

1. Floor and Ceiling Runners "J" -shaped runners, 2-1/2 in. wide with unequal legs of 1 in. and 2-1/4 in., fabricated from 25 MSG galv steel. Runners positioned with short leg toward finished side of wall. Runners attached to structural supports with steel fasteners located not more than 2 in. from ends and not more than 24 in. OC.

2. Steel Studs "C-T" shaped studs 1-5/8 in. wide by 2-1/2 in. deep, fabricated from 25 MSG galv steel. Cut to lengths 3/4 in. less than floor to ceiling height and spaced 24 in. or 600 mm oc.

3. Gypsum Board* 1 in. thick gypsum wallboard liner panels, supplied in nom. 24 in. or 600 mm (for metric spacing) widths. Panels cut 1 in. less in length than the floor to ceiling height. Vertical edges inserted in "T" shaped section of C-T studs. Free edge of end panels secured to long leg of J runner with tabs in runner or 1-5/8 in. long Type 5 self-tapping bugle head steel screws spaced not more than 12 in. OC.

AMERICAN GYPSUM CO -- Type AG-C

CONTINENTAL GYPSUM COMPANY -- Type CG-C AMES HARDIE GYPSUM INC -- Type Hardiliner

REPUBLIC GYPSUM CO -- Type RG-10 'ABCO GYP9UM, DIV OF 'ACIFIC COAST BUILDING PRODUCTS INC -- Type PG-10

STANDARD GYPSUM L L C -- Type SG-C AND FOREST PRODUCTS CORP

tright angles to studs and side "J" runners with I in. long Type 5 self-tapping steel crews starting at 2 in. from the floor and ceiling runners and spaced a maximum 24 in. OC long the vertical edges and in the field of the boards.

ace layer oriented parallel to studs and side "J" runners and attached with 1-5/8 in. long ype 5 self-tapping steel screws, starting at 3 in. from the floor and ceiling runners and paced a maximum 12 in. OC along the vertical edges and in the field of the boards. Face yer joints covered with paper tape and two coats of joint compound. Exposed screw eads covered with two coats of joint compound.

AMERICAN GYPSUM CO -- Type AG-C

ONTINENTAL GYPSUM COMPANY -- Type CG-C

JAMES HARDIE GYPSUM INC -- Type Max"C"

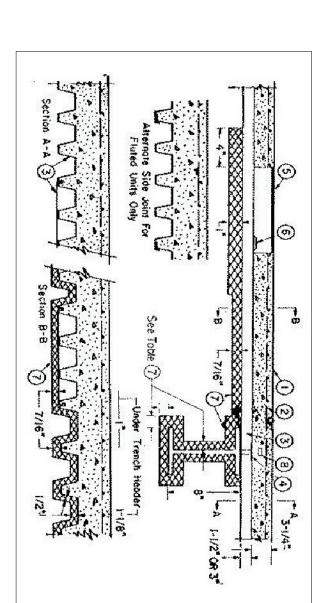
ABCO GYPSUM, DIV OF ACIFIC COAST BUILDING PRODUCTS INC --PG-C,

REPUBLIC GYPSUM CO -- Type RG-C

IPLE-INLAND FOREST PRODUCTS CORP -- Type TG-C

5. Batts and Blankets* (optional) -- Mineral wool or glass fiber batts partially or completely filling stud cavity. Any mineral wool or glass fiber batt material bearing the Classification Marking as to Fire Resistance.

Design No. D826 April 22, 2004 Restrained Assembly Rating -- 2 Hr. Unrestrained Assembly Rating -- 0 Hr. (See Item 3) Unrestrained Beam Ratings -- 1, 1-1/2 and 2 Hr.



Beam -- W8X20, min size.

1. Light-Weight Concrete -- Expanded shale, clay, or slate aggregate by rotary-kiln method, or expanded by clay, shale or flyash aggregate by the sintered grate process, ill +or- 3 pcf unit weight, 3000 psi compressive strength, vibrated, 4 to 1 per cent entrained air.

2. Welded Wire Fabric -- 6x6 -- WI.4xWI.4.

3. Steel Floor and Form Units* -- Composite 1-1/2, 2, or 3 in. deep galv units. Fluted units may be phosphatized/painted. Min gauges are 20 MSG for fluted and 20/20 MSG for cellular and particle cellular units. The following combinations of units may be used:

(1) All fluted. 1-1/2, 2, or 3 in. deep galv units. Fluted units may be 15G for fluted and 20/20 MSG for cellular and partial units may be used:

) One cellular or partial cellular to one or 5C STEEL DECK, DIV OF more fluted

15C PROFILES INC -- 24 in. wide Types B, BR, BMOD, BRMOD, N, BF24, Ypes B, BR, BF30±36 in. wide Types B-36, 2W36, 3W36.

DECK WEST INC -- 36 in. wide B-DW, Inverted B-DW, BA-DW, Inverted BA-DW, 2-DW, 3-DW. Side joints of 2-DW and 3-DW may be fastened together with min 1 in. long No. 12 x 14 self-drilling, self-tapping steel screws 36 in. OC. CONSOLIDATED SYSTEMS INC -- 24 in. wide Types CFD-2, -3± 24± 30 or 36 in. wide Types CFD-1.5 -12± 24 or 36 in. wide Types Mac-Lok 2, 3± 24 in. wide B2C, B2F, NC, NFC± 30 in. wide B3C.

EPIC METALS CORP -- 24 in. wide Types ECI50, ECPI50, EC300, ECP300, EC366, ECP366± 36 wide, Types EC266, ECP266.

GENS METALS INC -- 24 in. wide Types LF2, JIA DER CONSTRUCTION MATERIAL CO LTD -- 24 or 36 in.

<u>F3</u>.

MARLYN STEEL DECKS INC -- Type 1.5 CF, 2.0 CF or 3.0 CF. NEW MILLENNIUM BUILDING SYSTEMS L L C -- Type 1.5CD or 2.0CD.

=LYNN CANADA LTD -- 24 in. wide, Types T-150, T-150F.

TOMEN BUILDING COMPONENTS INC -- 24, 30 or 36 in. wide Type LXR-B± 24 or 36 in. wide Type _XR-3W± 36 in. wide, Type LXR-2W. H ROBERTSON -- QL Types, 24 in. wide, 3 nverted, 121, NKX, TKX± 17 in. wide 21± 36 in. se fastened together with min 1 in. long No. 3 or 3 inverted, UKX, 2 or 3 in. 99, AKX, WKX, 21 or 21 wide 2 or 3 in. 99. Side joints of 99, AKX, WKX, TKX may 12x14 self-drilling, self-tapping steel screws 36 in. OC.

UNITED STEEL DECK INC -- 24,30 or 36 in Types 1-1/2,2 or 3 in. LOK-Floor and LOK-FI Types AWC 2 or 3 in., 12 or 24 in. wide . . wide, Types 1-1/2 in. B-LOK and B-LOK Cell± 24 in. wide, oor Cell± 24 in. wide, Types N-LOK and N-LOK Cell,

VALLEY JOIST -- 24 or 36 in. wide Types WVC 1-1/2 or WVC 2.

/ERCO MFG CO -- 24, 30 or 36 in. wide Types PLB, B, BR± 24 or 36 in. wide Types PLW2, W2, PLW3, U3± 24 in. wide Types PLN, N. 12 in. wide PLW2, W2, PLW3 or W3 units may be blended with 24 or 36 in. uide PLW2, W2, PLW3 or W3 units, respectively. Units may be phos/ptd. JLCRAFT, DIV OF

NUCOR CORP -- 24,30 or 36 in. 2VLP,3VLP. , T es 15VL, 15VLI, 15VLP± 24 or

EELING-PITTSBI IRGH STEEL CORP, DIV

UHEELING CORRUGATING CO -- 30 in. wide Types SB-150, -150N, -150NR, -150R± 30 or 36 in. wide Type SB-BI6LF± 24 or 36 in. wide Types SB-P2ILF, -P31LF± 24 in. wide Types SB-200, -300. Types SB-200, -300. Lock Form Type, 24, 30 or 36 in. wide Types BI6LF, BI6LFNV± 24 in. wide Types P34LF, P34LFNV± 12, 24 or 36 in. wide Types C20LF, C30LF, C31LF, P20LF, P30LF, P31LF. Inits may be phos/ptd. 30 in. wide Type 1-1/2 in. V-Grip± 24 or 36 in. wide Types 212V-Grip, 112V-Grip± 36 in. wide Types 212V-Grip, may be phos/painted.

pacing of welds attaching units to supports shall be at each edge and not to exceed 16 in. etween edges. Unless noted otherwise, adjacent units button-punched or welded together 36 in 12 along side joints. The Unrestrained Assembly Rating is 1, 1-1/2, or 2 Hr. dependent on the prestrained Beam Rating, for 1-1/2 in. deep, 24 in. wide, 18 MSG fluted and 18/20 MSG cellular units 18 th clear spans not more than 8 ft 10 in.

Alternate Construction -- Noncomposite units of the same type shown above may be used provided allowable loading is calculated on the basis of noncomposite design.

4. Joint Cover -- 2 in. wide pressure sensitive tape.

5. Trench Header -- (Bearing the UL Listing Mark). Housing constructed of steel and provided with metal edge screeds.

6. Access Openings -- As required, with grommets.

7. Spray-Applied Fire Resistive Materials* -- Applied by spraying with water in one or more coats to final untamped thickness as shown on the above illustration, to steel surfaces which are free of dirt, loose scale and oil. Adhesive is optional. Tamping is optional. Min avg density of pcf with min ind density of II pcf for Types II or DC/F. Min avg and min ind densities of 22 and 1 pcf, respectively, for Type HP. For method of density determination, refer to Design Information Section. When a trench header is not incorporated in the assembly, the Spray-Applied Fire Resistive Materials need only be applied to the steel beam. I grommets.

Is -- Applied by spraying with water in one or more by the above illustration, to steel surfaces which are by the is optional. Tamping is optional. Min avg density of 13 by the steel of DC/F. Min avg and min ind densities of 22 and 19 to density determination, refer to Design Information or porated in the assembly, the Spray-Applied Fire and to the steel beam.

Min Thkns In. (W8X20) 3/4 1-1/8 1-7/6 Restrained Assembly
Rating Hr
2
2
2 Unrestrained Beam Rating Hr

SOLATEK INTERNATIONA optional -- Types D-C/F or II, Type EBS or Type \times adhesi

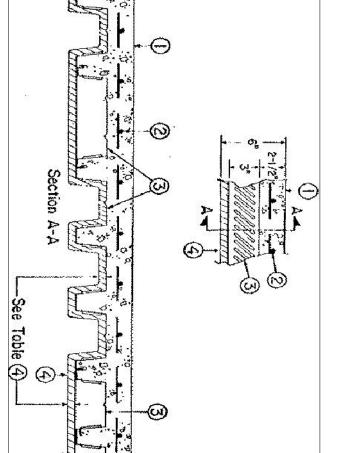
8. Shear-Connector Studs -- Optional Studs to 5 1/4 in. long for 3 in. deep form units, hea Welded to the top flange of beam through

s, 3/4 in. diam by 3 in. long, for 1-1/2 in. deep form units iaded type or equivalent per AISC specifications. the steel form units.

9. Electrical Inserts -- (Not Shown) -- Classified as "Outlet Boxes and Fittings Classified for Fire Resistance".

WALKER SYSTEMS INC -- When FA300 after set electrical inserts are used, no additional thickness of Spray-Applied Fire Resistive Materials material is required beyond that specified for the general floor area. After set insert may be installed on any 1-1/2, 2 or 3 in. deep cellular floor units specified under Item 3, except 12 in. wide units with cell width exceeding 7-1/4 in. Spacing shall be no more than one insert in each 20 sq ft of floor area in each span with inserts spaced no closer than 24 in. O.C.

(Type 325-MI and Type 325-M2 Preset Inserts with Activation Fitting Type X). Installed per accompanying installation instructions over factory punched holes in Type AWC2 or AWC3 floor units. The min thickness of material on the cellular units shall be T/8 in. The holes cut if the insert cover for passage of wires shall be no more than 1/8 in. larger diam than the wire. For abandonment of insert see installation instructions.



Alternate Construction -- Noncomposite units of the same type listed above may be used provided allowable loading is calculated on the basis of noncomposite design.

4. Spray-Applied Fire Resistive Materials* -- Applied by spraying with water in one coat to a final untamped thickness as shown in table below, to steel surfaces which are free of dirt, oil or scale. Use of adhesive is optional. Tamping is optional. Min avg untamped density is 17 pcf with min ind untamped density of 13 pcf for Types II or DC/F. Min avg and min ind untamped densities of 22 and 19 pcf, respectively, for Type HP. For method of density determination, refer to General Information reserving.

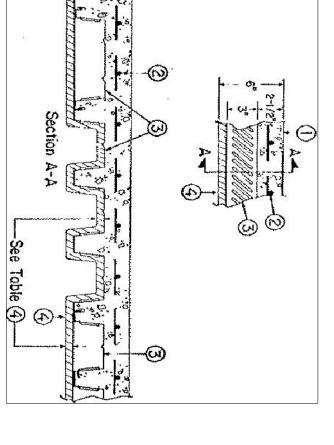
Restrained	Unrestrained	HH	거t.
Assembly	Assembly	Thkns	Thkns
Rating Hr	Rating Hr	Crests	Valley ≰ Flat Plate
ر ا) hr	<u>2</u>	ω/⁄ο Σ

or 11, Type EBS

Design No. X711 November Ø7, 2001 Ratings -- 3/4, 1, 1-1/2, 2, 3 and

Type 351 -- After set Insert)
nstalled per accompanying installation instructions in 4-1/4 in. diam hole core-drilled thru nstalled per accompanying installation instructions in 4-1/4 in. diam hole core-drilled thru soncrete topping, centered over top of cell of Type AWC2 or AWC3 cellular floor unit. Spacing of inserts shall be not more than one insert in each 4 sq. ft. of floor area with not less than 2 ft. OC spacing of adjacent inserts. Required Spray-Applied Fire Resistive Materials thickness of 1/2 in. on cellular floor units with inserts.

Design No. D827 February 06, 1997 Restrained Assembly Ratings -- 2 and 3 Hr. Unrestrained Assembly Ratings -- 2 and 3 Hr.



Sand-Gravel Concrete -- 3000 psi compressive strength, minimum. Let we have the concrete with the concrete in the conformal c

strained Assembly Rating Hr. Unrestrained Assembly Rating Hr. Mtl. Thkns. Crests. Mtl. Thkns. ley & Flat Plate. 2 hr2 hrl/2 in.3/8 in.3 hr3 hrl/2 in.1/2 in.150LATEK INTERNATIONAL -- Types D-C/or II, Type EBS or Type X adhesive/sealer optional.

Rating	Assem	Restr	
÷	<u>6</u>	aine o	
Rating H	Assembly	Unrestrained	
Crests	Thkns	<u> </u>	
Valley ≰ Flat Plate	Thkns	그는 그는	
	g Hr Rating Hr Crests Valley & Flat	nbly Assembly Thkns Thkns Thkns Valley # Flat	ained Unrestrained MtI MtI mbly Assembly Thkns Thkns G Hr Rating Hr Crests Valley & Flat

ISOLATEK INTERNATIONAL -- Types D-C/F, HP
*Bearing the UL Classification Mark

JALKER SYSTEMS INC -- Type FA300 after set electrical insert with suffix PP-C, P-C or T-C service fittings. Type APA-375-C fittings used for abandonment of insert.

JNITED STEEL DECK INC -- For use with 12 or 24 in. wide AWC2 or AWC3 units. Types and fittings as described below. Use of inserts requires spray-applied fire resistive material (Item 7) on cellular units at thicknesses listed below.

(Type 325 preset insert with Activation Fittings Type I, III, V, VI or VII). nstalled per accompanying installation instructions over factory punched holes in Type AWC2 or AWC3 floor units. The min thickness of Spray-Applied Fire Resistive Materials on cellular units with nserts shall be 1-5/8 in.

I. Steel Pipe or Tube Column -- Steel circular pipe with diameter (OD) ranging from a minimum of 3 in. to a maximum of 32 in. with a minimum wall thickness of 3/16 in. Steel square or rectangular tube with outside wall dimensions ranging from a minimum 3 in. to a maximum of 32 in. and a minimum wall thickness of 3/16 in.

The A/P ratio of the steel pipe or tube (see Item 2) shall range from Ø.18 to 2.0.

2. Spray-Applied Fire Resistive Materials* -- Applied by mixing with water and spraying in one or more coats to steel surfaces which must be clean and free of dirt, loose scale and oil. Min avg and ind density of I5/14 pcf respectively. Min avg and min ind density of 2/19 pcf respectively for Types Z-106/G. For method of density determination, see Design Information Section, preceding these designs.

The hourly rating of the structural member is dependent upon the ratio of A/P and the thickness of Spray-Applied Fire Resistive Materials, where A is the cross sectional area of the pipe or tube and P is the heated perimeter.

The A/P ratio of a circular pipe is determined by:

A/P pipe = t (d - t)

the outer diameter of the pipe (in.)
the wall thickness of the pipe (in.)
A/P ratio of a rectangular or square
tube = t (a + b - 2t)

a = the outer width of the tube (in.) b = the outer length of the tube (in.) b = the outer length of the tube (in.) t = the wall thickness of the tube (in.) The thickness of Spray-Applied Fire Resistive Materials for ratings of 3/4, $1 \cdot 1 \cdot 1/2$, 2, 3 and 4 h of a steel pipe or tube can be determined by the equation: h = \mathbb{R} - $\emptyset 2\emptyset$ 4.43 (Δ/\mathbb{P})

R = the hourly rating (hrs).
h = the thickness of Spray-Applied Fire Resistive Materials, minimum 1/4 in, maximum 3-1/8 in.
ARABIAN VERMICULITE INDUSTRIES -- Types MK-5, MK-6/CBF, MK-6/ED, MK-6/HY,
MK-6s, Sonophone 1, Sonophone 5, Z-106, Z-106/G.
GRACE CANADA INC -- Types MK-4, MK-5.
GRACE KOREA INC -- Types MK-6/CBF, MK-6/ED, MK-6/HY, MK-6s, Monokate Acoustic 1,
Monokate Acoustic 5, Z-106, Z-106/G.
PYROK INC -- Type LD.
SOUTHWEST VERMICULITE CO -- Types 4, 5, 5EF, 5GP, 5MD, 8EF, 8GP, 8MD, 9EF, 9GP, 9MD.
VERMICULITE PRODUCTS INC -- Types MK-4, MK-5.
W R GRACE 4 CO - CONN
CONSTRUCTION PRODUCTS DIV -- Types MK-4, MK-5, MK-6/HY, MK-6s, Monokate
Acoustic 1, Monokate Acoustic 5, RG, Z-106, Z-106/G.
*Bearing the UL Classification Mark

sign No. X528 y 29, 2001 tings -- 1, 2 and :

PLUMBING: CRABTREE ENGINEERING 726 S. MT. MORIAH MEMPHIS, TN 38117 (901) 767-9898

726 S. MT. MORIAH MEMPHIS, TN 38117 (901) 767-2557

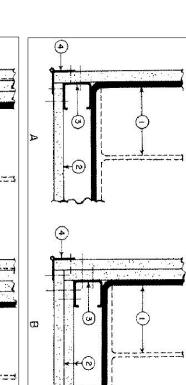
ELECTRICAL: CHS ENGINEERING

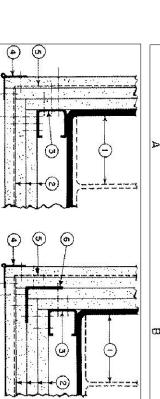
MECHANICAL: CRABTREE ENGINEERING 726 S. MT. MORIAH MEMPHIS, TN 38117 (901) 767-9898

SK INTERNATIONAL, INC. 130 SOUTH MAIN STREET HUNTSVILLE, AL 35811 (256) 852-3098

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. Steel Column -- Min sizes of W-shaped and tubular steel columns which appear in the AISC Steel Construction Manual as shown under Item 2.2. Gypsum Board* -- For 1 Hr rating, any 5/8 in. or 1/2 in. thick gypsum wallboard Classified for use in fire resistance assemblies. For 2 Hr and 3 Hr ratings, any 5/8 in. or 1/2 in. thick gypsum wallboard Classified for use in other 2 Hr, 3 Hr or 4 Hr Column Cesigns. Min total thickness of layers in inches for the various ratings and min column sizes are as called the column of the column column sizes are as called the column column column sizes are as called the column column

CORNER DETAILS OF WALLBOARD SPPORT SYSTEMS WITHOUT STEEL COVERS

200 200 200 200 200 200 200 200 200 200	TS 4 by 4	₩I Ø ×49	d'al×om	W4x13		Size	Min Column
57/8	_	7		_		_	
1-5/8	Tube Shaped Columns] -]/8	1-1/2	1-1/2	Tot:	2	Rating (Hr)
1-5/8 2-1/2	e Shaped (2-1/2	1-1/8	2-1/4	2-1/4	al thicknese	W	
Þ	00 lumns	Þ	m	m	(h.)	₹	Corne
0	0		n			2hr	~
Q	U	O	U	U		3	Various Rating
							Ш

horizontal joints.

See Gypsum Board (CKNX) category for names of manufacturers.

2A. Gypsum Board* -- As an alternate to Item 2 - 3/4 in. thick gypsum mailboard. For 2 Hr rating, 1-1/2 in. total thickness, installed in accordance with corner detail B. For 3 Hr rating, 2-1/4 in. total thickness installed in accordance with corner detail B. For 3 Hr rating, 2-1/4 in. total thickness installed in accordance with corner detail B. For 3 Hr rating, 2-1/4 in. total thickness installed in accordance with corner detail C. Boards are to be applied vertically without horizontal joints.

CANADIAN GYPSUM COMPANY -- Type IP-X3, ULTRACODE, ULTRACODE SHC or ULTRACODE URC.

UNITED STATES GYPSUM CO -- Type IP-X3, ULTRACODE, ULTRACODE SHC or ULTRACODE URC.

3. Steel Stud -- 1-5/8 in. wide with 1-5/16 and 1-1/16 in. legs having a 1/4- in. folded flange, fabricated from No. 25 MSG galv steel. Length to be 1/2 in. less than the assembly height.

3A. As an alternate to Item 3 Steel Framing Members* -- galv. steel clips spaced 4 ft. OC and 1-1/4 in. from top and bottem of column. A No. 28 MSG galv steel support angle with 1-1/4 in. length shall be placed over clips and secured with screws attaching the wallboard. The angle cut 1 in. less than assembly height splices in angle to occur over clips. The clips for use with wide flange columns only.

JOHN WAGNER ASSOCIATE INC, DBA GRABBER -- Types CB, CBIClips.

4. Corner Beads -- No. 28 MSG galv steel, 1-1/4 in. legs to be attached to the wallboard with No. 6 by 1 in. screws and secured 17 in OC max

RABBER -- Types CB, CBIClips.

1. Corner Beads -- No. 28 MSG galv steel, 1-1/4 in. legs to be attached to the wallboard with No. 6 by 1 in. screw.

1. Paced 12 in. OC max.

2. Tie Wire -- No. 18 SWG steel wire spaced 24 in. OC used with second layer of wallboard.

3. Screws -- For attaching first layer of wallboard to steel studs, and third layer of wallboard to 2 in. by 2 in. teel angle (25 Ga) to be No. 6 by 1 in. (or 1-1/4 in. for 3/4 in. thick wallboard) Phillips head self-drilling, elf-tapping double lead screws spaced 24 in. OC For attaching second layer of wallboard to steel studs and ourth layer of wallboard to 2 in. by 2 in. steel angle (25 Ga) to be No. 6 by 1-3/4 in. (or 2-1/4 in. for 3/4 in. thick allboard) steel screws of the same type spaced 12 in. OC For attaching third layer of wallboard to steel studs of be No. 8 by 2-1/4 in. screws of the same type spaced 12 in. OC

3. Finishing System -- (Not Shown) -- Joint compound applied over corner beads to a thickness of 1/16 in. Bearing the Lotassification Mark

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Holday Dru DRAWN BY FILE NAME CHECKED BY SHEET NAME **UL DETAILS** FIRE RATED BOSSIER CITY, LOUISIANA PEL \mathbb{X} 10/26/07

DRAWING

SCALE

1507-UL12

PROJECT NO

NONE