

WILSHIRE HILLS III

Lee's Summit, MO

MHDC Project No. #22-057 MT

PRINTS ISSUED
10/30/23 PERMIT SUBMITTAL

REVISIONS:

1	12/15/23	Addendum 1 - Response to City Comments
2	03/14/24	Addendum 2
3	04/19/24	Addendum 3 - Response to City Comments #2
4	07/16/24	Addendum 4 - Response to City Comments
5	10/04/24	ASI 001



WILSHIRE HILLS III
LEE'S SUMMIT, MISSOURI
MHDC Project No. #22-057 MT

SHEET TITLE
TITLE SHEET

PROJECT NUMBER: 23034

SHEET NUMBER:

G-001

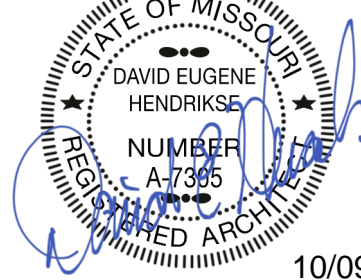
PROJECT CERTIFICATION

I, **David E. Hendrikse**, hereby specify pursuant to the governing requirements of the state, that the documents intended to be authenticated by my seal are limited to:

G-001	G-201	G-301	A-200	A-402
G-002	G-202	G-302	A-201	A-403
G-003	G-203	G-303	A-202	A-404
G-004	G-204	AS-101	A-203	A-410
G-005	G-205	A-101	A-300	A-411
G-006	G-206	A-102	A-301	A-500
G-007	G-207	A-103	A-302	A-501
G-100	A-104	A-303	A-502	
G-101	G-209	A-120	A-503	
G-102	G-210	A-121	A-400	A-600
G-200	G-300	A-122	A-401	A-700

and I hereby disclaim any responsibility for all other plans, specifications, reports or other documents or instruments relating to or intended to be used for any part or parts of the architectural or engineering project or survey.

SEAL



DAVID E. HENDRIKSE, AIA

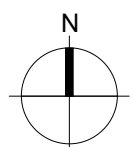
REGIONAL MAP



VICINITY MAP



WILSHIRE HILLS III
LEE'S SUMMIT, MISSOURI



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GENERAL

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CIVIL

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06/30/23	C4.01	GRADING & DRAINAGE PLAN	1	02/22/24
06/30/23	C5.01	STORM SEWER PLAN	1	02/22/24
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06/30/23	C7.01	UTILITY PLAN & PROFILE	1	02/06/24
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STRUCTURAL

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10/30/23	S-500	STRUCTURAL DETAILS		
10/30/23	S-501	STRUCTURAL DETAILS		
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10/30/23	S-503	STRUCTURAL DETAILS		

SOLID FILL INDICATES INCLUSION IN ISSUE
SHEET ISSUE DATE

10 / 10 / 2020 A-000 SHEET NAME - 10 / 10 / 2020

SHEET INDEX LEGEND

SHEET NUMBER AND NAME
CURRENT REVISION NUMBER
& REVISION DATE ON SHEET

ARCHITECTURAL

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10/30/23	A-600	WINDOW / DOOR / FINISH SCHEDULES	5	10/04/24
10/30/23	A-700	INTERIOR ELEVATIONS	5	10/04/24

MECHANICAL

Sheet Issue Date	Sheet Number	Sheet Name	Rev	Current Revision Date
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10/30/23	MEP201	MEP PENETRATION DETAILS		
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10/30/23	M201	ENLARGED UNIT PLANS - HVAC	1	12/15/23
10/30/23	M301	MECHANICAL SCHEDULES	1	12/15/23
10/30/23	M401	MECHANICAL DETAILS		

PLUMBING

Sheet Issue Date	Sheet Number	Sheet Name	Rev	Current Revision Date
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10/30/23	P103	THIRD FLOOR PLUMBING PLAN		
10/30/23	P201	ENLARGED UNIT PLANS - PLUMBING		
10/30/23	P301	PLUMBING SCHEDULES		
10/30/23	P302	PLUMBING DETAILS	1	12/15/23

ELECTRICAL

Sheet Issue Date	Sheet Number	Sheet Name	Rev	Current Revision Date
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10/30/23	E102	SECOND FLOOR LIGHTING PLAN	5	10/04/24
10/30/23	E103	THIRD FLOOR LIGHTING PLAN	5	10/04/24
10/30/23	E111	ENLARGED UNIT PLANS - LIGHTING		
10/30/23	E201	FIRST FLOOR POWER PLAN	1	12/15/23
10/30/23	E202	SECOND FLOOR POWER PLAN		
10/30/23	E203	THIRD FLOOR POWER PLAN		
10/30/23	E211	ENLARGED UNIT PLANS - POWER	5	10/04/24
10/30/23	E301	ELECTRICAL RISER DIAGRAM	1	12/15/23
10/30/23	E302	ELECTRICAL SCHEDULES		
10/30/23	E303	ELECTRICAL SCHEDULES		
10/30/23	E401	ELECTRICAL SCHEDULES/DETAILS		
10/30/23	E402	ELECTRICAL DETAILS		
10/30/23	SL100	SITE PHOTOMETRICS		

PROJECT DATA

PROJECT DESIGN INFORMATION

NEW CONSTRUCTION: YES

ZONING: MU - MIXED USE ZONING

CODE:

2018 INTERNATIONAL BUILDING CODE
2018 INTERNATIONAL RESIDENTIAL CODE
2018 INTERNATIONAL MECHANICAL CODE
2018 INTERNATIONAL PLUMBING CODE
2018 INTERNATIONAL FIRE CODE
2017 NATIONAL ELECTRIC CODE
2018 ACCESSIBILITY CODE (CONSISTENT WITH 2010 - ADA UFAS)
2018 IBC ENERGY CODE
1998 - FAIR HOUSING ACT DESIGN MANUAL

OCCUPANCY GROUP: R-2

TYPE OF CONSTRUCTION: TYPE V-A

NOTE: MHDC FORM 1200 FOR DESIGN/CONSTRUCTION COMPLIANCE GUIDELINES ARE UTILIZED IN THE DESIGN OF THE PROJECT

BUILDING SUMMARY:

ONE (1) TOTAL BUILDINGS
HEIGHT: 46' - 8"

SQUARE FOOTAGES:	GROSS	NET
3-STORY		
FIRST FLOOR	17,860 S.F.	17,437 S.F.
SECOND FLOOR	17,860 S.F.	17,437 S.F.
THIRD FLOOR	17,860 S.F.	17,437 S.F.
TOTAL	53,580 S.F.	52,311 S.F.

ENERGY CONSERVATION: SEE CODE ANALYSIS

UNIT SUMMARY: OVERALL UNIT TOTAL (3-STORY) = 50

3-STORY (BLDG) UNITS

TYPE "A" UNITS (5% OF TOTAL)	(5) UNITS - TWO BEDROOM (3) UNITS - ONE BEDROOM
HIVI UNITS (2% OF TOTAL)	(1) UNITS - TWO BEDROOM (1) UNITS - ONE BEDROOM
STANDARD UNITS	(26) UNITS - TWO BEDROOM (14) UNITS - ONE BEDROOM

TOTAL UNITS (50) UNITS

SQUARE FOOTAGE:	GROSS	NET
TYPE "A" - 2 BEDROOM	880 S.F.	822 S.F.
TYPE "B" - 2 BEDROOM	880 S.F.	822 S.F.
TYPE "A" - 1 BEDROOM	711 S.F.	660 S.F.
TYPE "B" - 1 BEDROOM	711 S.F.	660 S.F.
TYPE "B" - 2 BEDROOM	1004 S.F.	935 S.F.

SITE SUMMARY: SEE CIVIL

NOTE: SQUARE FOOTAGE

-GROSS - COMMON SPACE CALCULATION: OUTSIDE PERIMETER OF STUD (ENTIRE BUILDING) LESS THE TOTAL OF THE GROSS UNIT SQUARE FOOTAGE PER FLOOR.
-GROSS - UNIT CALCULATION: CENTERLINE OF PARTY WALL TO OUTSIDE OF EXTERIOR STUD WALL AND/OR OUTSIDE OF CORRIDOR STUD WALL.
-NET - PAINT-TO-PAINT AT PERIMETER, TAKEN FROM INSIDE OF DEMISING, EXTERIOR, AND CORRIDOR WALLS.

SIGNATURE BLOCK

OWNER:

WILSHIRE HILLS III, L.P.
206 PEACH WAY
COLUMBIA, MO 65203

BY: _____

NAME

CONTRACTOR:

FAIRWAY CONSTRUCTION CO., INC.
206 PEACH WAY
COLUMBIA, MO 65203

BY: _____

NAME

ARCHITECT:

ROSEMAN & ASSOCIATES, P.C.
1526 GRAND BOULEVARD
KANSAS CITY, MO 64108-1404

BY: _____

DATE: _____

BONDING COMPANY:

OWNER NAME
ADDRESS
CITY, ST ZIP

BY: _____

NAME

MISSOURI HOUSING DEVELOPMENT COMMISSION

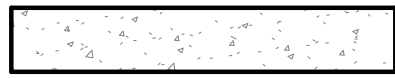
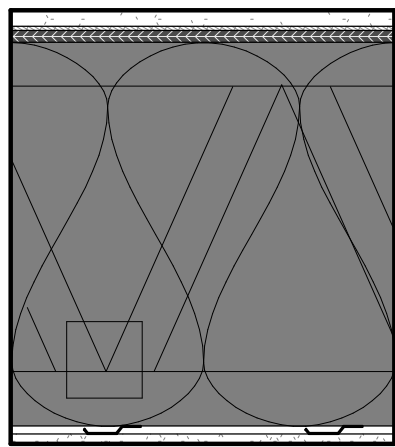
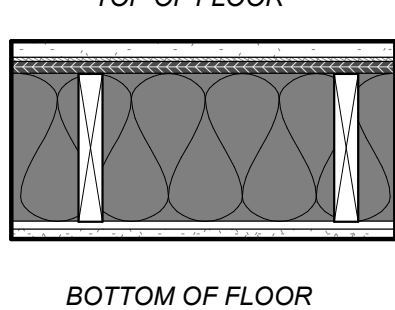
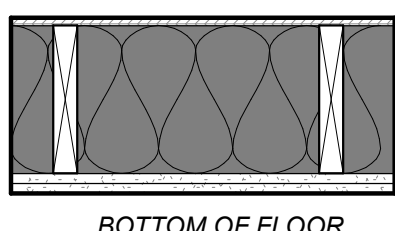
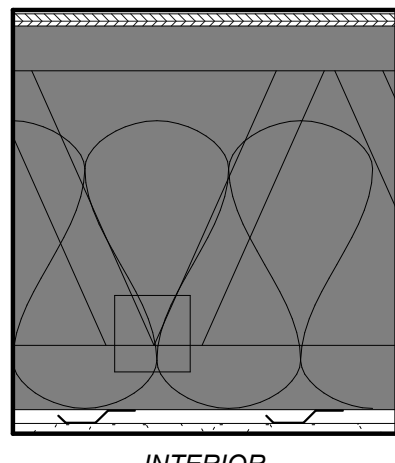
920 MAIN STREET, SUITE 1400
KANSAS CITY, MO 64105

BY: _____



NAME

DATE: _____

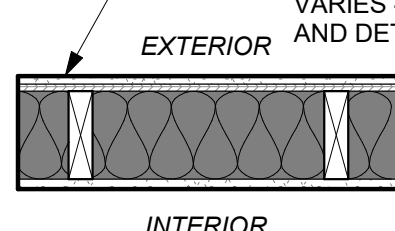
FLOOR/CEILING ASSEMBLIES - WOOD

	F1	CONCRETE - NON-RATED - SLAB ON GRADE <ul style="list-style-type: none">CONCRETE SLAB ON GRADE PER STRUCT. DWGS. NOTES: <ol style="list-style-type: none">SEE STRUCTURAL FOR REINFORCING AND THICKNESSVERIFY SLAB ELEVATIONS WITH CIVIL AND LANDSCAPE
	F3	WOOD OPEN WEB TRUSS - 1HR <ul style="list-style-type: none">1" GYPCRETE TOPPING1/4" ACOUSTICAL MAT15/32" MIN. PLYWOOD SHEATHING, TYPE 'C/D'. SEE ALSO NOTE b.WOOD TRUSSES PER STRUCTURAL, REFER TO UL FOR MIN. REQ'SUNFACED FIBERGLASS INSULATION COMPLETELY FILLED IN CONCEALED CAVITY TO COMPLY WITH NFPA 13 CONCEALED SPACES.25 MSG GALVANIZED RESILIENT CHANNELS, SPACED PER U.L.(1) LAYER OF 5/8" TYPE 'C' GWB PER UL NOTES: <ol style="list-style-type: none">ASSEMBLY TO COMPLY WITH UL DESIGN L528 (JUN 27, 2024)STRUCTURAL SHALL SUPERCEDE IF STRUCT SHEATHING IS THICKER OR DIFFERENT TYPE THAN LISTED ABOVE. PROVIDE REQ MIN ABOVE.REFER TO UL FOR SCREW PATTERNSTC TO BE MIN. 50 PER IBC CHAPTER 12, IIC TO BE EQUAL OR GREATER THAN 50 WHEN TESTED UNDER ASTM E 492. (STC 60 BASED UPON TESTING 30160-08-90744-11. IIC 52 BASED UPON TESTING 30160-08-90744-7 ASSUMING VCT FLOOR FINISH.)VERIFY GWB AND RESILIENT CHANNEL WITH UL SPECIFIED. TAKE NOTE OF REQUIRED RESILIENT CHANNEL SPACING WITH INSULATION-FILLED CAVITYMIN. DEPTH OF TRUSS SHALL BE 18" WHEN DUCT PRESENT.
	F6	WOOD 2X10 LUMBER - 1HR <ul style="list-style-type: none">1" GYPCRETE TOPPING1/4" ACOUSTICAL MATMIN 15/32" TYPE 'C/D' SHEATHING OR PER UL SYSTEM, SEE NOTE b.2X10 WOOD JOISTS SPACED MAX 16" O.C.; REFER TO STRUCTURAL FOR REQUIRED SPACING IF MORE RESTRICTIVECROSS BRIDGING PER ULUNFACED FIBERGLASS INSULATION COMPLETELY FILLED IN CONCEALED CAVITY TO COMPLY WITH NFPA 13 CONCEALED SPACES AND UL25 MSG GALVANIZED RESILIENT CHANNEL SPACED PER UL.(1) LAYER OF 5/8" TYPE 'C' GWB PER UL NOTES: <ol style="list-style-type: none">ASSEMBLY TO COMPLY WITH UL DESIGN L516, (APRIL 29, 2020)STRUCTURAL SHALL SUPERCEDE IF STRUCT SHEATHING IS THICKER OR DIFFERENT TYPE THAN LISTED ABOVE. PROVIDE REQ MIN ABOVE.STC SHALL BE MIN. 50 PER IBC CHAPTER 12, IIC TO BE EQUAL OR GREATER THAN 50 WHEN TESTED UNDER ASTM E 492. (STC 59 BASED UPON TESTING TL88-110. IIC 52 BASED UPON TESTING 100336557C-R001m ASSUMING VINYL FLOOR FINISH.)REFER TO UL FOR SCREW PATTERNVERIFY SHEATHING TYPE, GWB, AND RESILIENT CHANNEL WITH UL SYSTEM SPECIFIED. TAKE NOTE OF REQUIRED RESILIENT CHANNEL SPACING WITH INSULATION-FILLED CAVITY
	F19	WOOD 2X10 LUMBER - 1HR - T.O. ELEVATOR SHAFT <ul style="list-style-type: none">1/2" SHEATHING PER IBCWOOD 2X10 JOISTS SPACED PER STRUCTURALUNFACED FIBERGLASS INSULATION COMPLETELY FILLED IN CONCEALED CAVITY TO COMPLY WITH NFPA 13 CONCEALED SPACES.(2) LAYERS 5/8" TYPE X GWB, PER IBC NOTES: <ol style="list-style-type: none">ASSEMBLY TO COMPLY WITH 2018 IBC TABLE 721.1(3) ITEM 21-1.1REFER TO IBC FOR SCREW PATTERNFIRE CAULK BOTTOM OF CEILING TO WALL, CONTINUOUSLY
ROOF/CEILING ASSEMBLIES - WOOD		
	R3	WOOD SLOPED TRUSS - 1HR - SHINGLES <ul style="list-style-type: none">ASPHALT SHINGLES PER SPECIFICATIONSROOF UNDERLAYMENT PER SPECIFICATIONS15/32" MIN. ROOF SHEATHING, SEE NOTE b.WOOD TRUSS FRAMING PER STRUCT. DWGS, MAX SPACING 24" OC - REFERENCE UL FOR CONSTRUCTIONR-38 INSULATION PER 2018 IECC, INSTALLED PER ULVAPOR BARRIER CLASS 1 ON UNDERSIDE OF TRUSS, AS REQUIRED25 MSG GALVANIZED STEEL RESILIENT CHANNELS, SPACED PER UL(1) LAYER OF 5/8" TYPE 'C' GWB NOTES: <ol style="list-style-type: none">ASSEMBLY TO COMPLY WITH UL DESIGN P545 (APR 4, 2019)STRUCTURAL SHALL SUPERCEDE IF STRUCT SHEATHING IS THICKER OR DIFFERENT TYPE THAN LISTED ABOVE. PROVIDE REQ MIN ABOVE.REFER TO UL FOR SCREW PATTERN

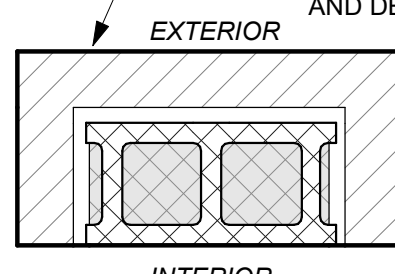
INTERIOR BARRIER ASSEMBLIES - WOOD - 1 HR RATED

	P20	WOOD 2X6 STUD - 1HR BARRIER - INTERIOR <ul style="list-style-type: none">(1) LAYER 5/8" TYPE "X" GYPSUM BOARD2x6 WOOD STUDS SPACED 24" O.C. MAX. OR PER STRUCT. DWGS.5-1/2" FRICTION FIT UNFACED BATT INSULATION IN STUD CAVITY(1) LAYER 5/8" TYPE "X" GYPSUM BOARD NOTES: <ol style="list-style-type: none">ASSEMBLY TO COMPLY WITH UL DESIGN U309 (JAN 30, 2024)REFER TO UL FOR SCREW PATTERN AND OTHER REQUIREMENTSSHALL COMPLY WITH IBC SECTION 7 FOR FIRE BARRIERS
	P21	WOOD 2X6 STUD - 1HR BARRIER - INTERIOR SOUND DAMPENING <ul style="list-style-type: none">(1) LAYER 5/8" TYPE "X" GYPSUM BOARD25 MSG GALVANIZED RESILIENT CHANNEL, SPACED 24" O.C.2x6 WOOD STUDS SPACED 24" O.C. MAX OR PER STRUCT. DWGS.5-1/2" FRICTION FIT UNFACED BATT INSULATION IN STUD CAVITY(1) LAYER 5/8" TYPE "X" GYPSUM BOARD NOTES: <ol style="list-style-type: none">ASSEMBLY TO COMPLY WITH UL DESIGN U309 (JAN 30, 2024)REFER TO UL FOR SCREW PATTERN AND OTHER REQUIREMENTSSHALL COMPLY WITH IBC SECTION 7 FOR FIRE BARRIERSSTC SHALL BE 50 OR OVER AT UNIT ASSEMBLIES, MEETING ASTM E90 (STC 51 BASED UPON TESTING NGC 2011071)WHERE BARRIER DIVIDES A CORRIDOR AND A UNIT, CORRIDOR SIDE SHALL RECEIVE THE RESILIENT CHANNEL

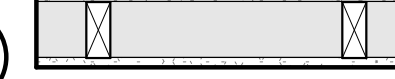
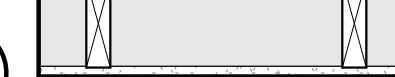
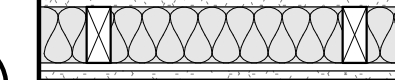
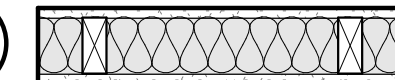



EXTERIOR PARTITION ASSEMBLIES - WOOD - RATING VARIES

	P30	WOOD 2X6 STUD - 1HR PARTITION - EXTERIOR (INTERIOR RATED) <i>EXTERIOR</i> <ul style="list-style-type: none">EXTERIOR FINISH SYSTEM PER ELEVATIONSWEATHER RESISTANT BARRIER, PER SPECIFICATIONS(1) LAYER SHEATHING PER STRUCT. DWGS.2x6 WOOD STUDS SPACED 24" O.C. MAX OR PER STRUCT. DWGS.5-1/2" KRAFT OR FOIL FACED BATT INSULATION IN STUD CAVITY, R-VALUE PER DRAWINGS/SPECIFICATIONS TO MEET IECC.(1) LAYER 5/8" TYPE "X" GYPSUM BOARD <i>INTERIOR</i> <ul style="list-style-type: none">(1) LAYER 5/8" TYPE "X" GYPSUM BOARD NOTES: <ol style="list-style-type: none">ASSEMBLY TO COMPLY WITH 2024 IBC, TABLE 721.1(2), MATERIAL #16, ITEM NUMBER 16-1.4RATING FROM THE INTERIOR SIDE ONLYEXTERIOR SYSTEM TO BE PER DETAILS AND ELEVATIONS
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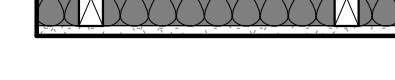
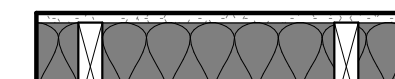

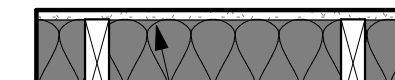
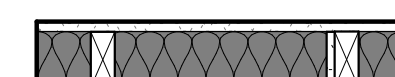
SITE WALL ASSEMBLIES

	P90	EXTERIOR FINISH, MATERIAL VARIES - SEE ELEVATIONS AND DETAILS <i>EXTERIOR</i> <ul style="list-style-type: none">EXTERIOR FINISH PER SPEC, WRAP CORNERS, BRICK WITH 1" AIR GAP SHOWN8" CMU (REINFORCING PER STRUCT) <i>INTERIOR</i> <ul style="list-style-type: none">APPLY WATERPROOFING AT ALL SUBGRADE PORTION OF WALLSINTERIOR EXPOSED AREAS TO BE PAINTED PER FINISH SCHEDULE
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INTERIOR PARTITION ASSEMBLIES - WOOD - NON RATED

	P1	WOOD 2X4 STUD - NON-RATED PARTITION - INTERIOR <ul style="list-style-type: none">(1) LAYER 5/8" TYPE "X" GYPSUM BOARD2x4 WOOD STUDS SPACED 16" O.C.(1) LAYER 5/8" TYPE "X" GYPSUM BOARD NOTES: <ol style="list-style-type: none">ATTACH GYPSUM WITH 1-1/4" TYPE 'W' STEEL SCREWS @ 12" O.C.
	P2	WOOD 2X6 STUD - NON-RATED PARTITION - INTERIOR <ul style="list-style-type: none">(1) LAYER 5/8" TYPE "X" GYPSUM BOARD2x6 WOOD STUDS SPACED 16" O.C.(1) LAYER 5/8" TYPE "X" GYPSUM BOARD NOTES: <ol style="list-style-type: none">ATTACH GYPSUM WITH 1-1/4" TYPE 'W' STEEL SCREWS @ 12" O.C.
	P3	WOOD 2X4 STUD - NON-RATED PARTITION - INTERIOR SOUND <ul style="list-style-type: none">(1) LAYER 5/8" TYPE "X" GYPSUM BOARD2x4 WOOD STUDS SPACED 16" O.C.3 1/2" BATT INSULATION IN STUD CAVITY1/2" RESILIENT CHANNEL, SPACED 24" O.C.(1) LAYER 5/8" TYPE "X" GYPSUM BOARD NOTES: <ol style="list-style-type: none">ATTACH GYPSUM WITH 1-1/4" TYPE 'W' STEEL SCREWS AT 12" O.C.
	P4	WOOD 2X4 STUD - NON-RATED PARTITION - INTERIOR SOUND DAMPENING <ul style="list-style-type: none">(1) LAYER 5/8" TYPE "X" GYPSUM BOARD2x4 WOOD STUDS SPACED 16" O.C.3 1/2" BATT INSULATION IN STUD CAVITY(1) LAYER 5/8" TYPE "X" GYPSUM BOARD NOTES: <ol style="list-style-type: none">ATTACH GYPSUM WITH 1-1/4" TYPE 'W' STEEL SCREWS @ 12" O.C.
	P5	WOOD 2X6 STUD - NON-RATED PARTITION - INTERIOR SOUND DAMPENING <ul style="list-style-type: none">(1) LAYER 5/8" TYPE "X" GYPSUM BOARD2x6 WOOD STUDS SPACED 16" O.C.5 1/2" BATT INSULATION IN STUD CAVITY(1) LAYER 5/8" TYPE "X" GYPSUM BOARD NOTES: <ol style="list-style-type: none">ATTACH GYPSUM WITH 1-1/4" TYPE 'W' STEEL SCREWS @ 12" O.C.
	P6	WOOD 2X2 STUD - NON-RATED FURRING - INTERIOR <ul style="list-style-type: none">(1) LAYER 5/8" TYPE "X" GYPSUM BOARD ON OCCUPIED SIDE2x2 WOOD STUDS SPACED 16" O.C. NOTES: <ol style="list-style-type: none">ATTACH GYPSUM WITH 1-1/4" TYPE 'W' STEEL SCREWS @ 12" O.C.
	P7	WOOD 2X4 STUD - NON-RATED FURRING - INTERIOR <ul style="list-style-type: none">(1) LAYER 5/8" TYPE "X" GYPSUM BOARD ON OCCUPIED SIDE2x4 WOOD STUDS SPACED 16" O.C. NOTES: <ol style="list-style-type: none">ATTACH GYPSUM WITH 1-1/4" TYPE 'W' STEEL SCREWS @ 12" O.C.

INTERIOR PARTITION ASSEMBLIES - WOOD - 1 HR RATED

	P10	WOOD 2X4 STUD - 1HR PARTITION - INTERIOR <ul style="list-style-type: none">(1) LAYER 5/8" TYPE "X" GYPSUM BOARD2x4 WOOD STUDS SPACED 24" O.C. MAX. OR PER STRUCT. DWGS.3-1/2" FRICTION FIT UNFACED BATT INSULATION IN STUD CAVITY(1) LAYER 5/8" TYPE "X" GYPSUM BOARD NOTES: <ol style="list-style-type: none">ASSEMBLY TO COMPLY WITH UL DESIGN U309 (JAN 30, 2024)REFER TO UL FOR SCREW PATTERN AND OTHER REQUIREMENTS
	P11	WOOD 2X6 STUD - 1HR PARTITION - INTERIOR <ul style="list-style-type: none">(1) LAYER 5/8" TYPE "X" GYPSUM BOARD2x6 WOOD STUDS SPACED 24" O.C. MAX. OR PER STRUCT. DWGS.5-1/2" FRICTION FIT UNFACED BATT INSULATION IN STUD CAVITY(1) LAYER 5/8" TYPE "X" GYPSUM BOARD NOTES: <ol style="list-style-type: none">ASSEMBLY TO COMPLY WITH UL DESIGN U309 (JAN 30, 2024)REFER TO UL FOR SCREW PATTERN AND OTHER REQUIREMENTS
	P12	WOOD 2X4 STUD - 1HR PARTITION - INTERIOR SOUND DAMPENING <ul style="list-style-type: none">(1) LAYER 5/8" TYPE "X" GYPSUM BOARD2x4 WOOD STUDS SPACED 24" O.C. MAX. OR PER STRUCT. DWGS.3-1/2" FRICTION FIT UNFACED BATT INSULATION IN STUD CAVITY25 MSG GALVANIZED STEEL RESILIENT CHANNEL, 24" O.C.(1) LAYER 5/8" TYPE "X" GYPSUM BOARD NOTES: <ol style="list-style-type: none">ASSEMBLY TO COMPLY WITH UL DESIGN U309 (JAN 30, 2024)REFER TO UL FOR SCREW PATTERN AND OTHER REQUIREMENTSSTC SHALL BE 50 OR OVER AT UNIT ASSEMBLIES, MEETING ASTM E90 (STC 51 BASED UPON TESTING NGC 2011071)WHERE PARTITION DIVIDES A CORRIDOR AND UNIT, RESILIENT CHANNEL SHALL BE ON CORRIDOR SIDE OF WALL, GC TO COORDINATEWHERE PARTITION IS USED AS A DEMISING WALL AND/OR FOR STRUCTURAL SHEAR, GC TO COORDINATE ADDITIONAL LAYERS OF STRUCTURAL MATERIAL PER STRUCTURAL DRAWINGS. THESE LAYERS TO BE ADDITIVE TO THE ASSEMBLY LISTED ABOVE AND SHALL BE INCORPORATED PER UL 263. WHERE ONLY ONE LAYER IS ADDED FOR STRUCTURAL SHEAR, THIS SHALL BE PLACED ON SIDE OF WALL WHERE ONLY GYPSUM BOARD RESIDES, NOT ON RESILIENT CHANNEL SIDE.
	P13	WOOD 2X6 STUD - 1HR PARTITION - INTERIOR SOUND DAMPENING <ul style="list-style-type: none">(1) LAYER 5/8" TYPE "X" GYPSUM BOARD2x6 WOOD STUDS SPACED 24" O.C. MAX. OR PER STRUCT. DWGS.5-1/2" FRICTION FIT UNFACED BATT INSULATION IN STUD CAVITY25 MSG GALVANIZED STEEL RESILIENT CHANNEL, 24" O.C.(1) LAYER 5/8" TYPE "X" GYPSUM BOARD NOTES: <ol style="list-style-type: none">ASSEMBLY TO COMPLY WITH UL DESIGN U309 (JAN 30, 2024)REFER TO UL FOR SCREW PATTERN AND OTHER REQUIREMENTSSTC SHALL BE 50 OR OVER AT UNIT ASSEMBLIES, MEETING ASTM E90 (STC 51 BASED UPON TESTING NGC 2011071)WHERE PARTITION DIVIDES A CORRIDOR AND UNIT, RESILIENT CHANNEL SHALL BE ON CORRIDOR SIDE OF WALL, GC TO COORDINATEWHERE PARTITION IS USED AS A DEMISING WALL AND/OR FOR STRUCTURAL SHEAR, GC TO COORDINATE ADDITIONAL LAYERS OF STRUCTURAL MATERIAL PER STRUCTURAL DRAWINGS. THESE LAYERS TO BE ADDITIVE TO THE ASSEMBLY LISTED ABOVE AND SHALL BE INCORPORATED PER UL 263. WHERE ONLY ONE LAYER IS ADDED FOR STRUCTURAL SHEAR, THIS SHALL BE PLACED ON SIDE OF WALL WHERE ONLY GYPSUM BOARD RESIDES, NOT ON RESILIENT CHANNEL SIDE.
	P14	WOOD DOUBLE 2X4 STUD - 1HR PARTITION - INTERIOR <ul style="list-style-type: none">(1) LAYER 5/8" TYPE "X" GYPSUM BOARD2x4 WOOD STUDS SPACED 16" O.C. MAX. OR PER STRUCT. DWGS.3 1/2" FRICTION FIT BATT INSULATION IN STUD CAVITY1" AIR GAP2x4 WOOD STUDS SPACED 16" O.C. MAX. OR PER STRUCT. DWGS.3 1/2" FRICTION FIT BATT INSULATION IN STUD CAVITY(1) LAYER 5/8" TYPE "X" GYPSUM BOARD NOTES: <ol style="list-style-type: none">ASSEMBLY TO COMPLY WITH UL U341 (SEPT 23, 2020)REFER TO UL FOR SCREW PATTERN AND OTHER REQUIREMENTSPROVIDE 1/2" GYP BOARD DRAFT STOP AT MAX 10'-0" O.C.STC SHALL BE 50 OR OVER AT UNIT ASSEMBLIES, MEETING ASTM E90 (STC 61 BASED UPON TESTING TL11-120)

PRINTS ISSUED

10/30/23 PERMIT SUBMITTAL

REVISIONS:

1

12/15/23

Addendum 1 - Response to City Comments

5

10/04/24

ASI 001

rosemann & associates P.C.

ARCHITECTURE

INTERIOR DESIGN

ENGINEERING

PLANNING

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DENVER ▲ KANSAS CITY ▲ ST. LOUIS ▲ ATLANTA

STATE OF MISSOURI
DAVID EUGENE HENDRICKS
NUMBER A-7385
EXPIRATION DATE 12/31/2024
10/09/24

WILSHIRE HILLS III

LEE'S SUMMIT, MISSOURI

MHDC Project No. #22-057 MT

SHEET TITLE
ASSEMBLIES - PARTITION,
CEILING, ROOF

PROJECT NUMBER: 23034

SHEET NUMBER:

G-102

10/30/2024 11:52:05 AM
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UL DESIGN - U309

UL Product iQ®



Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States
BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States

Design Criteria and Allowable Variations

See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

Design Criteria and Allowable Variations

Design No. **U309**

January 30, 2024

Bearing Wall Rating — 1 Hr.

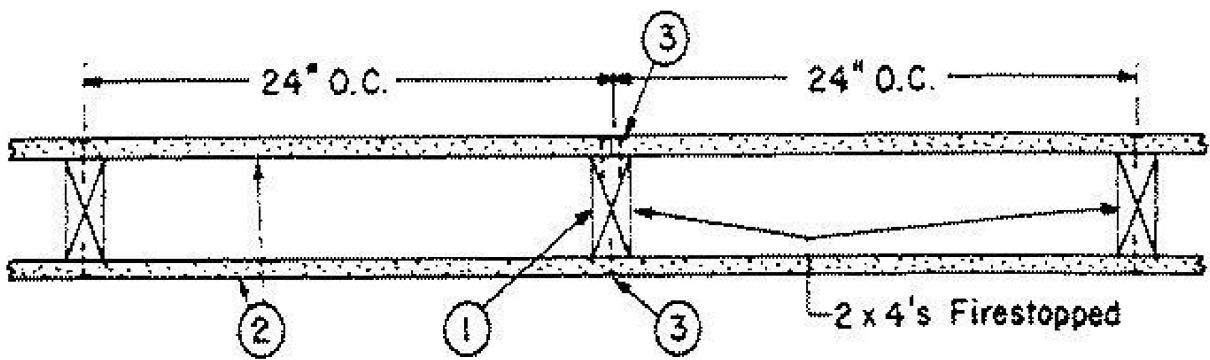
Finish Rating — See Items 2, 2A and 2B

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. **Wood Studs** — Nom 2 by 4 in., spaced 24 in. OC effectively firestopped.

2. **Gypsum Board*** — 5/8 in. thick, 4 ft wide, applied either horizontally or vertically, nailed to studs and bearing plates with 6d cement coated nails min. 1-7/8 in. long, 0.0915 in. shank diam and 1/4 in. diam heads spaced 7 in. OC. Finish Rating 27 Min. When used in widths other than 48 in., gypsum board to be installed horizontally.



When **Steel Framing Members*** (Items 5 or any alternate clips) are used, wallboard attached to furring channels with 1 in. long Type S bugle-head steel screws spaced 12 in. OC.

When Item 6, resilient channels are used, 5/8 in. thick, 4 ft wide applied vertically. Screw attached furring channels with 1 in. long, self-drilling, self-tapping Type 5 or 5-12 steel screws spaced 8 in. OC, vertical joints located midway between studs.

AMERICAN GYPSUM CO — Types AGX-1, M-Glass, AG-C, LightRoc

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

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

CERTAINTED GYPSUM INC — Type X-1, Types EGRG, GlasRoc, GlasRoc-2, Type C, Type LWTX

CERTAINTED GYPSUM INC — Types LGFC6A, LGFC2A, LGFC-C/A, LGCF-WD, LGLLX, CLX

GEORGIA-PACIFIC GYPSUM L L C, DBA PARCO GYPSUM — Types 5, 6, 9, C, DAP, DD, DA, DAPC, DGG, DS, GPF56, LS (finish rating 23 min), Type X, Veneer Plaster Base - Type X, Water Rated - Type X, Sheathing - Type X, Softt - Type X, TG-C, Type LWX, Veneer Plaster Base-Type LWX, Water Rated-Type LWX, Sheathing-Type-LWX, Softt-Type-LWX, Water Rated-Type DGLW, Sheathing-Type- DGLW, Softt-Type DGLW, Type LW2X, Veneer Plaster Base - Type LW2X, Water Rated - Type LW2X, Sheathing - Type LW2X, Softt - Type LW2X, Type DGL2W, Water Rated - Type DGL2W, Sheathing - Type DGL2W

NATIONAL GYPSUM CO — Types eXP-C, FSK, FSK-C, FSW, FSW-3, FSW-5, FSW-C, FSW-G, FSMR-C, FSW-6 (finish rating 20 min), FSL FSW-8, RSX

PABCO BUILDING PRODUCTS L L C, DBA PARCO GYPSUM — Type C, PG-9, PG-11, PG-C, PGS-WGS, PGI

PANEL REV 5 A — Types GREX, GRIX, PRC, PRC2, PRX, RHX, MDX, ETX

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

THAI GYPSUM PRODUCTS PCL — Type X, Type C

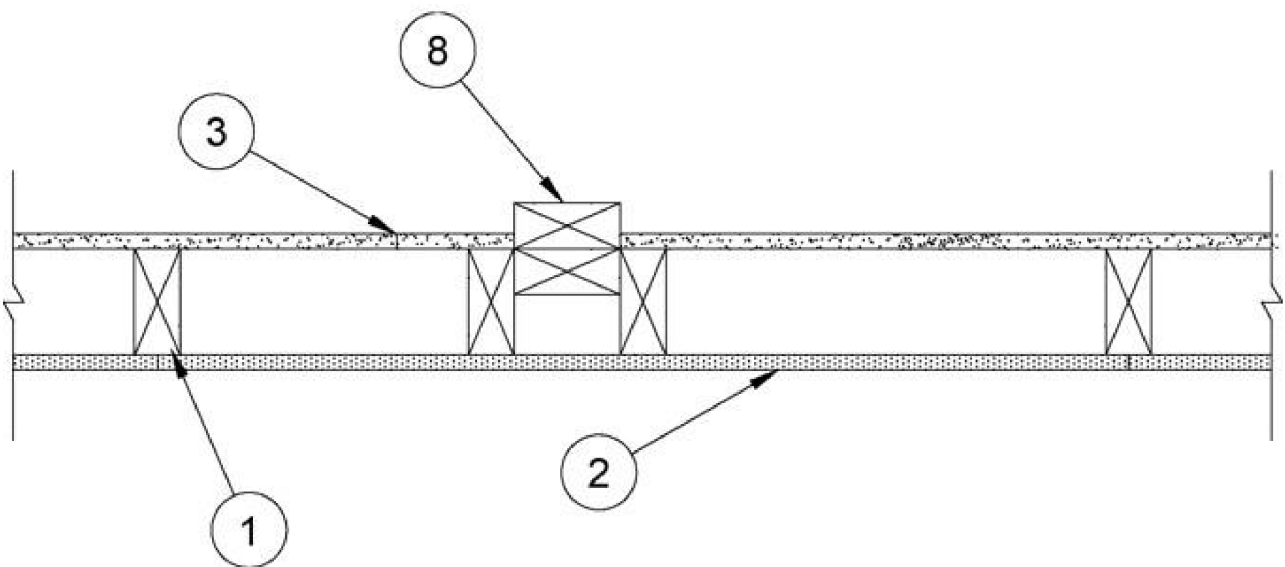
2A. **Gypsum Board*** — (As an alternate to Item 2, Not Shown) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically to studs and bearing plates on one side of the assembly with 1-5/8 in. long Type S screws spaced 12 in. OC at perimeter of panels and 8 in. OC in the field. Horizontal joints of vertically applied panels need not be backed by studs. Panel joints covered with paper tape and two layers of joint compound. Screwheads covered with two layers of joint compound. Batts and Blankets placed in stud cavity as described in Item 4E. Not evaluated for use with Steel Framing Members, Furring Channels or Fiber, Sprayed.
PABCO BUILDING PRODUCTS L L C, DBA PARCO GYPSUM — Type QuietRock 530 (finish rating 23 min)

2B. **Gypsum Board*** — (As an alternate to Item 2) — 5/8 in. thick gypsum panels, with square edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last two screws 1 and 4 in. from edge of board or nailed to studs and bearing plates with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 1/4 in. diam heads spaced 7 in. OC. When used in widths of other than 48 in., gypsum boards are to be installed horizontally.
GEORGIA-PACIFIC GYPSUM L L C — Type DGG, GreenGlass Type X (finish rating 23 min).

2C. **Gypsum Board*** — (As an alternate to Item 2) — 5/8 in. thick, 4 ft. wide, paper surfaced applied vertically only and secured as described in Item 2.

GEORGIA-PACIFIC GYPSUM L L C — Type X ComfortGuard Sound Deadening Gypsum Board (finish rating 27 min)

NATIONAL GYPSUM CO — Type SBW8



2D. **Gypsum Board*** — (As an alternate to Items 2 through 2C) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically and secured as described in Item 2.

PABCO BUILDING PRODUCTS L L C, DBA PARCO GYPSUM — Type QuietRock ES

2E. **Gypsum Board*** — (As an alternate to Item 2) — 5/8 in. thick, 4 ft. wide, paper surfaced applied vertically or horizontally and secured with 1-1/4 in. Type W coarse thread gypsum panel steel screws spaced a maximum of 12 in. OC.
CERTAINTED GYPSUM INC — Type SilentFX

2F. **Gypsum Board*** — (As an alternate to 5/8 in. Type FSW in Item 2) — 2 layers nom. 5/16 in. thick gypsum panels applied vertically or horizontally. Horizontal joints on the same side need not be staggered. Inner layer attached with fasteners, as described in Item 2, spaced 24 in. OC. Outer layer attached per Item 2.
NATIONAL GYPSUM CO — Type FSW

2G. **Gypsum Board*** — (As an alternate to Item 2) — 5/8 in. thick, 4 ft. wide, applied vertically or horizontally with vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Secured as described in Item 2 or 2K.
CERTAINTED GYPSUM INC — 5/8" Easi-Lite Type X

THAI GYPSUM PRODUCTS PCL — 5/8" Easi-Lite Type X

2H. **Wall and Partition Facings and Accessories*** — (As an alternate to Item 2) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically and secured as described in Item 2.

PABCO BUILDING PRODUCTS L L C, DBA PARCO GYPSUM — Type QuietRock 527.

2I. **Gypsum Board*** — (As an alternate to Item 2) — 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a maximum 10 in. OC, with the last two screws 4 and 1 in. from the edges of the board. When used in widths other than 48 in., gypsum panels are to be installed horizontally.
CERTAINTED GYPSUM INC — Type LGFC6A (finish rating 21 min), Type LGFC2A, Type LGFC-C/A, Type LGFC-WD, Type LGLLX

2J. **Gypsum Board*** — (As an alternate to Item 2) — 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels fastened to framing as described in Item 2 or with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board. When used in widths of other than 48 in., gypsum boards are to be installed horizontally. When square edge boards are used joint treatment, Item 3, may be omitted.
AMERICAN GYPSUM CO — Types AGX-1, M-Glass, AG-C

NATIONAL GYPSUM CO — Type FSK, Type FSK-G, Type FSW, Type FSW-3, Type FSW-5, Type FSW-G, Type FSK-C, Type FSW-C, Type FSMR-C, Type FSW-6, Type FSL

2K. **Gypsum Board*** — (As an alternate to Item 2) — 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last screw 1/2 in. from edge of board. When used in widths of other than 48 in., gypsum boards are to be installed horizontally.
CERTAINTED GYPSUM INC — Type X-1, Types EGRG, GlasRoc, GlasRoc-2, Type C

3. **Joints and Fastener Heads** — Wallboard joints covered with paper tape and joint compound. Fastener heads covered with joint compound. Gypsum plaster not more than 1/8 in. thick may be applied over the wallboard in addition to the specified joint treatment.

4. **Batts and Blankets*** — (Not Shown) — Optional glass fiber insulation.

CERTAINTED CORP

JOHNS MANVILLE

OWENS CORNING

4A. **Fiber, Sprayed*** — As an alternate to Batts and Blankets (Item 4) — Spray applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product with a nominal

dry density of 2.7 lb/ft³. Alternate Application Method: The fiber is applied without water or adhesive at a nominal dry density of 3.5 lb/ft³, in accordance with the application instructions supplied with the product. When Item 5 is used, Fiber, Sprayed shall be SANCTUARY.

Applegate Greenfiber Acquisition LLC — SANCTUARY for use with wet or dry application. Insulmax is to be used for dry application only

4B. **Fiber, Sprayed*** — As an alternate to Batts and Blankets (Item 4) — Spray applied cellulose insulation material. The fiber is applied with water to interior surfaces in accordance with the application instructions supplied with the product. Applied to completely fill the enclosed cavity. Minimum dry density of 4.3 pounds per cubic ft.
NU-WOOL CO INC — Cellulose Insulation

4C. **Batts and Blankets*** — Required for use with resilient channels, Item 6, 3 in. thick mineral wool batts, placed to fill interior of wall, attached to the 4 in. face of the studs with staples placed 24 in. OC.
ROCKWOOL — Type SAFerSOUND, min. 1.69 pcf.

THERMAFIBER/OWENS CORNING — Type SAFB, SAFB FF

4D. **Glass Fiber Insulation** — (As an alternate to Item 4C) — 3 in. thick glass fiber batts bearing the UL Classification Marking as to Surface Burning and/or Fire Resistance, placed to fill the interior of the wall, attached to the 4 in. face of the studs with staples placed 24 in. OC. See **Batts and Blankets** (BKNV or BZJZ) Categories for names of Classified companies.

4E. **Batts and Blankets*** — (Required for use with Wall and Partition Facings and Accessories, Item 2A) — Glass fiber insulation, nom 3-1/2 in. thick, min. density of 0.80 pcf, with a flame spread of 25 or less and a smoke developed of 50 or less, friction-fitted to completely fill the stud cavities. See Batts and Blankets Category (BKNV) for names of manufacturers.

4F. **Fiber, Sprayed*** — As an alternate to Batts and Blankets (Item 4) — Spray applied cellulose fiber. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. The minimum dry density shall be 4.30 lbs/ft³.
INTERNATIONAL CELLULOSE CORP — Celbar-RL

4G. **Fiber, Sprayed*** — As an alternate to Batts and Blankets (Item 4) — Spray-applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. To facilitate the installation of the material, any thin, woven or non-woven netting may be attached by any means possible to the outer face the studs. The material shall reach equilibrium moisture content before the installation of materials on either face of the studs. The minimum dry density shall be 5.79 lbs/ft³.

Applegate Greenfiber Acquisition LLC— Applegate Advanced Stabilized Cellulose Insulation

5. **Steel Framing Members*** — (Optional, Not Shown) — Furring channels and Steel Framing Members as described below:
a. Furring Channels — Formed of No. 25 MSG galv steel, 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Wallboard attached to furring channels as described in Item 2.

b. Steel Framing Members* — Used to attach furring channels (Item a) to studs (Item 1). Clips spaced 48 in. OC, and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. Furring channels are friction fitted into clips. RSIC-1 clip for use with 3-9/16 in. wide furring channels, RSIC-1 (2.75) clip for use with 2-23/32 in. wide furring channels.
PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-1 (2.75)

5A. **Steel Framing Members*** — (Optional, Not Shown, As an alternate to Item 5) — 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 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in.

and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Gypsum board attached to furring channels as described in Item 2.

b. Steel Framing Members* — Used to attach furring channels (Item a) to studs. Clips spaced 48 in. OC. Genie clips secured to studs with No. 8 x 1-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips.
PLITEQ INC — Type Genie Clip

5B. **Steel Framing Members*** — (Optional, Not Shown, As an alternate to Item 5) — Furring channels and Steel Framing Members as described below:
a. Furring Channels — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in Item 2.

b. Steel Framing Members* — Used to attach furring channels (Item 5Ba) to studs. Clips spaced 48 in. OC, and secured to studs with 2 in. coarse drywall screw with 1 in. diam washer through the center hole. Furring channels are friction fitted into clips.
STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237R

5C. **Steel Framing Members*** — (Optional, Not Shown, As an alternate to Item 5) — Furring channels and Steel Framing Members as described below:

a. Furring Channels — Formed of No. 25 MSG galv steel, Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 5Cb. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in Item 3.

b. Steel Framing Members* — Used to attach furring channels (Item 5Ca) to studs. Clips spaced 48 in. OC, and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips.
REGUPOL AMERICA — Type SonusClip

5D. **Steel Framing Members*** — (Optional, Not Shown, As an alternate to Item 5) — Resilient channels and Steel Framing Members as described below:

a. Resilient Channels — Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and secured in place with two No. 8 15 x 1/2 in. Philips Modified Truss screws spaced 2-1/2 in. from the center of the overlap. Gypsum board attached to resilient channels as described in Item 3.

b. Steel Framing Members* — Used to attach resilient channels (Item 5Da) to studs. Clips spaced 48 in. OC, and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Resilient channels are secured to clips with one No. 10 x 1/2 in. pan-head self-drilling screw.
KEENE BUILDING PRODUCTS CO INC — Type RC+ Assurance Clip

5E. **Steel Framing Members*** — (Optional, Not Shown, As an alternate to Item 5) — Used as an alternate method to attach resilient channels to wall studs. A resilient sound isolation accessory shall be used at each attachment point of the resilient channels and spaced max 24 in. O.C. Channel ends butted and centered under the structural members and attached with one accessory at each end. Additional accessories used to hold resilient channels that support the gypsum board end joints. The accessory envelops the mounting edge of the resilient channel. The accessory and resilient channel are fastened to the structural members with the screws supplied with the accessory and per the accessory manufacturer's installation instructions.
PAC INTERNATIONAL L L C — Type RC-1 Boost

5F. **Steel Framing Members*** — (Optional, Not Shown, As an alternate to Item 5) — Furring channels and Steel Framing Members as described below:

a. Furring Channels — Formed of No. 25 MSG galv steel, 2-23/32 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Gypsum board attached to furring channels as described in Item 3.

b. Steel Framing Members* — Used to attach furring channels (Item 5Fa) to studs. Clips spaced maximum 48 in. OC. Clips secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. Furring channels are friction fitted into clips.

CLARKDIETRICH BUILDING SYSTEMS — Type ClarkDietrich Sound Clip

6. **Furring Channel** — Optional — Not Shown — For use on one side of the wall - Resilient channels, 25 MSG galv steel, spaced vertically 24 in. OC, flange portion screw attached to one side of studs with 1-1/4 in. long diamond shaped point, double lead Phillips head steel screws. When resilient channels are used, insulation, Items 4C or 4D is required.

7. **Wall and Partition Facings and Accessories*** — (Optional, Not Shown) — Nominal 1/2 in. thick, 4 ft wide panels, for optional use as an additional layer on one or both sides of the assembly. Panels attached in accordance with manufacturer's recommendations. When the QR-500 or QR-510 panel is installed between the wood framing and the UL Classified gypsum board, the required UL Classified gypsum board layer(s) is/are to be installed as indicated as to fastener type and spacing, except that the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.
PABCO BUILDING PRODUCTS L L C, DBA PARCO GYPSUM — Type QuietRock QR-500 and QR-510

8. **Non-Bearing Wall Partition Intersection** — (Optional) — Two nominal 2 by 4 in. stud or nominal 2 by 6 in. stud nailed together with 2 in. long 10d nails spaced a max. 16 in. OC, vertically and fastened to one side of the minimum 2 by 4 in. stud with 3 in. long 10d nails spaced a max 16 in. OC, vertically. Intersection between partition wood studs to be flush with the 2 by 4 in. studs. The wall partition wood studs are to be framed by a second 2 by 4 in. wood stud fastened with 3 in. long 10d nails spaced a max. 16 in. OC, vertically. Maximum one non-bearing wall partition intersection per stud cavity. Non-bearing wall partition stud depth shall be at a minimum equal to the depth of the bearing wall.

9. **Mineral and Fiber Board*** — (Optional, Not Shown) — For optional use as an additional layer on one side of wall. Nom 1/2 in. thick, 4 ft wide with long dimension parallel and centered over studs. Attached to framing with 2 in. long Type W steel screws, spaced 12 in. OC. The required UL Classified gypsum board layer(s) is/are to be installed as indicated as to fastener type and spacing, except that the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.
HOMASOTE CO — Homasote Type 440-32

9A. **Mineral and Fiber Board*** — (Optional, Not Shown) — For use with Items 9B-9E) — For optional use as an additional layer on one side of wall. Nom 1/2 in. thick, 4 ft wide with long dimension parallel and centered over studs. Attached to framing with minimum 1-3/8 in. long ring shanked nails or 1-1/4 in. long Type W steel screws, spaced 12 in. OC along board edges and 24 in. OC in field of board along intermediate framing. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.
HOMASOTE CO — Homasote Type 440-32

9B. **Glass Fiber Insulation** — (For use with Item 9A) — 3-1/2 in. thick glass fiber batts bearing the UL Classification Marking as to Surface Burning and/or Fire Resistance, placed to fill the interior of the wall. See Batts and Blankets (BKNV or BZJZ) categories for names of Classified companies.

9C. **Batts and Blankets*** — (As an alternate to Item 9B, For use with Item 9A), 3 in. thick mineral wool batts, placed to fill interior of wall, attached to the 3-1/2 in. face of the studs with staples placed 24 in. OC.
ROCKWOOL — Type SAFerSOUND, min. 1.69 pcf.

THERMAFIBER/OWENS CORNING — Type SAFB, SAFB FF

9D. **Adhesive** — (For use with Item 9A) — Construction grade adhesive applied in vertical, serpentine, nominal 3/8 in. wide beads down the length of both vertical edges of Mineral and Fiber Board (Item 9A).

9E. **Gypsum Board*** — (For use with Item 9A) — 5/8 in. thick, 4 ft wide, applied vertically over Mineral and Fiber Board (Item 9A) with vertical joints located anywhere over stud cavities. Secured to mineral and fiber boards with 1-1/2 in. Type G Screws spaced 8 in. OC along edges of each vertical joint and 12 in. OC in intermediate field of the Mineral and Fiber Board (Item 9A). Secured to outermost studs and bearing plates with 2 in. long Type S screws spaced 8 in. OC. Gypsum Board joints covered with paper tape and joint compound. Screw heads covered with joint compound. Finish Rating 30 Min.

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10/09/24

WILSHIRE HILLS III

LEE'S SUMMIT, MISSOURI

MHDC Project No. #22-057 MT

SHEET TITLE
UL ASSEMBLIES

PROJECT NUMBER: 23034

SHEET NUMBER:

G-200

10/30/2024 11:52:08 AM
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UL DESIGN - U309 - CONT.

- AMERICAN GYPSUM CO — Type AG-C
- CERTAINTEED GYPSUM INC — Type FRPC, Type C
- CGC INC — Types C, IP-X2, IPC-AR
- CERTAINTEED GYPSUM INC — Type LGFC-C/A
- GEORGIA-PACIFIC GYPSUM L L C — Types 5, DAPC, TG-C
- NATIONAL GYPSUM CO — Types FSK-C, FSW-C
- PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type PG-C
- PANEL REY S A — Types PRC, PRC2
- THAI GYPSUM PRODUCTS PCL — Type C
- UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR
- USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR

9F. **Mineral and Fiber Board** — (Optional, Not Shown) — For optional use as an additional layer on one side of wall - Nom 1/2 in. thick, 4 ft wide, square edge fiber boards applied vertically to studs on one side of the wall in between the wood studs and the UL Classified Gypsum Board (Item 2). Fiber boards installed with 1-1/4 in. long, Type W, bugle head, coarse thread gypsum board screws spaced 12 in. OC max, with the last screws spaced 2 in. and 6 in. from edge of board. Gypsum board (Item 2) installed as indicated as to fastener type and spacing, except that the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.

BLUE RIDGE FIBERBOARD INC — SoundStop

10. **Wall and Partition Facings and Accessories*** — (CLBV) (Optional, Not Shown) — For use with Item 1, Item 2, Item 3, Items 4, and Item 6. For maximum fire rating of 1 hour. On one side of the wall, over the first layer of Gypsum Board (Item 2), install Reflexor membrane with the gold side facing outwards. Membrane installed with T50 staples spaced 12 inches on center in both directions as per manufacturer's instructions, seams in membrane to be overlapped by 2 inches. When Reflexor membrane is used an additional layer of Gypsum Board that is identical to the first layer and as specified in Item 2 shall be installed over the membrane. Additional layer of Gypsum Board to be installed through the membrane to the stud as specified in Item 2 except the fastener length shall be increased by a minimum of 5/8 inch. Install Batts and Blankets in the stud cavity as per Item 4.

On the other side of the wall prior to the installation of the Gypsum Board install Resilient Channels as per Item 6. Over the Resilient Channel install 3/4 inch thick SONOpn panel secured to the Resilient Channel with min. 1-1/4 in. long drywall screws and washers spaced at 16 in. OC on the perimeter of the panel and 8 in. OC in the field of the panel. Over the SONOpn panel install the same Gypsum Board as specified in Item 2 with the fastener length increased by minimum 3/4 inch. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.

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

MSL — Reflexor membrane, SONOpn panel

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

Last Updated on 2024-01-30

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2024 IBC, CHAPTER 7, SECTION 721, TABLE 721.1(2), MATERIAL #16, ITEM NUMBER 16-1.4

16-1.4⁹

2" x 6" wood studs at 24" centers with double top plates, single bottom plates; interior side covered with 5/8" Type X gypsum wallboard, 4' wide, applied vertically with all joints over framing or blocking and fastened with 2 1/4" Type S drywall screws spaced 7" on center. Joints covered with tape and joint compound. Exterior covered with 15/32" wood structural panels, applied vertically with edges over framing or blocking and fastened with 6d common nails (bright) at 12" on center in the field and 6" on center on panel edges. R-19 fiberglass insulation installed in stud cavity. Rating established from the gypsum-covered side only.

UL DESIGN - U341

UL Product iQ®



Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States
BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

[See General Information for Fire Resistance Ratings - ANSI/UL 263 Certified for United States](#)

[Design Criteria and Allowable Variances](#)

[See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada](#)

[Design Criteria and Allowable Variances](#)

Design No. U341

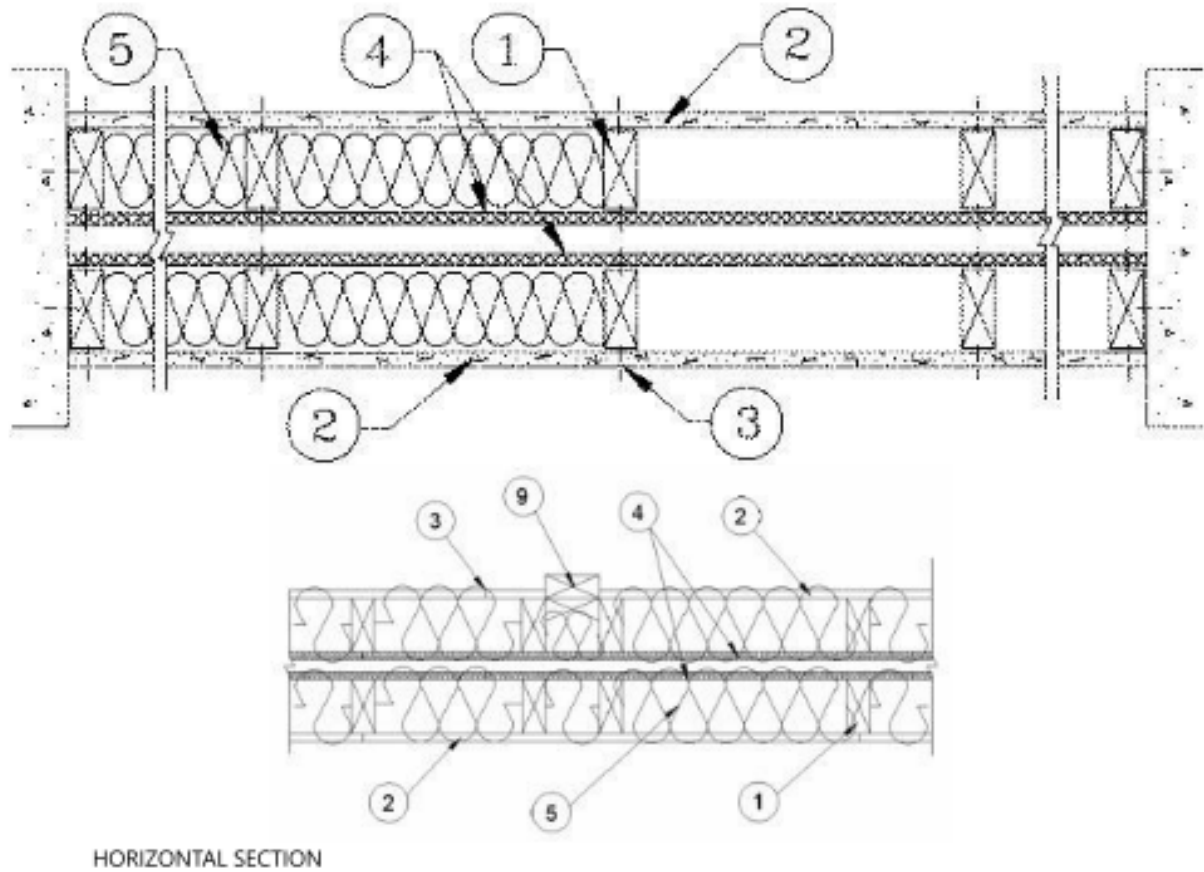
August 4, 2023

Bearing Wall Rating — 1 Hr.

Finish Rating — Min 20 min.

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.



HORIZONTAL SECTION

1. **Wood Studs** — Nom 2 by 4 in., spaced 24 in. OC max. Cross braced at mid-height and effectively firestopped at top and bottom of wall. No min. air space between stud rows except to accommodate attachment of sheathing, where required. See Items 4 and 5.

2. **Gypsum Board*** — Any 5/8 in. thick UL Classified Gypsum Board that is eligible for use in Design Nos. L501, G512 or U305. Nom 5/8 in. thick 4 ft wide. Gypsum board applied horizontally or vertically, unless specified below, and nailed to studs and bearing plates 7 in. OC with 6d cement coated nails, 1-7/8 in. long, 0.0915 in. shank diam and 1/4 in. diam head. As an alternate, No. 6 bugle head drywall screws, 1-7/8 in. long, may be substituted for the 6d cement coated nails.

When **Steel Framing Members*** (Item 6 or any alternate clips) are used, wallboard attached to furring channels with 1 in. long Type S bugle-head steel screws spaced 12 in. OC.

When used in widths other than 48 in., gypsum board to be installed horizontally.

AMERICAN GYPSUM CO [\(View Classification\)](#) — CNX.R14196

BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO [\(View Classification\)](#) — CNX.R19374

CABOT MANUFACTURING ULC [\(View Classification\)](#) — CNX.R25370

CERTAINTEED GYPSUM INC [\(View Classification\)](#) — CNX.R3660

CGC INC [\(View Classification\)](#) — CNX.R19751

CERTAINTEED GYPSUM INC [\(View Classification\)](#) — CNX.R18482

GEORGIA-PACIFIC GYPSUM L L C [\(View Classification\)](#) — CNX.R2717

NATIONAL GYPSUM CO [\(View Classification\)](#) — CNX.R3501

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM [\(View Classification\)](#) — CNX.R7094

PANEL REY S A [\(View Classification\)](#) — CNX.R21796

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD [\(View Classification\)](#) — CNX.R19262

THAI GYPSUM PRODUCTS PCL [\(View Classification\)](#) — CNX.R27517

UNITED STATES GYPSUM CO [\(View Classification\)](#) — CNX.R1319

USG BORAL DRYWALL SFZ LLC [\(View Classification\)](#) — CNX.R38438

USG BORAL DRYWALL SFZ LLC [\(View Classification\)](#) — CNX.R38438

USG MEXICO S A DE C V [\(View Classification\)](#) — CNX.R16089

2A. **Gypsum Board*** — (As an alternate to Item 2, not shown) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically to studs and bearing plates on one side of the assembly with 1-5/8 in. long Type S screws spaced 12 in. OC at perimeter of panels and 8 in. OC in the field. Horizontal joints of vertically applied panels need not be backed by studs. Panel joints covered with paper tape and two layers of joint compound. Screwheads covered with two layers of joint compound. Batts and Blankets placed in stud cavity as described in Item 5C. Not evaluated for use with Steel Framing Members, Furring Channels or Fiber, Sprayed.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock QR-530 (finish rating 23 min).

2B. **Gypsum Board*** — (As an alternate to Item 2, not shown) — Any 5/8 in. thick gypsum panels that are eligible for use in Design Nos. L501, G512 or U305, supplied by the Classified companies listed below shown in the **Gypsum Board*** (CNX) category. Applied horizontally or vertically and attached to studs and bearing plates with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board. When used in widths other than 48 in., gypsum board to be installed horizontally.

UNITED STATES GYPSUM CO

USG BORAL DRYWALL SFZ LLC

USG MEXICO S A DE C V

2C. **Gypsum Board*** — (As an alternate to Item 2, Not Shown) — 5/8 in. thick gypsum panels applied horizontally or vertically and attached to studs and bearing plates with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board. When used in widths other than 48 in., gypsum board to be installed horizontally.

AMERICAN GYPSUM CO — Types AGX-1, M-Glass, AG-C, LightRock

CERTAINTEED GYPSUM INC — Type C or Type X-1

NATIONAL GYPSUM CO — Type FSK, Type FSK-G, Type FSW, Type FSW-3, Type FSW-5, Type FSW-G, Type FSK-C, Type FSW-C, Type FSMR-C, Type FSW-6, Type FSL

THAI GYPSUM PRODUCTS PCL — Type C or Type X

2D. **Gypsum Board*** — (As an alternate to Items 2, 2A, 2B and 2C) — 5/8 in. thick gypsum panels, with square edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last 2 screws 1 and 4 in. from edge of board or nailed as described in Item 2. When used in widths of other than 48 in., gypsum boards are to be installed horizontally.

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

2E. **Gypsum Board*** — (As an alternate to Items 2 through 2D) — 5/8 in. thick, 4 ft. wide, paper surfaced applied vertically only and secured as described in Item 2.

GEORGIA-PACIFIC GYPSUM L L C — Type X ComfortGuard Sound Deadening Gypsum Board.

2F. **Gypsum Board*** — (As an alternate to Items 2 through 2E) - Installed as described in Item 2. 5/8 in. thick, 4 ft. wide, paper surfaced, applied vertically only and fastened to the studs and plates with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 1/4 in. diam heads, 7 in. OC. Not for use with Item #6.

NATIONAL GYPSUM CO — Type S8W8

2G. **Gypsum Board*** — (As an alternate to Items 2 through 2F) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically and secured as described in Item 2.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Types QuietRock ES.

2H. **Gypsum Board*** — (As an alternate to Items 2 through 2G) — Installed as described in Item 2. 5/8 in. thick, 4 ft. wide, paper surfaced, applied vertically or horizontally fastened to the studs and plates with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 12 in. OC.

CERTAINTEED GYPSUM INC — Type SilentX

2I. **Wall and Partition Facings and Accessories*** — (As an alternate to Items 2 through 2H) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically and secured as described in Item 2.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock S27.

2J. **Gypsum Board*** — (As an alternate to 5/8 in. Type FSW in Item 2) — 2 layers nom. 5/16 in. thick gypsum panels applied vertically or horizontally. Horizontal joints on the same side need not be staggered. Inner layer attached with fasteners, as described in Item 2, spaced 24 in. OC. Outer layer attached per Item 2.

NATIONAL GYPSUM CO — Type FSW.

2K. **Gypsum Board*** — (As an alternate to Item 2) — 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a maximum 10 in. OC with the last two screws 4 and 1 in. from the edges of the board. When used in widths other than 48 in., gypsum panels are to be installed horizontally.

CERTAINTEED GYPSUM INC — Type LGFC6A (finish rating 21 min), Type LGFC2A, Type LGFC-C/A, Type LGFC-WD, Type LGLX

3. **Joints and Nailheads** — Gypsum board joints of outer layer covered with tape and joint compound. Nail heads of outer layer covered with joint compound. As an alternate, nom 3/32 in. thick gypsum veneer plaster may be applied to the nominal dry density of 3.5 lb/ft³, in accordance with the application instructions supplied with the product.

4. **Sheathing** — (Optional) — Septum may be sheathed with min 7/16 in. thick wood structural panels min grade "C-D" or "Sheathing" or min 1/2 in. thick **Mineral and Fiber Boards***.

See **Mineral and Fiber Boards** (CER2) category for names of Classified companies.

5. **Batts and Blankets*** — 3-1/2 in. max thickness glass or mineral fiber batt insulation. **Optional** when sheathing (Item 4) is used on both halves of wall.

See **Batts and Blankets** (BZJ2) category for list of Classified companies.

5A. **Fiber, Sprayed*** — As an alternate to Batts and Blankets (Item 5) — Spray applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product with a nominal dry density of 2.7 lb/ft³. Alternate Application Method: The fiber is applied without water or adhesive at a nominal dry density of 3.5 lb/ft³, in accordance with the application instructions supplied with the product.

Applegate Greenfiber Acquisition LLC — Insulmax and SANCTUARY for use with wet or dry application. INS515LD and INS541LD are to be used for dry application only.

5B. **Fiber, Sprayed*** — As an alternate to Batts and Blankets (Item 5) when Sheathing (Item 4) is used on both halves of wall - Spray applied cellulose insulation material. The fiber is applied with water to interior surfaces in accordance with the application instructions

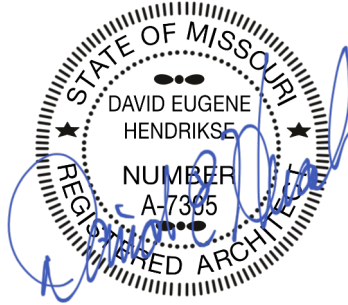
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10/09/24

WILSHIRE HILLS III
LEE'S SUMMIT, MISSOURI
MHDC Project No. #22-057 MT

SHEET TITLE
UL ASSEMBLIES

PROJECT NUMBER: 23034

SHEET NUMBER:

G-201

UL DESIGN - L528 - CONT.

UL DESIGN - L528 - CONT.

are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long No. 6 Type S bugle-head steel screws spaced 12 in. OC in the field of the board. Gypsum board buttend end joints shall be staggered minimum 16 in. within the assembly. At the gypsum board butt joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 6 in. on each end. These additional furring channels shall be attached to underside of the truss with Genie clips as described in Item 3D. Screw spacing along the gypsum board butt joint shall be 6 in. OC. When **Steel Framing Members** (Item 3E) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board. Gypsum board buttend end joints shall be staggered minimum 48 in. and centered over main furring channels. At the gypsum board butt joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 3 in. on each end. The two support furring channels shall be spaced approximately 3 in. in from joint. Screw spacing along the gypsum board butt joint and along both additional channels shall be 8 in. OC. Additional screws shall be placed in the adjacent section of gypsum board into the aforementioned 3 in. extension of the extra butt joint channels as well as into the main channel that runs between. Butt joint furring channels shall be attached with one RESILMOUNT Sound Isolation Clip at each end of the channel. When **Fiber, Sprayed** (Items 6 or 6A) is used, two layers of nom 5/8 in. thick, 4 ft wide gypsum board are installed with long dimensions perpendicular to furring channels. Base layer gypsum board secured with 1 in. long No. 6 Type S bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. End joints secured to both resilient channels as shown in the end joint detail. Outer layer gypsum board secured with 1-5/8 in. long No. 6 Type S bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. Outer layer shall be finished as described in Item 5. When **Foamed Plastic** insulation (Item 7G) is applied to the underside of the subflooring, screw spacing shall be reduced to 8 in. OC with minimum 1-1/4 in. long Type S screws to install gypsum to the resilient channels (Item 3A). Resilient channels (Item 3A) to be spaced maximum 12 in. OC. Buttend end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. End joints secured to both resilient channels as shown in end joint detail.

When **Steel Framing Members** (Item 3E) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC and located a min of 1-1/2 in. from side and end joints. End joints secured to both resilient channels as shown in the end joint detail. Outer layer gypsum board secured with 1-5/8 in. long No. 6 Type S bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. Outer layer shall be finished as described in Item 5. When **Foamed Plastic** insulation (Item 7G) is applied to the underside of the subflooring, screw spacing shall be reduced to 8 in. OC with minimum 1-1/4 in. long Type S screws to install gypsum to the resilient channels (Item 3A). Resilient channels (Item 3A) to be spaced maximum 12 in. OC. Buttend end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. End joints secured to both resilient channels as shown in end joint detail.

When **Steel Framing Members** (Item 3E) are used, one layer of 5/8 in. thick, 48 in. wide gypsum board, installed with long dimension perpendicular to cross channels with side joints centered along main runners. Gypsum board fastened to cross channels with 1 in. long No. 8 Type S bugle head steel screws located 1/2 in. from end joints and 1-3/4 in. from side joints and spaced 8 in. OC along the end points and in the field. Panels fastened to cross tees with 1 in. long Type S bugle-head screws spaced in the field and 8 in. OC along end joints. Panels fastened to main runners with 1 in. long Type S bugle-head screws spaced midway between cross tees. Screws along sides and ends of panels spaced 3/8 to 1/2 in. from panel edge. Gypsum board sheets screw attached to leg of wall angle with 1 in. long No. 8 Type S bugle head steel screws spaced 12 in. OC. End joints of panels shall be staggered with spacing between joints on adjacent panels not less than 4 ft OC.

When **Steel Framing Members** (Item 3E) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to resilient channels. Gypsum board secured to resilient channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board and located 3/4 in. from side joints and 1-1/2 in. from end joints. Gypsum board joints are to be staggered by a minimum of 24 in.

When **Steel Framing Members** (Item 3M) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 4. Adjacent butt joints staggered minimum 48 in. OC.

When **Steel Framing Members** (Item 3N) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 4. Butt joints staggered minimum 24 in. OC.

When **Steel Framing Members** (Item 3U) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 4. Butt joints staggered minimum 48 in. OC.

AMERICAN GYPSUM CO — Type AG-C

CERTAINTED GYPSUM INC — Type C

CGC INC — Types C, IP-X2, IPC-AR

CERTAINTED GYPSUM INC — Type LGFC-C/A

GEORGIA-PACIFIC GYPSUM L L C — Types S, DAPC, TG-C

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

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

THAI GYPSUM PRODUCTS PCL — Type C

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

USG BORAL DRYWALL SFZ LLC — Type C

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

4A. **Gypsum Board** — For use when Item 3C is used and **Batts and Blankets*** are secured to the plywood subfloor, to the trusses or draped over the furring channel/gypsum panel ceiling membrane as described in Item 3C. For method of gypsum board installation, see Item 4.

CGC INC — Types C, IP-X2, IPC-AR

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

USG BORAL DRYWALL SFZ LLC — Type C

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

4B. **Gypsum Board*** — For use when **Batts and Blankets*** (Item 7A) and Resilient Channels (Item 3F) are used. Nom 5/8 in. thick, 4 ft wide gypsum board installed with long dimension perpendicular to resilient channels. Nom 1 in. long No. Type S bugle head screws are driven through channel spaced 8 in. OC. End joints of gypsum board similarly fastened to additional resilient channels positioned at end joint locations.

AMERICAN GYPSUM CO — Type AG-C

CERTAINTED GYPSUM INC — Type LGFC-C/A

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

4C. **Gypsum Board*** — For use with Items 3G and 7C or 31 and 7F, or 31 and 7C. Nom 5/8 in. thick, 48 in. wide gypsum panels installed with long dimension perpendicular to resilient channels. Gypsum panels secured with 1 in. long Type S bugle head steel screws spaced 8 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. Finish Rating with this ceiling system is 20 min.

CGC INC — Type ULUX

UNITED STATES GYPSUM CO — Type ULUX

4D. **Gypsum Board*** — For use when Flooring System (Item 1) consists of both System No. 1 and min 15/32 in. plywood, min grade "Underlayment" or "Surd-1-Floor" with T & G edges and conforming with PS1-83 specifications, or min 3/4 in. thickness of any Floor Topping Mixture (CCOV) bearing the UL Classification Marking as to Fire Resistance, min Truss depth (Item 2) is 18 in. and Batts and Blankets (Item 7D) and Resilient Channels (Item 3A) are used. One layer of nom 5/8 in. thick, 48 in. wide gypsum board installed with

long dimension perpendicular to resilient channels. Gypsum board secured with 1 in. long Type S bugle head steel screws. Screws spaced 1 in. from side joints, and 12 in. OC in the rest of the field. Screws spaced 1-1/2 in. from the end joints. End joints secured to both resilient channels as shown in end joint detail. When batt insulation (Item 7D) is draped over the resilient channel/gypsum board ceiling membrane, the resilient channel (Item 3A) spacing shall be reduced to 12 in. OC, and gypsum board screws spaced 1 in. from side joints, and 8 in. OC in the rest of the field. For use only with Ceiling Duct Assembly described in Item 9R.

PANEL REY SA — Type PR2

4F. **Gypsum Board*** — For use with Items 3K, 3L, and 7G— One layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to resilient channels. Gypsum board secured to resilient channels with min nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board and located 3/4 in. from side joints and 1-1/2 in. from end joints. Gypsum board butt joints are to be staggered by a minimum of 24 in.

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

4G. **Gypsum Board*** — For use with Items 3G and 7C. Nom 5/8 in. thick, 48 in. wide gypsum panels installed with long dimension perpendicular to resilient channels. Gypsum panels secured with 1 in. long Type S bugle head steel screws spaced 8 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints.

AMERICAN GYPSUM CO — Type AG-C

5. **Finishing System** — (Not Shown) — Vinyl, dry or premixed joint compound, applied in two coats to joints and screw-heads. Nom 2 in. wide paper tape embedded in first layer of compound over all joints. As an alternate, nom 3/32 in. thick veneer plaster may be applied to the entire surface of gypsum board.

6. **Fiber, Sprayed*** — (Dry Dense Packed 100% Borate Formulation) — (Not Shown, Optional) — The fiber is applied without water or adhesive at a nominal dry density of 3.5 lb/ft³ in accordance with the application instructions supplied with the product. When Item 6 (Fiber, Sprayed, Dry Dense Packed) is used, Furring Channels (Item 3F) or Resilient Channels (Item 3A) spacing shall be reduced to 12 in. OC. When Item 6 (Fiber, Sprayed, Dry Dense Packed) is used, two layers of gypsum board required as described in Item 4. Not evaluated for use with Item 3C.

APPLGATE GREENFIBER ACQUISITION LLC — Insulmax and SANCTUARY to be used with dry application only.

6A. **Fiber, Sprayed*** — (Loose Fill 100% Borate Formulation) — (Not Shown, Optional) — The finished rating when Fiber, Sprayed is used has not been determined. The fiber is applied without water or adhesive at a minimum dry density of 0.5 lb/ft³ and at a max thickness of 3-1/2 in., in accordance with the application instructions supplied with the product. When Item 6A (Fiber, Sprayed, Loose Fill) is used, Furring Channels (Item 3F) or Resilient Channels (Item 3A) spacing shall be reduced to 12 in. OC. When Item 6A (Fiber Sprayed, Loose Fill) is used, two layers of gypsum board required as described in Item 4. Not evaluated for use with Item 3C.

APPLGATE GREENFIBER ACQUISITION LLC — Insulmax & SANCTUARY to be used with dry application only.

7. **Batts and Blankets*** — (Not Shown) — For use with Item 3D — Nom 3 in. thick mineral wool insulation held suspended in the concealed space with 0.090 in. diam galv steel wires attached to the wood trusses at 18 in. OC.

7A. **Batts and Blankets*** — For Use With Items 3F and 4B — Glass fiber insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance having a min. density of 0.5 pcf, draped over the resilient channel/gypsum panel ceiling membrane. No limit on overall thickness.

7B. **Batts and Blankets*** — (Not Shown) — For use with Item 3E — Nom 3-1/2 in. thick, min. 2 pcf fiber glass insulation held suspended in the concealed space with nominal 0.090 in. diam galv steel wires attached to the wood trusses at nominally 16 in. OC.

7C. **Batts and Blankets* or Fiber, Sprayed*** — For Use with Item 4C (Not Shown) — Min. 3-1/2 in thick with no limit on maximum thickness fitted in the concealed space, draped over the resilient channel (Item 3G)/gypsum board (Item 4C or 4G) ceiling membrane.

7D. **Batts and Blankets*** — For Use With Item 4D — Insulation may be secured to plywood subfloor with staples spaced 12 in. OC or to the trusses with 0.090 in. diam galv steel wires spaced 12 in. OC. Insulation may alternatively be draped over the resilient channels and gypsum board ceiling membrane, and the resilient channels and gypsum board attachment shall be modified as specified in Item 4D. Any glass fiber insulation bearing the UL Classification Marking for Surface Burning Characteristics and/or Fire Resistance, and having a min density of 0.5 pcf and max thickness of 3-1/2 in. may be used.

7E. **Foamed Plastic*** — (As alternate to Item 6 and 6A, Not Shown) — Spray foam insulation applied directly to the underside of the plywood subflooring. Spray foam insulation installed to a maximum thickness of 10 in. at a nominal 0.5 lb/ft³ or 2.0 lb/ft³ density, depending on the product installed. Spray foam insulation is limited to use with minimum 18 in. deep trusses (Item 2). When spray foam insulation is installed, resilient channels (Item 3A) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board (Item 4) spaced maximum 3 in. away from gypsum butt joints. Gypsum board (Item 4) to be installed using minimum 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and buttend end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a ceiling damper (Item 9) in the concealed space, minimum 1 in. clearance to be maintained between damper housing and spray foam insulation. Not evaluated for use with Items 3, 3B through 3F, 3G, 6, 6A, 7 through 7D. Not evaluated with Flooring System (Item 1) Configuration No. 1.

BAF CORP — Enerlite® NM, Enerlite® G, FE178®, Sprayite® 178, Sprayite® 81206, Walitite® 200, Walitite® US, Walitite® US-N, Walitite® HS, Walitite® MAX, Walitite® v.5, Walitite® LWP, Walitite® Plus and Enerlite® Max.

7F. **Batts and Blankets*** — (Not Shown) For Use with Item 31 and 4C — Glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. There is no limit in the overall thickness of insulation, and the insulation can be secured against the subflooring, held suspended in the concealed space or draped over the Steel Framing Members and gypsum panel membrane.

7G. **Batts and Blankets*** — (Not Shown) For Use with Item 3L, 3K, 3U, and 4F — Glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. There is no limit in the overall thickness of insulation, and the insulation can be secured against the subflooring, held suspended in the concealed space or draped over the Steel Framing Members and gypsum panel membrane.

7H. **Foamed Plastic*** — (As alternate to Items 6 and 7) — Spray foam insulation applied directly to the underside of the plywood subflooring. Spray foam insulation installed to a maximum thickness of 11 in. at a nominal 1.0 lb/ft³ - 2.5 lb/ft³ density, while maintaining a minimum 7 in. clearance between the spray foam insulation and the gypsum board (Item 4). Spray foam insulation is limited for use with minimum 18 in. deep trusses (Item 2). When spray foam insulation is installed, resilient channels (Item 3A) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board spaced maximum 3 in. away from gypsum butt joints. Gypsum board to be installed using minimum 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and buttend end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a ceiling damper (Item 9) in the concealed space, no clearance is necessary between damper housing and spray foam insulation. Only for use with item 3A; not evaluated for use with alternates to item 3A.

CARLISLE SPRAY FOAM INSULATION — Types SealTite Pro Closed Cell (CC), SealTite Pro Open Cell (OC), SealTite Pro OCK, SealTite Pro No Trim 21, SealTite Pro One Zero, SealTite PRO HFO, Foamulate Closed Cell, Foamulate OCK, Foamulate 70, Foamulate HFO, and Foamulate HFO 20 in.

7I. **Batts and Blankets*** — (Not Shown - Required as indicated with Flooring System No. 26) - Glass fiber insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. Min. 3-1/2 in. thick, 0.92 pcf density, draped over the resilient or furring channels and gypsum panel membrane. Resilient or furring channels to be spaced 12 in. OC with extra channels installed at butt joints as indicated above.

8. **Air Duct*** — (Optional) — Any UL Class 0 or Class 1 flexible air duct installed in accordance with the instructions provided by the damper manufacturer.

9. **Ceiling Damper*** — (Optional. To be used with Air Duct Item 8) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 349 sq in. Max. overall length and width shall not exceed 18-11/16 in. by 18-11/16 in. with max. 16 in. by 16 in. register opening. Aggregate damper openings shall not exceed 175 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. An aluminum or steel grille (Item 10) shall be installed in accordance with installation instructions.

MIAMI TECH INC — Model Series RxCRD, RxCrDS or RxCRPD

9A. **Alternate Ceiling Damper*** — (Optional. To be used with Air Duct Item 8) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max damper assembly size nom 18 in. long by 18 in. wide and 4-1/4 in. high, or 8 in. diam. fabricated from galv steel. Aggregate damper openings shall not exceed 162 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper.

RUSKIN COMPANY — Model CFDT7, CFDT7-END-BT, CFDT7-90-BT, CFDT7-ST-BT, CFDT7-R6-D8, CFDT7-T1-86 or CFDT7T

9B. Deleted.

9C. **Alternate Ceiling Damper*** — (Optional. To be used with Air Duct Item 8) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max 14 in. diam. damper with insulated register box assembly. The maximum size of the register box assembly is nom. 20 in. long by 20 in. wide and 4 in. high fabricated from galv steel. Aggregate area of the register opening(s) through the ceiling membrane shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper assembly installed in accordance with the manufacturers installation instructions.

AIRE TECHNOLOGIES INC — Series 57

9D. **Alternate Ceiling Damper*** — (Optional. To be used with Air Duct Item 8) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max 20 in. long by 16 in. wide by 4 in. high rectangular damper with duct board plenum box assembly. The maximum outer dimensions of the plenum box assembly are 23-1/2 in. long by 19-1/2 in. wide and 17 in. high fabricated from 6pcf, 1-1/2 to 2 in. thick Knauf Air Duct Board M*. Aggregate area of the register opening(s) through the ceiling membrane shall not exceed 160 sq in. per 100 sq ft ceiling area. Damper assembly installed in accordance with the manufacturers installation instructions.

9E. **Alternate Ceiling Damper*** — (Optional. To be used with Air Duct Item 8) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max 14 in. long by 14 in. wide by rectangular damper with 90° boot. The maximum size of damper/boot assembly is 14 in. long by 14 in. wide and 18 in. high fabricated from galv steel. The aggregate area of the register opening(s) through the ceiling membrane shall not exceed 98 sq in. per 100 sq ft ceiling area. Damper assembly installed in accordance with the manufacturers installation instructions.

AIRE TECHNOLOGIES INC — Models 50 w/ Boot, 50EA w/ Boot, 51 w/Boot, 50 w/ Box, 50EA w/ Box or 51 w/Box

9F. **Alternate Ceiling Damper*** — (Optional. To be used with Air Duct Item 8). — For use with min 18 in. deep trusses Not for use with flooring system 1 or 17. Max plenum box size nom 19 in. long by 19 in. wide and 11-7/8 in. high fabricated from galv steel. Aggregate damper openings shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper.

LLOYD INDUSTRIES INC — Model CRD 50-BT, CRD 50-EA-BT, CRD 55-BT, CRD 55-EA-BT

UNITED ENERTECH CORP — Model C-S/R-WT-L, C-S/R-EA-L, C-S/R-BT, C-S/R-EA-BL

9G. **Alternate Ceiling Damper*** — (Optional. To be used with Air Duct Item 8). — For use with min 18 in. deep trusses Not for use with flooring system 1 or 17. Max plenum box size nom 13 in. long by 13 in. wide and 11-7/8 in. high fabricated from galv steel. Aggregate damper openings shall not exceed 50 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper.

LLOYD INDUSTRIES INC — Model CRD 50-BT-6, CRD 50-EA-BT-6, CRD 55-BT-6, CRD 55-EA-BT-6

9H. **Alternate Ceiling Damper*** — (Optional. To be used with Air Duct Item 8). Ceiling damper & fan assembly for use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 103 sq in. with the length not to exceed 10-1/8 in. and the width not to exceed 10-1/8 in. Aggregate damper openings shall not exceed 57 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 10) shall be installed in accordance with installation instructions.

PANASONIC CORPORATION, PANASONIC CORPORATION OF NORTH AMERICA — Model PC-RD05C5

9I. **Alternate Ceiling Damper*** — (Optional. To be used with Air Duct Item 8). Ceiling damper & fan assembly for use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 113 sq in. with the length not to exceed 10-1/8 in. and the width not to exceed 11-7/8 in. Aggregate damper openings shall not exceed 57 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 10) shall be installed in accordance with installation instructions.

BROAN-NUTONE L L C — Model RDRJWVT

9J. **Alternate Ceiling Damper*** — (Optional. To be used with Air Duct Item 8). Ceiling damper & fan assembly for use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 87 sq in. with the length not to exceed 10 in. and the width not to exceed 7-15/16 in. Aggregate damper openings shall not exceed 44 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A metallic grille (Item 10) shall be installed in accordance with installation instructions.

BROAN-NUTONE L L C — Models RDI1 and RDH

9K. **Alternate Ceiling Damper*** — (Optional. To be used with Air Duct Item 8). For use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max plenum box size nom 19 in. long by 19 in. wide and 11-7/8 in. high fabricated from galv steel. Aggregate damper openings shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper.

METAL-FAB INC — Models MSCD-HC and MRCD-HC

9L. **Alternate Ceiling Damper*** — (Optional. To be used with Air Duct Item 8). Ceiling damper & fan assembly for use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 87 sq in. with the length not to exceed 9 in. and the width not to exceed 9-11/16 in. Aggregate damper openings shall not exceed 44 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 10) shall be installed in accordance with installation instructions.

BROAN-NUTONE L L C — Model RDWMT

9M. **Alternate Ceiling Damper*** — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 87 sq in. with the length not to exceed 9 in. and the width not to exceed 9-11/16 in. Aggregate damper openings shall not exceed 44 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 10) shall be installed in accordance with installation instructions.

BROAN-NUTONE L L C — Model RDWMT2

9N. **Alternate Ceiling Damper*** — (Optional. To be used with Air Duct Item 8) — For use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom 21 in. long by 18 in. wide, fabricated from galvanized steel. Plenum box max size nom 21 in. long by 18 in. wide by 14 in. high (inner dimension) fabricated from either galvanized steel or min 1 in. thick listed Duct Board bearing the UL Listing Marking having a min R-Value of 4.3. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 180 sq in. per 100 sq ft of ceiling area.

GREENHECK FAN CORP — Model CRD-1WT

9O. **Alternate Ceiling Damper*** — (Optional. To be used with Air Duct Item 8) — For use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom 12 in. long by 12 in. wide with an 8 in. diameter damper, fabricated from galvanized steel. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 72 sq in. per 100 sq ft of ceiling area.

GREENHECK FAN CORP — Model CRD-2WT

9P. **Alternate Ceiling Damper*** — For use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 324 sq in. with the length not to exceed 24 in. and the width not to exceed 20 in. Max height of damper shall be 14 in. Aggregate damper openings shall not exceed 162 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 10) shall be installed in accordance with installation instructions.

C&S AIR PRODUCTS — Model RD-521

POTTORFF — Model CFD-521

9Q. **Alternate Ceiling Damper*** — For use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 196 sq in. with the length not to exceed 26 in. and the width not to exceed 14 in. Max height of damper shall be 7 in. Aggregate damper openings shall not exceed 98 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 10) not to exceed 144 in.² shall be installed in accordance with installation instructions.

C&S AIR PRODUCTS — Model RD-521-BT

POTTORFF — Model CFD-521-BT

9R. **Alternate Ceiling Damper*** — For use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 256 sq in. with the length not to exceed 24 in. and the width not to exceed 20 in. Max height of damper shall be 17 in. Aggregate damper openings shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 10) shall be installed in accordance with installation instructions.

C&S AIR PRODUCTS — Models RD-521-IP, RD-521-NP

POTTORFF — Models CFD-521-IP, CFD-521-NP

9S. **Alternate Ceiling Damper*** — For use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 144 sq in. with the length not to exceed 14 in. and the width not to exceed 12 in. Max height of damper shall be 17-7/8 in. Aggregate damper openings shall not exceed 74 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 10) shall be installed in accordance with installation instructions.

C&S AIR PRODUCTS — Models RD-521-90, RD-521-NP90

POTTORFF — Models CFD-521-90, CFD-521-90NP

9T. **Alternate Ceiling Damper*** — (Optional. To be used with Air Duct Item 8) — For use with min 18 in. deep trusses. For use with Item 4D only. Not for use with flooring system 1. Maximum 20 in. long by 18 in. wide by 2-1/8 in. high, fabricated from galvanized steel. Plenum box maximum size nom. 21 in. long by 18 in. wide by 16 in. high fabricated from either galvanized steel or Classified Air Duct Materials bearing the UL Class 0 or Class 1 rigid air duct material. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 106 sq in. per 100 sq ft of ceiling area.

NAIROL INDUSTRIES INC — Types 0755, 0755A, 0756, 0756D, 0757, 0757D, 0757FP, 0757DP, 0763

SAFE AIR DOWCO — 0455, 0455A, 0456, 0456D, 0457, 0457D, 0457-D8, 0457-CB, 0463-FB, 0457-EB, 0463-GB, 0463

9U. **Alternate Ceiling Damper*** — (Optional. to be used with Air Duct Item 8) For use with min 18 in. deep tr



Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States
BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. **P545**
June 26, 2023

Unrestrained Assembly Rating — 1 Hr.
Finish Rating — 24 or 25 Min (See Items 3 and 3A)

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.

each tooth has a twist for stiffness. The pairs are repeated on approximately 7/8 in. centers with four rows of teeth per inch of plate width. Where the truss intersects with the interior face of the exterior walls, the min truss depth shall be 5-1/4 in. and a min. average depth of 18 in. Where the truss intersects with the interior face of the exterior walls, the min truss depth may be reduced to 3 in. if the batts and blankets (Item 3) are used as shown in the above illustration (Alternate Insulation Placement) and are firmly packed against the intersection of the bottom chords and the plywood sheathing. Min roof slope of 3/12 unless American Gypsum boards are used, in which case there is no minimum slope.

3. **Batts and Blankets*** — (Optional) — Glass fiber insulation, secured to the wood structural panels with staples spaced 12 in. OC or to the trusses with 0.090 in. diam galv steel wires spaced 12 in. OC. Any glass fiber insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance, having a min density of 0.5 pcf. As an option, the insulation may be fitted in the concealed space, draped over the resilient channel/gypsum wallboard ceiling membrane when resilient channels and gypsum wallboard attachment is modified as specified in Items 6 and 7. The Finish Rating is 24 min. when the insulation is draped over the resilient channels and gypsum board ceiling membrane and 25 min. when it is installed on underside of the plywood deck or when it is omitted.

When Type AG-C panels are installed there is no limit on maximum thickness.

When Type TG-C panels are installed the maximum thickness is 3-1/2 in.

3A. **Loose Fill Material*** — As an alternate to Item 3 — Loose fill material bearing the UL Classification Marking for Surface Burning Characteristics, having a min density of 0.5 pcf, fitted in the concealed space, draped over the resilient channel/gypsum wallboard ceiling membrane when resilient channels and gypsum wallboard attachment is modified as specified in Items 6 and 7. The finished rating when this insulation is used has not been determined.

When Type AG-C panels are installed there is no limit on maximum thickness.

When Type TG-C panels are installed the maximum thickness is 3-1/2 in.

3B. **Fiber, Sprayed*** — For Use With American Gypsum Type AG-C only. As an alternate to Item 3 (not evaluated for use with Item 6B and 6C) — spray-applied cellulose insulation material, having a min density of 0.5 lb/ft³, applied with water, over the resilient channel/gypsum board ceiling membrane when resilient channels and gypsum board attachment is modified as specified in Items 6 and 7. Fiber, Sprayed is applied with moisture in accordance with the application instructions supplied with the product. The finish rating when Fiber Sprayed is used has not been determined. Alternate application method: The fiber is applied without water or adhesive in accordance with the application instructions supplied with a minimum density of 0.5 lb/ft³ over the resilient channel/gypsum board ceiling membrane when resilient channels and gypsum board attachment is modified as specified in Items 6 and 7. Alternate application method: The fiber is applied without water or adhesive to a nominal density of 3.5 lb/ft³ behind netting (Item 11) stapled to the rafters. The netting is stapled at both lower edges of the rafters creating a cavity to accept the cellulose fiber. The finished rating when this insulation is used has not been determined.

When Type AG-C panels are installed there is no limit on maximum thickness.

When Type TG-C panels are installed the maximum thickness is 3-1/2 in.

APPLGATE GREENFIBER ACQUISITION LLC — IN5735, IN5745, IN5750LD, Insulmax, and SANCTUARY for use with wet or dry application. IN5510LD, IN5515LD, IN5541LD, IN5735, IN5765LD, and IN5773LD are to be used for dry application only.

3C. **Foamed Plastic*** — For Use With American Gypsum Type AG-C only. (As an alternate to Item 3, Not Shown) — Spray foam insulation applied directly to the underside of the underside of the roofing system (Item 1). Spray foam insulation installed to a maximum thickness of 10 in. at a nominal 0.5 lb/ft³ density, while maintaining a minimum 8-1/2 in. clearance between the spray foam insulation and the gypsum board. When spray foam insulation is used, resilient channels (Item 6) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board (Item 7) installed at 6 in. OC to allow for maximum 3 in. spacing off ends of the gypsum board joints. Gypsum board to be installed using 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butt end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a ceiling damper (Items 5 through 5AC) in the concealed space, minimum 1 in. clearance to be maintained between damper housing and spray foam insulation. Limited to resilient channels, Item 6 only, no Item 6 alternates. The finished rating when this insulation is used has not been determined.

SES FOAM INC — Succesal

3D. **Foamed Plastic*** — For Use With American Gypsum Type AG-C only. (As alternate to Item 3 Not Shown) — Spray foam insulation applied directly to the underside of the underside of the roofing system. Spray foam insulation installed to a maximum thickness of 10 in. at a nominal 0.5 lb/ft³ or 2.0 lb/ft³ density, depending on the product installed. When spray foam insulation is installed, resilient channels (Item 6)

shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board spaced maximum 3 in. away from gypsum butt joints. Gypsum board to be installed using minimum 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butt end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a ceiling damper (Items 5 through 5AC) in the concealed space, minimum 1 in. clearance to be maintained between damper housing and spray foam insulation. Limited to resilient channels, Item 6 only, no Item 6 alternates. The finished rating when this insulation is used has not been determined.

BASF CORP — Enerlite® NM, Enerlite® G, FE178®, Spraylite® 178, Spraylite® 81206, Walltite® 200, Walltite® US, Walltite® US-N, and Walltite® HP+

3E. **Foamed Plastic*** — For Use With American Gypsum Type AG-C only. (As an alternate to Item 3, Not Shown) — Spray foam insulation applied directly to the underside of the underside of the roofing system. Spray foam insulation installed to a maximum thickness of 17 in. at a nominal 0.5 lb/ft³ density, while maintaining a minimum 1-1/2 in. clearance between the spray foam insulation and the gypsum board. When spray foam insulation is used, resilient channels (Item 6) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board installed at 6 in. OC to allow for maximum 3 in. spacing off ends of the gypsum board joints. Gypsum board to be installed using 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butt end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a ceiling damper (Items 5 through 5AC) in the concealed space, no clearance is necessary between damper housing and spray foam insulation. Limited to resilient channels, Item 6 only, no Item 6 alternates. The finished rating when this insulation is used has not been determined.

SES FOAM INC — EasySeal, EasySeal UL

3F. **Foamed Plastic*** — (As alternate to Item 3 - not to be used in combination with any alternates to item 3) — Spray foam insulation applied directly to the underside of the underside of the roofing system. Spray foam insulation installed to a maximum thickness of 11 in. at a nominal 1.0 lb/ft³ - 2.5 lb/ft³ density, while maintaining a minimum 7 in. clearance between the spray foam insulation and the gypsum board (Item 7). Spray foam insulation is limited to use with minimum 18 in. deep trusses (Item 2). When spray foam insulation is installed, resilient channels (Item 6) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board spaced maximum 3 in. away from gypsum butt joints. Gypsum board to be installed using minimum 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butt end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels, as illustrated above. If used with a ceiling damper (Items 5 through 5AC) in the concealed space, no clearance is necessary between damper housing and spray foam insulation. Only for use with item 5 not evaluated for use with alternates to item 5. Only for use with item 6 not evaluated for use with alternates to item 6.

CARLISLE SPRAY FOAM INSULATION — Types SealTite Pro Closed Cell (CC), SealTite Pro Open Cell (OC), SealTite Pro OCK, SealTite Pro No Trim 21, SealTite Pro One Zero, SealTite PRO HFO, Foamulate Closed Cell, Foamulate OCK, Foamulate 70, Foamulate HFO, and Foamulate HFO 2.0.

4. **Air Duct*** — For use with **Ceiling Damper*** - Any UL Class 0 or Class 1 flexible air duct installed in accordance with the instructions provided by the damper manufacturer.

5. **Ceiling Damper*** — Nom 20 in. long by 18 in. wide by 2-1/8 in. high, fabricated from galvanized steel. Plenum box maximum size nom. 21 in. long by 18 in. wide by 16 in. high fabricated from either galvanized steel or Classified Air Duct Materials bearing the UL Class 0 or Class 1 rigid air duct material. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 180 sq in. per 100 sq ft of ceiling area.

NALOR INDUSTRIES INC — Types 0755, 0755A, 0756, 0756D, 0757, 0757D, 0757FP, 0757DFP, 0758, 0759, 0760, 0761, 0762, 0763, CRD5, CRD6, CRD6G, CRD6FP, CRD6DFP.

SAFE AIR DOWCO — 0455, 0455A, 0456, 0456D, 0457, 0457D, 0457-DB, 0457-CB, 0463-FB, 0457-FB, 0463-GB, 0463

5A. **Alternate Ceiling Damper*** — Max plenum box size nom 19 in. long by 19 in. wide and 11-7/8 in. high fabricated from galv steel. Aggregate damper openings shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper.

AIRE TECHNOLOGIES INC — Models: CRD model 50 w/Boot, CRD model 50EA w/Boot, CRD model 55 w/Boot, CRD model 55 EA w/Boot

LLOYD INDUSTRIES INC — Model CRD 50-BT, CRD 50-EA-BT, CRD 55-BT, CRD 55 EA-BT

5B. **Alternate Ceiling Damper*** — Max plenum box size nom 13 in. long by 13 in. wide and 11-7/8 in. high fabricated from galv steel. Aggregate damper openings shall not exceed 50 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper.

LLOYD INDUSTRIES INC — Model CRD 50-BT-6, CRD 50-EA-BT-6, CRD 55-BT-6, CRD 55 EA-BT-6, CRD50-™ X-BT-6

5C. **Alternate Ceiling Damper*** — Max size ceiling outlet in plenum box nom 12 in. long by 12 in. wide. Plenum box fabricated from galv steel. Aggregate damper openings shall not exceed 72 sq in. per 100 sq ft of ceiling area. Installed in accordance with the manufacturers installation instructions provided with the damper.

AIRE TECHNOLOGIES INC — Models: CRD model 50 w/Boot, CRD model 50EA w/Boot, CRD model 55 w/Boot, CRD model 55 EA w/Boot

LLOYD INDUSTRIES INC — Model CRD 50-95BT, CRD 50-EA-95BT, CRD 55-95BT, CRD 55 EA-95BT

5D. **Alternate Ceiling Damper*** — Max size ceiling outlet in plenum box nom 16 in. long by 16 in. wide. Aggregate damper openings shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper.

LLOYD INDUSTRIES INC — Models CRD 50-FGPB-4.2, -4.2 NI, -6.0, -6.0 NI; CRD50-EA-FGPB-4.2, -4.2 NI, -6.0, -6.0 NI

5E. **Alternate Ceiling Damper*** — Max plenum box size nom 15 in. long by 15 in. wide and 11-7/8 in. high fabricated from galv steel. Aggregate damper openings shall not exceed 72 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper.

LLOYD INDUSTRIES INC — Models 45-CRD-LT-BT and 45-CRD-LTD-BT

5F. **Alternate Ceiling Damper*** — Max size ceiling outlet in plenum box nom 10 in. long by 10 in. wide. Plenum box fabricated from galv steel. Aggregate damper openings shall not exceed 50 sq in. per 100 sq ft of ceiling area. Installed in accordance with the manufacturers installation instructions provided with the damper.

LLOYD INDUSTRIES INC — Model 45-LTD-95-BT-4

5G. **Alternate Ceiling Damper*** — Max plenum box size nom 19 in. long by 15 in. wide and 11-7/8 in. high fabricated from galv steel. Aggregate damper openings shall not exceed 96 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper.

LLOYD INDUSTRIES INC — Model CRD50-™ X-BT

5H. **Alternate Ceiling Damper*** — Max nom area shall be 324 sq in. Max square size shall be 18 in. by 18 in. Rectangular sizes not to exceed 324 sq in. with a max width of 18 in. Max height of damper shall be 14 in. Aggregate damper openings shall not exceed 162 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 9) shall be installed in accordance with installation instructions.

C&S AIR PRODUCTS — Model RD-521

POTTORFF — Model CFD-521

5I. **Alternate Ceiling Damper*** — Max nom area shall be 196 sq in. Max square size shall be 14 in. by 14 in. Rectangular sizes not to exceed 196 sq in. with a max width of 26 in. Max height of damper shall be 7 in. Aggregate damper openings shall not exceed 98 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 9) shall be installed in accordance with installation instructions.

C&S AIR PRODUCTS — Model RD-521-BT

POTTORFF — Model CFD-521-BT

5J. **Alternate Ceiling Damper*** — Max nom area shall be 256 sq in. with the length not to exceed 24 in. and the width not to exceed 20 in. Max height of damper shall be 17 in. Aggregate damper openings shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 9) shall be installed in accordance with installation instructions.

C&S AIR PRODUCTS — Model RD-521-IP, RD-521-NP

POTTORFF — Models CFD-521-IP, CFD-521-NP

5K. **Alternate Ceiling Damper*** — Max nom area shall be 144 sq in. with the length not to exceed 14 in. and the width not to exceed 12 in. Max height of damper shall be 17-7/8 in. Aggregate damper openings shall not exceed 74 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 9) shall be installed in accordance with installation instructions.

C&S AIR PRODUCTS — Model RD-521-90, RD-521-NP90

POTTORFF — Models CFD-521-90, CFD-521-90NP

5L. **Alternate Ceiling Damper*** — (Optional) Max nom area shall be 324 sq in. Max square size shall be 18 in. by 18 in. Rectangular sizes not to exceed 324 sq in. with a max width and max length of 18 in. Max round size shall be 18 in. dia. Aggregate damper openings shall not exceed 162 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper.

RUSKIN COMPANY — Models CFD7T, CFD7T-ENB-BT, CFD7T-90-BT, CFD7T-ST-BT, CFD7T-SB, CFD7T-R6-DB, CFD7T-I86, or CFD7T

5M. **Alternate Ceiling Damper*** — Ceiling damper & fan assembly. Max nom area shall be 75 sq in. with the length not to exceed 8-9/16 in. and the width not to exceed 8-3/4 in. Max height of damper shall be 9-7/8 in. Aggregate damper openings shall not exceed 38 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturers installation instructions provided with the damper. A plastic grille shall be installed in accordance with installation instructions.

DELTA ELECTRONICS INC — Models CRD2, GBR-CRD, ITG-CRD

5N. **Alternate Ceiling Damper*** — Max nom area shall be 324 sq in. Max square size shall be 18 in. by 18 in. Rectangular sizes not to exceed 324 sq in. with a max length of 20 in. and a max width of 22 in. Max height of damper shall be 14 in. Aggregate damper openings shall not exceed 154 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturer's installation instructions provided with the damper. An aluminum or steel grille shall be installed in accordance with installation instructions.

UNITED ENERTECH CORP — Type C-S/R-WT or C-S/R-WTP (Max nom area 324 sq. in.) or C-S/R-WTS or C-S/R-WTPS (Max nom area 162 sq. in.)

5O. **Alternate Ceiling Damper*** — Ceiling damper & fan assembly. Max nom area shall be 75 sq in. with the length not to exceed 9-1/4 in. and the width not to exceed 9-3/4 in. Max height of damper shall be 9-7/8 in. Aggregate damper openings shall not exceed 45 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille shall be installed in accordance with installation instructions.

DELTA ELECTRONICS INC — Model SIG-CRD

5P. **Alternate Ceiling Damper*** — Ceiling damper & fan assembly. Max nom area shall be 131 sq in. with the length not to exceed 11-1/16 in. and the width not to exceed 11-7/8 in. Aggregate damper openings shall not exceed 66 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 9) shall be installed in accordance with installation instructions.

DELTA ELECTRONICS INC — Model SMT-CRD

5Q. **Alternate Ceiling Damper*** — Ceiling damper & fan assembly. Max nom area shall be 103 sq in. with the length not to exceed 10-1/8 in. and the width not to exceed 10-1/8 in. Aggregate damper openings shall not exceed 52 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille shall be installed in accordance with installation instructions.

PANASONIC CORPORATION, PANASONIC CORPORATION OF NORTH AMERICA — Model PC-RD05CS

5R. **Alternate Ceiling Damper*** — Ceiling damper & fan assembly. Max nom area shall be 113 sq in. with the length not to exceed 10-1/8 in. and the width not to exceed 11-1/8 in. Aggregate damper openings shall not exceed 52 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille shall be installed in accordance with installation instructions.

BROAN-NUTONE L L C — Model RDKUWT

5S. **Alternate Ceiling Damper*** — Ceiling damper & fan assembly. Max nom area shall be 79 sq in. with the length not to exceed 10 in. and the width not to exceed 7-15/16 in. Aggregate damper openings shall not exceed 40 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A metallic grille shall be installed in accordance with installation instructions.

BROAN-NUTONE L L C — Models RDJ1 and RDH

5T. **Alternate Ceiling Damper*** — Max plenum box size nom 19 in. long by 19 in. wide and 11-7/8 in. high fabricated from galv steel. Aggregate damper openings shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper.

METAL-FAB INC — Models MSCD-HC and MRCD-HC

5U. **Alternate Ceiling Damper*** — Ceiling damper & fan assembly. Max nom area shall be 87 sq in. with the length not to exceed 9 in. and the width not to exceed 9-11/16 in. Aggregate damper openings shall not exceed 44 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille shall be installed in accordance with installation instructions.

BROAN-NUTONE L L C — Model RDMWT

5V. **Alternate Ceiling Damper*** — Ceiling damper & fan assembly. Max nom area shall be 87 sq in. with the length not to exceed 9 in. and the width not to exceed 9-11/16 in. Aggregate damper openings shall not exceed 44 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille shall be installed in accordance with installation instructions.

BROAN-NUTONE L L C — Model RDMWT2

5W. **Alternate Ceiling Damper*** — Max nom 21 in. long by 18 in. wide, fabricated from galvanized steel. Plenum box max size nom 21 in. long by 18 in. wide by 14 in. high (inner dimension) fabricated from either galvanized steel or min 1 in. thick Listed Duct Board bearing the UL Listing Marking having a min R-Value of 4.3. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 180 sq in. per 100 sq ft of ceiling area.

GREENHECK FAN CORP — Model CRD-TWT

5X. **Alternate Ceiling Damper*** — Max nom 12 in. long by 12 in. wide with an 8 in. diameter damper, fabricated from galvanized steel. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 72 sq in. per 100 sq ft of ceiling area.

GREENHECK FAN CORP — Model CRD-2WT

5Y. **Alternate Ceiling Damper*** — Max 12 in. diameter damper and insulated register box assembly. The maximum size of the register box assembly is nom. 20 in. long by 20 in. wide and 4 in. high fabricated from galv steel. The aggregate area of the register opening(s) through the ceiling membrane shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper assembly installed in accordance with the manufacturers installation instructions.

AIRE TECHNOLOGIES INC — Model 57B.

5Z. **Alternate Ceiling Damper*** — Max 20 in. long by 16 in. wide by 4 in. high rectangular damper with plenum box assembly. The maximum outer dimensions of the plenum box assembly is 23-1/2 in. long by 19-1/2 in. wide and 17 in. high fabricated from 6pct. 1-1/2 to 2 in. thick Knauf Air Duct Board M*. The aggregate area of the register opening(s) through the ceiling membrane shall not exceed 160 sq in. per 100 sq ft ceiling area. Damper assembly installed in accordance with the manufacturers installation instructions.

AIRE TECHNOLOGIES INC — Series 58.

5AA. **Alternate Ceiling Damper*** — Max 14 in. long by 14 in. wide and 18 in. high ceiling damper with boot or box assembly, fabricated from galv steel. The aggregate area of the register opening(s) through the ceiling membrane shall not exceed 98 sq in. per 100 sq ft of ceiling area. Damper assembly installed in accordance with the manufacturers installation instructions.

AIRE TECHNOLOGIES INC — Model 51 w/Boot.

5AB. **Alternate Ceiling Damper*** — Max nom 11-1/8 in. long by 13-5/8 in. wide, fabricated from galvanized steel. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 76 sq in. per 100 sq ft of ceiling area.

GREENHECK FAN CORP — Model CRD-310WT

5AC. **Alternate Ceiling Damper*** — Max nom 12-3/8 in. long by 14-1/2 in. wide, fabricated from galvanized steel. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 90 sq in. per 100 sq ft of ceiling area.

GREENHECK FAN CORP — Model CRD-320WT

5AD. **Alternate Ceiling Damper*** — Max 12 in. diameter damper within max 15 in. by 15 in. register box with max 12 in. by 12 in. register opening fabricated from galvanized steel. Aggregate area of the register opening(s) through the ceiling membrane shall not exceed 72 sq in. per 100 sq ft. of ceiling area. Damper assembly installed in accordance with the manufacturer's installation instructions.

RUSKIN COMPANY — Model CFD7T-SR

5AE. **Alternate Ceiling Damper*** — Max 12 in. diameter damper and insulated register box assembly. The maximum size of the register box assembly is nom. 20 in. long by 20 in. wide and 4 in. high fabricated from galv steel. The aggregate area of the register opening(s) through the ceiling membrane shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper assembly installed in accordance with the manufacturers installation instructions.

SOUTHWARK METAL MFG CO — Model 800 w/Box

5AF. **Alternate Ceiling Damper*** — Max 20 in. long by 16 in. wide by 4 in. high rectangular damper with plenum box assembly. The maximum outer dimensions of the plenum box assembly are 23-1/2 in. long by 19-1/2 in. wide and 17 in. high fabricated from 6pct. 1-1/2 to 2 in. thick Knauf Air Duct Board M*. The aggregate area of the register opening(s) through the ceiling membrane shall not exceed 160 sq in. per 100 sq ft ceiling area. Damper assembly installed in accordance with the manufacturers installation instructions.

SOUTHWARK METAL MFG CO — CRD w/D8 Box

5AG. **Alternate Ceiling Damper*** — Max 14 in. long by 14 in. wide and 18 in. high ceiling damper with boot or box assembly, fabricated from galv steel. The aggregate area of the register opening(s) through the ceiling membrane shall not exceed 98 sq in. per 100 sq ft of ceiling area. Damper assembly installed in accordance with the manufacturers installation instructions.

SOUTHWARK METAL MFG CO — Model 500 w/Boot, 510 w/Boot, 500 w/Box or 510 w/Box

5AH. **Alternate Ceiling Damper*** — Max nom 10-3/8 in. long by 10-3/8 in. wide, fabricated from galvanized steel. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 54 sq in. per 100 sq ft of ceiling area.

GREENHECK FAN CORP — Model CRD-300WT

6. **Furring Channels** — Resilient channels formed of 25 MSG galv steel, spaced 16 in. OC, installed perpendicular to trusses. When insulations are installed or draped over the resilient channel/gypsum wallboard ceiling membrane, the spacing shall be as described below. Channels secured to each truss with 1-1/4 in. long Type S steel screws. Channels overlapped 4 in. at splices. Channels oriented opposite at wallboard butt joints (spaced 6 in. OC) as shown in the above illustration.

When Type AG-C panels are attached to the resilient channels, the channels may remain at 16 in. OC.

When Type TG-C panels are attached to the resilient channels, the channels are installed at 12 in. OC.

6A. **Steel Framing Members*** — (Not Shown) — As an alternate to Item 6, furring channels and Steel Framing Members* as described below:

a. **Furring Channels** — Formed of No. 25 MSG galv steel, 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced 16 in. OC perpendicular to trusses. When batt insulation (Item 3) is draped over the resilient channel/gypsum board ceiling membrane, the resilient channel spacing shall be reduced to 12 in. OC. Channels secured to trusses as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap.

b. **Steel Framing Members*** — Used to attach furring channels (Item a) to trusses (Item 2). Clips spaced 48 in. OC. RSIC-1 and RSIC-1 (2.75) clips secured to alternating trusses with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. RSIC-V and RSIC-V (2.7

UL DESIGN - P545 (CONT.)

b. **Steel Framing Members*** — Used to attach furring channels (Item a) to the wood trusses (Item 2). Clips spaced at 48" OC and secured to the bottom of the trusses with one 2 in. Coarse Drywall Screw with 1 in. diam washer through the center hole. Furring channels are then friction fitted into clips. Ends of channels are overlapped 6" and tied together with double strand of No. 18 AWG galvanized steel wire. Additional clips are required to hold the Gypsum Butt joints as described in Item 7.

STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237 or A237R

6C. **Alternate Steel Framing Members*** — (Not Shown) — Not evaluated with Item 3 (Batts and Blankets). As an alternate to Items 6 through 6B, furring channels and Steel Framing Members as described below.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, 2-1/2 in. wide by 7/8 in deep, spaced 16 in OC, perpendicular to trusses. Channels secured to trusses as described in Item b.

b. **Steel Framing Members*** — Used to attach furring channels (Item a) to the wood trusses (Item 2). Clips spaced at 48" OC and secured to the bottom of the trusses with one 2-1/2 in. Coarse Drywall Screw with 1 in. diam washer through the center hole. Furring channels are then friction fitted into clips. Ends of channels are overlapped 6" and tied together with double strand of No. 18 AWG galvanized steel wire. Additional clips are required to hold the Gypsum Butt joints as described in Item 7.

REGUPOL AMERICA — Type SonusClip

7. **Gypsum Board*** — Nom 5/8 in. thick, 48 in. wide, installed with long dimension perpendicular to resilient channels with 1 in. long Type S screws spaced 12 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. At end joints, two resilient channels are used, extending a min of 6 in. beyond both ends of the joint. When batt and blanket insulation, Item 3, is draped over the resilient channel/gypsum wallboard ceiling membrane, screws shall be installed at 8 in. OC. When **Steel Framing Members** (Item 6B) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board. Gypsum board butted end joints shall be staggered minimum 48 in. and centered over main furring channels. At the gypsum board butt joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 3 in. on each end. The two support furring channels shall be spaced approximately 3 in. in from end joint. Screw spacing along the gypsum board butt joint and along both additional channels shall be 8 in. OC. Additional screws shall be placed in the adjacent section of gypsum board into the aforementioned 3 in. extension of the extra butt joint channels as well as into the main channel that runs between. Butt joint furring channels shall be attached with one RESILMOUNT Sound Isolation Clip at each end of the channel.

When **Steel Framing Members** (Item 6C) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board. Gypsum board butted end joints shall be staggered minimum 48 in. and centered over main furring channels. At the gypsum board butt joints, an additional single length of furring channel shall be installed and be spaced approximately 3 in. from the butt joint (6 in. from the continuous furring channels) to support the floating end of the gypsum board. Each of these shorter sections of furring channel shall extend one truss beyond the width of the gypsum panel and be attached to the adjacent trusses with one SonusClip at every truss involved with the butt joint.

AMERICAN GYPSUM CO — Types AG-C

GEORGIA-PACIFIC GYPSUM L L C — Type TG-C

7A. **Gypsum Board*** — (As an alternative to Item 7) — For use when no insulation is used. Nom 5/8 in. thick, 48 in. wide gypsum board, installed as described in item 7 with resilient channels (Item 6) spaced 24 in OC.

AMERICAN GYPSUM CO — Type AG-C

8. **Finishing System** — (Not Shown) — Vinyl, dry or premixed joint compound, applied in two coats to joints and screw-heads; paper tape, 2 in. wide, embedded in first layer of compound over all joints. As an alternate, nom 3/32 in. thick veneer plaster may be applied to the entire surface of gypsum wallboard.

9. **Grille** — Installed in accordance with the installation instructions provided with the ceiling damper

10. **Discrete Products Installed in Air-handling Spaces*** — Automatic Balancing Valve/Damper — (Not Shown - Optional) — For use with item 5L, Ruskin Company's Model CFD7T damper (CABS). Ceiling damper to be provided with plenum box per damper

manufacturer's instructions with side outlet only. Entire assembly to be installed into any UL Class 0 or Class 1 flexible air duct in accordance with the instructions provided by the automatic balancing valve/damper manufacturer.

METAL INDUSTRIES INC — Model ABV-4, ABV-5, ABV-6

11. **Netting** — (Not shown) Fibrous, woven netting material fastened to underside of each joist with staples, with side joints overlapped.

12. **Netting** — (Not shown) - Non-woven polypropylene fabric fastened to underside of each joist with staples, with side joints overlapped. For use with Type AG-C gypsum boards only.

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

Last Updated on 2023-06-26

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UL DESIGN - W-L1003

2/25/2019 Through-penetration Firestop Systems: XHEZ,W-L-1003 - UL Product Spec

THROUGH-PENETRATION FIRESTOP SYSTEM

Assembly Usage Disclaimer

XHEZ - Through-penetration Firestop Systems

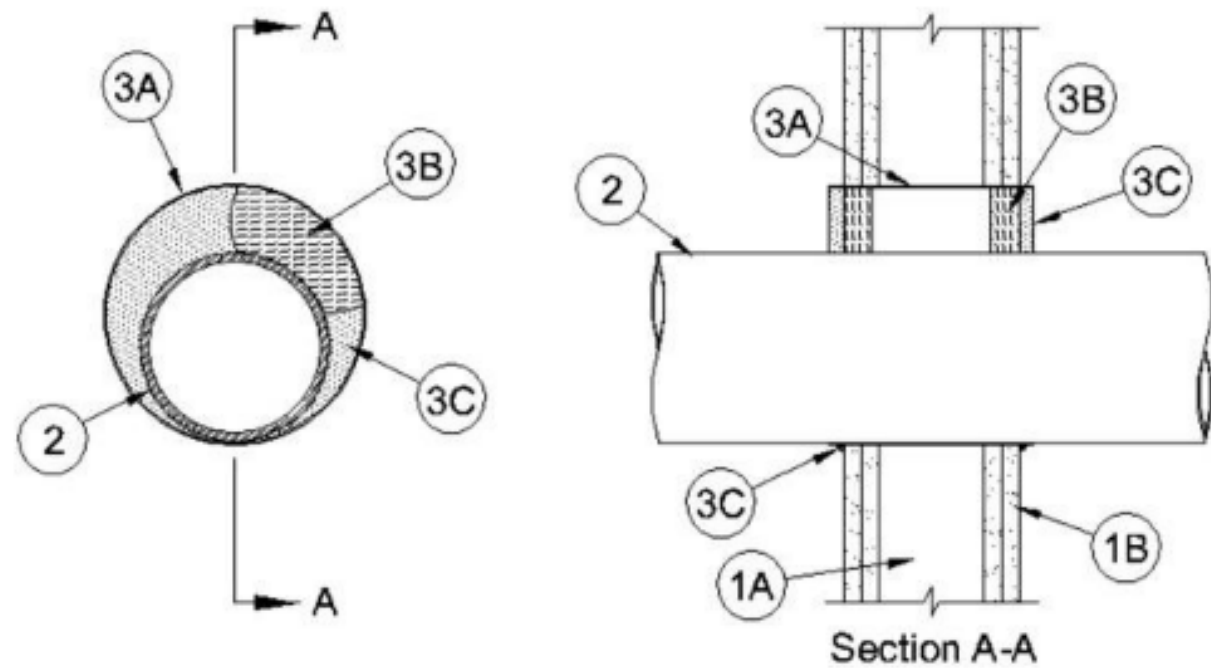
See General Information for Through-penetration Firestop Systems

System No. W-L-1003

February 14, 2008

F Ratings — 1 and 2 Hr (See Item 1)

T Rating — 0 Hr



1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400 or V400 Series Wall and Partition Design 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. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC with nom 2 by 4 in. (51 by 102 mm) lumber end plates and cross braces. Steel studs to be min

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2/25/2019 Through-penetration Firestop Systems: XHEZ,W-L-1003 - UL Product Spec

3-1/2 in. (89 mm) wide by 1-3/8 in. (35 mm) deep channels spaced max 24 in. (610 mm) OC.

B. **Gypsum Board*** — Nom 5/8 in. (16 mm) thick, 4 ft (1.2 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, U400 or V400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 15 in. (381 mm).

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Through-Penetrant** — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The space between pipes, conduits or tubing and the steel sleeve (Item 3A) shall be min of 0 in. (point contact) to max 2-3/8 in. (60 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. **Steel Pipe** — Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe** — Nom 12 in. (305 mm) diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. (305 mm) diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipe.

C. **Conduit** — Nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing.

D. **Copper Tubing** — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.

E. **Copper Pipe** — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. **Firestop System** — Installed symmetrically on both sides of wall assembly. The details of the firestop system shall be as follows.

A. **Steel Sleeve** — Cylindrical sleeve fabricated from min 0.019 in. thick (0.48 mm) galv sheet steel and having a min 2 in. (51 mm) lap along the longitudinal seam. Length of steel sleeve to be equal to thickness of wall plus 1 to 4 in. (25 to 102 mm) such that, when installed, the ends of the sleeve will project approx 1/2 to 2 in. (13 to 51 mm) beyond the surface of the wall on both sides of the wall assembly. 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 board layers.

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2/25/2019 Through-penetration Firestop Systems: XHEZ,W-L-1003 - UL Product Spec

B. **Packing Material** — Min 1 in. (25 mm) thickness of mineral wool batt insulation firmly packed into steel sleeve on both sides of the wall assembly as permanent forms. Packing material to be recessed min 1/2 in. (13 mm) from end of steel sleeve (flush with or recessed into gypsum board surface) on both sides of wall assembly.

B1. **Packing Material** — (Not shown) — As an alternate to Item B, nom 1 in. (25 mm) thick polyethylene backer rod may be used. The backer rod is to be recessed within the steel sleeve a min of 1 in. (25 mm) from each surface of wall.

C. **Fill, Void or Cavity Materials*** — **Caulk or Sealant** — When mineral wool batt insulation is used, caulk or sealant applied to fill the steel sleeve to a min depth of 1/2 in. (13 mm) on both sides of wall assembly. When backer rod is used, a min thickness of 1 in. (25 mm) of caulk or sealant is required flush with both sides of wall. A nom 1/4 in. (6 mm) diam continuous bead of caulk or sealant shall be applied around the circumference of the steel sleeve at its egress from the gypsum board layers on both sides of the wall assembly.

3M COMPANY — CP 25WB+, IC 15WB+ or FB-3000 WT

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

Last Updated on 2008-02-14

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- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
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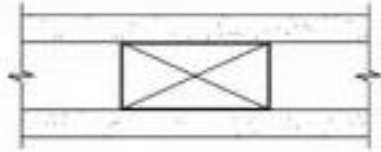
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UL DESIGN - WG3640

WALL ASSEMBLY
ASSEMBLY RATING - 1 HOUR

RESOURCE: GA-600-2018 FIRE RESISTANCE AND SOUND CONTROL DESIGN MANUAL



Thickness: 2-7/8" (Fire)
Approx. Weight: 7 psf (Fire)
Fire Test: UL R1319, 9-12-96,
UL Design U338

GYPSUM WALLBOARD, WOOD STUDS
Fire Design:
One layer 5/8" type X gypsum wallboard or gypsum veneer base applied parallel or at right angles to each side of either 2 x 3 or 2 x 4 wood studs, turned flatwise, 24" o.c. with 6d cement-coated nails, 1-7/8" long, 0.0915" shank, 1/4" heads, 7" o.c. Horizontal joints staggered not less than 12" on OPPOSITE SIDES. (NLB)

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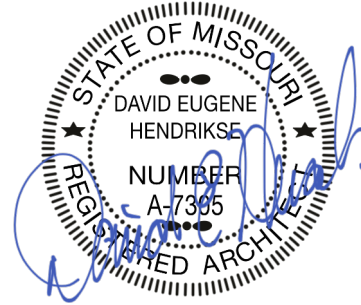
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10/09/24

WILSHIRE HILLS III
LEE'S SUMMIT, MISSOURI
MHDC Project No. #22-057 MT

SHEET TITLE
UL ASSEMBLIES

PROJECT NUMBER: 23034

SHEET NUMBER:

G-208

UL DESIGN - W-L2003

2/25/2019

Through-penetration Firestop Systems: XHEZ-W-L-2003 - UL Product Spec

2/25/2019

Through-penetration Firestop Systems: XHEZ-W-L-2003 - UL Product Spec

THROUGH-PENETRATION FIRESTOP SYSTEM

Assembly Usage Disclaimer

XHEZ - Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems

System No. W-L-2003

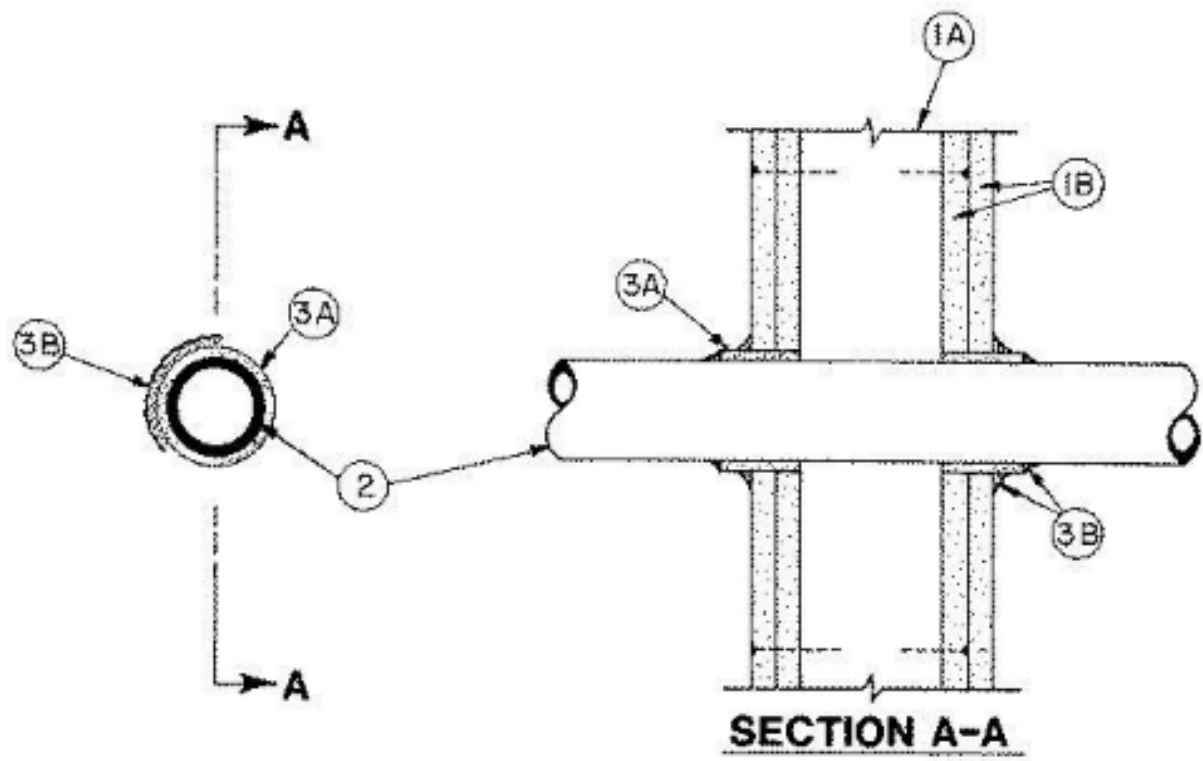
November 20, 2009

F Ratings — 1 and 2 Hr (See Item 3)

T Ratings — 1 and 2 Hr (See Item 3)

L Rating At Ambient — 7 CFM/sq ft (See Item 3B)

L Rating At 400 F — less than 1 CFM/sq ft (See Item 3B)



1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300,

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2/25/2019

Through-penetration Firestop Systems: XHEZ-W-L-2003 - UL Product Spec

U400 or V400 Series Wall or Partition Design 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. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC with nom 2 by 4 in. (51 by 102 mm) lumber end plates and cross braces. Steel studs to be min 3-5/8 in. (92 mm) wide by 1-3/8 in. (35 mm) deep channels spaced max 24 in. (610 mm) OC.
- B. **Gypsum Board*** — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, U400 or V400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 3-1/8 in. (79 mm).

2. **Through Penetrants** — One nonmetallic pipe or conduit to be centered in the through opening. The annular space between pipe or conduit and periphery of opening shall be min 1/4 in. (6 mm) and max 3/8 in. (10 mm). Pipe or conduit to be rigidly supported on both sides of the floor-ceiling assembly. The following types and sizes of nonmetallic pipes or conduits may be used:

- A. **Polyvinyl Chloride (PVC) Pipe** — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
- B. **Rigid Nonmetallic Conduit**** — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 or 80 PVC conduit installed in accordance with the National electric Code (NFPA No. 70).
- C. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** — Nom 2 in. (51 mm) diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.
- D. **Cellular Core Polyvinyl Chloride (ccPVC) Pipe** — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
- E. **Acrylonitrile Butadiene Styrene (ABS) Pipe** — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
- F. **Cellular Core Acrylonitrile Butadiene Styrene (ccABS) Pipe** — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

3. **Firestop System** — Installed symmetrically on both sides of wall assembly. The hourly F and T Ratings for the firestop system are equal to the hourly fire rating of

http://productspec.ul.com/document.php?id=XHEZ-W-L-2003

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http://productspec.ul.com/document.php?id=XHEZ-W-L-2003

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the wall assembly in which it is installed. The details of the firestop system shall be as follows.

A. **Fill, Void or Cavity Materials* — Wrap Strip** — Nom 1/4 in. (6 mm) thick intumescent elastomeric material faced on one side with aluminum foil, supplied in 2 in. (51 mm) wide strips. Nom 2 in. (51 mm) wide strip tightly wrapped around nonmetallic pipe (foil side out) with seam butted. Wrap strip layer securely bound with steel wire or aluminum foil tape and slid into annular space approx 1-1/4 in. (32 mm) such that approx 3/4 in. (19 mm) of the wrap strip protrudes from the wall surface.
3M COMPANY — FS-195+

B. **Fill, Void or Cavity Materials* — Caulk, Sealant or Putty** — Min 5/8 in. (16 mm) thickness of caulk or putty applied into annular space between wrap strip and periphery of opening. A nom 1/4 in. (6 mm) diam bead of caulk or putty to be applied to the wrap strip/wall interface and to the exposed edge of the wrap strip layers approx 3/4 in. (19 mm) from the wall surface.
3M COMPANY — CP 25WB+ caulk or MP+ Stix putty, IC 15WB+ caulk, FireDam 150+ caulk or FB-3000 WT sealant. (Note: L Ratings apply only when Type CP 25WB+ caulk or FB-3000 WT sealant is used. CP 25WB+ and FireDam 150+ not suitable for use with CPVC pipes.)

C. **Foil Tape** — (not shown) — Nom 4 in. (102 mm) wide, 3 mil thick aluminum tape wrapped around pipe prior to the installation of the wrap strip (Item 3A). Min of one wrap, flush with both sides of wall and proceeding outward. Tape is not required for pipes shown in Items 2A, 2B and 2C.

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Last Updated on 2009-11-20

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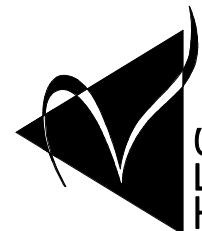
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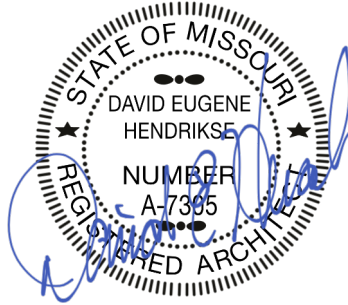
5 10/04/24 ASI 001



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10/09/24

WILSHIRE HILLS III

LEE'S SUMMIT, MISSOURI

MHDC Project No. #22-057 MT

SHEET TITLE
UL ASSEMBLIES

PROJECT NUMBER: 23034

SHEET NUMBER:

G-209

UL DESIGN - U356

UL Product iQ®



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- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variations
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variations

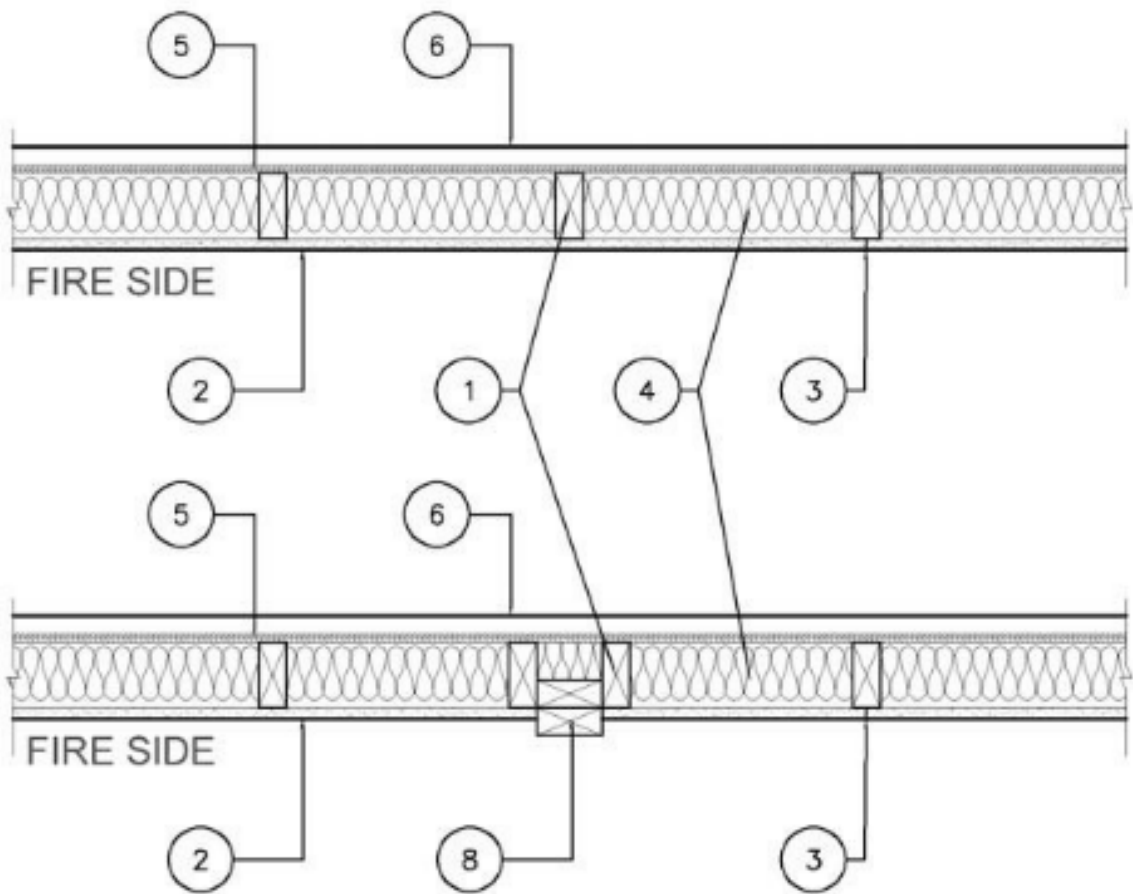
Design No. U356

August 4, 2023

Bearing Wall Rating - 1 Hr Rating Exposed to Fire on Interior Face Only
Bearing Wall Rating — 1 Hr Rating Exposed to Fire on Exterior Face (See Item 6E)
Finish Rating — 23 Min or 25 Min (See Item 2C)
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.

Feedback



1. **Wood Studs** — Nom 2 by 4 in. OC with two 2 by 4 in. top and one 2 by 4 in. bottom plates. Studs laterally-braced by wood structural panel sheathing (Item 5). When **Mineral and Fiber Boards*** (Item 5A) are considered as bracing for the studs, the load is restricted to 76% of allowable axial load. Walls effectively fire stopped at top and bottom of wall.
2. **Gypsum Board*** — Any 5/8 in. thick UL Classified Gypsum Board that is eligible for use in Design Nos. L501, G512 or U305. Nom 5/8 in. thick, 4 ft wide, applied vertically and nailed to studs and bearing plates 7 in. OC with 6d cement-coated nails, 1-7/8 in. long with 1/4 in. diam head.

Feedback

When Item **Steel Framing Members*** (Item 7 or any alternate clips), is used, gypsum panels attached to furring channels with 1 in. long Type S bugle-head steel screws spaced 12 in. OC.

When Item 7A **Steel Framing Members***, is used, two layers of gypsum panels attached to furring channels. Base layer attached to furring channels with 1 in. long Type S bugle-head steel screws spaced 12 in. OC. Face layer attached to furring channels with 1-5/8 in. long Type S bugle-head steel screws spaced 12 in. OC. All joints in face layers staggered with joints in base layers.

AMERICAN GYPSUM CO [\(View Classification\)](#) — CNXK.R14196

BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO [\(View Classification\)](#) — CNXK.R19374

CABOT MANUFACTURING ULC [\(View Classification\)](#) — CNXK.R3660

CERTAINTED GYPSUM INC [\(View Classification\)](#) — CNXK.R3660

CGC INC [\(View Classification\)](#) — CNXK.R19751

CERTAINTED GYPSUM INC [\(View Classification\)](#) — CNXK.R18482

GEORGIA-PACIFIC GYPSUM L L C [\(View Classification\)](#) — CNXK.R2717

NATIONAL GYPSUM CO [\(View Classification\)](#) — CNXK.R3501

PABCO BUILDING PRODUCTS L L C, DBA PARCO GYPSUM [\(View Classification\)](#) — CNXK.R7094

PANEL REY S A [\(View Classification\)](#) — CNXK.R21796

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD [\(View Classification\)](#) — CNXK.R19262

THAI GYPSUM PRODUCTS PCL [\(View Classification\)](#) — CNXK.R27517

UNITED STATES GYPSUM CO [\(View Classification\)](#) — CNXK.R1319

USG BORAL DRYWALL SFZ LLC [\(View Classification\)](#) — CNXK.R38438

USG MEXICO S A DE C V [\(View Classification\)](#) — CNXK.R16089

2A. Gypsum Board* — (As an alternate to Item 2, Not Shown) — Any 5/8 in. thick 4 ft wide gypsum panels that are eligible for use in Design Nos. L501, G512 or U305, supplied by the Classified Companies listed below shown in the **Gypsum Board*** (CNXK) category. Applied vertically and attached to studs and bearing plates with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board.

CGC INC

UNITED STATES GYPSUM CO

USG BORAL DRYWALL SFZ LLC

USG MEXICO S A DE C V

2B. Gypsum Board* — (As an alternate to Item 2, Not Shown) — 5/8 in. thick 4 ft wide gypsum panels applied vertically and attached to studs and bearing plates with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board.

2C. Gypsum Board* — (As an alternate to Item 2, Not Shown) — For Use with Item 5A only - 5/8 in. thick 4 ft wide gypsum panels applied horizontally and attached to studs and bearing plates with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last screws 1 in. and 4 in. from edges of board. Finish Rating is 25 min.

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

AMERICAN GYPSUM CO — Types AGX-1, M-Glass, AG-C, LightRoc

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

CERTAINTED GYPSUM INC — Type C, Type X-1, Easi-Lite Type X-2

GEORGIA-PACIFIC GYPSUM L L C — Types X, Veneer Plaster Base-Type X, Water Rated-Type X, Sheathing Type-X, Soffit-Type X, Type X ComfortGuard Sound Deadening Gypsum Board.

PABCO BUILDING PRODUCTS L L C, DBA PARCO GYPSUM — Types PG-11, PGS-WRS, PGI.

THAI GYPSUM PRODUCTS PCL — Type C or Type X

2D. Gypsum Board* — (As an alternate to Item 2) — Not to be used with Item 7, 5/8 in. thick, 4 ft. wide, paper surfaced, applied vertically only and fastened to the studs and plates with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 1/4 in. diam heads, 7 in. OC.

NATIONAL GYPSUM CO — Type SBWS

2E. Gypsum Board* — (As an alternate to Items 2 through 2D) — Nominal 5/8 in. thick, 4 ft wide panels, secured as described in Item 2.

PABCO BUILDING PRODUCTS L L C, DBA PARCO GYPSUM — Type QuietRoc ES.

2F. Gypsum Board* — (As an alternate to Item 2) — Not to be used with Item 7, 5/8 in. thick, 4 ft. wide, paper surfaced, applied vertically or horizontally and fastened to the studs and plates with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board.

CERTAINTED GYPSUM INC — Type SilentFX

2G. Wall and Partition Facings and Accessories* — (As an alternate to Items 2 through 2F) — Nominal 5/8 in. thick, 4 ft wide panels, secured as described in Item 2.

PABCO BUILDING PRODUCTS L L C, DBA PARCO GYPSUM — Type QuietRoc S27.

2H. Gypsum Board* — (As an alternate to Item 2) — 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a maximum 10 in. OC with the last two screws 7 and 1 in. from the edges of the board. When used in widths other than 48 in., gypsum panels are to be installed horizontally.

CERTAINTED GYPSUM INC — Type LGFC6A (finish rating 21 min), Type LGFC2A, Type LGFC-C/A, Type LGFC-WD, Type LGLXL

2I. Gypsum Board* — (As an alternate to Item 2) — 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board. When used in widths of other than 48 in., gypsum boards are to be installed horizontally.

AMERICAN GYPSUM CO — Types AGX-1 (finish rating 25 min.), M-Glass (finish rating 25 min.), AG-C (finish rating 25 min.), LightRoc (finish rating 25 min.)

Feedback

NATIONAL GYPSUM CO — Type FSK, Type FSK-G, Type FSW, Type FSW-3, Type FSW-5, Type FSW-G, Type FSK-C, Type FSW-C, Type FSMR-C, Type FSW-6, Type FSL

2J. Gypsum Board* — (As an alternate to Item 2) - 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread steel screws spaced a max 8 in. OC with the last screw 1 in. from edge of board. When used in widths other than 48 in., gypsum boards are to be installed horizontally.

CERTAINTED GYPSUM INC — Type C, Type X-1 (finish rating 26 min), Easi-Lite Type X (finish rating 24 min), Easi-Lite Type X-2, Type EGRG or GlasRoc or GlasRoc Sheathing (finish rating 23 min)

3. Joints and Fastener Heads — (Not Shown) — Gypsum board joints covered with tape and joint compound. Fastener heads covered with joint compound.

4. Batts and Blankets* — Mineral fiber or glass fiber insulation, 3-1/2 in. thick, pressure fit to fill wall cavities between studs and plates. Mineral fiber insulation to be unfaced and to have a min density of 3 pcf. Glass fiber insulation to be faced with aluminum foil or kraft paper and to have a min density of 0.9 pcf (min R-13 thermal insulation rating).

See **Batts and Blankets*** (BKNV) Category in the Building Materials Directory and **Batts and Blankets*** (BZIJ) Category in the Fire Resistance Directory for names of Classified Companies.

4A. Fiber, Sprayed* — As an alternate to Batts and Blankets (Item 4) — Spray applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product with a nominal dry density of 2.7 lb/ft³. Alternate Application Method: The fiber is applied without water or adhesive at a nominal dry density of 3.5 lb/ft³, in accordance with the application instructions supplied with the product.

Applegate Greenfiber Acquisition LLC — INSS15LD, INSS41LD, Insulmax, and SANCTUARY are to be used for dry application only.

4B. Fiber, Sprayed* — As an alternate to Item 4 and 4A — Spray applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. Nominal dry density of 4.58 lb/ft³.

NU-WOOL CO INC — Cellulose Insulation

4C. Fiber, Sprayed* — As an alternate to Batts and Blankets (Item 4) — Spray applied cellulose fiber. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. The minimum dry density shall be 4.30 lbs/ft³.

INTERNATIONAL CELLULOSE CORP — Celbar-RL

4D. Fiber, Sprayed* — As an alternate to Batts and Blankets (Item 4) — Spray applied, granulated mineral fiber material. The fiber is applied with adhesive, at a minimum density of 4.0 pcf, to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. See Fiber, Sprayed (CCAZ).

AMERICAN ROCKWOOL MANUFACTURING, LLC — Type Rockwool Premium Plus

5. Wood Structural Panel Sheathing — Min 7/16 in. thick, 4 ft wide wood structural panels, min grade "C-D" or "Sheathing". Installed with long dimension of sheet (strength axis) or face grain of plywood parallel with or perpendicular to studs. Vertical joints centered on studs. Horizontal joints backed with nom 2 by 4 in. wood blocking. Attached to studs on exterior side of wall with 6d cement coated box nails spaced 6 in. OC at perimeter of panels and 12 in. OC along interior studs.

5A. Mineral and Fiber Boards* — As an alternate to Item 5 - Min 1/2 in. thick, 4 ft wide sheathing, installed vertically to studs. Vertical joints centered on studs. Horizontal joints backed with nom 2 by 4 in. wood blocking. Attached to studs on exterior side of wall with 1-1/2 in. long galvanized roofing nails spaced 6 in. OC at perimeter of panels and 12 in. OC along interior studs. As an option a weather resistive barrier may be applied over the Mineral and Fiber Boards.

6. Exterior Facings — Installed in accordance with the manufacturer's installation instructions. One of the following exterior facings is to be applied over the sheathing:

A. Vinyl Siding — Molded Plastic* — Contoured rigid vinyl siding having a flame spread value of 20 or less.

See **Molded Plastic** (BTAT) category in the Building Materials Directory for names of manufacturers.

B. Particle Board Siding — Hardboard exterior sidings including patterned panel or lap siding.

C. Wood Structural Panel or Lap Siding — APA Rated Siding. Exterior, plywood, OSB or composite panels with veneer faces and structural wood core, per PS 1 or APA Standard PRP-108, including textured, rough sawn, medium density overlay, brushed, grooved and lap siding.

D. Cementitious Stucco — Portland cement or synthetic stucco systems with self-furring metal lath or adhesive base coat. Thickness from 3/8 to 3/4 in., depending on system.

E. Brick Veneer — Any type on nom 4 in. wide brick veneer. When brick veneer is used, the rating is applicable with exposure on either face. Brick veneer fastened with corrugated metal wall ties attached over sheathing to wood studs with 8d nail per tie; ties spaced not more than each sixth course of brick and max 32 in. OC horizontally. One in. air space provided between brick veneer and sheathing.

F. Exterior Insulation and Finish System (EIFS) — Nom 1 in. **Foamed Plastic*** insulation bearing the UL Classification Marking, attached over sheathing and finished with coating system, or Portland cement or synthetic stucco systems, in accordance with manufacturer's instructions. See **Foamed Plastic** (BRYX and CCVV) categories for names of Classified companies.

G. Siding — Aluminum or steel siding attached over sheathing to studs.

H. Fiber-Cement Siding — Fiber-cement exterior sidings including smooth and patterned panel or lap siding.

I. Wall and Partition Facings and Accessories* — Stone veneer is mortar bonded to a lath, scratch coat and water resistant barrier applied to sheathing, installed in accordance with the manufacturers installation instructions, and meeting the requirements of local code agencies.

ELDORADO STONE OPERATIONS L L C — Type Eldorado Stone

J. Cementitious Backer Units — 1/2 in. or 5/8 in., min. 32 in. wide- Applied vertically or horizontally with vertical joints centered over studs. Fastened to studs and runners with cement board screws of adequate length to penetrate stud by a minimum 3/4 in., spaced a max of 8 in. OC. Horizontal joints need not be backed by framing. When Cementitious Backer Units are used, the rating is applicable with exposure on either face. Cementitious Backer Units for use as substrate for exterior finishes such as ceramic tile, slate, marble, natural stone, manufactured stone, thin brick, or Portland cement or synthetic stucco.

NATIONAL GYPSUM CO — Type PernaBase

K. Building Units — 1 in., 2 in. or 3 in. thick, 4 ft. wide composite exterior cement backer board with rigid insulation, finished with ceramic tile, marble, natural stone, manufactured stone, thin brick, Portland cement or synthetic stucco.

NATIONAL GYPSUM CO — Type PBCI

6A. Building Units* — As an alternate to Exterior Facing Item 6 — Insulated steel panels, 12 through 42 in. wide. Attached over sheathing through retainer clips to studs or support steel with No. 14 hex head self-tapping screws located at each joint in the concealed lip of the units and spaced in accordance with the structural design requirements. KINGSPAN INSULATED PANELS INC — Types 200, 300, 400, 900, or KS series, 2 through 6 in. thickness; CWP-V, H, 2 through 3 in. nominal thickness or Designwall 2000 or Designwall 4000, 2 and 3 in. nominal thickness.

7. Steel Framing Members* — (Optional, Not Shown) — Furring Channels and Steel Framing Members as described below:

a. Furring Channels — Formed of No. 25 MSG galv steel, 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Gypsum board attached to furring channels as described in Item 2.

b. Steel Framing Members* — Used to attach furring channels (Item 7A) to studs. Clips spaced 48 in. OC, and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. Furring channels are friction fitted into clips. RSIC-1 clip for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) clip for use with 2-23/32 in. wide furring channels.

PAE INTERNATIONAL L L C — Types RSIC-1, RSIC-1 (2.75).

Feedback

7A. Steel Framing Members* — (Optional, Not Shown, As an alternate to Item 7) — Furring channels and Steel Framing Members as described below:

a. Furring Channels — Formed of No. 25 MSG galv steel, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. Two layers of gypsum board attached to furring channels as described in Item 2.

b. Steel Framing Members* — Used to attach furring channels (Item 7Aa) to interior side of studs. Clips spaced 48 in. OC., and secured to studs with two No. 8 x 2-1/2 in. coarse drywall screws, one through the hole at each end of the clip. Furring channels are friction fitted into clips.

KINETICS NOISE CONTROL INC — Type Isomax.

7B. Steel Framing Members* — (Optional, Not Shown, As an alternate to Item 7) — Furring channels and Steel Framing Members as described below:

a. Furring Channels — Formed of No. 25 MSG galv steel, 2-3/8 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Gypsum board attached to furring channels as described in Item 2.

b. Steel Framing Members* — Used to attach furring channels (Item a) to studs. Clips spaced 48 in. OC. Genie clips secured to studs with No. 8 x 1-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips.

PLITEQ INC — Type Genie Clip

7C. Steel Framing Members* — (Optional, Not Shown, As an alternate to Item 7) — Furring channels and Steel Framing Members as described below:

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

b. Steel Framing Members* — Used to attach furring channels (Item 7Ca) to studs. Clips spaced 48 in. OC., and secured to studs with 2 in. coarse drywall screw with 1 in. diam washer through the center hole. Furring channels are friction fitted into clips.

STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237R

7D. Steel Framing Members* — (Optional, Not Shown, As an alternate to Item 7) — Furring channels and Steel Framing Members as described below:

a. Furring Channels — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 7Db. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in Item 2.

b. Steel Framing Members* — Used to attach furring channels (Item 7Da) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips.

REGUPOL AMERICA — Type SonusClip

7E. Steel Framing Members* — (Optional, Not Shown, As an alternate to Item 7) — Resilient channels and Steel Framing Members as described below:

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

b. Steel Framing Members* — Used to attach resilient channels (Item 7Ea) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Resilient channels are secured to clips with one No. 10 x 1/2 in. pan-head self-drilling screw.

KEENE BUILDING PRODUCTS CO INC — Type RC+ Assurance Clip

7F. Steel Framing Members* — (Optional, Not Shown, As an alternate to Item 7) — Furring channels and Steel Framing Members as described below:

a. Furring Channels — Formed of No. 25 MSG galv steel, 2-23/32 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Gypsum board attached to furring channels as described in Item 2.

b. Steel Framing Members* — Used to attach furring channels (Item 7Fa) to studs. Clips spaced maximum 48 in. OC. Clips secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. Furring channels are friction fitted into clips.

CLARKDIETRICH BUILDING SYSTEMS — Type ClarkDietrich Sound Clip

8. Non-Bearing Wall Partition Intersection — (Optional) — Two nominal 2 by 4 in. stud or nominal 2 by 6 in. stud nailed together with two 3in. long 10d nails spaced a max. 16 in. OC, vertically and fastened to one side of the minimum 2 by 4 in. stud with 3 in. long 10d nails spaced a max 16 in. OC, vertically. Intersection between partition wood studs to be flush with the 2 by 4 in. studs. The wall partition wood studs are to be framed by a second 2 by 4 in. wood stud fastened with 3 in. long 10d nails spaced a max. 16 in. OC, vertically. Maximum one non-bearing wall partition intersection per stud cavity. Non-bearing wall partition stud depth shall be at a minimum equal to the depth of the bearing wall.

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

Last Updated on 2023-08-04

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Feedback

PRINTS ISSUED
10/30/23 PERMIT SUBMITTAL

REVISIONS:
1 12/15/23 Addendum 1 - Response to City Comments
5 10/04/24 ASI 001

ARCHITECTURE
INTERIOR DESIGN
ENGINEERING
PLANNING

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WILSHIRE HILLS III
LEE'S SUMMIT, MISSOURI
MHDC Project No. #22-057 MT

SHEET TITLE
UL ASSEMBLIES

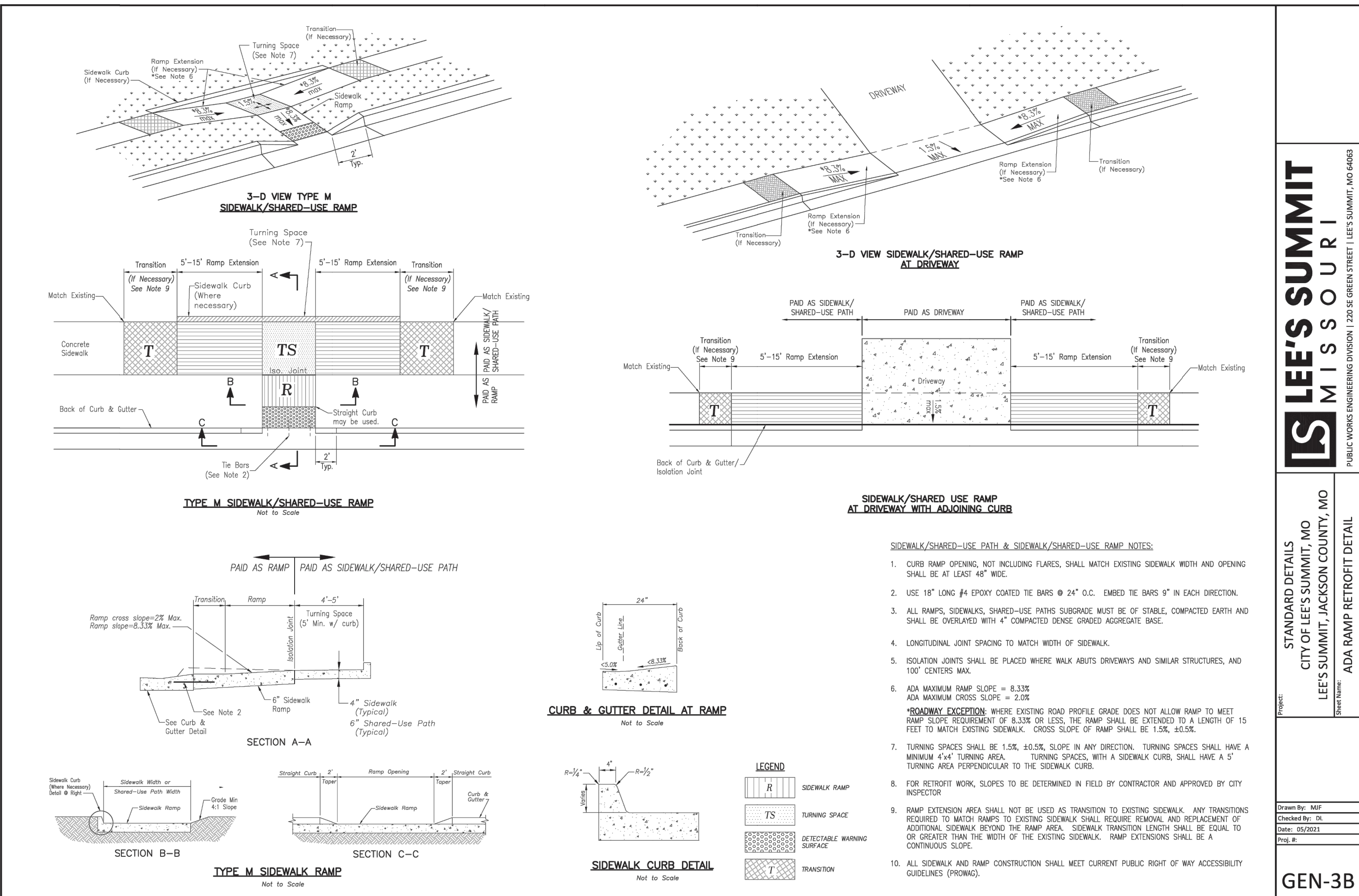
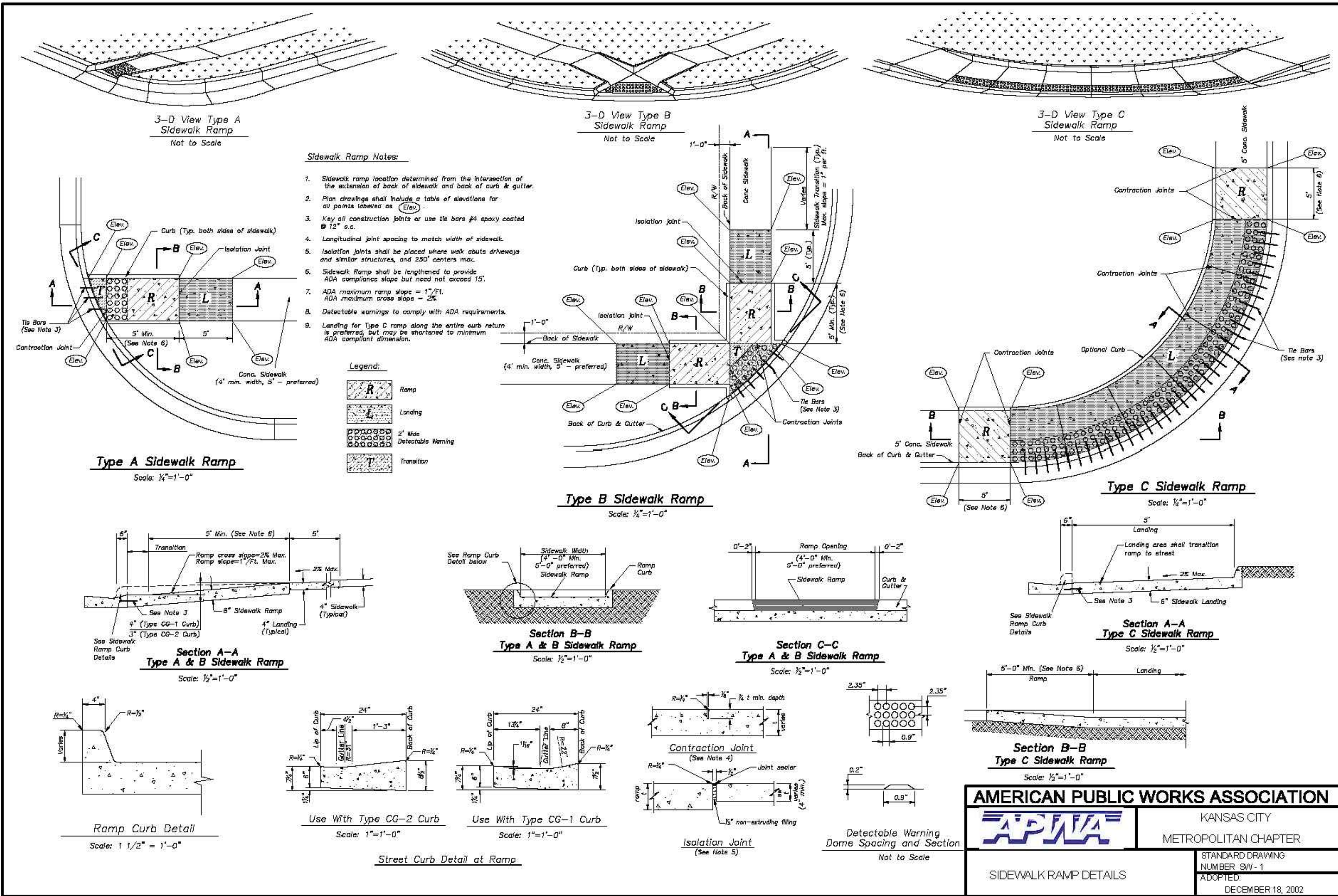
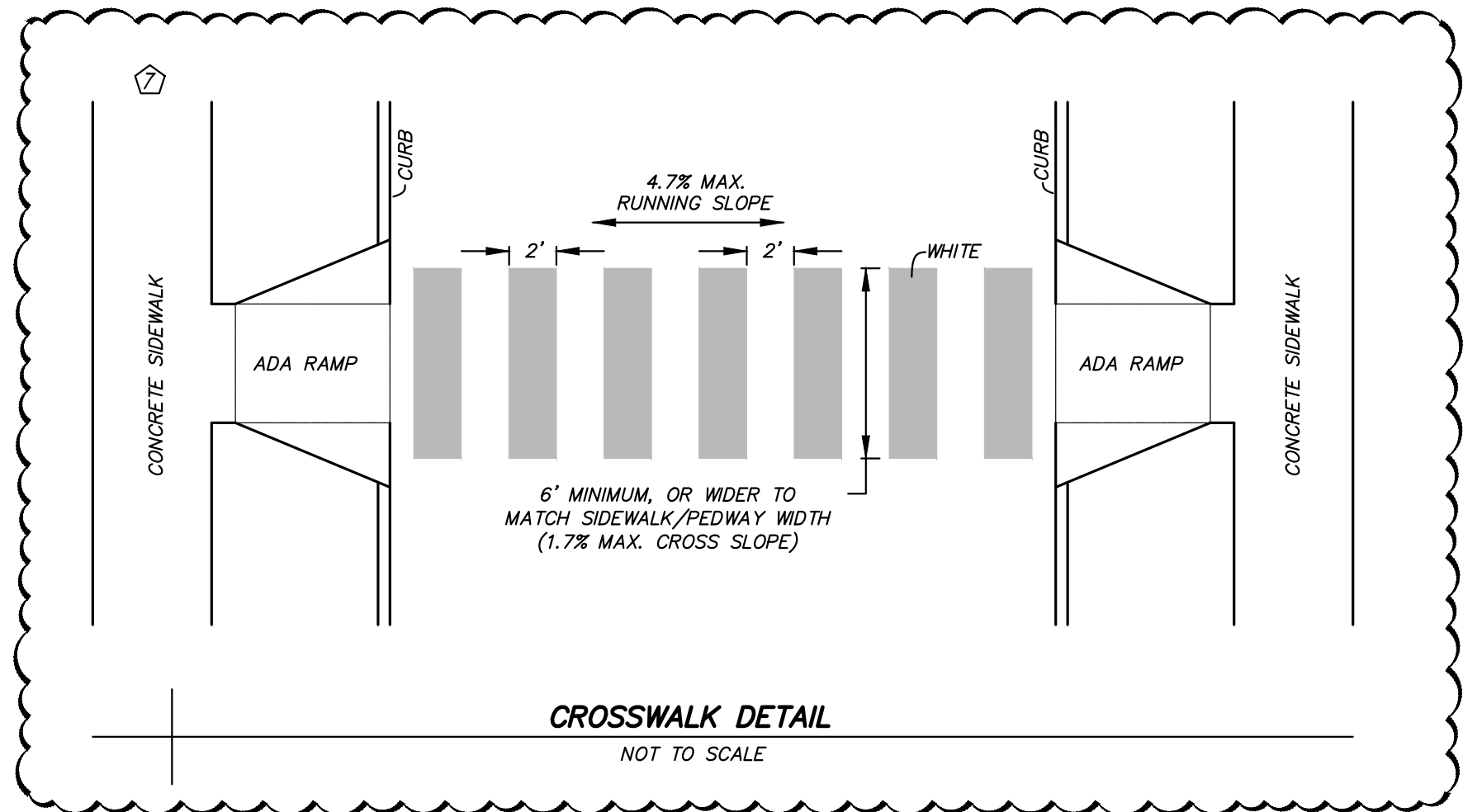
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SHEET NUMBER:

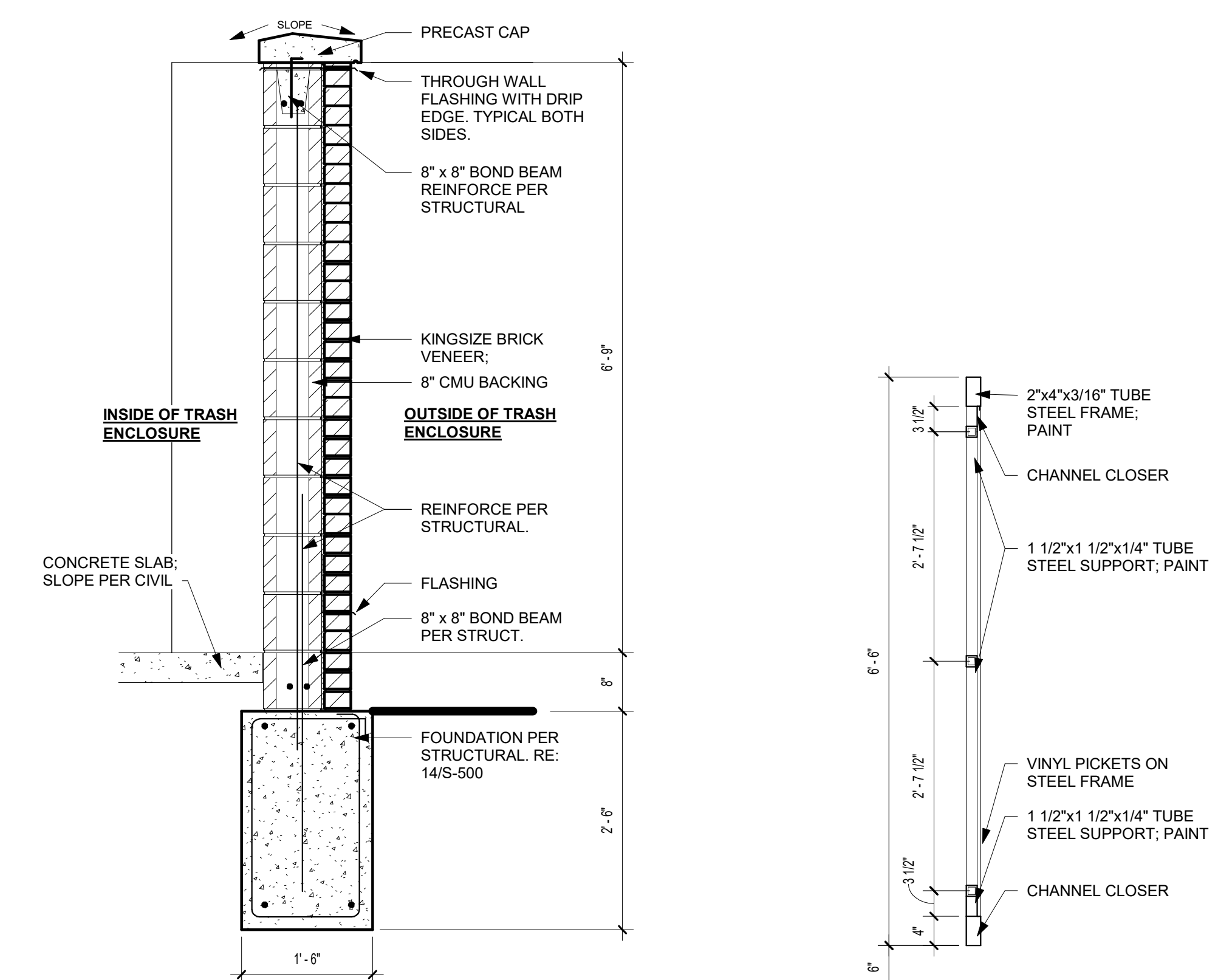


Feedback

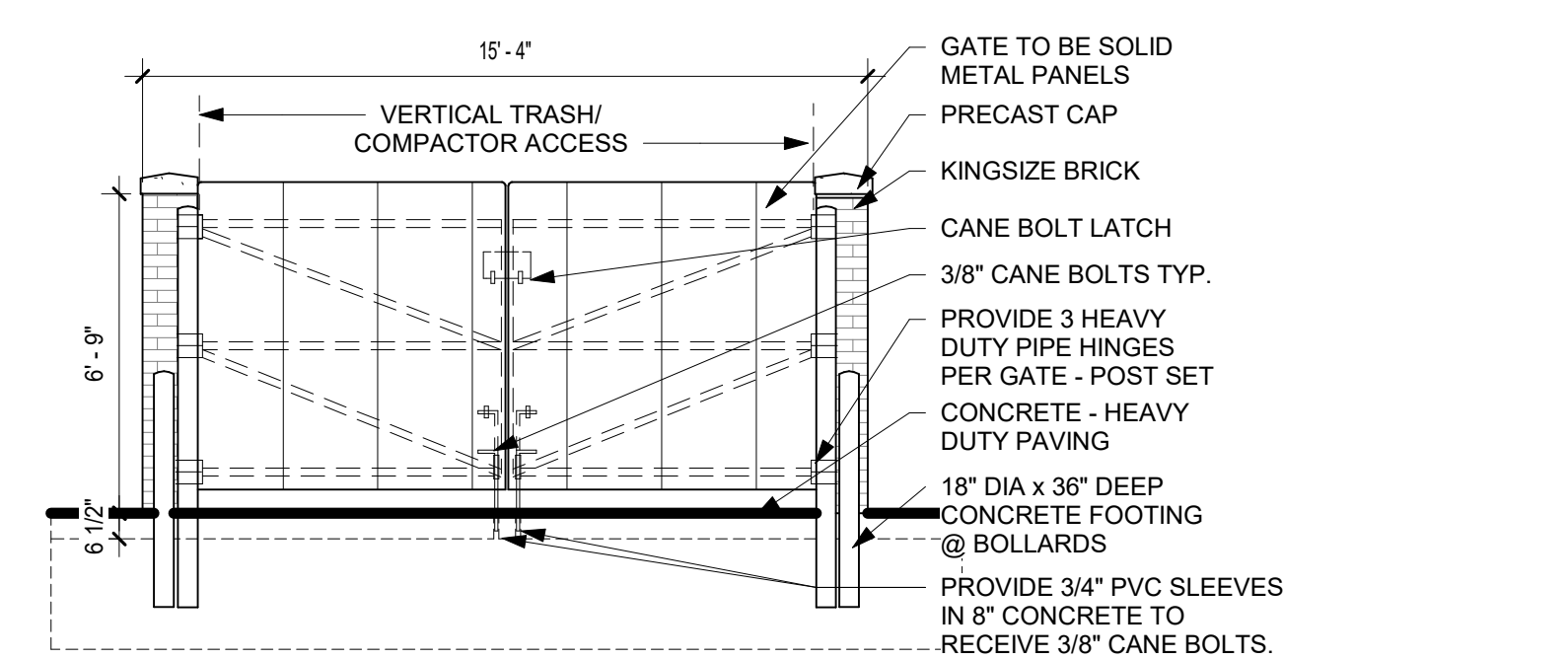
P:\GENERAL PROJECTS\15925--LES--WILSHIRE-HILLS-3--ENG\CAD\15925 COVER & DETAILS.DWG 10/8/2024



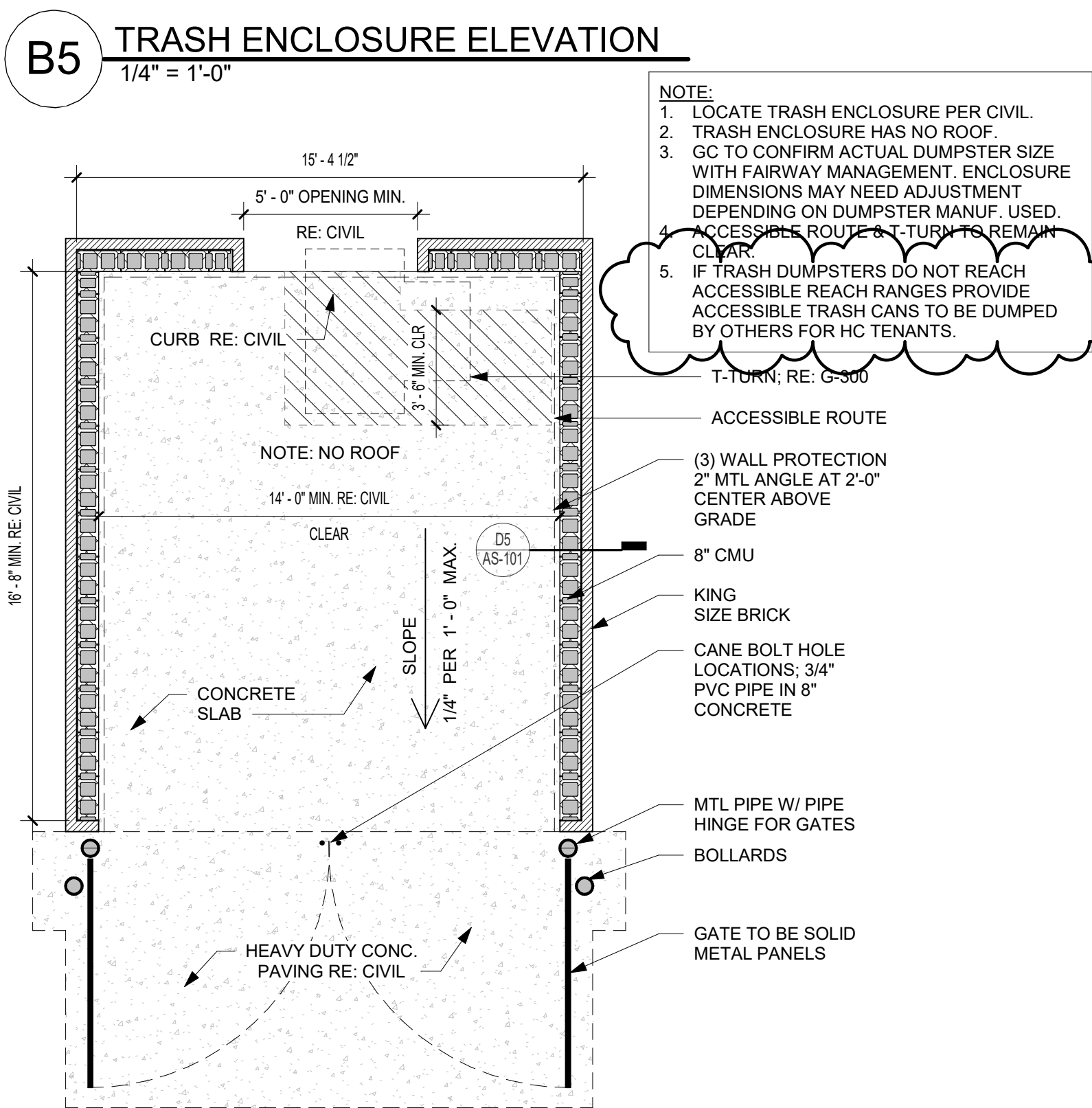
CONSTRUCTION DOCUMENTS



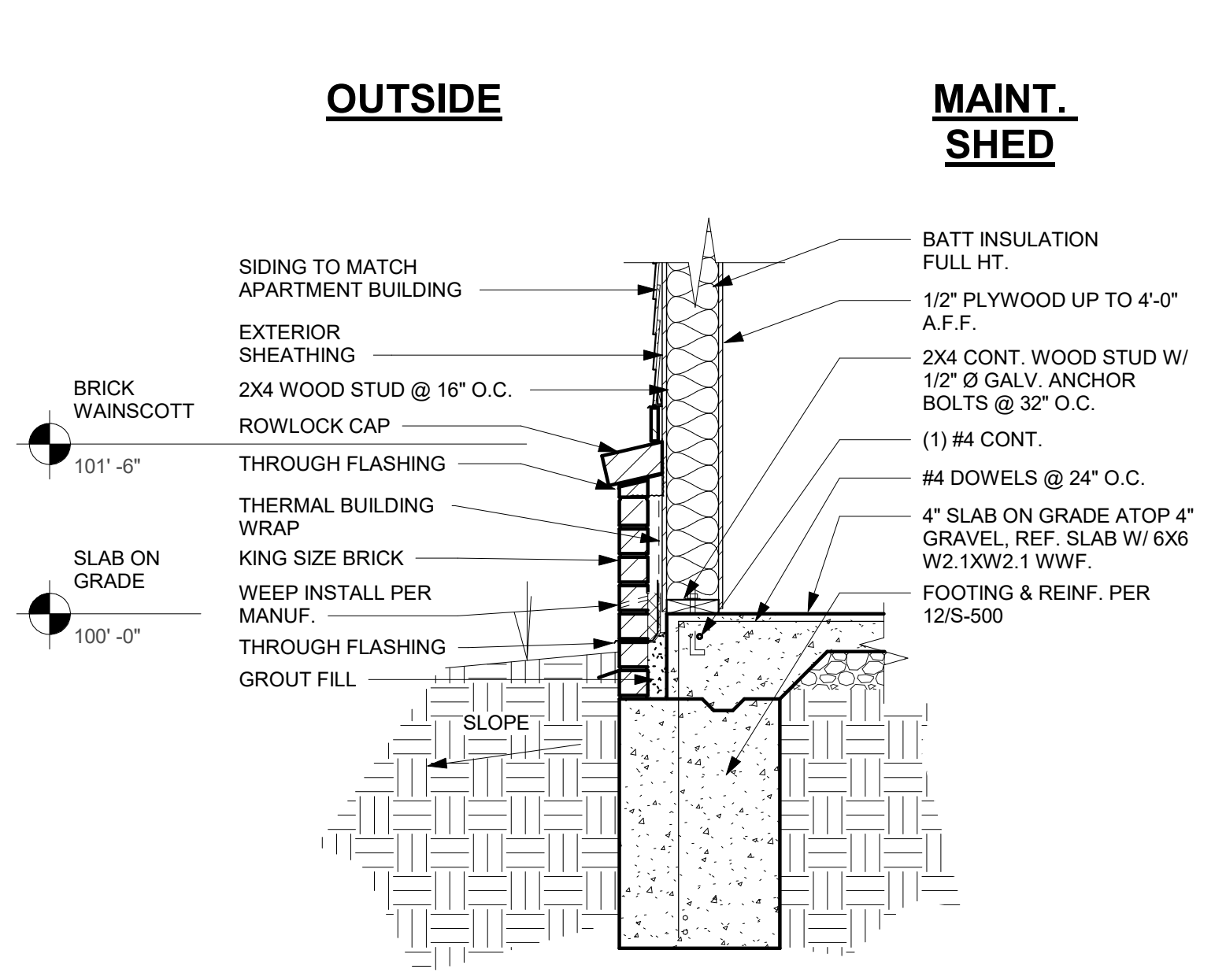
D5 TRASH ENCLOSURE SECTION
3/4" = 1'-0"



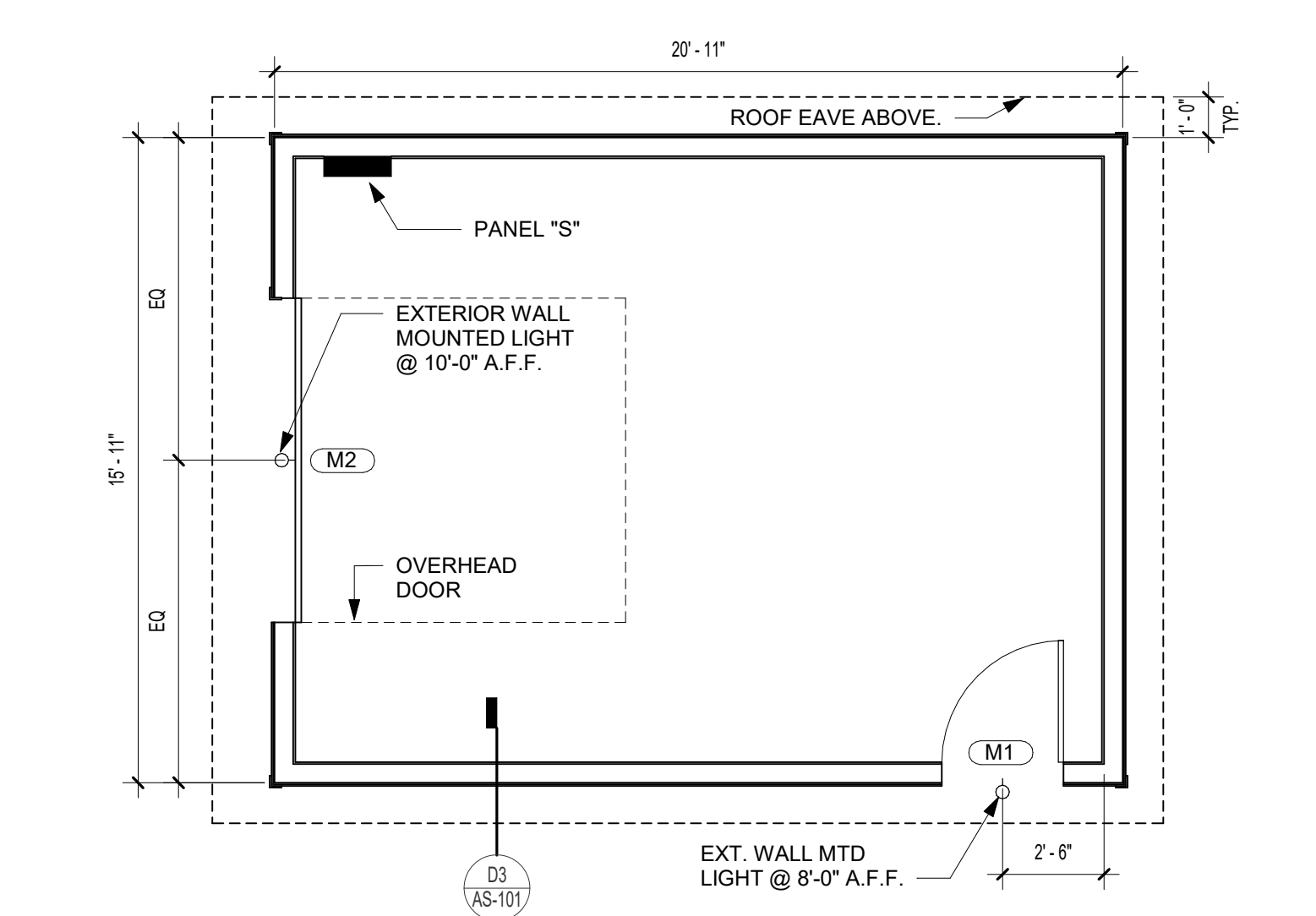
D4 TRASH ENCLOSURE GATE SECTION
3/4" = 1'-0"



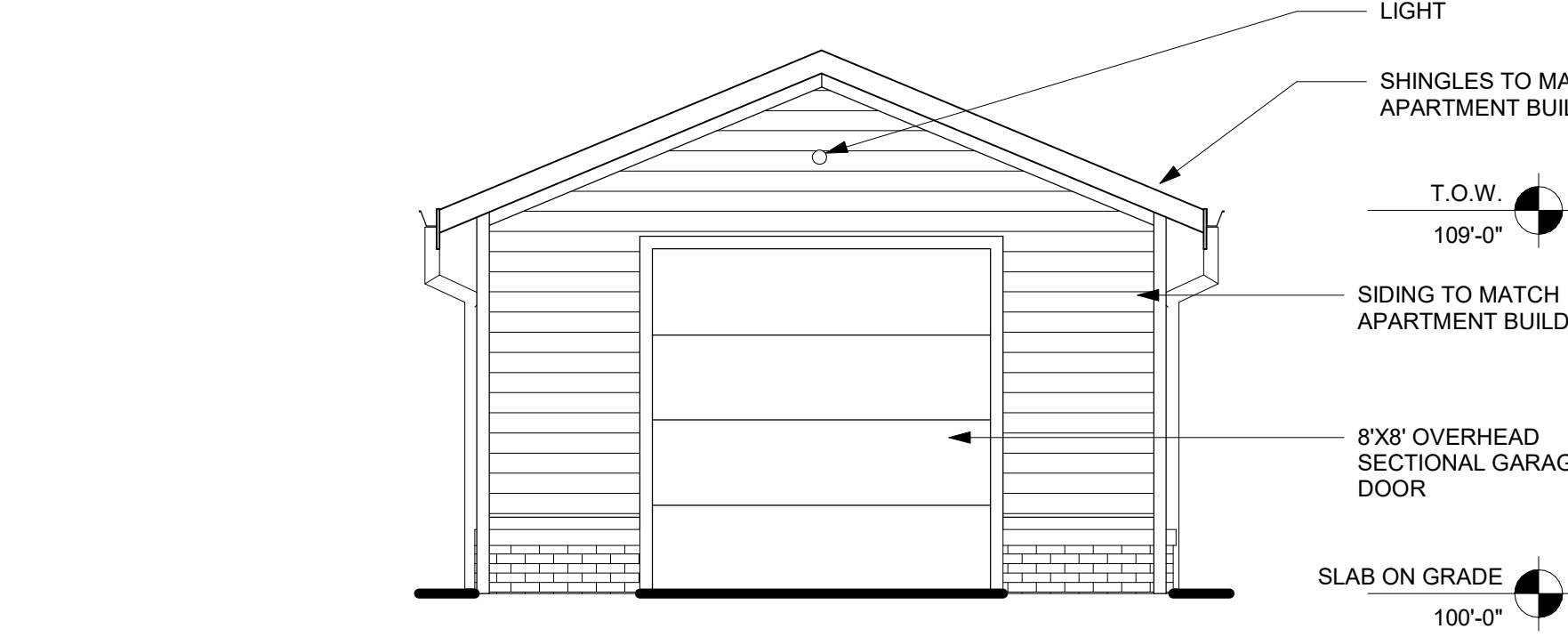
A5 TRASH ENCLOSURE FLOOR PLAN
1/4" = 1'-0"



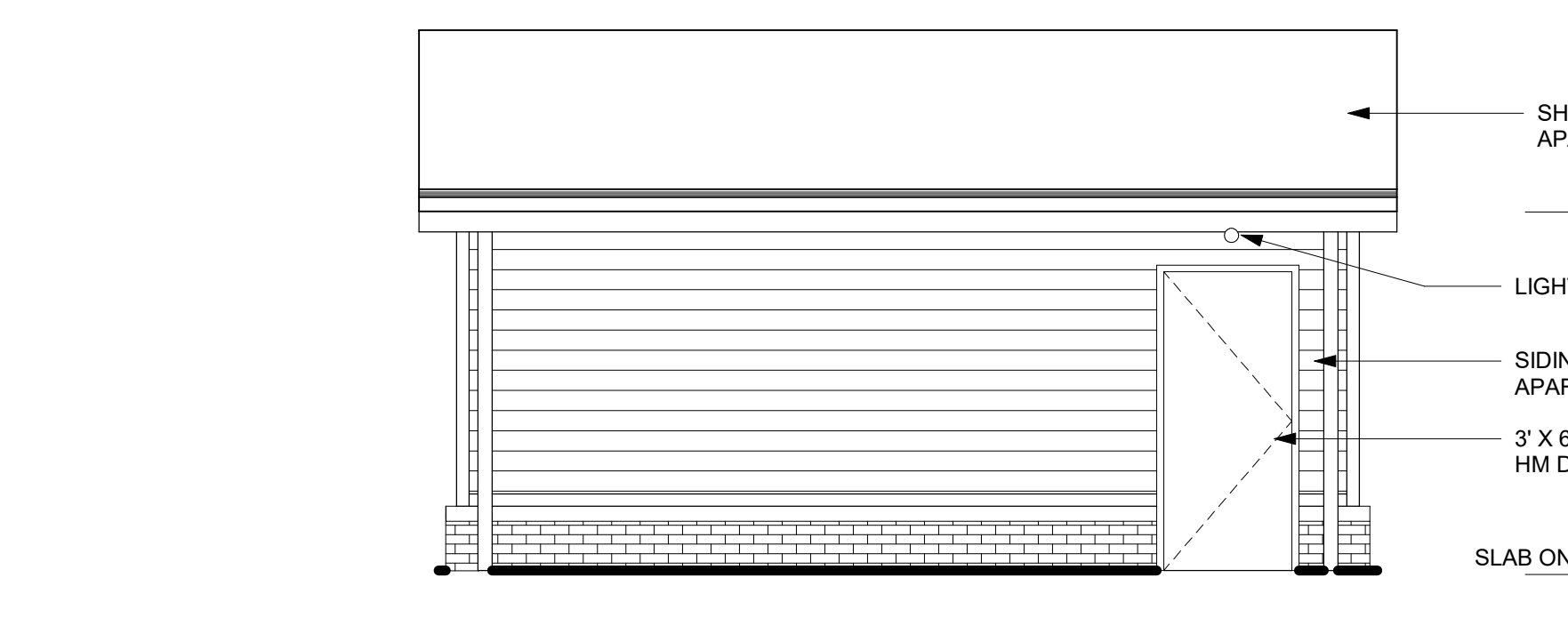
D3 MAINTENANCE SHED SECTION
3/4" = 1'-0"



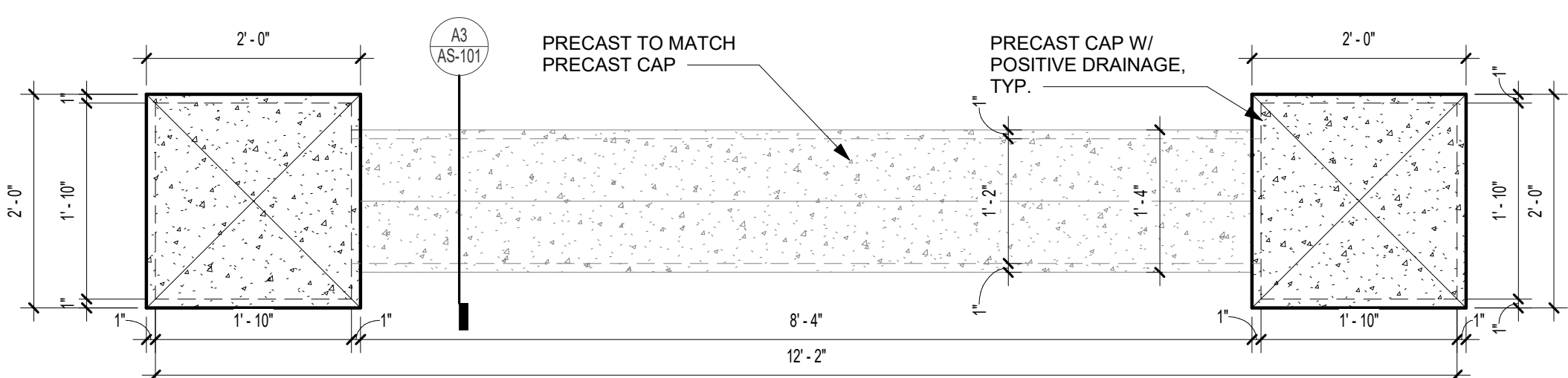
B3 MAINTENANCE SHED FLOOR PLAN
1/4" = 1'-0"



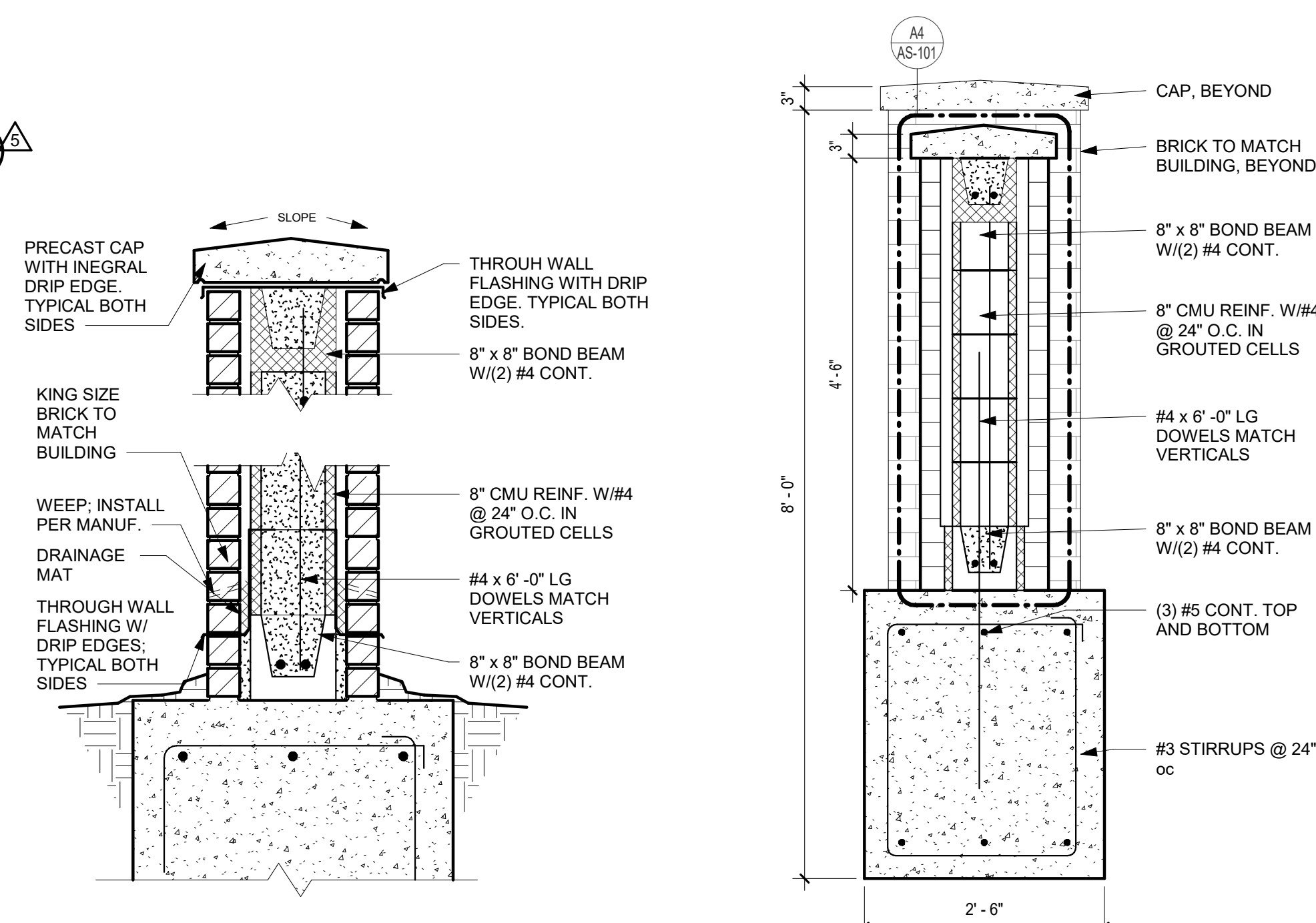
D1 MAINTENANCE SHED FRONT ELEVATION
1/4" = 1'-0"



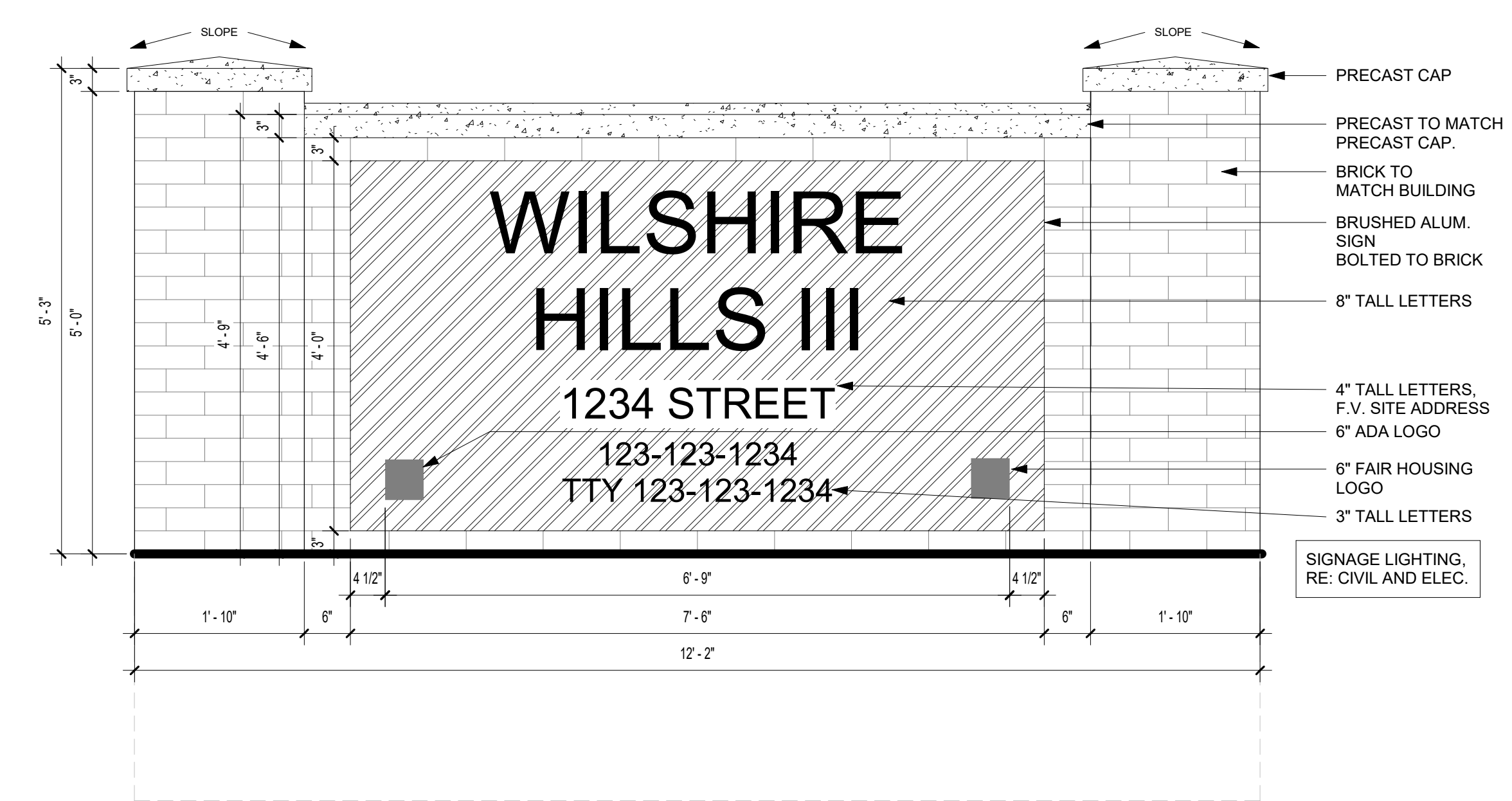
C1 MAINTENANCE SHED SIDE ELEVATION
1/4" = 1'-0"



B1 MONUMENT SIGN PLAN
3/4" = 1'-0"



A4 MONUMENT SIGN SECTION
1" = 1'-0"



A1 MONUMENT SIGN FRONT ELEVATION
3/4" = 1'-0"

PRINTS ISSUED
10/30/23 PERMIT SUBMITTAL

REVISIONS:
4 07/16/24 Addendum 4 - Response to City Comments
5 10/04/24 ASI 001

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STATE OF MISSOURI
DAVID EUGENE HENDRICKS
NUMBER A-7365
EXPIRATION DATE 12/31/2024
10/09/24

WILSHIRE HILLS III
LEE'S SUMMIT, MISSOURI
MHDC Project No. #22-057 MT

SHEET TITLE
ARCHITECTURAL SITE AMENITIES

PROJECT NUMBER: 23034

SHEET NUMBER:

AS-101

REFERENCE G-003 FOR GENERAL NOTES

RCP LEGEND

- C2 - 2' X 4' ACT SYSTEM - CERAMAGUARD UNPERFORATED SQUARE LAY-IN, PER 095113
- C3 - GWB ON METAL STUD
- C4 - SMOOTH FIBERCEMENT BOARD. PROVIDE 1X BATTEN @ SEAMS. PAINT FINISH
- C8 - TONGUE & GROOVE (EXTERIOR) - SIZE: 1X6' PTD PER ARCH RECOMMENDATIONS
- 9'-0" INDICATES CEILING HEIGHT

PRINTS ISSUED
10/30/23 PERMIT SUBMITTAL

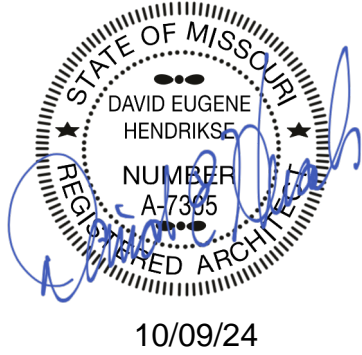
REVISIONS:
5 10/04/24 ASI 001

rosemann & ASSOCIATES P.C.

ARCHITECTURE
INTERIOR DESIGN
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WILSHIRE HILLS III
LEE'S SUMMIT, MISSOURI
MHDC Project No. #22-057 MT

SHEET TITLE
FIRST FLOOR REFLECTED
CEILING PLAN

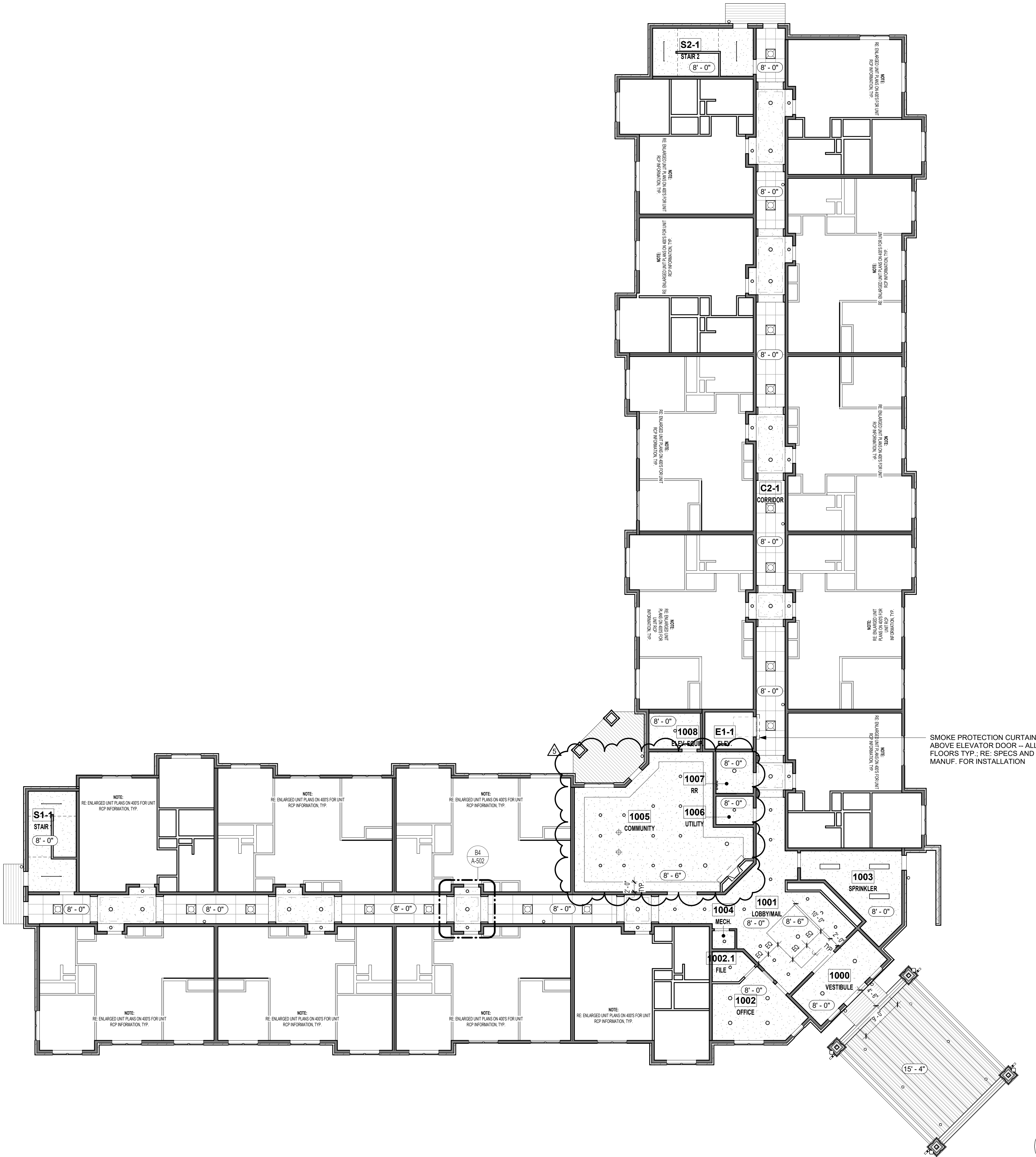
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SHEET NUMBER:

A-120

FIRST FLOOR REFLECTED
CEILING PLAN
3/32" = 1'-0"

1

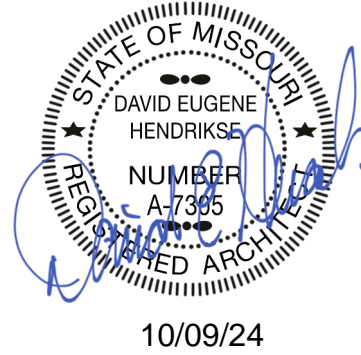


REFERENCE G-003 FOR GENERAL NOTES
REFERENCE A-120 FOR RCP LEGEND

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5 10/04/24 ASI 001

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WILSHIRE HILLS III
LEE'S SUMMIT, MISSOURI
MHDC Project No. #22-057 MT

SHEET TITLE
SECOND FLOOR REFLECTED
CEILING PLAN

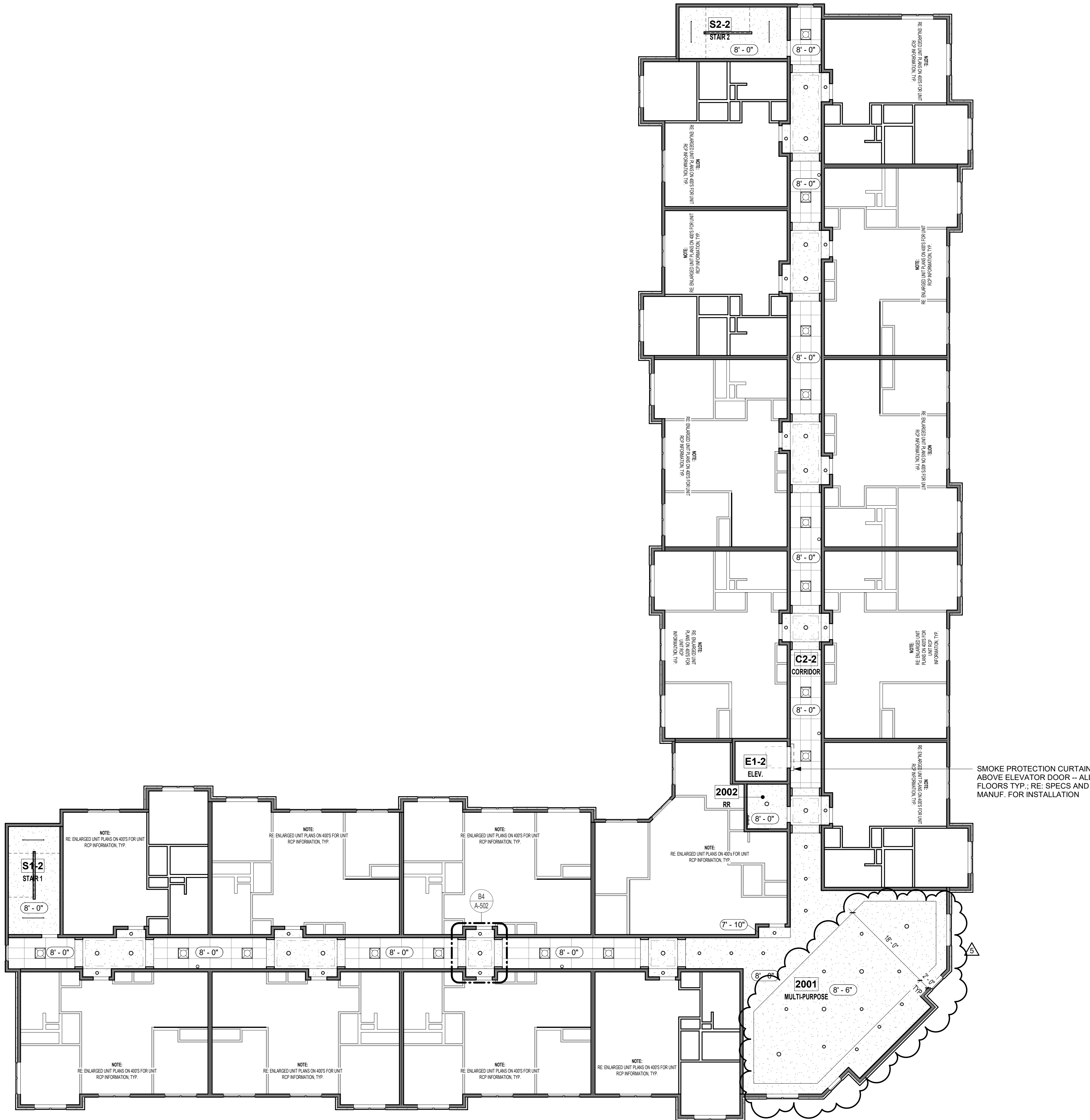
PROJECT NUMBER: 23034

SHEET NUMBER:

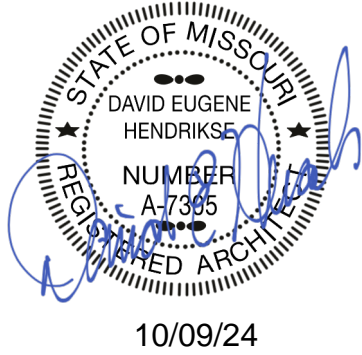
A-121

**SECOND FLOOR REFLECTED
CEILING PLAN**
3/32" = 1'-0"

1



SMOKE PROTECTION CURTAIN
ABOVE ELEVATOR DOOR - ALL
FLOORS TYP.; RE: SPECS AND
MANUF. FOR INSTALLATION



WILSHIRE HILLS III
LEE'S SUMMIT, MISSOURI
MHDC Project No. #22-057 MT

SHEET TITLE
THIRD FLOOR REFLECTED
CEILING PLAN

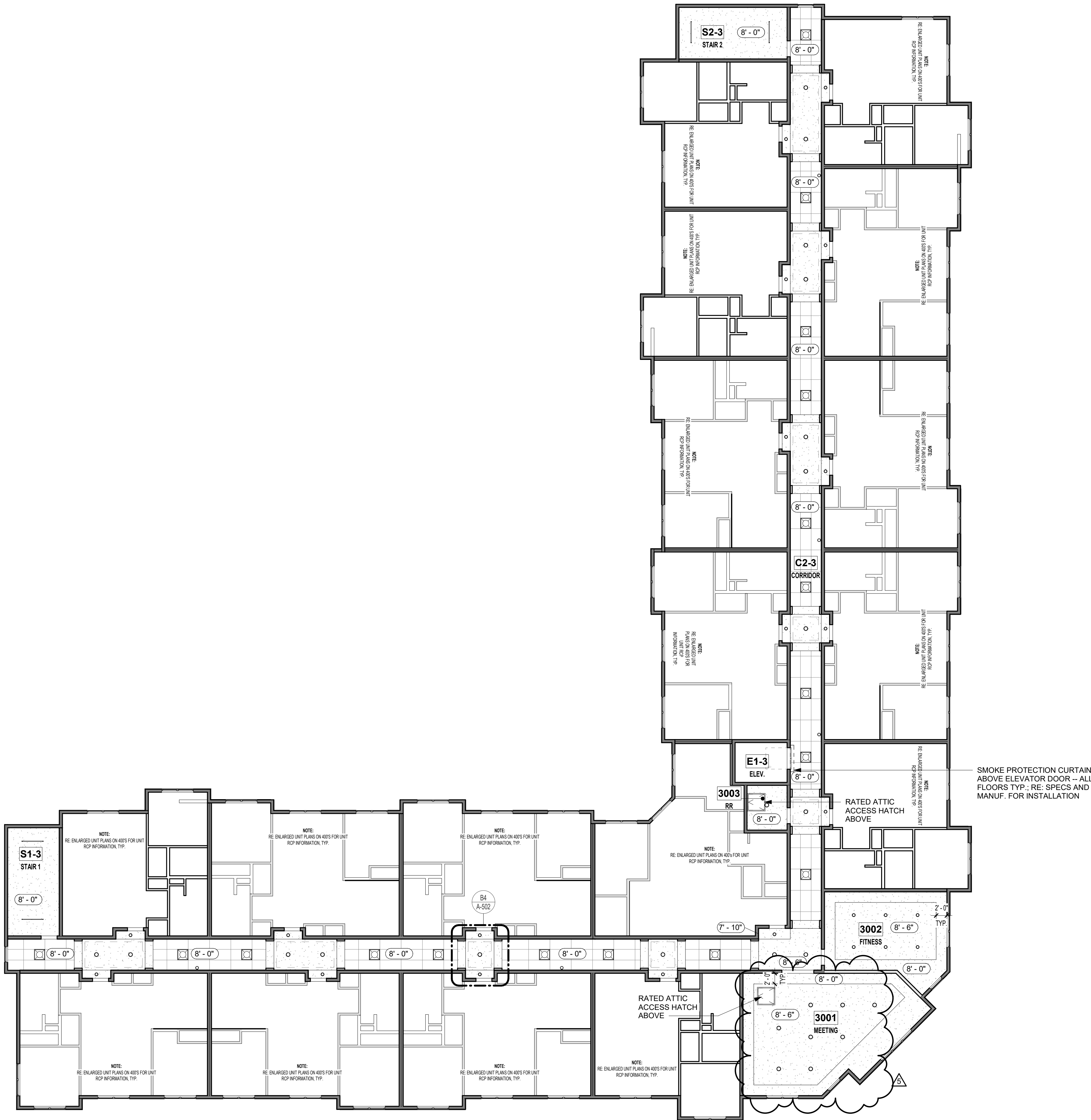
PROJECT NUMBER: 23034

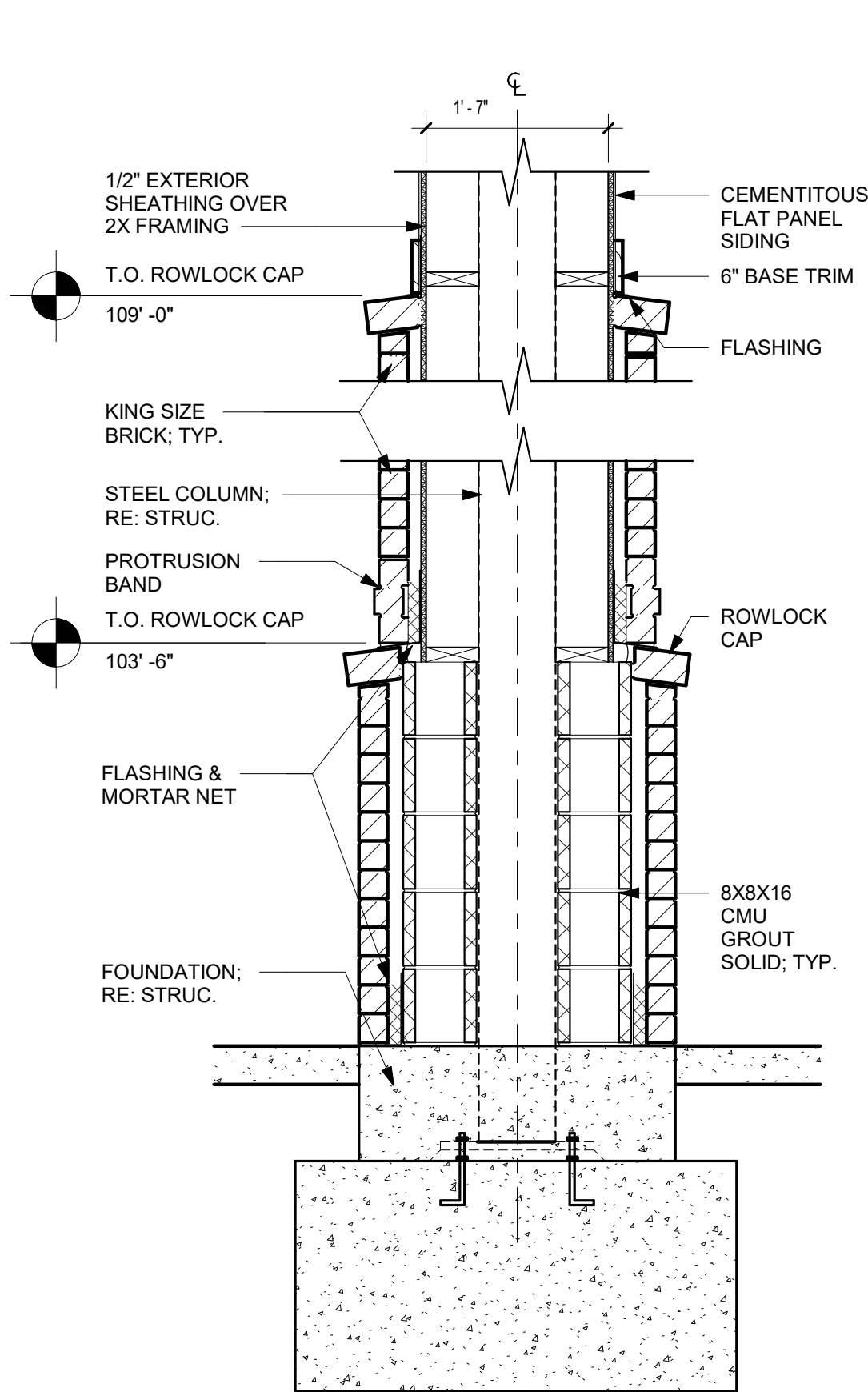
SHEET NUMBER:

A-122

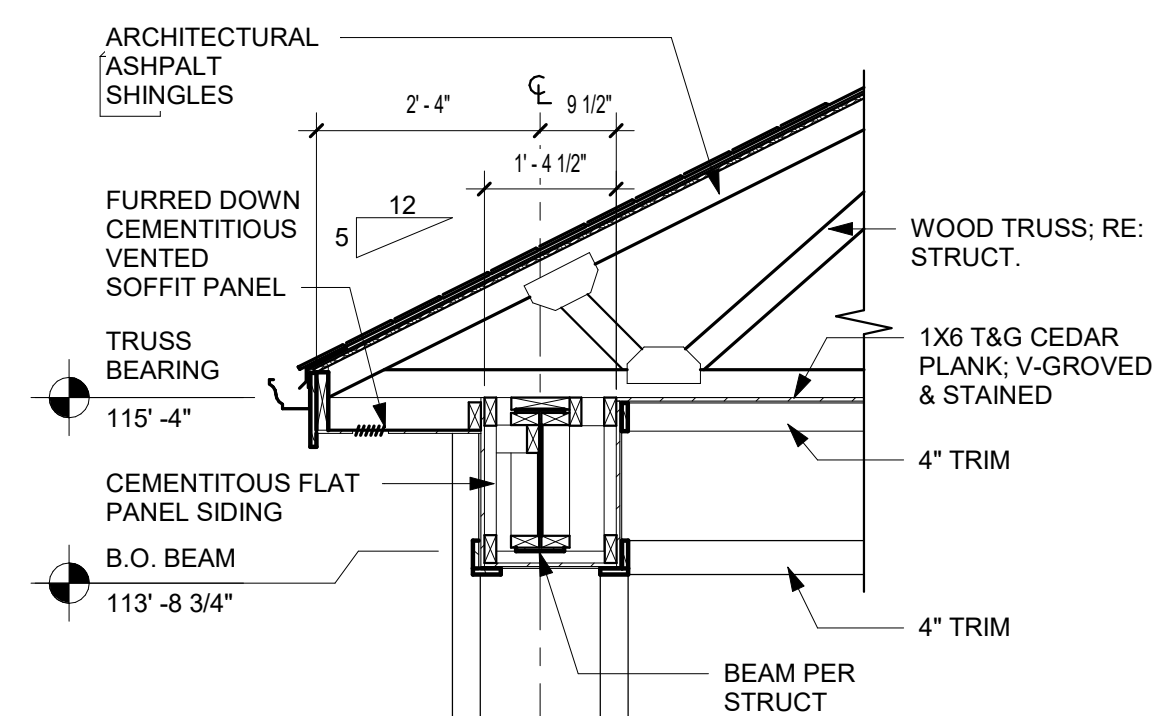
THIRD FLOOR REFLECTED
CEILING PLAN
3/32" = 1'-0"

1

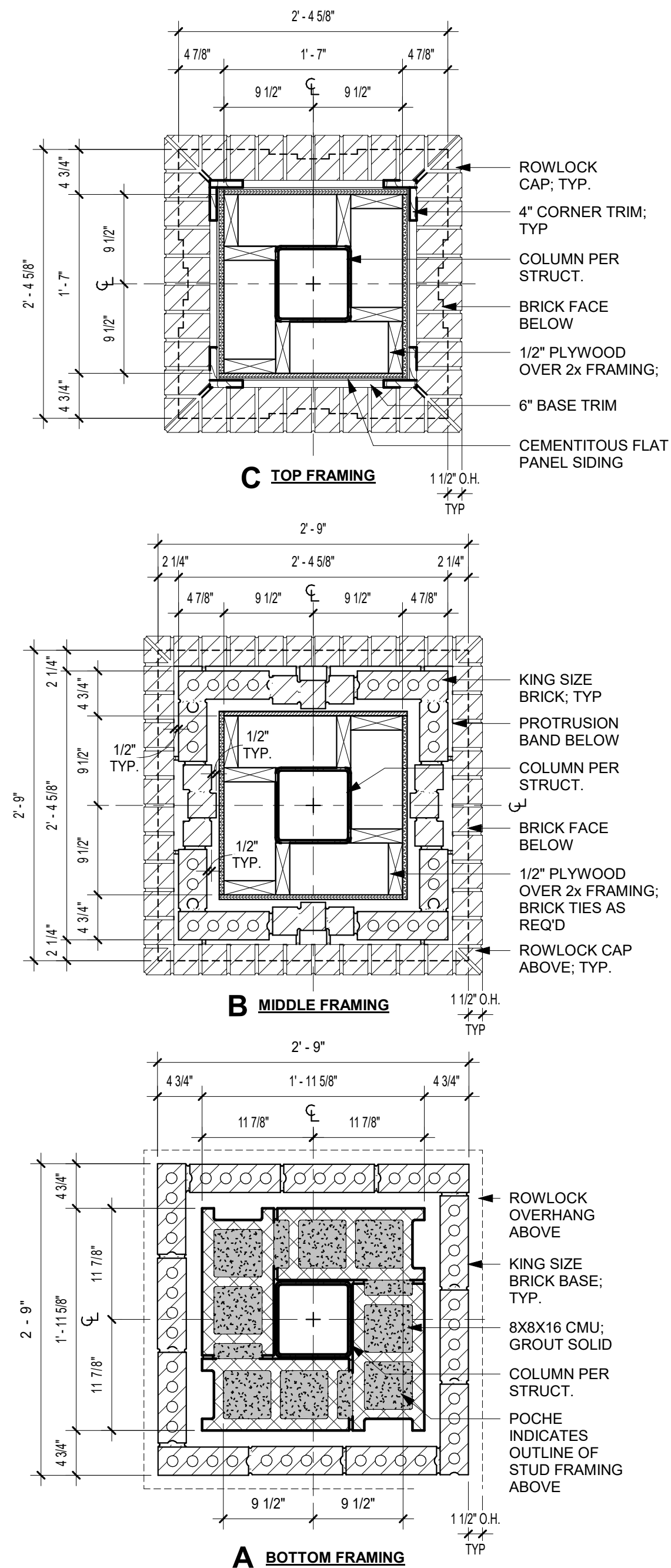




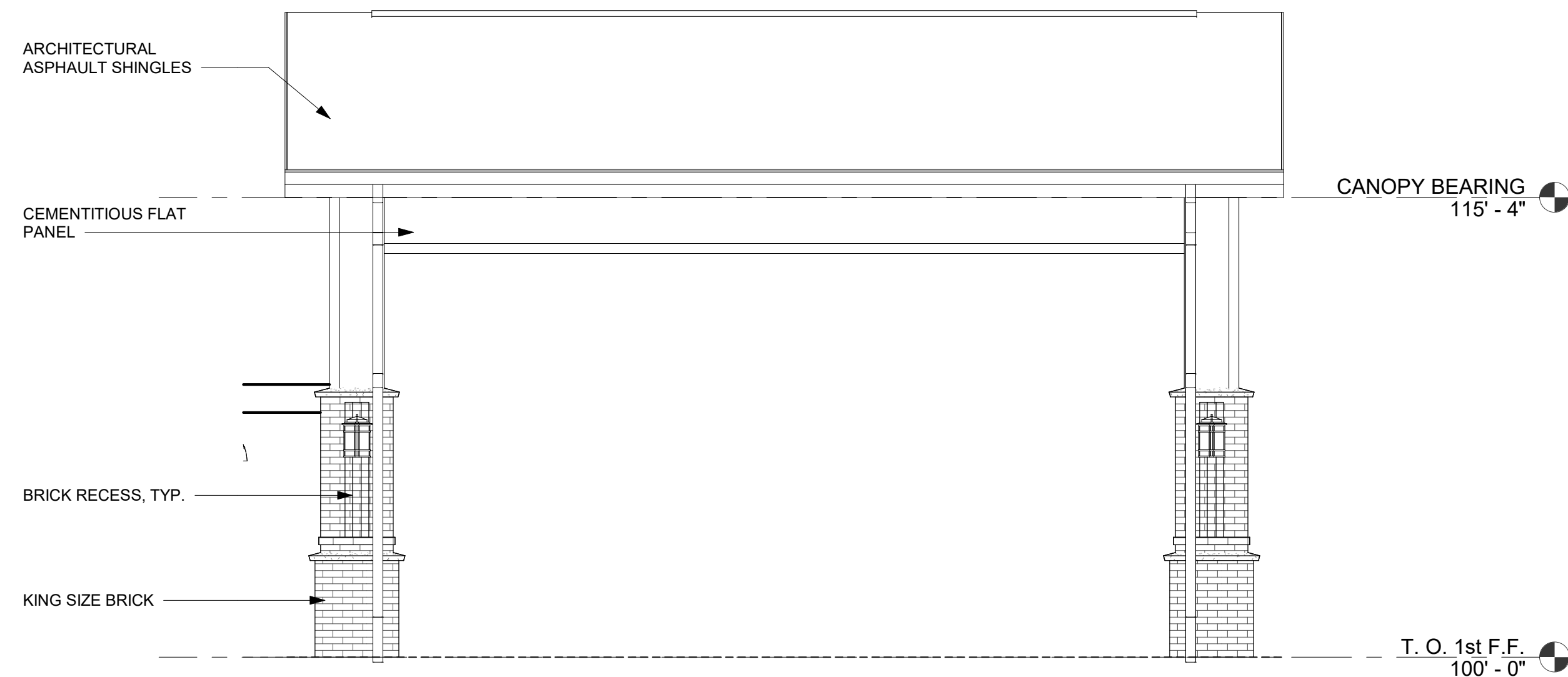
C5 CANOPY COLUMN SECTION DETAIL
3/4" = 1'-0"



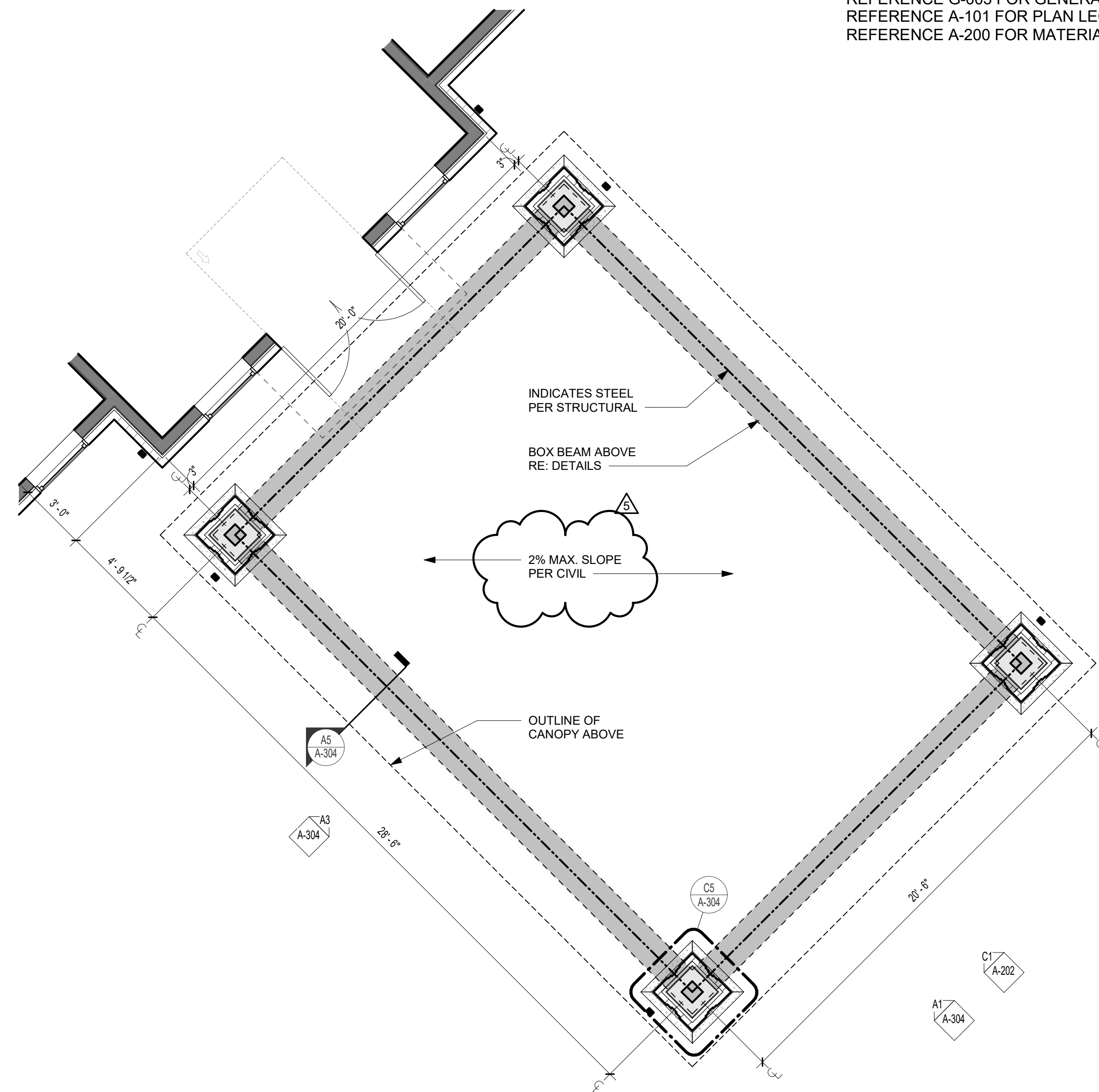
A5 CANOPY SECTION
1/2" = 1'-0"



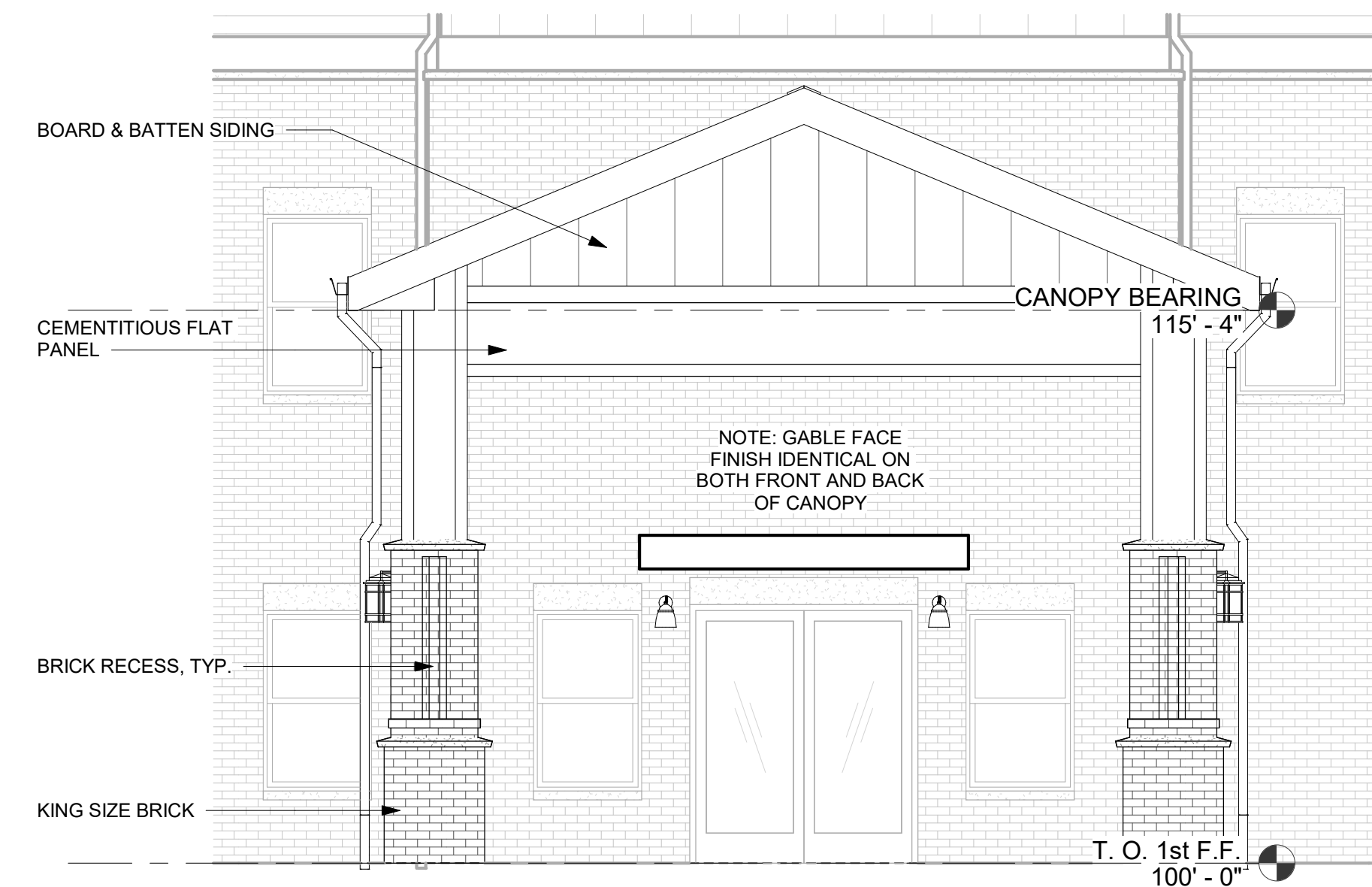
C3 CANOPY COLUMN PLAN
1" = 1'-0"



A3 CANOPY SIDE ELEVATION
1/4" = 1'-0"



C1 CANOPY PLAN
1/4" = 1'-0"



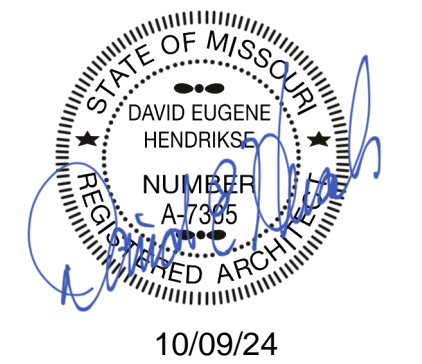
A1 CANOPY FRONT ELEVATION
1/4" = 1'-0"

REFERENCE G-003 FOR GENERAL NOTES
REFERENCE A-101 FOR PLAN LEGEND
REFERENCE A-200 FOR MATERIALS LEGEND

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WILSHIRE HILLS III

LEE'S SUMMIT, MISSOURI

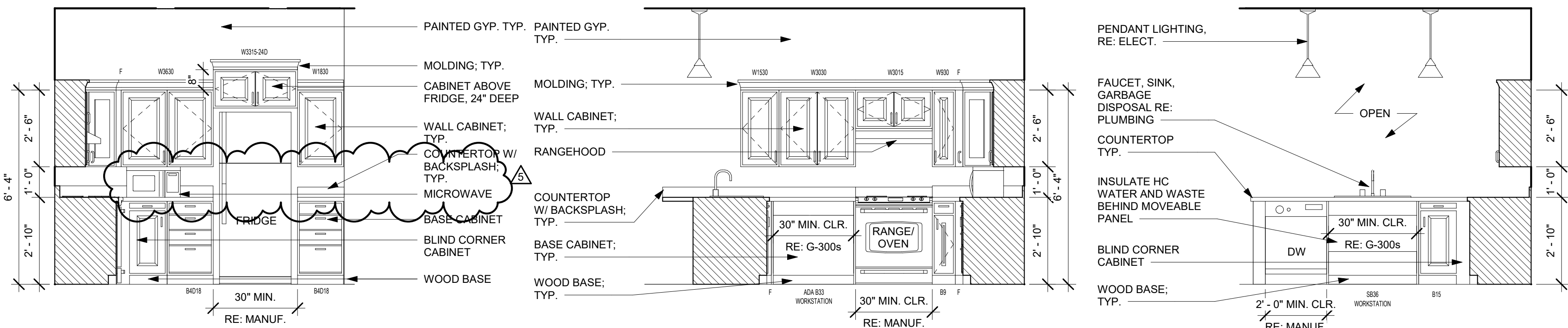
MHDC Project No. #22-057 MT

SHEET TITLE
FRONT CANOPY PLAN / ELEV. /
SECTION / & DETAILS

PROJECT NUMBER: 23034

SHEET NUMBER:

A-304



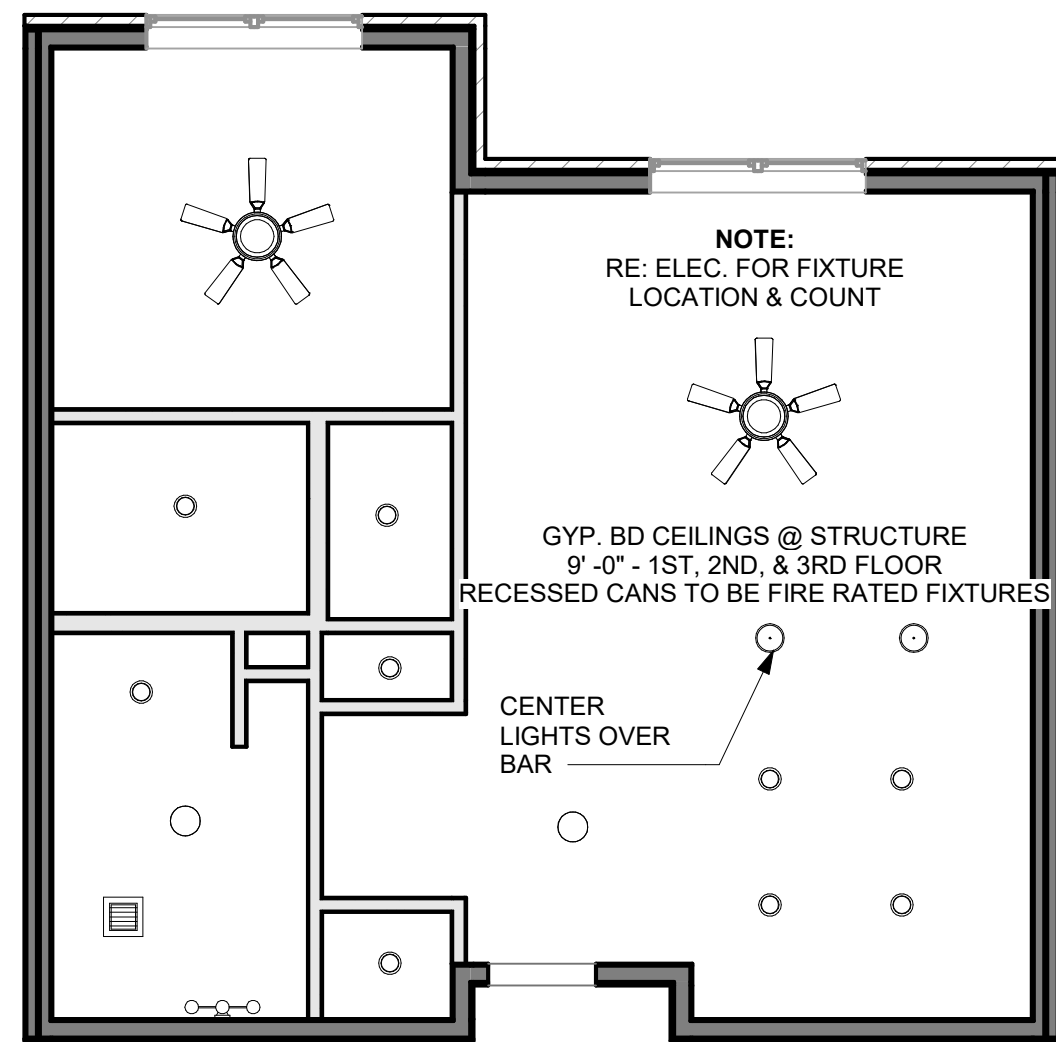
C5 ONE BED TYPE A KITCHEN ELEV. 1
3/8" = 1'-0"

C4 ONE BED TYPE A KITCHEN ELEV. 2
3/8" = 1'-0"

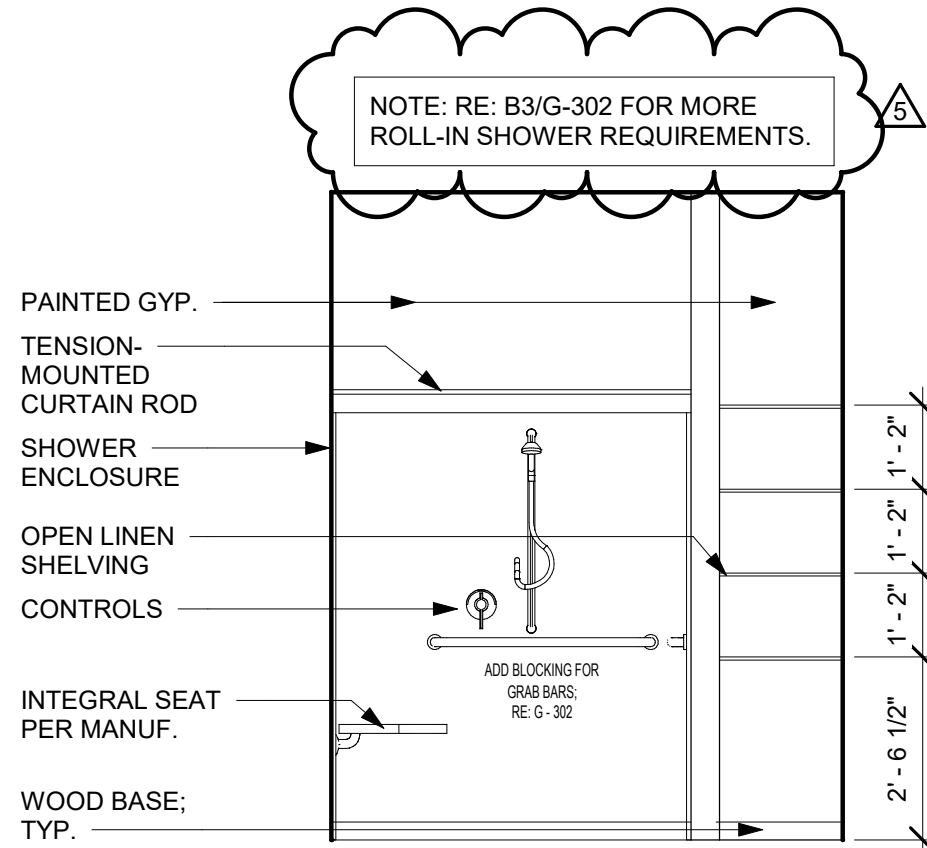
C3 ONE BED TYPE A KITCHEN ELEV. 3
3/8" = 1'-0"



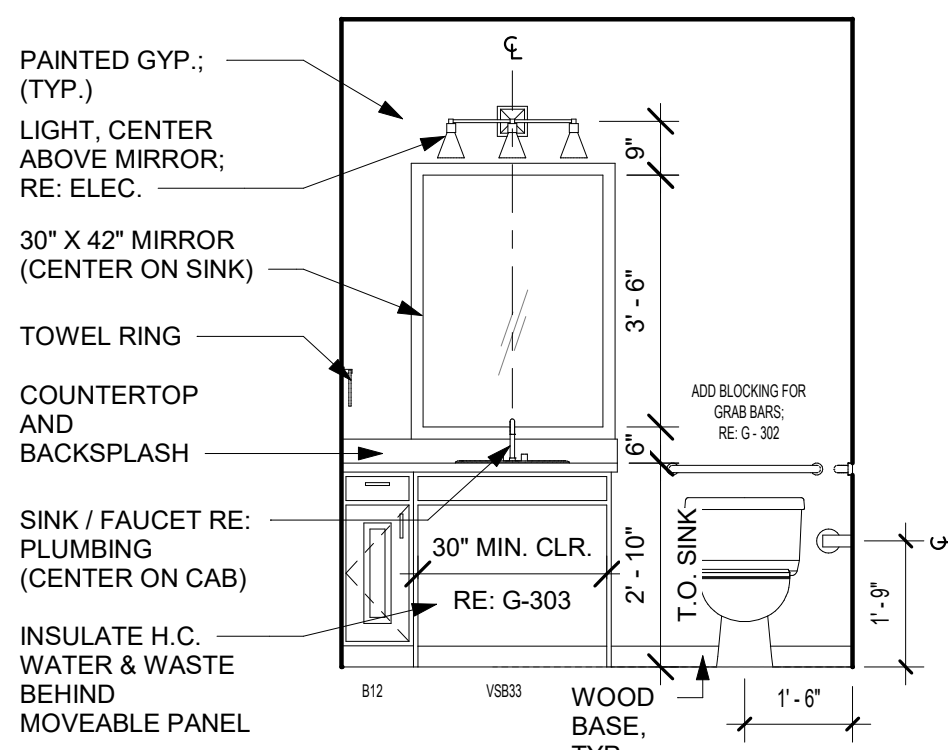
B5 ONE BEDROOM UNIT - TYPE A - FINISH PLAN
3/16" = 1'-0"



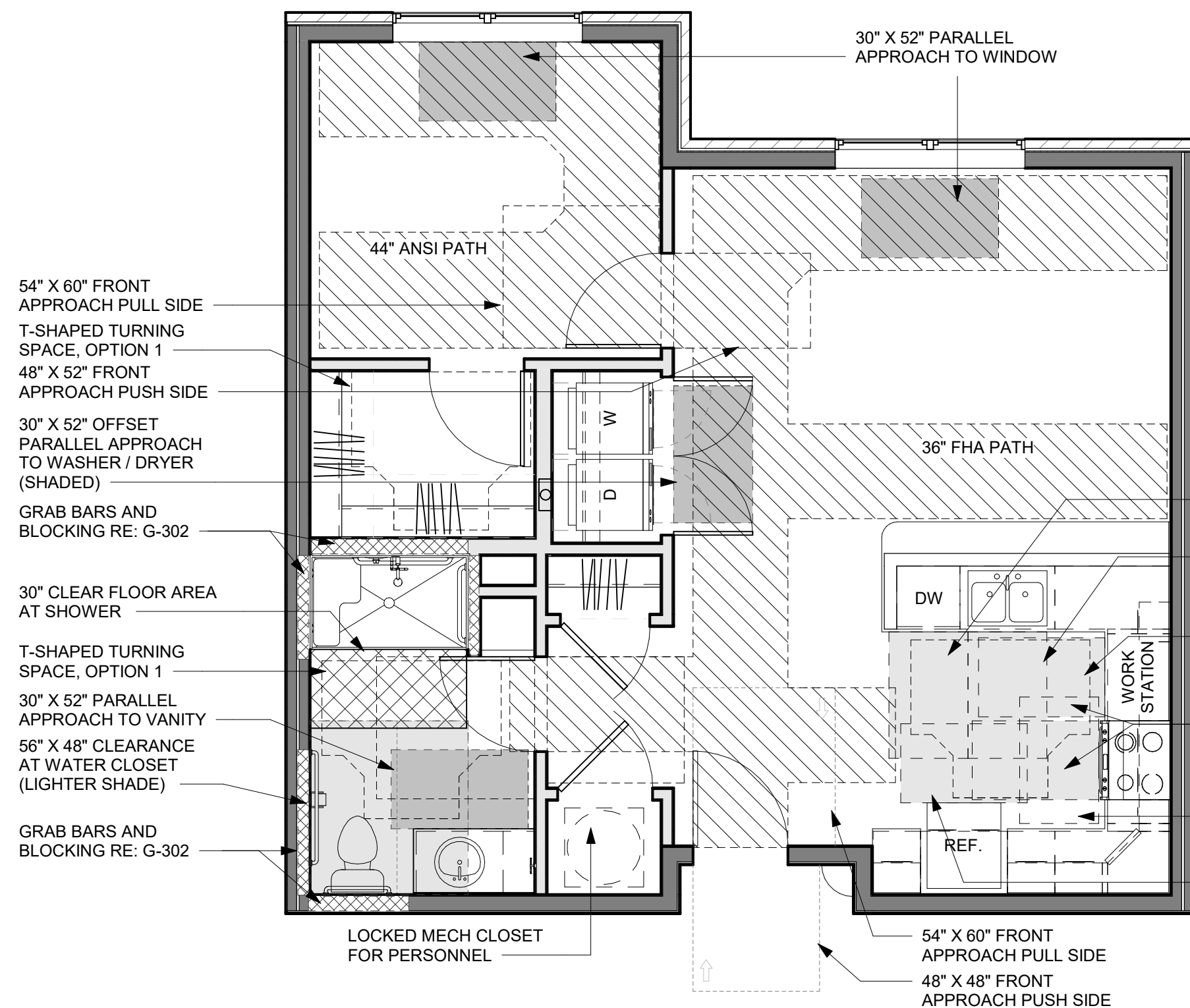
A5 ONE BEDROOM UNIT - TYPE A - FIRST FLOOR REFLECTED CEILING PLAN
3/16" = 1'-0"



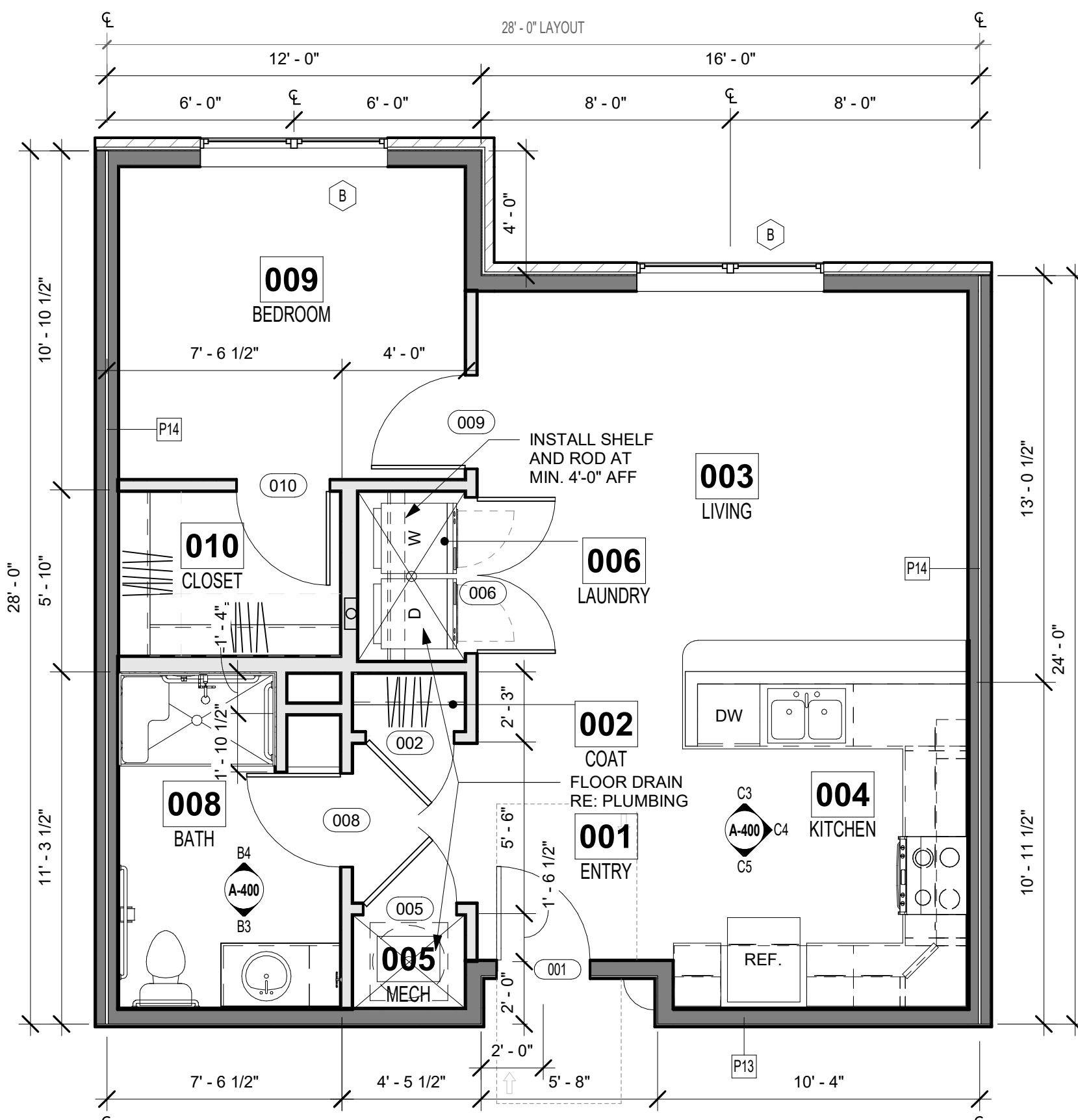
B4 ONE BED TYPE A BATH ELEV. 1
3/8" = 1'-0"



B3 ONE BED TYPE A BATH ELEV. 2
3/8" = 1'-0"

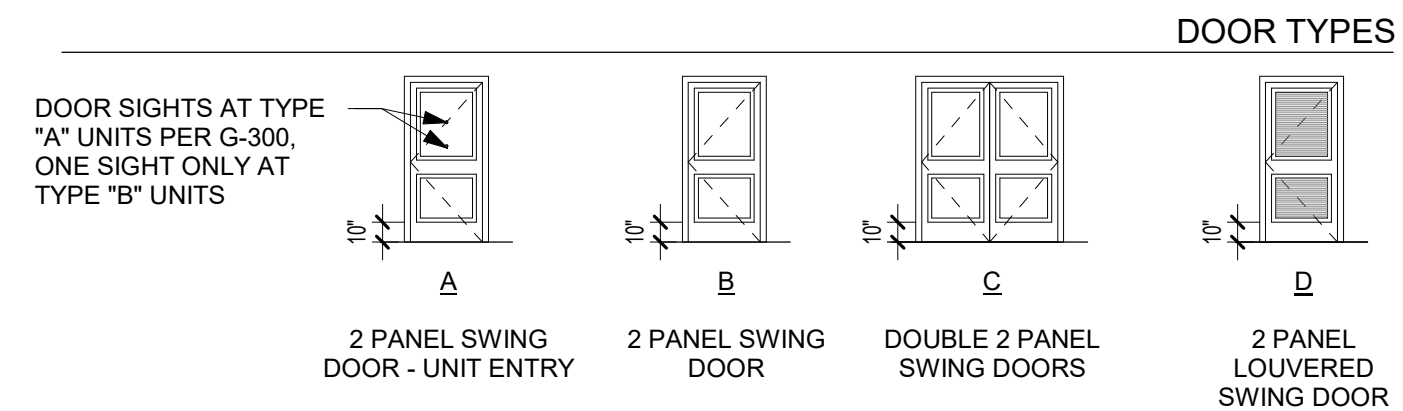


A3 ONE BEDROOM UNIT - TYPE A - CLEAR SPACE PLAN
1/4" = 1'-0"



A1 ONE BEDROOM UNIT - TYPE A - FLOOR PLAN
1/4" = 1'-0"

REFERENCE G-003 FOR GENERAL NOTES
REFERENCE A-101 FOR PLAN LEGEND
REFERENCE A-120 FOR RCP LEGEND



DOOR SCHEDULE - 1 BED UNITS										
Mark	Width	Height	Thickness	Type Mark	Door Material	Door Finish	Frame Material	Frame Finish	Fire Rating	Comments
001	3'-0"	6'-8"	0'-1 3/4"	A	WD S.C.	PT-3	TIMELY MT-1	PT-3	20 MIN.	FACTORY KERF FOR SMOKE SEAL, FRAME READY FOR WOOD CASING
002	2'-10"	6'-8"	0'-1 3/8"	B	WD H.C.	PT-3	WD	PT-3		
005	3'-0"	6'-8"	0'-1 3/8"	D	WD H.C.	PT-3	WD	PT-3		
006	5'-0"	6'-8"	0'-1 3/8"	C	WD H.C.	PT-3	WD	PT-3		
008	3'-0"	6'-8"	0'-1 3/8"	B	WD H.C.	PT-3	WD	PT-3		
009	3'-0"	6'-8"	0'-1 3/8"	B	WD H.C.	PT-3	WD	PT-3		
010	3'-0"	6'-8"	0'-1 3/8"	B	WD H.C.	PT-3	WD	PT-3		

ROOM FINISH SCHEDULE - 1 BED TYPE A UNITS					
Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish
001	ENTRY	LVP-1	WB-1, PT-3	PT-1	PT-2
002	COAT	LVP-1	WB-1, PT-3	PT-1	PT-2
003	LIVING	LVP-1	WB-1, PT-3	PT-1	PT-2
004	KITCHEN	LVP-1	WB-1, PT-3	PT-1	PT-2
005	MECH	--	--	--	--
006	LAUNDRY	SV-1	WB-1, PT-3	PT-1	PT-2
008	BATH	SV-1	WB-1, PT-3	PT-1	PT-2
009	BEDROOM	LVP-1	WB-1, PT-3	PT-1	PT-2
010	CLOSET	LVP-1	WB-1, PT-3	PT-1	PT-2

UNIT FINISH LEGEND

CARPET:
CPT-1 MOHAWK PROPERTIES COLLECTION: BROADLOOM (SMARTSTRAND W/ NANOC), PM395 NEUTRAL SHIRT, #859 TWILIGHT JUNGLE

LUXURY VINYL PLANK:
LVP-1 MOHAWK REXFORD COLLECTION: 12MIL, RP811, #890 STURDY BROWN

SHEET VINYL:
SV-1 MOHAWK PORTICO COLLECTION: #592 COOL SANDS

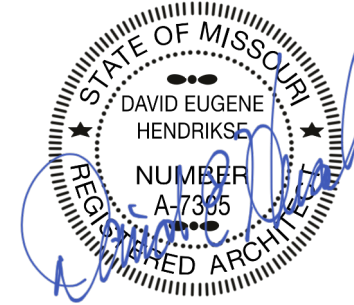
BASE:
WB-1 WOOD BASE, FJ623, 9/16" X 3.25" COLONIAL, PT-3; WOOD SHOE MOLD, FJ129, 7/16" X 1 1/16" COLONIAL, PT-3

PAINT:
PT-1 SHERWIN WILLIAMS, SW 7044 AMAZING GRAY, EGGSHELL
PT-2 SHERWIN WILLIAMS, SW 7042 SHOJI WHITE, FLAT
PT-3 SHERWIN WILLIAMS, SW 7042 SHOJI WHITE, SEMI-GLOSS

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10/09/24

WILSHIRE HILLS III

LEE'S SUMMIT, MISSOURI

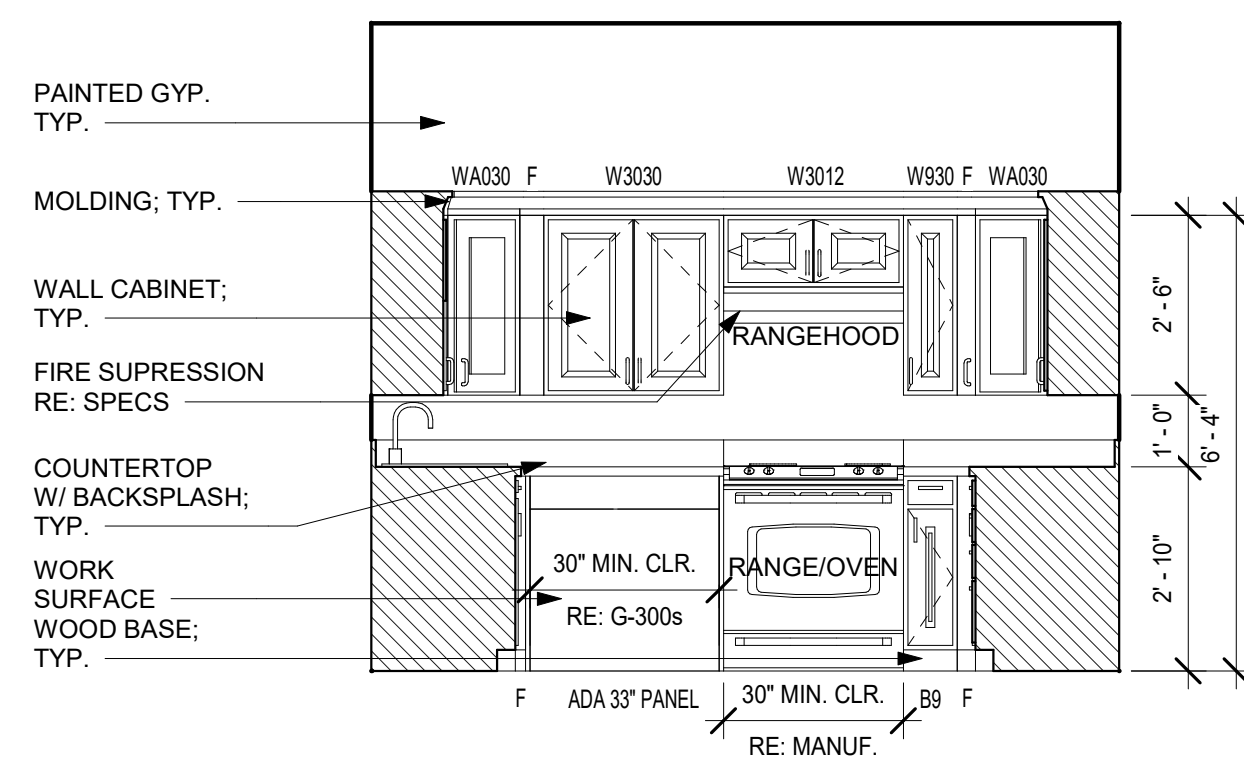
MHDC Project No. #22-057 MT

SHEET TITLE
ONE BEDROOM UNIT PLAN - TYPE A

PROJECT NUMBER: 23034

SHEET NUMBER:

A-400

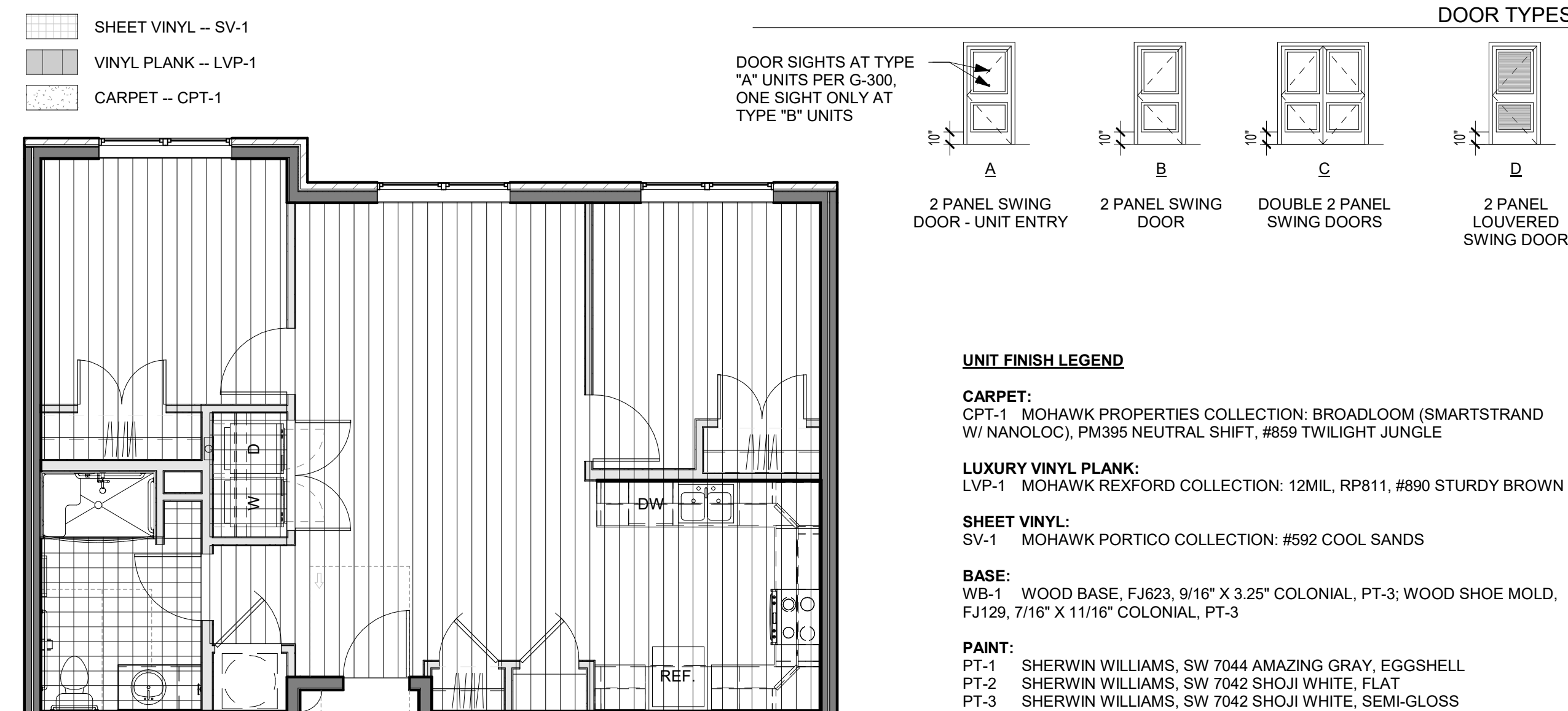


DOOR SCHEDULE - 2 BED UNITS											
Mark	Width	Height	Thickness	Type	Door Material	Door Finish	Frame Material	Frame Finish	Fire Rating	Comments	Hardware Group
001	3' - 0"	6' - 8"	0" - 1 3/4"	A	WD S.C.	PT-3	TIMELY MT-1	PT-3	20 MIN.	FACTORY KERF FOR SMOKE SEAL, FRAME READY FOR WOOD CASING	U1
002	2' - 8"	6' - 8"	0' - 1 3/8"	B	WD H.C.	PT-3	WD	PT-3			
005	3' - 0"	6' - 8"	0' - 1 3/8"	D	WD H.C.	PT-3	WD	PT-3			
006	5' - 0"	6' - 8"	0' - 1 3/8"	C	WD H.C.	PT-3	WD	PT-3			
008	3' - 0"	6' - 8"	0' - 1 3/8"	B	WD H.C.	PT-3	WD	PT-3			
009	3' - 0"	6' - 8"	0' - 1 3/8"	B	WD H.C.	PT-3	WD	PT-3			
010	4' - 0"	6' - 8"	0' - 1 3/8"	C	WD H.C.	PT-3	WD	PT-3			
012	3' - 0"	6' - 8"	0' - 1 3/8"	B	WD H.C.	PT-3	WD	PT-3			
013	4' - 0"	6' - 8"	0' - 1 3/8"	C	WD H.C.	PT-3	WD	PT-3			
014	2' - 8"	6' - 8"	0' - 1 3/8"	B	WD H.C.	PT-3	WD	PT-3			

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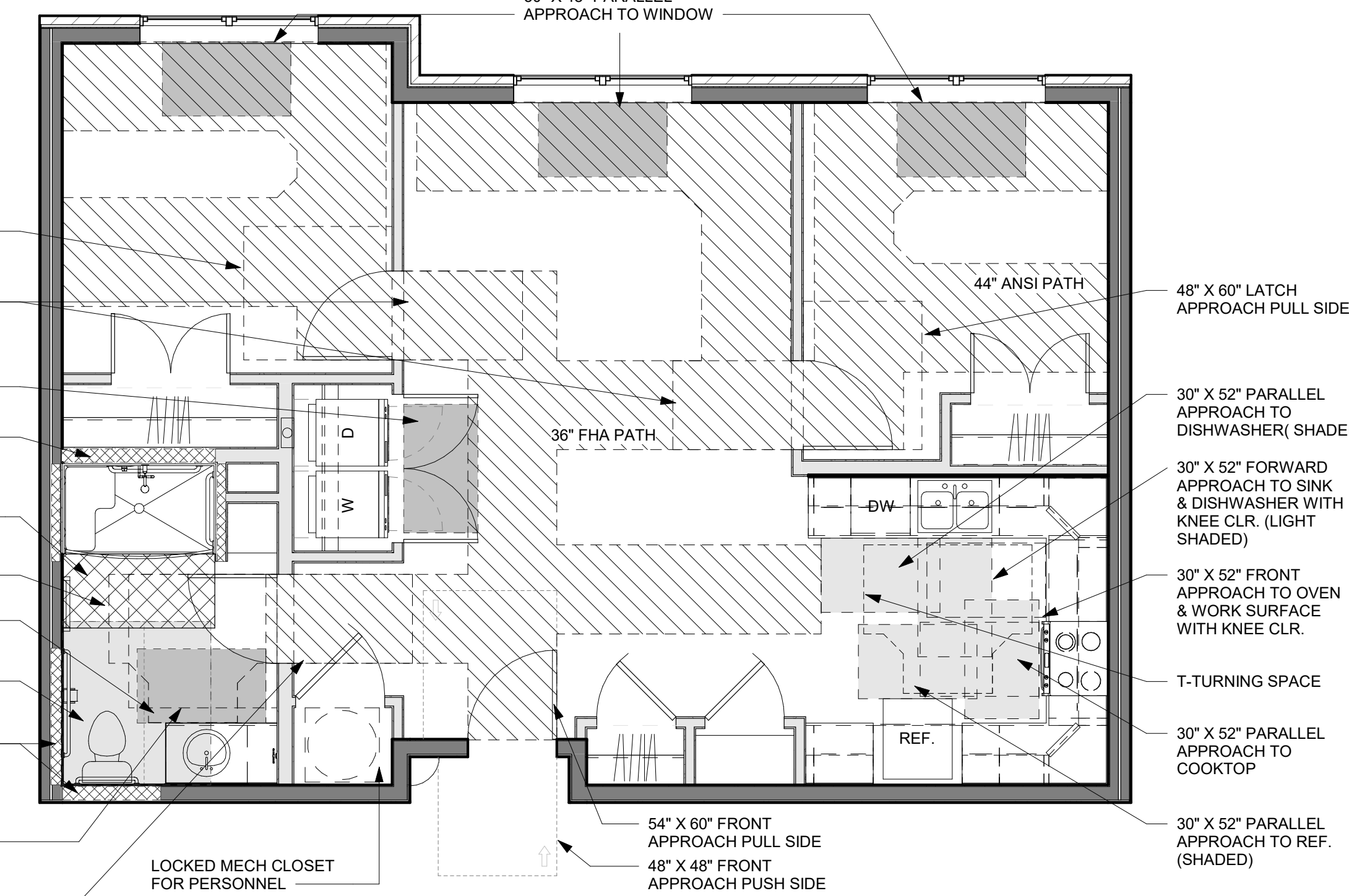
REVISIONS:
5 10/04/24 ASI 001

D4 TWO BED TYPE A KITCHEN ELEV. 2
3/8" = 1'-0"

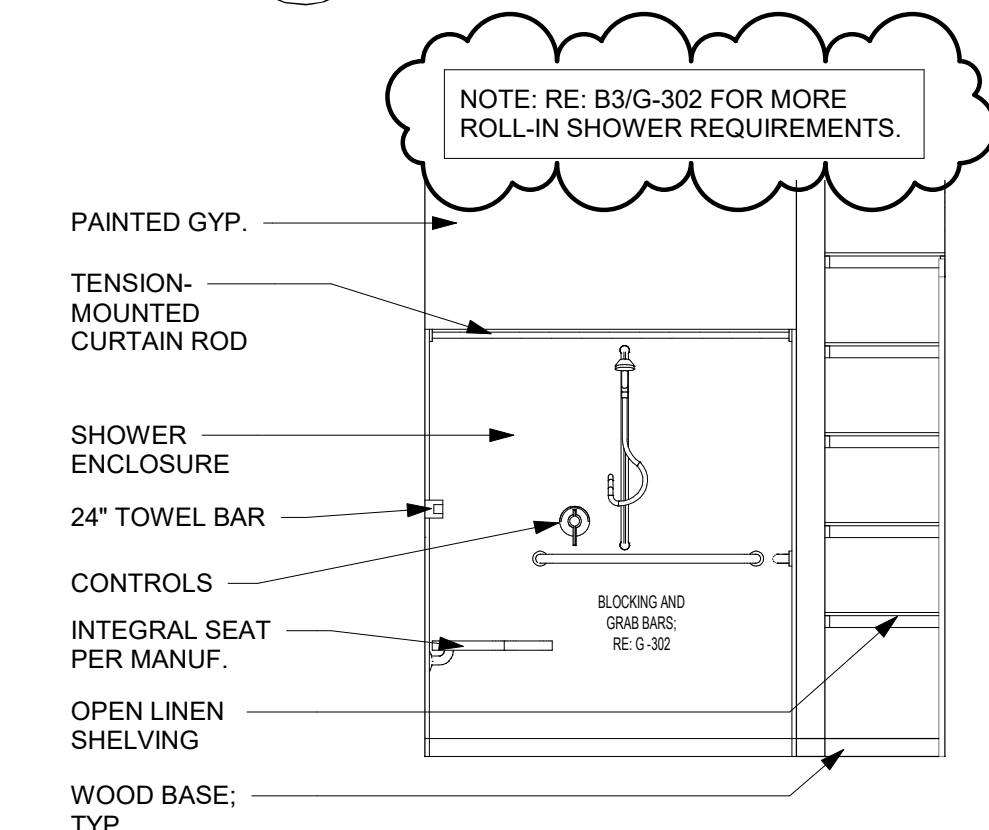


C3 TWO BEDROOM UNIT - TYPE A -
REFLECTED CEILING PLAN
3/16" = 1'-0"

C1 TWO BEDROOM UNIT - TYPE A -
FINISH PLAN
 $\frac{3}{16}" = 1'-0"$



A3 TWO BEDROOM UNIT - TYPE A - CLEAR SPACE PLAN
1/4" = 1'-0"



A3 TWO BEDROOM
SPACE PLAN
1/4" = 1'-0"

A1 TWO BEDROOM UNIT - TYPE A - FLOOR PLAN
1/4" = 1'-0"

MHDC Project No. #22-057 MT

SHEET TITLE
TWO BEDROOM UNIT PLAN - TYPE
A

PROJECT NUMBER: 23034

SHEET NUMBER:

A-402

STATE OF MISSOURI
DAVID EUGENE
HENDRIKSE
NUMBER
A-7395
REGISTERED ARCHIVIST

10/09/24

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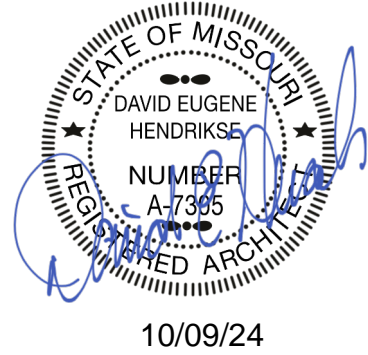
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REFERENCE G-003 FOR GENERAL NOTES
REFERENCE A-101 FOR PLAN LEGEND

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REVISIONS:
1 12/15/23 Addendum 1 - Response to City Comments
5 10/04/24 ASI 001

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WILSHIRE HILLS III

LEE'S SUMMIT, MISSOURI

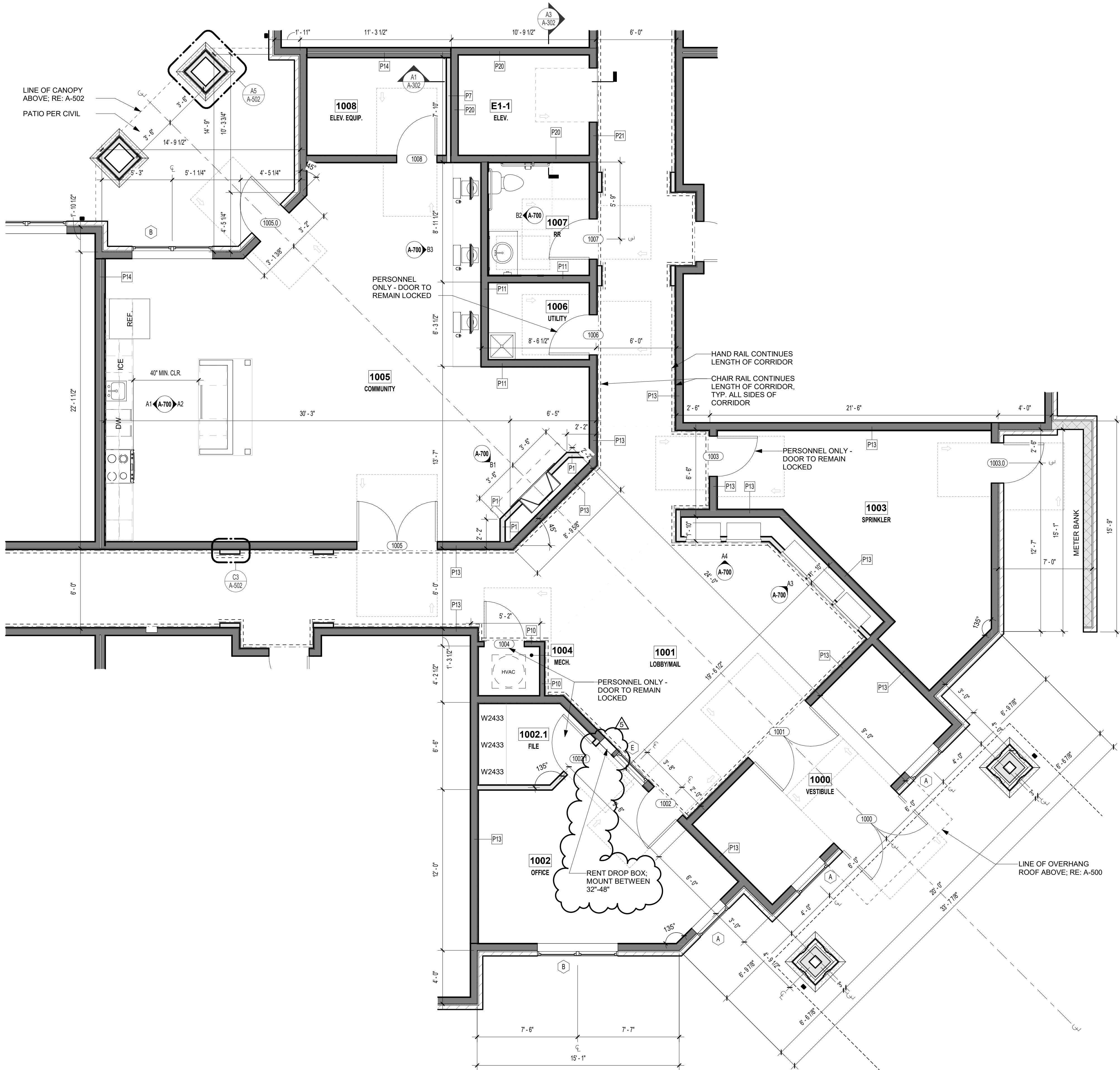
MHDC Project No. #22-057 MT

SHEET TITLE
ENLARGED FLOOR PLANS -
COMMON AREAS

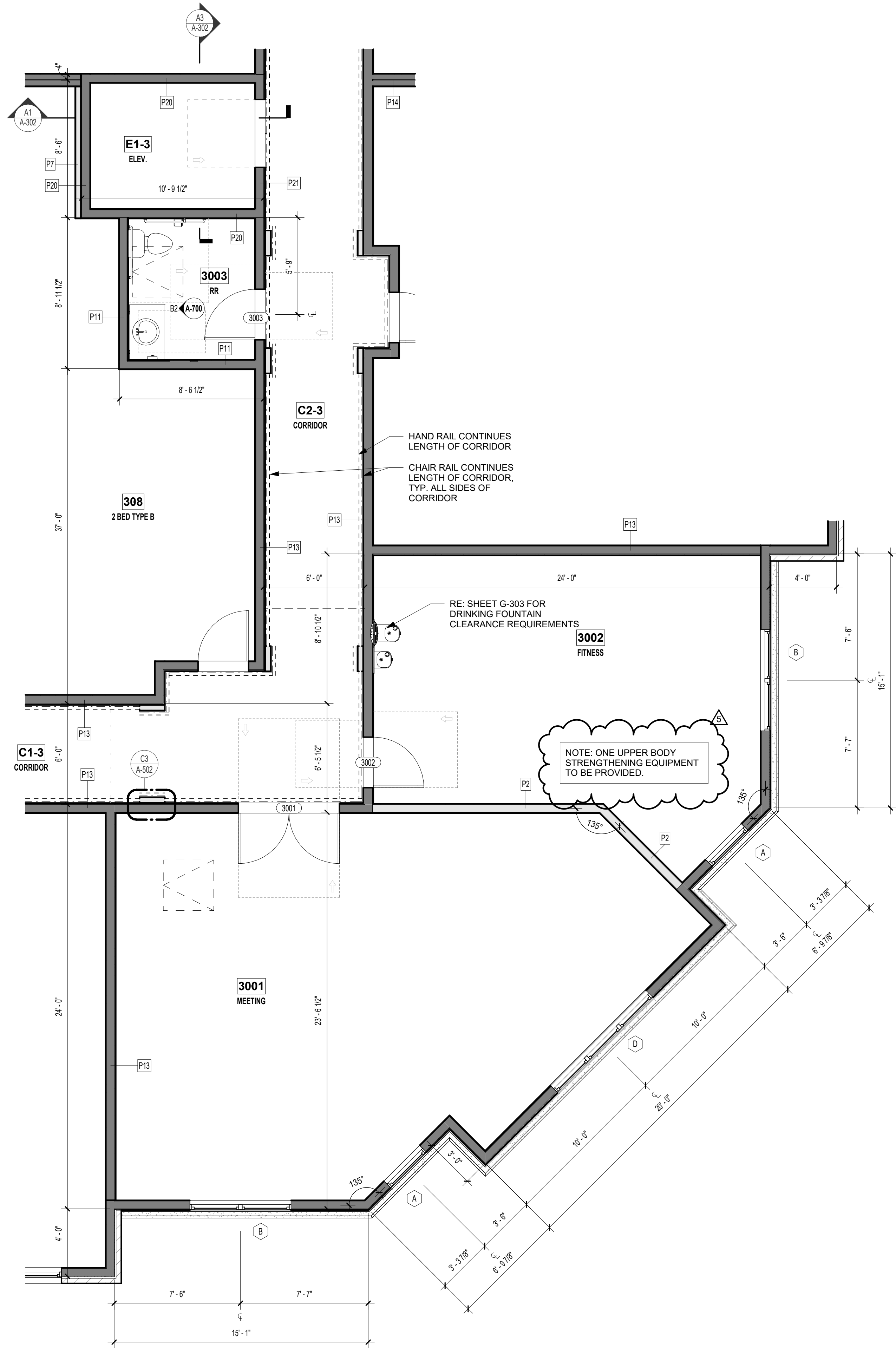
PROJECT NUMBER: 23034

SHEET NUMBER:

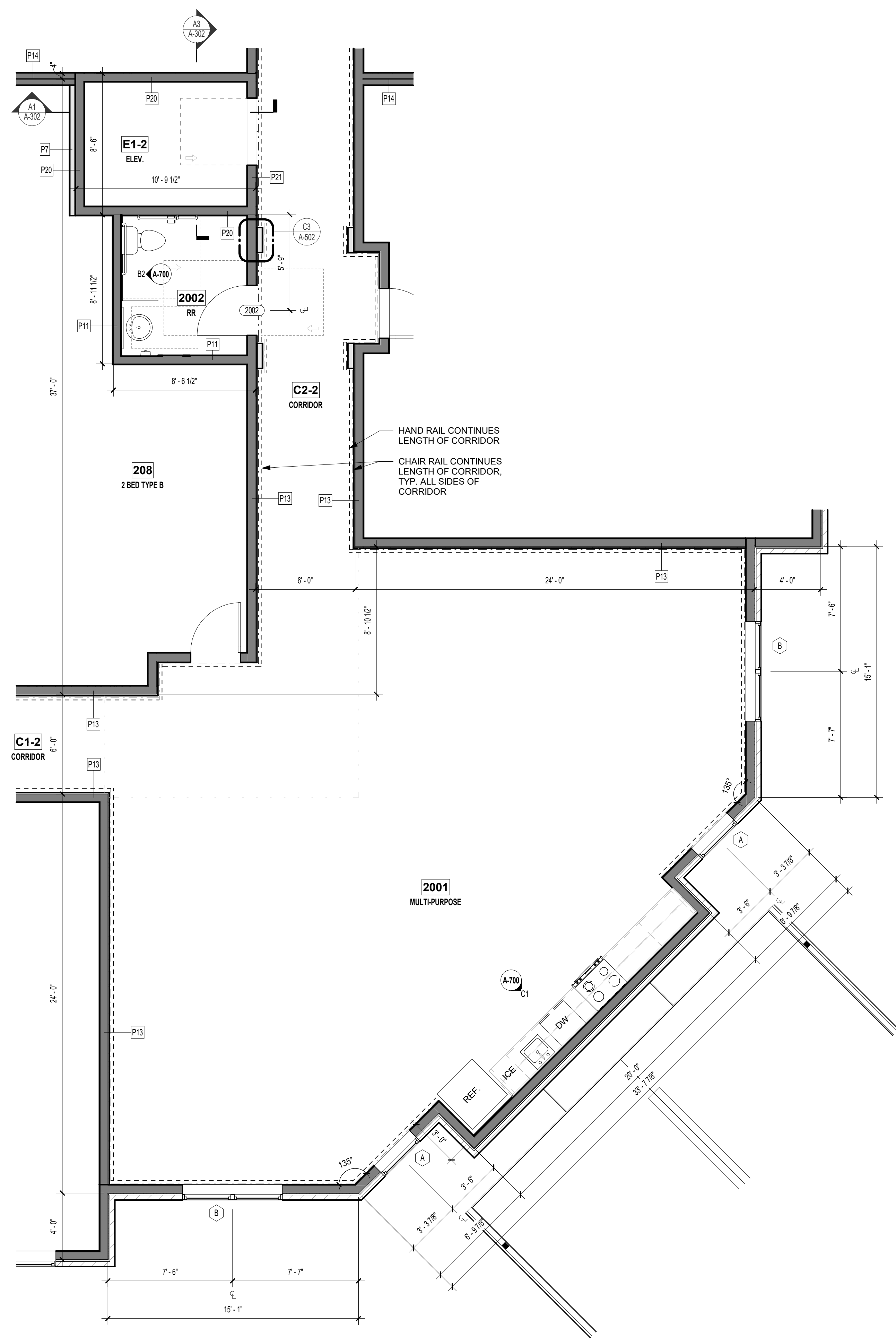
A-410



A1 1ST FLOOR ENLARGED PLAN
1/4" = 1'-0"

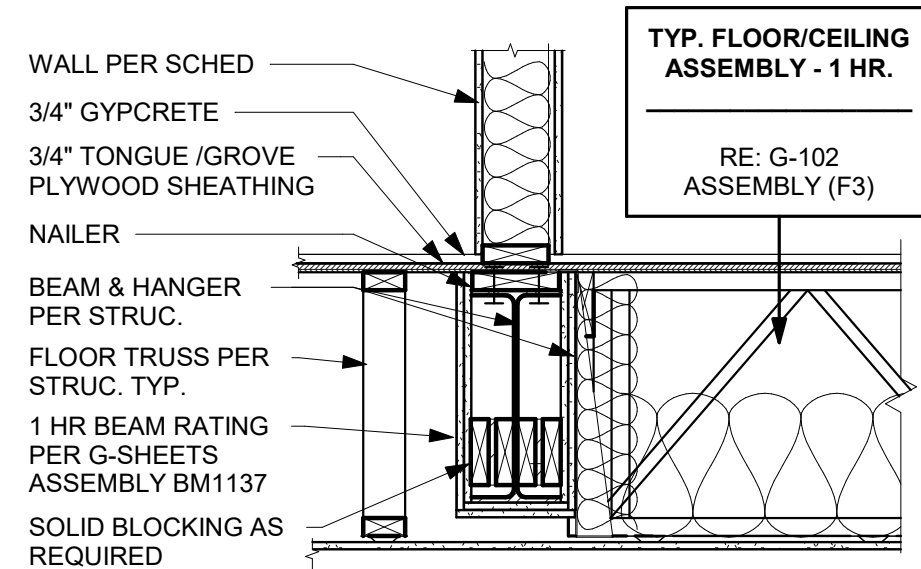
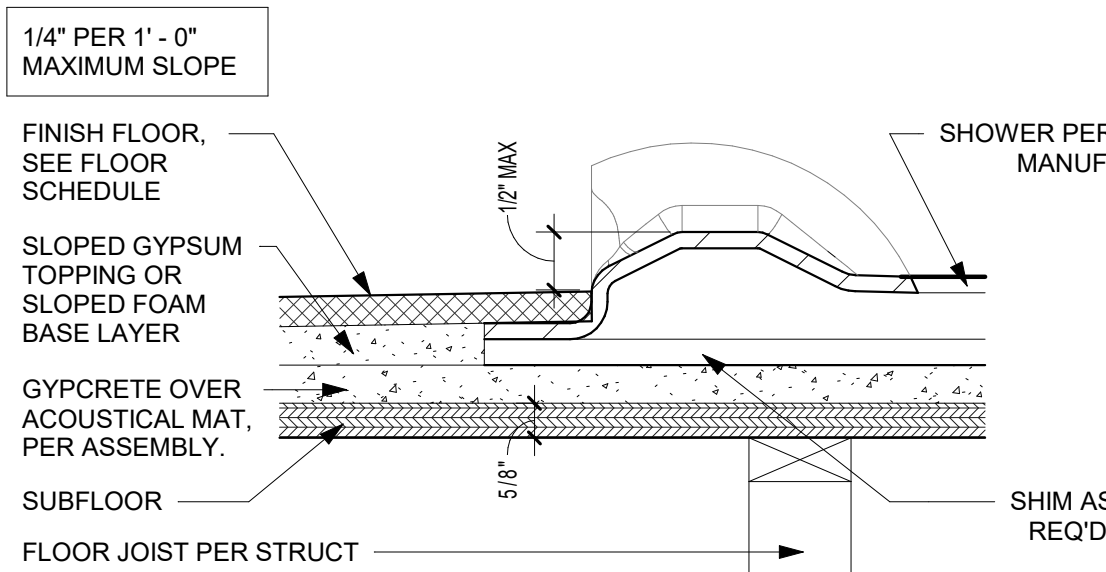
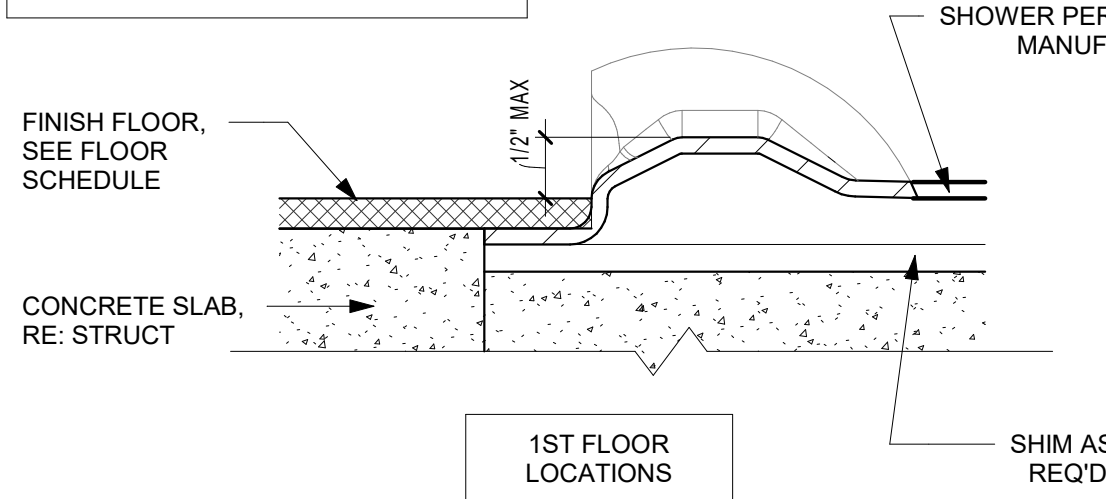


A3 3RD FLOOR ENLARGED PLAN
1/4" = 1'-0"

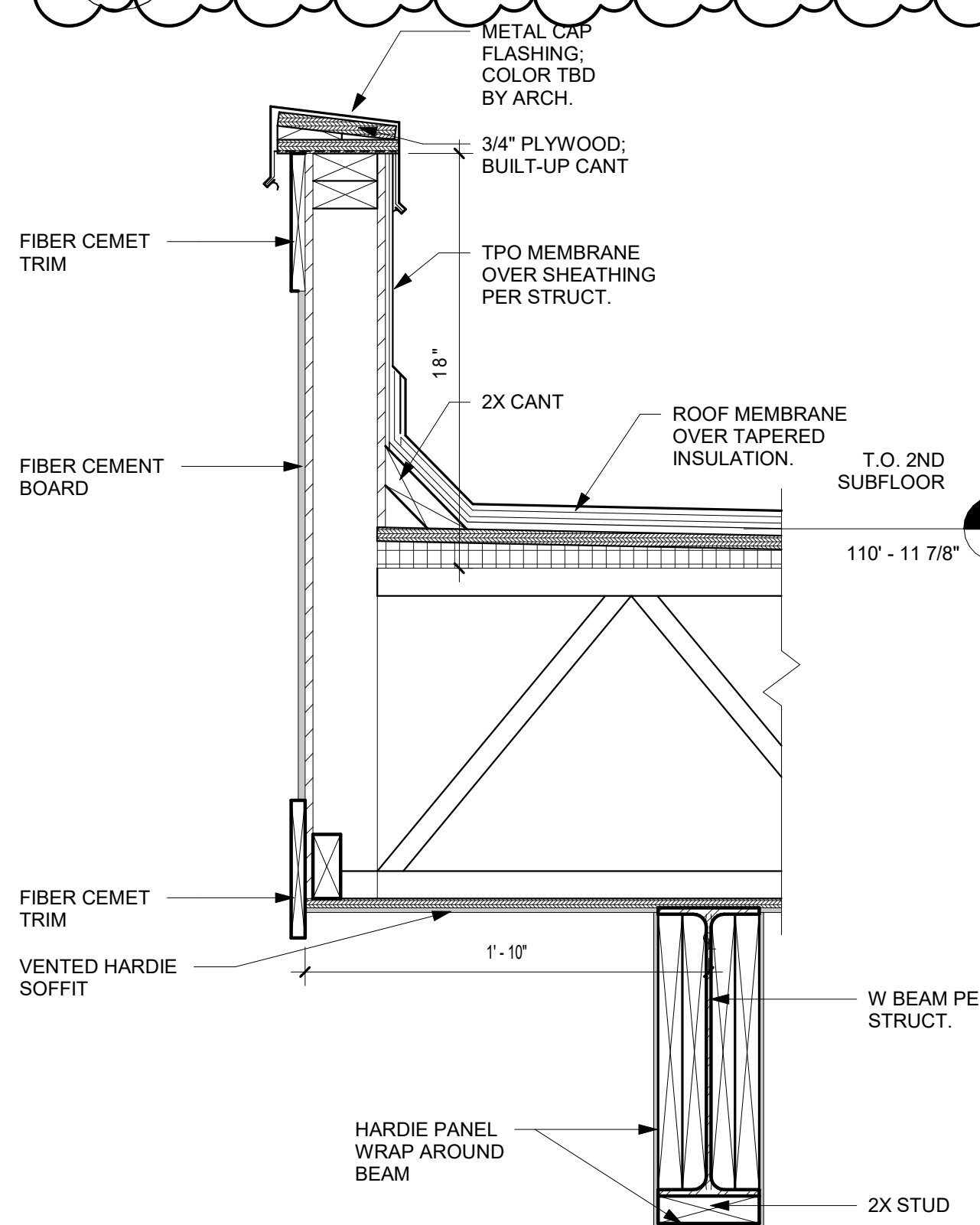


A1 2ND FLOOR ENLARGED PLAN
1/4" = 1'-0"

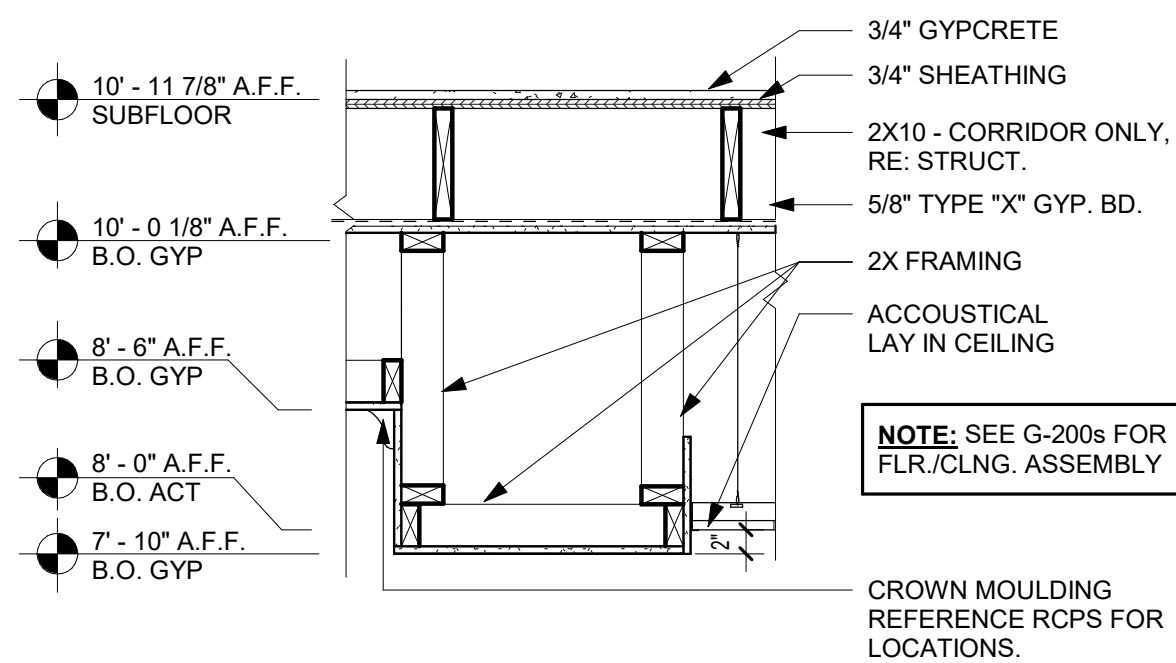
NOTE:
DETAIL PER AQUATIC; CONFIRM
THRESHOLD MEETS ACCESSIBILITY
REQUIREMENTS W/ MANUFACTURER.



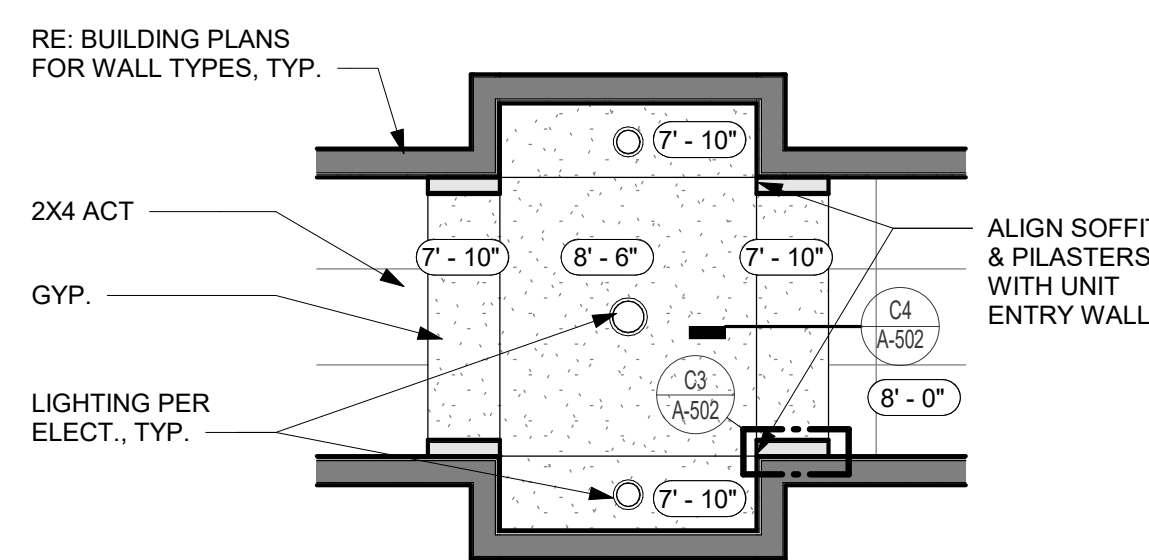
D5 ROLL-IN SHOWER TRANSITION DETAILS
3/4" = 1'-0"



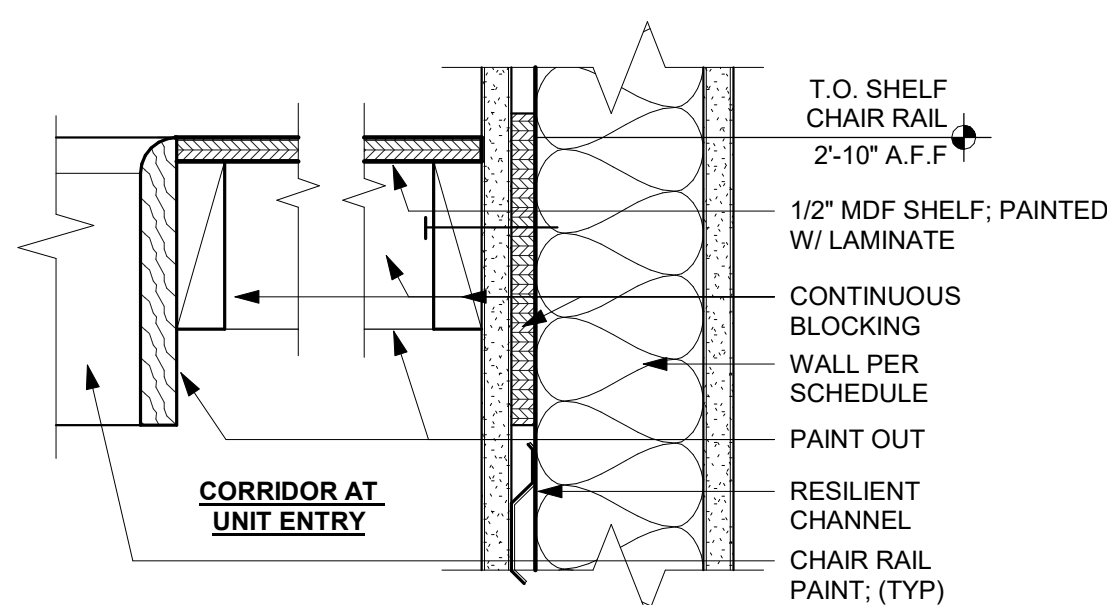
D4 UPSET BEAM DETAIL
3/4" = 1'-0"



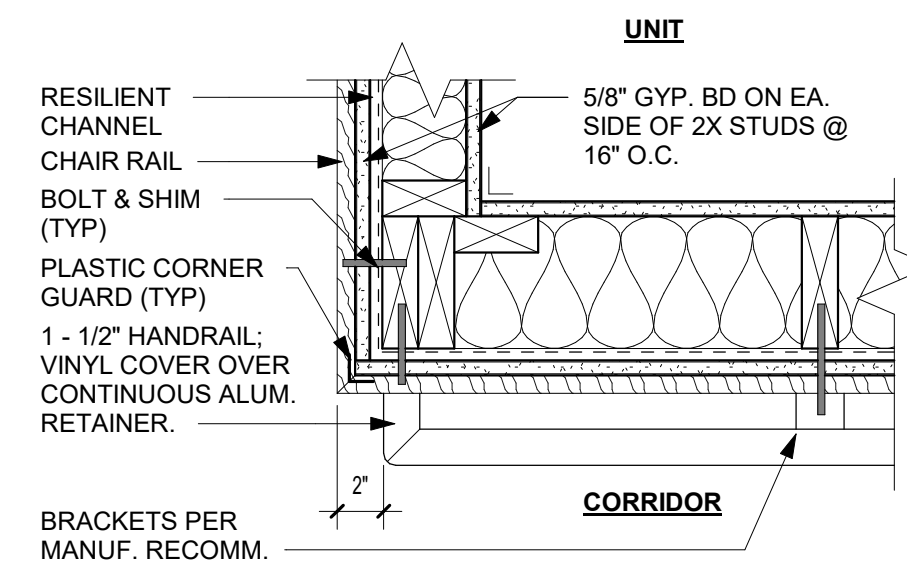
C4 TYPICAL UNIT ENTRY SOFFIT SECTION
3/4" = 1'-0"



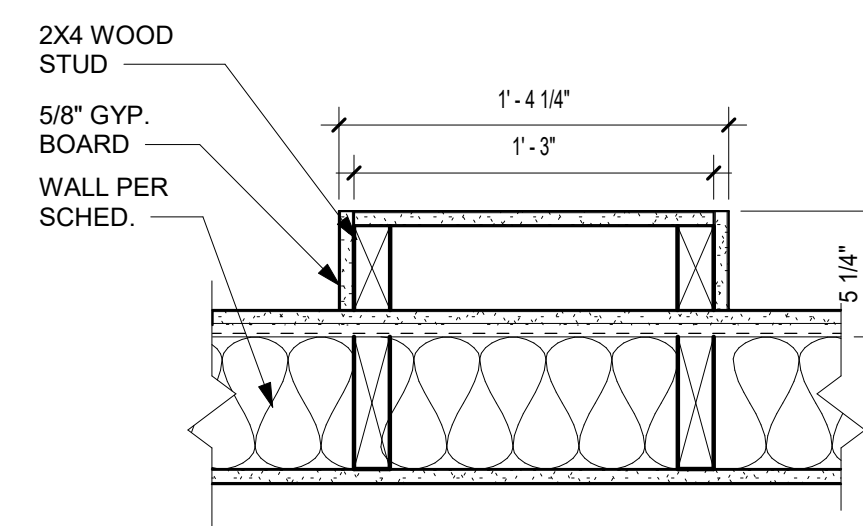
B4 TYP. CEILING @ UNIT ENTRY
1/4" = 1'-0"



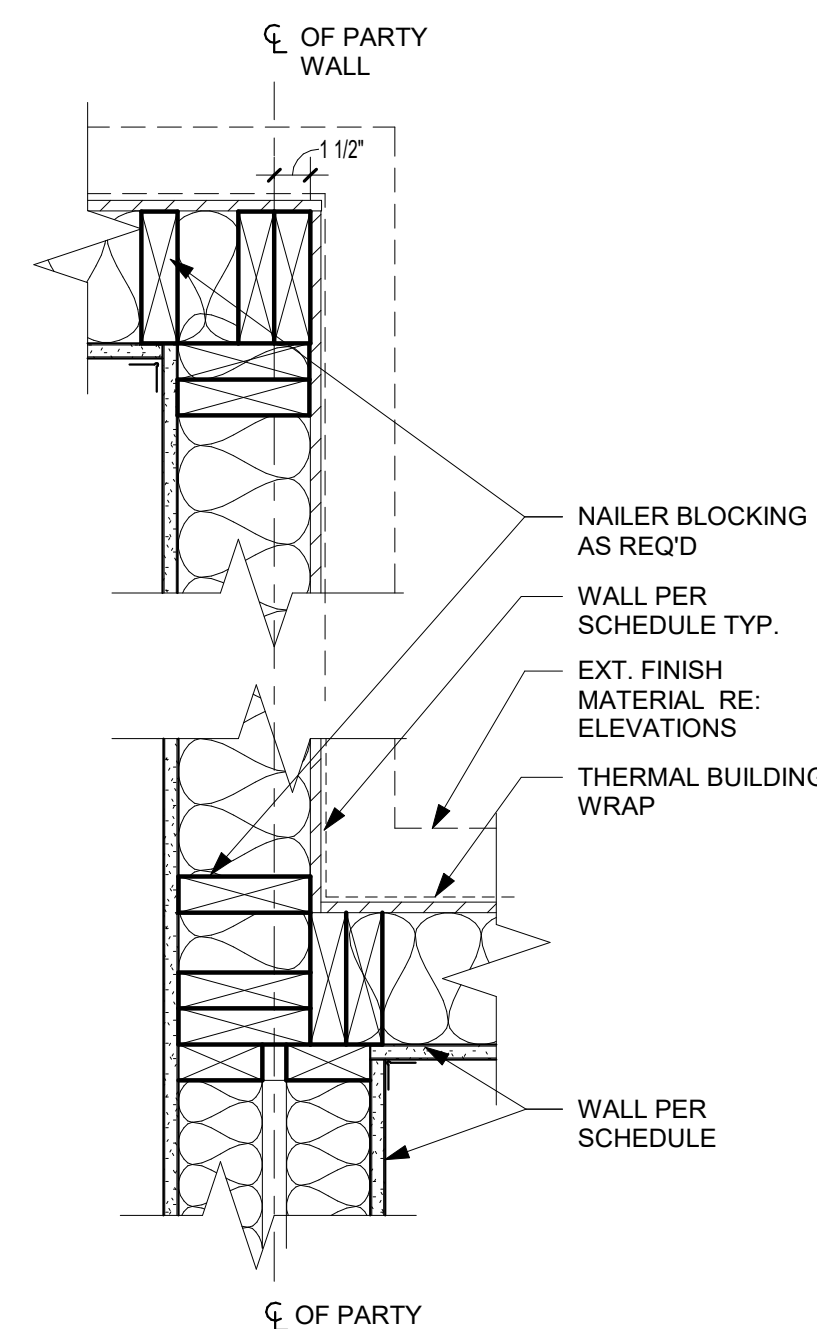
A4 PURSE SHELF AT UNIT ENTRY
3" = 1'-0"



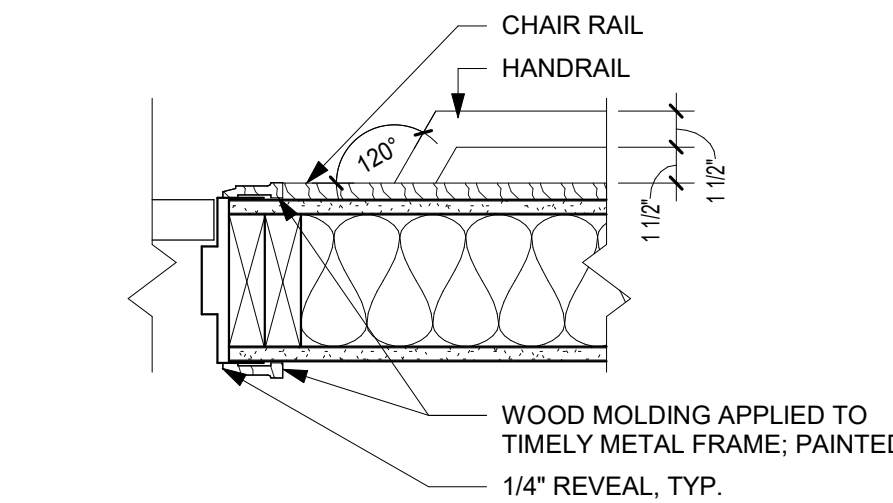
D3 HANDRAIL TO CORNER TRANSITION
1 1/2" = 1'-0"



C3 TYPICAL PILASTER DETAIL
1 1/2" = 1'-0"

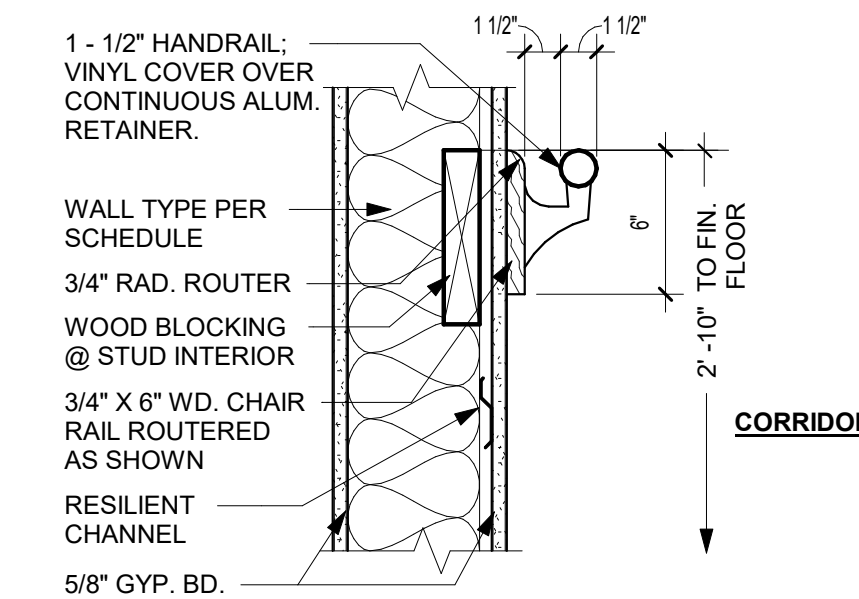


A3 EXTERIOR DEMISING WALL FIRE SEPARATION DETAIL
1 1/2" = 1'-0"

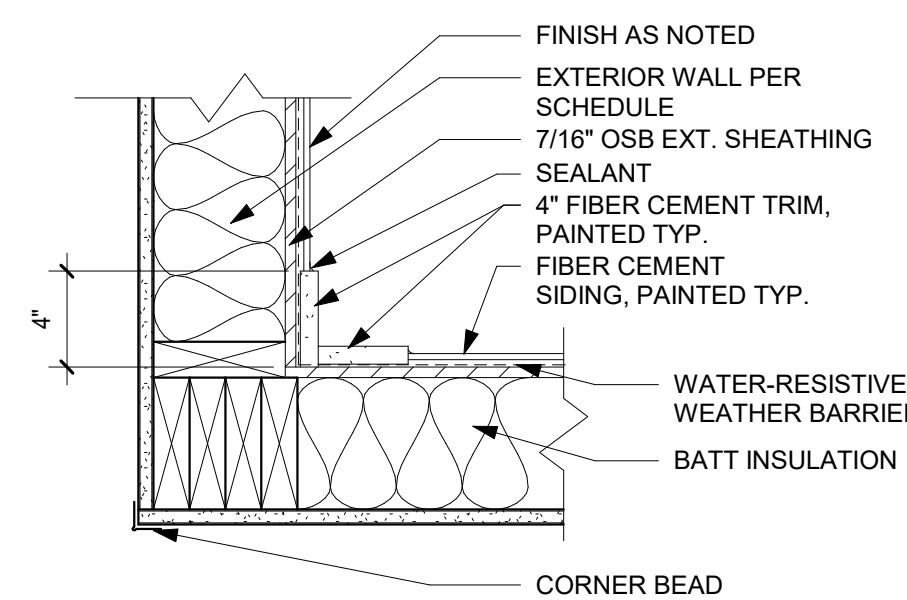


NOTE: CONDITION SIMILAR AT HOLLOW METAL FRAMES, WINDOWS AND OTHER INTERRUPTIONS/TERMINATIONS OF THE HANDRAIL

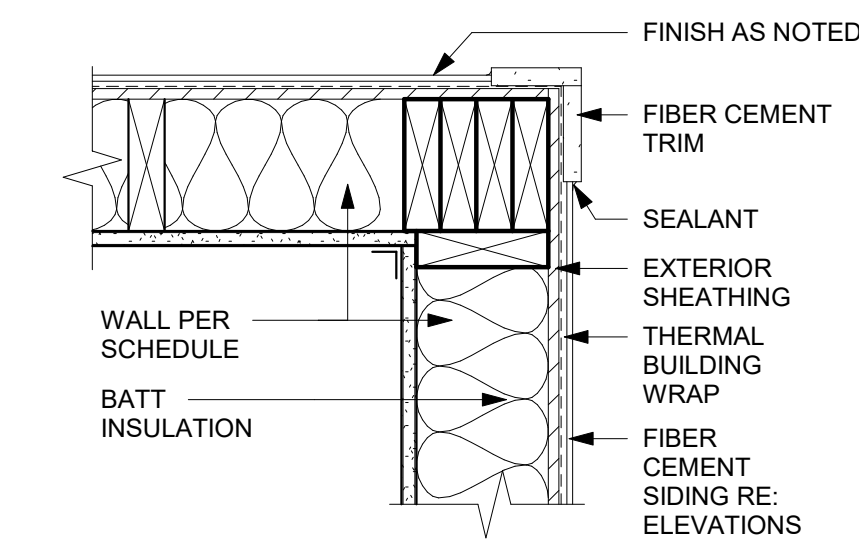
E2 HANDRAIL TO DOOR TRANSITION
1 1/2" = 1'-0"



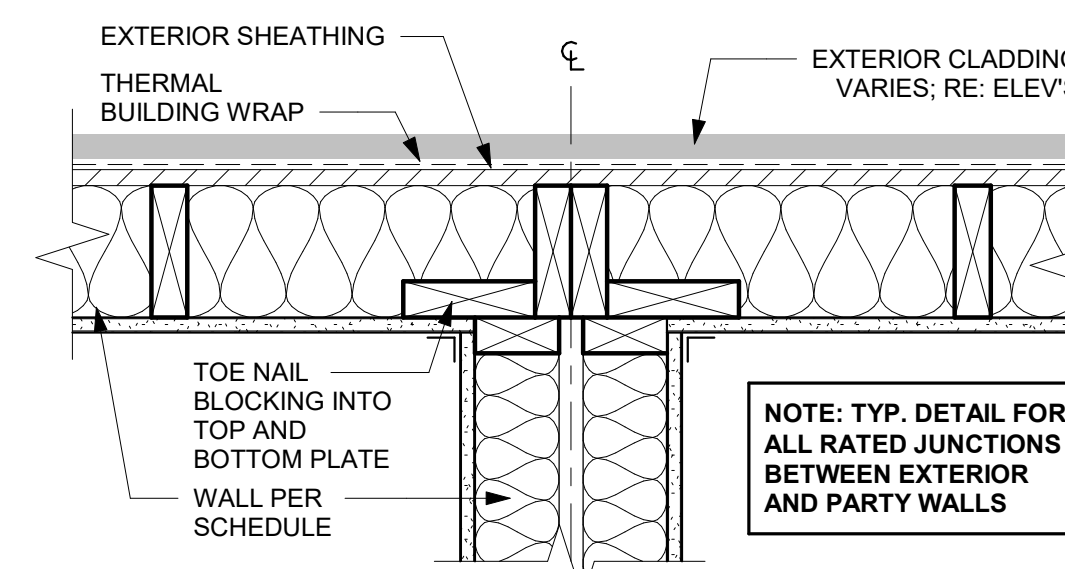
D2 HANDRAIL DETAIL
1 1/2" = 1'-0"



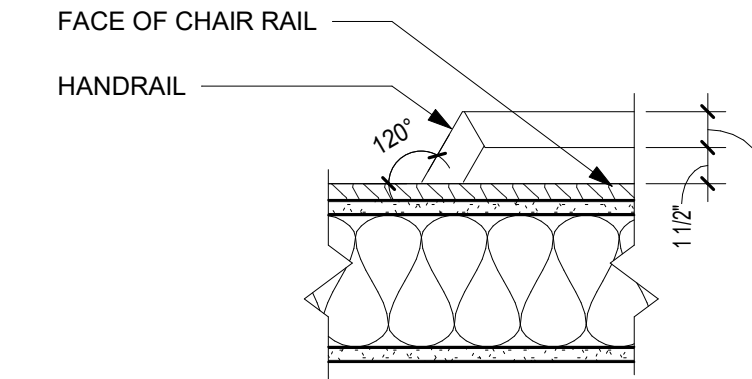
C2 SIDING @ INSIDE CORNER
1 1/2" = 1'-0"



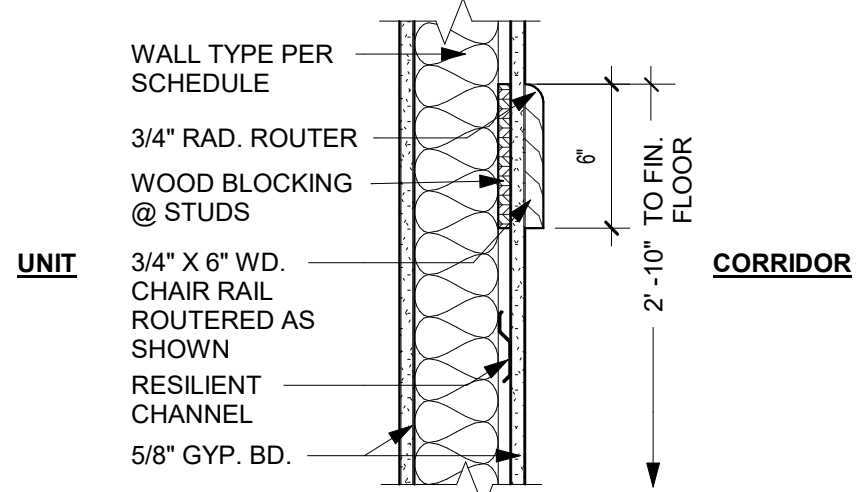
B2 SIDING @ OUTSIDE CORNER
1 1/2" = 1'-0"



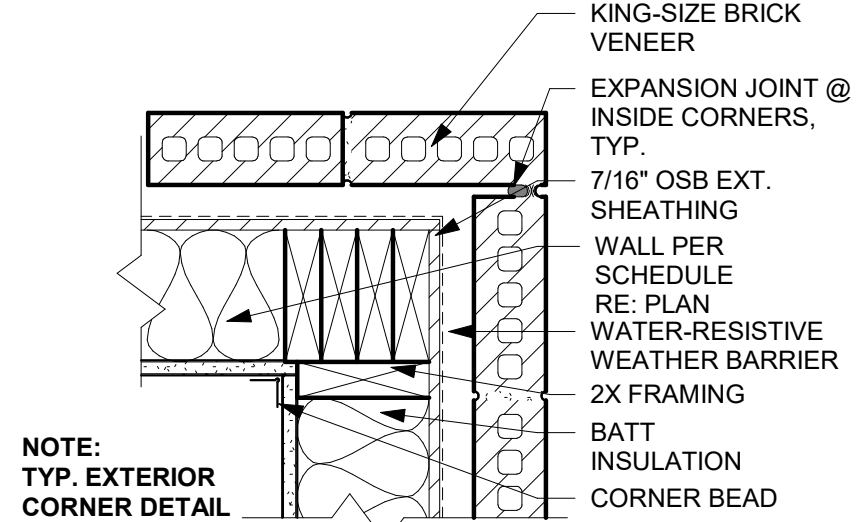
A2 PARTY WALL FIRE SEPARATION PLAN DETAIL
1 1/2" = 1'-0"



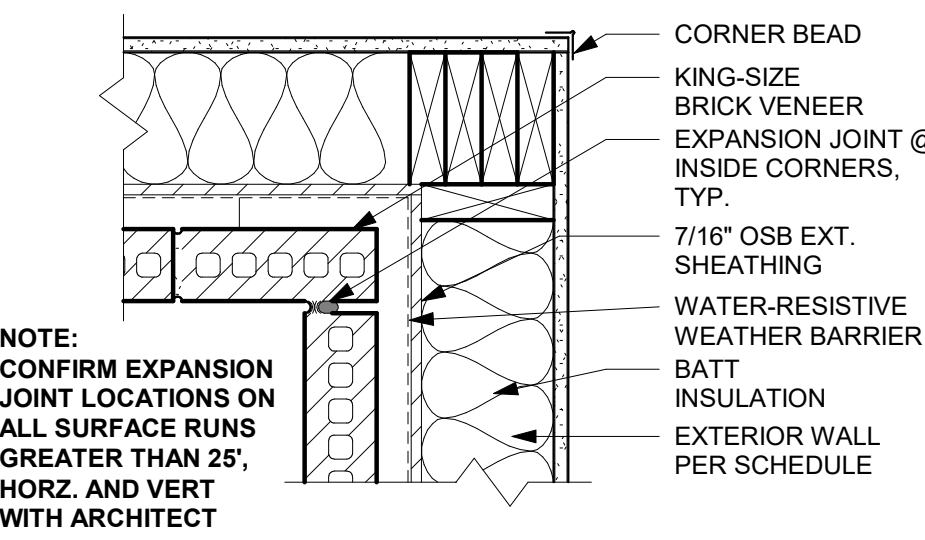
E1 HANDRAIL TO CHAIR RAIL TRANSITION
1 1/2" = 1'-0"



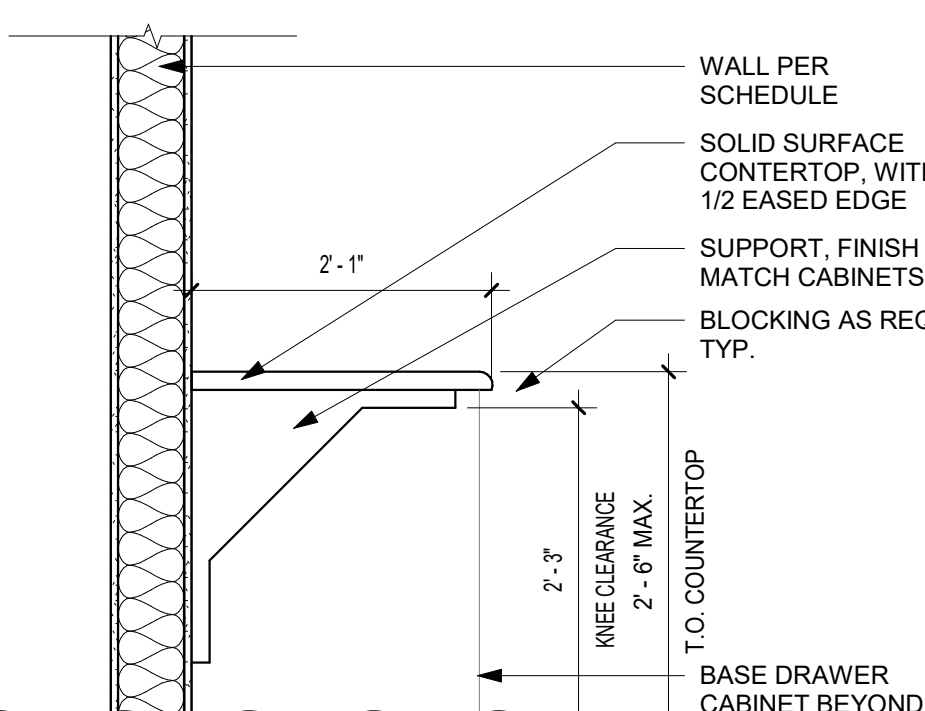
D1 CHAIR RAIL DETAIL
1 1/2" = 1'-0"



C1 BRICK @ OUTSIDE CORNER
1 1/2" = 1'-0"

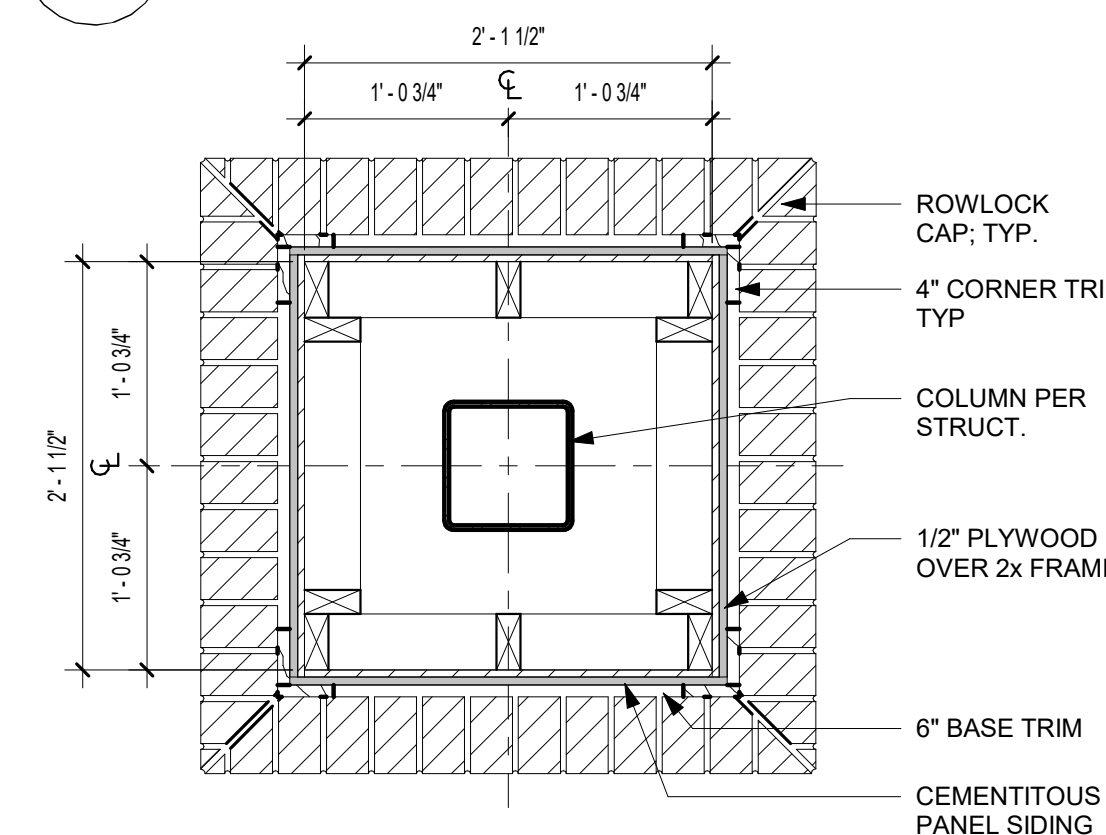


B1 BRICK @ INSIDE CORNER
1 1/2" = 1'-0"



A1 DESK SECTION
3/4" = 1'-0"

C5 PARAPET @ BACK PATIO
1 1/2" = 1'-0"



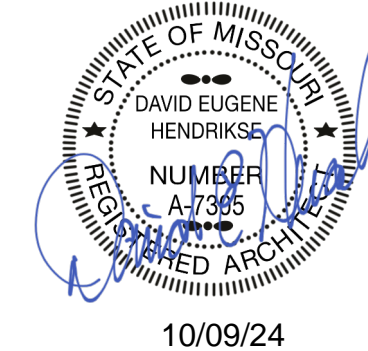
A5 EXTERIOR COLUMN PLAN DETAIL
1" = 1'-0"

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PRINTS ISSUED
10/30/23 PERMIT SUBMITTAL

REVISIONS:
5 10/04/24 ASI 001

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WILSHIRE HILLS III

LEE'S SUMMIT, MISSOURI

MHDC Project No. #22-057 MT

SHEET TITLE
DETAILS

PROJECT NUMBER: 23034
SHEET NUMBER:

A-502

FINISH LEGEND

CARPET:
CPT-1 MOHAWK GROUP: UNCHARTED RESTORE TILE, 359 ECOACTIVE, BRICK ASHLAR PATTERN
CPT-2 MOHAWK GROUP: UNCHARTED SOLVE II TILE, 359 ECOACTIVE, BRICK ASHLAR PATTERN
CP-1 MOWHAWK GROUP: BROADLOOM, BIGLOW NEW BASICS II, 26OZ, # 7928 MAJOLICA TIN
WOM-1 SHAW: PATH TILE - 5T034, PORTABELLA #34761, QUARTER TURN

LUXURY VINYL PLANK:

LVP-1 MOHAWK REXFORD COLLECTION: 12MIL, RP811, #890 STURDY BROWN

SHEET VINYL:

SV-1 MOHAWK PORTICO COLLECTION: #592 COOL SANDS

PORCELAIN TILE:

POR-1 DALTILE: ARTICULO, AR09 COLUMN GRAY, 18" X 18"; GROUT 1/8" MAPEI #93 WARM GRAY
POR-2 DALTILE: ARTICULO, AR09 COLUMN GRAY, 12" X 24"; GROUT 1/8" MAPEI #93 WARM GRAY, RUNNING BOND 33% OVERLAP
POR-3 DALTILE: ARTICULO, AR09 COLUMN GRAY, 6" X 24"; GROUT 1/8" MAPEI #93 WARM GRAY, RUNNING BOND 33% OVERLAP

FRP WALL PANEL:

FRP-1 MARLITE ARTIZAN VISUAL WALL PANELS, VERIFY COLOR WITH OWNER

BASE:

WB-1 WOOD BASE, FJ623, 9/16" X 3.25" COLONIAL, PT3; WOOD SHOE MOLD, FJ129, 7/16" X 1 1/16" COLONIAL, PT3
RB-1 RUBBER BASE, STYLE AND COLOR BY OWNERSHIP

PAINT:

PT-1 SHERWIN WILLIAMS, SW 7044 AMAZING GRAY, EGGSHELL
PT-2 SHERWIN WILLIAMS, SW 7042 SHOJI WHITE, FLAT
PT-3 SHERWIN WILLIAMS, SW 7042 SHOJI WHITE, SEMI-GLOSS
PT-4 SHERWIN WILLIAMS, SW 7069 IRON ORE, SEMI-GLOSS
PT-5 SHERWIN WILLIAMS, SW 7015 REPOSE GRAY, EGGSHELL
PT-6 SHERWIN WILLIAMS, SW 7017 DORIAN GRAY, EGGSHELL
PT-7 SHERWIN WILLIAMS, SW 7633 TAUPE TONE, EGGSHELL
PT-8 SHERWIN WILLIAMS, SW 7046 ANONYMOUS, EGGSHELL
PT-9 SHERWIN WILLIAMS, SW 9143 CADET, EGGSHELL
PT-10 SHERWIN WILLIAMS, SW 9127 AT EASE SOLDIER, EGGSHELL
PT-11 SHERWIN WILLIAMS, SW 9168 ELEPHANT EAR, EGGSHELL
PT-12 SHERWIN WILLIAMS, SW 7048 URBANE BRONZE, EGGSHELL
PT-13 SHERWIN WILLIAMS, SW 7048 URBANE BRONZE, SEMI-GLOSS

FINISH ABBREVIATIONS:

BCR BELOW CHAIR RAIL, VERIFY WITH PLANS AND OWNER
ACR ABOVE CHAIR RAIL, VERIFY WITH PLANS AND OWNER

WINDOW COMMENTS:

1. GLAZING DEEMED TO BE IN A HAZARDOUS LOCATION PER 2406.4 IBC 2018 SHALL BE TEMPERED/SAFETY GLAZING.
2. EACH PANE OF SAFETY GLAZING INSTALLED IN HAZARDOUS LOCATIONS SHALL BE IDENTIFIED BY MANUFACTURER'S DESIGNATION PER 2406 IBC 2018.
3. CONFIRM OPERATION OF SASH LOCKS AT TYPE 'A' UNITS WILL BE WITHIN 48" REQUIRED REACH RANGE. RE: A117.1-2009 SECTION 1003.9 & 1004.5.
4. ALL WINDOWS IN PUBLIC SPACES RECEIVE TRIM; RE: SPECS FOR TRIM PROFILE.
5. REFERENCE EXTERIOR ELEVATIONS FOR EXTERIOR WINDOW TRIM.
6. REFER TO CODE SHEET G-100 FOR ALL FIRE RATINGS
7. WINDOWS ON AND ABOVE SECOND FLOOR MUST HAVE WINDOW OPENING CONTROL DEVICES THAT COMPLY WITH ASTM F 2090.
8. WINDOW LOCATIONS PER A-400S UNO.
9. OPERABLE PARTS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE OPERABLE PARTS SHALL BE 5.0 POUNDS (22.2 N) MAXIMUM.

PUBLIC ROOM FINISH COMMENTS:

1. PAINT BULKHEADS
2. GLUE DOWN CARPET; NO PAD TO MEET ACCESSIBILITY.

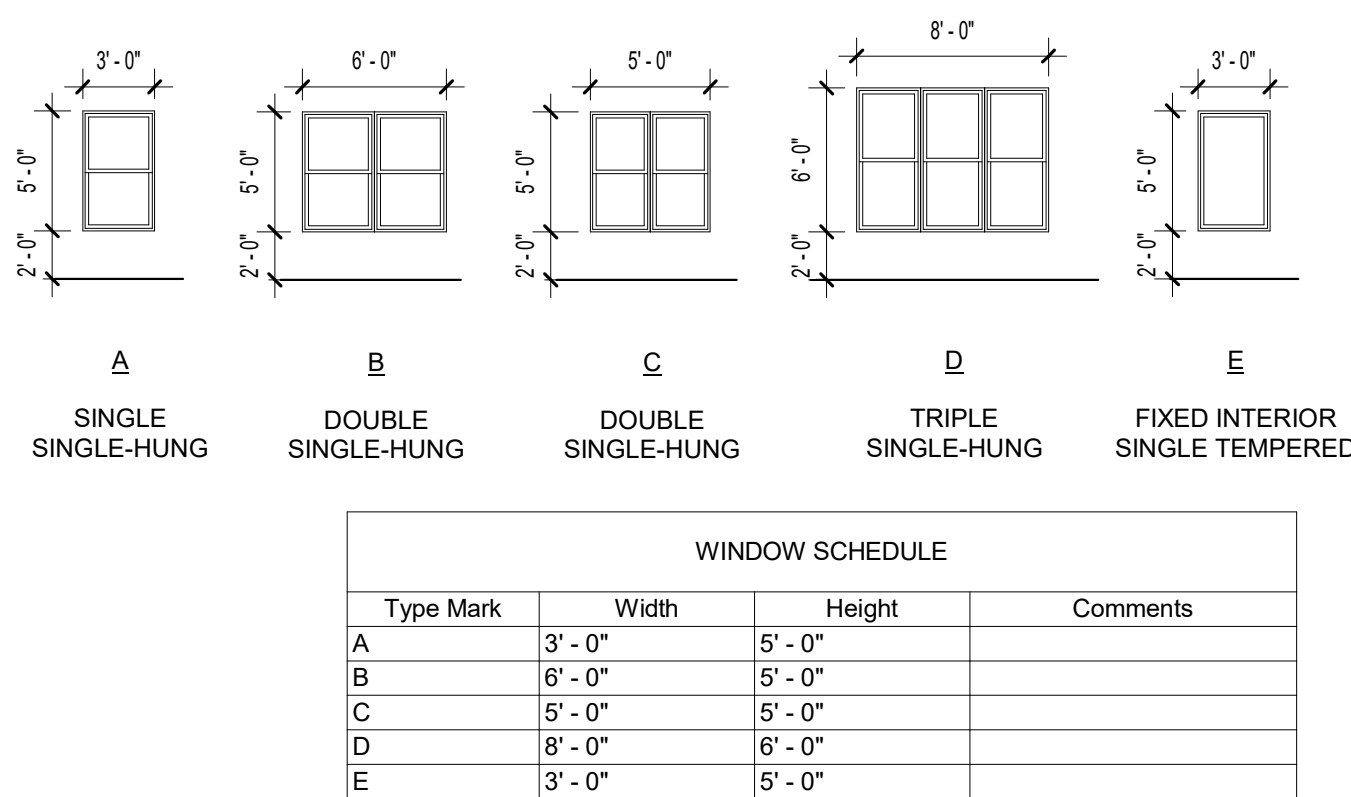
GENERAL NOTES:

1. BASE FINISH:
 - A. RB-1 = VINYL TOED/TOELESS - STANDARD COLOR; EXTEND BASE 4" MIN.

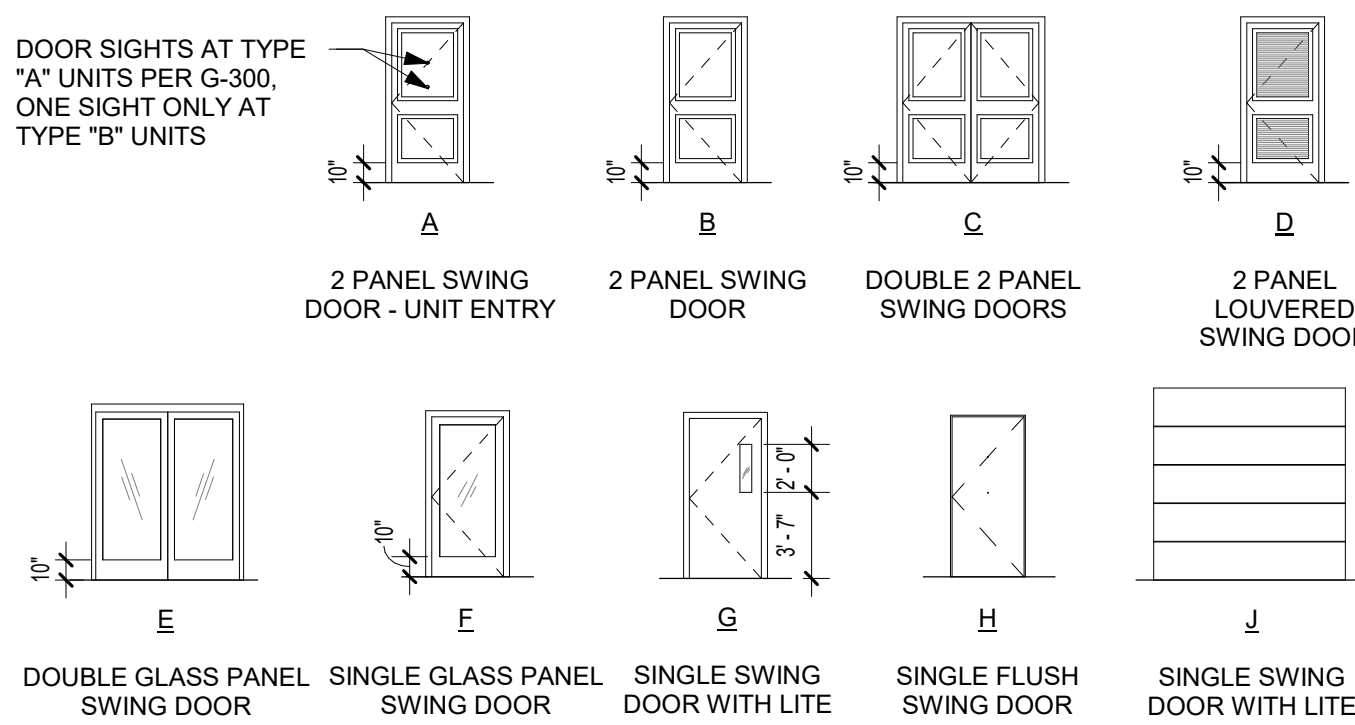
PUBLIC DOOR COMMENTS:

1. FINAL HARDWARE SCHEDULE AND FINAL GROUPS TO BE DETERMINED BY DOOR SUB-CONTRACTOR. VERIFY FINAL HARDWARE INSTALLATION WITH CLIENT AND ARCHITECT.
2. DOOR BEING USED FOR EGRESS SHALL BE IN ACCORDANCE WITH IBC 2018 SECT. 1008 AND SHALL NOT REQUIRE TIGHT GRASPING, TIGHT PINCHING, OR TWISTING OF THE WRIST TO OPERATE.
3. ALL FRAMES TO BE 2" UNLESS OTHERWISE NOTED.
4. PAINT / STAIN ALL DOORS AND FRAMES.
5. VERIFY KEYING SCHEDULE WITH OWNER. ALL KEYS TO BE GIVEN TO OWNER AT SUBSTANTIAL COMPLETION.
6. DOOR SIGHTS AT UNIT ENTRY DOORS. RE: G-300 FOR H/VI DOOR SIGHT
7. MT (TIMELY) FRAMES TO RECEIVE FIELD INSTALLED WOOD TRIM, TYP. ALL LOCATIONS.
8. ALL DOOR HARDWARE TO BE LEVER TYPE HARDWARE, UNLESS OTHERWISE NOTED.
9. ALL COMMON AREA RATED DOORS TO HAVE **SMOKE SEALS (GASKETS), CLOSURES AND LATCH** HARDWARE.
10. UNIT DOORS TO HAVE SPRING HINGES & LATCH TYP UNO.
11. ALL DOORS TO HAVE 32 CLEAR WIDTH PER SECTION 404.2.2 (ICC A117.1-2009).

WINDOW TYPES



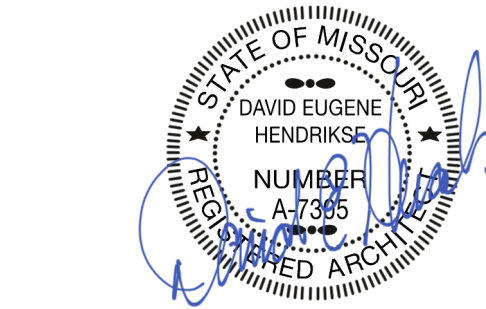
DOOR TYPES

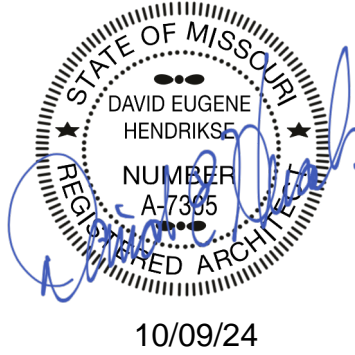


PUBLIC ROOM FINISH SCHEDULE						
Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish	Comments
1000	VESTIBULE	WOM-1	WB-1	TBD BY OWNER	PT-2	
1001	LOBBY/MAIL	CPT-1	WB-1	PT-6 BCR / PT-5 ACR	PT-2	
1002	OFFICE	CPT-1	WB-1	PT-6 BCR / PT-5 ACR	PT-2	
1002.1	FILE	CPT-1	WB-1	PT-1	PT-2	
1003	SPRINKLER	SV-1	RB-1	--	PT-2	
1004	MECH	SV-1	WB-1	--	PT-2	
1005	COMMUNITY	LVP-1	WB-1	PT-6 BCR / PT-5 ACR	PT-2	POR-3 AT FIREPLACE SURROUND, CABS. W/ PL COUNTER W/ SPLASH
1006	UTILITY	SV-1	WB-1	--	PT-2	PROVIDE F.R.P. WALL PROTECTION WITHIN 2 FT. OF SERVICE SINKS, URINALS, AND WATER CLOSETS TO A HEIGHT OF 4 FT. A.F.F.
1007	RR	LVP-1	RB-1	TBD BY OWNER	PT-2	CABS. W/ PL COUNTER W/ SPLASH; PROVIDE F.R.P. WALL PROTECTION WITHIN 2 FT. OF SERVICE SINKS, URINALS, AND WATER CLOSETS TO A HEIGHT OF 4 FT. A.F.F.
1008	ELEV. EQUIP.	SV-1	RB-1	--	PT-2	
2001	MULTI-PURPOSE	LVP-1	WB-1	PT-6 BCR / PT-5 ACR	PT-2	CABS. W/ PL COUNTER W/ SPLASH
2002	RR	LVP-1	RB-1	TBD BY OWNER	PT-2	CABS. W/ PL COUNTER W/ SPLASH; PROVIDE F.R.P. WALL PROTECTION WITHIN 2 FT. OF SERVICE SINKS, URINALS, AND WATER CLOSETS TO A HEIGHT OF 4 FT. A.F.F.
3001	MEETING	CPT-1	WB-1	PT-6 BCR / PT-5 ACR	PT-2	
3002	FITNESS	CPT-1	WB-1	PT-6 BCR / PT-5 ACR	PT-2	
3003	RR	LVP-1	RB-1	TBD BY OWNER	PT-2	CABS. W/ PL COUNTER W/ SPLASH; PROVIDE F.R.P. WALL PROTECTION WITHIN 2 FT. OF SERVICE SINKS, URINALS, AND WATER CLOSETS TO A HEIGHT OF 4 FT. A.F.F.
C1-1	CORRIDOR	CPT-2	WB-1	PT-6 BCR / PT-5 ACR	PT-2	
C1-2	CORRIDOR	CPT-2	WB-1	PT-6 BCR / PT-5 ACR	PT-2	
C1-3	CORRIDOR	CPT-2	WB-1	PT-6 BCR / PT-5 ACR	PT-2	
C2-1	CORRIDOR	CPT-2	WB-1	PT-6 BCR / PT-5 ACR	PT-2	
C2-2	CORRIDOR	CPT-2	WB-1	PT-6 BCR / PT-5 ACR	PT-2	
C2-3	CORRIDOR	CPT-2	WB-1	PT-6 BCR / PT-5 ACR	PT-2	
E1-1	ELEV.	POR-2	--	--	PT-2	
E1-2	ELEV.	POR-2	--	--	PT-2	
E1-3	ELEV.	POR-2	--	--	PT-2	
S1-1	STAIR 1	CP-1	WB-1	PT-5	PT-2	
S1-2	STAIR 1	CP-1	WB-1	PT-5	PT-2	
S1-3	STAIR 1	CP-1	WB-1	PT-5	PT-2	
S2-1	STAIR 2	CP-1	WB-1	PT-5	PT-2	
S2-2	STAIR 2	CP-1	WB-1	PT-5	PT-2	
S2-3	STAIR 2	CP-1	WB-1	PT-5	PT-2	

DOOR SCHEDULE - PUBLIC

Mark	Width	Height	Thickness	Type Mark	Door Material	Door Finish	Frame Material	Frame Finish	Fire Rating	Comments	Hardware Group
1000	6' - 0"	7' - 0"	0' - 1 3/4"	E	ALUM.	PRE-FINISH	ALUM. MT-1	PRE-FINISH		CLOSER, ACCESSIBLE CONTROLS, PUSH PULL BARS, WEATHER GASKET, TEMPERED, RAIN DRIP, THRESHOLD	3
1001	6' - 0"	6' - 8"	0' - 1 3/4"	E	ALUM.	PRE-FINISH	ALUM. MT-1	PRE-FINISH		CLOSER, ACCESSIBLE CONTROLS, PUSH PULL BARS, WEATHER GASKET, TEMPERED, KEY FOB OPERATION, MOTION SENSORS, EMERGENCY REQUEST TO EXIT BUTTON	4
1002	3' - 0"	6' - 8"	0' - 1 3/4"	F	HM	PT	HM MT-1	PT	20 MIN.	CLOSER, SMOKE SEALS, SWEEPS, LATCH HARDWARE, TEMPERED	11
1002.1	3' - 0"	6' - 8"	0' - 1 3/4"	B	WD H.C.	PT	HM MT-1	PT		LATCH HARDWARE	7
1003	3' - 0"	6' - 8"	0' - 1 3/4"	B	HM	PT	HM MT-1	PT	45 MIN.	CLOSER, SMOKE SEALS, SWEEPS, LATCH HARDWARE	9
1003.0	3' - 0"	6' - 8"	0' - 1 3/4"	B	INSUL. MTL.	PT	INSUL. MTL.	PT		CLOSER, WEATHER GASKET, THRESHOLD, RAIN DRIP, LATCH HARDWARE	8
1004	3' - 0"	6' - 8"	0' - 1 3/4"	B	HM	PT	HM MT-1	PT	45 MIN.	LATCH HARDWARE	12
1005	6' - 0"	6' - 8"	0' - 1 3/4"	E	HM	PT	HM MT-1	PT	20 MIN.	SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE, TEMPERED	13
1005.0	3' - 0"	7' - 0"	0' - 1 3/4"	F	ALUM.	PRE-FINISH	ALUM. MT-1	PRE-FINISH		CLOSER, ACCESSIBLE CONTROLS, PUSH PULL BARS, WEATHER GASKET, TEMPERED, RAIN DRIP, THRESHOLD	14
1006	3' - 0"	6' - 8"	0' - 1 3/4"	B	HM	PT	HM MT-1	PT	45 MIN.	SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE	16
1007	3' - 0"	6' - 8"	0' - 1 3/4"	B	WD S.C.	PT	HM MT-1	PT	20 MIN.	SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE	6
1008	3' - 0"	6' - 8"	0' - 1 3/4"	B	HM	PT	HM MT-1	PT	45 MIN.	CLOSER, SMOKE SEALS, SWEEPS, LATCH HARDWARE	9
2002	3' - 0"	6' - 8"	0' - 1 3/4"	B	WD S.C.	PT	HM MT-1	PT	20 MIN.	SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE	6
3001	6' - 0"	6' - 8"	0' - 1 3/4"	E	HM	PT	HM MT-1	PT	20 MIN.	SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE, TEMPERED	10
3002	3' - 0"	6' - 8"	0' - 1 3/4"	F	HM	PT	HM MT-1	PT	20 MIN.	SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE, TEMPERED	15
3003	3' - 0"	6' - 8"	0' - 1 3/4"	B	WD S.C.	PT	HM MT-1	PT	20 MIN.	SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE	6
C1-1	3' - 0"	7' - 0"	0' - 1 3/4"	F	ALUM.	PRE-FINISH	ALUM. MT-1	PRE-FINISH		CLOSER, ACCESSIBLE CONTROLS, PUSH PULL BARS, WEATHER GASKET, TEMPERED, RAIN DRIP, THRESHOLD, PANIC HARDWARE, LATCH HARDWARE	2
C2-1	3' - 0"	7' - 0"	0' - 1 3/4"	F	ALUM.	PRE-FINISH	ALUM. MT-1	PRE-FINISH		CLOSER, ACCESSIBLE CONTROLS, PUSH PULL BARS, WEATHER GASKET, TEMPERED, RAIN DRIP, THRESHOLD, PANIC HARDWARE, LATCH HARDWARE	2
M1	3' - 0"	6' - 8"	0' - 1 3/4"	H	HM	PT	HM MT-1	PT		CLOSER, SMOKE SEALS, SWEEPS, LATCH HARDWARE	9
M2	8' - 0"	8' - 0"	0' - 1 3/4"	J	HM	PT	HM MT-1	PRE-FINISH			
S1-1	3' - 0"	6' - 8"	0' - 1 3/4"	G	HM	PRE-FINISH	HM MT-1	PT	60 MIN.	PANIC HARDWARE, CLOSER, SMOKE SEALS, SWEEPS, LATCH HARDWARE, PANIC HARDWARE, KICK PLATE, MAG HOLD	5
S1-1.0	3' - 0"	7' - 0"	0' - 1 3/4"	F	INSUL. MTL.	PT	INSUL. MTL.	PT		CLOSER, KEY FOB OPERATION, WEATHER GASKET, TEMPERED, LATCH HARDWARE, PANIC HARDWARE	1
S1-2	3' - 0"	6' - 8"	0' - 1 3/4"	G	HM	PT	HM MT-1	PT	60 MIN.	PANIC HARDWARE, CLOSER, SMOKE SEALS, SWEEPS, LATCH HARDWARE, PANIC HARDWARE, KICK PLATE, MAG HOLD	5
S1-3	3' - 0"	6' - 8"	0' - 1 3/4"	G	HM	PT	HM MT-1	PT	60 MIN.	PANIC HARDWARE, CLOSER, SMOKE SEALS, SWEEPS, LATCH HARDWARE, PANIC HARDWARE, KICK PLATE, MAG HOLD	5
S2-1	3' - 0"	6' - 8"	0' - 1 3/4"	G	HM	PT	HM MT-1	PT	60 MIN.	PANIC HARDWARE, CLOSER, SMOKE SEALS, SWEEPS, LATCH HARDWARE, PANIC HARDWARE, KICK PLATE, MAG HOLD	5
S2-1.0	3' - 0"	7' - 0"	0' - 1 3/4"	F	INSUL. MTL.	PT	INSUL. MTL.	PT		CLOSER, KEY FOB OPERATION, WEATHER GASKET, TEMPERED, LATCH HARDWARE, PANIC HARDWARE	1
S2-2	3' - 0"	6' - 8"	0' - 1 3/4"	G	HM	PT	HM MT-1	PT	60 MIN.	PANIC HARDWARE, CLOSER, SMOKE SEALS, SWEEPS, LATCH HARDWARE, PANIC HARDWARE, KICK PLATE, MAG HOLD	5
S2-3	3' - 0"	6' - 8"	0' - 1 3/4"	G	HM	PT	HM MT-1	PT	60 MIN.	PANIC HARDWARE, CLOSER, SMOKE SEALS, SWEEPS, LATCH HARDWARE, PANIC HARDWARE, KICK PLATE, MAG HOLD	5





WILSHIRE HILLS III

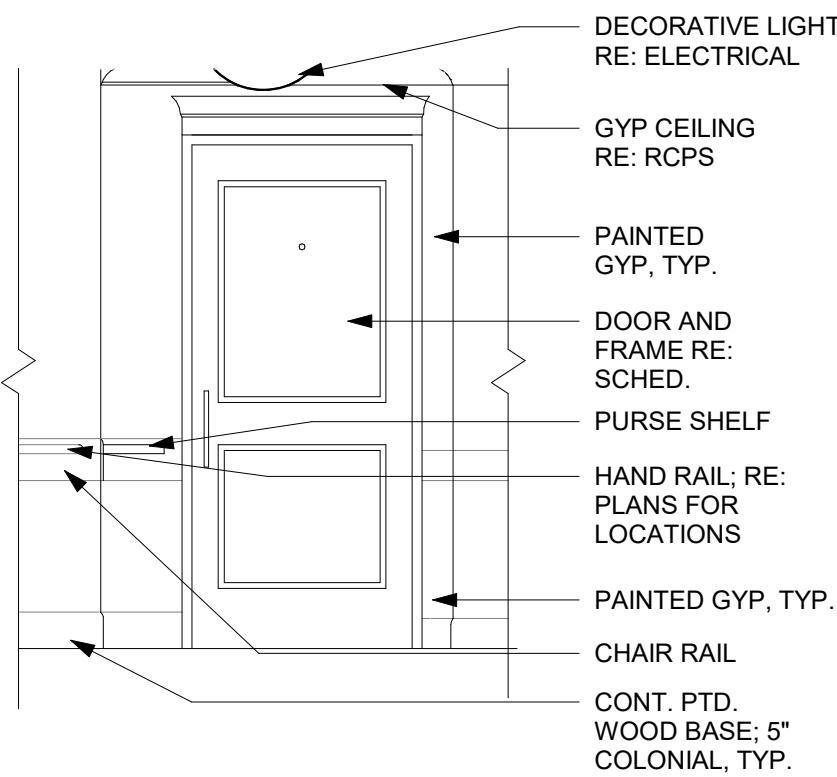
LEE'S SUMMIT, MISSOURI

MHDC Project No. #22-057 MT

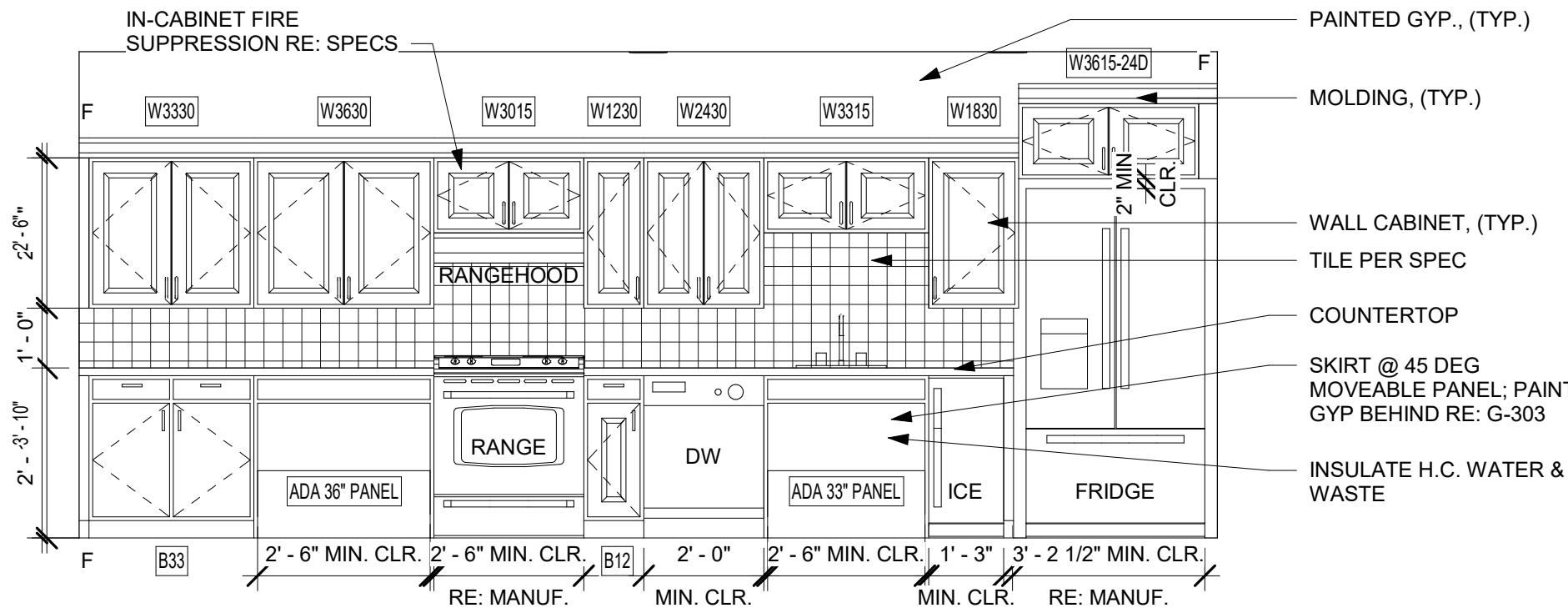
SHEET TITLE
INTERIOR ELEVATIONS

PROJECT NUMBER: 23034
SHEET NUMBER:

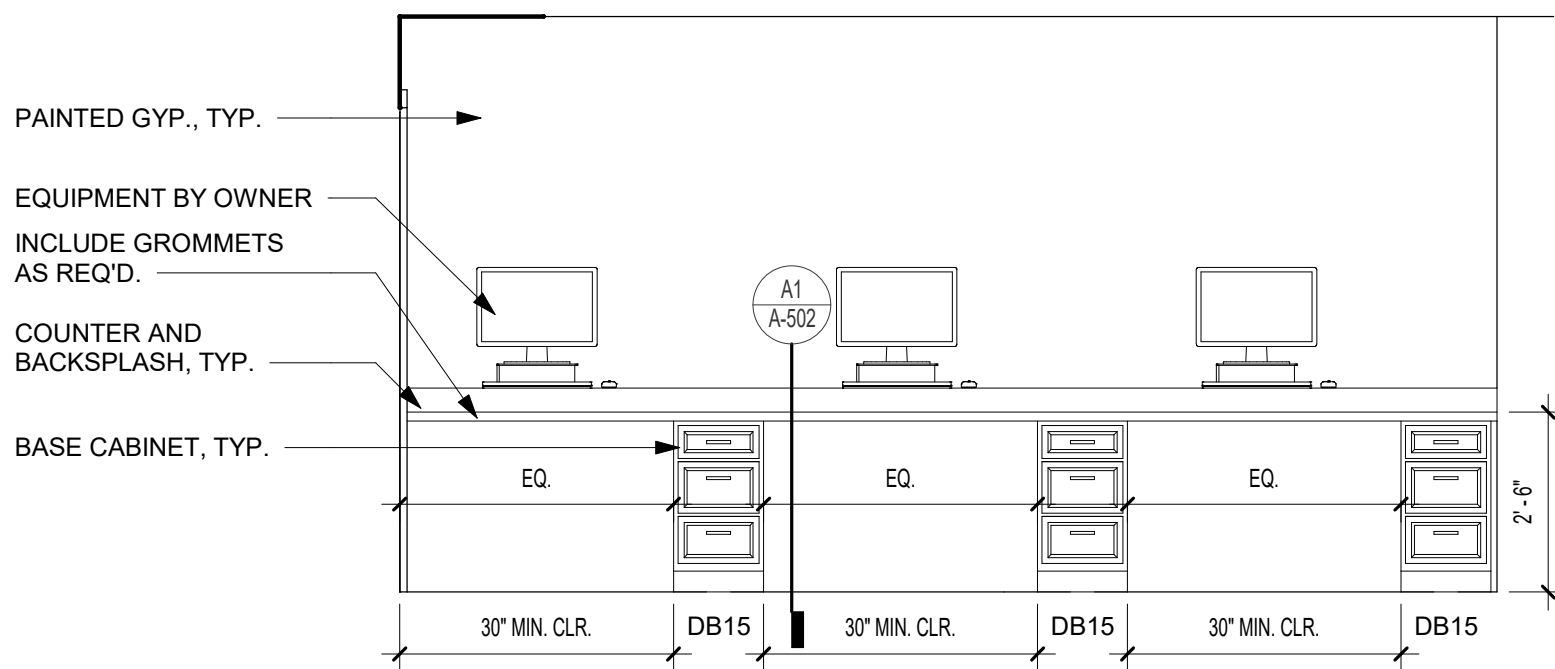
A-700



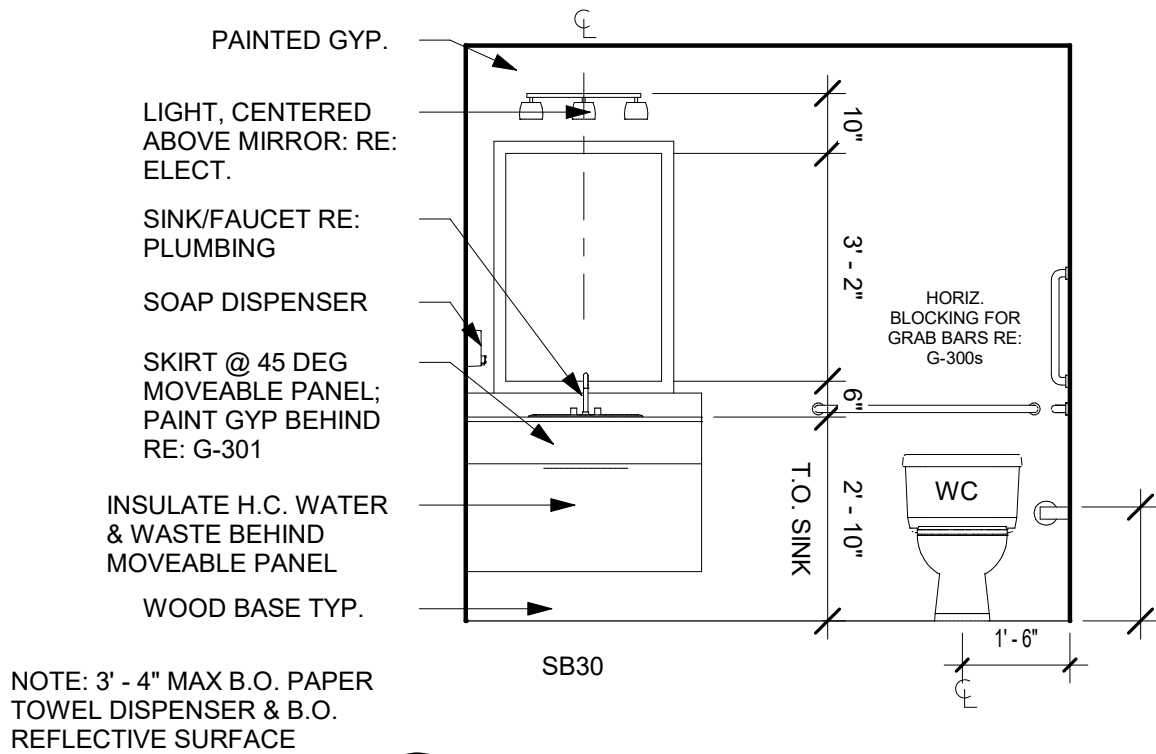
C2 TYP. UNIT ENTRY
3/8" = 1'-0"



C1 MULTI-PURPOSE KITCHEN ELEVATION
3/8" = 1'-0"

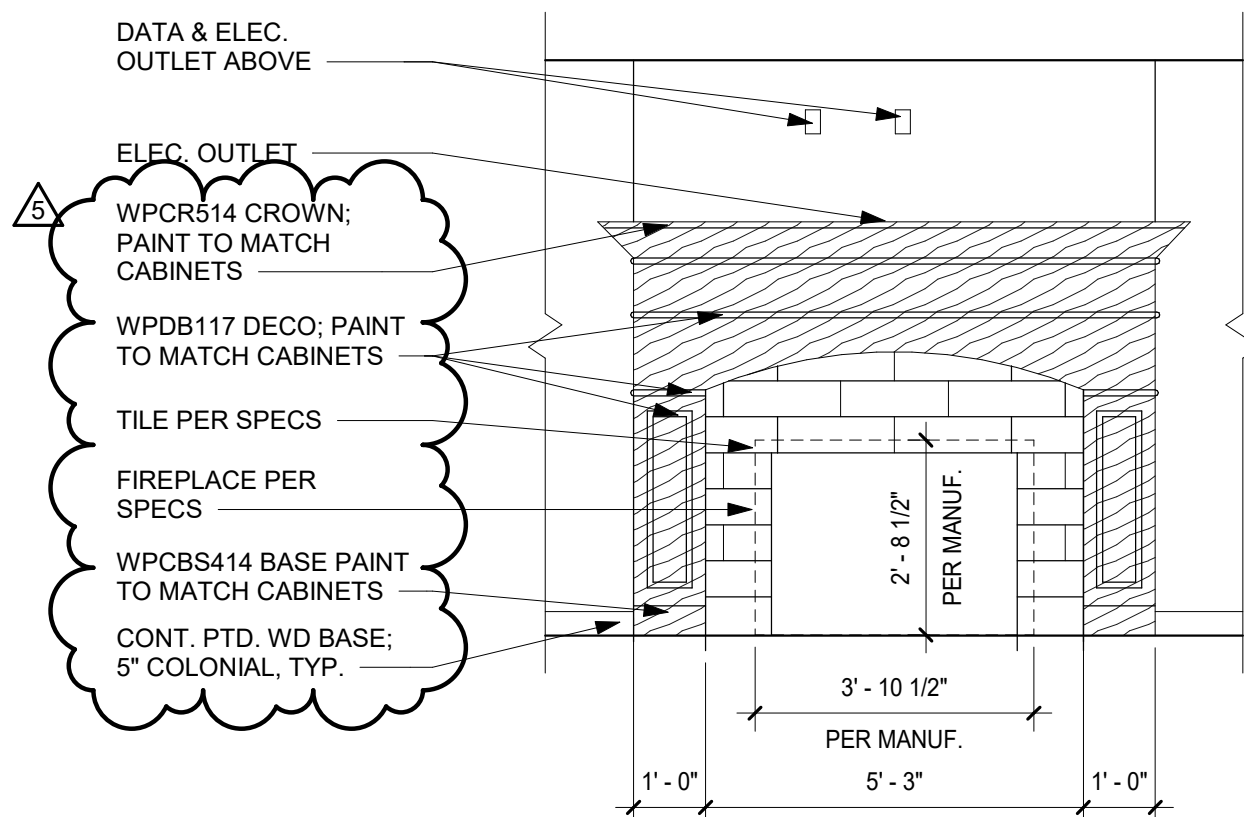


B3 COMPUTER ELEVATION
3/8" = 1'-0"

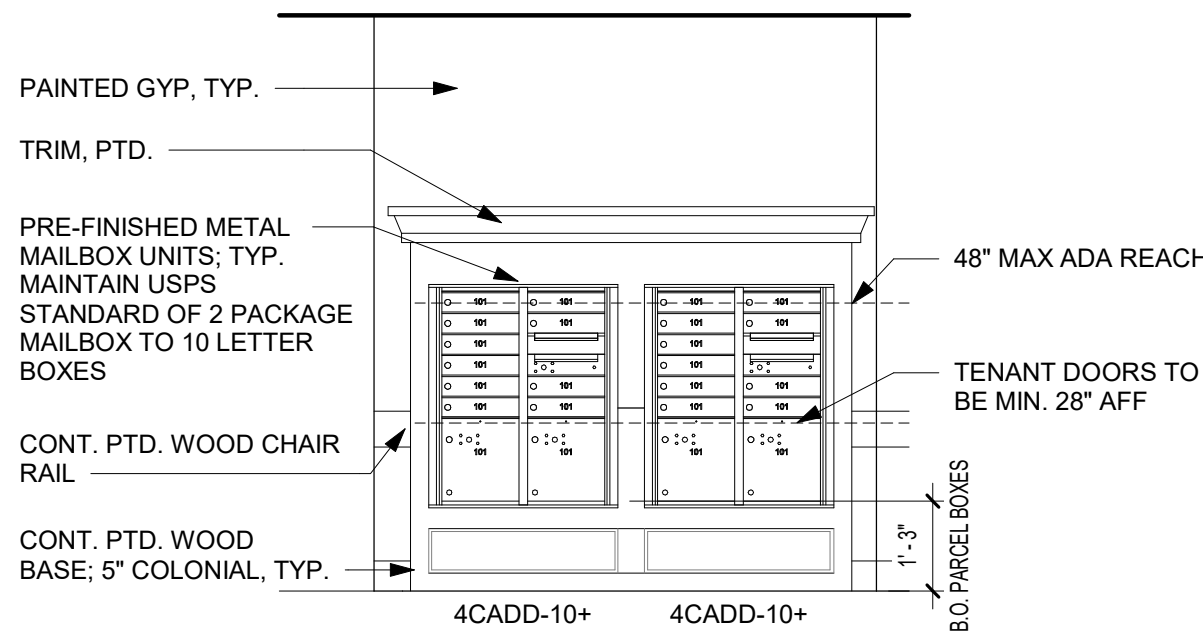


NOTE: 3'-4" MAX B.O. PAPER
TOWEL DISPENSER & B.O.
REFLECTIVE SURFACE

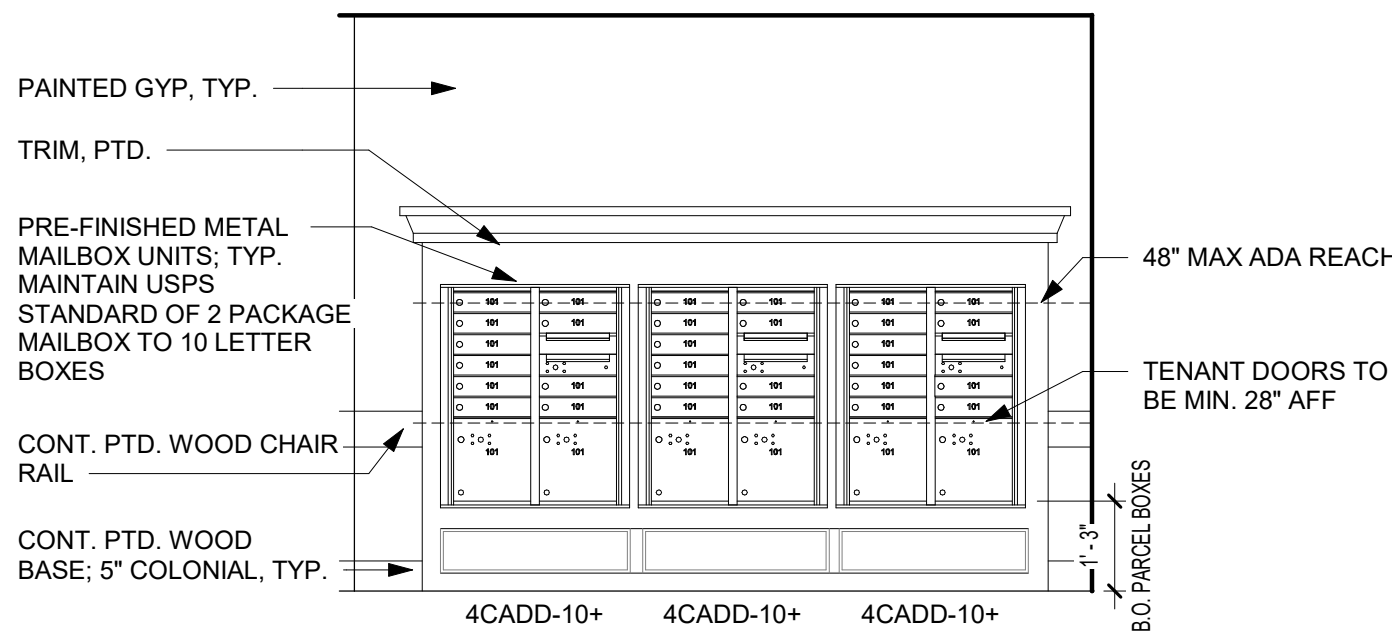
B2 PUBLIC RESTROOM ELEVATION
3/8" = 1'-0"



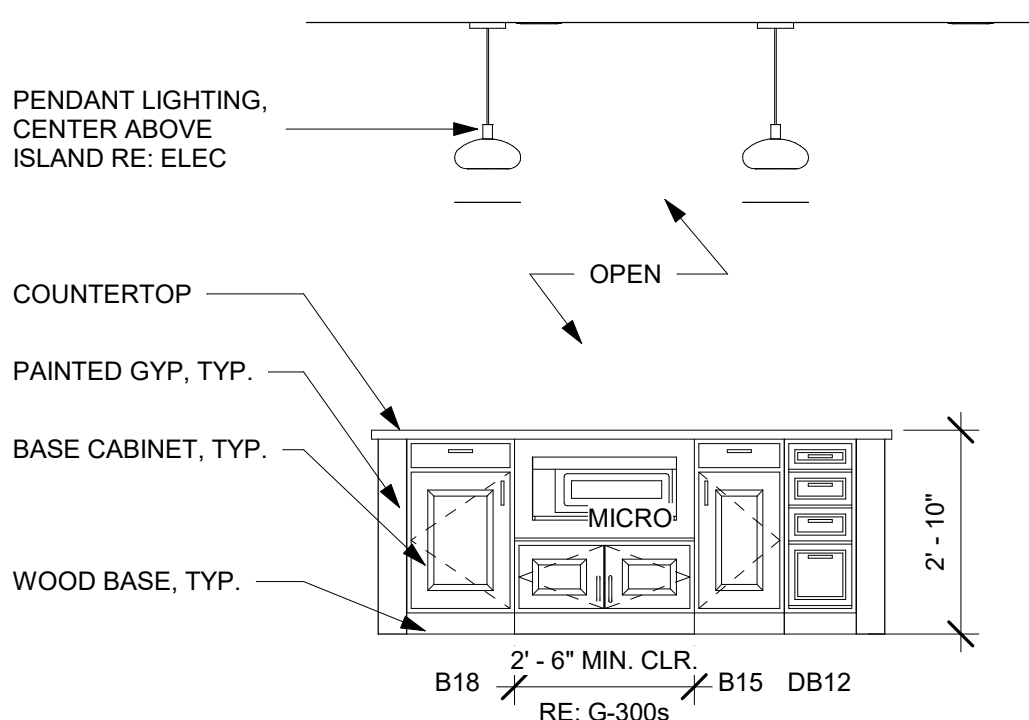
B1 TYP. FIREPLACE ELEVATION
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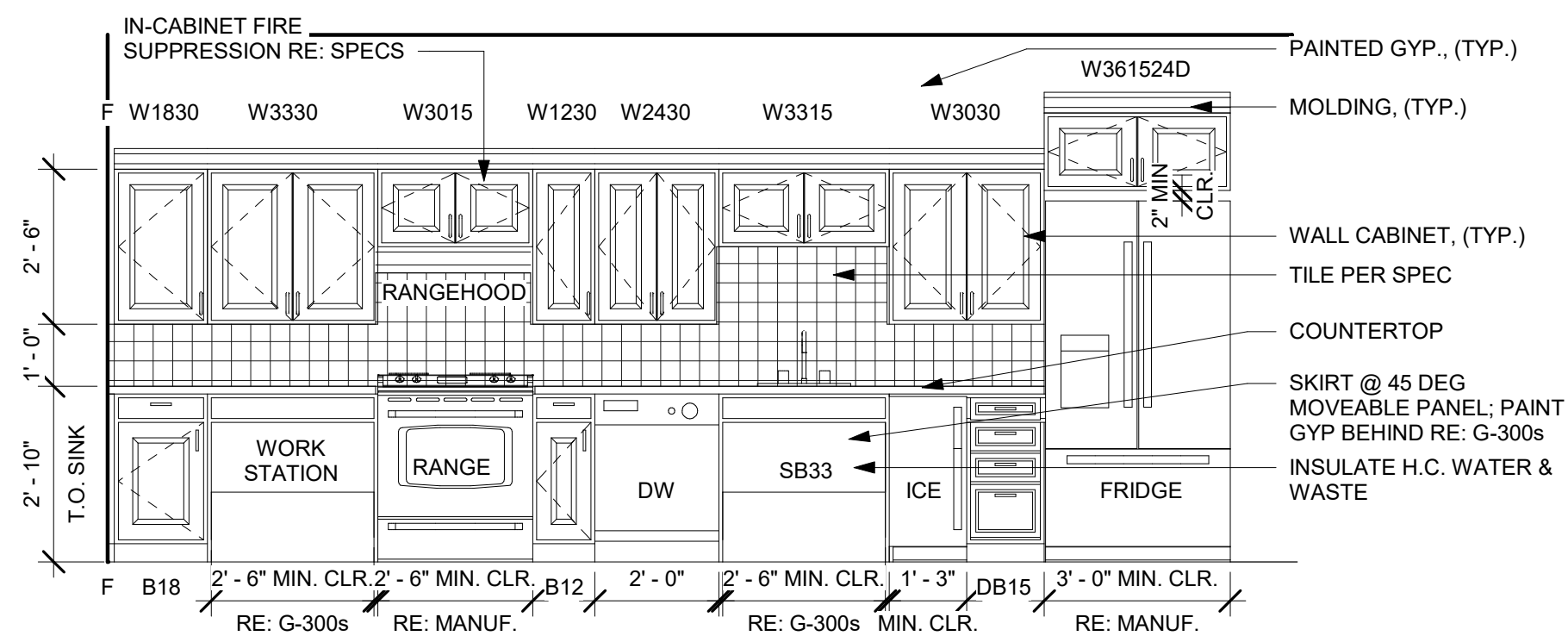
A4 MAILBOX ELEVATION 2
3/8" = 1'-0"



A3 MAILBOX ELEVATION 1
3/8" = 1'-0"



A2 COMMUNITY KITCHEN ELEVATION 2
3/8" = 1'-0"



A1 COMMUNITY KITCHEN ELEVATION 1
3/8" = 1'-0"

GENERAL LIGHTING NOTES

1. REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.
2. LIGHT FIXTURES INDICATED AS EMERGENCY FIXTURES ARE TO FUNCTION AS NIGHT LIGHTS UNLESS SPECIFICALLY SHOWN SWITCHED.
3. ALL CIRCUITING SHOWN ON THIS PLAN IS DIAGRAMMATIC.
3.1. ALL FIXTURES SHALL BE FED FROM JUNCTION BOXES WITH LIGHT FIXTURE WHIPS (<6'). DASTY-CHAINING OF FIXTURES IS NOT ALLOWED.
3.2. SWITCH BOX LOCATIONS SHALL BE WIRED SO THAT A NEUTRAL WIRE IS AVAILABLE AT THE SWITCH BOX LOCATION, EITHER IN THE BOX OR AVAILABLE TO BE ADDED VIA RACEWAY OR AN ACCESSIBLE WALL CAVITY.
3.3. WALL SWITCHES FOR SEPARATE LOAD TYPES (EM/NORMAL, 120/277V, ETC.) SHALL NOT BE IN A SINGLE BOX.
3.4. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

LIGHTING PLAN KEYED NOTES

- 1 ROUTE THROUGH RCS-1, THEN HOMERUN.
- 2 ROUTE THROUGH RCS-2, THEN HOMERUN.
- 3 MOUNT DEVICES IN ELEVATOR PIT BELOW PATH OF ELEVATOR TRAVEL.
- 4 CONNECT TO RECEPTACLE CIRCUIT SERVING THIS ROOM/AREA.
- 5 ROUTE UP TO LIGHT FIXTURES ON SECOND FLOOR.



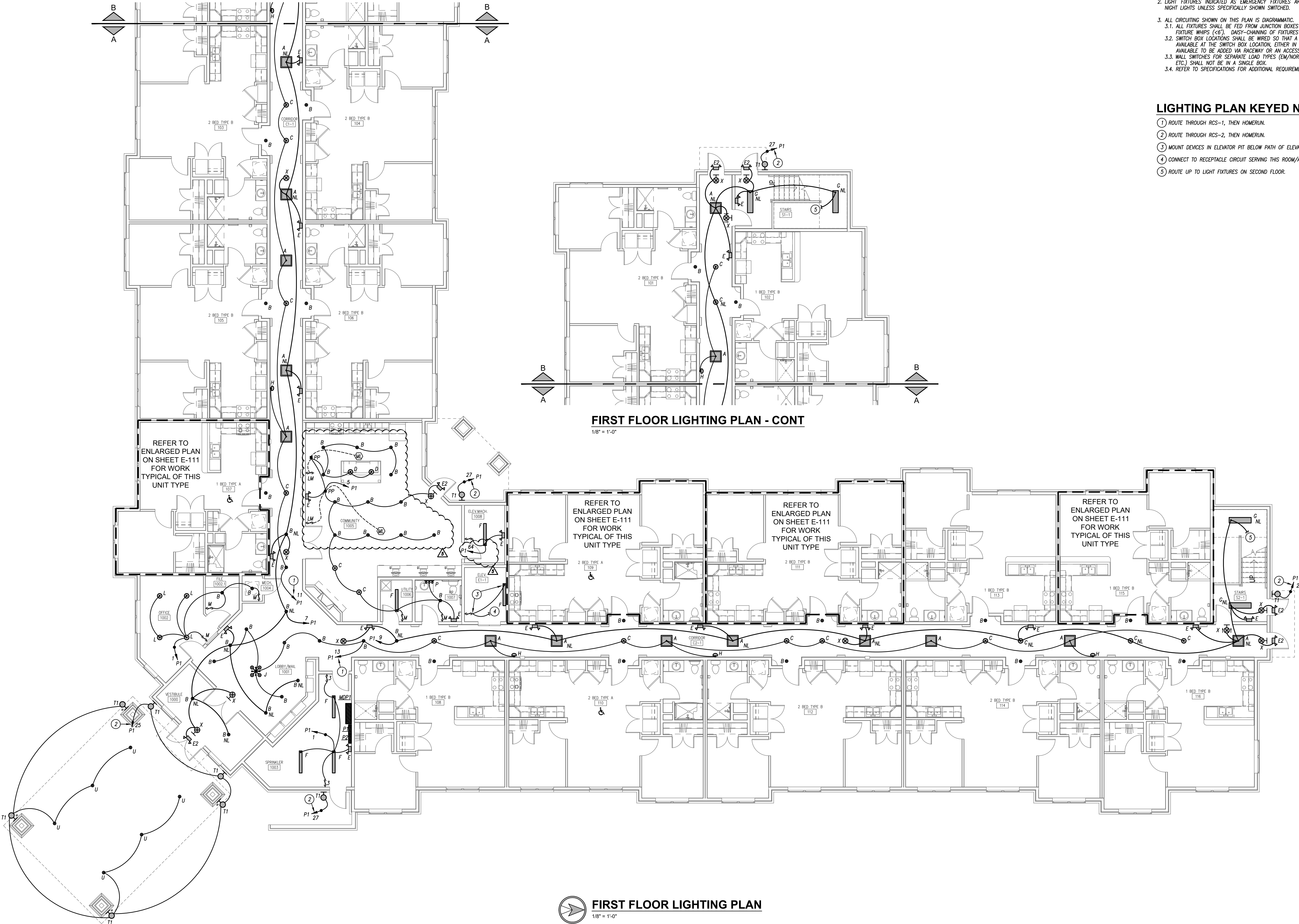
WILSHIRE HILLS III
LEE'S SUMMIT, MISSOURI

SHEET TITLE
FIRST FLOOR LIGHTING PLAN

PROJECT NUMBER: 23.161

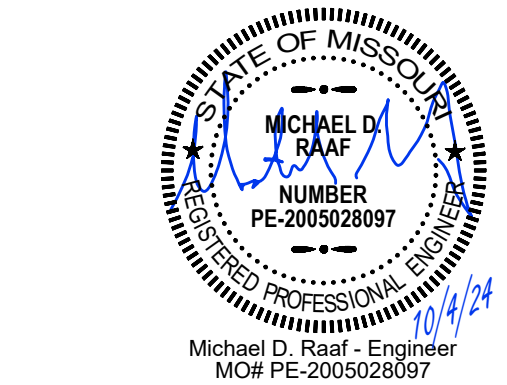
SHEET NUMBER:

E101



1. REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.
2. LIGHT FIXTURES INDICATED AS EMERGENCY FIXTURES ARE TO FUNCTION AS NIGHT LIGHTS UNLESS SPECIFICALLY SHOWN SWITCHED.
3. ALL CIRCUITING SHALL BE FIELD RUN FROM JUNCTION BOXES.
 1. ALL FIXTURES SHALL BE FED FROM JUNCTION BOXES WITH LIGHT FIXTURE WHIPS (<6"). DUSTY-DRAINING OF FIXTURES IS NOT ALLOWED.
 2. SWITCH BOX LOCATIONS SHALL BE WIRED SO THAT A NEUTRAL WIRE IS AVAILABLE AT THE SWITCH BOX LOCATION, EITHER IN THE BOX OR AVAILABLE TO BE ADDED VIA RACEWAY OR AN ACCESSIBLE WALL CAVITY.
 3. WALL SWITCHES FOR SMALL LOAD TYPES (EN/NORMAL, 120/277V, ETC.) SHALL NOT BE IN A SINGLE BOX.
4. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

- ① ROUTE TO LIGHTS ON FIRST FLOOR.
- ② ROUTE TO LIGHTS ON THIRD FLOOR.
- ③ ROUTE THROUGH REMOTE CONTROL SWITCH RCS-1 ON FIRST FLOOR, THEN HOMERUN.
- ④ MOUNT DEVICES IN ELEVATOR SHAFT OUT OF PATH OF ELEVATOR TRAVEL.
- ⑤ CONNECT TO RECEPTACLE CIRCUIT SERVING THIS ROOM/AREA.

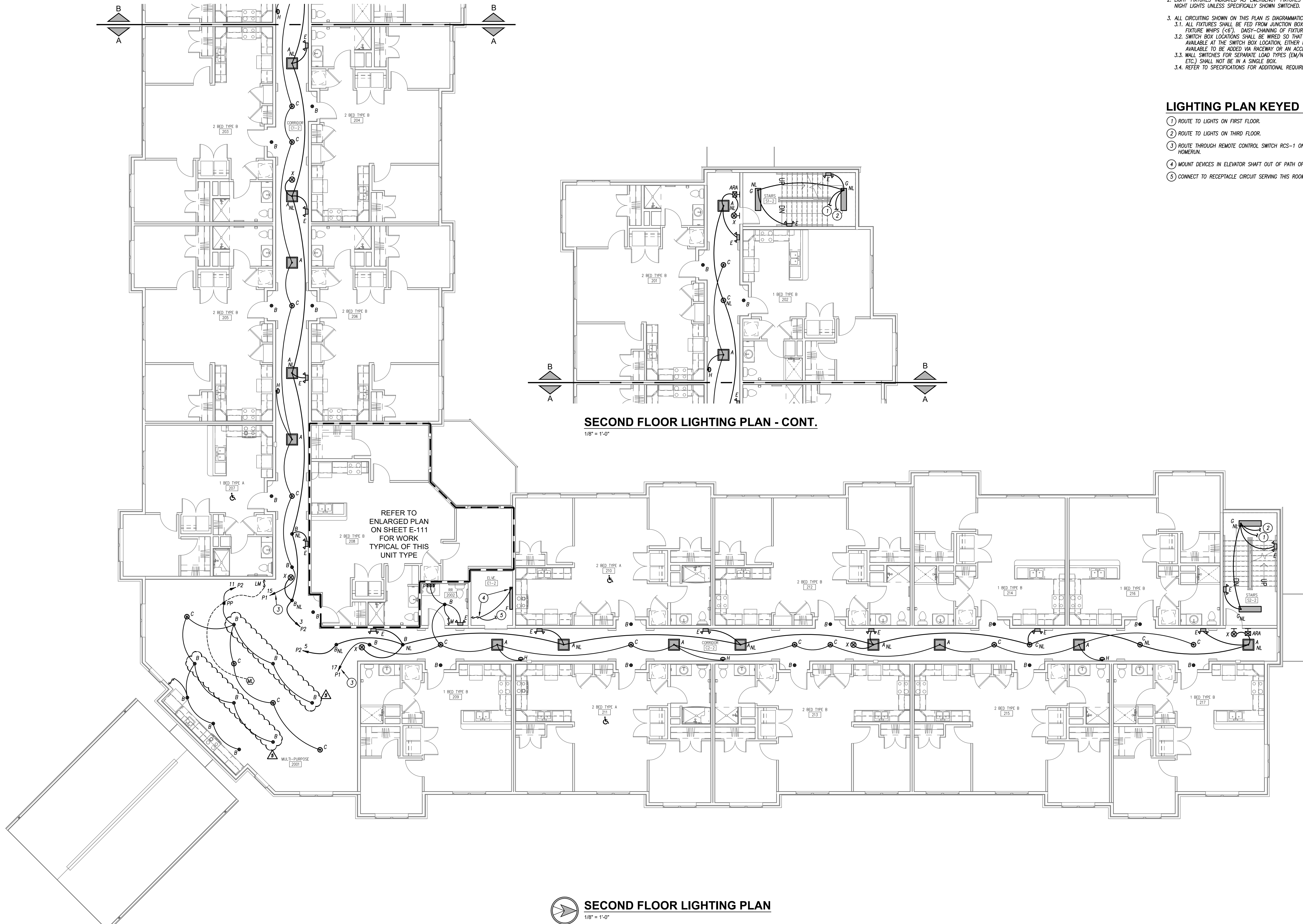


LEE'S SUMMIT, MISSOURI

PROJECT NUMBER: 23.161

SHEET NUMBER:

E102



1/8" = 1'-0"

$$1/8" = 1'-0"$$

GENERAL LIGHTING NOTES

1. REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.
2. LIGHT FIXTURES INDICATED AS EMERGENCY FIXTURES ARE TO FUNCTION AS NIGHT LIGHTS UNLESS SPECIFICALLY SHOWN SWITCHED.
3. ALL CIRCUITING SHOWN ON THIS PLAN IS DIAGRAMMATIC.
3.1. ALL FIXTURES SHALL BE FED FROM JUNCTION BOXES WITH LIGHT FIXTURE WHIPS (<6'). DASTY-CHANNING OF FIXTURES IS NOT ALLOWED.
3.2. SWITCH BOX LOCATIONS SHALL BE WIRED SO THAT A NEUTRAL WIRE IS AVAILABLE AT THE SWITCH BOX LOCATION, EITHER IN THE BOX OR AVAILABLE TO BE ADDED VIA RACEWAY OR AN ACCESSIBLE WALL CAVITY.
3.3. WALL SWITCHES FOR SEPARATE LOAD TYPES (EM/NORMAL, 120/277V, ETC.) SHALL NOT BE IN A SINGLE BOX.
3.4. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

LIGHTING PLAN KEYED NOTES

- ① ROUTE TO LIGHTS ON SECOND FLOOR.
- ② ROUTE THROUGH REMOTE CONTROL SWITCH RCS-1 ON FIRST FLOOR, THEN HOMERUN.
- ③ MOUNT DEVICES IN ELEVATOR SHAFT OUT OF PATH OF ELEVATOR TRAVEL.
- ④ CONNECT TO RECEPTACLE CIRCUIT SERVING THIS ROOM/AREA.

pkmr
ENGINEERS

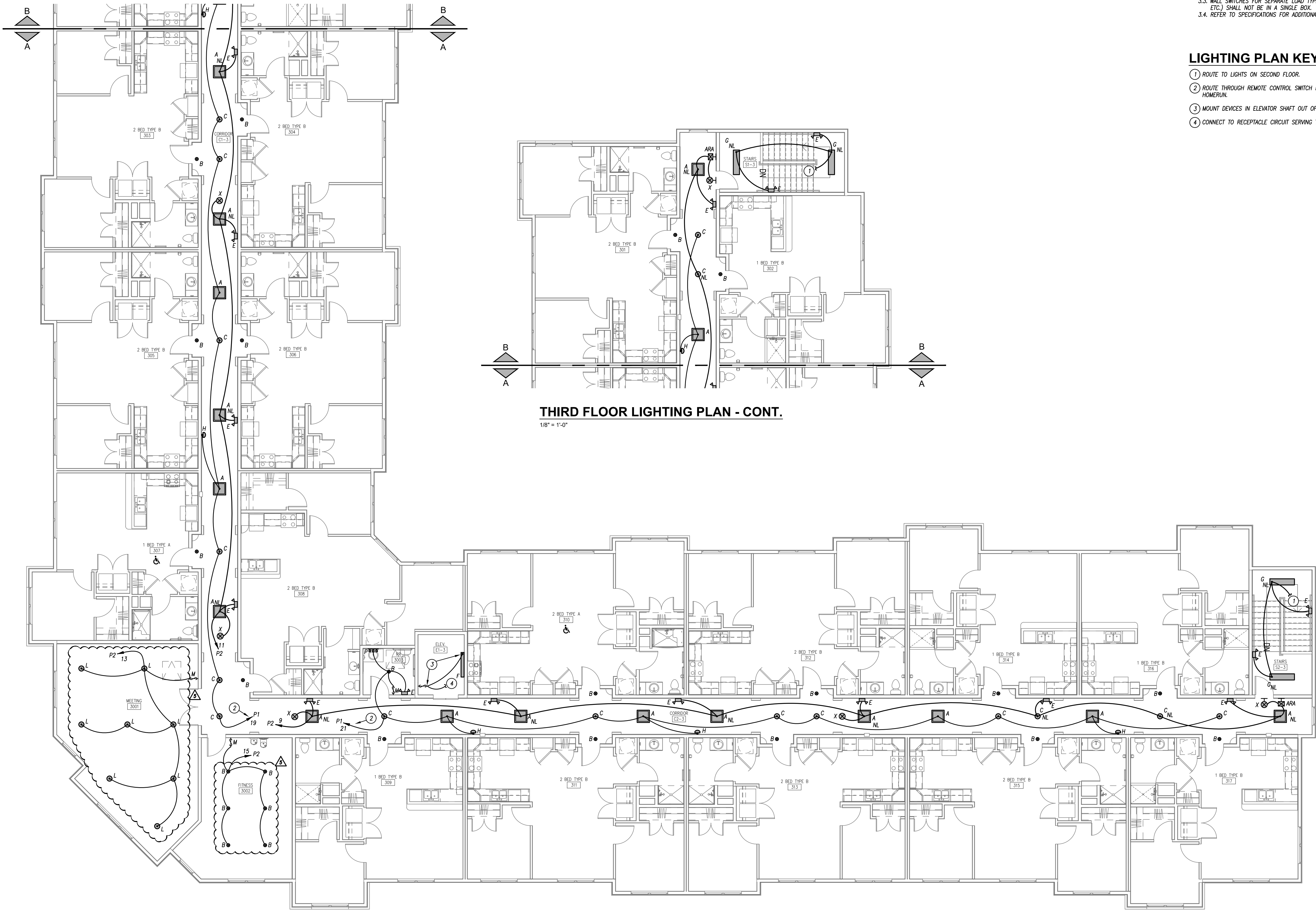
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WILSHIRE HILLS III
LEE'S SUMMIT, MISSOURI

SHEET TITLE
THIRD FLOOR LIGHTING PLAN
PROJECT NUMBER: 23.161
SHEET NUMBER:

E103



THIRD FLOOR LIGHTING PLAN - CONT.
1/8" = 1'-0"

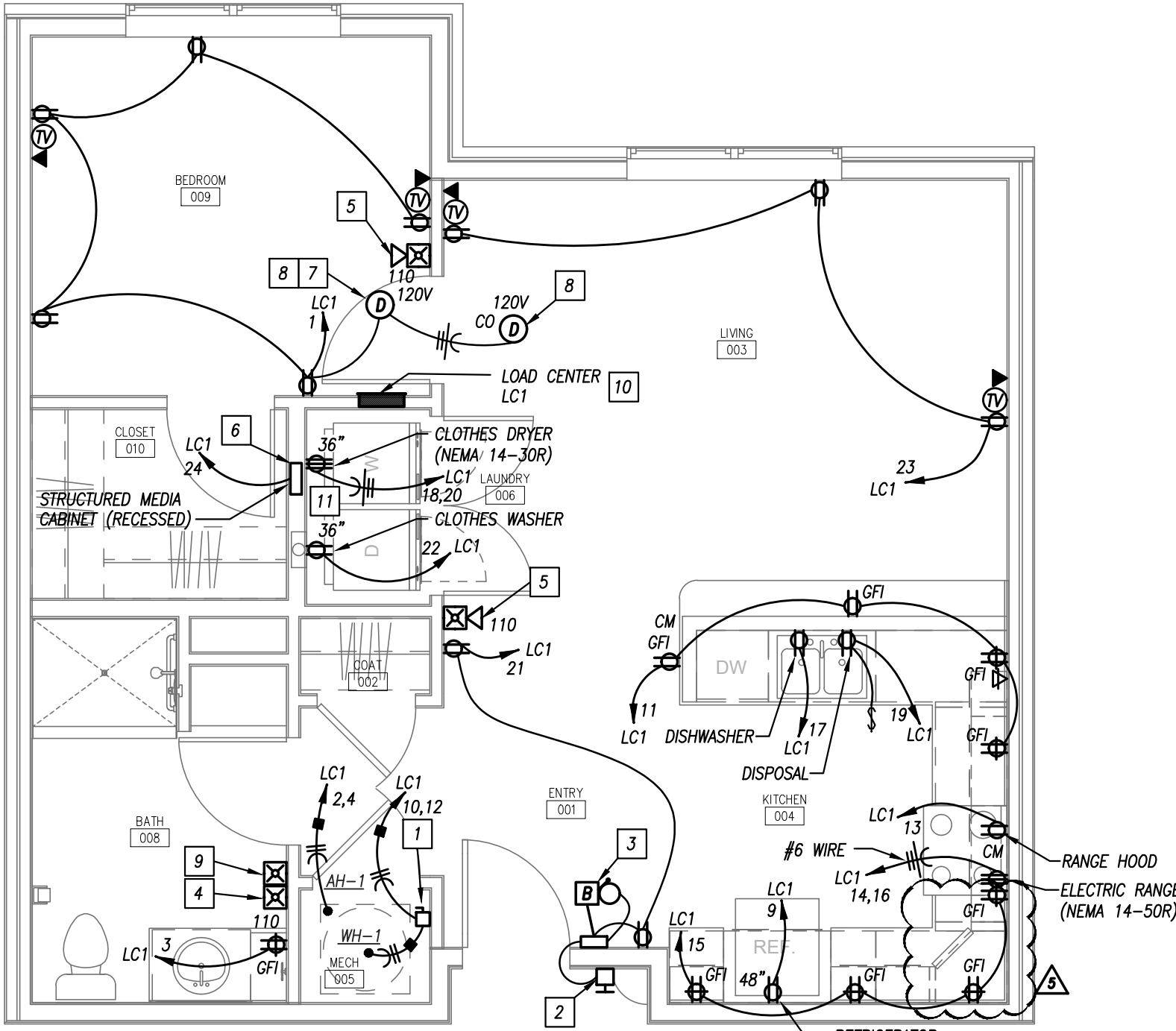
THIRD FLOOR LIGHTING PLAN
1/8" = 1'-0"

GENERAL POWER NOTES

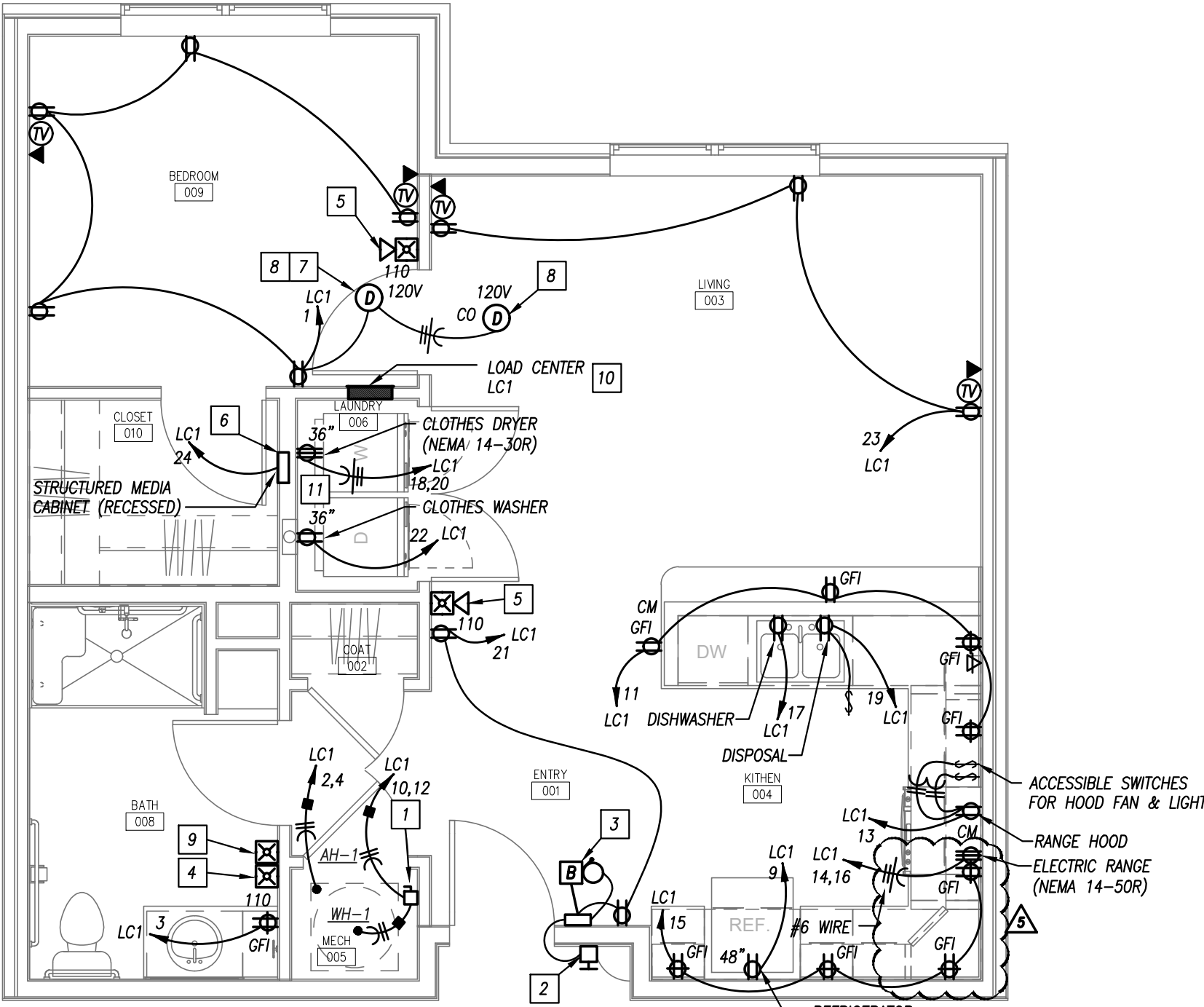
1. REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.
2. COORDINATE EXACT NEMA CONFIGURATIONS OF RECEPTACLES SERVING EQUIPMENT WITH EXACT EQUIPMENT BEING FURNISHED.
3. EXACT MECHANICAL EQUIPMENT LOCATIONS MAY NOT BE SHOWN FOR CLARITY. COORDINATE EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT, DUCT DETECTORS, ETC. WITH MECHANICAL DRAWINGS AND CONTRACTOR.
4. COORDINATE EXACT LOCATIONS OF SMOKE DETECTORS WITH CEILING FANS, HVAC DIFFUSERS, SPRINKLER HEADS, ETC. PER NFPA REQUIREMENTS.

POWER PLAN KEYED NOTES

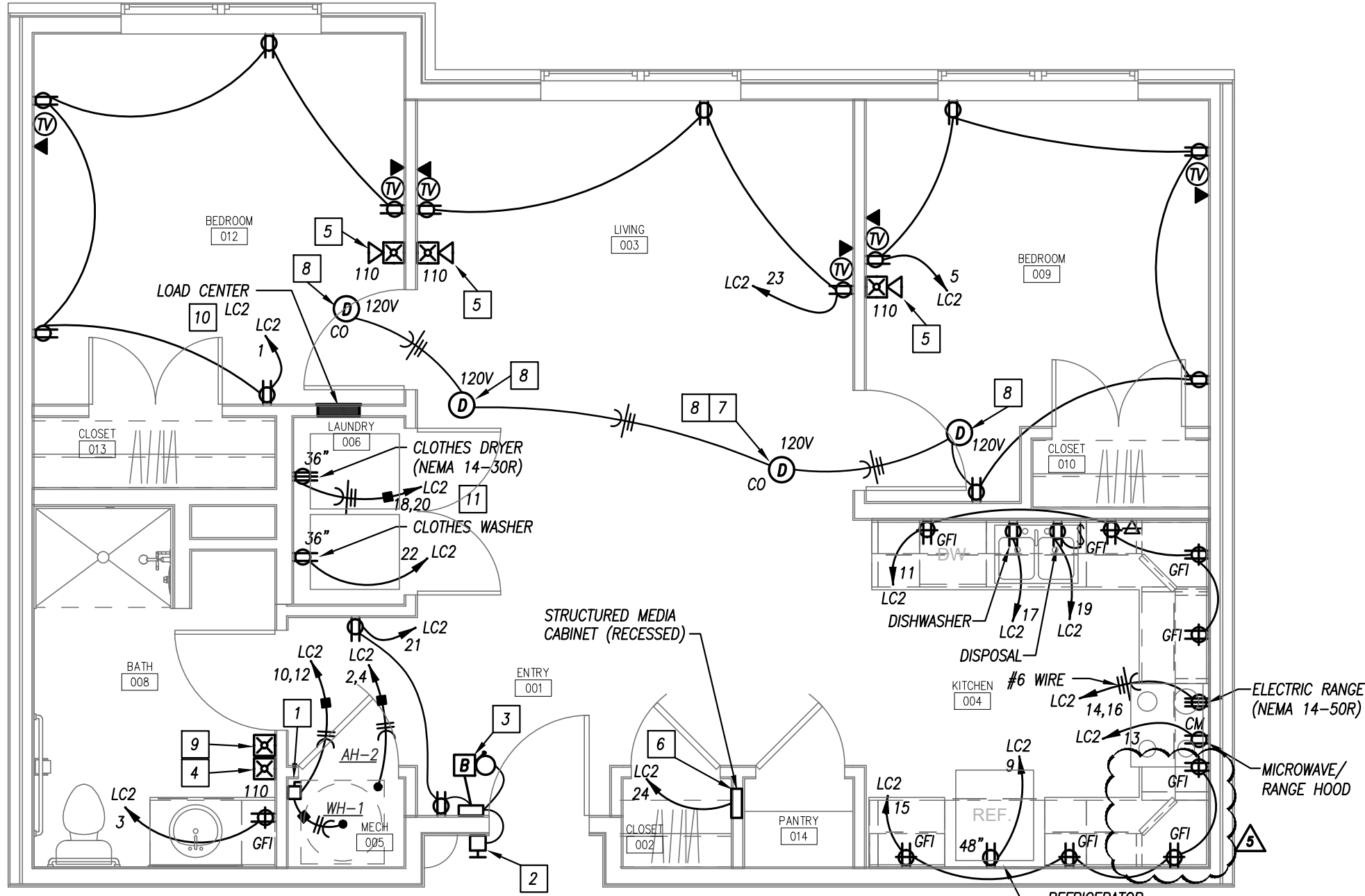
- 1 30 AMP, 2-POLE, NON-FUSED DISCONNECT SWITCH IN NEMA 1 ENCLOSURE. MOUNT AT UNIT WITH ADEQUATE CLEARANCES.
- 2 DOORBELL AND DOORBELL POWER SUPPLY. -HEATH-ZENITH 57/M SERIES OR SIMILAR HARD-WIRED DOORBELL AND CHIME.
- 3 FOR HEARING/VISUALLY-IMPAIRED UNIT(S) ONLY. PROVIDE DOORBELL SIGNALER WITH INTEGRAL STROBE AND CHIME IN LIEU OF CHIME ONLY.
- 4 PROVIDE DEVICE IN HEARING AND VISUALLY IMPAIRED UNIT ONLY. PROVIDE ROUGH-IN AND WIRING FOR FUTURE DEVICE IN ALL OTHER LIVING UNITS.
- 5 PROVIDE 110cd HORN/STROBE IN HEARING AND VISUALLY-IMPAIRED LIVING UNITS. PROVIDE MINI-HORN IN ALL OTHER UNITS.
- 6 RECESSED STRUCTURED MEDIA CABINET. MOUNT HIGH ON WALL.
- 7 COMBINATION SMOKE ALARM AND CARBON MONOXIDE DETECTOR.
- 8 PROVIDE MULTI-STATION 120 VOLT SMOKE ALARM WITH BATTERY BACK-UP IN NON-HEARING IMPAIRED UNITS. PROVIDE MULTI-STATION 120V SMOKE ALARM WITH 177 CANDELA INTEGRAL VISUAL ALARM AND BATTERY BACK-UP IN HEARING IMPAIRED UNITS. REFER TO ARCHITECTURAL PLANS FOR UNIT TYPES.
- 9 PROVIDE 120 VOLT 110 CANDELA STROBE IN HEARING IMPAIRED UNITS ONLY. WIRE TO SMOKE DETECTORS IN UNIT. REFER TO ARCHITECTURAL PLANS FOR UNIT TYPES.
- 10 INSTALL LOAD CENTER SUCH THAT TOP BREAKER IS AT 48" AFF.
- 11 WASHER AND DRYER SHALL ALWAYS BE ORIENTED WITH WASHER ON LEFT AND DRYER ON RIGHT.



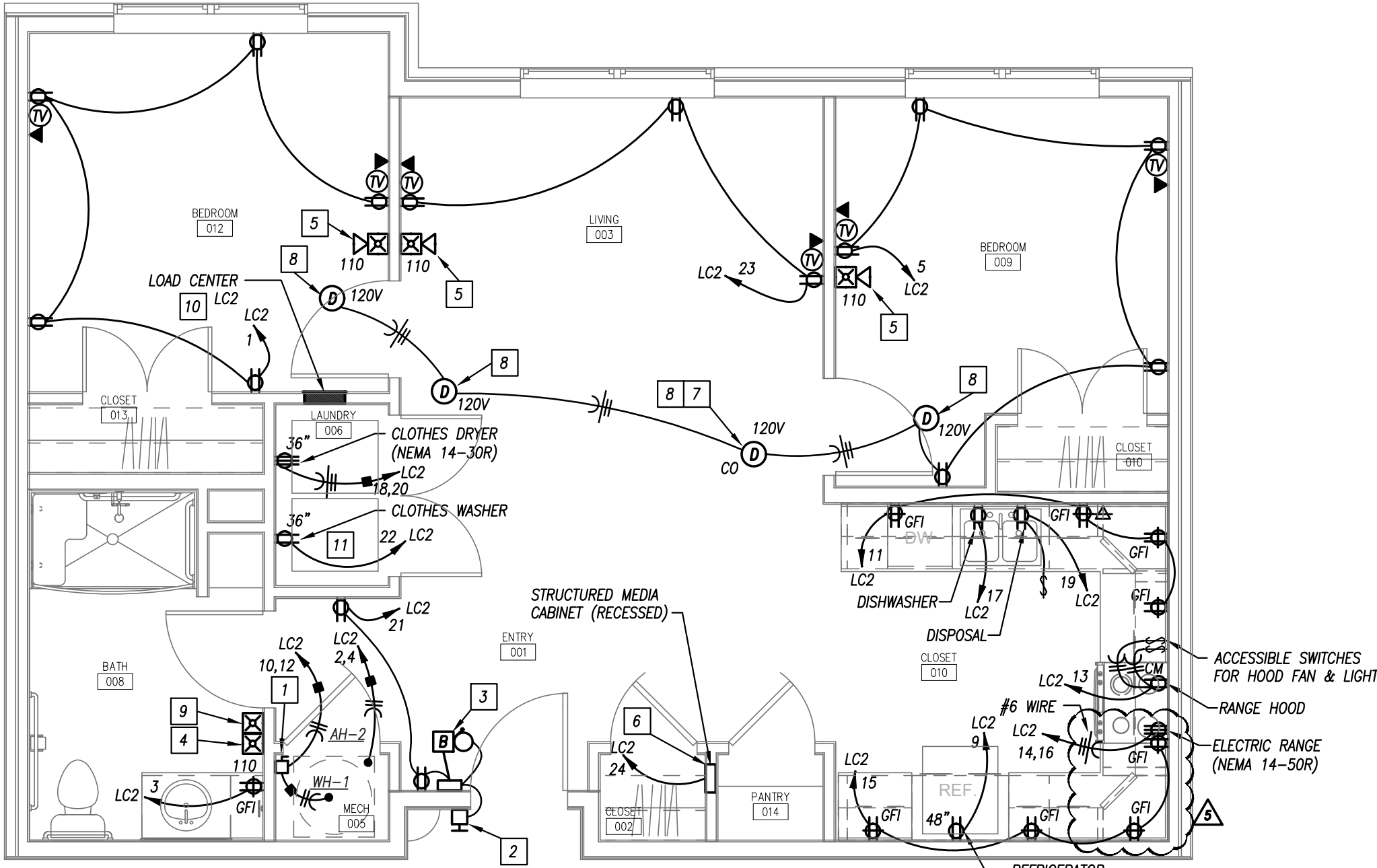
TYPE B - ONE BEDROOM
TYPICAL UNIT FLOOR PLAN - POWER
1/4" = 1'-0"



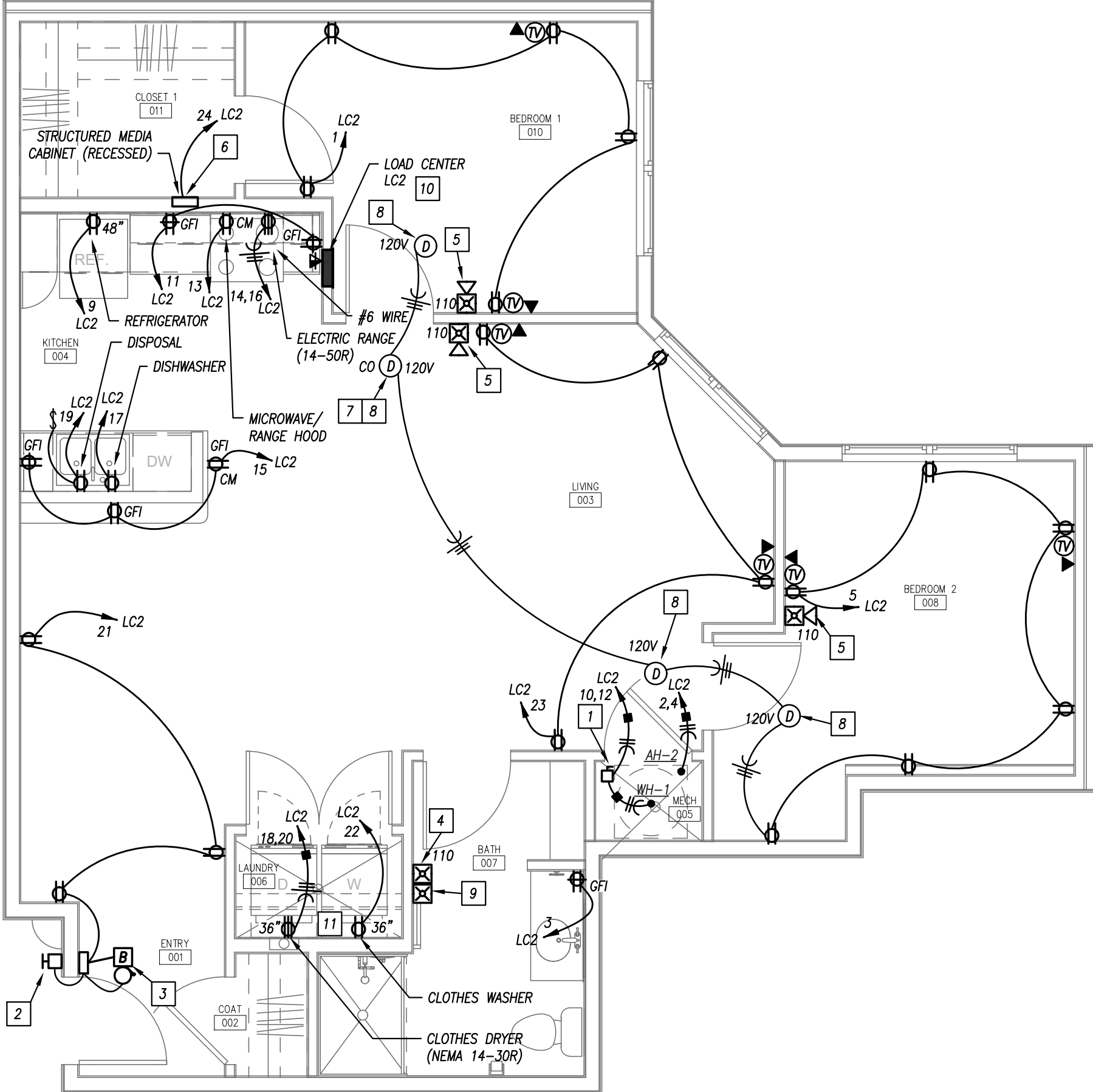
TYPE A - ONE BEDROOM
TYPICAL UNIT FLOOR PLAN - POWER
1/4" = 1'-0"



TYPE B - TWO BEDROOM
TYPICAL UNIT FLOOR PLAN - POWER
1/4" = 1'-0"



TYPE A - TWO BEDROOM
TYPICAL UNIT FLOOR PLAN - POWER
1/4" = 1'-0"



TYPE B - TWO BEDROOM - (CORNER)
TYPICAL UNIT FLOOR PLAN - POWER
1/4" = 1'-0"

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