JUPITER MEDICAL CENTER NEIGHBORHOOD HOSPITAL AT AVENIR

PALM BEACH GARDENS, FL













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PALM BEACH GARDENS, FL













ADDRESS: 12955 NORTH LAKE BOULEVARD		
PALM BEACH GARDENS, FLORIDA		
PROPOSED USE: HOSPITAL		
OWNER/CONTACT PERSON: BRANDON WRIGHT		PHONE #615.726.001
II. GOVERNING CODES:		
STATE OF FLORIDA: ■ FLORIDA BUILDING CODE 8TH EDITION (2023) — BUILDING		
 FLORIDA BUILDING CODE 8TH EDITION (2023) – ACCESSIBILITY FLORIDA BUILDING CODE 8TH EDITION (2023) – TEST PROTOCOLS 		
 FLORIDA ELEVATOR & ESCALATOR CODÈ – ASME A17.1/CSA B44 FLORIDA ELEVATOR & ESCALATOR PERFORMANCE—BASED CODE – ASME A17.7/CSA B 	44.7	
FLORIDA BUILDING CODE 8TH EDITION (2023) — MECHANICAL	77./	
 FLORIDA HEALTH CARE FACILITY VENTILATION CODE — 2017 ASHRAE 170 FLORIDA BUILDING CODE 8TH EDITION (2023) — PLUMBING 		
FLORIDA BUILDING CODE 8TH EDITION (2023) — FUEL GAS FLORIDA FIRE SPRINKLER CODE — 2019 NFPA 13		
FLORIDA FIRE STANDPIPE AND HOSE CODE — 2019 NFPA 14 FLORIDA FIRE PUMP INSTALLATION CODE — 2019 NFPA 20		
 FLORIDA BUILDING CODE 8TH EDITION (2023) — ENERGY CONSERVATION IECC. AMENI 	DED	
FLORIDA ELECTRICAL CODE (2023) – 2020 NFPA 70 FLORIDA EMERGENCY AND STANDBY POWER CODE – 2019 NFPA 110 FLORIDA FIRE ALARM AND SIGNALING CODE – 2019 NFPA 72		
• GUIDELINES FOR THE DESIGN AND CONSTRUCTION OF HOSPITALS, 2022 EDITION. • HEALTHCARE FACILITIES CODE — 2021 NFPA 99	~~~ √3\	
FIRE PROTECTION FOR LABORATORIES USING CHEMICALS — 2019 NFPA 45 STANDARD FOR SAFEGUARDING CONSTRUCTION OPERATIONS — 2019 NFPA 241	}	
FLORIDA FIRE PREVENTION CODE 8TH EDITION (2023) - (2021 NFPA 1 & 101 AS A	AMENDED)	
FEDERAL FIRE CODES: FEDERAL FIRE CODES:	0) 1110 1505===	0040 EDITION 55 5
THE FEDERAL GOVERNMENT, THROUGH THE CENTER FOR MEDICARE/MEDICAID SERVICES (CM NFPA 101 LIFE SAFETY CODE (AND ALL NFPA CODES AND STANDARDS AS REFERENCED THI	EREIN) AND THE 2012	NFPA 99 HEALTH CARE
FACILITIES CODE AS MODIFIED BY 42 CFR PARTS 403, 416, AND 418 FOR PURPOSES OF IN THE FEDERAL MEDICARE/MEDICAID PROGRAMS. THESE MODIFICATIONS EXCLUDE ADOPTION	CERTIFICATION OF ALL	FACILITIES PARTICIPATING
13. THEREFORE, ALL PROJÉCTS AND ALL CERTIFIED EXISTING FACILITIES MUST BE IN COMPL FLORIDA STATE FIRE CODES. WHEREVER THE REQUIREMENTS OF FEDERALLY ADOPTED CODES	LIANCE WITH THESE CO S OR STANDARDS DIFFE	DES, AS WELL AS THE ER FROM THOSE ADOPTED
BY THE STATE, THE MORE STRINGENT REQUIREMENT SHALL PREVAIL. SEE THE FEDERAL RUMEDICAID PROGRAMS; FIRE SAFETY REQUIREMENTS FOR CERTAIN HEALTH CARE FACILITIES.		
FLORIDA STATE FIRE CODES (HOSPITALS & NURSING HOMES):		
EFFECTIVE DECEMBER 31, 2023, THE FOLLOWING STATE FIRE CODES ARE ADOPTED BY THE RULE 69A-3.012. THE CODES AND STANDARDS REFERENCED IN THE RULE ARE TO BE USE	D FOR ALL HOSPITAL A	AND NURSING HOME
PROJECTS THAT HAVE NOT RECEIVED A STAGE II PRELIMINARY PLAN OR STAGE III APPROVALLIST OF FIRE CODES AND STANDARDS FOR HOSPITALS AND NURSING HOMES MAY BE FOUN	PRIOR TO DECEMBER	
WWW.FLRULES.ORG/GATEWAY/RULENO.ASP?ID=69A-3.012		
ANY CURRENT, ADDED OR AMENDED LOCAL MUNICIPAL CODES		A 65 5 5
I. USE AND OCCUPANCY	2023 FBC ²	2021NFPA 101
ISTITUTIONAL GROUP I-2	SECT. 308.4	
JEALTH CARE		SECT. 6.1.5
HOSPITAL (29 BED)		
V. CONSTRUCTION TYPE	2023 FBC	2021 NFPA 101
YPE II-A	TABLE 504.3	
YPE II (111)		SECT. 18.1.6.1
4. D. W. D. M. G. M. G. A. D. G.	222 502	(2)
/. BUILDING HEIGHT AND AREA <u>ALLOWED</u> <u>ACTUAL</u>	2023 FBC	2021 NFPA 101
ALLUWED ACTUAL	TADLE FOA A	TABLE 18.1.6.1
	I IABLE 504.4	
	TABLE 504.4	
A. HEIGHT, STORIES: 3 STORIES 2 STORIES	TABLE 504.4	
A. HEIGHT, STORIES: 3 STORIES 2 STORIES		
A. HEIGHT, STORIES: 3 STORIES 2 STORIES 8. HEIGHT, FEET: 85 FT 38 FT C. AREA, SF/FLOOR: 90,000 2 1ST FLOOR 31,974		
A. HEIGHT, STORIES: 3 STORIES 2 STORIES B. HEIGHT, FEET: 85 FT 38 FT C. AREA, SF/FLOOR: 90,000 2 1ST FLOOR 31,974	TABLE 504.3	
A. HEIGHT, STORIES: 3 STORIES 2 STORIES 3. HEIGHT, FEET: 85 FT 38 FT C. AREA, SF/FLOOR: 90,000 22 1ST FLOOR 31,974 2ND FLOOR 21,396	TABLE 504.3 TABLE 506.2	
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A. HEIGHT, STORIES: 3 STORIES 2 STORIES 3. HEIGHT, FEET: 85 FT 38 FT 3. AREA, SF/FLOOR: 90,000 21,396 71. BUILDING PROTECTION	TABLE 504.3 TABLE 506.2	
A. HEIGHT, STORIES: 3 STORIES 2 STORIES B. HEIGHT, FEET: 85 FT 38 FT C. AREA, SF/FLOOR: 90,000 2 1ST FLOOR 31,974 2ND FLOOR 21,396 VI. BUILDING PROTECTION AUTOMATIC SPRINKLER SYSTEM — REQUIRED IN INSTITUTIONAL OCCUPANCY	TABLE 504.3 TABLE 506.2 2023 FBC	2021 NFPA 101
A. HEIGHT, STORIES: 3 STORIES 2 STORIES 3. HEIGHT, FEET: 85 FT 38 FT 3. HEIGHT, FEET: 85 FT 38 FT 2. AREA, SF/FLOOR: 90,000 22 1ST FLOOR 31,974 2ND FLOOR 21,396 71. BUILDING PROTECTION AUTOMATIC SPRINKLER SYSTEM — REQUIRED IN INSTITUTIONAL OCCUPANCY SPECIAL DETAILED REQUIREMENTS BASED ON USE: A. CORRIDOR WALLS:	TABLE 504.3 TABLE 506.2 2023 FBC SECT. 903.2.6	2021 NFPA 101 SECT. 18.3.5.1
A. HEIGHT, STORIES: 3 STORIES 2 STORIES 3. HEIGHT, FEET: 85 FT 38 FT 3. AREA, SF/FLOOR: 90,000 2 1ST FLOOR 31,974 2ND FLOOR 21,396 7. BUILDING PROTECTION AUTOMATIC SPRINKLER SYSTEM — REQUIRED IN INSTITUTIONAL OCCUPANCY SPECIAL DETAILED REQUIREMENTS BASED ON USE: A. CORRIDOR WALLS: 1. SHALL BE CONSTRUCTED AS SMOKE PARTITIONS — DOORS NOT REQ'D TO HAVE CLOSERS	TABLE 504.3 TABLE 506.2 2023 FBC SECT. 903.2.6 SECT. 407.3 SECT. 407.3.1	2021 NFPA 101 SECT. 18.3.5.1 SECT. 18.3.6.2 SECT. 18.3.6.2.3/ 18.3.6.3.11
A. HEIGHT, STORIES: 3 STORIES 2 STORIES 3. HEIGHT, FEET: 85 FT 38 FT 2. AREA, SF/FLOOR: 90,000 2 1ST FLOOR 31,974 2ND FLOOR 21,396 7. BUILDING PROTECTION AUTOMATIC SPRINKLER SYSTEM — REQUIRED IN INSTITUTIONAL OCCUPANCY SPECIAL DETAILED REQUIREMENTS BASED ON USE: A. CORRIDOR WALLS: 1. SHALL BE CONSTRUCTED AS SMOKE PARTITIONS — DOORS NOT REQ'D TO HAVE CLOSERS 3. SMOKE BARRIERS — 1 HOUR FIRE RESISTANCE:	TABLE 504.3 TABLE 506.2 2023 FBC SECT. 903.2.6 SECT. 407.3 SECT. 407.3.1 SECT. 709.3	2021 NFPA 101 SECT. 18.3.5.1 SECT. 18.3.6.2 SECT. 18.3.6.2.3/ 18.3.6.3.11 SECT. 18.3.7.1
A. HEIGHT, STORIES: 3 STORIES 2 STORIES 3. HEIGHT, FEET: 85 FT 38 FT 3. AREA, SF/FLOOR: 90,000 2 1ST FLOOR 31,974 2ND FLOOR 21,396 7. BUILDING PROTECTION AUTOMATIC SPRINKLER SYSTEM — REQUIRED IN INSTITUTIONAL OCCUPANCY SPECIAL DETAILED REQUIREMENTS BASED ON USE: A. CORRIDOR WALLS: 1. SHALL BE CONSTRUCTED AS SMOKE PARTITIONS — DOORS NOT REQ'D TO HAVE CLOSERS 3. SMOKE BARRIERS — 1 HOUR FIRE RESISTANCE: 1. PATIENT SLEEPING AREAS — MINIMUM 2 SMOKE COMPARTMENTS	TABLE 504.3 TABLE 506.2 2023 FBC SECT. 903.2.6 SECT. 407.3 SECT. 407.3.1 SECT. 709.3 SECT. 407.5	SECT. 18.3.6.2 SECT. 18.3.6.2 SECT. 18.3.6.3.11 SECT. 18.3.7.1
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HEIGHT, STORIES: 3 STORIES 2 STORIES 3 HEIGHT, FEET: 85 FT 38 FT 38 FT 2 AREA, SF/FLOOR: 90,000 2 1ST FLOOR 31,974 2ND FLOOR 21,396 7 BUILDING PROTECTION AUTOMATIC SPRINKLER SYSTEM — REQUIRED IN INSTITUTIONAL OCCUPANCY PECIAL DETAILED REQUIREMENTS BASED ON USE: A CORRIDOR WALLS: 1 SHALL BE CONSTRUCTED AS SMOKE PARTITIONS — DOORS NOT REQ'D TO HAVE CLOSERS 3 SMOKE BARRIERS — 1 HOUR FIRE RESISTANCE: 1 PATIENT SLEEPING AREAS — MINIMUM 2 SMOKE COMPARTMENTS 2 AREA OF SMOKE COMPARTMENT NOT TO EXCEED 22,500 SF 3 EXIT ACCESS TRAVEL DISTANCE WITHIN SMOKE COMPARTMENT = 200 FT MAX.	TABLE 504.3 TABLE 506.2 2023 FBC SECT. 903.2.6 SECT. 407.3 SECT. 407.3.1 SECT. 709.3 SECT. 407.5 SECT. 407.5 SECT. 407.5 SECT. 407.5 SECT. 407.5	SECT. 18.3.6.2 SECT. 18.3.6.2 SECT. 18.3.6.2.3/ 18.3.6.3.11 SECT. 18.3.7.1(1) SECT. 18.3.7.1(1) SECT. 18.3.7.1.(5)
HEIGHT, STORIES: 3 STORIES 2 STORIES 3 HEIGHT, FEET: 85 FT 38 FT 38 FT 1 AREA, SF/FLOOR: 90,000 2 1ST FLOOR 31,974 2ND FLOOR 21,396 4 EVALUATION STORIES BASED ON USE: A CORRIDOR WALLS: 1 SHALL BE CONSTRUCTED AS SMOKE PARTITIONS — DOORS NOT REQ'D TO HAVE CLOSERS 3 SMOKE BARRIERS — 1 HOUR FIRE RESISTANCE: 1 PATIENT SLEEPING AREAS — MINIMUM 2 SMOKE COMPARTMENTS 2 AREA OF SMOKE COMPARTMENT NOT TO EXCEED 22,500 SF 3 EXIT ACCESS TRAVEL DISTANCE WITHIN SMOKE COMPARTMENT = 200 FT MAX. 4 PROVIDE 30 NSF OF REFUGE PER PATIENT ON EACH SIDE OF SMOKE BARRIER	TABLE 504.3 TABLE 506.2 2023 FBC SECT. 903.2.6 SECT. 407.3 SECT. 407.3.1 SECT. 709.3 SECT. 407.5 SECT. 407.5 SECT. 407.5 SECT. 407.5 SECT. 407.5	2021 NFPA 101 SECT. 18.3.5.1 SECT. 18.3.6.2 SECT. 18.3.6.2.3/ 18.3.6.3.11 SECT. 18.3.7.1 SECT. 18.3.7.1(1) SECT. 18.3.7.1.(5) SECT. 18.2.2.5.1.1
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HEIGHT, STORIES: 3 STORIES 2 STORIES 3 HEIGHT, FEET: 85 FT 38 FT 3 AREA, SF/FLOOR: 90,000 1 IST FLOOR 31,974 2 ND FLOOR 21,396 7 I. BUILDING PROTECTION AUTOMATIC SPRINKLER SYSTEM — REQUIRED IN INSTITUTIONAL OCCUPANCY PECIAL DETAILED REQUIREMENTS BASED ON USE: A. CORRIDOR WALLS: 1. SHALL BE CONSTRUCTED AS SMOKE PARTITIONS — DOORS NOT REQ'D TO HAVE CLOSERS 3. SMOKE BARRIERS — 1 HOUR FIRE RESISTANCE: 1. PATIENT SLEEPING AREAS — MINIMUM 2 SMOKE COMPARTMENTS 2. AREA OF SMOKE COMPARTMENT NOT TO EXCEED 22,500 SF 3. EXIT ACCESS TRAVEL DISTANCE WITHIN SMOKE COMPARTMENT = 200 FT MAX. 4. PROVIDE 30 NSF OF REFUGE PER PATIENT ON EACH SIDE OF SMOKE BARRIER 5. PROVIDE 6 SF OF REFUGE PER AMBULATORY PATIENT ON EACH SIDE OF SMOKE BARRIER 6. INDEPENDENT EGRESS — EXIT W/O RETURN TO S.C. OF POINT OF EGRESS ORIGIN	TABLE 504.3 TABLE 504.3 TABLE 506.2 2023 FBC SECT. 903.2.6 SECT. 407.3 SECT. 407.3.1 SECT. 709.3 SECT. 407.5 SECT. 407.5 SECT. 407.5 SECT. 407.5 SECT. 407.5.1,1 SECT. 407.5.1,2 SECT. 407.5.2	2021 NFPA 101 SECT. 18.3.5.1 SECT. 18.3.6.2 SECT. 18.3.6.2.3/ 18.3.6.3.11 SECT. 18.3.7.1 SECT. 18.3.7.1(1) SECT. 18.3.7.1.(5) SECT. 18.2.2.5.1.1
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11. EXIT SERVING 2 DIRECTION - 6'-0" MIN. CORRIDOR DOUBLE DOOR 32" MIN. DR. LEAF

SECT. 1010.1.1

SECT. 18.2.2.5.5

VI. BUILDING PROTECTION — CONT'D		2023 FBC 	2021 NFPA 2
EIDE DECICTANCE DATING DECLIIDEMENTS:			
FIRE RESISTANCE RATING REQUIREMENTS: A. STRUCTURAL FRAME:			
STRUCTURAL FRAME.	1 HOUR	TABLE 601	TABLE 4.1.1
STRUCTURAL FRAME — ROOF ONLY	1 HOUR	TABLE 601(b)	TABLE 4.1.1
		MBEE COT(B)	77.522 77.77
B. BEARING WALLS:			
INTERIOR	1 HOUR	TABLE 601	TABLE 4.1.1
EXTERIOR	1 HOUR	TABLE 601	TABLE 4.1.1
C. NON-BEARING WALLS:			
INTERIOR	0 HOUR	TABLE 601	TABLE 4.1.1
EXTERIOR: 10FT < FIRE SEPARATION DISTANCE < 30 FT	1 HOUR	TABLE 705.5	TABLE 4.1.1
EXTERIOR: FIRE SEPARATION DISTANCE ≥ 30 FT	0 HOUR	TABLE 705.5	TABLE 4.1.1
D. FLOOR CONSTRUCTION:	1 HOUR	TABLE 601	TABLE 4.1.1
2021) NFPA 101	SMOKE BARRIER	TABLE COA	SECT. 8.6.1(1)
E. ROOF CONSTRUCTION:	1 HOUR	TABLE 601	TABLE 4.1.1
			2021 NFPA 1
F. CORRIDOR 0 HOL	JR/SMOKE PARTITION *	TABLE 1020.2 /	SECT. 18.3.6.2.2
CORR. DOORS SHALL NOT BE REQ'D TO BE SELF-CLOSING BUT SHALL	,	SECT 407.3.1	SECT. 18.3.6.2.3
SOURCE OF THE THOU DE THE DE DE SELI - OLOSINO DOI SHALL	L DE TOOMING.		
G. SHAFT ENCLOSURE 1 HOUR	R (EQUAL TO FLOOR)	SECT. 713.4	
1. ELEVATOR LOBBY: 2 STORY — NOT REQUIRED		SECT. 3006.2	
2. ELEVATOR CAR TO ACCOMMODATE STRETCHER: 2ND STORY @	16 FT - PROVIDED	SECT. 3002.4	
2A. ELEVATOR CAR TO ACCOMMODATE STRETCHER: 24"x76" MIN.	./3" STAR OF LIFE	SECT. 3002.4	
3. ELEVATOR HOISTWAY TO BE PRESSURIZED		SECT. 3006.3,4	
4. ELEVATOR OPENING PROTECTIVE: 2 STORY - NOT REQUIRED		SECT. 3006.2	
5. ELEVATOR MACHINE ROOM/SPACE: RATING EQUAL TO SHAFT		SECT. 3005.4	
6. ELEVATOR MACHINE ROOM VENTILATION: INDEPENDENT DESIGN	NATED SYSTEM	SECT. 3005.2	
	OUR (EQUAL TO FLOOR)	SECT. 1011/1023.2	SECT. 7.1.3.2.1
EXTERIOR WALL:	4 110115 111/111 40 57	,	0507 70050
1. ANGLE LESS THAN 180 DEGREES FROM NON-RATED WALL	1 HOUR W/IN 10 FI	SECT. 1027.6/1023.7	SECT. 7.2.2.5.2.
I. INCIDENTAL USE AREAS:		T 509.1/S 509.1	T 18.3.2.1
	TO SPRINKLER SYSTEM	T 509.17	NFPA 99 SECT. 10.
LAUNDRY ROOMS OVER 100 SF	1 HOUR	T 509.1	SECT. 18.3.2.1.2(2
PHYSICAL PLANT MAINTENENCE SHOP	1 HOUR	T 509.1	SECT. 18.3.2.1.2(
WASTE/TRASH COLLECTION ROOMS OVER 100 SF	1 HOUR	T 509.1	SECT. 18.3.2.1.2(
LINEN COLLECTION ROOMS OVER 100 SF	1 HOUR	T 509.1	SECT. 18.3.2.1.2(
STORAGE ROOMS OVER 100 SF	1 HOUR	T 509.1	SECT. 18.3.2.1.2(
STORAGE ROOMS OVER 50 SF & UNDER 100 SF	SMOKE PARTITION		SECT. 18.3.2.1.3(2
			}
BOILER AND FUEL-FIRED HEATER ROOM	1 HOUR	T 509.1	SECT. 18.3.2.1.2(
ELECTRICAL ROOM (OVER 112.5 KVA ONLY)	1 HOUR	NEC 450.21 (A & B)	
ELECTRICAL ROOM (EMERGENCY SYSTEMS)	1 HOUR	NEC 700.9 (D)(2)	CFCT 10 7 /
MED GAS ROOM	1 HOUR MINIMUM		SECT. 18.3.2 NFPA 99 S-5.1.3.3
	W/ AMOUNT OF STOR.)		NFPA 99 SECT. 1
KITCHEN AREAS	1 HOUR		SECT. 18.3.2.5.1/9. NFPA 96
J. DOOR AND SHUTTER PROTECTION RATINGS		TABLE 716.5	TABLE 8.3.3.2.2
1 HOUR FIRE BARRIER IN SHAFT, 1 HOUR	R DOOR	140FF \ 10.9	INDLL 0.3.3.2.2
EXIT ENCLOSURE, AND EXIT PASSAGE	. 23011		
	DUR DOOR		
1 HOUR FIRE PARTITION IN CORRIDOR WALL 20 MIN			
	OUR DOOR		
1 HOUR SMOKE BARRIER 20 MIN			
K. LIMITING SIZES OF GLASS PANELS		TABLE 716.6	TABLE 8.3.3.2.2 NFPA 80
1 HOUR FIRE PROTECTION RATING AREA –	- 100 SQ. IN.		
MAX. HI	EIGHT – 33 IN.		
	IDTH – 10 IN.		
MAX. W			I
	- 1,296 SQ. IN.		
3/4 HOUR FIRE PROTECTION RATING AREA –	- 1,296 SQ. IN. EIGHT — 54 IN.		
3/4 HOUR FIRE PROTECTION RATING AREA — MAX. HE	·		

VII. BUILDING EGRESS A. EGRESS WIDTH PER OCCUPANT SERVED — INSTITUTIONAL I—2 — SPRINKLER SYSTEM	2023 FBC TABLE 1005.3	2021 NFPA 10 TABLE 7.3.3
1. STAIRWAYS = 0.3 INCHES PER OCCUPANT	TABLE 1005.3.1	TABLE 7.3.3.1
2. OTHER EGRESS COMPONENTS = 0.2 INCHES PER OCCUPANT	TABLE 1005.3.2	TABLE 7.3.3.1
B. ACCESSIBLE MEANS OF EGRESS — 2 MINIMUM 2023 FBC ACCESS	SECT. 1009.1	SECT. 7.2.12.3.4
AREA OF REFUGE TO BE PROVIDED ON EITHER SIDE OF 1HR FIRE SMOKE BARRIER	SECT. 1009.6.2	0201. 7.2.12.0.1
C. MEANS OF EGRESS		
1. DOORS TO BE 32" CLEAR MINIMUM, 48" MAXIMUM	SECT. 1010.1.1	SECT. 7.2.1.2.3.2
2. I-2 OCCUPANCY FOR MOVEMENT OF BEDS TO BE 41.5" CLEAR & 80" MIN. HEIGHT	SECT. 1010.1.1	SECT. 18.2.3.6(1)
(INCLUD'G SLEEPING, DIAGNOSTIC & TREATMENT AREAS, PHYSICAL THERAPY)		
3. SWING IN THE DIRECTION OF TRAVEL SERVING SPACES OF 50 OR MORE OCCUPANTS	SECT. 1010.1.2.1	SECT. 7.2.1.4.2(1)
4. HORIZONTAL EXIT - MAXIMUM 2/3 OF REQUIRED EXITS WITH I-2	SECT. 1026.1,E1	
D. STAIRWAY		
1. 44" MINIMUM WIDTH	SECT. 1011.2	TABLE 7.2.2.2.1.2(B)
48" MINIMUM IF ACCESSIBLE 2023 FBC ACCESS		SECT. 7.2.12.3
2. MINIMUM HEADROOM — 6'-8"	SECT. 1011.3	TABLE 7.2.2.2.1.1(d
3. RISER HEIGHTS = 7" MAX. & 4" MIN., TREAD DEPTH = 11" MIN.	SECT. 1011.5.2	TABLE 7.2.2.2.1.1(d
4. DIMENSIONAL UNIFORMITY = 3/8" DIFF. IN LARGEST & SMALLEST RISER HEIGHTS	SECT. 1011.5.4	TABLE 7.2.2.3.6.2
E. EXIT ACCESS		
1. I-2, HABITABLE ROOMS - DIRECT ACCESS TO A CORRIDOR	SECT. 407.4.1	SECT. 18.2.5.6.1
2. TRAVEL DIST. BETWEEN ANY POINT & EXIT ACCESS DOOR IN ROOM - 50 FT.	SECT. 407.4.2	SECT. 18.2.6.2.3
3. CORRIDOR ACCESS: DIRECT EGRESS & TRAVEL DISTANCE - 100 FT. MAX.	SECT. 407.4.4.3	
4. SUITES OF ROOMS OTHER THAN SLEEPING NOT TO EXCEED 12,500 S.F.	SECT. 407.4.4.6.1,E	SECT. 18.2.5.7.3.2(
5. TRAVEL DISTANCE W/IN SMOKE COMPARTMENT TO SMOKE BARRIER DOOR - 200 FT.	SECT. 407.5	SECT. 18.2.5.7.3.3(
6. TRAVEL DISTANCE FROM MOST REMOTE POINT TO AN EXIT — 200 FT.	TABLE 1017.2	SECT. 18.2.6.2.1
7. COMMON PATH OF EGRESS TRAVEL NOT TO EXCEED 75 FT. W/SPRINKLER	TABLE 1006.2.1	SECT. 18.2.5.2
8. LOCATE 2 EXITS NOT LESS THAN 1/3 LENGTH OF MAX OVERALL DIAGONAL DIM.	SECT. 1007.1.1,E2	SECT. 7.5.1.3.3
9. BOILER, INCINERATOR, FURNACE ROOMS OVER 500 S.F.	SECT. 1006.2.2.1	
2 EXIT ACCESS DOORS — SEPARATED 1/2 LENGTH OF DIAGONAL		
F. CORRIDORS		
1. WIDTH — 72" FOR AMBULATORY PATIENTS RECEIVING OUTPATIENT MEDICAL CARE	T 1020.3	
2. WIDTH — 96" IN GROUP I—2 WHERE REQUIRED FOR BED MOVEMENT	T 1020.3	CEOT. 40.0.7.4
3. EXIT ACCESS CORRIDORS — 96",	······································	SECT. 18.2.3.4 (1)
4. DEAD ENDS — 20 FT.	SECT. 1020.5	SECT. 18.2.5.2
5. ACCESSIBLE ROUTES: PROTRUDING OBJECTS	SECT. 1020.3	NOT LISTED
(27" A.F.F. < LEADING EDGE RANGE > 80" A.F.F.) SHALL NOT REDUCE MIN. CLEAR WIDTH	SECT. 1003.3.4	NOT LISTED
6. HORIZONTAL PROJECTION ALLOWANCE: 4" MAX. INTO CIRCULATION PATH	SECT. 1003.3.3	NOT LISTED
7. PORTABLE FIRE EXTINDUISHERS	SECT. 906	SECT. 18.3.5.12
		<u> </u>
/III. OCCUPANT LOAD	2023 FBC	2021 NFPA 10
TOTAL OCCUPANCY LOAD FIRST FLOOR: (5) (281) PEOPLE	TABLE 1004.5	TABLE 7.3.1.2
INSTITUTIONAL — INPATIENT TREATMENTS AREAS (12,323 SF/240 GROSS) 51 OCC.	<u>}</u>	
KITCHENS, COMMERCIAL (1,088 SF/100 GROSS) 11 OCC. 72 OCC	 	
BUSINESS AREAS (10,779 SF/150 GROSS) 72 OCC. ASSEMBLY W/O FIXED SEATS — UNCONCENTRATED (1.731 SF/15 NET) 116 OCC.	 	
	<u> </u>	
LOCKER ROOMS (651 SF/50 GROSS) 13 OCC. ACCESSORY STORAGE/MECHANICAL (5,402 SF/300 GROSS) 18 OCC.	l i	
EXIT UNITS PROVIDED FIRST FLOOR: 2,292 PEOPLE	<u> </u>	
TOTAL OCCUPANCY LOAD SECOND FLOOR: 204 PEOPLE	<u> }</u>	
INSTITUTIONAL — INPATIENT TREATMENTS AREAS (3,349 SF/240 GROSS) 14 OCC.	<u> }</u>	
INSTITUTIONAL - INPATIENT TREATMENTS AREAS (3,349 SF/240 GROSS) 14 OCC. INSTITUTIONAL - SLEEPING AREAS (11,603 SF/120 GROSS) 97 OCC.	ļ{	
BUSINESS AREAS (4,884 SF/150 GROSS) 37 OCC.	<u> {</u>	
	<u> </u>	
ASSEMBLY W/O FIXED SEATS - UNCONCENTRATED (845 SF/15 NET) 57 OCC.	15	
ASSEMBLY W/O FIXED SEATS — UNCONCENTRATED (845 SF/15 NET) 57 OCC. ACCESSORY STORAGE/MECHANICAL (715 SF/300 GROSS) 3 OCC.	}	

Lumina de la constanta de la c

1. SEPARATE PERMITS ARE REQUIRED FOR THE PROPOSED ACCESS CONTROL SYSTEM, FIRE ALARM SYSTEM, FIRE SPRINKLER SYSTEM, GENERATOR, AND POTENTIAL BDA

2. BUILDING ADDRESS NUMBERS SHALL BE BETWEEN 8"-12" HIGH AND CONTRASTING

WITH THEIR BACKGROUND.

DESCRIPTION

CCD #001

CCD #004

SNOISIAN

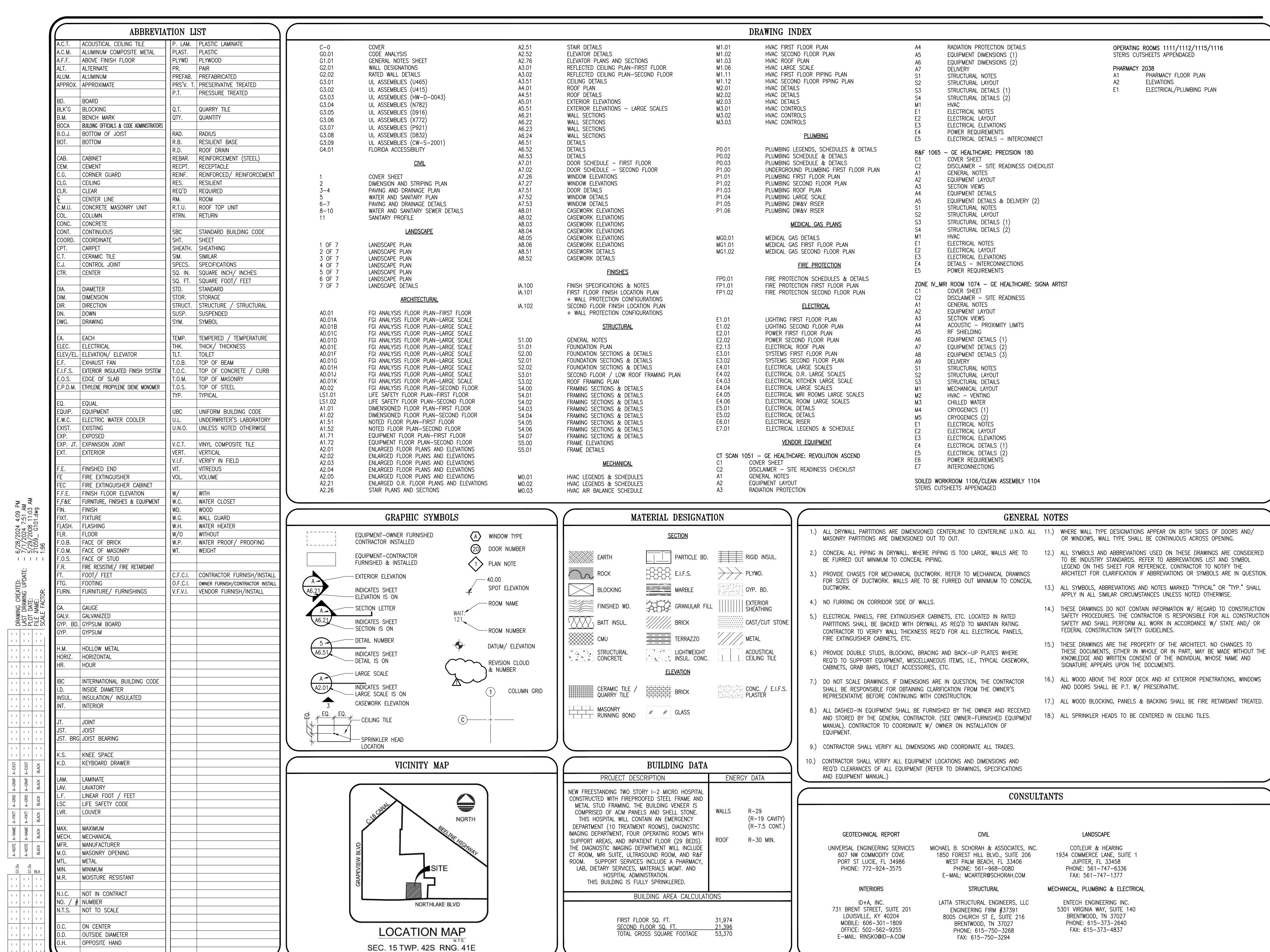
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NO. DATE DESCRIPTION
2 10.04.24 CCD #001
3 11.07.24 CCD #002
5 01.08.25 CCD #004

CODE ANALYSIS

G0.0′

ISSUE DATE: JOB NUMBER 07.24.24 21059





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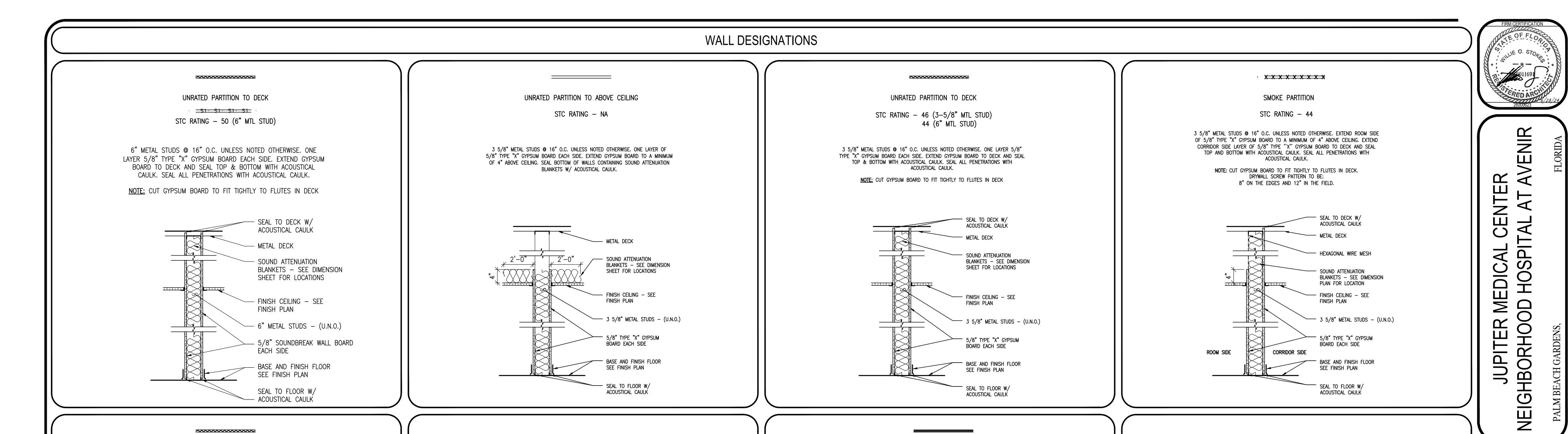
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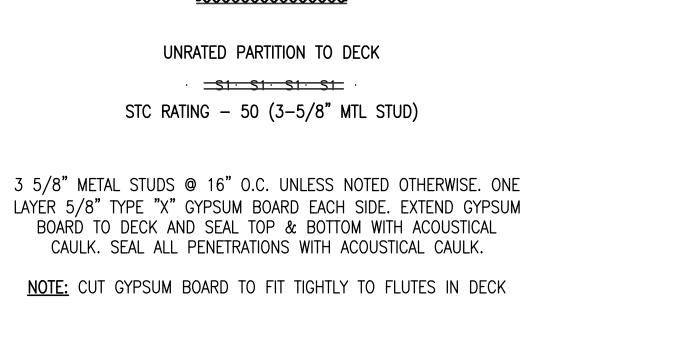
REVISIONS

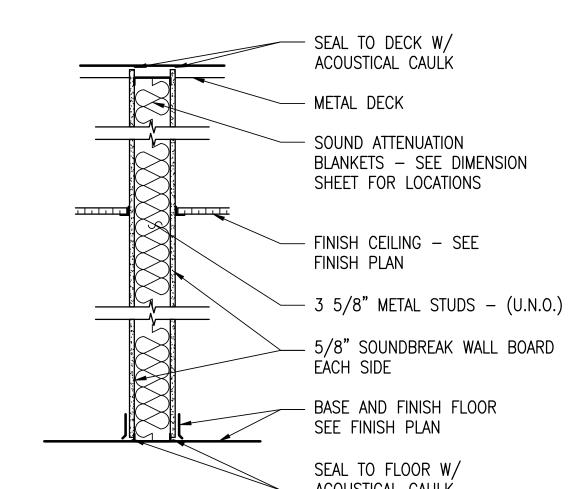
GENERAL NOTES

G1.01

ISSUE DATE: JOB NUMBER 06.28.24 21059





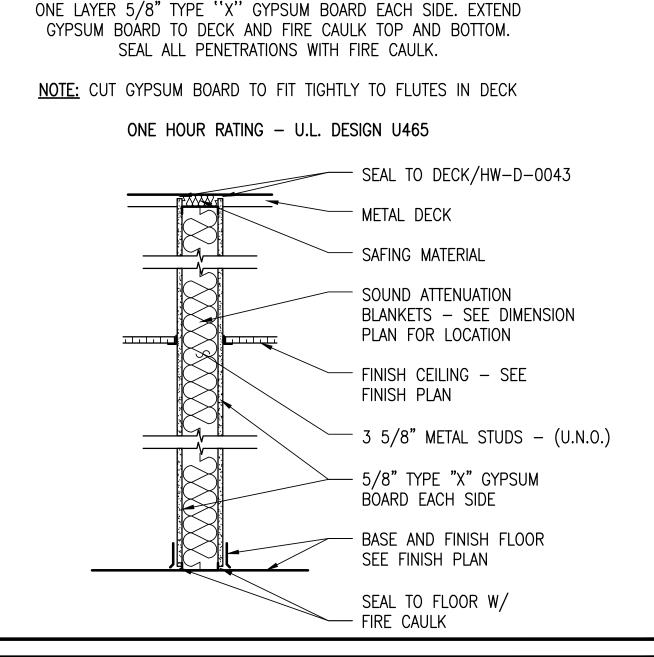


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6/14/2024 6/20/2024 7/1/2024 21059___G2C

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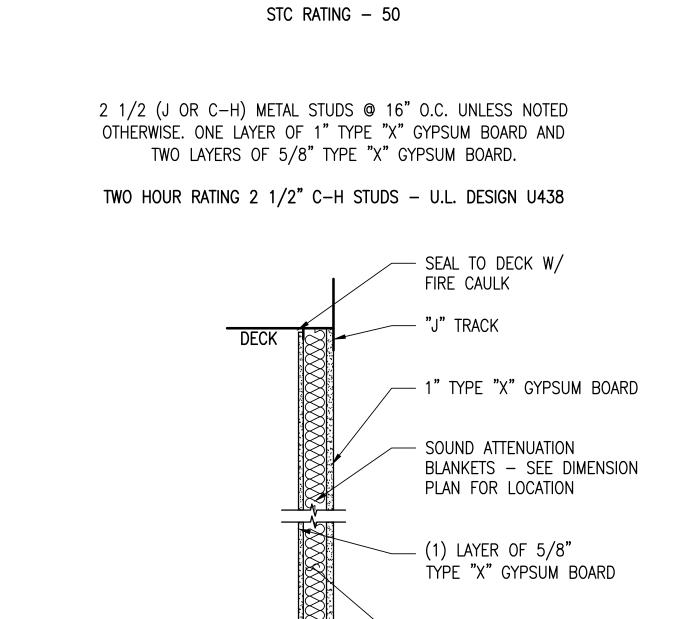
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ONE HOUR FIRE - SMOKE BARRIER

STC RATING -46 (3-5/8" MTL STUD)

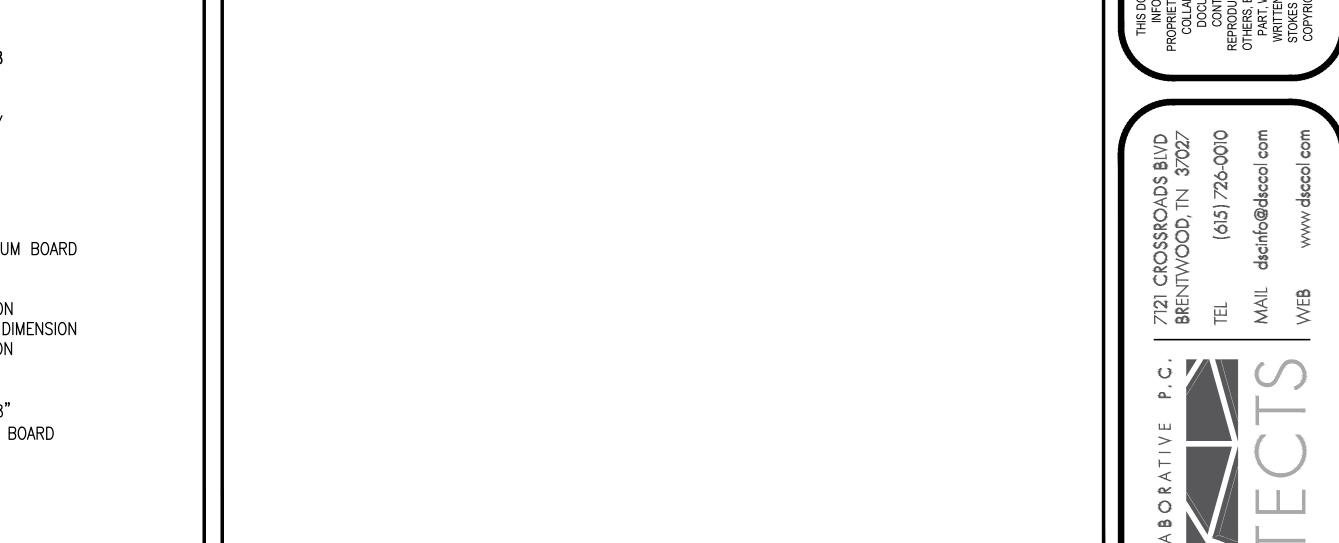
3 5/8" METAL STUDS @ 16" O.C. UNLESS NOTED OTHERWISE.

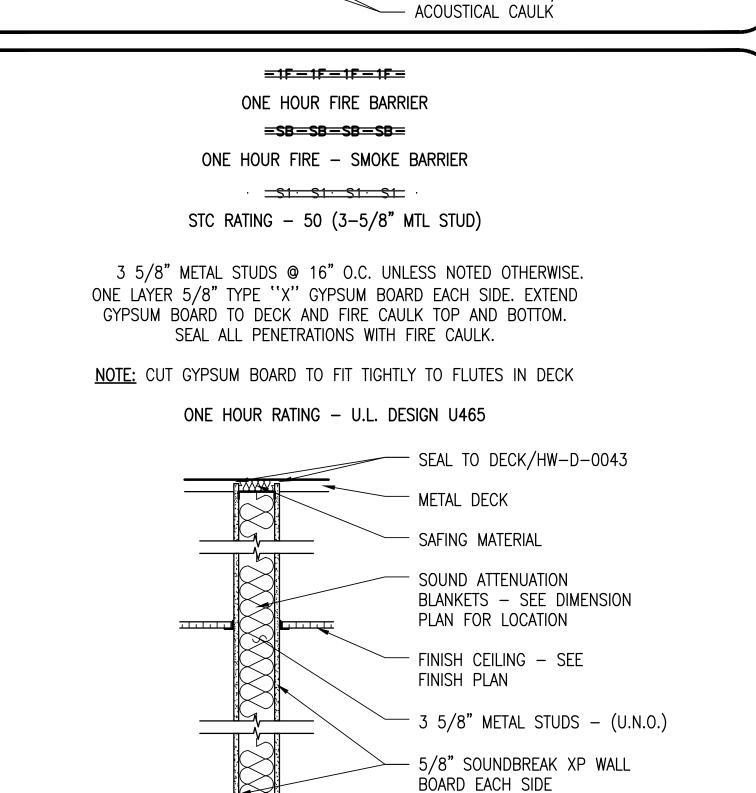
44 (6" MTL STUD)



"C-H" STUDS

1 HR - SHAFT BARRIER



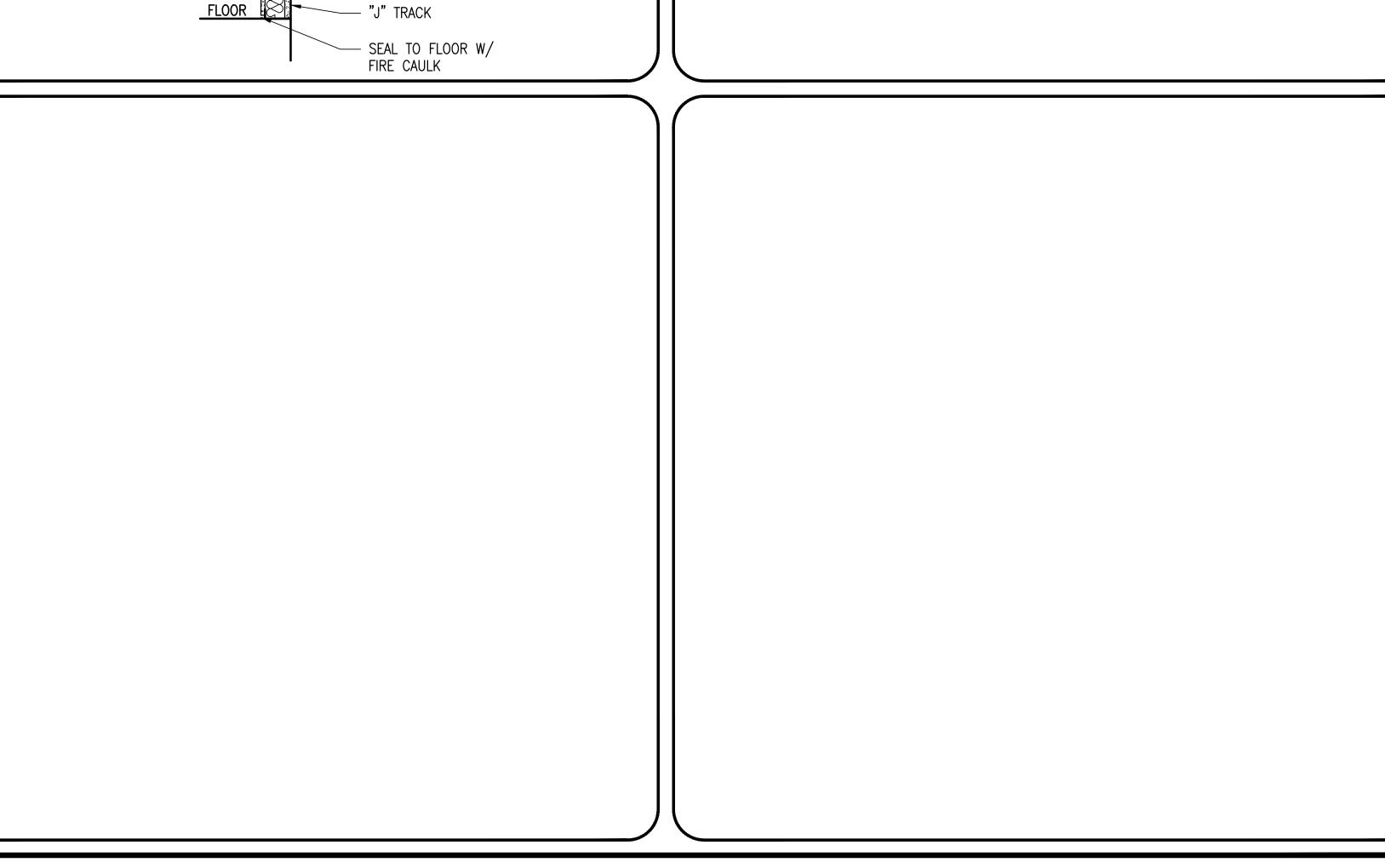


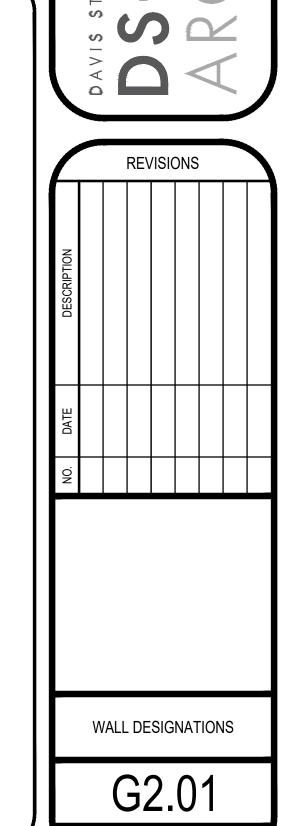
BASE AND FINISH FLOOR

SEE FINISH PLAN

— FIRE CAULK

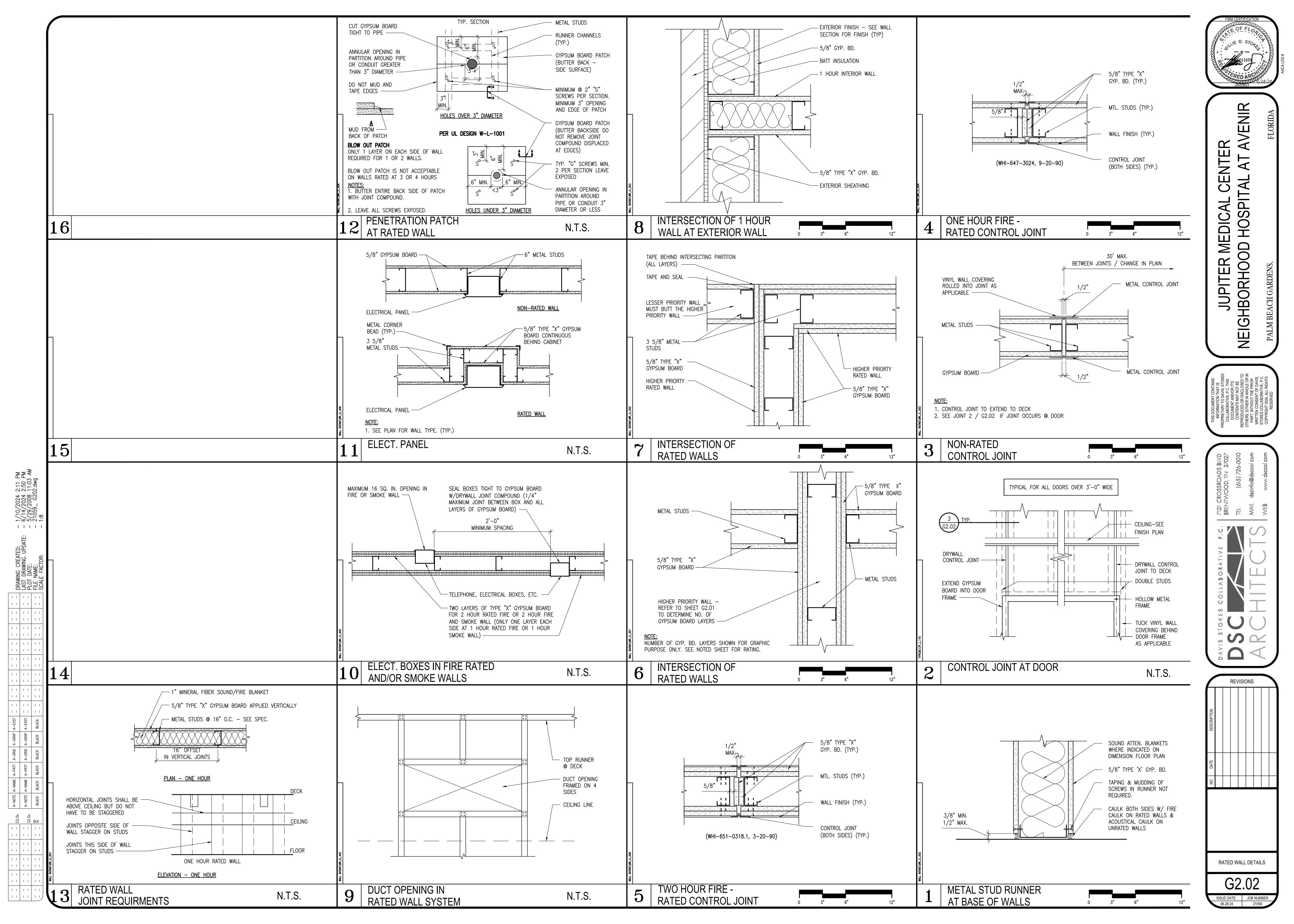
SEAL TO FLOOR W/





 ISSUE DATE:
 JOB NUMBER

 06.28.24
 21059



=1F=1F=1F= ONE HOUR FIRE BARRIER =SB=SB=SB= ONE HOUR FIRE - SMOKE BARRIER

Design No. **U465**

March 15, 2024

Nonbearing Wall Rating — 1 HR. * Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada),

1. Floor and Ceiling Runners — (Not Shown) — Channel shaped runners, 3-5/8 in. deep (min), 1-1/4 in. legs, formed from min No. 25 MSG galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

1A. Framing Members* — Floor and Ceiling Runners — (Not Shown) — As an alternate to Item 1 — Channel shaped, min 3-5/8 in, deep, attached to floor and ceiling with fasteners 24 in. OC. max. ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME D24/30EQD and Type

SUPREME D20 CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV — Type SUPREME D24/30EQD and Type SUPREME D20

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME D24/30EQD and Type SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME D24/30EQD and

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME D24/30EQD and Type TELLING INDUSTRIES L L C — Type SUPREME D24/30EQD and Type SUPREME D20 UNITED METAL PRODUCTS INC — Type SUPREME D24/30EQD and Type

1B. Framing Members* — Floor and Ceiling Runners — Not Shown — In lieu of Item 1 — For use with Item 2B, proprietary channel shaped runners, 1-1/4 in. wide by min 3-5/8 in. deep fabricated from min 0.020 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

CEMCO, LLC — Viper20™ Track MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™ Track IMPERIAL MANUFACTURING GROUP INC — Viper20™ Track

 Floor and Ceiling Runners — (Not Shown) — For use with Item 2C — Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, min depth to accommodate stud size, with min 1 in. long legs, attached to floor and ceiling with fasteners spaced max 24 in. OC

Items 1 through 1C — For use with Item 2D and 4G only, proprietary channel shaped UNITED METAL PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME runners, 1-1/4 in. deep by min 3-5/8 in. wide fabricated from min 0.018 in. thick galv D20 steel, attached to floor and ceiling with fasteners spaced 24 in. OC max. CLARKDIETRICH BUILDING SYSTEMS — CD ProTRAK

DMFCWBS L L C — ProTRAK MBA METAL FRAMING — ProTRAK RAM SALES L L C — Ram ProTRAK

Type SUPREME D20

SUPREME D20

1E. Framing Members* — Floor and Ceiling Runners — Not Shown — In lieu of Items 1 through 1D — For use with Item 2E and 4I only, proprietary channel shaped runners, 1-1/4 in. deep by min 3-5/8 in. wide fabricated from min 0.018 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max. TELLING INDUSTRIES L L C — TRUE-TRACK™

F. Framing Members* — Floor and Ceiling Runners — Not Shown — In lieu of Items 1 through 1E — For use with Item 2, channel shaped runners, 1-1/4 in. deep by min 3-5/8 in. wide fabricated from min 25 MSG steel, attached to floor and ceiling with fasteners spaced 24 in. OC max. KIRII (HONG KONG) LTD — Type KIRII

IG. Framing Members* — Floor and Ceiling Runners — Not Shown — In lieu of Items 1 through 1F — For use with Item 2, channel shaped runners, 1-1/4 in. deep by min 3-5/8 in. wide, attached to floor and ceiling with fasteners spaced 24 in. OC

STEEL STRUCTURAL PRODUCTS L L C — Tri-S ProTRAK

STUDCO BUILDING SYSTEMS — CROCSTUD Track

IH. Floor and Ceiling Runners — (Not Shown) — Channel shaped, fabricated from min 0.02 in. galv steel, min width to accommodate stud size, with min 1 in. long legs, 2E. Framing Members* — Steel Studs — As an alternate to Items 2 through 2D for use with studs specified below and fabricated from min 0.02 in. galv steel or thicker, attached to floor and ceiling with fasteners spaced max 24 in. OC. MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™ Track VT100 IMPERIAL MANUFACTURING GROUP INC — Viper20™ Track VT100

 Framing Members* — Floor and Ceiling Runners — Not Shown — In lieu of Item 1 — For use with Item 2H, proprietary channel shaped runners, 1-1/4 in. wide by min 3-5/8 in. deep fabricated from min 0.020 in. thick galv steel, attached to floor MSG steel, spaced a max of 24 in. OC. Studs to be cut 1/2 in. less than assembly and ceiling with fasteners spaced 24 in. OC max.

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™ Track IJ. Framing Members* — Floor and Ceiling Runners — Not Shown — In lieu of by min 3-5/8 in. wide fabricated from min 0.018 in. thick galv steel, attached to floor

Studs to be cut 1/2 in. less than the assembly height.

and ceiling with fasteners spaced 24 in. OC max. RESCUE METAL FRAMING, L L C — AlphaTRAK

IK. Framing Members* — Floor and Ceiling Runners — Not Shown — In lieu of Item 1 — For use with Item 2M, proprietary channel shaped runners, 1-1/4 in. wide by min 3-5/8 in. deep, fabricated from min 25 MSG (0.018 in. min. bare metal thickness), attached to floor and ceiling with fasteners spaced 24 in. OC max.

CEMCO, LLC — Viper X Track IL. Framing Members* — Floor and Ceiling Runners — Not Shown — In lieu of by min 3-5/8 in. deep fabricated from min 0.020 in. thick galv steel, attached to floor **EB METAL INC** — NITROSTUD and ceiling with fasteners spaced 24 in. OC max. CRACO MFG INC — SmartTrack20™

1M. Framing Members* - Floor and Ceiling Runners - Not shown - In lieu of Items 1 through 1L – For use with Item 2O, proprietary channel shaped runners, min 1-1/4 in. OLMAR SUPPLY INC — PRIMESTUD wide by min 3-5/8 in. deep fabricated from min 20 MSG galv steel (0.0329 in. min bare metal thickness), attached to floor and ceiling with fasteners spaced 24 in. OC max. PANEL REY S A - SUPRA Track 20/33 mil

1N. Framing Members* — Floor and Ceiling Runner — Not Shown — In lieu of Item 1 – For use with Item 2P, proprietary channel shaped runners, 1-1/4 in. wide by min. 3- MARINO/WARE, DIV OF WARE INDUSTRIES INC — StudRite™ 5/8 in. deep fabricated from min 0.019 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max. PANEL REY S A – SUPRA Track 20EQ/19 mil

10. Framing Members* — Floor and Ceiling Runner — (Not Shown — Alternate to Item 1) — For use with Item 2Q, channel shaped runners pre-equipped with proprietary attachment clips. Min. 3-5/8 in. wide. Legs of top runners minimum 3-1/4 2M. Framing Members* — Steel Studs — Not Shown — In lieu of Item 2 — For use in. wide. Legs of bottom runners minimum 1-1/2 in. wide. Runners attached to floor with Item 1K, proprietary channel shaped steel studs, min 1-1/4 in. wide by min 3-5/8 and ceiling with fasteners 24 in. OC max. **HYPERFRAME INC** - Hypertrack

1P. Framing Members* — Floor and Ceiling Runner — Not Shown — In lieu of Item 5/8 in. deep fabricated from min. 20 EQ/22 mils. (min. 0.0221 in. thick) galvanized steel, attached to floor and ceiling with fasteners spaced 24 in. OC max. **JJC INTERNATIONAL DISTRIBUTORS** — Non-structural Tracks 3-5/8" and 6".

1Q. Framing Members* — Floor and Ceiling Runners — Not Shown — In lieu of Items 1 — _For use with Item 2R, proprietary channel shaped runners, 1-1/4 in. deep by min 3-5/8 in. wide fabricated from min 0.018 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max. IRONLINE METALS LLC — Bantam Track.

2. Steel Studs — Channel shaped, 3-5/8 in. deep (min), formed from min No. 25 MSG PANEL REY S A – SUPRA Stud 20/33 mil galv steel spaced 24 in. OC max. Studs to be cut 3/4 in. less than assembly height.

2A. Framing Members* — Steel Studs — As an alternate to Item 2 — Channel shaped studs, min 3-5/8 in. deep, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height **ALLSTEEL & GYPSUM PRODUCTS INC** — Type SUPREME D24/30EQD and Type SUPREME D20

SUPREME D24/30EQD and Type SUPREME D20 **QUAIL RUN BUILDING MATERIALS INC** — Type SUPREME D24/30EQD and Type SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME D24/30EQD and

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV — Type

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME D24/30EQD and Type SUPREME D20 1D. Framing Members* — Floor and Ceiling Runners — Not Shown — In lieu of TELLING INDUSTRIES L L C — Type SUPREME D24/30EQD and Type SUPREME D20

> 2B. Framing Members* — Steel Studs — Not Shown — In lieu of Item 2 — For use with Item 1B, proprietary channel shaped steel studs, 1-1/4 in. wide by min 3-5/8 in. deep fabricated from min 0.020 in. thick galv steel. Studs cut 3/4 in. less in length than assembly height.

CEMCO, LLC — Viper20™ CRACO MFG INC — SmartStud20™ MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™

IMPERIAL MANUFACTURING GROUP INC — Viper20™

Type SUPREME D20

2C. Steel Studs — (As an alternate to Item 2, For use with Item 1C) — Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, 3-1/2 in. min depth, **ROCKWOOL MALAYSIA SDN BHD** — Type Acoustical Fire Batts spaced a max of 16 in. OC. Studs friction-fit into floor and ceiling runners. Studs to be cut 5/8 to 3/4 in. less than assembly height. See materials in Item(s) 4 that require Item

2D. **Framing Members*** — **Steel Studs** — As an alternate to Items 2 through 2C — For use with Item 1D and 4G only, channel shaped studs, min 3-5/8 in. wide fabricated from min 0.018 in. thick galv steel, spaced a max of 24 in. OC. Studs to be cut 1/2 in. less than assembly height.

CLARKDIETRICH BUILDING SYSTEMS — CD ProSTUD DMFCWBS L L C — ProSTUD MBA METAL FRAMING — ProSTUD

RAM SALES L L C — Ram ProSTUD STEEL STRUCTURAL PRODUCTS L L C — Tri-S ProSTUD

For use with Item 1E and 4I only, channel shaped studs, min 3-5/8 in. wide fabricated from min 0.018 in. thick galv steel, spaced a max of 24 in. OC. Studs to be cut 1/2 in. less than assembly height. TELLING INDUSTRIES L L C — TRUE-STUD™

2F. Framing Members* — Steel Studs — As an alternate to Items 2 through 2E — For use with Item 1F, channel shaped studs, min 3-5/8 in. wide fabricated from min 25 INTERNATIONAL CELLULOSE CORP — Celbar-RL

KIRII (HONG KONG) LTD — Type KIRII

2G. Framing Members* — Steel Studs — Not Shown — In lieu of Item 2 through 2F Items 1 — For use with Item 2 L, proprietary channel shaped runners, 1-1/4 in. deep — For use with Item 1G. Proprietary channel shaped studs, minimum 3-5/8 in. wide, STUDCO BUILDING SYSTEMS — CROCSTUD

2H. Framing Members* — Steel Studs — Not Shown — In lieu of Item 2 — For use with Item 1I, proprietary channel shaped steel studs, 1-1/4 in. wide by min 3-5/8 in. deep fabricated from min 0.020 in. thick galv steel. Studs cut 3/4 in. less in length than

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™ 21. Framing Members* — Steel Studs — In lieu of Item 2 — For use with Item 1, channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, 3-5/8 in. Item 1 — For use with Item 2N, proprietary channel shaped runners, 1-1/4 in. wide deep (min), spaced 24 in. OC max. Studs to be cut 3/4 in. less than assembly height.

2J. Framing Members* — Steel Studs — In lieu of Item 2 — For use with Item 1, channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, 3-5/8 in. fill to completely filling stud cavity. When foamed plastic is used, minimum stud depth shall be 3-1/2 in. with min. 20 MSG thickness. deep (min), spaced 24 in. OC max. Studs to be cut 3/4 in. less than assembly height. **CARLISLE SPRAY FOAM INSULATION** — Types SealTite ONE, SealTite Pro Closed

2K. Framing Members* — Steel Studs — As an alternate to Item 2 — For use with Item 1B (3-5/8 in. wide track), channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, 1-1/4 in. wide by 3-5/8 in. deep, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.

Foamsulate HFO.

3H. **Foamed Plastic*** — As an alternate to Batts and Blankets (Items 3-3F), for use

fill to completely filling stud cavity. When foamed plastic is used, minimum stud

BASF CORP - Enertite® NM, Enertite® G, FE178®, Spraytite® 178, Spraytite®

81206, Walltite® 200, Walltite® US, Walltite® US-N, Walltite® HP+, FE137®,

FE158®, Spraytite® 158, Spraytite® SP, Spraytite® 81205, Spraytite® Comfort XL,

4. **Gypsum Board*** — 5/8 in. thick, 4 ft wide, attached to steel studs and floor and

on opposite sides of the assembly. When Steel Framing Members* (Item 6 or any

alternate clips) are used, gypsum board is screw attached to furring channels with 1

CABOT MANUFACTURING ULC — Type X, 5/8 Type X, Type Blueglass Exterior

CGC INC — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULIX, USGX, WRC or

Deadening Gypsum Board, Type LWX, Veneer Plaster Base-Type LWX, Water Rated-

NATIONAL GYPSUM CO — Types eXP-C, FSK, FSK-C, FSK-G, FSMR-C, FSW-C, FSW-

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Types PG-C, PG-9,

PANEL REY S A — Types GREX, GRIX, PRC, PRC2, PRX, RHX, MDX, ETX, PRX2

SAINT-GOBAIN GYPROC MIDDLE EAST FZE — Type Gyproc FireStop, Gyproc

MR, Gyproc DuraLine M2TECH, Gyproc DuraLine ACTIV'Air, Gyproc DuraLine MR

UNITED STATES GYPSUM CO — Type AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR,

USG MEXICO S A DE C V — Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, USGX,

WRC or WRX (Joint tape and compound, Item 5, optional for use with Type USGX)

4A. **Gypsum Board*** — (As alternate to Item 4) — Nom 5/8 in. thick gypsum panels

joints centered over studs and staggered one stud cavity on opposite sides of studs.

CGC INC — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULIX, USGX, WRC or

CERTAINTEED GYPSUM INC — Types LGFC2A, LGFC6A, LGFC-C/A, LGFC-WD

SAINT-GOBAIN GYPROC MIDDLE EAST FZE — Type Gyproc FireStop, Gyproc

FireStop MR, Gyproc FireStop M2TECH, Gyproc FireStop ACTIV'Air, Gyproc FireStop

MR, Gyproc DuraLine M2TECH, Gyproc DuraLine ACTIV'Air, Gyproc DuraLine MR

MR ACTIV'Air, Gyproc FireStop M2TECH ACTIV'Air, Gyproc DuraLine, Gyproc DuraLine

USG BORAL DRYWALL SFZ LLC — Types C, SCX, USGX (Joint tape and compound,

USG MEXICO S A DE C V — Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, USGX,

WRC or WRX (Joint tape and compound, Item 5, optional for use with Type USGX)

4B. **Gypsum Board*** — (As an alternate to Items 4 or 4A) — Nom 3/4 in. thick, 4 ft

wide, installed as described in Item 4A with screw length increased to 1-1/4 in.

WRX (Joint tape and compound, Item 5, optional for use with Type USGX)

THAI GYPSUM PRODUCTS PCL — Type X and Type C, M2Tech Type C

GEORGIA-PACIFIC GYPSUM L L C — Types DAP, DAPC, DGG, DS

ACTIV'Air, Gyproc DuraLine M2TECH ACTIV'Air

Item 5, optional for use with Type USGX)

Horizontal edge joints and horizontal butt joints on opposite sides of studs need not

with beveled, square or tapered edges, applied vertically or horizontally. Vertical

FireStop MR, Gyproc FireStop M2TECH, Gyproc FireStop ACTIV'Air, Gyproc FireStop

MR ACTIV'Air, Gyproc FireStop M2TECH ACTIV'Air, Gyproc DuraLine, Gyproc DuraLine

BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO — Type DBX-1

WRX (Joint tape and compound, Item 5, optional for use with Type USGX)

Type DGL2W, Water Rated - Type DGL2W, Sheathing - Type DGL2W

G, FSW, FSW-3, FSW-5, FSW-6, FSW-8, FSL, RSX.

ACTIV'Air, Gyproc DuraLine M2TECH ACTIV'Air

Item 5, optional for use with Type USGX)

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD — Type EX-1

THAI GYPSUM PRODUCTS PCL — Type X and Type C, M2Tech Type C

PG-11, PGS-WRS, PGI

ceiling track with 1 in. long, Type S steel screws spaced 8 in. OC. along edges of

depth shall be 3-1/2 in, with min, 20 MSG thickness.

in. long, Type S steel screws spaced 12 in. OC.

Walltite® XL, and Walltite® MAX

with Item 4U — Spray applied, foamed plastic insulation, at any thickness from partial

2L. Framing Members* — Steel Studs — As an alternate to Items 2 — For use with Item 1J, channel shaped studs, min 3-5/8 in. wide fabricated from min 0.018 in. thick galv steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height. RESCUE METAL FRAMING, L L C — AlphaSTUD

in. deep, fabricated from min 25 MSG (0.018 in. min. bare metal thickness). Studs cut board and 12 in. OC in the field of the board. Joints oriented vertically and staggered 3/4 in. less in length than assembly height. **CEMCO, LLC** — Viper X

1 – For use with Item 2R, proprietary channel shaped runners, 1-1/4 in. wide by min. 3- 2N. Framing Members* — Steel Studs — Not Shown — In lieu of Item 2 — For use AMERICAN GYPSUM CO — Types AG-C, AGX-1, M-Glass, LightRoc with Item 1L, proprietary channel shaped steel studs, 1-1/4 in. wide by min 3-5/8 in. deep fabricated from min 0.020 in. thick galv steel. Studs cut 3/4 in. less in length than assembly height. CRACO MFG INC — SmartStud20™

> 2O. Framing Members* - Steel Studs - Not Shown - In lieu of Items 2 through **CERTAINTEED GYPSUM INC** — Types EGRG, GlasRoc, Type X-1, Type C, 5/8" Easi-2N – For use with Item 1M, proprietary channel shaped steel studs, min 1-5/8 in. wide Lite Type X, Easi-Lite Type X-2, Type LWTX by min 3-5/8 in. deep fabricated from min 20 MSG galv steel (0.0329 in. min bare CERTAINTEED GYPSUM INC — Types LGFC2A, LGFC6A, LGFC-C/A, LGFC-WD, LGLLX metal thickness) spaced 24 in. OC max. Studs cut 3/4 in. less in length than assembly GEORGIA-PACIFIC GYPSUM L L C — Types 5, 6, 9, C, DAP, DD, DA, DAPC, DGG, DS, GPFS6, LS, Type X, Veneer Plaster Base - Type X, Water Rated - Type X, Sheathing -

Type X, Soffit - Type X, TG-C, GreenGlass Type X, Type X ComfortGuard Sound 2P. Framing Members* — Steel Studs — Not Shown — In lieu of Item 2 – For use Type LWX, Sheathing Type-LWX, Soffit-Type LWX, Type DGLW, Water Rated-Type with Item 1N, proprietary channel shaped steel studs, min 1-1/4 in. wide by min 3-5/8 DGLW, Sheathing Type- DGLW, Soffit-Type DGLW, Type LW2X, Veneer Plaster Base in. deep with 1/4 in. return lips fabricated from min 0.019 in. thick galv steel, spaced 24 Type LW2X, Water Rated - Type LW2X, Sheathing - Type LW2X, Soffit - Type LW2X, in. OC max. Studs cut 3/4 in. less in length than assembly height. PANEL REY S A - SUPRA Stud 20EQ/19 mil

2Q. Framing Members* — Steel Studs — (Not Shown — Alternate to Item 2, For use NATIONAL GYPSUM CO — Riyadh, Saudi Arabia — Type FR, or WR with Item 10) — Channel shaped steel studs with attachment clips at top and bottom, min 3-5/8 in. depth, spaced a max of 24 in. OC. Studs clipped into floor and ceiling runners (Item 10). Max 2-3/8 in. extension reveal from top of stud to inside of ceiling

HYPERFRAME INC— Hyperstud

2R. **Framing Members*** — **Steel Studs** — Not Shown — In lieu of Item 2 – For use with Item 1P, proprietary channel shaped steel studs, min 1-1/4 in. wide by min 3-5/8 n. deep fabricated from min. 20 EQ/22 mils. (min. 0.0221 in. thick) galvanized steel, spaced 24 in. OC max. Studs cut 3/4 in. less in length than assembly height. **JJC INTERNATIONAL DISTRIBUTORS** — Non-structural Studs 3-5/8" and 6".

2R. Framing Members* — Steel Studs — Not Shown — In lieu of Item 2 – For use SCX, SHX, ULIX, USGX, WRC, WRX, (Joint tape and compound, Item 5, optional for use with Item 1Q, proprietary channel shaped steel studs, min 1-1/4 in. wide by min 3-5/8 with Type USGX) in. deep fabricated from min. min. 0.018 in. thick galvanized steel, spaced 24 in. OC USG BORAL DRYWALL SFZ LLC — Types C, SCX, USGX (Joint tape and compound, max. Studs cut 3/4 in. less in length than assembly height. **IRONLINE METALS LLC** — Bantam Stud.

3. Batts and Blankets* — (Optional) — Mineral wool or glass fiber batts partially of completely filling stud cavity See Batts and Blankets (BZJZ) category for names of Classified companies. **ROCKWOOL** — Type AFB, min. density 1.69 pcf / 27.0 kg/m³

be staggered or backed by steel framing. Panels attached to steel studs and floor runner with 1 in. long Type S steel screws spaced 8 in. OC when applied horizontally, 3A. **Fiber, Sprayed*** — As an alternate to Batts and Blankets (Item 3) — (100% Borate or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when panels Formulation) — Spray applied cellulose material. The fiber is applied with water to are applied vertically. When used in widths other than 48 in., gypsum panels to be completely fill the enclosed cavity in accordance with the application instructions installed horizontally. When using ULIX, panels need not be staggered in horizontal supplied with the product with a nominal dry density of 2.7 lb/ft³. Alternate applications and screw spacing can be increased to 12 in. OC in field and perimeter. Application Method: The fiber is applied without water or adhesive at a nominal dry

CERTAINTEED GYPSUM INC — Type X-1, Type C, Type EGRG/ GlasRoc, GlasRoc-2, density of 3.5 lb/ft³, in accordance with the application instructions supplied with the Type SilentFX, Easi-Lite Type X-2

Applegate Greenfiber Acquisition LLC — Insulmax and SANCTUARY for use with wet or dry application.

3B. Fiber, Sprayed* — As an alternate to Batts and Blankets (Item 3) — Spray applied cellulose insulation material. The fiber is applied with water to interior surfaces in accordance with the application instructions supplied with the product. Applied to completely fill the enclosed cavity. Minimum dry density of 4.3 pounds per cubic ft. **NU-WOOL CO INC** — Cellulose Insulation

3C. Fiber, Sprayed* — As an alternate to Batts and Blankets (Item 3) — Spray applied cellulose fiber. The fiber is applied with water to completely fill the enclosed cavity in UNITED STATES GYPSUM CO — Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, accordance with the application instructions supplied with the product. The minimum SCX, SHX, ULIX, USGX, WRC, WRX (Joint tape and compound, Item 5, optional for use dry density shall be 4.30 lbs/ft³.

3D. Batts and Blankets* — For use with Item 8. Nom 3 in. thick, minimum 3.4 pcf mineral wool batts, friction fit between the studs and floor and ceiling runners. See Batts and Blankets (BZJZ) category for names of manufacturers.

3E. Batts and Blankets* — For use with Item 4R and 4S. Placed in stud cavities, any min. 3-1/2 in. thick glass fiber insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance.

3F. Fiber, Sprayed* — As an alternate to Batts and Blankets (Item 3) — Spray-applied 4C. Gypsum Board* — As an alternate to Items 4, 4A, and 4B — Nom. 5/8 in. thick cellulose material. The fiber is applied with water to completely fill the enclosed cavity gypsum panels, with square edges, applied horizontally. Gypsum panels fastened to in accordance with the application instructions supplied with the product. To facilitate framing with 1 in, long bugle head steel screws spaced a max 8 in, OC, with last 2 the installation of the material, any thin, woven or non-woven netting may be attached screws 3/4 in. and 4 in. from each edge of board. Horizontal joints need not be by any means possible to the outer face the studs. The material shall reach equilibrium backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite moisture content before the installation of materials on either face of the studs. The sides of studs on interior walls need not be staggered or backed by steel framing. minimum dry density shall be 5.79 lbs/ft³.

Applegate Greenfiber Acquisition LLC— Applegate Advanced Stabilized Cellulose

CGC INC — Types AR, IP-AR **UNITED STATES GYPSUM CO** — Types AR, IP-AR See Batts and Blankets (BKNV or BZJZ) Categories for names of Classified companies. USG MEXICO S A DE C V — Types AR, IP-AR

GEORGIA-PACIFIC GYPSUM L L C — Type DGG, GreenGlass Type X

4D. Gypsum Board* — As an alternate to Items 4, 4A, 4B, 4C, 4G — Nom. 5/8 in. thick gypsum panels applied vertically or horizontally. Vertical joints centered over 3G. Foamed Plastic* — As an alternate to Batts and Blankets (Items 3-3F), for use studs and staggered one stud cavity on opposite sides of studs. Horizontal edge with Item 4U — Spray applied, foamed plastic insulation, at any thickness from partial joints and horizontal butt joints on opposite sides of studs need not be staggered or backed by steel framing. Gypsum panels fastened to framing with 1 in. long Type S steel screws 12 in. OC along vertical edges and in the field, and 12 in. along the top and bottom of the wall. When used in widths other than 48 in., gypsum panels to be Cell (CC), SealTite Pro Open Cell (OC), SealTite Pro OCX, SealTite Pro No Trim 21, installed horizontally. When studs (Item 2) spaced a max 16 in. OC, 5/8 in. thick gypsum panels applied vertically or horizontally, 1 in. long spaced 16 in. OC along SealTite Pro One Zero, Foamsulate Closed Cell, Foamsulate OCX, Foamsulate 70, and vertical edges and in the field, and 16 in. OC along top and bottom of wall.

> 4E. **Gypsum Board*** — (As an Alternate to Items 4 through 4D) – Installed as described in item 4. 5/8 in. thick, 4 ft wide, applied vertically only and fastened to the studs and plates with 1 in. long Type S steel screws spaced 12 in. OC. When studs (Item 2) spaced a max 16 in. OC, 5/8" in. thick gypsum panels applied vertically or horizontally with 1 in. long Type S steel screws spaced 16 in. OC along vertical edges and in the field, and 16 in. OC along top and bottom of wall.

NATIONAL GYPSUM CO — Types eXP-C, FSK, FSK-C, FSK-G, FSW-C, FSW-G, FSW,

4F. $\mathbf{Gypsum\ Board^*}$ — (Not Shown) — (As an alternate to Item 4 when used as the base layer on one or both sides of wall. For direct attachment only to steel studs Item 2C) - Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Gypsum board secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the

RAY-BAR ENGINEERING CORP — Type RB-LBG

NATIONAL GYPSUM CO — Type SBWB

FSW-3, FSW-5, FSW-6, FSMR-C

4G. Gypsum Board* — (As an alternate to Items 4 through 4F) — For use with Items 1D and 2D only, 5/8 in. thick, 4 ft wide, attached to steel studs and floor and ceiling track with 1 in. long, Type S steel screws spaced 8 in. OC. along edges of board and 12 in. OC in the field of the board. Joints oriented vertically and staggered on opposite sides of the assembly. When using Types eXP-C, FSK, FSK-C, FSK-G, FSW-C, FSW-G, FSW, FSW-3, FSW-5, FSW-6, FSMR-C and ULIX, panels need not be staggered in horizontal applications and screw spacing can be increased to 12 in. OC in field and perimeter.

CGC INC — Type SCX, ULIX **CERTAINTEED GYPSUM INC** — Type LGFC6A, LGFC-C/A NATIONAL GYPSUM CO — Types eXP-C, FSK, FSK-C, FSK-G, FSW-C, FSW-G, FSW, FSW-3, FSW-5, FSW-6, and FSMR-C UNITED STATES GYPSUM CO — Type SCX, ULIX **USG BORAL DRYWALL SFZ LLC** — Type SCX

4H. **Gypsum Board*** — (As an alternate to Items 4 through 4G) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically and secured as described in Item 4. PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock ES

4I. **Gypsum Board*** — (As an alternate to Items 4 through 4F) — 5/8 in. thick, 4 ft wide, attached to steel studs and floor and ceiling track with 1 in. long, Type S steel screws spaced 8 in. OC. along edges of board and 12 in. OC in the field of the board. Joints oriented vertically and staggered on opposite sides of the assembly. When using ULIX, panels need not be staggered in horizontal applications and screw spacing can be increased to 12 in. OC in field and perimeter. When using ULIX, panels need not be staggered in horizontal applications and screw spacing can be increased to 12 in. OC in field and perimeter. CGC INC — Types SCX, ULIX

UNITED STATES GYPSUM CO — Types SCX, ULIX **USG BORAL DRYWALL SFZ LLC** — Type SCX

4J. Gypsum Board* — (Not Shown) — (As an alternate to Item 4 when used as the base layer on one or both sides of wall. For direct attachment only to steel studs Item 2C) — Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Gypsum board secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. To be used with Lead Batten Strips (see Item 9A) or Lead Discs (see Item 10A). MAYCO INDUSTRIES INC — Type X-Ray Shielded Gypsum

4K. Gypsum Board* — (As an alternate to Item 4 and 4A, not for use with Items 1D, 1E, 2D and 2E) — Nom. 5/8 in. thick gypsum panels with beveled, square or tapered edges installed as described in Item 4 and 4A

CGC INC — Type ULX UNITED STATES GYPSUM CO — Type ULX **USG MEXICO S A DE C V** — Type ULX

4L. Gypsum Board* — (Not Shown) — (As an alternate to Item 4 when used as the base layer on one or both sides of wall. For direct attachment only to steel studs Item 2C). Nom 5/8 in, thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws gypsum panel steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 2 in. wide, max 8 ft long with a max thickness of 0.14 in. placed on 4J or 4L. the face of studs and attached to the stud with construction adhesive and two 1 in long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead discs, nominal 3/8 in. diam by max 0.085 in. thick. Compression fitted or adhered over the screw heads. Lead batten strips and discs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". **RADIATION PROTECTION PRODUCTS INC** — Type RPP - Lead Lined Drywall

4M. **Gypsum Board*** — (For use with Item 8) — 5/8 in. thick, 4 ft wide, applied vertically over Mineral and Fiber Board (Item 8) with vertical joints located anywhere over stud cavities. Secured to mineral and fiber boards with 1-1/2 in. Type G Screws spaced 8 in. OC along edges of each vertical joint and 12 in. OC in intermediate field of the Mineral and Fiber Board (Item 8). Secured to outermost studs and floor and ceiling runners with 2 in. long Type S screws spaced 8 in. OC. Gypsum Board joints covered with paper tape and joint compound. Screw heads covered with joint

AMERICAN GYPSUM CO — Type AG-C **CERTAINTEED GYPSUM INC** — Type C CGC INC — Types C, IP-X2, IPC-AR **CERTAINTEED GYPSUM INC** — Type LGFC-C/A **GEORGIA-PACIFIC GYPSUM L L C** — Types 5, DAPC, TG-C

NATIONAL GYPSUM CO — Types eXP-C, FSK-C, FSW-C

PANEL REY S A — Types PRC, PRC2

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type PG-C

SAINT-GOBAIN GYPROC MIDDLE EAST FZE — Type Gyproc FireStop, Gyproc FireStop MR. Gyproc FireStop M2TECH, Gyproc FireStop ACTIV'Air, Gyproc FireStop MR ACTIV'Air, Gyproc FireStop M2TECH ACTIV'Air, Gyproc DuraLine, Gyproc DuraLine b. Steel Framing Members* — Used to attach furring channels (Item 6Ba) to stude MR, Gyproc DuraLine M2TECH, Gyproc DuraLine ACTIV'Air, Gyproc DuraLine MR ACTIV'Air, Gyproc DuraLine M2TECH ACTIV'Air THAI GYPSUM PRODUCTS PCL — Type C, M2Tech Type C UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR, ULIX

4N. Wall and Partition Facings and Accessories* — (As an alternate to Item 4) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically and secured as described in PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock 527

40. **Gypsum Board*** — As an alternate to Items 4, 4A, 4B, and 4C — Two layers Nom 5/16 in. thick gypsum panels applied vertically or horizontally. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered or backed by steel framing. Horizontal joints on the same side need not be staggered. When applied horizontally, both layers of gypsum board fastened to each side of framing with 1 in. long Type S steel screws spaced 8 in. OC and staggered 4 in. OC between layers. When applied vertically, both layers of gypsum board fastened to each side of Furring channels and Steel Framing Members as described below: framing with 1 in, long Type S steel screws spaced 8 in, OC along vertical edges and 12 in, OC in the field, staggered 4 in, OC between layers, Screws spaced a max 12 in. along the top and bottom edges of the wall. NATIONAL GYPSUM CO — Type FSW

in. thick gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered or backed by steel framing. Panels attached to steel studs and runners with 1 in. long Type S steel screws spaced 12 in. OC when applied horizontally or vertically. When used in widths other than 48 in., gypsum panels to be installed horizontally.

CGC INC — Type ULIX **UNITED STATES GYPSUM CO** — Types ULIX

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR

4Q. Gypsum Board* — 3/4 in. thick, 4 ft wide, attached to steel studs and floor and ceiling track as described in Item 4 with screw length increased to min. 1- 1/8 in. PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type PG-13

4R. **Gypsum Board*** — As an alternate to Item 4D. For use with Item 3E, **Batts and Blankets*** — 5/8 in. thick, 4 ft wide, installed as described in Item 4. When studs (Item x 1/2 in. pan-head self-drilling screw. 2) spaced a max 16 in, OC, 5/8 in, thick gypsum panels applied vertically or horizontally, 1 in. long spaced 16 in. OC along vertical edges and in the field, and 16 in. OC along top and bottom of wall. 6F Steel Framing Members* — (Optional, Not Shown, As an alternate to Item 6) — NATIONAL GYPSUM CO — Type FSLX.

4S. **Gypsum Board*** — As an alternate to Item 4. For use with Item 3E, **Batts and Blankets*** — 5/8 in. thick, 4 ft wide, installed as described in Item 4A. CERTAINTEED GYPSUM INC — Type CLLX.

4T. Wall and Partition Facings and Accessories* — (As an alternate to 5/8 in, thick board as outlined in Item 4) — Nominal 1-3/8 in. thick, 4 ft wide panels, applied vertically or horizontally. Fastened with #6 x 2 in. long drywall screws spaced 8 in. OC along the perimeter and 12 in. OC in the field. PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock 545

4U. Gypsum Board*— (As an alternate to Item 4 when Foam Plastic insulation Items 3G or 3H is used) — Any 5/8 in. thick, 4 ft. wide, Gypsum Board listed in Item 4 above. Applied vertically with vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Gypsum panels secured to studs with 1-1/4 in. long Type S steel screws spaced 8 in. OC at perimeter and in the field. For 2 layer assemblies outer layer will be attached to studs over inner layer with the 1-7/8 in. long a. Furring Channels — Formed of No. 25 MSG galv steel. Spaced 24 in. OC steel screws spaced 8 in. OC.

gypsum panels applied vertically or horizontally. Horizontal edge joints and horizontal ltem 4. Not for use with Items 4F, 4J, or 4L. butt joints on opposite sides of studs need not be staggered or backed by steel b. **Steel Framing Members*** — Used to attach furring channels (Item 6Fa) to studs. framing. Gypsum panels fastened to framing with 1 in. long Type S steel screws 12 in. Clips spaced 48 in. OC., and secured to studs with No. 10 x 2 in. screw through the OC along vertical edges and in the field. Screws spaced a max 12 in. along the top and center hole. Furring channels are friction fit into clips. bottom edges of the wall for both vertical and horizontal applications. CERTAINTEED GYPSUM INC — Type X-1, SilentFX, GlasRoc, Type C

5. Joint Tape and Compound — Vinyl, dry or premixed joint compound, applied in two coats to joints and screw heads; paper tape, 2 in. wide, embedded in first layer of compound over all joints. As an alternate, nominal 3/32 in, thick gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard. Joints supplied with square edges.

6. **Resilient Channel** — (Optional — Not Shown) — 25 MSG galv steel resilient channels spaced vertically max 24 in. OC, flange portion attached to each intersecting 500 and QR-510 stud with 1/2 in, long type S-12 pan head steel screws. May not be used with Item 4F

6A. **Steel Framing Members*** — (Optional, Not Shown, As an alternate to Item 6) — Furring channels and Steel Framing Members as described below: a. Furring Channels — Formed of No. 25 MSG galv steel. 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. HOMASOTE CO — Homasote Type 440-32 As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping No. 6 framing screws, min 7/16 in. long at the midpoint 8A. Mineral and Fiber Board — (Optional, Not Shown) — For optional use as an

Clips spaced 48 in. OC., and secured to studs with 1-5/8 in. wafer or hex head Type S

Type S steel screws spaced 12 in. OC max, with the last screws spaced 2 in. and 6 in.

2-23/32 in. wide furring channels PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-1 (2.75)

6B. **Framing Members*** — (Optional on one or both sides, Not Shown, As an alternate to Item 6) — Furring channel and Steel Framing Members as described a. Furring Channels — Formed of No. 25 MSG galv steel. 2-3/8 in. wide by 7/8 in.

deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as

4. Not for use with Items 4F, 4J, or 4L. (Item 2). Clips spaced max. 48 in. OC. GENIECLIPS secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. Furring channels are friction fitted into clips. PLITEQ INC — Type Genie Clip min 1-1/2 in. wide, max 10 ft long with a max thickness of 0.125 in. Strips placed on

6C. **Steel Framing Members*** — (Optional, Not Shown, As an alternate to Item 6) — Furring channels and Steel Framing Members as described below: a. Furring Channels — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in Item 4. Not for use with Items 4F, 4J, or 4L.

b. Steel Framing Members* — Used to attach furring channels (Item 6Ca) to studs. Clips spaced 48 in. OC., and secured to studs with 2 in. coarse drywall screw with 1 in. diam washer through the center hole. Furring channels are friction fitted into clips. **STUDCO BUILDING SYSTEMS** — RESILMOUNT Sound Isolation Clips - Type A237R

6D. **Steel Framing Members*** — (Optional, Not Shown As an alternate to Item 6) a. Furring Channels — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 6Db. Ends of 10. Lead Discs or Tabs — (Not Shown, For Use With Item 4E) — Used in lieu of or in adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in diam by max 0.125 in. thick lead discs compression fitted or adhered over steel screw

4P. **Gypsum Board*** — As an alternate to Item 4. Nom 5/8 in. thick, 4 ft wide, Nom 5/8 b. **Steel Framing Members*** — UUsed to attach furring channels (Item 6Da) to studs. boards (Item 4E) underneath screw locations prior to the installation of the screws. Clips spaced 48 in. OC, and secured to studs with No.8 x 2-1/2 in. coarse drywall screw

Lead discs or tabs to have a purity of 99.9% meeting the Federal specification QQ-Lthrough the center hole. Furring channels are friction fitted into clips. **REGUPOL AMERICA** — Type SonusClip

Item 4. Not for use with Items 4F, 4J, or 4L.

6E. **Steel Framing Members* —** (Optional, Not Shown As an alternate to Item 6) — Resilient channels and Steel Framing Members as described below: a. **Resilient Channels** — Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and secured in place with two No. 8 15 x 1/2 in. Philips Modified Truss screws spaced 2-1/2 in. from the center of the overlap. Gypsum board attached to resilient channels as described in Item 4. Not for use with Items 4F,

b. Steel Framing Members* — Used to attach resilient channels (Item 6Ea) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Resilient channels are secured to clips with one No. 10 **KEENE BUILDING PRODUCTS CO INC** — Type RC+ Assurance Clip

Furring channels and Steel Framing Members as described below: a. Furring Channels — Formed of No. 25 MSG galv steel. 2-23/32 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described 4 to Item 4I except the fastener length shall be increased by a minimum of 5/8 inch. in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with Install Batts and Blankets in the stud cavity as per Item 3. double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, On the other side of the wall, prior to the installation of the Gypsum Board, install ends of adjoining channels may be overlapped 6 in. and secured together with two

Resilient Channels as per Item 6. Over the Resilient Channels install 3/4 inch thick self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with SONOpan panel secured to the Resilient Channels with min. 1-1/4 in. long drywall as described in Item 4.

b. Steel Framing Members* — Used to attach furring channels (Item 6Fa) to studs. drywall screw through the center grommet. Furring channels are friction fitted into

CLARKDIETRICH BUILDING SYSTEMS — Type ClarkDietrich Sound Clip

6F. Steel Framing Members* — (Optional, Not Shown) — Furring channels and Steel Framing Members as described below: perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 4V. **Gypsum Board*** — (As an alternate to Item 4, for 1 hr. rating) — Nom. 5/8 in. thick AWG galvanized steel wire. Gypsum board attached to furring channels as described in

MASON INDUSTRIES INC — Type CWC-50

Wall and Partition Facings and Accessories* — (Optional, Not Shown) — Nominal (self-tapping). Gypsum Board (Item 4) to be installed directly over the Barrier Mesh 1/2 in. thick, 4 ft wide panels, for optional use as an additional layer on one or both sides of the assembly. Panels attached in accordance with manufacturer's recommendations. When the QR-500 or QR-510 panel is installed between the steel framing and the UL Classified gypsum board, the required UL Classified gypsum board members and secured using the Barrier Mesh Clips or occur in between framing reinforced. Paper tape and joint compound may be omitted when gypsum boards are layer(s) is/are to be installed as indicated as to fastener type and spacing, except that members as overlapping joints secured using 18 SWG wire ties spaced a maximum 12 the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated in. on center. or intended as a substitute for the required layer(s) of UL Classified Gypsum Board. PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock QR-

> 8. Mineral and Fiber Board* — (Optional, Not Shown) — For optional use as an additional layer on one side of wall. Nom 1/2 in. thick, 4 ft wide with long dimension parallel and centered over studs. Attached to studs and floor and ceiling runners with 1-5/8 in, long Type S steel screws, spaced 12 in, OC and 24 in, OC along all intermediate framing. The required UL Classified gypsum board layer (Item 4M) is to be installed over the Mineral and Fiber Boards. Batts and Blankets, Item 3D, and Adhesive, Item 11, are required.

of the overlap, with one screw on each flange of the channel. Not for use with Items additional layer on one side of wall - Nom 1/2 in. thick, 4 ft wide, square edge fiber boards applied vertically to study on one side of the wall in between the wood study b. Framing Members* — Used to attach furring channels (Item a) to studs (Item 2). and the UL Classified Gypsum Board (Item 4). Fiber boards installed with 1-1/4 in. long, steel screw through the center grommet. Furring channels are friction fitted into clips. from edge of board. Gypsum board (Item 4) installed as indicated as to fastener type RSIC-1 clip for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) clip for use with and spacing, except that the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board. Not evaluated for use with Item 4M. **BLUE RIDGE FIBERBOARD INC** — SoundStop

> 8B. Mineral and Fiber Board* — (Optional, Not Shown) — For optional use as an additional layer on one side of wall. Nom 1/2 in. thick, 4 ft wide with long dimension parallel and centered over studs. Attached to studs and floor and ceiling runners with 1-5/8 in. long Type S steel screws, spaced 12 in. OC and 24 in. OC along all intermediate framing. The required UL Classified gypsum board layer is to be installed

described in Item b. Gypsum board attached to furring channels as described in Item over the Mineral and Fiber Boards and secured to study with length of fasteners increased by 1/2 in. over the length specified for installation of the gypsum boards. Batts and Blankets, Item 3, are optional unless otherwise required. Not for use with Items 4F, 4J, 4L, and 4M. **HOMASOTE CO** — Homasote Type 440-32

> the interior face of studs and attached from the exterior face of the stud with two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum board (Item 4E) and optional at remaining stud locations. 9A. **Lead Batten Strips** — (Not Shown, for use with Item 4J) — Lead batten strips, 2 in, wide, max 10 ft long with a max thickness of 0.140 in. Strips placed on the face of

9. Lead Batten Strips — (Not Shown, For Use With Item 4E) — Lead batten strips,

screws, one at the top of the strip and one at the bottom of the strip or with one min. 1 in. long min. Type S-8 pan head steel screw at the top of the strip. Lead batten strips to have a purity of 99.5% meeting the Federal specification OO-L-201f, Grades "B, C or D". Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 4J) and optional at remaining stud locations. addition to the lead batten strips (Item 8) or optional at other locations - Max 3/4 in.

heads or max 1/2 in. by 1-1/4 in. by max 0.125 in. thick lead tabs placed on gypsum

studs and attached to the stud with two min. 1 in. long min. Type S-8 pan head steel

10A. **Lead Discs** — (Not Shown, for use with Item 4J) — Max 5/16 in. diam by max 0.140 in. thick lead discs compression fitted or adhered over steel screw heads. Lead discs to have a purity of 99.5% meeting the Federal Specification QQ-L-201f, Grades

1. **Adhesive** — Not Shown — (For use with Item 8) — Construction grade adhesive applied in vertical, serpentine, nominal 3/8 in. wide beads down the length of both vertical edges of Mineral and Fiber Board (Item 8).

12. Wall and Partition Facings and Accessories* — (CLBV) (Optional, Not Shown) For use with Items 1 to 1I, Items 2 to 2J, Item 3, Items 4 to 4I, Item 5 and Item 6. For maximum fire rating of 1 hour. On one side of the wall, over the first layer of Gypsum Board (Item 4 to Item 41), install RefleXor membrane with the gold side facing outwards. Membrane installed with T50 staples spaced 12 inches on center in both directions as per manufacturer's instructions, seams in membrane to be overlapped by 2 inches. When RefleXor membrane is used an additional layer of Gypsum Board that is identical to the one used in the first layer and as specified in Item 4 to Item 4I shall be installed over the membrane. The additional layer of Gypsum Board to be installed through the membrane to the stud as specified in Item

crews and washers spaced at 16 in. OC on the perimeter of the panel and 8 in. OC i the field of the panel. Over the SONOpan panel install the same Gypsum Board as specified in Item 4 to Item 4I with the fastener length increased by minimum 3/4 inch Clips spaced maximum 48 in. OC. Clips secured to studs with No. 8 x 2-1/2 in. coarse

Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.

Alternately, on the other side of the wall prior to the installation of the Gypsum Board, install 3/4 in, thick SONOpan panels, secured to one side of studs either horizontally or vertically. Panels secured to each stud with min. 1-1/4 in. long drywall screws spaced 12 in. OC. Over the SONOpan, install 25 MSG galv steel, Resilient Channels, spaced vertically 24 in. OC. Resilient Channels fastened through panels to each stud with min. 2 in. long drywall screws or self-tapping screws. Over the Resilient Channels install Gypsum Board as specified in Item 4 to Item 4I with the specified drywall screws. Panels not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.

MSL — RefleXor membrane, SONOpan panel

3. Barrier Mesh — (Optional, Not Shown) - Attached to steel studs on one or both sides of the wall using Barrier Mesh Clips spaced at maximum 12 inches on center vertically, using a flat head type screw penetrating through the steel at least 3/8 of an inch. For Steel Studs less than 0.033 inches in thickness, use self-piercing screws. For Steel Studs equal to or greater than 0.033 inches in thickness, use steel drill screws using prescribed screw patterns with lengths increased by a minimum 1/8 in. Barrier Mesh may be installed with the long dimension of the diamond pattern positioned vertically or horizontally. Barrier Mesh joints may occur as butt joints at the framing

CLARKDIETRICH BUILDING SYSTEMS — Barrier Mesh, Barrier Mesh Clips

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada),

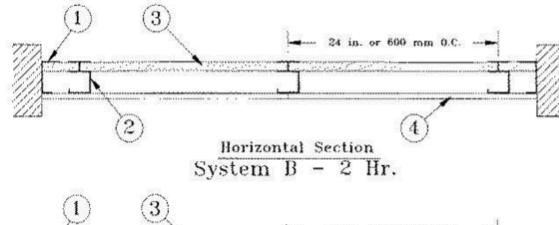
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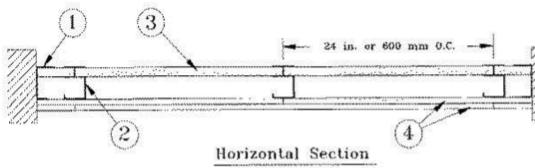
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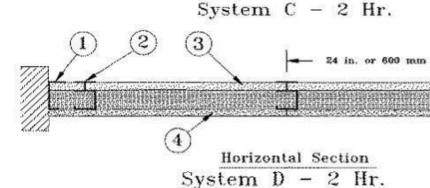
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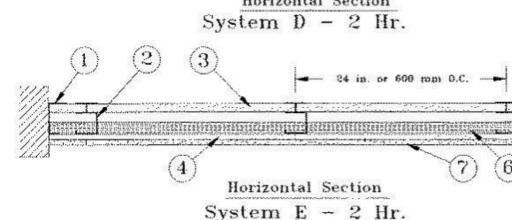
Nonbearing Wall Ratings — 1, 2, 3 or 4 Hr * Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada),

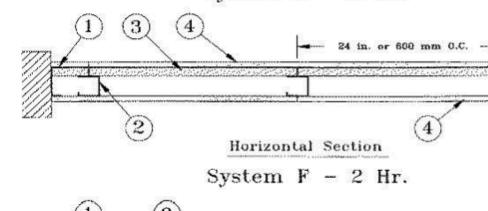
System A - 1 Hr.

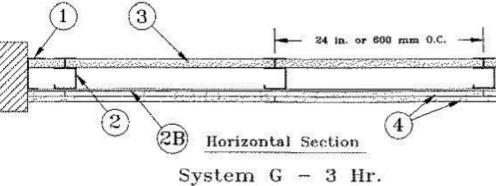




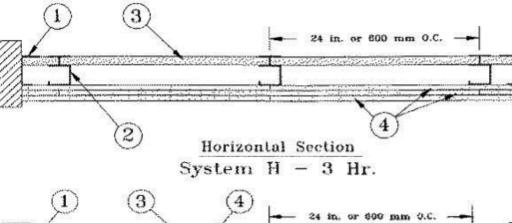


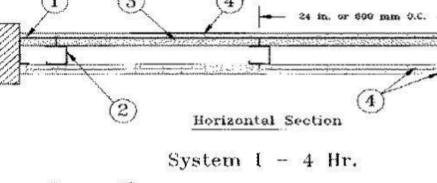


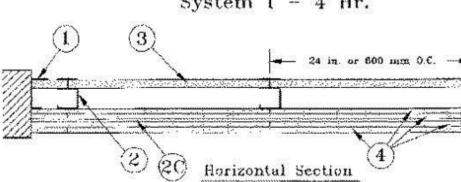




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1. Floor, Side and Ceiling Runners — "J" - shaped runner, min 2-1/2 in. deep (min 4 in. deep when System C is used), with unequal legs of 1 in. and 2 in., fabricated from min 24 MSG (min 20 MSG when Item 4A, 4B, 4C, 4D or 7 are used) galv steel. Runners positioned with short leg toward finished side of wall. Runners attached to structural supports with steel fasteners located not greater than 2 in. from ends and not greater than 24 in. OC. "E" - shaped studs (Item 2A) may be used as side runners in place of "J" - shaped runners.

2. Steel Studs — "C-H" - shaped studs, min 2-1/2 in. deep (min 4 in. deep when System C is used), fabricated from min 25 MSG (min 20 MSG when Items 2D, 4A, 4B, 4C, 4D or 7 is used) galv steel. Cut to lengths 3/8 to 1/2 in. less than floor-to-ceiling height and spaced 24 in. or 600 mm OC (max 16 in. OC when Items 4A, 4B, 4C, or 4D are used).

2A. Steel Studs — (Not Shown) — "E" - shaped studs installed back to back in place of "C-H" - shaped studs (Item 2) "E" - shaped studs secured together with steel screws spaced a maximum 12 in. OC. Fabricated from min 25 MSG (min 20 MSG when Item 2D, 4A, 4B or 7 is used) galv steel, min 2-1/2 in. deep (min 4 in. deep when System C is used), with one leg 1 in. long and two legs

3/4 in. long. Shorter legs 1 in. apart to engage gypsum liner panels. Cut to lengths 3/8 to 1/2 in. less than floor to ceiling heights.

2B. **Furring Channels** — (Optional, Not Shown) — For use with single or double layer systems. Resilient furring channels fabricated from min 25MSG corrosion protected steel, installed horizontally, and spaced vertically a max 24 in. OC. Flange portion of channel attached to each intersecting "C-H" or "E" stud on side of stud opposite the 1 in. liner panels with 1/2 in. long Type S or S-12 pan-head steel screws. When furring channels are used, wallboard to be installed vertically only. . Not to be used with Type FRX-G gypsum board, lead backed gypsum boards (Items 4A-4D), or cementitious backer units (Item 7).

2C. Furring Channels — For use with System I - "Hat" - shaped, 25 MSG galv steel furring channels attached directly over the inner layers of wallboard to each stud with 2 in. long Type S pan head steel screws. Screws alternate from top flange to bottom flange at each stud intersection. Furring channels spaced vertically max 24 in. OC.

2D. **Steel Framing Members*** — (Optional, Not Shown) — For use with single or double layer systems. Furring channels and Steel Framing Members as described below. Not to be used with Type FRX-G gypsum board, lead backed gypsum boards (Items 4A-4D), or cementitious backer units (Item 7).

a. Furring Channels — Formed of No. 25 MSG galv steel. 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to stude as described in Item b. Gypsum board installed vertically only and attached to furring channels as described in Item 4.

b. Steel Framing Members* — Used to attach furring channels (Item 2Da) to studs (Item 2 or 2A). Clips spaced max. 24 in. OC., and secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. Furring channels are friction fitted into clips. RSIC-1 clip for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) clip for use with 2-23/32 in.

wide furring channels. PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-1 (2.75)

2E. Steel Framing Members* — (Optional, Not Shown) — Furring channels and Steel Framing Members as described below. . Not to be used with Type FRX-G gypsum board, lead backed gypsum boards (Items 4A-4D), or cementitious backer units (Item 7).

a. Furring Channels — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in Item 4.

b. Steel Framing Members* — Used to attach furring channels (Item 2Ea) to studs. Clips spaced 24 in. OC., and secured to studs with 2 in. coarse drywall screw with 1 in. diam washer through the center hole. Furring channels are friction fitted into clips.

STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type

2F. **Steel Framing Members*** — (Optional, Not Shown) — For use with single or double layer systems. Furring channels and Steel Framing Members as described below. Not to be used with Type FRX-G gypsum board, lead backed gypsum boards (Items 4A-4D), or cementitious backer units (Item 7).

a. Furring Channels — Formed of No. 25 MSG galv steel. 2-3/8 in. wide by 7/8 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board installed vertically only and attached to furring channels as described in Item 3.

b. **Steel Framing Members*** — Used to attach furring channels (Item 2Da) to studs (Item 2 or 2A). Clips spaced max. 24 in. OC. GENIECLIPS secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. Furring channels are friction fitted into clips. **PLITEQ INC** — Type GENIECLIP

2G. **Steel Framing Members*** — (Optional, Not Shown) — Furring channels and Steel Framing Members as described below. Not to be used with Type FRX-G gypsum board, lead backed gypsum boards (Items 4A-4D), or cementitious backer units (Item 7).

a. Furring Channels — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 2Gb. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in Item 4.

b. **Steel Framing Members*** — Used to attach furring channels (Item 2Ga) to studs. Clips spaced 24 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips.

REGUPOL AMERICA — Type SonusClip

2H. **Steel Framing Members*** — (Optional, Not Shown) — Resilient channels and Steel Framing Members as described below. Not to be used with Type FRX-G gypsum board, lead backed gypsum boards (Items 4A-4D), or cementitious backer units (Item 7).

a. **Resilient Channels** — Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and secured in place with two No. 8 15 x 1/2 in. Philips Modified Truss screws spaced 2-1/2 in. from the center of the overlap. Gypsum board attached to resilient channels as described in Item

b. **Steel Framing Members*** — Used to attach resilient channels (Item 2Ha) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Resilient channels are secured to clips with one No. 10 x 1/2 in. pan-head self-drilling screw. **KEENE BUILDING PRODUCTS CO INC** — Type RC+ Assurance Clip

21. **Steel Framing Members*** — (Optional, Not Shown) — For use with single or double layer systems. Furring channels and Steel Framing Members as described below. Not to be used with Type FRX-G gypsum board, lead backed gypsum boards (Items 4A-4D), or cementitious backer units (Item 7).

a. Furring Channels — Formed of No. 25 MSG galv steel. 2-23/32 in. wide by 7/8 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board installed vertically only and attached to furring channels as described in Item 4.

b. Steel Framing Members* — Used to attach furring channels (Item 2Ia) to studs (Item 2 or 2A). Clips spaced max. 24 in. OC., and secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. Furring channels are friction fitted into clips. **CLARKDIETRICH BUILDING SYSTEMS** — Type ClarkDietrich Sound Clip

3. **Gypsum Board*** — Gypsum liner panels, nom 1 in. thick, 24 in. or 600 mm (for metric spacing) wide. Panels cut 1 in. less in length than floor to ceiling height. Vertical edges inserted in "H" portion of "C-H" studs or the gap between the two 3/4 in. legs of the "E" studs. Free edge of end panels attached to long leg of vertical "J" - runners with 1-5/8 in. long Type S steel screws spaced not greater than 12 in. OC. When wall height exceeds liner panel length, liner panel may be butted to extend to the full height of the wall. Horizontal joints need not be backed by steel framing. In System I, butt joints in liner panels are staggered min 36 in. Butt joints backed with 6 in. by 22 in. strips of 3/4 in. thick gypsum wallboard (Item 4). Wallboard strips centered over butt joints and secured to liner panels with six 1-1/2 in. long Type G steel screws, three screws along the 22 in. dimension at the top and bottom of the strips.

UNITED STATES GYPSUM CO — Type SLX

USG BORAL DRYWALL SFZ LLC — Type SLX

USG MEXICO S A DE C V — Type SLX

4. Gypsum Board* —

CGC INC — Type SLX

System A — 1 Hr

Gypsum panels, with beveled, square or tapered edges, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, attached to studs with 1 in. long Type S steel screws spaced 12 in. when installed vertically or 8 in OC when installed horizontally. Horizontal joints need not be backed by steel framing.

CGC INC — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULIX, ULX, USGX, WRC, WRX

THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO — Types C and SCX UNITED STATES GYPSUM CO — Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SGX, SHX, ULIX, ULX, WRC, WRX, USGX.

USG BORAL DRYWALL SFZ LLC — Types C, SCX, SGX, USGX **USG MEXICO S A DE C V** — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULX, USGX, WRC, WRX

System B — 2 Hr

Gypsum panels, with beveled, square or tapered edges, nom 1/2 in. or 5/8 in thick, 48 in. or 1200 mm wide, applied vertically or horizontally in two layers. Inner or base layer attached to studs with 1 in. long Type S steel screws spaced 24 in. OC when installed vertically or 16 in. OC when installed horizontally. Outer or face layer attached to studs with 1-5/8 in. long Type S steel screws spaced 12 in. OC when installed vertically and staggered 12 in. from base layer screws or 8 in. OC when installed horizontally and staggered 8 in. from base layer screws. Horizontal joints between inner and outer layers staggered a min of 12 in. Horizontal joints need not be backed by steel framing. Vertical joints centered over studs and staggered 24 in.

CGC INC — 1/2 in. Type C, IP-X2, IPC-AR or WRC; 5/8 in. Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULX, USGX, WRC, WRX

THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO — Types C and SCX **UNITED STATES GYPSUM CO** — 1/2 in. Types C, IP-X2, IPC-AR, or WRC; 5/8 in. Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SGX, SHX, ULIX, ULX,

USG BORAL DRYWALL SFZ LLC — 1/2 in. Type C; 5/8 in. Types C, SCX, SGX,

USG MEXICO S A DE C V — 1/2 in. Types C, IP-X2, IPC-AR or WRC; 5/8 in. Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULX, USGX, WRC, WRX

System C — 2 Hr

Gypsum panels, with beveled, square or tapered edges, nom 3/4 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, secured with 1-1/4 in. long Type S steel screws spaced 8 in. OC along vertical edges and 12 in. OC in the field when installed vertically or 8 in. OC along the vertical edges and in the field when installed horizontally. Horizontal joints need not be backed by steel framing. Screws along side joints offset 4 in. Requires min 4 in. deep framing per Items 1, 2 and 3. Requires min 3 in. thick mineral wool batts per

CGC INC — Types IP-X3 or ULTRACODE

USGX, WRC, WRX.

UNITED STATES GYPSUM CO — Types IP-X3 or ULTRACODE

USG BORAL DRYWALL SFZ LLC — Type ULTRACODE

USG MEXICO S A DE C V — Types IP-X3 or ULTRACODE

System D — 2 Hr Gypsum panels, with beveled, square or tapered edges, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, attached directly to studs with 1 in. long Type S steel screws spaced 24 in. when installed vertically

or 16 in. OC when installed horizontally. Horizontal joints need not be backed by steel framing. Requires face layer of 1/2 or 5/8 in. thick cementitious backer units per Item 7 and min 1-1/2 in. thick mineral wool batts per Item 6. CGC INC — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULX, USGX,

WRC, WRX THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO — Types C and SCX

UNITED STATES GYPSUM CO — Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SGX, SHX, ULIX, ULX, USGX, WRC, WRX.

USG BORAL DRYWALL SFZ LLC — Types C, SCX, SGX, USGX **USG MEXICO S A DE C V** — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULX, USGX, WRC, WRX

System E — 2 Hr Gypsum panels, with beveled, square or tapered edges, nom 1/2 in. or 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, attached to studs with 1 in. long Type S steel screws spaced 12 in. OC when installed

vertically or 8 in. when installed horizontally. Horizontal joints need not be backed by steel framing.

CGC INC — 1/2 in. Types C, IP-X2, IPC-AR; 5/8 in. Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULX, USGX, WRC, WRX

THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO — Types C and SCX

UNITED STATES GYPSUM CO — 1/2 in. Types C, IP-X2, IPC-AR; 5/8 in. Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SGX, SHX, ULIX, ULX, USGX, WRC, WRX.

USG BORAL DRYWALL SFZ LLC — 1/2 in. Type C; 5/8 in. Types C, SCX, SGX,

USG MEXICO S A DE C V — 1/2 in. Types C, IP-X2, IPC-AR; 5/8 in. Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULX, USGX, WRC, WRX

System F — 2 Hr

Gypsum panels, with beveled, square or tapered edges, nom 1/2 in. or 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically in two layers. Inner or base layer attached to resilient furring channels (Item 2B) with 1 in. long Type S steel screws spaced 24 in. Outer or face layer attached to resilient furring channels (Item 2B) with 1-5/8 in. long Type S steel screws spaced 12 in. OC and staggered 12 in. from base layer screws. Joints between inner and outer layers staggered 24 in.

CGC INC — 1/2 in. Type C, IP-X2, IPC-AR or WRC; 5/8 in. Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULX, USGX, WRC, WRX

THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO — Types C and SCX

UNITED STATES GYPSUM CO — 1/2 in. Type C, IP-X2, IPC-AR or WRC; 5/8 in. Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SGX, SHX, ULIX, ULX, USGX, WRC, WRX.

USG BORAL DRYWALL SFZ LLC — 1/2 in. Type C; 5/8 in. Types C, SCX

USG MEXICO S A DE C V — 1/2 in. Types C, IP-X2, IPC-AR or WRC; 5/8 in. Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULX, USGX, WRC, WRX

System G — 3 Hr

Gypsum panels, with beveled, square or tapered edges, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally in three layers. Inner or base layer attached to studs with 1 in. long Type S steel screws spaced 24 in. OC when installed vertically or 16 in OC when installed horizontally. Middle layer attached to studs with 1-5/8 in. long Type S steel screws spaced 24 in. when installed vertically or 16 in. OC when installed horizontally. Outer or face layer attached to studs with 2-1/4 in. long Type S steel screws spaced 16 in. when installed vertically or 12 in. OC when installed horizontally. Screws offset 6 in. from layer below. Horizontal joints on adjacent layers staggered a min of 12 in. . Horizontal joints need not be backed by steel framing. Vertical joints centered over studs and staggered 24 in. on adjacent layers.

CGC INC — Types C, IP-X2, IPC-AR, ULIX, WRC

THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO — Type C

UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR, ULIX, WRC

USG BORAL DRYWALL SFZ LLC — Type C **USG MEXICO S A DE C V** — Types C, IP-X2, IPC-AR, WRC

System H — 3 Hr

Gypsum panels, with beveled, square or tapered edges, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, two layers over the flange of the "C" section of the studs, one layer over the flange of the "H" section of the studs. Inner or base layer attached to studs with 1 in. long Type S steel screws spaced 24 in. OC when installed vertically or 16 in. OC when installed horizontally. Face layer attached to studs with 1-5/8 in. long Type S steel screws spaced 16 in. when installed vertically or 12 in. OC when installed horizontally. Screws offset 6 in. from layer below. Horizontal joints on adjacent layers staggered a min of 12 in. Horizontal joints need not be backed by steel framing. Vertical joints centered over studs and staggered 24 in. on adjacent

CGC INC — Types C, IP-X2, IPC-AR, ULIX, WRC

THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO — Type C

UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR, ULIX, WRC

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR, WRC

Gypsum panels, with beveled, square or tapered edges, nom 3/4 in. thick, 4 ft wide (or 1200 mm for metric spacing) wallboard with square or tapered edges. Total of four layers to be used. First and second (inner) layers applied vertically or horizontally over the steel studs. Horizontal joints need not be backed by steel framing. When applied vertically, joints centered over studs and staggered min 24 in., otherwise all joints staggered min 12 in. First layer secured to studs with 1-1/4 in. long Type S self-drilling, self-tapping buglehead steel screws spaced 24 in. OC. Second layer secured to studs with 2-1/4 in. long Type S self-drilling, self-tapping bugle-head steel screws spaced 12 in. OC. Third layer applied vertically over the furring channels (Item 2C) with a 1-1/4 in. long Type S self-drilling, self-tapping bugle-head steel screws spaced 12 in. OC. Fourth layer applied vertically or horizontally with 2-1/4 in. long Type S self-drilling, self-tapping bugle-head steel screws spaced 12 in. OC. When applied vertically, joints to be staggered min 24 in. from third layer, otherwise all joints staggered min 12 in.

CGC INC — Types IP-X3 or ULTRACODE

UNITED STATES GYPSUM CO — Types IP-X3 or ULTRACODE

USG BORAL DRYWALL SFZ LLC — Type ULTRACODE

USG MEXICO S A DE C V — Types IP-X3 or ULTRACODE 4A. Gypsum Board* — (As an alternate to Item 4 Systems A, B, C, D, E, G, H,

and I when used as the base layer, For direct attachment only) — Nom 5/8 in. or 3/4 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over 20 MSG steel studs and staggered min 1 stud cavity on opposite sides of studs. See Items 1, 2, 2A, 2B and 2D. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. For Joint Compound see Item 5. To be used with Lead Batten Strips (see Item 9) or Lead Discs or Tabs (see Item 10).

RAY-BAR ENGINEERING CORP — Type RB-LBG

4B. Gypsum Board* — (As an alternate to Item 4 Systems A, B, C, D, E, G, H, and I when used as the base layer, For direct attachment only) — Nominal 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 (or #6 by 1-1/4 in. long bugle head fine driller) steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field.

NEW ENGLAND LEAD BURNING CO INC, DBA NELCO — Type Nelco 4C. **Gypsum Board*** — (As an alternate to Item 4 Systems A, B, C, D, E, G, H,

3/4 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over 20 MSG steel studs and staggered min 1 stud cavity on opposite sides of studs. See Items 1, 2, 2A, 2B and 2D. Wallboard secured to study with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. For Joint Compound see Item 5. To be used with Lead Batten Strips (see Item 9A) or Lead Discs (see Item 10A). Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 2 in. wide, max 10 ft long with a max thickness of 0.140 in. placed on the face of studs and attached to the stud with two 1 in. long Type S-8 pan head steel screws, one at the top of the strip and one at the bottom

and I when used as the base layer, For direct attachment only) — Nom 5/8 or

MAYCO INDUSTRIES INC — Type X-Ray Shielded Gypsum

4D. **Gypsum Board*** — (As an alternate to Item 4 Systems A, B, C, D, E, G, H, and I when used as the base layer, For direct attachment only) — Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws gypsum panel steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 2 in. wide, max 8 ft long with a max thickness of 0.14 in. placed on the face of studs and attached to the stud with construction adhesive and two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead discs, nominal 3/8 in. diam by max 0.085 in. thick. Compression fitted or adhered over the screw heads. Lead batten strips and discs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".

5. **Joint Tape and Compound** — (Not Shown)

Systems A, B, C, E, F, G, H, I Joints on outer layers of gypsum boards (Item 4 and 4A) covered with paper tape and joint compound. Paper tape and joint compound may be omitted when gypsum boards are supplied with square edges. Exposed screw heads

RADIATION PROTECTION PRODUCTS INC — Type RPP - Lead Lined Drywall

6. Batts and Blankets* —

covered with joint compound.

Systems A, B, E, F, G, H, I

(Optional) — Mineral wool or glass fiber batts partially or completely filling stud cavity. Any mineral wool or glass fiber batt mineral bearing the UL Classification Marking as to Fire Resistance.

Systems C & D

Min 3 in. (System C) and min 1-1/2 in. (System D) thick mineral wool batts, friction fitted between the studs and floor and ceiling runners

ROCKWOOL — Type AFB, min. density 1.8 pcf / 28.8 kg/m³

THERMAFIBER INC — Type SAFB, SAFB FF

7. Cementitious Backer Units* — (System D) — Nom 1/2 or 5/8 in. thick panels, square edge, attached to studs over gypsum wallboard with 1-5/8 in. long, Type S-12, corrosion resistant steel screws spaced 8 in. OC and staggered 8 in. from gypsum wall board screws. Joints covered with glass fiber mesh tape. Vertical joints staggered one stud cavity from gypsum wallboard joints. Horizontal joints staggered a min of 12 in. from the gypsum wallboard

UNITED STATES GYPSUM CO — Type DCB

8. **Laminating Adhesive*** — (Optional, Not Shown) — Used to bond outer layer of Cementitious Backer Units (Item 7) to inner layers of Gypsum Board (Item 4) in System D. ANSI A136.1 Type 1 organic adhesive applied with 1/4 in. square notched trowel. See Adhesives (BYWR) in the Fire Resistance Directory or Adhesives (BJLZ) in the Building Materials Directory for names of Classified companies.

9. **Lead Batten Strips** — (Not Shown, For Use With Item 4A) — Lead batten strips, min 1-1/2 in. wide, max 10 ft long with a max thickness of 0.125 in. Strips placed on the interior face of studs and attached from the exterior face of the stud with two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 4A) and optional at remaining stud locations. Required behind vertical joints.

9A. Lead Batten Strips — (Not Shown, for use with Item 4C) — Lead batten strips, 2 in. wide, max 10 ft long with a max thickness of 0.140 in. Strips placed on the face of studs and attached to the stud with two min. 1 in. long min. Type S-8 pan head steel screws, one at the top of the strip and one at the bottom of the strip or with one min. 1 in. long min. Type S-8 pan head steel screw at the top of the strip. Lead batten strips to have a purity of 99.5% meeting the Federal specification QQ-L-201f, Grades "B, C or D".. Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 6) and optional at remaining stud locations.

10. **Lead Discs or Tabs** — (Not Shown, For Use With Item 4A) — Used in lieu of or in addition to the lead batten strips (Item 9) or optional at other locations - Max 3/4 in. diam by max 0.125 in. thick lead discs compression fitted or adhered over steel screw heads or max 1/2 in. by 1-1/4 in. by max 0.125 in. thick lead tabs placed on gypsum boards (Item 4A) underneath screw locations prior to the installation of the screws. Lead discs or tabs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".

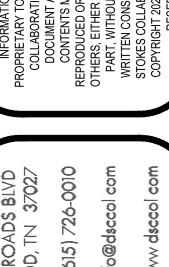
10A. **Lead Discs** — (Not Shown, for use with Item 4C) — Max 5/16 in. diam by max 0.140 in. thick lead discs compression fitted or adhered over steel screw heads. Lead discs to have a purity of 99.5% meeting the Federal Specification QQ-L-201f, Grades "B, C or D".

11. **Lead Batten Strips** — (Not Shown, For Use With Item 4B) — Lead batten strips, 2 in. wide, max 10 ft long with a max thickness of 0.142 in. Strips placed on the face of studs and attached to the stud with two min. 1 in. long min. Type S-8 pan head steel screws, one at the top of the strip and one at the bottom of the strip or with one min. 1 in. long min. Type S-8 pan head steel screw at the top of the strip. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 4B) and optional at remaining stud locations.

12. **Lead Tabs** — (Not Shown, For Use With Item 4B) — 2 in. wide, 5 in. long with a max thickness of 0.142 in. Tabs friction-fit around front face of stud, the stud folded back flange, and the back face of the stud. Tabs required at each location where a screw (that secures the gypsum boards, Item 4B) will penetrate the steel stud. Lead tabs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead tabs may be held in place with standard adhesive tape if necessary.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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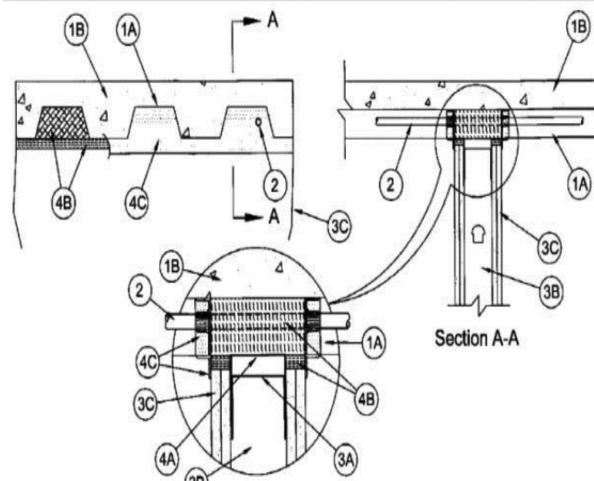




ONE HOUR FIRE - SMOKE BARRIER

CAN/III C S115

ANSI/UL2079	CAN/ULC S115
Assembly Ratings — 1, 2, 3 and 4 Hr (See Items 2 and 3)	F Ratings — 1, 2, 3 and 4 Hr (See Items 2 and 3)
Nominal Joint Widths - 1-1/2 and 2-1/2 In. (See Item 4)	FT Ratings — 1, 2, 3 and 4 Hr (See Items 2 and 3)
Class II Movement Capabilities — 40 or 50% Compression or Extension (See Item 4)	FH Ratings — 1, 2, 3 and 4 Hr (See Items 2 and 3)
L Rating At Ambient — Less Than 1 CFM/sq ft	FTH Ratings — 1, 2, 3 and 4 Hr (See Items 2 and 3)
L Rating At 400 F — Less Than 1 CFM/sq ft	Nominal Joint Widths - 1-1/2 and 2-1/2 In. (See Item 4)
	Class II Movement Capabilities — 40 or 50% Compression or Extension (See Item 4)
	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — Less Than 1 CFM/sq ft
(B) (A)	(IB)



- 1. Floor Assembly The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D900 Series Floor-Ceiling Design in the UL Fire Resistance Directory. The hourly fire rating of the floor assembly shall be equal to or greater than the hourly fire rating of the wall assembly. The floor assembly shall include the following construction features:
- A. **Steel Floor and Form Units*** Max 3 in. (76 mm) deep galv steel fluted floor
- B. **Concrete** Min 2-1/2 in. (64 mm) thick reinforced concrete, as measured from the
- 1A. **Roof Assembly** (Not Shown) As an alternate to the floor assembly (Item 1), a fire rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P900 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly fire rating of the roof assembly shall be equal to or greater than the hourly fire rating of the wall
- A. **Steel Roof Deck** Max 3 in. (76 mm) deep galv steel fluted roof deck.

top plane of the floor units.

B. **Roof Insulation** — Min 2-1/4 in. (57 mm) thick poured insulating concrete, as measured from the top plane of the steel roof deck.

assembly. The roof assembly shall include the following construction features:

- 2. **Through Penetrant** (Optional) Max one penetrant per flute to be installed parallel and centered within the flutes of the steel deck. Penetrants installed with a min annular space of 1/2 to 1-2/ in. in. (13-38 mm) between the penetrant and the steel deck. Penetrant to be rigidly supported on both sides of wall assembly. The following types and sizes of penetrants may be used:
- A. **Conduit** Nom 1/2 in. diam (or smaller) steel electrical metallic tubing (EMT) or steel conduit.
- B. **Conduit** Nom 1-1/2 in. diam (or smaller) Schedule 40 PVC conduit.
- C. **Polyvinyl Chloride (PVC) Pipe** Nom 1-1/2 in. (38 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
- smaller) SDR17 SDR13.5 CPVC pipe for use in closed (process or supply) piping When steel conduit or EMT (Item 2A) is installed in flute of steel deck, the hourly rating of the joint system is 1 hr. When nonmetallic penetrates (Items 2B,

D. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 1-1/2 in. (38 mm) diam (or

- 2C and 2D) are installed in flute of steel deck, the hourly rating of the joint system is equal to the hourly fire rating of the wall assembly up to a max of 2 hr.
- 3. Wall Assembly 1, 2, 3 or 4 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400, or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
- A. **Steel Floor and Ceiling Runners** Floor and ceiling runners of wall assembly shall consist of galv steel channels sized to accommodate steel studs. When deflection channel (Item 4A) is used, flange height of ceiling runner is to be equal to or greater than flange height of deflection channel and the ceiling runner is to nest within the deflection channel with a 1/2 to 3/4 in. (13 to 19 mm) gap maintained between the top of the ceiling runner and the top of the deflection channel. When deflection channel is not used, flange height of ceiling runner shall be min 1/4 in. (6

mm) greater than max extended joint width. Ceiling runner installed perpendicular to direction of fluted steel deck and secured with steel masonry anchors or welds spaced max 24 in. (610 mm) OC.

A1. Light Gauge Framing* — Slotted Ceiling Runner — Slotted ceiling runner may be used as an alternate to the ceiling runner in Item 3A. Slotted ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 3B). Ceiling runner installed perpendicular to direction of fluted steel floor or roof deck and secured to valleys with steel masonry anchors spaced max 24 in. (610 mm) OC. When slotted ceiling runner is used, deflection channel (Item 4A) shall not

BRADY CONSTRUCTION INNOVATIONS INC, DBA SLIPTRACK SYSTEMS — SLP-TRK, SLPTRK325

CEMCO, LLC — CST, CST325

CLARKDIETRICH BUILDING SYSTEMS — Type SLT, SLT-H

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Type SLT

METAL-LITE INC — The System

RAM SALES L L C — RAM Slotted Track

SCAFCO STEEL STUD MANUFACTURING CO

TELLING INDUSTRIES L L C — True-Action Deflection Track

A2. Light Gauge Framing* — Vertical Deflection Ceiling Runner — When the nom joint width is less than or equal to 1 in. (25 mm), vertical deflection ceiling runner may be used as an alternate to the ceiling runner in Items 3A and 3A1., Vertical deflection ceiling runner to consist of galv steel channel with slotted vertical deflection clips mechanically fastened within runner. Slotted clips, provided with step bushings, for permanent fastening of steel studs. Vertical deflection ceiling runner installed perpendicular to direction of fluted steel deck and secured to valleys with steel masonry anchors spaced max 24 in. (610 mm) OC. When vertical deflection ceiling runner is used, deflection channel (Item 4A) shall not be used.

A3. Light Gauge Framing* — Notched Ceiling Runner — As an alternate to the ceiling runners in Items 3A through 3A3, notched ceiling runners to consist of Cshaped galv steel channel with notched return flanges sized to accommodate steel studs (Item 3B). Notched ceiling runner installed perpendicular to direction of fluted steel deck and secured to valleys with steel masonry anchors spaced max 24 in. (610 mm) OC. When notched ceiling runner is used, deflection channel (Item 4A) shall not

OLMAR SUPPLY INC — Type SCR

A4. Steel Framing Members* — Sound Isolation Clips — (Not Shown, For Max 2 hr Assembly Rating) — As an alternate attachment means for the ceiling runner to the underside of the floor or roof assembly when no deflection channel (Item 4A) is used, sound isolation clips installed in accordance with the accompanying installation instructions. Sound isolation clip installed through nom 1 in. (25 mm) diam hole in ceiling runner and attached to top of ceiling runner using four min No. 8 by 1/2 in. (13 mm) long self-tapping galv steel screws. Sound isolation clips to be installed adjacent to every stud location but not more than 24 in. (610 mm) OC and attached to the underside of floor or roof assembly using min 3/16 in. (5 mm) diam by 2-1/2 in. (64 mm) long steel masonry anchors.

PAC INTERNATIONAL L L C — Type RSIC-U-HD

B. Studs — Steel studs to be min 3-1/2 in (89 mm) wide. Studs cut 1/2 to 1-1/4 in. (13 to 32 mm) less in length than assembly height with bottom nesting in and secured to floor runner. When deflection channel (Item 4A) is used, steel studs attached to ceiling runner with sheet metal screws located 1/2 in. (13 mm) below the bottom to the deflection channel. When deflection channel is not used, studs to nest in ceiling runner without attachment. When slotted ceiling runner (Item 3A1) is used, steel studs secured to slotted ceiling runner with No. 8 by 1/2 in. (13 mm) long wafer head steel screws at midheight of slot on each side of wall. When vertical deflection ceiling runner (Item 2A2) is used, steel studs secured to slotted vertical deflection clips, through the bushings, with steel screws at midheight of each slot. Stud spacing not to exceed 24 in. (610 mm) OC.

C. **Gypsum Board*** — Gypsum board sheets installed to a min total thickness of 5/8 in., 1-1/4 in., 1-1/2 in. or 2 in. (16, 32, 38 or 51 mm) on each side of wall for 1, 2, 3 and 4 hr fire rated assemblies, respectively. Wall to be constructed in the individual U400 Series Design in the UL Fire Resistance Directory, except that a max 1 or 2 in. (25 or 51 mm) gap (See Item 4) shall be maintained between the top of the gypsum board and the bottom surface of the steel floor or roof deck . The screws attaching the gypsum board to the studs along the top of the wall shall be located 1 in. (25 mm) below the bottom of the ceiling runner. No gypsum board attachment screws shall be driven into the ceiling runner or into the optional deflection channel.

When through penetrant (Item 2) is not used, the hourly fire rating of the joint system is equal to the hourly fire rating of the wall.

- 4. Joint System Max separation between bottom of floor or roof deck and top of gypsum board (at time of installation of joint system) is 2-1/2 in. (64 mm) for 1 and 2 hr Ratings and 1 in. (25 mm) for 3 and 4 hr Ratings. The joint system is designed to accommodate a max 50 percent compression or extension from its installed width for max 1-1/2 in. (38 mm) wide joints and a max 40 percent compression or extension from its installed width for max 2-1/2 in. (64 mm) wide joints. The joint system shall consist of forming and fill materials, with or without a deflection channel (Item 4A), as follows:
- A. **Deflection Channel** (Optional) Max 2 in. (51 mm) deep min 24 gauge galv steel channel sized to accommodate ceiling runner (Item 3A). Deflection channel installed perpendicular to direction of fluted steel deck and secured to valleys with steel masonry anchors or welds spaced max 24 in. (610 mm) OC. The ceiling runner is installed within the deflection channel to maintain a 1/2 to 3/4 in. (13 to 19 mm) gap between the top of the ceiling runner and the top of the deflection channel. The ceiling runner nests inside the deflection channel without attachment.

B. Forming Material* — Nom 4 pcf (64 kg/m³) mineral wool batt cut to the shape of the steel deck flute and installed into the flutes above the ceiling channel. The mineral wool batt pieces are to be stacked to a thickness approx 1 in. (25 mm) greater than the overall thickness of the wall and compressed approx 14 percent in depth thickness such that it is flush with the gypsum board surface on both sides of the wall. When sound isolation clips (Item 2A5) are used, the space between the top of the ceiling runner and the underside of the floor or roof shall be tightly packed with mineral wool batt insulation. Additional sections of mineral wool batt insulation are compressed 50 percent in thickness and installed cut edge first to completely fill the gap above the top of the gypsum board, flush with both surfaces of wall. JOHNS MANVILLE — Safing

INDUSTRIAL INSULATION GROUP L L C — MinWool-1200 Safing **ROCK WOOL MANUFACTURING CO** — Delta Board

ROCKWOOL MALAYSIA SDN BHD — Safe

ROCKWOOL — Safe

THERMAFIBER INC — SAF

B1. Forming Material* — (Optional, Not Shown) — Preformed mineral wool plugs, formed to the shape of the fluted floor units, friction fit to completely fill the flutes above the ceiling channel. The plugs shall project beyond each side of the ceiling runner and shall be recessed from both wall surfaces to accommodate the required thickness of fill material (Item 4C). Additional forming material, described in Item 4B, to be used in conjunction with the plugs to fill the gap between the top of gypsum board and bottom of steel deck.

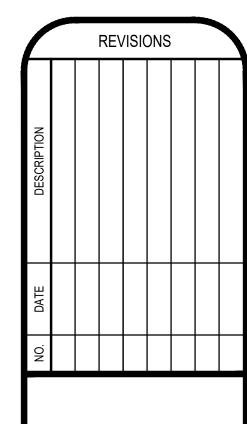
THERMAFIBER INC — TopStop mineral wool deck plugs Type SAF batts

C. Fill, Void or Cavity Material* — Sealant — Min 1/16 in. (1.6 mm) dry thickness (min 1/8 in. or 3.2 mm wet thickness) of fill material spray applied on each side of the wall in the flutes of the steel floor or roof deck and between the top of the wall and the bottom of the steel floor or roof deck and overlap a min 1/2 in. (13 mm) onto gypsum board on both sides of wall. Additional 1/6 in. (1.6 mm) dry thickness (1/8 in. or 3.2 mm wet thickness) of fill material shall overlap a min 1/2 in. (13 mm) onto the steel deck and steel conduit or EMT (when used) on both sides of wall. **SPECIFIED TECHNOLOGIES INC** — SpecSeal AS200 Elastomeric Spray

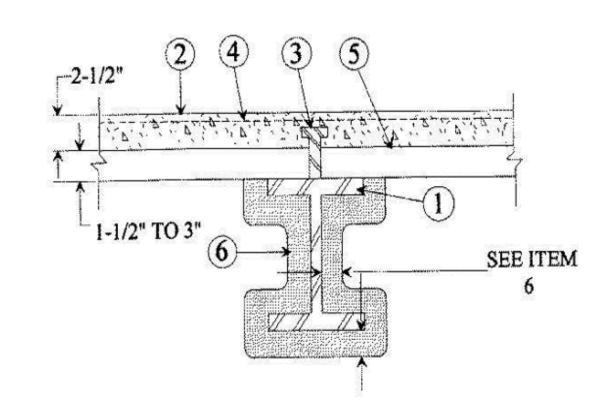
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada),

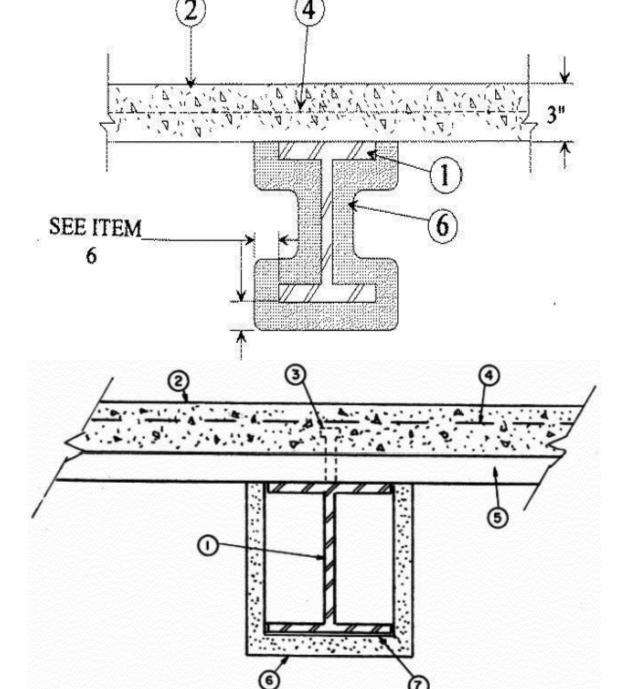






* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.





Steel Beam — W8x28 min size.

Normal Weight or Lightweight Concrete — Compressive strength, 3000 psi. For normal weight concrete either carbonate or siliceous aggregate may be used. Unit weight, 148 pcf. For lightweight concrete unit weight 110 pcf.

3. **Shear Connector** — (Optional) — Studs, 3/4 in. diam headed type or equivalent per AISC specifications. Welded to the top flange of beam through the steel floor units.

4. Welded Wire Fabric — (Optional) — 6x6-10/10 SWG.

5. Steel Floor and Form Units — 1-1/2 to 3 in. deep fluted units welded to

6. Spray-Applied Fire Resistive Materials* — Applied by mixing with water and spraying in more than one coat to the beam to the final thicknesses shown below. When fluted or corrugated steel floor units are used, crest areas shall be filled with Spray-Applied Fire Resistive Materials above the beam. Beam surfaces must be clean and free of dirt, loose scale and oil. Min average and min ind. density of 15/14 pcf respectively. Min avg and min ind density of 22/19 pcf respectively for Types Z-106, Z-106/HY, Z-106/G. Min avg and min ind density of 40/36 pcf respectively for Types AV650, Z-146, Z-146PC and Z-146T cementitious mixture. Min avg and min ind density of 50/45 pcf respectively for Types AV800, Z-156, Z-156T and Z-156PC. For method of density determination, see Design Information Section.

The thicknesses of Spray-Applied Fire Resistive Materials shown in the table below are applicable when the beams are supporting solid concrete slabs or floor assemblies containing only fluted floor or form units with lightweight concrete.

Min Thkns In.

Rating Hr	Restrained Beam	Unrestrained Beam
1	5/16	5/1
1-1/2	7/16	5/
2	11/16	7/
3	1-3/16	1-5/1
4	1-5/8	1-5/

The thickness of Spray-Applied Fire Resistive Materials shown in the table below are only applicable when the beams are supporting solid, normal weight, concrete slabs or floor assemblies containing only fluted floor or form units, topped with normal weight concrete.

Min Thkns In.

Rating Hr	Restrained Beam	Unrestrained Beam
1	5/16	5/16
1-1/2	3/8	5/8
2	9/16	7/8
3	1	1-5/16
4	1-7/16	1-5/8

The thickness of Spray-Applied Fire Resistive Materials shown in the table below are applicable when the thickness applied to the beams' lower flange edges is reduced by one-half and the beams are supporting solid concrete slabs or floor assemblies containing only fluted floor or form units with lightweight concrete.

Min Thkns In.

Rating Hr	Restrained Beam	Unrestrained Beam
1	7/16+	7/16+
1-1/2	7/16+	3/4
2	11/16	1
3	1-3/16	1-7/16
4	1-11/16	1-15/16

+ Thickness applied to beams' lower flange edges shall be a min of 1/4 in.

The thickness of Spray-Applied Fire Resistive Materials shown in the table below are applicable when the thickness applied to the beams' lower flange edges is reduced by one-half and the beams are supporting solid concrete slabs or floor assemblies containing only fluted floor or form units with normal weight concrete.

Min Thkns In.

Rating Hr	Restrained Beam	Unrestrained Beam
1	3/8	3/8
1-1/2	3/8	5/8
2	9/16	7/8
3	1	1-7/16
4	1-7/16	1-15/16

ARABIAN VERMICULITE INDUSTRIES — Types MK-6/HY, MK-6/HY Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, MK-6 GF, MK-6 GF Extended Set, MK-1000/HB, MK-1000/HB Extended Set, Z-106, Z-106/G, Z-106/HY, Z-146 investigated for exterior use. Types AV650 and AV800 investigated for external use.

GCP KOREA INC — Types MK-6/HY, MK-6/HY Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, MK-6 GF, MK-6 GF Extended Set, MK-1000/HB, MK-1000/HB Extended Set, Z-106, Z-106/G, Z-106/HY, Z-146 investigated for exterior use.

GCP APPLIED TECHNOLOGIES INC — Types MK-6/HY, MK-6/HY Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, MK-6 GF, MK-6 GF Extended Set, MK-1000/HB, MK-1000/HB Extended Set, RG, Z-106, Z-106/G, Z-106/HY, Z-146, Z-146T, Z146PC, Z-156, Z-156T and Z-156PC investigated for exterior use.

6A. Spray-Applied Fire Resistive Materials* — Applied by mixing with water and spraying in more than one coat to the beam to the final thicknesses shown below. When fluted steel floor units are used, crest areas shall be filled with Spray-Applied Fire Resistive Materials above the beam. Beam surfaces must be clean and free of dirt, loose scale and oil. Min average and min ind. density of 22/20 pcf respectively. For method of density determination, see Design Information Section. The thicknesses of Spray-Applied Fire Resistive Materials shown in the table below are applicable when the beams are supporting solid concrete slabs or floor assemblies containing only fluted floor or form units with

lightweight concrete.

Min Thkns In.

Rating Hr	Restrained Beam	Unrestrained Beam
1	5/16	5/16
1-1/2	7/16	9/16
2	5/8	13/16
3	1-1/16	1-1/4
4	1-5/8	1-5/8

The thicknesses of Spray-Applied Fire Resistive Materials shown in the table below are applicable when the beams are supporting solid concrete slabs or floor assemblies containing only fluted floor or form units with normal weight concrete.

Min Thkns In.

Unrestrained Beam Rating Hr Restrained Beam

1	5/16	5/10
1-1/2	3/8	9/10
2	9/16	13/10
3	1	1-1/4
4	1-7/16	1-5/8
4	1-7/16	

The thickness of Spray-Applied Fire Resistive Materials shown in the table below are applicable when the thickness applied to the beams' lower flange edges is reduced by one-half and the beams are supporting solid concrete

slabs or floor assemblies containing only fluted floor or form units with lightweight or normal weight concrete.

Min Thkns In.

Rating Hr	Restrained Beam	Unrestrained Beam
1	7/16+	7/16+
1-1/2	7/16+	11/16
2	11/16	15/16
3	1-3/16	1-3/8
4	1-11/16	1-15/16

+ Thickness applied to beams' lower flange edges shall be a min of 1/4 in.

The thickness of Spray-Applied Fire Resistive Materials shown in the table below are applicable when the thickness applied to the beams' lower flange edges is reduced by one-half and the beams are supporting solid concrete slabs or floor assemblies containing only fluted floor or form units with normal weight concrete.

Min Thkns In.

Rating Hr	Restrained Beam	Unrestrained Beam	
1	3/8	3/8	
1-1/2	3/8	5/8	
2	9/16	7/8	
3	1	1-7/16	
4	1-7/16	1-15/16	

ARABIAN VERMICULITE INDUSTRIES — Type Z-106/HY

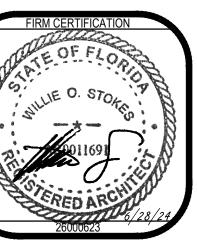
GCP KOREA INC — Type Z-106/HY

GCP APPLIED TECHNOLOGIES INC — Z-106/HY

7. **Metal Lath** — (Optional for contour applications, required for boxed applications) - 3.4 lb/sq yd expanded steel. May be tied to lath hangers with No. 18 SWG steel wire spaced 6 in. OC max. or fastened directly to the steel with welds, screws, or powder actuated fasteners

8. Lath Hangers — (To be used with Item 7) — No. 6 SWG steel wire, spaced 27 in. OC max.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



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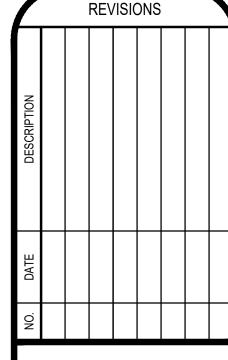
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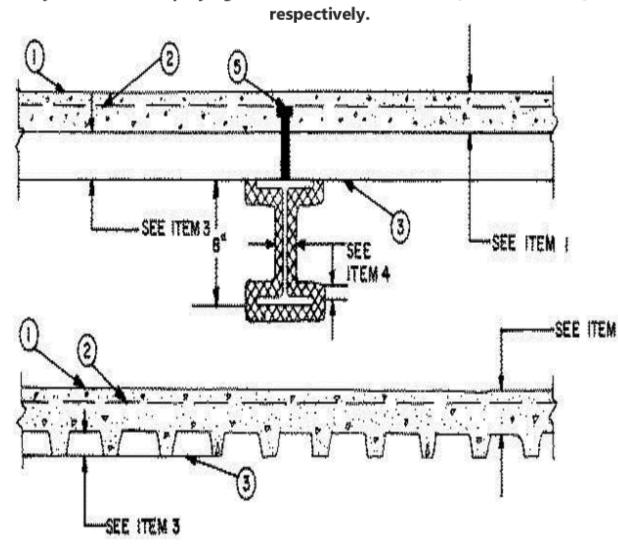






This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction CANAM STEEL CORP — 24 in. wide, Types 1-1/2, 2 or 3 in. LOK-Floor and LOKfactor shall be used — See Guide BXUV or BXUV7

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada),



Supports — 8x28 min size steel beams. Or steel joists or joist girders (not shown), wide Type EC266. composite or noncomposite. Welded or bolted to end supports. Designed per S.J.I. specifications for a max tensile stress of 30 ksi. May be either uncoated or provided with a shop coat of paint. For the 2 h or less Restrained or Unrestrained Beam Ratings, top and bottom chords shall each consist of two angles with a min total area of 0.96 and 0.77 sq in., respectively. Web members shall be either round ft 6 in., 6 ft 0 in. and 6 ft 6 in. max spans for the 22, 20 and 18 gauge units, bars or angles. Min area of the end diagonal web shall be 0.444 sq in. Min area of respectively. For multiple spans, 18 gauge units may be used on a max 7 ft 6 in. each of the first six interior diagonal webs shall be 0.406 sq in. All other interior webs shall have a min area of 0.196 sq in. For the 3 h Restrained or Unrestrained Beam Ratings, each of the top and bottom chords shall each consist of two angles COMPOSITE/FLOOR, 3" COMPOSITE/FLOOR. with a min total area of 1.74 sq in. Web members shall be either round bars or angles. Min area of each of the first five end diagonal webs shall be 0.886 sq in. All KAM INDUSTRIES LTD, DBA CORDECK — 24 in. wide, Types 2 or 3 in. WDR. other interior webs shall have a min area of 0.441 sq in. Bridging per S.J.I. specifications is required when noncomposite joists are used. For noncomposite joists, steel filler pieces of proper size, 1 to 2 in. long shall be welded to and between the top chord angles at midway between all top chord panel points.

1. Normal Weight or Lightweight Concrete — Normal weight concrete carbonate or siliceous aggregate, 3500 psi compressive strength, vibrated. Lightweight concrete, expanded shale, or slate aggregate by rotary-kiln method, or expanded clay aggregate by rotary-kiln or sintered-grate method, or pelletized LOK-2, LOK-3. expanded blast furnace slag aggregate, 3000 psi compressive strength, vibrated, 4 to 7 percent entrained air.

Restrained Assembly Rating Hr	Concrete (Type)	Concrete Unit Weight pcf	Concrete Thkns In.
1	Normal Weight	147-153	3-1/2
1-1/2	Normal Weight	147-153	4
2	Normal Weight	147-153	4-1/2
3	Normal Weight	147-153	5-1/4
3/4 or 1 (See Item 6)	Lightweight	107-113	2-1/2
1	Lightweight	107-120	2-5/8
1-1/2	Lightweight	107-113	3
2	Lightweight	107-113	3-1/4
2	Lightweight	107-116	3-1/4*
2	Lightweight	114-120	3-1/2
3	Lightweight	107-113	4-3/16
3	Lightweight	114-120	4-7/16

*For use with 2 or 3 in. steel floor and form units only.

Welded Wire Fabric — 6x6 - W1.4xW1.4

3. Steel Floor and Form Units* — Composite or non-composite, 1-1/2, 1-5/8, 1 13/16, 2 or 3 in. deep galv units or 4-1/2 in. deep noncomposite galvanized units. Fluted units may be uncoated or phosphatized/painted. Min gauges are 22 MSG for fluted and 20/20 MSG for cellular units. The following combinations of units may be used:

(1) all 18, 24, 26, 28 or 36 in. wide cellular.

(2) all fluted.

(3) one or two 3 in. deep, 12 in. wide, 18/18 MSG min cellular units, alternating with 3 in. deep fluted or other cellular.

(4) any blend of fluted and 18, 24, 26, 28, or 36 in. wide cellular.

(5) 3 in. deep, 30 in. wide cellular with 8-1/8 in. wide valley along side joints may be used when 3/8 in. diam reinforcing bars are placed 1-1/2 in. to each side of side joints and 1 in. above bottom of unit.

(6) Corrugated, 1-5/16 in. deep, 30 in. wide, 24 MSG min galv units with shear wires factory welded to deck corrugations. Welded to supports 12 in. OC. through (b) 1-1/2 in. deep, 24 or 36 in. wide, 20 MSG or thicker fluted with clear spans not welding washers. For shear wire spacing of 8 in. or less the steel deck stress shall more than 8 ft 8 in.

not exceed 20 KSI. For shear wire spacing greater than 8 in. OC. but less than or equal to 12 in. OC., steel deck stress shall not exceed 12 KSI.

ASC STEEL DECK, DIV OF ASC PROFILES L L C — 32 in. wide Types NH-32, NHN-32, NHF-32; 36 in. wide Types BH-36, BHN-36, BHN-35-1/4, BHF-36, BHF-36A, 2WH-36, 2WHS-36, 2WHF-36, 2WHF-36A, 3WxH-36, 3WxHF-36, 3WxHF-36A, 3WH-36. 3WHF-36. 3WHF-36A, 3W-36, 3WF-36, DG3W-36, DG3WF-36. All units may be galvanized or Prime Shield. Non-cellular decks may be vented designated with a "V" suffix to the product name. Cellular deck top and bottom sections may be riveted together (designated with "Fr") vs. arc spot welded, "F".

CANAM GROUP INC — 36 in. wide Type P-3623, P-3606, P-3615 and 24 in wide min ind density of 19/18 pcf respectively for Type 7GP and 7HD. For method of Type P-2432 composite; 24 or 36 in. wide Type 3 in. LOK-Floor; 36 in. wide Types 1.5B, 1.5BI, 1.5BL and 1.5BL; 24 in. or 36 in. wide, vented Types LF2 and LF3.

Floor Cell; 36 in. wide, Types 2 or 3 in. LOK-Floor and LOK-Floor Cell; 24 in. wide, Types N-LOK and N-LOK Cell; 24, 30 or 36 in. wide, Type 1-1/2 in. B-LOK and B-

KAM INDUSTRIES LTD, DBA CORDECK — QL Types, 24 in. wide 3 or 3 inverted, UKX, UKX-3, 2 in. 99, AKX, 21 or 21 inverted, 121, NKX, TKX; 24 or 30 in. wide GKX, GKXH, GKX-A; 36 in. wide 99, AKX, WKX; 24, 26, or 36 in. wide NKX; 1.5NKC, NKC, AKX, 2 or 3 in. TKC; 12 in. wide noncomposite Sec. 12; 17 in. wide 21; 26 or 28 in. wide UKX, 87.5 cm wide. Side joints of QL, 99, 121, WKX, TKX, TKC, and Metric units - QL-77-900; QLC-78-900 may be welded together 60 in. OC. Side joints of 99, AKX, WKX, GKX, GKX-A, TKX and Metric units - QL-77-900 and QLC-78-900 may be fastened together with min 1 in. long No. 12x14 self-drilling, self-tapping steel screws 36 in. OC.

CHIA TEH CONSTRUCTION MATERIAL CO LTD — 24 or 36 in. wide Mac-Lok 3; 24 in. wide CFD-3.

DECK WEST INC — 36 in. wide Type B-DW, Inverted B-DW, BA-DW, Inverted BA-DW, 2-DW or 3-DW. Side joints of Type 2-DW and 3-DW may be fastened SEE ITEM | together with min 1 in. long No. 12 x 14 self-drilling, self-tapping steel screws 36 in. OC.

> **DECKCO LLC** – 36 in. wide, Types DC 1.5B, DC 1.5 Form, DC 1.5 Inverted Composite, DC 1.5 Inverted Form, DC 1.5 Composite, DC 2 Form, DC 2 Composite, DC 3 Form, DC 3 Composite.

DESIGN ASSISTANCE CONSTRUCTION SYSTEMS INC — 36 in. wide Type DACS1.5CD, or 24 in. wide Type DACS2.0CD, or DACS3.0CD.

EPIC METALS CORP — 24 in. wide Types EC150, ECP150, EC300, ECP300, EC366, ECP366, EC150, EC300 inverted, ECA, 30 in. wide Types ECB150, ECBR150; 36 in.

HAMBRO STRUCTURAL SYSTEMS, DIV OF CANAM STEEL CORP — 36 in. wide, 1-1/2 in. Type P3615HB. The max superimposed loadings for Type P3615HB units shall not exceed 250 PSF. For single spans, the use of the units shall be limited to 5 spans with a max total superimposed loading of 240 PSF.

INTSEL STEEL EAST LLC — 36 in. wide Types 1.5" COMPOSITE/FLOOR, 2"

MARLYN STEEL DECKS INC — Type 1.5 CF, 2.0 CF or 3.0 CF. **NEW MILLENNIUM BUILDING SYSTEMS L L C** — 24 in. wide Type Versa-Dek.

NEW MILLENNIUM BUILDING SYSTEMS L L C — 24 or 36 in. wide Types 2.0CD, 3.0CD, 2.0CFD, 3.0CFD, 3.0CFDES; 24, 30 or 36 in. wide Types 1.5CD, 1.5CDI, 1.5CDR, 1.5CFD. Fluted units may be phos/painted or galvanized.

ROOF DECK INC — 36 in. wide Types LOK 1 1/2, LOK 1 1/2 R; 24 in. wide Types

STEEL MASTERS INTERNATIONAL DEPENDABLE STEEL — 36 in. wide Types 2WH-36, 3WH-36. Units may be phos/painted or galvanized.

TATA STEEL INTERNATIONAL MIDDLE EAST FZE — 36 in. wide, Type ComFlor

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

VERCO DECKING INC - A NUCOR CO — FORMLOK™ deck types PLB, B, BR, PLN3, N3, PLN, N, PLW2, W2, PLW3, W3. Units may be galvanized, phos./ptd., or mill finish. Units may be cellular or acoustical cellular, with the suffix "CD" or "CD-AC" added to the product name, respectively. All non-cellular deck may be vented or non-vented. 12 in. wide PLW2, W2, PLW3 or W3 units may be blended with 24 or in. wide PLW2, W2, PLW3 or W3 units, respectively; or Types N3, PLN3.

VICWEST INC. — Types HB938, HB938CL, HB938-INV, HB308-INV, HB306, HB30V; Types HBS938, HBS938CL and HBS938CL-IN Composite Steel Decks; Types Acoustic 1. RDS938, RDS938CL and RDS938CL-IN Non-Composite Steel Decks.

VULCRAFT, DIV OF NUCOR CORP — 24, 30 or 36 in. wide Types 1.5VL, 1.5VLI, 1.5PLVLI, 1.5VLP, 1.5PLVLP, 1.5VLR; 24 or 36 in. wide Types 1.5VLPA, 1.5PLVLPA, 2VLI, 2.0PLVLI, 2VLJ, 2VLP, 2.0PLVLP, 2VLPA, 2.0PLVLPA, 3VLI, 3.0PLVLI, 3VLJ, 3VLP, 3.0PLVLP, 3VLPA, 3.0PLVLPA. Types 1.5VL, 1.5VLI, 1.5PLVLI, 1.5VLR, 2VLI, 2.0PLVLI, 2VLJ, 3VLI, 3.0PLVLI, 3VLJ units may be phos/ptd. 24 or 36 in. wide Types 2VLJ, 3VLJ units ++ may be used for max 2 hr Restrained Assembly Rating. Side joints of Type 1.5VL may be fastened together with min 1 in. long No. 12x14 self-drilling, self-tapping steel screws 36 in. OC max. 36 in. wide Types 1.5 SB, 1.5 SBR; 24 or 36 in wide Types 2.0 SB, 3.0 SB, 36 in. wide Type High Strength 1.5 SBI, 36 in. wide Type High Strength 1.5 SBN.

Spacing of welds attaching units to supports shall be 12 in. OC for 12, 24, and 36 in. wide units, four welds per sheet for 30 in. wide units, 6 in. OC for 18 in. wide and Sec. 12 units. Unless noted otherwise, adjacent units button-punched or welded together 36 in. OC along side joints. Adjacent 18 in. wide units welded together 30 in. OC along side joints. For 3 Hr. Rating, units with overlapping type side joints welded together 24 in. OC max.

When a superimposed load of 250 PSF is desired the spacing of welds or buttonpunches shall not exceed 24 in. OC along side joints.

++ Side joints of Types 2VLJ or 3VLJ units may be fastened together with No. 8, 3/4 in. long self-drilling Tek screws driven diagonally from the top side through the joint of the units at 36 in. O. C. max.

The Unrestrained Assembly Rating is equal to the Unrestrained Beam Rating for a max of 3 Hr. and is limited to the following units and limitations:

(a) 1-1/2 in. deep, 24 or 36 in. wide, 22 MSG or thicker fluted with clear spans not more than 7 ft 8 in.

(c) 1-1/2 in. deep, 24 or 36 in. wide, 16 MSG or thicker fluted and 18/18 MSG or thicker cellular with clear spans not more than 9 ft 11 in.

(d) 3 in. deep, 36 in. wide, 18 MSG or thicker fluted and 24 in. wide, 20/18 MSG or thicker cellular with clear spans not more than 13 ft 2 in.

4. Spray-Applied Fire Resistive Materials* — Applied by mixing with water and spraying in one or more coats to a final thickness as shown in the tables below, in the tables below to steel beam surfaces which must be clean and free of dirt, loose 1-1/ scale and oil. Min avg and min ind density of 15/14 pcf respectively. Min avg and 1_{-1} density determination, refer to Design Information Section.

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Spray Applied Fire Resistive Mtl Thkns on Beam In.
1	1	1	1/2
1-1/2	1	1	1/2
1-1/2	1-1/2	1-1/2	13/16
2	1	1	1/2
2	2	2	1-1/16
3	1-1/2	1-1/2	13/16
2	2	2	1.0/16

The thicknesses of Spray-Applied Fire Resistive Materials shown in the table below are applicable when the thickness applied to the beams' lower flange edges is reduced by 1/2 that shown in the table:

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Spray Applied Fire Resistive Mtl Thkns on Beam In.
1	1	1	9/16
1-1/2	1	1	9/16
1-1/2	1-1/2	1-1/2	7/8
2	1	1	9/16
2	2	2	1-3/16
3	1-1/2	1-1/2	7/8
3	3	3	1-3/4

The thicknesses of Spray-Applied Fire Resistive Materials shown in the table below 50/45 pcf respectively for Types Z-156, Z-156T and Z-156PC. are applicable when the thickness applied to the beams' lower flange edges is educed by 1/2 that shown in the table and the beams are supporting all fluted floor or form units w/lightweight concrete only:

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Spray Applied Fire Resistive Mtl Thkns on Beam In.
1	1	1	7/16+
1-1/2	1	1	7/16+
1-1/2	1-1/2	1-1/2	3/4
2	1	1	7/16+
2	2	2	1
3	1-1/2	1-1/2	3/4
3	3	3	1-9/16

+Thickness applied to beams' lower flange edge to be 1/4 in. min.

The thickness of material required on the steel joist for the various ratings are shown in the following table:

Restrained or Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Spray Applied Fire Resistive Mtl Thkns on Joist & Bridging In.
1	1	1-1/8
1-1/2	1-1/2	1-3/4
2	2	2-1/4
3	3	2-7/8

GCP KOREA INC — Types MK-6/CBF, MK-6/ED, MK-6/HY, MK-6s, Monokote

PYROK INC — Type LD.

SOUTHWEST FIREPROOFING PRODUCTS CO — Types 4, 5, 5EF, 5GP, 5MD, 7 7HD, 8EF, 8GP, 8MD, 9EF, 9GP, 9MD.

GCP APPLIED TECHNOLOGIES INC — Types MK-6/HY, MK-6s, RG, Monokote

4A. Alternate Spray-Applied Fire Resistive Materials* — Applied by mixing with with concrete, the center to center spacing of the high potential and low potential water and spraying in one or more coats to a final thickness as shown in the tables single-service after set inserts may be reduced to a min of 7-1/2 in. Restrained below to steel beam surfaces which must be clean and free of dirt, loose scale and Assembly Rating is 2 hr or less with internally protected type 436 after set insert oil. When fluted steel deck is used the area between the steel deck and the beams with Type M4-, M6- or M8- Series single-service activation fitting. top flange shall be sprayed min avg and min ind density of 19/18 pcf, respectively for Types 7GP, 7HD, 105. Min avg and min ind density of 22/19 pcf, respectively for Types Z-106, Z-106/G, Z-106/HY. For method of density determination, refer to M6- or M8- Series single-service activation fitting. Design Information Section.

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Fire Resistive Mtl Thkns on Beam In.
1	1	1	1/2
1-1/2	1	1	1/2
1-1/2	1-1/2	1-1/2	13/16
2	1	1	1/2
2	2	2	1-1/16
3	1-1/2	1-1/2	13/16
3	3	3	1-9/16

are applicable when the beams are supporting all fluted floor or form units w/lightweight concrete only:

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Spray Applied Fire Resistive Mtl Thkns on Beam In.
	1	1	7/16
1/2	1	1	7/16
1/2	1-1/2	1-1/2	3/4
	1	1	7/16
	2	2	1
	1-1/2	1-1/2	3/4
	3	3	1-5/16

+Thickness applied to beams lower flange edge to be 1/4 in. min.

The thickness of material required on the steel joist for the various Ratings are shown in the following table:

Restrained or Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Type of Concrete Slab	Spray Applied Fire Resistive Mtl Thkns In. Joist & Bridging
1	1	NW or LW	1-1/8
1-1/2	1-1/2	NW or LW	1-3/4
2	2	NW or LW	2-1/4
3	3	NW or LW	2-7/8

SOUTHWEST FIREPROOFING PRODUCTS CO — Types 7GP, 7HD.

GCP APPLIED TECHNOLOGIES INC — Types Z- 105, Z-106, Z-106/G, Z-106/HY, Monokote Acoustic 5.

4B. Alternate Spray-Applied Fire Resistive Materials — Applied by mixing with water and spraying in one or more coats to a final thickness as shown in the tables below to steel beam surfaces which must be clean and free of dirt, loose scale and oil. The thicknesses shown in the table below are applicable to beams supporting all fluted floor or form units. Min avg and min ind density of 40/36 pcf, respectively. Min avg and min ind density of 40/36 pcf respectively for Types Z-146, Z-146PC and Z-146T cementitious mixture. Min avg and min ind density of For density determination refer to Design Information Section.

Unrestrained Beam Rating Hr	Restrained Assembly Rating Hr	Concrete Type	Spray Applied Fire Resistive Mtl Thkns on Beam In.
1	1, 1-1/2, 2	LW	9/16
1-1/2	1, 1-1/2, 2, 3	LW	7/8
1	1, 1-1/2, 2	LW	3/4
1-1/2	1, 1-1/2, 2, 3	LW	1

GCP KOREA INC — Type Z-146 investigated for exterior use

GCP APPLIED TECHNOLOGIES INC — Types Z-146, Z-146T, Z146PC, Z-156, Z-156T and Z-156PC investigated for exterior use

5. Shear-Connector Studs — Optional — Studs 3/4 in. diam by 3 in. long, for 1-1/2 in. deep form units to 5-1/4 in. long for 3 in. deep form units, headed type or equivalent per AISC specifications. Welded to the top flange of the beam through the steel form units.

6. Electrical Inserts — (Not shown) Classified as "Outlet Boxes and Fittings Classified for Fire Resistance.'

KAM INDUSTRIES LTD, DBA CORDECK — Preset Inserts

For use with 2-1/2 in. lightweight concrete topping over QL-WKX steel floor units. Installed over factory-punched holes in floor units per accompanying installation

Spacing shall not be more than one insert in each 14 sq ft. of floor area with spacing along floor units not less than 48 in. OC. The holes cut in insert cover for passage of wires shall be no more than 1/8 in. larger diam. than wire. Restrained Assembly Rating is 3/4 hr with Tapmate II-FS-1 and 1 hr with Tapmate II-FS-2

KAM INDUSTRIES LTD, DBA CORDECK — Tapmate II-FS-1, II-FS-2; Series KEB.

(2) **Wiremold Co.** — After set Inserts.

GP. Single-service after set inserts installed per accompanying installation instructions in 2-1/2 in. diam hole core-drilled through min 3-1/4 in. thick concrete topping to top of cell of any min 3 in. deep cellular steel floor unit specified under Item 3. Spacing shall be no more than one insert in each 10 sq ft of floor area in each span with a min center to center spacing of 16 in. If the high potential and low potential raceways of the cellular steel floor unit are separated by a valley filled

WIREMOLD CO — Internally protected Type 436 after set insert with Type M4-,

7. Mineral and Fiber Boards* — (Optional, not shown). Applied over concrete floor with no restriction on board thickness. When mineral and fiber boards are used, the unrestrained beam rating shall be increased by a minimum of 1/2 hr. See Mineral and Fiber Board (CERZ) category for names of manufacturers.

8. Roof Covering Materials* — (Optional, not shown)Consisting of materials compatible with insulations described herein which provide Class A, B or C coverings. See Built-Up Roof Covering Materials in Building Materials Directory.

9. **Insulating Concrete** — (not shown) Optional. Various types of insulating concrete prepared and applied in the thickness indicated:

A. Vermiculite Concrete — (not shown) Optional.

1. Blend 6 to 8 cu. ft. of Vermiculite Aggregate* to 94 lb. Portland Cement and air The thicknesses of Spray-Applied Fire Resistive Materials shown in the table below entraining agent. Min thickness of 2 in. as measured to the top surface of the structural concrete or foamed plastic (Item 10) when it is used. **ELASTIZELL CORP OF AMERICA**

SIPLAST INC

VERMICULITE PRODUCTS INC

2. Blend 3.5 cu. ft. of Type NVC Concrete Aggregate* or Type NVS Vermiculite Aggregate* coat, 1/8 in. thickness beneath foamed plastic (Item 10) when used, 1 in. min topping thickness.

SIPLAST INC

VERMICULITE PRODUCTS INC

Vermiculite concrete may be covered with Roof Covering Materials (Item 8).

B. Cellular Concrete — Roof Topping Mixture* — concentrate mixed with water and Portland cement per manufacturers specifications. Min. thickness of 2-in. as measured to the top surface of the structural concrete or foamed plastic (Item 10A) when used. Cast dry density and 28— day min. compressive strength of 190 psi as determined with ASTM C495—66.

AERIX INDUSTRIES — Cast dry density of 37 (+ or -) 3.0 pcf.

CELCORE INC — Type Celcore with cast dry density of 31 (+ or - 3.0) pcf or Type Celcore MF with cast dry density of 29 (+ or - 3.0) pcf.

ELASTIZELL CORP OF AMERICA — Type II. Mix #1 of cast dry density 39 (+ or -) 3.0 pcf, Mix #2 of cast dry density 40 (+ or -) 3.0 pcf, Mix #3 of cast dry density 47 (+ or -) 3.0 pcf.

C. Cellular Concrete-Roof Topping Mixture* — Concentrate mixed with water and Portland cement per manufacturers specifications. 28-day min. compressive strength of 190 psi as determined with ASTM C495-66.

SIPLAST INC — Mix No. 1 or 2. Cast dry density of 32+3 (Mix No. 1) or 36+3 (Mix No. 2) pcf.

D. **Perlite Concrete** — 6 cu ft. of Perlite Aggregate* to 94 lb of Portland Cement and 1-1/2 pt air entraining agent. Min. thickness 2 in. as measured to the top surface of structural concrete or foamed plastic (Item 10A) when it is used. See Perlite Aggregate (CFFX) in Fire Resistance Directory for names of manufacturers.

E. Cellular Concrete — Roof Topping Mixture* — Foam Concentrate mixed with water, Portland Cement and UL Classified Vermiculite Aggregate per manufacturer's application instructions. Cast dry density of 33 (+ or -) 3.0 pcf and 28-day compressive strength of min 250 psi as determined in accordance with ASTM C495-86.

AERIX INDUSTRIES — Mix No. 3.

SIPLAST INC — Mix No. 3.

SIPLAST INC

F. Floor Topping Mixture* — (Optional, not shown) — Approx 4.5 gal of water to 41 lbs of NVS Premix floor topping mixture. Slurry coat 1/8 in. thickness beneath foamed plastic (Item 10) when used , 1 in. min topping thickness.

Floor Topping Mixture may be covered with Built-Up or Single Membrane Roof Covering.

10. Foamed Plastic* — (optional — Not Shown) For use only with vermiculite (Item 9A) or cellular (Item 9C) concretes — Rigid polystyrene foamed plastic insulation having slots and/or holes sandwiched between vermiculite concrete slurry which is applied to the normal or lightweight concrete surface and vermiculite concrete topping (Item 9A).

SIPLAST INC

VERMICULITE PRODUCTS INC

10A. Foamed Plastic* — For use only with cellular concrete. Nominal 24 by 48 in. polystyrene foamed plastic insulation boards having a density of 1.0 + 0.1 pcf encapsulated within cellular concrete topping (Item 9B). Each insulation board shall contain six nominal 3 in. diameter holes oriented in two rows of three holes each with the holes spaced 12 in. OC, transversely and 16 in. OC longitudinally. See Foamed Plastic* (BRYX) category in Building Materials Directory or Foamed Plastic* (CCVW) category in Fire Resistance Directory for list of manufacturers.

11. Foamed Plastic* — (Optional, not shown). Polyisocyanurate roof insulation, applied over concrete floor with no restriction on insulation thickness. When polyisocyanurate insulation is used, the unrestrained beam rating shall be increased by a minimum of 1/2 hr.

12. **Metal Lath** — (Not Shown) — (Required with Z-146, Z-146T, Z146PC, Z-156, Z-156T and Z-156PC, otherwise optional) - Metal lath may be used to facilitate the spray application of Spray-Applied Fire Resistive Materials on steel bar joist and trusses. The diamond mesh, 3/8 in. expanded steel lath, 1.7 to 3.4 lb per sq yd is secured to both sides of each steel joist with No. 18 SWG galv steel wire at joist web and bottom chord members spaced 15 in. OC max. When used, the metal lath is to be fully covered with Spray-Applied Fire Resistive.

See Foamed Plastic (CCVW) category for list of manufacturers.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

ENIR

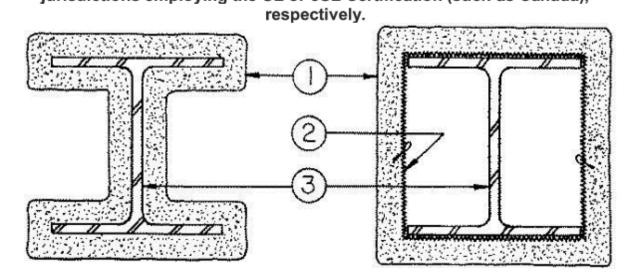
MEDIC,

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REVISIONS

Ratings — 1, 1-1/2, 2, 3 and 4 h.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada),



1. Spray-Applied Fire Resistive Materials* — Applied by mixing with water and spraying in more than one coat to the thicknesses shown below, to steel surfaces which are clean and free of dirt, loose scale, and oil. Min avg and min ind density of 15/14 pcf respectively. Min avg and min ind density of 22/19 pcf respectively for Types Z-106, Z-106/G, Z-106/HY. Min avg and min ind density of 19/18 pcf respectively for Types 7GP and 7HD. Min avg and min ind density of 40/36 pcf respectively for Types Z-146, Z-146PC and Z-146T cementitious mixture. Min avg and min ind density of 50/45 pcf respectively for Types Z-156, Z-156T and Z-156PC. For method of density determination, see Design Information Section, Sprayed Material.

The thickness of Spray-Applied Fire Resistive Materials to be applied to all surfaces of the column (Item 1) required for rating periods of 1 h, 1-1/2 h, 2 h, 3 h, 4 h may be determined by the equation:

1.05 (W/D) + 0.61

h = Spray-Applied Fire Resistive Materials thickness in the range 0.25-3.875 in.

R = Fire resistance rating in hours (1 - 4 h)

D = Heated perimeter of steel column in inches

W = Weight of steel column in lbs per foot

W/D = 0.33 to 6.62

As an alternate to the equation, the minimum thickness of Spray-Applied Fire Resistive Materials required for various fire resistance ratings of contour sprayed or boxed columns may be determined from the table below:

Min Thk In.

Col Size W/D 1 Hr 1-1/2 Hr 2 Hr 3 Hr 4 Hr W4x13 0.556 14/16 1 5/16 1 11/16 2 8/16 3 6/16 W5x19 0.644 13/16 1 5/16 1 11/16 2 8/16 3 2/16 W5x19 0.644 13/16 1 3/16 1 9/16 2 6/16 3 2/16 W6x12 0.438 1 1/16 1 8/16 1 2/16 2 8/16 3 13/16 W6x15 0.431 1 1 7/16 1 15/16 2 8/16 3 13/16 W6x20 0.563 14/16 1 14/16 1 11/16 2 8/16 3 5/16 W6x20 0.563 14/16 1 1/16 1 16/16 2 8/16 3 1/16 W8x10 0.327 1 1/16 1 1/16 1 15/16 2 8/16 3 1/16 W8x13 0.421 1 1 7/16 1 15/16 2 8/16 3 13/16 W8x13 0.421 1 7 7/16 1 14/16 1 11/16 2 8/16 3 1/16 W8x13 0.48	Min			N	lin Thk Ir	۱.	
W5x16 0.550 14/16 1 5/16 1 11/16 2 8/16 3 6/16 W5x19 0.644 13/16 1 3/16 1 9/16 2 6/16 3 2/16 W6x9 0.338 1 1/16 1 8/16 2 2 8/16 3 13/16 W6x12 0.448 15/16 1 7/16 1 14/16 2 8/16 3 13/16 W6x15 0.431 1 1 7/16 1 15/16 2 8/16 3 13/16 W6x20 0.563 14/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x10 0.327 1 1/16 1 1 0/16 2 2/16 3 3/16 N/A W8x13 0.421 1 1 7/16 1 1 5/16 2 8/16 3 13/16 W8x13 0.481 15/16 1 6/16 1 1 13/16 2 8/16 3 13/16 W8x18 0.499 15/16 1 6/16 1 1 11/16 2 8/16 3 13/16 W8x24 0.591 13/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x31 0.665 <t< th=""><th></th><th>W/D</th><th>1 Hr</th><th>1-1/2 Hr</th><th>2 Hr</th><th>3 Hr</th><th>4 Hr</th></t<>		W/D	1 Hr	1-1/2 Hr	2 Hr	3 Hr	4 Hr
W5x19 0.644 13/16 1 3/16 1 9/16 2 6/16 3 2/16 W6x9 0.338 1 1/16 1 8/16 2 2 8/16 3 13/16 W6x12 0.448 15/16 1 7/16 1 1 4/16 2 8/16 3 13/16 W6x15 0.431 1 1 7/16 1 1 11/16 2 8/16 3 13/16 W6x16 0.584 13/16 1 4/16 1 1 11/16 2 8/16 3 5/16 W6x20 0.563 14/16 1 1 1/16 1 1 1/16 2 8/16 3 6/16 W8x10 0.327 1 1/16 1 1 0/16 2 2/16 3 3/16 N/A W8x13 0.421 1 5/16 1 6/16 1 1 3/16 2 8/16 3 1/16 W8x13 0.421 1 5/16 1 6/16 1 1 3/16 2 8/16 3 1/16 W8x13 0.499 15/16 1 6/16 1 1 1/16 2 8/16 3 5/16 W8x24 0.591 13/16 1 3/16 1 1 1/16 2 8/16 3 1/16	W4x13	0.556	14/16	1 5/16	1 11/16	2 8/16	3 6/16
W6x9 0.338 1 1/16 1 8/16 2 2 8/16 3 13/16 W6x12 0.448 15/16 1 7/16 1 14/16 2 8/16 3 12/16 W6x15 0.431 1 1 7/16 1 15/16 2 8/16 3 13/16 W6x16 0.584 13/16 1 4/16 1 11/16 2 8/16 3 5/16 W6x20 0.563 14/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x10 0.327 1 1/16 1 10/16 2 2/16 3 3/16 N/A W8x13 0.421 1 1 7/16 1 15/16 2 8/16 3 13/16 W8x18 0.499 15/16 1 6/16 1 13/16 2 8/16 3 1/16 W8x21 0.577 1 4/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x24 0.591 1 3/16 1 4/16 1 11/16 2 8/16 3 1/16 W8x21 0.577 1 4/16 1 4/16 1 11/16 2 8/16 3 1/16 <	W5x16	0.550	14/16	1 5/16	1 11/16	2 8/16	3 6/16
W6x12 0.448 15/16 1 7/16 1 14/16 2 8/16 3 12/16 W6x15 0.431 1 1 7/16 1 15/16 2 8/16 3 13/16 W6x16 0.584 13/16 1 4/16 1 11/16 2 8/16 3 5/16 W6x20 0.563 14/16 1 4/16 1 11/16 2 8/16 3 6/16 W6x25 0.696 12/16 1 2/16 1 6/16 2 211/16 3 3/16 W8x10 0.327 1 1/16 1 10/16 2 2/16 3 3/16 N/A W8x13 0.421 1 1 7/16 1 15/16 2 8/16 3 10/16 W8x18 0.499 15/16 1 6/16 1 13/16 2 8/16 3 1/16 W8x24 0.591 13/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x31 0.665 13/16 1 3/16 1 1/16 2 8/16 3 1/16 W8x33 0.665 13/16 1 2/16 1 6/16 2 2 11/16 3 1/16	W5x19	0.644	13/16	1 3/16	1 9/16	2 6/16	3 2/16
W6x15 0.431 1 1.7/16 1.15/16 2.8/16 3.13/16 W6x16 0.584 13/16 1.4/16 1.11/16 2.8/16 3.5/16 W6x20 0.563 14/16 1.4/16 1.11/16 2.8/16 3.5/16 W6x25 0.696 12/16 1.2/16 1.6/16 2.2/16 3.3/16 N/A W8x10 0.327 1.1/16 1.10/16 2.2/16 3.3/16 N/A W8x13 0.421 1 1.7/16 1.15/16 2.8/16 3.13/16 W8x18 0.499 15/16 1.6/16 1.13/16 2.8/16 3.9/16 W8x18 0.499 15/16 1.6/16 1.11/16 2.8/16 3.5/16 W8x24 0.591 13/16 1.4/16 1.11/16 2.8/16 3.5/16 W8x28 0.688 12/16 1.3/16 1.9/16 2.5/16 3.1/16 W8x31 0.665 13/16 1.2/16 1.6/16 2.21/16 3.1/16 <td>W6x9</td> <td>0.338</td> <td>1 1/16</td> <td>1 8/16</td> <td>2</td> <td>2 8/16</td> <td>3 13/16</td>	W6x9	0.338	1 1/16	1 8/16	2	2 8/16	3 13/16
W6x16 0.584 13/16 1 4/16 1 11/16 2 8/16 3 5/16 W6x20 0.563 14/16 1 4/16 1 11/16 2 8/16 3 6/16 W6x25 0.696 12/16 1 2/16 1 6/16 2 2 11/16 W8x10 0.327 1 1/16 1 10/16 2 2/16 3 3/16 N/A W8x13 0.421 1 17/16 1 15/16 2 8/16 3 13/16 W8x18 0.499 15/16 1 6/16 1 13/16 2 8/16 3 9/16 W8x21 0.577 14/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x24 0.591 13/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x28 0.688 12/16 1 3/16 1 9/16 2 5/16 3 1/16 W8x33 0.665 13/16 1 1/16 1 6/16 2 2 11/16 W8x43 1.000 10/16 14/16 1 2/16 1 11/16 2 9/16 W8x48 1.000 10/16	W6x12	0.448	15/16	1 7/16	1 14/16	2 8/16	3 12/16
W6x20 0.563 14/16 1 4/16 1 11/16 2 8/16 3 6/16 W6x25 0.696 12/16 1 2/16 1 6/16 2 2 11/16 W8x10 0.327 1 1/16 1 10/16 2 2/16 3 3/16 N/A W8x13 0.421 1 17/16 1 15/16 2 8/16 3 13/16 W8x15 0.481 15/16 1 6/16 1 13/16 2 8/16 3 10/16 W8x18 0.499 15/16 1 6/16 1 13/16 2 8/16 3 5/16 W8x21 0.577 14/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x24 0.591 13/16 1 4/16 1 11/16 2 5/16 3 1/16 W8x33 0.665 13/16 1 3/16 1 9/16 2 5/16 3 1/16 W8x33 0.749 12/16 1 2/16 1 6/16 2 2 11/16 2 21/16 1 2/16 1 11/16 2 7/16 W8x48 1.000 10/16 14/16 1 2/16 1 11/16 2	W6x15	0.431	1	1 7/16	1 15/16	2 8/16	3 13/16
W6x25 0.696 12/16 1 2/16 1 6/16 2 2 11/16 W8x10 0.327 1 1/16 1 10/16 2 2/16 3 3/16 N/A W8x13 0.421 1 1 7/16 1 15/16 2 6/16 3 13/16 W8x15 0.481 15/16 1 6/16 1 13/16 2 8/16 3 10/16 W8x18 0.499 15/16 1 6/16 1 13/16 2 8/16 3 9/16 W8x21 0.577 14/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x24 0.591 13/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x28 0.688 12/16 1 3/16 1 9/16 2 5/16 3 1/16 W8x33 0.749 12/16 1 2/16 1 6/16 2 2 11/16 2 11/16 1 11/16 2 8/16 3 1/16 W8x44 0.00 10/16 14/16 1 2/16 1 11/16 2 8/16 3 1/16 W8x48 1.000 10/16 14/16 1 2/16 <td>W6x16</td> <td>0.584</td> <td>13/16</td> <td>1 4/16</td> <td>1 11/16</td> <td>2 8/16</td> <td>3 5/16</td>	W6x16	0.584	13/16	1 4/16	1 11/16	2 8/16	3 5/16
W8x10 0.327 1 1/16 1 10/16 2 2/16 3 3/16 N/A W8x13 0.421 1 1 7/16 1 15/16 2 8/16 3 13/16 W8x15 0.481 15/16 1 6/16 1 13/16 2 8/16 3 10/16 W8x18 0.499 15/16 1 6/16 1 13/16 2 8/16 3 5/16 W8x21 0.577 14/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x24 0.591 13/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x28 0.688 12/16 1 3/16 1 6/16 2 5/16 3 1/16 W8x31 0.665 13/16 1 3/16 1 6/16 2 5/16 3 1/16 W8x33 0.665 13/16 1 1/16 1 6/16 2 5/16 3 1/16 W8x48 1.00 10/16 1 1/16 1 2/16 1 1 1/16 2 8/16 W8x48 1.200 9/16 1 1/16 1 2/16 1 1 1/16 2 8/16	W6x20	0.563	14/16	1 4/16	1 11/16	2 8/16	3 6/16
W8x13 0.421 1 1 7/16 1 15/16 2 8/16 3 13/16 W8x15 0.481 15/16 1 6/16 1 13/16 2 8/16 3 10/16 W8x18 0.499 15/16 1 6/16 1 13/16 2 8/16 3 9/16 W8x21 0.577 14/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x24 0.591 13/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x28 0.688 12/16 1 3/16 1 6/16 2 2 11/16 3 1/16 W8x31 0.665 13/16 1 3/16 1 6/16 2 5/16 3 1/16 W8x31 0.665 13/16 1 1/16 1 6/16 2 2 11/16 2 11/16 W8x31 0.665 13/16 1 1/16 1 16/16 2 2 11/16 2 11/16 2 2 11/16 W8x48 1.000 10/16 1 14/16 1 2/16 1 11/16 2 8/16 3 13/16 W8x58 1.200 9/16 1 12/16 1 1 1/16	W6x25	0.696	12/16	1 2/16	1 6/16	2	2 11/16
W8x15 0.481 15/16 1 6/16 1 13/16 2 8/16 3 10/16 W8x18 0.499 15/16 1 6/16 1 13/16 2 8/16 3 9/16 W8x21 0.577 14/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x24 0.591 13/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x28 0.688 12/16 1 3/16 1 6/16 2 2 11/16 W8x31 0.665 13/16 1 2/16 1 6/16 2 2 11/16 W8x35 0.749 12/16 1 2/16 1 6/16 2 2 11/16 W8x40 0.849 11/16 14/16 1 2/16 1 11/16 2 8/16 W8x58 1.200 9/16 13/16 1 2/16 1 1 1/16 2 3/16 W8x58 1.200 9/16 13/16 1 2/16 1 1 8/16 2 2 8/16 3 13/16 W10x12 0.347 1 1/16 1 8/16 2 2 8/16 3 13/16 W10x12 0.482 1	W8x10	0.327	1 1/16	1 10/16	2 2/16	3 3/16	N/A
W8x18 0.499 15/16 1 6/16 1 13/16 2 8/16 3 9/16 W8x21 0.577 14/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x24 0.591 13/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x31 0.665 13/16 1 3/16 1 9/16 2 5/16 3 1/16 W8x35 0.749 12/16 1 2/16 1 6/16 2 2 11/16 W8x40 0.849 11/16 1 4/16 1 2/16 1 11/16 2 8/16 W8x48 1.000 10/16 14/16 1 2/16 1 11/16 2 7/16 W8x58 1.200 9/16 13/16 1 2/16 1 10/16 2 3/16 W10x12 0.347 1 1/16 1 8/16 2 8/16 3 13/16 W10x15 0.429 1 1 7/16 1 15/16 2 8/16 3 10/16 W10x19 0.538 14/16 1 5/16 1 12/16 2 8/16 3 7/16 W10x20 0.523 14/16 </td <td>W8x13</td> <td>0.421</td> <td>1</td> <td>1 7/16</td> <td>1 15/16</td> <td>2 8/16</td> <td>3 13/16</td>	W8x13	0.421	1	1 7/16	1 15/16	2 8/16	3 13/16
W8x21 0.577 14/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x24 0.591 13/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x28 0.688 12/16 1 3/16 1 6/16 2 2 11/16 W8x31 0.665 13/16 1 3/16 1 9/16 2 5/16 3 1/16 W8x35 0.749 12/16 1 2/16 1 6/16 2 2 11/16 W8x40 0.849 11/16 14/16 1 2/16 1 11/16 2 7/16 W8x48 1.000 10/16 14/16 1 2/16 1 11/16 2 7/16 W8x58 1.200 9/16 13/16 1 2/16 1 10/16 2 3/16 W10x12 0.347 1 1/16 1 8/16 2 8/16 3 13/16 W10x15 0.429 1 7/16 1 15/16 2 8/16 3 13/16 W10x17 0.482 15/16 1 6/16 1 13/16 2 8/16 3 1/16 W10x19 0.538 14/16 1 5/16 <td>W8x15</td> <td>0.481</td> <td>15/16</td> <td>1 6/16</td> <td>1 13/16</td> <td>2 8/16</td> <td>3 10/16</td>	W8x15	0.481	15/16	1 6/16	1 13/16	2 8/16	3 10/16
W8x24 0.591 13/16 1 4/16 1 11/16 2 8/16 3 5/16 W8x28 0.688 12/16 1 3/16 1 6/16 2 2 11/16 W8x31 0.665 13/16 1 3/16 1 9/16 2 5/16 3 1/16 W8x35 0.749 12/16 1 2/16 1 6/16 2 2 11/16 W8x40 0.849 11/16 1 4/16 1 2/16 1 11/16 2 8/16 W8x48 1.000 10/16 14/16 1 2/16 1 11/16 2 7/16 W8x58 1.200 9/16 13/16 1 2/16 1 10/16 2 3/16 W8x67 1.370 8/16 12/16 1 18/16 2 8/16 3 13/16 W10x12 0.347 1 1/16 1 8/16 2 8/16 3 13/16 W10x17 0.482 15/16 1 6/16 1 13/16 2 8/16 3 13/16 W10x17 0.482 15/16 1 5/16 1 12/16 2 8/16 3 1/16 W10x19 0.538 14/16 <td>W8x18</td> <td>0.499</td> <td>15/16</td> <td>1 6/16</td> <td>1 13/16</td> <td>2 8/16</td> <td>3 9/16</td>	W8x18	0.499	15/16	1 6/16	1 13/16	2 8/16	3 9/16
W8x28 0.688 12/16 1 3/16 1 6/16 2 2 11/16 W8x31 0.665 13/16 1 3/16 1 9/16 2 5/16 3 1/16 W8x35 0.749 12/16 1 2/16 1 6/16 2 2 11/16 W8x40 0.849 11/16 1 4/16 1 2/16 1 11/16 2 7/16 W8x48 1.000 10/16 14/16 1 2/16 1 11/16 2 7/16 W8x58 1.200 9/16 13/16 1 2/16 1 10/16 2 3/16 W10x12 0.347 1 1/16 1 8/16 2 8/16 3 13/16 W10x15 0.429 1 7/16 1 15/16 2 8/16 3 13/16 W10x19 0.538 14/16 1 5/16 1 12/16 2 8/16 3 7/16 W10x20 0.523 14/16 1 5/16 1 12/16 2 8/16 3 7/16 W10x30 0.699 12/16 1 2/16 1 10/16 2 5/16 3 2/16 W10x33 0.661 13/16 1 1/16	W8x21	0.577	14/16	1 4/16	1 11/16	2 8/16	3 5/16
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W12x45 0.829 11/16 1 1/16 1 6/16 2 2 11/16							
WYTZYSO FOUGUS 11/16F 14/16F 1-2/16F 1-11/16F 2-8/16							
VV12X30 0.303 11/10 14/10 12/10 111/10 2 0/10	W12x50	0.909	11/16	14/16	1 2/16	1 11/16	2 8/16

W12x53 0.855 11/16 14/16 1 2/16 1 11/16 2 8/16

W12x58	0.925	11/16	14/16	1 2/16	1 11/16	2 8/16
W12x65	0.925	11/16	14/16	1 2/16	1 11/16	2 8/16
W12x72	1.020	10/16	14/16	1 2/16	1 11/16	2 7/16
W12x79	1.110	10/16	14/16	1 2/16	1 11/16	2 5/16
W12x87	1.220	9/16	13/16	1 1/16	1 10/16	2 2/16
W12x96	1.340	8/16	12/16	1	1 8/16	2
W12x106	1.470	8/16	12/16	15/16	1 7/16	1 14/16
W12x120	1.650	7/16	11/16	14/16	1 5/16	1 12/16
W12x136	1.860	7/16	10/16	13/16	1 3/16	1 9/16
W12x152	2.040	6/16	9/16	12/16	1 2/16	1 8/16
W12x170	2.260	6/16	9/16	11/16	1 1/16	1 6/16
W12x190	2.500	5/16	8/16	10/16	15/16	1 4/16
W12x210	2.730	5/16	7/16	9/16	14/16	1 3/16
W12x230	2.960	5/16	7/16	9/16	13/16	1 2/16
W12x252	3.200	5/16	7/16	9/16	13/16	1 1/16
W12x279	3.500			8/16		15/16
		4/16	6/16		12/16	
W12x305	3.760	4/16	6/16	8/16	11/16	15/16
W12x336	4.060	4/16	5/16	7/16	10/16	14/16
W14x22	0.476	15/16	1 6/16	1 13/16	2 8/16	3 10/16
W14x26	0.559	14/16	1 5/16	1 11/16	2 8/16	3 6/16
W14x30	0.562	14/16	1 4/16	1 11/16	2 8/16	3 6/16
W14x34	0.633	13/16	1 3/16	1 10/16	2 6/16	3 3/16
W14x38	0.706	12/16	1 2/16	1 6/16	2	2 11/16
W14x43	0.752	12/16	1 2/16	1 6/16	2	2 11/16
W14x48	0.835	11/16	1 1/16	1 6/16	2	2 11/16
W14x53	0.915	11/16	14/16	1 2/16	1 11/16	2 8/16
W14x61	0.928	11/16	14/16	1 2/16		
W14x68	1.040	10/16	14/16	1 2/16		
W14x74	1.120	9/16	14/16	1 2/16		
W14x74	1.230	9/16	13/16	1 1/16		
W14x90	1.080	10/16	14/16	1 2/16		2 5/16
W14x99	1.180	9/16	13/16	1 2/16		
W14x109	1.290	9/16	13/16	1 1/16		
W14x120	1.420	8/16	12/16	1	1 7/16	
W14x132	1.560	8/16	11/16	15/16	1 6/16	1 13/16
W14x145	1.640	7/16	11/16	14/16	1 5/16	1 12/16
W14x159	1.780	7/16	10/16	13/16	1 4/16	1 10/16
W14x176	1.960	6/16	9/16	12/16	1 2/16	1 8/16
W14x193	2.140	6/16	9/16	12/16	1 1/16	1 7/16
W14x211	2.320	6/16	8/16	11/16	1	1 6/16
W14x233	2.550	5/16	8/16	9/16	14/16	1 4/16
W14x257	2.780	5/16	7/16	9/16	14/16	1 3/16
W14x283	3.030	5/16	7/16	9/16	13/16	1 1/16
W14x311	3.300	4/16	6/16	8/16	12/16	1
W14x342	3.580	4/16	6/16	8/16	11/16	15/16
W14x370	3.840	4/16	6/16	7/16	11/16	14/16
W14x398	4.090	4/16	5/16	7/16	10/16	14/16
W14x426	4.320	4/16	5/16	7/16	10/16	13/16
W14x455	4.590	4/16	5/16	6/16	9/16	12/16
W14x500	4.950	4/16	5/16	6/16	9/16	12/16
W14x550	5.340	4/16	4/16	6/16	8/16	11/16
W14x605	5.820	4/16	4/16	5/16	8/16	10/16
W14x665	6.210	4/16	4/16	5/16	7/16	9/16
W14x730	6.760	4/16	4/16	5/16	6/16	9/16
W16x26	0.499	15/16	1 6/16	1 13/16	2 8/16	3 9/16
W16x31	0.592	13/16	1 4/16	1 10/16	2 7/16	3 4/16
W16x36	0.617	13/16	1 4/16	1 10/16	2 7/16	3 3/16
W16x40	0.686	13/16	1 3/16	1 9/16	2 5/16	3 1/16
W16x45	0.767	12/16	1 1/16	1 6/16	2	2 11/16
W16x50	0.846	11/16	14/16	1 2/16	1 11/16	2 8/16
W16x57	0.963	10/16	14/16	1 2/16	1 11/16	2 8/16
W16x67	0.936	11/16	14/16	1 2/16	1 11/16	2 8/16
W16x77	1.070	10/16	14/16	1 2/16	1 11/16	2 5/16
W16x89	1.220	9/16	13/16	1 1/16	1 10/16	2 2/16
W16x100	1.370	8/16	12/16	1	1 8/16	2
W18x35	0.602	13/16	1 4/16	1 10/16	2 7/16	3 4/16
W18x40	0.688	12/16	1 3/16	1 6/16	2	2 11/16
W18x46	0.786	12/16	1 1/16	1 6/16	2	2 11/16
W18x50	0.778	12/16	1 1/16	1 6/16	2	2 11/16
W18x55	0.850	11/16	14/16	1 2/16	1 11/16	2 8/16
W18x60	0.923	11/16	14/16	1 2/16	1 11/16	2 8/16
W18x65	0.997	10/16	14/16	1 2/16	1 11/16	2 7/16
W18x71	1.080	10/16	14/16	1 2/16	1 11/16	2 5/16
W18x76	0.971	10/16	14/16	1 2/16	1 11/16	2 8/16
W18x86	1.090	10/16	14/16	1 2/16	1 11/16	2 5/16
W18x97	1.220	9/16	13/16	1 1/16	1 10/16	2 2/16
W18x106	1.330	8/16	12/16	1	1 8/16	2
W18x119	1.480	8/16	12/16	15/16	1 7/16	1 14/16
W21x44	0.672	13/16	1 3/16	1 9/16	2 5/16	3 1/16
W21x44 W21x50	0.672	12/16	1 2/16	1 6/16	2 5/16	2 11/16
				77.7		
W21x57	0.857	11/16	14/16	1 2/16	1 11/16	2 8/16
W21x62	0.846	11/16	14/16	1 2/16	1 11/16	2 8/16
W21x68	0.926	11/16	14/16	1 2/16	1 11/16	2 8/16
W21x73	0.989	10/16	14/16	1 2/16	1 11/16	2 7/16
W21x83	1.120	9/16	14/16	1 2/16	1 11/16	2 4/16
W21x93	1.240	9/16	13/16	1 1/16	1 10/16	2 2/16
W21x101	1.130	9/16	14/16	1 2/16	1 11/16	2 4/16
	1.240	9/16	13/16	1 1/16	1 10/16	2 2/16
W21x111						
	1.350	8/16	12/16	1	1 8/16	2
W21x122		8/16 8/16	12/16 12/16	1	1 8/16 1 7/16	
W21x111 W21x122 W21x132 W21x147	1.350			-		1 15/16 1 12/16

W24x55 0.749 12/16 1 2/16 1 6/16 2 2 11/16

W24x62	0.844	11/16	14/16	1 2/16	1 11/16	2 8/16
N24x68	0.837	11/16	1 1/16	1 6/16	2	2 11/16
N24x76	0.933	11/16	14/16	1 2/16	1 11/16	2 8/16
N24x84	1.020	10/16	14/16	1 2/16	1 11/16	2 7/16
N24x94	1.140	9/16	14/16	1 2/16	1 11/16	2 4/16
W24x104	1.070	10/16	14/16	1 2/16	1 11/16	2 5/16
W24x117	1.200	9/16	13/16	1 2/16	1 10/16	2 3/16
W24x131	1.330	8/16	12/16	1	1 8/16	2
W24x146	1.480	8/16	12/16	15/16	1 7/16	1 14/16
W24x162	1.630	7/16	11/16	14/16	1 5/16	1 12/16
N27x84	0.921	11/16	14/16	1 2/16	1 11/16	2 8/16
N27x94	1.030	10/16	14/16	1 2/16	1 11/16	2 6/16
N27x102	1.110	10/16	14/16	1 2/16	1 11/16	2 5/16
N27x114	1.230	9/16	13/16	1 1/16	1 10/16	2 2/16
N27x146	1.350	8/16	12/16	1	1 8/16	2
W27x161	1.480	8/16	12/16	15/16	1 7/16	1 14/16
N27x178	1.630	7/16	11/16	14/16	1 5/16	1 12/16
W30x99	1.000	10/16	14/16	1 2/16	1 11/16	2 7/16
W30x108	1.090	10/16	14/16	1 2/16	1 11/16	2 5/16
W30x116	1.160	9/16	14/16	1 2/16	1 11/16	2 4/16
N30x124	1.240	9/16	13/16	1 1/16	1 10/16	2 2/16
N30x132	1.320	9/16	13/16	1 1/16	1 9/16	2 1/16
W30x173	1.470	8/16	12/16	15/16	1 7/16	1 14/16
W30x191	1.620	7/16	11/16	14/16	1 5/16	1 12/16
W30x211	1.760	7/16	10/16	14/16	1 4/16	1 11/16
W33x118	1.080	10/16	14/16	1 2/16	1 11/16	2 5/16
W33x130	1.180	9/16	13/16	1 2/16	1 10/16	2 3/16
N33x141	1.280	9/16	13/16	1 1/16	1 9/16	2 1/16
N33x152	1.370	8/16	12/16	1	1 8/16	2
N33x201	1.580	8/16	11/16	15/16	1 6/16	1 13/16
N33x221	1.730	7/16	10/16	14/16	1 4/16	1 11/16
N33x241	1.870	7/16	10/16	13/16	1 3/16	1 9/16
N36x135	1.150	9/16	14/16	1 2/16	1 11/16	2 4/16
N36x150	1.270	9/16	13/16	1 1/16	1 9/16	2 1/16
W36x160	1.350	8/16	12/16	1	1 8/16	2
N36x170	1.430	8/16	12/16	1	1 7/16	1 15/16
N36x182	1.520	8/16	11/16	15/16	1 6/16	1 14/16
N36x194	1.620	7/16	11/16	14/16	1 5/16	1 12/16
N36x210	1.740	7/16	10/16	14/16	1 4/16	1 11/16
N36x230	1.690	7/16	11/16	14/16	1 5/16	1 11/16
N36x245	1.790	7/16	10/16	13/16	1 4/16	1 10/16
W36x260	1.900	7/16	10/16	13/16	1 3/16	1 9/16
N36x280	2.030	6/16	9/16	12/16	1 2/16	1 8/16
N36x300	2.170	6/16	9/16	12/16	1 1/16	1 7/16

Applied Fire Resistive Materials applied to columns' flange tips are reduced to one-half that shown in the table below:

Min			М	in Thk lı	ո.	
Col Size	W/D	1 Hr	1-1/2 Hr	2 Hr	3 Hr	4 Hr
W6x9	0.338	1-1/8	1-5/8	2-1/16	3-1/8	4-3/16
W6x16	0.584	7/8	1-5/16	1-3/4	2-9/16	3-3/8
W8x28	0.688	13/16	1-3/16	1-1/2	2-1/4	2-15/16
W10x49	0.840	3/4	1-1/16	1-3/8	2-1/16	2-3/4
W14x233	2.55	5/16	1/2	11/16	1-3/16	1-5/8
W14x730	6.76	5/16	5/16	5/16	9/16	3/4

As an alternate to the equation, the min thickness of Spray-Applied Fire Resistive Materials Types Z-146, Z-146PC, Z-146T, Z-156, Z-156T and Z-156PC required for various fire resistance ratings of contours sprayed or boxed wide flange columns are shown in the table below:

Min Thkns In.

Size In.	1 Hr	1-1/2 Hr	2 Hr	3 Hr	4 Hr
W6x9	1-1/16	1-7/16	1-1/2	2-1/4	3
W6x12	1	1-3/8	1-1/2	2-1/4	3
W6x16	13/16	1-1/4	1-1/2	2-1/4	2-15/16
W8x28	3/4	1-3/16	1-3/8	2	2-1/2
W10x49	11/16	7/8	1-1/8	1-9/16	1-15/16
W21x73	11/16	7/8	1-1/8	1-9/16	1-15/16
W12x106	9/16	7/8	1-1/8	1-9/16	1-15/16
W14x233	5/16	1/2	9/16	7/8	1-1/4
W14x730	5/16	5/16	5/16	3/8	9/16

ARABIAN VERMICULITE INDUSTRIES — Types MK-6/HY, MK-6/HY Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, Z-106, Z-106/G, Z-106/HY.

GCP KOREA INC — Types MK-6/HY, MK-6/HY Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, Z-106, Z-106/G, Z-106/HY. PYROK INC — Type LD.

SOUTHWEST FIREPROOFING PRODUCTS CO — Types 4, 5, 5EF, 5GP, 5MD, 7GP, 7HD, 8EF, 8GP, 8MD, 9EF, 9GP, 9MD.

GCP APPLIED TECHNOLOGIES INC — Types MK-6/HY, MK-6/HY Extended Set, MK-10 HB, MK-10 HB Extended Set, MK-6/HB, MK-6s, RG, Z-106, Z-106/G, Z-106/HY, Z-146, Z-146PC, Z-146T, Z-156, Z-156T and Z-156PC (Types Z-146, Z-146PC, Z-146T, Z-156, Z-156PC, Z-156T also investigated for exterior use).

2. **Metal Lath** — (Required for box application - Optional for contour application) — 3.4 lb/sq yd galvanized or painted expanded steel lath. For box applications, lath shall be lapped 1 in. and tied together with No. 18 SWG galvanized steel; wire spaced vertically 6 in. O.C. For contour applications, lath is installed vertically with joints butted together and secured to the column with powder actuated fasteners located 18 inches on center at joints and as necessary to have the lath follow the column contour. As an alternate, welded fixing of pins to steel column are permitted.

3. Steel Column — Wide flange steel column, min/max sizes as specified

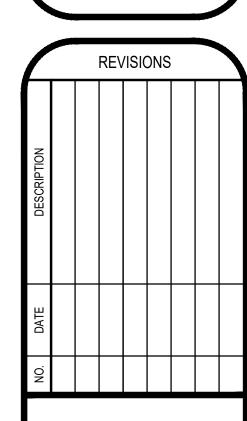
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



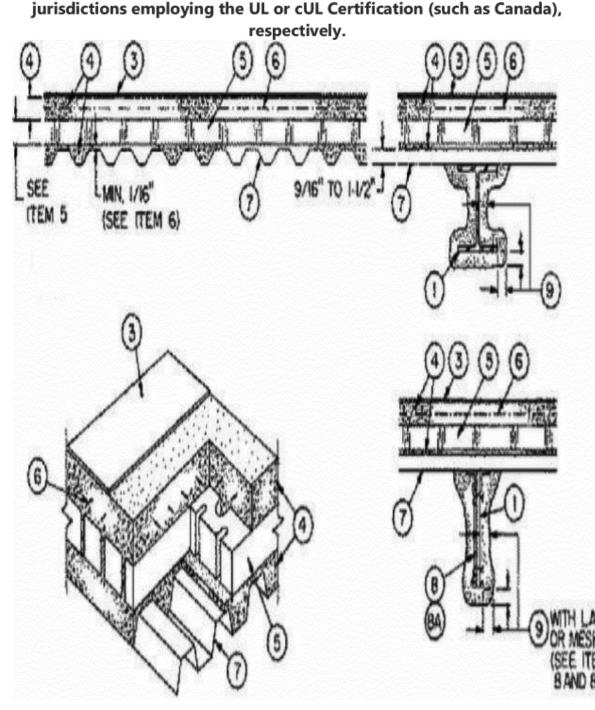
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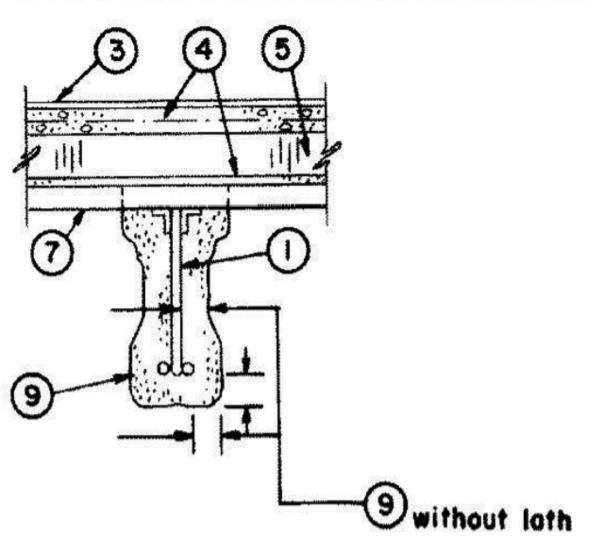


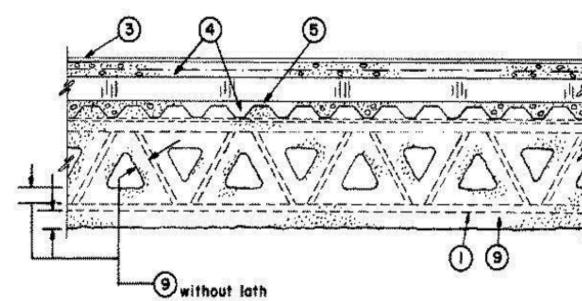




* Indicates such products shall bear the UL or cUL Certification Mark for







1. **Supports** — W6X16 or W8X10 beam. As alternate to steel beams, Joist girders — (Not shown) — 20 in. min depth and 13 lb/lin ft min weight.

1A. **Steel Joists** — 12K5 or heavier steel joist may be used as secondary

2. **Bridging Angles** — (Not shown) — 1-1/4 by 1-1/4 by 1/8 in. thick angles for use with steel joists. Angles welded to top and bottom chords of the joists.

3. **Roof Covering*** — Consisting of hot mopped or cold application materials compatible with insulation(s) described herein which provide Class A, B or C coverings. See Roofing Materials and Systems Directory-Roof Covering Materials (TEVT).

3A. In lieu of Item 3, roof covering consisting of single-ply Roofing **Membrane*** — that is either ballasted, adhered or mechanically attached as permitted under the respective manufacturer's Classification. See Fire Resistance Directory — Roofing Membranes (CHCI).

4. Vermiculite Concrete — 6 cu ft of Vermiculite Aggregate* to 94 lb of Portland cement and 0.11 lb of air entraining agent mixed with approx 25 gal of water. Min compressive strength shall be 125 psi when tested in accordance with ASTM C495. Min thickness above foamed plastic is 2 in. Min thickness between top of steel deck and bottom of foamed plastic shall be

1/16 in. when wire mesh (Item 6) is used and 1/8 in. when the wire mesh is not used. When foamed plastic (Items No. 5 through 5C) is not used the topping thickness of Vermiculite Concrete over the crests of steel deck shall be a min of 2-3/16 in. for the 1 and 1-1/2 h ratings and 2-3/8 in. for the 2 h rating. The max vermiculite concrete thickness shall be determined by job site conditions. MANDOVAL LTD

MANDOVAL VERMICULITE PRODUCTS INC

SIPLAST INC

THE STRONG CO INC

VERMICULITE PRODUCTS INC

4A. As an alternate to Item 4, Cellular Concrete—Roof Topping Mixture* Foam concentrate mixed with water and Portland cement per manufacturer's specifications. Cast dry density and 28-day compressive strength of min 190 psi as determined in accordance with ASTM C495. Min thickness above foamed plastic is 2 in. Min thickness between the top of steel deck and the bottom of foamed plastic shall be 1/8 in. When foamed plastic is not used, the min thickness of Roof Topping Mixture* above the top of the steel deck shall be 2-3/4 in.

AERIX INDUSTRIES — Cast dry density 37 (+ or -) 3.0 pcf.

CELCORE INC — Type Celcore with cast dry density of 31 (+ or - 3.0) pcf or Type Celcore MF with cast dry density of 29 (+ or - 3.0) pcf.

CONCRECEL INTERNATIONAL INC — Cast dry density 38 (+ or -) 3.0 pcf.

ELASTIZELL CORP OF AMERICA — Type II. Mix #1 of cast dry density 39 (+ or -) 3.0 pcf, Mix #2 of cast dry density 40 (+ or -) 3.0 pcf, Mix #3 of cast dry density 47 (+ or -) 3.0 pcf.

SIPLAST INC — Mix #2. Cast dry density of 36 (+ or -) 3.0 pcf.

4B. As an alternate to Item 4 — Perlite Concrete — Mix consists of 6 cu ft of **Perlite Aggregate*** to 94 lb of Portland cement and 1-1/2 pints of airentraining agent. Thickness of perlite concrete topping to be 2 in. min from the top plane of the foamed plastic. Min thickness between the top of steel deck and the bottom of the foamed plastic shall be 1/8 in. See **Perlite Aggregate** (CFFX) category in Fire Resistance Directory for names of Classified companies.

4C. As an alternate to Item 4 — Cellular Concrete — Roof Topping Mixture* Foam Concentrate mixed with water, Portland Cement and UL Classified Vermiculite Aggregate per manufacturer's application instructions. Cast dry density of 33 (+ or -) 3.0 pcf and 28-day compressive strength of min 250 psi as determined in accordance with ASTM C495-86. A 1/8 in. min slurry coat shall be employed below the foamed plastic (Item 5). The cellular concrete topping thickness, above the foamed plastic, shall be 2 in. min. When foamed plastic is not used, the min thickness of Roof-Topping Mixture, above the top of the steel deck, shall be 2-3/4 in. AERIX INDUSTRIES — Mix #3.

SIPLAST INC — Mix #3.

4D. As an alternate to Item 4 — Cellular Concrete — Roof Topping Mixture* — Foam concentrate mixed with water and Portland cement per manufacturer's specifications. Cast dry density and 28-day compressive strength of min 190 psi as determined in accordance with ASTM C495. Min thickness above foamed plastic is 2 in. Min thickness between the top of steel deck and the bottom of foamed plastic shall be 1/8 in. When foamed plastic is not used, the min thickness of Roof Topping Mixture* above the top of the steel deck shall be 2-3/4 in.

CELCORE INC — Type Celcore with cast dry density of 31 (+ or - 3.0) pcf or Type Celcore MF with cast dry density of 29 (+ or - 3.0) pcf.

5. **Foamed Plastic*** — (Optional) — Foamed plastic insulation boards with holes and/or slots. Nom size 24 by 48 in. Thickness shall be 3/4 in. to 8 in.

VERMICULITE PRODUCTS INC

5A. **Foamed Plastic*** — Nom 24 by 48 in., 48 by 48 in., 24 by 96 in. or 48 by 96 in. by max 14 in. thick polystyrene foamed plastic insulation boards with holes symmetrically placed having a max density of 2.0 pcf. For use only with cellular concrete roof topping mixture.

5B. **Foamed Plastic*** — (Optional) — Nom 24 x 48 by max 8 in. thick polystyrene foamed plastic insulation boards having a density of 2.5 pcf max. Each insulation board shall contain six nom 3 in. diam holes oriented in two rows of three holes each, with the holes spaced 12 in. OC transversely and 16 in. OC longitudinally.

See **Foamed Plastic*** (BRYX) category in the Building Materials Directory or Foamed Plastic* (CCVW) category in Fire Resistance Directory for list of Classified Companies.

5C. **Foamed Plastic*** — (Optional — For Use With Items 4A and 4D) — Nominal 24 by 48 by max 14 in. thick expanded polystyrene foamed plastic insulation boards having a max. density of 2.5 \pm 0.1 pcf encapsulated within cellular concrete topping. Each insulation board shall contain eight min 2 in. diameter holes oriented in two rows of four holes each with the holes spaced 12 in. OC transversely and 12 in. OC longitudinally or six min 3 in. diameter holes oriented in two rows of three holes each with the holes spaced 12 in. OC transversely and 16 in. OC longitudinally.

See **Foamed Plastic*** (BRYX) category in the Building Materials Directory or **Foamed Plastic*** (CCVW) category in Fire Resistance Directory for list of Classified Companies.

Wire Mesh — No. 19 SWG galv steel wire twisted to form 2 in. hexagons. In addition, straight No. 16 SWG galv steel wire woven into mesh and spaced 3 in. apart for stiffness. Mesh installed without attachment perpendicular to supports and overlapped 6 in. at the sides. As an alternate, 4 by 8 in., No. 12/14 SWG or 2 by 2 in., No. 14/14 SWG welded wire fabric may be used. The wire mesh may be omitted for the 1 and 1-1/2 h ratings. Thickness of vermiculite concrete between the top of the roof deck and the bottom of the foamed plastic insulation shall be 1/8 in. min when wire mesh is not used.

6A. **Fiber Reinforcement*** — (Optional, not for use to achieve 2 hr ratings) — For use only with Roof-Topping Mixtures* manufactured by Cellular Concrete LLC. In lieu of Wire Mesh (Item 6), Fiber Reinforcement may be added to roof

topping mixtures (Items 4A or 4C). See Fiber Reinforcement (CBXQ) Category for rate that fibers are added to roof topping mixture.

FORTA CORP — Types Econo-Mono, Mighty-Mono, Stucco-Bond, Econo-Net, Cast-Master, Super-Net, Ultra-Net.

6B. Wire Lath — (As alternate for Wire Mesh Item 6) - For use only with Roof-Topping Mixtures* manufactured by ELASTIZELL CORP OF AMERICA. Welded wire lath, Type Structalath, 17 ga. galv steel wire welded to form 1-1/2 by 1-1/2 inch openings. Lath installed without attachment perpendicular to supports and overlapped 6 in. at the sides. The wire lath may be omitted for the 1 and 1-1/2 h ratings. Thickness of cellular concrete between the top of the roof deck and the bottom of the foamed plastic insulation shall be 1/8 in. min when wire lath is not used.

7. **Steel Roof Deck** — (Unclassified) — Noncomposite design, vented or nonvented units, 9/16 in., 15/16 in., 1-5/16 in., 1-1/2 or 2 in. deep galv units, nom 24 to 36 in. wide. When vented or nonvented 9/16 in. deep galv units are used, the Restrained Assembly and Beam Ratings shall not exceed 1-1/2 **h.** Welded to supports with 3/8 in. puddle welds through weld washers spaced 15 in. OC. Adjacent units overlapped one corrugation. Max support spacing 8 ft OC unless otherwise noted for specific Classified units and their recommended loadings. Steel thickness to be No. 24 MSG min when supports are spaced not more than 8 ft OC, No. 26 MSG min when supports are spaced not more than 6 ft OC, and No. 28 MSG, 9/16 in. deep steel deck may be used when supports are spaced 4 ft. OC. Roof deck units to be loaded not more than 75 percent of their max allowable bending stress. For clear spans not more than 7 ft., 8-3/8 in. the Unrestrained Assembly Rating is equal to the Restrained Assembly Rating. Or, Classified Steel Floor and Form **Units*** conforming to the same installation, steel thickness, loading requirements and **Restrained Assembly Rating** as described for unclassified

ASC STEEL DECK, DIV OF ASC PROFILES L L C — Types CP32, C1.4-32, B-36, BN-36, BN-35-1/4, DGB-36, CP-32 Ventform, 2WH-36 and 2WHS-36. Two or three 10 ft 0 in. continuous spans may be used for Type B-36, BN-36, BN-35-1/4, DGB-36, 2WH-36, or 2WHS-36 units, and 12 ft 0 in. simple or continuous spans may be used for Type N units, provided that the total loading on these spans is based on the allowable steel stress and the deflection limitation criteria using the steel (noncomposite) section properties of these units.

CANAM GROUP INC — Types P-3606, P-3615, or P-3012; 36 in. wide Types 1.5B, 1.5Bl; 24 in. wide Types 3N, 3NI.

CANAM STEEL CORP — Types B, UFX, UFXV, UFX-36, UFXV-36. Types NI and NS deck may be used on simple or continuous 12 ft 0 in. spans with the total loading on these spans limited by the allowable bending stress and/or the deflection criteria of this deck.

DECK WEST INC — 36 in. wide Type B-DW, BA-DW or 3-DW. The Type 3-DW units made from 22 ga or heavier steel may be used for a maximum 10 ft., 0 in. spans, provided that the total loading on these spans is based on the allowable steel stresses and the deflection limitation criteria using the steel (noncomposite) section properties of these units.

EPIC METALS CORP — Type Metricform, ER2R, ER3.5, ECA, ECA3.5.

GOODER HENRICHSEN CO. — Type B.

INTSEL STEEL EAST LLC — 36 in. wide Type 1.5" B-DECK/ROOF, 24 in. wide Type N-DECK/ROOF.

KAM INDUSTRIES LTD, DBA CORDECK — Type QL-3 or Sec. 3 with or without up-punched integral hanger tabs, and 3 in. QL-99. The 3 in. deep Type QL-99 units made from 22 ga or heavier steel may be used for max 10 ft, 0 in. spans, provided the total loading on these spans is based on the allowable steel stresses and the deflection limitation criteria using the steel (noncomposite) section properties of these units.

MARLYN STEEL DECKS INC — Types B, BV, EF, EVF, F, HF, HVF, N, NV, SF, SVF, Type Marcore.

NEW MILLENNIUM BUILDING SYSTEMS L L C — Types B, Bl, N, F, 0.6FD, 1.0FD, 1.5FD, 0.6FDV, 1.0FDV, BV, EHD, EHDV, HD, HDV, S, SV, SD, SDV, SDR, NW32 and NW32I. Units may be phos/painted or galvanized.

ROOF DECK INC — Vented or Nonvented Types EHD Multi-Rib, HD Multi-Rib, S Multi-Rib. STEEL MASTERS INTERNATIONAL DEPENDABLE STEEL — 36 in. wide

Types 2WH-36. Two or three 10 ft 0 in. continuous spans may be used for Type 2WH-36 units, provided that the total loading on these spans is based on the allowable steel stress and the deflection limitation criteria using the steel (noncomposite) section properties of these units.

VALLEY JOIST+DECK — Types F, B, BI, VS, B vented.

VERCO DECKING INC - A NUCOR CO — Deck types PLB, HSB, PLN3, HSN3, PLN, N, Shallow or Deep VERCOR™, Deep VERCOR VENTLOK, System 80; FORMLOK™ deck types PLB, B, PLN3, N3, PLN, N, PLW2, W2. Units may be galvanized, phos./ptd., or mill finish. Deck may be vented or non-vented. Two or three 10 ft 0 in. continuous spans may be used for the following units under the following conditions: (A) For Types PLB, PLB FORMLOK™, B, B FORMLOK™, PLW2 FORMLOK™ and W2 FORMLOK™ units the total loading on these spans shall be based on the allowable steel stress or the deflection limitation criteria using the steel (non-composite) section properties of these units. (B) For System 80 the min gauge of units is 18 MSG and use is limited to three continuous spans. Types 2.0D, 3.5D.

Deck types PLN, N may be used on simple or continuous 12 ft 0 in. spans with the total loading on these spans limited by the allowable bending stress and/or the deflection limitation criteria.

VULCRAFT, DIV OF NUCOR CORP — Types 0.6C, 0.6CPR, 0.6CPRV, 0.6CSV, 1.0C, 1.0CSV, 1.3C, 1.3CSV, 1.5C, 2C, 3C, 1.5B, 1.5BI, 1.5PLB, 1.5F, 3N, 3NI, 3.0PLN, 3NL-32, 3NI-32, 3PLN-32. Type 1.5B units made from 21MSG or heavier steel may be used on simple or continuous 10 ft 0 in. spans with the total load on these spans limited by the allowable bending stress and/or the deflection criteria of this deck. Type 3N made from 22MSG or heavier steel may be used on simple or continuous 12 ft 0 in. spans with the total load on these spans limited by the allowable bending stress and/or the deflection criteria of this deck; Types B High Strength, BW High Strength, Nonvented Types BW, 2.0D, 3.5D.

8. **Metal Lath** — (Not Shown) — (Required on both sides of joists with Z-146, Z-146T, Z146PC, Z-156, Z-156T and Z-156PC, otherwise optional I) — Metal lath is used to facilitate the spray application of Spray-Applied Fire Resistive Materials on steel bar joists and trusses. The diamond mesh, 3/8 in. expanded steel lath, 1.7 to 3.4 lb per sq yd, is secured to one side of each steel joist with No. 18 SWG galv steel wire at joist web and bottom chord members, spaced 15 in. OC max. When used, the metal lath is to be fully covered with Spray-Applied Fire Resistive Materials with no min thickness requirements.

8A. Non-Metallic Fabric Mesh — (Optional) — As an alternate to metal lath, glass fiber fabric mesh, weighing approximately 2.5 oz per sq yd, polypropylene fabric mesh, weighing approximately 1.25 oz per sq yd or equivalent, is used to facilitate the spray application. The mesh is secured to one side of each joist web member. The method of attaching the mesh must be sufficient to hold the mesh and the spray-applied Spray-Applied Fire Resistive Materials material in place during application until it has cured. An acceptable method to attach the mesh is by embedding the mesh in minimum 1/4 in. long beads of hot melted glue. The beads of glue shall be spaced a maximum of 12 in. OC along the top chord of the bar joist. Another method to secure the mesh is by 1-1/4 in. long by 1/2 in. wide hairpin clips formed from No. 18 SWG or heavier steel wire.

9. Spray-Applied Fire Resistive Materials* — Applied by mixing with water and spraying in more than one coat to the final thickness shown below to joist or beam surfaces which are clean, free of dirt, loose scale and oil. A 1-3/4 in. thickness of Spray-Applied Fire Resistive Materials shall be applied to the bridging bars. Min avg and min ind density of 15/14 pcf respectively. Min avg and min ind density of 19/18 pcf respectively for Type 7GP and 7HD. For method of density determination refer to Design Information Section.

Thkns In.

Restrained Assembly	Unrestrained Beam		Thkns Seam	Min Thkns on Joist	Min Thkns on Joist	
Rating Hr	Rating Hr	W6x16	W8x10	(No. Lath)	(with Lath)	
1	1	1	1-3/8	1-1/2+	1-1/2+	
1-1/2	1-1/2	1-1/4	1-3/4	2-1/4	1-3/4	
2	1-1/2	1-3/8	1-7/8	2-1/4	1-3/4	
2	2	1-5/8	2-1/4	2-7/16	1-7/8	

ARABIAN VERMICULITE INDUSTRIES — Types MK-6/CBF, MK-6/ED, MK-/HY, MK-6s, Sonophone 1.

GCP APPLIED TECHNOLOGIES INC — Types MK-6/HY, MK-6S, RG,

Monokote Acoustic 1.

GCP KOREA INC — Types MK-6/CBF, MK-6/ED, MK-6/HY, MK-6S, Monokote Acoustic 1.

PYROK INC — Type LD

SOUTHWEST FIREPROOFING PRODUCTS CO — Types 4, 5, 5EF, 5GP, 5MD, 7GP, 7HD, 8EF, 8GP, 8MD, 9EF, 9GP, 9MD

+ For 1 Hr ratings, the min joist size shall be 14J7. 9A. Spray-Applied Fire Resistive Materials* — (Not Shown) — In lieu of Item 9 the following Spray-Applied Fire Resistive Materials may be applied by mixing with water and spraying in multiple coats to final thicknesses shown below. Min avg and min ind density 19/18 pcf respectively for Types 7GP, 105. Min avg and min ind density of 22/19 pcf respectively for Types Z-106, Z-

106/G, Z-106/HY. For method of density determination, refer to Design Information Section, Sprayed Material.

Restrained Assembly	Unrestrained Beam	Min Thkns on Beam in		
Rating Hr	Rating Hr	W6x16	W8x10	
1	1	1-1/16	1-1/2	
1-1/2	1-1/2	1-3/8	1-15/16	
2	1-1/2	1-1/2	2-1/16	
2	2	1-13/16	2-9/16	

ARABIAN VERMICULITE INDUSTRIES — Types Sonophone 5, Z-106, Z-106/G, Z-106/HY.

GCP APPLIED TECHNOLOGIES INC — Types 105, Monokote Acoustic 5, KM-601, Z-106, Z-106/G, Z-106/HY.

GCP KOREA INC — Types Monokote Acoustic 5, Z-106, Z-106/G, Z-106/HY.

SOUTHWEST FIREPROOFING PRODUCTS CO — Type 7GP. 9B. Spray-Applied Fire Resistive Materials* — (Not Shown) — In lieu of Item 9 or 9A the following Spray-Applied Fire Resistive Materials may be applied by mixing with water and spraying in multiple coats to final thicknesses shown below. Min avg and min ind density 40/36 pcf respectively. Min avg and min ind density of 40/36 pcf respectively for Types Z-146, Z-146PC and Z-146T cementitious mixture. Min avg and min ind density of 50/45 pcf respectively for Types Z-156, Z-156T and Z-156PC. For method of

Restrained Assembly	Unrestrained Beam	Min Thkns on Beam in		
Rating Hr	Rating Hr	W6x16	W8x10	
1	1	1-1/16	1-1/2	
1-1/2	1-1/2	1-3/8	1-15/16	
2	1-1/2	1-1/2	2-1/16	
2	2	1-13/16	2-9/16	

density determination, refer to Design Information Section, Sprayed Material.

ARABIAN VERMICULITE INDUSTRIES — Type Z-146

GCP APPLIED TECHNOLOGIES INC — Types Z-146, Z-146T, Z146PC, Z-156, Z-156T and Z-156PC

GCP KOREA INC — Type Z-146

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada),

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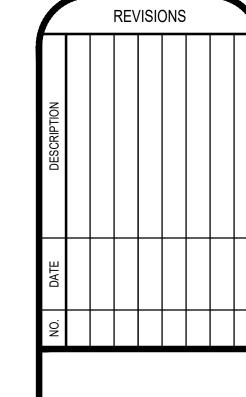
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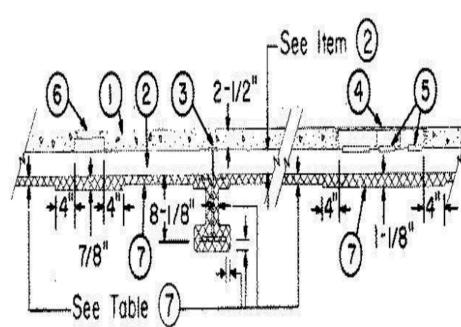
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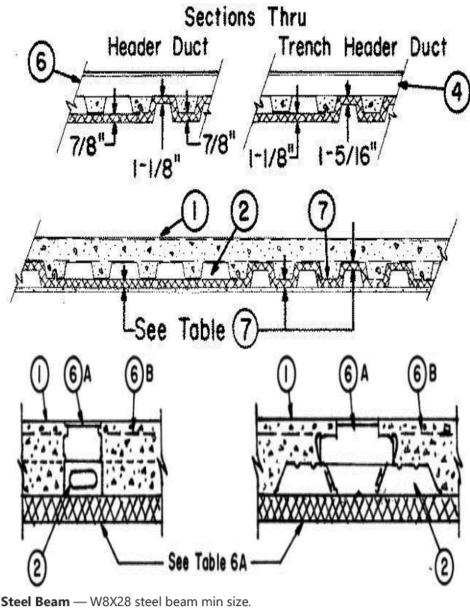




Unrestrained Beam Ratings — 1, 1-1/2, 2 and 3 Hr. (See Items 4 and 7) This design was evaluated using a load design method other than the Limit DESIGN ASSISTANCE CONSTRUCTION SYSTEMS INC — 24 in. wide Type States Design Method (e.g., Working Stress Design Method). For jurisdictions DACS2.0CD, or DACS3.0CD. employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7



jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



Note: Joists from the N series designs may be substituted for the listed beam. When joists are substituted, the restrained rating of the joist must be equal to or

requirements are in front of the Fire Resistance Directory - III. Floor-Ceiling and Roof-Ceilings, Item 7 - Steel Joists, or IV. Beams. Normal Weight or Light Weight Concrete — Normal weight concrete,

greater than the restrained rating of the assembly. Additional joist substitution

carbonate or siliceous aggregate, 150 +or- 3 pcf unit weight, 3500-psi compressive strength, vibrated. Light weight concrete, expanded shale, clay, or slate aggregate by rotary-kiln method, 112 +or- 3 pcf unit wt, 3000 psi compressive strength, vibrated, 4 to 7 per cent entrained air.

2. Steel Floor and Form Units* — Composite or non-composite, 1-1/2, 2 or 3 in. deep galv units. Min gauges are 22 MSG for fluted and 20/20 MSG for cellular. In spans containing a bottomless trench header, min 20/18 MSG cellular units and/or 1-1/2min 20 MSG fluted units shall be used. For spans with trench headers the allowable loading shall be based on non-composite design. The following combinations of units may be used: (1) All fluted

(2) 1 or more fluted to one cellular.

the sides of the trench header. ASC STEEL DECK, DIV OF ASC PROFILES L L C — 32 in. wide Types NH-32, NHN-32, NHF-32; 36 in. wide Types BH-36, BHN-36, BHN-35-1/4, BHF-36, BHF-36A, 2WH-36, 2WHS-36, 3WxH-36, 3WH-36, 3W-36, DG3W-36. All units may be galvanized or Prime Shield. Non-cellular decks may be vented designated with a allowable superimposed load for spans with an intermittent bottom trench header "V" suffix to the product name.

or 36 in. wide Type LF3. Type LF3 unit may be phos/ptd; 36 in. wide Types 1.5B, 1.5Bl, 1.5BL and 1.5BL; 24 in. or 36 in. wide, vented Types LF2 and LF3.

CANAM STEEL CORP — 24, 30 or 36 in. wide, Types BL, BLC; 24 in. wide, Types LF2, LF3, LFC1, LFC2, LFC3, NL, NLC; 36 in. wide, Types LF2, LFC3, LFC3. with an adjusting screw. The lower side rail positioned over the edge of the Types BL, LF2, LF3 and NL units may be phos/ptd.

KAM INDUSTRIES LTD, DBA CORDECK — QL Types 24 in. wide 3, UKX, NKC-1.5, shall extend a min of 4 in. beyond the sides of the intermittent bottom trench 2 in. 99, AKX, AKD; 26 or 28 in. wide UKX; 36 in. wide 2 or 3 in. 99, AKX, WKX, AKD, header. WKD; 24 or 30 in. wide 3 in. QL-GKX, -GKXH, -GKX-A.

CHIA TEH CONSTRUCTION MATERIAL CO LTD — 24 or 36 in. wide Mac-Lok 3; 24 in. wide CFD-3.

DECK WEST INC — 36 in. wide Type 2-DW, 3-DW, B-DW or BA-DW. **DECKCO LLC** – 36 in. wide, Types DC 1.5B, DC 1.5 Form, DC 1.5 Inverted DC 3 Form, DC 3 Composite.

EPIC METALS CORP — 24 in. wide Types EC150, -366, ECP150, -366; 24 or 30 in. wide Types EPC2, EPC3; 30 in. wide Type ECB-150.

INTSEL STEEL EAST LLC — 36 in. wide Types 1.5" COMPOSITE/FLOOR, 2" COMPOSITE/FLOOR, 3" COMPOSITE/FLOOR.

KAM INDUSTRIES LTD, DBA CORDECK — Hi-Bond Types 24 in. wide 3KA1F24; (1) KAM INDUSTRIES LTD, DBA CORDECK Inserts 30 in. wide 3KF30, 3P30. Type 3P30 unit may be phos/ptd and 24 in. wide, WDR2,

MARLYN STEEL DECKS INC — Type 1.5 CF, 2.0 CF or 3.0 CF.

NEW MILLENNIUM BUILDING SYSTEMS L L C — 24, 30 or 36 in. wide Types 1.5CD, 1.5CDI, 1.5CDR, 1.5CFD; 24 or 36 in. wide Types 2.0CD, 3.0CD, 2.0CFD, 3.0CFD, 3.0CFDES. Fluted units may be phos/painted or galvanized.

STEEL MASTERS INTERNATIONAL DEPENDABLE STEEL — 36 in. wide Types 2WH-36, 3WH-36. Units may be phos/painted or galvanized. **VERCO DECKING INC - A NUCOR CO** — FORMLOK™ deck types PLB, B, BR,

PLN3, N3, PLN, N, PLW2, W2, PLW3, W3. Units are min 24 in. wide and may be galvanized or phos./ptd. Units may be cellular with the suffix "CD" added to the product name. * Indicates such products shall bear the UL or cUL Certification Mark for VULCRAFT, DIV OF NUCOR CORP — 24, 30 or 36 in. wide Type 1.5VL, 1.5VLI,

1.5VLR, 1.5PLVLI, 1.5VLP, 1.5PLVLP; 24 or 36 in. wide, Types 2VLI, 2.0PLVLI, 3VLI, 3.0PLVLI, 2VLP, 2.0PLVLP and 3VLP, 3PLVLP. Types 1.5VLI, 1.5PLVLI, 2VLI, 2.0PLVLI, 3VLI, 3.0PLVLI units may be phos/ptd. 36 in. wide Type High Strength 1.5 SBI, 36 in. wide Type High Strength 1.5 SBN; 36 in. wide Types 1.5 SB, 1.5 SBR; 24 or 36 in wide Types 2.0 SB, 3.0 SB. Units may be phos/ptd. Min gauge 20/18 MSG for Type WDR2 or WDR3 cellular units used with min 20

MSG fluted units. Allowable loading for the floor shall be calculated based upon

published loading tables for the fluted units. Type WDR2 or WDR3 units may also be used without being blended with fluted units when NW concrete is used and the allowable bending stress for the cellular units does not exceed 16,000 psi. Spacing of welds attaching units to supports shall be at each side and not to exceed 16 in. OC between sides. For Type WDR2 or WDR3 units, welds not to exceed 12 in. OC. Unless noted otherwise, adjacent units button-punched or

welded together 36 in. OC along side joints. Alternate Construction — Non-composite units of the same type listed above may be used provided allowable loading is calculated on the basis of non-composite

4. **Trench Header** — (Bearing the UL Listing Mark). Constructed of steel and provided with metal edge screeds. When the trench header is located near a support the load carrying capacity of the span may be based on the allowable

slab at the center of the span, whichever governs. As an alternate in spans employing min 20/18 MSG cellular floor units and/or min units with inserts are: 20 MSG fluted floor units, trench headers (Bearing the UL Listing Mark) without the bottom pan may be used. The allowable superimposed load for spans with a bottomless trench header shall be based on non-composite design. The bottomless trench header, with a max width of 36 in., consists of two cell closers which conform to the contour of the floor units, placed along the sides of the desired trench header location and welded to the floor units. The side rails, consisting of extruded aluminum screeds secured to galv steel channels (min 18 For abandonment, see installation instructions. MSG), are positioned over the cell closers, aligned, and welded or riveted to the cell closers and floor units. A separate U-shaped galv steel channel (min 18 MSG), serving as the power compartment, is welded or riveted to the floor units. Steel

Installed per accompanying installation instructions over factory-punched holes in cover plates, 1/4 in. thick, shall be secured to the side rails. In bottomless trench QL-AKD or QL-WKD floor units. Inserts are used in the pre-active, active, or headers wider than 18 in., each side joint of the steel floor units shall be welded abandoned condition. Required Spray-Applied Fire Resistive Materials thicknesses with a 1 in. long weld near the trench header centerline. For QG-GKX-24 or -30 on floor units with inserts are: cellular floor units only, a separate KED-PTS (UL Listed) power transition sleeve is secured to power compartment with one rivet or screw. The use of the bottomless

trench header requires additional protection underneath the trench header.

Fireproofing thickness shall be increased as shown on the following table: Restrained & Min Thkns, In. **Unrestrained Assembly** on Crests on Valley & Flat Plate Rating Hr 1-3/16 1-1/2 1-5/16 1-3/4 1-5/8 2-1/4 2-1/8

4A. **Trench Header** — With an intermittent bottom (as an alternate to Item 4) when Type WDR cellular units are used — (Bearing the UL Listing Mark) — The shall be based on non-composite design. The intermittent bottom trench header, with a maximum width of 36 in., consists of horizontal closure plates, (min No. 16 CANAM GROUP INC — 36 in. wide Type P-3623, P-3606, P-3615 and 24 in wide MSG) with 4 threaded studs pre-welded on the top side of each plate near its Type P-2432 composite, 36 in. wide Type P-3606 and P-3615 non-composite; 24 corners. The plates to be placed over the fluted areas of the floor units and affixed to the floor units by welds at each corner. Concrete is to be vibrated into the voids formed by the plates and the fluted areas of the units beneath the trench header. The upper side rail is extruded aluminum attached to the lower steel side rail clip instructions.

plates. The use of the intermittent bottom trench header requires additional

protection underneath the trench header. (See Item 7) The additional protection

5. **Access Openings** — As required, with grommets.

Header Duct — (Bearing the UL Listing Mark) 1-1/2 in. deep by 6-7/8 in. wide. Housing constructed of steel. 6A. **Electrical Inserts** — Preset and after set electrical inserts Classified as **Outlet Boxes and Fittings Classified for Fire Resistance** *. Unless specified otherwise Composite, DC 1.5 Inverted Form, DC 1.5 Composite, DC 2 Form, DC 2 Composite, for a particular preset electrical insert type, the spacing of the preset electrical inserts shall be not less than 24 in. on center along cellular steel floor units with not more than one preset electrical insert in each 8 sq ft of floor area. The required thickness of Spray-Applied Fire Resistive Materials on the steel floor units with inserts shall be sprayed the entire length and width of the units between supports and shall extend beyond the edge of inserts onto adjacent floor units for a minimum horizontal width of 12 in. In floor spans (between supports) containing electrical inserts, the entire floor span (fluted and cellular steel floor units) must be sprayed with a minimum of 3/8 in. thickness of Spray-Applied Fire Resistive

Materials.

(Tapmate II, II-EA, II-FN, II-EAFN; Series KEB) Installed per accompanying installation instructions over factory-punched holes in QL-AKX or QL-WKX floor units. Inserts are used in the pre-active, active or abandoned condition. Required Spray-Applied Fire Resistive Materials thicknesses

on floor units with inserts are:

Assembly Rating Hr	Floor Unit Type	Concrete Type	Min Thkns, In.
	(Tapmate II,	II-EA)	
2	QL-AKX, -WKX	NW	7/8
2	QL-AKX	LW	1-1/16
2	QL-WKX	LW	15/16
3	QL-AKX	NW	1-1/4
3	QL-AKX	LW	1-1/2
3	QL-WKX; Metric	NW	1-3/16
	Units-QLC-78-900		
3	QL-WKX; Metric	LW	1-3/8
	Units-QLC-78-900		
	(Tapmate II-FN	or II-EAFN)	
2	QL-AKX, -WKX; Metric	NW	7/16
	Units-QLC-78-900		
2	QL-AKX, -WKX; Metric	LW	3/4
	Units-QLC-78-900		
3	QL-AKX, -WKX; Metric	NW	3/4

The hole cut in insert cover for passage of wires shall be no more than 1/8 in. 3. Joint Cover — 2 in. wide cloth adhesive tape applied following the contour of larger diam than the wire. For abandonment of Tapmate inserts, see installation larger diameter than the wire. For abandonment see installation

PC flush cover fittings.

(Tapmate II-EAFN-FC1; Series KEB)

Units-QLC-78-900

moment or shear stress of the floor units at the edge of the trench header away Installed per accompanying installation instructions over factory-punched holes in Installed per accompanying installation instructions in core-drilled holes over QLfrom the support or on the allowable composite moment or shear capacity of the QL-WKX floor units. Inserts are used in the pre-active, active, or abandoned condition. Required Spray-Applied Fire Resistive Materials thicknesses on floor

> Assembly Rating Hr Floor Unit Type Concrete Type Min Thkns, In.

(Tapmate III-FN, III-EAFN; Series KEC)

	(Tapmate III-F)	N or III-EAFN)	
Restrained Assembly Rating Hr	Floor Unit Type	Concrete Type	Min Thkns, In.

Unrestrained Assembly		(Tapmate III-FN or III-EAFN)			
on Crests	on Valley & Flat Plate	2	QL-AKD, WKD; Metric	NW	1/2
1-3/16	1		Units-QLC-78-C-900,		
1-1/2	1-5/16		-78-E-900, -78-F-900		
1-3/4	1-5/8	2	QL-AKD, WKD; Metric	LW	13/16
2-1/4			Units-QLC-78-C-900,		
			-78-E-900, -78-F-900		
l protection shal	l extend a min of 4 in. beyond	3	QL-AKD, -WKD	NW	3/4
			(Tapmate III-EAFN-F	C1)	
ermittent botton	n (as an alternate to Item 4)	2	QL-WKD	NW	1/2
	3		QL-WKD	LW	13/16
•		3	QL-AKD, WKD; Metric	NW	3/4
			Units-QLC-78-C-900,		
	•		-78-E-900, -78-F-900		
	on Crests 1-3/16 1-1/2 1-3/4 2-1/4 ires additional production shale and the control of the control of the control of the consists of horizonelded on the top	on Crests on Valley & Flat Plate 1-3/16 1 1-1/2 1-5/16 1-3/4 1-5/8	on Crests on Valley & Flat Plate 1-3/16	on Crests on Valley & Flat Plate 1-3/16	on Crests on Valley & Flat Plate 1-3/16

he hole cut in insert cover for passage of wires shall be no more than 1/8 in.

The Tapmate III insert may use KEB-HP-1; Series KEC outlet box fittings with the horizontal closure plates snapped-on the pre-welded threaded studs on top of the same hourly rating and fireproofing thicknesses as specified for the Tapmate II-EAFN electrical inserts.

(Tapmate IV, IV-EA, IV-H, IV-H-M, IV-S)

Installed per accompanying installation instructions over factory-punched holes in QL-GKX-24 or -30 floor units. Inserts are used in the preactive, active or abandoned condition. Required Spray-Applied Fire Resistive Materials thicknesses on floor units with inserts are:

Assembly

Rating Hr	Floor Unit Type	Concrete Type	Min Thkns, In.
	(Tapmate IV, IV	/-H, IV-H-M, IV-S	S)
1	QL-GKX	NW, LW	3/8
1-1/2	QL-GKX	NW	1/2
1-1/2	QL-GKX	LW	9/16
2	QL-GKX	NW	5/8
2	QL-GKX	LW	3/4
3	QL-GKX	NW	1-1/4
3	QL-GKX	LW	1-1/2
	(Tapma	ate IV-EA)	
1	QL-GKX	NW, LW	7/16
1-1/2	QL-GKX	NW	9/16
1-1/2	QL-GKX	LW	5/8
2	QL-GKX	NW	3/4
2	QL-GKX	LW	7/8

The holes cut in insert cover for passage of wires shall be no more than 1/8 in. larger diameter than the wire. For abandonment of inserts see installation instructions.

Type KED-HP-1 outlet box fittings may be used with Tapmate IV box assemblies or in lieu of Tapmate IV or IV-EA fittings with the same hourly ratings and protection material thicknesses as specified for the above electrical inserts.

(Tapmate IV-FN-S, IV-FN-H, IV-EAFN; Series KED) Installed per accompanying installation instructions over factory-punched holes in QL-GKX-24 or -30 floor units. Inserts are used in the preactive, active, or

Restrained Assembly Rating Hr	Floor Unit Type	Concrete Type	Min Thkns, In.
	(Tapmate IV-FN-S	, IV-FN-H, IV-l	EAFN)
2	QL-GKX	NW	1/2

LW

NW

13/16

3/4

Restrained

Assembly

Rating Hr

1-1/2

1-1/2

abandoned condition. Required Spray-Applied Fire Resistive Materials thicknesses

The hole cut in insert cover for passage of wires shall be no more than 1/8 in.

QL-GKX

QL-GKX

Type KED-HP-1 outlet box fittings may be used with Tapmate IV box assemblies or The Tapmate II-FN insert may use KEM-HP-1 outlet box fittings in lieu of the KEB- in lieu of Tapmate IV-FN-S, IV-FN-H, IV-EAFN fittings with the same hourly ratings and protection material thicknesses as specified for the above electrical inserts.

(Tapmate KED-MSA Multi-Service After set Inserts)

GKX-24 or -30 steel floor units. Spacing of after set inserts shall be not more than one insert per each 7-1/2 sq ft of floor area with not less than 25-1/2 in. between edges of adjacent after set inserts. After set inserts may be installed with either the flip lid plastic cover (KEC-PC3, PC4 and PC5 components) or the Deluxe Cover (KED-NAC type). Required Spray-Applied Fire Resistive Materials thicknesses on steel floor units with inserts are tabulated below:

on floor units with inserts are:

Assembly Rating Hr	Floor Unit Type	Concrete Type	Min Thkns, In.
1	QL-GKX	NW, LW	3/8
1-1/2	QL-GKX	NW	1/2
1-1/2	QL-GKX	LW	9/16
2	QL-GKX	NW	5/8
2	QL-GKX	LW	3/4
3	QL-GKX	NW	1-1/4
3	OL-GKX	LW	1-1/2

(Tapmate VI) Installed per accompanying installation instructions over factory-punched holes in 3 in. deep Type QL-GKX, 24 in. wide cellular steel floor units. Refer to installation instructions for Classified assemblies. The required Spray-Applied Fire Resistive Materials thicknesses on steel floor units with inserts are:

Restrained Assembly Rating, Hr	Floor Unit Type	Concrete Type	Min Thkns, In.
1		LW or NW	3/8
1-1/2		LW or NW	1/2
2		LW or NW	3/4
3		LW or NW	1

KAM INDUSTRIES LTD, DBA CORDECK — Tapmate II, II-EA, II-FN, II-EAFN, II-EAFN-FC1; Series KEB. Tapmate III-FN, III-EAFN, III-EAFN-FC1; Series KEC. Tapmate IV, IV-EA, IV-EAFN, IV-FN-S, IV-FN-H, IV-H, IV-H-M, IV-S; Series KED, Tapmate KED-MSA, Tapmate VI

(2) Wiremold Co., and Kam Industries LTD d/b/a Cordeck Inserts

(NRG Bloc IV Preset Inserts; FAKM-II, RAKM-II, RAKM, RPF, FPF, S36BB, S36CC, S37BB, S37CC, S36PB, S36PP, S37PB, S37PP, S38CC, S38BB, S38PB, S38PP, S39CC, FPCT, FPBT, FPCTC, FPBTC, FPFFT, FPFFTC Service Fittings or Type S3AXBP abandonment plate)

The NRG Bloc IV preset insert is furnished by **KAM INDUSTRIES LTD d/b/a CORDECK.** The service fitting components are furnished by **WIREMOLD** the beams shall be as follows: **CO.** Installed per accompanying installation instructions over factory-punched holes in 3 in. deep K-Type cellular steel floor units (furnished by KAM INDUSTRIES LTD d/b/a CORDECK). Openings made in the two-part access hatch of the Type RAKM service fitting for passage of wires shall be no greater than 1/8 in. larger than diameter of wire. When Type RPF, FPF, S36PB, S36PP, S37PB, S37PP, S38PP, S39PP, FPFFTC, FPFFT service fittings are used, furniture whip for power feed from service fitting cover to be liquid-tight steel conduit with cast steel 90 degree elbow connector. Refer to installation instructions for Classified assemblies. The

Restrained Assembly Rating, Hr	Floor Unit Type	Concrete Type	Min Thkns, In.
(Type RAKM-		S3AXBP)	C, FPBTC, FPCTC,
	3 in. K	LW or NW	3/8
-1/2	3 in. K	LW or NW	7/16
	3 in. K	LW or NW	11/16
	3 in. K	LW or NW	1
	(Ty	pe FAKM-II)	
1-1/2	3 in. K	LW or NW	3/8
	3 in. K	LW or NW	7/16
	3 in. K	LW or NW	13/16
(Types RAK	KM, S37BB, S3	7CC, S39BB, S39C	CC, FPBT, FPCT)
1-1/2	3 in. K	LW or NW	3/8

	3 in. K	LW or NW	13/16
(Types RAI	KM, S37BB, S37	CC, S39BB, S39	CC, FPBT, FPCT)
1/2	3 in. K	LW or NW	3/8
	3 in. K	LW or NW	11/16
Γ)	Type RPF, S37PE	3, S37PP, S39PP	, FPFFT)
	3 in. K	NW, LW	3/8
	3 in. K	NW	3/8
	3 in. K	LW	1/2
	3 in. K	NW	9/16
	3 in. K	LW	3/4
	3 in. K	NW	1
	(Type FPF, S36	SPB, S36PP, FPF	FTC)
1/2	3 in. K	LW, NW	3/8
	3 in. K	LW, NW	7/16
	3 in. K	LW, NW	13/16

(PK Series Preset Inserts: RPF, S37PB, S37PP, S39PP or FPFFT Service Fittings) Installed per accompanying installation instructions over factory pre-punched knockouts or factory installed over pre-punched knockouts in Type WDR2 or WDR3 cellular steel floor units. Furniture whip for power feed from service fitting cover to be liquid-tight steel conduit with cast steel 90 degree elbow connector. Fire Resistive Materials thicknesses on floor units with inserts are:

Concrete		Restrained Assembly	Unrestrained Assembly	Concrete	Min Mtl Steel I Form	Floor
Туре	Min Thkns, In.	Rating Hr	Rating Hr	Type	Fluted	Ce
RPF, S37PB, S37PP, S39	9PP, FPFFT)	1	1	NW	-	
NW	3/8	1, 1-1/2, 2	1	LW	3/8	
LW	1/2	1-1/2	1	NW	_	
NW	7/16	1-1/2	1-1/2	NW		
LW	5/8	2	1	NW	_	
NW	11/16	2	2	NW	_	
LW	7/8	3	1-1/2	NW		
NW	1-1/8	3	2	NW	_	
		3	3	NW		

(Types TSAR, TSACR After set Inserts)

After set inserts installed per accompanying installation instructions in holes coredrilled through concrete topping to top of cells of the cellular floor units. Types When trench header (Item 4A) is used with Type WDR cellular units, the following insert in each 4 sq ft of floor area with not less than 2 ft center to center of units for the various Restrained and Unrestrained Assembly Ratings. adjacent inserts. The required Spray-Applied Fire Resistive Materials thicknesses on floor units with inserts are shown below:

Restrained Assembly Rating, Hr	Floor Unit Type	Concrete Type	Min Thkns, In.
	(Types TSAR,	TSACR)	
1	WDR2 or WDR3	NW, LW	1/2
1-1/2	WDR2 or WDR3	NW, LW	3/4
2	WDR2 or WDR3	NW, LW	1-1/4

WIREMOLD CO — Type NRG Bloc IV preset inserts; Type FAKM-II, RAKM-II, RAKM, RPF, FPF, S36BB, S36CC, S37BB, S37CC, S36PB, S36PP, S37PB, S37PP, S38CC, S38BB, S39BB, S39CC, S38PP, S39PP, FPCT, FPBT, FPCTC, FPBTC, FPFFT, FPFFTC service fittings or Type S3AXBP abandonment plate. Type PK-Series inserts; **ISOLATEK INTERNATIONAL** — Type D-C/F, HP, II, or II HS. Type E.B.S. or Type X Type RPF, S37PB, S37PP, S39PP or FPFFT service fittings. Type TSAR, TSACR after adhesive/surface sealer are required under bottomless and intermittent trench

6B. **Welded Wire Fabric** — 6x6-W1.4xW1.4. Required only when electrical inserts for the other conditions and heavier gauges of floor units.

Applied Fire Resistive Materials above the beam. Beam surfaces must be free of units. dirt, oil or scale. Under bottomless and intermittent trench headers (Items 4 and 4A), under for Type WDR cellular floor units, under 20/20 MSG cellular floor units 9. **Roof Covering** — (Optional, Not Shown) Class A, B or C **Built-Up Roof** and under 22 MSG fluted floor units, the use of adhesive is required; adhesive is Covering Materials * consisting of asphalt (or coal tar pitch) and felt in alternate optional for the other conditions and heavier gauges of floor units. Min avg untamped density is 13 pcf with min untamped individual density of 11 pcf for

Types DC/F, II, or II HS. Min avg and individual densities of 22 and 19 pcf, respectively, for Type HP. For method of density determination, refer to Design 10. **Insulation*** — (Optional, Not Shown) Rigid Insulation Boards installed as Information Section. The thickness of the Spray-Applied Fire resistive Materials on indicated below:

Unrestrained

Min Thknes, Spray-Applied Resistive Mtl, In. W8x28 When Deck

Restrained Assembly Rating, Hr	Assembly and Beam Rating	Concrete Type	W8x28 When Deck Is All Fluted	When Deck Is blend or All Cellular	B. Mineral and Fiber Board* — (For use in 2 hr. assembly ratings only) Approver concrete floor with no restriction on thickness. When mineral and fiber
1	1	NW	3/8	3/8	is used. Compatible Roof Covering materials *, providing Class A, B or C
1-1/2	1-1/2	NW	1/2	1/2	coverage shall be used. See Roofing Systems (TGFU) in Building Materials
2	1	NW	3/8	3/8	Directory.
2	2	NW	3/4	13/16	C. Foamed Plastic (CCVW)* — (As an alternate to Item 10 - Not shown -
3	1-1/2	NW	1/2	1/2	Optional) - Expanded polystyrene insulation installed to a maximum nomin density of 2.0 lb/ft ³ .
3	3	NW	1-3/16	1-5/16	density of 2.0 lb/ft ² .
1	1	LW	3/8	7/16	BASF CORP STYRENIC FOAMS DIV — Types Neopor® GPS (Roofing Boar
1-1/2	1-1/2	LW	5/8	11/16	Neopor® GPS (EIFS), Neopor® GPS (Stucco), Neopor® GPS (CI), Neopor® (IE), Neopor® GPS (Perma R-Chrome), Neopor® GPS (Termite Treated), Ne
2	1	LW	3/8	7/16	GPS (HALO Subterra), Neopor® GPS (Foundation PRO), Neopor® GPS (HA
2	2	LW	1	1	Exterra), Neopor® GPS (HALO Interra), Neopor® GPS (PFT Pro Board), Neo
3	1-1/2	LW	5/8	11/16	GPS (PFT Red Label), and Neopor® GPS (PFT Chrome).
3	3	LW	1-9/16	1-5/8	11. Vermiculite Concrete — (Optional, Not Shown) Min 2 in. thick, consisting our ft Vermiculite Aggregate * to 94 lb Portland cement and 0.5 lb air entra
					cu it vermiculte Aggregate " to 94 ib Portiand Cement and 0.5 ib all entre

r the general floor area, the following thicknesses of Spray-Applied Fire Resistive single ply Roof Covering Materials *. sterials are required on the steel floor units for the various Restrained and restrained Assembly Ratings:

Restrained	Unrestrained	Min. Steel Floor			Min Thknes, Spray-Applied Resistive Mtl, In.			
Assembly Rating, Hr	Assembly Rating, Hr	Unit Depth, In.	Concrete Type	Crests	Valley	Flat Plate		
1	1	1-1/2	NW or LW	3/8	3/8	3/8		
1-1/2	1-1/2	1-1/2	NW or LW	3/8	3/8	3/8		
1-1/2	1-1/2	2	NW or LW	3/8	3/8	3/8		
2	1	1-1/2	NW or LW	1/2	3/8	3/8		
2	2	1-1/2	NW or LW	1/2	3/8	3/8		
2	2	2	NW or LW	3/8	3/8	3/8		
3	1-1/2	1-1/2	NW or LW	11/16	1/2	1/2		
3	1-1/2	3	NW or LW	5/8	5/8	1/2		
3	3	1-1/2	NW or LW	11/16	1/2	1/2		
3	3	3	LW	5/8	5/8	1/2		

headers or electrical inserts, the following thicknesses of Spray-Applied Fire Refer to installation instructions for Classified assemblies. Required Spray-Applied

Resistive Materials are required on the steel floor units for the various Restrained distance between the outer rows of studs and the edge of the trench header shall and Unrestrained Assembly Ratings:

Restrained Assembly	Unrestrained Assembly	Concrete	Min Mtl Thkns In. Steel Floor & Form Units		
Rating Hr	Rating Hr	Type	Fluted	Cellular	
1	1	NW	-	3/8	
1, 1-1/2, 2	1	LW	3/8	1/2	
1-1/2	1	NW	-	3/8	
1-1/2	1-1/2	NW		3/8	
2	1	NW	-	1/2	
2	2	NW		1/2	
3	1-1/2	NW	_	15/16	
3	2	NW	_	15/16	
3	3	NW	_	15/16	

TSAR and TSACR for use in 7 in. diam holes. Spacing shall be not more than one thicknesses of Spray-Applied Fire Resistive Materials are required on the steel floor

Restrained Assembly	Unrestrained Assembly	Concrete Type	Min Mtl Thkns In. Trench Header Intermittent (Item 4A)		
Rating Hr	Rating Hr		Crests	Valley	Flat Plate
1	1	LW, NW	1-3/16	1	1
1-1/2	1-1/2	NW	1-1/2	1-1/4	1-1/4+
1-1/2	1	LW	1-1/2	1-1/4	1-1/4+
2	2	NW	1-3/4	1-5/8	1-5/8+
2	1	LW	1-3/4	1-5/8	1-5/8+

headers (Items 4 and 4A), under for Type WDR cellular floor units, under 20/20 MSG cellular floor units and under 22 MSG fluted floor units. Adhesive is optional

8. **Shear Connector Studs** — (Optional, Not Shown) Studs, 3/4 in. diam, by 3 in. 7. Spray-Applied Fire Resistive Materials* — Applied by spraying with water to long for 1-1/2 in. deep form units to 5-1/4 in. deep for 3 in. units, headed type or the final untamped thicknesses shown below. Crest area shall be filled with Spray- equivalent per AISC specifications. Welded to top beam flange through steel form

layers placed over concrete slab.

See Building Materials Directory for descriptions.

A. Foamed Plastic* — Rigid polystyrene foamed plastic insulation boards, no restriction on thickness, installed with or without adhesion, over roof covering (item 9). Covered with min 10 psf crushed stone or concrete pavers.

GCP APPLIED TECHNOLOGIES INC Mineral and Fiber Board* — (For use in 2 hr. assembly ratings only) Applied over concrete floor with no restriction on thickness. When mineral and fiber board s used. Compatible Roof Covering materials *, providing Class A, B or C

BASF CORP STYRENIC FOAMS DIV — Types Neopor® GPS (Roofing Board), Neopor® GPS (EIFS), Neopor® GPS (Stucco), Neopor® GPS (CI), Neopor® GPS IE), Neopor® GPS (Perma R-Chrome), Neopor® GPS (Termite Treated), Neopor® GPS (HALO Subterra), Neopor® GPS (Foundation PRO), Neopor® GPS (HALO Exterra), Neopor® GPS (HALO Interra), Neopor® GPS (PFT Pro Board), Neopor® GPS (PFT Red Label), and Neopor® GPS (PFT Chrome).

11. Vermiculite Concrete — (Optional, Not Shown) Min 2 in. thick, consisting of 6 cu ft **Vermiculite Aggregate** * to 94 lb Portland cement and 0.5 lb air entraining agent, poured over insulation (Item 10A). May be covered with any built-up or **ELASTIZELL CORP OF AMERICA** — Types MS 16-U, MSV 200.

GCP APPLIED TECHNOLOGIES INC

A. Perlite Concrete — Mix consists of 6.2 cu ft Perlite Aggregate* to 94 lbs of rtland cement and 1-1/2 pt air entraining agent. Compressive strength 80 psi

e Perlite Aggregate (CFFX) category for names of Classified companies.

Cellular Concrete — Roof Topping Mixture* — (Not Shown) — Optional am concentrate mixed with water and Portland cement per manufacturer's plication instruction. 28 day compressive strength of min 190 psi as determined accordance with ASTM C495-86, min 2 in. thick, poured above the foamed stic (Item 10A or 11C). May be covered with any built-up or single ply roof

vering materials*. RIX INDUSTRIES — Cast dry density of 37 (+ or -) 3.0 pcf.

ASTIZELL CORP OF AMERICA — Type II. Mix #1 of cast dry density 39 (+ or -) pcf, Mix #2 of cast dry density 40 (+ or -) 3.0 pcf, Mix #3 of cast dry density 47 or -) 3.0 pcf.

Steel Studs with Discs — (Not Shown) — The stud consists of No. 12 SWG eel wire, of a length 3/8 in. shorter than the thickness of protection material, with e end welded to 1-3/16 in. diam No. 28 MSG galv steel disc. The total number of studs shall average at least one stud per 236 sq in. of cellular floor units When Type WDR cellular units are used, for the general floor area without trench beneath the trench header. The ends of studs opposite the discs shall be welded to the cellular floor units in rows running parallel with the trench header. The not exceed 4 in. The spacing between rows shall not exceed 22 in. The spacing petween the studs in each row shall not exceed 24 in.

> Indicates such products shall bear the UL or cUL Certification Mark for urisdictions employing the UL or cUL Certification (such as Canada), espectively.

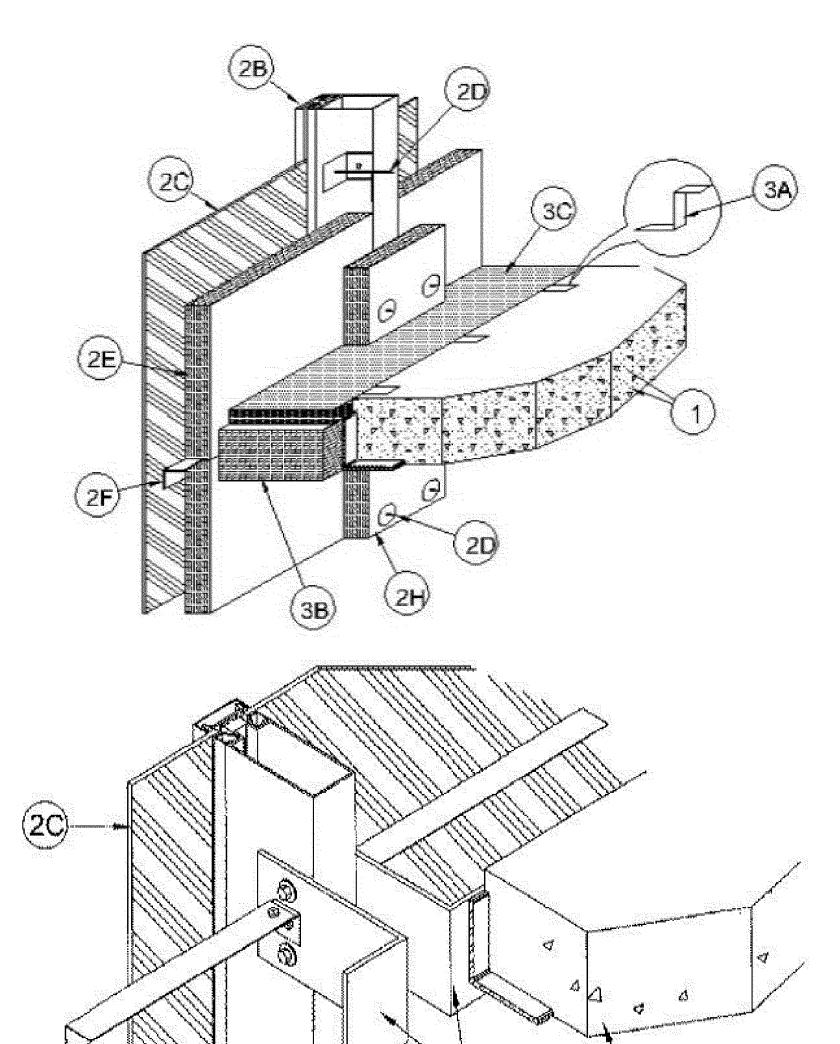
January 28, 2008

F Rating — 2 Hr T Rating — 3/4 Hr

Integrity Rating — 2 Hr

Insulation Rating — 3/4 Hr

Linear Opening Width — 8 In. Max



- 1. Floor Assembly Min 5 in. thick reinforced lightweight or normal weight (100-150 pcf) structural concrete. Perimeter of floor assembly to be provided with min 4 by 4 by 1/4 in. thick east-in-place structural steel angle for weld-attachment of mullion mounting angles (Item 2A).
- 2. Curtain Wall Assembly The curtain wall assembly shall incorporate the following construction features:
 - A. Mullion Mounting Angles Min 5 in. long angles with one nom 4 in. leg for attachment to edge of floor assembly and with one leg approx 2 in, longer than distance to nearest face of mullion. Angles to be formed of min 1/4 in. thick steel. Angles welded to steel angle at edge of floor assembly (Item 1) on each side of vertical mullion (Item 2B) at each floor level. Top edge of each angle to be recessed 1 to 2 in. below top surface of
 - B. Framing The rectangular tubing mullions (vertical members) and transoms (horizontal members) shall be min 2-1/2 in. wide by 4-1/2 in. deep and shall be formed from min 0.100 in. thick aluminum. Mullions spaced max 60 in. OC and secured to steel mounting angles (Item 2A) at each floor level with two 3/8-16x4 in. long hex head steel bolts in conjunction with anchor sleeves. Interior face of mullions to be max 8 in. from edge of floor assembly. Transoms to be spaced min 72 in. OC. Transom above perimeter joint system to be located such that its bottom surface is at a height of 33 in. above the top surface of the floor (Item 1).
 - C. **Spandrel Panels** Nom 1/4 in. thick opaque heat-strengthened glass. Each panel secured in position with aluminum retainers in conjunction with glazing gaskets and steel screws.
 - D. Impaling Pins Min 4-1/2 in. long 12 gauge steel pins swaged to nom 2 by 2 by 2 in. long galv steel angle. Steel angle screw-attached to mullions and transoms with No. 12 steel screws. Impaling pins to be located in each corner and spaced max 12 in. OC around perimeter of each spandrel panel. Leg of steel angle provided with impaling pin to be recessed 2 in. from interior face of framing such that curtain wall insulation (Item 2E) is flush with interior face of framing.
 - E. Curtain Wall Insulation* Min 2 in. thick mineral wool batt insulation, unfaced or faced on one side with aluminum foil/scrim vapor retarder, supplied in nom 36 in. wide batts. Insulation batts installed over entire interior surface of curtain wall. Insulation batts to be installed with

no vertical seams and with horizontal seams spaced min 36 in. OC. Insulation panels tightly-fitted between vertical mullions and impaled on pins (Item 2D), flush with interior surface of framing, and secured in position with min 1-1/2 in. diam steel clinch shields. The horizontal seam between insulation panels shall be located 3 in, below the top plane of the floor at each floor level.

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- F. Stiff Back Angle Nom 1-1/2 by 1-1/2 in, angle formed of min 20 gauge galv steel to be installed to stiffen curtain wall insulation between vertical mullions at safing joint. Ends of stiff back angle secured to angle attachment clips (Item 2G) with steel screws. Horizontal leg of stiff back angle to be located at midheight of forming material (Item 3B). Vertical leg of stiff back angle to be recessed from interior face of mullion to accommodate thickness of curtain wall insulation (Item 2E).
- G . **Angle Attachment Clip** Nom 1-1/2 by 1-1/2 by 1-1/2 in. long angle formed of min 20 gauge galv steel. Angle attachment clips welded or screw-attached to mullion mounting angles (Item 2A) for attachment of stiff back angles (Item 2F).
- H. Framing Covers Curtain Wall Insulation* Min 8 in. wide strips cut from the same nom 2 in, thick mineral wool batt insulation used for the curtain wall insulation (Item 2E). Framing covers to be centered over mullions and transoms and impaled on the same pins used to secure the curtain wall insulation and secured in position wiht steel clinch shields.

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I. Light Gauge Framing* - Spiral Anchor — (Not Shown) - As an alternate to the impaling pins (Item 2D), galv steel wire spiral anchors may be used to secure the framing covers (Item 2H) to the curtain wall insulation (Item 2E) on each side of the mullion. Nom length of spiral anchors to be equal to thickness of curtain wall insulation plus thickness of framing cover. Spiral anchors driven through mullion covers and into curtain wall insulation and spaced max 12 in. OC.

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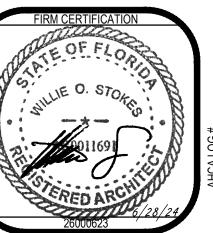
- 3. Perimeter Fire Containment System The perimeter fire containment system shall incorporate the following construction features:
 - A. Support Clips Z-shaped clips formed from 1 in. wide strips of 20 ga galv steel. Clips to be 3 in. high with 2 in. and 3 in. upper and lower horizontal legs, respectively. The 3 in. horizontal leg is to be impaled into edge of forming material (Item 3B) at its middepth and the 2 in. horizontal leg is to rest on top surface of floor. Safing clips to be located adjacent to mullion mounting angles (Item 2A) and spaced max 12 in. OC along perimeter of floor assembly.
 - B. Forming Material* Nom 4 in. thick, nom 4 pef density mineral wool batt insulation. Batt sections to be cut to a width approx 25 percent greater than width of perimeter joint and compression-fitted into perimeter joint such that its top surface is recessed 1 in. from top surface of floor assembly. Length of batt to be equal to on center spacing of mullions such that it is friction-fitted between mullions without seams. Additional pieces of forming material to be friction-fitted into spaces between mullion mounting angles at each mullion location.

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C. Fill, Void or Cavity Material* — Min 1 in. thickness of fill material installed atop forming material, flush with top surface of floor assembly. Dry mix or ready-mix material. Dry mix material mixed with water in accordance with the accompanying installation instructions.

UNITED STATES GYPSUM CO — Types FC, RFC

*Bearing the UL Classification Mark



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