OGDEN SCHOOL DISTRICT

HIGHLAND JUNIOR HIGH - AUDITORIUM RIGGING REPLACEMENT

325 GRAMERCY AVE
OGDEN, UT 84404

Project Narrative

THE PROJECT CONSIST OF THE REMOVAL OF THE EXISTING AUDITORIUM RIGGING SYSTEM, EXISTING SUSPENDED LATH AND PLASTER CEILING SYSTEM AND THE STAGE HOUSE LIGHTS. THE EXISTING CURTAINS, MASKING BORDERS AND STAGE LIGHTING WILL BE REMOVED AND REINSTALLED. A NEW STEEL SUB-STRUCTURE WILL BE PROVIDED ALONG WITH A NEW PAINTED SUSPENDED GYPSUM BOARD CEILING SYSTEM AND STAGE HOUSE LIGHTS. THE EXISTING MECHANICAL CEILING GRILLES WILL BE REMOVED TO FACILITATE THE REMOVAL OF THE CEILING AND REINSTALLED UPON COMPLETION OF THE NEW CEILING AS DETAILED IN THE CONSTRUCTION DOCUMENTS.

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NORTH

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Project Team

CLIENT
OGDEN SCHOOL DISTRICT
1950 Monroe Blvd
Ogden, UT 84401

ARCHITECT
KNIT
868 S. McClelland St., #2
Salt Lake City, Utah 84102
801-883-9328

ELECTRICAL ENGINEER
BNA Consulting
635 South State Street
Salt Lake City, Utah 84111
801-532-2196

STRUCTURAL ENGINEER
ARW ENGINEERS STRUCTURAL CONSULTANTS
1594 Park Circle
Ogden, Utah 84404
801-782-6008, EXT 8211

KNIT
868 S. McClelland Street, Suite 2
Salt Lake City, Utah 84102
Phone 801.883.9328
knitstudios.com

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REV	DATE	COMMENT

STATE OF UTAH
MARK DUKE PARKER
LICENSED ARCHITECT
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TITLE: COVER SHEET
PROJECT: HIGHLAND JH - AUDITORIUM RIGGING REPLACEMENT
325 GRAMERCY AVENUE, OGDEN, UT 84404
CLIENT: OGDEN SCHOOL DISTRICT

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GI.01

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ICC-ES Evaluation Report
ESR-1308

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DIVISION: 09 00 00—FINISHES
Section: 09 22 26—Suspension Systems
Section: 09 53 00—Acoustical Ceiling Suspension Assemblies

REPORT HOLDER:

WORTHINGTON ARMSTRONG VENTURE (WAVE)

EVALUATION SUBJECT:

FIRE- AND NONFIRE-RESISTANCE-RATED SUSPENDED CEILING FRAMING SYSTEMS

ADDITIONAL LISTEE:

ARMSTRONG WORLD INDUSTRIES, INC.

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015, 2012, and 2009 *International Building Code*® (IBC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)†

†The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

For evaluation for compliance with codes adopted by Los Angeles Department of Building and Safety (LADBS), see ESR-1308 LABC Supplement.

For evaluation for compliance with codes adopted by California Office of Statewide Health Planning and Development (OSHPD) and Division of the State Architect (DSA), see ESR-1308 CBC Supplement.

Properties evaluated:

- Interior finish
- Fire resistance
- Structural

2.0 USES

The Worthington Armstrong Venture (WAVE) ceiling framing systems described in this report are suspended, exposed framing systems of ceiling assemblies used in fire-resistance-rated and nonfire-resistance-rated construction for interior applications.

3.0 DESCRIPTION

3.1 Grid Components:

3.1.1 Main Runners, Nonfire-resistance-rated: Main runners for use in nonfire-resistance-rated ceiling assemblies include the 6100, AL7200, SS7200, 7300, 7302, 7305, 7500, 7502, 6500B, EA7900, 7600, and 76008 7602, 76028, 7603, 76038, 76068, 7607, series. All members are classified as intermediate-duty in accordance with ASTM C635, except the following, which are classified as heavy-duty: 6501, ES7901, EA7903, 6101, 6121A, 6127A, 6132, 6195A, 7301, 7306, 7307, 7501, 7504, 7507, 7508, 7509, 7601, 7604, 7605, 7612, 76128, 76018, 76048 and 76058. Profiles of runners are shown in Figure 1.

The 7300 and 7500 runners are cold-formed from ASTM A568 steel. The runners have a hot-dipped galvanized coating and a factory-installed polyester-painted steel cap or aluminum cap along the entire length of the bottom flange. The 6100, 6101, 6500B, 6501, ES7901,7600, and 7601 series have a painted coating in addition to the hot-dipped galvanized coating, and have no cap. The AL 7200, EA7900 and EA7903 runners are cold-formed from 3003-H14 aluminum and have a baked polyester paint coating. The 6500B, 6501 and ES7901, EA7900 and EA7903 runners have a polyurethane-filled upper bulb in addition to a polyurethane-coated lower flange.

The ES7901C runners are cold-formed from ASTM A568 steel; have a painted coating in addition to the hot-dipped galvanized coating; a factory-installed polyester-painted steel cap ; and include an integral extruded PVC gasket. The ES7901C main runners are classified as heavy-duty in accordance with ASTM C635 and shall be used in conjunction with ES7920C and ES7940C cross runners listed in Table 3 of this report.

The EA7900C runners are cold-formed from 3105-H24 aluminum and have a baked polyester paint coating and include an integral extruded PVC gasket. The EA7900C main runners are classified as intermediate-duty in accordance with ASTM C635 and shall be used in conjunction with EA7920C and EA7940C cross runners listed in Table 3 of this report.

The SS 7200 runners are cold-formed from 300 series stainless steel complying with ASTM A480. Table 2 specifies dimensions, lengths, and allowable transverse loads.

3.1.2 EAC Main Runners, Low Voltage, Nonfire-resistance-rated: Main runners for use with low voltage powered lighting systems include the following: EAC Prelude Main Runners: DC730112, DC730110, DC730108, and DC730106; non-powered 730106; EAC Suprafine Main Runners: DC750112, DC750110, DC750108, and DC750106; the non-powered 750106; EAC Silhouette Main Runners: DC760112, DC760110, DC760108, and DC760106; and the non-powered 760106. The EAC Prelude, EAC Silhouette, and EAC Suprafine are classified as heavy-duty in accordance with ASTM C635. See Table 2 for the listed runners, and Figure 1 for a profile of these runners.

The EAC main runners are cold-formed from ASTM A568 steel. The runners have a hot-dipped galvanized coating and a factory-installed, polyester-painted steel cap along the entire length of the bottom flange. The EAC Silhouette series has a painted coating in addition to the hot-dipped galvanized coating and have no cap on the bottom flange.

The EAC Prelude, EAC Silhouette, and EAC Suprafine main runners have a snap-on upper polymerprofile that supports two tin-plated copper conducted strips that serve to carry the low voltage current. The EAC Silhouette main runners also have a lower conductive snap-on polymer conductive strip in the lower box profile in addition to the upper conductive snap-on polymer profile. The snap-on polymer has a flame-spread index of 25 or less and a smoke-developed index of 50 or less, when tested in accordance with ASTM E84.

The EAC main runners are used in conjunction with the XL 7300 (Prelude), XL 7500 (Suprafine) and XL 7600 (Silhouette) cross runners listed in Table 3 of this report.

3.1.3 Main Runners, Gravity Loaded, and Nonfire-resistance-rated: Main runners for use to support gravity loads only in non-fire-resistance-rated ceiling assemblies include 730145 series. The suspended ceiling framing system must be installed in accordance with the IBC Section 808 for ceiling systems up to 4 psf (19.5 kg/m^2) of uniform gravity load. The 730145 main runners are cold-formed from ASTM A568 steel. The runners have a hot-dipped galvanized coating and a factory-installed, polyester-painted steel cap along the entire length of the bottom flange. The 730145 main runners are used in conjunction with XL7325 and XL 7345 cross runners listed in Table 3 of this report. Profiles of the runners are shown in Figure 1.

3.1.4 Cross Runners, Nonfire-resistance-rated: Cross runners for use in nonfire-resistance-rated ceiling assemblies are the XL6100 series (Interlude), XL6500 series (Sonata), XL7100 series (Prelude), XLAL7200 series (Aluminum Prelude), XLSS7200 series (Stainless Prelude), XL7300 series (Prelude), XL7500 series (Suprafine), XL7600 series (Silhouette), XL76008 series (Silhouette), EA7900 series (Aluminum 15/16 inch Clean Room), EA7903 series (Aluminum 1 1/2 inch Clean Room), and ES7900 series (Steel 15/16 inch Clean Room).

The XL 6100 series, XL6500 series, XL7100 series, XL7300 series, XL7500 series, XL7600 series and XL76008 series ES7900 series cross runners are cold-formed from ASTM A568 steel. The cross runners have a hot-dipped galvanized coating and a factory-installed polyester-painted steel cap or aluminum cap along the entire length of the bottom flange. The XL 6100 XL6500, ES7900 and XL7600 and XL 76008 series have a baked polyester painted coating in addition to the hot-dipped galvanized coating, and have no capping on the lower flange. The XLAL 7200, EA7900 and EA7903 series runners are cold-formed from 3003-H14 aluminum and have a baked polyester painted coating. The XL6500 series, ES7900 series, EA7900 series and EA7903 series runners have a polyurethane-filled upper bulb in addition to a polyurethane-coated lower flange. The XLSS 7200 runners are cold-formed from 300 series stainless steel complying with ASTM A480. Table 3 specifies dimensions, lengths, and allowable transverse loads.

3.1.5 Main Runners, Fire-resistance-rated: Main runners for use in fire-resistance-rated ceiling assemblies are the HD 8201, 8300, 8301, 8500 and 8501 runners listed in Table 2. The 8300 and 8500 runners are classified structurally as intermediate-duty in accordance with ASTM C635; Models 8301, 8501, and HD 8201 main runners are classified as heavy-duty. Profiles of runners are shown in Figure 1.

All members have an inverted T-shape. Members are cold-formed from ASTM A568 steel with a hot-dipped galvanized coating.

Models 8300, HD 8201 and 8301 have a factory-installed steel cap along the entire length of the bottom flange. The HD 8201 member has a hot-dipped galvanized coating and a bottom flange cap made from either 3003-H16 or 3105-H16 aluminum. Table 2 specifies dimensions, lengths and allowable transverse loads.

3.1.6 Cross Runners, Fire-resistance-rated: Cross runners for use in fire-resistance-rated ceiling assemblies are the XL 8200 series (Prelude Plus Fire Guard), XL8300 series (Prelude Fire Guard), and XL 8500 (Prelude Suprafine Fire Guard) series runners listed in Table 3. Profiles of runners are shown in Figure 1. Members are cold-formed from ASTM A568 steel with a hot-dipped galvanized coating. The XL 8300 and XL 8500 series have a factory-installed steel cap along the entire length of the bottom flange. The XL 8200 series members have a hot-dipped galvanized coating and a bottom flange cap made from either 3003-H16 or 3105-H-16 aluminum. Table 3 specifies dimensions, lengths and allowable transverse loads.

3.1.7 Cross Runners, Gravity Loaded, and Nonfire-resistance-rated: Cross runners for use to support gravity loads only and in non-fire-resistance rated ceiling assemblies are the XL 7325 and XL 7345 series runners listed in Table 3. The suspended ceiling framing system must be installed in accordance with the 2015, 2012, and 2009 IBC Section 808 for ceiling systems up to 4 psf (19.5 kg/m^2) of uniform gravity load. Profiles of the runners are shown in Figure 1. Members are cold-formed from ASTM A568 steel with a hot-dipped galvanized coating and a factory-installed, polyester-painted steel cap along the entire length of the bottom flange. Table 3 specifies dimensions, lengths, and allowable transverse loads.

3.1.8 Materials: Steel runners are cold formed from ASTM A653 CS Type B steel and have a hot-dipped galvanized minimum protective zinc coating of G30, G60, or G90. The steel runners have a carbon steel composition that conforms to ASTM A568 and a zinc protective coating that conforms to ASTM A653. Aluminum runners are cold-formed from 3003-H14 and 3105-H24 aluminum, and the stainless steel runners are cold formed from 300 series stainless steel.

3.2 Hanger Wire:

Hanger wire for suspended ceilings, framing members, and any fixtures must comply with Section 13.5.6 of ASCE 7 and IBC Section 2506.2.1.

3.3 BERC Clip:

The BERC (Beam End Retaining Clip) System is illustrated in Figure 3. The BERC clip is used to connect main and cross runners to wall molding at the ceiling perimeter. The clip is similar to the BERC-2 clip, described below, except the horizontal leg of the BERC clip is shorter than that of the BERC-2.

3.4 BERC-2 and AL BERC-2 Clips:

The BERC-2 and AL BERC-2 clips are illustrated in Figure 2. The clips are used to connect main and cross runners to wall molding at the ceiling perimeter. The BERC-2 clip is manufactured from 0.034-inch-thick (0.864 mm), hot-dipped galvanized, cold-rolled steel complying with ASTM A568. The AL BERC-2 clip is fabricated from 0.034-inch-thick (0.864 mm) 3003-H16 or 3105 H16 Aluminum.

3.5 STAC and XTAC Clip:

The Single Tee Adapter Clip (STAC) is illustrated in Figure 4. The STAC clip is used to connect cross runners to main runners in off-module and staggered grid installations. The cross runners must have a minimum steel substrate thickness of 0.015-inch. The connection capacity between main runner and cross runner exceed 180 lbf (81.5 kg). The STAC clip is manufacturered from 0.046-inch thick (1.17 mm), hot-dipped galvanized, cold-rolled steel compling with ASTM A568. The Cross Tee Adapter Clip (XTAC) is illustrated in Figure 2. The XTAC clip is used to connect cross runners to main runners in off-module and staggered grid installations. The cross runners must have a minimum steel substrate thickness of 0.015-inch. The connection capacity between main runner and cross runner exceeds 180 lbf (81.5 kg). The XTAC clip is manufacturered from 0.050-inch thick(1.27 mm), hot-dipped galvanized, cold-rolled steel complying with ASTM A568.

3.6 Accessories:

Each framing system has accessory items that include support angles and corner caps. Steel for accessory items is manufactured from hot-dipped galvanized, cold-rolled steel complying with ASTM A568 and ASTM A653.

3.6.1 TechZone Yoke (TZYK):

The TechZone Yoke (TZYK) is illustrated in Figure 5. The TZYK is used in ceiling framing systems with continuous lighting and diffuser configurations; each yoke assembly requires 2 single yokes and when assembled create either 4-inch (101.6 mm), 6-inch (152.4 mm), or 8-inch (203.2 mm) widths. The TZYK is manufactured from 0.050-inch thick (1.27 mm) hot-dipped galvanized, extruded steel complying with ASTM A653.

4.0 DESIGN AND INSTALLATION

4.1 General:

The suspended ceiling framing system must be installed in accordance with this report and the manufacturer's published installation instructions. The suspended ceiling framing system must be installed in accordance with IBC Sections 808, 1613 and 2506.2.1 for ceiling systems up to 4 psf (19.5 kg/m^2).

4.2 Main Runners:

Main runners must be installed and leveled to within 1/4 inch in 10 feet (6.4 mm in 3048 mm), with the supporting wire taut. Vertical support hanger wire must be installed within 3 inches (51 mm) of the main runner fire expansion relief. The design loads for main runners must be less than or equal to the capacities allowed in Table 2 of this report. Supports for the main runners that consist of vertical hangers, perimeter hangers, and lateral force bracing must be installed in accordance with the applicable code.

4.3 Cross Runners:

Main runners, or other cross runners, must support cross runners to within 1/32 inch (0.80 mm) of the required center-to-center spacing. This tolerance must be noncumulative beyond 12 feet (3658 mm). Intersecting runners must be installed to form a right angle to the supporting members.

The maximum design load capacities for cross runners must be less than or equal to the capacities allowed in Table 3 of this report.

4.4 Seismic Design:

4.4.1 Seismic Design Requirements: Seismic design and installation details of the ceiling systems, excluding 730145 main runner, and XL7325 and XL7345 cross runners, must be in accordance with Section 13.5.6 of ASCE 7-16 for the 2021 and 2018 IBC [ASCE 7-10 for the 2015 and 2012 IBC and ASCE 7-05 for the 2009 IBC]; as referenced in IBC Section 1613, except as noted in Section 4.4.2 of this report. Systems classified as intermediate-duty are limited to use in Seismic Design Categories A, B and C.

4.4.2 Ceiling Framing Systems with BERC, BERC-2,and AL BERC-2 Clips:

4.4.2.1 Alternate Installation with BERC-2 and AL BERC-2 Clips, for Seismic Design Categories D, E and F: Under this installation, the main runner must be rated heavy-duty and have a minimum simple span allowable uniform load of 16.35 pounds per lineal foot (238 N/m); with a maximum ceiling weight permitted for systems with BERC-2 or XTAC clips at 4 pounds per square foot (19.5 kg/m^2); with a maximum ceiling weight permitted for systems with AL BERC-2 clip at 2 pounds per square foot (9.75 kg/m^2). With this installation under Section 4.4.2.1, the main and cross runners must be as described in Table 2 and 3 of this report. The BERC-2, XTAC, and AL BERC-2 clips are used to secure the main runners and cross runners to the wall molding, as detailed below and shown in Figure 2. A nominally 7/8-inch (22 mm) wall molding is used in lieu of the 2-inch (51 mm) perimeter supporting closure angle required by Section 5.2.2 of ASTM E580 and Section 13.5.6.2.2 of ASCE 7-16 for the 2021 and 2018 IBC [ASCE 7-10 for the 2015 and 2012 IBC and Section 13.5.6.2.2 (b) of ASCE 7-05 for the 2009 IBC] for Seismic Design Categories D, E and F. The ceiling system must be as prescribed by the applicable code except for the use of the BERC-2, XTAC, and AL BERC-2 clips and the 7/8-inch (22 mm) wall molding and elimination of spreader bars.

The BERC-2 and AL BERC-2 clips are attached to the wall molding by sliding the locking lances over the hem of the vertical leg of the wall molding(see Figure 2). Under the 2021 and 2018 IBC, as required by Section 13.5.6.2.2 of ASCE 7-16, either BERC-2 or AL BERC-2 clips must be screwed to the wall molding with a total of two (2) screws (see Figure 2), and the wall molding must be positively attached to the wall studs or other supporting structure. BERC-2,and AL BERC-2 clips installed on the two adjacent walls where the runners must be fixed (attached wall), are attached to the runner by a No. 7 by 7/16-inch long (minimum) self-piercing sheet metal screw through the fixed hole in the clip and the top flange bulb of the runner. XTAC clips installed on the two adjacent walls where the runners must be fixed (attached wall), are attached to wall molding by two No. 7 x 7/16-inch long (minimum) self-piercing sheet metal screws through the vertical leg of the wall molding and to runners by two No. 7 x 7/16-inch long (minimum) self-piercing sheet metal screws through the web of the runner. BERC-2, or AL BERC-2 clips installed on opposite walls where the runners must not be fixed to the clips (unattached walls), the clips must not be mechanically connected to the runner by any fastener and must allow the terminal runner end to move 3/4 inch (19.1 mm) towards and away from the wall, and installation of a No. 7 by 7/16-inch long (minimum) self-piercing sheet metal screw through the horizontal slotted hole is optional, as shown in Figure 2.

BERC-2,AL BERC-2, or XTAC clips installed in this manner are an acceptable means of preventing runners from spreading in lieu of spacer bars (stabilizer bars) required in Section 5 of ASTM E580 for the 2021, 2018, 2015 and 2012 IBC (CISCA 3-4 for the 2009 IBC). ASTM E580 is referenced in ASCE 7, which is referenced in the 2021, 2018, 2015 and 2012 IBC Section 1613 (CISCA 3-4 is referenced in ASCE 7-05, Section 13.5.6.2.2, which is referenced in 2009 IBC Section 1613). The assemblies described in in this Section 4.4.2.1 are equivalent to that required by CISCA 3-4 and Section 5 of ASTM E580. See Figure 2.

A single 1/8-inch-diameter (3.175 mm) steel pop rivet complying with Industrial Fastener Institute Standard IFI-114 may be used in lieu of BERC-2, XTAC, and AL BERC-2 perimeter clips to secure the main runners and cross runners to the wall molding on two adjacent walls (attached walls). The center of the rivet must be 0.25 inch (6.35 mm) from the edge of the wall angle. See Figure 2.

4.4.2.2 Alternate Installation with BERC-2 and TechZone Yoke (TZYK) for Seismic Design Categories D, E and F: Under this installation, the 7501 main runner must be used, with a maximum ceiling weight permitted for systems with BERC-2 clips at 3.35 pounds per square foot (16.4 kg/m^2), The BERC-2 clips are used to secure the main runners and cross runners to the wall molding, as detailed below and shown in Figure 2. A nominally 7/8-inch (22 mm) wall molding is used in lieu of the 2-inch (51 mm) perimeter supporting closure angle required by Section 5.2.2 of ASTM E580 and Section 13.5.6.2.2 of ASCE 7-16 for the 2021 and 2018 IBC [ASCE 7-10 for the 2015 and 2012 IBC and Section 13.5.6.2.2 (b) of ASCE 7-05 for the 2009 IBC] for Seismic Design Categories D, E and F. The ceiling system must be as prescribed by the applicable code except for the use of the BERC-2 clips and the 7/8-inch (22 mm) wall molding and elimination of spreader bars.

The BERC-2 clips are attached to the wall molding as specified in section 4.4.2.1 of this report.

Each TZTK yoke assembly must be suspended from structure with a vertical 12 gauge steel wire through the center hole of the top of the yoke assembly. Alternatively, the yoke assembly can be suspended from two hanger wires secured through the holes at the corners of the yoke assembly. The yoke assembly must be attached to the main runners and to the cross tees using a single 1/8-inch-diameter (3.175 mm) steel pop rivet complying with Industrial Fastener Institute Standard IFI-114 at 24 inches (609.6 mm) from the perpendicular end of the main runner and spaced at every 48 inches (1219.2 mm) on center. All lighting fixtures must be installed in accordance with Section 5.3 of ASTM E580.

In lieu of splay wire bracing in accordance with Section 5.2.8 of ASTM E580, rigid bracing members composed of 2½-inch (63.5 mm) wide by 25 gage steel studs must be attached to the web of the main runner using self-tapping screws. The two rigid bracing members splayed 90 degrees from each other at an angle of 45 degrees from the plan of the ceiling. The location and spacing of the rigid bracing members must comply with Section 5.2.8 of ASTM E580. In addition to the rigid bracing members, a compression post composed of a 2 ½-inch (63.5 mm) wide 25 gage steel stud connected to the main runner. The length of the bracing members must be designed by a registered design professional.

4.4.2.3 Alternate Installation with BERC, BERC-2and AL BERC-2 Clips, for Seismic Design Category C: Terminal ends of the runners are secured by attaching either the BERC, BERC-2, XTAC or AL BERC-2 clip to the wall molding and attaching the runners to the clip. The runners have zero clearance at the perimeter on two adjacent walls (attached walls) and 3/8-inch (9.5 mm) clearance on the opposite walls (unattached walls), as detailed in this section and shown in Figures 2 & 3. The BERC or BERC-2 clip is attached to the wall molding by sliding the locking lances over the hem of the vertical leg of the wall molding; the AL BERC-2 clip also requires an additional No. 7 by 7/16-inch long (minimum) self-piercing sheet metal screw through the clip and into the wall molding. When the runners must be fixed (attached walls) at two adjacent walls, attach a No.7 by 7/16-inch long self-piercing screw through the fixed hole of a BERC-2 or AL BERC-2 clip and the top flange bulb of the runner, or through the fixed hole of a BERC clip and into the web of the runner. XTAC clips may be used in lieu of BERC, BERC-2 or AL BERC-2 perimeter clips to secure the main runners and cross runners to the wall molding on two adjacent walls (attached walls). XTAC clips are attached by two No. 7 x 7/16-inch long (minimum) self-piercing sheet metal screws through the vertical leg of the wall molding and to runners by two No. 7 x 7/16-inch long (minimum) self-piercing sheet metal screws through the web of the runner. BERC-2, AL BERC-2, or BERC clips installed on opposite walls where the runners must not be fixed to the clips (unattached walls), the clips must not be mechanically connected to the runner by any fastener and must allow the terminal runner end to move 3/8-inch (9.5 mm) towards and away from the wall, and installation of a No. 7 by 7/16-inch long (minimum) self-piercing sheet metal screw through the horizontal slotted hole is optional, as shown in Figure 2.

BERC or BERC-2 or XTAC or AL BERC-2 clips installed in this manner are an acceptable means of preventing runners from spreading, in lieu of spacer bars (stabilizer bars) required in Section 4 of ASTM E580, which is referenced in Section 13.5.6.2.1 of ASCE 7-16 under the 2021 and 2018 IBC Section 1613 [ASCE 7-10 under the 2015 and 2012 IBC Section 1613; and Section 13.5.6.2.1 and CISCA 0-2 as referenced in ASCE 7-05 under the 2009 IBC Section 1613]. Except for the use of the BERC or BERC-2 or XTAC or AL BERC-2 clip as noted above, installation of the ceiling system must be as prescribed by the applicable code. The maximum ceiling weight permitted is 2.5 pounds per square foot (12.2 kg/m^2) for ceiling systems using BERC or BERC-2 or XTAC clips and 2 psf (9.75 kg/m^2) for ceiling systems using the AL BERC-2 clip. With this installation, the main and cross runners must be as described in Tables 2 and 3 of this report, except for CleanRoom AL series (EA7900C, EA7920C, and EA7940C) and CleanRoom Steel series (ES7901C, ES7920C and ES7940C).

The assemblies described in this Section 4.4.2.3 are equivalent to that required by Section 4 of ASTM E580, which is referenced in Section 13.5.6.2.1 of ASCE 7-16 under 2021 and 2018 IBC Section 1613 [ASCE 7-10 under the 2015 and 2012 IBC Section 1613; and Section 13.5.6.2.1 and CISCA 0-2, as referenced in ASCE 7-05 under the 2009 IBC Section 1613] A single 1/8-inch-diameter (3.175 mm) steel pop rivet complying with Industrial Fastener Institute Standard IFI-114 may be used in lieu of BERC-2, XTAC, AL BERC-2, and BERC perimeter clips to secure the main runners and cross runners to the wall molding on two adjacent walls (attached walls). The center of the rivet must be 0.25 inch (6.35 mm) from the edge of the wall angle. See Figures 2 and 3.

4.5 Lighting Fixtures:

Lighting fixtures must be installed in accordance with Section 13.5.6 of ASCE 7-16 and ASCE 7-10. Lighting fixtures may also be attached to the grid with clips complying with the ICC-ES Acceptance Criteria for Attachment Devices for Recessed Lighting Fixtures (Luminaires) in Suspended Ceiling Systems (AC184). The lighting fixtures may also be attached to the framing members with sheet metal screws having a minimum allowable shear strength of 314 lbf (1395 N) and minimum allowable tension strength of 137 lbf (609.6 N) for a No. 20/20 gage metal-to-metal connection.

4.6 Partitions:

Partitions must be laterally supported as required by Section 13.5.8 of ASCE 7, as referenced by the applicable IBC Section 1613.

4.7 Two-hour Fire-resistance-rated Floor-ceiling Assembly:

The floor-ceiling assembly described in Section 4.7 has a two-hour fire-resistance rating (refer to Figure 7 for details):

4.7.1 Structural Beams: The structural floor beams supporting the floor-ceiling assembly are minimum W8×15, or an equivalent-sized steel beam having a minimum weight-to-heated-perimeter ratio, W/D, of 0.54.

In accordance with Section 704.3 of the 2015, 2012, and 2009 IBC, structural steel floor beams need not be individually fire-protected when the suspended ceiling forms the protective membrane for the fire-resistance-rated assembly. However, structural floor beams must be individually protected on all sides for the full length with materials having the required fire-resistance rating, when they support directly applied loads from a floor and roof or more than one floor, or where the required fire-resistance rating of such members is greater than two hours.

4.7.2 Floor Joists: Floor joists are minimum 10K1 steel bar joists, spaced a maximum of 24 inches (610 mm) on center. Each joist must be welded to end supports, and must have 1/2-inch-diameter (12.7 mm) steel bar bridging members welded to top and bottom chords of each joist at midspan.

4.7.3 Steel-floor Decking: The concrete deck is either supported by minimum No. 22 gage [0.0299 inch (0.759 mm)] galvanized steel deck panels with 1 19/32-inch-deep (32.5 mm) flutes spaced 6 inches (152 mm) on center, or is supported by minimum No. 20 gage [0.0359 inch (0.91 mm)] galvanized steel cellular panels having 3-inch-deep (76 mm) flutes.

When a blend of fluted and cellular steel deck panels is used, the concrete topping thickness is measured from the top plane of the cellular deck panels. The steel deck panels must be welded to supports at 12 inches (305 mm) on center. Adjacent deck panels must be button-punched or welded together at 36 inches (914 mm) on center at side joints.

Where fluted and cellular floor deck panels are installed end-to-end, galvanized steel angles must be tack-welded to the cellular floor deck panels in such a manner as to cover the cells.

4.7.4 Concrete Floor: The concrete floor must be a minimum of 2 1/2 inches (63.5 mm) thick, measured from the top of the metal deck panels, and normal-weight concrete with carbonate or siliceous aggregates. The concrete must have a minimum density of 150 ± 3 pcf (2400 ± 48 kg/m^3), and a minimum compressive strength of 3,000 psi (20.7 MPa). The middle of the slab must be reinforced with 6×6–W1.4×W1.4 welded wire fabric.

4.7.5 Suspended Ceiling Members:

4.7.5.1 Main Runners: Main runners are either the 8300, 8301 or HD 8201. The main runners are 12 feet (3657.6 mm) long and spaced a maximum of 4 feet (1219.2 mm) on center. The design loads for main runners must be less than or equal to the capacities shown in Table 2. Vertical hangers, perimeter hangers, and lateral-force bracing for the main runners are installed in accordance with the code. The distance from the bottom side of the floor decking to the bottom side of the main runners is a minimum of 19 3/4 inches (502 mm).

4.7.5.2 Cross Runners: Cross runners are either the XL 8200 series (Prelude Plus Fire Guard) or XL 8300 series (Prelude Fire Guard). Main runners must be located within 1/32 inch (0.79 mm) of the required center distances, and this tolerance must be noncumulative beyond 12 feet (3657.6 mm). Intersecting runners must be installed to form a right angle to the supporting members. The design loads for cross runners must be less than or equal to the capacities shown in Table 3. A cross runner that supports another cross member must have a minimum uniformly distributed load capacity of 12 pounds per linear foot (175 N/m).

4.7.5.3 Hanger Wire: The suspended ceiling is supported by No. 12 SWG [0.105 inch (2.7 mm) in diameter] galvanized steel wire that is attached to the concrete slab through the steel floor units, before concrete placement, or attached to hanger clips. The hanger clips are minimum 0.045-inch-thick (1.14 mm), 2-inch-wide (51 mm), 3 1/2-inch-long (90 mm), galvanized steel clips that are hooked at one end, for attachment over the male leg of steel floor units, and spaced as required for hanger wire attachment.

Hanger wires are spaced a maximum of 48 inches (1219 mm) on center or must be located at every other main runner/cross-tee intersection, whichever dimension is less along main runners. Hanger wire must be located at all four corners of light fixtures, at mid-span of cross tees next to 4- and 5-foot-long (1219 and 1524 mm) light fixtures and air duct outlets, and next to each main runner splice. Additional hanger wires are required at the mid-span of those cross tees running parallel and nearest to the walls and those near the end of cut cross tees longer than 2 feet (610 mm) that abut walls.

4.7.6 Acoustical Material: Acoustical lay-in ceiling panels used with the suspended ceiling system are the nominal panel sizes and types shown in Table 1. Panels are nominally 5/8 inch (15.9 mm) or 3/4 inch (19.1 mm) thick. Border panels are supported at walls by 24 MSG painted steel channels, 1 inch (25 mm) deep, with a 2-inch (23.8 mm) bottom flange. Optional support method consists of BERC-2 clip at wall attached to 15/16 inch × 15/16 inch No. 24 MSG painted steel channels.

4.7.7 Hold-down Clips: Hold-down clips, produced from No. 24 gage spring steel, must be used for ceiling panels weighing less than one pound per square foot. When the ceiling is composed of nominally 24-by-24-inch (610 by 610 mm), 24-by-36-inch (610 by 914 mm), or 30-by-30-inch (762 by 762 mm) lay-in panels, one clip is placed over bulbs of cross tees near cross tee midpoints. When the ceiling is composed of 20-by-60 inch (508 by 1524mm), 36-by-36-inch (914 by 914 mm), 24-by-48-inch (610 by 1219 mm), 30-by-60-inch (762 by 1524 mm), 36-by-60-inch (914 by 1524 mm) or 48-by- 48-inch (1219 mm) lay-in panels, two clips are placed over bulbs of each cross tee near cross tee quarter-points. One leg of each clip is cut off when placement is over bulbs of cross tees adjacent to the long side of light fixtures.

4.7.8 Recessed Light Fixtures: Fluorescent-lamp-type, steel housing fixtures can be used in the fire-resistance-rated assembly, provided the fixtures measure 1 by 4 feet (305 by 1219 mm), 2 by 2 feet (610 by 610 mm), 2 by 4 feet (610 by 1219 mm), 20 by 48 inches (508 by 1219 mm) or 20 by 60 inches (508 by 1524 mm). The nominally 1-by-4-foot (305 by 1219 mm), 2-by-2-foot (610 by 610 mm) and 2-by-4-foot (610 by 1219 mm) fixtures may include vented sides for air boots and vented tops for air-return purposes. Linear air diffusers and linear air returns must be used with nominally 20-by-48-inch (508 by 1219 mm) fixtures. When nominally 20-by-60-inch (508 by 1524 mm) fixtures are used, fixture stabilizers are used to supplement the hanger wires occurring at the mid-span of the 5-foot-long (1524 mm) cross tees.

When nominally 1-by-4-foot (305 by 1219 mm) fixtures are used, the aggregate number of fixtures must not exceed four per 100 square feet (9.3 m^2) of ceiling area. When nominally 2-by-2-foot (610 by 610 mm) fixtures are used, the aggregate number of fixtures must not exceed five per 100 square feet (9.3 m^2) of ceiling area. When nominally 2-by-4-foot (610 by 1219 mm), 20-by-48-inch (508 by 1219 mm), or 20-by-60-inch (508 by 1524 mm) fixtures are used, the aggregate number of fixtures must not exceed three per 100 square feet (9.3 m^2) of ceiling area. The fixtures must be wired in conformance with an approved electrical code.

The recessed light fixture must be protected on the topside with acoustical ceiling tile panel material having a minimum thickness of 5/8 inch (15.9 mm). The panels are cut into pieces to form a five-sided enclosure which is rectangular or trapezoidal in cross section, depending upon fixture type, and which is approximately 1/2 inch (12.7 mm) longer and wider than the fixture, with sufficient depth to provide at least 1 inch (12.7 mm) of clearance between the fixture and the enclosure. The pieces are held together with 8d nails. Spacers provide the 1 1/4-inch (31.7 mm) clearances when placed on top of fixtures located away from the ballasts. When no air-handling or air-return fixtures are used, a maximum 1 1/4-inch (31.7 mm) separation must be maintained between the long fixture protection sidepieces and the top piece. When air supply light fixtures with air boots are used, fixtures and air boots must be fully enclosed except for the nominally 28-square-inch (18 064 mm^2) opening needed for the connection to air-supply ducts.

4.7.9 Air Duct: Air ducts are permitted in the assembly provided the ducts are constructed of minimum No.22 MSG galvanized steel and aggregate duct opening area is less than or equal to 113 square inches (72 903 mm^2) per 100 square feet (9.2 m^2) of ceiling area. The maximum air duct-opening dimension is 12 inches (305 mm).

4.8 8500 (Prelude SupraFine Fire Guard) Series One-hour Fire-resistance-rated Roof-ceiling System:

This exposed grid system consists of the 8500 series main runners and the XL 8520 or XL 8540 cross runners, and is part of a one-hour fire-resistance-rated floor-ceiling system. The rating applies to restrained and unrestrained assemblies as described in ASTM E119. See Figure 6 for assembly details. General requirements in 2021, 2018, 2015 and 2012 IBC Section 711 and 2009 IBC Section 712 must be observed.

4.9 Special Inspection:

Where special inspections are required by the building official, the suspended ceilings in Seismic Design Categories C, D, E and F shall be subject to periodic special inspections during the installation of the suspended ceiling systems and their anchorage in accordance with the following requirements:

- For installations in accordance with Section 4.4.2 of this report, special inspection must be conducted as required by the building official during enforcement of the 2021, 2018 and 2015 IBC Sections 1704.5, 1705.1.1 and 1705.13.2, 2012 IBC Sections 1705.1.1, 1705.11.4 and Item 3 of Section 1705.12; and 2009 IBC Section 1704.15, Item 3 of Section 1708.1, and 1708.4, as applicable.
- For installation in accordance with Section 4.4.1 of this report, special inspection must be in compliance with the following: Section 13.5.6.2.2 (h) of ASCE 7-05, and 2009 IBC Section 1705.3.4, Item 3 for the 2009 IBC; Section 13.5.6.2.2 (h) of ASCE 7-05, as applicable.
- The special inspector must verify that the ceiling framing systems are as described in this report, and comply with this report and the approved construction documents.

Where special inspections are required by the building official, a statement of special inspection must be provided as required by 2021, 2018, 2015 and 2012 IBC Section 1704.3 (Sections 1705.2 and 1705.3 for the 2009 IBC).

5.0 CONDITIONS OF USE

The suspended ceiling systems described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The ceiling suspension main runners, cross runners, BERC, BERC-2,AL BERC-2, STAC and XTAC clips, and accessories must be fabricated and installed in accordance with this report and the manufacturer's published installation instructions. In the event of a conflict between the manufacturer's installation instructions and this report, this report governs.

5.2 Design loads and spans of main and cross runners must comply with Tables 2 and 3 of this report.

5.3 Suspended ceiling systems must be designed and installed in accordance with ASCE 7 Section 13.5.6 as referenced by the applicable IBC Section 1613. The documents must be prepared by a registered design professional where required by statutes of the jurisdiction in which the project is to be constructed.

5.4 Special inspections must be provided in accordance with Section 4.9 of this report.

5.5 For Seismic Design Category C, D, E or F, a quality assurance plan complying with IBC Chapter 17, including 2021, 2018, 2015 and 2012 IBC Section 1704.3 (2009 IBC Sections 1705.2 and 1705.3) must be submitted to the code official.

5.6 The ceiling framing systems must not be used to provide lateral support for walls or partitions, except as provided for in ASCE 7, Section 13.5.8.1 as referenced in the applicable IBC Section 1613.

5.7 The ceiling systems must be braced to resist seismic forces as determined from Section 1613 of the IBC.

5.8 The systems are limited to ceilings not considered accessible in accordance with Item 29 of 2021 IBC Table 1607.1, Item 28 of 2018, 2015 and 2012 IBC Table 1607.1 and Item 31 of 2009 IBC Table 1607.1, as applicable.

5.9 The supporting construction for the ceiling system has not been evaluated and is outside the scope of this report. The code official must approve the floor or roof construction supporting the suspended ceiling system.

5.10 The ceiling systems recognized in this report have been evaluated for use in interior applications. For exterior ceiling systems must be designed for wind loads and with due consideration of atmospheric conditions.

5.11 Lay-in ceiling panels must be justified to the satisfaction of the code official as complying with the interior finish requirements of Chapter 8 of the applicable code.

5.12 The electrical safety of the EAC main runners is outside the scope of this report. EAC main runners must be installed in accordance with the applicable provisions of the National Electrical Code.

5.13 Suspended ceiling system with 730145 main runner, and XL7325 and XL7345 cross runners have only been evaluated for gravity loads only. Seismic design is outside the scope of this report.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Suspended Ceiling Framing Systems (AC368), dated November 2019 (editorially revised March 2021).

6.2 Reports of fire-resistance tests in accordance with ASTM E119.

6.3 Reports of comparative seismic qualification tests in accordance with the ICC-ES Acceptance Criteria for Seismic Certification by Shake-table Testing of Nonstructural Components (AC156), dated October 2010 (editorially revised December 2020).

7.0 IDENTIFICATION

7.1 Cartons of framing members, clips and accessories are identified with the name and address of Armstrong World Industries, Inc.; the catalog number; the word "WAVE"; and the ICC-ES evaluation report number (ESR-1308).

7.2 The report holder's contact information is the following:

WORTHINGTON ARMSTRONG VENTURE (WAVE)
101 LINDENWOOD DRIVE, SUITE 350
MALVERN, PENNSYLVANIA 19355
(610) 722-1218
www.armstrongceilings.com
jrameen@armstrongceilings.com

7.3 The Additional Listee's contact information is the following:

ARMSTRONG WORLD INDUSTRIES, INC.
POST OFFICE BOX 3001
LANCASTER, PENNSYLVANIA 17604

TABLE 1—ACOUSTICAL MATERIALS

ACOUSTICAL PANEL SIZE (inches)	ACOUSTICAL MATERIAL TYPE[1]	STEEL FLOOR DECK PANEL TYPE[2]
0 by 60	P(S OR P) OR PC(S)	F, C or B
20 by 60	P(S OR P) OR PC(S)	F or B1
24 by 24	BF(S)	F, C or B
24 by 24	BF(S)	F
24 by 24 or 36	P(S)	F, C or B
24 by 24 or 36	PC(S)	C or B
24 by 24 or 36	P(S)	F
24 by 48 or 60	P(S OR P) OR PC(S)	F, C or B
24 by 48 or 60	P(S OR P) OR PC(S)	F or B1
30 by 30	P(S)	F, C or B
30 by 30	PC(S)	C or B
30 by 30	P(S)	F
30 by 60	P(S) OR PC(S)	F, C or B
36 by 36	PC(S)	F, C or B
36 by 36	PC(S)	F or B1
36 by 60	PC(S)	F, C or B
48 by 48	PC(S)	F, C or B

For **SI**: 1 inch = 25.4 mm.

[1](S) = surface perforations, (P) = through perforations.

[2](F) = all fluted steel deck panels, (C) = all cellular steel floor deck panels, (B) = any blend of fluted and cellular floor deck panels, (B$_1$) = blend of one cellular floor deck panels and one or more fluted deck panels.

TABLE 2—DIMENSIONS AND ALLOWABLE LOADS FOR MAIN RUNNERS (SIMPLE SPAN)

CATALOG NUMBER	NOTE	TYPE (SEE FIGURE 1)	LENGTH (inches)	METAL THICKNESS (inch)	MAXIMUM SPAN (feet)	ALLOWABLE LOAD (lb./lin. ft.)
6100	1	M	144	0.013	4	12.6
6101	1	M	144	0.019	4	16.79
6121A	1	M	144	0.019	4	16.79
6127A	1	M	120	0.019	4	16.79
6132	1	M	132	0.019	4	16.79
6195A	1	M	126	0.019	4	16.79
6500B	5	P	144	0.015	4	15.92
6501	1, 5	P	144	0.018	4	19.42
Al 7200	1	B	144	0.021	3	13.47
SS 7200	3	B	144	0.015	4	12.23
7300	1	A	144	0.010	4	13.5
7301	1	A	144	0.015	4	16.73
730106	1, 8	S	72	0.017	4	17.35
730145	1, 7	U	144	0.0195	4	40.16
7302	1	A	120	0.010	4	13.5
7305	1	A	140	0.010	4	13.5
7306	1	A	132	0.015	4	17.25
7307	1	A	126	0.015	4	17.25
7500	1	H	144	0.013	4	12.75
7501	1	H	144	0.018	4	16.86
7502	1	H	120	0.013	4	12.38
7504	1	H	120	0.018	4	16.28
7507	1	H	144	0.018	4	16.28
DC730112	1, 8	S	144	0.017	4	17.35
DC730110	1, 8	S	120	0.017	4	17.35
DC730108	1, 8	S	96	0.017	4	17.35
DC730106	1, 8	S	72	0.017	4	17.35
7508	1	H	132	0.018	4	16.28
7509	1	H	126	0.018	4	16.28
DC750112	1	N	144	0.019	4	16.83
DC750110	1	N	120	0.019	4	16.83
DC750108	1	N	96	0.019	4	16.83
DC750106	1	N	72	0.019	4	16.83
750106	1	N	72	0.019	4	16.83
7600	1	K	144	0.013	4	13.10
76008	1	L	144	0.013	4	13.10
7601	1	K	144	0.017	4	16.35
76018	1	L	144	0.017	4	16.35
7602	1	K	120	0.017	4	13.10
76028	1	L	120	0.013	4	13.10
7603	1	K	144	0.013	4	12.28
76038	1	K	144	0.013	4	12.28
7604	1	K	120	0.017	4	16.35
76048	1	L	120	0.017	4	16.35
7605	1	K	120	0.017	4	16.35
76058	1	L	120	0.017	4	16.35
7606	1	K	120	0.013	4	13.07
76068	1	L	120	0.013	4	13.07
7607	1	K	120	0.013	4	12.8
7612	1	K	144	0.018	4	16.48
76128	1	K	144	0.018	4	16.48
DC760112	1	O	144	0.015	4	16.44
DC760110	1	O	120	0.015	4	16.44
DC760108	1	O	96	0.015	4	16.44
DC760106	1	O	72	0.015	4	16.44
760106	1	O	72	0.015	4	16.44
EA7900	5	Q	144	0.026	4	12.26
EA7900C	6, 8	T	144	0.021	4	14.09
EA7903	5	R	144	0.022	4	16.74
ES7901	5	Q	144	0.015	4	18.33
ES7901C	6,8	V	144	0.017	4	20.39
HD 8201	1, HD	A	144	0.015	4	16.73
8300	1	A	144	0.010	4	13.5
8301	1	A	144	0.015	4	16.73
8500	1	H	144	0.013	4	13.31
8501	1	H	144	0.018	4	16.86

For **SI**: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lb./lin. ft. = 14.6 N/m, 1 lb. = 4.44 N.

NOTES:

1 = Single stitched web
2 = Double stitched web
3 = Available stitched or unstitched
4 = Hanger wire support at mid-span
5 = Polyurethane filled upper bulb / polyurethane coated lower flange
6 = Integral PVC gasket.
7 = Limited to gravity usage. Seismic design is outside the scope of evaluation.
8 = Lateral support/bracing is required at 24 inches on center.
HD = Hot-dipped galvanized finish

KNIT
868 S. McClelland Street, Suite 2
Salt Lake City, Utah 84102
Phone 801.883.9328
knitstudios.com

ISSUE DATE 05-17-2022

REV DATE COMMENT

MARK DUKE PAVON
05-17-2022

TITLE ICC-ESR EVALUATION REPORT: ESR-1308
PROJECT HIGHLAND JH - AUDITORIUM RIGGING REPLACEMENT
325 GRAMERCY AVENUE, OGDEN, UT 84404
CLIENT OGDEN SCHOOL DISTRICT

JOB NO: 210218

GI.02

TABLE 3—DIMENSIONS AND ALLOWABLE LOADS FOR CROSS RUNNERS (SIMPLE SPAN)

CATALOG NUMBER	NOTE	TYPE	LENGTH (inches)	METAL THICKNESS (inch)	MAXIMUM SPAN (feet)	UNIFORM LOAD (lb./lin. ft.)
6100 Series						
XL 6104	2	M	4	0.013	0.3	66.89
XL 6106	2	M	6	0.013	0.5	66.89
XL 6110	2	M	12	0.013	1	66.89
XL 6161	2	M	21	0.013	1.75	66.89
XL 6120	2	M	24	0.013	2	66.89
XL 6167	2	M	27	0.013	2.25	49.32
XL 6170	2	M	30	0.013	2.5	38.8
XL 6162	2	M	42	0.013	3.5	20
XL 6140	2	M	48	0.013	4	12.6
XL 6164	2	M	54	0.013	4.5	9.2
XL 6150	2	M	60	0.013	5	5.8
XL 6160	2, 4	M	72	0.013	4	12.6
XL 6180	2, 4	M	96	0.013	4	12.6
6600 Series						
XL6521	5	P	24	0.014	2	42.00
XL6541	5	P	48	0.014	4	15.88
7100 Series						
XL 7126	1	E	24	0.010	2	33
XL 7146	1	E	48	0.010	4	8
AL 7200 Series						
XLAL7220	2	B	24	0.021	2	44.45
XLAL7240	2	B	48	0.021	4	6.33
SS 7200 Series						
XLSS7220	3	B	24	0.015	2	61.66
XLSS7240	3	B	48	0.015	4	10.4
7300 Series						
XL 7304	2	D	4	0.009	0.3	36.00
XL 7306	2	D	6	0.009	0.5	36.00
XL 7316	2	D	12	0.009	1	36.00
XL 7366	2	D	18	0.009	1.5	36.00
XL 7368	2	D	20	0.009	1.67	36.00
XL 7326	2	D	24	0.009	2	36.00
XL 7320	2	A	24	0.011	2	61.33
XL 7325	2, 7	U	24	0.0195	2	46.72
XL 7378	2	D	30	0.009	2.5	16.94
XL 7370	2	D	36	0.009	3	11.76
XL 7380	2	D	48	0.009	4	6.75
XL 7345	2, 7	U	48	0.0195	4	46.72
XL 7342	2	C	48	0.009	4	7.80
XL 7340	2	A	48	0.010	4	12.25
XL 7341	2	A	48	0.010	4	16.92
XL 7357	2	A	60	0.010	5	7.61
XL 7356	2	A	60	0.010	5	7.61
XL 7390	2	A	72	0.010	6	3.3
XL 7360	2, 4	A	48	0.010	4	12.24
XL 7380	2	A	96	0.010	8	1.57
XL 7380	2, 4	A	96	0.010	4	12.12
7500 Series						
XL 7504	1	H	4	0.010	0.3	51.83
XL 7506	1	H	6	0.010	0.5	51.83
XL 7510	1	H	12	0.010	1	51.83
XL 7561	1	H	21	0.010	1.75	51.83
XL 7560	1	H	20	0.010	1.67	51.83
XL 7520	1	H	24	0.010	2	51.83
XL 7567	1	H	27	0.010	2.25	26.87
XL 7570	1	H	30	0.010	2.5	26.87
XL 7530	1	H	36	0.010	3	21.03
XL 7562	1	H	42	0.010	3.5	12.67
XL 7540	1	H	48	0.010	4	10.34
XL 7541	1	H	48	0.013	4	12.73
XL 7549	1	H	48	0.016	4	16.42
XL 7564	1	H	54	0.010	4.5	6.72
XL 7556	1	H	60	0.013	5	5.8
XL 7590	1, 4	H	72	0.013	4	12.73
XL 7580	1, 4	H	96	0.013	4	12.73

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lb./lin. ft. = 14.6 N/m, 1 lb. = 4.44 N.

TABLE 3—DIMENSIONS AND ALLOWABLE LOADS FOR CROSS RUNNERS (SIMPLE SPAN) (Continued)

CATALOG NUMBER	NOTE	TYPE	LENGTH (inches)	METAL THICKNESS (inch)	MAXIMUM SPAN (feet)	UNIFORM LOAD (lb./lin. ft.)
7600 Series						
XL 7604	1	I	4	0.015	0.3	71.66
XL 7606	1	I	6	0.015	0.5	71.66
XL 7610	1	I	12	0.015	1	71.66
XL 7660	1	I	20	0.015	1.67	71.66
XL 7620	1	I	24	0.015	2	71.66
XL 7670	1	I	30	0.015	2.5	39.68
XL 7640	1	I	48	0.015	4	13.53
XL 7646	1	I	48	0.015	4	13.21
XL 7645	1	I	48	0.015	4	12.85
XL 7650	1	I	60	0.015	5	6.59
XL 7656	1	I	60	0.015	5	5.71
XL 7657	1	I	60	0.015	5	5.60
XL 7690	1, 4	K	72	0.013	4	12.59
XL 7680	1, 4	K	96	0.013	4	12.59
7000 Series						
XL7610S	1	J	12	0.015	1	69.69
XL 7660S	1	J	20	0.015	1.67	69.69
XL 7620S	1	J	24	0.015	2	69.69
XL 7670S	1	J	30	0.015	2.5	47.76
XL 7640S	1	J	48	0.015	4	14.11
XL 7646S	1	J	48	0.015	4	13.01
XL 7645S	1	J	48	0.015	4	12.6
XL 7650S	1	J	60	0.015	5	9
XL 7656S	1	J	60	0.015	5	7
XL 7657S	1	J	60	0.015	5	7
XL 7690S	1, 4	L	72	0.013	4	12.6
XL 7680S	1, 4	L	96	0.013	4	12.6
EA7900 Series						
EA 7920	5	Q	24	0.026	2	66.62
EA 7920C	6	T	24	0.021	2	41.62
EA 7940	5	Q	48	0.026	4	15.32
EA 7940C	6, 8	T	48	0.021	4	12.67
EA7903 Series						
EA 7927	5	R	24	0.022	2	60.55
EA 7947	5	R	48	0.022	4	17.66
ES7901 Series						
ES 7920	5	Q	24	0.015	2	60.83
ES 7920C	6	V	24	0.017	2	69.83
ES 7940	5	Q	48	0.015	4	16.83
ES 7940C	6,8	V	48	0.017	4	17.20
XL8200 Series						
XL 8223	2, HD	B	24	0.013	2	38.83
XL 8240	2, HD	B	48	0.013	4	12.75
8300 Series						
XL 8313	2	D	12	0.009	1	45.4
XL 8323	2	D	24	0.009	2	40.46
XL 8320	2	A	24	0.011	2	61.33
XL 8376	2	A	30	0.011	2.5	20.84
XL 8330	2	A	36	0.011	3	23.11
XL 8340	2	A	48	0.011	4	12.25
XL 8341	2	A	48	0.016	4	16.69
XL 8357	2	A	60	0.016	5	7.47
XL 8356	2	A	60	0.016	5	7.53
8600 Series						
XL 8520	1	H	24	0.013	2	58.5
XL 8540	1	H	48	0.013	4	12.73

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lb./lin. ft. = 14.6 N/m, 1 lb. = 4.44 N.

NOTES:

1 = Single stitched web
2 = Double stitched web
3 = Available stitched or unstitched
4 = Hanger wire support at midspan
5 = Polyurethane filled upper bulb / polyurethane coated lower flange
6 = Hot-dipped galvanized finish
7 = Limited to gravity usage. Seismic design is outside the scope of evaluation.
8 = Lateral support/bracing is required at 24 inches on center.
HD = Hot-dipped galvanized finish

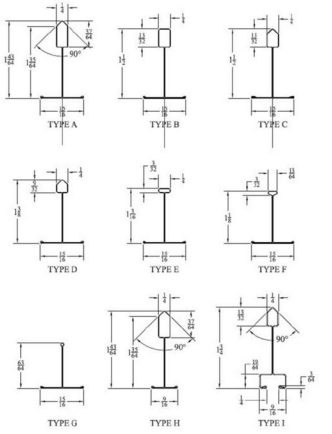

FIGURE 1—RUNNER PROFILES

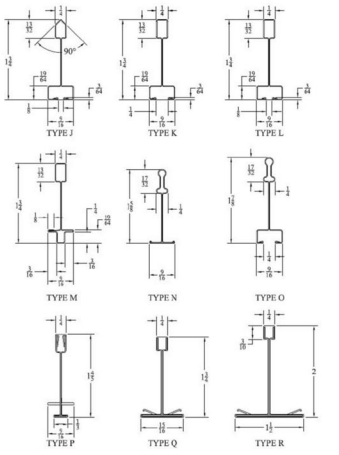

FIGURE 1—RUNNER PROFILES (Continued)

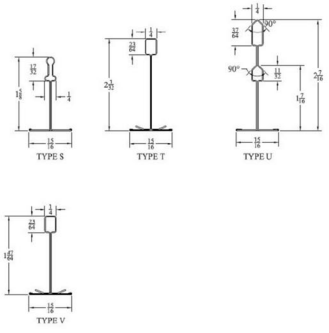

FIGURE 1—RUNNER PROFILES (Continued)

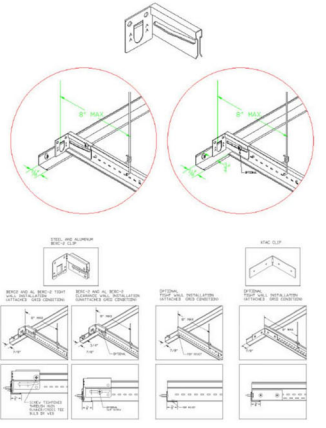

FIGURE 2—BERC-2, AL BERC-2, and XTAC CLIPS

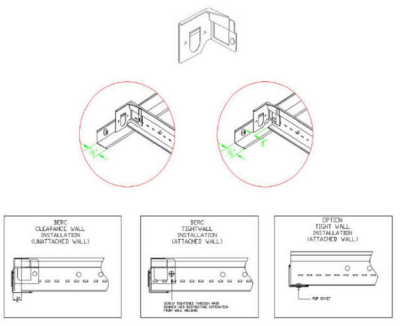

FIGURE 3—BERC CLIP

FIGURE 4—SINGLE TEE ADAPTER CLIP (STAC)

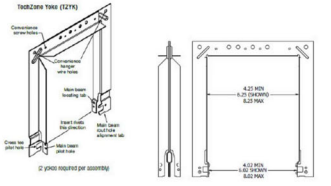

FIGURE 5—TECKZONE YOKE (TZYK)

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868 S. McClelland Street, Suite 2
Salt Lake City, Utah 84102
Phone 801.883.9328
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ISSUE DATE 05-17-2022

REV DATE COMMENT

STATE OF UTAH
MARK DUKE PAVON
LICENSED ARCHITECT

05-17-2022

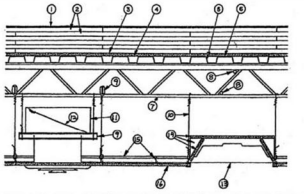
TITLE: ICC-ESR EVALUATION REPORT: ESR-1308

PROJECT: HIGHLAND JH - AUDITORIUM RIGGING REPLACEMENT
3225 GRANT AVENUE, OGDEN, UT 84404

CLIENT: OGDEN SCHOOL DISTRICT

JOB NO.: 210218

GI.03



For SI: 1 inch = 25.4 mm, 1 foot =304.8 mm, 1 psf = 4.88 kg/m², 1 gallon = 3.81 L, 1 sq. ft. = 0.0929 m², 1 psi = 6.89 kPa, 1 lbm = 0.45 kg, 1 sq. in. = 645.16 mm².

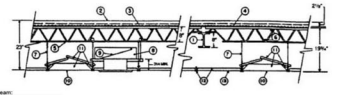
1. **Roof Covering:** Roof covering consisting of hot-mopped or cold application materials compatible with insulation(s) described in Item 2 that provide Class A, B or C coverings.
2. **Roof Insulation—Mineral and Fiber Boards:** The boards must comply with ASTM C612, Type 1A or 1B; 24-by-48-inch minimum size, maximum size 48 by 96 inches, to be applied in six layers. Boards to be installed perpendicular to gypsum wallboard direction, with end joints staggered 2 feet in adjacent rows. Each layer of board must be offset, in both directions, from layer below a minimum of 12 inches in order to lap all joints. Minimum board thickness is 1 inch (No limit on maximum overall thickness.)
3. **Sheathing Material (Optional):** Vinyl film vapor barrier, applied with adhesive to the gypsum wallboard. Adjacent sheets overlapped 2 inches.
4. **Gypsum Sheathing:** Water-resistant core gypsum sheathing complying with ASTM C79. Supplied in sheets nominally 2 by 4 feet to 4 by 12 feet, by nominal $\frac{5}{8}$-inch thick. Minimum weight is 2.0 psf. Applied perpendicular to the steel roof deck direction with adhesive, or laid loosely. End joints to occur over crests of steel roof deck, with end joints staggered 2 feet in adjacent rows.
5. **Steel Roof Deck:** Minimum 0.019-inch-thick (26 gage), minimum 1-inch-deep, minimum 25-inch-wide, painted or galvanized, fluted steel deck. Flutes must be approximately 4 inches on center, crests approximately $2\frac{5}{8}$ inches wide. As an alternate, $1\frac{1}{2}$-inch-deep, minimum 18-inch-wide fluted galvanized steel deck is permitted. Minimum 0.029-inch-thick (22 gage) flutes must be 6 inches on center, crest width ranging from $3\frac{1}{2}$ to 5 inches. Deck must be welded to supports with welding washers spaced 12 inches on center. Side lap joints of adjacent units welded or secured together with No. 12 by $\frac{1}{2}$-inch self-drilling, self-tapping steel screws midway between steel joists.
6. **Fasteners:**
   A. **Adhesive (Optional): BMCA Insulation Products Inc.:** May be applied between crests of steel roof deck and gypsum sheathing in $\frac{5}{8}$-inch-wide ribbons, 8 inches on center, at 0.4 gallon per 100 square feet. May also be applied in $\frac{5}{8}$-inch-wide ribbons, 8 inches on center, at 0.4 gallon per 100 square feet, between gypsum sheathing and vapor barrier, and between gypsum boards and roof insulation when vapor barrier is omitted. May also be applied at the same rate between layers of roof insulation.
   B. **Mechanical Fastener:** (Not shown) Any steel nail or steel clip designed for the purpose may be used to attach one or more layers of insulation to steel roof deck (through gypsum sheathing). The gypsum sheathing may also be attached directly to the steel roof deck with the mechanical fasteners.
   C. **Hot Asphalt or Coal Tar Pitch:** (Not shown) May be used as an alternate to adhesive between layers of roof insulation, at a rate not to exceed 35 pounds per 100 square feet.
7. **Steel Joists:** Type 10J4 or 12K1 minimum size, 10K1 size may be used when limited to a span of 12 feet 0 inches, maximum. As an alternate, any LH Series steel joists spanning no greater than 60 feet may be used. For spans greater than 60 feet, LH Series joists may be used, provided their vertical deflection under total load must not be greater than $\frac{1}{240}$ of the joist span.
8. **Bridging:** Steel bars, $\frac{1}{2}$ inch in diameter, welded to top and bottom chords of each joist.
9. **Cold-rolled Channels:** Number 16 MSG cold-rolled steel channels, $1\frac{1}{2}$ inches deep with $\frac{5}{8}$-inch flanges must be placed on lower chord of joists and secured with 18 SWG galvanized steel wire. Installed perpendicular to joists, the channels must be located as required to provide hanger wire attachment points.

   When steel joists are spaced more than 5 feet on center, two cold-rolled channels must be placed back to back and tied together with a double strand of 18 SWG galvanized steel wire at 24 inches on center. The double channels installed perpendicular to the joists and spaced a maximum of 48 inches on center may be placed on top of the joists' bottom chord and tied to each joist with a double strand of 18 SWG galvanized steel wire, or suspended below the joists with 12 SWG galvanized steel wire wrapped around the cold-rolled channels and with the other end wrapped around the bottom chord of the joists.

FIGURE 6—8500 SERIES ONE-HOUR FIRE-RESISTANCE-RATED ASSEMBLY

10. **Hanger Wire:** Number 12 SWG galvanized wire must be twist-tied to steel joists or cold-rolled steel channels. When the ceiling consists of nominal 24-by-24-inch panels or 24-by-48-inch panels, hanger wires must be spaced a maximum of 48 inches on center on main runners adjacent to cross tee intersections. Hanger wires must occur at all four corners of light fixtures, at midspan of cross tees adjacent to 4-foot light fixtures and at duct outlets, and adjacent to each main runner splice. When the ceiling consists of nominal 20-by-60-inch panels, hanger wires must be spaced 40 inches on center along main runners, and one wire must occur at each corner of light fixtures, at midspan of all cross tees, and adjacent to each main runner splice.
11. **Air Duct:** Minimum 0.019-inch-thick (26 gage) galvanized steel. Total area of duct openings must not exceed 576 square inches per each 100 square feet of ceiling area. Area of individual duct openings must not exceed 675 square inches. Maximum opening dimension is 30 inches, inside and outside faces of duct throat must be protected with $\frac{1}{4}$-inch-thick ceramic fiber paper, laminated to the metal. Minimum dimension of opening is 30 inches. Duct supported by $1\frac{1}{2}$-inch-deep, minimum 0.053-inch-thick (16 gage) cold-rolled steel channels spaced not over 48 inches on center, suspended by No. 12 SWG galvanized steel wire.
12. **Damper:** Minimum 0.056-inch-thick (16 gage) galvanized steel, sized to overlap duct opening a minimum of 2 inches. Protected on both sides with $\frac{1}{4}$-inch-thick ceramic fiber paper, laminated to the metal, and held open with a fusible link.
13. **Fixtures, Recessed Light:** Fluorescent-lamp-type steel housing, nominally 2 by 4 feet or 20 by 60 inches in size. Fixtures must be spaced so their total area does not exceed 24 square feet per each 100 square feet of ceiling area. When 20-by-60 inch fixtures must be used, fixture stabilizers formed from No. 16 gage steel channels, must be used in addition to the hanger wires at midspan of the cross tees. Fixture must be wired in conformance with the National Electrical Code. Fixture and ballasts must be considered for ambient temperature conditions before installation.
14. **Fixture Protection—Acoustical Material—Armstrong World Industries, Inc.:** Type $\frac{5}{8}$-inch P (S) or $\frac{5}{8}$-inch PC (S) is cut to form a five-sided enclosure, trapezoidal in cross section, approximately $\frac{1}{2}$ inch longer and wider, and $\frac{1}{2}$ inch higher, than the light fixture housing. For 2-by-4-foot fixtures, the protection consists of a $23\frac{5}{8}$-by-$47\frac{5}{8}$-inch top piece, two $5\frac{1}{2}$-by-$47\frac{5}{8}$-inch side pieces, and two $4\frac{1}{2}$-by-$23\frac{5}{8}$-inch end pieces. For 20-by-60-inch fixtures, the protection consists of a nominal 20-by-60-inch top piece, two nominal 6-by-60-inch side pieces, and two nominal $4\frac{1}{2}$-by-20-inch end pieces. The top edge of each fixture protection side piece may be provided with a 1-inch-deep-by-maximum-20-inch-long notch near its midpoint. The side and top pieces must be laid in place and the end pieces must be held in place with three 6d nails spaced 6 inches on center. (S) - Surface perforations.
15. **Steel Framing Members—Armstrong World Industries, Inc.:** Type 8500 systems with a $\frac{9}{16}$-inch-wide flange grid must be used. Main runners, nominally 12 feet long, must be spaced 4 feet on center. Cross tees, nominally 4 feet long, must be installed perpendicular to main runners and spaced 2 feet on center. Cross tees, nominally 2 feet long, must be installed perpendicular to 4-foot cross tees and spaced 4 feet on center. Grid modules containing light fixtures must employ a fixture-centering clip at each corner. The No. 24 gage electrogalvanized steel clip is nested on the flange of the intersecting grid tees, has two $1\frac{1}{16}$-inch-long legs with their sides perpendicular to each other, and has a U-shaped return at the top of each leg for engaging over the bulb of the intersecting grid tees.
16. **Acoustical Material:** Nominal 24-by-24-inch or -48-inch tap-in panels. Border panels must be supported at walls by minimum 0.018-inch-thick (26 gage) painted steel angles with $\frac{7}{8}$-inch legs; or, minimum 0.016-inch-thick (28 gage) painted steel channels, $1\frac{1}{2}$ inches deep with $\frac{7}{8}$-inch flanges.
17. **Hold-down Clips:** (Not shown) Number 24 MSG spring steel, placed over cross tees at 2 feet on center.

FIGURE 6—8500 SERIES ONE-HOUR FIRE-RESISTANCE-RATED ASSEMBLY (Continued)



1. Beam:
2. Normal-weight Concrete
3. Welded Wire Fabric
4. Steel Form Units
5. Steel Joists
6. Bridging
7. Hanger Wire
8. Air Duct
9. Damper: No. 16 MSG minimum galvanized steel, sized to overlap duct opening 2 inches, minimum. Protected on both sides with $\frac{1}{4}$-inch-thick ceramic fiber paper laminated to the metal with adhesive and held open with a listed fusible link.
10. Fixtures, Recessed Light
11. Fixture Protection—Batts and Blankets
12. Steel Framing Members—Worthington Armstrong Venture
13. Acoustical Material
14. Hold-down Clips (Not Illustrated)

For SI: 1 inch = 25.4 mm.

FIGURE 7—TWO-HOUR FIRE-RESISTANCE-RATED FLOOR-CEILING ASSEMBLY (REFER TO SECTION 4.6 OF THIS REPORT)

KNIT
868 S. McClelland Street, Suite 2
Salt Lake City, Utah 84102
Phone 801.883.9328
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ISSUE DATE 05-17-2022

REV	DATE	COMMENT

STATE OF UTAH
MARK DUKE PAVON
LICENSED ARCHITECT

05-17-2022

TITLE: ICC-ESR EVALUATION REPORT: ESR-1308

PROJECT: HIGHLAND JH - AUDITORIUM RIGGING REPLACEMENT
3225 GRANT AVENUE, OGDEN, UT 84404

CLIENT: OGDEN SCHOOL DISTRICT

JOB NO.: 210218

GI.04

GENERAL DEMOLITION NOTES

A. SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION AND COORDINATE.

B. ALL WORK SHALL BE DONE IN PROTECTED SPACE. NO DUST OR DIRT SHALL TRAVEL FROM CONSTRUCTION AREA TO ADJACENT AREAS. TEMPORARY DUST PARTITION SHALL BE ERECTED PRIOR TO COMMENCEMENT OF WORK. COORDINATE LOCATION WITH OWNER

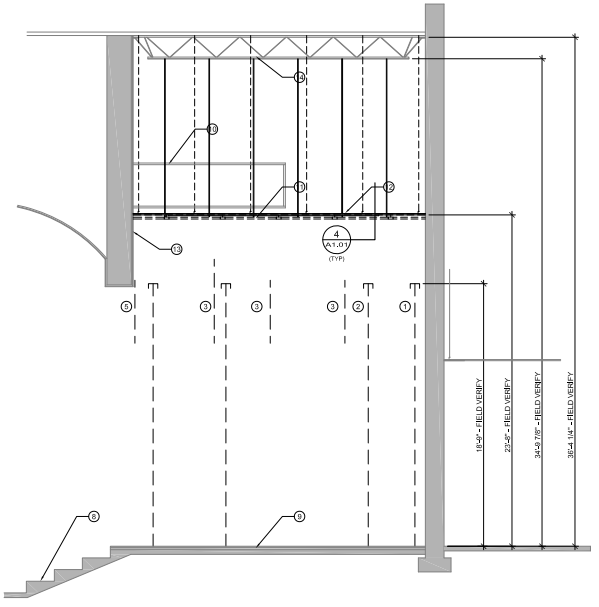
C. CONTRACTOR SHALL NOTIFY OWNER/ARCHITECT IN WRITING OF ANY UNFORESEEN EXISTING CONDITIONS THAT MAY PREVENT OR DISALLOW WORK. CONTRACTOR SHALL RECORD ANY DISCREPANCY ON A REPRODUCIBLE DOCUMENT & TRANSMIT FOR PROJECT RECORD FOR COORDINATION & NECESSARY RESOLUTION PRIOR OR CONTINUING WORK.

D. CONTRACTOR SHALL EXERCISE CAUTION NOT TO DAMAGE EXISTING SURFACES, DUCTS, PIPES, DOORS & ALL ASSOCIATED COMPONENTS ADJACENT TO DEMOLITION AREAS. SHOULD ANY DAMAGE OCCUR, CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR OR REPLACE AT NO ADDITIONAL COST TO THE OWNER.

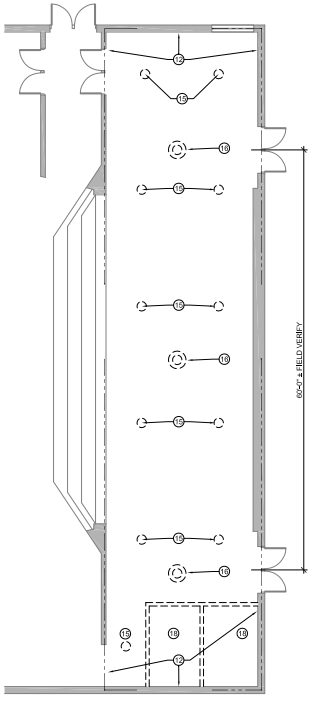
E. MAINTAIN ACCESS TO EXITS AT ALL TIMES. FIRE ALARMS & SMOKE DETECTION SYSTEMS SHALL REMAIN OPERATIONAL AT ALL TIMES. PROTECT SMOKE DETECTORS AS REQUIRED & IN CONFORMANCE WITH CODES & LOCAL AUTHORITIES HAVING JURISDICTION.

FLOOR PLAN REFERENCE NOTES

1. REMOVE EXISTING REAR MASKING PANEL AND RIGGING SYSTEM COMPLETE. RETAIN AND PROTECT FLOOR MOUNTED PULLEY SYSTEM ANCHORS. SALVAGE MASKING PANEL FOR REINSTALLATION.
2. REMOVE EXISTING REAR CURTAIN AND RIGGING SYSTEM COMPLETE. RETAIN AND PROTECT FLOOR MOUNTED PULLEY SYSTEM ANCHORS. SALVAGE CURTAIN PANEL FOR REINSTALLATION.
3. REMOVE EXISTING MASKING BORDER PANEL AND RIGGING SYSTEM COMPLETE. RETAIN AND PROTECT FLOOR MOUNTED PULLEY SYSTEM ANCHORS. SALVAGE MASKING PANEL FOR REINSTALLATION.
4. REMOVE EXISTING STAGE LIGHTS AND RIGGING SYSTEM COMPLETE. RETAIN AND PROTECT FLOOR MOUNTED PULLEY SYSTEM ANCHORS. SALVAGE STAGE LIGHTS FOR REINSTALLATION.
5. REMOVE EXISTING FRONT CURTAIN AND RIGGING SYSTEM COMPLETE. RETAIN AND PROTECT FLOOR MOUNTED PULLEY SYSTEM ANCHORS. SALVAGE FRONT CURTAIN FOR REINSTALLATION.
6. REMOVE THE EXISTING COUNTERWEIGHT LINE SET SYSTEM AND WALL MOUNTED WINCH COMPLETE. PATCH AND REPAIR WALL TO MATCH EXISTING.
7. EXISTING DRESSING ROOMS, NOT-IN-SCOPE OF WORK.
8. EXISTING STAGE STAIRS, RETAIN AND PROTECT.
9. EXISTING HARDWOOD MAPLE STAGE FLOOR OVER 2X SLEEPERS ON TOP OF A CONCRETE SUB-FLOOR. RETAIN AND PROTECT.
10. EXISTING CAT WALK SYSTEM SUSPENDED FROM JOIST ABOVE. RETAIN AND PROTECT.
11. REMOVE EXISTING PIPE GRID SYSTEM COMPLETE.
12. REMOVE EXISTING SUSPENDED LATH AND PLASTER CEILING SYSTEM COMPLETE.
13. METAL LATH AND PLASTER WALL FINISH SYSTEM. RETAIN AND PROTECT. PATCH AND REPAIR AS REQUIRED FOR REMOVAL OF RIGGING SYSTEM. PAINT TO MATCH.
14. EXISTING STEEL JOIST. SEE STRUCTURAL FOR ADDITIONAL INFORMATION.
15. REMOVE EXISTING STAGE HOUSE LIGHTS AND PREPARE FOR NEW LIGHTS. SEE ELECTRICAL FOR ADDITIONAL INFORMATION.
16. REMOVE EXISTING MECHANICAL DIFFUSER FOR REMOVAL OF EXISTING SUSPENDED PLASTER CEILING. CLEAN AND REINSTALL UPON NEW CEILING INSTALLATION.
17. EXISTING WALL THROUGH-WALL LOUVER AND DAMPER SYSTEM. RETAIN AND PROTECT.
18. EXISTING DRESSING ROOMS BELOW, NOT-IN-SCOPE OF WORK.

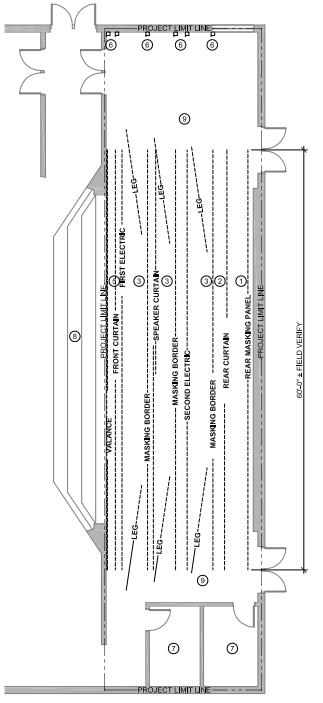


DEMOLITION PARTIAL SECTION 3
1/4" = 1'-0"



NORTH

DEMOLITION RCP 2
1/8" = 1'-0"



NORTH

DEMOLITION PLAN 1
1/8" = 1'-0"

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ISSUE DATE 05-17-2022

REV	DATE	COMMENT

05-17-2022

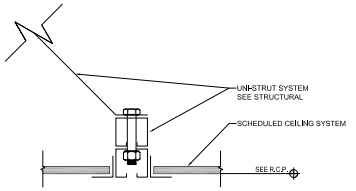
TITLE: DEMOLITION PLANS AND SECTION

PROJECT: HIGHLAND JH - AUDITORIUM RIGGING REPLACEMENT
325 GRAMERCY AVENUE, OGDEN, UT 84404

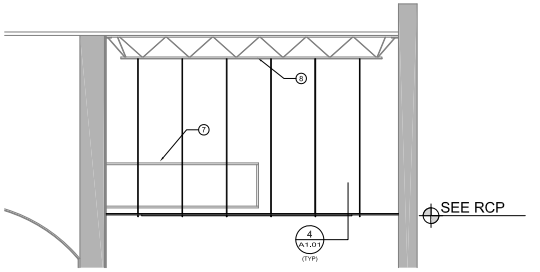
CLIENT: OGDEN SCHOOL DISTRICT

JOB NO: 210218

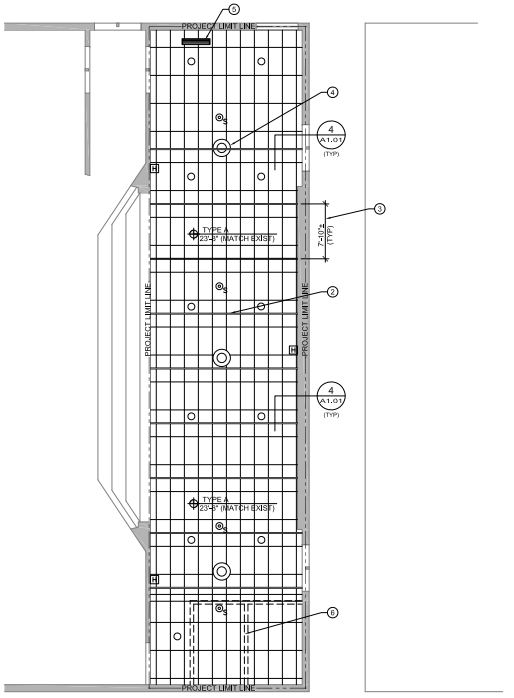
AD.01



CEILING DETAIL 4
3" = 1'-0"

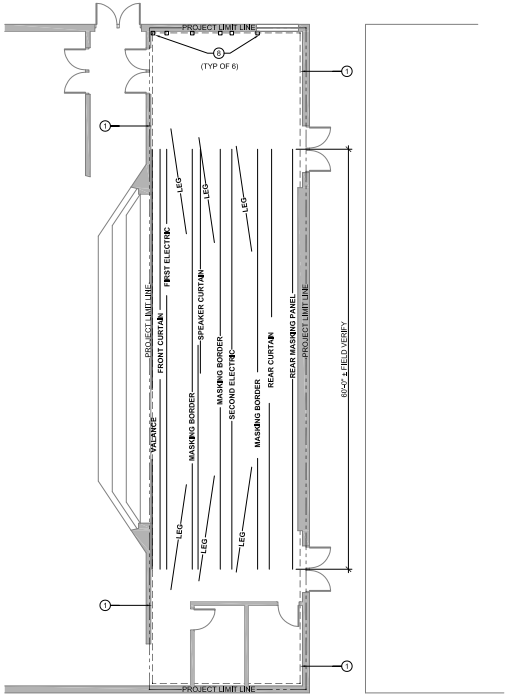


CEILING SECTION DETAIL 3
1/4" = 1'-0"



NORTH

REFLECTED CEILING PLAN 2
1/8" = 1'-0"



NORTH

FLOOR PLAN 1
1/8" = 1'-0"

GENERAL NOTES

A. SEE STRUCTURAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION AND COORDINATE.

B. ALL WORK SHALL BE DONE IN PROTECTED SPACE. NO DUST OR DIRT SHALL TRAVEL FROM CONSTRUCTION AREA TO ADJACENT AREAS. TEMPORARY DUST PARTITION SHALL BE ERECTED PRIOR TO COMMENCEMENT OF WORK. COORDINATE LOCATION WITH OWNER

C. CONTRACTOR SHALL NOTIFY OWNER/ARCHITECT IN WRITING OF ANY UNFORESEEN EXISTING CONDITIONS THAT MAY PREVENT OR DISALLOW WORK. CONTRACTOR SHALL RECORD ANY DISCREPANCY ON A REPRODUCIBLE DOCUMENT & TRANSMIT FOR PROJECT RECORD FOR COORDINATION & NECESSARY RESOLUTION PRIOR OR CONTINUING WORK.

D. CONTRACTOR SHALL EXERCISE CAUTION NOT TO DAMAGE EXISTING SURFACES, DUCTS, PIPES, DOORS & ALL ASSOCIATED COMPONENTS ADJACENT TO DEMOLITION AREAS. SHOULD ANY DAMAGE OCCUR, CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR OR REPLACE AT NO ADDITIONAL COST TO THE OWNER.

E. MAINTAIN ACCESS TO EXITS AT ALL TIMES. FIRE ALARMS & SMOKE DETECTION SYSTEMS SHALL REMAIN OPERATIONAL AT ALL TIMES. PROTECT SMOKE DETECTORS AS REQUIRED & IN CONFORMANCE WITH CODES & LOCAL AUTHORITIES HAVING JURISDICTION.

F. HEIGHT REFERENCES ARE TAKEN FROM DATUM FINISH ELEVATION 0'-0". FIELD VERIFY CONDITIONS & NOTIFY ARCHITECT OR ANY INADEQUATE CLEARANCES FOR CEILING LAYOUT AS DESIGNED.

G. NOTIFY ARCHITECT OF ANY DISCREPANCIES BETWEEN FINISH SCHEDULE & CEILING PLAN.

H. LIGHT FIXTURES SHOWN FOR COORDINATION PURPOSES ONLY. REFER TO ELECTRICAL DRAWING FOR LIGHT FIXTURE TYPES.

I. SEE ELECTRICAL FOR ADDITIONAL INFORMATION & COORDINATE.

J. INSTALL SUSPENDED ACOUSTIC CEILING PER CURRENT ICC-ES EVALUATION REPORT ESR- 1308 AND ALL ASSOCIATED AMENDMENTS. SEE SHEETS GI.02 - GI.04 FOR ADDITIONAL INFORMATION.

PLAN REFERENCE NOTES

1. PROVIDE THE FOLLOWING STAGE RIGGING:
   6—COUNTERWEIGHT LINE SETS, 5 LINE, COMPLETE, INCLUDING APPROX. 50' LONG BATTENS. (2 FOR STAGE LIGHTS, 3 FOR BORDER CURTAINS, 1 FOR SCENERY)
   7—DEAD-HUNG LINE SETS FOR REMAINING DRAPES.
   3—LOT H&H SPECIALTIES 401S SERIES STAGE CURTAIN TRACK, COMPLETE FOR BI-PART OPERATION, FOR TRAVELER CURTAINS.
   6—LOT H&H SPECIALTIES 401W SERIES STAGE CURTAIN TRACK, COMPLETE WITH PIVOT DEVICES, FOR LEG CURTAINS.
2. UNI-STRUT SYSTEM. SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION AND COORDINATE.
3. TYPICAL ROOF JOIST SPACING. FIELD VERIFY.
4. RE-INSTALLED MECHANICAL DIFFUSER. COORDINATE LOCATION WITH NEW UNI-STRUT SYSTEM.
5. RE-INSTALLED MECHANICAL GRILLE. FIELD VERIFY LOCATION.
6. EXISTING CHANGE ROOMS BELOW. RETAIN AND PROTECT.
7. EXISTING CATWALK SYSTEM SUSPENDED FROM JOIST ABOVE. RETAIN AND PROTECT.
8. EXISTING ROOF STEEL JOIST. SEE STRUCTURAL FOR ADDITIONAL INFORMATION.
9. NEW HEAD BLOCK ANCHORING PLATE FOR PULLEY SYSTEM. PAINT ALL EXPOSED STEEL TO MATCH WALL COLOR.

CEILING LEGEND

CEILING TYPE / CEILING HEIGHT	CEILING ELEVATION MARKER
	TYPE A: NEW 24" X 48" ACOUSTIC SUSPENDED CEILING SYSTEM. SEE STRUCTURAL FOR ADDITIONAL INFORMATION AND COORDINATE..
	REINSTALLED SUPPLY AIR DIFFUSER.
	REINSTALLED SUPPLY AIR DIFFUSER.
	EXISTING SUPPLY DUCTWORK. RETAIN AND PROTECT
	LED LIGHT FIXTURES
S	SMOKE DETECTOR
H	FIRE ALARM HORN STROBE

KNIT
868 S. McClelland Street, Suite 2
Salt Lake City, Utah 84102
Phone 801.883.9328
knitstudios.com

ISSUE DATE 05-17-2022

REV	DATE	COMMENT

STATE OF UTAH
MARK DUKE PARKER
LICENSED ARCHITECT
05-17-2022

TITLE: FLOOR PLAN, REFLECTED CEILING PLAN AND DETAILS

PROJECT: HIGHLAND JH - AUDITORIUM RIGGING REPLACEMENT
325 GRAMERCY AVENUE, OGDEN, UT 84404

CLIENT: OGDEN SCHOOL DISTRICT

JOB NO: 210218

A1.01

INTERIOR STEEL STUD FRAMING NOTES

A. GENERAL

1. THE ARCHITECTURAL DRAWINGS ARE THE PRIME CONTRACT DRAWINGS. THE FRAMING DRAWINGS ARE SUPPLEMENTARY TO AND MUST BE USED IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS AND OTHER CONSULTANTS DRAWINGS. ALL OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS AND/OR SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND STRUCTURAL ENGINEER BEFORE PROCEEDING WITH ANY WORK INVOLVED. IN CASE OF CONFLICT, FOLLOW THE MOST STRINGENT REQUIREMENT AT NO ADDITIONAL COST TO THE OWNER
2. SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER, TYPICAL OR SIMILAR DETAILS AND SECTIONS SHALL APPLY WHERE SPECIFIC DETAILS ARE NOT SHOWN. TYPICAL OR SIMILAR DETAILS REFER TO THE CONDITION ADDRESSED AND ARE NOT NECESSARILY DETAILS LABELED "TYPICAL" OR "SIMILAR" IN THE PLANS AND DOCUMENTS.
3. DRAWINGS AND DETAILS HAVE BEEN PREPARED WITH THE INTENT TO VISUALLY REPRESENT INFORMATION PROVIDED IN SCALED FORM; HOWEVER CONTRACTOR/SUPPLIERS SHOULD NOT SCALE PLANS OR DETAILS FOR DIMENSIONAL INFORMATION.

B. BASIS OF DESIGN

1. GOVERNING BUILDING CODE: INTERNATIONAL BUILDING CODE (IBC) 2018GOVERNING BUILDING CODE: INTERNATIONAL BUILDING CODE (IBC) 2018
   OCCUPANCY CATEGORY: III
2. DRAWINGS AND DETAILS HAVE BEEN PREPARED WITH THE INTENT TO VISUALLY REPRESENT INFORMATION PROVIDED IN SCALED FORM; HOWEVER CONTRACTOR/SUPPLIERS SHOULD NOT SCALE PLANS OR DETAILS FOR DIMENSIONAL INFORMATION.
3. SEISMIC DESIGN
   a. SEISMIC IMPORTANCE FACTOR, IP: 1.25
   b. SITE CLASS : d
   c. MAPPED SPECTRAL RESPONSE ACCELERATIONS: Ss = 1.381
   d. SITE SOIL COEFFICIENT Fa = (BASED ON SITE CLASS D)
   e. SPECTRAL RESPONSE COEFFICIENT : SDS = 1.105
   f. SEISMIC DESIGN CATEGORY : SEISMIC DESIGN CATEGORY: D

C. POST INSTALLED ANCHORS

1. UNLESS NOTED OTHERWISE, ALL POST INSTALLED ANCHORS INTO CONCRETE SHALL BE HILTI HUS-EZ SCREW ANCHORS, SIMPSON TITEN HD ANCHORS, OR APPROVED EQUAL PRIOR TO BID. USED IN ACCORDANCE WITH A CURRENT ICC-ES REPORT.
2. DRILLED HOLES FOR ANCHOR INSTALLATION SHALL BE OF SIZE AND DEPTH AS RECOMMENDED BY THE ANCHOR ICC-ES REPORT.
3. ALL ANCHOR BOLTS SHALL BE INSTALLED WITH STANDARD FLAT WASHERS.
4. ANCHOR HOLES IN TRACKS SHALL NOT BE OVERSIZED. HOLES SHALL BE NO GREATER THAN 1/16" GREATER THAN THE DIAMETER OF THE ANCHOR BEING INSTALLED.
5. UNLESS NOTED OTHERWISE, ALL POWER ACTIVATED FASTENERS (PAFs) SHALL BE HILTI X-U SERIES FASTENERS. USE X-U FASTENERS FOR CONCRETE & X-U15 ANCHORS FOR STRUCTURAL STEEL.

Structural Sheet Index

SHEET NUMBER	SHEET NAME
S001	STRUCTURAL NOTES
S101	ROOF FRAMING PLAN
S201	DETAILS

KNIT
868 S. McClelland Street, Suite 2
Salt Lake City, Utah 84102
Phone 801.883.9328
knitstudios.com

ISSUE DATE 05/03/22

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ARW ENGINEERS
structural consultants
1594 W. Park Cir. Ogden, Utah 84404
ph. 801.782.8008 arwengineers.com

PROFESSIONAL STRUCTURAL ENGINEER
5/3/2022
McKay M. Parrish
No. 5253492
STATE OF UTAH

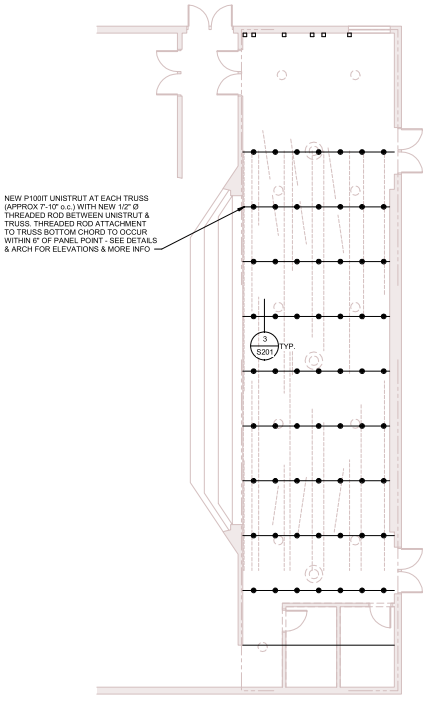
TITLE: STRUCTURAL NOTES

PROJECT: HIGHLAND JH - AUDITORIUM RIGGING
325 GRAMERCY AVENUE, OGDEN, UT 84404

CLIENT: OGDEN SCHOOL DISTRICT

JOB NO: 210218
ARW JOB NO: 21514

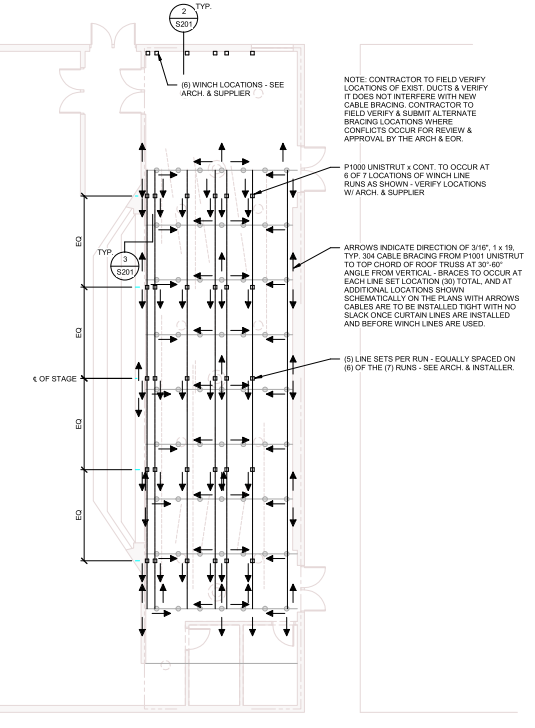
S001



AUDITORIUM STAGE RIGGING SUPPORT PLAN - LOWEST LEVEL OF UNISTRUT

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

A
S101



UNISTRUT & BRACING ABOVE SUSPENDED CEILING

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

B
S101

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868 S. McClelland Street, Suite 2
Salt Lake City, Utah 84102
Phone 801.883.9328
knitstudios.com

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ARW ENGINEERS
structural consultants
1594 W. Park Dr. Ogden, Utah 84404
ph. 801.782.5008 arwengineers.com

PROFESSIONAL STRUCTURAL ENGINEER
5/3/2022
McKay M. Parrish
No. 5253492
STATE OF UTAH

TITLE: ROOF FRAMING PLAN

PROJECT: HIGHLAND JH - AUDITORIUM RIGGING
325 GRAMERCY AVENUE, OGDEN, UT 84404

CLIENT: OGDEN SCHOOL DISTRICT

JOB NO: 210218
ARW JOB NO: 21514

S101

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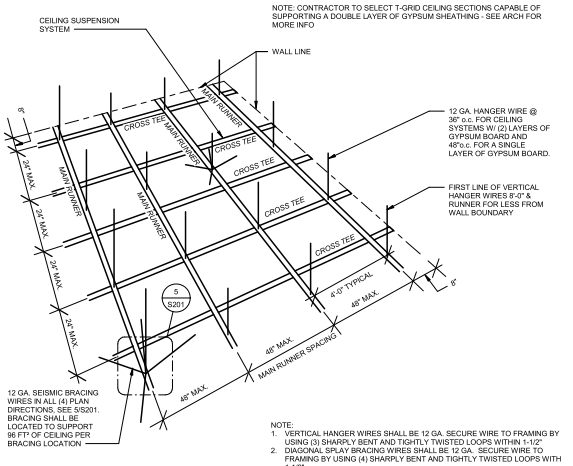
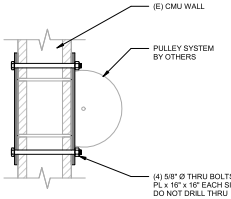
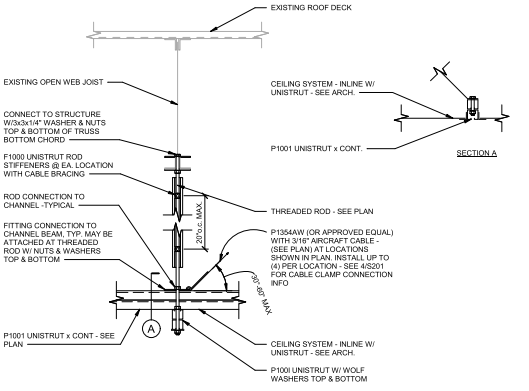


NOTE:
1. VERTICAL HANGER WIRES SHALL BE 12 GA. SECURE WIRE TO FRAMING BY USING (3) SHARPLY BENT AND TIGHTLY TWISTED LOOPS WITHIN 1-1/2"
2. DIAGONAL SPLAY BRACING WIRES SHALL BE 12 GA. SECURE WIRE TO FRAMING BY USING (4) SHARPLY BENT AND TIGHTLY TWISTED LOOPS WITH 1-1/2".
3. WHEN ATTACHING SPLAYED WIRES TO ROOF JOISTS, DO SO WITHIN 6" OF A PANEL POINT.
4. ALL GYPSUM BOARD CEILINGS (WHERE OCCUR) MUST BE BRACED. EXCEPTION: AREAS SMALLER THAN 144 SQ FT. AND WITH WALLS ON FOUR SIDES.

TYPICAL SUSPENDED GYPSUM CEILING
SCALE : NONE
1 S201

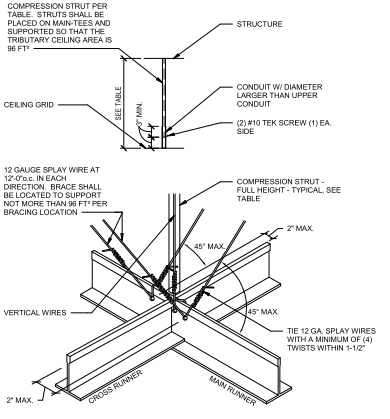


TYPICAL HEAD BLOCK ANCHORING DETAIL
SCALE : NONE
2 S201

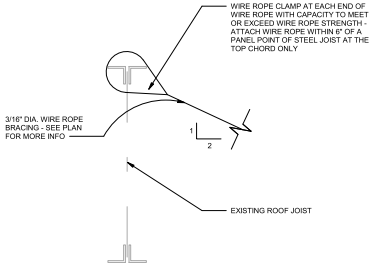


TYPICAL UNISTRUT CONNECTION
SCALE : NONE
3 S201

CONDUIT SIZE	MAX. LENGTH OF COMPRESSION CONDUIT
1"	11'-0"
1 1/4"	19'-0"

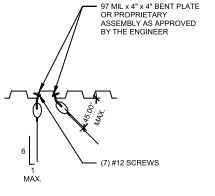


SPLAY WIRE CONNECTION DETAIL
SCALE : NONE
5 S201



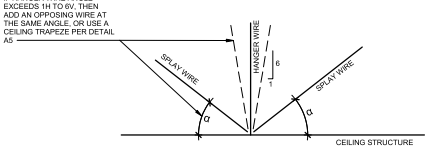
DETAIL TYP. FOR UNISTRUT BRACING
SCALE : NONE
4 S201

NOTE: DO NOT SCREW TO BOTTOM OF DECK. SCREWS MUST BE ON VERTICAL FACE.



HANGER WIRE CONNECTION TO METAL DECK

HANGER WIRE CONNECTION TO STRUCTURE DETAIL
SCALE : NONE
6 S201



TYP. HANGER WIRE
SCALE : NONE
7 S201

KNIT
868 S. McClelland Street, Suite 2
Salt Lake City, Utah 84102
Phone 801.883.9328
knitstudios.com

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ARW ENGINEERS
structural consultants
1594 W. Park Cir. Ogden, Utah 84404
ph. 801.782.8008 arwengineers.com

PROFESSIONAL STRUCTURAL ENGINEER
5/3/2022
McKay M. Parrish
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STATE OF UTAH

TITLE: **DETAILS**
PROJECT: **HIGHLAND JH - AUDITORIUM RIGGING**
325 GRAMERCY AVENUE, OGDEN, UT 84404
CLIENT: OGDEN SCHOOL DISTRICT

JOB NO: **210218**
ARW JOB NO: **21514**

S201

LIGHT FIXTURE SCHEDULE NOTES

LIGHT FIXTURE ABBREVIATION SCHEDULE

A.F.F.	ABOVE FINISH FLOOR	SCBA	STANDARD PAINTED COLOR AS SELECTED BY THE ARCHITECT
WALL@CLG	WALL MOUNT AT CORNER OF WALL AND CEILING	CFBA	CUSTOM FINISH AS SELECTED BY THE ARCHITECT
CCBA	CUSTOM PAINTED COLOR AS SELECTED BY THE ARCHITECT	SFBA	STANDARD FINISH AS SELECTED BY THE ARCHITECT

LIGHT FIXTURE GENERAL NOTES

1. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLANS FOR LOCATIONS OF LIGHT FIXTURES. BRING ALL DISCREPANCIES OF LOCATIONS AND QUANTITIES TO THE ATTENTION OF THE ARCHITECT AND ELECTRICAL ENGINEER PRIOR TO BIDDING.
2. REFER TO ARCHITECTURAL ELEVATIONS FOR MOUNTING HEIGHTS AND LOCATIONS OF LIGHT FIXTURES. BRING ALL DISCREPANCIES TO THE ATTENTION OF THE ARCHITECT PRIOR TO BIDDING.
3. REFER TO THE SPECIFICATIONS FOR OTHER LIGHT FIXTURE, FUSING, BALLAST, AND LAMP REQUIREMENTS AND ACCEPTABLE MANUFACTURERS.
4. CONFIRM AVAILABLE MOUNTING DEPTHS OF ALL LIGHT FIXTURES AND COMPARE WITH DEPTHS SHOWN ON SHOP DRAWINGS. BRING ALL POTENTIAL CONFLICT AREAS TO THE ATTENTION OF THE ARCHITECT AND ELECTRICAL ENGINEER PRIOR TO RELEASE.
5. REFER TO LIGHTING PLANS FOR ALL LINEAR FIXTURE LENGTHS. THE CATALOG NUMBER IS BASED ON THE FIXTURE SPECIFIED AND MAY NOT REFLECT THE QUANTITY OR OVERALL LENGTH OF LINEAR FIXTURES REQUIRED. CONTRACTOR TO NOTE THAT VARIOUS FIXTURE LENGTHS MAY BE REQUIRED TO ACHIEVE THE OVERALL RUN LENGTH.
6. REFER TO LIGHTING PLANS FOR ALL UNDERCABINET FIXTURE LENGTHS. THE CATALOG NUMBER IS BASED ON THE FIXTURE SPECIFIED AND MAY NOT REFLECT THE QUANTITY OR OVERALL LENGTH OF UNDERCABINET FIXTURES REQUIRED. CONTRACTOR TO NOTE THAT VARIOUS FIXTURE LENGTHS MAY BE REQUIRED TO ACHIEVE THE OVERALL RUN LENGTH OR TO FIT WITHIN THE MILLWORK. COORDINATE FIXTURE LAYOUT WITH MILLWORK SHOP DRAWINGS PRIOR TO LIGHTING SUBMITTALS.
7. WHEN A CONTRADICTION EXISTS BETWEEN A SPECIFIC MODEL NUMBER AND THE DESCRIPTION, THE DESCRIPTION SHALL GOVERN.
8. PRIOR APPROVALS SHALL BE SUBMITTED TO THE ELECTRICAL ENGINEER'S OFFICE AT LEAST (8) EIGHT WORKING DAYS BEFORE THE BID. PRIOR APPROVALS RECEIVED AFTER THIS TIME PERIOD SHALL BE REJECTED.
9. REFER TO SPECIFICATIONS 260500, 265100 & 265600 (16001, 16510 & 16551).
10. VALUE ENGINEERING CONDUCTED WITHOUT THE DESIGN TEAM IE; ARCHITECT, OWNER, ENGINEER & LIGHTING CONSULTANT/DESIGNER WILL NOT BE ALLOWED, REVIEWED OR APPROVED.

FIXTURE SCHEDULE

Project Manager: ***RICHARD WARDLE***

TYPE	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	VOLTS	TOTAL WATTS	LAMPS
A	8" LED DOWNLIGHT WITH 8000 LUMENS, BLACK BAFFLE AND ELECTRONIC DIMMING DRIVER	PORTFOLIO	LDB8-80-D010-ER88-80120-8040-BLB-N-1-B	120 V	74 VA	INCLUDED

PANELBOARD SCHEDULE

PANEL S — TYPE EXIST'WESTING — 120/208 VOLTS — 3 PH, 4 W — X LUGS, BREAKER, SUBFIED LUGS, 150 GROUND, 200% NEUTRAL, SPD

MOUNTING: X FLUSH, SURFACE — DIMENSIONS: 20 W, 6 D (in.), H — LOCATION STAGE — AMP 225 — MAINS

BRANCH BREAKERS

ITEM	AMPS	POLE	WIRE SIZE	CIR NO.	LEFT PHASE LOAD A	B	C	RIGHT PHASE LOAD A	B	C	CIR NO.	AMPS	POLE	WIRE SIZE	ITEM
EXISTING LOAD	20	1		1							2	20	1		EXISTING LOAD
EXISTING LOAD	20	1		3							4	20	1		EXISTING LOAD
EXISTING LOAD	20	1		5							6	20	1		EXISTING LOAD
EXISTING LOAD	20	1		7							8	20	1		EXISTING LOAD
EXISTING LOAD	20	1		9							10	20	1		EXISTING LOAD
EXISTING LOAD	20	1		11							12	20	1		EXISTING LOAD
EXISTING LOAD	20	1		13							14	20	1		EXISTING LOAD
EXISTING LOAD	20	1		15							16	30	1		EXISTING LOAD
SPACE ONLY				17							18				SPACE ONLY
EXISTING LOAD				19							20	30	3		EXISTING LOAD
-				21							22	-	-		-
-				23							24	-	-		-
SPACE ONLY				25							26				SPACE ONLY
SPACE ONLY				27							28				SPACE ONLY
SPACE ONLY				29							30				SPACE ONLY
SPACE ONLY				31							32				SPACE ONLY
				33							34				
				35							36				
				37							38				
				39							40				
				41							42				

TOTAL (VA) AMPS/PHASE — CONNECTED LOAD TOTAL

* Provide 5 mA GFCI Circuit Break

PROJECT: — EQUIP RATING — AMPS RMS SYM.

GENERAL NOTES

1. CONSULT ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF ALL LIGHTING FIXTURES.
2. VERIFY ALL EQUIPMENT DIMENSIONS AND LOCATIONS BEFORE BEGINNING ROUGH IN. CONSULT ALL APPLICABLE CONTRACT DRAWINGS AND SHOP DRAWINGS TO INSURE NEC CODE CLEARANCES REQUIRED AROUND ALL ELECTRICAL EQUIPMENT.
3. CONTRACTOR SHALL VERIFY ALL ELECTRICAL LOADS (VOLTAGE, PHASE, CONNECTION REQUIREMENTS, ETC.) OF ALL EQUIPMENT FURNISHED UNDER ALL DIVISIONS, INCLUDING ALL EXISTING EQUIPMENT TO BE RE-USED. REVIEW ALL SHOP DRAWINGS AND EXISTING EQUIPMENT BEFORE BEGINNING ROUGH IN.
4. SEE SECTION 265100 (16510) OF THE SPECIFICATION REQUIRED COORDINATION MEETINGS WITH MECHANICAL AND CEILING CONTRACTORS.
5. SEE APPLICABLE SHOP DRAWINGS FOR ROUGH IN LOCATION OF ALL EQUIPMENT, WIRING DEVICES, ETC. WHERE APPLICABLE MOUNT ALL WIRING DEVICES ABOVE BACK SPLASH EXCEPT THOSE SERVING UNDER COUNTER EQUIPMENT.
6. SEE SPECIFICATION FOR ENERGY SAVING LAMP AND BALLAST REQUIREMENTS.
7. FINISHES OF ALL LIGHT FIXTURES SHALL BE AS SELECTED BY ARCHITECT.
8. THE ELECTRICAL CONTRACTOR SHALL NOTIFY AND COOPERATE WITH THE MECHANICAL CONTRACTOR SUCH THAT NO PIPING, DUCTS, OR EQUIPMENT FOREIGN TO THE OPERATION OF THE ELECTRICAL EQUIPMENT SHALL BE PERMITTED TO BE INSTALLED IN, ENTER OR PASS THRU ELECTRICAL ROOMS OR SPACES, OR ABOVE OR BELOW ELECTRICAL EQUIPMENT IN OTHER AREAS.
9. ELECTRICAL BOXES SHALL NOT BE LOCATED IN MASONRY COLUMNS IN BRICK WALLS OR IN GROUTED CELLS ADJACENT TO OPENINGS. COORDINATE LOCATION OF BOXES WITH MASONRY CONTRACTOR.
10. ALL PENETRATIONS OF FIRE RATED FLOORS, WALLS, AND CEILINGS SHALL BE SEALED WITH APPROVED MATERIAL TO MAINTAIN FIRE RATING OF SURFACE PENETRATED.
11. CONTRACTOR SHALL VERIFY FURNITURE LAYOUT PRIOR TO ANY FLOORBOX OR POKE-THRU INSTALLATION. COORDINATE EXACT LOCATION OF FLOOR BOX OR POKE-THRU WITH OWNER AND FURNITURE PROVIDER PRIOR TO ROUGH-IN.
12. CIRCUITS EXTENDING OVER 70' FOR 120 VOLT AND 115' FOR 277 VOLT 20 AMP CIRCUITS SHALL BE RUN WITH CONDUCTORS PER TABLE BELOW.

20 AMP MINIMUM BRANCH CIRCUIT CONDUCTOR SIZING

MAXIMUM LENGTH	BRANCH CIRCUIT VOLTAGE	
CONDUCTOR LENGTH (FT)	120 VOLT	277 VOLT
<70	MIN. #12 AWG	MIN. #12 AWG
70 - 115	MIN. #10 AWG	MIN. #12 AWG
115 - 170	MIN. #8 AWG	MIN. #10 AWG
170 - 270	MIN. #6 AWG	MIN. #8 AWG
271 - 380	NOTE B	MIN. #8 AWG
>380	NOTE B	NOTE B

A. THESE ARE BASED ON MAXIMUM LENGTH OF CIRCUIT.

B. PERFORM VOLTAGE DROP CALCULATIONS AND PROVIDE CONDUCTOR SIZE TO KEEP BRANCH CIRCUIT VOLTAGE DROP LESS THAN 3% WITH A 15 AMP LOAD.

C. CONTRACTOR SHALL ENSURE THAT THE INSTALLATION OF EACH BRANCH CIRCUIT STAYS WITHIN 3% VOLTAGE DROP FOR A 15 AMP LOAD. IF NECESSARY, CONTRACTOR SHALL INCREASE WIRE AND CONDUIT SIZE TO MEET THE STANDARD AT NO ADDITIONAL COST TO OWNER.

SYMBOL SCHEDULE

NOTES:

1. SEE FIXTURE SCHEDULE FOR TYPE, MOUNTING AND WATTAGE.
2. HEIGHT MEASURED TO CENTER LINE OF THE BOX FROM THE FINISHED FLOOR.
3. REFER TO DRAWINGS FOR DIRECTIONAL ARROWS.
4. SUBSCRIPT INDICATES FIXTURES TO BE CONTROLLED.
5. NEMA TYPE 'ND' NON-FUSED UNLESS NOTED 'F' (FUSED). USE 'HD' 480V.
6. HEIGHT MEASURED TO TOP OF THE BOX FROM FINISHED FLOOR.
7. PROVIDE H.O.A. AND S.S. PUSHBUTTONS AS REQUIRED.
8. DOUBLE ARROWS INDICATE A DOUBLE FACE UNIT.
9. DEVICES NOTED WITH AN "A" ADJACENT TO IT INDICATES TO COORDINATE WITH MILLWORK SHOP DRAWINGS AND ELEVATIONS FOR HEIGHT.
10. SUBSCRIPT INDICATES NEMA CONFIGURATION.
11. SOLID BOX AROUND DEVICE INDICATES INSTALLED IN FLOOR, DASHED BOX AROUND DEVICE INDICATES INSTALLED IN CEILING.
12. COORDINATE WITH DOOR HARDWARE SUPPLIER.
13. FOR WATER COOLER LOCATION, SEE DIAGRAM R002. FOR ALL OTHER LOCATIONS MOUNT AT +16" TO BOTTOM OF THE BOX FROM FINISHED FLOOR, OR AS NOTED.
14. ARROWS SHOWN ON DEVICE INDICATE THE SENSOR AIMING LOCATION.
15. CAMERA NUMBERS ARE SHOWN INSIDE THE CAMERA SYMBOL. CAMERA TYPES ARE SHOWN IN CAMERA TAGS.
16. MOUNT ON TRACK OF OVERHEAD DOOR 6" FROM TOP OF DOOR UNLESS OVERHEAD DOOR IS ROLL UP DOOR, THEN MOUNT PER MANUFACTURER'S INSTRUCTIONS.
17. INSTALL DEVICES PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
18. DASHED LINE INDICATES EQUIPMENT CLEARANCES. ARROW DENOTES FRONT OF RANK.
19. SPEAKER TO BE MOUNTED IN HORIZONTAL POSITION.
20. MOUNTING HEIGHTS IS TO BOTTOM OF DISPLAY.

* TYPICAL SYMBOL SCHEDULE. SOME SYMBOLS MAY NOT BE USED IN THIS SET OF DRAWINGS.

STANDARD MOUNTING HEIGHT UNLESS OTHERWISE NOTED ON PLANS

GENERAL

SYMBOL	DESCRIPTION	MOUNTING HEIGHT	NOTES	SYMBOL	DESCRIPTION	MOUNTING HEIGHT	NOTES
	ONE CIRCUIT, HOME RUN TO PANEL			J F	JUNCTION BOX ('F' IN FLOOR)	AS NOTED	
	TWO CIRCUIT, HOME RUN TO PANEL				EQUIPMENT PANEL SEE DRAWINGS	+72"	6.
	THREE CIRCUIT, HOME RUN TO PANEL				CABLE TRAY (BASKET/LADDER)	AS NOTED	
	CONDUIT RUN CONCEALED IN WALL OR CEILING				GROUND BUS BAR	+18"	6.
	CONDUIT RUN CONCEALED IN FLOOR OR GROUND			X	LIGHT FIXTURE (LETTER DESIGNATES TYPE)		
	CONDUIT UP			X 1	EQUIPMENT NUMBER		
	CONDUIT DOWN			842	ARCHITECTURAL ROOM NUMBER		
	CONDUIT STUB LOCATION	CAP CONDUIT		X	DEVICE/EQUIPMENT (TEXT DESIGNATES TYPE) SEE SCHEDULE		
	CONDUIT/CIRCUIT CONTINUATION			X	DEVICE/EQUIPMENT (TEXT DESIGNATES TYPE) SEE SCHEDULE/LEGEND		

LIGHTING

SYMBOL	DESCRIPTION	MOUNTING HEIGHT	NOTES	SYMBOL	DESCRIPTION	MOUNTING HEIGHT	NOTES
	CEILING LIGHT FIXTURE	CEILING	1.	EP	EMERGENCY LIGHTING CONTROL UNIT	ABOVE CEILING	SEE DIAGRAM, SPEC.
	WALL LIGHT FIXTURE	AS NOTED	1.	$	SINGLE POLE SWITCH	+46"	2. 4.
	RECESSED DOWNLIGHT FIXTURE	CEILING	1.	$3	THREE-WAY SWITCH	+46"	2. 4.
	RECESSED WALL-WASH DOWNLIGHT FIXTURE	CEILING	1.	$4	FOUR-WAY SWITCH	+46"	2. 4.
	LIGHT FIXTURE	AS NOTED	1.	$K	KEY OPERATED SWITCH	+46"	2. 4.
	EGRESS LIGHT FIXTURE	AS NOTED	1.	$P	SWITCH WITH PILOT LIGHT	+46"	2. 4.
	STEP LIGHT FIXTURE	AS NOTED	1.	$D	VARIABLE INTENSITY SWITCH	+46"	2. 4.
	IN-GRADE LIGHT FIXTURE	CONCRETE BASE	1.	$TM	TIMER SWITCH	+46"	2. 4.
	FLOOD OR TRACK FIXTURE	AS NOTED	1.		**MOMENTARY CONTACT SWITCH**	+46"	2. 4.
	CEILING / WALL MOUNTED EXIT LIGHT	CEILING/ AS NOTED	1. 3. 8.		DUAL TECH CEILING MOUNTED OCCUPANCY SENSOR (PROVIDE WITH ALL PP AND ROOM CONTROLLERS)	CEILING	SEE DIAGRAM, SPEC.
	EMERGENCY LIGHT FIXTURE	AS NOTED	1.		DUAL TECH WALL MOUNTED OCCUPANCY SENSOR (SUBSCIPT D = DIMMING AND DAY-LIGHT CONTROL)	+46"	2. 4., SEE DIAGRAM, SPEC.
	COMBO EXIT / EMERGENCY LIGHT FIXTURE	AS NOTED	1.	P	PHOTO-ELECTRIC CONTROL (LOCATE ON ROOF, FACE NORTH)	AS NOTED	MOUNT AS PER MFR.

POWER

SYMBOL	DESCRIPTION	MOUNTING HEIGHT	NOTES	SYMBOL	DESCRIPTION	MOUNTING HEIGHT	NOTES
	DUPLEX RECEPTACLE — UPPER OUTLET SWITCH CONTROLLED	+18" OR AS NOTED	2. 9.		SPECIAL PURPOSE OUTLET	+18" OR AS NOTED	2. 10. W/CAP.
	SIMPLEX RECEPTACLE	+18" OR AS NOTED	2. 9.	FB	FLOOR BOX - SEE SCHEDULE	FLOOR	SEE DIAGRAM, SPEC.
T	TAMPER-PROOF RECEPTACLE	+18" OR AS NOTED	2. 9.	PT	POKE THRU - SEE SCHEDULE	FLOOR	SEE DIAGRAM, SPEC.
	DUPLEX RECEPTACLE	+18" OR AS NOTED	2. 9. 11.		MOTOR OUTLET	TO SUIT EQUIP.	
U	DUPLEX RECEPTACLE WITH USB OUTLET	+18" OR AS NOTED	2. 9.		PUSHBUTTON	+46"	2.
	CONTROLLED DUPLEX RECEPTACLE	+18" OR AS NOTED	2. 9.		NON-FUSED DISCONNECT SWITCH	+60"	5. 6.
A	DUPLEX RECEPTACLE		9.		FUSED DISCONNECT SWITCH	+60"	5. 6.
G	**5mA GFCI CIRCUIT BREAKER PROTECTED RECEPTACLE**		**13.**		BREAKER DISCONNECT SWITCH	+60"	5. 6.
WP	WEATHERPROOF RECEPTACLE	+24" OR AS NOTED	2. 9.		MANUAL STARTER THERMAL OVERLOAD SWITCH WITH PILOT LIGHT	+46"	2.
IG	ISOLATED GROUND RECEPTACLE	+18" OR AS NOTED	2. 9.		MAGNETIC STARTER	+60"	6. 7.
	GROUND FAULT INTERRUPTER DUPLEX RECEPTACLE	+18" OR AS NOTED	2. 9.		MAGNETIC STARTER / DISCONNECT COMBINATION	+60"	6. 7.
	DUPLEX RECEPTACLE EMERGENCY POWER (RED)	+18" OR AS NOTED	2. 9. 11.	VFD	VARIABLE FREQUENCY DRIVE	+66"	6.
	FOURPLEX RECEPTACLE	+18" OR AS NOTED	2. 9. 11.		PANEL BOARD	+72"	6.
	GROUND FAULT INTERRUPTER FOURPLEX RECEPTACLE	+18" OR AS NOTED	2. 9.		MAIN DISTRIBUTION PANEL		
	FOURPLEX RECEPTACLE EMERGENCY POWER (RED)	+18" OR AS NOTED	2. 9. 11.	M	UTILITY METER	+72"	6.
	CONTROLLED FOURPLEX RECEPTACLE	+18" OR AS NOTED	2. 9.				

FIRE ALARM

SYMBOL	DESCRIPTION	MOUNTING HEIGHT	NOTES	SYMBOL	DESCRIPTION	MOUNTING HEIGHT	NOTES
	BELL	+94"	2.	D	FIRE/SMOKE DAMPER		
F	FIRE ALARM MANUAL STATION	+46"	2.		DOOR HOLDER	AS NOTED	
H	FIRE ALARM SIGNAL HORN / STROBE	+94"/ CEILING	2.	FS	FLOW SWITCH		
H	CONCEALED FIRE ALARM SIGNAL HORN / STROBE WALL	+94"	2.	TS	TAMPER SWITCH		
E	CONCEALED FIRE ALARM SIGNAL SPEAKER / STROBE WALL	+94"	2.	WF	WATER FLOOD INDICATOR		
S	FIRE ALARM STROBE	+94"/ CEILING	2.	R	FIRE ALARM RELAY OR SECURITY RELAY		
S	SMOKE DETECTOR	CEILING		CM	FIRE ALARM CONTROL MODULE		
H	HEAT DETECTOR	CEILING		MM	FIRE ALARM MONITOR MODULE		
D	DUCT SMOKE DETECTOR		MTD. IN DUCT				

DEMOLITION NOTES

1. COORDINATE ALL NEW ELECTRICAL EQUIPMENT REQUIREMENTS AND MAKE CONNECTION TO EXISTING SYSTEMS. THIS INCLUDES LIGHTING, POWER, SIGNAL, RACEWAY AND OTHER SYSTEMS INCLUDED UNDER DIVISION 26 (16).
2. RELOCATE, REWIRE AND/OR RECONNECT EXISTING ELECTRICAL DEVICES AND/OR EQUIPMENT THAT FOR ANY REASON OBSTRUCTS CONSTRUCTION.
3. CONCEAL ALL RACEWAY AND WIRING IN EXISTING WALLS, CEILINGS, FLOORS, ETC. EXCEPT WHERE THE USE OF SURFACE METAL RACEWAYS (E.G. WIRE MOLD) IS INDICATED ON DRAWINGS OR IN SPEC.
4. LEAVE ALL EXISTING EQUIPMENT, IN PORTIONS OF THE BUILDING NOT BEING REMODELED, IN WORKING CONDITION. RESTORE ALL INTERRUPTED BRANCH CIRCUITS, FEEDERS, ETC. TO WORKING CONDITION.
5. EXISTING RACEWAYS MAY BE REUSED (IN PLACE) WHERE POSSIBLE, AND WHERE IN COMPLIANCE WITH THE SPECIFICATIONS AND THE INTENT OF THE CONTRACT DOCUMENTS. INSURE INTEGRITY OF EXISTING RACEWAY BEFORE REUSE.
6. REMOVE ALL RACEWAYS, CONDUCTORS, BOXES, DEVICES, EQUIPMENT, ETC. THAT ARE NOT TO BE REUSED.
7. REMOVE EXISTING LIGHT FIXTURES WHICH ARE NOT TO BE REUSED, PLACE IN CARTON, LABEL APPROPRIATELY, AND RETURN TO OWNER, OR PROPERLY DISPOSE OF FIXTURES THAT THE OWNER CHOOSES NOT TO KEEP.
8. DO NOT PENETRATE STRUCTURAL ELEMENTS OF FLOORS, WALLS, CEILINGS, ROOFS, ETC.
9. DISCONNECT AND RECONNECT ANY/ALL FIXTURES, DEVICES, EQUIPMENT, ETC. REQUIRED FOR PROPER COMPLETION OF THE WORK.

INDEX OF ELECTRICAL DRAWINGS

BNA CONSULTING
SALT LAKE ST.GEORGE
4225 Lake Park Blvd Ste 225
West Valley City, Utah 84120
P 801.532.2196
www.bnaconsulting.com

KNIT
868 S. McClelland Street, Suite 2
Salt Lake City, Utah 84102
Phone 801.883.9328
knitstudios.com

ISSUE DATE 5/18/2022

REV	DATE	COMMENT

JOSHUA HANKINSON — STATE OF UTAH — 5/18/2022

TITLE: SYMBOLS, AND NOTES

PROJECT: HIGHLAND JH - AUDITORIUM RIGGING REPLACEMENT
325 GRAMERCY AVENUE, OGDEN, UT 84404

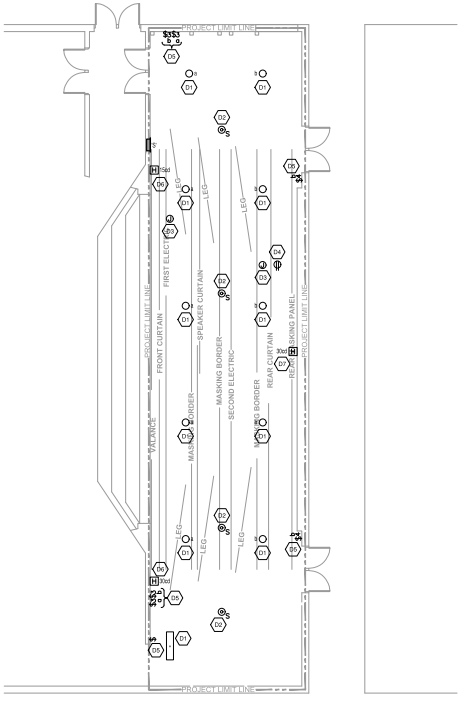
CLIENT: OGDEN SCHOOL DISTRICT

JOB NO: 210218

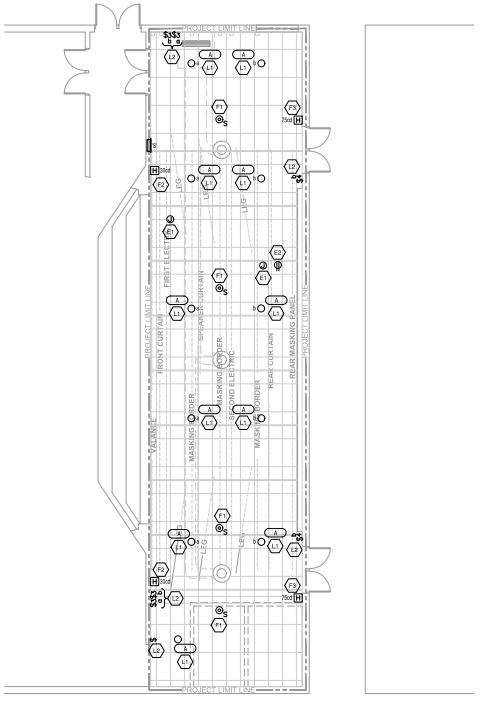
E0.1

SHEET KEYNOTES

D1	EXISTING LIGHT FIXTURE TO BE REMOVED. REMOVE ASSOCIATED CONDUIT AND WIRING.
D2	EXISTING FIRE ALARM SYSTEM SMOKE DETECTOR TO BE REMOVED FOR REMOVAL OF CEILING SYSTEM.
D3	EXISTING POWER CONNECTION FOR DIMMING SYSTEM CONNECTOR STRIPS. DISCONNECT AND STORE STRIPS FOR REINSTALLATION.
D4	EXISTING RECEPTACLE LOCATION. PROTECT DURING REMOVAL OF CEILING SYSTEM.
D5	EXISTING SWITCH LOCATION TO REMAIN.
D6	EXISTING FIRE ALARM SYSTEM HORN/STROBE TO REMAIN.
D7	EXISTING FIRE ALARM SYSTEM HORN/STROBE TO BE RELOCATED. ELECTRICAL PLAN THIS SHEET FOR NEW REQUIREMENTS.
E1	REINSTALL DIMMING SYSTEM CONNECTOR STRIPS AND RECONNECT POWER CONNECTION.
E2	REINSTALL RECEPTACLE LOCATION.
F1	REINSTALL FIRE ALARM SYSTEM SMOKE DETECTOR AFTER INSTALLATION OF NEW CEILING.
F2	EXISTING FIRE ALARM SYSTEM HORN/STROBE.
F3	RELOCATED FIRE ALARM SYSTEM HORN/STROBE. SET CANDELA RATING TO 75cd AND EXTEND CONDUIT AND WIRING TO NEW LOCATION.
F4	ADD NEW FIRE ALARM SYSTEM HORN/STROBE. EXTEND EXISTING LOOP TO NEW LOCATION.
L1	PROVIDE NEW FIXTURE. CONNECT TO EXISTING LIGHTING CIRCUIT.
L2	EXISTING SWITCH LOCATION.



ELECTRICAL DEMOLITION PLAN
1/8" = 1'-0"



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1/8" = 1'-0"

KNIT
868 S. McClelland Street, Suite 2
Salt Lake City, Utah 84102
Phone 801.883.9328
knitstudios.com

ISSUE DATE 5/18/2022

REV	DATE	COMMENT

PROFESSIONAL ENGINEER
JOSHUA HAKKINSON
STATE OF UTAH

5/18/2022

TITLE: ELECTRICAL PLANS

PROJECT: HIGHLAND JH - AUDITORIUM RIGGING REPLACEMENT
325 GRAMERCY AVENUE, OGDEN, UT 84404

CLIENT: OGDEN SCHOOL DISTRICT

JOB NO: 210218

E2.1

BNA CONSULTING
SALT LAKE ST.GEORGE
4225 Lake Park Blvd Ste 225
West Valley City, Utah 84120
P 801.532.2196
www.bnaconsulting.com