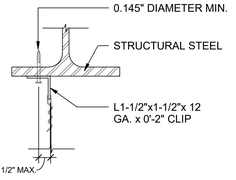
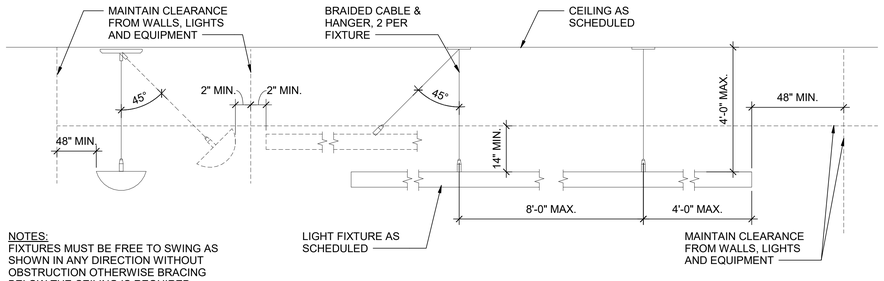
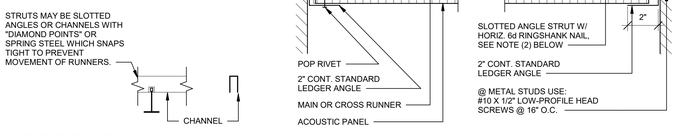


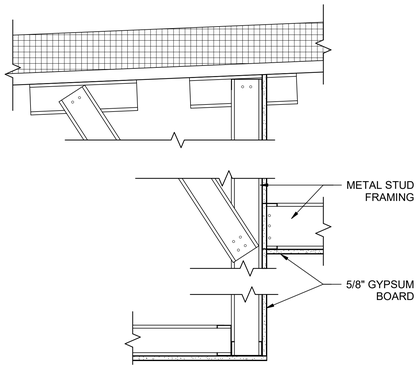
12 HANGER WIRE CONNECTION TO STRUCTURAL STEEL
Scale: 3" = 1'-0"



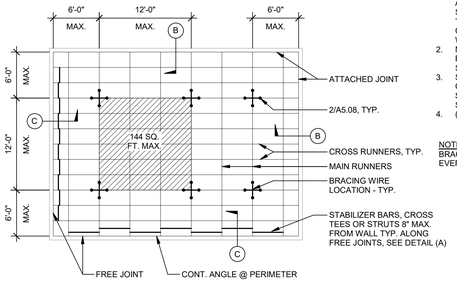
NOTES:
FIXTURES MUST BE FREE TO SWING AS SHOWN IN ANY DIRECTION WITHOUT OBSTRUCTION OTHERWISE BRACING BELOW THE CEILING IS REQUIRED

11 PENDANT LIGHT FREE SWING AREA DIAGRAM
Scale: 1 1/2" = 1'-0"





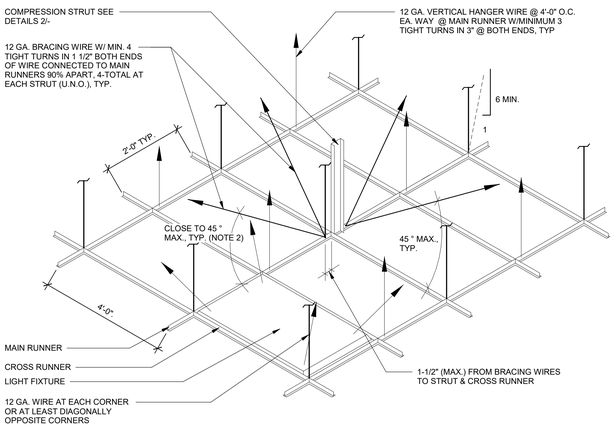
NOTE: REFER TO STRUCTURAL DETAIL 10/S1.32 FOR SOFFIT FRAMING



NOTES:
1. PROVIDE #12 GAGE HANGER WIRES AT THE ENDS OF ALL MAIN AND CROSS RUNNERS WITHIN 8" OF THE SUPPORT OR WITHIN 1/4 OF THE LENGTH OF THE END TEE, WHICHEVER IS LESS, FOR THE PERIMETER OF THE CEILING AREA. PERIMETER WIRES ARE NOT REQUIRED WHEN THE LENGTH OF THE END TEE IS 8" OR LESS.
2. NAILS AT ENDS OF HORIZONTAL STABILIZERS ARE TO BE PLACED WITH NAIL HEAD TOWARD CENTERLINE OF SPAN OF STRUT.
3. STABILIZER BAR MAY BE SLOTTED APPROVED ANGLES OR CHANNELS WITH "DIAMOND POINTS" OF SPRING STEEL WHICH SNAP TIGHT TO PREVENT MOVEMENT OF STRUT.
4. (1) #10 SMS TO 20 GA. MIN. WALL STUD @24" O.C.

NOTE:
BRACING WIRES AND COMP. STRUCT SHALL OCCUR AT EVERY 144 SQ. FT. MAX. IN ROOMS OVER 144 SQ. FT.

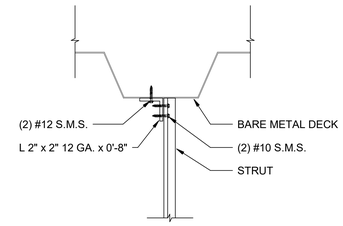
10 TYPICAL CEILING PLAN FOR 12'-0" X 12'-0" BRACE ASSEMBLY SPACING
Scale: 1/8" = 1'-0"



NOTES:
1. COMPRESSION STRUTS: COMPRESSION STRUTS SHALL NOT REPLACE HANGER WIRES. MAXIMUM KL/R RATIO OF 200 OR LESS.
2. THE MINIMUM ACCEPTABLE ANGLE IS DETERMINED SUCH THAT THE WIRES DO NOT INTERFER WITH THE RUNNERS, LIGHT FIXTURES, ETC. AND REMAIN STRAIGHT AND UNOBSTRUCTED.
3. SPLAYED BRACING WIRES AND COMPRESSION STRUTS ARE TO BE PROVIDED FOR EVERY 8'-0"MAX. X 8'-0" MAX. = 64 SQ.FT. OF CEILING AREA MAX.

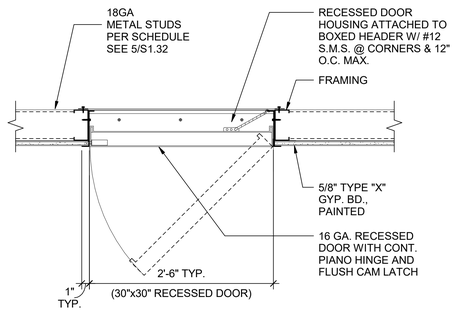
9 SUSPENDED CEILING - SUSPENSION AND BRACING ASSEMBLY
Scale: 1 1/2" = 1'-0"

8 GYPSUM BOARD CEILING - VERTICAL TRANSITION
Scale: 1 1/2" = 1'-0"

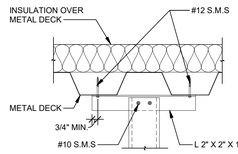


BARE METAL DECK, WHERE APPLICABLE

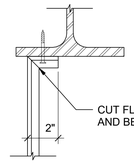
7 COMPRESSION CHANNEL STRUT CONNECTION
Scale: 3" = 1'-0"



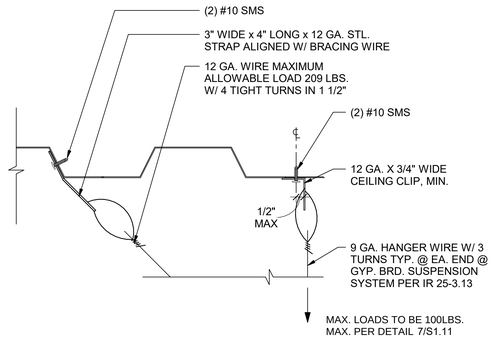
6 ACCESS PANEL @ GYP. BRD. CEILING
Scale: 1 1/2" = 1'-0"



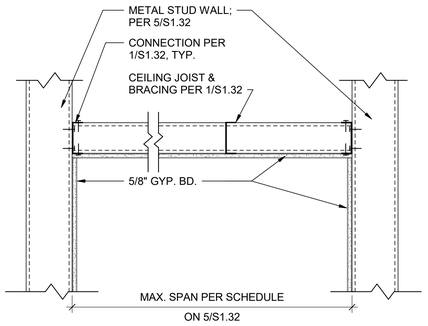
5 STRUT CONNECTION TO METAL DECK
Scale: 1 1/2" = 1'-0"



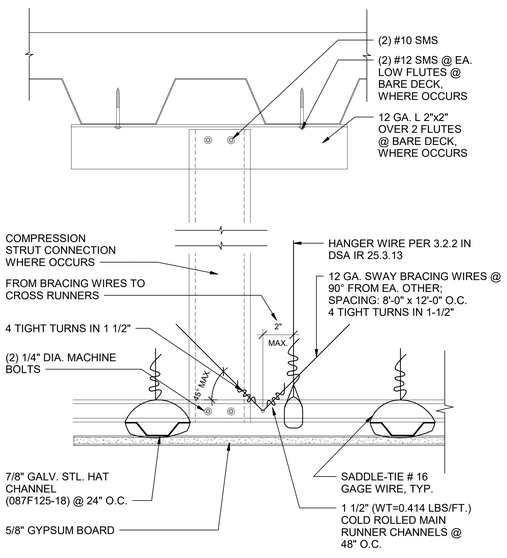
4 STRUT CONNECTION TO STRUCTURAL STEEL
Scale: 3" = 1'-0"



3 TYP. HANGING AND BRACING WIRE TO BARE METAL DECK
Scale: 3" = 1'-0"



2 STUD FRAMED GYP. BRD. CEILING
Scale: 1 1/2" = 1'-0"



NOTE:
1. SUSPENDED GYPSUM BOARD CEILING SHALL BE INSTALLED PER DSA 1R 25-3.13
2. MECH. DUCTS REQUIRE INDEPENDENT SUPPORT TO STRUCTURE ABOVE, SEE STRUCTURAL

1 TYP. SUSPENDED GYP. BRD. CEILING
Scale: 3" = 1'-0"

CEILING NOTES

DRYWALL CEILING SUSPENSION CONVENTIONAL CONSTRUCTION - ONE LAYER:

PER DSA IR 25-3.13 (rev 04-08-14)

Purpose: The purpose of this IR is to provide additional guidelines for the design and construction of gypsum wall board suspended ceiling systems.
1. MATERIALS: Materials are to comply with CBC section 2508 and applicable ASTM standards. Gypsum wallboard is either 1/2 inch or 5/8 inch in thickness. Cold-Formed steel sections specified in this IR are identified by a Product designator which has been standardized by the American Iron and Steel Institute (AISI) in Collaboration with the Steel Stud Manufacturers Association (SSMA).
2. DESIGN: The prescriptive requirements of this IR shall be taken as the minimum requirements and apply to a ceiling that is not accessible, has a single layer of Gypsum board not exceeding 5/8" thick, and has a total ceiling weight no to exceed 4 lbs psf. A ceiling that is required by CCR Title 24 to be accessible, or otherwise dose not meet these limitations, shall be designed to meet the applicable requirements of CBC Sections 1607A and 2508.1, and ASCE 7-10, section 13.3.1.
3. DETAILS OF CONSTRUCTION.
3.1 General: Gypboard wallboard ceilings shall not support building components other than air conditioning/heating grills or light fixtures. All such components shall be supported either directly from main runners, or by supplemental framing supported by main runners. No vertical loads other than Gypsum board dead load shall be applied to cross-furring.
3.2 Vertical Support System.
There are many possible variations of main runner sizes and spacings and spans listed in ASTM C754-04, table 7. All of the combinations are acceptable, provided the main runner spacing dose not exceed 4'-0" and the ceiling area supported by a hanger wire dose not exceed 16 square feet
3.2.1 Main Runner Spacing and Span: The Main runner most frequently used is a 1- 1/2" cold rolled channel designated 150U050-54 (1-1/2" cold rolled channels weighing 0.414 lbs/ft) spaced no more than 4'-0" o.c. with hanger wire spacing not to exceed 4'-0" o.c. and no more then 6" from each end of the main runner.
3.2.2 Vertical hanger wires: Class 1 zinc coated (galvanized) carbon steel per ASTM A641 # 9 gage w/soft temper & min. tensile strength = 70ksi
3.2.3 Cross-furring: 7/8 inch galvanized steel hat sections, designated 087F125-18, at 24" o.c. maximum
3.3 Connection Hanger Wires, Steel Framing and Furring
3.3.1 Hanger wires shall be saddle-tied to main runners per IR 25-2.13 figure 3A(f).
3.3.2 Cross furring should be saddle-tied to the main runners w/min. one strand of # 16 gage, or two strands of # 18 gage tie wire
3.3.3 Main runners shall be spliced by lapping and interlocking flanges and installing two (2) #8 screws @ each end of splice. The lap must be a minimum of 12 inches long.
3.3.4 Cross furring should be spliced by lapping and interlocking the pieces and installing two (2) #8 screws @ each end of splice. The lap must be a minimum of eight (8) inches long.
3.4 Installation and Anchorage of Hanger and Bracing Wires: Fasten hanger wires with not less than three (3) tight turns within a distance of 3 inches. Hanger wire loops shall be tightly wrapped and sharply bent to prevent any vertical movement or rotation of the member within the loops (see ASTM E580, section 5.2.7.2). Fasten bracing wires with four (4) tight turns within a distance of 1 -1/2". Hanger and Bracing wire anchors shall be installed in such a manner that the direction of the anchor aligns as closely as possible with the direction of the wire.
3.4.3 provide trapeze of other supplementary support members at obstructions to typical hanger spacing. Provide additional hangers, struts or braces as required at all ceiling breaks, soffits or discontinuous areas. Hanger wire that are more than 1 in 6 out of plumb are to have counter-sloping wires.
4. CEILING FIXTURES, TERMINALS, AND DEVICES.
4.1 All recessed or drop-in light fixtures, as well as ceiling mounted mechanical air terminals and services, shall be supported directly by main runners or by supplemental framing which is supported directly by main runners and positively attached with screws or other approved connectors to resist a horizontal force equal to the weight of the component. A min. of two attachments are required at each fixture and component.
4.2 Surface mounted fixtures shall be attached to a main runner with a positive clamping device made of material with a minimum of 14 gage. Rotational spring clamps do not comply.
4.3 Light fixtures, grilles, mechanical terminals, and flexible sprinkler hose fittings or other services weighing greater than 20 lbs. must be independently supported by not less than two (2) taut #12 gage wires where less than 56 pounds, and four (4) taut #12 gage wires where greater than or equal to 56 pounds, and attached to the housing and to the structure above. The wires, including their attachment to the structure above, must be capable of supporting four (4) times the weight of the unit.
4.4 All lightweight misc. devices, such as strobe lights, occupancy sensors, speakers, exit signs, etc., shall be attached to the ceiling per Section 4.1 of IR 25-3.13. Devices weighing more than 20 lbs. shall be supported from the structure above per Section 4.3 of IR 25-3.13
4.5 Penetrations through the ceiling for sprinkler heads and other similar devices that are not integrally tied to the ceiling system in the lateral direction shall have a two (2) inch oversized ring, sleeve or adapter through the ceiling to allow free movement of one (1) inch in all horizontal directions. Alternately, per ASTM E580, Section 5.2.8.5, a flexible sprinkler hose fitting that can accommodate 1 inch of ceiling movement shall be permitted to be used in lieu of the oversized ring, sleeve, or adapter.
4.6 Access Panels: Access to the space between the ceiling and the floor or roof above shall not be allowed. small access panels for the inspection, adjustment or repair of utility switches, valves, sensor, etc, may be allowed if the panel is less than 300 square inches. such panels shall also have permanently attached warning label as follows"
"**Warning**: 1) Do not climb, walk or Crawl on the Gypsum board ceiling panels or metal framing.
2) Do not store or stow anything on the gypsum board ceiling panels or metal framing."
5. LATERAL SYSTEM: A gypsum board ceiling grater than 144 square feet in area shall be designed to resist its own seismic loads, per section 2 above , and shall not be permitted to be used to resist primary structural loads or other loads. There are two optional lateral systems for this purpose:
-The Brace wire system, per Section 5.1.
-The Diaphragm system, per Section 5.2.
Either or both options may be shown on plans or noted in specifications.
Note 1. if Both options are shown on plans or noted in specifications, only one option can be used for each separate ceiling area.
Note 2. Fire-rated systems shall be installed per rated listing (i.e. UL, Factory Mutual, etc.) and manufacturers' instruction, and the rated listing may dictate the optional lateral system used.
5.1 Brace Wire System: Lateral force bracing assemblies shall consist of a compression strut and four (4) #12 gage splayed bracing wires oriented 90 degrees from each other. Lateral force bracing assemblies shall be spaced, per Table 1 for all values of the component importance factor (Ip) of the ceiling.
5.1.1 There shall be a brace assembly a distance of not more than one half of the above spacing from each surrounding wall, expansion joint and at the edge of any ceiling vertical offset.
5.1.2 The slope of the bracing wires shall not exceed 45 degrees from the plane of the ceiling and shall be taut. Splices in bracing wires are not permitted w/o DSA approval.
5.1.3 Ceiling grid members may be attached to not more than two (2) adjacent walls. Ceiling grid members shall be at least 1 inch free of other walls. If walls run diagonally to ceiling grid system runners, one end of main and cross runners should be free, and a min. of 1 inch clear of wall.
5.1.4 Suspended ceiling systems with an area of 144 square feet or less, surrounded by walls which connect directly to the structure above, do not require bracing assemblies when attached to at least two adjacent walls and the perimeter walls are designed to carry the ceiling lateral forces.
5.2 Diaphragm System: A suspended gypsum board ceiling may be designed as a horizontal diaphragm to resist its own seismic loads as prescribed in this section. gypsum board shall not be used in diaphragm ceilings to resist lateral forces imposed by partitions.
5.2.1 Diaphragm Ratios:
Horizontal 2:1 maximum Vertical 1:1 maximum
5.2.2 A maximum diaphragm shear equal to 50 lbs./ft. is allowed with 1 inch or 1-1/4 inch Hi-Lo Type S, or S-12, bugle head screws at 12 inches o.c. at all gypsum board edges (3/8 inch screw edge distance) and at all intermediate supports. A wall constructed similarly can resist the same shear force provided the gypsum board is on the same side of the studs as the ceiling is, and a positive connection between the ceiling and the wall is detailed. The gypsum board diaphragms are to resist lateral loads due to their own weight and/or the ceiling diaphragm(s) only.
5.2.3 Details are required providing for lateral load transfer from the gypsum board to shear walls, or other lateral load resisting elements, on all four sides of the diaphragm. There shall be no steps or vertical offsets in the ceiling plane.
6. DSA Acceptance of Evaluation Reports: At the discretion of the DSA, Proprietary systems may be Accepted under all the following conditions:
- Acceptance will be granted on a project specific basis.
-Proprietary systems must meet the requirements of the CBC.
-Proprietary systems must have valid evaluation reports meeting the provisions of DSA IR A-5.
In accordance w/DSA IR A-5, DSA will accept OSHPD Preapproved Details (OPD) "2013 CBC Standard Gypsum Board Ceiling Details for Suspended and Joist Framing Construction"

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120551 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 01/11/2021

REVISIONS

1	DSA_V2	Date 1

LICENSED ARCHITECT
HELENA L. JUBANY
No. C22214
Ren. 5-31-21
STATE OF CALIFORNIA

NORWALK LA MIRADA UNIFIED SCHOOL DISTRCT
LA MIRADA HIGH SCHOOL NEW FOOTBALL STADIUM PROJECT
13520 ADELFA DRIVE, LA MIRADA, CA. 90638

DSA # 03-120551

NAC ARCHITECTURE
NAC NO. 161-19015
DATE 12/10/2020

DSA BACKCHECK SUBMISSION

CEILING DETAILS

A5.09

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