LEE'S SUMMIT
MIDDLE SCHOOL #4

PACKAGE 3 - BUILDING & SITE

1001 SE BAILEY ROAD
LEE'S SUMMIT, MO 64081

ISSUE FOR PERMIT - VOLUME 1 OF 2

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LEE'S SUMMIT MIDDLE SCHOOL #4
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1001 SE BAILEY ROAD
LEE'S SUMMIT, MO 64081

PACKAGE 3 - BUILDING & SITE
10/08/20
REVISIONS

13-20102-00

COVER SHEET - VOLUME 1

0.01

LEE'S SUMMIT MIDDLE SCHOOL #4

PACKAGE 3 - BUILDING & SITE

1001 SE BAILEY ROAD
LEE'S SUMMIT, MO 64081

ISSUE FOR PERMIT - VOLUME 2 OF 2

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TA7.2 AUDIO-VIDEO SIGNAL FLOWS
TA7.3 AUDIO-VIDEO SIGNAL FLOWS
TN0.1 TECHNOLOGY GENERAL NOTES AND LEGEND
TN1.1A TECHNOLOGY FIRST LEVEL PLAN - AREA A
TN1.1B TECHNOLOGY FIRST LEVEL PLAN - AREA B
TN1.1C TECHNOLOGY FIRST LEVEL PLAN - AREA C
TN1.1D TECHNOLOGY FIRST LEVEL PLAN - AREA D
TN1.1E TECHNOLOGY FIRST LEVEL PLAN - AREA E
TN1.1F TECHNOLOGY FIRST LEVEL PLAN - AREA F
TN1.1G TECHNOLOGY FIRST LEVEL PLAN - AREA G
TN1.1S TECHNOLOGY FIRST LEVEL PLAN - AREA S
TN1.2A TECHNOLOGY SECOND LEVEL PLAN - AREA A
TN1.2B TECHNOLOGY SECOND LEVEL PLAN - AREA B
TN1.2C TECHNOLOGY SECOND LEVEL PLAN - AREA C
TN1.2E TECHNOLOGY SECOND LEVEL PLAN - AREA E
TN1.2F TECHNOLOGY SECOND LEVEL PLAN - AREA F
TN1.2G TECHNOLOGY SECOND LEVEL PLAN - AREA G
TN2.1A TECHNOLOGY FIRST LEVEL RCP - AREA A
TN2.1B TECHNOLOGY FIRST LEVEL RCP - AREA B
TN2.1C TECHNOLOGY FIRST LEVEL RCP - AREA C
TN2.1D TECHNOLOGY FIRST LEVEL RCP - AREA D
TN2.1E TECHNOLOGY FIRST LEVEL RCP - AREA E
TN2.1F TECHNOLOGY FIRST LEVEL RCP - AREA F
TN2.1G TECHNOLOGY FIRST LEVEL RCP - AREA G
TN2.2A TECHNOLOGY SECOND LEVEL RCP - AREA A
TN2.2B TECHNOLOGY SECOND LEVEL RCP - AREA B
TN2.2C TECHNOLOGY SECOND LEVEL RCP - AREA C
TN2.2D TECHNOLOGY SECOND LEVEL RCP - AREA D
TN2.2E TECHNOLOGY SECOND LEVEL RCP - AREA E
TN2.2G TECHNOLOGY SECOND LEVEL RCP - AREA G
TN4.1 TECHNOLOGY ENLARGED PLANS
TN4.2 TECHNOLOGY ENLARGED PLANS
TN5.1 TECHNOLOGY DETAILS
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TN6.1 TECHNOLOGY RISER DIAGRAMS
TY0.1 SECURITY GENERAL NOTES AND LEGEND
TY1.1A SECURITY FIRST LEVEL PLAN - AREA A
TY1.1B SECURITY FIRST LEVEL PLAN - AREA B
TY1.1C SECURITY FIRST LEVEL PLAN - AREA C
TY1.1D SECURITY FIRST LEVEL PLAN - AREA D

.SPECIAL SYSTEMS.

TY1.1E SECURITY FIRST LEVEL PLAN - AREA E
TY1.1F SECURITY FIRST LEVEL PLAN - AREA F
TY1.1G SECURITY FIRST LEVEL PLAN - AREA G
TY1.1S SECURITY FIRST LEVEL PLAN - AREA S
TY1.2A SECURITY SECOND LEVEL PLAN - AREA A
TY1.2B SECURITY SECOND LEVEL PLAN - AREA B
TY1.2C SECURITY SECOND LEVEL PLAN - AREA C
TY5.1 SECURITY DETAILS
TY5.2 SECURITY DETAILS

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1 ADDENDUM 002 10/19/20

13-20102-00

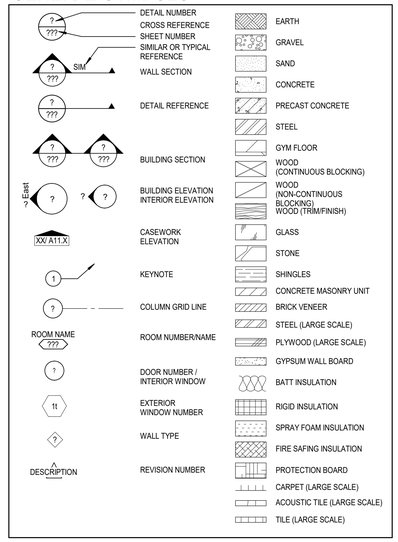
COVER SHEET - VOLUME 2

0.02

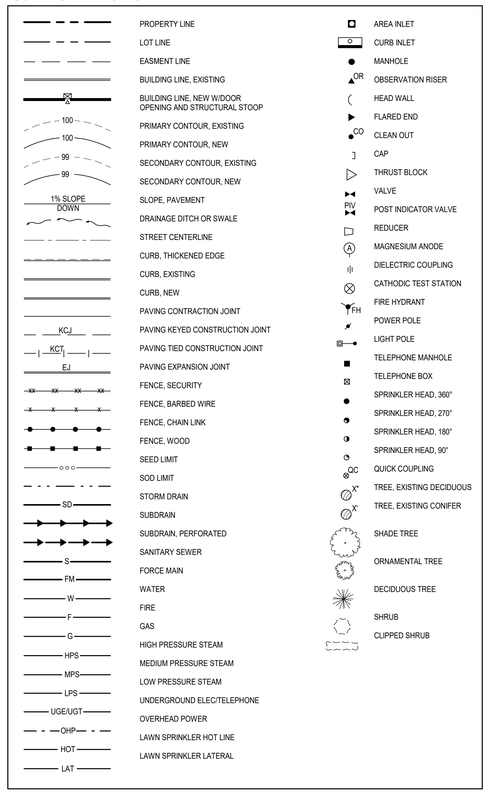
ABBREVIATIONS

#	NUMBER	EXP	EXPANSION	NWC	NORMAL WEIGHT CONCRETE	VERT	VERTICAL
&	AND	EXP	EXPOSED			VEST	VESTIBULE
@	AT	EXT	EXTERIOR	O to O	OUT TO OUT	VF	VINYL FLOOR
				OA	OVERALL	VOC	VOLITILE ORGANIC COMPOUND
AB	ANCHOR BOLT	F	FABRIC	OC	ON CENTER	VOL	VOLUME
AB	AIR BARRIER	F.O.	FACE OF	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED	VP	VENEER PLASTER
ABS	ASBESTOS	F.V.	FIELD VERIFY	OFF	OFFICE	VT	VINYL TILE
ACC	ADA ACCESSIBLE	FAB	FABRICATE(D)	OFOI	OWNER FURNISHED OWNER INSTALLED	VWC	VINYL WALL COVERING
ACR	ACRYLIC	FB	FACE BRICK	OPG(S)	OPENING(S)		
AD	ACCESS DOOR	FD	FLOOR DRAIN	OPP	OPPOSITE	W	WEST
ADA	AMERICANS WITH DISABILITY ACT	FDN	FOUNDATION	OSHA	OPERATIONAL SAFETY AND HEALTH ADMINISTRATION	W	WIDE
ADDN	ADDITION OR ADDITIONAL	FE	FIRE EXTINGUISHER	OTB	OPEN TO BELOW	W/	WITH
ADJ	ADJUSTABLE	FEC	FIRE EXTINGUISHER CABINET	OVFL	OVERFLOW	W/O	WITHOUT
ADJT	ADJACENT	FF	FINISH FLOOR	OVHD	OVERHEAD	WB	WALL BASE
ADMIN	ADMINISTRATION	FH	FIRE HYDRANT			WC	WATER CLOSET
AEC	AUTOMATED EXTERNAL DEFIBRILLATIORS	FHC	FIRE HOSE CABINET	P	PAINT	WC	WALL COVERING
AFF	ABOVE FINISHED FLOOR	FIG	FIGURE	PAN B	PANIC BOLT	WCL	WATER CLOSET/LAVATORY COMBINATION
AFG	ABOVE FINISHED GRADE	FIN	FINISHED	PAR	PARALLEL	WD	WOOD
AHJ	AUTHORITY HAVING JURISDICTION	FIX	FIXTURE	PB	PARTICLE BOARD	WDF	WOOD FLOORING
AL	ALUMINUM	FL	FLOOR	PC	PRECAST CONCRETE	WDW	WINDOW
ALT	ALTERNATE	FLASH	FLASHING	PCD	PAPER CUP DISPENSER	WG	POLISHED WIRE GLASS
ALUM	ALUMINUM	FLEX	FLEXIBLE	PCT	PORCELAIN CERAMIC TILE	WI	WROUGHT IRON
ANCH	ANCHOR	FLG	FLOORING	PD	PANIC DEVICE	WOM	WALK OFF MAT
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	FLM	FULL LENGTH MIRROR	PENT	PENTHOUSE	WR	WASTE RECEPTACLE
AP	ACCESS PANEL	FLUOR	FLUORESCENT	PERF	PERFORATED	WRB	WEATHER RESISTANT BARRIER
APC	ACOUSTIC PANEL CEILING	FO	FINISH OPENING	PERP	PERPENDICULAR	WW	WARM WHITE
APPROX	APPROXIMATE	FOC	FACE OF CONCRETE	PG	PATTERN GLASS	WWF	WELDED WIRE FABRIC
ARCH	ARCHITECTURAL	FOF	FACE OF FINISH	PIC	PORTABLE INSTRUMENT CONNECTION		
ASPH	ASPHALT	FOM	FACE OF MASONRY	PIG	PATTERN INSULATING GLASS	YD	YARD
AUTO	AUTOMATIC	FOS	FACE OF STUD	PL	PLATE		
AVG	AVERAGE	FOW	FACE OF WALL	PL	PROPERTY LINE		
AWP	ACOUSTIC WALL PANEL	FP	FIREPROOFING	PL	PLASTIC LAMINATE		
		FR	FIRE RESISTANT	PLAM	PLASTIC LAMINATE		
B.O.	BOTTOM OF	FRP	FIBERGLASS REINFORCED PANEL	PLBG	PLUMBING		
BCS	BABY CHANGING STATION	FRT	FIRE RESISTANCE TREATED	PLYWD	PLYWOOD		
BD	BOARD	FS	FLOOR SINK	PR	PAIR		
BLDG	BUILDING	FSS	FOLDING SHOWER SEAT	PREFAB	PREFABRICATED		
BLK	BLOCK	FT	FEET	PROJ	PROJECT(OR) (ION)		
BLKG	BLOCKING	FTG	FOOTING	PS	PROJECTION SCREEN		
BLKHD	BULKHEAD	FUT	FUTURE	PT	POINT		
BM(S)	BEAM(S)	FVC	FIRE VALVE CABINET	PTD	PAPER TOWEL DISPENSER		
BOT	BOTTOM	FWC	FABRIC WALL COVERING	PTD/R	COMBINATION TOWEL DISPENSER/RECEPTACLE		
BRDG	BRIDGING			PTN	PARTITION		
BRG	BEARING	G	GROUT	PVC	POLYVINYL CHLORIDE		
BRKT	BRACKET	GA	GAUGE	PWL	SOUND POWER LEVEL		
BSMT	BASEMENT	GAL	GALLON				
BT	BATHTUB	GALV	GALVANIZED	QT	QUARRY TILE		
BTWN	BETWEEN	GB	GRAB BAR	QTR RND	QUARTER ROUND		
		GC	GENERAL CONTRACTOR	QTY	QUANTITY		
C	CHANNEL	GD	GARBAGE DISPOSAL				
CAB	CABINET	GEN	GENERAL	RAD	RADIUS		
CANT	CANTILEVER	GFA	GROSS FLOOR AREA	RB	RUBBER BASE		
CAP	CAPACITY	GL	GLUE LAMINATED	RC	REMOTE CONTROL		
CBD	CHALKBOARD	GL	GLASS	RCP	REFLECTED CEILING PLAN		
CER	CERAMIC	GMP	GUARANTTED MAXIMUM PRICE	RD	ROOF DRAIN		
CF	CUBIC FEET	GOVT	GOVERNMENT	REF	REFERENCE		
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED	GR	GUARD RAIL	REFL	REFLECTED		
CFSF	COLD-FORMED STEEL FRAMING	GR	GRADE	REM	REMOVABLE		
CG	CLEAR FLOAT GLASS	GRS	GALVANIZED RIGID STEEL	REQ(D)	REQUIRE(D)		
CI	CAST IRON	GWB	GYPSUM WALL BOARD	RESIL	RESILIENT		
CIG	CLEAR INSULATING GLASS	GYP	GYPSUM	REV	REVISION(S)		
CIP	CAST IN PLACE			RF	RESILIENT FLOORING		
CJ	CONTROL JOINT	H	HEIGHT	RF	RUBBER FLOOR		
CJA	CONTROL JOINT ABOVE	HC	HOLLOW CORE	RFM	RECESSED FLOOR MAT		
CL	CENTER LINE	HD	HAND DRYER	RH	ROBE HOOK		
CLG	CEILING	HDBD	HARDBOARD	RI&C	ROUGH IN AND CONNECT		
CLOS	CLOSET	HDR	HEADER	RM	ROOM		
CLR	CLEAR	HDWD	HARDWOOD	RND	ROUND		
CMU	CONCRETE MASONRY UNIT	HDWR	HARDWARE				
COL	COLUMN	HM	HOLLOW METAL	S	SOUTH		
COM	COMMON	HORIZ	HORIZONTAL	S	SINK		
COMB	COMBINATION	HR	HOUR	SAT	SPRAYED ACOUSTIC TREATMENT		
COMM	COMMUNICATIONS	HR	HANDRAIL	SAW	SOUND ABSORBING WALL UNITS		
COMPR	COMPRESSIBLE	HS	HARDWARE SET	SB	SPLASH BLOCK		
CONC	CONCRETE	HSS	HOLLOW STRUCTURAL SHAPE	SC	SOLID CORE		
CONF	CONFERENCE	HVAC	HEATING VENTILATING AND AIR CONDITIONING	SC	SHOWER CURTAIN		
CONFIG	CONFIGURATION			SCD	SEAT COVER DISPENSER		
CONN(S)	CONNECTION(S)	i.e.	THAT IS	SCH	SHOWER CURTAIN HOOK		
CONST	CONSTRUCTION	IAW	IN ACCORDANCE WITH	SCHED	SCHEDULE		
CONT	CONTINUOUS	IBC	INTERNATIONAL BUILDING CODE	SCR	SHOWER CURTAIN ROD		
CONTR	CONTRACT(OR)	ID	INSIDE DIAMETER	SCT	STRUCTURAL CLAY TILE		
CORR	CORRIDOR	IF	INSIDE FACE	SD	SOAP DISPENSER		
CP	COVER PLATE	IJ	ISOLATION JOINT	SECT	SECTION		
CPT	CARPET	IJS	IN JOIST SPACE	SECY	SECRETARY		
CR	CHAIR RAIL	IN	INCH	SG	SPANDREL GLASS		
CS	COUNTERSINK	INC	INCLUDE(ING)	SGL	SINGLE		
CSTJ	CONSTRUCTION JOINT	INSUL	INSULATION	SH	SHOWER		
CSWK	CASEWORK	INT	INTERIOR	SHM	SECURITY HOLLOW METAL		
CT	CERAMIC TILE			SHT	SHEET		
CTG	CLEAR TEMPERED FLOAT GLASS	JAN	JANITOR	SIM	SIMILAR		
CTIG	CLEAR TEMPERED INSULATING GLASS	JCT	JUNCTION	SLNT	SEALANT		
CTR	CENTER	JFB	JOINT FILLER BOARD	SM	SHEET METAL		
CU	COPPER	JST	JOIST	SND	SANITARY NAPKIN DISPOSAL		
CU	CUBIC	JT	JOINT	SNV	SANITARY NAPKIN VENDOR		
CU	COMBINATION UNIT			SPEC	SPECIFICATION(S)		
CV	CONDOM VENDOR	KCJ	KEYED CONSTRUCTION JOINT	SPL	SOUND PRESSURE LEVEL		
CY	CUBIC YARD	KD	KNOCKDOWN	SPL	SPECIAL		
CYL	CYLINDER	KH	KITCHEN HOOD	SQ	SQUARE		
		KIT	KITCHEN	SS	STAINLESS STEEL		
D	DEPTH			SS	SOLID SURFACE		
DB	DECIBEL	L	ANGLE	SSA	STORM SHELTER AREA		
DBL	DOUBLE	LAB	LABORATORY	SSS	STAINLESS STEEL SHELF		
DC	DUST COLLECTOR	LAM	LAMINATED	ST	STONE		
DEG	DEGREE	LAV	LAVATORY	ST	STAIR		
DEMO	DEMOLISH OR DEMOLITION	LB(S)	POUND(S)	STAGD	STAGGERED		
DEPR	DEPRESSION(VED)	LBR	LUMBER	STC	SOUND TRANSMISSION CLASS		
DEPT	DEPARTMENT	LDG	LOADING	STD	STANDARD		
DET	DETAIL	LF	LINEAR FOOT	STGR	STRINGER		
DET	DETENTION	LG	LENGTH (LONG)	STL	STEEL		
DF	DRINKING FOUNTAIN	LG	LAMINATED GLASS	STOR	STORAGE		
DG	DOOR GRILLE	LIN	LINEAR	STRUCT	STRUCTURAL		
DIA	DIAMETER	LINO	LINOLEUM	SUBFL	SUBFLOOR		
DIAG	DIAGONAL	LKR	LOCKER	SURF	SURFACE		
DIM	DIMENSION	LOC	LOCATION	SUSP	SUSPENDED		
DIV	SPECIFICATION DIVISION	LONG	LONGITUDINAL	SV	SHEET VINYL		
DN	DOWN	LSC	LIFE SAFETY CODE	SYM	SYMETRICAL		
DPFG	DAMPROFFING	LTG	LIGHTING				
DR	DOOR	LV	LOUVER	T	TREAD		
DSN	DOWNSPOUT NOZZLE	LVT	LUXURY VINYL TILE	T&G	TONGUE AND GROOVE		
DW	DISHWASHER	LWC	LIGHT WEIGHT CONCRETE	T.O.	TOP OF		
DWG(S)	DRAWING(S)			TAN	TANGENT		
DWL(S)	DOWEL(S)	M	THOUSAND	TB	TOWEL BAR		
DWR	DRAWER	MAG	MAGNETIC	TBD	TACK BOARD		
		MAINT	MAINTENANCE	TCP	TOILET COMPARTMENT PARTITION		
E	EAST	MAN	MANUAL	TEMP	TEMPORARY		
EA	EACH	MAS	MASONRY	TERR	TERRAZZO		
EA	EACH FACE	MATL	MATERIAL	TG	TINTED FLOAT GLASS		
EB	EXPANSION BOLT	MAX	MAXIMUM	TH	THRESHOLD		
EC	ELECTRICAL CONTRACTOR	MB	MOP BASIN	TI	TENANT IMPROVEMENT		
EE	EACH END	MBD	MARKER BOARD	TIG	TINTED INSULATING GLASS		
EEW	EMERGENCY EYE WASH	MBH	MOP/BROOM HOLDER	TMR	TILT MIRROR UNIT		
EEWS	EMERGENCY EYE WASH SHOWER	MC	MEDICINE CABINET	TOP	TOP OF PAVING		
EFF	EFFICIENCY	MECH	MECHANICAL	TRANS	TRANSVERSE		
EJ	EXPANSION JOINT	MEMB	MEMBRANE	TT	TERRAZZO TILE		
EL	ELEVATION	MEZZ	MEZZANINE	TTD	TOILET TISSUE DISPENSER		
ELAS	ELASTOMERIC	MFR	MANUFACTURER	TTG	TINTED TEMPERED FLOAT GLASS		
ELEC	ELECTRICAL	MH	MANHOLE	TTIG	TINTED TEMPERED INSULATING GLASS		
ELEV	ELEVATOR	MIN	MINIMUM	TW	TACK WALL		
EMER	EMERGENCY	MISC	MISCELLANEOUS	TYP	TYPICAL		
ENCL	ENCLOSURE	MR/S	MIRROR WITH SHELF				
ENG	ENGINEER	MTD	MOUNTED	UL	UNDERWRITERS LABORATORIES		
ENTR	ENTRANCE	MTG	MOUNTING	UNEX	UNEXCAVATED		
EQ	EQUAL	MUL	MULLION	UNFIN	UNFINISHED		
EQUIP	EQUIPMENT			UNO	UNLESS NOTED OTHERWISE		
EQUIV	EQUIVALENT	N	NORTH	UR	URINAL		
ERF	EPOXY RESIN FLOORING	NA	NOT APPLICABLE	US	UTILITY SHELF		
EUI	ENERGY USE INTENSITY	NC	NOISE CRITERIA	UTIL	UTILITY		
EW	EACH WAY	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION				
EWC	ELECTRIC WATER COOLER	NIC	NOT IN CONTRACT	VB	VAPOR BARRIER		
EXIST	EXISTING	NOM	NOMINAL	VB	VINYL BASE		
		NTS	NOT TO SCALE	VCB	VENTED COVE BASE		

GENERAL SYMBOLS



SITE SYMBOLS



LEE'S SUMMIT MIDDLE SCHOOL #4

LEE'S SUMMIT R-7 SCHOOL DISTRICT

1001 SE BAILEY ROAD
LEE'S SUMMIT, MO 64081

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SYMBOLS AND ABBREVIATIONS

0.1

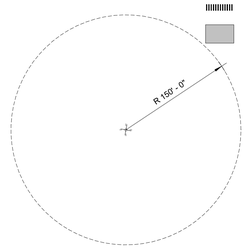
CODE SITE PLAN LEGEND

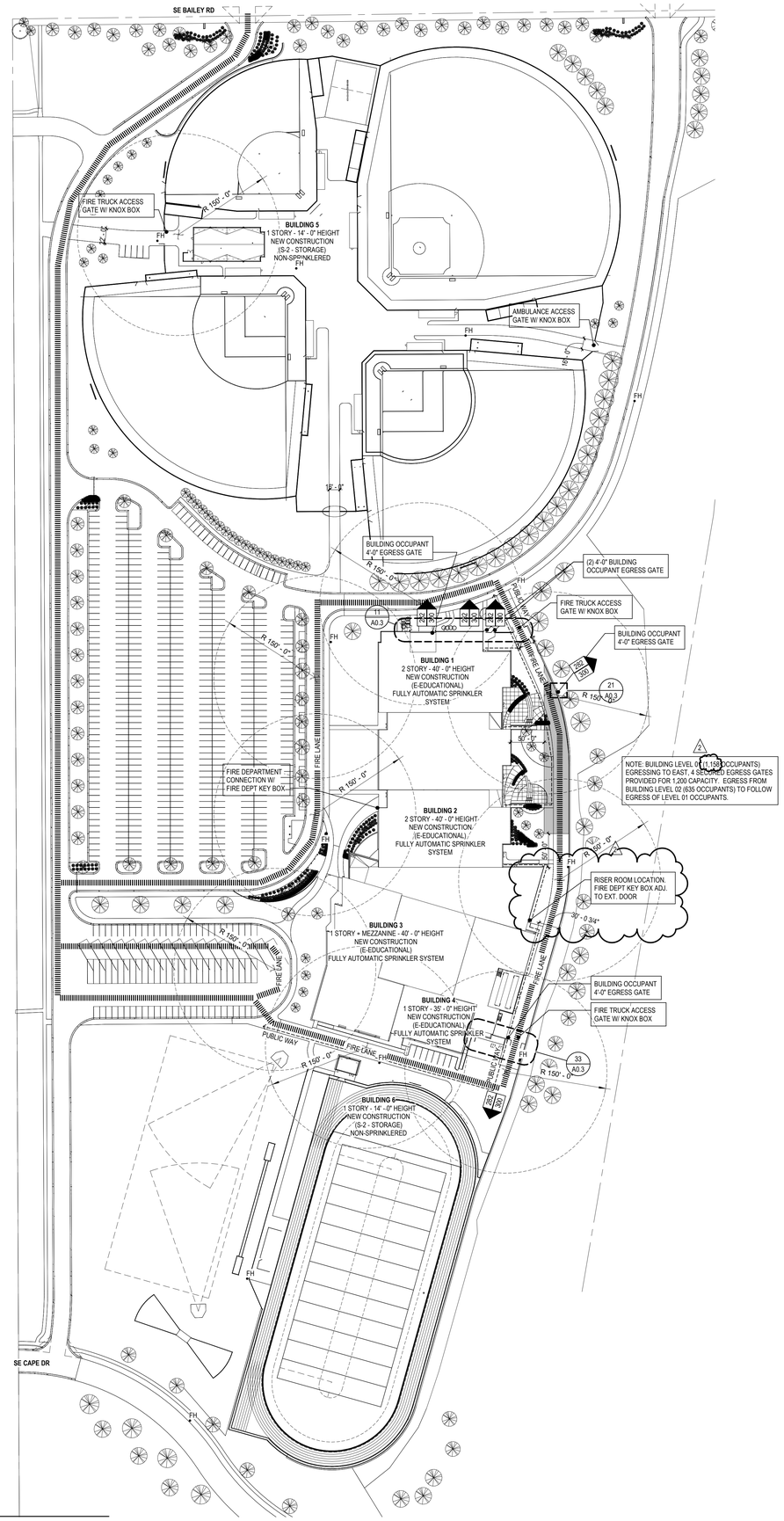
FH — FIRE HYDRANT

FIRE LANES AND FIRE LANE ACCESS

7,390 SF AREA OF REFUGE 50'-0" FEET AWAY FROM BUILDING. AREA ALLOWS FOR 2,463 MAX. OCCUPANTS AT 3 SF/PER OCCUPANT.

FIRE TRUCK HOSE RADIUS





CODE SITE PLAN

SCALE: 1" = 80'-0"

NORTH

DLR Group

SCOTT PAULIN
REGISTERED ARCHITECT
STATE OF MISSOURI

LEE'S SUMMIT MIDDLE SCHOOL #4

LEE'S SUMMIT R-7 SCHOOL DISTRICT

1001 SE BAILEY ROAD
LEE'S SUMMIT, MO 64081

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1	CITY REVIEW	11/3/20
2	ASI 003	12/2/20

13-20102-00

CODE ANALYSIS - SITE PLAN

CP0.0

SYMBOL LEGEND

- [###] - OCCUPANCY LOAD
- (###) - ACCESSORY USE AREA (OCCUPANCY LOAD IS NOT INCLUDED IN LOADS BEYOND THIS ROOM)
- (open arrow 0/0) - COMBINED OCCUPANT LOAD AT A GIVEN DOOR OR STAIR
  - TOTAL EXIT CAPACITY OF DOOR OR STAIR (THE CAPACITY OF DOORS ARE DETERMINED AS FOLLOWS: CLEAR OPENING WIDTH IN INCHES DIVIDED BY 0.15 THE CAPACITY OF STAIRS ARE DETERMINED AS FOLLOWS WIDTH IN INCHES DIVIDED BY 0.2 FOR SPRINKLERED PER 1005.3.1 EXCEPTION 1)
- (solid arrow 0/0) - COMBINED OCCUPANT LOAD AT A GIVEN DOOR. (SUM OF THESE EQUALS TOTAL OCCUPANT LOAD)
  - TOTAL EXIT CAPACITY OF DOOR (THE CAPACITY OF DOORS ARE DETERMINED AS FOLLOWS: CLEAR OPENING WIDTH IN INCHES DIVIDED BY 0.15)
- PD - PANIC DEVICE
- XX MIN - DOOR FIRE RATING

WALL SEPARATION LEGEND

WALL HOURLY RATING		WALL FIRE RATING TYPE	
0 =	0 HOUR	C =	CORRIDOR
1/2 =	1/2 HOUR	EW =	EXTERIOR WALL
1 =	1 HOUR	FB =	FIRE BARRIER
2 =	2 HOUR	FP =	FIRE PARTITION
3 =	3 HOUR	FSB =	FIRE/SMOKE BARRIER
SP =	SMOKE PARTITION	FW =	FIRE WALL
SW =	SMOKE WALL	HX =	HORIZONTAL EXIT
		SB =	SMOKE BARRIER
		VS =	VERTICAL SHAFT
		VX =	VERTICAL EXIT
		XP =	EXIT PASSAGEWAY

2-HR DOUBLE FIRE WALL PER IBC 706.2 NFPA 221 CHAPTER 4, SECTION 4.5 TABLE 4.5, DOUBLE WALL ASSEMBLIES, COMPOSED OF THE FOLLOWING ELEMENTS:

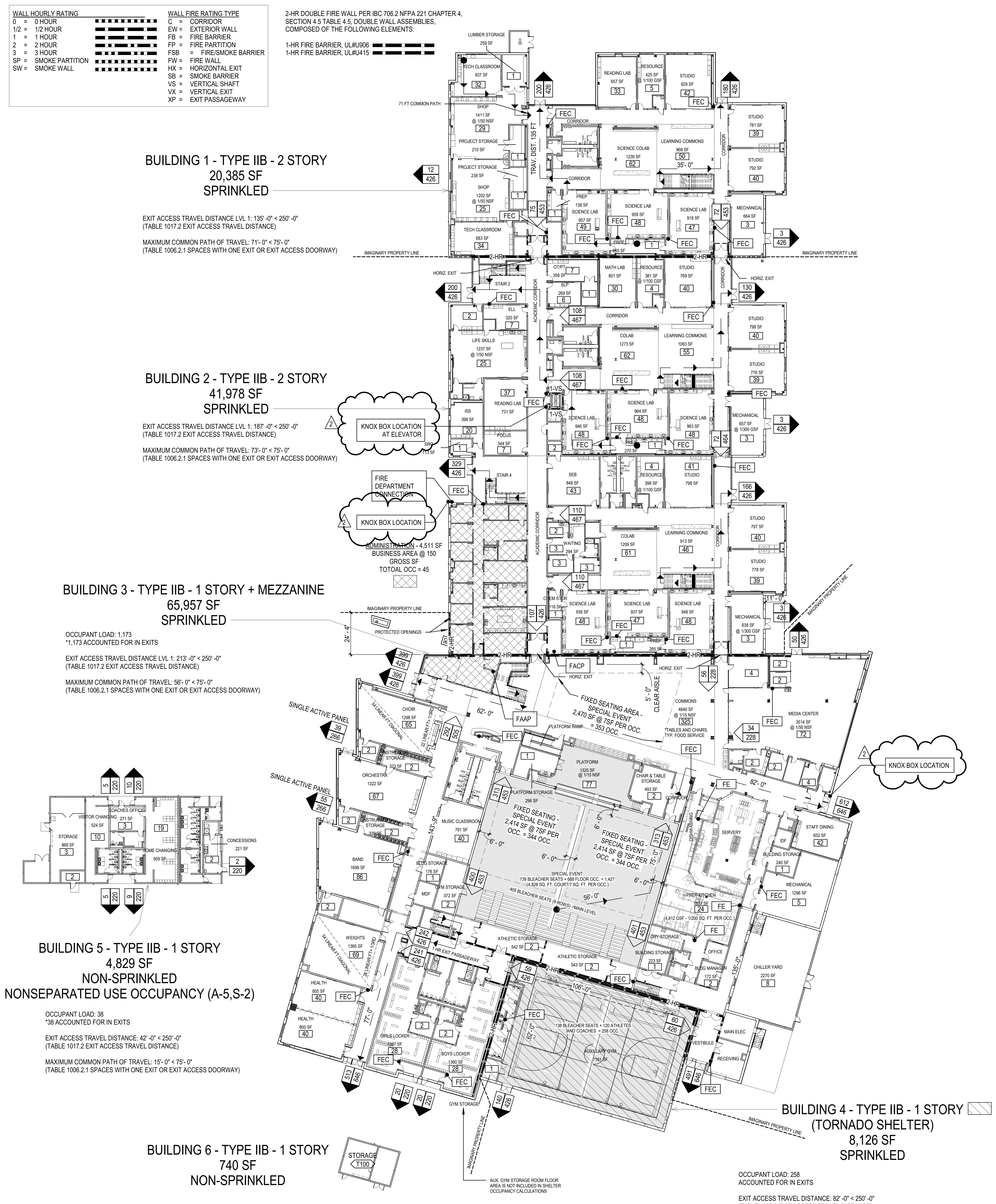
1-HR FIRE BARRIER, UL#U906
1-HR FIRE BARRIER, UL#U415

TYPICAL DOOR WIDTHS

DOOR WIDTH	CLEAR WIDTH	IBC 1005.1 FACTOR	ALLOWABLE OCCUPANCY
36"	33"	0.15	220
42"	39"	0.15	260
48"	45"	0.15	300
PAIR 36"	64"	0.15	426
PAIR 42"	76"	0.15	506
PAIR 48"	88"	0.15	586

EXIT ACCESS STAIRWAYS:

1. EXIT ACCESS STAIRWAYS AND RAMPS - TRAVEL DISTANCE ON EXIT ACCESS STAIRWAYS OR RAMPS SHALL BE INCLUDED IN THE EXIT ACCESS TRAVEL DISTANCE MEASUREMENT PER IBC 2018 1017.3.1.
2. TWO-STORY OPENINGS - OPENINGS DO NOT CONNECT MORE THAN TWO STORIES PER IBC 712.1.9, EXCEPTION 1.
3. EXIT ACCESS STAIRWAYS AND RAMPS SERVE ONLY TWO STORIES PER IBC 1019.3, EXCEPTION 1, AND DO NOT REQUIRE A SHAFT ENCLOSURE.



CODE PLAN, LEVEL 1
SCALE: 1" = 30'-0"
NORTH

BUILDING I:
OCCUPANCY GROUP: E
CONSTRUCTION TYPE: IIB
ALLOWABLE AREA (IBC TABLE 506.2): 43,500 SF
ALLOWABLE AREA INCREASE FOR FRONTAGE
(IBC 506.2.3 SINGLE OCCUPANCY, MULTI STORY BUILDING
IBC 506.3 FRONTAGE INCREASE):

IF= .6
Aa=[At + (NS * If)] * Sa
Aa=[43,500+(14,500*.6)]

TOTAL ALLOWABLE AREA PER FLOOR: 52, 200
ACTUAL AREA PER FLOOR:
LEVEL 01: 20,385 SF
LEVEL 02: 20,385 SF

MAXIMUM ALLOWABLE BUILDING HEIGHT (PER TABLE 504.3): 75' - 0"
ACTUAL BUILDING HEIGHT: 42' - 3"

BUILDING 2:
OCCUPANCY GROUP: E
CONSTRUCTION TYPE: IIB
ALLOWABLE AREA (IBC TABLE 506.2): 43,500 SF
ALLOWABLE AREA INCREASE FOR FRONTAGE (IBC 506.3):

IF= .26
Aa=[At + (NS * If)] * Sa
Aa=[43,500 + (14,500 * .26)]

TOTAL ALLOWABLE AREA PER FLOOR: 47, 270
ACTUAL AREA PER FLOOR:
LEVEL 01: 41,978 SF
LEVEL 02: 41,842 SF

MAXIMUM ALLOWABLE BUILDING HEIGHT (PER TABLE 504.3): 75' - 0"
ACTUAL BUILDING HEIGHT: 42' - 3"

BUILDING 3:
OCCUPANCY GROUP: E
CONSTRUCTION TYPE: IIB
ALLOWABLE AREA (IBC TABLE 506.2): 58, 000 SF
ALLOWABLE AREA INCREASE FOR FRONTAGE (IBC 506.3):

IF= .67
Aa=[At + (NS * If)] * Sa
Aa=[58,000 + (14,500 * .67)]

TOTAL ALLOWABLE AREA PER FLOOR: 67, 715
ACTUAL AREA PER FLOOR:
LEVEL 01: 61,768 SF
MEZZANINE AND EQUIPMENT PLATFORMS: 5,718 SF

MAXIMUM ALLOWABLE BUILDING HEIGHT: 75'-0'
ACTUAL BUILDING HEIGHT: 32'-0"

BUILDING 4:
OCCUPANCY GROUP: E
CONSTRUCTION TYPE: IIB
ALLOWABLE AREA (IBC TABLE 506.2): 58,000 SF
ALLOWABLE AREA INCREASE FOR FRONTAGE (IBC 506.2.2, 506.3):

IF= .46
Aa=[At + (NS * If)] * Sa
Aa=[58,000 + (14,500 * .46)]

TOTAL ALLOWABLE AREA PER FLOOR: 64,670
ACTUAL AREA PER FLOOR: LEVEL 01: 8,126 SF

MAXIMUM ALLOWABLE BUILDING HEIGHT: 75'-0'
ACTUAL BUILDING HEIGHT: 32'-0"

BUILDING 5:
OCCUPANCY GROUP: S-2
CONSTRUCTION TYPE: IIB
ALLOWABLE AREA (IBC TABLE 506.2): 26,000 SF
ALLOWABLE AREA INCREASE FOR FRONTAGE (IBC 506.2.2, 506.3):
***NONSEPARATED USE OCCUPANCY - ALLOWABLE AREA AND HEIGHT OF BUILDING BASED ON MOST RESTRICTIVE ALLOWANCES PER 508.3.2.**
IF=.4
Aa=[At + (NS * If)] * Sa
Aa=[26, 000 + (26,000 * .4)]

TOTAL ALLOWABLE AREA PER FLOOR: 36,400
ACTUAL AREA PER FLOOR: 4,829 SF
MAXIMUM ALLOWABLE BUILDING HEIGHT: 55'-0'
ACTUAL BUILDING HEIGHT: 14'-0"

BUILDING 6:
OCCUPANCY GROUP: S-2
CONSTRUCTION TYPE: IIB
ALLOWABLE AREA (IBC TABLE 506.2): 26,000 SF
ALLOWABLE AREA INCREASE FOR FRONTAGE (IBC 506.2.2, 506.3):
IF=.4
Aa=[At + (NS * If)] * Sa
Aa=[26, 000 + (26,000 * .4)]

TOTAL ALLOWABLE AREA PER FLOOR: 36,400
ACTUAL AREA PER FLOOR: 740 SF
MAXIMUM ALLOWABLE BUILDING HEIGHT: 55'-0'
ACTUAL BUILDING HEIGHT: 14'-0"

PROJECT LOCATION:
1001 SE BAILEY ROAD
LEE'S SUMMIT, MO 64081

OWNER NAME:
LEE'S SUMMIT R-7 SCHOOL DISTRICT

OWNER CONTACT:
KYLE GORRELL, DIRECTOR LSR7 FACILITY SERVICES

OWNER ADDRESS:
DEPARTMENT OF LEE'S SUMMIT SCHOOL DISTRICT
FACILITY SERVICES
502 SE TRANSPORT DRIVE
LEE'S SUMMIT, MO 64081

COUNTY: JACKSON COUNTY

FIRE DEPARTMENT:
LEE'S SUMMIT FIRE DEPARTMENT

WATER SUPPLY:
LEE'S SUMMIT WATER UTILITIES

AUTHORITY HAVING JURISDICTION:
CITY OF LEE'S SUMMIT

ARCHITECT OF RECORD:
DLR GROUP
7290 WEST 133RD STREET, OVERLAND PARK, KS 66213

CODES/REGULATIONS:
BUILDING: 2018 IBC
FIRE: 2018 INTERNATIONAL FIRE CODE
MECHANICAL: 2018 INTERNATIONAL MECHANICAL CODE
PLUMBING: 2018 INTERNATIONAL PLUMBING CODE
ELECTRICAL: 2017 NATIONAL ELECTRICAL CODE
ACCESSIBLE STANDARD: ICC/ANSI A117.1-2017

NEW CONSTRUCTION:
OCCUPANCY:
EDUCATIONAL GROUP E (SECTION 305): INSTRUCTIONAL AREAS
CONSTRUCTION TYPE (SECTION 602): TYPE IIB
ALLOWABLE HEIGHT (PER IBC TABLE 504.3): 75' - 0"
ALLOWABLE NUMBER OF STORIES (PER TABLE 504.4): 3

SEPARATION REQUIREMENTS:
BUILDING SEPARATION
PER TABLE 706.4: 2-HOUR FIRE WALL
*a. IN TYPE II CONSTRUCTION, WALLS SHALL BE PERMITTED TO HAVE A 2-HOUR FIRE-RESISTANCE RATING

LIFE SAFETY
AUTOMATIC FIRE SUPPRESSION SYSTEM THROUGHOUT
FIRE ALARMS THROUGHOUT
FIRE EXTINGUISHERS THROUGHOUT
EMERGENCY LIGHTING
FIRE DEPARTMENT CONNECTIONS -SEE CIVIL AND PLUMBING PLANS
FIRE ALARM ANNUNCIATOR PANEL (FAAP) - AT RECEPTION D100A
FIRE ALARM CONTROL PANEL (FACP) - AT ELECTRICAL C116
SMOKE CONTROL SYSTEM: NOT APPLICABLE
MANUAL ALARMS
COMMUNICATIONS AND ELECTRICAL ROOMS: NO UPS PROVIDED, NO RACK OF BATTERIES PROVIDED.
PENETRATIONS THROUGH FLOORS (PIPING, CONDUIT, ETC.): ANNULAR SPACE AROUND PENETRATING ITEMS TO BE FILLED WITH APPROVED MATERIALS TO RESIST THE FREE PASSAGE OF FLAME AND THE PRODUCTS OF COMBUSTION, PER 2018 IBC 714.6.2 AND 718.2.5.
DUCT PENETRATIONS THROUGH FLOORS: ANNULAR SPACE AROUND PENETRATING DUCT TO BE FILLED WITH AN APPROVED NON-COMBUSTIBLE MATERIAL THAT RESISTS THE FREE PASSAGE OF FLAME AND THE PRODUCTS OF COMBUSTION, PER 2018 IBC 717.6.3.2 AND 718.2.5

PLUMBING FIXTURES

	# OCCUPANTS		WC REQ'D		WC PROVIDED		LAV REQ'D		LAV PROVIDED		DRINKING FOUNTAINS	
	M	W	M	W	M	W	M	W	M	W	REQ'D.	PROV.
STUDENTS/ FACULTY NOTES: *CALCULATIONS BASED ON IPC 4.1 REQT'S. OCCUPANT LOAD BASED ON PROJECTED 1,200 STUDENT/ 260 FACULTY COUNT*	730	730	15	15	17	17	15	15	17	17	15	20
MAIN GYMNASIUM - PERFORMANCE SPECIAL EVENT *NOTES: COMPETITION & AUXILLARY GYMS ARE NON-SIMULTANEOUS USE FROM STUDENT OCCUPANCY. BASED ON 1,369 OCCUPANTS SEATED ON BLEACHERS AND FLOOR W/ 63 STAGE OCCUPANTS*	714	714	6	12	12	12	4	4	7	7	3	6
MAIN GYMNASIUM - ATHLETIC COMPETITION (ASSEMBLY) *NOTES: COMPETITION & AUXILLARY GYMS ARE NON-SIMULTANEOUS USE FROM STUDENT OCCUPANCY. BASED ON 615 OCCUPANTS SEATED ON BLEACHERS AND 125 ATHLETES AND OFFICIALS*	370	370	3	6	12	12	2	2	7	7	2	6
BASEBALL/SOFTBALL COMPLEX (ASSEMBLY) *NOTES: CALCULATIONS BASED ON IPC 4.1 REQT'S. OCCUPANT LOAD BASED ON PROJECTED MAXIMUM 600 ATHLETIC EVENT OCCUPANTS. FAMILY TOILET INCLUDED WITH FEMALE COUNTS PER 2902.1.2.*	300	300	4	8	4	8	2	2	2	4	1	2
TORNADO SHELTER NOTES: PER ICC 500 TABLE 702.2. *OCCUPANT LOAD BASED ON PROJECTED 1,200 STUDENT/ 260 FACULTY COUNT. TO BE USED AS DESIGNATED STORM SHELTER FOR STUDENT/FACULTY POPULATION. CALCULATIONS BASED ON ICC-500 REQUIREMENT FOR PLUMBING FIXTURES*	730	730	3	3	3	3	1	1	1	1	-	-

DLR Group

STATE OF MISSOURI SCOTT PASHIA NUMBER 7347 ARCHITECT 10/8/20

LEE'S SUMMIT MIDDLE SCHOOL #4
LEE'S SUMMIT R-7 SCHOOL DISTRICT
1001 SE BAILEY ROAD
LEE'S SUMMIT, MO 64081

PACKAGE 3 - BUILDING & SITE
10/08/20
REVISIONS
1 CITY REVIEW 11/3/20
2 ASI 003 12/2/20

13-20102-00

CODE PLAN - LEVEL 01

CP1.1

SYMBOL LEGEND

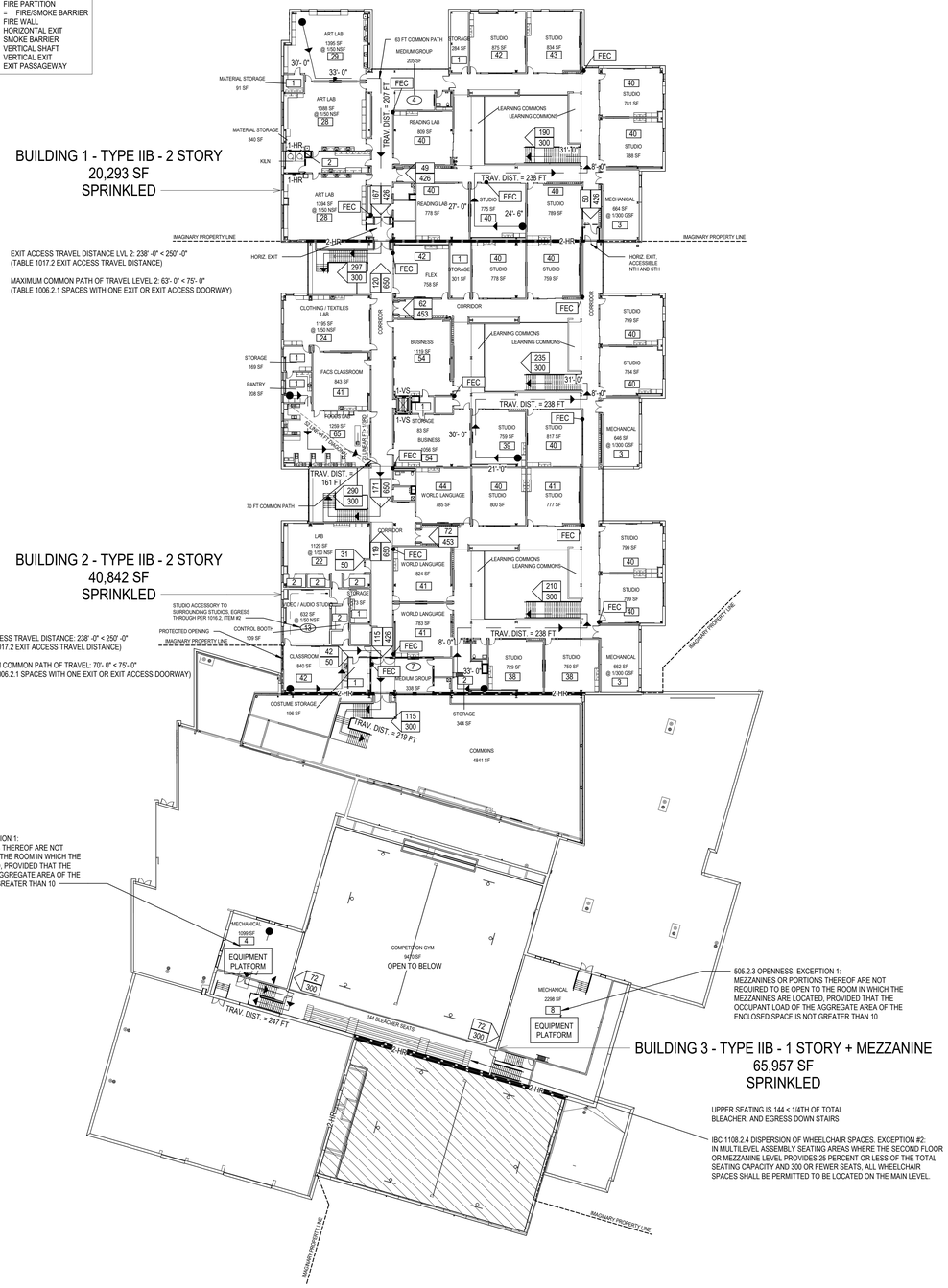
- ### - OCCUPANCY LOAD
- ### - ACCESSORY USE AREA (OCCUPANCY LOAD IS NOT INCLUDED IN LOADS BEYOND THIS ROOM)
- 0 / 0 - COMBINED OCCUPANT LOAD AT A GIVEN DOOR OR STAIR / TOTAL EXIT CAPACITY OF DOOR OR STAIR (THE CAPACITY OF DOORS ARE DETERMINED AS FOLLOWS: CLEAR OPENING WIDHT IN INCHES DIVIDED BY 0.15 THE CAPACITY OF STAIRS ARE DETERMINED AS FOLLOWS WIDTH IN INCHES DIVIDED BY 0.2 FOR SPRINKLERED PER 1005.3.1 EXCEPTION 1)
- 0 / 0 - COMBINED OCCUPANT LOAD AT A GIVEN DOOR. (SUM OF THESE EQUALS TOTAL OCCUPANT LOAD) / TOTAL EXIT CAPACITY OF DOOR (THE CAPACITY OF DOORS ARE DETERMINED AS FOLLOWS: CLEAR OPENING WIDTH IN INCHES DIVIDED BY 0.15)
- PD - PANIC DEVICE
- XX MIN - DOOR FIRE RATING

TYPICAL DOOR WIDTHS

DOOR WIDTH	CLEAR WIDTH	IBC 1005.1 FACTOR	ALLOWABLE OCCUPANCY
36"	33"	0.15	220
42"	39"	0.15	260
48"	45"	0.15	300
PAIR 36"	64"	0.15	426
PAIR 42"	76"	0.15	506
PAIR 48"	88"	0.15	586

WALL SEPARATION LEGEND

WALL HOURLY RATING		WALL FIRE RATING TYPE	
0 =	0 HOUR	C =	CORRIDOR
1/2 =	1/2 HOUR	EW =	EXTERIOR WALL
1 =	1 HOUR	FB =	FIRE BARRIER
2 =	2 HOUR	FP =	FIRE PARTITION
3 =	3 HOUR	FSB =	FIRE/SMOKE BARRIER
SP =	SMOKE PARTITION	FW =	FIRE WALL
SW =	SMOKE WALL	HX =	HORIZONTAL EXIT
		SB =	SMOKE BARRIER
		VS =	VERTICAL SHAFT
		VX =	VERTICAL EXIT
		XP =	EXIT PASSAGEWAY



CODE PLAN, LEVEL 02

SCALE: 1" = 30'-0"

NORTH

BUILDING I:
OCCUPANCY GROUP: E
CONSTRUCTION TYPE: IIB
ALLOWABLE AREA (IBC TABLE 506.2): 43,500 SF
ALLOWABLE AREA INCREASE FOR FRONTAGE
(IBC 506.2.3 SINGLE OCCUPANCY, MULTI STORY BUILDING
IBC 506.3 FRONTAGE INCREASE):

IF= .6
Aa=[At + (NS * If)] * Sa
Aa=[43,500+(14,500*.6)]

TOTAL ALLOWABLE AREA PER FLOOR: 52, 200
ACTUAL AREA PER FLOOR:
LEVEL 01: 20,385 SF
LEVEL 02: 20,385 SF

MAXIMUM ALLOWABLE BUILDING HEIGHT (PER TABLE 504.3): 75' - 0"
ACTUAL BUILDING HEIGHT: 42' - 3"

BUILDING 2:
OCCUPANCY GROUP: E
CONSTRUCTION TYPE: IIB
ALLOWABLE AREA (IBC TABLE 506.2): 43,500 SF
ALLOWABLE AREA INCREASE FOR FRONTAGE (IBC 506.3):

IF= .26
Aa=[At + (NS * If)] * Sa
Aa=[43,500 + (14,500 * .26)]

TOTAL ALLOWABLE AREA PER FLOOR: 47, 270
ACTUAL AREA PER FLOOR:
LEVEL 01: 41,978 SF
LEVEL 02: 41,842 SF

MAXIMUM ALLOWABLE BUILDING HEIGHT (PER TABLE 504.3): 75' - 0"
ACTUAL BUILDING HEIGHT: 42' - 3"

BUILDING 3:
OCCUPANCY GROUP: E
CONSTRUCTION TYPE: IIB
ALLOWABLE AREA (IBC TABLE 506.2): 58, 000 SF
ALLOWABLE AREA INCREASE FOR FRONTAGE (IBC 506.3):

IF= .67
Aa=[At + (NS * If)] * Sa
Aa=[58,000 + (14,500 * .67)]

TOTAL ALLOWABLE AREA PER FLOOR: 67, 715
ACTUAL AREA PER FLOOR:
LEVEL 01: 61,768 SF
MEZZANINE AND EQUIPMENT PLATFORMS: 5,718 SF

MAXIMUM ALLOWABLE BUILDING HEIGHT: 75'-0'
ACTUAL BUILDING HEIGHT: 32'-0"

BUILDING 4:
OCCUPANCY GROUP: E
CONSTRUCTION TYPE: IIB
ALLOWABLE AREA (IBC TABLE 506.2): 58,000 SF
ALLOWABLE AREA INCREASE FOR FRONTAGE (IBC 506.2.2, 506.3):

IF= .46
Aa=[At + (NS * If)] * Sa
Aa=[58,000 + (14,500 * .46)]

TOTAL ALLOWABLE AREA PER FLOOR: 64,670
ACTUAL AREA PER FLOOR: LEVEL 01: 8,126 SF

MAXIMUM ALLOWABLE BUILDING HEIGHT: 75'-0'
ACTUAL BUILDING HEIGHT: 32'-0"

BUILDING 5:
OCCUPANCY GROUP: S-2
CONSTRUCTION TYPE: IIB
ALLOWABLE AREA (IBC TABLE 506.2): 26,000 SF
ALLOWABLE AREA INCREASE FOR FRONTAGE (IBC 506.2.2, 506.3):
***NONSEPARATED USE OCCUPANCY - ALLOWABLE AREA AND HEIGHT OF BUILDING BASED ON MOST RESTRICTIVE ALLOWANCES PER 508.3.2.**
IF=.4
Aa=[At + (NS * If)] * Sa
Aa=[26, 000 + (26,000 * .4)]

TOTAL ALLOWABLE AREA PER FLOOR: 36,400
ACTUAL AREA PER FLOOR: 4,829 SF
MAXIMUM ALLOWABLE BUILDING HEIGHT: 55'-0'
ACTUAL BUILDING HEIGHT: 14'-0"

BUILDING 6:
OCCUPANCY GROUP: S-2
CONSTRUCTION TYPE: IIB
ALLOWABLE AREA (IBC TABLE 506.2): 26,000 SF
ALLOWABLE AREA INCREASE FOR FRONTAGE (IBC 506.2.2, 506.3):
IF=.4
Aa=[At + (NS * If)] * Sa
Aa=[26, 000 + (26,000 * .4)]

TOTAL ALLOWABLE AREA PER FLOOR: 36,400
ACTUAL AREA PER FLOOR: 740 SF
MAXIMUM ALLOWABLE BUILDING HEIGHT: 55'-0'
ACTUAL BUILDING HEIGHT: 14'-0"

DLR Group

LEE'S SUMMIT MIDDLE SCHOOL #4

LEE'S SUMMIT R-7 SCHOOL DISTRICT

1001 SE BAILEY ROAD
LEE'S SUMMIT, MO 64081

PACKAGE 3 - BUILDING & SITE
10/08/20
REVISIONS

13-20102-00

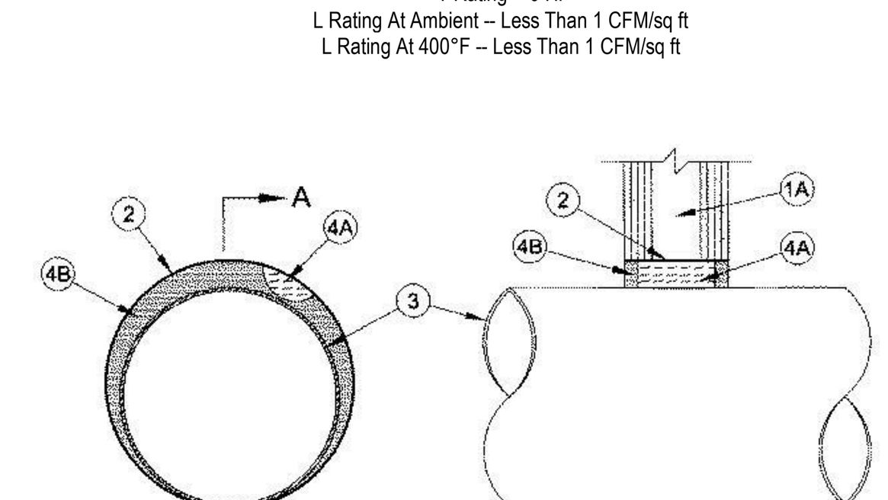
CODE PLAN - LEVEL 02

CP1.2

System No. W-L-1171

November 18, 1999

F Ratings---3 and 4 Hr (See Item 1)
T Rating -- 0 Hr
L Rating At Ambient -- Less Than 1 CFM/sq ft
L Rating At 400°F -- Less Than 1 CFM/sq ft



Section A-A

1. Wall Assembly The 3 or 4 hr fire-rated gypsum wallboard/steel stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs Wall framing shall consist of steel channel studs. Steel studs to be min 3-5/8 in. wide and spaced max 24 in. OC.
B. Gypsum Board* Multiple layers of min 1/2 in. thick gypsum wallboard. The gypsum wallboard type, thickness, number of layers and orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 22 in.
2. Steel Sleeve Cylindrical sleeve fabricated from min 0.031 in. thick (No. 22 MSG) galv sheet steel and having a min 2 in. lap along the longitudinal seam. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the openings and releasing the coil to let it uncoil against the circular cutouts in the gypsum wallboard layers. The ends of the steel sleeve shall be installed flush with each face of the wall or extend a max 1/4 in. beyond each surface of the wall.
3. Through Penetrants One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe, conduit or tubing and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used.
A. Steel Pipe Nom 20 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe Nom 20 in. diam (or smaller) cast or ductile iron pipe.
C. Conduit Nom 6 in. diam (or smaller) rigid steel conduit, nom 4 in. diam (or smaller) electrical metallic tubing or nom 1 in. diam (or smaller) flexible steel conduit.
D. Copper Tubing Nom 6 in. diam (or smaller) Type M (or heavier) copper tubing.
E. Copper Pipe Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
4. Firestop System The firestop system shall consist of the following:
A. Packing Material In 4 hr fire-rated assemblies, min 5-5/8 in. thickness of min 4 pcf mineral wool batt insulation firmly packed into opening as a permanent form. In 3 hr fire-rated assemblies, min 4-5/8 in. thickness of min 4 pcf mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.
B. Fill, Void or Cavity Material* - Caulk Min 1 in. thickness of fill material applied within the annulus, flush with both ends of steel sleeve. A min 1/4 in. thick bead of fill material shall be applied at the point contact location on both surfaces of walll. When sleeve projects beyond surface of wall, a min 1/4 in. thick bead of caulk shall be applied to outer perimeter of sleeve at interface with wall surfaces.
SPECIFIED TECHNOLOGIES INC -- SpecSeal 100, 101, 102, 129, 105 Sealant

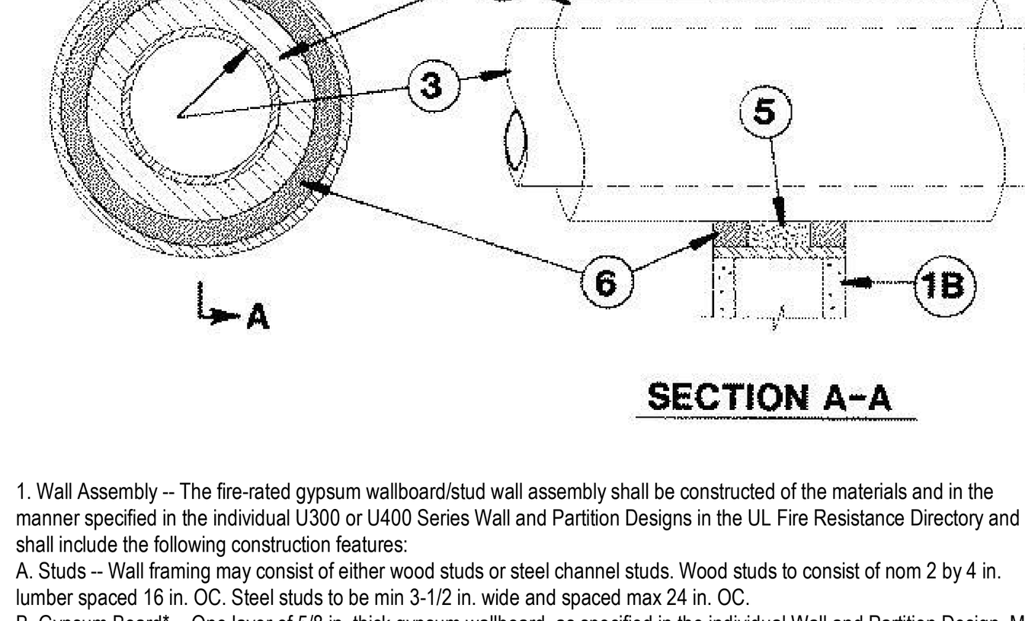
*Bearing the UL Classification Marking

UL DESIGN W-L-1171

System No. W-L-5021

January 09, 2003

F Rating -- 1 Hr
T Rating -- 1/2 Hr
L Rating At Ambient -- 4 CFM/Sq Ft
L Rating At 400 F -- Less Than 1 CFM/Sq Ft



SECTION A-A

1. Wall Assembly -- The fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs -- Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 3-1/2 in. wide and spaced max 24 in. OC.
B. Gypsum Board* -- One layer of 5/8 in. thick gypsum wallboard, as specified in the individual Wall and Partition Design. Max diam of opening is 8 in.
2. Metallic Sleeve -- Nom 8 in. diam (or smaller) Schedule 40 (or thinner) steel pipe cast into wall assembly with joint compound and installed flush with wall surfaces.
3. Through Penetrants -- One metallic pipe or tubing to be centered within the firestop system. Pipe or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubing may be used:
A. Steel Pipe -- Nom 4 in. diam (or smaller) Schedule 40 (or heavier) steel pipe.
--
B. Copper Tubing -- Nom 4 in. diam (or smaller) Type L (or heavier) copper tubing.
C. Copper Pipe -- Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
4. Pipe Covering* -- Nom 1 in. thick hollow cylindrical heavy density (min 3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. An annular space of 3/4 in. is required within the firestop system.
See Pipe and Equipment Covering -- Materials -- (BRGU) category in the Building Material Directory for the names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

5. Packing Material -- Min 2-3/4 in. thickness of min 4.0 pcf mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.
6. Fill, Void or Cavity Material* -- Sealant -- Min 1 in. thickness of fill material applied within the annulus, flush with both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF

HILTI INC -- FS-ONE Sealant

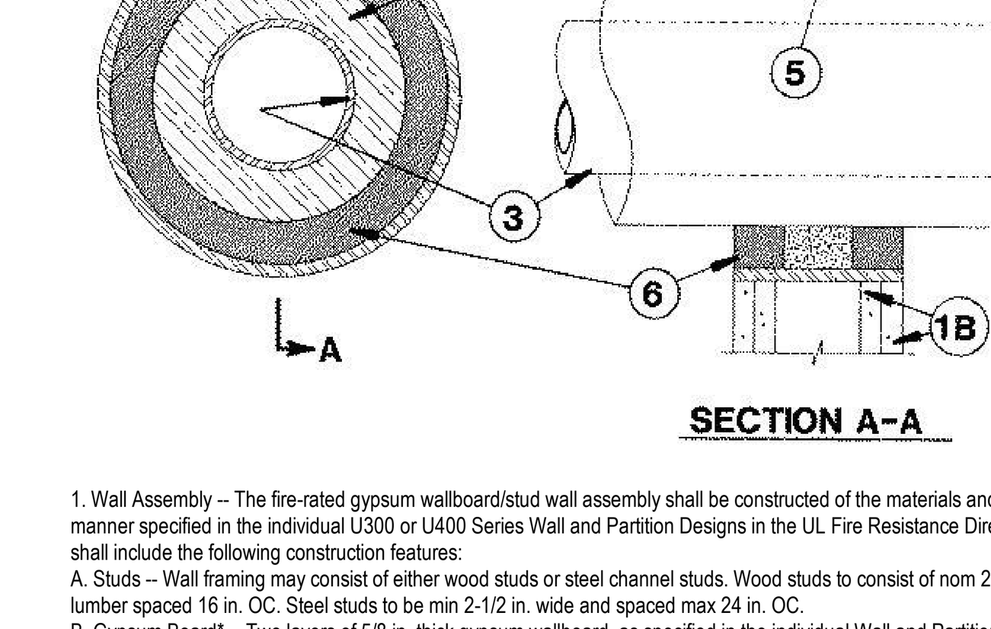
*Bearing the UL Classification Mark

UL DESIGN W-L-5021

System No. W-L-5024

January 09, 2003

F Rating -- 2 Hr
T Rating -- 1 Hr
L Rating At Ambient -- 4 CFM/Sq Ft
L Rating At 400 F -- Less Than 1 CFM/Sq Ft



SECTION A-A

1. Wall Assembly -- The fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs -- Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.
B. Gypsum Board* -- Two layers of 5/8 in. thick gypsum wallboard, as specified in the individual Wall and Partition Design. Max diam of opening is 10 in.
2. Metallic Sleeve -- Nom 10 in. diam (or smaller) Schedule 40 (or thinner) steel pipe cast into wall assembly with joint compound and installed flush with wall surfaces.
3. Through Penetrants -- One metallic pipe or tubing to be centered within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or tubing may be used:
A. Steel Pipe -- Nom 4 in. diam (or smaller) Schedule 40 (or heavier) steel pipe.
--
B. Copper Tubing -- Nom 4 in. diam (or smaller) Type L (or heavier) copper tubing.
C. Copper Pipe -- Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
4. Pipe Covering* -- Nom 1-1/2 in. thick hollow cylindrical heavy density (min 3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. A nom annular space of 1-7/16 in. is required within the firestop system.
See Pipe and Equipment Covering -- Materials -- (BRGU) category in the Building Material Directory for the names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

5. Packing Material -- Min 2 in. thickness of min 4.0 pcf mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.
6. Fill, Void or Cavity Material* -- Sealant -- Min 1-1/2 in. thickness of fill material applied within the annulus, flush with both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF

HILTI INC -- FS-ONE Sealant

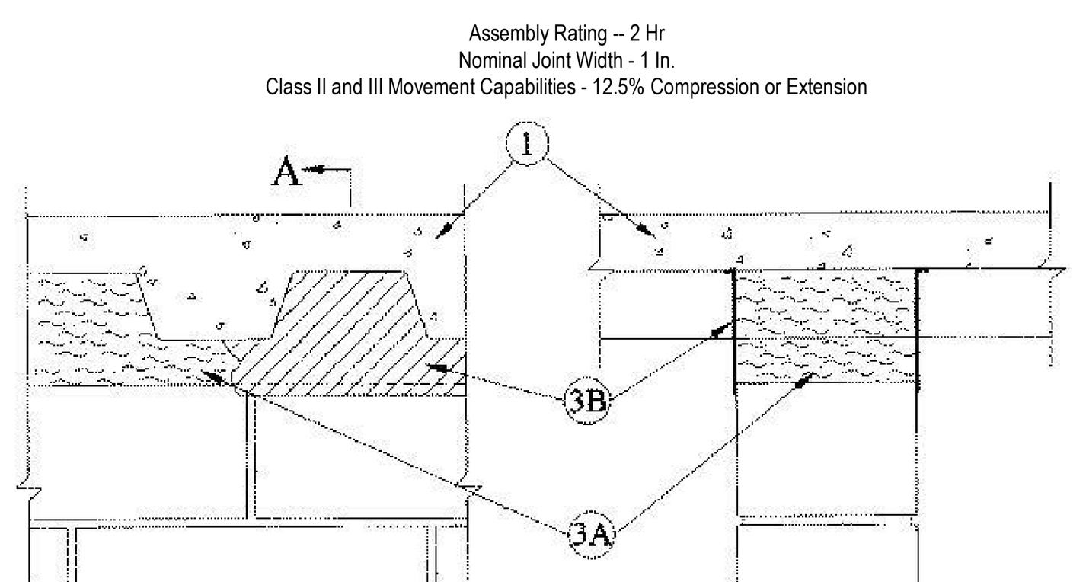
*Bearing the UL Classification Mark

UL DESIGN W-L-5024

System No. HW-D-0098

December 04, 2001

Assembly Rating -- 2 Hr
Nominal Joint Width - 1 In.
Class II and III Movement Capabilities - 12.5% Compression or Extension



1. Floor Assembly The fire rated fluted steel unit/concrete floor assembly shall be constructed of the materials and in a manner described in the individual D700 or D900 Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:
A. Steel Floor and Form Units* Max 2 in. deep galv steel fluted floor units.
B. Concrete Min 2-1/2 in thick reinforced concrete as measured from top plane of the floor units.
C. Spray-Applied Fire Resistive Materials* (Optional)--(Not Shown)--Prior to the installation of the forming material and fill, void or cavity material (Items 3A, 3B) the steel floor units may be sprayed with a min 5/16 in. to max 1-3/4 in. thickness of fire resistive material.
W R GRACE & CO - CONN

CONSTRUCTION PRODUCTS DIV -- Type MK-6-HY

1A. Roof Assembly (Not Shown) -- As an alternate to the floor assembly, 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 rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction features:
A. Steel Roof Deck Max 2 in. deep galv steel fluted roof deck.
B. Roof Insulation Min 2-1/4 in. thick poured insulating concrete, as measured from the top plane of the floor units.
1B. Roof Assembly As an alternate to Items 1 and 1A, a fire rated protected 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 P700 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction features:
A. Steel Roof Deck Max 2 in. deep galv steel fluted roof deck.
B. Spray--Applied Fire Resistive Materials* (Not Shown)--Prior to the installation of the steel ceiling runners, Forming Material and Fill, Void or Cavity Material (Items 2A, 3A, 3B), the roof assembly shall be sprayed with the type and thickness of fire resistive material indicated in the individual P700 Series design.

2. Wall Assembly Min 6 in. thick steel-reinforced lightweight or normal weight (100-150 pcf) structural concrete. Wall may also be constructed of any UL Classified Concrete Blocks*.
See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

3. Joint System Max separation between bottom of floor or roof and top of wall at time of installation of joint system is 1 in. The joint system is designed to accommodate a max 12.5 percent compression or extension from its installed width. The joint system shall consist of the following:
A. Forming Material Nom 4.0 pcf mineral wool batt insulation compressed and firmly packed to completely fill the flutes and the gap between the top of the wall and bottom of the floor or roof as a permanent form. Batt insulation cut to the shape of the fluted steel deck, approx 33 percent larger than the flutes. Pieces compressed and installed vertically into the flutes above the top of the wall. Additional pieces of batt insulation, min 6 in. wide, installed edge-first into joint opening between bottom of fluted steel deck and top of wall, parallel with joint direction, such that batt sections are compressed min 33 percent in thickness. Compressed batt sections are flush with both surfaces of wall. Adjoining lengths of batt to be tightly butted with butted seams spaced min 48 in. apart along the length of the joint.
ROCK WOOL MANUFACTURING CO -- Delta Board

A1. Forming Material*--Plugs (Optional-Not Shown) Performed mineral wool plugs, formed to the shape of the fluted floor units, friction fit to completely fill the flutes above the ceiling runner. The plugs shall be flush with both wall surfaces. Additional forming material, described in Item 3A, to be used in conjunction with the plugs to fill the gap between the top of the wall and the bottom of the steel floor units.
HILTI CONSTRUCTION CHEMICALS, DIV OF

HILTI INC -- CP777 Speed Plugs

B. Fill, Void or Cavity Material* Min 1/8 in. wet thickness of fill material sprayed or troweled on each side of the wall to completely cover mineral wool forming material and to overlap a min of 1/2 in. onto wall and steel deck on both sides of wall. When spray-applied fire resistive material* is applied to the steel steel deck, the fill material is to overlap the wall a min of 1/2 in. and the spray-applied fire resistive material a min of 2 in. on both sides of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF

HILTI INC -- CP672 Firestop Spray

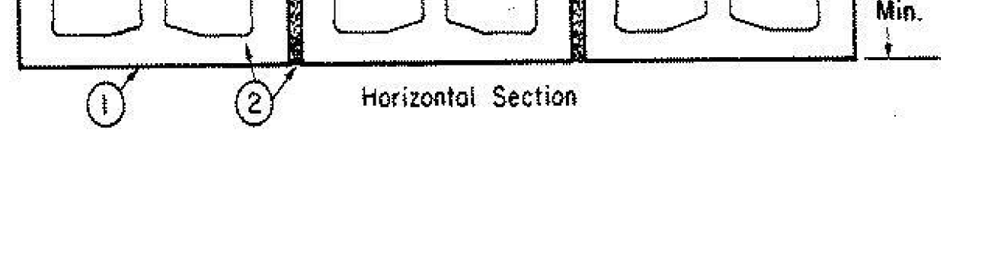
*Bearing the UL Classification Mark

UL DESIGN HW-D-0098

Design No. U906

December 02, 1999

Bearing Wall Rating - 2 HR.
Nonbearing Wall Rating - 2 HR.



1. Concrete Blocks* — Nominal 6 by 8 by 16 in, hollow or solid.
Classification D-2 (2 hr).

ANCHOR CONCRETE PRODUCTS INC

GAGNE & SON CONCRETE BLOCK INC

Allowable compressive stress of 57% of max allowable compressive stress in accordance with the empirical design method.

BETCO BLOCK & PRODUCTS INC, DBA

ARTHUR WHITCOMB

WESTBROOK CONCRETE BLOCK CO INC

Allowable compressive stress of 75.6% of max allowable compressive stress in accordance with the empirical design method.

2. Mortar — Blocks laid in full bed of mortar, nom. 3/8 in. thick, of not less than 2-1/4 and not more than 3-1/2 parts of clean sharp sand to 1 part Portland cement (proportioned by volume) and not more than 50 percent hydrated lime (by cement volume). Vertical joints staggered.
3. Portland Cement Stucco or Gypsum Plaster — Add 1/2 hr to Classification if used. Attached to concrete blocks (Item 1).
4. Foamed Plastic* — (Optional-Not Shown) — 1-1/2 in. thick max, 4 ft wide sheathing attached to concrete blocks (Item 1).
THE DOW CHEMICAL CO — Type Thermax

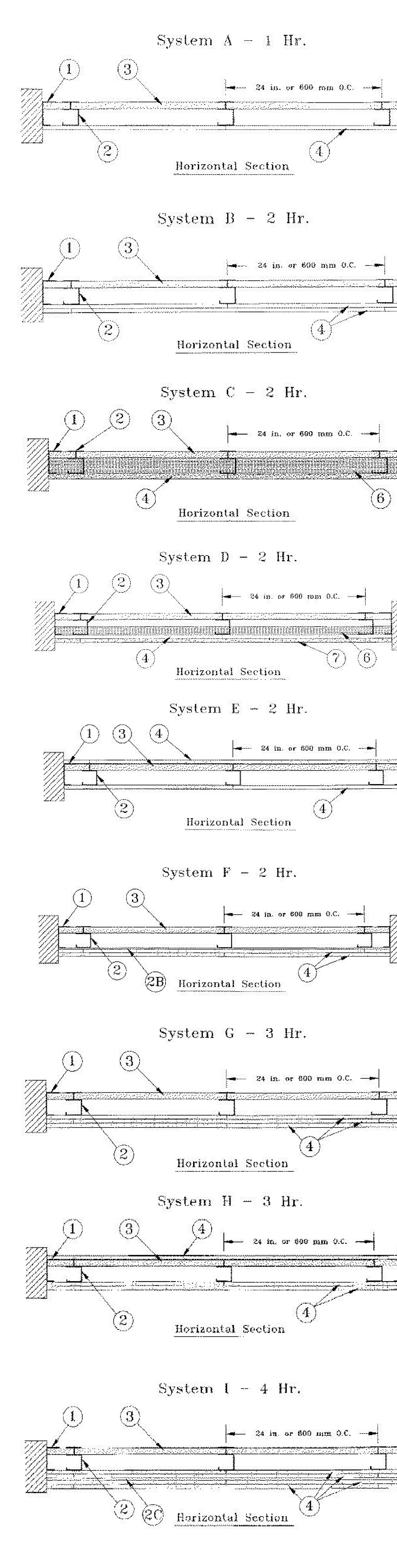
*Bearing the UL Classification Mark

UL DESIGN U906

Design No. U415

June 10, 2003

Nonbearing Wall Ratings -- 1, 2, 3 or 4 Hr



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 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 Item 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.

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 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 or FRX-G gypsum wallboard (Item 4A) 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.

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.

CANADIAN GYPSUM COMPANY -- Type SLX

UNITED STATES GYPSUM CO -- Type SLX

USG MEXICO S A DE C V -- Type SLX

4. Gypsum Board* --

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.
CANADIAN GYPSUM COMPANY -- Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, RC, WRX
UNITED STATES GYPSUM CO -- Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
USG MEXICO S A DE C V -- Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, 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.
CANADIAN GYPSUM COMPANY -- 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, WRC, WRX
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, SHX, WRC, WRX
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, 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 Item 6.
CANADIAN GYPSUM COMPANY -- Types IP-X3, ULTRACODE, ULTRACODE SHC, LTRACODE WRC.
UNITED STATES GYPSUM CO -- Type IP-X3, ULTRACODE, ULTRACODE SHC or ULTRACODE WRC.
USG MEXICO S A DE C V -- Type IP-X3, ULTRACODE, ULTRACODE SHC or ULTRACODE WRC.

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.
CANADIAN GYPSUM COMPANY -- Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
UNITED STATES GYPSUM CO -- Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
USG MEXICO S A DE C V -- Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, 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.
CANADIAN GYPSUM COMPANY -- 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, 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, SHX, 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, 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.
CANADIAN GYPSUM COMPANY -- 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, 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, SHX, 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, 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.
CANADIAN GYPSUM COMPANY -- 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. 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.
CANADIAN GYPSUM COMPANY -- 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 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-tappling 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.

CANADIAN GYPSUM COMPANY -- Types IP-X3, ULTRACODE, ULTRACODE SHC or ULTRACODE WRC
UNITED STATES GYPSUM CO -- Type IP-X3, ULTRACODE, ULTRACODE SHC or ULTRACODE WRC.
USG MEXICO S A DE C V -- Type IP-X3, ULTRACODE, ULTRACODE SHC or ULTRACODE WRC.

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 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 runners.
THERMAFIBER INC -- Type SAFB

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, corrossion 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.
*Bearing the UL Classification Mark

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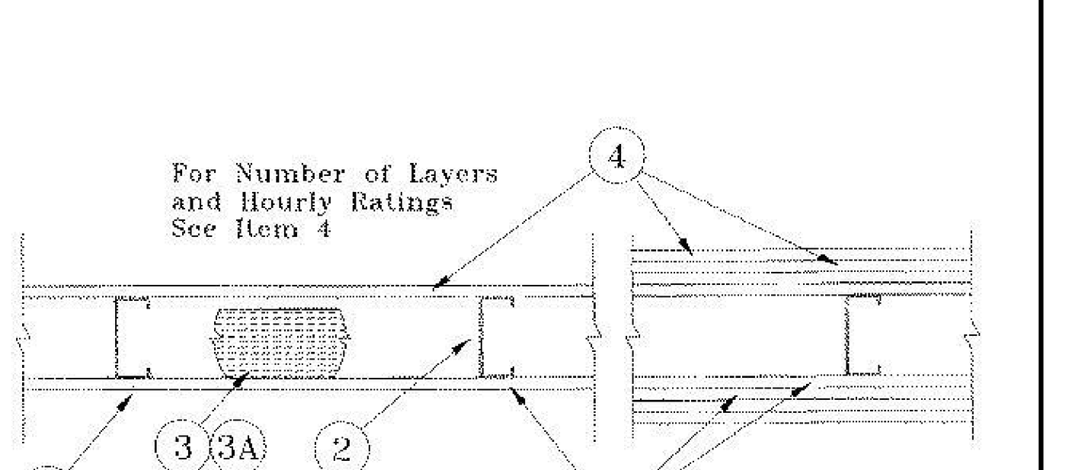
UL DESIGN U415

Design No. U419

October 09, 2003

Nonbearing Wall Ratings -- 1, 2, 3 or 4 Hr (See Items 3 & 4)



1. Floor and Ceiling Runners -- (Not shown) -- Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min width to accommodate stud size, with min 1 in. long legs, attached to floor and ceiling with fasteners 24 in. OC max.

2. Steel Studs -- Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min width as indicated under Item 4, min 1-1/4 in. flanges and 1/4 in. return, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.

3. Batts and Blankets* -- (Required as indicated under Item 4) -- Mineral wool batts, friction fitted between studs and runners. Min nom thickness as indicated under Item 4. See Batts and Blankets (BKNV or BZJZ) Categories for names of Classified companies.

3A. 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.

4. 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:

Wallboard Protection on Each Side of Wall

Rating	Min Stud Depth	No. of Layers & Thkns of Panel	Min Thkns of Insulation (item 3)
1	3-1/2	1 layer, 5/8 in. thick	Optional
1	2-1/2	1 layer, 1/2 in. thick	1-1/2 in.
1	1-5/8	1 layer, 3/4 in. thick	Optional
2	1-5/8	2 layers, 1/2 in. thick	Optional
2	1-5/8	2 layers, 5/8 in. thick	Optional
2	3-1/2	1 layer, 3/4 in. thick	3 in.
3	1-5/8	3 layers, 1/2 in. thick	Optional
3	1-5/8	2 layers, 3/4 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
4	2-1/2	2 layers, 3/4 in. thick	2 in.

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

UNITED STATES GYPSUM CO -- 1/2 in. thick Type C, IP-X2, IPC-AR or WRC; 5/8 in. thick Type SCX, SHX, WRX, IP-X1, AR, C, WRC, FRX-G, IP-AR, IP-X2, IPC-AR ; 3/4 in. thick Type IP-X3, ULTRACODE, ULTRACODE SHC or ULTRACODE WRC.

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 Type IP-X3, ULTRACODE, ULTRACODE SHC or ULTRACODE WRC.

4A. Gypsum Board* -- (As an alternate to Item 4) -- 5/8 in. thick, 2 ft. wide, tongue and groove edge, applied horizontally as the outer layer to one side of the assembly. Secured as described in Item 5. Joint covering (Item 7) not required.
CANADIAN GYPSUM COMPANY -- Type SHX.

UNITED STATES GYPSUM CO -- Type SHX.

USG MEXICO S A DE C V -- Type SHX.

5. Fasteners -- (Not shown) -- Type S or S-12 steel screws used to attach panels to studs (Item 2) or furring channels (Item 6). 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 layer 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 layer. Three-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., 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.

6. 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 4A.

6A. Steel Framing Members (Not Shown)* -- (Optional on one or both sides, not shown, for single or double layer systems) -- 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. 2-3/8 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 5. Not for use with Item 4A.

b. Steel Framing Members* -- Used to attach furring channels (Item 6a) to studs (Item 2). Clips spaced max. 48 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.
PAC INTERNATIONAL INC -- Type RSIC-1.

7. 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.

8. 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.

9. 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

*Bearing the UL Classification Mark

UL DESIGN U419

DLR Group

© DLR Group

Missouri State Certificate of Authority #000939

LEE'S SUMMIT MIDDLE SCHOOL #4
LEE'S SUMMIT R-7 SCHOOL DISTRICT
1001 SE BAILEY ROAD
LEE'S SUMMIT, MO 64081

PACKAGE 3 - BUILDING & SITE
10/08/20
REVISIONS

13-20102-00

UL DESIGNS

CP1.3

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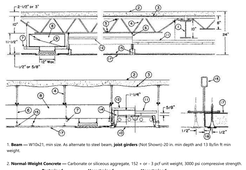
Design No. G523

March 10, 2020

Restrained Assembly Rating — 2 and 3 Hr.
(See Items 2, 15, 15C, 15D, 15E, 15G, 17, 21 and 21A)
Unrestrained Assembly Rating — 2 and 3 Hr.
(See Items 2, 15, 15C, 15D, 15E, 15G, 17, 21 and 21A)
Unrestrained Beam Rating — 2 and 3 Hr.
(See Items 2, 15, 15C, 15D, 15E and 17)

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 factor 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), respectively.**



1. **Beam** — W10x21, min size. As alternate to steel beam, **joist girders** (Not Shown) 20 in. min depth and 13 lb/ft min weight.

2. **Normal Weight Concrete** — Carbonate or siliceous aggregate, 152 + or - 3 pcf unit weight, 3000 psi compressive strength.

Restrained Assembly Rating Hr	Unrestrained Assembly Rating Hr	Unrestrained Beam Rating Hr	Concrete Thkns In.
2	2	2	2-1/2
2	3	2	2-1/2
3	3	3	3

3. **Metal Lath** — 3/8 in. 3.4 lb per sq yd expanded steel. Tied to each joist at every other rib and midway between joists at side laps with 18 SWG galv steel wire. As an alternate for 2 in wire/strip ratig only, the form material for the concrete may be corrugated steel deck 9/16 in. deep of 28 MSG steel galv steel welded to supports 15 in. OC with welding washers. The concrete thickness shall be measured to the top plane of the steel deck.

3A. **Steel Floor and Form Units*** — (Not Shown) As an alternate to Item 3, Composite 1-1/2 in. deep, 35.35 or 36 in. wide, 20 MSG galv steel, with 2 in. deep embossments, 6 MSG galv steel wires per ft. OC. Adjacent units button-punched, welded or screwed together 36 in. OC max along perimeter. The concrete thickness shall be measured to the top plane of the steel deck. **VULCRAFT, DIV OF NUCOR CORP** — Types 1.5VL, 1.5VLI, 1.5PDI.

4. **Steel Joists** — Type 62J or 106Y min size, spaced 24 in. OC welded to end supports.

5. **Bridging** — 1/2 in. diam steel bars welded to top and bottom chord of each joist.

6. **Hanger Wire** — No. 12 SWG galv steel wire, twist-tied to lower chord of joists. Located 48 in. O.C. along main runners; hanger wires required at all four corners of light fixtures, and at midspan of cross tees at the sides of the light fixture.

7. **Cold Rolled Channels** — No. 16 MSG cold-rolled steel channels, 1-1/2 in. deep with 9/16 in. leas.

8. **Air Duct** — No. 24 MSG galv steel. Supported on 1-1/2 in. 16 MSG cold-rolled steel channels spaced 24 in. OC.Duct opening not to exceed 144 sq in. Duct opening not to exceed 144 sq in. Duct opening not sq ft of ceiling area, with no individual opening greater than 144 sq in. Maximum lateral dimension of duct outlet 12 in.

8A. **Air Duct Materials*** — (Not shown) — Optional. For the 2 h ratings, as an alternate to steel air duct (Item 8), Rigid Air Duct Materials may be used in accordance with the following: The duct outlet limited to 1 in. in diameter, or a cross-sectional area of the 24 in. long min 0.029 in. thick (22 gauge) galv steel duct liner. These ducts are supported by min 0.013 in. thick (16 gauge) galv steel hangers suspended from the joists by 12 SWG galv steel wire. Channels are placed directly below the steel duct liner, one on each side of the thruun, and otherwise spaced 72 in. OC for ducts up to 36 in. wide, and 48 in. OC for ducts between 36 and 60 in. wide. Min clearance of 4 in. required between back of ceiling membrane and bottom of air duct material.
JOHNS MANVILLE — Rigid Class 1.

KNAUF INSULATION LLC — Rigid, Class 1

9. **Damper** — No. 13 MSG steel, hinged on one side. Protected on both surfaces with 1/16 in. thick ceramic fiber paper. Damper held in open position with 160 F fusible Link bearing the UL Listing Mark. Damper to overlap duct outlet by 3 in. In lieu of the damper described above, Duct Outlet Protection System A, as described in the Design Information Section, may be used with steel ducts. When 2-1/2 in. thick concrete and 5/8 in. thick gypsum board are used.

10. **Fixtures, Recessed Light** — Bearing the UL Listing Mark). Recessed light fixture with steel housing with four adjustable mounting brackets, 2 by 4 ft size, with or without vented sides for air boots. Fixtures spaced so their area does not exceed 24 sq ft per 100 sq ft of ceiling area. Wired in conformance with the National Electrical Code.

10A. **Alternate Fixtures, Recessed Light** — For use with Steel Framing Members, Item 15B, 15D, 15E, 15F, or 15G - Bearing the UL Listing Mark). Recessed light fixture with NEMA Type 1 steel housing, 1 by 2 ft, 1 by 4 ft, 2 by 2 ft or 2 by 4 ft size. Fixtures provided with swing-out steel support hooks near each corner designed to engage the bulb of the steel framing member cross tees. Size of steel framing member module to be nominally 2 in. wider and longer than the nominal fixture size to allow installation from below. Fixtures to be additionally screw attached to the web of the cross tees near the center of each long side and at both ends using No. 6 by 2 5/8 in. long (sides) and No. 6 by 1 5/8 in. long (ends) steel drywall screws. Fixtures spaced so their area does not exceed 24 sq ft per each 100 sq ft of ceiling area. Wired in conformance with the National Electrical Code.

10B. **Alternate Fixtures, Recessed Light** — For Use with Steel Framing Members, Item 15A - Bearing the UL Listing Mark). Recessed light fixture with NEMA Type 1 steel housing, 1 by 2 ft, 1 by 4 ft, 2 by 2 ft or 2 by 4 ft size. Fixtures provided with swing-out steel support hooks near each corner designed to engage the bulb of the steel framing member cross tees. Fixtures to be additionally screw attached to the web of the cross tees near the center of each long side and at both ends using 2 in. long Type S (1 inches) and 1 in. long Type S (2 inch) steel screws. Fixtures spaced so their area does not exceed 24 sq ft per each 100 sq ft of ceiling area. Wired in conformance with the National Electrical Code.

11. **Fixture Protection — Luminaire Assemblies and Luminaire Enclosure Classified for Fire Resistance*** — (Not Shown) - As an alternate to Item 12, luminaire enclosure kits consisting of pre-cut pieces of faced batts and assembly hardware may be used to form a free sided rectangular enclosure over NEMA 2 recessed light fixtures. Enclosure kits to be installed in accordance with the accompanying installation instructions. When air supply light fixtures with air boots are used, fixtures and air boots shall be fully enclosed except for the opening needed to accommodate connection to air supply duct.
SPI LLC — Safe3in®

THERMAFIBER INC — FiafaxShield

Any Class I Air Duct Material bearing the UL Listing Mark (Qaj and QX Equipment Directory).

14. **Air Boots** — No. 24 MSG galv steel air boots to be installed in not more than 67 percent of the light fixtures. Air boots are installed in pairs, along both sides of light fixtures and connected by a No. 24 MSG galv steel, crossover duct.

15. **Steel Framing Members*** —

a. **Main Runners** — Nom 12 ft long, spaced 4 ft OC.

b. **Cross Ties** — Nom 4 ft long spaced 24 in. OC perpendicular to main runners with one additional cross tee located 8 in. on each side of each joint and point of gussets bound. When Type 6TAC or 6THC cross tees are used, assembly and beam ratings are limited to 2 hr.
RIGID, USG INC, BJB & ROCKFON — Types 650, 6000, 675, 675C, the main runner ends may be nested to the wall molding along one wall and the cross tee ends may be nested to the wall molding along both adjacent walls. The rivets are intended to facilitate the ceiling installation, not to replace hanger wires.

15A. **Alternate Steel Framing Members*** — Main runners, cross tees, cross channels and wall angle as listed below:

a. **Main Runners** — Nom 10 or 12 ft. long, 15/16 in. or 1-1/2 in. wide face, spaced 4 ft. OC.

b. **Cross Ties** — Nom 4 ft. long, 1-1/2 in wide face or 15/16 in. wide face installed at sides of light fixtures (Item 10), installed perpendicular to the main runners, spaced 24 in. OC. When Batts and Blankets* (Item 21) are used, cross ties spaced 16 in. OC. Additional cross ties or cross channels used at 8 in. from each side of butted gypsum board end joints. The cross ties or cross channels may be nested or screw attached to the wall angle or channel to facilitate the ceiling installation. When Nominal Type 1 Item 10B light fixtures are used, nom 4ft long cross ties, 1-1/2 in wide face, installed perpendicular to main runners and spaced nom 10 in. OC. Two nom 10 in. long cross ties, 1-1/2 inch wide face, spaced nom 14 in. OC to accommodate nom 1 by 2 ft or 1 by 4 ft NEMA Type F fixture or spaced 26 in. OC to accommodate nom 2 by 2 ft NEMA or 2 by 4 ft NEMA Type F fixture. When nom 2 by 2 ft NEMA Type F fixture is used, nom 26 in. long cross ties to be used to form nom 26 in. modules at the center of the nom 50 in. long cross ties. Two additional nom 4 ft cross ties, 1-1/2 in. wide face are installed perpendicular to the main runners outside each end of fixture opening to support the ends of the gypsum board perimeter. Small cutoff pieces of cross tees are installed at the center of the nom 50 in. long cross ties and main runners by inserting the dip end into a cross tee slot on the main runner and securing the other end with a pop-rivet to the nom 50 in. long cross tee.

c. **Cross Channels** — Nom 4 ft. long, installed perpendicular to main runners, spaced 24 in. OC. When Batts and Blankets* (Item 21) are used, cross channels spaced 16 in. OC.

d. **Wall Angle or Channel** — Painted or galv steel angle with 1 in. legs or 1-5/16 in. deep painted or galv steel channel with 1 in. legs attached to walls at perimeter of ceiling with fasteners 16 in. OC. Adjacent cross tees and butted gypsum board end joints with bottom flanges of channel resting on flanges of wall angle or channel and at both ends using 1/2 in. long Type S (1/2 inch) .414 in. long Screw Type S (12 inch) steel screws. Fixtures spaced so their area does not exceed 24 sq ft per each 100 sq ft of ceiling area. Wired in conformance with the National Electrical Code.

11. **Fixture Protection — Gypsum Board**** — 1/2 or 5/8 in. thick, same as Item 17, cut into pieces to form a box assembly approx 1/2 in. longer and wider than the fixture with sufficient depth to provide at least 1-1/4 in. clearance between the fixture and the protection enclosure. The pieces are held together by No. 10 SWG galv steel wire at every corner. Overlap on adjacent lay in panels.
THERMAFIBER INC — Type FB.

11A. **Fixture Protection — Luminaire Enclosure** — (Not Shown) - As an alternate to Item 11, luminaire enclosure kits consisting of pre-cut pieces of faced batts and assembly hardware may be used to form a free sided rectangular enclosure over NEMA 2 recessed light fixtures. Enclosure kits to be installed in accordance with the accompanying installation instructions. When air supply light fixtures with air boots are used, fixtures and air boots shall be fully enclosed except for the opening needed to accommodate connection to air supply duct.
SPI LLC — Safe3in®

THERMAFIBER INC — FiafaxShield

11B. **Alternate Steel Framing Members*** — (Not Shown) — As an alternate to Items 15, 15A, 15B, 15C and 15D, Main runners nom 12 ft long, spaced 72 in. OC. Cross tees, nom 6 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 6 ft long cross tees required at each gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. When NEMA Type F (Item 10A) light fixtures are used, nom 6 ft long cross tees installed perpendicular to main runners and spaced nom 14 in., 26 in. or 50 in. OC, dependent upon fixture size and orientation. Nominal 14 in., 26 in. and/or 50 in. cross tees used in combination with the 6 ft long cross tees to create modules to accommodate nom 1 by 2 ft, 1 by 4 ft, 2 by 2 ft and 2 by 4 ft NEMA Type F fixtures. Additional lengths of cross tee to be installed perpendicular to main runners near corner of room 50 in. long cross tee on each side of 1 by 4 ft or 2 by 4 ft light fixture which is installed with its long dimension parallel with the main runners. Ends of these additional short lengths of cross tee are to engage roof main runner at one end and are to be inserted to nom 50 in. long cross tee at opposite end. The main runners and cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.
ARMSTRONG WORLD INDUSTRIES INC — Type DHS-6000.

11C. **Alternate Steel Framing Members*** — (Not Shown) — As an alternate to Items 15, 15A, 15B, 15C and 15D, Main runners nom 12 ft long, spaced 72 in. OC. Cross tees, nom 6 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 6 ft long cross tees required at each gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. When NEMA Type F (Item 10A) light fixtures are used, nom 6 ft long cross tees installed perpendicular to main runners and spaced nom 14 in., 26 in. or 50 in. OC, dependent upon fixture size and orientation. Nominal 14 in., 26 in. and/or 50 in. cross tees used in combination with the 6 ft long cross tees to create modules to accommodate nom 1 by 2 ft, 1 by 4 ft, 2 by 2 ft and 2 by 4 ft NEMA Type F fixtures. Additional lengths of cross tee to be installed perpendicular to main runners near corner of room 50 in. long cross tee on each side of 1 by 4 ft or 2 by 4 ft light fixture which is installed with its long dimension parallel with the main runners. Ends of these additional short lengths of cross tee are to engage roof main runner at one end and are to be inserted to nom 50 in. long cross tee at opposite end. The main runners and cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.
USG INTERIORS LLC — Type DGL or KK.

11D. **Alternate Steel Framing Members*** — (Not Shown) — As an alternate to Items 15, 15A, 15B, 15C and 15D, Main runners nom 12 ft long, spaced 72 in. OC. Cross tees, nom 4 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 4 ft long cross tees required at each gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. When NEMA Type F (Item 10A) light fixtures are used, nom 4 ft long cross tees installed perpendicular to main runners and spaced nom 14 in., 26 in. or 50 in. OC, dependent upon fixture size and orientation. Nominal 14 in., 26 in. and/or 50 in. cross tees used in combination with the 4 ft long cross tees to create modules to accommodate nom 1 by 2 ft, 1 by 4 ft, 2 by 2 ft and 2 by 4 ft NEMA Type F fixtures. Additional lengths of cross tee to be installed between the 4 ft long cross tees at each end of fixture and are to be inserted to nom 50 in. long cross tee at opposite end. Additional short lengths of cross tee to be installed perpendicular to main runners near corner of room 50 in. long cross tee on each side of 1 by 4 ft or 2 by 4 ft light fixture which is installed with its long dimension parallel with the main runners. Ends of these additional short lengths of cross tee are to engage roof main runner at one end and are to be inserted to nom 50 in. long cross tee at opposite end. The main runners and cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.
ARMSTRONG WORLD INDUSTRIES INC — Type DFS-6000 Suspension System. When Type DFS-6000 Steel Framing Members with 4 ft long cross tees are used, assembly and beam ratings are limited to 2 hr.

11E. **Alternate Steel Framing Members*** — (Not Shown) — As an alternate to Items 15, 15A, 15B, 15C and 15D, Main runners nom 12 ft long, spaced 72 in. OC. Cross tees, nom 6 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 6 ft long cross tees required at each gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. When NEMA Type F (Item 10A) light fixtures are used, nom 6 ft long cross tees installed perpendicular to main runners and spaced nom 14 in., 26 in. or 50 in. OC, dependent upon fixture size and orientation. Nominal 14 in., 26 in. and/or 50 in. cross tees used in combination with the 6 ft long cross tees to create modules to accommodate nom 1 by 2 ft, 1 by 4 ft, 2 by 2 ft and 2 by 4 ft NEMA Type F fixtures. Additional lengths of cross tee to be installed between the 6 ft long cross tees at each end of fixture and are to be inserted to nom 50 in. long cross tee at opposite end. Additional short lengths of cross tee to be installed perpendicular to main runners near corner of room 50 in. long cross tee on each side of 1 by 4 ft or 2 by 4 ft light fixture which is installed with its long dimension parallel with the main runners. Ends of these additional short lengths of cross tee are to engage roof main runner at one end and are to be inserted to nom 50 in. long cross tee at opposite end. The main runners and cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.
USG INTERIORS LLC — Type DXL or RX.

11F. **Alternate Steel Framing Members*** — (Not Shown) — As an alternate to Items 15, 15A, 15B, 15C and 15D, Main runners nom 12 ft long, spaced 72 in. OC. Cross tees, nom 4 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 4 ft long cross tees required at each gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. When NEMA Type F (Item 10A) light fixtures are used, nom 4 ft long cross tees installed perpendicular to main runners and spaced nom 14 in., 26 in. or 50 in. OC, dependent upon fixture size and orientation. Nominal 14 in., 26 in. and/or 50 in. cross tees used in combination with the 4 ft long cross tees to create modules to accommodate nom 1 by 2 ft, 1 by 4 ft, 2 by 2 ft and 2 by 4 ft NEMA Type F fixtures. Additional lengths of cross tee to be installed between the 4 ft long cross tees at each end of fixture and are to be inserted to nom 50 in. long cross tee at opposite end. Additional short lengths of cross tee to be installed perpendicular to main runners near corner of room 50 in. long cross tee on each side of 1 by 4 ft or 2 by 4 ft light fixture which is installed with its long dimension parallel with the main runners. Ends of these additional short lengths of cross tee are to engage roof main runner at one end and are to be inserted to nom 50 in. long cross tee at opposite end. The main runners and cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.
USG INTERIORS LLC — Type DXL or RX.

11G. **Alternate Steel Framing Members*** — (Not Shown) - As an alternate to Items 15 through 15F - Main runners nom 12 ft long, spaced 48 in. OC. Cross tees, nom 4 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 4 ft long cross tees required at each gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. When NEMA Type F (Item 10A) light fixtures are used, nom 4 ft long cross tees installed perpendicular to main runners and spaced nom 14 in., 26 in. or 50 in. OC, dependent upon fixture size and orientation. Nominal 14 in., 26 in. and/or 50 in. cross tees used in combination with the 4 ft long cross tees to create modules to accommodate nom 1 by 2 ft, 1 by 4 ft, 2 by 2 ft and 2 by 4 ft NEMA Type F fixtures. Additional lengths of cross tee to be installed between the 4 ft long cross tees at each end of fixture and are to be inserted to nom 50 in. long cross tee at opposite end. Additional short lengths of cross tee to be installed perpendicular to main runners near corner of room 50 in. long cross tee on each side of 1 by 4 ft or 2 by 4 ft light fixture which is installed with its long dimension parallel with the main runners. Ends of these additional short lengths of cross tee are to engage roof main runner at one end and are to be inserted to nom 50 in. long cross tee at opposite end. The main runners and cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.
ARMSTRONG WORLD INDUSTRIES INC — Type DFS-6000 Steel Framing Members with 4 ft long cross tees are used, assembly and beam ratings are limited to 2 hr.

11H. **Alternate Steel Framing Members*** — (Not Shown) — As an alternate to Items 15 through 15F - Main runners nom 12 ft long, spaced 72 in. OC. Cross tees, nom 4 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 4 ft long cross tees required at each gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. When NEMA Type F (Item 10A) light fixtures are used, nom 4ft long cross tees, 1-1/2 in wide face, installed perpendicular to main runners and spaced nom 14 in. OC. Two nom 10 in. long cross tees, 1-1/2 inch wide face, spaced nom 14 in. OC to accommodate nom 1 by 2 ft or 1 by 4 ft NEMA Type F fixture or spaced 26 in. OC to accommodate nom 2 by 2 ft NEMA or 2 by 4 ft NEMA Type F fixture. When nom 2 by 2 ft NEMA Type F fixture is used, nom 26 in. long cross ties to be used to form nom 26 in. modules at the center of the nom 50 in. long cross ties. Two additional nom 4 ft cross ties, 1-1/2 in. wide face are installed perpendicular to the main runners outside each end of fixture opening to support the ends of the gypsum board perimeter. Small cutoff pieces of cross tees are installed at the center of the nom 50 in. long cross ties and main runners by inserting the dip end into a cross tee slot on the main runner and securing the other end with a pop-rivet to the nom 50 in. long cross tee.

c. **Cross Channels** — Nom 4 ft. long, installed perpendicular to main runners, spaced 24 in. OC. When Batts and Blankets* (Item 21) are used, cross channels spaced 16 in. OC.

d. **Wall Angle or Channel** — Painted or galv steel angle with 1 in. legs or 1-5/16 in. deep painted or galv steel channel with 1 in. legs attached to walls at perimeter of ceiling with fasteners 16 in. OC. Adjacent cross tees and butted gypsum board end joints with bottom flanges of channel resting on flanges of wall angle or channel and at both ends using 1/2 in. long Type S (1/2 inch) .414 in. long Screw Type S (12 inch) steel screws. Fixtures spaced so their area does not exceed 24 sq ft per each 100 sq ft of ceiling area. Wired in conformance with the National Electrical Code.

USG INTERIORS LLC — Type DGL or KK.

11I. **Alternate Steel Framing Members*** — (Not Shown) — As an alternate to Items 15, 15A, 15B, 15C and 15D, Main runners nom 12 ft long, spaced 72 in. OC. Cross tees, nom 6 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 6 ft long cross tees required at each gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. When NEMA Type F (Item 10A) light fixtures are used, nom 6 ft long cross tees installed perpendicular to main runners and spaced nom 14 in., 26 in. or 50 in. OC, dependent upon fixture size and orientation. Nominal 14 in., 26 in. and/or 50 in. cross tees used in combination with the 6 ft long cross tees to create modules to accommodate nom 1 by 2 ft, 1 by 4 ft, 2 by 2 ft and 2 by 4 ft NEMA Type F fixtures. Additional lengths of cross tee to be installed between the 6 ft long cross tees at each end of fixture and are to be inserted to nom 50 in. long cross tee at opposite end. Additional short lengths of cross tee to be installed perpendicular to main runners near corner of room 50 in. long cross tee on each side of 1 by 4 ft or 2 by 4 ft light fixture which is installed with its long dimension parallel with the main runners. Ends of these additional short lengths of cross tee are to engage roof main runner at one end and are to be inserted to nom 50 in. long cross tee at opposite end. The main runners and cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.
ARMSTRONG WORLD INDUSTRIES INC — Type DHS-6000 Suspension System. When Type DHS-6000 Steel Framing Members with 6 ft long cross tees are used, assembly and beam ratings are limited to 2 hr.

11J. **Alternate Steel Framing Members*** — (Not Shown) — As an alternate to Items 15, 15A, 15B, 15C and 15D, Main runners nom 12 ft long, spaced 72 in. OC. Cross tees, nom 4 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 4 ft long cross tees required at each gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. When NEMA Type F (Item 10A) light fixtures are used, nom 4 ft long cross tees installed perpendicular to main runners and spaced nom 14 in., 26 in. or 50 in. OC, dependent upon fixture size and orientation. Nominal 14 in., 26 in. and/or 50 in. cross tees used in combination with the 4 ft long cross tees to create modules to accommodate nom 1 by 2 ft, 1 by 4 ft, 2 by 2 ft and 2 by 4 ft NEMA Type F fixtures. Additional lengths of cross tee to be installed between the 4 ft long cross tees at each end of fixture and are to be inserted to nom 50 in. long cross tee at opposite end. Additional short lengths of cross tee to be installed perpendicular to main runners near corner of room 50 in. long cross tee on each side of 1 by 4 ft or 2 by 4 ft light fixture which is installed with its long dimension parallel with the main runners. Ends of these additional short lengths of cross tee are to engage roof main runner at one end and are to be inserted to nom 50 in. long cross tee at opposite end. The main runners and cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.
USG INTERIORS LLC — Type DXL or RX.

11K. **Alternate Steel Framing Members*** — (Not Shown) — As an alternate to Items 15, 15A, 15B, 15C and 15D, Main runners nom 12 ft long, spaced 72 in. OC. Cross tees, nom 6 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 6 ft long cross tees required at each gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. When NEMA Type F (Item 10A) light fixtures are used, nom 6 ft long cross tees installed perpendicular to main runners and spaced nom 14 in., 26 in. or 50 in. OC, dependent upon fixture size and orientation. Nominal 14 in., 26 in. and/or 50 in. cross tees used in combination with the 6 ft long cross tees to create modules to accommodate nom 1 by 2 ft, 1 by 4 ft, 2 by 2 ft and 2 by 4 ft NEMA Type F fixtures. Additional lengths of cross tee to be installed between the 6 ft long cross tees at each end of fixture and are to be inserted to nom 50 in. long cross tee at opposite end. Additional short lengths of cross tee to be installed perpendicular to main runners near corner of room 50 in. long cross tee on each side of 1 by 4 ft or 2 by 4 ft light fixture which is installed with its long dimension parallel with the main runners. Ends of these additional short lengths of cross tee are to engage roof main runner at one end and are to be inserted to nom 50 in. long cross tee at opposite end. The main runners and cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.
ARMSTRONG WORLD INDUSTRIES INC — Type DHS-6000 Suspension System. When Type DHS-6000 Steel Framing Members with 6 ft long cross tees are used, assembly and beam ratings are limited to 2 hr.

11L. **Alternate Fixtures, Recessed Light** — For Use with Steel Framing Members, Item 15B, 15D, 15E, 15F, or 15G - Bearing the UL Listing Mark). Recessed light fixture with NEMA Type F steel housing, 1 by 2 ft, 1 by 4 ft, 2 by 2 ft or 2 by 4 ft size. Fixtures provided with swing-out steel support hooks near each corner designed to engage the bulb of the steel framing member cross tees. Size of steel framing member module to be nominally 2 in. wider and longer than the nominal fixture size to allow installation from below. Fixtures to be additionally screw attached to the web of the cross tees near the center of each long side and at both ends using No. 6 by 2-5/8 in. long (sides) and No. 6 by 1-5/8 in. long (ends) steel drywall screws. Fixtures spaced so their area does not exceed 24 sq ft per each 100 sq ft of ceiling area. Wired in conformance with the National Electrical Code.

11M. **Alternate Fixtures, Recessed Light** — For Use with Steel Framing Members, Item 15B, 15D, 15E, 15F, or 15G - Bearing the UL Listing Mark). Recessed light fixture with NEMA Type F steel housing, 1 by 2 ft, 1 by 4 ft, 2 by 2 ft or 2 by 4 ft size. Fixtures provided with swing-out steel support hooks near each corner designed to engage the bulb of the steel framing member cross tees. Fixtures to be additionally screw attached to the web of the cross tees near the center of each long side and at both ends using 2 in. long Type S (2 inch) and 1 in. long Type S (1 inch) steel screws. Fixtures spaced so their area does not exceed 24 sq ft per each 100 sq ft of ceiling area. Wired in conformance with the National Electrical Code.

11N. **Alternate Fixtures, Recessed Light** — For Use with Steel Framing Members, Item 15A, 15B, 15C, 15F, or 15G - Bearing the UL Listing Mark). Recessed light fixture with NEMA Type F steel housing, 1 by 2 ft, 1 by 4 ft, 2 by 2 ft or 2 by 4 ft size. Fixtures provided with swing-out steel support hooks near each corner designed to engage the bulb of the steel framing member cross tees. Fixtures to be additionally screw attached to the web of the cross tees near the center of each long side and at both ends using 2 in. long Type S (2 inch) and 1 in. long Type S (1 inch) steel screws. Fixtures spaced so their area does not exceed 24 sq ft per each 100 sq ft of ceiling area. Wired in conformance with the National Electrical Code.

12. **Fixture Protection — Batts and Blankets*** — (Alternate to Item 11) — 1-1/4 in. thick, cut into pieces to form a box assembly approx 1/2 in. longer and wider than the fixture with sufficient depth to provide at least 1-1/4 in. clearance between the fixture and the protection enclosure. The pieces are held together by No. 16 SWG galv steel wire at every corner. Overlap on adjacent lay in panels.
THERMAFIBER INC — Type FB.

13. **Fixture Protection - Luminaires, Luminaire Assemblies and Luminaire Enclosure Classified for Fire Resistance*** — (Not Shown) - As an alternate to Item 12, luminaire enclosure kits consisting of pre-cut pieces of faced batts and assembly hardware may be used to form a free sided rectangular enclosure over NEMA 2 recessed light fixtures. Enclosure kits to be installed in accordance with the accompanying installation instructions. When air supply light fixtures with air boots are used, fixtures and air boots shall be fully enclosed except for the opening needed to accommodate connection to air supply duct.
SPI LLC — Safe3in®

THERMAFIBER INC — FiafaxShield

13A. **Fixture Protection — Gypsum Board**** — As an alternate to Item 13, cut to fit 1/2 in. and 5/8 in. thick, 4 ft wide, installed with long dimension perpendicular to cross tees with side joints centered along main runners and gypsum board fastened to cross tees with 1 in. long drywall screws located 12 in. from end joints and 1-3/4 in. from each side joint and spaced 12 in. OC along end joints. Fastened to main runners with 1 in. long drywall screws spaced 12 in. OC in the field and 8 in. OC along end joints. Fastened to main runners with 1 in. long drywall screws spaced midway between cross tees. Additional cross tees used at 8 in. from each side of butted gypsum board end joints. When **Batts and Blankets*** (Item 21A) are used, cross tees spaced 16 in. OC with additional cross tees 8 in. away from each side of butted gypsum board ends. The cross ties shall be riveted with 5/8 in. dia. rivets to the wall angle and to the main tee where the cross tee does not align with slot in the main tee. When NEMA Type F (Item 10A) light fixtures are used, nom 4ft long cross ties, 1-1/2 in wide face, installed perpendicular to main runners and spaced nom 14 in. OC. Two nom 50 in. long cross tees, 1-1/2 inch wide face, spaced nom 14 in. OC to accommodate nom 1 by 2 ft or 1 by 4 ft NEMA Type F fixture or spaced 26 in. OC to accommodate nom 2 by 2 ft NEMA or 2 by 4 ft NEMA Type F fixture. When nom 2 by 2 ft NEMA Type F fixture is used, nom 26 in. long cross ties to be used to form nom 26 in. modules at the center of the nom 50 in. long cross ties. Two additional nom 4 ft cross ties, 1-1/2 in. wide face are installed perpendicular to the main runners outside each end of fixture opening to support the ends of the gypsum board perimeter. Small cutoff pieces of cross tees are installed at the center of the nom 50 in. long cross ties and main runners by inserting the dip end into a cross tee slot on the main runner and securing the other end with a pop-rivet to the nom 50 in. long cross tee.

c. **Cross Channels** — Nom 4 ft. long, installed perpendicular to main runners, spaced 24 in. OC. When Batts and Blankets* (Item 21) are used, cross channels spaced 16 in. OC.

d. **Wall Angle or Channel** — Painted or galv steel angle with 1 in. legs or 1-5/16 in. deep painted or galv steel channel with 1 in. legs attached to walls at perimeter of ceiling with fasteners 16 in. OC. Adjacent cross tees and butted gypsum board end joints with bottom flanges of channel resting on flanges of wall angle or channel and at both ends using 1/2 in. long Type S (1/2 inch) .414 in. long Screw Type S (12 inch) steel screws. Fixtures spaced so their area does not exceed 24 sq ft per each 100 sq ft of ceiling area. Wired in conformance with the National Electrical Code.

13B. **Alternate Fixtures, Recessed Light** — For Use with Steel Framing Members, Item 15B, 15D, 15E, 15F, or 15G - Bearing the UL Listing Mark). Recessed light fixture with NEMA Type F steel housing, 1 by 2 ft, 1 by 4 ft, 2 by 2 ft or 2 by 4 ft size. Fixtures provided with swing out steel support hooks near each corner designed to engage the bulb of the steel framing member cross tees. Size of steel framing member module to be nominally 2 in. wider and longer than the nominal fixture size to allow installation from below. Fixtures to be additionally screw attached to the web of the cross tees near the center of each long side and at both ends using No. 6 by 2-5/8 in. long (sides) and No. 6 by 1-5/8 in. long (ends) steel drywall screws. Fixtures spaced so their area does not exceed 24 sq ft per each 100 sq ft of ceiling area. Wired in conformance with the National Electrical Code.

13C. **Alternate Fixtures, Recessed Light** — For Use with Steel Framing Members, Item 15A, 15B, 15C, 15F, or 15G - Bearing the UL Listing Mark). Recessed light fixture with NEMA Type F steel housing, 1 by 2 ft, 1 by 4 ft, 2 by 2 ft or 2 by 4 ft size. Fixtures provided with swing out steel support hooks near each corner designed to engage the bulb of the steel framing member cross tees. Size of steel framing member module to be nominally 2 in. wider and longer than the nominal fixture size to allow installation from below. Fixtures to be additionally screw attached to the web of the cross tees near the center of each long side and at both ends using 2 in. long Type S (2 inch) and 1 in. long Type S (1 inch) steel screws. Fixtures spaced so their area does not exceed 24 sq ft per each 100 sq ft of ceiling area. Wired in conformance with the National Electrical Code.

14. **Fixture Protection — Gypsum Board**** — 1/2 or 5/8 in. thick, same as Item 15, 15A or 15B, Cut to form a five sided enclosure, rectangular in cross section, for the NEMA Type F light fixture (Item 10A). The fixture protection enclosure is installed around the grid module prior to installation of the NEMA Type F light fixture. The fixture protection enclosure is to be installed in the grid module prior to installation of the NEMA Type F light fixture. The fixture protection side pieces are to be provided with slots, 1-1/4 in. from the edge of the 5/8 in. wide flange of the steel framing members, to accommodate the cross tee bulbs. On each side the pieces are installed vertically, resting on the cross tees intersecting the 5/8 in. long cross tees and placed 1-1/4 in from the edge of the 5/8 in. wide flange. The four side pieces of the light fixture protection box are secured together with 6d nails, one at mid-height, and one at each of the four corners. The top piece of gypsum board is loosely-laid on top of the four sided box and secured at each of the four corners with 6d nails. Holes are drilled through the top piece of gypsum board for the attachment of the hanger wires specified in Item 8. Two # 9 tang cross ties are placed on top of the fixture protection box, equally spaced and secured from the underside of the fixture protection box with three 1 in. long Type S screws equally spaced. The dimensions of the fixture protection pieces for the various sizes of NEMA Type F fixtures are tabulated below:

NEMA Type F Fixture Size	1 by 2 ft	1 by 4 ft	2 by 2 ft	2 by 4 ft
Top Piece, in.	19 x 31	19 x 55	31 x 31	31 x 55
Side Piece, in.	6 x 19	6 x 19	6 x 31	6 x 31
End Piece, in.	6 x 19	6 x 19	6 x 31	6 x 31

14A. **Fixture Protection — Gypsum Board**** — 1/2 or 5/8 in. thick, same as Item 15, 15A, 15B, 15C and 15D, Main runners nom 12 ft long, spaced 72 in. OC. Cross tees, nom 6 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 6 ft long cross tees required at each gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. When NEMA Type F (Item 10A) light fixtures are used, nom 6 ft long cross tees installed perpendicular to main runners and spaced nom 14 in., 26 in. or 50 in. OC, dependent upon fixture size and orientation. Nominal 14 in., 26 in. and/or 50 in. cross tees used in combination with the 6 ft long cross tees to create modules to accommodate nom 1 by 2 ft, 1 by 4 ft, 2 by 2 ft and 2 by 4 ft NEMA Type F fixtures. Additional lengths of cross tee to be installed between the 6 ft long cross tees at each end of fixture and are to be inserted to nom 50

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LEE'S SUMMIT MIDDLE SCHOOL #4

LEE'S SUMMIT R-7 SCHOOL DISTRICT

1001 SE BAILEY ROAD
LEE'S SUMMIT, MO 64081

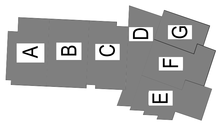
PACKAGE 3 - BUILDING & SITE
10/08/20
REVISIONS

13-20102.00

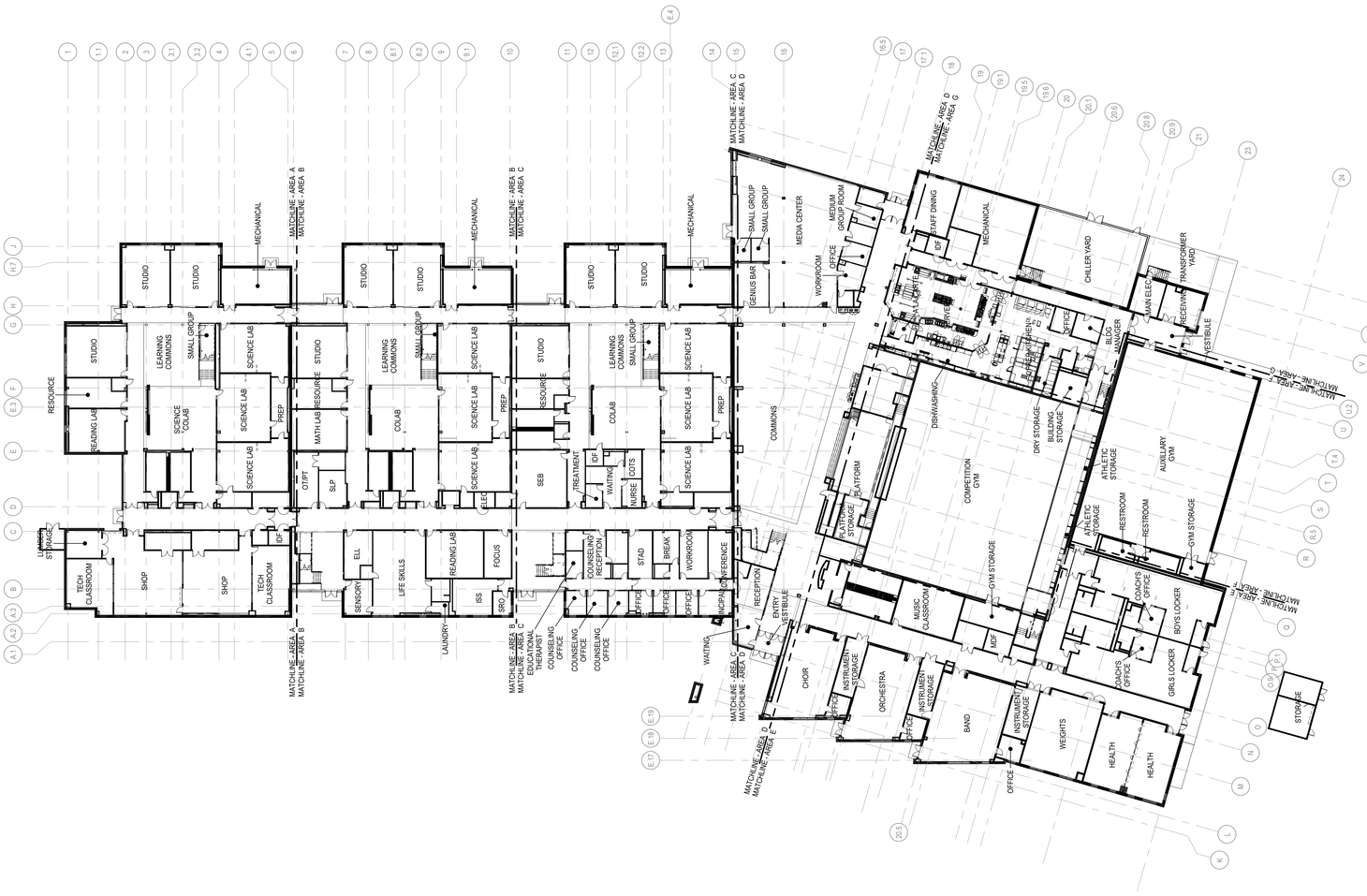
FIRST LEVEL ORIENTATION PLAN

OP1.1

KEY PLAN



NORTH



FIRST LEVEL ORIENTATION PLAN

NORTH SCALE: 1" = 30'-0"

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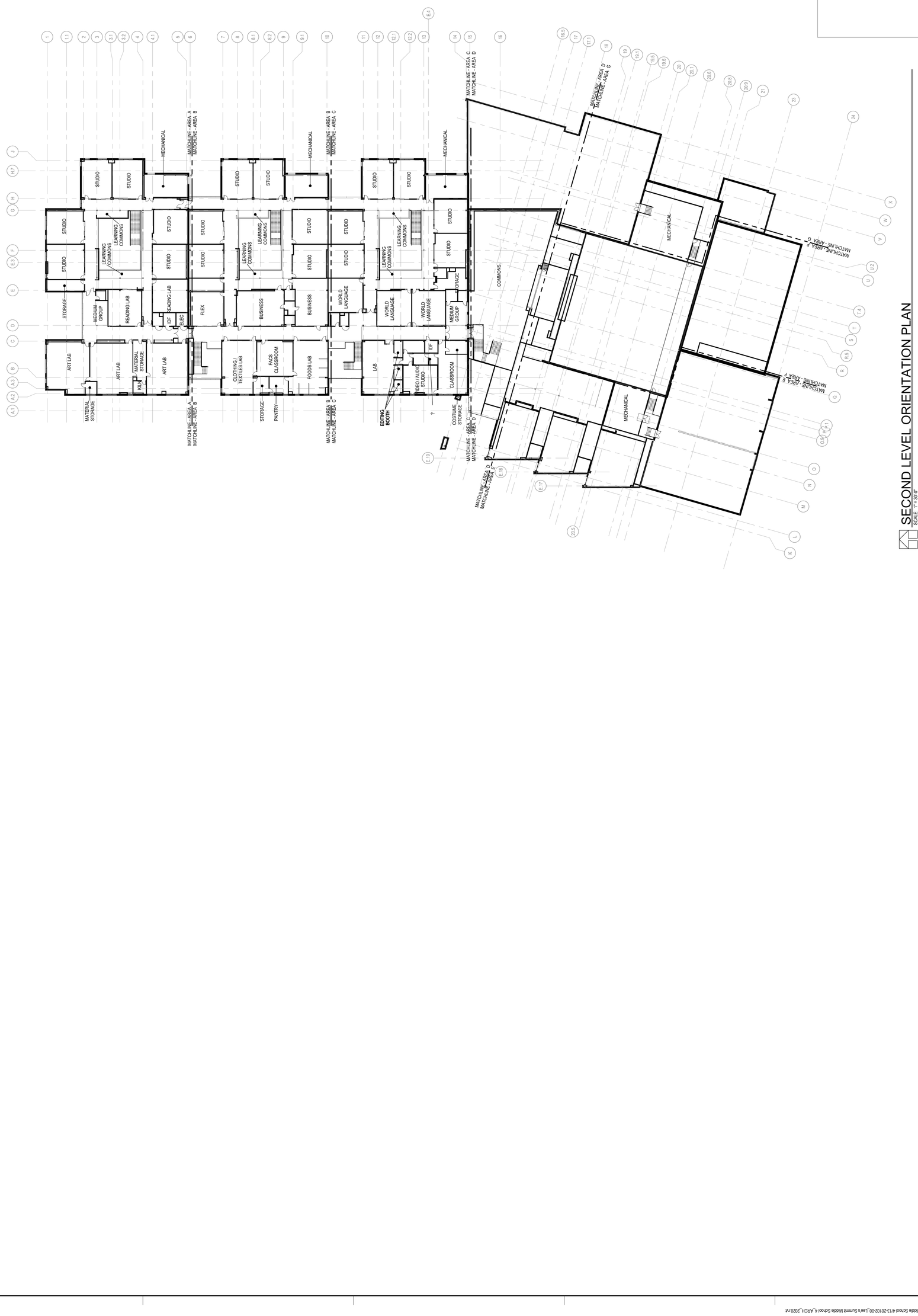

OP1.2

SECOND LEVEL ORIENTATION PLAN

13-20102-00

PACKAGE 3 - BUILDING & SITE
10/09/20
REVISIONS

LEE'S SUMMIT MIDDLE SCHOOL #4

LEE'S SUMMIT R-7 SCHOOL DISTRICT

1001 SE BAILEY ROAD
LEE'S SUMMIT, MO 64081

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