















SUMITOMO DAINIPPON PHARMA

3900 TRAVERSE MOUNTAIN BLVD, SUITE 100, LEHI, UTAH 84043

















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PERMIT & BID SET JULY 27, 2021

ABBREVIATIONS

1

2	AND AT	E EA	EAST EACH
ACT ADJ AFF ALT AL/ALU APPRO ARCH	ACOUSTICAL CEILING TILE ADJUSTABLE ABOVE FINISH FLOOR ALTERNATE M ALUMINUM X APPROXIMATE ARCHITECTURAL	EIFS EJ ELEC ELEV EQ EQUIP EVAP EXIST EXP	EXTERIOR INSULATION ST EXPANSION JOINT ELECTRICAL ELEVATION EQUAL EQUIPMENT EVAPORATIVE EXISTING EXPANSION
BD BLDG	BOARD BUILDING BLOCK (ING)	EXT EWC	EXTERIOR ELECTRIC WATER COOLER
BRG BRG BSMT BS BW	BOTTOM OF BEARING BASEMENT BOTH SIDES BOTH WAYS	FA FD FDN FE FEC FG	FIRE ALARM FLOOR DRAIN FOUNDATION FIRE EXTINGUISHER FIRE EXTINGUISHER CABIN FINISH GRADE
CAB CB	CABINET CATCH BASIN	FH	FIRE HYDRANT
CSA G HAM J L C L C L R X M	CUSTOM COLOR SELECTED BY ARCHITECT CORNER GUARD CHAMFER CONTROL JOINT CENTER LINE CEILING CLEAR CONSTRUCTION MANAGER	FIN FLR F.O. FT FRP FRT FTG FV	FINISHED FLOOR FACE OF FOOT, FEET FIBER REINFORCED PANE FIRE RETARDANT TREATE FOOTING FIELD VERIFY
COL COMP CONC CONT CONT CMU CSBA CT	COLUMN COMPUTER CONCRETE CONTINUOUS CONCRETE MASONRY UNIT COLOR SELECTED BY ARCHITECT CERAMIC TILE	GA. GALV GB GC GFRC GYP GWB	GAUGE GALVANIZED GRAB BAR GENERAL CONTRACTOR GLASSFIBER REINFORCED GYPSUM GYPSUM WALLBOARD
))B)BL)EPT)F)IA)IM)N	DEPTH DECK BEARING DOUBLE DEPARTMENT DRINKING FOUNTAIN DIAMETER DIMENSION DOWN	HB HC HDW HDF HM HOR	HOSE BIBB HANDICAP ACCESSIBLE HARDWARE HIGH DENSITY FIBERBOAR HOLLOW METAL HEIGHT HORIZONTAL
)TL/ DE)W)WG	ET DETAIL DISHWASHER DRAWING	ID ICF IN INCL INFO INT INSUL	INSIDE DIAMETER INSULATED CONCRETE FC INCH INCLUDE INFORMATION INTERIOR INSULATE, (D), (ION)

PROJECT TEAM

BUILDING OWNER	MECHANICAL ENGINEER
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INV INVERT

UTILITY CONTACTS

POWER	WATER
Lehi City Power Rob Littlefield 560 West Glen Carter Drive Lehi, UT, 84043 phone: 801-616-2068 email: rlittlefield@lehi-ut.gov	Lehi City Water Department 2538 North 300 West Lehi, UT, 84043 phone: 801-768-7102 ext. 3 fax: 801-768-1575
NATURAL GAS	TELEPHONE
Questar Gas Company	CenturyLink
1640 Mountain Springs Pkwy Springville, UT, 84663 phone: 801-853-7400	phone: 877-744-4416

NOT ALL ABBREVATIONS MAY BE USED

3

	JST JT	JOIST JOINT	R R
STEM	LAV LB/ LBS	LAVATORY SPOUND (S)	R R R
R NET	MAT MAX MDF MECH MEMB MEZZ MFR MGR MIN MIR MISC MO MTD MTL MW	MATERIAL (S) MAXIMUM MEDIUM DENSITY FIBERBOARD MECHANICAL MEMBRANE MEZZANINE MANUFACTURER MANAGER MINIMUM MIRROR MISCELLANEOUS MASONRY OPENING MOUNT, (ED) METAL MICROWAVE	RR SSSSSSSSSSSSSS
L D WOOD	N NIC NO. NOM NRC NTS	NORTH NOT IN CONTRACT NUMBER NOMINAL NOISE REDUCTION COEFFICIENT NOT TO SCALE	S S S S S T T T
D PANEL	OC OD OFD OH OPG OPP OSB OZ	ON CENTER OUTSIDE DIAMETER OVERFLOW DRAIN OVERHEAD OPENING OPPOSITE ORIENTED STRAND BOARD OUNCE	
RD	PERI PERM PL PLAM PNL P.O. PR PT PART PLY	PERIMETER PERMENANT PLATE PLASTIC LAMINATE PANEL POINT OF PAIR POST TENSIONED PARTITION PLYWOOD	
DRM	QT	QUARRY TILE	N N
	R / RAD RCP REC REF	RADIUS REFLECTED CEILING PLAN RECESSED REFERENCE	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5

REFG REFRIGERATOR REINF REINFORCE (ED) REM REMOVE (ED) REPL REPLACE REQD REQUIRED REV REVISION (S) RM ROOM RO ROUGH OPENING SOUTH SALV SALVAGE (ED) SECT SECTION SF SQUARE FOOT SIM SIMILAR SLNT SEALANT SPEC SPECIFICATION (S) SQ SQUARE STAINLESS STEEL STC SOUND TRANSMISSION CLASS STD STANDARD STL STEEL STOR STORAGE STRUC STRUCTURE (AL) SUSP SUSPENDED SYM SYMMETRY (ICAL) THICKNESS **F&B** TOP AND BOTTOM **F&G** TONGUE AND GROOVE TBD TO BE DETERMINED TEMP TEMPORARY THRU THROUGH T.O. TOP OF TRANS TRANSFORMER TUBE STEEL TYP TYPICAL JNF UNFINISHED INO UNLESS OTHERWISE NOTED VAR VARIES VB VAPOR BARRIER VCT VINYL COMPOSITION TILE VERT VERTICAL /EST VESTIBULE WC VINYL WALLCOVERING WEST WIDTH WITH WATER CLOSET NC WD WOOD W/O WITHOUT WSCT WAINSCOT WWF WELDED WIRE FABRIC

REFERENCE SYMBOL LEGEND

BUILDING SECTION BUILDING SECTION - WALL SECTION - ELEVATION SIM NUMBER AND NUMBER DIRECTION A101 - DIRECTION OF A101 VIEW SHEET WHERE DRAWN - SHEET WHERE DRAWN WALL SECTION LAYOUT GRID LINES WALL SECTION GRID NUMBER SIM. IDENTIFICATIO A101 - DIRECTION OF VIEW - SHEET WHERE DRAWN Α LEVEL LINE INTERIOR ELEVATION SECOND LEVEL - ELEVATION •-----116' - 0" NUMBER AND DIRECTION AX > **ROOM NAME AND NUMBER** - SHEET WHERE DRAWN ROOM NAME DETAIL REFERENCE 101 WALL TYPE MARK DETAIL A101 NUMBER CONSTRUCTION - SHEET WHEN **TYPE - BY CSI DIVISION** DRAWN, HYPEN WALL TYPE INDICATES 5A6 - 1 DETAIL ON SAME SHEET - FIRE RATING NOMINAL SIZE SEE WALL TYPE SHEET FOR ADDITIONAL INFORMATION **DRAWING TAGS REVISIONS TAG** FLOOR TRANSITIONS MARKER REVISION NUMBER TRANSITION SYMBOL **CEILING TAG** - CEILING TYPE ELEVATION MARKER X | X' - X" \bullet - CEILING HEIGHT WINDOW TAG - WINDOW MARKER **FINISH TAG** SHEET SYMBOLS DRAWING TITLE BASIC DRAWING TITLE

GENERAL NOTES

1. IT IS THE CONTRACTORS RESPONSIBILITY TO REVIEW AND COORDI THE WORK OF ALL SUB-CONTRACTORS, TRADES AND SUPPLIERS W THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BEFORE COMMENCING CONSTRUCTION, AND TO ASSURE THAT ALL PARTIES AWARE OF ALL REQUIREMENTS, REGARDLESS OF WHERE THE REQUIREMENTS OCCUR IN THE CONTRACT DOCUMENTS, WHICH MI AFFECT THE WORK OF THAT PARTY.

4

- 2. AS PART OF THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WORK OF ALL SUB-CONTRACTORS, TRADES AND SUPPLIERS, THE CONTRACTOR SHALL ENDEAVOR TO IDENTIFY AND NOTIFY THE ARCHITECT OF ANY CONFLICTS BETWEEN THE WORK OF DIFFEREN PARTIES AT THE EARLIEST POSSIBLE DATE SO AS TO ALLOW REASONABLE AND ADEQUATE TIME FOR THE CONFLICT TO BE RES WITHOUT DELAYING THE WORK. ALL DEVIATIONS FROM THAT WHIC REQUIRED BY THE CONTRACT DOCUMENTS MUST BE APPROVED IN ADVANCE BY THE ARCHITECT.
- THE ARCHITECTURAL DRAWINGS ESTABLISH AND COORDINATE THI FINISHED APPEARANCE AND EXACT LOCATION OF ALL EXPOSED ELEMENTS OF THE WORK OF ALL THE TRADES, INCLUDING THAT WO WHICH IS ILLUSTRATED PRIMARILY ON DRAWINGS OF OTHER DISCIPLINES. QUANTITIES ARE TO BE PROVIDED AS SHOWN ON DRAWINGS OF OTHER DISCIPLINES BUT LOCATIONS SHOWN ON OT DRAWINGS ARE SCHEMATIC, UNLESS OTHERWISE NOTED ON THE ARCHITECTURAL DRAWINGS. THE ARCHITECTURAL DRAWINGS TAK PRECEDENCE FOR THE FINISHED APPEARANCE AND EXACT LOCAT OF ALL PARTS OF THE WORK.
- EXCEPT WHERE DIRECTED TO PLACE ITEMS OF WORK AT THE APPROXIMATE LOCATION SHOWN; DO NOT SCALE DRAWINGS FOR DIMENSIONAL INFORMATION. ALL ELEMENTS OF THE DRAWINGS MA NOT BE DRAWN TO EXACT SCALE. ALL DIMENSIONS REQUIRED ARE SHOWN OR MAY BE DERIVED FROM THOSE SHOWN ON THE FLOOR PLANS, DETAIL PLANS, ELEVATIONS, SECTIONS, DETAILS, SCHEDUL AND SPECIFICATIONS. IF DIMENSIONS ARE NOT PRESENT, THE ARCHITECT IS TO BE NOTIFIED SO THAT A CLARIFICATION CAN BE ISSUED.
- CONTRACTOR TO FOLLOW CURRENT ANSI 117-1 STANDARDS AS REPRESENTED ON SHEET G300, GENERAL ACCESSIBILITY GUIDELI NOTIFY ARCHITECT IF THE DESIGN DRAWINGS CONFLICT WITH THIS SHEET.

DEFERRED SUBMITTALS

CONTRACTOR IS RESPONSIBLE TO SUBMIT DEFERRED SUBMITTALS IN ACCORDANCE IBC 107.3.4.1. AS PART OF THE SUBMITTAL PROCESS, THE CONTRACTOR IS TO SUBMI ALL ICC-ES REPORTS FOR ITEMS NOTED.

• FIRE PROTECTION PER 107.2.2 FIRE ALARM SYSTEMS

NOTES TO BIDDERS

- 1. THIS SHEET CONTAINS A LIST OF DRAWINGS WHICH COMPRISE A FU OF DRAWINGS FOR THIS PROJECT. ANY CONTRACTOR. SUBCONTRA VENDOR OR ANY OTHER PERSON PARTICIPATING IN OR BIDDING ON PROJECT SHALL BE RESPONSIBLE FOR THE INFORMATION CONTAIN ANY AND ALL SHEETS OF DRAWINGS AND SPECIFICATIONS. IF ANY PERSON, PARTY OR ENTITY ELECTS TO SUBMIT BIDS FOR ANY POR ALL, OF THIS PROJECT, THAT PERSON, PARTY OR ENTITY SHALL BE RESPONSIBLE FOR ANY AND ALL INFORMATION CONTAINED IN THES DRAWINGS AND SPECIFICATIONS, INCLUDING, BUT NOT LIMITED TO, SUBSEQUENT ADDENDUMS OR CLARIFICATIONS THAT MAY BE ISSU
- THESE DOCUMENTS SHOW THE DESIGN INTENT. IT IS THE CONTRA RESPONSIBILITY TO PROVIDE EVERYTHING SHOWN ON THE DRAWINGS OR SPECIFIED REGARDLESS OF WHERE IT IS SHOWN ON THE DRAWINGS OR IN THE SPECIFICATIONS. FOR EXAMPLE; SOME MILLWORK DETAILS HAVE STEEL FRAMES WHICH MAY BE PROVIDED BY DIVISION 05 OR WITH THE MILLWORK AT THE CONTRACTOR'S DISCRETION, BUT IT SHALL BE PROVIDED AS PART OF THE CONTRACT.
- 3. EVERYTHING CALLED FOR IN THESE DOCUMENTS SHALL BE "NEW" AND PROVIDED BY THE CONTRACTOR, SUBCONTRACTOR, VENDOR OR ANY OTHER PERSON PARTICIPATING IN OR BIDDING ON THIS PROJECT UNLESS NOTED OTHERWISE AS EXISTING (EXIST), NOT IN CONTRACT (NIC) OR FOR REFERENCE ONLY. FURNISHINGS SHOWN DASHED SHALL BE FOR REFERENCE ONLY.

VICINITY MAP



PROJEC NORTH

3

MATCH LINE

		5
	SHEET	NDEX
INATE VITH	SHEET NUMBER	SHEET NAME
SARE		
	GENERAL	
IGHT	C G001	
	G002	GENERAL INFORMATION
E THE	G101	RATED WALL, FEC & EGRESS & RESEARCH LAB PLAN
	G200	UL RATED METAL STUD WALL ASSEMBLIES
IT	G201	UL RATED METAL STUD WALL ASSEMBLIES
	G202	FIRESTOP SYSTEMS
CLVED CH IS	G300	TYPICAL ANSI ACCESSIBILITY STANDARDS
N	G400 G401	LAB INFORMATION & CHEMICAL HYGIENE PLAN
	G401	CHEMICAL HYGIENE PLAN
E	G600	EXISTING CONDITIONS
ORK	ARCHITECTURAL	
	A111.0	DEMOLITION PLAN
HER	A111.0C	
Έ	A111.1 A111.2	ANNOTATED, DIMENSION, AND FINISH PLAN
ION	Δ111.5	FOLIPMENT PLAN
	A501	INTERIOR ELEVATIONS
	A700	DOOR SCHEDULE
• • •	A800	WALL TYPES + TYP. INTERIOR DETAILS
ጓY =	A840	CEILING DETAILS
-		
ES	MECHANICAL	
	MEUUT MD101	FIRST FLOOR DEMO PLAN
	MH101	FIRST FLOOR MECHANICAL PLAN
	MH102	ROOF MECHANICAL PLAN
NES.	MP101	FIRST FLOOR MECHANICAL PIPING PLAN
8	MP102	FIRST FLOOR MECHANICAL PIPING PLAN
	MP103	ROOF MECHANICAL PLAN
	ME501	MECHANICAL DETAILS
	ME502 ME601	MECHANICAL DETAILS
		WEGHANICAE SCHEDULES
	ELECTRICAL	
	EE001	SHEET INDEX, ABBREVIATIONS, AND GENERAL NOTES
WITH	EE501	ELECTRICAL DETAILS
IT	EE701	TYPICAL MOUNTING HEIGHT DETAILS
	EE702	
	ED101A ED101P	LEVEL 1 ELECTRICAL DEMOLITION PLAN
	EDIUID EP101	LEVEL 1 CEILING DEMOLITION PLAN
	EP601	EQUIPMENT SCHEDULE
	EP602	PANEL SCHEDULES
	EL101	LEVEL 1 LIGHTING PLAN
	EL601	INTERIOR LIGHTING FIXTURE SCHEDULE
ULL SET	EL602	INTERIOR LIGHTING COMCHECK
ACTOR,	EY101	LEVEL 1- AUXILARY PLAN
	Grand total: 44	
TION, OR		
SE		
, ANY		
ED.		
CTORS		





REV DATE DESCRIPTION

VCBO NUMBER: 21560 **CLIENT NUMBER:** DATE: JULY 27, 2021

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G001

GENERAL

INDEX

INFORMATION AND

DESIGN DATA

PROJECT DESCRIPTION:

SDP IS AN OFFICE WITH A SMALL RESEARCH FACILITY. THE PROJECT WILL BA A REMODEL CONSISTING OF CHANGING (1) LAB CONTROL AREA INTO (3) CONTROL AREAS. THE MAIN OBJECT OF THE PROJECT IS TO ENLARGE THE LAB SPACE AND TO INSTALL A LARGE REFRIGERATED ROOM (COLD ROOM) INTO AN EXSTING EXISTING EQUIPMENT ROOM. TO DO THIS THEY WILL ELIMINATE AN OFFICE, A CONFERENCE ROOM, A SMALL FLUORO AND STORAGE ROOM. THE REMOVAL OF THESE (4) ROOMS WILL ENABLE (3) ROOMS TO BE ENLARGED.

1

ROOM 005 LABELED IHC/NANOSTRING HAS OVERTIME HAS CHANGED FROM A STORAGE ROOM INTO LAB SPACE. UPGRADES ARE BEING MADE TO BRING IT UP TO CODE.

BECAUSE OF THE INCREASE OF TOXIC CHEMICALS THE LAB WILL CHANGE FROM (1) CONTROL AREA TO (3) CONTROL AREAS. SEE SHEET G101 FOR CONTROL AREA LOCATIONS AND SF.

THE PREVIOUS LAB 2/PROCEDURE ROOM WILL CHANGE FROM 332 SF TO 511 SF.

THE EQUIPMENT ROOM WILL CHANGE FROM 241 SF TO 372 SF

THE RESEARCH LAB CLASSIFICATION IS AMIMAL BIOSAFETY LEVEL 2 ABL-2.

GOVERNING BUILDING CODES:

IBC 2018, IPC 2018, IMC 2018, IFGC 2015, NEC 2014, IECC 2018, ANSI 117-1 2009, IFC 2018, GUIDE FOR THE CARE & USE OF LABORATORY ANIMALS 8TH EDITION

OCCUPANCY TYPE - (CH.3)

•BUSINESS GROUP B (304) WITH LABORATORY: TESTING & RESEARCH -OCCUPANCY TYPE B AS A CONTROL AREA(S). CHEMICAL QUANTITIES WILL BE BELOW LEVELS SET FORTH IN TABLE 414.2.5(1).

CONSTRUCTION TYPE: PER TABLE 503: II-B

FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (TABLE 601) · STRUCTURAL FRAME (INCLUDES COL, GIRDERS, TRUSSES) - 0 HOUR

· BEARING WALLS	
EXTERIOR	- 0 HOUR
INTERIOR	- 0 HOUR
· NON-BEARING WALLS AND PARTITIONS (INTERIOR)	- 0 HOUR
FLOOR CONSTRUCTION INCLUDING BEAMS AND JOISTS (DESIGN NO. N708)	- 0 HOUR

• ROOF CONSTRUCTION INCLUDING BEAMS AND JOISTS - 0 HOUR (DESIGN NO. P701)

*CONTROL AREA

1 HOUR BARRIER 1 HOUR FIRE RESISTIVE BETWEEN CEILING [(2) HOUR FLOOR- WE ÂRE SLAB ON GRADE + PER SECTION 414.2.4 CAN BE 1 -HR WITH FULLY SPRINKLERED BLDG AND 3 OR FEWER STORIES]

* EXIT DISCHARGE LEVEL 1

- 1 HOUR

AUTOMATIC SPRINKLER SYSTEM, 903.1 - YES

SEPARATED OCCUPANCY OCCUPANCY B, 1 HR SEPARATION @ CONTROL AREAS

DESIGN OCCUPANCY LOAD-B- 20,932 SF @ 100 OCC PER SF/ 209 OCC TOTAL 209 OCCUPANTS

EGRESS WIDTH FOR OCCUPANCY SERVED PER 1005 - STAIRS 0.3 IN / OCC., OTHER 0.2 IN / OCC

MAIN LEVEL:

209 OCCS. x 0.2 = 41.8" REQUIRED CORRIDOR WIDTH PROVIDED: 72" (NOT INCL. MECH. RM. EXIT DOORS)

EXIT ACCESS - (CH. 10)

2 EXITS REQUIRED - (CH. 1015.1) • WHERE THE OCCUPANCY LOAD TOTALS MORE THAN 49

• WHERE ALLOWABLE TRAVEL DIST. IS EXCEEDED.

· PLACE FAR ENOUGH APART - NOT LESS THAT 1/2 MAXIMUM DIAGONAL DIMENSION OF AREA SERVED (MEASURED STRAIGHT LINE BETWEEN EXITS)

THROUGH INTERVENING SPACES (1014.2)

· PERMITTED WHERE ADJOINING ROOMS OR AREAS ACCESSORY TO THE AREAS SERVED, IS NOT HIGH HAZARD OCCUPANCY, AND PROVIDE A DISCERNIBLE PATH OF EGRESS TRAVEL TO AN EXIT.

DISTANCE: (TABLE 1016.2)

· WITH SPRINKLER SYSTEM - 300' MAXIMUM LENGTH OF EXIT ACCESS TRAVEL

COMMON PATH OF EGRESS TRAVEL - (CH. 1014.3) · UNTIL 2 EXITS BECOME OBVIOUS) B- OCCUPANCY 100'

CORRIDOR FIRE RESISTANCE RATING (TABLE 1018.1) · WITHOUT SPRINKLER SYSTEM - 1 HOUR FIRE RATED CONSTRUCTION WITH AN OCCUPANT LOAD OF > 30 • WITH SPRINKLER SYSTEM - X HOUR FIRE RATED CONSTRUCTION

DEAD ENDS (1018.4)

• MUST BE LESS THAN 20' WHERE MORE THAN ONE EXIT IS REQUIRED; · OR 50' IN SPRINKLERED BUILDING (EXCEPTION 2) • OR THE LENGTH IS 2.5 TIMES THE WIDTH (EXCEPTION 3)

INTERIOR WALL & CEILING FINISH REQUIREMENTS - (CH. 8 TABLE 803.9) (IN SPRINKLERED BUILDING)

1

• EXIT ENCLOSURES AND EXIT PASSAGEWAYS - CLASS B

· CORRIDORS AND OTHER EXIT WAYS - CLASS C

· ROOMS AND ENCLOSED SPACES - CLASS C INTERIOR FLOORS FINISH - (PER 804)

LAB: **B OCCUPANCY**

711

307.1(1) Table 307.1 Maximum allowable quantities per control area of hazardou posing a physical hazard. See Specification Section Appendix A and C for chem quantities.

2

414.2 Control Areas shall comply with IBC 414.2.1 through 414.2.5 & International Fire Code 414.2 Control Areas shall be separated from each other by fire barriers per IBC section 707 or

414.2.2 Number of Controls areas allowed per this level- 4.

414.2 The fire-resistance rating for fire barriers shall be in accordance with IBC Table 414.2.2. The floor area of control area shall have a fire-resistance rating of not less than 2 hours. This project is 1 hour, floor level 1. Maximum allowable quantity per control area 100 %- per table 307.1 (1) & 307.1(2). Number of controlled areas per floor 4, we have 2.

See Specifications Appendix B for Lab/Chemical Hygiene, Appendix D for Animal information and Appendix E for Lab Waste Stream.

All gas needed will be by a vacuum pump and will be portable.

Emergency equipment will be comprised of: fire extinguishers - part of project, spill and first aid kits- both provided by tenant. Safety manual will be located by chemical hood.

No chemicals will be neutralized to go down sink they will be picked up by waste diposal service.

2

ous Materials	
mical types &	

	3	<u>.</u>			4				5
	Note: Building	Chemical (is fully sprinkl	Quantities ered through	s Not to be excee out with an automatice s	ded in each prinkler system i	Control n accordance	Area, ce with Section 903.1.1		
1			Stora	ige		Use Closed	Systems	Use-Open	Systems
Material	Class	Solid Ibs (Cubic Feet)	Liquid gallons (lbs)	Gas - Cubic Feet at NTP (lbs)	Solid lbs (Cubic Feet)	Liquid gallons (lbs)	Gas - Cubic Feet at NTP (lbs)	Solid Ibs (Cubic Feet)	Liquid gallons (lbs)
Combustible Dust	NA	Report needed	NA	NA	Report	NA	NA	Report needed	NA
Combustible Fiber	Loose Baled	100 lbs (1,000 cf)	NA	NA	100 lbs (1,000 cf)	NA	NA	20 lbs (200cf)	NA
Combustible Liquid	II IIIA IIIB	NA	480 1,320 NL	NA	NA	240 660 NL	NA	NA	60 160 NL
Cryogeneic Flammable	NA	NA	90	NA	NA	90	NA	NA	20
Cryogenic Inert	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cryogenic Oxidizing	NA	NA	90	NA	NA	90	NA	NA	20
Explosives	Division 1.1 Division 1.2 Division 1.3 Division 1.4 Division 1.4G Division 1.5 Division 1.6	2 2 10 100 250 2 2 2	(2) (2) (10) (100) NA (2) NA	NA	0.25 0.25 1 50 NA 0.25 NA	(0.25) (0.25) (1) (50) NA (0.25) NA	NA	0.25 0.25 1 NA NA 0.25 NA	(0.25) (0.25) (1) NA NA (0.25) NA
Flammable gas	Gaseous Liquefied	NA	NA (600)	4,000 NA	NA	NA (600)	4,000 NA	NA	NA
Flammable liquid	IA IB and IC	NA	120 480	NA	NA	60 240	NA	NA	20 60
Flammable liquid, combination (IA, IB, IC)	NA	NA	240	NA	NA	240	NA	NA	60
Flammable solid	NA	500	NA	NA	250	NA	NA	50	NA
Inert gas	Gaseous Liquefied	NA NA	NA NA	NL NL	NA NA	NA NA	NL NL	NA NA	NA NA
Organic peroxide	UD I II III IV V	2 20 200 1,000 NL NL	2 20 200 1,000 NL NL	NA	0.25 2 100 250 NL NL	(0.25) (2) (100) (250) NL NL	NA	0.25 2 20 50 NL NL	(0.25) (2) (20) (50) NL NL
Oxidizer	4 3 2 1	1 40 1,000 NL	(2) (40) (1000) NL	NA	0.25 4 500 NL	(0.25) (4) (500) NL	NA	0.25 4 100 NL	(0.25) (4) (100) NL
Oxidizing gas	Gaseous Liquified	NA	NA (600)	6,000 NA	NA	NA (600)	6,000 NA	NA	NA
Pyrophoric	NA	8	(8)	100	1	(1 lb)	20	0	0
Unstable (reactive	4 3 2 1	2 20 200 NL	(2) (20) (200) NL	20 200 3,000 NL	0.25 2 100 NL	(0.25) (2) (100) NL	4 40 3,000 NL	0.25 2 20 NL	(0.25) (2) (20) NL
Water reactive	3 2 1	20 200 NL	(10) (100) NL	NA	10 100 NL	(10) (100) NL		2 20 NL	(2) (20) NL
Corrosives	NA	20,000	2,000	Gaseous 3,240 Liquefied (300 lbs)	10,000	1,000	Gaseous 3,240* Liquefied (300 lbs)	2,000	200
Highly Toxic	NA	40	(40)	Gaseous 40** Liquefied (8 lbs)**	20	20 lbs	Gaseous 40** Liquefied (8 lbs)**	6	(6 lbs)
Toxic	NA	2,000	(1,000 lbs)	Gaseous 3,240 Liquefied (300 lbs)	1,000	(1,000 lbs)	Gaseous 3,240* Liquefied (300 lbs)	250	(250 lbs)

*All materials wil be stored in approved storage cabinets, gas cabinets, exhausted enclosures or in listed safety cans as specified by the International Fire Code.

4

**Allowed only where stored in approved exhausted gas cabinets or exhausted enclosures as specified in the International Fire Code

**SDP will remain below these quantities per control area

3





UL DI	ESIGN NO. U420-1 OR 2 HR NONBEARING CHASE WALL	UL DESIGN No.
Des	ign No. U420	Design No. U415 Nonbearing Wall Ratings — 1, 2, 3 or
	4 + 24 in O.C. + 24 in O.C.	System A - 1 Hr
	$\begin{array}{c c} (1) \\ \hline \\ $	
		Horizontal Section
	4 Vertical Section	
Nonbearing V	Vall Rating 1 or 2 HR.	
1. Stu 1A. Fra	ds — Channel shaped, min. 1 5/8 in. depth. Fabricated from No. 25 MSG galv steel. Studs to be cut 1/4 in. less than assembly height. ning Members*— Steel Studs — As an alternate to Item 1 for a 2 hour rating only - For use with Item 3A, channel shaped studs, min 1-5/8 in.	Horizontal Section System C - 2 Hr
	ICH BUILDING SYSTEMS — CD ProSTUD	
MBA BUILDIN SOUTHEAST	IG SUPPLIES — ProSTUD ERN STUD & COMPONENTS INC — ProSTUD CTURAL SYSTEMS I. I. C. — Tri-S ProSTUD	2 4 Horizontal Section
1B. Fra No. 25 MSG o	ning Members*— Steel Studs — As an alternate to Item 1- For use with Item 3B, channel shaped studs, min 1-5/8 in. wide, fabricated from alv steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.	System D - 2 Hr
KIRII (HONG	KONG) LTD — Type KIRII	
screws in each fastened to the	a stud. As an alternate, but limits the stud cavity depth to maximum 9-1/2 in., cut from the gypsum wallboard, 9-1/2 in. long and 12 in. wide, a studs with three Type S wallboard screws in each stud. Vertical spacing of bracing not to exceed 48 in. OC.	2 4 Horizontal Section
3. Flo	or and Ceiling Runners — Channel — shaped 1 5/8 in. wide with 1 in. legs, fabricated from No. 25 MSG galv steel. Attached to floor and teners spaced 24 in. OC.	System E - 2 Hr
3A. Fra channel shape	ning Members*— Floor and Ceiling Runners — (Not shown) — As an alternate to Item 3 for a 2 hour rating only - For use with Item 1A, d, min 1-5/8 in. wide, attached to floor and ceiling with fasteners 24 in. OC. max.	
CLARKDIETF DMFCWBS L MBA BUILDI	I CH BUILDING SYSTEMS — CD ProTRAK L C — ProTRAK IG SUPPLIES — ProTRAK	(2)(4) Horizontal Section
SOUTHEAST STEEL STRU	ERN STUD & COMPONENTS INC — ProTRAK CTURAL SYSTEMS L L C — Tri-S ProTRAK	1. Floor, Side and Ceiling I and 2 in., fabricated from min 24 MS
3B. Fra 1-5/8 in. wide KIRII (HONG	ning Members*— Floor and Ceiling Runners — (Not shown) — As an alternate to Item 3 - For use with Item 1B, channel shaped, min fabricated from No. 25 MSG, attached to floor and ceiling with fasteners 24 in. OC. max. KONG) LTD — Type KIRII	(Item 2A) may be used as side runne
4. Gypsum B For 1 Hr Rati	pard* — Nom 5/8 in. thick gypsum board with beveled, square, or tapered edges. ng — One layer of gypsum board to be used. Applied vertically with joints centered over studs. Fastened to studs with 1 in. long, Type S,	2. Steel Studs — "C-H" - sn Items 2D, 4A, 4B or 7 is used) galv s
gypsum board runners.	screws spaced 8 in. OC at the joints, located 3/8 in. from the edges, and 12 in. OC in the field. Fasteners to be spaced 8 in. OC at the	together with steel screws spaced a in. deep (min 4 in. deep when System to learn the 2/0 to 4/0 in least the field
For 2 Hr Ratin fastened to the and 12 in. OC	ng — Two layers of gypsum board to be used. The inner layer to be applied in the same manner as for the 1 Hr Rating. The outer layer to be e studs (through the inner layer) using 1 5/8 in. long, Type S, wallboard screws spaced 8 in. OC at the joints, located 3/8 in. from the edges in the field.	2B. Furring Channels — (O
Fasteners to b	e spaced 8 in. OC at the runners. Joints to be staggered 24 in. from the inner layer.	stud on side of stud opposite the 1 ir installed vertically only. Not to be use
Any UL Classi Classified co	fied Gypsum Board that is eligible for use in Design Nos. L501, G512 or U305. See Gypsum Board (CKNX) category for names of npanies.	(item 7). 2C. Furring Channels — For
4A. Gyp horizontally. V staggered one	sum Board* — (As alternate to Item 4) - Nom 5/8 in. thick gypsum panels with beveled, square or tapered edges, applied vertically or ertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (2-hr system) stud cavity. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered or backed with steel framing.	channels spaced vertically max 24 in
Horizontal edg to steel studs and 12 in. OC	e joints and horizontal butt joints in adjacent layers (2-hr system) staggered a minimum of 12 in. For the single layer system, panels attached and floor runner with 1 in. long Type S steel screws spaced 8 in. OC when applied horizontally, or 8 in. OC along vertical and bottom edges in the field when applied vertically. For the double layer system, base layer panels attached to steel studs and floor runner with 1 in. long Type	as described below. Not to be used 7):
S steel screws	spaced 16 in. Face layer panels attached to steel studs and floor runner with 1-5/8 in. long Type S steel screws spaced 16 in. OC. ype AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.	channels secured to studs as describ. Steel Framing secured to studs with No. 8 x 1-1/2 i
UNITED STA USG MEXICC	ES GYPSUM CO — Type AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX. S A DE C V — Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.	PAC INTERNATIONAL II
4B. Gypsum 1-1/4 in.	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	ceiling height. Vertical edges inserte to long leg of vertical "J" - runners w liner panel may be butted to extend to
CGC INC — 1 UNITED STA USG MEXICC	ypes AR, IP-AR. T ES GYPSUM CO — Types AR, IP-AR. S A DE C V — Types AR, IP-AR.	are staggered min 36 in. Butt joints t secured to liner panels with six 1-1/2
4C. Wa	I and Partition Facings and Accessories* — (As an alternate to Items 4 through 4B) — Nominal 5/8 in. thick, 4 ft wide panels, applied secured as described in Item 4.	CGC INC — Type SLX UNITED STATES GYPSUM CO — USG MEXICO S A DE C V — Type
4D. Gyp	ERGY INC — Types QuietRock ES, QuietRock 527.	4. Gypsum Board* —
screws space layer to be fas	In board to be used. This have applied ventically with joints centered over study. Pastened to study with 1 m. long, Type S, gypsum board I 8 in. OC at the joints, located 3/8 in. from the edges, and 12 in. OC in the field. Fasteners to be spaced 8 in. OC at the runners. The outer tened to the study horizontally using 1 5/8 in. long, Type S, gypsum board screws spaced 8 in. OC at the joints, located 3/8 in. from the edges in the field. Fasteners to be spaced 8 in. OC at the runners.	Gypsum panels, with beveled, squar in. long Type S steel screws spaced
PABCO BUIL	DING PRODUCTS L L C, DBA PABCO GYPSUM — Types C, PG-11, PGS-WRS.	framing. CGC INC — Types AR, C, IP-AR, IF
tapered edges	installed as described in Item 4A.	UNITED STATES GYPSUM CO — USG MEXICO S A DE C V — Types
UNITED STA USG MEXICO	TES GYPSUM CO — Type ULX S A DE C V — Type ULX	Gypsum panels, with beveled, squar
5. Join wide, embedd	It Tape and Compound — Vinyl or casein, dry or premixed joint compound applied in two coats to joints and screw heads. Paper tape, 2 in. ed in first layer of compound over all joints.	Inner or base layer attached to stude Outer or face layer attached to stude screws or 8 in. OC when installed ho
6. Bat be 2 1/2 in. for	as and Blankets* — (Optional, not shown) Glass fiber batts may be installed in the interior or wall cavity. The max thickness of the batts shall the walls with 2 Hr assembly ratings and 3 1/2 in for the walls with 1 Hr assembly ratings. Attached to wallboard with wire staples spaced in OC and vertically 24 in OC	of 12 in. Horizontal joints need not b CGC INC — 1/2 in. Type C, IP-X2, I
CERTAINTEE GUARDIAN F	D CORP IBERGLASS INC	UNITED STATES GYPSUM CO — ULX, USGX, WRC, WRX USG MEXICO S A DE C V — 1/2 in
JOHNS MAN OWENS COR	VILLE INTERNATIONAL INC NING	
6A. Fib completely fill application me	er, Sprayed* — As an alternate to Batts and Blankets (Item 6) — Spray applied cellulose insulation material. The fiber is applied with water to the enclosed cavity in accordance with the application instructions supplied with the product. Nominal dry density of 3.0 lb/ft3. Alternate thod: The fiber is applied with U.S. Greenfiber LLC Type AD100 hot melt adhesive at a nominal ratio of one part adhesive to 6.6 parts fiber to	Gypsum panels, with beveled, squar long Type S steel screws spaced 8 i the field when installed horizontally.
completely fill U S GREENF	the enclosed cavity in accordance with the application instructions supplied with the product. Nominal dry density of 2.5 lb/ft3. BER L L C — Cocoon2 Stabilized or Cocoon-FRM (Fire Rated Material)	framing per Items 1, 2 and 3. Requir
6B. Fib with water to i Minimum drv d	er, Sprayed* — As an alternate to Batts and Blankets (Item 6) and Item 6A - Spray applied cellulose insulation material. The fiber is applied interior surfaces in accordance with the application instructions supplied with the product. Applied to completely fill the enclosed cavity. lensity of 4.3 pounds per cubic ft.	UNITED STATES GYPSUM CO — USG MEXICO S A DE C V — Types
NU-WOOL CO	D INC — Cellulose Insulation er, Sprayed* — As an alternate to Batts and Blankets (Item 6) - Sprav applied cellulose fiber. The fiber is applied with water to completely fill	Gypsum panels, with beveled, squar
the enclosed o	avity in accordance with the application instructions supplied with the product. The minimum dry density shall be 4.30 lbs/ft3.	with 1 in. long Type S steel screws s steel framing. Requires face layer of
7. Cer in., 5/8 in., 3/4 cement board boards are use fastened over members, and	nentitious Backer Units* — (Optional Item Not Shown - For Use On Face Of 1 Hr Or 2 Hr Systems With All Standard Items Required) - 1/2 in. or 1 in. thick, min. 32 in. wide Applied vertically or horizontally with vertical joints centered over studs. Fastened to studs and runners with screws of adequate length to penetrate stud by a minimum of 3/8 in. for steel framing members spaced a max of 8 in. OC. When 4 ft. wide ed, horizontal joints need not be backed by framing. 2-Hr System - Applied vertically with vertical joints centered over studs. Face layer gypsum board to studs and runners with cement board screws of adequate length to penetrate stud by a minimum of 3/8 in. for steel framing a minimum of 3/4 in. for wood framing members spaced a max of 8 in. OC.	CGC INC — Types AR, C, IP-AR, IF United States Gypsum CO — USG Mexico S A de C V — Type
*Rearing the	JL Classification Mark	
_ carring the		

1

\mid No. U415- 1, 2, 3 or 4 hr shaft wall



3



d 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. nin 24 MSG (min 20 MSG when Item 4A, 4B or 7 are used) galv steel. Runners positioned with short leg toward finished side of structural supports with steel fasteners located not greater than 2 in. from ends and not greater than 24 in. OC. "E" - shaped stude side runners in place of "J" - shaped runners.

"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 sed) 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.

(Not Shown) — "E" - shaped studs installed back to back in place of "C-H" - shaped studs (Item 2) "E" - shaped studs secured 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 en 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 s than floor to ceiling heights.

nels — (Optional, not shown) — For use with single or double layer systems. Resilient furring channels fabricated from min 25MSG installed horizontally, and spaced vertically a max 24 in. OC. Flange portion of channel attached to each intersecting "C-H" or "E" ite 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 t to be used with Type FRX-G gypsum wallboard, Type RB-LBG (Item 4A), Type Nelco (Item 4B) or cementitious backer units

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

Iembers* — (Optional, not shown) — For use with single or double layer systems. Furring channels and Steel Framing Members be used with Type FRX-G gypsum wallboard, Type RB-LBG (Item 4A), Type Nelco (Item 4B) or cementitious backer units (Item

g 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. as described in Item b. Gypsum board installed vertically only and attached to furring channels as described in Item 3. Framing Members* — Used to attach furring channels (Item 2Da) to studs (Item 2 or 2A). Clips spaced max. 24 in. OC., and 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. Furring channels are friction fitted into clips. TIONAL INC — Type RSIC-1.

* — 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 es 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 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, 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 utt 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 h 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.

IM CO — Type SLX / — Type SLX

24 in O.C.

System A - 1 Hr

led, square or tapered edges, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, attached to studs with 1 s spaced 12 in. when installed vertically or 8 in OC when installed horizontally. Horizontal joints need not be backed by steel

, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULX, WRC, WRX

IM CO — Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SGX, SHX, ULX, WRC, WRX, USGX. / — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULX, WRC, WRX

<u>System B - 2 Hr</u>

led, 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. d to studs with 1 in. long Type S steel screws spaced 24 in. OC when installed vertically or 16 in. OC when installed horizontally. d 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 nstalled horizontally and staggered 8 in. from base layer screws. Horizontal joints between inner and outer layers staggered a min need not be backed by steel framing. Vertical joints centered over studs and staggered 24 in.

, IP-X2, IPC-AR or WRC; 5/8 in. Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULX, WRC, WRX IM 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,

/ — 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, WRC, WRX

<u>System C - 2 Hr</u>

led, 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. 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 izontally. Horizontal joints need not be backed by steel framing. Screws along side joints offset 4 in. Requires min 4 in. deep B. Requires min 3 in. thick mineral wool batts per Item 6.

or ULTRACODE

IM CO — Types IP-X3, or ULTRACODE – Types IP-X3, or ULTRACODE

System D - 2 Hr

led, square or tapered edges, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, attached directly to studs screws spaced 24 in. when installed vertically or 16 in. OC when installed horizontally. . Horizontal joints need not be backed by e 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.

, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULX, WRC, WRX

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

4

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, WRC, WRX 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, ULX, USGX, WRC, WRX. 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, WRC. WRX

<u>System F - 2 Hr</u>

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, WRC. WRX

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, ULX, USGX, WRC, WRX. USG MEXICO S A DE C V — 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, WRC, WRX

<u>System G - 3 Hr</u>

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, WRC

UNITED STATES GYPSUM CO - Types C, IP-X2, IPC-AR, WRC 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 layers.

CGC INC — Types C, IP-X2, IPC-AR, WRC **UNITED STATES GYPSUM CO** — Types C, IP-X2, IPC-AR, WRC

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

System I - 4 Hr

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 bugle-head steel screws spaced 24 in. OC. Second layer secured to studs with 2-1/4 in. long Type S self-drilling, self-tapping buglehead 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 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

NEW ENGLAND LEAD BURNING CO INC, DBA NELCO — Nelco

4C. 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 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 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 of the strip. **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". RADIATION PROTECTION PRODUCTS INC — Type RPP - Lead Lined Drywall

Joint Tape and Compound — (Not Shown) 5. 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 covered with joint compound.

6. Batts and Blankets* —

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 **THERMAFIBER INC** — Type SAFB

Cementitious Backer Units* — (System D) — Nom 1/2 or 5/8 in. thick panels, square edge, attached to studs over 7 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 joints. UNITED STATES GYPSUM CO - DUROCK Exterior Cement Board or DUROCK Brand Cement Board.

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.	D
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 99.9% meeting the Federal specification QQ-L-201f, Grades "A, B, C or D" Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 6) and optional at remaining stud locations.	Pilder
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 99.9% meeting the Federal Specification QQ-L-201f, Grades "A, 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.

*Bearing the UL Classification Mark

Last Updated on 2012-08-01





REV DATE DESCRIPTION

VCBO NUMBER: 21560 **CLIENT NUMBER:** DATE: JULY 27, 2021

Σ M 4 Ω Ζ C Ω Z 4 0 Σ 0 UL RATED METAL STUD WALL

ASSEMBLIES

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Design No. U419 CONTINUED

2F. Framing Members*— Steel Studs — (Not shown, As an alternate to Item 2) — For use with Items 1G, 5F or 5G or 5I only, channel shaped studs, min depth as indicated under Item 5F, 5G or 5I, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.

CLARKDIETRICH BUILDING SYSTEMS — CD ProSTUD DMFCWBS L L C — ProSTUD

MBA BUILDING SUPPLIES — ProSTUD SOUTHEASTERN STUD & COMPONENTS INC - ProSTUD

STEEL STRUCTURAL SYSTEMS L L C — Tri-S ProSTUD

2G. Framing Members* - Metal Studs — Not shown - In lieu of Item 2 — For use with Item 1H, proprietary channel shaped steel studs, minimum width indicated under Item 5, 1-1/4 in. deep fabricated from min 0.015 in. (min bare metal thickness) galvanized steel. Studs 3/8 in. to 3/4 in. less in lengths than assembly heights. SUPER STUD BUILDING PRODUCTS — The Edge

2H. Framing Members* - Steel Studs — Not shown - In lieu of Item 2 - For use with Item 11. Proprietary channel shaped studs, minimum width indicated under Item 5. Studs to be cut 3/8 to 3/4 in less than the assembly STUDCO BUILDING SYSTEMS - CROCSTUD

21. Framing Members*— Steel Studs — (Not shown, As an alternate to Item 2) — For use with Items 1K. fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height. TELLING INDUSTRIES L L C — TRUE-STUD™

2J. Framing Members* - Steel Studs — (As an alternate to Item 2. For use with Items 5C or 5L) - Proprietary channel shaped studs, 3-5/8 in. deep spaced a max of 24 in. OC. Studs to be cut 3/4 in less than the assembly height and installed with a ½ in. gap between the end of the stud and track at the bottom of the wall. For direct attachment of gypsum board only.

TELLING INDUSTRIES L L C — Viper25™

2K. Framing Members* - Metal Studs — Not shown - In lieu of Item 2 — For use with Item 1M, proprietary channel shaped steel studs, min depth as indicated under Item 5, spaced a max if 24 in. OC, fabricated from min 0.020 in. thick galv steel. Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights TELLING INDUSTRIES L L C — Viper20™

3. Wood Structural Panel Sheathing — (Optional, For use with Item 5 Only.)- (Not Shown) - 4 ft wide, 7/16 in. thick oriented strand board (OSB) or 15/32 in. thick structural 1 sheathing (plywood) complying with DOC PS1 or PS2, or APA Standard PRP-108, manufactured with exterior glue, applied horizontally or vertically to the steel studs. Vertical joints centered on studs, and staggered one stud space from wallboard joints. Attached to studs with flathead self-drilling tapping screws with a min. head diam. of 0.292 in. at maximum 6 in. OC. in the perimeter and 12 in. OC. in the field. When used, fastener lengths for gypsum panels increased by min. 1/2 in.

Batts and Blankets* — (Required as indicated under Item 5) — Mineral wool batts, friction fitted between studs and runners. Min nom thickness as indicated under Item 5. See Batts and Blankets (BKNV or BZJZ) Categories for names of Classified companies.

4A. Batts and Blankets* — (Optional) — Placed in stud cavities, any glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. See Batts and Blankets (BKNV or BZJZ) Categories for names of Classified companies.

5. **Gypsum Board*** — 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. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 12 in. The thickness and number of layers for the 1 hr, 2 hr, 3 hr and 4 hr ratings are as follows: Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stud Depth, in.	Min Stud	No. of Depth, in. Laye
	Items 2, 2D, 2E, 2G and 2H	Item 2A	& Thkns of Panel
1	3-1/2	3-5/8	1 layer, 5/8 in. thick
1	2-1/2	3-5/8	1 layer, 1/2 in. thick
1	1-5/8	3-5/8	1 layer, 3/4 in. thick
2	1-5/8	2-1/2	2 laydvers, 1/2 in. thick
2	1-5/8	2-1/2	2 layers, 5/8 in. thick
2	3-1/2	3-5/8	1 layer, 3/4 in. thick
3	1-5/8	2-1/2	3 layers, 1/2 in. thick
3	1-5/8	2-1/2	2 layers, 3/4 in. thick
3	1-5/8	2-1/2	3 layers, 5/8 in. thick
4	1-5/8	2-1/2	4 layers, 5/8 in. thick
4	1-5/8	2-1/2	4 layers, 1/2 in. thick
4	2-1/2	2-1/2	2 layers, 3/4 in. thick

CGC INC — 1/2 in. thick Type C, IP-X2 or IPC-AR; WRC, 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRX or WRC; 3/4 in. thick Types IP-X3 or ULTRACODE UNITED STATES GYPSUM CO — 1/2 in. thick Type C, IP-X2, IPC-AR or WRC; 5/8 in. thick Type SCX, SGX, SHX, WRX, IP-X1, AR, C, WRC, FRX-G, IP-AR, IP-X2, IPC-AR ; 3/4 in. thick Types IP-X3 or ULTRACODE USG MEXICO S A DE C V — 1/2 in. thick Type C, IP-X2, IPC-AR or WRC; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRX, WRC or: 3/4 in, thick Types IP-X3 or ULTRACODE

When Item 7B, Steel Framing Members*, is used, Nonbearing Wall Rating is limited to 1 Hr. Min. stud depth is 3-1/2 in., min. thickness of insulation (Item 4) is 3 in., and two layers of gypsum board panels (1/2 in. or 5/8 in. thick) shall be attached to furring channels as described in Item 6. One laver of gypsum board panels (1/2 in. or 5/8 in. thick) attached to opposite side of stud without furring channels as described in Item 6.

5A. Gypsum Board* — (As an alternate to Item 5) — 5/8 in. thick, 24 to 54 in. wide, applied horizontally as the outer layer to one side of the assembly. Secured as described in Item 6.

CGC INC — Type SHX.

UNITED STATES GYPSUM CO — Type FRX-G, SHX. USG MEXICO S A DE C V — Type SHX.

6A. Fasteners — (Not shown) — For use with Item 2A - Type S or S-12 steel screws used to attach panels to 5B. Gypsum Board* — (Not Shown) - As an alternate to Item 5 when used as the base layer on one or both studs (Item 2A). Single layer systems: 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick sides of wall when 5/8 in or 3/4 in. thick products are specified. For direct attachment only to steel studs Item 2B, (not panels, spaced 8-1/2 in. OC with additional screws 1 in. and 2-1/2 in. from edges of the board when panels are to be used with Item 3) - Nom 5/8 in. or $\frac{3}{4}$ in. may be used as alternate to all 5/8 in. or $\frac{3}{4}$ in. shown in Item 5. horizontally, or 8 in, OC along vertical and bottom edges and 12 in, OC in the field when panels are applied Wallboard Protection on Each Side of Wall table. Nom 5/8 in. or ³/₄ in. thick lead backed gypsum panels with beveled, vertically. Two layer systems applied vertically: First layer- 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels or 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 20 MSG steel studs Item 2B with 1-1/4 in. long Type S-12 steel 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC with screws offset 8 in. from first layer. Two layer screws spaced 8 in. OC at perimeter and 12 in. OC in the field. To be used with Lead Batten Strips (see Item 11) or systems applied horizontally: First layer-1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. Lead Discs or Tabs (see Item 12). thick panels, spaced 16 in. OC starting 8 in. from each edge of the board with an additional screw placed 1-1/4 **RAY-BAR ENGINEERING CORP** — Type RB-LBG in. from each edge of the board. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels or 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC starting 8 in. from each edge of the board with an additional screw 5C. Gypsum Board* — (For Use With Item 2C) Rating Limited to 1 Hour. 5/8 in. thick, 48 in. wide, Gypsum placed 1-1/4 in. from each edge of the board with screws offset 8 in. from first layer. Three-layer systems: First panels with beveled, square or tapered edges, applied vertically or horizontally. (Vertical Application) - The gypsum layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 board is to be installed on each side of the studs with 1 in. long Type S coated steel screws spaced 8 in. OC starting in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in., 5/8 in. thick panels or 2-5/8 in. long for 4 in. from the edge of the board at the vertical edges and 12 in. OC starting 6 in. from the edge of the board at the 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below. For all layers, an additional center of each board. Gypsum boards are to be secured to the top and bottom track with screws spaced 8 in. OC screw shall be placed 1-1/4 in. from each edge of the board. Four-layer systems: First layer- 1 in. long for 1/2 starting 4 in. from the board edge. Fasteners shall not penetrate through both the stud and the track at the same in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced time. Vertical joints are to be centered over studs and staggered one stud cavity on opposite sides of studs. 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 24 (Horizontal Application) - The gypsum board is to be installed on each side of the studs with 1 in. long Type S coated in. OC. Fourth layer- 2-5/8 in. long for 1/2 in. thick panels or 3 in. long for 5/8 in. thick panels, spaced 12 in. steel screws spaced 8 in. OC starting 4 in. from the edge of the board at the vertical edges and 12 in. OC starting 6 OC. Screws offset min 6 in. from layer below. For all layers, an additional screw shall be placed 1-1/4 in. from in. from the edge of the board at the center of each board. Gypsum boards are to be secured to the top and bottom each edge of the board.

track with screws spaced 8 in. OC starting 4 in. from the board edge. Fasteners shall not penetrate through both the stud and the track at the same time. All horizontal joints are to be backed as outlined under section VI of Volume 1 in the Fire Resistive Directory.

CGC INC — Type SCX. **UNITED STATES GYPSUM CO** — Type SCX, SGX.

USG MEXICO S A DE C V — Type SCX.

	Min	
5		Thkns of
	Insulatio	n
	(Item 4)	
	(/	
	Optional	
	1-1/2 in.	
	Optional	
		Optional
	Optional	
	3 in.	
	Optional	

2 in.

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5D. Gypsum Board* — (As an alternate to Item 5) — 5/8 in. thick, 48 in. wide, applied vertically or horizontally. Secured as described in Item 6. For use with Items 1 and 2 only. **UNITED STATES GYPSUM CO** — Type USGX.

5E. Gypsum Board* — (Not Shown) - (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 1/2 in. or 5/8 in thick products are specified. For direct attachment only to steel studs Item 2B, not to be used with Item 3). 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 No. 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 — Nelco

5F. Gypsum Board* — (As an alternate to Item 5) — For use with Items 1G and 2F and limited to 1 Hour Rating only, Gypsum panels with beveled, square or tapered edges, applied vertically, and fastened to the steel studs with 1 in. long Type S screws spaced 8 in. OC along vertical and bottom edges and 12 in. OC in the field. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Steel stud depth shall be a minimum 3-5/8 in. **UNITED STATES GYPSUM CO** — 5/8 in. thick Type SCX, SGX.

5G. Gypsum Board* — (As an alternate to Item 5) — For use with Items 1G and 2F only, Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally, as specified in the table below and fastened to the steel studs as described in Item 6. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 12 in. The thickness and number of layers for the 2 hr, 3 hr and 4 hr ratings are as follows:

Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stu Depth, Item 2F	d No. of Layers in. & Thickness of Panel	Min Thkns of Insulation (Item 4)	
2	1-5/8	2 layers, 1/2 in. thick	Optional	
2	1-5/8	2 layers, 5/8 in. thick	Optional	
3	1-5/8	3 layers, 1/2 in. thick	Optional	
3	1-5/8	3 layers, 5/8 in. thick	Optional	
4	1-5/8	4 layers, 5/8 in. thick	Optional	
4	1-5/8	4 layers, 1/2 in. thick	Optional	

CGC INC — 1/2 in. thick Type C, IP-X2 or IPC-AR; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, or; 3/4 in. thick Types IP-X3 or ULTRACODE **UNITED STATES GYPSUM CO** — 1/2 in. thick Type C, IP-X2, IPC-AR or; 5/8 in. thick Type SCX, SGX,

SHX. IP-X1, AR. C. , FRX-G. IP-AR. IP-X2, IPC-AR ; 3/4 in, thick Types IP-X3 or ULTRACODE USG MEXICO S A DE C V — 1/2 in. thick Type C, IP-X2, IPC-AR or; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, or; 3/4 in. thick Types IP-X3 or ULTRACODE

5H. Gypsum Board* — (Not Shown) - (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 5/8 or 3/4 in thick products are specified. For direct attachment only to steel studs Item 2B, (not to be used with Item 3) - Nom 5/8 or 3/4 in. may be used as alternate to all 5/8 or 3/4 in. shown in Item 5, Wallboard Protection on Each Side of Wall table. Nom 5/8 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. 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. Gypsum board secured to 20 MSG steel studs Item 2B 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 11A) or Lead Discs (see Item 12A).

MAYCO INDUSTRIES INC — Type X-Ray Shielded Gypsum

51. Gypsum Board* — (As an alternate to Item 5) - Nom. 5/8 in. thick gypsum panels with beveled, square or tapered edges installed as described in Item 5. Steel stud minimum depth shall be as indicated in Item 5.

CGC INC — Type ULX

UNITED STATES GYPSUM CO - Type ULX USG MEXICO S A DE C V — Type ULX

5J. Gypsum Board* — (Not Shown) - (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 1/2 in. or 5/8 in thick products are specified. For direct attachment only to steel studs Item 2B, not to be used with Item 3). 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".

RADIATION PROTECTION PRODUCTS INC — Type RPP - Lead Lined Drywall

6. Fasteners — (Not shown) — For use with Items 2 and 2F - Type S or S-12 steel screws used to attach panels to studs (Item 2) or furring channels (Item 7). Single layer systems: 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 8 in. OC when panels are applied horizontally, or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when panels are applied vertically. Two laver systems: First layer- 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels or 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC with screws offset 8 in. from first laver. Three-laver systems: First laver-1 in. long for 1/2 in. 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in., 5/8 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below. Four-layer systems: First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 24 in. OC. Fourth layer- 2-5/8 in. long for 1/2 in. thick panels or 3 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below.

Furring Channels — (Optional, not shown, for single or double layer systems) — Resilient furring channels fabricated from min 25 MSG corrosion-protected steel, spaced vertically a max of 24 in. OC. Flange portion attached to each intersecting stud with 1/2 in. long Type S-12 steel screws. Not for use with Item 5A and 5F

Design No. U419 CONTINUED

7A. Framing Members* — (Not Shown) — (Optional on one or both sides, not shown, for single or double layer systems) — As an alternate to Item 7, furring channels and Steel Framing Members as described below:

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 attached to furring channels as described in Item 6. Not for use with Item 5A and 5E.

b. Steel Framing Members* — Used to attach furring channels (Item 7Aa) to studs (Item 2). Clips spaced max. 48 in. OC. RSIC-1 clips secured to studs with No. 8 x 1-1/2 in. minimum selfdrilling. S-12 steel screw through the center arommet. RSIC-V clips secured to study with No. 8 x 9/16 in. minimum self-drilling, S-12 steel screw through the center hole. Furring channels are friction fitted into

PAC INTERNATIONAL INC - Types RSIC-1, RSIC-V.

7B. Framing Members* — (Optional, Not Shown) — As an alternate to Item 7, for single or double layer systems, furring channels and Steel Framing Members on only one side of studs as described

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. Batts and Blankets placed in stud cavity as described in Item 5. Two layers of gypsum board attached to furring channels as described

in Item 5. Not for use with Item 5A and 5E. **b.** Steel Framing Members* — Used to attach furring channels (Item 7Ba) to one side of studs (Item 2) only. Clips spaced 48 in. OC., and secured to studs with two No. 8 x 2-1/2 in. coarse drywall screws, one through the hole at each end of the clip. Furring channels are friction fitted into clips. **KINETICS NOISE CONTROL INC** — Type Isomax

Framing Members* — Optional - Not Shown - Used as an alternate method to attach resilient 7C. channels (Item 7). Clips attached at each intersection of the resilient channel and the steel studs (Item 2). Resilient channels are friction fitted into clips, and then clips are secured to the steel stud with min. 1 in. long Type S-12 steel screws through the center hole of the clip and the resilient channel flange. **KEENE BUILDING PRODUCTS CO INC** — Type RC Assurance.

7D. Framing Members* — (Not Shown) — (Optional on one or both sides, not shown, for single or double layer systems) — As an alternate to Item 7, furring channels and Steel Framing Members as described below:

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 attached to furring channels as described in Item 6. Not for use with Item 5A and 5E. **b. Steel Framing Members**^{*} — Used to attach furring channels (Item 7Aa) to studs (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 GENIECLIP

Joint Tape and Compound — Vinyl or casein, dry or premixed joint compound applied in two coats to joints and screw heads of outer layers. Paper tape, nom 2 in. wide, embedded in first layer of compound over all joints of outer layer panels. Paper tape and joint compound may be omitted when gypsum panels are supplied with a square edge.

9. Siding, Brick or Stucco — (Optional, not shown) — Aluminum, vinyl or steel siding, brick veneer or stucco, meeting the requirements of local code agencies, installed over gypsum panels. Brick veneer attached to studs with corrugated metal wall ties attached to each stud with steel screws, not more than each sixth course of brick.

10. Caulking and Sealants* — (Optional, not shown) — A bead of acoustical sealant applied around the partition perimeter for sound control. **UNITED STATES GYPSUM CO** — Type AS

Lead Batten Strips — (Not Shown, For Use With Item 5B) - 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 5B) and optional at remaining stud locations. Required behind vertical joints.

11A. Lead Batten Strips — (Not Shown, For Use With Item 5H) 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 99.9% meeting the Federal specification QQ-L-201f, Grades "A, B, C or D". Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations.

12. Lead Discs or Tabs — (Not Shown, For Use With Item 5B) - Used in lieu of or in addition to the lead batten strips (Item 11) 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 5B) 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".

12A. Lead Discs — (Not Shown, for use with Item 5H) 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 99.9% meeting the Federal Specification QQ-L-201f, Grades "A, B, C or D".

13. Lead Batten Strips — (Not Shown, For Use With Item 5E) 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 5E) and optional at remaining stud locations.

Lead Tabs — (Not Shown, For Use With Item 5E) 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 5E) 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.

*Bearing the UL Classification Mark

Last Updated on 2012-10-03

