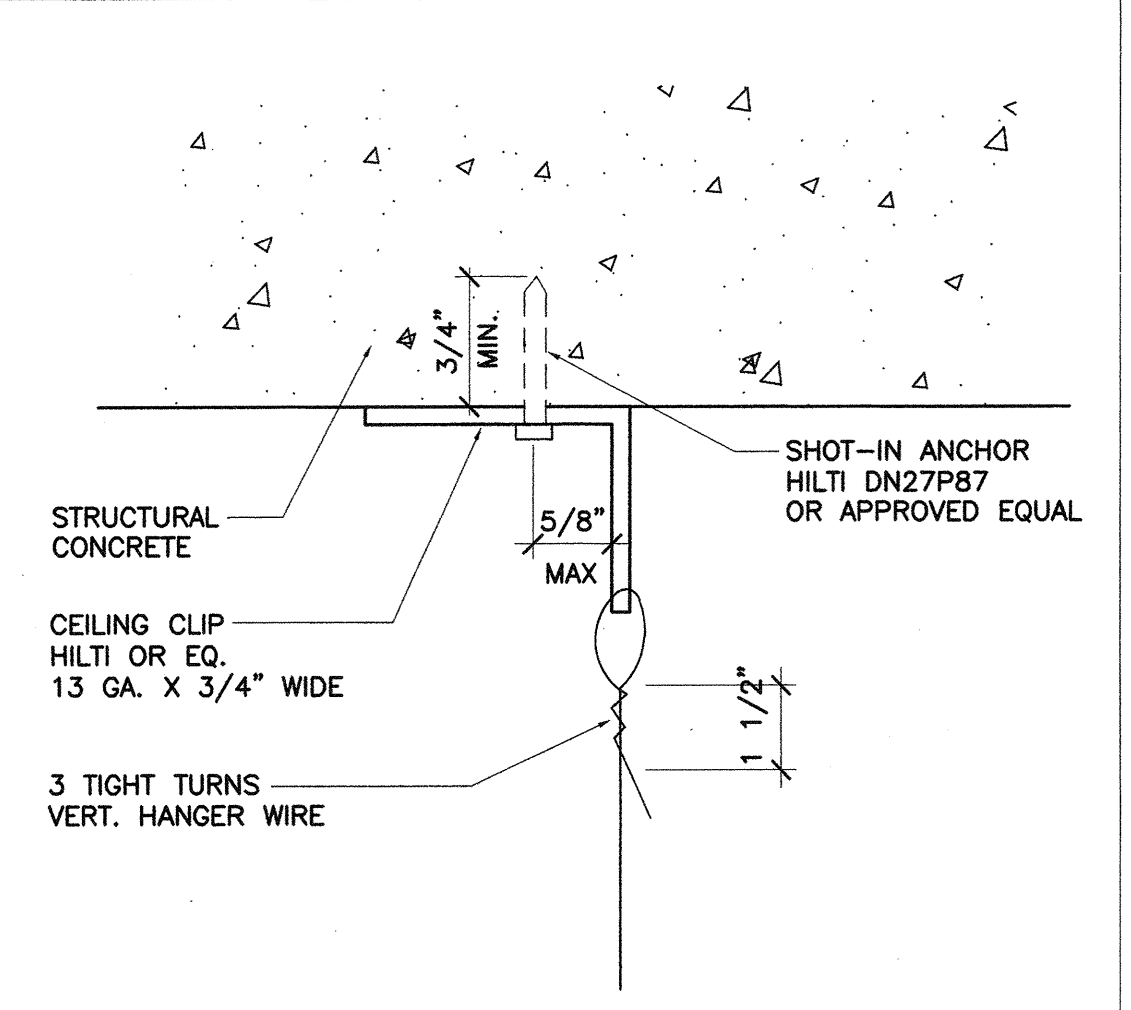


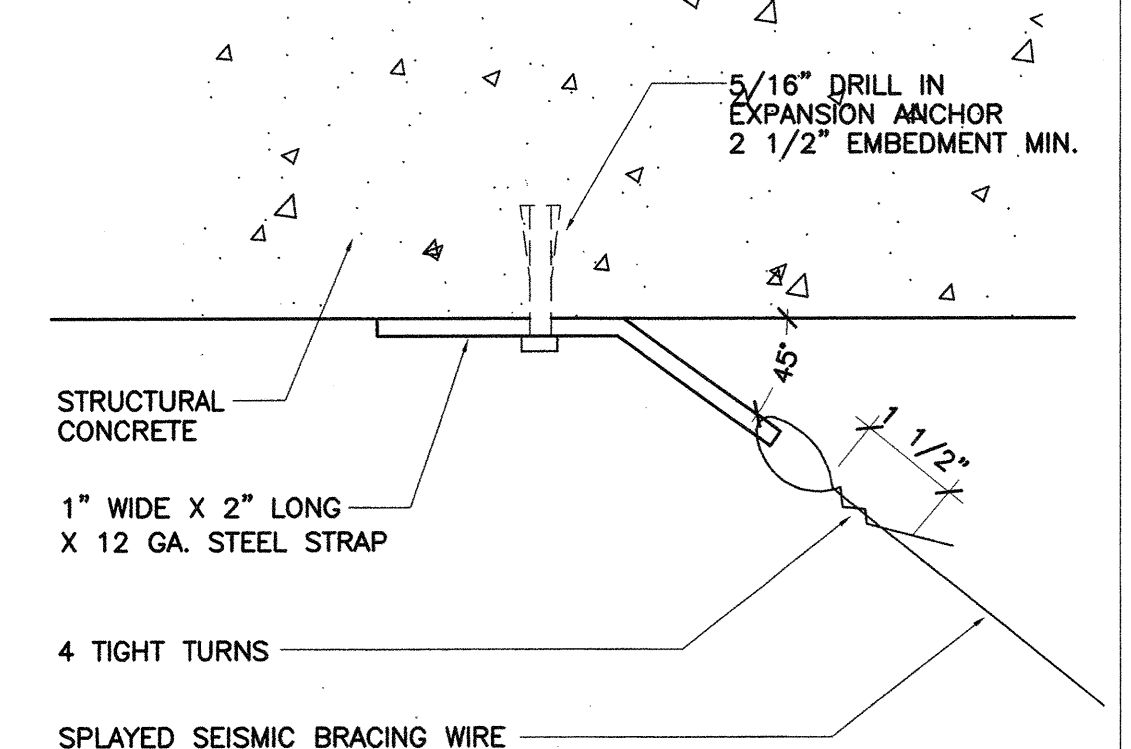
**9 Universal Ceiling Bracket**  
SCALE: 1 1/2" = 1'-0"

**SUSPENDED DRYWALL CEILING NOTES (IR47-5)**

- (a) **General:** Gypsum suspended ceiling systems shall be designed and constructed in accordance with provisions of Title 24, CCR and the following interpretations may be used as additional guidelines.
- (b) **Material:** Materials are to comply with applicable UBC standards. Gypsum Board is one layer of 1/2" of 5/8" thick Type "X".
- (c) **Design:** For lateral load, use same factors as for lay-in acoustical tile ceilings. Use 0.5 x 4# /sq. ft. = 2# /sq. ft. lateral load for hospitals and 0.5 x 4# /sq. ft. = 1.2# /sq. ft. for schools.
- (d) **Details of Construction:**
  - (1) General. Gypsum ceilings shall not support materials or building components other than grills, light fixtures, small electrical conduits, small ducts and the like. All such components should be supported either directly from main runners, or by supplemental framing which is supported by main runners. No vertical loads other than gypsum dead load should be applied to cross-furring.
  - (2) Vertical Support Systems.
    - (A) Space hangers and main runners at 4'-0" o.c. In addition the following requirements must be met:
      - i. Vertical hanger wires are No. 8 gage and galvanized; however, if ceiling is non-accessible, a No. 12 gage wire hanger may be used.
      - ii. Main runners are 1-1/2" steel channels, 1.12#/ft. minimum, hot rolled.
      - iii. Cross-furring shall be 7/8", 26 gage galvanized hot sections at 16" maximum c.c.
    - (B) The following requirements apply to all wire hanger/runner combinations:
      - i. Hangers should be saddle-tied around main runners to develop the full strength of the hangers.
      - ii. Cross-furring should be saddle-tied to the main runners with one strand of No. 16 or two strands of No. 18 gage tie wire.
      - iii. Main runners should be spliced by lapping and interlocking flanges 12" minimum and tying near each end with double loops of No. 16 gage wire.
      - iv. Cross-furring should be spliced by lapping and interlocking the pieces 8" minimum and tying near each end with double loops of No. 16 gage wire.
  - (e) **Light Fixtures Supports:**
    - (1) All recessed or drop-in light fixtures should be supported directly by main runners or by supplemental framing which is supported by main runners.
    - (2) Surface mounted fixtures should be attached to a main runner with a positive clamping device made of material with a minimum of 14 gage. Rotational spring catches do not comply.
  - (f) **Lateral System:**
    - (1) Seismic brace to ceiling above as for acoustical tile suspension system. Use #12 diagonal wires spaced on 8' x 12' grid for hospital and a 12' x 12' grid for schools and with 6'-0" of walls. Seismic brace to be located at intersection of main runner and cross-furring member. Provide connection between diagonal wires and main runner so as to prevent slipping, a 200# approximate seismic load.

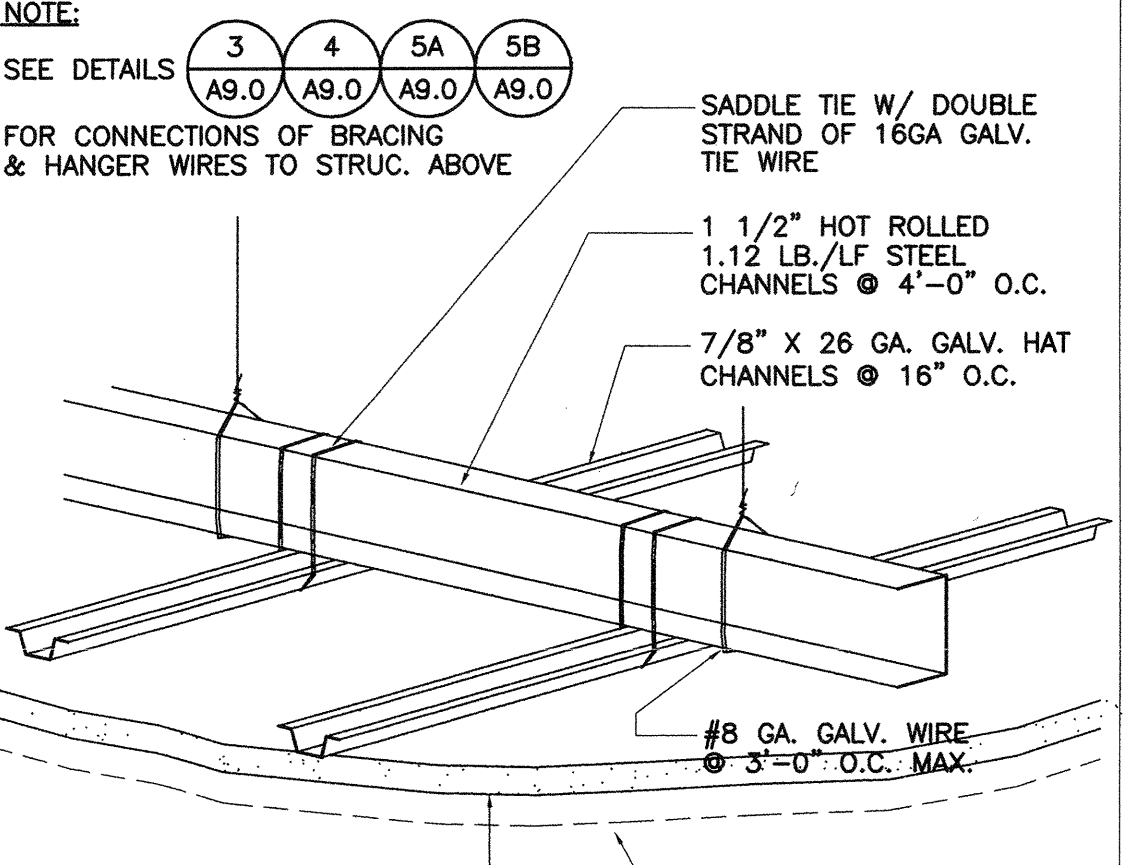


**A Vertical Suspending Wire Attachment**

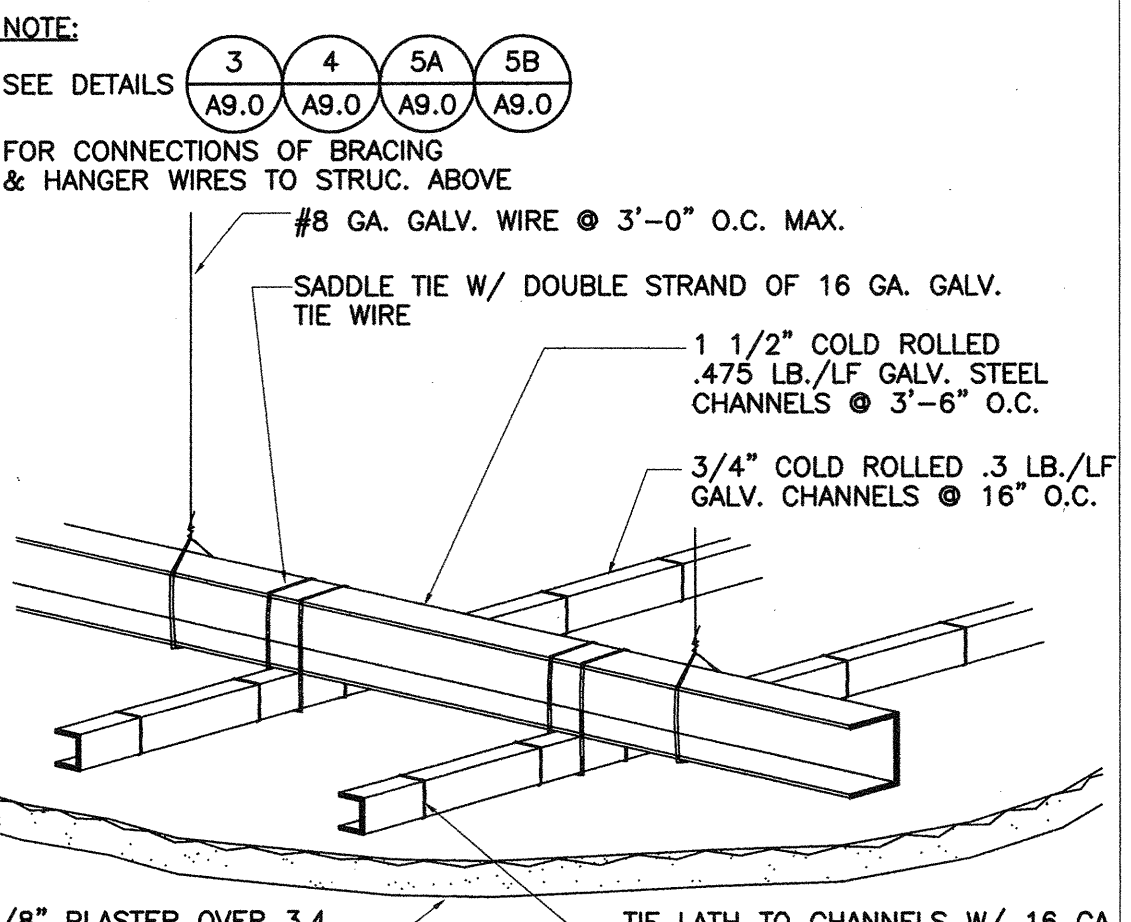


**B Splayed Seismic Bracing Wire Attachment**  
NOTE: USE ROTARY DRILL ONLY WHEN SETTING ANCHORS IN CENTER LINE OF CONC. RISERS OR CONC. DECK.

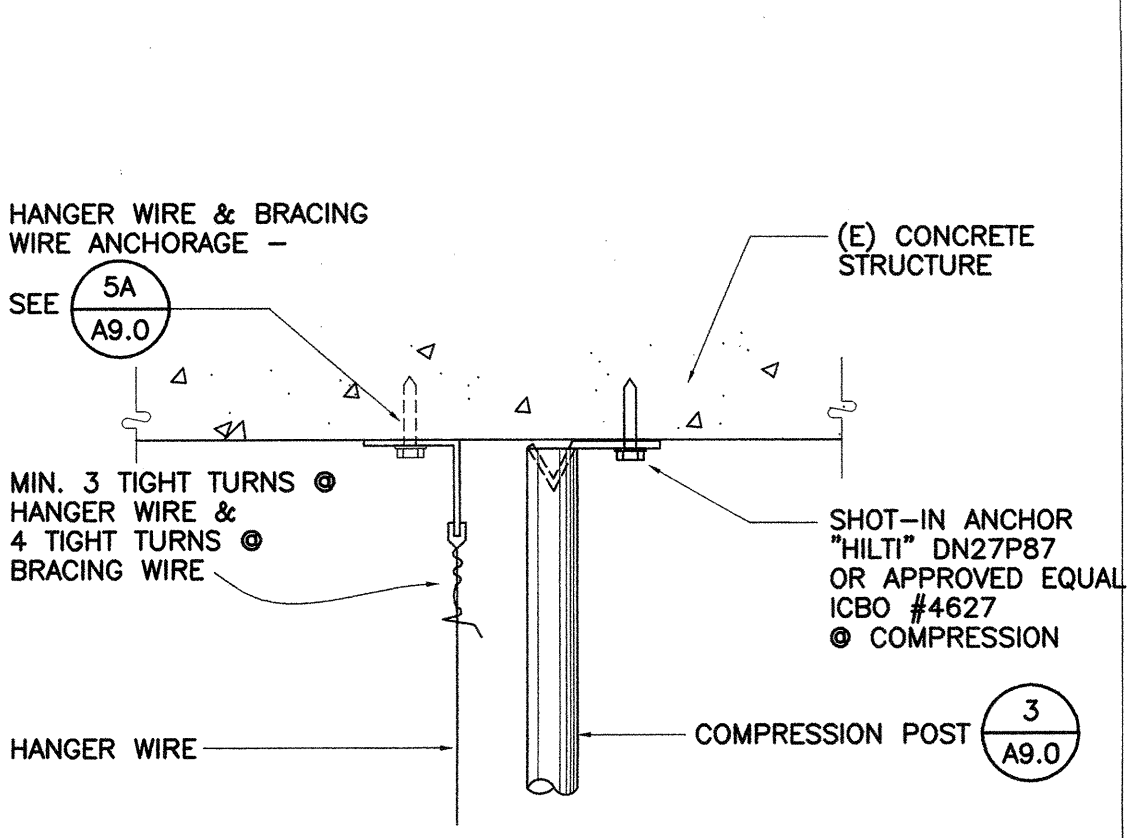
**5 Hanger Wire Bracket Connection**  
SCALE: NO SCALE



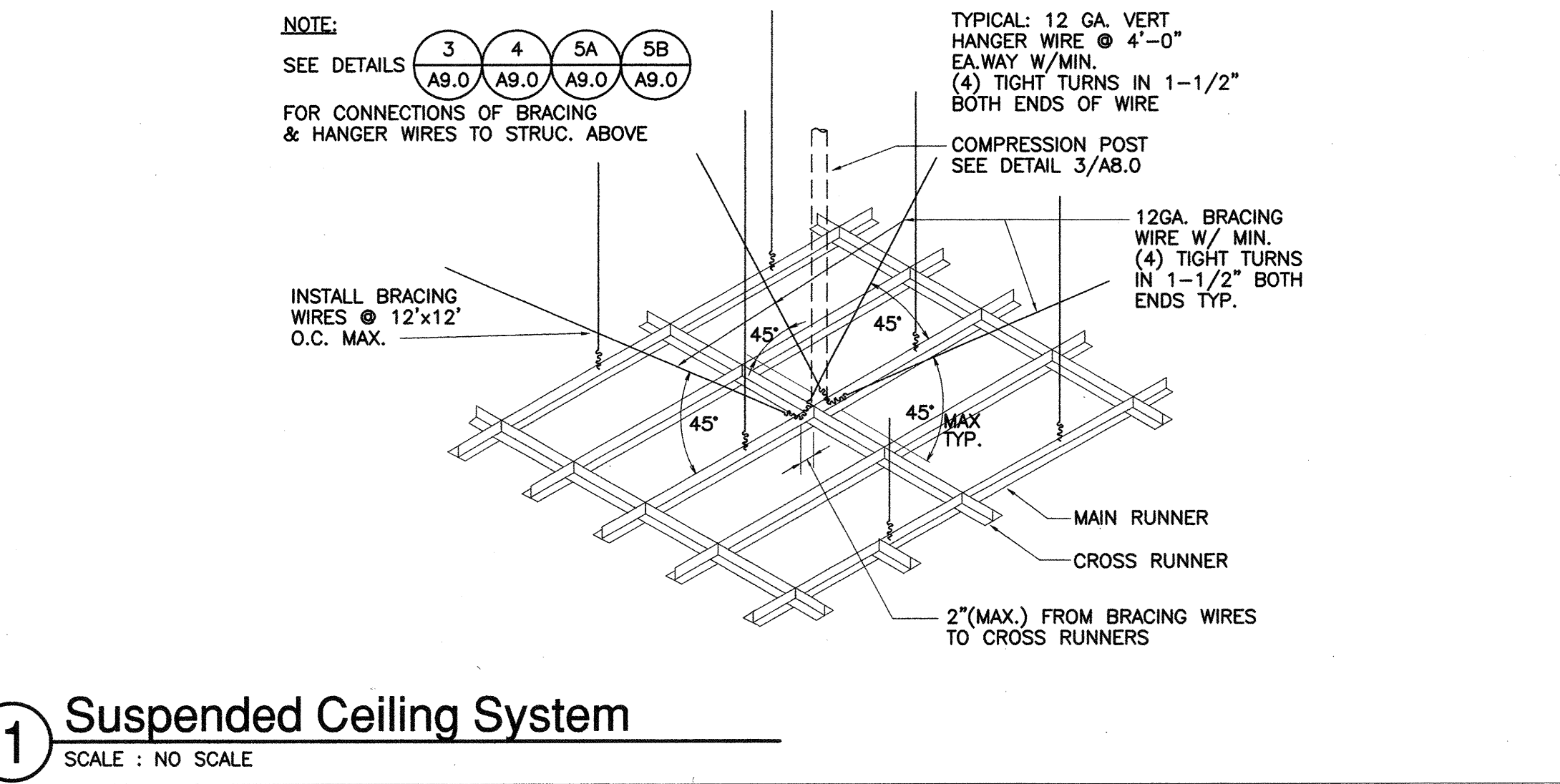
**6 Suspended Gyp. Board Ceiling**  
SCALE: NONE



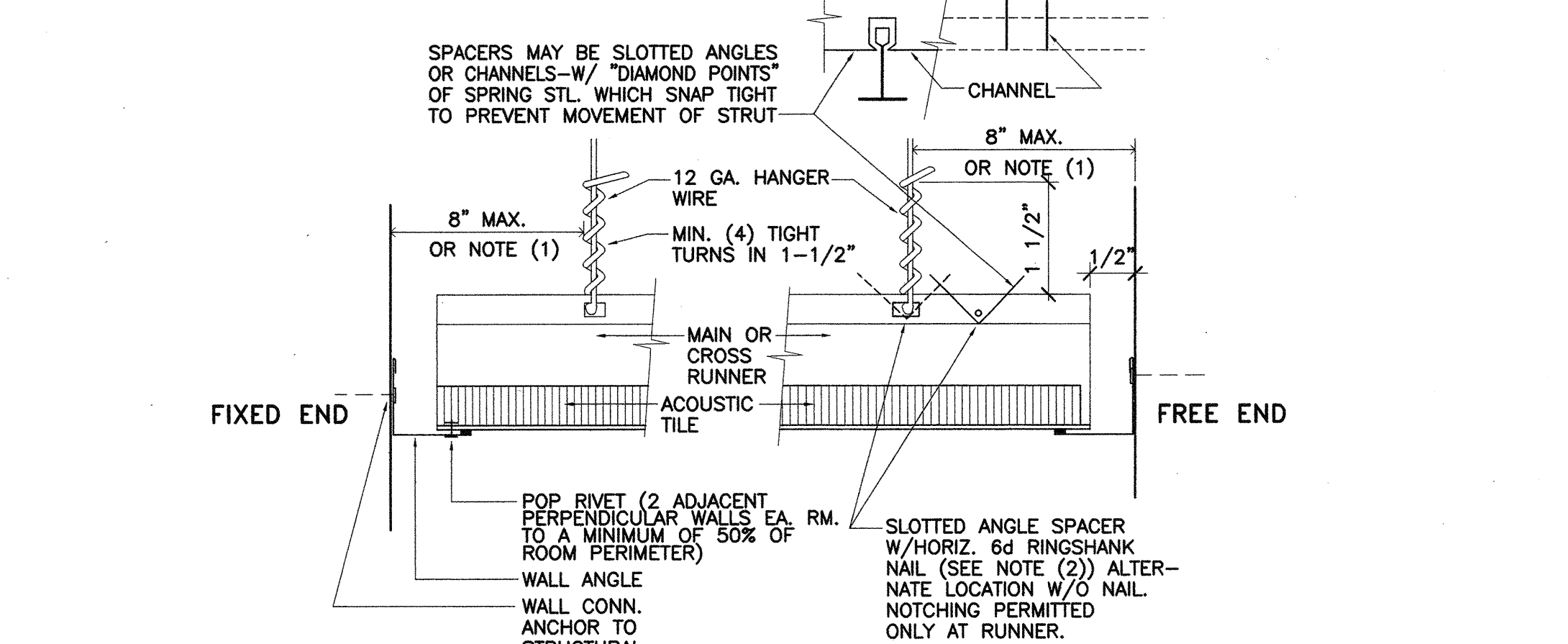
**7 Suspended Plaster Ceiling**  
SCALE: NONE



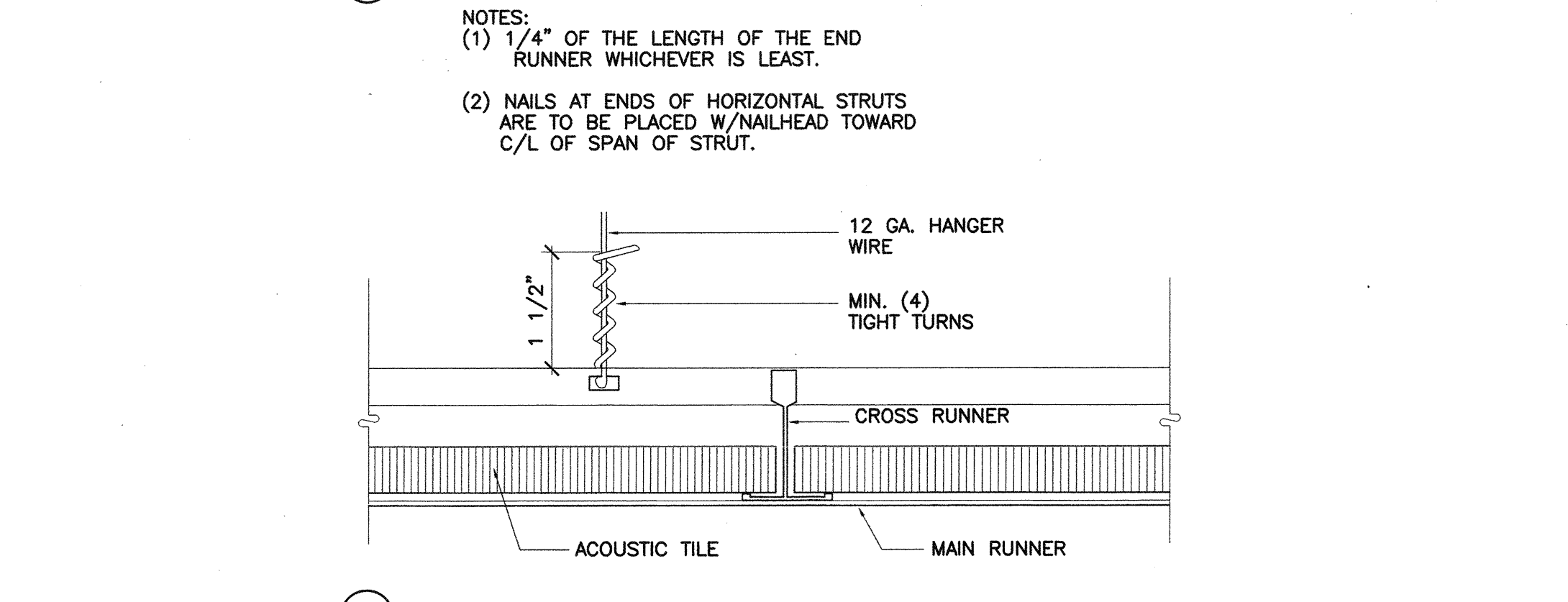
**8 Compression Post Anchor**  
SCALE: 3" = 1'-0"



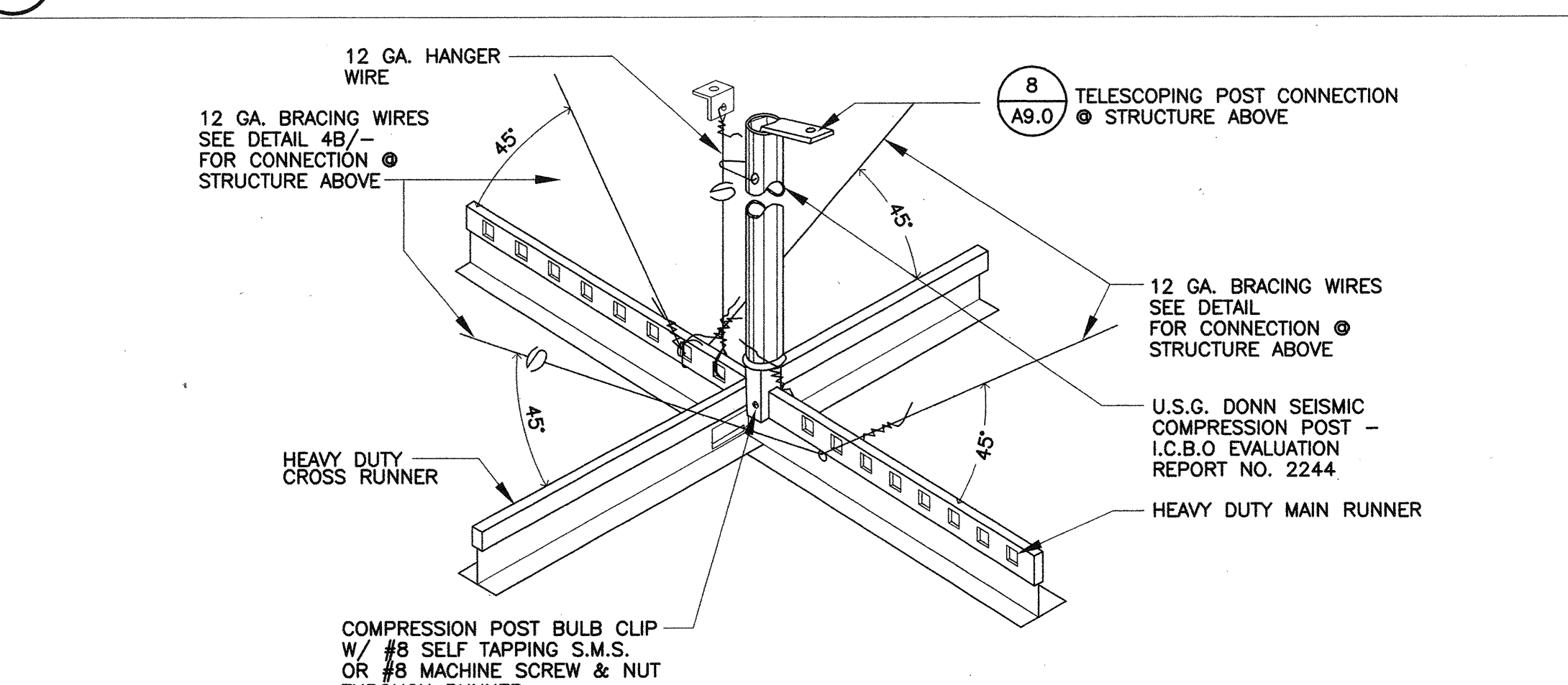
**1 Suspended Ceiling System**  
SCALE: NO SCALE



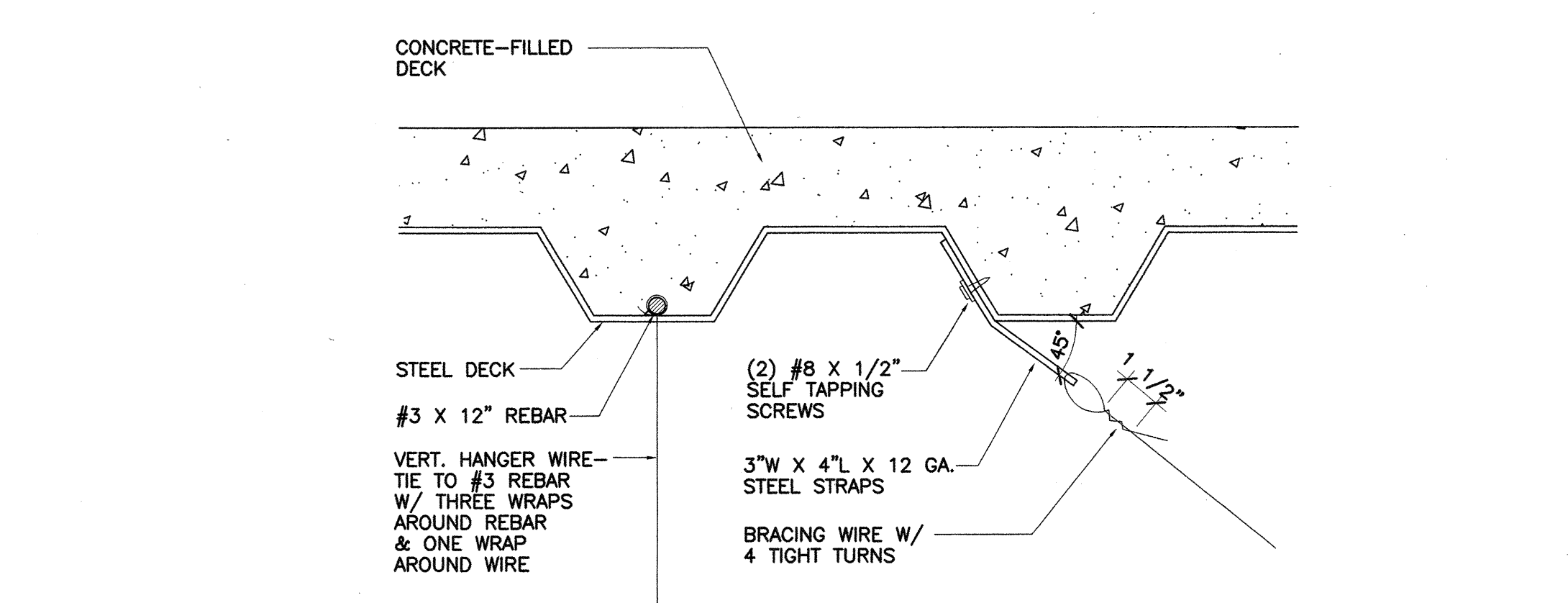
**A TYP. HORIZONTAL STRUT CONNECTIONS INTO CONCRETE AND METAL DECKS.**  
NOTE: REFER TO DETAILS 4/A9.0 AND 5(A&B)/A9.0 FOR WIRE CONNECTIONS INTO CONCRETE AND METAL DECKS.



**B HANGER WIRE CONNECTION TO GRID**  
NOTE: REFER TO DETAILS 4/A9.0 AND 5(A&B)/A9.0 FOR WIRE CONNECTIONS INTO CONCRETE AND METAL DECKS.



**2 Ceiling Grid Connection**  
SCALE: N.T.S.



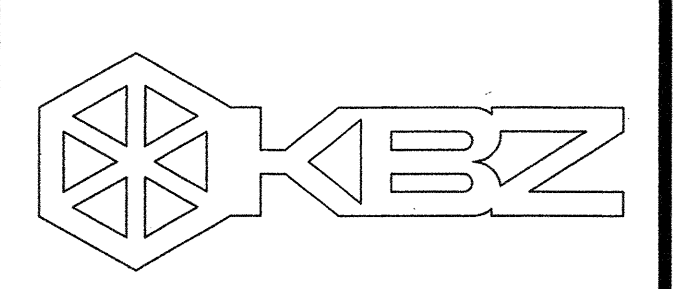
**3 Compression Post Detail**  
SCALE: NO SCALE

**4 Wire Attachments at Deck**  
SCALE: -

**SUSPENDED ACOUSTICAL CEILING NOTES**

- The following notes are acceptable for ceiling systems whose total weight including air conditioning grilles and light fixtures does not exceed four (4) psf. Heavier systems and those supporting lateral loads from partitions will require other special design details:
- (1) 12 ga. (min.) hanger wires may be used for up to and including 4'-0" x 4'-0" grid spacing along main runners.
  - (2) Provide 12 ga. hanger wires at the ends of all main and cross runners within 8" from the support or within 1/4 of the length of the end tee, whichever is least, for the perimeter of the ceiling area. End connections for runners which are designed and detailed to resist the applied horizontal forces may be used in lieu of the 12 ga. hanger wires subject to DSA/SSS or OSHPD review and approval.
  - (3) Provide trapeze or other supplementary support members at obstructions to main hanger spacing. Provide additional hangers, struts or braces as required for ceiling breaks, soffits or discontinuous areas. Hanger wires that are more than 1 in 6 out of plumb are to have counter-sloping wires.
  - (4) Ceiling grid members may be attached to not more than 2 adjacent walls. Ceiling grid members should be at least 1/2 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 minimum of 1/2 inch clear of wall.
  - (5) At the perimeter of the ceiling area where main or cross runners are not connected to the adjacent wall, provide interconnection between the runners at the free end to prevent lateral spreading. A metal strut or a 18 ga. wire with a positive mechanical connection to the runner may be used. Where the perpendicular distance from the wall to the first parallel runner is 12" or less, this interlock is not required.
  - (6) Provide sets of four 12 ga. splayed bracing wires oriented 90 degrees from each other at the following spacing:
    - (A) For school buildings, place sets of bracing wires at a spacing not more than 12 feet by 12 feet on center.
    - (B) For essential services buildings, place sets of bracing wires not more than 8 feet by 12 feet on center.
    - (C) Provide bracing wires at locations not more than 1/2 the spacings given in (A) and (B) above from each perimeter wall and at the edge of vertical ceiling offsets for both school and hospital buildings.
 

The slope of these wires should not exceed 45 degrees from the plane of the ceiling and should be taut without causing the ceiling to lift. Splices in bracing wires are not to be permitted without special OSA/SSS or OSHPD approval.
  - (7) Fasten hanger wires with not less than 3 tight turns. Fasten bracing wires with 4 tight turns. Make all light turns within a distance of 1-1/2 inches. Hanger or bracing wire anchors to the structure should be installed in such a manner that the direction of the wire aligns as closely as possible with the direction of the forces acting on the wire. Note: Wire turns made by machine where both strands have been deformed or bent in wrapping can waive the 1-1/2" requirement, but the number of turns should be maintained, and be as tight as possible.
  - (8) Separate all ceiling hanging and bracing wires at least 8 inches from all unbraced ducts, pipes, conduit, etc. It is acceptable to attach lightweight items, such as single electrical conduit not exceeding 3/4" nominal diameter, to hanger wires using connectors acceptable to OSA/SSS or OSHPD.
  - (9) When drilled-in concrete anchors or shot-in anchors are used in reinforced concrete for hanger wires, 1 out of 10 must be field tested for 200 pounds of tension. When drilled-in concrete anchors are used for bracing wires, 1 out of 2 must be field tested for 440 pounds in tension. Shot-in anchors in concrete are not permitted for bracing wires. If any shot-in or drilled-in anchor fails, see C.B.C. Section 192319 a.3.5. NOTE: Drilled-in or shot-in anchors require special DSA or OSHPD approval when used in prestressed concrete.
  - (10) Attach all light fixtures to the ceiling grid runners to resist a horizontal force equal to the weight of the fixtures.
  - (11) Flush or recessed light fixtures and air terminals or services weighing less than 56 pounds may be supported directly on the runners of a heavy duty grid system but, in addition, they must have a minimum of two 12 ga. slack safety wires attached to the fixture at diagonal corners and anchored to the structure above. All 4 ft. x 4 ft. light fixtures must have slack safety wires at each corner. All flush or recessed light fixtures and air terminals or services weighing 56 pounds or more must be independently supported by not less than 4 taut 12 ga. wires each attached to the fixture and to the structure above regardless of the type of ceiling grid system used. The taut 12 ga. wires including their attachment to the structure above must be capable of supporting 4 times the weight of the unit.
  - (12) All fixtures and air terminals or services supported on intermediate duty grid systems must be independently supported by not less than 4 taut 12 ga. wires each attached to the fixture or terminal and to the structure above.
  - (13) Support surface mounted light fixtures by at least two positive devices which surround the ceiling runner and which are each supported from the structure above by a 12 ga. wire. Spring clips or clamps that connect only to the runner are not acceptable. Provide additional supports when light fixtures are 8 feet or longer.
  - (14) Support pendant mounted light fixtures directly from the structure above with hanger wires or cables passing through each pendant hanger and capable of supporting 4 times the weight of the fixture.
  - (15) Comply with Division of the State Architect IR-M-3.



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PROJECT ARCHITECT

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**SAN BRUNO, CALIFORNIA 94066**  
**3900 COLLEGE DRIVE**

NO.	DESCRIPTION	DATE	BY
REVISION			

DRAWN: L.J.L.  
CHECKED: SD  
DATE: 3/21/01  
JOB NO.: 98-03  
SHEET TITLE: SUSPENDED CEILING DETAILS

SHEET 17  
**A 9.0**  
OF 21



IDENTIFICATION STAMP  
DIV. OF THE STATE ARCHITECT  
OFFICE OF REGULATION SERVICES  
APPL 0-103795  
DATE: 04/21/01