JOHNSON - BETTS MEADOWS
TOPEKA, KS

PROJECT CERTIFICATION

I, **Gabe Vogl**, 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-203	G-300	A-120	A-402	A-600
G-002	G-204	G-301	A-121	A-403	A-700
G-003	G-205	G-302	A-122	A-404	A-701
G-004	G-206	G-303	A-200	A-405	A-710
G-005	G-207	AS-101	A-201	A-406	A-720
G-006	G-208	A-101	A-202	A-407	
G-100	G-209	A-102	A-203	A-408	
G-101	G-210	A-103	A-300	A-410	
G-102	G-211	A-104	A-301	A-500	
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G-201	G-214	A-107	A-400	A-503	
G-202	G-215	A-108	A-401	A-504	

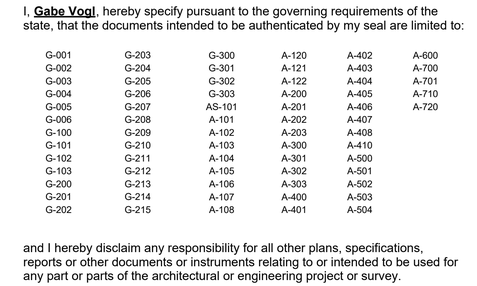
and I hereby disclaim any responsibility for all other plans, specifications, reports or other documents or instruments relating to or intended to be used for any part or parts of the architectural or engineering project or survey.

SEAL

Gabe Vogl, AIA

REGIONAL MAP

VICINITY MAP



JOHNSON - BETTS MEADOWS
TOPEKA, KS

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SOLID FILL INDICATES INCLUSION IN ISSUE
SHEET ISSUE DATE

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

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

SHEET INDEX LEGEND

PROJECT DATA

PROJECT DESIGN INFORMATION

NEW CONSTRUCTION: YES

ZONING: M-2

CODE:
2021 INTERNATIONAL BUILDING CODE
2015 UNIFORM MECHANICAL CODE
2023 NATIONAL ELECTRIC CODE
2009 ACCESSIBILITY CODE ICC/ANSI 117-1
2021 IECC ENERGY CODE
2021 INTERNATIONAL FIRE CODE

OCCUPANCY GROUP: R-2

TYPE OF CONSTRUCTION: TYPE V-A

BUILDING SUMMARY:

NUMBER (9) TOTAL BUILDINGS HEIGHT: VARIES

SQUARE FOOTAGES:	COVERED	GROSS	NET
BUILDING A (3)			
FIRST FLOOR	8,779 S.F.	7,499 S.F.	6,985 S.F.
SECOND FLOOR	8,655 S.F.	7,376 S.F.	6,880 S.F.
THIRD FLOOR	8,655 S.F.	7,376 S.F.	6,880 S.F.
TOTAL	**26,089 S.F.**	**22,251 S.F.**	**20,744 S.F.**
BUILDING A - STEPPED (3)			
FIRST FLOOR	8,925 S.F.	7,599 S.F.	7,085 S.F.
SECOND FLOOR	8,801 S.F.	7,475 S.F.	6,978 S.F.
THIRD FLOOR	8,801 S.F.	7,475 S.F.	6,978 S.F.
TOTAL	**26,527 S.F.**	**22,549 S.F.**	**21,040 S.F.**
BUILDING B (2)			
FIRST FLOOR	4,667 S.F.	4,004 S.F.	3,722 S.F.
SECOND FLOOR	4,544 S.F.	3,880 S.F.	3,617 S.F.
THIRD FLOOR	4,544 S.F.	3,880 S.F.	3,617 S.F.
TOTAL	**13,755 S.F.**	**11,764 S.F.**	**10,956 S.F.**
BUILDING C (1)			
FIRST FLOOR	5,623 S.F.	4,981 S.F.	4,386 S.F.
SECOND FLOOR	5,623 S.F.	4,981 S.F.	4,676 S.F.
THIRD FLOOR	5,623 S.F.	4,981 S.F.	4,676 S.F.
TOTAL	**16,869 S.F.**	**14,943 S.F.**	**13,737 S.F.**

ENERGY CONSERVATION: R-30 ATTIC , R-21 WALLS

UNIT SUMMARY: OVERALL UNIT TOTAL = **176**

WALK-UP UNITS

TYPE "A" UNITS (5% OF TOTAL)	(4) UNITS - ONE BEDROOM
HI/VI UNITS (2% OF TOTAL)	(2) UNITS - ONE BEDROOM
STANDARD UNITS	(66) UNITS - ONE BEDROOM
TYPE "A" UNITS (5% OF TOTAL)	(3) UNITS - TWO BEDROOM
HI/VI UNITS (2% OF TOTAL)	(2) UNITS - TWO BEDROOM
STANDARD UNITS	(55) UNITS - TWO BEDROOM
TYPE "A" UNITS (5% OF TOTAL)	(3) UNITS - THREE BEDROOM
HI/VI UNITS (2% OF TOTAL)	(1) UNITS - THREE BEDROOM
STANDARD UNITS	(40) UNITS - THREE BEDROOM
TOTAL UNITS	**(176) UNITS**

SQUARE FOOTAGE:	GROSS	NET
TYPE "A" - 1 BEDROOM	737 S.F.	650 S.F.
TYPE "B" - 1 BEDROOM	737 S.F.	660 S.F.
TYPE "B" - 1 BEDROOM - ALT.	787 S.F.	706 S.F.
TYPE "A" - 2 BEDROOM	973 S.F.	852 S.F.
TYPE "B" - 2 BEDROOM	973 S.F.	852 S.F.
TYPE "B" - 2 BEDROOM - ALT.	966 S.F.	846 S.F.
TYPE "A" - 3 BEDROOM	1,241 S.F.	1,092 S.F.
TYPE "B" - 3 BEDROOM	1,241 S.F.	1,092 S.F.
TYPE "B" - 3 BEDROOM - ALT.	1,250 S.F.	1,101 S.F.

SITE SUMMARY: PER 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.

PROJECT TEAM

OWNER
JOHNSON-BETTS MEADOWS, LP
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CONTACT: **CONNOR MENARD**
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CONTRACTOR
TBD
ADDRESS:
CONTACT:
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MECHANICAL, ELECTRICAL, PLUMBING ENGINEER
PEARSON, KENT, MCKINKLEY, RAFF ENGINEERS LLC
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CONTACT: **DARREN THRASHER**
EMAIL: darren.thrasher@pkmreng.com
PHONE: 913.492.2400

CIVIL ENGINEER
SBB ENGINEERING, LLC
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CONTACT: **Brian Austin**
EMAIL: Brian.Austin@sbbeng.com
PHONE: Phone

BUILDING OFFICIAL
CITY OF TOPEKA, KS
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CONTACT: **Rhiannon Friedman**
EMAIL: mfriedman@topeka.org
PHONE: Phone

SIGNATURE BLOCK

OWNER:
JOHNSON-BETTS MEADOWS, LP
2010 SE CALIFORNIA AVE
TOPEKA, KS 66607

BY: _____ DATE: _____
NAME

ARCHITECT:
ROSEMANN & ASSOCIATES, P.C.
1526 GRAND BOULEVARD
KANSAS CITY, MO 64108-1404

BY: _____ DATE: _____
(Signing Official's Name Here)

CONTRACTOR:
CONTRACTOR NAME
ADDRESS
CITY, ST ZIP

BY: _____ DATE: _____
NAME

BONDING COMPANY:
OWNER NAME
ADDRESS
CITY, ST ZIP

BY: _____ DATE: _____
NAME

PRINTS ISSUED
12/18/25 - 95% CDs

REVISIONS:

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JOHNSON - BETTS MEADOWS
TOPEKA, KS

SHEET TITLE
TITLE SHEET

PROJECT NUMBER: 25144

SHEET NUMBER:

G-001

ARCHITECTURAL

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ELECTRICAL

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■	12/18/25	E113	ENLARGED - BLDG. - C COMMUNITY LIGHTING PLAN		
■	12/18/25	E211	ENLARGED UNITS POWER PLANS		
■	12/18/25	E212	ENLARGED UNITS POWER PLANS		
■	12/18/25	E213	ENLARGED - BLDG. - C COMMUNITY POWER PLAN		
■	12/18/25	E301	ELECTRICAL RISER DIAGRAM		
■	12/18/25	E302	ELECTRICAL LOAD CALCULATIONS		
■	12/18/25	E303	ELECTRICAL LOAD CALCULATIONS		
■	12/18/25	E401	ELECTRICAL SCHEDULES		
■	12/18/25	E501	ELECTRICAL DETAILS		

PRINTS ISSUED

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
TITLE SHEET

PROJECT NUMBER: 25144

SHEET NUMBER:

G-002

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ABBREVIATIONS

A	ABV	ABOVE
	ACC	ACCESSIBLE
	ACT	ACOUSTICAL CEILING TILE
	AD	AREA DRAIN
	ADA	AMERICANS WITH DISABILITIES ACT
	ADAAG	ADA ACCESSIBILITY GUIDELINES
	ADF	ACCESSIBLE DRINKING FOUNTAIN
	ADH	ADHESIVE
	ADJ	ADJUSTABLE/ADJACENT
	AEWC	ACCESSIBLE ELECTRIC WATER COOLER
	AFF	ABOVE FINISH FLOOR
	AHJ	AUTHORITY HAVING JURISDICTION
	AHU	AIR HANDLING UNIT
	AL	ASSISTED LIVING
	ALAV	ACCESSIBLE LAVATORY
	ALT	ALTERNATE
	ALUM	ALUMINUM
	AMI	ACCESSIBLE MIRROR
	ANN	FIRE ANNUNCIATOR PANEL
	ANO	ANNODIZED
	APPD	APPROVED
	APPROX	APPROXIMATE(LY)
	ASD	ACCESSIBLE SOAP DISPENSER
	ASH	ACCESSIBLE SHOWER HEAD
	ATTEN	ATTENUATION
	ATTN	ATTENTION
	AU	ACCESSIBLE URINAL
B	B.O.	BOTTOM OF
	BD	BOARD
	BLDG	BUILDING
	BLK	BLOCK / BLACK
	BLKG	BLOCKING
	BM	BENCH MARK
	BO	BY OTHERS
	BOD	BOTTOM OF DECK(ING)
	BOH	BACK OF HOUSE
	BOT	BOTTOM (OF)
	BRG	BEARING
	BRKT	BRACKET
	BRZ	BRONZE
	BSMT	BASEMENT
	BTWN / BTW	BETWEEN
	BUR	BUILT UP ROOFING
	BUS	BUSINESS
C	C TO C	CENTER TO CENTER
	CAB	CABINET
	CB	CERAMIC BASE/CORNER BEAD/CHALKBOARD
	CEM / CEMT	CEMENT / CEMENTITIOUS
	CFM	CUBIC FEET PER MINUTE
	CI	CAST IRON
	CIP	CAST IN PLACE
	CJ	CONTROL JOINT
	CL	CENTERLINE
	CLG	CEILING
	CLO	CLOSET
	CLR	CLEAR
	CLRM	CLASSROOM
	CMP	CORRUGATE METAL PIPE
	CMU	CONCRETE MASONRY UNIT
	CNTR	COUNTERTOP
	CO	CLEANOUT
	COL	COLUMN
	COMB	COMBINATION
	CONC	CONCRETE
	CONN	CONNECTION
	CONST	CONSTRUCTION
	CONT	CONTINUOUS
	CONTR	CONTRACTOR
	COORD	COORDINATE / COORDINATOR
	CORR	CORRIDOR
	CPT	CARPET
	CSK	COUNTERSINK / COUNTER SUNK
	CT	CERAMIC TILE
	CTG	COATING
	CTR	CENTER
	CY	CUBIC YARD(S)

D	DBL	DOUBLE
	DEMO	DEMOLITION / DEMOLISH
	DIA	DIAMETER
	DIAG	DIAGONAL
	DIM	DIMENSION
	DIMS	DIMENSIONS
	DN	DOWN
	DP	DEEP
	DR	DOOR
	DS	DOWNSPOUT
	DTL	DETAIL
	DWG	DRAWING
E	E	EAST
	EA	EACH
	EF	EACH FACE
	EJ	EXPANSION JOINT
	EL	ELEVATION
	ELEC	ELECTRIC(AL)
	ELEV	ELEVATOR
	ENLG	ENLARGED
	EPDM	ETHLYENE PROPYLENE DIENE TERPOLYMER
	EQ	EQUAL
	ES	EACH SIDE
	EW	EACH WAY
	EWC	ELECTRIC WATER COOLER
	EXH	EXHAUST
	EXIST	EXISTING
	EXP	EXPANSION
	EXT	EXTERIOR
F	FA	FIRE ALARM
	FACP	FIRE ACCESS CONTROL PANEL
	FAWCM	FULLY ADHERED WATER CONTROL MEMBRANE
	FBG	FIBERGLASS
	FD	FLOOR DRAIN / FIRE DEPARTMENT
	FDN	FOUNDATION
	FE	FIRE EXTINGUISHER
	FEC	FIRE EXTINGUISHER CABINET
	FF	FINISH FLOOR
	FGL	FIBERGLASS
	FH	FIRE HOSE
	FHA	FAIR HOUSING ACT
	FHC	FIRE HOSE CABINET
	FIN	FINISH
	FIXT	FIXTURE
	FLASH	FLASHING
	FLEX	FLEXIBLE
	FLR	FLOOR
	FND	FOUNDATION
	FO	FACE OF
	FRP	FIBER-REINFORCED PLASTIC
	FT	FOOT
	FTG	FOOTING
G	GA	GAUGE
	GALV	GALVANIZED
	GB	GRAB BAR
	GC	GENERAL CONTRACTOR
	GEN	GENERAL
	GFRC	GLASS FIBER REINFORCED CONCRETE
	GL	GLASS
	GLZ	GLAZED TILE
	GPM	GALLONS/MINUTE
	GR	GRADE
	GWB	GYPSUM WALL BOARD
	GYP	GYPSUM
	GYP BD	GYPSUM BOARD
H	HB	HOSE BIBB
	HC	HOLLOW CORE
	HCWD	HOLLOW CORE WOOD
	HD	HEAVY DUTY OR HAND DRYER
	HDBD	HARD BOARD
	HDNR	HARDENER
	HDW	HARDWARE
	HDWD	HARDWOOD
	HM	HOLLOW METAL
	HORIZ	HORIZONTAL
	HR	HOUR
	HT	HEIGHT
	HTG	HEATING
	HTR	HEATER
	HYD	HYDRANT

I	IBC	INTERNATIONAL BUILDING CODE
	ID	INTERIOR DESIGNER
	ID	INSIDE DIAMETER
	IDF	INDIVIDUAL DISTRIBUTION FRAME
	IL	INDEPENDENT LIVING
	IN	INCHES
	INDIV	INDIVIDUAL
	INSUL	INSULATION / INSULATED
	INT	INTERIOR
	INV	INVERT
J	JAN	JANITOR
	JST	JOIST
	JT	JOINT
K	KD	KNOCKED DOWN
	KIT	KITCHEN
	KN	KNOX BOX
L	LA	LANDSCAPE / LANDSCAPE ARCHITECT
	LAM	LAMINATE
	LAV	LAVATORY
	LF	LINEAR FOOT/FEET
	LG	LONG
	LGTH	LENGTH
	LKR	LOCKER
	LSC	LIFE SAFETY CODE
	LT	LIGHT
M	MAS	MASONRY
	MATL	MATERIAL
	MAX	MAXIMUM
	MB	MARKER BOARD / MAIL BOX
	MC	MEMORY CARE
	MDF	MAIN DISTRIBUTION FRAME
	MECH	MECHANICAL
	MFR	MANUFACTURE(ER)
	MH	MANHOLE
	MI	MIRROR
	MIN	MINIMUM
	MO	MASONRY OPENING
	MTD	MOUNTED
	MTG HT	MOUNTING HEIGHT
	MTL	METAL
N	N	NORTH
	N/A	NOT APPLICABLE
	NIC	NOT IN COUNT / NOT IN CONTRACT
	NO	NUMBER
	NOM	NOMINAL
	NTS	NOT TO SCALE
O	OA	OVERALL
	OC	ON CENTER
	OD	OUTSIDE DIAMETER
	OFD	OVERFLOW ROOF DRAIN
	OFF	OFFICE
	OH	OPPOSITE HAND
	OPNG	OPENING
	OPP	OPPOSITE
	OSB	ORIENTED STRAND BOARD
P	PA	PUBLIC ADDRESS
	PAR	PARALLEL
	PCP	PORTLAND CEMENT PLASTER
	PERP	PERPENDICULAR
	PH	PRE-HUNG
	PL	PROPERTY LINE
	PLAM	PLASTIC LAMINATE
	PLAS	PLASTER
	PLBG	PLUMBING
	PLBG	PLUMBING
	PLYWD	PLYWOOD
	PNL	PANEL
	PNLG	PANELING
	PR	PAIR
	PRE-FIN	PRE-FINISHED
	PREFAB	PREFABRICATED
	PREFIN	PREFINISHED
	PT	PAINT
	PTD	PAINTED
	PTN	PARTITION
	PTR	PAPER TOWEL RECEPTACLE

R	R	RADIUS
	RA	RETURN AIR
	RC	RESILIENT CHANNEL
	RCP	REFLECTED CEILING PLAN / REINFORCED CONCRETE PIPE(ING)
	RD	ROOF DRAIN
	RE / REF	REFER TO
	RECPT	RECEPTACLE
	RECS	RECOMMENDATION(S)
	REF	REFRIGERATOR / REFER TO
	REINF	REINFORCING
	REQD	REQUIRED
	REV	REVISION
	RFG	ROOFING
	RO	ROUGH OPENING
	RR	RESTROOM
	RTU	ROOF TOP UNIT
S	S	SOUTH
	SAF	SELF ADHERED FLASHING
	SAFP	SPRAYED APPLIED FIRE-PROOFING
	SC	SOLID CORE
	SCHED	SCHEDULE
	SCR	SHOWER CURTAIN ROD
	SCWD	SOLID CORE WOOD
	SD	SOAP DISPENSER
	SECT	SECTION
	SF	SQUARE FEET
	SH	SINGLE HUNG
	SHR	SHOWER
	SHT	SHEET
	SIM	SIMILAR
	SND	SANITARY NAPKIN DISPENSER
	SOG	SLAB ON GRADE
	SP CTG	SPECIAL COATING
	SPEC	SPECIFICATION
	SPKR	SPEAKER
	SQ	SQUARE
	SQIN	SQUARE INCHES
	SST	STAINLESS STEEL
	STC	SOUND TRANSMISSION COEFFICIENT
	STD	STANDARD
	STL	STEEL
	STOR	STORAGE
	STRUCT	STRUCTURAL
	SUBFLR	SUBFLOOR
	SUSP	SUSPEND(ED)
	SY	SQUARE YARD
	SYM	SYMMETRICAL
T	T	TREAD
	T&B	TOP AND BOTTOM
	T&G	TONGUE AND GROOVE
	T.O.	TOP OF
	TB	TOWEL BAR
	TBD	TO BE DETERMINED
	TEL / TELE	TELEPHONE
	TER / TRZ	TERRAZZO (TERRACE)
	TERM	TERMINATE / TERMINAL
	TOC	TOP OF CURB / TOP OF CONC
	TOM	TOP OF MASONRY
	TOW	TOP OF WALL
	TP / TPD	TOILET PAPER DISPENSER
	TPO	THERMOPLASTIC POLYOLEFIN
	TRANS	TRANSFORMER / TRANSPARENT / TRANSOM
	TS	TUBE STEEL
	TYP	TYPICAL
U	UNO	UNLESS NOTED OTHERWISE
	UON	UNLESS OTHERWISE NOTED
	UR	URINAL
	US	UTILITY SHELF

V	VCT	VINYL COMPOSITE TILE
	VENT	VENTILATE / VENTILATION
	VER	VERIFY
	VIF	VERIFY IN FIELD
	VP	VISION PANEL
	VTR	VENT THRU ROOF
W	W	WEST
	W/	WITH
	W/IN	WITHIN
	W/O	WITHOUT
	WC	WATER CLOSET
	WD	WOOD
	WDW	WINDOW
	WF	WIDE FLANGE / WATER FOUNTAIN
	WH	WALL HUNG / HYDRANT / WATER HEATER / WEEP HOLE
	WLD	WELD(ED)
	WRB	WEATHER-RESISTANT BARRIER
	WT	T SECTION
	WWF	WELDED WIRE FABRIC
X	X	BY (EX: 2X4)
Y	YD	YARD / YARD DRAIN

MATERIAL LEGEND AND SYMBOLS

- MASONRY BLOCK - PLAN 1/2" = 1'-0" AND BELOW
- BRICK - SECTION
- CONCRETE ABOVE 1-1/2" = 1'-0"
- STUD WALL
- GYPSUM BOARD
- PLYWOOD
- RIGID INSULATION
- BATT INSULATION
- STANDING SEAM METAL ROOF
- EARTH
- CRUSHED ROCK
- SAND
- CONTINUOUS LUMBER
- NON-CONTINUOUS LUMBER (SHIM)
- FINISH LUMBER
- STEEL OR METAL

- 9999A.2 / Room Name — ROOM NUMBER
- ACCESSIBLE UNIT OR TYPE-A UNIT
- HEARING IMPAIRED UNIT
- VISUALLY IMPAIRED UNIT
- 101 — DOOR NUMBER
- A1 — WINDOW TYPE
- P7 — WALL TYPE
- 01.00 — ELEVATION KEYNOTE
- 01.00 — PLAN KEYNOTE
- ELEVATION NUMBER / 1 / A101 / SHEET NUMBER; SIM — SIMILAR TO WALL SECTION INDICATED; WALL SECTION CUT LINE
- ELEVATION NUMBER / 1 / A101 / SHEET NUMBER; SIM — SIMILAR TO BUILDING SECTION INDICATED; BUILDING SECTION CUT LINE
- ELEVATION NUMBER / A-101 / 3 / SHEET NUMBER — EXTERIOR ELEVATION
- ELEVATION NUMBER / A-101 / 3 / SHEET NUMBER — INTERIOR ELEVATION
- ELEVATION NUMBER / 1 / A101 / SHEET NUMBER; SIM — SIMILAR TO BUILDING SECTION INDICATED; ENLARGED PLAN OR DETAIL CALLOUT
- Name / Elevation — ELEVATION MARK
- ARCHITECT TO VERIFY

GENERAL NOTES

STANDARDS AND REGULATIONS

1. CONTRACTOR SHALL PERFORM ALL WORK IN CONFORMANCE WITH APPLICABLE BUILDING CODES, REGULATIONS, ORDINANCES, UTILITY PROVIDER REQUIREMENTS, AND SIMILAR STANDARDS.
2. CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS AND SIMILAR RELEASES REQUIRED FOR CONSTRUCTION AND OCCUPANCY. CONTRACTOR SHALL FURNISH ALL COPIES OF SUCH ITEMS TO OWNER AND ARCHITECT WITHIN 10 DAYS OF RECEIPT. IF PERMITS ARE ISSUED SUBJECT TO CERTAIN CONDITIONS OR REVISIONS TO THE WORK OR PERMITS ARE DELAYED FOR ANY REASON, CONTRACTOR SHALL NOTIFY CONTRACTING OFFICER IMMEDIATELY.
3. CONTRACTOR SHALL OBTAIN ALL REQUIRED INSPECTIONS OF THE WORK. CONTRACTOR SHALL REGULARLY UPDATE OWNER AND ARCHITECT REGARDING THE STATUS OF THE INSPECTIONS.
4. CONTRACTOR SHALL COORDINATE WORK WITH APPLICABLE UTILITY PROVIDERS.
5. CONTRACTOR SHALL BE FAMILIAR WITH AND WORK SHALL BE IN COMPLIANCE WITH REFERENCED FIRE-RATED ASSEMBLY TESTS AND STANDARDS.

ADMINISTRATION OF THE WORK

1. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE MEANS, METHODS AND SEQUENCES OF CONSTRUCTION.
2. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SAFETY OF ALL CONSTRUCTION PERSONNEL AND AUTHORIZED VISITORS.
3. CONTRACTOR SHALL BECOME FULLY ACQUAINTED WITH THE CONDITIONS RELATED TO THE WORK. ANY KNOWN DISCREPANCIES BETWEEN THE DOCUMENTS AND ACTUAL CONDITIONS SHALL BE REPORTED TO THE OWNER FOR RESOLUTION PRIOR TO PROCEEDING WITH WORK RELATED TO THE DISCREPANCY.
4. CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL CONSTRUCTION AND DEMOLITION DEBRIS. CONTRACTOR SHALL OBTAIN APPROVAL OF OWNER (AND GOVERNING AUTHORITIES, IF APPLICABLE) FOR DETAILS RELATED TO REMOVAL OF TRASH, INCLUDING SUCH ISSUES AS PATH OF TRAVEL.
5. CONTRACTOR SHALL BECOME FAMILIAR WITH AND COMPLY WITH GOVERNMENT'S PROCEDURES FOR MAINTAINING A SECURE SITE AND BUILDING.
6. EACH INSTALLER SHALL EXAMINE SUBSTRATE CONDITION AND/OR SITE CONDITIONS WHICH AFFECT THE QUALITY OF EACH PRODUCT TO BE INSTALLED. IF ANY CONDITIONS EXIST WHICH WILL HAVE A DETRIMENTAL EFFECT ON THE QUALITY OF THE INSTALLATION, THE INSTALLER SHALL IMMEDIATELY NOTIFY THE CONTRACTOR. INSTALLATION SHALL NOT PROCEED UNTIL THE UNSATISFACTORY CONDITIONS ARE CORRECTED. PROCEEDING WITH THE INSTALLATION SHALL SIGNIFY ACCEPTANCE OF THE CONDITIONS.
7. CONTRACTOR SHALL MAINTAIN RECORD DRAWINGS ON SITE AT ALL TIMES.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING COORDINATION EFFORTS OF ALL SUBCONTRACTORS.
9. CONTRACTOR SHALL NOT CLOSE UP CEILING UNTIL ARCHITECT HAS AN OPPORTUNITY TO INSPECT ALL WORK WHICH WILL BE CONCEALED BY CEILING. CONTRACTOR SHALL NOTIFY ARCHITECT AT LEAST TWENTY-FOUR HOURS PRIOR TO CLOSE-UP.
10. CONTRACTOR SHALL LAY OUT WORK AS SOON AS POSSIBLE. ANY DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT FOR RESOLUTION PRIOR TO PROCEEDING WITH THE WORK IN QUESTION.

USE OF CONSTRUCTION DOCUMENTS

1. CONTRACTOR SHALL NOT SCALE DRAWINGS. ONLY WRITTEN DIMENSIONS OR KEYED NOTES SHALL BE USED. CONTACT ARCHITECT IF CLARIFICATION OR ADDITIONAL INFORMATION IS REQUIRED.
2. DRAWINGS SHALL NOT BE REPRODUCED FOR SUBMITTALS. DRAWINGS OR PORTIONS OF DRAWINGS USED FOR SUBMITTALS WILL BE REJECTED AND RETURNED TO CONTRACTOR.
3. DIMENSIONS ARE AS FOLLOWS UNLESS NOTED OTHERWISE:
   A. FACE OF STUD
   B. TO CENTERLINE OF COLUMNS, PARTY WALL, WINDOWS AND DOORS
   C. TO TOP OF STRUCTURAL DECK
   D. TO BOTTOM OF FINISHED CEILING

DEFINITIONS

1. "ALIGN" AS USED IN THESE DOCUMENTS SHALL MEAN TO ACCURATELY LOCATE AND FINISH FACES IN THE SAME PLANE AND/OR TO INSTALL NEW CONSTRUCTION ADJACENT TO EXISTING CONSTRUCTION WITHOUT ANY VISIBLE JOINTS OR SURFACE IRREGULARITIES.
2. "CLEAR" AS USED IN THESE DOCUMENTS SHALL MEAN THAT THE CONDITION IS NOT ADJUSTABLE WITHOUT THE APPROVAL OF THE ARCHITECT, CLEAR DIMENSIONS ARE TYPICALLY TO FINISH FACE.
3. "MAXIMUM" OR "MAX" AS USED IN THESE DOCUMENTS SHALL MEAN THAT THE CONDITION IS SLIGHTLY ADJUSTABLE BUT MAY NOT VARY TO A DIMENSION OR QUANTITY GREATER THAN THAT SHOWN WITHOUT APPROVAL OF THE ARCHITECT.
4. "MINIMUM" OR "MIN." AS USED IN THESE DOCUMENTS SHALL MEAN THAT THE CONDITION IS SLIGHTLY ADJUSTABLE BUT MAY NOT VARY TO A DIMENSION OR QUANTITY LESS THAN THAT SHOWN WITHOUT APPROVAL OF THE ARCHITECT.
5. "TYPICAL" OR "TYP" AS USED IN THESE DOCUMENTS SHALL MEAN THAT THE CONDITION OR DIMENSION IS THE SAME OR REPRESENTATIVE FOR SIMILAR CONDITIONS THROUGHOUT.
6. "+/-" AS USED IN THESE DOCUMENTS SHALL MEAN THE DIMENSION OR QUANTITY IS SLIGHTLY ADJUSTABLE TO ACCOMMODATE ACTUAL CONDITIONS.

GENERAL CONSTRUCTION ISSUES

1. HATCHED AREAS INDICATE AREA TO BE FURRED DOWN ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE.
2. ALL PLUMBING SUPPLY LINES IN EXTERIOR WALLS TO RECEIVE FULL INSULATION.
3. DO NOT ALLOW EXTERIOR SHEATHING TO BE IN CONTACT WITH CONCRETE SURFACE.
4. HOLD ALL WOOD TRIM A MINIMUM OF 1/4-INCH ABOVE CONTACT WITH HORIZONTAL CONCRETE SURFACES.

PASSIVE SUB SLAB DEPRESSURIZATION RADON CONTROL SYSTEM

1. PROVIDE UNDERSLAB RADON MITIGATION SYSTEM WITH REQUIRED VENTING.
2. DESIGN OF SUB SLAB DEPRESSURIZATION RADON CONTROL SYSTEM WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. PROVIDE ELECTRICAL JUNCTION BOX IN ATTIC FOR POSSIBLE FUTURE INSTALLATION OF WARNING DEVICE FOR EACH VERTICAL STACK.
4. PROVIDE 15 AMP, 115 VOLT ELECTRIC CIRCUIT AND JUNCTION BOX FOR FUTURE INSTALLATION OF VENT FAN.
5. ALL CONCRETE SLABS THAT COME IN CONTACT WITH THE GROUND SHALL BE LAID OVER A GAS PERMEABLE MATERIAL MADE UP OF EITHER A MINIMUM 4" THICK UNIFORM OF CLEAN AGGREGATE OR A MINIMUM 4" THICK UNIFORM LAYER OF SAND, OVERLAIN BY A LAYER OR STRIPS OF MANUFACTURED MATTING DESIGNED TO ALLOW THE LATERAL FLOW OF SOIL GASES.
6. ALL CONCRETE FLOOR SLABS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL BUILDING CODES.
7. ALL OPENINGS, GAPS, AND JOISTS IN FLOOR AND WALL ASSEMBLIES IN CONTACT WITH SOIL OR GAPS AROUND PIPES, TOILETS, BATHTUBS OR DRAINS PENETRATING THESE ASSEMBLIES SHALL BE FILLED OR CLOSED WITH MATERIALS THAT PROVIDE A PERMANENT AIR-TIGHT SEAL. SEAL LARGE OPENINGS WITH NON-SHRINK MORTAR, GROUTS OR EXPANDING FOAM MATERIALS AND SMALLER GAPS WITH ELASTOMERIC JOINTS SEALANT, AS DEFINED ASTM C920-A7.
8. VENT PIPES SHALL BE INSTALLED SO THAT ANY RAINWATER OR CONDENSATION DRAINS DOWNWARD INTO THE GROUND BENEATH THE SLAB OR SOIL - GAS - RETARDER MEMBRANE.
9. EXHAUST CLEARANCES MUST CONFORM TO THE CURRENT NATIONAL STANDARD PLUMBING CODE, FOR EXHAUST TERMINATION LIMITATION AND REQUIREMENTS.

PRINTS ISSUED
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PRELIMINARY
NOT FOR
CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
GENERAL INFORMATION

PROJECT NUMBER: 25144

SHEET NUMBER:

G-003

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ROOF PLAN GENERAL NOTES

1. ALL NEW WORK TO MEET ALL APPLICABLE BUILDING, PLUMBING, MECHANICAL, HANDICAP, AND LIFE SAFETY CODES AND REQUIREMENTS.

2. THE MINIMUM NET FREE VENTILATING AREA SHALL BE 1/300 OF THE AREA OF THE SPACE VENTILATED. THE OPENINGS SHALL BE COVERED WITH CORROSION-RESISTANT MESH OR OTHER APPROVED MATERIALS WITH OPENINGS NOT MORE THAN 1/2" IN ANY DIRECTION.

3. WHERE RIDGE OR GABLE VENTS ARE UTILIZED, ADDITIONAL PROTECTION AGAINST SNOW INFILTRATION SHALL BE PROVIDED BY BALANCING THE AREA OF THE VENTS IN THE RIDGES AND THE EAVES SUCH THAT AT LEAST 1/2 OF THE VENTILATION AREA SHALL BE PROVIDED BY SOFFIT OR EAVE VENTS, WITH THE BALANCE OF THE VENTILATION OPENINGS PROVIDED BY THE GABLE OR RIDGE VENTS. REFERENCE 2021 IBC SECTION 1202.

4. ALL FLOOR JOIST BEARING HEIGHTS ARE 9'-1 1/8". ALL ROOF TRUSS BEARING HEIGHTS ARE 9' - 1 1/8". REFERENCE WALL SECTIONS ON A-300 SHEETS.

5. 1'-6" ROOF SOFFIT, UNLESS NOTED OTHERWISE, REF: ROOF PLAN.

6. CONTRACTOR TO INSTALL GUTTERS, DOWNSPOUTS AND ALL FLASHING PER APPLICABLE SMACNA GUIDELINES. IF ADDITIONAL DOWNSPOUTS ARE REQUIRED, CONTRACTOR SHALL CONFIRM LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION.

7. MEMBRANE ROOFING SYSTEM ON RIGID INSULATION, ALL ROOF LOCATIONS TYP. U.O.N.

8. COLORS T.B.D., COORDINATE WITH ARCHITECT.

REFLECTED CEILING PLAN GENERAL NOTES

1. SEE MEP SET FOR LOCATIONS OF ALL LIGHT FIXTURES AND MECHANICAL DIFFUSERS.

2. COORDINATE ANY DISCREPANCIES WITH MEP AND ARCHITECT PRIOR TO INSTALLATION.

3. ALL CEILINGS TO CONFORM TO 2021 IBC TABLE 803.13.

4. ALL ACT TILES TO BE WHOLE DIMENSIONS AND ARE NOT TO BE FIELD CUT, ALL ACT TO BE FIELD CENTERED IN SPACE, U.N.O. OR DIMENSIONED.

5. SEE ENLARGED UNIT PLANS (A-400 SERIES) FOR ALL UNIT RCP PLANS EXCEPT WHERE HEIGHTS ARE LISTED ON RCP PLANS IN A-100 SERIES.

6. ALL UN-HATCHED REGIONS ARE TO BE OPEN UNFINISHED CEILING TO THE STRUCTURAL DECK AND STRUCTURAL MEMBERS ABOVE. SURFACES TO BE CLEANED AND PATCHED/REPAIRED.

7. WHERE CEILING HEIGHT IS B.O. FLOOR ASSEMBLY, FINISH TO BE LEVEL FOUR FINISH. ALL UNITS TO HAVE A LEVEL FOUR FINISH AT CEILINGS.

8. ALL MECH DUCTS WHICH FEED TO PLENUM SPACE VIA MECH SHAFTS SHALL BE ENCLOSED ON THE BOTTOM ACCORDING TO PROGRESSIVE ENGINEERING REPORT AER-09-038.

9. ACCESS TO EQUIPMENT SHALL BE THROUGH ACT WHERE AVAILABLE. WHERE NECESSARY, ACCESS THROUGH GWB CEILING TO USE ACCESS HATCHES. GC TO PROVIDE HATCHES AND HATCH LOCATION DIAGRAM PRIOR TO INSTALL.

10. ALL DIMENSIONS FOR CEILING TYPE C5 AND C1 ARE TO FINISHED FACE. ALL DIMENSIONS TO WALLS ARE TO F.O. STUD.

11. ALL DROPPED SOFFIT FRAMING IN COMMON AREAS SHALL BE OUT OF METAL STUDS. ONE (1) HOUR RATED CEILING THROUGHOUT BUILDING AT UNDERSIDE OF ROOF TRUSSES AND ARE PART OF THE FIRE RATED FLOOR-CEILING ASSEMBLY.

12. ALL GYPSUM BOARD CEILINGS TO BE PAINTED PA-1 (U.N.O.).

13. MISCELLANEOUS SYMBOLS INDICATED ON REFLECTED CEILING PLAN ARE MECHANICAL IN NATURE. REFER TO MEP DRAWING SHEETS FOR FURTHER CLARIFICATION FOR ITEM IDENTIFICATION AND LOCATIONS.

PLAN GENERAL NOTES

01 - GENERAL
A. ALL NEW WORK TO MEET ALL APPLICABLE BUILDING, PLUMBING, MECHANICAL, ELECTRICAL, HANDICAP, AND LIFE SAFETY CODES AND REQUIREMENTS.
B. ALL WALL DIMENSIONS ARE TO FACE OF STUD, UNLESS NOTED OTHERWISE.
C. DO NOT SCALE DRAWINGS.
D. NOTIFY ARCHITECT OF ANY DISCREPANCIES BETWEEN PROJECT DOCUMENTS AND EXISTING CONDITIONS. ANY MODIFICATIONS DUE TO DIMENSIONAL CHANGES SHOULD BE PART OF THE PROJECT COST.
E. GENERAL CONTRACTOR AND ALL SUBCONTRACTORS SHALL THOROUGHLY FAMILIARIZE THEMSELVES TO ALL SITE SPECIFIC REQUIREMENTS AND EXTENTS OF THE NEW WORK PRIOR TO BIDDING. NO CHANGES IN THE CONTRACT WILL BE CONSIDERED FOR INFORMATION DISCERNABLE FROM THE EXISTING CONDITIONS OR THE PROJECT DOCUMENTS.
F. CONTRACTORS SHALL BE FAMILIAR AND INCORPORATE ALL PROVISIONS AND REQUIREMENTS ESTABLISHED BY CODES APPLICABLE TO THE PROJECT INCLUDING FAIR HOUSING, UFAS, ANSI, & ADAAG.
G. TYPICAL TOP OF FIRST FLOOR SUBFLOOR ELEVATION IS REFERENCED AS 100'-0". CONTRACTOR SHALL VERIFY BUILDING FINISH FLOOR ELEVATION WITH ACTUAL CONDITIONS. COORDINATE ACTUAL GRADE WITH CIVIL DRAWINGS.
H. FULLY ACCESSIBLE UNITS SHALL MEET THE REQUIREMENTS OF 2009 ICC/ANSI A117.1 - TYPE 'A' DWELLING UNITS AND 2010 ADAAG (DOJ). ALL OTHER DWELLING UNITS TO BE TYPE 'B'.
I. LEVELS ABOVE MAIN LEVEL ARE MEASURED TO T.O. SUBFLOOR.
J. WHOLE BUILDING TO MEET FAIR HOUSING ACT.
K. ALL PENETRATIONS INTO FIRE-RATED ASSEMBLIES ARE TO BE FIRESTOPPED WITH UL APPROVED FIRESTOPPING ASSEMBLIES. UL INFORMATION SHALL BE PROVIDED BY TRADE RESPONSIBLE FOR PENETRATION. REFERENCE THE G200 SERIES.
L. THROUGH PENETRATIONS NOT LOCATED WITHIN WALL CAVITY OR FLOOR/CEILING/ROOF ASSEMBLY SHALL BE REQUIRED TO HAVE FIRE RESISTIVE PENETRATION WITH A T-RATING EQUAL TO OR EXCEEDING THE ASSEMBLY THAT IS PENETRATED.
M. CONTROL JOINTS IN GWB AT ALL UNIT CORRIDORS SHALL BE LOCATED AT INSIDE CORNER OF PILASTERS AND ACROSS TOP OF DROP SOFFIT AT PILASTERS. AT LOCATIONS WHICH THERE IS A 30' SPAN BETWEEN PILASTERS, A CONTROL JOINT SHALL OCCUR AT THE CENTRAL LOCATION BETWEEN THE TWO PILASTERS ADJACENT TO THE NEAREST DOOR, RUNNING FROM HEAD TO T.O. PARTITION AT CORNER. AT LOCATIONS WHICH THERE IS A 30' SPAN BETWEEN SOFFIT WHERE PILASTER OCCURS, A CONTROL JOINT SHALL OCCUR AT THE INSIDE CORNER OF PILASTER AND SOFFITS. CONTROL JOINTS SHALL OCCUR AT THE CORNERS OF ALL STOREFRONT, RUNNING TO THE T.O. THE PARTITION. GC TO VERIFY WITH ARCHITECT DURING CONSTRUCTION ALL CONTROL JOINT LOCATIONS PRIOR TO INSTALL.
N. PROVIDE FIREBLOCKING AND DRAFTSTOPPING AS REQUIRED AND IN ACCORDANCE WITH 2021 IBC, SECTION 718.
O. CONTRACTOR TO PROVIDE FIRE BLOCKING AT FIRE SEPARATION PARTITION AT 10' ON CENTER VERTICALLY, TYPICAL. CONTRACTOR TO PROVIDE FIRE BLOCKING AT FIRE SEPARATION PARTITION AT ALL BACK-TO-BACK ELECTRICAL OUTLETS.
P. ALL INTERIOR WALLS ARE TYPE P1, UNLESS NOTED OTHERWISE. ALL EXTERIOR WALLS ARE TYPE P30, UNLESS NOTED OTHERWISE. SEE SHEET G-101 FOR PARTITION SCHEDULE.
Q. ALL EXTERIOR MATERIALS TO BE APPLIED PER MANUFACTURER RECOMMENDATIONS AND WITH ASSOCIATED PRODUCTS (SUCH AS STAPLES, NAILS, TAPER, SEALANT).

03 - CONCRETE
A. CONCRETE SEALANT TO BE USED ON FIRST FLOOR WHERE RECEIVING RESILIENT VINYL FLOORING.
B. AT SLAB ON GRADE UNITS, LEVEL CONCRETE SURFACE AT AREAS WHERE VCT FLOORING TO BE INSTALLED.

04 - MASONRY
A. ALL EXTERIOR BRICK TO HAVE WEEP HOLES AT MAX 2' ABOVE GRADE.
B. ALL EXTERIOR BRICK TO EXTEND BELOW GRADE BY 3 COURSES (8") MIN. AND HAVE A BRICK LEDGE.
C. ALL LOCATIONS WITH EXTERIOR BRICK TO BE GROUTED SOLID FROM BELOW GRADE CONDITION TO LOWEST WEEP HOLE.

05 - METALS
A. STAIR HANDRAILS, TREADS, STRINGERS TO BE PRE-FINISHED OR PAINTED STEEL.
B. ALL DOWNSPOUTS TO BE CONNECTED TO UNDERDRAINS, SLOPED AWAY FROM BUILDING.
C. ALL EXTERIOR METAL TO BE PRE-FINISHED OR PRIMED/PAINTED. COLOR PER ARCH.

06 - WOOD, PLASTICS AND COMPOSITES
A. ALL COMMON SPACE AND UNIT TOILET ROOMS / BATHROOMS TO HAVE BLOCKING FOR FUTURE INSTALL OF GRAB BARS AT GRAB BAR LOCATIONS SHOWN ON G-300S . BLOCKING TO BE PROVIDED FOR ALL SHOWER GRAB BARS AND SEATING AS REQUIRED BY MANUFACTURER AND G-300S.
B. CONTRACTOR TO COORDINATE BLOCKING AT ALL ADJACENT POCKET DOORS, MEDICINE CABINETS, AND OTHER ELEMENTS.
C. AT ALL IDF, MDF & ELEC ROOMS; INTERIOR FINISH TO BE FIRE-TREATED PLYWOOD PAINTED WHITE ON ALL WALLS.
D. ALL SHEAR WALL LOCATIONS & EXTENT OF SHEATHING TO BE COORDINATE WITH STRUCTURAL DRAWINGS.
E. ALL EXPOSED CABINET ENDS TO HAVE FINISHED PANELS, INCLUDING BUT NOT LIMITED TO END OF CABINET RUN, ADJACENT TO REFRIGERATOR, LOCATIONS OF VERTICAL OFFSETS.

07 - THERMAL AND MOISTURE PROTECTION
A. CAULK ALL JOINTS BETWEEN DISSIMILAR MATERIALS FOR WEATHER TIGHT, WATERTIGHT, AIRTIGHT, ETC. PERFORMANCE.
B. ALL EXTERIOR WRB TO BE APPLIED, TAPERED AND SEALED PER INSTRUCTIONS.
C. PROVIDE SOUND ATTENUATION INSULATION OVER ALL BATHROOM CEILINGS AND IN BATHROOM WALLS, TYPICAL ALL BATHROOMS.
D. AT EXTERIOR WALLS, CAULK CONTROL JOINTS IN FLOOR SLAB 12" INTO BUILDING TO PREVENT AGAINST WATER INFILTRATION.

08 - OPENINGS
A. DOORS- ELECTRICIAN IS REQUIRED TO COORDINATE WITH DOOR HARDWARE SCHEDULE FOR ALL ELECTRICAL ROUGH IN REQUIREMENTS FOR DOORS, INCLUDING AUTO OPERATORS, MAG HOLD OPENS, ELECTRONIC STRIKES, KEYPADS AND MAG LOCKS.
B. ALL DOOR HARDWARE SHALL BE COORDINATED W/ OWNER BY DESIGN BUILD CONTRACTOR.

09 - FINISHES
A. ALL LEANRAIL TO HAVE RADIUS CORNER, MIN 1" PER I.D.
B. LEANRAIL LOCATIONS TO BE SUBMITTED FOR ARCH/ID APPROVAL ON PLAN DWG.
C. PRIME, PAINT AND SEAL ALL WALLS, COLUMNS AND CEILINGS AS REQUIRED PRIOR TO INSTALLATION OF M/E/P/F/TELEPHONE/SECURITY INSTALLATION.
D. CONTRACTOR TO COORDINATE ALL WET WALLS WITH ADJACENT RATINGS AND TO ACCOMMODATE PLUMBING FIXTURES. WALLS TO BE ALIGNED.
E. ALL WALLS TO BE ALIGNED AS INDICATED ON DRAWINGS - IF WALL IS MISALIGNED MID-WALL AND WILL AFFECT VISUAL APPEARANCE IN ROOM (I.E. 'JOG' WILL APPEAR) GC TO BRING TO ARCH ATTENTION PRIOR TO FINISHING.
F. FLOOR TRANSITION SHALL OCCUR AT MIDDLE OF WALL WHERE OCCURS IN DOORWAY. PROVIDE VINYL REDUCER STRIP.

PLAN GENERAL NOTES - (CONT.)

10 - SPECIALTIES
A. ALL PUBLIC SOAP DISPENSERS TO BE INSTALLED IN SIDE WALL OF SINK OVER COUNTER.
B. ALL FIREPLACES TO BE INSTALLED PER MANUFACTURERS REQUIREMENTS AND TO MEET FIRE RATING OF WALLS ADJACENT.
C. PROVIDE VENTILATED WIRE SHELVING AT ALL CLOSETS AND PANTRY UNO. REFERENCE ENLARGED FLOOR PLAN NOTES ON A-400 SHEETS FOR LOCATIONS. DEPTH TO BE COORDINATED WITH ANY LIGHT FIXTURES TO NOT ENCROACH ON IFC CLEARANCES.
D. TOILET PAPER DISPENSER TO BE INSTALLED PER A4/G-302 AND 2009 ICC ANSI 117.1
E. SEE G-301 FOR SIGNAGE REQUIREMENTS. NUMBERING OF UNITS AND ROOMS SHALL BE UPDATED TO MEET AHJ AND OWNER REQUIREMENTS PRIOR TO SIGNAGE PRODUCTION.

21 - FIRE SUPPRESSION
A. ALL UNITS TO HAVE APPROPRIATE NUMBER OF SMOKE DETECTORS INSTALLED INTERCONNECTED AND HARD-WIRED WITH BATTERY BACKUP PER CODE, INCLUDING ONE (1) IN EACH BEDROOM.
B. FIRE EXTINGUISHERS SHALL BE LOCATED SO THAT THE MAXIMUM TRAVEL DISTANCE SHALL NOT EXCEED 75 FEET. GENERAL CONTRACTOR TO PROVIDE SEMI-RECESSED TYPE THROUGHOUT WITH RATED CABINET. PROVIDE (1) TYPE "CLASS K" WITHIN 30 FEET OF COMMERCIAL COOKING EQUIPMENT. PROVIDE RESIDENTIAL TYPE ANSUL SYSTEM AT ALL RESIDENTIAL RANGES AS REQUIRED BY FIRE DEPARTMENT HEIGHT TO MEET ANSI.
C. CONCEALED SPRINKLER HEADS TO BE USED U.N.O.
D. IN RESIDENT UNITS, SEMI-RECESSED SPRINKLER HEADS TO BE USED. ALL COMMON AREA SPRINKLERS TO BE FULLY CONCEALED. SEE SPECIFICATION 21 00 00
E. DRY SPRINKLERS TO BE COORDINATED WITH DESIGN-BUILD CONTRACTOR. ALL SPRINKLERS IN BUILDING CAN BE WET. SPRINKLER LOCATIONS AND SPRINKLER EQUIP TO BE COORDINATED W/ ARCH PRIOR TO INSTALL - GC TO PROVIDE LOCATIONS OF HEADS ON RCPS FOR ARCH REVIEW PRIOR TO INSTALL. GC TO COORD FIRE SPRINKLER LINER W/ ALL MEP IN CORRIDOR SPACE TO MAINTAIN CEILING TYPE & HT. PER ARCH DWGS

22 - PLUMBING
A. PLUMBING VENT STACKS, FLUES, FRESH AIR INTAKES, ETC. NOT SHOWN FOR CLARITY. SEE MEP DRAWINGS FOR HVAC/ELECTRICAL/PLUMBING REQUIREMENTS/EQUIPMENT/LOCATIONS. GC TO VERIFY LOCATIONS OF ALL SIDEWALL VENTS PRIOR TO INSTALL.
B. PROVIDE FLOOR DRAINS AS INDICATED ON PLUMBING DRAWINGS AND PER APPLICABLE PLUMBING CODE.
C. DRAINAGE SHALL BE PER 2021 IBC 3201.4 - DRAINAGE WATER COLLECTED FROM A ROOF, AWNING, CANOPY OR MARQUEE AND CONDENSATE FROM MECHANICAL EQUIPMENT SHALL NOT FLOW OVER A PUBLIC WALKING SURFACE.
D. CONTRACTOR TO COORDINATE MECHANICAL DUCT, SPRINKLER, PLUMBING, AND ELECTRICAL SUCH THAT CEILING HEIGHTS AND LOCATIONS ARE MAINTAINED PER REFLECTED CEILING PLANS.
E. ALL DOWNSPOUTS INTO COURTYARDS AND AT HARDSCAPE TO BE HARDPIPED TO STORM SEWER. GUTTERS/DOWNSPOUTS SHALL NOT FLOW OVER SIDEWALKS OR OTHER HARDSCAPE.
F. MOISTURE RESISTANT GYP SHOULD GO AT ALL CEILINGS AND WALLS OF BATHROOMS, LAUNDRY ROOMS, MECHANICAL CLOSETS, (INCLUDING BEHIND SINK BASES, SINKS, TOILETS, SHOWERS, BATHS & LAUNDRY ROOMS.)

23 - HVAC
A. GC TO COORDINATE MECHANICAL PADS FOR ROOFTOP AND GROUND MOUNTED UNITS.

26 - ELECTRICAL
A. SEE ELECTRICAL PLANS FOR ELECTRIC DEVICE LAYOUTS.
B. SEE D2/G-300 FOR ELECTRICAL MOUNTING HEIGHT REQUIREMENTS.
C. PROVIDE EXIT SIGNS AT LOCATIONS AND PER 2021 IBC SECTION 1013 - A TACTILE SIGN STATING 'EXIT' AND COMPLYING WITH ICC A117.1 SHALL BE PROVIDED ADJACENT TO EACH DOOR TO AN AREA OF REFUGE, AN EXTERIOR AREA FOR ASSISTED RESCUE, AN EXIT STAIRWAY, AN EXIT RAMP, AN EXIT PASSAGEWAY AND THE EXIT DISCHARGE
D. PROVIDE DIMMER CAPABILITY FOR ALL COMMON AREA DECORATIVE AND DOWNLIGHTS/SPOTS (CAN LIGHTS).
E. TIMECLOCK AND PHOTOCELL FOR EXTERIOR LIGHTS. MULTIPLE ZONES MAY BE NECESSARY. INSTALL PER MANUFACTURERS RECOMMENDATIONS.
F. ALL ELECTRICAL AND IDF/MDF ROOMS TO HAVE SOLID BLOCKING TO ACCOMMODATE PANEL ATTACHMENT. BLOCKING TO BE PAINTED TO MATCH WALLS. WALLS TO REMAIN RATED AS INDICATED PER PLAN.
G. FIRE PULL STATIONS TO BE PROVIDED PER IFC 2018 AND A.H.J.
H. ALL LIGHTING, T-STATS AND OTHER SWITCHES TO BE INSTALLED PER ANSI 117.1, 2010 ADAAG, AND THE FAIR HOUSING ACT. LOCATIONS AND GROUPINGS OF SWITCHES TO BE ACCEPTED BY ARCH PRIOR TO INSTALL.

PRINTS ISSUED
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PRELIMINARY
NOT FOR
CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
PLAN GENERAL NOTES

PROJECT NUMBER: 25144

SHEET NUMBER:

G-004

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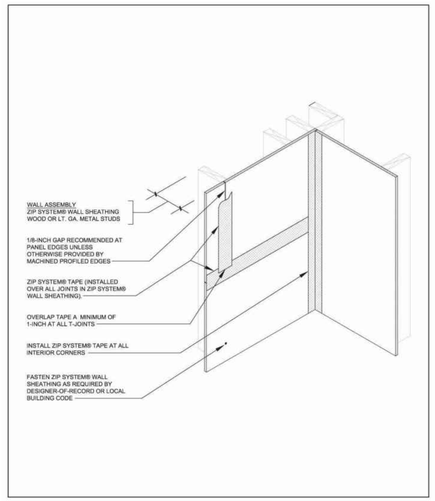
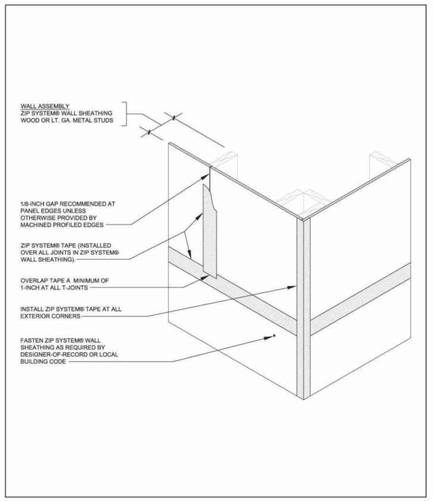
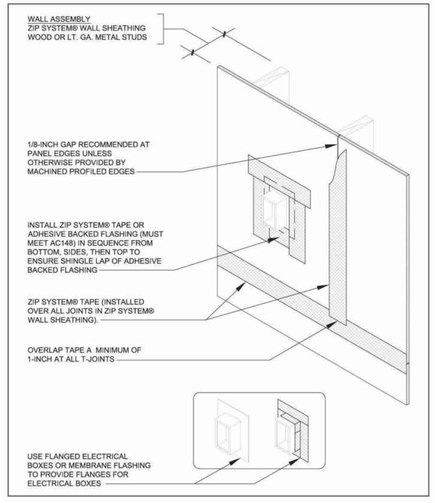
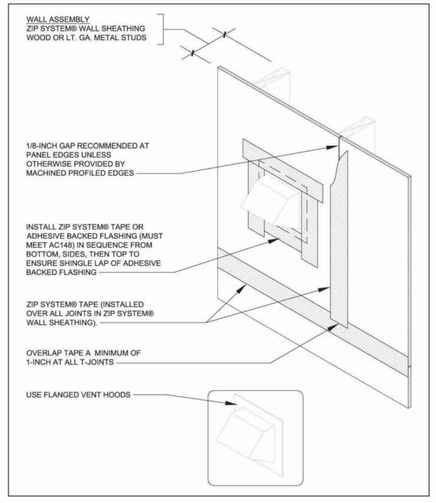
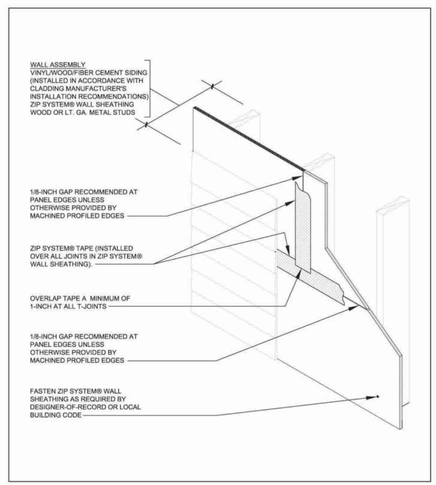
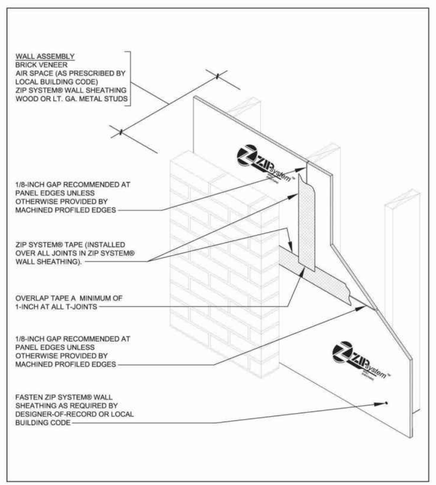












Brick Mould Windows (continued)

3. ZIP System tape may be used as pan flashing if installed in accordance with brick mould window installation details posted on zipsystem.com. Other adhesive-based flashing tapes (must meet ICC-ES Acceptance Criteria for Flashing Materials (AC148)) may be used as pan flashing if installed per ASTM 2112-07. Apply the flashing to cover the bottom of the opening, overhanging onto the sheathing by at least 2" and extending a minimum of 6" up each jamb.

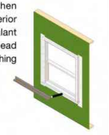
4. For vertical jambs, cut ZIP System tape or another adhesive-backed flashing tape (must meet ICC-ES Acceptance Criteria for Flashing Materials (AC148)) and apply to each of the window jambs. Ensure that they cover the entire inside of the rough opening as well as overlap onto the sheathing by at least 2". Flashing shall also extend above the rough opening, such that it will project 1" beyond the exterior trim of the window.

Once the tape is in place, use the tape gun or roller to seal the flashing to the sheathing.

5. Apply sealant to jambs and header allowing for drainage at the sill in accordance with window manufacturer's installation instructions. When using ZIP System tape, use a butyl, polyurethane or silicone sealant. Do not use latex sealants with ZIP System tape. When using another flashing tape, follow the flashing manufac-turer's recommendations in selecting a sealant compatible with that flashing.

6. Install and level window per manufacturer's installation instructions.

7. Cut a piece of rigid head flashing so that when installed, it is flush with the edges of the exterior moulding of the window. Apply a bead of sealant to the back and bottom surface of the rigid head flashing. Use sealant recommended by the flashing manufacturer.



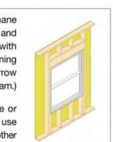
8. Secure the rigid head flashing to ZIP System wall sheathing.

9. Cut a length of ZIP System tape or another adhesive-backed flashing tape (must meet ICC-ES Acceptance Criteria for Flashing Materials (AC148)) and apply to the rigid head flashing, ensuring that the adhesive-backed flashing overlaps the jamb flashings.

Once the tape is in place, use the tape gun or roller to seal the flashing to the sheathing.

10. From the interior, apply low-pressure polyurethane foam (for windows) between the rough opening and the window frame. (Caulk sealant compatible with the sill flashing may be used at the sill if the opening between the sill flashing and window is too narrow to allow the use of low-pressure polyurethane foam.)

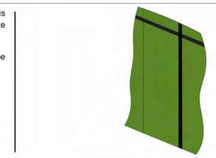
When using ZIP System tape, butyl, silicone or polyurethane sealants are acceptable. Do not use latex sealants with ZIP System tape. If using another flashing tape, follow the flashing manufacturer's recommendation in selecting a sealant compatible with that flashing.



Apply ZIP System tape after all ZIP System wall sheathing panels are fully fastened to wall-framing members. Only ZIP System tape should be used to seal the seams of ZIP System panels. Ensure that the panel surface is dry and free of sawdust and dirt prior to taping. **ZIP System tape is a contact tape that requires pressure for an adequate seal.**

Step 1. Tape all seams using ZIP System tape. Ensure that the tape is centered over the seam within +/- 1/2" to provide adequate coverage and that wrinkles in tape are minimal.

Use the ZIP System tape gun or roller to apply pressure to the tape and smooth out any wrinkles.

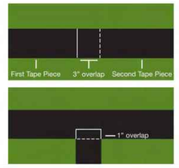


Step 2. Wherever tape splices occur at a horizontal or vertical seam, create an overlapping splice of at least 3".

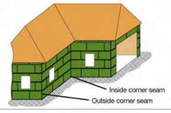
At T-joints, the tape pieces should overlap by at least 1". Apply moderate pressure onto the surface of the tape to ensure a secure bond between the panel and the tape.

Use the ZIP System tape gun or roller to apply pressure to the tape and smooth out any wrinkles.

Take special care to remove any voids and/or trapped air at splice areas and T-joints.

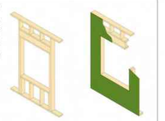


Step 3. Tape inside and outside corner seams.



Flanged Windows

1. Fasten the ZIP System wall sheathing sheathing to the wood frame and install ZIP System tape to all wall panel seams, as de-tailed in sections 02 and 03.



2. ZIP System tape may be used as pan flashing if installed in accordance with flanged window installation details posted on zipsystem.com. Other adhesive-based flashing tapes (must meet ICC-ES Acceptance Criteria for Flashing Materials (AC148)) may be used as pan flashing if installed per ASTM 2112-07. Apply the flashing to cover the bottom of the opening, overhanging onto the sheathing by at least 2" and extending a minimum of 6" up each jamb.

3. Apply sealant around inside face of mounting flange. Sealant must be gapped at the sill to permit drainage. Install and level window per manufacturer's installation instructions. Verify sealant compatibility with window manufacturer. When using ZIP System tape as pan flashing, butyl, silicone or polyurethane sealants are acceptable. Do not use latex sealants.

4. Cut two pieces of ZIP System tape or another adhesive-backed flashing tape (must meet ICC-ES Acceptance Criteria for Flashing Materials (AC148)) and apply to each of the window jamb flanges, ensuring the jamb flashings overlap the sill flashing.

Once the tape is in place, use the tape gun or roller to seal the flashing to the sheathing.

5. Cut a length of ZIP System tape or another adhesive-backed flashing tape (must meet ICC-ES Acceptance Criteria for Flashing Materials (AC148)) and apply to the header, ensuring that the flashing overlaps the jamb flashings.*

Once the tape is in place, use the tape gun or roller to seal the flashing to the sheathing.

*DO NOT tape bottom flange.

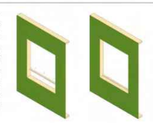
6. From the interior, apply low-pressure polyurethane foam (for windows) between the rough opening and the window frame. (Caulk sealant compatible with the sill flashing may be used at the sill if the opening between the sill flashing and window is too narrow to allow the use of low-pressure polyurethane foam.)

When using ZIP System tape, butyl, silicone or polyurethane sealants are acceptable. Do not use latex sealants with ZIP System tape. If using another flashing tape, follow the flashing manufacturer's recommendation in selecting a sealant compatible with that flashing.

Brick Mould Windows

1. Fasten the ZIP System wall sheathing sheathing to the wood frame and install ZIP System tape to all wall panel seams, as de-tailed in sections 02 and 03.

2. If recommended by the win-dow manufacturer, cut a strip of wood to function as a back dam at the sill. The wood strip should have a length equal to the width of the rough opening and a height and width of at least 1/2". Position the block at the inside edge of the window frame.



THIS SHEET IS PROVIDED FOR REFERENCE ONLY. ALL INSTALLATION TO BE PER MANUFACTURER RECOMMENDATION

PRINTS ISSUED
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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
GENERAL INFORMATION

PROJECT NUMBER: 25144

SHEET NUMBER:

G-005

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GC TO PROVIDE BID ALTERNATE
FOR ZIP SYSTEM RE: G-005.

WEATHER-RESISTIVE BARRIER INSTALLATION GUIDELINES

WEATHER-RESISTIVE BARRIER INSTALLATION ON VERTICAL WALLS

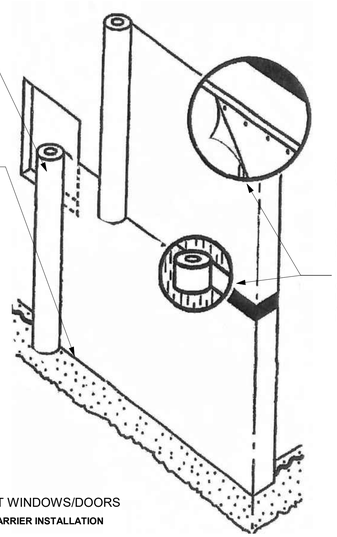
PRIOR TO INSTALLATION OF WINDOWS OR DOORS

STEP 1
UNWRAP ROLL AT CORNER, LEAVE 6" TO 12" OVERLAP - PRINTED STUD MARKS TO LINE UP WITH FIRST STUD.

STEP 2
ROLL SHOULD BE PLUMB - EXTEND BOTTOM ROLL EDGE OVER SILL PLATE INTERFACE AT LEAST 2" TO 3".

STEP 3A
WEATHER-RESISTIVE BARRIER TO BE SECURED ON VERTICAL STUD LINE EVERY 12" TO 18". WHEN USING WOOD, INSULATED SHEATHING BOARD, OR EXTERIOR GYPSUM BOARD; LARGE HEAD OR PLASTIC WEATHER HEAD NAIL USE IS BEST PRACTICE. ALSO, 1" MIN. CROWN WIDE STAPLES MAY BE USED.

STEP 3B
WHEN USING MASONRY, TEMPORARILY ATTACH BARRIER WITH ADHESIVES CONTAINING POLYURETHANE, ELASTOMERIC, OR LATEX BASE IN VERTICAL STRIPS - SPACE APPROXIMATELY 24" APART (CONSULT BUILDING WRAP MANUFACTURER FOR LIST OF SUGGESTED ADHESIVES). AS A PERMANENT ATTACHMENT, USE CLADDING FASTENERS.



STEP 4
DIRECTLY UNROLL BARRIER OVER WINDOWS AND DOORS - UPPER ROLL TO OVERLAP BOTTOM ROLL 6" HORIZONTALLY.

STEP 5
UPPER OF UPPER AND LOWER PLATES TO BE COVERED BY BARRIER - TAPE ALL HORIZONTAL SEAMS AT BAND JOISTS, HEADERS AND ROLL OVERLAPS USING 2" OR 3" MANUFACTURER APPROVED TAPE. ALL ACCIDENTAL TEARS, DAMAGE OR PENETRATIONS TO BE TAPED.

FLASHING SYSTEM INSTALLATION AT WINDOWS/DOORS

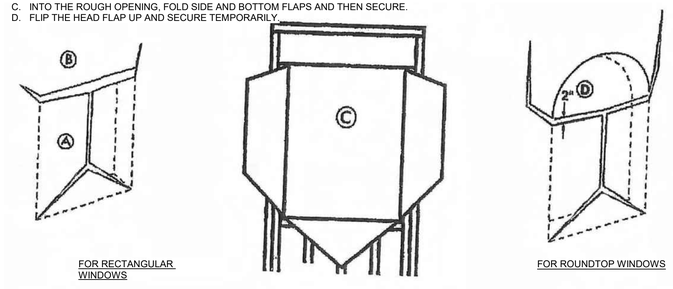
UPON COMPLETION OF WEATHER-RESISTIVE BARRIER INSTALLATION

GENERAL INSTRUCTIONS

- USE AND INSTALL APPROVED FLASHING PER WEATHER-RESISTIVE BARRIER MANUFACTURER'S RECOMMENDATIONS.
- INSTALL FLASHING ON CLEAN, DRY SURFACES. SURFACES TO BE WIPED TO REMOVE MOISTURE, DIRT, GREASE AND OTHER DEBRIS WHICH MAY INTERFERE WITH ADHESION.
- PRESSURE TO BE APPLIED ALONG ENTIRE SURFACE TO ACHIEVE A GOOD BOND.
- SMOOTH/REPOSITION SURFACE AS NECESSARY TO ELIMINATE ALL WRINKLES AND BUBBLES.

STEP 6
PREPARE WEATHER-RESISTIVE BARRIER FOR WINDOW OR DOOR INSTALLATION:

A. MAKE A MODIFIED 'I-CUT' IN THE BARRIER, BEGINNING WITH A HORIZONTAL CUT ACROSS THE TOP OF THE WINDOW FRAME. (FOR ROUNDTOP WINDOWS, BEGIN THE CUT 2" ABOVE THE MULL JOINT; SEE D). CUT STRAIGHT DOWN FROM THE CENTER APPROXIMATELY 2/3 OF THE WAY, THEN ANGLE THE CUT TO THE CORNERS (SEE A).
B. TO EXPOSE SHEATHING, OR FRAMING MEMBERS, AND TO ALLOW FOR HEAD FLASHING INSTALLATION, CUT A FLAP ABOVE THE ROUGH OPENING.
C. INTO THE ROUGH OPENING, FOLD SIDE AND BOTTOM FLAPS AND THEN SECURE.
D. FLIP THE HEAD FLAP UP AND SECURE TEMPORARILY.

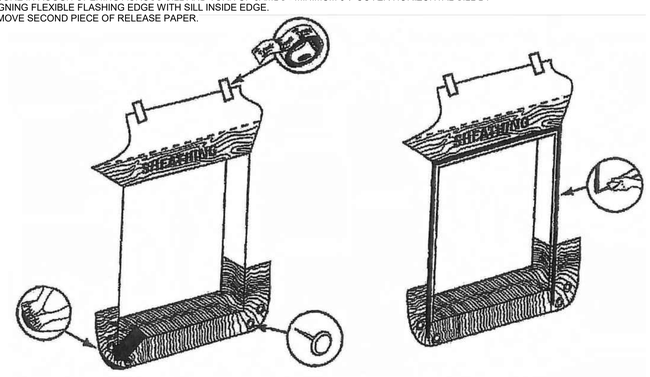


FOR RECTANGULAR WINDOWS

FOR ROUNDTOP WINDOWS

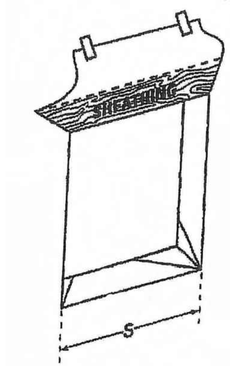
STEP 7

A. CUT FLEXIBLE FLASHING AT LEAST 12" LONGER THAN SILL ROUGH OPENING WIDTH.
B. REMOVE FIRST PIECE OF RELEASE PAPER, COVER HORIZONTAL SILL BY ALIGNING INSIDE EDGE OF SILL, AND SECURE IN ROUGH OPENING ACROSS SILL AND TURN UP JAMBS - MINIMUM 6". COVER HORIZONTAL SILL BY ALIGNING FLEXIBLE FLASHING EDGE WITH SILL INSIDE EDGE.
C. REMOVE SECOND PIECE OF RELEASE PAPER.



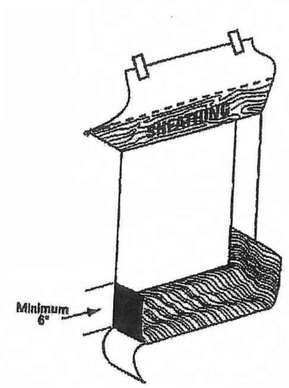
STEP 8

A. FAN FLEXIBLE FLASHING ONTO WALL FACE AT BOTTOM CORNERS.
B. PRESS SILL FLASHING FIRMLY TO ENSURE FULL ADHESION.
C. **FANNED EDGES TO BE SECURED WITH MECHANICAL FASTENERS.**



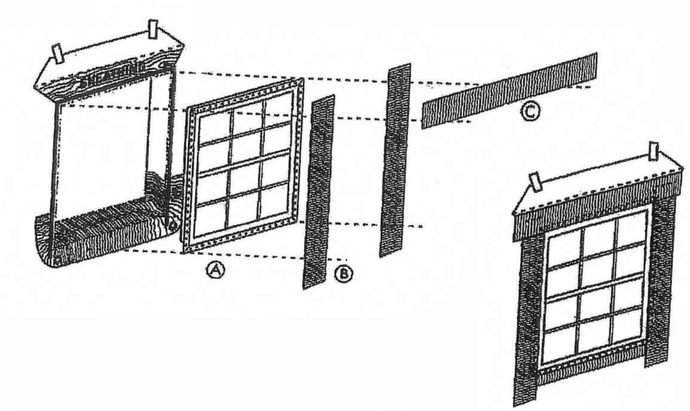
STEP 9

A. AT WALL OR BACK SIDE OF WINDOW MOUNTING FLANGE, APPLY A CONTINUOUS BEAD OF CAULK ACROSS JAMBS AND HEAD - BOTTOM SILL FLANGE TO REMAIN UNCAULKED.
B. **CAULK NOT TO BE APPLIED TO BOTTOM SILL FLANGE.**



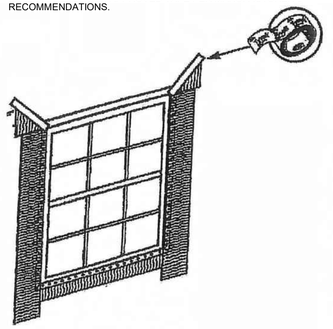
STEP 10

A. INSTALL WINDOW/DOOR PER MANUFACTURER'S INSTRUCTIONS. (IMAGE A)
B. CUT TWO PIECES OF FLASHING OR FLEXIBLE FLASHING FOR JAMB FLASHING TO EXTEND 1" ABOVE WINDOW HEAD FLANGE AND BELOW BOTTOM EDGE OF SILL FLASHING. REMOVE RELEASE PAPER AND TIGHTLY PRESS ALONG SIDES OF WINDOW FRAME. (IMAGE B)
C. CUT A PIECE OF FLASHING OR FLEXIBLE FLASHING FOR HEAD FLASHING, TO EXTEND BEYOND OUTER EDGES OF JAMB FLASHING. REMOVE RELEASE PAPER AND INSTALL COMPLETELY COVERING MOUNTING FLANGE AND ADHERING TO EXPOSED SHEATHING OR FRAMING MEMBERS. (IMAGE C)



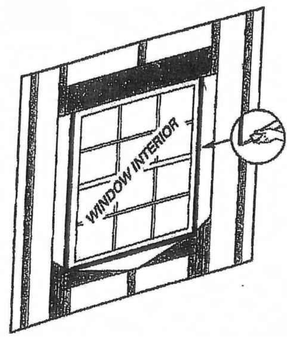
STEP 11

A. FLIP DOWN WEATHER-RESISTIVE BARRIER UPPER FLAP SO THAT IT LAYS FLAT ACROSS HEAD FLASHING.
B. TAPE ALONG ALL CUTS IN WEATHER-RESISTIVE BARRIER AND ACROSS WINDOW HEAD WITH APPROVED TAPE PER MANUFACTURER'S RECOMMENDATIONS.



STEP 12

CAULK (BACKER ROD, AS NECESSARY) AT REAR OF WINDOW/DOOR FRAME TO SEAL INSIDE OF ROUGH OPENING ACROSS BOTTOM AND A MINIMUM 12" TURN UP AT SIDES TO FORM A BACK DAM. IN ORDER TO AIR SEAL AROUND WINDOW OPENING, COMPLETELY CAULK AROUND BACK EDGE OF WINDOW PERIMETER.



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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
GENERAL INFORMATION

PROJECT NUMBER: 25144

SHEET NUMBER:

G-006

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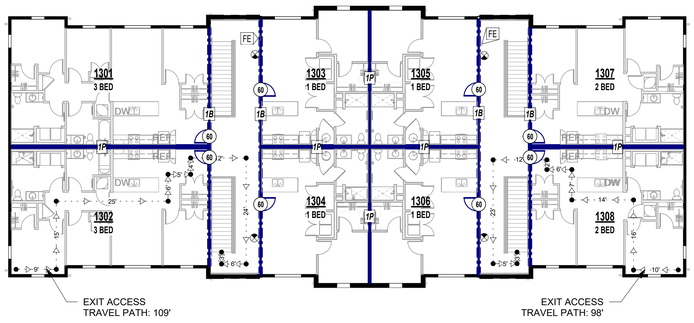
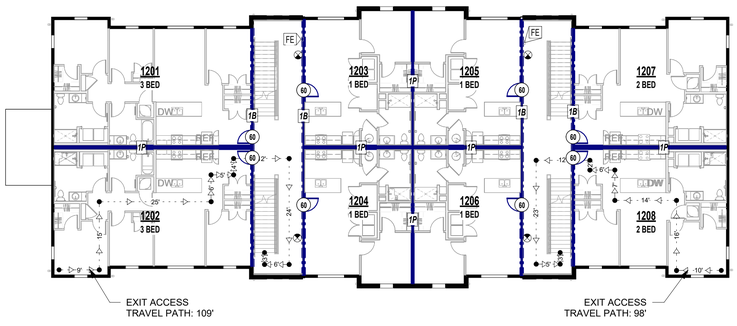


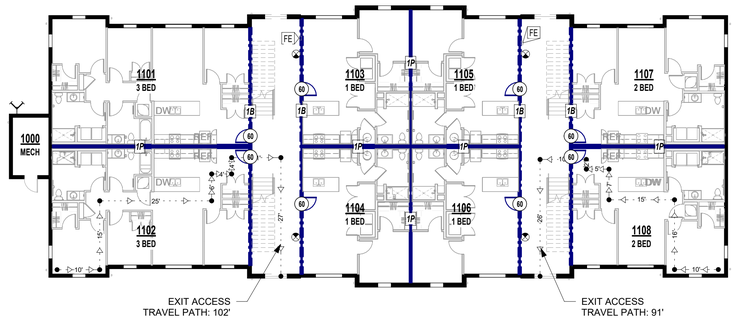
C1 3RD FLOOR CODE PLAN - BUILDING A

1/16" = 1'-0"



B1 2ND FLOOR CODE PLAN - BUILDING A

1/16" = 1'-0"



A1 1ST FLOOR CODE PLAN - BUILDING A

1/16" = 1'-0"

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CODE PLAN GENERAL NOTES:

1. FIRE EXTINGUISHERS SHALL BE LOCATED SO THAT THE MAXIMUM TRAVEL DISTANCE SHALL NOT EXCEED 75 FEET. GENERAL CONTRACTOR TO PROVIDE SURFACE MOUNTED FIRE EXTINGUISHERS AT EACH RESIDENTIAL UNIT UNDER KITCHEN SINKS AT ACCESSIBLE HEIGHTS. GC ALSO TO PROVIDE SEMI-RECESSED FIRE EXTINGUISHER CABINETS WITH FIRE EXTINGUISHERS AT ALL COMMUNITY AMENITY AREAS.
2. SIGNS IDENTIFYING FIRE PROTECTION EQUIPMENT, CONTROLS FOR AIR CONDITIONING SYSTEMS, SPRINKLER RISERS AND VALVES, OR OTHER FIRE DETECTION, SUPPRESSION OR CONTROL ELEMENTS SHALL BE IDENTIFIED FOR THE USE OF THE FIRE DEPARTMENT PER 2021 IBC. SIGNAGE SHALL ALSO MEET 2021 IFC REQUIREMENTS FOR HEIGHT AND LETTERING. GC TO COORDINATE WITH AUTHORITY HAVING JURISDICTION ON ALL SIGNAGE.
3. KNOX BOX QUANTITY AND LOCATION TO BE COORDINATED BY THE GENERAL CONTRACTOR WITH AUTHORITY HAVING JURISDICTION.
4. ANNUNCIATOR PANEL AND FACP QUANTITY AND LOCATION TO BE COORDINATED BY THE GENERAL CONTRACTOR WITH AUTHORITY HAVING JURISDICTION PRIOR TO INSTALL.
5. ALL DIMENSIONS ARE APPROXIMATE ON CODE PLAN. ACTUAL ARCHITECTURAL DIMENSIONS PER ARCHITECTURAL AND STRUCTURAL PLAN.
6. PROJECT COMPLIES WITH 2021 INTERNATIONAL ENERGY CONSERVATION CODE (IECC).

CODE REVIEW

PROJECT NAME:	JOHNSON-BETTS MEADOWS
PROJECT LOCATION:	TOPEKA, KS
CODE:	2021 IBC
CODE REVIEW COMPLETED BY:	M. BRENNAN

CHAPTER THREE

SECTION 302 CLASSIFICATION:	R-2 APARTMENTS; B COMMUNITY

CHAPTER FIVE

TABLE 504.3 ALLOWABLE HT AND BUILDING AREAS:	R S13R TYPE V-A: 60' B S13R TYPE V-B: 60' (50' MAX HEIGHT PER PUD)
TABLE 504.4 ALLOWABLE # OF STORIES ABOVE GRADE:	R-2 S13R TYPE V-A: 4 STORIES B S13R TYPE V-B: 3 STORIES
TABLE 506.2 ALLOWABLE AREA/FLOOR:	R-2 S13R TYPE V-A: 12,000 SF B S13R TYPE V-B: 27,000 SF

SECTION 506.2.3 AREA MODIFICATIONS:

ALLOWABLE		ACTUAL
12,000 SF	BLDG A (1ST FL)	8,779 SF
	BLDG A - STEPPED	8,925 SF
	BLDG B (1ST FL)	4,667 SF
27,000 SF	BLDG C (1ST FL)	5,623 SF

SECTION 506.3 FRONTAGE INCREASE:	N/A
SECTION 506.3.3 (EQUATION 5-5)	ALL BUILDINGS UNDER ALLOWABLE SF
SECTION 508.2 ACCESSORY OCCUPANCIES:	MAX 10% AREA / FLOOR MAX 12,000 SF TOTAL
TABLE 508.4 REQUIRED SEPARATION OF OCCUPANCIES:	R-A OCC: 1 HR FIRE PARTITION R-B OCC: 1 HR FIRE PARTITION

CHAPTER SIX

TABLE 601 FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS):

CONSTRUCTION TYPE	VA
PRIMARY STRUCTURAL FRAME:	1 HR
INTERIOR BEARING WALLS:	1 HR
EXTERIOR BEARING WALLS:	1 HR
NON-BEARING WALLS:	0 HR
FLOOR CONSTRUCTION:	1 HR
ROOF CONSTRUCTION:	1 HR

2021 IECC

CLIMATE ZONE: 4A CONST. TYPE: V-A CHAPTER 4-RESIDENTIAL ENERGY EFFICIENCY

PROJECT COMPLYING WITH 2021 IECC

MEETS 2021 IECC SECTION R402.1.2

BELOW ARE GENERAL GUIDELINES:

TABLE 402.1.2- BUILDING ENVELOPE REQUIREMENTS
FENESTRATION U-FACTOR = 0.30
SKYLIGHT U-FACTOR = 0.55
GLAZED FENESTRATIONS SHGC = 0.40
CEILING U-FACTOR = 0.024
WOOD FRAME WALL U-FACTOR = 0.045
FLOOR U-FACTOR = 0.047

TABLE 402.1.3- INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS
CEILING R-VALUE = 60
WOOD FRAME WALL R-VALUE = 20+5 or 13+10ci or 0+15
MASS WALL R-VALUE = 8/13
FLOOR R-VALUE = 19
SLAB R-VALUE & DEPTH = 10ci, 4 ft

ALL OF IECC 2021 APPLIES, HOWEVER PARTICULAR NOTE SHALL BE TAKEN OF THE FOLLOWING. ADDITIONALLY, GC TO PROVIDE INSULATION, FENESTRATION, AND OTHER REQUIREMENTS PER BELOW:

1. AIR LEAKAGE PER SECTION R402.4
2. AIR BARRIER PENETRATIONS PER R402.4.1.1
3. AIR LEAKAGE OF FENESTRATION PER SECTION R402.4.3
4. BUILDING MECHANICAL SYSTEM REQUIREMENTS PER SECTION R403
5. DUCT/PLENUM INSULATION AND SEALING PER R403.3
6. PIPING INSULATION PER R403.4
7. SERVICE WATER HEATING PER SECTION R403.5
8. LIGHTING ELECTRICAL SYSTEMS PER SECTION R404

OCCUPANCY TABULATION PER 2021 IBC TABLE 1004.5 - BUILDING A

ROOM NO.	OCCUPANCY CHP.3	ROOM NAME	ROOM OCCUPANCY	AREA	OCC. LOAD CALC.	IBC OCC. LOAD FACTOR
1101	R-2	3 BED	Residential	1165 SF	6	200
1102	R-2	3 BED	Residential	1165 SF	6	200
1103	R-2	1 BED	Residential	684 SF	4	200
1104	R-2	1 BED	Residential	684 SF	4	200
1105	R-2	1 BED	Residential	684 SF	4	200
1106	R-2	1 BED	Residential	684 SF	4	200
1107	R-2	2 BED	Residential	907 SF	5	200
1108	R-2	2 BED	Residential	907 SF	5	200
				6880 SF	38	
1000	S	MECH	Accessory Storage Areas, Mechanical Equipment Room	105 SF	1	300
				105 SF	1	
				6985 SF	39	
1201	R-2	3 BED	Residential	1165 SF	6	200
1202	R-2	3 BED	Residential	1165 SF	6	200
1203	R-2	1 BED	Residential	684 SF	4	200
1204	R-2	1 BED	Residential	684 SF	4	200
1205	R-2	1 BED	Residential	684 SF	4	200
1206	R-2	1 BED	Residential	684 SF	4	200
1207	R-2	2 BED	Residential	907 SF	5	200
1208	R-2	2 BED	Residential	907 SF	5	200
				6880 SF	38	
				6880 SF	38	
1301	R-2	3 BED	Residential	1165 SF	6	200
1302	R-2	3 BED	Residential	1165 SF	6	200
1303	R-2	1 BED	Residential	684 SF	4	200
1304	R-2	1 BED	Residential	684 SF	4	200
1305	R-2	1 BED	Residential	684 SF	4	200
1306	R-2	1 BED	Residential	684 SF	4	200
1307	R-2	2 BED	Residential	907 SF	5	200
1308	R-2	2 BED	Residential	907 SF	5	200
				6880 SF	38	
				6880 SF	38	
Grand total: 25				20744 SF	115	

CHAPTER SEVEN

SECTION 704 FIRE-RESISTANCE RATING OF STRUCTURAL MEMBERS:	1 HR (REF. 601)
TABLE 705.5 FIRE RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE:	<30 FEET: 1 HR ≥30 FEET: 0 HR
TABLE 705.8 MAX AREA EXTERIOR WALL OPENINGS:	45% (MIN FIRE SEPARATION DISTANCE: 12')
SECTION 706 FIRE WALLS:	N/A
SECTION 707 FIRE BARRIERS:	2 HR
SECTION 708 FIRE PARTITIONS:	1 HR
SECTION 709 SMOKE BARRIERS:	DAMPERS REQUIRED
SECTION 710 SMOKE PARTITIONS:	0 HR
SECTION 711 HORIZONTAL ASSEMBLIES:	1 HR
SECTION 712 VERTICAL OPENINGS:	1 HR R-2
SECTION 713 SHAFT ENCLOSURES:	1 HR (<4 STORIES)
SECTION 714 PENETRATIONS:	VARIES
SECTION 715 FIRE-RESISTANT JOINT SYSTEMS:	1 HR (TO MATCH SYSTEMS)
SECTION 716 OPENING PROTECTIVES:	1 HR BARRIER (BREEZEWAYS): 60 MIN 1 HR PARTITION: 1/3 HR 1 HR EXTERIOR: 3/4 HR
SECTION 717 DUCTS AND AIR TRANSFER OPENINGS:	1.5 HOUR DAMPER RATING
SECTION 718 CONCEALED SPACES:	FIREBLOCK & DRAFTSTOP

CHAPTER NINE

SECTION 903 AUTOMATIC SPRINKLER SYSTEM:	R-2, REQUIRED: NFPA 13R
SECTION 905 STANDPIPE SYSTEM:	N/A
SECTION 906 PORTABLE FIRE EXTINGUISHERS:	REQUIRED PER NFPA 10, 75' MAX TRAVEL
SECTION 907 FIRE ALARM & DETECTION SYSTEM:	REQUIRED PER NFPA 72
SECTION 909 SMOKE CONTROL SYSTEM:	NOT REQUIRED

CHAPTER TEN

TABLE 1004.5 MAX FLOOR AREA ALLOW/OCCUP:	RESIDENTIAL: 200 GROSS BUSINESS: 150 GROSS
SECTION 1005 MEANS OF EGRESS SIZING:	STAIRS 0.3/OCC, OTHER EGRESS 0.2/OCC.
TABLE 1006.2.1 SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY:	R-2: 20 OCC. MAX, 125' MAX COMMON PATH
TABLE 1006.3.3 MINIMUM NUMBER OF EXITS PER STORY:	1 - 500 OCCUPANTS: 2 EXITS MIN. REQ'D
SECTION 1009 ACCESSIBLE EGRESS:	1 / 30x52 SPACE / 200 OCC.
SECTION 1011.2 STAIRWAY WIDTH CAPACITY:	44" MIN.
SECTION 1014.2 HANDRAIL HEIGHTS:	34" MIN. - 38" MAX.
SECTION 1014.6 HANDRAIL EXTENSIONS:	EXTEND HORIZONTALL 12" BEYOND TOP RISER, CONT. SLOPE 1 DEPTH TREAD @ BOTTOM
TABLE 1017.2 EXIT ACCESS TRAVEL DISTANCE:	R: 250' SPRINKLED
TABLE 1019.3 STAIRWELL EGRESS:	3 STORIES - RE: 713

CHAPTER ELEVEN

TABLE 1106.1 ACCESSIBLE PARKING SPACES:	AS PER CIVIL

CHAPTER TWELVE

1202.5 NATURAL VENTILATION:	4% VENTILATION
1204.2 NATURAL LIGHT:	8% LIGHTING

CHAPTER TWENTY NINE

TABLE 2902.1 PLUMBING FAC. NO.	1 WC / UNIT; 1 LAVATORY / UNIT

CODE PLAN LEGEND

- 100 / 20' / [72"] — NUMBER OF OCCUPANTS EXITING; REQUIRED EXIT WIDTH; EXIT WIDTH PROVIDED BY DESIGN
- EXT. - RATED PARTITION (IBC CH. 6)
- NON - RATED PARTITION
- 1P — 1 HR RATED PARTITION (IBC 708)
- 1B — 1 HR RATED BARRIER (IBC 707)
- ### Room Name — ROOM TAG
- HEARING/VISIBILITY
- ADA/ACCESSIBLE UNITS *NOTE: ADA UNITS PER SITE DIAGRAM ON A-101
- FE — FIRE EXTINGUISHER CABINET OR SURFACE MTD. AT CONC.
- KB — FIRE DEPARTMENT KNOX BOX (DEFER SUBMITTAL FOR LOC.)
- FIRE DEPARTMENT CONENCTION
- 60/S — DOOR RATING
- * — DOOR WITH PANIC HARDWARE (SEE DOOR SCHEDULE)
- EXIT SIGNAGE; SEE ELECTRICAL
- EGRESS STARTING POINT
- EGRESS DISTANCE OF TRAVEL
- EGRESS DIRECTION OF TRAVEL

REFERENCE G-003 FOR GENERAL NOTES

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JOHNSON - BETTS MEADOWS

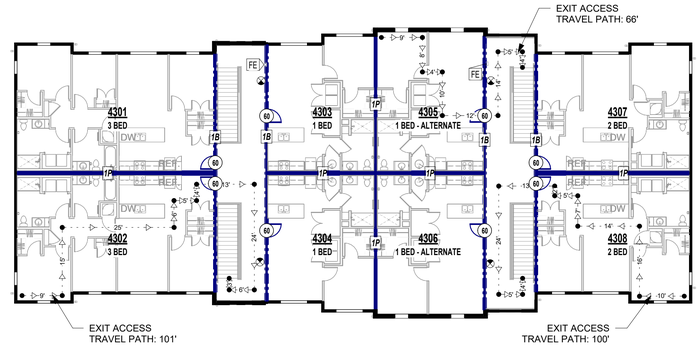
TOPEKA, KS

SHEET TITLE
CODE ANALYSIS

PROJECT NUMBER: 25144

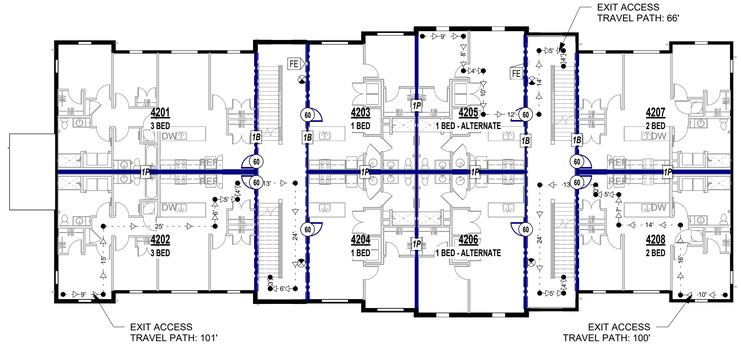
SHEET NUMBER:

G-100



C1 3RD FLOOR CODE PLAN - BUILDING A - STEPPED

1/16" = 1'-0"



B1 2ND FLOOR CODE PLAN - BUILDING A - STEPPED

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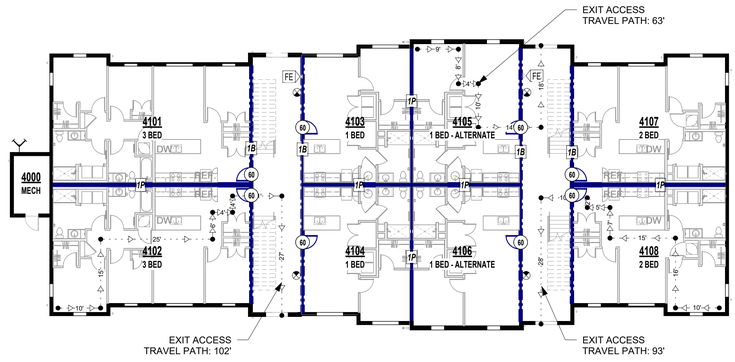

A1 1ST FLOOR CODE PLAN - BUILDING A - STEPPED

1/16" = 1'-0"

OCCUPANCY TABULATION PER 2021 IBC TABLE 1004.5 - BUILDING A - STEPPED

ROOM NO.	OCCUPANCY CHP.3	ROOM NAME	ROOM OCCUPANCY	AREA	OCC. LOAD CALC.	IBC OCC. LOAD FACTOR
4101	R-2	3 BED	Residential	1165 SF	6	200
4102	R-2	3 BED	Residential	1165 SF	6	200
4103	R-2	1 BED	Residential	684 SF	4	200
4104	R-2	1 BED	Residential	684 SF	4	200
4105	R-2	1 BED - ALTERNATE	Residential	733 SF	4	200
4106	R-2	1 BED - ALTERNATE	Residential	733 SF	4	200
4107	R-2	2 BED	Residential	907 SF	5	200
4108	R-2	2 BED	Residential	907 SF	5	200
				6978 SF	38	
4000	S	MECH	Accessory Storage Areas, Mechanical Equipment Room	105 SF	1	300
				105 SF	1	
				7083 SF	39	
4201	R-2	3 BED	Residential	1165 SF	6	200
4202	R-2	3 BED	Residential	1165 SF	6	200
4203	R-2	1 BED	Residential	684 SF	4	200
4204	R-2	1 BED	Residential	684 SF	4	200
4205	R-2	1 BED - ALTERNATE	Residential	733 SF	4	200
4206	R-2	1 BED - ALTERNATE	Residential	733 SF	4	200
4207	R-2	2 BED	Residential	907 SF	5	200
4208	R-2	2 BED	Residential	907 SF	5	200
				6978 SF	38	
				6978 SF	38	
4301	R-2	3 BED	Residential	1165 SF	6	200
4302	R-2	3 BED	Residential	1165 SF	6	200
4303	R-2	1 BED	Residential	684 SF	4	200
4304	R-2	1 BED	Residential	684 SF	4	200
4305	R-2	1 BED - ALTERNATE	Residential	733 SF	4	200
4306	R-2	1 BED - ALTERNATE	Residential	733 SF	4	200
4307	R-2	2 BED	Residential	907 SF	5	200
4308	R-2	2 BED	Residential	907 SF	5	200
				6978 SF	38	
				6978 SF	38	
Grand total: 25				21038 SF	115	

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
CODE ANALYSIS

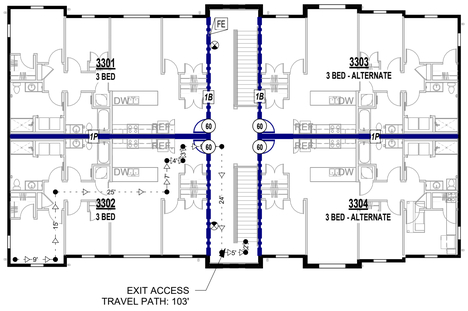
PROJECT NUMBER: 25144

SHEET NUMBER:

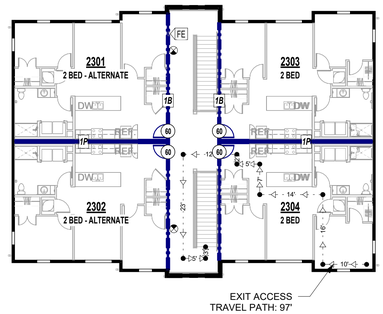
G-101

OCCUPANCY TABULATION PER 2021 IBC TABLE 1004.5 - BUILDING C						
ROOM NO.	OCCUPANCY CHP.3	ROOM NAME	ROOM OCCUPANCY	AREA	OCC. LOAD CALC.	IBC OCC. LOAD FACTOR
3004		VESTIBULE	(none)	142 SF		
3005		RR	(none)	62 SF		
3006		RR	(none)	62 SF		
3013		RR	(none)	62 SF		
				329 SF	0	
3007	A-3	COMMUNITY	Assembly Unconcentrated	878 SF	59	15
				878 SF	59	
3000	B	LEASING	Business Areas	394 SF	3	150
3001	B	OFFICE	Business Areas	123 SF	1	150
3002	B	OFFICE	Business Areas	157 SF	2	150
3003	B	MAIL	Business Areas	166 SF	2	150
3010	B	LOBBY	Business Areas	278 SF	2	150
3011	B	MEETING ROOM	Business Areas	132 SF	1	150
3012	B	CLASSROOM	Business Areas	311 SF	3	150
3014	B	MEETING ROOM	Business Areas	162 SF	2	150
3015	B	OFFICE	Business Areas	146 SF	1	150
				1870 SF	17	
3002.1	S	CLOSET	Accessory Storage Areas, Mechanical Equipment Room	43 SF	1	300
3008	S	STORAGE	Accessory Storage Areas, Mechanical Equipment Room	58 SF	1	300
3009	S	MECH	Accessory Storage Areas, Mechanical Equipment Room	66 SF	1	300
3015.1	S	CLOSET	Accessory Storage Areas, Mechanical Equipment Room	14 SF	1	300
3016	S	MAINTENANCE	Accessory Storage Areas, Mechanical Equipment Room	215 SF	1	300
3017	S	SPRINKLER	Accessory Storage Areas, Mechanical Equipment Room	222 SF	1	300
3018	S	SHOP	Accessory Storage Areas, Mechanical Equipment Room	558 SF	2	300
3019	S	MECH	Accessory Storage Areas, Mechanical Equipment Room	131 SF	1	300
				1306 SF	9	
				4382 SF	85	
3201	R-2	3 BED	Residential	1165 SF	6	200
3202	R-2	3 BED	Residential	1165 SF	6	200
3203	R-2	3 BED - ALTERNATE	Residential	1173 SF	6	200
3204	R-2	3 BED - ALTERNATE	Residential	1173 SF	6	200
				4676 SF	24	
				4676 SF	24	
3301	R-2	3 BED	Residential	1165 SF	6	200
3302	R-2	3 BED	Residential	1165 SF	6	200
3303	R-2	3 BED - ALTERNATE	Residential	1173 SF	6	200
3304	R-2	3 BED - ALTERNATE	Residential	1173 SF	6	200
				4676 SF	24	
				4676 SF	24	
Grand total: 30				13733 SF	133	

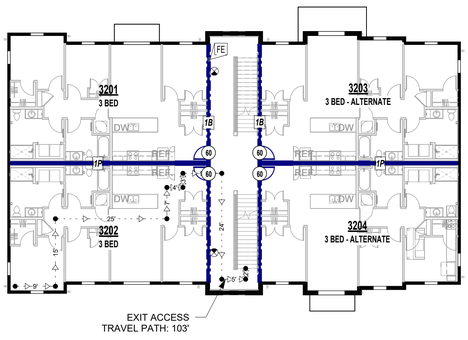
OCCUPANCY TABULATION PER 2021 IBC TABLE 1004.5 - BUILDING B						
ROOM NO.	OCCUPANCY CHP.3	ROOM NAME	ROOM OCCUPANCY	AREA	OCC. LOAD CALC.	IBC OCC. LOAD FACTOR
2101	R-2	2 BED - ALTERNATE	Residential	901 SF	5	200
2102	R-2	2 BED - ALTERNATE	Residential	901 SF	5	200
2103	R-2	2 BED	Residential	907 SF	5	200
2104	R-2	2 BED	Residential	907 SF	5	200
				3617 SF	20	
2000	S	MECH.	Accessory Storage Areas, Mechanical Equipment Room	105 SF	1	300
				105 SF	1	
				3722 SF	21	
2201	R-2	2 BED - ALTERNATE	Residential	901 SF	5	200
2202	R-2	2 BED - ALTERNATE	Residential	901 SF	5	200
2203	R-2	2 BED	Residential	907 SF	5	200
2204	R-2	2 BED	Residential	907 SF	5	200
				3617 SF	20	
				3617 SF	20	
2301	R-2	2 BED - ALTERNATE	Residential	901 SF	5	200
2302	R-2	2 BED - ALTERNATE	Residential	901 SF	5	200
2303	R-2	2 BED	Residential	907 SF	5	200
2304	R-2	2 BED	Residential	907 SF	5	200
				3617 SF	20	
				3617 SF	20	
Grand total: 13				10956 SF	61	



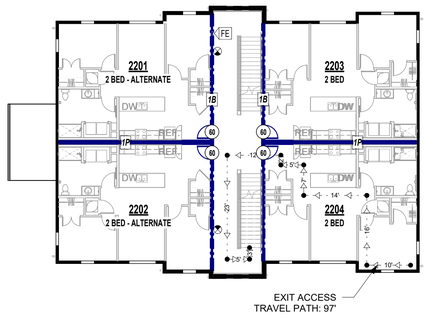
C2 3RD FLOOR CODE PLAN - BUILDING C
1/16" = 1'-0"



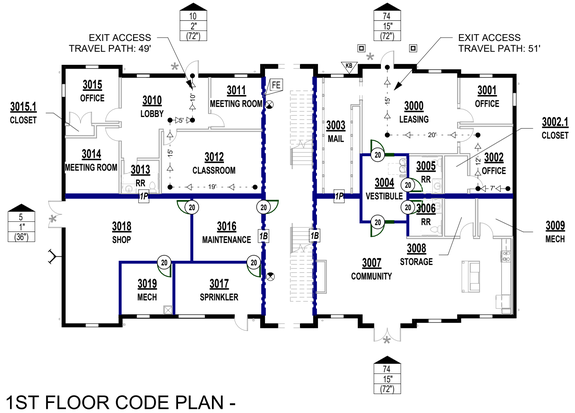
C1 3RD FLOOR CODE PLAN - BUILDING B
1/16" = 1'-0"



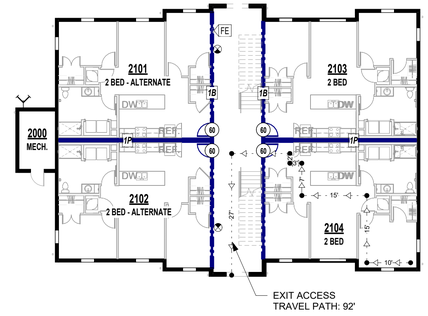
B2 2ND FLOOR CODE PLAN - BUILDING C
1/16" = 1'-0"



B1 2ND FLOOR CODE PLAN - BUILDING B
1/16" = 1'-0"



A2 1ST FLOOR CODE PLAN - BUILDING C
1/16" = 1'-0"



A1 1ST FLOOR CODE PLAN - BUILDING B
1/16" = 1'-0"

PRINTS ISSUED
12/18/25 - 95% CDs

REVISIONS:

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS
TOPEKA, KS

SHEET TITLE
CODE ANALYSIS

PROJECT NUMBER: 25144

SHEET NUMBER:
G-102

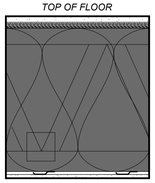
12/18/2025 9:55:36 AM
C:\Revit Local Files\25144_central_RSA_rosemannCS4RT.rvt

FLOOR/CEILING ASSEMBLY-WOOD

F1

CONCRETE - NON-RATED - SLAB ON GRADE
- CONCRETE SLAB ON GRADE PER STRUCT. DWGS.
- VAPOR BARRIER PER SPECS

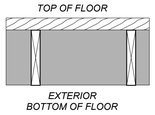
NOTES
a. SEE STRUCTURAL FOR REINFORCING AND THICKNESS
b. VERIFY SLAB ELEVATIONS WITH CIVIL AND LANDSCAPE



F3

WOOD OPEN WEB TRUSS - 1HR
- 3/4" GYPCRETE TOPPING
- 1/4" ACOUSTICAL MAT
- 19/32" MIN. PLYWOOD SHEATHING, TYPE 'C/D' , SEE ALSO NOTE b.
- WOOD TRUSSES PER STRUCTURAL, REFER TO UL FOR MIN. REQS
- UNFACED FIBERGLASS INSULATION TO MEET IECC AND STC REQUIREMENTS.
- 25 MSG GALVANIZED RESILIENT CHANNELS, SPACED PER U.L.
- (1) LAYER OF 5/8" TYPE 'C' GWB PER UL

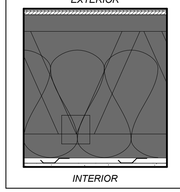
NOTES:
a. ASSEMBLY TO COMPLY WITH UL DESIGN L546 (JULY 22, 2025)
b. STRUCTURAL SHALL SUPERCEDE IF STRUCT SHEATHING IS THICKER OR DIFFERENT TYPE THAN LISTED ABOVE. PROVIDE REQ MIN ABOVE.
c. REFER TO UL FOR SCREW PATTERN.
d. STC TO BE MIN. 50 PER IBC CHAPTER 12, IIC TO BE EQUAL OR GREATER THAN 50 WHEN 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.)
e. VERIFY GWB AND RESILIENT CHANNEL WITH UL SPECIFIED, TAKE NOTE OF REQUIRED RESILIENT CHANNEL SPACING WITH INSULATION-FILLED CAVITY.
f. MIN. DEPTH OF TRUSS SHALL BE 18" WHEN DUCT PRESENT.



F21

COMPOSITE DECKING OVER 2X JOIST FRAMING PER STRUCTURAL
a. COMPOSITE DECKING OVER 2X WOOD JOIST PER STRUCTURAL. ALL FLOOR ASSEMBLY COMPONENTS TO BE WEATHER RESISTANT

ROOF/CEILING ASSEMBLY-WOOD

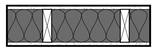


R3

WOOD SLOPED TRUSS - 1HR - SHINGLES
- ASPHALT SHINGLES PER SPECIFICATIONS
- ROOF UNDERLAYMENT PER SPECIFICATIONS
- 15/32" MIN. ROOF SHEATHING, SEE NOTE b.
- WOOD TRUSS FRAMING PER STRUCT. DWGS, MAX SPACING 24" OC - REFERENCE UL FOR CONSTRUCTION
- INSULATION PER 2021 IECC, INSTALLED PER UL
- VAPOR BARRIER CLASS 1 ON UNDERSIDE OF TRUSS, AS REQUIRED
- 25 MSG GALVANIZED STEEL RESILIENT CHANNELS, SPACED PER UL
- (1) LAYER OF 5/8" TYPE 'C' GWB

NOTES:
a. ASSEMBLY TO COMPLY WITH UL DESIGN P545 (JULY 30, 2025)
b. STRUCTURAL SHALL SUPERCEDE IF STRUCT SHEATHING IS THICKER OR DIFFERENT TYPE THAN LISTED ABOVE. PROVIDE REQ MIN ABOVE.
c. REFER TO UL FOR SCREW PATTERN

EXTERIOR BARRIER ASSEMBLIES - WOOD - 1 HR RATED



P20

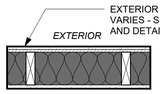
NOTE: RATED FROM INTERIOR SIDE ONLY

WOOD 2X6 STUD - 1HR BARRIER - EXTERIOR
EXTERIOR
- EXTERIOR FINISH SYSTEM PER ELEVATIONS
- WEATHER RESISTANT BARRIER, PER SPECIFICATIONS
- (1) LAYER 1/2" DENSGLASS
- (1) LAYER SHEATHING PER STRUCTURAL
- 2x6 WOOD STUDS SPACED 16" 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

INTERIOR

NOTES:
a. ASSEMBLY TO COMPLY WITH U356 (AUG 07, 2025)
b. REFER TO UL FOR SCREW PATTERN AND OTHER REQUIREMENTS
c. SHALL COMPLY WITH IBC SECTION 7 FOR FIRE BARRIERS
d. STC SHALL BE 50 OR OVER AT UNIT ASSEMBLIES, MEETING ASTM E90 (STC 51 BASED UPON TESTING NGC 2011071)
e. WHERE BARRIER DIVIDES A CORRIDOR AND A UNIT, CORRIDOR SIDE SHALL RECIEVE THE RESILIENT CHANNEL

EXTERIOR PARTITION ASSEMBLIES - WOOD - 1 HR RATED



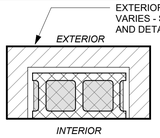
P30

WOOD 2X6 STUD - 1HR PARTITION - EXTERIOR (INTERIOR RATED)
EXTERIOR
- EXTERIOR FINISH SYSTEM PER ELEVATIONS
- WEATHER RESISTANT BARRIER, PER SPECIFICATIONS
- (1) LAYER SHEATHING PER STRUCT. DWGS.
- 2x6 WOOD STUDS SPACED 16" O.C. MAX OR PER STRUCT. DWGS.
- 5-1/2" BATT INSULATION IN STUD CAVITY, R-VALUE PER DRAWINGS/SPECIFICATIONS TO MEET IECC.
- (1) LAYER 5/8" TYPE "X" GYPSUM BOARD

INTERIOR

NOTES:
a. ASSEMBLY TO COMPLY WITH UL DESIGN U356 (AUG 07, 2025)
b. REFER TO UL FOR SCREW PATTERN AND OTHER REQUIREMENTS
c. EXTERIOR SYSTEM TO BE PER DETAILS AND ELEVATIONS

SITE WALL ASSEMBLIES

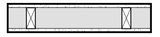


P90

CMU 8" BLOCK - SITE WALL
- EXTERIOR FINISH PER SPEC, WRAP CORNERS, BRICK WITH 1" AIR GAP SHOWN
- 8" CMU (REINFORCING PER STRUCT)

NOTES:
a. APPLY WATERPROOFING AT ALL SUBGRADE PORTION OF WALLS
b. INTERIOR EXPOSED AREAS TO BE PAINTED PER FINISH SCHEDULE

INTERIOR PARTITION ASSEMBLIES - WOOD - NON RATED



P1

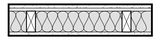
WOOD 2X4 STUD - NON-RATED PARTITION - INTERIOR
- (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD
- 2x4 WOOD STUDS SPACED 16" O.C.
- (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD

NOTES:
a. ATTACH GYPSUM WITH 1-1/4" TYPE 'W' STEEL SCREWS @ 12" O.C.

P2

WOOD 2X6 STUD - NON-RATED PARTITION - INTERIOR
- (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD
- 2x6 WOOD STUDS SPACED 16" O.C.
- (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD

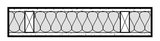
NOTES:
a. ATTACH GYPSUM WITH 1-1/4" TYPE 'W' STEEL SCREWS @ 12" O.C.



P3

WOOD 2X4 STUD - NON-RATED PARTITION - INTERIOR SOUND
- (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD
- 1/2" RESILIENT CHANNEL, SPACED 24" O.C.
- 2x4 WOOD STUDS SPACED 16" O.C.
- 3 1/2" BATT INSULATION IN STUD CAVITY
- (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD

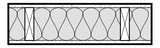
NOTES:
a. ATTACH GYPSUM WITH 1-1/4" TYPE 'W' STEEL SCREWS AT 12" O.C.



P4

WOOD 2X4 STUD - NON-RATED PARTITION - INTERIOR SOUND DAMPENING
- (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD
- 2x4 WOOD STUDS SPACED 16" O.C.
- 3 1/2" BATT INSULATION IN STUD CAVITY
- (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD

NOTES:
a. ATTACH GYPSUM WITH 1-1/4" TYPE 'W' STEEL SCREWS @ 12" O.C.



P5

WOOD 2X6 STUD - NON-RATED PARTITION - INTERIOR SOUND DAMPENING
- (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD
- 2x6 WOOD STUDS SPACED 16" O.C.
- 5 1/2" BATT INSULATION IN STUD CAVITY
- (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD

NOTES:
a. ATTACH GYPSUM WITH 1-1/4" TYPE 'W' STEEL SCREWS @ 12" O.C.

P6

WOOD 2X2 STUD - NON-RATED FURRING - INTERIOR
- (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ON OCCUPIED SIDE
- 2x2 WOOD STUDS SPACED 16" O.C.

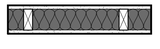
NOTES:
a. ATTACH GYPSUM WITH 1-1/4" TYPE 'W' STEEL SCREWS @ 12" O.C.

P7

WOOD 2X4 STUD - NON-RATED FURRING - INTERIOR
- (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ON OCCUPIED SIDE
- 2x4 WOOD STUDS SPACED 16" O.C.

NOTES:
a. ATTACH GYPSUM WITH 1-1/4" TYPE 'W' STEEL SCREWS @ 12" O.C.

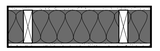
INTERIOR PARTITION ASSEMBLIES - WOOD - 1 HR RATED



P10

WOOD 2X4 STUD - 1HR PARTITION - INTERIOR
- (1) LAYER 5/8" TYPE "X" GYPSUM BOARD
- 2x4 WOOD STUDS SPACED 16" 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

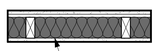
NOTES:
a. ASSEMBLY TO COMPLY WITH UL DESIGN U305 (AUG 08, 2025)
b. REFER TO UL FOR SCREW PATTERN AND OTHER REQUIREMENTS



P11

WOOD 2X6 STUD - 1HR PARTITION - INTERIOR
- (1) LAYER 5/8" TYPE "X" GYPSUM BOARD
- 2x6 WOOD STUDS SPACED 16" 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:
a. ASSEMBLY TO COMPLY WITH UL DESIGN U305 (AUG 08, 2025)
b. REFER TO UL FOR SCREW PATTERN AND OTHER REQUIREMENTS

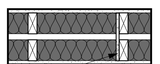


VERIFY IF WALL SHEATHING FOR SHEAR W/ STRUCT DWGS. IS REQUIRED. SHEATHING SHALL ATTACH DIRECTLY TO STUDS PER STRUCT.

P12

WOOD 2X4 STUD - 1HR PARTITION - INTERIOR SOUND DAMPENING
- (1) LAYER 5/8" TYPE "X" GYPSUM BOARD
- 25 MSG GALVANIZED STEEL RESILIENT CHANNEL, 24" O.C.
- 2x4 WOOD STUDS SPACED 16" 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:
a. ASSEMBLY TO COMPLY WITH UL DESIGN U305 (AUG 08, 2025)
b. REFER TO UL FOR SCREW PATTERN AND OTHER REQUIREMENTS
c. STC SHALL BE 50 OR OVER AT UNIT ASSEMBLIES, MEETING ASTM E90 (STC 51 BASED UPON TESTING NGC 2011071)
d. WHERE PARTITION DIVIDES A CORRIDOR AND UNIT, RESILIENT CHANNEL SHALL BE ON CORRIDOR SIDE OF WALL, GC TO COORDINATE
e. WHERE 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.

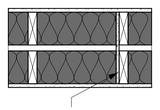


1/2" GYP DRAFT STOP @ MAX 10' O.C. (RE: IBC 718.3 FOR LOCATION REQ'S)

P14

WOOD DOUBLE 2X4 STUD - 1HR PARTITION - INTERIOR
- (1) LAYER 5/8" TYPE "X" GYPSUM BOARD
- 2x4 WOOD STUDS SPACED 16" O.C. MAX, OR PER STRUCT. DWGS.
- 3 1/2" FRICTION FIT BATT INSULATION IN STUD CAVITY
- 1" AIR GAP
- 2x4 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:
a. ASSEMBLY TO COMPLY WITH UL U341 (NOV 14, 2025)
b. REFER TO UL FOR SCREW PATTERN AND OTHER REQUIREMENTS
c. PROVIDE 1/2" GYP BOARD DRAFT STOP AT MAX 10'-0" O.C.
d. STC SHALL BE 50 OR OVER AT UNIT ASSEMBLIES, MEETING ASTM E90 (STC 61 BASED UPON TESTING TL11-120)



1/2" GYP DRAFT STOP @ MAX 10' O.C. (RE: IBC 718.3 FOR LOCATION REQ'S)

P14.1

WOOD DOUBLE 2X6 STUD - 1HR PARTITION - INTERIOR
- (1) LAYER 5/8" TYPE "X" GYPSUM BOARD
- 2x6 WOOD STUDS SPACED 16" O.C. MAX, OR PER STRUCT. DWGS.
- 5 1/2" FRICTION FIT BATT INSULATION IN STUD CAVITY
- 1" AIR GAP
- 2x6 WOOD STUDS SPACED 16" O.C. MAX, OR PER STRUCT. DWGS.
- 5 1/2" FRICTION FIT BATT INSULATION IN STUD CAVITY
- (1) LAYER 5/8" TYPE "X" GYPSUM BOARD

NOTES:
a. ASSEMBLY TO COMPLY WITH UL U341 (NOV 14, 2025)
b. REFER TO UL FOR SCREW PATTERN AND OTHER REQUIREMENTS
c. PROVIDE 1/2" GYP BOARD DRAFT STOP AT MAX 10'-0" O.C.
d. STC SHALL BE 50 OR OVER AT UNIT ASSEMBLIES, MEETING ASTM E90 (STC 61 BASED UPON TESTING TL11-120)

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
ASSEMBLIES - PARTITION, CEILING, ROOF

PROJECT NUMBER: 25144

SHEET NUMBER:

G-103

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UL DESIGN - L516

UL Product iQ®

UL Solutions

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

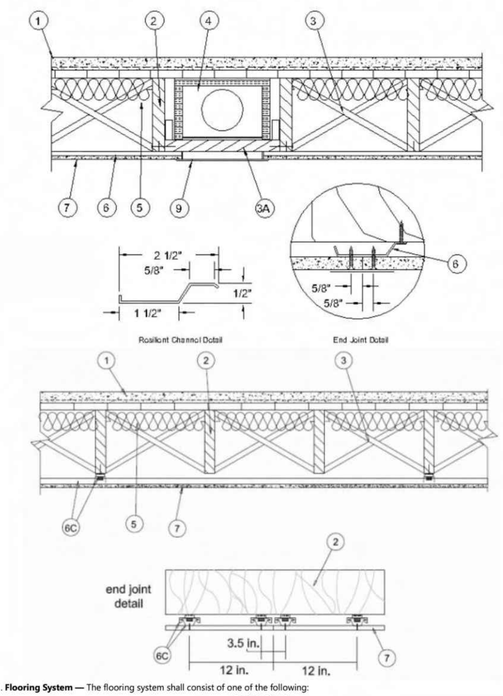
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. **L516**

July 4, 2025

Unrestrained Assembly Rating — 1 Hr.
Finish Rating — 28 Min. or (16 Min. See Item 7B)
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. **Flooring System —** The flooring system shall consist of one of the following:
System No. 1

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered.

Wire Reinforcement — Hexagonal mesh constructed of No. 19 SWG galv steel wire with No. 16 SWG galv steel wire woven longitudinally into the mesh spaced 3 in. OC. Mesh installed with No. 16 SWG wires perpendicular to joists and lapped 5 in. at the sides.

Sheathing Material* — Polyethylene film vapor barrier.

See **Sheathing Materials** (BVDV) Category in the Building Materials Directory for names of manufacturers.

Finish Flooring Perlite Concrete — Min 1-5/8 in. thickness of perlite-sand concrete, having a min compressive strength of 2000 psi. Mixture shall consist of 1 part Portland cement, 2 parts sand and 3 parts **Perlite Aggregate***.

See **Perlite Aggregate** (CFFX) category for names of manufacturers.

System No. 2

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered.

Mineral and Fiber Board* — Min 1/2 in. thick, supplied in sizes ranging from 3 ft by 4 ft to 8 ft by 12 ft. All joints to be staggered a min of 12 in. with adjacent sub-floor joints.

HOMASOTE CO — Type 440-32 Mineral and Fiber Board

System No. 3

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered.

Floor Mat Materials* - (Optional) — Floor mat material nom 1/8 in. (3mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 3/4 in. (19mm)

HACKER INDUSTRIES INC — FIRM-FILL SCM 125

Alternate Floor Mat Materials - (Optional) — Floor mat material nom 1/4 in. (6mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1 in. (25mm)

HACKER INDUSTRIES INC — Types FIRM-FILL SCM 250 and FIRM-FILL SCM 250+

Alternate Floor Mat Materials - (Optional) — Floor mat material nom 3/8 in. (10mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1-1/4 in. (32mm)

HACKER INDUSTRIES INC — Types FIRM-FILL SCM 400 and FIRM-FILL SCM 400+

Alternate Floor Mat Materials - (Optional) — Floor mat material nom 3/4 in. (19mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1-1/2 in. (38mm)

HACKER INDUSTRIES INC — Types FIRM-FILL SCM 750 and FIRM-FILL SCM 750+

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 5/64 in. (2mm) thick adhered to subfloor with Hacker Floor Primer. Primer to be applied to the surface of the mat prior to the placement of a min 1 in. of floor-topping mixture.

HACKER INDUSTRIES INC — Type Hacker Sound-Mat.

Alternate Floor Mat Materials - (Optional) — Floor mat material nom 1/4 in. (6mm) thick adhered to subfloor with Hacker Floor Primer. Primer to be applied to the surface of the mat prior to the placement of a min 1-1/4 in. (32mm) of floor-topping mixture.

HACKER INDUSTRIES INC — Type Hacker Sound-Mat II.

Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

UNITED STATES GYPSUM CO — Types SAM, LEVELROCK® Brand Sound Reduction Board, LEVELROCK® Brand Floor Underlayment SRM-25

Alternate Floor Mat Materials* — (Optional) - Nom 3/8 in. thick floor mat material loose laid over the subfloor.

GRASSWORX L L C — Type SC50

System No. 7

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the joists with joints staggered.

Vapor Barrier — (Optional) - Commercial asphalt saturated felt, 0.030 in. thick.

Vapor Barrier — (Optional) - Nom 0.010 in. thick commercial rosin-sized building paper.

Finish Flooring* — Min 3/4 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance. See Floor- and Roof-Topping Mixtures (CCOX) category for names of Classified Companies. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

Floor Mat Materials* — (Optional) - Nom. 1/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 55/025 and Quiet Qurl 55/025 N

Alternate Floor Mat Materials* — (Optional) - Floor mat material Nom. 3/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 60/040 and Quiet Qurl 60/040 N

Alternate Floor Mat Materials* — (Optional) - Floor mat material Nom. 3/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1-1/2 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 65/075, Quiet Qurl 65/075 N

Alternate Floor Mat Materials* — (Optional) - Floor mat material Nom. 1/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 52/013 and Quiet Qurl 52/013 N

Alternate Floor Mat Materials* — (Optional) - Floor mat material Nom. 1/4 in. entangled net core with a compressible fabric attached to the bottom loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

KEENE BUILDING PRODUCTS CO INC — Quiet Qurl 55/025 MT and Quiet Qurl 55/025 N MT

System No. 8

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered.

Vapor Barrier - (Optional) — Nom 0.010 in. thick commercial rosin-sized building paper.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

ARCOSA SPECIALTY MATERIALS — AccuCrete® Types NexGen, Green, Prime and PrePour, AccuRadiant®, AccuLevel® Types G40, G50 and SD30

Floor Mat Material* — (Optional) - Floor mat material nominal 2 - 9.5 mm thick loose laid over the subfloor. Floor topping shall be a min of 3/4 in.

Metal Lath (Optional) — For use with 3/8 in. (10 mm) floor mat materials, 3/8 in. expanded steel diamond mesh, 3.4 lbs/sq yd placed over the floor mat material. Hacker Floor Primer to be applied prior to the placement of the metal lath. When metal lath is used, floor topping thickness a nom 1-1/4 in. over the floor mat.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a min compressive strength of 1100 psi. Mixture shall consist of 6.8 gal of water to 80 lbs of floor topping mixture to 1.9 cu ft of sand.

HACKER INDUSTRIES INC — Type Firm-Fill Gypsum Concrete, Firm-Fill 2010, Firm-Fill 4010, Firm-Fill High Strength, Gyp-Span Radiant, Firm-Fill 3310

System No. 4

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered.

Finish Flooring - Floor Topping Mixture* — Min 3/4 thickness of floor topping mixture having a minimum compressive strength of 1500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

MAXXON CORP — Type Maxxon Standard and Maxxon High Strength

Floor Mat Materials* - (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

MAXXON CORP — Type Encapsulated Sound Mat.

Floor Mat Reinforcement - (Optional) - Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath (Optional) — 3/8 in. expanded galvanized steel diamond mesh, 3.4 lbs/sq yd loose laid over the floor mat material.

Fiber Glass Reinforcement - (Optional, Not Shown) - 0.015 in. thick PVC coated non-woven fiberglass mesh, 0.368 lbs/sq yd loose laid over the floor mat material.

System No. 5

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered.

Vapor Barrier — (Optional) Nom 0.010 in. thick commercial rosin-sized building paper.

Finish Flooring — Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

FORMULATED MATERIALS LLC — FR-25, FR-30, SiteMix, and Treadstone Advantage

Floor Mat Material* — (Optional) Floor mat material nominal 2 - 9.5 mm thick loose laid over the subfloor. Floor topping shall be a min of 3/4 in.

FORMULATED MATERIALS LLC — Types M1, M2, M3, Elite, Duo, R1, R2, and Treadstone Elite Max

System No. 6

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered.

Vapor Barrier — (Optional) - Nom 0.010 in. thick commercial asphalt saturated felt.

Finish Flooring - Floor Topping Mixture* - — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 1800 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

UNITED STATES GYPSUM CO — Types LRK, HSLRK, CSD

USG MEXICO S A DE C V — Types LRK, HSLRK, CSD

ARCOSA SPECIALTY MATERIALS — AccuQuiet Types D13, D-18, D25, DX38, EM.125, EM.125S, EM.250, EM.250S, EM.375, EM.375S, EM.750, and EM.750S.

System No. 9

Subflooring — Min 23/32 in. thick T&G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with end joints staggered 4 ft. Panels secured to trusses with construction adhesive and No. 6d ringed shank nails spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Gypsum Board* — One layer of nom 5/8 in. thick, 4 ft wide gypsum board, installed with long dimension perpendicular to joists. Gypsum board secured with 1 in. long No. 6 Type W bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. The joints of the gypsum board are to be staggered a minimum of 12 inches from the joints of the subfloor.

GEORGIA-PACIFIC GYPSUM L L C — Type DS

Floor Mat Materials* — (As an alternate to the single layer gypsum board) - Floor mat material loose laid over the subfloor.

MAXXON CORP — Type Encapsulated Sound Mat.

Gypsum Board* — (For use when floor mat is used) Two layers of nom 5/8 in. thick, 4 ft wide gypsum board, installed with long dimension perpendicular to joists on top of the floor mat material. Gypsum board secured to each other with 1 in. long No. 6 Type G bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. The joints of the gypsum board are to be staggered a minimum of 12 inches in between layers and from the joints of the subfloor.

GEORGIA-PACIFIC GYPSUM L L C — Type DS

System No. 10

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the joists with joints staggered.

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

Finish Flooring — Floor Topping Mixture* — Min 3/4 or 1 in. thickness of floor topping mixture for 19/32 or 15/32 in. thick wood structural panels respectively, having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.
DEPENDABLE LLC — Types GSL M3.4, GSL K2.6, GSL-CSD and GSL RH

Floor Mat Materials* — (Optional) — Nom. 1/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.
KEENE BUILDING PRODUCTS CO INC — Types Quiet Qurl 55/025 and Quiet Qurl 55/025 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 3/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.
KEENE BUILDING PRODUCTS CO INC — Types Quiet Qurl 60/040 and Quiet Qurl 60/040 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 3/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1-1/2 in.
KEENE BUILDING PRODUCTS CO INC — Types Quiet Qurl 65/075 and Quiet Qurl 65/075 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 1/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.
KEENE BUILDING PRODUCTS CO INC — Types Quiet Qurl 52/013 and Quiet Qurl 52/013 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 1/4 in. entangled net core with a compressible fabric attached to the bottom loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.
KEENE BUILDING PRODUCTS CO INC — Types Quiet Qurl 55/025 MT and Quiet Qurl 55/025 N MT

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PRELIMINARY
NOT FOR
CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
UL ASSEMBLIES - L516

PROJECT NUMBER: 25144

SHEET NUMBER:

G-200

UL DESIGN - L516 (CONT.)

System No. 11

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered.

Finish Flooring* — Floor Topping Materials — Min 3/4 in. to 1-1/2 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance with a minimum compressive strength of 1500 psi.
See **Floor- and Roof-Topping Mixtures** (CCOX) category for names of Classified Companies.

Floor Mat Materials* — (Optional) — Floor mat material nom 1/8 in. to 3/4 in. thick. Loose laid over the subfloor. When used, Acousti-flor CSM (crack suppression mat) is loose laid over the floor mat material. Floor topping material thickness is dependent on thickness of floor mat used.
WALFLOR INDUSTRIES INC — Type Acousti-flor, Acousti-flor CSM. Floor topping thickness depends on products used as follows:

Acousti-flor (1/8 in. thick) - Floor topping thickness shall be a minimum of 3/4 in.

Acousti-flor (1/4 in. thick) - Floor topping thickness shall be a minimum of 1 in.

Acousti-flor (3/8 in. thick) - Floor topping thickness shall be a minimum of 1 in.

Acousti-flor (3/4 in. thick) - Floor topping thickness shall be a minimum of 1-1/2 in.

Metal Lath — (Optional) — Expanded steel diamond mesh, 2.5 lb / sq yd loose laid over floor mat material.

Fiberglass Mesh Reinforcement — (Optional) — Coated non-woven glass fiber mesh grid loose laid over floor mat material.

System No. 12

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

ALPHAGYP, LLC — Type AlphaGyp

System No. 12

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered.

Finish Flooring - Floor Topping Mixture* — Min 1 in. thickness of floor topping mixture having a min compressive strength of 4500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.
SIKA DEUTSCHLAND GMBH — Type SCHONOX AP Rapid Plus

System No. 13

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered.

Vapor Barrier — (Optional) - Commercial asphalt saturated felt, 0.030 in. thick.

Vapor Barrier — (Optional) - Nom 0.010 in. thick commercial rosin-sized building paper.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance. See Floor- and Roof-Topping Mixtures (CCOX) category for names of Classified Companies.

RUSKIN COMPANY — Model CFD7

UNITED ENERTECH CORP — Models C-S/R-HC(-A), C-RD-HC(-A)

5. **Batts and Blankets* - (Optional) —** Nom 48 by 16 by 3 in. thickness of glass fiber batts secured to joists on both sides with staples spaced 12 in. OC.
CERTAINTEED CORP

KNAUF INSULATION LLC

JOHNS MANVILLE

KNAUF INSULATION LLC

MANSON INSULATION INC

OWENS CORNING

6. **Resilient Channels —** Resilient channels, formed from No. 25 MSG galv steel and shaped as shown, spaced 24 in. OC perpendicular to joists. Channels overlapped 1/2 in. at ends and secured to each joist with one 1-1/4 in. long No. 7 Type S bugle head screw. Additional resilient channels positioned so as to coincide with end joints of gypsum board (Item 7). Additional channels shall extend min 3 in. beyond each side edge of board. Channel spaced 16 in. OC when used with Item 7D.

6A. **Steel Framing Members* —** (Not Shown) - As an alternate to Item 6. Used with Item 7A only.
a. **Furring Channels —** Hat-shaped furring channels, 7/8 in. deep by 2-5/8 in. wide at the base and 1-1/4 in. wide at the face, formed from No. 25 ga. galv steel, spaced max. 16 in. OC perpendicular to joists and Cold Rolled Channels (Item 6Ab). Furring channels secured to Cold Rolled Channels at every intersection with a 1/2 in. pan head self-drilling screw through each furring channel leg. Ends of adjoining channels overlapped 4 in. and tied together with two double strand No. 18 SWG galv steel wire ties, one at each end of overlap. Supplemental furring channels at base layer and outer layer gypsum board butt joints are not required. Optional Batts and Blankets may be draped over furring channels as described in Item 5. Two layers of gypsum board attached to furring channels as described in Item 7A.

b. **Cold Rolled Channels —** 1-1/2 in. by 1/2 in., formed from No. 16 ga. galv steel, positioned vertically and parallel to joists, friction-fitted into the channel caddy on the Steel Framing Members (Item 6Ad). Adjoining lengths of cold rolled channels lapped min. 6 in. and wire-tied together with two double strand 18 SWG galv steel wire ties, one at each end of overlap.

c. **Blocking —** Where joist design does not permit direct, full contact of the hanger bracket, a piece of nominal 2 by 4 in. lumber (blocking), min. 6 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the joists (Item 2) at the top and bottom of the blocking at each Steel Framing Member (Item 6Ad) location.

d. **Steel Framing Members* —** Hangers spaced 48 in. OC. max along joist, and secured to the Blocking (Item 6Ac) on alternating joists with a single 5/16 in. by 2 in. hex head lag bolt or four #6 1-1/4 in. drywall screws through mounting hole(s) on the hanger bracket. The two 1/4 in. long steel teeth on the hanger are embedded in the side of the blocking. Hanger positioned on blocking and leveling bolt height adjusted such that furring channels are flush with bottom of joists before gypsum board installation. Spring gauge of hanger chosen per manufacturer's instructions.
KINETICS NOISE CONTROL INC — Type ICW.

6B. **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 24 in. OC perpendicular to joists. Channels secured to joists 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 joists (Item 2). Clips spaced 48 in. OC. RSIC-1 and RSIC-1 (2.75) secured to alternating joists with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. RSIC-V and RSIC-V (2.75) clips secured to alternating trusses with No. 8 x 1-1/2 in. coarse drywall screw through the center hole. RSIC-Si-X secured to alternating joists with No. 10 x 3-1/2 in. coarse screw. Furring channels are friction fitted into clips. RSIC-1, RSIC-Si-X, and RSIC-V clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) and RSIC-V (2.75) clips for use with 2-23/32 in. wide furring channels.

a. **Furring Channels —** Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to joists and friction fit into Steel Framing Members (Item 6Gb). 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 or with two TEK screws along each leg of the 6 in. overlap. Two furring channels positioned 6 in. OC, 3 in. on each side of gypsum board (Item 7) end joints. Butt joint channels held in place by strong back channels placed upside down, on top of, and running perpendicular to primary furring channels, extending 6 in. longer than length of gypsum side joint. Strong back channels spaced maximum 48 in. OC. Strong back channels secured to every intersection of primary furring channels with four 7/16 in. pan head screws, two along each of the legs at intersections. Butt joint channels run perpendicular to strong back channels and shall be minimum 6 in. longer than length of joint, secured to strong back channels with 7/16 in. pan head screws, two along each of the legs at intersection with strong back channels.

b. **Steel Framing Members* —** Used to attach furring channels (Item 6Ga) to joists. Clips spaced 48 in. OC and secured along joist webs at each furring channel intersection with min. 3/4 in. long self-drilling #10 x 1-1/2 in. screws through each of the provided hole locations. Furring channels are friction fitted into clips.
PAC INTERNATIONAL L L C — Type RSIC-S1-1 Ultra

7. **Gypsum Board* —** Nom 5/8 in. thick, 48 in. wide gypsum board, installed with long dimension perpendicular to resilient channels and side edges located between joists. Gypsum board secured with 1 in. long No. 7 Type S bugle head screws spaced 12 in. OC. End joints of gypsum board similarly fastened to additional resilient channels positioned at end joint locations. Screws located 3/4 and 5/8 in. from side and end joints, respectively.
When **Steel Framing Members*** (Item 6B, 6C) are used, sheets installed with long dimension perpendicular to furring channels and side joints of sheet located beneath joints. Nom 1 in. long No. 6 Type S bugle head screws are driven through channel spaced 12 in. OC in the field. Gypsum board butt joints shall be staggered min. 2 ft. within the assembly, and occur between the 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 6 in. on each end. The two furring channels shall be spaced approximately 3-1/2 in. OC, and be attached to the joist with one clip at each end of the channel. Screw spacing along the butt joint to attach the gypsum board to the furring channels shall be 8 in. OC.

When **Steel Framing Members** (Item 6D) 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 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 6E) 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 joist beyond the width of the gypsum panel and be attached to the adjacent joists with one SonusClip at every joist involved with the butt joint.

When **Steel Framing Members** (Item 6F) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 7. Adjacent butt joints staggered minimum 48 in. OC.

When **Steel Framing Members** (Item 6G) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 7. Butt joints staggered minimum 24 in. OC.

AMERICAN GYPSUM CO — Type AG-C

CABOT MANUFACTURING ULC — 5/8 in. Type C.

CERTAINTEED GYPSUM INC — Type C

CGC INC — Type C, IP-X2, IPC-AR

CERTAINTEED GYPSUM INC — Type LGFC-C/A

Floor Mat Materials* — (Optional, Not Shown) - Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.
Freudenberg Performance Materials LP — EnkaSonic® by Colbond a member of the Low & Bonar group Types 125, 250, 250 Plus, 400, 400 Plus, 750, and 750 Plus.

Floor Mat Reinforcement — (Optional) - Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath — (Optional) — Expanded steel diamond mesh, 2.5 lb / sq yd loose laid over floor mat material.

Fiberglass Mesh Reinforcement — (Optional) — Coated non-woven glass fiber mesh grid loose laid over floor mat material.

System No. 14

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered.

Finish Flooring - Floor Topping Mixture* — Min 1 in. thickness of floor topping mixture having a min compressive strength of 2500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

Apex Minerals LLC — Type Apex Multi Underlayment

2. **Wood Joists —** Min 2 by 10, spaced 16 in. OC and effectively fireblocked in accordance with local codes.

3. **Cross Bridging —** Min 1 by 3 in. or min 2 by 10 in. solid blocking.

3A. **Horizontal Bridging —** Used in lieu of Item 3 in same joist bay as ceiling damper (Item 4), when ceiling damper is employed. Wood 2 by 4 in. secured between joists with nails.

4. **Ceiling Damper* - (Optional) —** Max nom area shall be 198 sq in. Max rectangular size shall be 12 in. wide by 16-1/2 in. long. Max height of damper shall be 8-3/4 in. Aggregate damper openings shall not exceed 99 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.
AIR BALANCE INC — Type 299 (See Item 7B)

CENTRAL VENTILATION SYSTEMS CO L L C — Models C-S/R-HC(-A), C-RD-HC(-A)

JAMIL ALI NASSER AL-ZADJALI FOR INDUSTRY— Models C-S/R-HC(-A), C-RD-HC(-A)

BADR & ASFOUR COMPANY FOR ENGINEERING AND METAL INDUSTRIES — Models C-S/R-HC(-A), C-RD-HC(-A)

GREENHECK FAN CORP — Model CRD-1WJ

METAL-FAB INC — Models MSCDHC, MRCDHC

BRISK MFG INC — Model BMI-50-CRD-S/R-WT

PRICE INDUSTRIES LTD — Models CD-S/R-HC, CD-RD-HC

Adjoining channels are overlapped as described in Item a. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 7.
PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-V, RSIC-1 (2.75), RSIC-V (2.75), RSIC-Si-X.

6C. **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, 2-3/8 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to joists. Channels secured to joists 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 joists (Item 2). Clips spaced 48 in. OC., and secured to alternating joists with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. Furring channels are friction fitted into clips. Adjoining channels are overlapped as described in Item a. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 7.
PLITEQ INC — Type GENIECLIP

6D. **Alternate 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, 2-5/8 in. wide by 7/8 in deep, spaced 24 in OC, perpendicular to joists. Channels secured to joists as described in Item b.

b. **Steel Framing Members* —** Used to attach furring channels (Item a) to the wood joists (Item 2). Clips spaced at 48 in. OC and secured to the bottom of the joists 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

6E. **Alternate 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, 2-1/2 in. wide by 7/8 in deep, spaced 24 in OC, perpendicular to joists. Channels secured to joists as described in Item b.

b. **Steel Framing Members* —** Used to attach furring channels (Item a) to the wood joists (Item 2). Clips spaced at 48 in. OC and secured to the bottom of the joists 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

6F. **Steel Framing Members* —** (Optional, Not Shown) — As an alternate to Item 6.
a. **Furring Channels —** Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced 24 in. OC, perpendicular to the joists. Channels secured to Cold Rolled Channels at every intersection with a 3/4 in. TEK screw through each furring channel leg. Ends of adjoining channels overlapped 12 in. and fastened together with two double strand No. 18 SWG galv steel wire ties, one at each end of overlap, or with two 3/4 in. TEK screws in each leg of the overlap section. Two furring channels positioned 3 in. OC, 1-1/2 in. on each side of gypsum board (Item 7) end joints, each extending a min of 6 in. beyond both side edges of the board.

b. **Cold Rolled Channels —** — 1-1/2 in. by 1/2 in., formed from No. 16 ga. galv steel, positioned vertically and parallel to joists, friction-fitted into the channel caddy on the Steel Framing Members (Item 6Fc) and secured with two 3/4 in. TEK screws. Adjoining lengths of cold rolled channels lapped min. 12 in. and secured along bottom legs with four 3/4 in. TEK screws and wire-tied together with two double strand 18 SWG galv steel wire ties, one at each end of overlap.

c. **Steel Framing Members* —** Spaced 48 in. OC. max along joist, and secured to the joist on alternating joists with two, #10 x 1-1/2 in. screws through mounting holes on the hanger bracket.
PAC INTERNATIONAL L L C — Type RSIC-SI-CRC EZ Clip

6G. **Steel Framing Members* —** (Optional, Not Shown) — As an alternate to Item 6.

GEORGIA-PACIFIC GYPSUM L L C — Types 5, DAPC, TG-C.

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

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

PANEL REY S A — Type PRC

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

7A. **Gypsum Board —** When **Steel Framing Members** (Item 6A) are used, two layers of nom 5/8 in. thick, 4 ft wide gypsum board are installed with long dimensions perpendicular to furring channels (Item 6Aa). Base layer attached to the furring channels using 1 in. long Type S bugle head steel screws spaced 8 in. OC along butted end joints and 12 in. OC in the field of the board. Butted end joints centered on the continuous furring channels. Butted base layer end joints to be offset a min of 16 in. in adjacent courses. Outer layer attached to the furring channels using 1-5/8 in. long Type S bugle head steel screws spaced 8 in. OC at butted end joints and 12 in. OC in the field. Butted end joints centered on the continuous furring channels and offset a min of 16 in. from butted end joints of base layer. Butted side joints of outer layer to be offset min 16 in. from butted side joints of base layer.
CGC INC — Type 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

7B. **Gypsum Board* —** (Finish Rating - 16 min.) Required when Air Balance Inc. Type 299 ceiling damper (Item 4) is installed. Nom 5/8 in. thick, 48 in. wide gypsum board, installed and secured as described in items 7 and 7A.
UNITED STATES GYPSUM CO — Type C

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Type C

7C. **Gypsum Board* (As an alternative to Items 7, 7A and 7B) —** Nom 5/8 in. thick, 48 in. wide gypsum board, installed and secured as described in Items 7, 7A and 7B with max screw spacing 8 in. OC.
CGC INC — Type ULIX

UNITED STATES GYPSUM CO — ULIX

7D. **Gypsum Board* (As an alternate to Item 7) —** Nom 5/8 in. thick, 4 ft. wide gypsum board, installed and secured as described in Item 7 with screws spaced max. 8 in. OC.

NATIONAL GYPSUM CO — Type FSLX

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PRELIMINARY
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CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
UL ASSEMBLIES - L516

PROJECT NUMBER: 25144

SHEET NUMBER:

G-201

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UL DESIGN - L516 (CONT.)

8. **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.

9. **Grille —** Steel 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 4, Ruskin Company's Model CFD7 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

*** 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 2025-07-04

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
UL ASSEMBLIES - L516

PROJECT NUMBER: 25144

SHEET NUMBER:

G-202

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UL DESIGN - L546

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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

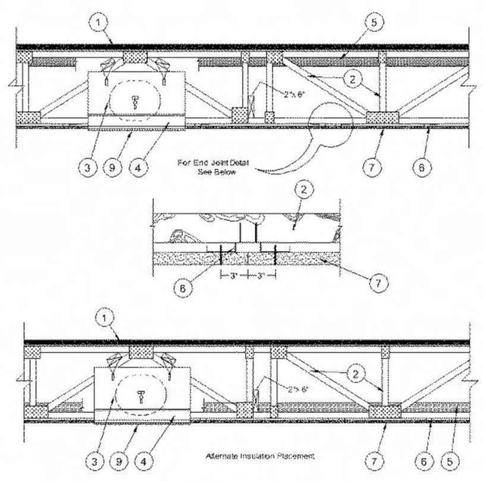
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. **L546**

July 22, 2025

Unrestrained Assembly Rating — 1 Hr
Finish Rating — 24 or 25 Min (See Item 5)
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. **Flooring System —** The flooring system shall consist of one of the following:

System No. 1

Subflooring — Min 15/32 or 19/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered.

Finish Flooring - Floor Topping Mixture* — Min 3/4 thickness of floor topping mixture having a minimum compressive strength of 1500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

MAXXON CORP — Types Maxxon Standard and Maxxon High Strength

Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

MAXXON CORP — Type Encapsulated Sound Mat

Floor Mat Reinforcement — (Optional) Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath — (Optional) — 3/8 in. expanded galvanized steel diamond mesh, 3.4 lbs/sq yd loose laid over the floor mat material.

Fiber Glass Reinforcement - (Optional, Not Shown) - 0.015 in. thick PVC coated non-woven fiberglass mesh, 0.368 lbs/sq yd loose laid over the floor mat material.

System No. 2

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered.

Finish Floor — Mineral and Fiber Board* — Min 1/2 in. thick, supplied in sizes ranging from 3 ft by 4 ft to 8 ft by 12 ft. All joints to be staggered a min of 12 in. with adjacent sub-floor joints.

HOMASOTE CO — Type 440-32 Mineral and Fiber Board

System No. 3

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with joints staggered.

Vapor Barrier — (Optional) — Nom 0.030 in thick commercial asphalt saturated felt.

Finish Flooring — Floor Topping Mixture* — Min 1-1/2 in. thickness of floor topping mixture having a min compressive strength of 1000 psi and a cast density of 100 plus or minus 5 pcf. Foam concentrate mixed 40:1 by volume with water and expanded at 100 psi through nozzle. Mixture shall consist of 1.4 cu feet of preformed foam concentrate to 94 lbs Type I Portland cement, 300 lbs of sand with 5-1/2 gal of water.

ELASTIZELL CORP OF AMERICA — Type FF

System No. 4

Subflooring — Min 15/32 or 19/32 in. thick wood structural panels, min grade C-D or Sheathing. Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered.

Vapor Barrier — (Optional) Nom 0.030 in. thick commercial asphalt saturated felt.

Finish Flooring — Floor Topping Mixture* —Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 1500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

FORMULATED MATERIALS LLC — Types FR-25, FR-30, SiteMix, and Treadstone Advantage

Alternate Floor Mat Material* — (Optional) Floor mat material nominal 2 - 9.5 mm thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

FORMULATED MATERIALS LLC — Types M1, M2, M3, Elite, Duo, R1, and R2

System No. 5

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered.

Floor Mat Materials* — (Optional) — Floor mat material nom 1/8 in. (3mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 3/4 in. (19 mm)

HACKER INDUSTRIES INC — FIRM-FILL SCM 125

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 1/4 in. (6 mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1 in. (25 mm)

HACKER INDUSTRIES INC — Types FIRM-FILL SCM 250 and FIRM-FILL SCM 250+

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 3/8 in. (10 mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1-1/4 in. (32mm)

HACKER INDUSTRIES INC — Types FIRM-FILL SCM 400 and FIRM-FILL SCM 400+

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 3/4 in. (19 mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1-1/2 in. (38mm)

HACKER INDUSTRIES INC — Types FIRM-FILL SCM 750 and FIRM-FILL SCM 750+

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 5/64 in. (2 mm) thick adhered to subfloor with Hacker Floor Primer. Primer to be applied to the surface of the mat prior to the placement of a min 1 in. of floor-topping mixture.

HACKER INDUSTRIES INC — Type Hacker Sound-Mat.

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 1/4 in. (6 mm) thick adhered to subfloor with Hacker Floor Primer. Primer to be applied to the surface of the mat prior to the placement of a min 1-1/4 in. (32 mm) of floor-topping mixture.

HACKER INDUSTRIES INC — Type Hacker Sound-Mat II.

Metal Lath — (Optional) — For use with 3/8 in. (10 mm) floor mat materials, 3/8 in. expanded steel diamond mesh, 3.4 lbs/sq yd placed over the floor mat material. Hacker Floor Primer to be applied prior to the placement of the metal lath. When metal lath is used, floor topping thickness a nom 1-1/4 in. over the floor mat.

Finish Flooring — Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a min compressive strength of 1100 psi. Mixture shall consist of 6.8 gal of water to 80 lbs of floor topping mixture to 1.9 cu ft of sand.

HACKER INDUSTRIES INC — Firm-Fill Gypsum Concrete, Firm-Fill 2010, Firm-Fill 3310, Firm-Fill 4010, Firm-Fill High Strength, Gyp-Span Radiant

System No. 6

Subflooring — Min 15/32 or 19/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered.

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

Finish Flooring — Floor Topping Mixture* — Min 3/4 or 1 in. thickness of floor topping mixture for 19/32 or 15/32 in. thick wood structural panels respectively, having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

ARCOSA SPECIALTY MATERIALS — AccuCrete® Types NexGen, Green, Prime and PrePour, AccuRadiant®, AccuLevel® Types G40, G50 and SD30

Alternate Floor Mat Material* — (Optional) — Floor mat material nominal 2 - 9.5 mm thick loose laid over the subfloor. Floor topping shall be a min of 3/4 in. or 1 in. thickness of floor topping for 19/32 or 15/32 in. thick wood structural panels respectively.

ARCOSA SPECIALTY MATERIALS — AccuQuiet® Types D13, D-18, D25, DX38, EM.125, EM.125S, EM.250, EM.250S, EM.375, EM.375S, EM.750, and EM.750S.

System No. 7

Subflooring — 15/32 or 19/32 in. thick wood structural panels, min. grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to joists with joints staggered.

Vapor Barrier — (Optional) — Commercial asphalt saturated felt 0.030 in. thick.

Finish Flooring — Floor Topping Mixture* — Compressive strength to be 2100 psi min. Thickness to be 3/4 in. min for 19/32 in thick wood structural panels or 1 in. min. for 15/32 in thick wood structural panels. Refer to manufacturer's instructions accompanying the material for specific mix design. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

System No. 8

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with joints staggered.

Vapor Barrier — (Optional) — Nom 0.010 in. thick commercial asphalt saturated felt.

Finish Flooring — Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 1800 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

UNITED STATES GYPSUM CO — Types LRK, HSLRK, CSD

USG MEXICO S A DE C V — Types LRK, HSLRK, CSD

Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

UNITED STATES GYPSUM CO — Types SAM, LEVELROCK® Brand Sound Reduction Board, LEVELROCK® Brand Floor Underlayment SRM-25

Alternate Floor Mat Materials* — (Optional) - Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding minimum thickness of floor topping over floor mat.

GRASSWORX L L C — SC Types

System No. 9

Subflooring — Min 23/32 in. thick T&G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with end joints staggered 4 ft. Panels secured to trusses with construction adhesive and No. 6d ringed shank nails spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Gypsum Board* — One layer of nom 5/8 in. thick, 4 ft wide gypsum board, installed with long dimension perpendicular to joists. Gypsum board secured with 1 in. long No. 6 Type W bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. The joints of the gypsum board are to be staggered a minimum of 12 inches from the joints of the subfloor.

GEORGIA-PACIFIC GYPSUM L L C — Type DS

Floor Mat Materials* — (As an alternate to the single layer gypsum board) — Floor mat material loose laid over the subfloor.

MAXXON CORP — Type Encapsulated Sound Mat

Gypsum Board* — (For use when floor mat is used) Two layers of nom 5/8 in. thick, 4 ft wide gypsum board, installed with long dimension perpendicular to joists on top of the floor mat material. Gypsum board secured to each other with 1 in. long No. 6 Type G bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. The joints of the gypsum board are to be staggered a minimum of 12 inches in between layers and from the joints of the subfloor.

GEORGIA-PACIFIC GYPSUM L L C — Type DS

System No. 10

Subflooring — Min 15/32 or 19/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered.

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

Finish Flooring — Floor Topping Mixture* — Min 3/4 or 1 in. thickness of floor topping mixture for 19/32 or 15/32 in. thick wood structural panels respectively, having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

DEPENDABLE LLC — GSL M3.4, GSL K2.6, GSL-CSD, GSL RH, and SKIMFLOW.

Floor Mat Materials* — (Optional) — Nom. 1/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 55/025 and Quiet Qurl 55/025 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 3/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 60/040 and Quiet Qurl 60/040 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 3/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1-1/2 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 65/075, Quiet Qurl 65/075 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 1/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 52/013 and Quiet Qurl 52/013 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 1/4 in. entangled net core with a compressible fabric attached to the bottom loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

KEENE BUILDING PRODUCTS CO INC — Quiet Qurl 55/025 MT and Quiet Qurl 55/025 N MT

System No. 11

Subflooring — Min 15/32 or 19/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered.

Finish Flooring - Floor Topping Mixture* — Min 1 in. thickness of floor topping mixture having a min compressive strength of 4500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.
SIKA DEUTSCHLAND GMBH — Type SCHONOX AP Rapid Plus

System No. 12

Subflooring — Min 15/32 or 19/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered.

Vapor Barrier — (Optional) - Commercial asphalt saturated felt, 0.030 in. thick.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance. See Floor- and Roof-Topping Mixtures (CCOX) category for names of Classified Companies. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

Floor Mat Materials* — (Optional, Not Shown) - Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.
Freudenberg Performance Materials LP — EnkaSonic® by Colbond a member of the Low & Bonar group Types 125, 250, 250 Plus, 400, 400 Plus, 750, and 750 Plus.

Floor Mat Reinforcement — (Optional) - Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath — (Optional) — Expanded steel diamond mesh, 2.5 lb / sq yd loose laid over floor mat material.

Fiberglass Mesh Reinforcement — (Optional) — Coated non-woven glass fiber mesh grid loose laid over floor mat material.

System No. 13

Subflooring — Min 15/32 or 19/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered.

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

GRASSWORX L L C — SC Types

Finish Flooring* — Min 3/4 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance. See Floor- and Roof-Topping Mixtures (CCOX) category for names of Classified Companies. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

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PRELIMINARY
NOT FOR
CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
UL ASSEMBLIES - L546

PROJECT NUMBER: 25144

SHEET NUMBER:

G-203

UL DESIGN - L546 (CONT.)

Floor Mat Reinforcement — (Optional) - Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath — (Optional) — Expanded steel diamond mesh, 2.5 lb / sq yd loose laid over floor mat material.

Fiberglass Mesh Reinforcement — (Optional) — Coated non-woven glass fiber mesh grid loose laid over floor mat material.

System No. 14

Subflooring — Subflooring — Min 23/32 in. thick T&G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with end joints staggered.

Finish Floor - Building Units* — Min 1/2 in. thick magnesium oxide panels installed parallel, perpendicular, or diagonally to trusses with panel edges offset a min of 4 in. between subfloor and magnesium oxide panels. Panels secured to subfloor with construction adhesive and corrosion-resistant fasteners spaced 6 in. OC around panel edges and 12 in. OC in the field of the panel. Fasteners must be placed no closer than 1/2 in. from all panel edges and no closer than 2 in. from panel corners.

HUBER ENGINEERED WOODS LLC — Type 1/2 in. and 5/8 in. Square Edge Exacor® Board, Type ¾ in. T&G Exacor® Board.

System No. 15

Subflooring — Min 15/32 or 19/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered.

Finish Flooring - Floor Topping Mixture* — For use with Item 7E - Min 3/4 thickness of floor topping mixture having a minimum compressive strength of 900 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

TECNODRY SA DE CV — Types SURFACE-GYP

System No. 16

Subflooring — Min 15/32 or 19/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

ALPHAGYP, LLC — Type AlphaGyp

System No. 17

Subflooring — Min 15/32 or 19/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered.

Finish Flooring - Floor Topping Mixture* — Min 3/4 thickness of floor topping mixture having a minimum compressive strength of 1500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

BoldStep — Types BoldStep Regular and BoldStep High Strength

Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

BoldStep — Type Sound Mat

Floor Mat Reinforcement — (Optional) Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath — (Optional) — 3/8 in. expanded galvanized steel diamond mesh, 3.4 lbs/sq yd loose laid over the floor mat material.

Fiber Glass Reinforcement — (Optional, Not Shown) - 0.015 in. thick PVC coated non-woven fiberglass mesh, 0.368 lbs/sq yd loose laid over the floor mat material.

System No. 18

Subflooring — Min 15/32 or 19/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered.

Finish Flooring – Floor Topping Mixture* — Min 1 in. thickness of floor topping mixture having a min compressive strength of 2000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

YESERA COMERCIAL S.A. — Type MAX-CRETE Complete

System No. 19

Subflooring — Min 15/32 or 19/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered.

Finish Flooring - Floor Topping Mixture* — Min 1 in. thickness of floor topping mixture having a min compressive strength of 2500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

Apex Minerals LLC — Type Apex Multi Underlayment

2. **Trusses —** Parallel chord trusses spaced a max of 24 in. OC fabricated from nom 2 by 4 lumber, with lumber oriented vertically or horizontally. Min truss depth is 12 in. when dampers are not used and 18 in. when dampers are used. Truss members secured together with min 0.036 in. thick galv steel plates. Plates have 5/16 in. long teeth projecting perpendicular to the plane of the plate. The teeth are in pairs facing each other (made by the same punch), forming a split tooth type plate. Each tooth has a chisel point on its outside edge with these points being diagonally opposite each other for each pair. The top half of 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.

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

4. **Ceiling Damper* —** (Optional. To be used with Air Duct Item 3) — For use with min 18 in. deep trusses. 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

4A. **Alternate Ceiling Damper* —** For use with min 18 in. deep trusses. 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) 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.

4B. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 3) — For use with min 18 in. deep trusses. 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

4C. **Alternate Ceiling Damper* —** For use with min 18 in. deep trusses. 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

4D. **Alternate Ceiling Damper* —** For use with min. 18 in. deep trusses. 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 9) shall be installed in accordance with installation instructions.
MIAMI TECH INC — Model Series RxCRD, RxCRDS or RxCRPD

4E. **Alternate Ceiling Damper* —** Ceiling damper & fan assembly for use with min 18 in. deep trusses. 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 (Item 9) shall be installed in accordance with installation instructions.
DELTA ELECTRONICS INC — Models CRD2, GBR-CRD, ITG-CRD

4F. **Alternate Ceiling Damper* —** For use with min 18 in. deep trusses. 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 (Item 9) 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.)

4G. **Alternate Ceiling Damper* —** Ceiling damper & fan assembly for use with min 18 in. deep trusses. 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 (Item 9) shall be installed in accordance with installation instructions.
DELTA ELECTRONICS INC — Model SIG-CRD

4H. **Alternate Ceiling Damper* —** Ceiling damper & fan assembly for use with min 18 in. deep trusses. 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

4I. **Alternate Ceiling Damper* —** Ceiling damper & fan assembly for use with min 18 in. deep trusses. 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 (Item 9) shall be installed in accordance with installation instructions.
PANASONIC CORPORATION, PANASONIC CORPORATION OF NORTH AMERICA — Model PC-RD05C5

4J. **Alternate Ceiling Damper* —** Ceiling damper & fan assembly for use with min 18 in. deep trusses. 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 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 9) shall be installed in accordance with installation instructions.
BROAN-NUTONE L L C — Model RDFUWT

4K. **Alternate Ceiling Damper* —** Ceiling damper & fan assembly for use with min 18 in. deep trusses. 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 (Item 9) shall be installed in accordance with installation instructions.
BROAN-NUTONE L L C — Models RDJ1 and RDH

4L. **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 9) shall be installed in accordance with installation instructions.
BROAN-NUTONE L L C — Model RDMWT

4M. **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 9) shall be installed in accordance with installation instructions.
BROAN-NUTONE L L C — Model RDMWT2

4N. **Alternate Ceiling Damper* —** (Optional, To be used with Air Duct Item 3) — For use with min 18 in. deep trusses. 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

4O. **Alternate Ceiling Damper* —** (Optional, To be used with Air Duct Item 3) — For use with min 18 in. deep trusses. 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

4P. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct, Item 3) — For use with min 18 in. deep trusses. Max nom 18 in. long by 18 in. wide, fabricated from galvanized steel. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 162 sq in. per 100 sq ft of ceiling area.
RUSKIN COMPANY — Model CFD7T, CFD7T-END-BT, CFD7T-90-BT, CFD7T-ST-BT, CFD7T-SB, CFD7T-R6-DB, or CFD7T-IB6

4Q. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct, Item 3) — For use with min 18 in. deep trusses. Max 8 in. diameter damper, fabricated from galvanized steel. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 25 sq in. per 100 sq ft of ceiling area.
RUSKIN COMPANY — Model CFDR7T

4R. **Alternate Ceiling Damper* —** (Optional, to be used with Air Duct Item 3) For use with min 18 in. deep trusses. 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

4S. **Damper* —** (Optional, to be used with Air Duct Item 3) For use with min 18 in. deep trusses. 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

4T. **Alternate Ceiling Damper* —** (Optional, to be used with Air Duct Item 3) For use with min 18 in. deep trusses. 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

4U. **Alternate Ceiling Damper* -** (Optional, to be used with Air Duct Item 3) For use with min 18 in. deep trusses. 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 180 sq in. per 100 sq ft of ceiling area.

NAILOR INDUSTRIES INC — Types 0755, 0755A, 0756, 0756D, 0757, 0757D, 0757FP, 0757DFP, 0763

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

4V. **Alternate Ceiling Damper* —** (Optional, to be used with Air Duct Item 3) For use with min 18 in. deep trusses. 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

5. **Batts and Blankets* —** (Optional with Items 7 and 7B; Required with Item 7A) — Glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. When the resilient channels (Item 6) or furring channels (Item 6A, 6O) are spaced 16 in. OC, the insulation shall be a max of 3-1/2 in. thick, and shall be secured against the subflooring with staples at 12 in. OC or held suspended in the concealed space with 0.090 in. diam galv steel wires attached to the wood trusses at 12 in. OC. When the resilient channels (Item 6) or furring channels (Item 6A, 6O) are spaced a max of 12 in. OC or when the Steel Framing Members (Item 6B) are used, 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 resilient or furring channels (or Steel Framing Members) and gypsum panel membrane. When **Steel Framing Members** (Item 6C) are used, max 3-1/2 in. thick insulation shall be draped over the furring channels (Item 6Ca) and gypsum board ceiling membrane, and friction-fitted between trusses and Steel Framing Members (Item 6Cd). The finished rating has only been determined when the insulation is secured to the subflooring.

5A. **Fiber, Sprayed* —** (Dry Dense Packed 100% Borate Formulation) — As an alternate to Item 5 — When used, the resilient channel and gypsum board attachment is modified as specified in Items 6 and 7 and wire mesh (Item 10) shall be attached to the furring channels to facilitate installation of the material. The finished rating when Fiber, Sprayed is used has not been determined. The fiber is applied without water or adhesive at a nominal dry density of 3.5 lb/ft^3, in accordance with the application instructions supplied with the product. When Item 5A (Fiber, Sprayed) is used, two layers of gypsum board required as described in Item 7. Not evaluated for use with Items 6B, 6C, 6D, or 6T.
APPLEGATE GREENFIBER ACQUISITION LLC — Insulmax & SANCTUARY to be used with dry application only.

5B. **Fiber, Sprayed* —** (Loose Fill 100% Borate Formulation) — As an alternate to Items 5 and 5A — 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/ft^3 and at a max thickness of 3-1/2 in., in accordance with the application instructions supplied with the product. Wire mesh (Item 10) shall be attached to the furring channels to facilitate installation of the material. When Item 5B (Fiber, Sprayed) is used, two layers of gypsum board required as described in Item 7. Not evaluated for use with Items 6B, 6C, 6D, or 6T.
APPLEGATE GREENFIBER ACQUISITION LLC — Insulmax & SANCTUARY to be used with dry application only.

5C. **Cavity Insulation - Batts and Blankets* or Fiber, Sprayed* —** (Required for Item 7C, As described above in Items 5 through 5B) — Min. 3-1/2 in thick with no limit on maximum thickness fitted in the concealed space, draped over the resilient channel (Item 6I)/gypsum board (Item 7C) ceiling membrane.

5D. **Batts and Blankets* —** (Not Shown) For Use with Item 6T — 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. When draped over the furring channels the furring channel spacing shall be reduced to 12 in OC.

5E. **Insulation — Loose Fill Material* —** (Optional) — As an alternate to Item 5-5D — Shredded glass fibers bearing the UL Classification Marking for Surface Burning Characteristics, applied within the concealed space, over the resilient or furring channel/gypsum panel or Steel Framing Members/gypsum panel ceiling membrane. When used, two layers of gypsum required as described in Item 7 with 2nd layer joints staggered and screw length increased min. 5/8 in. Not evaluated for use with Items 6B, 6C, or 6T.

CERTAINTEED LLC – Type InsulSafe R, InsulSafe SP, InsulSafe XC, Northern White, or OPTIMA

6. **Resilient Channels —** Resilient channels, formed of 25 MSG thick galv steel, spaced 16 in. OC perpendicular to trusses. When insulation (Items 5, 5A, 5B) is draped over the resilient channel/gypsum board ceiling membrane, the spacing shall be reduced to 12 in. OC. Channels secured to each truss with 1-1/4 in. long Type S bugle head steel screws. Channels overlapped 4 in. at splices. Two channels, spaced 6 in OC, oriented opposite each gypsum board end joint as shown in the above illustration. Additional channels shall extend 6 in beyond each side edge of board.

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 (Items 5) 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-Si-X secured with No. 10 x 3-1/2 in. screws. RSIC-V and RSIC-V (2.75) clips secured to alternating trusses with No. 8 x 1-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips. RSIC-1, RSIC-Si-X, and RSIC-V clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) and RSIC-V (2.75) clips for use with 2-23/32 in. wide furring channels. Adjoining channels are overlapped as described in Item a. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping No. 6 framing screws, min 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 7.
PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-V, RSIC-Si-X, RSIC-1 (2.75), RSIC-V (2.75)

6B. **Alternate Steel Framing Members —** (Not Shown) — As an alternate to Items 6 and 6A, main runners, cross tees, cross channels and wall angle as listed below.
a. **Main Runners —** Nom 10 or 12 ft long, 15/16 in. or 1-1/2 in. wide face, spaced 4 ft. OC. Main runners suspended by min 12 SWG galv steel hanger wires spaced 48 in. OC. Hanger wires to be located adjacent to main runner/cross tee intersections. Hanger wires wrapped and twist-tied on 16d nails driven in to side of trusses at least 5 in. above the bottom face.

b. **Cross Tees or Channels —** Nom 4 ft long cross tees, with 15/16 in. or 1-1/2 in. wide face, or nom 4 ft long cross channels, with 1-1/2 in. wide face, either spaced 16 in. OC, installed perpendicular to the main runners. Additional cross tees or channels used 8 in. from each side of butted gypsum board end joints. The cross tees or channels may be riveted or screw-attached to the wall angle or channel to facilitate the ceiling installation.

c. **Wall Angle or Channel —** Painted or galv steel angle with 1 in. legs or channel with 1 in. legs, 1-9/16 in. deep attached to walls at perimeter of ceiling with fasteners 16 in. OC. To support steel framing member ends and for screw-attachment of the gypsum panel.
CGC INC — Type DGL or RX.

USG INTERIORS LLC — Type DGL or RX.

6C. **Steel Framing Members* —** (Not Shown) — As an alternate to Items 6, 6A and 6B.
a. **Furring Channels —** Hat-shaped furring channels, 7/8 in. deep by 2-5/8 in. wide at the base and 1-1/4 in. wide at the face, formed from No. 25 ga. galv steel, spaced max. 16 in. OC perpendicular to trusses and Cold Rolled Channels (Item 6Cb). Furring channels secured to Cold Rolled Channels at every intersection with a 1/2 in. pan head self-drilling screw through each furring channel leg. Ends of adjoining channels overlapped 4 in. and tied together with two double strand No. 18 SWG galv steel wire ties, one at each end of overlap. Supplemental furring channels at base layer and outer layer gypsum board butt joints are not required. Batts and Blankets draped over furring channels as described in Item 5. Two layers of gypsum board attached to furring channels as described in Item 7.

b. **Cold Rolled Channels —** 1-1/2 in. by 1/2 in., formed from No. 16 ga. galv steel, positioned vertically and parallel to trusses, friction-fitted into the channel caddy on the Steel Framing Members (Item 6Cd). Adjoining lengths of cold rolled channels lapped min. 6 in. and wire-tied together with two double strand 18 SWG galv steel wire ties, one at each end of overlap.

c. **Blocking —** Where truss design does not permit direct, full contact of the hanger bracket, a piece of nominal 2 by 4 in. lumber (blocking), min. 6 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the truss (Item 2) at the top and bottom of the blocking at each Steel Framing Member (Item 6Cd) location.

d. **Steel Framing Members* —** Hangers spaced 48 in. OC. max along truss, and secured to the Blocking (Item 6Cc) on alternating trusses with a single 5/16 in. by 2 in. hex head lag bolt or four #6 1-1/4 in. drywall screws through mounting hole(s) on the hanger bracket. The two 1/4 in. long steel teeth on the hanger are embedded in the side of the blocking. Hanger positioned on blocking and leveling bolt height adjusted such that furring channels are flush with bottom of trusses before gypsum board installation. Spring gauge of hanger chosen per manufacturer\'s instructions.

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
UL ASSEMBLIES - L546

PROJECT NUMBER: 25144

SHEET NUMBER:

G-204

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KINETICS NOISE CONTROL INC — Type ICW.

6D. **Steel Framing Members* —** (Not Shown) — As an alternate to Items 6, 6A, 6B and 6C.
a. **Furring Channels —** Formed of No. 25 MSG galv steel, 2-3/8 in. wide by 7/8 in. deep, spaced 16 in. OC perpendicular to wood structural members. When insulation, Items 5 or 5A is applied over the furring channel/gypsum panel ceiling membrane, the furring 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 AWG 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, and secured to the bottom chord of alternating trusses with two No. 8 x 2-1/2 in. course drywall screws, one through the hole at each end of the clip. When insulation, Items 5 or 5A is applied over the furring channel/gypsum panel ceiling membrane, the clip spacing shall be reduced to 24 in. OC and secured to consecutive trusses. Furring channels are friction fitted into clips. Adjoining channels are overlapped as described in Item a. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping No. 6 framing screws, min 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 7. Two layers of gypsum board required as described in Item 7. Not evaluated for use with Item 5B.
KINETICS NOISE CONTROL INC — Type Isomax.

6E. **Steel Framing Members* —** (Optional, Not Shown) — Used as an alternate method to attach min. 1/2 in. deep resilient channels (Item 6) to wood trusses (Item 2). Resilient channels are friction fitted into clips, and then clips are secured to the bottom chord of each wood truss with a min. 1-3/4 in. long Type S bugle head steel screw through the center hole of the clip and the resilient channel flange. Adjoining resilient channels are overlapped 4 in. under trusses. The clip flange is opened slightly to accommodate the two overlapped channels. Additional clips required to hold resilient channel that supports the gypsum board butt joints, as described in Item 7.
KEENE BUILDING PRODUCTS CO INC — Type RC Assurance.

6F. **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, 2-3/8 in. wide by 7/8 in. deep, spaced 16 in. OC perpendicular to trusses. When batt insulation (Items 5) 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. GenieClips secured to alternating joists with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. When insulation, Items 5 is applied over the furring channel/gypsum panel ceiling membrane, the clip spacing shall be reduced to 24 in. OC and secured to consecutive trusses. Furring channels are friction fitted into clips. Adjoining channels are overlapped as described in Item a. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping No. 6 framing screws, min 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 7. Not evaluated for use with Item 5A or 5B.
PLITEQ INC — Type GENIECLIP

6G. **Alternate Steel Framing Members* —** (Not Shown) — As an alternate to items 6-6F, furring channels and Steel Framing Members as described below.
a. **Furring Channels —** Formed of No. 25 MSG galv steel, 2-5/8 in. wide by 7/8 in deep, spaced 16 in OC, perpendicular to trusses. When batt insulation (Items 5) 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.

b. **Steel Framing Members* —** Used to attach furring channels (Item a) to trusses (Item 2). Clips spaced at 48" OC and secured to the bottom of the joists 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 7B.
STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237 or A237R

6H. **Alternate Steel Framing Members* —** (Not Shown) — As an alternate to items 6-6G, 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. When batt insulation (Items 5) 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.

b. **Steel Framing Members* —** Used to attach furring channels (Item a) to 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 7B.
REGUPOL AMERICA — Type SonusClip

6I. **Resilient Channels —** For Use With Item 7C - Formed from min 25 MSG galv. steel installed perpendicular to trusses and spaced 16 in. OC. Channels secured to each truss with 1-5/8 in. long Type S bugle head steel screws. Channels overlapped 4 in. at splices. Two channels, spaced 6 in. OC, oriented opposite each gypsum panel end joint. Additional channels shall extend min 6 in. beyond each side edge of panel. Insulation, Item 5C is applied over the resilient channel/gypsum panel ceiling membrane.

6J. **Steel Framing Members* —** (Optional, Not Shown) — As an alternate to Item 6.
a. **Furring Channels —** Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced as indicated in Item 6, perpendicular to the trusses. Channels secured to Cold Rolled Channels at every intersection with a 3/4 in. TEK screw through each furring channel leg. Ends of adjoining channels overlapped 12 in. and fastened together with two double strand No. 18 SWG galv steel wire ties, one at each end of overlap, or with two 3/4 in. TEK screws in each leg of the overlap section. Two furring channels used at end joints of gypsum board (Item 7), each extending a min of 6 in. beyond both side edges of the board.

b. **Cold Rolled Channels —** 1-1/2 in. by 1/2 in., formed from No. 16 ga. galv steel, positioned vertically and parallel to trusses, friction-fitted into the channel caddy on the Steel Framing Members (Item 6Jd) and secured with two 3/4 in. TEK screws. Adjoining lengths of cold rolled channels lapped min. 12 in. and secured along bottom legs with four 3/4 in. TEK screws and wire-tied together with two double strand 18 SWG galv steel wire ties, one at each end of overlap.

c. **Blocking —** Where truss design does not permit direct, full contact of the hanger bracket, a piece of nominal 2 by 4 in. lumber (blocking), min. 12 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the trusses at the top and bottom of the blocking at each Steel Framing Member (Item 6Jd) location with 16d nails or minimum 2-1/2 in. screws.

d. Steel Framing Members* — Spaced 48 in. OC. max along truss, and secured to the truss on alternating trusses with two, #10 x 2 in. screws through mounting holes on the hanger bracket.
PAC INTERNATIONAL L L C — Type RSIC-SI-CRC EZ Clip

6K. **Steel Framing Members* —** (Not Shown) — As an alternate to Item 6.
a. **Furring Channels —** Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced as indicated in Item 6, perpendicular to trusses and friction fit into Steel Framing Members (Item 6Kc). 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 or with two TEK screws along each leg of the 6 in. overlap. Two furring channels used at end joints of gypsum board (Item 7). Butt joint channels held in place by strong back channels placed upside down, on top of, and running perpendicular to primary furring channels, extending 6 in. longer than length of gypsum side joint. Strong back channels spaced maximum 48 in. OC. Strong back channels secured to every intersection of primary furring channels with four 7/16 in. pan head screws, two along each of the legs at intersections. Butt joint channels run perpendicular to strong back channels and shall be minimum 6 in. longer than length of joint, secured to strong back channels with 7/16 in. pan head screws, two along each of the legs at intersection with strong back channels.

b. **Blocking —** Where truss design does not permit direct, full contact of the hanger bracket, a piece of nominal 2 by 4 in. lumber (blocking), min. 12 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the trusses at the top and bottom of the blocking at each Steel Framing Member (Item 6Kc) location with 16d nails or minimum 2-1/2 in. screws.

c. **Steel Framing Members* —** Used to attach furring channels (Item 6Ka) to trusses. Clips spaced 48 in. OC and secured along truss webs at each furring channel intersection with min. 3/4 in. long self-drilling #10 x 1-1/2 in. screws through each of the provided hole locations. Furring channels are friction fitted into clips.
PAC INTERNATIONAL L L C — Type RSIC-S1-1 Ultra

6L. **Steel Framing Members* —** (Optional - Not Shown) — Used to attach resilient channels (Item 6) to trusses (Item 2). Clips spaced 48 in. OC and secured to trusses with one No. 8 x 2-1/2 in. coarse drywall screw through center grommet hole. Channels secured to clips with one #10 x 1/2 in. pan-head self-drilling screw. Ends of adjoining channels overlapped 6 in. and secured together with two #8 15 x 1/2 in. Philips Modified screws spaced 2-1/2 in. from the center of the overlap. Gypsum board butt joints require additional resilient channels spaced 1-1/2 in. from the butt joint on either side. One edge of the extra channels will extend to an adjacent truss where it is secured with a clip.
KEENE BUILDING PRODUCTS CO INC — Type RC+ Assurance Clip

6M. **Steel Framing Members* —** (Optional, Not Shown) — Used as an alternate method to attach resilient channels to structural members. 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. Gypsum Board butt joints staggered minimum 24 in. OC and Gypsum Board screws spaced 8 in. OC when used.
PAC INTERNATIONAL L L C — Type RC-1 Boost

6N. **Resilient Channels —** For use with **American Gypsum Co. Type AG-C gypsum board only**. Resilient channels, formed of 25 MSG thick galv steel, spaced 16 in. OC perpendicular to trusses. When insulation (Items 5, 5A, 5B) is applied over the resilient channel/gypsum board ceiling membrane, the spacing may remain at 16 in. OC. Channels secured to each truss with 1-1/4 in. long Type S bugle head steel screws. Channels overlapped 4 in. at splices. Two channels, spaced 6 in OC, oriented opposite each gypsum board end joint as shown in the above illustration. Additional channels shall extend 6 in beyond each side edge of board.

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

a. **Furring Channels —** Formed of No. 25 MSG galv steel, 2-23/32 in. wide by 7/8 in. When there is no insulation installed in the concealed space the furring channels are spaced 24 in. OC max perpendicular to trusses. When insulation (Item 5) is secured to the underside of the subfloor the furring channels are spaced 16 in. OC max. When insulation (Item 5) is applied over the furring channel/gypsum panel ceiling membrane, the furring channels are spaced 12 in. OC max. Channels secured to trusses as described in Item 6Ob. 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. Additional clips required to hold furring channel that supports the wallboard butt joints, as described in Item 7.

b. **Steel Framing Members* —** Used to attach furring channels (Item 6Oa) to trusses (Item 2). Clips spaced 48 in. OC max with No. 8 x 2-1/2 in. course drywall screw through the center grommet. Furring channels are friction fitted into clips.

CLARKDIETRICH BUILDING SYSTEMS — Type ClarkDietrich Sound Clips

6P. **Steel Framing Members* —** (Optional, Not Shown) — Used as an alternate method to attach resilient channels (items 6 and 6I)_to structural members. A resilient sound isolation accessory shall be used at each attachment point of the resilient channels and spaced 16 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 2in. screws supplied with the accessory and per the accessory manufacturer's installation instructions. Gypsum Board butt joints staggered minimum 24 in. OC and Gypsum Board screws spaced 8 in. OC when used.

PAC INTERNATIONAL L L C — Type RC-1 Boost

6Q. **Steel Framing Members*** — (Not Shown) — As an alternate to item 6I, 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 (Items 5) 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-Si-X secured with No. 10 x 3-1/2 in. screws. RSIC-1, and RSIC-Si-X, clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) clips for use with 2-23/32 in. wide furring channels. Adjoining channels are overlapped as described in Item a. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping No. 6 framing screws, min 7/16 in. long at the midpoint of the overlap, with one 2in. screw on each flange of the channel. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 7.

PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-Si-X, RSIC-1 (2.75), RSIC-SI-X.

6R. **Steel Framing Members*** — (Optional, Not Shown) — As an alternate to Item 6I.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced as indicated in Item 6, perpendicular to the trusses. Channels secured to Cold Rolled Channels at every intersection with a 3/4 in. TEK screw through each furring channel leg. Ends of adjoining channels overlapped 12 in. and fastened together with two double strand No. 18 SWG galv steel wire ties, one at each end of overlap, or with two 3/4 in. TEK screws in each leg of the overlap section. Two furring channels used at end joints of gypsum board (Item 7), each extending a min of 6 in. beyond both side edges of the board.

b. **Cold Rolled Channels** — 1-1/2 in. by 1/2 in., formed from No. 16 ga. galv steel, positioned vertically and parallel to trusses, friction-fitted into the channel caddy on the Steel Framing Members (Item 6Id) and secured with two 3/4 in. TEK screws. Adjoining lengths of cold rolled channels lapped min. 12 in. and secured along bottom legs with four 3/4 in. TEK screws and wire-tied together with two double strand 18 SWG galv steel wire ties, one at each end of overlap.

c. **Blocking** — Where truss design does not permit direct, full contact of the hanger bracket, a piece of nominal 2 by 4 in. lumber (blocking), min. 12 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the trusses at the top and bottom of the blocking at each Steel Framing Member (Item 6Id) location with 16d nails or minimum 2-1/2 in. screws.

d. **Steel Framing Members*** — Spaced 48 in. OC. max along truss, and secured to the truss on alternating trusses with two, #10 x 2in. screws through mounting holes on the hanger bracket.

PAC INTERNATIONAL L L C — Type RSIC-SI-CRC EZ Clip

6S. **Steel Framing Members*** — (Not Shown) — As an alternate to Item 6I.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced as indicated in Item 6, perpendicular to trusses and friction fit into Steel Framing Members (Item 6Kc). 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 or with two TEK screws along each leg of the 6 in. overlap. Two furring channels used at end joints of gypsum board (Item 7). Butt joint channels held in place by strong back channels placed upside down, on top of, and running perpendicular to primary furring channels, extending 6 in. longer than length of gypsum side joint. Strong back channels spaced maximum 48 in. OC. Strong back channels secured to every intersection of primary furring channels with four 7/16 in. pan head screws, two along each of the legs at intersections. Butt joint channels run perpendicular to strong back channels and shall be minimum 6 in. longer than length of joint, secured to strong back channels with 7/16 in. pan head screws, two along each of the legs at intersection with strong back channels.

b. **Blocking** — Where truss design does not permit direct, full contact of the hanger bracket, a piece of nominal 2 by 4 in. lumber (blocking), min. 12 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the trusses at the top and bottom of the blocking at each Steel Framing Member (Item 6Kc) location with 16d nails or minimum 2-1/2 in. screws.

c. **Steel Framing Members*** — Used to attach furring channels (Item 6Ka) to trusses. Clips spaced 48 in. OC and secured along truss webs at each furring channel intersection with min. 3/4 in. long self-drilling #10 x 1-1/2 in. screws through each of the provided hole locations. Furring channels are friction fitted into clips.
PAC INTERNATIONAL L L C — Type RSIC-S1-1 Ultra

6T. **Steel Framing Members* —** (Optional, not shown) Not for use with Items 5A and 5B) — 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. 2-23/32 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to joists. Channels secured to joists as described in Item 6Tb. 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. Additional clips required to hold furring channel that supports the gypsum board butt joints as described in Item 7.

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

At gypsum board butt joints continuous back to back channels installed with clips installed on every truss

ISOTECH INDUSTRIES INC. — Type ISOSTUD

7. **Gypsum Board* —** Nom 5/8 in. thick, 48 in. wide gypsum board. When resilient channels (Item 6) are used, gypsum board installed with long dimension perpendicular to resilient channels. Gypsum board secured with 1 in. long Type S bugle head screws spaced 12 in. OC and located a min of 1/2 in. from side joints and 3 in. from end joints. End joints secured to both resilient channels as shown in end joint detail. When batt insulation (Item 5) is draped over the resilient channel/gypsum board ceiling membrane, screws spacing shall be 8 in. OC. When **Steel Framing Members*** (Item 6A, 6F, 6O) are used, gypsum board installed with long dimension perpendicular to furring channels and side joints of sheet located beneath joists. Gypsum board secured to furring channels with 1 in. long Type S bugle head screws spaced 12 in. OC in the field. Butted end joints shall be staggered min 2 ft within the assembly, and occur between the continuous furring channels. At butted end 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. The two furring channels shall be spaced approximately 3-1/2 in. OC, and be attached to underside of the truss with one clip at each end of the channel. Screw spacing along the end joint shall be 8 in. OC.
When S**teel Framing Members** (Item 6J) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 7. Adjacent butt joints staggered minimum 48 in. OC.

When **Steel Framing Members** (Item 6K) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 7. Butt joints staggered minimum 24 in. OC.

When **Steel Framing Members** (Item 6T) are used, nom 5/8 in. thick, 4 ft wide gypsum board installed perpendicular to furring channels with butt joints centered between continuous back to back channels and secured to all channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC. Butt joints staggered minimum 48 in. OC.

AMERICAN GYPSUM CO — Type AG-C

CABOT MANUFACTURING ULC — 5/8 in. 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

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — 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

7A. **Gypsum Board* —** Nom 5/8 in. thick, 48 in. wide gypsum board, installed with long dimension perpendicular to resilient channels. Gypsum board secured with 1-1/8 in. long Type S bugle head screws spaced 8 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. End joints secured to both resilient channels as shown in end joint detail. When Item 7A is used, the insulation must be used and must be draped over the resilient channel/gypsum board.

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

7B. **Gypsum Board* —** Nom 5/8 in. thick, 48 in. wide gypsum panels. When resilient channels (Item 6) are used, gypsum panels installed with long dimension perpendicular to resilient channels. Gypsum panels secured with 1 in. long Type S bugle head steel screws spaced 12 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. When insulation (Items 5 or 5A) is applied over the resilient channel/gypsum panel ceiling membrane screw spacing shall be reduced to 8 in. OC. End joints secured to both resilient channels as shown in end joint detail. When **Steel Framing Members** (Item 6A, 6O) are used, gypsum panels installed with long dimensions perpendicular to furring channels. Panels attached to the furring channels using 1 in. long Type S bugle-head steel screws spaced 8 in. OC along butted end joints and in the field of the panel. Butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. Each end of each gypsum panel shall be supported by a single length of furring channel equal to the width of the gypsum panel plus 6 in. on each end. The two support furring channels shall be spaced approximately 3-1/2 in. OC, and be attached to underside of the truss with one clip at each end of the channel. When **Steel Framing Members*** (Item 6B) are used, gypsum panels installed with long dimension perpendicular to cross tees with side joints centered along main runners and end joints centered along cross tees. 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. End joints of panels shall be staggered with spacing between joints on adjacent panels not less than 4 2 ft OC. When **Fiber, Sprayed** (Items 5A or 5B) 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 Type S bugle head steel screws spaced 12 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. End joints secured to both resilient channels as shown in end joint detail. Outer layer gypsum board secured with 1-5/8 in. long Type S bugle head steel screws spaced 12 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. Outer layer shall be finished as described in Item 8. When both **Steel Framing Members** (Item 6A) and **Fiber, Sprayed** (Items 5A or 5B) are used, furring channels spaced 12 in. OC and two layers of nom 5/8 in. thick, 4 ft wide gypsum board are installed with long dimension perpendicular to furring channels. Base layer secured to furring channels with nom 1 in. long Type S bugle head screws spaced 8 in. OC along butted end joints and in the field of the board. Butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. 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. The two support furring channels shall be spaced approximately 3-1/2 in. OC, and be attached to the underside of the truss with one clip at each end of the channel. Outer layer secured to furring channels using 1-5/8 in. long Type S screws spaced 8 in. OC and 1-1/2 in. from the end joint. Butted end joints to be offset a min. of 8 in. from base layer end joints. Butted side joints of outer layer to be offset min. 18 in. from butted side joints of base layer. When **Steel Framing Members** (Item 6C) are used, two layers of nom 5/8 in. thick, 4 ft wide gypsum board are installed with long dimensions perpendicular to furring channels (Item 6Ca). Base layer attached to the furring channels using 1 in. long Type S bugle head steel screws spaced 8 in. OC along butted end joints and 12 in. OC in the field of the board. Butted end joints centered on the continuous furring channels. Butted base layer end joints to be offset a min of 16 in. in adjacent courses. Outer layer attached to the furring channels using 1-5/8 in. long Type S bugle head steel screws spaced 8 in. OC at butted end joints and 12 in. OC in the field. Butted end joints centered on the continuous furring channels and offset a min of 16 in. from butted end joints of base layer. Butted side joints of outer layer to be offset min 16 in. from butted side joints of base layer. When **Steel Framing Members** (Item 6D) are 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 attached to the furring channels using 1 in. long Type S bugle-head steel screws spaced 12 in. OC in the field of the board. Butted end joints shall be staggered min 2 ft. within the assembly, and occur midway between the continuous furring channels. 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. The two furring channels shall be spaced approximately 4 in. OC, and be attached to underside of the truss with one Isomax clip at each end of the channel. Screw spacing along the gypsum board butt joint shall be 8 in. OC. Outer layer attached to the furring channels using 1-5/8 in. long Type S bugle-head steel screws spaced 12 in. OC in the field. The end of the outer layer boards at the butt joint shall be attached to the base layer boards with 1-5/8 in. long Type G screws spaced 8 in. OC and 1-1/2 in. from the end joint. Butted end joints to be offset a min of 8 in. from base layer end joints. Butted side joints of outer layer to be offset min 18 in. from butted side joints of base layer. Outer layer shall be finished as described in Item 8. When **Steel Framing Members** (Item 6F) are used, two layers of nom 5/8 in. thick, 4 ft wide are installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels using 1 in. long No. 6 Type S bugle-head steel screws spaced 12 in. OC in the field of the board. Butted end joints shall be staggered minimum 2 ft. within the assembly. Additional furring channels constructed as per Item 6F shall be used to support each end of each gypsum board. These additional furring channels shall be attached to underside of the truss with Genie clips as described in Item 6F. Screw spacing along the gypsum board butt joint shall be 8 in. OC. Outer layer attached to the furring channels using 1-5/8 in. long No. 6 Type S bugle-head steel screws spaced 12 in. OC in the field. The outer layer boards at the butt joint shall be attached to the base layer boards with No. 10, 1-1/2 in. long drywall screws spaced 8 in. OC and 1-1/2 in. from the end joint. Butted end joints to be offset a min of 24 in. from base layer end joints. Butted side joints of outer layer to be offset min 16 in. from butted side joints of base layer. When **Steel Framing Members** (Item 6G) 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

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
UL ASSEMBLIES - L546

PROJECT NUMBER: 25144

SHEET NUMBER:

G-205

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UL DESIGN - L546 (CONT.)

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 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 6H) 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.

CERTAINTEED GYPSUM INC — Type C

CABOT MANUFACTURING ULC — 5/8 in. 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

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — 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

7C. **Gypsum Board* —** (As an alternative to Items 7 and 7B, For use with Items 5C and 6I) — Nom 5/8 in. thick, 48 in. wide gypsum board, installed and secured as described in Items 7 and 7B but with max screw spacing 8 in. OC. When used with insulation (Batts and Blankets* or Fiber Sprayed*) that is installed over the resilient channel/Gypsum Board* ceiling membrane, the resilient channels may remain at 16 in. OC and not need to be reduced to 12 in. OC.
CGC INC — Type ULIX

UNITED STATES GYPSUM CO — ULIX

7D. **Gypsum Board* —** (As an alternative to Items 7, 7A, 7B and 7C) — 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.

7E. **Gypsum Board* —** For use with System No. 15 – Two layers of Nom 5/8 in. thick, 48 in. wide gypsum board, base layer installed as detailed in Item 7. Face layer installed over base layer with 2 in. long Type S bugle head screws. All joints and fastener spacing to be consistent with base layer requirements, except staggered with those in base layers. Any Gypsum Board listed in Item 7.

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. 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.

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

10. **Wire Mesh —** (Not Shown) — For use with Item 5A and 5B — 1 in. 20 gauge galvanized poultry netting installed between the furring channels and gypsum board. The poultry netting is attached with washers and 1/2 in. wafer head screws, spaced 24 in. OC., to the furring channels. The **Fiber, Sprayed** (Item 5A or 5B) is installed through cut-openings in the poultry netting, in-between trusses. The cut-openings in the poultry netting shall be staggered at a maximum of 6 ft.

*** 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 2025-07-22

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
UL ASSEMBLIES - L546

PROJECT NUMBER: 25144

SHEET NUMBER:

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- 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

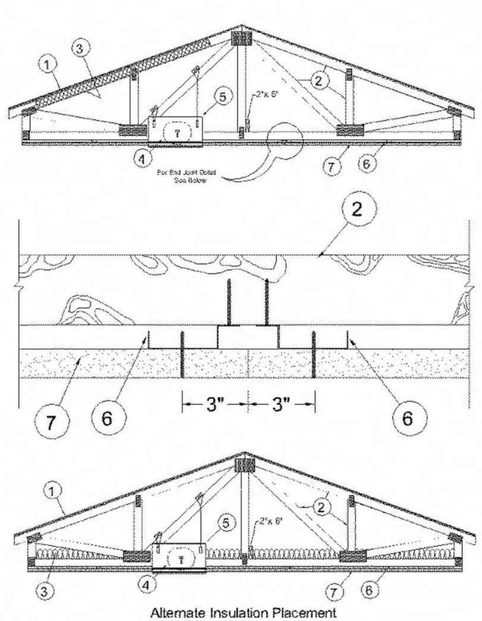
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. **P545**

July 30, 2025

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.**



Alternate Insulation Placement

1. **Roofing System* —** Any UL Class A, B or C Roofing System **(TGFU)** or Prepared Roof Covering **(TFWZ)** acceptable for use over nom 15/32 in. thick wood structural panels, min. grade "C-D" or "Sheathing". Nom 15/32 in. thick wood structural panels secured to trusses with No. 6d ringed shank nails. Nails spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails. Construction adhesive is optional.

2. **Trusses —** Pitch chord trusses, spaced a max of 24 in. OC, fabricated from nom 2 by 4 lumber, with lumber oriented vertically or horizontally. Truss members secured together min.0.0356 in. thick galv steel plates. Plates have 5/16 in. long teeth projecting perpendicular to the plane of the plate. The teeth are in pairs facing each other (made by the same punch), forming a split tooth type plate. Each tooth has a chisel point on its outside edge. These points are diagonally opposite each other for each pair. The top half of 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/ft^3, 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/ft^3 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/ft^3 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.

APPLEGATE GREENFIBER ACQUISITION LLC — Insulmax and SANCTUARY for use with wet or dry application. INS510LD, INS515LD, and INS541LD 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/ft^3 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 butted 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.
Holcim Solutions and Products US, LLC — Sucraseal

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 roofing system. Spray foam insulation installed to a maximum thickness of 10 in. at a nominal 0.5 lb/ft^3 or 2.0 lb/ft^3 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 butted 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 — Enertite® NM, Enertite® G, FE178®, Spraytite® 178, Spraytite® 81206, Walltite® 200, Walltite® US, Walltite® US-N, Walltite® HP+, Walltite® MAX, Walltite® v.5, Walltite® LWP, Walltite® Plus, Walltite® One, and Enertite® Max

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/ft^3 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 butted 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.
Holcim Solutions and Products US, LLC — EasySeal.5, EasySeal Ultra and EasySeal EZ-U

3F. **Foamed Plastic* —** (As alternate 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/ft^3 - 2.5 lb/ft^3 density, while maintaining a minimum 7 in. clearance between the spray foam insulation and the gypsum board (Item 7). Spray foam insulation is limited for 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 butted 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 OCX, SealTite Pro No Trim 21, SealTite Pro One Zero, SealTite PRO HFO, Foamsulate Closed Cell, Foamsulate OCX, Foamsulate 70, Foamsulate HFO, and Foamsulate HFO 2.0.

3G. **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/ft^3 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 butted 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.
EVERESTSYSTEMS LLC — Opticell 0.5

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.
NAILOR INDUSTRIES INC — Types 0755, 0755A, 0756, 0756D, 0757, 0757D, 0757FP, 0757DFP, 0758, 0759, 0760, 0761, 0762, 0763, CRD5, CRD5D, CRD6, CRD6D, CRD6FP, CRD6DFP.

SAFE AIR DOWCO — 0455, 0455A, 0456, 0456D, 0457, 0457D, 0457-DB, 0457-CB, 0463-FB, 0457-EB, 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-^{W} 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-^{W} 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) 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

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-END-BT, CFD7T-90-BT, CFD7T-ST-BT, CFD7T-SB, CFD7T-R6-DB, CFD7T-IB6, or CFDR7T

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

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PRELIMINARY
NOT FOR
CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
UL ASSEMBLIES - P545

PROJECT NUMBER: 25144

SHEET NUMBER:

G-207

UL DESIGN - P545 (CONT.)

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-RD05C5

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 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 shall be installed in accordance with installation instructions.
BROAN-NUTONE L L C — Model RDFUWT

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-1WT

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 571B.

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 6pcf, 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 6pcf, 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/DB 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

5AI. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 4.) — For use with min. 18 in. deep trusses. Max 7-11/32 in. long by 7-11/16 in. wide fabricated from galvanized steel. Aggregate area of the register opening(s) through the ceiling membrane shall not exceed 28.5 sq in. per 100 sq ft of ceiling area. Damper assembly installed in accordance with the manufacturer's installation instructions.
AIRE TECHNOLOGIES INC — Models ITG-CRD2.

5AJ. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 4.) — For use with min. 18 in. deep trusses. Max 9-11/16 in long by 9-1/16 in. wide fabricated from galvanized steel. Aggregate area of the register opening(s) through the ceiling membrane shall not exceed 44.5 sq in. per 100 sq ft of ceiling area. Damper assembly installed in accordance with the manufacturer's installation instructions.
AIRE TECHNOLOGIES INC — Models SIG-CRD2

5AK. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 4.) — For use with min. 18 in. deep trusses. Max 10-13/32 in. long by 10-22/32 in. wide fabricated from galvanized steel. Aggregate area of the register opening(s) through the ceiling membrane shall not exceed 56 sq in. per 100 sq ft of ceiling area. Damper assembly installed in accordance with the manufacturer's installation instructions.
AIRE TECHNOLOGIES INC — Models SMT-CRD2

5AL. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 4.) — For use with min. 18 in. deep trusses. Max 8-13/16 in. wide and 8-1/2 in. long fabricated from galvanized steel. Aggregate area of the register opening(s) through the ceiling membrane shall not exceed 37.5 sq in. per 100 sq ft of ceiling area. Damper assembly installed in accordance with the manufacturer's installation instructions.
AIRE TECHNOLOGIES INC — Models GBR-CRD2

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 (2.75) clips secured to alternating trusses with No. 8 x 1-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips. RSIC-1 and RSIC-V clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) and RSIC-V (2.75) clips for use with 2-23/32 in. wide furring channels. Adjoining channels are overlapped as described in Item a. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping No. 6 framing screws, min 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 7.
PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-V, RSIC-1 (2.75), RSIC-V (2.75)

6B. **Alternate Steel Framing Members* —** (Not Shown) — Not evaluated with Item 3 (Batts and Blankets). As an alternate to Items 6 or 6A, furring channels and Steel Framing Members as described below.
a. **Furring Channels —** Formed of No. 25 MSG galv steel, 2-5/8 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 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 2025-07-30

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JOHNSON - BETTS MEADOWS
TOPEKA, KS

SHEET TITLE
UL ASSEMBLIES - P545

PROJECT NUMBER: 25144

SHEET NUMBER:

G-208

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UL DESIGN - U305 (CONT.)

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

14A. **Mineral and Fiber Board* —** (Optional, Not Shown) — For use with Items 14B-14E) — 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

14B. **Glass Fiber Insulation —** (For use with Item 14A) — 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.

14C. **Batts and Blankets* —** (As an alternate to Item 14B, For use with Item 14A), 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.
THERMAFIBER/OWENS CORNING — Type SAFB, SAFB FF

14D. **Adhesive —** (For use with Item 14A) — 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 14A).

14E. **Gypsum Board* —** (For use with Item 14A) — 5/8 in. thick, 4 ft wide, applied vertically over Mineral and Fiber Board (Item 14A) 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 14A). 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.
AMERICAN GYPSUM CO — Type AG-C

CABOT MANUFACTURING ULC — 5/8 in. 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 — Type PRC

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

14F. **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 3). 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 3) 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

14G. **Building Units –** (Optional Item Not Shown – For use over Gypsum Board, Item 3) 1 in., 2 in. or 3 in. thick, 4 ft. wide – Applied vertically or horizontally with vertical joints centered over studs. Fastened to studs and runners with wafer head screws of adequate length to penetrate framing by a minimum of of ¾ in., spaced a max 8 in. o.c.

NATIONAL GYPSUM CO – Type PBCI

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

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
UL ASSEMBLIES - U305

PROJECT NUMBER: 25144

SHEET NUMBER:

G-209

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UL DESIGN - U305

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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. **U305**

August 8, 2025

Bearing Wall Rating — 1 Hr
Finish Rating — See Items 3, 3A, 3D, 3E, 3F, 3G, 3H, 3J and 3L.
STC Rating - 56 (See Item 9)

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

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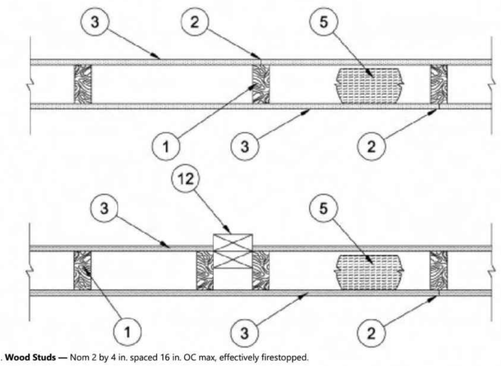

1. **Wood Studs —** Nom 2 by 4 in. spaced 16 in. OC max, effectively firestopped.

2. **Joints and Nail-Heads —** Joints covered with joint compound and paper tape. Joint compound and paper tape may be omitted when square edge boards are used. As an alternate, nom 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard with the joints reinforced with paper tape. Nailheads exposed or covered with joint compound.

3. **Gypsum Board* —** 5/8 in. thick paper or vinyl surfaced, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels nailed 7 in. OC with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 15/64 in. diam heads. When used in widths other than 48 in., gypsum panels are to be installed horizontally. For an alternate method of attachment of gypsum panels, refer to Items 6 through 6F, **Steel Framing Members***.
When Items 6, 6B, 6C, 6D, 6E, 6F, 6G, or 6H **Steel Framing Members***, are used, gypsum panels attached to furring channels with 1 in. long Type S bugle-head steel screws spaced 12 in. OC.

When Item 6A, **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. One layer of gypsum board attached to opposite side of wood stud without furring channels as described in Item 3.

When Item 7, resilient channels are used, 5/8 in. thick, 4 ft wide gypsum panels applied vertically. Screw attached furring channels with 1 in. long, self-drilling, self-tapping Type S or S-12 steel screws spaced 8 in. OC, vertical joints located midway between studs.

AMERICAN GYPSUM CO — Types AGX-1(finish rating 23 min.), M-Glass (finish rating 23 min.), Type AGX-11 (finish rating 26 min), Type AGX-12 (finish rating 22 min), Type LightRoc (finish rating 23 min.) or Type AG-C

BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO — Type DBX-1 (finish rating 24 min)

CABOT MANUFACTURING ULC — Type X (finish rating 22 min), 5/8 Type X, Moisture Resistant Type X, Gypsum Sheathing Type X, Mold & Mildew Resistant Type X and Mold & Mildew Resistant AR Type X, Type Blueglass Exterior Sheathing, 5/8 in. Type C.

CERTAINTEED GYPSUM INC — Type C, Type X-1 (finish rating 26 min); Type EGRG or GlasRoc (finish rating 23 min), GlasRoc-2, Type Habito (finish rating 26 min), Type LWTX (finish rating 18 min), Type LGFC6A (finish rating 34 min), Type LGFC2A, Type LGFC-C/A, Type LGFC-WD, Type LGLLX (finish rating 21 min), Type CLLX (finish rating 24 min)

CGC INC — Type AR (finish rating 24 min), Type C (finish rating 24 min), Type IP-AR (finish rating 24 min), Type IPC-AR (finish rating 24 min), Type IP-X1 (finish rating 24 min), Type IP-X2 (finish rating 24 min), Type SCX (finish rating 24 min), Type SHX (finish rating 24 min), Type ULX (finish rating 22 min), Type WRC (finish rating 24 min), Type WRX (finish rating 24 min), Type ULIX (finish rating 20 min)

GEORGIA-PACIFIC GYPSUM L L C — Type 5 (finish rating 26 min), Type 6 (finish rating 23 min), Type 9 (finish rating 26 min), Type C (finish rating 26 min), Type DGG (finish rating 20 min), Type GPFS1 (finish rating 20 min), Type GPFS2 (finish rating 20 min), Type GPFS6 (finish rating 26 min), Type DS, Type DAP, Type DD (finish rating 20 min), Type DA, Type DAPC, Type LS (finish rating 23 min), Type X, Veneer Plaster Base - Type X, Water Rated - Type X, Sheathing - Type X, Soffit - Type X, Type LWX (finish rating 22 min), Veneer Plaster Base-Type LWX (finish rating 22 min), Water Rated-Type LWX (finish rating 22 min), Sheathing Type-LWX (finish rating 22 min), Soffit-Type LWX (finish rating 22 min), Type DGLW (finish rating 22 min), Water Rated-Type DGLW (finish rating 22 min), Sheathing Type- DGLW (finish rating 22 min), Soffit-Type DGLW (finish rating 22 min), Type LWX (finish rating 22 min), Type LW2X (finish rating 22 min), Veneer Plaster Base - Type LW2X (finish rating 22 min), Water Rated - Type LW2X (finish rating 22 min), Sheathing - Type LW2X (finish rating 22 min), Soffit - Type LW2X (finish rating 22 min), Type DGL2W (finish rating 22 min), Water Rated - Type DGL2W (finish rating 22 min), Sheathing - Type DGL2W (finish rating 22 min)

NATIONAL GYPSUM CO — Type FSK (finish rating 20 min), Type FSK-G (finish rating 20 min), Type FSW (finish rating 20 min), Type FSW-2 (finish rating 24 min), Type FSW-3 (finish rating 20 min), Type FSW-5 (finish rating 22 min), Type FSW-G (finish rating 20 min), Type FSK-C (finish rating 20 min), Type FSW-C (finish rating 20 min), Type FSMR-C, Type FSW-6 (finish rating 20 min), Type FSL (finish rating 24 min), Type FSW-8, Type FSLX (finish rating 21 min), Type RSX (finish rating 26 min).

NATIONAL GYPSUM CO — Riyadh, Saudi Arabia — Type FR, or WR.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Types C, PG-2 (finish rating 20 min), PG-3 (finish rating 20 min), Types PG-3W, PG-5W (finish rating 20 min), Type PG-4 (finish rating 20 min), Type PG-6 (finish rating 23 min), Types PG-3WS, PG-5WS, PGS-WRS (finish rating 20 min), Types PG-5, PG-9 (finish rating 26 min), PG-11 PG-13 (Nails increased to 2 in.), Type PG-C or PGI (finish rating 26 min)

PANEL REY S A — Type ARX, GREX, GRIX, PRX, PRC, PRC2; Types RHX, Guard Rey, MDX, ETX (finish rating 22 min), PRX2 (finish rating 21 min)

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD — Type EX-1 (finish rating 26 min)

THAI GYPSUM PRODUCTS PCL — Type C, Type X (finish rating 26 min)

UNITED STATES GYPSUM CO — Type AR (finish rating 24 min), Type C (finish rating 24 min), Type FRX-G (finish rating 29 min), Type IP-AR (finish rating 24 min), Type IPC-AR (finish rating 24 min), Type IP-X1 (finish rating 24 min), Type IP-X2 (finish rating 24 min), Type SHX (finish rating 24 min), Type SGX (finish rating 24 min), Type ULX (finish rating 22 min), Type WRX (finish rating 24 min), Type WRC (finish rating 24 min), Type ULIX (finish rating 20 min), Type SCX (finish rating 24 min)

USG BORAL DRYWALL SFZ LLC — Type SGX (finish rating 24 min).

USG MEXICO S A DE C V — Type AR (finish rating 24 min), Type C (finish rating 24 min), Type WRX (finish rating 24 min), Type WRC (finish rating 24 min), Type IP-X1 (finish rating 24 min), Type IP-X2 (finish rating 24 min), Type SHX (finish rating 24 min), SCX (finish rating 24 min), Type IP-AR (finish rating 24 min), Type IPC-AR (finish rating 24 min), Type ULX (finish rating 22 min)

3A. **Gypsum Board* —** (As an alternate to Item 3) — 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.), LighttRoc (finish rating 25 min.)

CERTAINTEED GYPSUM INC — Type C, Type X-1 (finish rating 26 min), Type EGRG or GlasRoc, LWTX.

CGC INC — Type AR (finish rating 24 min), Type C (finish rating 24 min), Type IP-AR (finish rating 24 min), Type IPC-AR (finish rating 24 min), Type IP-X1 (finish rating 24 min), Type IP-X2 (finish rating 24 min), Type SCX (finish rating 24 min), Type SHX (finish rating 24 min), Type WRC (finish rating 24 min), Type WRX (finish rating 24 min)

NATIONAL GYPSUM CO — Type FSW (finish rating 24 min)

UNITED STATES GYPSUM CO — Type AR (finish rating 24 min), Type SGX (finish rating 24 min), Type C (finish rating 24 min), Type WRX (finish rating 24 min), Type WRC (finish rating 24 min), Type IP-X1 (finish rating 24 min), Type IP-X2 (finish rating 24 min), Type SCX (finish rating 24 min), Type SHX (finish rating 24 min), Type FRX-G (finish rating 24 min), Type IP-AR (finish rating 24 min), Type IPC-AR (finish rating 24 min)

USG BORAL DRYWALL SFZ LLC — Types C, SCX, SGX (finish rating 24 min).

USG MEXICO S A DE C V — Type AR (finish rating 24 min), Type C (finish rating 24 min), Type WRX (finish rating 24 min), Type WRC (finish rating 24 min), Type IP-X1 (finish rating 24 min), Type IP-X2 (finish rating 24 min), Type SHX (finish rating 24 min), Type SCX, Type IP-AR (finish rating 24 min), Type IPC-AR (finish rating 24 min)

3B. **Gypsum Board* —** (As an alternate to Item 3) — Nom 3/4 in. thick, installed with 1-7/8 in. long cement coated nails as described in Item 3 or 1-3/8 in. long Type W coarse thread gypsum panel steel screws as described in Item 3A.
CGC INC — Types AR, IP-AR

UNITED STATES GYPSUM CO — Types AR, IP-AR

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

3C. **Gypsum Board* —** (As an alternate to Items 3, 3A and 3B) — 5/8 in. thick, 2 ft wide, tongue and groove edge, applied horizontally to one side of the assembly. Installed with 1-7/8 in. long cement coated nails as described in Item 3 or 1-1/4 in. long Type W coarse thread gypsum panel steel screws as described in Item 3A. Joint covering (Item 2) not required.
CGC INC — Type SHX

UNITED STATES GYPSUM CO — Type SHX

USG MEXICO S A DE C V — Type SHX

3D. **Gypsum Board* —** (As an alternate to Items 3, 3A, 3B, or 3C — Not Shown) — For Direct Application to Studs Only- Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-5/8 in. long Type W coarse thread gypsum panel steel screws spaced 8 in. OC at perimeter and in the field. Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 1-1/2 in. wide, max 10 ft long with a max thickness of 0.125 in. placed on the face of studs and attached to the stud with two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead discs or tabs may be used in lieu of or in addition to the lead batten strips or optional at other locations. Max 3/4 in. diam by max 0.125 in. thick lead discs compression fitted or adhered over steel screw heads or max 1/2 in. by 1-1/4 in. by max 0.125 in. thick lead tabs placed on gypsum boards underneath screw locations prior to the installation of the screws. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".
RAY-BAR ENGINEERING CORP — Type RB-LBG (finish rating 24 min)

3E. **Gypsum Board* —** (As an alternate to Items 3, 3A, 3B, 3C, and 3D) — 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 7 in. OC with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 15/64 in. diam heads. When used in widths of other than 48 in., gypsum boards are to be installed horizontally.
GEORGIA-PACIFIC GYPSUM L L C — Type DGG (finish rating 20 min), GreenGlass Type X (finish rating 23 min)

3F. **Gypsum Board* —** (As an alternate to Items 3, 3A, 3B, 3C, 3D, and 3E) — 5/8 in. glass-mat faced with square edges, applied either horizontally or vertically. Gypsum panels nailed 7 in. OC around the perimeter and in the field with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 15/64 in. diam heads. Nails shall be placed 1 inch and 3 inch from horizontal joints and 7 inch OC thereafter.
CGC INC — Type USGX (finish rating 22 min)

UNITED STATES GYPSUM CO — Type USGX (finish rating 22 min.)

USG BORAL DRYWALL SFZ LLC — , Type USGX (finish rating 22 min.)

USG MEXICO S A DE C V — Type USGX (finish rating 22 min.)

3G. **Gypsum Board* —** (As an alternate to Items 3 through 3F) — 5/8 in. thick paper surfaced applied vertically. Gypsum panels nailed 7 in. OC with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 15/64 in. diam heads.
GEORGIA-PACIFIC GYPSUM L L C — Type X ComfortGuard Sound Deadening Gypsum Board (finish rating 27 min)

3H. **Gypsum Board* —** (As an alternate to Items 3) — Not to be used with items 6 or 7. 5/8 in. thick paper surfaced applied vertically only. Gypsum panels nailed 7 in. OC with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 15/64 in. diam heads.
NATIONAL GYPSUM CO — Type SBWB

3I. **Gypsum Board* —** (As an alternate to Items 3 through 3H, Not Shown) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically. Panels nailed 7 in. OC with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 15/64 in. diam heads. Panel joints covered with paper tape and two layers of joint compound. Nailheads covered with two layers of joint compound.
PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock ES (finish rating 20 min)

3J. **Gypsum Board* —** (As an alternate to Item 3) — 5/8 in. thick paper surfaced applied vertically or horizontally. Gypsum panels secured with 1-1/4 in. Type W coarse thread gypsum panel steel screws spaced a maximum of 12 in. OC.
CERTAINTEED GYPSUM INC — Type SilentFX

3K. **Gypsum Board* —** (As an alternate to Item 3) — 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 8 in. OC with the last screw 1 in. from the edge of the board. When used in widths other than 48 in., gypsum panels are to be installed horizontally.
NATIONAL GYPSUM CO — Type FSK (finish rating 20 min), Type FSK-G (finish rating 20 min), Type FSW (finish rating 20 min), Type FSW-2 (finish rating 24 min), Type FSW-3 (finish rating 20 min), Type FSW-5 (finish rating 22 min), Type FSW-G (finish rating 20 min), Type FSK-C (finish rating 20 min), Type FSW-C (finish rating 20 min), Type FSMR-C, Type FSW-6 (finish rating 20 min), Type FSL (finish rating 24 min).

3L. **Gypsum Board* —** (As an alternate to Item 3) — For Direct Application to Studs Only — Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-5/8 in. long Type W coarse thread gypsum panel steel screws spaced 8 in. OC at perimeter and in the field. Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 2 in. wide, max 10 ft long with a max thickness of 0.140 in. placed on the face of studs and attached to the stud with two 1 in. long Type S-8 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead discs, max 5/16 in. diam by max 0.140 in. thick. compression fitted or adhered over the screw heads. Lead batten strips to have a purity of 99.5% meeting the Federal specification QQ-L-201f, Grades "B, C or D".
MAYCO INDUSTRIES INC — "X-Ray Shielded Gypsum"

3M. **Gypsum Board* —** (As an alternate to Items 3) — For Direct Application to Studs Only — For use as the base layer or as the face layer. Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-5/8 in. long Type W coarse thread gypsum panel steel screws spaced 8 in. OC at perimeter and in the field when applied as the base layer. When applied as the face layer screw length to be increased to 2-1/2 in. Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 2 in. wide, max 8 ft long with a max thickness of 0.14 in. placed on the face of studs and attached to the stud with construction adhesive and two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead discs, nominal 3/8 in. diam by max 0.085 in. thick. Compression fitted or adhered over the screw heads. Lead batten strips and discs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Fasteners for face layer gypsum panels (Items 4, 4A or 4B) when installed over lead backed board to be min 2-1/2 in. Type S-12 bugle head steel screws spaced as described in Item 4.
RADIATION PROTECTION PRODUCTS INC — Type RPP - Lead Lined Drywall

3N. **Gypsum Board* —** (As an alternate to Item 3) — 5/8 in. thick, 4 ft. wide, applied horizontally or vertically with vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Secured as described in Item 3 or 3A.
CERTAINTEED GYPSUM INC — Easi-Lite Type X (finish rating 24 min), Easi-Lite Type X-2 (finish rating 24 min)

3O. **Wall and Partition Facings and Accessories* —** (As an alternate to Item 3, Not Shown) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically. Panels nailed 7 in. OC with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 15/64 in. diam heads. Panel joints covered with paper tape and two layers of joint compound. Nailheads covered with two layers of joint compound.
PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock 527 (finish rating 24 min).

3P. **Gypsum Board* —** (As an alternate to Item 3, Not Shown) — Two layers nom. 5/16 in. thick gypsum panels applied vertically or horizontally. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered or backed by wood studs. Horizontal joints on the same side between face and base layers need not be staggered. Base layer gypsum panels fastened to studs with 1-1/4 in. long drywall nails spaced 8 in. OC. Face layer gypsum panels fastened to studs with 1-7/8 in. long drywall nails spaced 8 in. OC starting with a 4" stagger.
NATIONAL GYPSUM CO — Type FSW (finish rating 25 min)

3Q. **Gypsum Board* —** (As an alternate to Item 3) — 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 LGLLX

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PRELIMINARY
NOT FOR
CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
UL ASSEMBLIES - U305

PROJECT NUMBER: 25144

SHEET NUMBER:

G-210

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UL DESIGN - U305 (CONT.)

3R. **Gypsum Board* —** (As an alternate to Item 3. For use with Item 5H) — Any 5/8 in. thick, 4 ft. wide, Gypsum Board listed in Item 3 above. Applied either horizontally or vertically, and screwed to panels with 1-5/8 in. long Type W coarse thread steel screws at 8 in. OC at perimeter and in the field with the last two screws 4 and 3/4 in. from the edges of the board when applied as the base layer. When used in widths other than 48 in., gypsum panels are to be installed horizontally.

3S. **Gypsum Board* —** 3/4 in. thick paper or vinyl surfaced, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels secured as described in Item 3 with nail length increased to 2 in.
PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type PG-13

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

3U. **Gypsum Board* —** (As an alternate to Item 3 - For use with Foamed Plastic products, Item 5J) — 5/8 in. thick, 4 ft. wide, applied vertically with vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Gypsum panels nailed 7 in. OC with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 15/64 in. diam heads.
AMERICAN GYPSUM CO — Types AGX-1

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

CABOT MANUFACTURING ULC — Type X

CERTAINTEED GYPSUM INC — Type X

CGC INC — Type SCX

PANEL REY S A — Type ARX, PRX

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

THAI GYPSUM PRODUCTS PCL — Type X

UNITED STATES GYPSUM CO — Types SCX and SGX

USG BORAL DRYWALL SFZ LLC — Types SCX and SGX

USG MEXICO S A DE C V — Type SCX

3V. **Gypsum Board* —** (As an alternate to Item 3. For use with Item 5K) — Any 5/8 in. thick, 4 ft. wide, Gypsum Board listed in Item 3 above. Applied vertically with vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Gypsum panels secured to studs with 1-5/8 in. long Type W coarse thread gypsum panel steel screws spaced 8 in. OC at perimeter and in the field.

3W. **Gypsum Board* —** (As an alternate to Item 3. For use with Item 5L) — Any 5/8 in. thick, 4 ft. wide, Gypsum Board listed in Item 3 above. Applied vertically with vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Gypsum panels secured to studs with 1-1/4 in. long Type W screws spaced 8 in. OC at perimeter and in the field.

3X. **Gypsum Board* —** (As an alternate to Item 3. For use with Item 5M) — Any 5/8 in. thick, 4 ft. wide, Gypsum Board listed in Item 3 above. Two layers applied vertically with vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Joints in outer layers staggered with joints in inner layers. Inner layer secured to studs with 1-1/4 in. long Type W screws spaced 8 in. OC at perimeter and in the field. Outer layer secured to studs with 1-7/8 in. long Type W screws spaced 8 in. OC at the perimeter and in the field.

4. **Steel Corner Fasteners —** (Optional) — For use at wall corners. Channel shaped, 2 in. long by 1 in. high on the back side with two 1/8 in. wide cleats protruding into the 5/8 in. wide channel, fabricated from 24 gauge galv steel. Fasteners applied only to the end or cut edge (not along tapered edges) of the gypsum board, no greater than 2 in. from corner of gypsum board, max spacing 16 in. OC. Nailed to adjacent stud through tab using one No. 6d cement coated nail per fastener. Corners of wall board shall be nailed to top and bottom plate using No. 6d cement coated nails.

5. **Batts and Blankets* —** (Optional — Required when Item 6A is used (RC-1)) — Glass fiber or mineral wool insulation. Placed to completely or partially fill the stud cavities. When Item 6A is used, glass fiber or mineral wool insulation shall be friction-fitted to completely fill the stud cavities.
CERTAINTEED CORP

JOHNS MANVILLE

KNAUF INSULATION LLC

MANSON INSULATION INC

ROCKWOOL — Types Acoustical Fire Batts and Type AFB, min. density 1.69 pcf / 27.0 kg/m^3

ROCKWOOL MALAYSIA SDN BHD — Type Acoustical Fire Batts

ROCK WOOL MANUFACTURING CO — Delta Board

THERMAFIBER/OWENS CORNING — Type SAFB, SAFB FF

5A. **Fiber, Sprayed* —** (Not Shown — Not for use with Item 6) — 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/ft^3. Alternate Application Method: The fiber is applied without water or adhesive at a nominal dry density of 3.5 lb/ft^3, in accordance with the application instructions supplied with the product. When Item 6B is used, Fiber, Sprayed shall be SANCTUARY.

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

5B. **Fiber, Sprayed* —** (Not Shown - Not for use with Item 6) — As an alternate to Batts and Blankets (Item 5) - 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

5C. **Batts and Blankets* —** Required for use with resilient channels, Item 7, 3 in. thick mineral wool batts, friction-fitted to fill interior of wall.
THERMAFIBER/OWENS CORNING — Type SAFB, SAFB FF

5D. **Glass Fiber Insulation —** (As an alternate to Item 5C) — 3 in. thick glass fiber batts bearing the UL Classification Marking as to Surface Burning and/or Fire Resistance, friction-fitted to fill the interior of the wall. See **Batts and Blankets** (BKNV or BZJZ) Categories for names of Classified companies.

5E. **Batts and Blankets* —** (Required for use with Wall and Partition Facings and Accessories, Item 3D) — 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.

5F. **Fiber, Sprayed* —** (Optional, Not Shown — Not for use with Items 6, 6A, 6B, 6C, or 6D) — As an alternate to Batts and Blankets (Item 5) and Item 5A - 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

5G. **Fiber, Sprayed* —** (Optional, Not Shown — Not for use with Items 6, 6A, 6B, 6C, or 6D). — As an alternate to Batts and Blankets (Item 5) and Item 5A - Brown Colored Spray applied cellulose fiber. The fiber is applied with water to completely fill the enclosed stud cavity in accordance with the application instructions supplied with the product. The minimum dry density shall be 4.30 lbs/ft^3.
INTERNATIONAL CELLULOSE CORP — Celbar-RL

5H. **Foamed Plastic* —** (Optional -For use with Item 3R) — Spray applied, foamed plastic insulation, at any thickness from partial fill to completely filling stud cavity.
Holcim Solutions and Products US, LLC — Nexseal™ 2.0 or Nexseal™ 2.0 LE Spray Foam and Sucraseal Spray Foam.

5I. **Fiber, Sprayed* —** (Not Shown — Not for use with Item 6) — 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. 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/ft^3.
Applegate Greenfiber Acquisition LLC— Applegate Advanced Stabilized Cellulose Insulation

5J. **Foamed Plastic* —** (Optional, Not Shown - For use with Item 3U) — Spray applied, foamed plastic insulation, at any thickness from partial fill to completely filling stud cavity.
HOLCIM SOLUTIONS AND PRODUCTS US, LLC — Types GacoEZSpray F4500, GacoProFill FR6500R, Gaco 052N, GacoOnePass F1850, GacoOnePass Low GWP F1880, and Gaco WallFoam 183M

5K. **Foamed Plastic* —** (Optional, Not Shown - For use with Item 3V) — Spray applied, foamed plastic insulation, at any thickness from partial fill to completely filling stud cavity.
CARLISLE SPRAY FOAM INSULATION — Types SealTite ONE, SealTite Pro Closed Cell (CC), SealTite Pro Open Cell (OC), SealTite Pro OCX, SealTite Pro No Trim 21, SealTite Pro One Zero, Foamsulate Closed Cell, Foamsulate OCX, Foamsulate 70, and Foamsulate HFO.

5L. **Foamed Plastic* -** (Optional, Not Shown – For use with Item 3W) - Spray applied, foamed plastic insulation, at any thickness from partial fill to completely filling stud cavity.

BASF CORP – Types Enertite® NM, Enertite® G, FE178®, Spraytite® 178, Spraytite® 81206, Walltite® 200, Walltite® US, Walltite® US-N, Walltite® HP+, Walltite® MAX, Walltite® LWP, Walltite® Plus, Walltite® One, and Enertite® Max

5M. **Foamed Plastic* -** (Optional, Not Shown – For use with Item 3X) - Spray applied, foamed plastic insulation, at any thickness from partial fill to completely filling stud cavity.

BASF CORP – Type Walltite® v.5

5N. **Loose Fill Material* –** Optional - (As an alternate to Items 5-5M) - Shredded glass fibers bearing the UL Classification Marking as to Surface Burning. Blown into wall cavities through pre-installed fabric stapled or adhered to studs.

CERTAINTEED LLC – Type InsulSafe R, InsulSafe SP, InsulSafe XC, Northern White,or OPTIMA

6. **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 3.

b. **Steel Framing Members* —** Used to attach furring channels (Item 6a) to studs. Clips spaced 48 in. OC. RSIC-1 and RSIC-1 (2.75) clips secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. RSIC-V and RSIC-V (2.75) 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. RSIC-1 and RSIC-V clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) and RSIC-V (2.75) clips for use with 2-23/32 in. wide furring channels.
PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-V, RSIC-1 (2.75), RSIC-V (2.75)

6A. **Steel Framing Members* —** (Optional, Not Shown) — Furring channels and Steel Framing Members on one side of studs 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. Batts and Blankets placed in stud cavity as described in Item 5. Two layers of gypsum board attached to furring channels as described in Item 3.

b. **Steel Framing Members* —** Used to attach furring channels (Item 6Aa) to one side of studs only. Clips spaced 48 in. OC., and secured to studs with two No. 8 x 2-1/2 in. coarse drywall screws, one through the hole at each end of the clip. Furring channels are friction fitted into clips.
KINETICS NOISE CONTROL INC — Type Isomax

6B. **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. 2-3/8 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 3.

b. **Steel Framing Members* —** Used to attach furring channels (Item 6Ba) 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

6C. **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. 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 3.

b. **Steel Framing Members* —** Used to attach furring channels (Item 6Ca) to studs. Clips spaced 48 in. OC., and secured to studs with No. 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 A237 or A237R

6D. **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, 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 a double strand of No. 18 AWG twisted steel wire. Gypsum board attached to furring channels as described in Item 3.

b. **Steel Framing Members* —** Used to attach furring channels (Item 6Da) 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

6E. **Steel Framing Members* —** (Optional, Not Shown) — 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 6Ea) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Resilient channels are secured to clips with one No. 10 x 1/2 in. pan-head self-drilling screw.
KEENE BUILDING PRODUCTS CO INC - Type RC+ Assurance Clip

6F. **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. 2-23/32 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 6Fa) to studs. Clips spaced 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

6G. **Steel Framing Members* —** (Optional, Not Shown) — 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 16 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

6H. **Steel Framing Members* —** (Optional on one or both sides, not shown, for single or double layer systems, not for use with Items 3D, 3L or 3M) — 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. 2-23/32 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 6Ha) to studs. Clips spaced maximum 48 in. OC. staggered on adjacent furring channels 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.

ISOTECH INDUSTRIES INC. — Type ISOSTUD

7. **Resilient 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 5C or 5D is required.

8. **Caulking and Sealants —** (Not Shown, Optional) — A bead of acoustical sealant applied around the partition perimeter for sound control.

9. **STC Rating —** The STC Rating of the wall assembly is 56 when it is constructed as described by Items 1 through 6, except:

A. Item 2, above — Nailheads Shall be covered with joint compound.

B. Item 2, above — Joints As described, shall be covered with fiber tape and joint compound.

C. Item 5, above — Batts and Blankets* The cavities formed by the studs shall be friction fit with R-19 unfaced fiberglass insulation batts measuring 6-1/4 in. thick and 15-1/4 in. wide.

D. Item 6, above — Steel Framing Members* Type RSIC-1 clips shall be used to attach gypsum board to studs on either side of the wall assembly.

E. Item 8, above — Caulking and Sealants (Not Shown) A bead of acoustical sealant shall be applied around the partition perimeter for sound control.

F. Steel Corner Fasteners (Item 4), Fiber, Sprayed (Items 5A and 5B) and Steel Framing Members (Item 6A), not evaluated as alternatives for obtaining STC rating.

10. **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 PABCO GYPSUM — Type QuietRock QR-500 and QR-510

11. **Cementitious Backer Units* —** (Optional Item Not Shown — For Use On Face Of 1 Hr Systems With All Standard Items Required) - 7/16 in., 1/2 in., 5/8 in., 3/4 in. or 1 in. thick, min. 32 in. wide. Applied vertically or horizontally with vertical joints centered over studs. Fastened to studs and runners with cement board screws of adequate length to penetrate stud by a minimum of 3/8 in. for steel framing members, and a minimum of 3/4 in. for wood framing members spaced a max of 8 in. OC. When 4 ft. wide boards are used, horizontal joints need not be backed by framing.
NATIONAL GYPSUM CO — Type DuraBacker, PermaBase, DuraBacker Plus, or PermaBase Plus

12. **Non-Bearing Wall Partition Intersection —** (Optional) —Two nominal 2 by 4 in. studs or nominal 2 by 6 in. studs nailed together with two 3 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 with 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.

13. **Mesh Netting —** (Not Shown) — Any thin, woven or non-woven fibrous netting material attached with staples to the outer face of one row of studs to facilitate the installation of the sprayed fiber from the opposite row.

14. **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

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PRELIMINARY
NOT FOR
CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
UL ASSEMBLIES - U305

PROJECT NUMBER: 25144

SHEET NUMBER:

G-211

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UL DESIGN - U341

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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

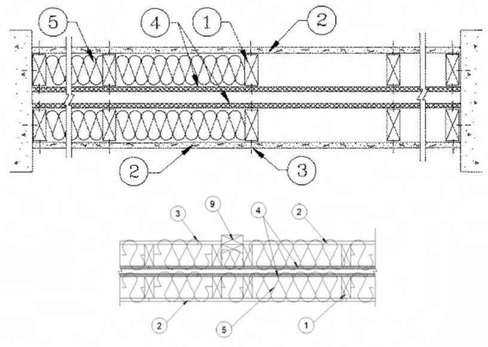
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. **U341**

November 14, 2025

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) — CKNX.R14196

BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO (View Classification) — CKNX.R19374

CABOT MANUFACTURING ULC (View Classification) — CKNX.R25370

CERTAINTEED GYPSUM INC (View Classification) — CKNX.R3660

CGC INC (View Classification) — CKNX.R19751

CERTAINTEED GYPSUM INC (View Classification) — CKNX.R18482

GEORGIA-PACIFIC GYPSUM L L C (View Classification) — CKNX.R2717

NATIONAL GYPSUM CO (View Classification) — CKNX.R3501

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM (View Classification) — CKNX.R7094

PANEL REY S A (View Classification) — CKNX.R21796

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD (View Classification) — CKNX.R19262

THAI GYPSUM PRODUCTS PCL (View Classification) — CKNX.R27517

UNITED STATES GYPSUM CO (View Classification) — CKNX.R1319

USG BORAL DRYWALL SFZ LLC (View Classification) — CKNX.R38438

USG BORAL DRYWALL SFZ LLC (View Classification) — CKNX.R38438

USG MEXICO S A DE C V (View Classification) — CKNX.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*** (CKNX) 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, LightRoc

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 SBWB

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 SilentFX

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 527.

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.

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 entire surface of Classified veneer baseboard with joints reinforced with paper tape.

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** (CERZ) 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** (BZJZ) 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/ft^3. Alternate Application Method: The fiber is applied without water or adhesive at a nominal dry density of 3.5 lb/ft^3, in accordance with the application instructions supplied with the product.

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

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 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

5C. **Batts and Blankets* —** (Required for use with Wall and Partition Facings and Accessories, Item 2A. Use of Sheathing, Item 4, does not nullify requirement of Item 5C for use with 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.

5D. **Fiber, Sprayed* —** As an alternate to Batts and Blankets (Item 5) and Item 5A when Sheathing (Item 4) is used on both halves of wall - 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/ft^3.
INTERNATIONAL CELLULOSE CORP — Celbar-RL

5E. **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. 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/ft^3.

Applegate Greenfiber Acquisition LLC— Applegate Advanced Stabilized Cellulose Insulation

6. **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 2-9/16 in. wide furring channels. RSIC-1 (2.75) clip for use with 2-23/32 in. wide furring channels.
PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-1 (2.75).

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

a. **Furring Channels —** Formed of No. 25 MSG galv steel. 2-3/8 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

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
UL ASSEMBLIES - U341

PROJECT NUMBER: 25144

SHEET NUMBER:

G-212

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UL DESIGN - U341 (CONT.)

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

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

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

b. **Steel Framing Members* —** Used to attach furring channels (Item 6Ba) 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

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

A. **Furring Channels —** Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 6Cb. 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 6CA) 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

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

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

b. **Steel Framing Members* —** Used to attach resilient channels (Item 6Da) 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

6E. **Steel Framing Members* —** (Optional, Not Shown) — 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. Gypsum board attached to resilient channels as described in Item 2.

b. **Steel Framing Members*** - Used to attach resilient channels to wall studs. A resilient sound isolation accessory shall be used at each attachment point of the resilient channels to the studs. 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 studs with the screws supplied with the accessory and per the accessory manufacturer's installation instructions.

PAC INTERNATIONAL L L C — Type RC-1 Boost

6F **Steel Framing Members* —** (Optional, Not Shown, As an alternate to Item 6) — Furring channels and Steel Framing Members as described below:

a **Furring Channels —** Formed of No. 25 MSG galv steel. 2-23/32 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 6Fa) 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

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 PABCO GYPSUM — Type QuietRock QR-500 and QR-510

8. **Mineral and Fiber Board* —** ((Optional, Not Shown) — For optional use as an additional layer on one or both sides of wall. Nom 1/2 in. thick, 4 ft wide with long dimension parallel and centered over studs. Attached to framing as described in Item 2. 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

9. **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 with 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.

(Optional, Not Shown) Alternate Construction For Use On One Side Of The Wall.

10. **Mineral and Fiber Board* —** For use with Items 10A-10D) —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

10A. **Glass Fiber Insulation —** (For use with Item 10) — 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.

10B. **Batts and Blankets* —** (As an alternate to Item 10B, For use with Item 10), 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.
THERMAFIBER/OWENS CORNING — Type SAFB, SAFB FF

10C. **Adhesive —** (For use with Item 10) — 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 14A).

10D. **Gypsum Board* —** (For use with Item 10) — 5/8 in. thick, 4 ft wide, applied vertically over Mineral and Fiber Board (Item 14A) 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 10). 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.
AMERICAN GYPSUM CO — Type AG-C

CERTAINTEED GYPSUM INC — Type C

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 — Type PRC

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

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JOHNSON - BETTS MEADOWS
TOPEKA, KS

SHEET TITLE
UL ASSEMBLIES - U341

PROJECT NUMBER: 25144

SHEET NUMBER:

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- 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. **U356**

August 7, 2025

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 2)
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.**

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) — CKNX.R14196

BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO (View Classification) — CKNX.R19374

CABOT MANUFACTURING ULC (View Classification) — CKNX.R25370

CERTAINTEED GYPSUM INC (View Classification) — CKNX.R3660

CGC INC (View Classification) — CKNX.R19751

CERTAINTEED GYPSUM INC (View Classification) — CKNX.R18482

GEORGIA-PACIFIC GYPSUM L L C (View Classification) — CKNX.R2717

NATIONAL GYPSUM CO (View Classification) — CKNX.R3501

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM (View Classification) — CKNX.R7094

PANEL REY S A (View Classification) — CKNX.R21796

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD (View Classification) — CKNX.R19262

THAI GYPSUM PRODUCTS PCL (View Classification) — CKNX.R27517

UNITED STATES GYPSUM CO (View Classification) — CKNX.R1319

USG BORAL DRYWALL SFZ LLC (View Classification) — CKNX.R38438

USG MEXICO S A DE C V (View Classification) — CKNX.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*** (CKNX) 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.

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.
CERTAINTEED 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*** (BZJZ) 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/ft^3. Alternate Application Method: The fiber is applied without water or adhesive at a nominal dry density of 3.5 lb/ft^3, in accordance with the application instructions supplied with the product.
Applegate Greenfiber Acquisition LLC — 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/ft^3.
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/ft^3.
INTERNATIONAL CELLULOSE CORP — Celbar-RL

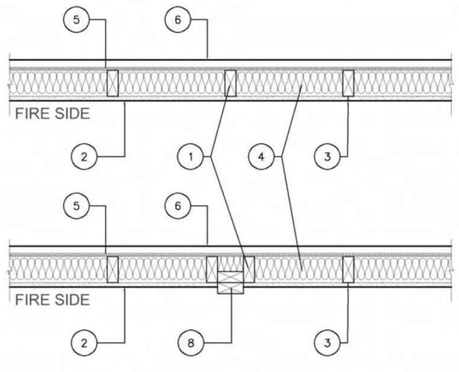
4D. **Fiber, Sprayed* —** As an alternate to Batts and Blankets (Item 4) — Spray applied, granulated mineral fiber material. The fiber is applied with adhesive, at a minimum density of 4.0 pcf, to completely fill the enclosed cavity in accordance with the application instructions supplied with the product.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



1. **Wood Studs —** Nom 2 by 4 in. spaced 16 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.

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

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

CERTAINTEED 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 PABCO GYPSUM — Types PG-11, PGS-WRS, PGI.

THAI GYPSUM PRODUCTS PCL — Type C or Type X

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

GEORGIA-PACIFIC GYPSUM L L C — Type X, Veneer Plaster Base-Type X, Water Rated-Type X, Sheathing Type-X, Soffit-Type X

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

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 SBWB

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 PABCO GYPSUM — Type QuietRock 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.
CERTAINTEED 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 PABCO GYPSUM — Type QuietRock 527.

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 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 LGLLX

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.)

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 CCVW) 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 PermaBase

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 Designwall 4000, KS Series/Optimo, Designwall 2000R, Designwall 2000R-459 and Designwall 2000

6B. **Building Units* — As an alternate to Exterior Facing Item 6 —** Insulated steel panels 24, 30 or 42 in. wide. Attached through retainer clips to studs with No. 14 hex head screws located at each joint in the concealed lip of the units and spaced in accordance with the structural design requirements.

CENTRIA, A NUCOR COMPANY — Types Formawall Dimension Series, Formawall Dimension Series Graphix.

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.

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PRELIMINARY
NOT FOR
CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
UL ASSEMBLIES - U356

PROJECT NUMBER: 25144

SHEET NUMBER:

G-214

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UL DESIGN - U356

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

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 with 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 2025-08-07

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL Solutions' Follow - Up Service. Only those products bearing the UL Mark should be considered to be Certified and covered under UL Solutions' Follow - Up Service. Always look for the Mark on the product.

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PRELIMINARY
NOT FOR
CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
UL ASSEMBLIES - U356

PROJECT NUMBER: 25144

SHEET NUMBER:

G-215

12/18/2025 9:56:26 AM
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REFERENCE G-003 FOR GENERAL NOTES

DIAGRAMS BELOW ARE APPLICABLE TO PUBLIC SPACES AND ALL UNIT TYPES UNLESS NOTED OTHERWISE

GENERAL NOTES

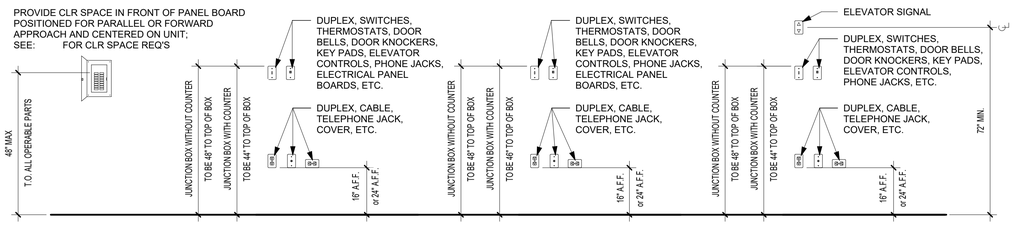
1. THE PROJECT SHALL MEET ALL APPLICABLE CODES SPECIFIED BY LOCAL AND FEDERAL REQUIREMENTS, INCLUDING BUT NOT LIMITED TO THE INFORMATION PRESENTED ON THE FOLLOWING G-300 SHEETS.
   A. LOCAL AND FEDERAL REQUIREMENTS SHALL SUPERCEDE ANY CONFLICTING INFORMATION
2. ALL DIMENSIONS PROVIDED ON THE FOLLOWING G-300 SHEETS REPRESENT CLEAR DIMENSIONS AND ARE TAKEN FROM FACE OF FINISH/COMPONENT
3. PER ICC A117.1-2017 105.3 - WHERE DIMENSIONS ARE STATED AS MINIMUM OR MAXIMUM, DIMENSIONS ARE NOT SUBJECT TO CONVENTIONAL INDUSTRY TOLERANCES

UNIVERSAL DESIGN REQ'S

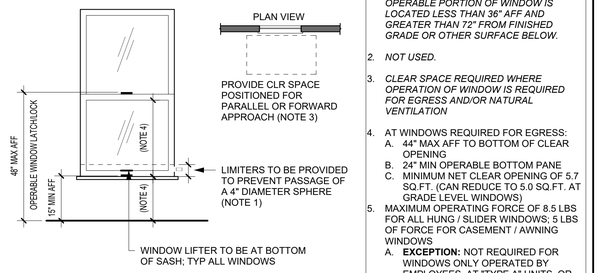
REQUIREMENTS FOR UNIVERSAL DESIGN HOUSING FOR THE ELDERLY AND SINGLE FAMILY DWELLINGS.

1. EQUITABLE USE
   A. FLAT LANDING SURFACES LEADING TO DOORWAYS
   B. LEVER ACTION DOOR HARDWARE
   C. LEVER ACTION PLUMBING FIXTURE CONTROLS
   D. NO THRESHOLDS AND/OR CHANGE OF WALKING SURFACE GREATER THAN 1/2 INCH
2. FLEXIBILITY IN USE
   A. BLOCKING IN BATHROOM WALLS TO ACCEPT GRAB RAILS
   B. BLOCKING IN OR BEHIND SHOWER/TUB ENCLOSURES TO ACCEPT GRAB RAILS
   C. DOOR ASSEMBLIES AND CABINET DOOR ASSEMBLIES THAT WILL ACCEPT LEVER OR KNOB HARDWARE WITHOUT ALTERATION OR REPLACEMENT
3. SIMPLE AND INTUITIVE
   A. BUTTONS ON CONTROL PANELS THAT CAN BE DISTINGUISHED BY TOUCH
4. PERCEPTIBLE INFORMATION
   A. SIGNAGE WITH LARGE CONTRASTING PRINT IN ADDITION TO GENERALLY RECOGNIZED ICONS
   B. CONTRASTING COLORS BETWEEN WIRING DEVICES [RECEPTACLES AND LIGHT SWITCHES] AND SURROUNDING SURFACES
   C. CONTRASTING COLORS BETWEEN STEPS AND LANDINGS
   D. CONTRASTING COLORS BETWEEN DIFFERENT FLOOR COVERINGS
   E. CONTRASTING COLORS BETWEEN COUNTERTOPS AND FLOORING
   F. CONTRASTING COLORS BETWEEN PLUMBING FIXTURES AND FLOORING/COUNTERTOPS
5. TOLERANCE FOR ERROR
   A. LIGHT SWITCHES WITH LARGE FLAT PADS
   B. NON-SLIP WALKING SURFACES
6. LOW PHYSICAL EFFORT
   A. SELF CLOSING FIRE RATED DOORS MUST BE ON LOWEST SETTING WHILE COMPLYING WITH THE ENFORCED BUILDING CODE
   B. NO INTERIOR RAMPS
7. SIZE AND SPACE FOR APPROACH AND USE
   A. 36 INCH WIDE DOORS
   B. FLOOR SPACE TO ACCOMMODATE A **67** INCH DIAMETER CIRCLE FOR WHEEL CHAIR TURNING IN KITCHEN AND BATHROOM
   C. 42 INCH WIDE RESIDENTIAL UNIT AND COMMON HALLWAYS

OTHER HEIGHTS



D2 MOUNTING HEIGHTS
NOT TO SCALE

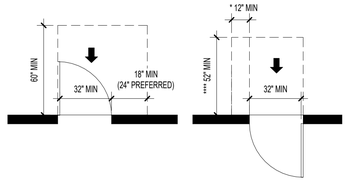


NOTES:

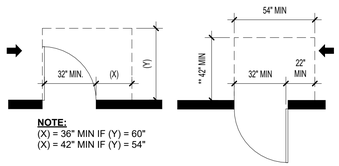
1. *PROVIDE LIMITERS AT R-2 OCCUPANCIES WHERE BOTTOM OF CLEAR OPENING OF OPERABLE PORTION OF WINDOW IS LOCATED LESS THAN 36" AFF AND GREATER THAN 72" FROM FINISHED GRADE OR OTHER SURFACE BELOW.*
2. *NOT USED.*
3. *CLEAR SPACE REQUIRED WHERE OPERATION OF WINDOW IS REQUIRED FOR EGRESS AND/OR NATURAL VENTILATION*
4. AT WINDOWS REQUIRED FOR EGRESS:
   A. 44" MAX AFF TO BOTTOM OF CLEAR OPENING
   B. 24" MIN OPERABLE BOTTOM PANE
   C. MINIMUM NET CLEAR OPENING OF 5.7 SQ.FT. (CAN REDUCE TO 5.0 SQ.FT. AT GRADE LEVEL WINDOWS)
5. MAXIMUM OPERATING FORCE OF 8.5 LBS FOR ALL HUNG / SLIDER WINDOWS; 5 LBS OF FORCE FOR CASEMENT / AWNING WINDOWS
   A. **EXCEPTION:** NOT REQUIRED FOR WINDOWS ONLY OPERATED BY EMPLOYEES, AT "TYPE A" UNITS, OR OPERABLE SKYLIGHTS

D1 WINDOW LATCH/LOCK REQ'S
NOT TO SCALE

DOORS

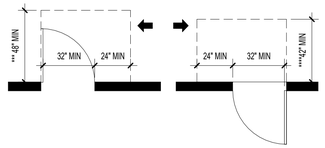


FRONT APPROACH SWINGING DOORS



NOTE:
(X) = 36" MIN IF (Y) = 60"
(X) = 42" MIN IF (Y) = 54"

HINGE SIDE APPROACH - SWINGING DOORS



LATCH SIDE APPROACH - SWINGING DOORS

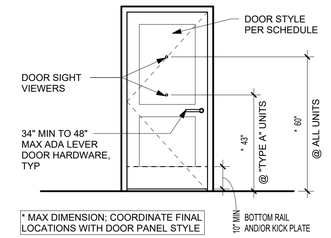
NOTE:
DOOR CLEARANCES ARE REQUIRED FOR ALL DOORS AT THE FOLLOWING LOCATIONS:
PUBLIC AREAS, "TYPE A" UNITS

"TYPE B" UNIT DOOR PUSH/PULL CLEARANCES ARE REQUIRED FOR UNIT ENTRY DOORS ONLY; SEE UNIT PLANS FOR MORE INFORMATION

GENERAL LEGEND:

*	= IF BOTH CLOSER & LATCH ARE REQUIRED
**	= 48" MIN IF BOTH CLOSER & LATCH PROVIDED
***	= 54" MIN IF CLOSER IS PROVIDED
****	= 48" MIN IF CLOSER PROVIDED
*****	= 48" AT "TYPE B" UNIT ENTRY & EXISTING BUILDING

C2 DOOR CLEARANCES
NOT TO SCALE



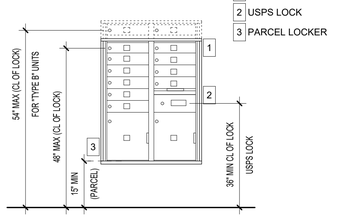
C1 DOOR HARDWARE HEIGHTS
NOT TO SCALE

MAIL BOXES

100% OF MAILBOXES PROVIDED MEET ACCESSIBILITY GUIDELINES

ACCESSIBLE MAILBOXES
48" MAX AFF (CL OF LOCK)
PROVIDE **30"x52"** CLEAR FLOOR SPACE AT ALL ACCESSIBLE LOCKERS, CENTERED ON MAILBOX

USPS ARROW LOCK
36" MIN & 48" MAX AFF (CL OF LOCK)
PARCEL LOCKER
15" AFF MIN (T.O. BOTTOM SHELF)
MINIMUM OF 1 PARCEL LOCKER FOR EVERY 5 MAILBOXES

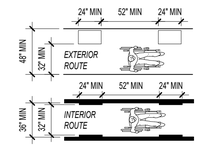


B4 FULLY ACCESSIBLE MAIL BOXES
NOT TO SCALE

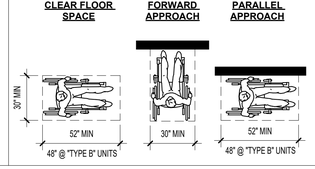
CLEAR FLOOR SPACES

NEW CONSTRUCTION

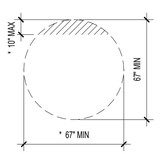
CLEAR WIDTH OF ACCESSIBLE ROUTES



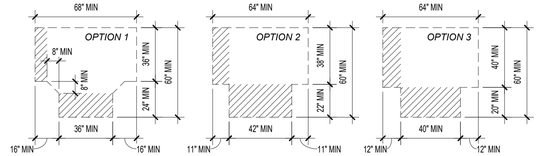
CLEAR SPACES



CIRCULAR



T-TURN REQUIREMENTS

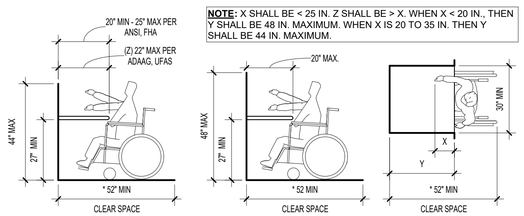


OVERLAP OF KNEE AND TOE CLEARANCE

NOTE:
1. VERIFY WITH ALL APPLICABLE CODES REGARDING OVERLAPPING OF CLEAR FLOOR SPACE AND TURNING SPACES.
2. ALL PARALLEL AND FORWARD APPROACH CLEAR SPACES ARE 30"X52" UNLESS NOTED OTHERWISE
   A. "TYPE B" CLEAR SPACES ARE 30"X48" UNLESS NOTED OTHERWISE

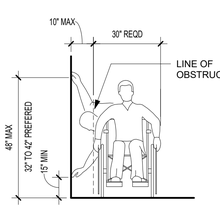
B2 WHEELCHAIR TURNING SPACE & CLEARANCES
NOT TO SCALE

REACH RANGES

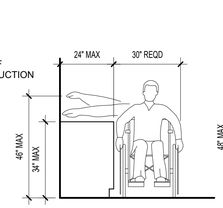


NOTE: X SHALL BE < 25 IN. Z SHALL BE > X. WHEN X < 20 IN., THEN Y SHALL BE 48 IN. MAXIMUM. WHEN X IS 20 TO 35 IN. THEN Y SHALL BE 44 IN. MAXIMUM.

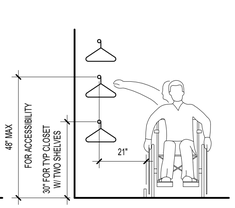
*48 MIN AT EXISTING BUILDINGS AND/OR "TYPE B" UNITS



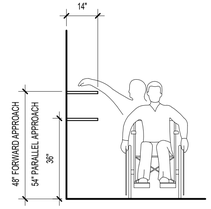
HIGH AND LOW SIDE REACH LIMITS



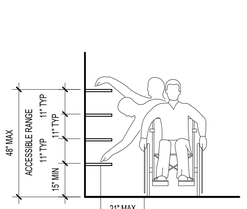
MAX SIDE REACH OVER OBSTRUCTION



CLOSET HANGING ROD



TYP. ACCESSIBLE SHELF MOUNTING HEIGHTS



SHELVES

A4 REACH REQUIREMENTS
NOT TO SCALE

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INTERIOR DESIGN
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REVISIONS:

PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
ACCESSIBILITY STANDARDS

PROJECT NUMBER: 25144

SHEET NUMBER:

G-300

IF PROJECT IS USING 2017 ANSI, DELETE 2009 SHEETS AND RENUMBER

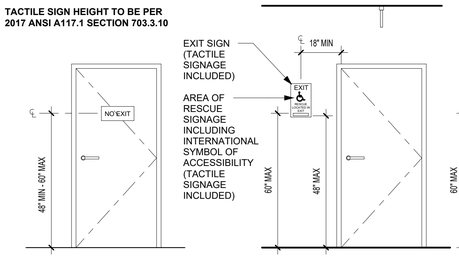
12/19/2025 9:56:29 AM
C:\Revit Local Files\25144-R24_rosemann_Betts_R24_rosemann24eT.rvt

REFERENCE G-003 FOR GENERAL NOTES

DIAGRAMS BELOW ARE APPLICABLE TO PUBLIC SPACES AND ALL UNIT TYPES UNLESS NOTED OTHERWISE

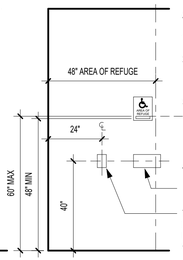
SIGNAGE

TACTILE SIGN HEIGHT TO BE PER 2017 ANSI A117.1 SECTION 703.3.10



SIGNAGE AT NON-EXIT

SIGNAGE AT STAIR ENTRY



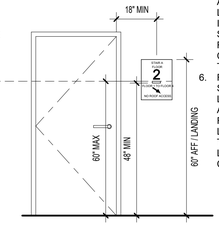
SIGNAGE AT AREA OF RESCUE

AREA OF RESCUE INSTRUCTIONS INDICATING ALL OF THE FOLLOWING:

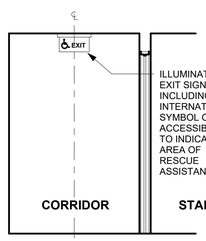
1. DIRECTIONS TO FIND OTHER MEANS OF EGRESS
2. UNLESS THEY ARE ASSISTING OTHERS, PERSONS ABLE TO USE THE EXIT STAIRWAY SHOULD DO SO AS SOON AS POSSIBLE.
3. INFORMATION ON PLANNED AVAILABILITY OF ASSISTANCE IN THE USE OF STAIRS OR SUPERVISED OPERATION OF ELEVATORS AND HOW TO SUMMON SUCH ASSISTANCE.
4. DIRECTIONS FOR USE OF THE EMERGENCY COMMUNICATIONS SYSTEM.

STAIR SIGNAGE REQ'S:

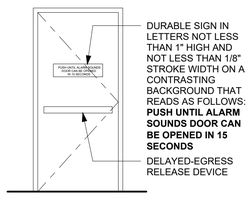
5. SIGNAGE PROVIDED AT EACH FLOOR LANDING AT INTERIOR EXIT STAIRWAYS AND/OR RAMPS CONNECTING MORE THAN 3 STORIES
6. FLOOR LEVEL SIGNAGE SHALL BE LOCATED ADJACENT EACH FLOOR-LEVEL LANDING ADJACENT TO THE DOOR LEADING TO CORRIDOR



SIGNAGE AT STAIR FLOOR LANDING



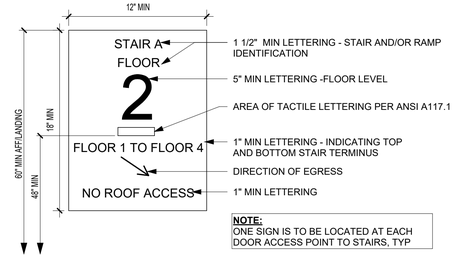
SIGNAGE AT EXIT



SIGNAGE AT DELAYED -EGRESS LOCKS

NOTE: SIGNS CONTAINING RAISED CHARACTERS AND BRAILLE SHALL BE LOCATED ON LATCH SIDE OF DOOR WITH A 18x18 CLEAR FLOOR SPACE OUTSIDE THE SWING OF THE DOOR

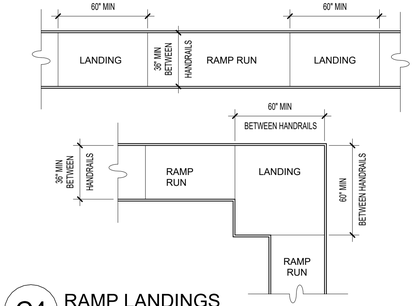
D4 CODE COMPLIANT SIGNAGE
NOT TO SCALE



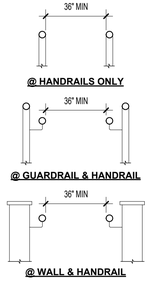
NOTE:
ONE SIGN IS TO BE LOCATED AT EACH DOOR ACCESS POINT TO STAIRS, TYP

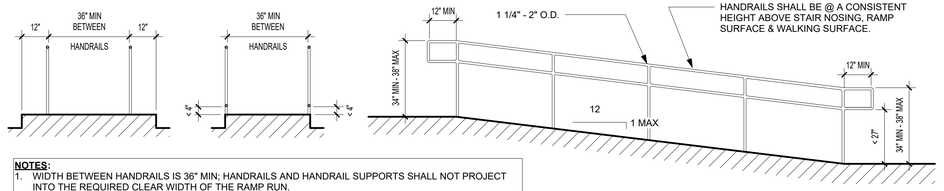
D1 EGRESS STAIR SIGNAGE
NOT TO SCALE

RAMPS



C4 RAMP LANDINGS
NOT TO SCALE





NOTES:

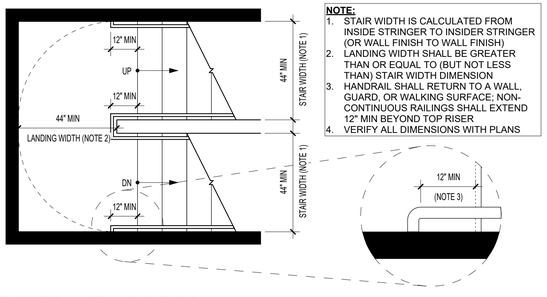
1. WIDTH BETWEEN HANDRAILS IS 36" MIN; HANDRAILS AND HANDRAIL SUPPORTS SHALL NOT PROJECT INTO THE REQUIRED CLEAR WIDTH OF THE RAMP RUN.
2. CROSS SLOPE OF RAMP SURFACES SHALL BE NO GREATER THAN 1:48 AND SHALL BE STABLE, FIRM, AND SLIP-RESISTANT. IF THE SLOPE IS EQ. OR GREATER THAN 1:20 YOU ARE REQ. TO HAVE HANDRAILS ON BOTH SIDES OF RAMP.
3. RAMP RUNS WITH A RISE GREATER THAN 6 INCHES SHALL HAVE HANDRAILS.

C3 RAMP & HANDRAIL SPECS
NOT TO SCALE

ADDITIONAL REQUIREMENTS

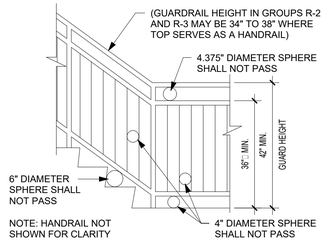
CARPET	MAX PILE HEIGHT SHALL BE 1/2 IN. EXPOSED EDGES OF CARPET SHALL BE FASTENED TO FLOOR SURFACES AND HAVE TRIM ALONG THE ENTIRE LENGTH OF THE EXPOSED EDGE. IF CARPET TILE IS USED ON AN ACCESSIBLE GROUND OF FLOOR SURFACE, IT SHALL HAVE A MAXIMUM COMBINED THICKNESS OF PILE, CUSHION, AND BACKING HEIGHT OF 1/2 IN.		
RAMPS	SLOPE	MAX RISE	MAX HORIZONTAL PROJECTION
	1:12 TO <1:16	30 IN.	30 FT.
	1:16 TO <1:20	30 IN.	40 FT.
	1:12 TO 1:20 - REQUIRES A HANDRAIL		
INTERIOR SIGNAGE	**CHARACTER PROPORTION AND COLOR CONTRAST** LETTERS AND NUMBERS ON SIGNS SHALL HAVE A WIDTH-TO-HEIGHT RATIO BETWEEN 3:5 AND 1:1 AND A STROKE WIDTH-TO-HEIGHT RATIO BETWEEN 1:5 AND 1:10. CHARACTERS AND SYMBOLS SHALL CONTRAST WITH THEIR BACKGROUND AND BE NON-GLARE. CHARACTERS SHALL BE UPPER CASE. CHARACTER HEIGHT, MEASURED VERTICALLY FROM THE BASELINE OF THE CHARACTER, SHALL BE 5/8 IN. MINIMUM, AND 2 IN. MAXIMUM, BASED ON THE UPPERCASE LETTER "I".		
	RAISED OR INDENTED CHARACTERS OR SYMBOLS LETTERS AND NUMBERS ON SIGNS SHALL BE RAISED OR INCISED 1/32 IN. MIN AND SHALL BE SANS SERIF CHARACTERS. RAISED CHARACTERS OR SYMBOLS SHALL BE AT LEAST 5/8 IN HIGH, BUT NO HIGHER THAN 2 IN. INDENTED CHARACTERS OR SYMBOLS SHALL HAVE A STROKE WIDTH OF AT LEAST 1/4 IN. SYMBOLS OR PICTOGRAPHS ON SIGNS SHALL BE RAISED OR INDENTED 1/32 IN MIN		
	MOUNTING LOCATION AND HEIGHT INTERIOR SIGNAGE SHALL BE LOCATED ALONGSIDE THE DOOR ON THE LATCH SIDE AND SHALL BE MOUNTED AT A HEIGHT OF BETWEEN 54 IN. AND 66 IN. ABOVE THE FINISHED FLOOR PER UFAS AND BETWEEN 48 IN. AND 60 IN. PER ANSI. REFER TO **ICC/ANSI A117.1-2017, 703.3.11** FOR MORE REQUIREMENTS ON MOUNTING LOCATION.		

STAIRS AND RAILINGS

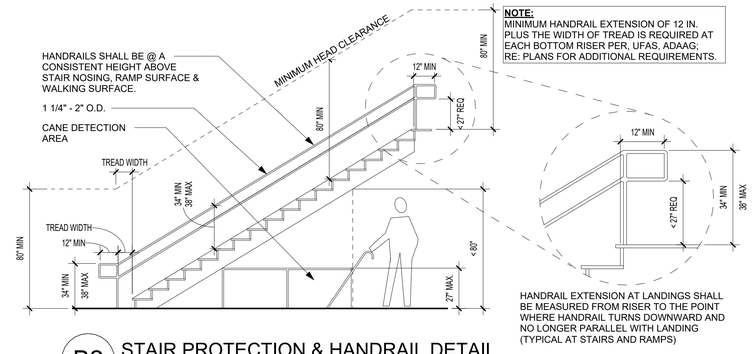


NOTE:
1. STAIR WIDTH IS CALCULATED FROM INSIDE STRINGER TO INSIDER STRINGER (OR WALL FINISH TO WALL FINISH)
2. LANDING WIDTH SHALL BE GREATER THAN OR EQUAL TO (BUT NOT LESS THAN) STAIR WIDTH DIMENSION
3. HANDRAIL SHALL RETURN TO A WALL, GUARD, OR WALKING SURFACE; NON-CONTINUOUS RAILINGS SHALL EXTEND 12" MIN BEYOND TOP RISER
4. VERIFY ALL DIMENSIONS WITH PLANS

B4 EGRESS STAIR REQ'S
NOT TO SCALE

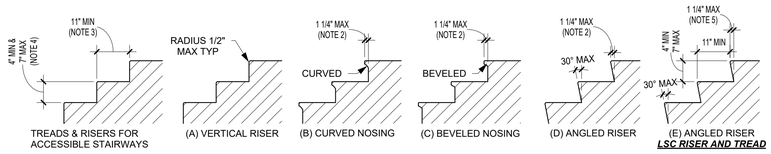


B3 STAIR OPENING GUARD LIMITATIONS
NOT TO SCALE



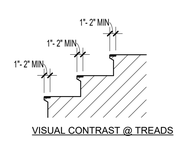
NOTE:
MINIMUM HANDRAIL EXTENSION OF 12 IN, PLUS THE WIDTH OF TREAD IS REQUIRED AT EACH BOTTOM RISER PER, UFAS, ADAAG; RE: PLANS FOR ADDITIONAL REQUIREMENTS.

B2 STAIR PROTECTION & HANDRAIL DETAIL
NOT TO SCALE



NOTES:
1. **REFER TO THE CODE OF THE CITY & STAIR DETAILS BEFORE DETERMINING THE STYLE OF THE STAIR**
2. 3/4" MIN NOSING PROJECTION WITHIN R-2 DWELLING UNITS WITH SOLID RISERS WHERE THE TREAD DEPTH IS LESS THAN 11"
3. 10" MIN TREAD DEPTH WITHIN INDIVIDUAL R-2 DWELLING UNITS.
4. 7 3/4" MAX RISER HEIGHT WITHIN INDIVIDUAL R-2 DWELLING UNITS
5. 1 1/2" PER LIFE SAFETY CODE WHERE ALLOWABLE

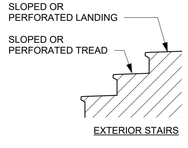
A4 STAIR RISER AND TREAD REQ
NOT TO SCALE



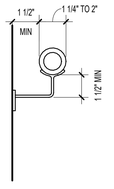
THE LEADING 2" OF TREADS SHALL HAVE VISUAL CONTRAST OF DARK-ON-LIGHT OR LIGHT-ON-DARK FROM THE REMAINDER OF THE TREAD

MATERIAL CHANGES SHALL PROVIDE A FLUSH SURFACE

IF STRIPE OVERLAPS NOSING, VERTICAL PORTION OF STRIPE TO BE 1/2" MAX



TREADS AND LANDINGS SUBJECT TO WET CONDITIONS SHALL BE DESIGNED TO PREVENT ACCUMULATION OF WATER



A2 IBC HANDRAIL DETAIL
NOT TO SCALE

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REVISIONS:

PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
ACCESSIBILITY STANDARDS

PROJECT NUMBER: 25144

SHEET NUMBER:

G-301

12/19/2025 9:56:31 AM
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REFERENCE G-003 FOR GENERAL NOTES

DIAGRAMS BELOW ARE APPLICABLE TO PUBLIC SPACES AND ALL UNIT TYPES UNLESS NOTED OTHERWISE

TOILET, BATH, LAUNDRY ACCESSORY SCHEDULE

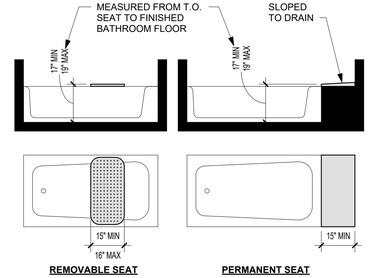
ACCESSORY	MOUNTING HEIGHT	LOCATION
MIRROR	SEE A1/G-303	PUBLIC & UNIT
PAPER TOWEL DISP/RECP	40" AFF MIN TO CONTROLS	PUBLIC
TOILET PAPER DISPENSER (TPD)	SEE D1/G-302	PUBLIC
TOILET PAPER HOLDER (TP)	SEE D1/G-302	UNIT
DIAPER CHANGING STATIONS	34" MAX TO CHANGING SURFACE	PUBLIC
GRAB BARS	SEE G-302	PUBLIC & UNIT
SANITARY NAPKIN RECEPTOR	18" MIN AFF & 24" MIN / 42" MAX FROM REAR WALL	PUBLIC
DRINKING FOUNTAIN	SEE C1/G303	PUBLIC
DRINKING FOUNTAIN - ACCESSIBLE	SEE C1/G-303	PUBLIC
WATER CLOSET (FLOOR-MOUNTED)	1'-4" AFF MIN TO RIM	PUBLIC & UNIT
WATER CLOSET - ACCESSIBLE (FLOOR-MOUNTED)	SEE D1/G-302	PUBLIC & UNIT
LAVATORY	SEE INTERIOR ELEVATIONS	PUBLIC & UNIT
LAVATORY - ACCESSIBLE	SEE A1/G-303	PUBLIC & UNIT
SOAP DISPENSER	40" AFF MIN TO CONTROLS	PUBLIC
MEDICINE CABINET	42" AFF MIN TO TOP OF BOTTOM SHELF	UNIT
MEDICINE CABINET - ACCESSIBLE	40" AFF MIN TO TOP OF BOTTOM SHELF	UNIT

REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION

GENERAL NOTES

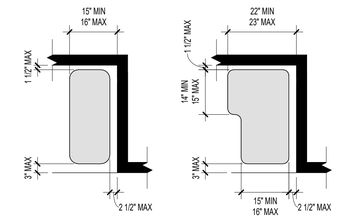
1. GRAB BAR BLOCKING IS REQUIRED AT ALL TOILET, SHOWER AND BATHTUB GRAB BAR LOCATIONS; APPLICABLE AT ALL PUBLIC SPACES, "TYPE A" UNITS, AND "TYPE B" UNITS.
2. CONTRACTOR SHALL BE FAMILIAR AND INCORPORATE ALL PROVISIONS AND REQUIREMENTS ESTABLISHED BY CODES APPLICABLE TO THE PROJECT INCLUDING FAIR HOUSING, UFAS, ANSI, & ADAAG

TUB SEAT



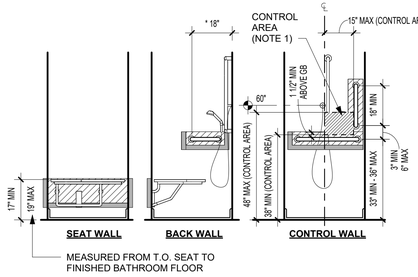
D2 BATHTUB SEAT
NOT TO SCALE

SHOWER SEAT

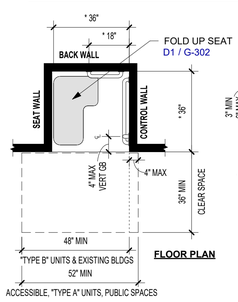


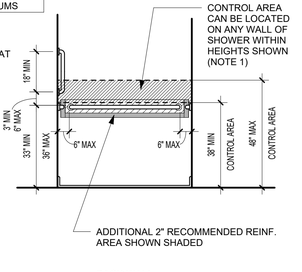
D1 SHOWER SEAT
NOT TO SCALE

SHOWERS

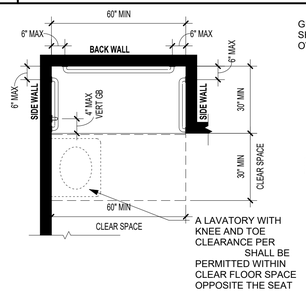


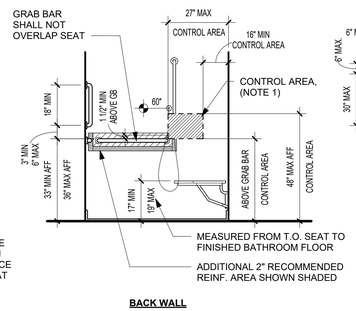
C4 TRANSFER SHOWER
NOT TO SCALE



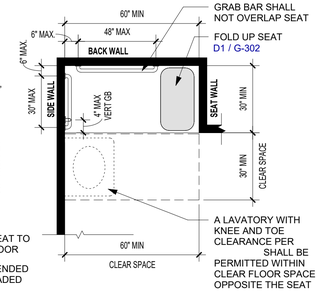


C3 ROLL-IN SHOWER W/O SEAT
NOT TO SCALE





C2 ROLL-IN SHOWER W/ SEAT
NOT TO SCALE



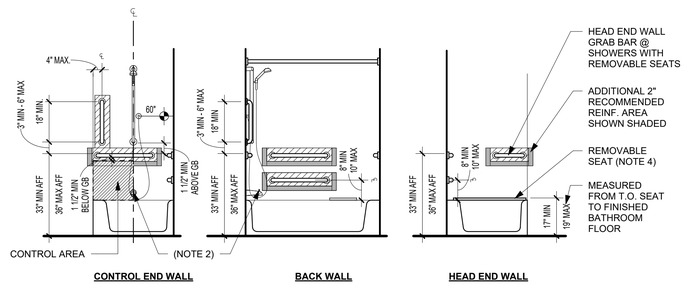
SHOWER NOTES

SHOWER DIAGRAMS & NOTES BELOW ARE APPLICABLE TO PUBLIC, AND "TYPE A" COMPLIANT BATHROOMS.

SEE UNIT PLANS AND/OR PLUMBING SCHEDULE FOR "TYPE B" OR EXEMPT SHOWER REQUIREMENTS

1. AN ADJUSTABLE-HEIGHT HAND SHOWER, MOUNTED ON A VERTICAL BAR, SHALL BE INSTALLED SUCH THAT THE HANDLE OF THE HAND SHOWER (POSITIONED AT ITS LOWEST POSITION) SHALL BE LOCATED WITHIN THE CONTROL AREA SHOWN
   A. FIXED SHOWER HEAD MOUNTED AT 48" MAX ABOVE SHOWER FLOOR PERMITTED AT PUBLIC SHOWERS.
2. A HAND SHOWER WITH A HOSE OF 59" MINIMUM IN LENGTH TO BE PROVIDED.
   A. HAND SHOWER SHALL HAVE A CONTROL WITH A NONPOSITIVE SHUT OFF FEATURE.
3. ADDITIONAL 2" RECOMMENDED REINFORCED AREA AROUND GRAB BARS (SHOWN SHADED).
4. SEE UNIT PLANS AND/OR INTERIOR ELEVATIONS FOR ADDITIONAL INFORMATION
5. THRESHOLDS SHALL BE 1/2" MAX

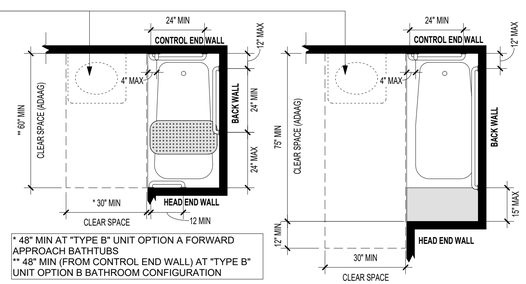
TUB



B4 BATHTUB HEIGHT REQ'S
NOT TO SCALE

"TYPE A" UNITS:
COUNTER TOPS AND CABINETRY PERMITTED WITHIN CLEAR FLOOR SPACE PROVIDED ALL OF THE FOLLOWING:
A. REMOVABLE COUNTER TOP & CABINETRY
B. FLOOR AND WALL FINISHES EXTEND UNDER AND BEHIND THE REMOVABLE CABINETRY & COUNTER TOP.

"TYPE B" UNITS:
OPTION A - PARALLEL APPROACH TUB:
LAVATORY PERMITTED WITHIN CLEAR FLOOR SPACE PROVIDED A 48"X30" CLEAR SPACE IS PROVIDED IN FRONT OF THE TUB
OPTION A - FORWARD APPROACH TUB:
WATER CLOSET AND LAVATORY PERMITTED WITHIN CLEAR FLOOR SPACE
OPTION B:
SINK OR CABINETRY NOT ALLOWED WITHIN 30"X48" CLEAR FLOOR SPACE



B3 BATHTUB CLEARANCES
NOT TO SCALE

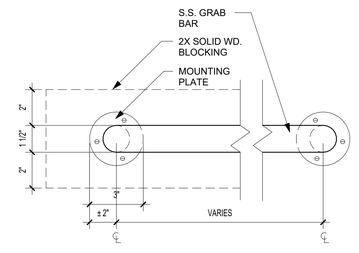
TUB NOTES

TUB DIAGRAMS & NOTES BELOW ARE APPLICABLE TO "TYPE A" COMPLIANT BATHROOMS.

SEE UNIT PLANS AND/OR PLUMBING SCHEDULE FOR "TYPE B" OR EXEMPT TUB REQUIREMENTS.

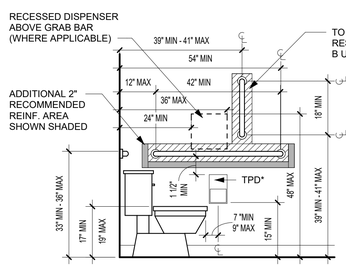
1. A HAND SHOWER WITH A HOSE OF 59" MINIMUM IN LENGTH TO BE PROVIDED.
   A. HAND SHOWER SHALL HAVE A CONTROL WITH A NONPOSITIVE SHUT OFF FEATURE.
2. NO PIN KNOB DIVERTERS IN ACCESSIBLE OR "TYPE A" UNITS AT TUB FAUCETS.
3. ADDITIONAL 2" RECOMMENDED REINFORCED AREA AROUND GRAB BARS (SHOWN SHADED).
4. REMOVABLE SEAT NOT REQUIRED AT "TYPE A" UNITS.
5. SEE UNIT PLANS AND/OR INTERIOR ELEVATIONS FOR ADDITIONAL INFORMATION.

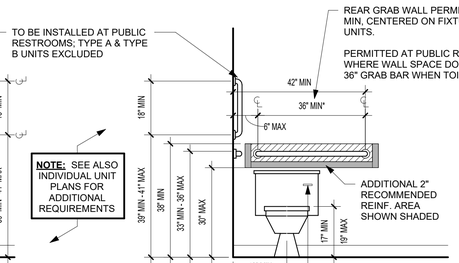
GRAB BAR



B1 GRAB BAR DETAIL
NOT TO SCALE

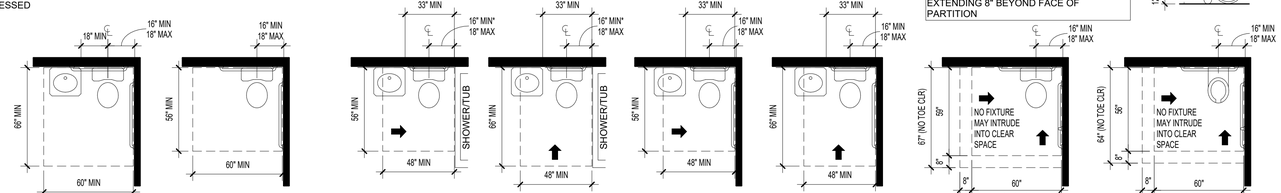
TOILET





* TOILET PAPER DISPENSER (TPD) = 2 ROLL DISPENSER, MAX 5" DIAMETER ROLLS
* TOILET PAPER HOLDER (TP) TO BE MOUNTED 21" AFF TO CENTER OF HOLDER, 7"- 9" FROM EDGE OF W.C.
* ALL OTHER DISPENSERS MOUNTED 18" MIN / 48" MAX AFF, AND 24" MIN / 42" MAX FROM BACK WALL TO OUTLET

A4 TOILET STANDARDS
NOT TO SCALE



A3 TOILET APPROACHES
NOT TO SCALE

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
ACCESSIBILITY STANDARDS

PROJECT NUMBER: 25144

SHEET NUMBER:

G-302

12/18/2025 3:56:35 AM
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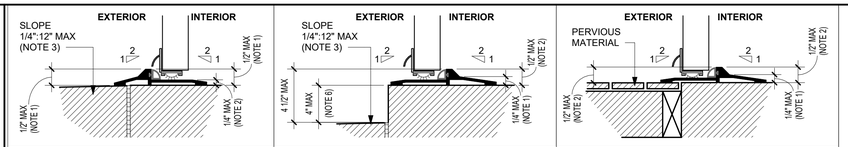
REFERENCE G-003 FOR GENERAL NOTES

DIAGRAMS BELOW ARE APPLICABLE TO PUBLIC SPACES AND ALL UNIT TYPES UNLESS NOTED OTHERWISE

THRESHOLD



SWINGING DOOR @ IMPERVIOUS MATERIAL	SWINGING SECONDARY DOOR @ IMPERVIOUS MATERIAL	SWINGING SECONDARY DOOR @ PERVIOUS MATERIAL
ALL DOORS INTENDED FOR PASSAGE	BALCONY OR OTHER EXTERIOR DOORS	BALCONY OR OTHER EXTERIOR DOORS
✓ PUBLIC DOORS		✓ PUBLIC DOORS
✓ "TYPE A" UNITS (ALL DOORS)		✓ "TYPE A" UNITS
✓ "TYPE B" UNITS (UNIT ENTRY DOORS ONLY)	✓ "TYPE B" UNITS	✓ "TYPE B" UNITS

SEE ARCHITECTURAL DRAWINGS FOR PROJECT SPECIFIC THRESHOLD DETAILS AND WEATHER PROOFING

NOTES:

1. CHANGES IN LEVEL OF 1/4" MAXIMUM IN HEIGHT SHALL BE PERMITTED TO BE VERTICAL WITH NO BEVEL PROVIDED **(IMAGE 1)**
2. CHANGES IN LEVEL GREATER THAN 1/4" SHALL BE BEVELED WITH A 1:2 SLOPE FOR UP TO 1/2" MAX **(IMAGE 2,3)**
3. FINISHED SURFACE OUTSIDE OF PRIMARY ENTRY DOOR MAY BE SLOPED AT A MAXIMUM OF 1/4" PER 12"
4. **EXISTING BUILDINGS ONLY**: EXISTING OR ALTERED THRESHOLDS SHALL BE PERMITTED TO BE 3/4" MAX WITH A 1:2 BEVELED EDGE ON EA SIDE OF HEIGHT EXCEEDING 1/4"
5. **SLIDING DOORS ONLY:** THRESHOLD SHALL BE PERMITTED TO BE 3/4" MAX WITH A 1:2 BEVELED EDGE ON EACH SIDE FOR HEIGHT EXCEEDING 1/4"
6. ALLOWABLE AT SECONDARY EXTERIOR RESIDENTIAL DOORS ONLY (**ANSI A117.1 1004.4.2 & FHA 4.11**)

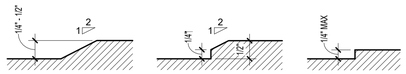
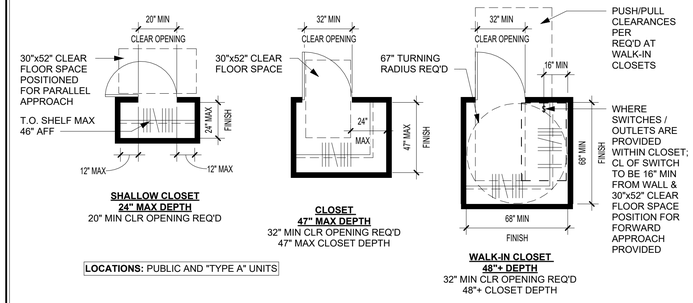


IMAGE 3 **IMAGE 2** **IMAGE 1**

D3 CHANGES IN LEVEL & THRESHOLDS
NOT TO SCALE

CLOSETS



SHALLOW CLOSET
24" MAX DEPTH
20" MIN CLR OPENING REQ'D

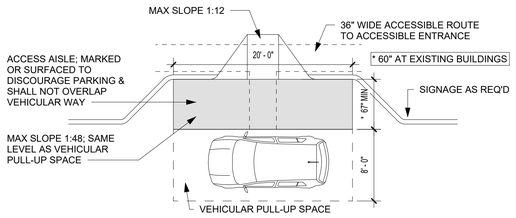
CLOSET
47" MAX DEPTH
32" MIN CLR OPENING REQ'D
47" MAX CLOSET DEPTH

WALK-IN CLOSET
48"+ DEPTH
32" MIN CLR OPENING REQ'D
48"+ CLOSET DEPTH

LOCATIONS: PUBLIC AND "TYPE A" UNITS

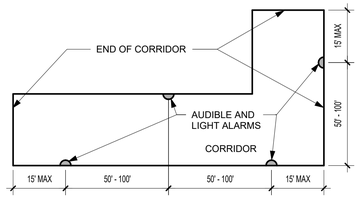
D1 CLOSET DIMENSIONS
NOT TO SCALE

PASSENGER LOADING ZONE

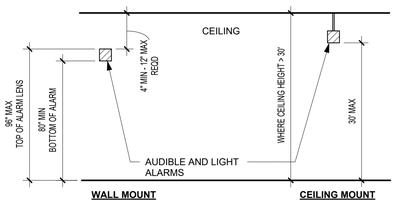


C4 PASSENGER LOADING ZONE
NOT TO SCALE

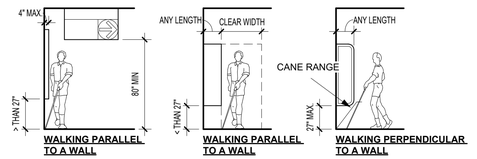
HEARING & VISION IMPAIRED



C3 ALARM SPACING IN CORRIDOR
NOT TO SCALE

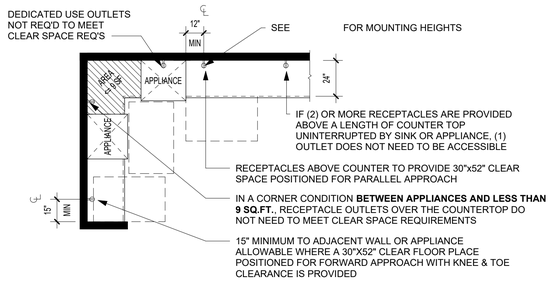


C2 CEILING/ WALL MOUNTED ALARM LOCATIONS
NOT TO SCALE



C1 PROTRUDING OBJECTS
NOT TO SCALE

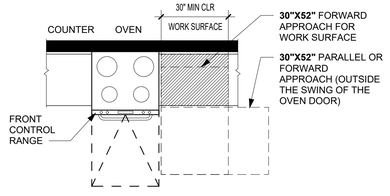
KITCHENS



B4 ABOVE COUNTER RECEPTACLES
NOT TO SCALE

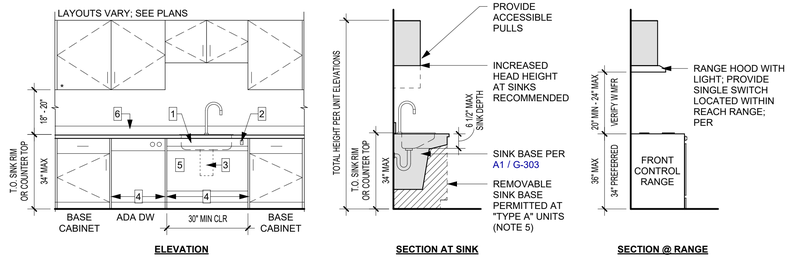
NOTE:
FOR PUBLIC SPACES AND "TYPE A" UNITS:

1. **SIDE-HINGED DOOR OVENS -** WORK SURFACE IS TO BE POSITIONED ADJACENT TO THE LATCH SIDE OF THE OVEN DOOR.
2. **BOTTOM-HINGED DOOR OVENS -** WORK SURFACE IS TO BE POSITIONED ADJACENT TO ONE SIDE OF THE OVEN DOOR.
3. **CONTROLS -** OVENS SHALL HAVE CONTROLS ON FRONT PANELS



B3 OVEN WITH WORK SPACE
NOT TO SCALE

* AT PUBLIC SPACES, 50% OF SHELF SPACE SHALL BE WITHIN REACH RANGE (2010 ADA 804.5); COORDINATE WITH DRAWINGS



B2 KITCHEN REQUIREMENTS
NOT TO SCALE

KITCHEN NOTES

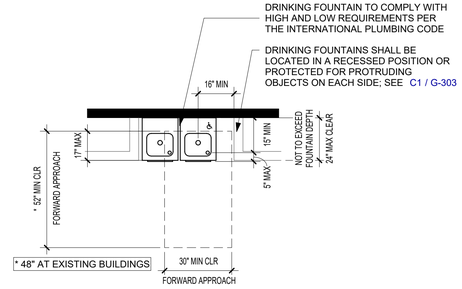
KITCHEN DIAGRAMS AND NOTES APPLICABLE TO PUBLIC SPACES AND "TYPE A" COMPLIANT KITCHENS

SEE UNIT PLANS AND/OR INTERIOR ELEVATIONS FOR "TYPE B" OR EXEMPT KITCHENS

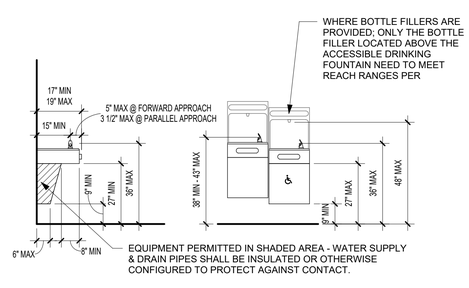
NOTES:

1. SINK DEPTH MAX 6 1/2" AND HAVE REAR LOCATED DRAINS
2. GARBAGE DISPOSAL SWITCH TO BE LOCATED WITHIN REACH RANGE; COORDINATE FINAL LOCATION WITH ARCHITECT
3. INSULATE ALL PIPES AND DRAIN EXPOSED BELOW SINK
4. PROVIDE FINISHED END PANELS EACH SIDE OF SINK PANEL AND DISHWASHER
   A. WALL BASE, WALL FINISH & FLOOR FINISH TO CONTINUE TO UNDERSIDE OF SINK
5. CABINETRY PERMITTED UNDER SINK AT "TYPE A" UNITS PROVIDED ALL THE FOLLOWING:
   A. REMOVABLE CABINETRY WITHOUT REPLACING SINK
   B. FLOORING, WALL FINISH, AND WALL BASE TO CONTINUE TO UNDERSIDE OF SINK
6. BACKSPLASH VARIES; COORDINATE WITH DRAWINGS
7. SEE INDIVIDUAL UNIT PLANS AND INTERIOR ELEVATIONS FOR SPECIFIC LAYOUTS

DRINKING FOUNTAINS

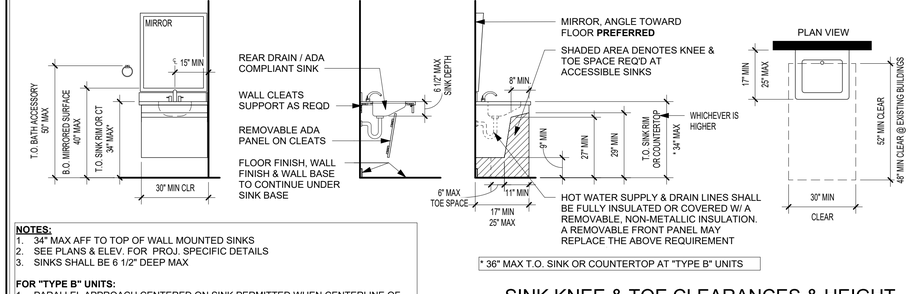


A4 DRINKING FOUNTAINS CLEAR SPACE REQUIREMENTS
NOT TO SCALE



A3 DRINKING FOUNTAIN HEIGHT REQUIREMENTS
NOT TO SCALE

SINKS



NOTES:

1. 34" MAX AFF TO TOP OF WALL MOUNTED SINKS
2. SEE PLANS & ELEV. FOR PROJ. SPECIFIC DETAILS
3. SINKS SHALL BE 6 1/2" DEEP MAX

FOR "TYPE B" UNITS:

1. PARALLEL APPROACH CENTERED ON SINK PERMITTED WHEN CENTERLINE OF SINK IS 24" MIN FROM ADJACENT WALL
2. IF FORWARD APPROACH IS PROVIDED, CABINETRY ALLOWED UNDER THE LAVATORY PROVIDED:
   A. CABINETRY CAN BE REMOVED WITHOUT REPLACEMENT OF THE LAVATORY
   B. FLOOR FINISH EXTENDS UNDER THE CABINETRY
   C. WALLS BEHIND AND SURROUNDING THE CABINETRY ARE FINISHED

* 36" MAX T.O. SINK OR COUNTERTOP AT "TYPE B" UNITS

A1 SINK KNEE & TOE CLEARANCES & HEIGHT REQUIREMENTS
NOT TO SCALE
LOCATIONS: PUBLIC AREAS, "TYPE A" UNITS

PRINTS ISSUED
12/18/25 - 95% CDs

REVISIONS:

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
ACCESSIBILITY STANDARDS

PROJECT NUMBER: 25144

SHEET NUMBER:

G-303

12/19/2025 9:56:38 AM
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CITY OF TOPEKA

JOHNSON-BETTS MEADOWS MULTI-FAMILY RESIDENTIAL DEVELOPMENT

WATER LINE 281381.00, STORMWATER 501144.00, & SANITARY 401139.00

TOPEKA, KANSAS

Know what's below. Call 811 before you dig or visit us at www.kansasonecall.com

"Kansas One-Call" is the Underground Utility Notification center for the State of Kansas. Through this facility, you can notify operators of underground facilities of proposed excavations to request that the underground facilities be marked before you dig.

Kansas Statute annotated #66-1801 through #66-1815 requires anyone who engages in any type of excavation to provide advance notice of at least two full working days, but not more than 15 calendar days, excluding weekends and holidays.

The person who is doing the work is responsible for calling Kansas One-Call. If the owner contracts with a professional excavator to do the excavation, then the professional excavator is responsible for calling Kansas One-Call.

The service provided by Kansas One-Call to excavators is free of charge.

Call 785-368-3111 for emergencies with City of Topeka utilities.

CITY OF TOPEKA UTILITIES

GOLDEN CITY — TOPEKA 1854 KANSAS

2025

TOPEKA Public Works ENGINEERING
620 SE MADISON St. + 2nd Floor + TOPEKA, KS 66607
Phone: (785) 368-3842 + Fax: (785) 368-3881

NON-EMERGENCY UTILITY OWNER CONTACTS

Cable TV
Cox Communications
931 SW Henderson Rd.
Topeka, KS 66615
Dean Cape
(785)320-0308
dean.cape2@cox.com

Electric
Evergy
P.O. Box 889
4001 NW 14th St.
Topeka, KS 66603
Jennifer Rohr
(785)575-1248
jennifer.rohr@evergy.com

Fiber Optic - City of Topeka
City of Topeka, Info. Tech.
620 SE Madison St., 3rd Flr
Topeka, KS 66603
Wesley White
(785)338-2633
wlwhite@topeka.org

Fiber Optic - LUMEN
LUMEN
711 E. 19th St.
Kansas City, MO 64108
Richard Redel
(816)518-2804
richard.redel@lumen.com
Relocations:
relocations@lumen.com

Fiber Optic - USD 501
USD 501, Info. Tech.
1900 SW Hope St.
Topeka, KS 66604
Joergen Laigaard
(785)438-4750
jlaigaard@tps501.org

Gas
Kansas Gas Service
P.O. Box 3538
200 E 1st St.
Topeka, KS 66603-3603
Anna Frizzell
(785)431-4276
(785)438-7017 (cell)
anna.frizell@onegas.com
Gas Leaks 1-888-482-4950
& call 911 immediately

Telephone
AT&T Corp.
220 SE 6th Ave., Ste. 236
Topeka, KS 66603
Ezra Brown
(785)596-9905
eb409q@att.com

Telephone - Civil Related
AT&T Corp.
9444 Nall Ave.
Overland Park, KS 66207
Daniel Jackson
(816)772-0419
(913)948-3079 (cell)
dj2685@att.com

Fiber Optic - AT&T Transmission
AT&T Services, Inc.
1425 Oak St.
Kansas City, MO 64016
Lenny Vohs
(770)335-8244
lv2121@att.com

Fiber Optic - Giant Communications
Giant Communications
515 S Kansas Ave., Ste. 210
Topeka, KS 66603
Lance Lyman
(785)362-3312
lancelyman@giantcomm.net

Sanitary/Storm Sewer
City of Topeka, WPC Div.
1115 NE Poplar St.
Topeka, KS 66616
Darrin A. Coffland
(785)368-2467
dcoffland@topeka.org

Water
City of Topeka, Water Dist.
3245 NW Waterworks Dr.
Topeka, KS 66606
Duncan Theuri
(785)368-0152
dtheuri@topeka.org

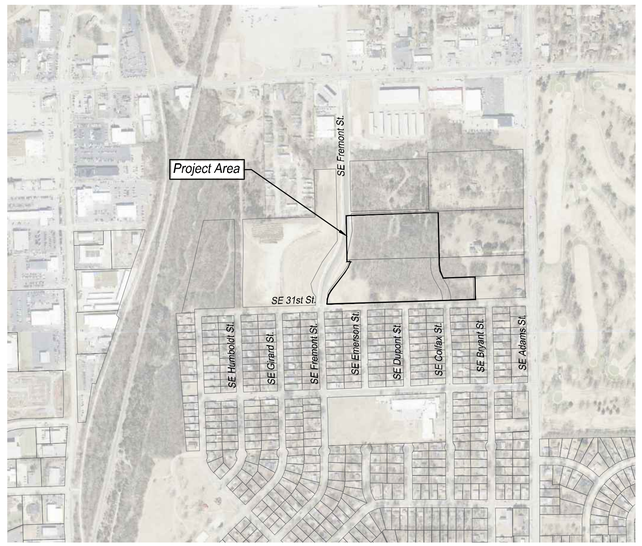
Traffic Signal
City of Topeka, Traffic Ops.
927 NW Harrison St.
Topeka, KS 66612
Duane Morris
(785)368-3913
dmorris@topeka.org

Fiber Optic - KSFiberNet
Kansas Fiber Network LLC
10875 Benson, Ste. 250
Overland Park, KS 66210
Brad Burger
(913)213-2937
bburger@ksfiber.net

Telephone/Fiber Optics
Verizon/MCI
Jeffrey Wiard
(620)242-6647
Jeffrey.Wiard@verizonwireless.com

GENERAL NOTE:

All construction methods and materials used in the construction of the improvements covered by these plans shall be in accordance with the Standard Technical Specifications and addendum to the (STS) on file in the office of the City Engineer, City of Topeka, Kansas.



Not to Scale

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LEGEND

Construction Limits		Mail Box	
Traffic Signal Line	TS	Existing Storm Inlet	
Overhead Telephone Line	OHT	Existing Sanitary Sewer Manhole	Ⓢ
Underground Telephone Line	T	Existing Storm Sewer Manhole	Ⓓ
Overhead Cable	OTV	Existing Traffic Manhole	⑦
Underground Cable	UTV	Sign	
Overhead Electric Line	OHP	Tree, Deciduous	
Underground Electric Line	UGP	Tree, Coniferous	
Water Line	W	Stump	
Gas Line	G	Shrub	
Sanitary Sewer			
Storm Sewer			
Fiber Optic Line	FO		
Centerline			
Right-of-Way Line			
Property Line			
Lot Line			
Chain link Fence			
Wood Fence			
RailRoad Tracks			
Section Corner			
Bench Mark			
Property Pin			
Power Pole			
Telephone Pole			
Street Light			
Guy Pole			
Guy Wire			
Fire Hydrant			
Water Meter			
Water Valve			
Gas Meter			
Gas Valve			

95% Construction Plans Not for Construction

CITY OF TOPEKA, KANSAS
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

RELEASED FOR CONSTRUCTION

CITY ENGINEER — DATE

ATTEST:

CITY CLERK — DATE

REVIEWED BY

UTILITIES — DATE

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

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SBB Engineering, LLC
101 S Kansas Ave., Topeka, KS 66603
Ph: (785) 215-8630 www.sbbeng.com

Johnson-Betts Meadows Multi-Family Residential Development Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Title Sheet

DATE: 12/18/2025
SHEET: 1 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Title, Gen Notes.dwg] [Plot Date: 12/18/2025 7:01:11 PM] [Last Saved: 12/18/2025 6:59:50 PM; Loconnor]

GENERAL NOTES:

1. All construction methods and materials used in the construction of the improvements covered by these plans shall be in accordance with the City Codes, Ordinances, and City of Topeka and Shawnee County Standard Technical Specifications and current revisions on file in the Office of the City Engineer, City of Topeka, Kansas.

2. The location of all overhead and underground utilities may vary from what is indicated in these plans. It shall be the Contractor's responsibility to coordinate with the utility owner to locate and flag all underground utilities whether indicated or not. No excavation will be permitted in the area of underground utilities until all such utilities have been located and identified to the satisfaction of all parties and then only with extreme care to avoid any possibility of damage to the utility.

3. All disposal sites must be approved by the Kansas Department of Health and Environment. Material either stockpiled or disposed of in a Flood Plain would require a Kansas State Board of Agriculture Permit. Any material dumped in waters of the United States or wetlands is subject to U.S. CORPS of Engineers Permitting Regulations. Any material buried or stockpiled beyond approved construction limits would require additional archeological investigations unless buried in previously approved borrow locations.

4. The Contractor shall maintain construction limits within the existing and/or proposed Right-of-Way and any easements shown. Work within the street shall require Traffic Control per the City of Topeka and Shawnee County Standard Details.

5. All Permits and fees necessary to construct the project are the responsibility of the Contractor unless otherwise noted.

6. Unless otherwise specified, all disturbed areas that are not hardscaped shall be either landscaped or seeded, fertilized and mulched in accordance with the City of Topeka and Shawnee County Standard Technical Specifications.

7. All concrete, including sidewalks and ramps, used on the project shall meet the requirement for Class A Pavement.

8. All saw cuts shall be full-depth. Saw cuts will not be paid for directly but shall be Subsidiary to other bid items.

9. All pavement removal areas shall be full-depth saw cut to form a straight and uniform line.

10. Sealing of Curb and Gutter sections shall be at expansion joints only. Contraction joints in Curb and Gutter shall not be sealed.

11. Sidewalk cross slopes shall not exceed 2.00%. Sidewalk construction, including sidewalk corridors through driveways, entrances, and alley approaches, in excess of 2.00% shall be removed and replaced at Contractor's expense.

12. Longitudinal slope of proposed sidewalk ramps shall not exceed 8.0%.

13. Access to all properties shall be maintained throughout the duration of construction by the Contractor.

14. Temporary Erosion Control shall be provided to control siltation and sediment movement, due to barren soils, into the storm sewer system. Temporary seeding, fertilizing and mulching shall be provided in the event that the project is not completed prior to an extended work stoppage due to winter weather.

15. All property pins disturbed by construction shall be replaced by a Land Surveyor Licensed in the State of Kansas. This work shall be Subsidiary to other items of the contract.

16. Contractor shall provide work zone traffic control in compliance with City of Topeka and Shawnee County Standards and the Manual on Uniform Traffic Control Devices (MUTCD) while working on or adjacent to public roadways is proceeding. The Contractor shall require a Traffic Disruption Permit from the City of Topeka Engineering Division (785-368-3842) 72 hours in advance of work in the public Right-of-Way.

17. Traffic Control devices and flagger operations necessary to complete the Project shall not be paid for directly, but shall be considered Subsidiary to the Bid Item "Temporary Traffic Control" (LS).

18. The Bid item, "Adjust Existing Manhole Cover" may require removal and replacement of the manhole cone and vertical sections. Manhole cones or cylinder sections replaced shall be replaced with concrete with ConmicShield antimicrobial additive. Contractor to measure height of replacement section necessary to adjust manhole rim to proposed grade. Subsidiary.

19. The Contractor shall be responsible for replacing any items damaged by the Contractor, Sub-Contractors, or construction equipment during construction. These items include any pavement, driveways, sidewalks, sprinklers, turf, trees, landscaping, or any other site improvements in the vicinity of the project. This work is Subsidiary to other items of the contract. The Contractor is encouraged to obtain video to document any existing damage prior to construction.

20. The Contractor has the option to use reinforced concrete pipe (RCP) or dual wall high-performance polypropylene (PP) storm sewer pipe.

ABBREVIATIONS

TC	Top of Curb
TG	Top of Finished Ground
TP	Top of Pavement
TS	Top of Sidewalk
TW	Top of Retaining Wall
M.E.	Match Existing
L.I.P.	Leave in Place
T.C.E.	Temporary Construction Easement

SUMMARY OF QUANTITIES
JOHNSON-BETTS MEADOWS MULTI-FAMILY RESIDENTIAL DEVELOPMENT

PROJECT QUANTITIES			
ITEM	DESCRIPTION	QTY	UNITS
1	CLEARING & GRUBBING	12.3	ACRE
2	CONTRACTOR CONSTRUCTON STAKING	1	LS
3	TEMPORARY TRAFFIC CONTROL	1	LS
4	PAVEMENT REMOVAL	200	SY
5	COMMON EXCAVATION	29,764	CY
6	EMBANKMENT, IN PLACE	48,714	CY
7	EMBANKMENT, IN PLACE (CONTRACTOR FURNISHED)	19,129	CY
8	CONSTRUCTION ENTRANCE	2	EA
9	8" ASPHALTIC PAVEMENT	1,290	SY
10	6" AGGREGATE BASE (AB-3)	2,905	SY
11	8" CONCRETE PAVEMENT	18	SY
12	CONCRETE CURB & GUTTER, TYPE II	4,839	LF
13	4" CONCRETE SIDEWALK	29,887	SF
14	6" SIDEWALK RAMP	690	SF
15	6" SIDEWALK RAMP (SPECIAL)	1,319	SF
16	SILT FENCE (ALLOWANCE)	5,000	LF
17	CURB INLET PROTECTION	12	EA
18	ROCK DITCH CHECK (CLASS III RIPRAP)	80	SY
19	TEMPORARY ROCK DITCH CHECK	8	EA
20	TEMPORARY SEEDING, FERTILIZING, & MULCHING	12.3	ACRE
21	PERMANENT SEEDING, FERTILIZING, & MULCHING	12.3	ACRE
22	4" PAVEMENT MARKING (PAINT)(WHITE)	1,800	LF
23	4" PAVEMENT MARKING (PAINT)(YELLOW)	360	LF
24	PAVEMENT MARKING SYMBOL (HC)	12	EA
25	SIGNING	1	LS
26	RETAINING WALL (MBW)	4,000	SF
27	HANDRAIL	306	LF
28	TRASH ENCLOSURE	2	EA
29	BENCH	14	EA
30	TREES AND LANDSCAPING (ALLOWANCE)	1	LS
31	PLAYGROUND (ALLOWANCE)	1	LS

	WATER LINE		
55	8" PVC WATER LINE, PC 235	1,547	LF
56	8" RJ PVC WATER LINE, PC 235	160	LF
57	6" RJ PVC WATER LINE, PC 235	5	LF
58	6" PVC FIRE LINE, PC 235	989	LF
59	8"x8" TAPPING SLEEVE	1	EA
60	8"X8" TEE	4	EA
61	8"X6" TEE	13	EA
62	8" 45 DEGREE BEND	1	EA
63	8" RJ 22.5 DEGREE BEND	6	EA
64	8" RJ 11.25 DEGREE BEND	1	EA
65	8" MJ CAP	2	EA
66	8" SWIVELxSOLID ADAPTER	8	EA
67	6" SWIVELxSOLID ADAPTER	7	EA
68	6" 22.5 DEGREE BEND	3	EA
69	6" 90 DEGREE BEND	1	EA
70	INSTALL 8" GATE VALVE AND BOX	8	EA
71	INSTALL 6" GATE VALVE AND BOX	6	EA
72	FIRE HYDRANT	4	EA
73	8"X2" TAPPING SADDLE AND CORP STOP	9	EA
74	INSTALL 2" METER, METER BOX/PIT, AND TOP	9	EA
75	2" SERVICE LINE	1,040	LF
76	MAKE CONNECTION TO 8" PVC WATER LINE	1	LS

	SANITARY SEWER		
77	8" PVC PIPE (SANITARY)	779	LF
78	SANITARY CLEANOUT	9	EA
79	4" SERVICE LINE	343	LF
80	6" SERVICE LINE	213	LF
81	CONNECT TO EXISTING STRUCTURE	1	EA
82	4' DIA. STD MH, TYPE I (CONTINT/CONMICSHIELD)	7	EA

	STORM SEWER		
32	REMOVAL OF EXISTING STRUCTURES	1	LS
33	24" NYLOPLAST DRAIN BASIN WITH PEDESTRIAN GRATE	6	EA
34	CURB INLET, TYPE I, L=6'	8	EA
35	CURB INLET, TYPE I, L=10'	3	EA
36	CURB INLET MANHOLE, TYPE I, 6'x6'	5	EA
37	AREA INLET, TYPE II-P	2	EA
38	6' DIA. AREA INLET MANHOLE, TYPE II-P	1	EA
39	5' DIA. STD MH, TYPE I	1	EA
40	8" ADS INLINE DRAIN	2	EA
41	8"x4" HDPE WYE	112	EA
42	8"X8" HDPE TEE	1	EA
43	4" STORM SEWER (HDPE)	736	EA
44	8" STORM SEWER (HDPE)	3,243	EA
45	12" STORM SEWER (HDPE)	454	LF
46	15" STORM SEWER (RCP/PP)	524	LF
47	18" STORM SEWER (RCP/PP)	13	LF
48	30" STORM SEWER (RCP/PP)	801	LF
49	36" STORM SEWER (RCP/PP)	56	LF
50	42" STORM SEWER (RCP/PP)	579	LF
51	30" END SECTION (RC)	7	EA
52	36" END SECTION (RC)	6	EA
53	42" END SECTION (RC)	1	EA
54	CLASS III STONE RIPRAP	72	SY

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

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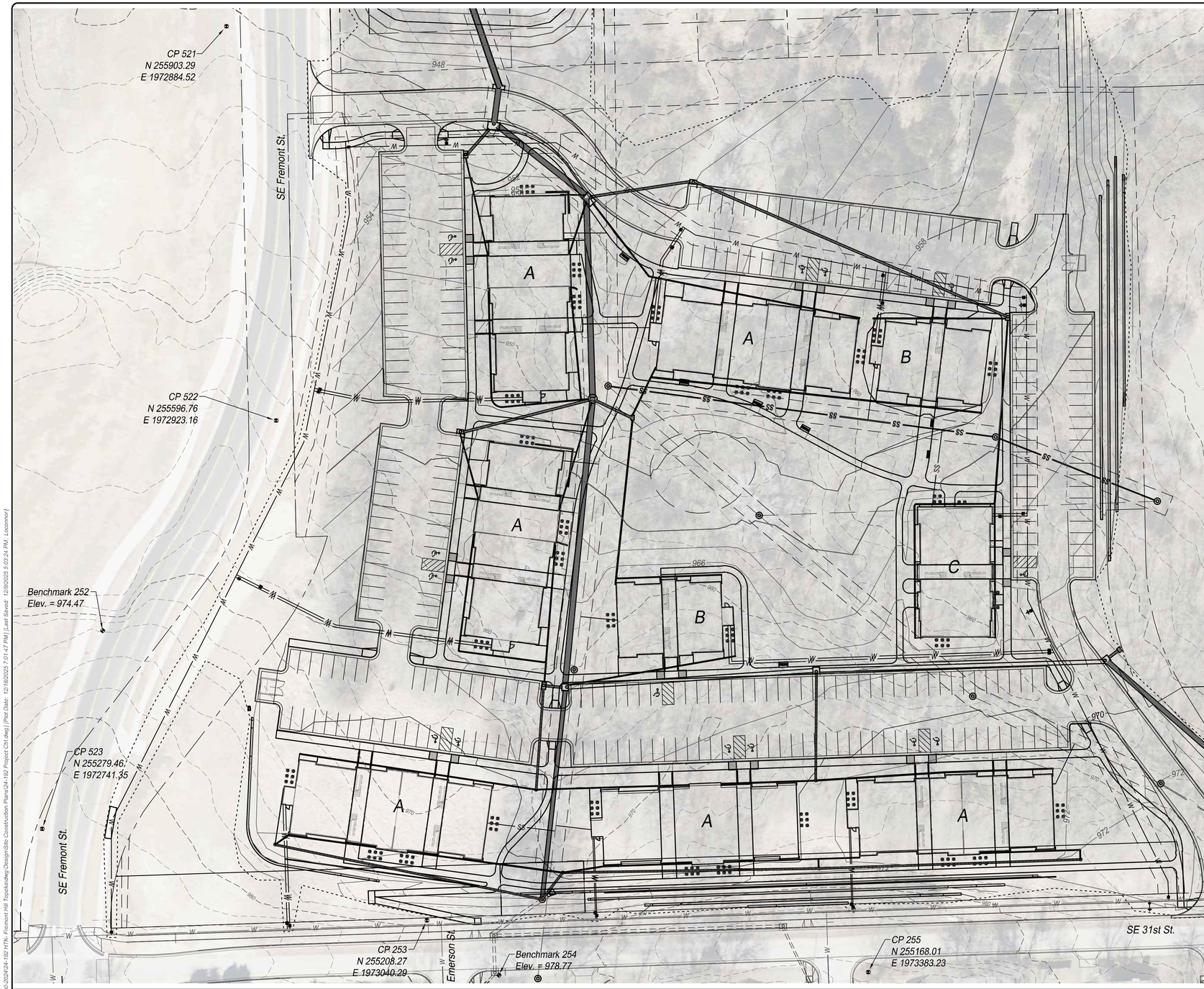
101 S Kansas Ave., Topeka, KS 66603
Ph: (785) 215-8630 www.sbbeng.com

Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

General Notes & Summary of Quantities

DATE: 12/18/2025
SHEET: 2 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Title, Gen Notes.dwg] [Plot Date: 12/18/2025 7:01:21 PM] [Last Saved: 12/18/2025 6:59:50 PM: Loconnor]



Horizontal & Vertical Control Data

Point	Northing	Easting	Elevation	Description
250	256,883.4	1,973,263.3	951.79	City of Topeka Bench Mark
251	255,997.2	1,972,904.9	941.81	Chiseled square cut North rim storm sewer manhole
252	255,433.4	1,972,788.4	974.47	Chiseled square cut North rim storm sewer manhole
254	255,165.7	1,973,096.4	978.77	Chiseled square cut at top Southeast corner curb inlet
257	255,219.2	1,973,712.2	973.62	Chiseled square cut at top Northwest corner curb inlet
200	254,015.81	1,971,866.98		5/8" x 24" Rebar w/ plastic "SBB ENG CLS 263" ID Cap
253	255,208.27	1,973,040.29		1/2" x 24" Rebar w/ plastic "SBBENG CONTROL" ID Cap
255	255,168.01	1,973,383.23		1/2" x 24" Rebar w/ plastic "SBBENG CONTROL" ID Cap
256	255,253.13	1,973,961.15		1/2" x 24" Rebar w/ plastic "SBBENG CONTROL" ID Cap
258	255,196.36	1,974,155.06		1/2" x 24" Rebar w/ plastic "SBBENG CONTROL" ID Cap
521	255,903.29	1,972,884.52		1/2" x 24" Rebar w/ plastic "SBBENG CONTROL" ID Cap
522	255,596.76	1,972,923.16		1/2" x 24" Rebar w/ plastic "SBBENG CONTROL" ID Cap
523	255,279.46	1,972,741.35		1/2" x 24" Rebar w/ plastic "SBBENG CONTROL" ID Cap

	Grid to Ground Factor	Ground to Grid Factor
Scale Point: CP #200	1.000036897	0.999963104

Horizontal data is based on Kansas State Plane, North Zone NAD 83 datum

Vertical data is based on NGVD 29 datum

Scale: 1" = 40'

0 40

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR

APP'D BY: B. AUSTIN

FIELD BOOKS: -

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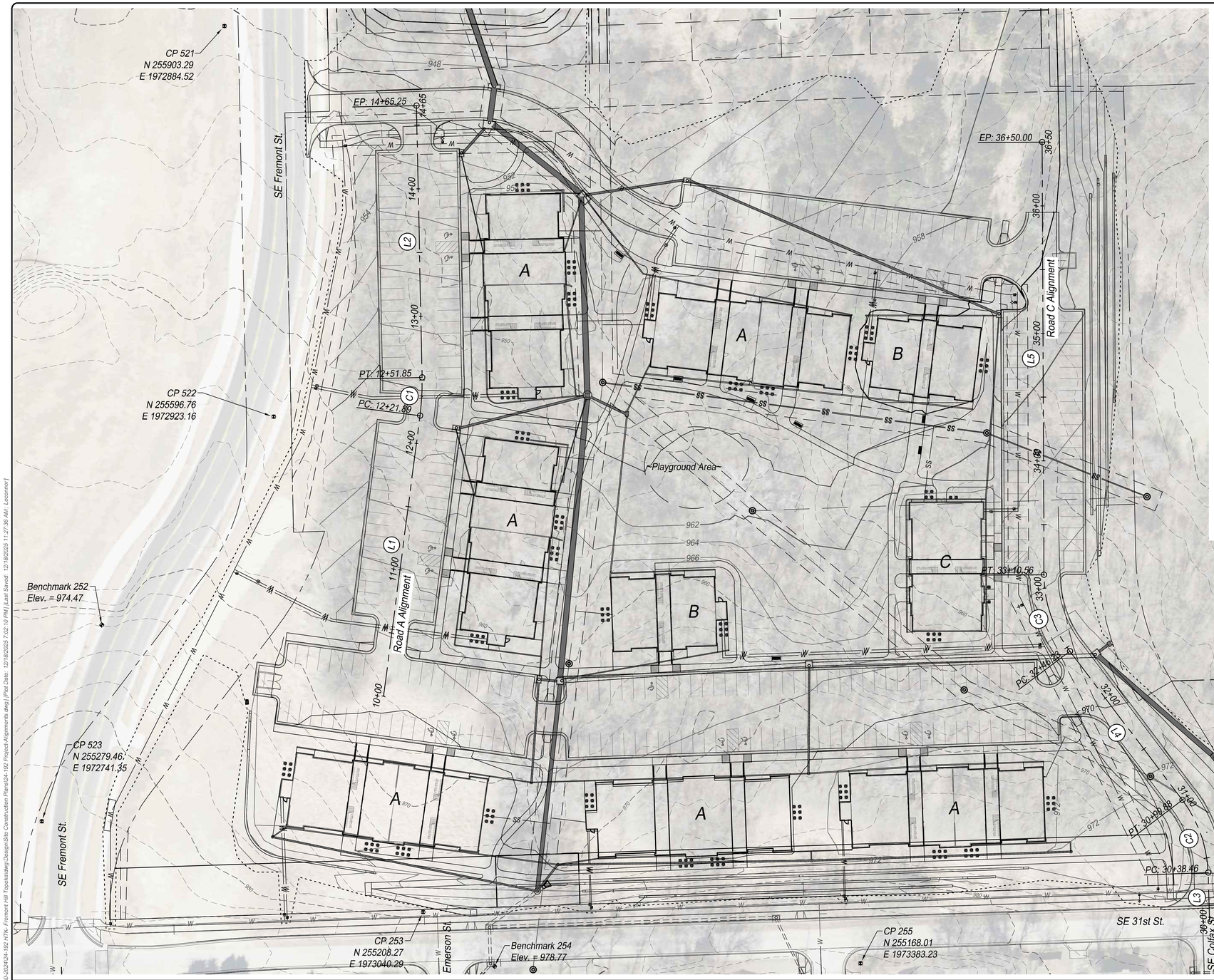
Project Control

DATE: 12/18/2025

SHEET: 3 OF 87

PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-202\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Project Ctrl.dwg] [Plot Date: 12/18/2025 7:01:47 PM] [Last Saved: 12/9/2025 5:03:24 PM] [Last User: LOconnor]



Road A (Alignment Control)

ID	Begin Station	End Station	Begin Coordinates	End Coordinates	Curve Info
L1	10+00.00	12+21.89	N: 255377.61 E: 1973009.34	N: 255597.64 E: 1973037.92	
C1	PC: 12+21.89	PT: 12+51.85	PC: N: 255597.64 E: 1973037.92	PT: N: 255627.54 E: 1973039.55	L: 29.96' T: 15.01' R: 200.00' Δ: 8°35'03" C: 29.94'
L2	12+51.85	14+65.25	N: 255627.54 E: 1973039.55	N: 255840.89 E: 1973035.14	

Road C (Alignment Control)

ID	Begin Station	End Station	Begin Coordinates	End Coordinates	Curve Info
L3	30+00.00	30+38.46	N: 255200.76 E: 1973657.16	N: 255239.20 E: 1973655.87	
C2	PC: 30+38.46	PT: 30+99.88	PC: N: 255239.20 E: 1973655.87	PT: N: 255296.19 E: 1973635.69	L: 61.42' T: 31.71' R: 100.00' Δ: 35°11'20" C: 60.46'
L4	30+99.88	32+46.23	N: 255296.19 E: 1973635.69	N: 255412.92 E: 1973547.41	
C3	PC: 32+46.23	PT: 33+10.56	PC: N: 255412.92 E: 1973547.41	PT: N: 255472.82 E: 1973527.16	L: 64.33' T: 33.32' R: 100.00' Δ: 36°51'27" C: 63.22'
L5	33+10.56	36+50.00	N: 255472.82 E: 1973527.16	N: 255812.25 E: 1973525.73	

SBB PROJ. NO. 24-192

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DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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Project Control
Road A & Road C

DATE: 12/18/2025
SHEET: 4 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-202434-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Project Alignments.dwg] [Plot Date: 12/18/2025 7:02:10 PM] [Last Saved: 12/18/2025 11:27:36 AM- Loconnor]

Road B (Alignment Control)

ID	Begin Station	End Station	Begin Coordinates	End Coordinates	Curve Info
L6	20+00.00	21+28.40	N: 255837.88 E: 1972949.11	N: 255842.37 E: 1973077.43	
C4	PC: 21+28.40	PT: 22+27.14	PC: N: 255842.37 E: 1973077.43	PT: N: 255800.39 E: 1973162.41	L: 98.74' T: 53.82' R: 100.00' Δ: 56°34'29" C: 94.78'
L7	22+27.14	22+40.21	N: 255800.39 E: 1973162.41	N: 255789.74 E: 1973169.98	
C5	PC: 22+40.21	PT: 23+23.48	PC: N: 255789.74 E: 1973169.98	PT: N: 255748.42 E: 1973239.52	L: 83.27' T: 44.22' R: 100.00' Δ: 47°42'41" C: 80.89'
L8	23+23.48	25+69.15	N: 255748.42 E: 1973239.52	N: 255719.06 E: 1973483.42	
L9	25+69.15	26+11.85	N: 255719.06 E: 1973483.42	N: 255719.24 E: 1973526.12	

Road D (Alignment Control)

ID	Begin Station	End Station	Begin Coordinates	End Coordinates	Curve Info
L10	40+00.00	42+38.08	N: 255394.03 E: 1972889.85	N: 255361.62 E: 1973125.71	
C6	PC: 42+38.08	PT: 42+63.80	PC: N: 255361.62 E: 1973125.71	PT: N: 255360.31 E: 1973151.37	L: 25.72' T: 12.89' R: 150.00' Δ: 9°49'27" C: 25.69'
L11	42+63.80	46+88.67	N: 255360.31 E: 1973151.37	N: 255375.14 E: 1973575.98	

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

SBB ENGINEERING

SBB Engineering, LLC
101 S Kansas Ave., Topeka, KS 66603
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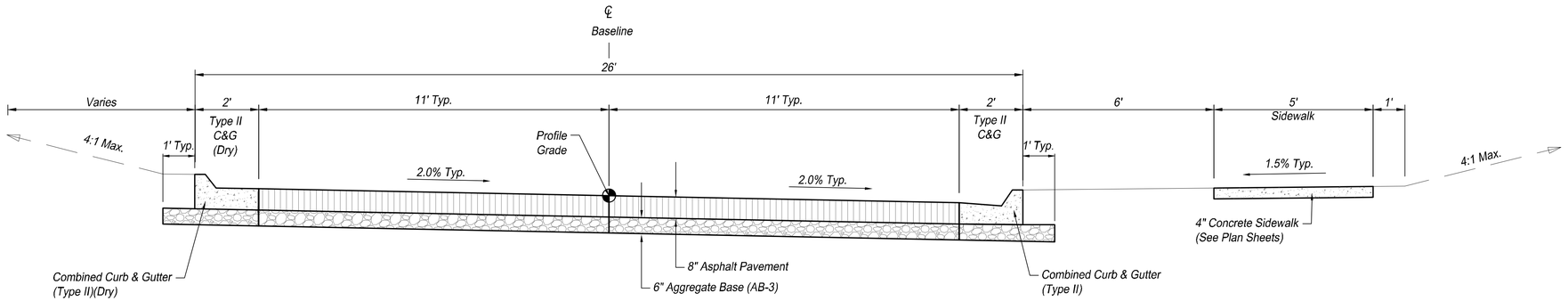
Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Project Control
Road B & Road D

DATE: 12/18/2025
SHEET: 5 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\00-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Project-Alignments.dwg] | Plot Date: 12/18/2025 7:02:14 PM | Last Saved: 12/18/2025 11:27:36 AM- Loconnor]



Typical Road Section
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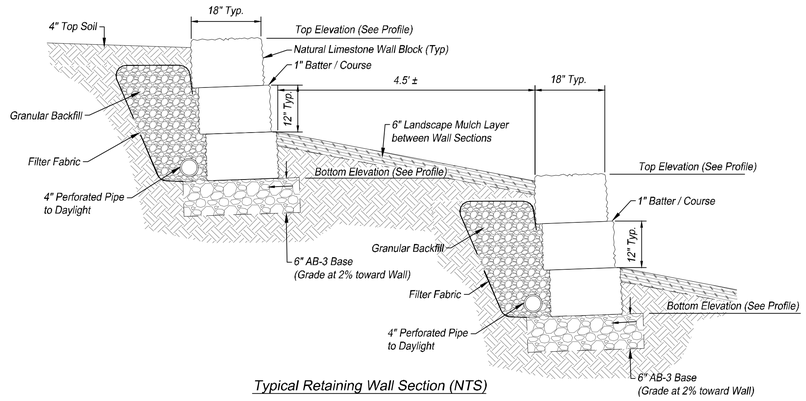

Typical Retaining Wall Section (NTS)

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
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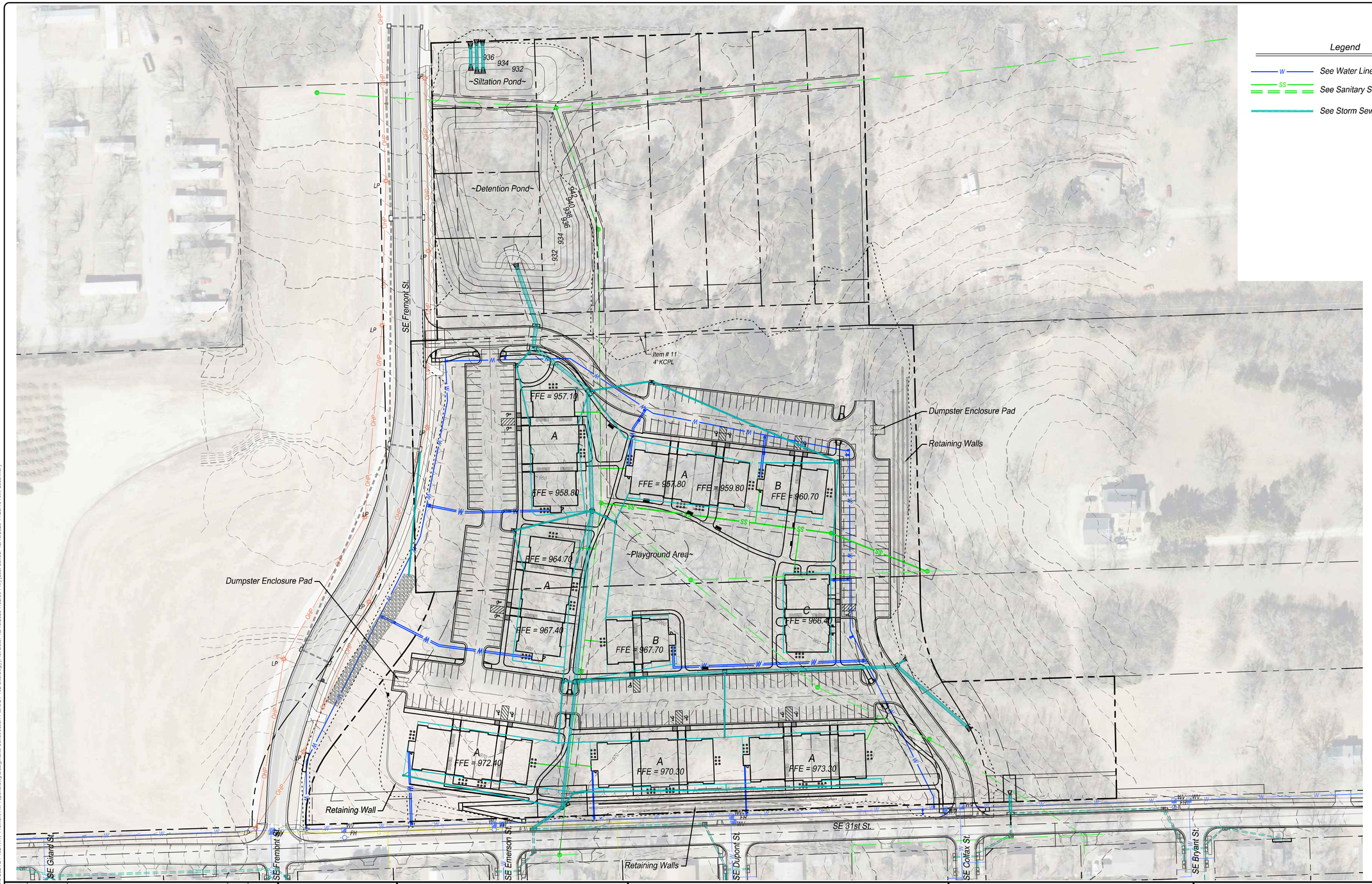
501144.00, & Sanitary 401139.00

Typical Sections

DATE: 12/18/2025
SHEET: 6 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Title, Gen Notes.dwg] [Plot Date: 12/18/2025 7:02:22 PM] [Last Saved: 12/18/2025 6:59:50 PM: Loconnor]



SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
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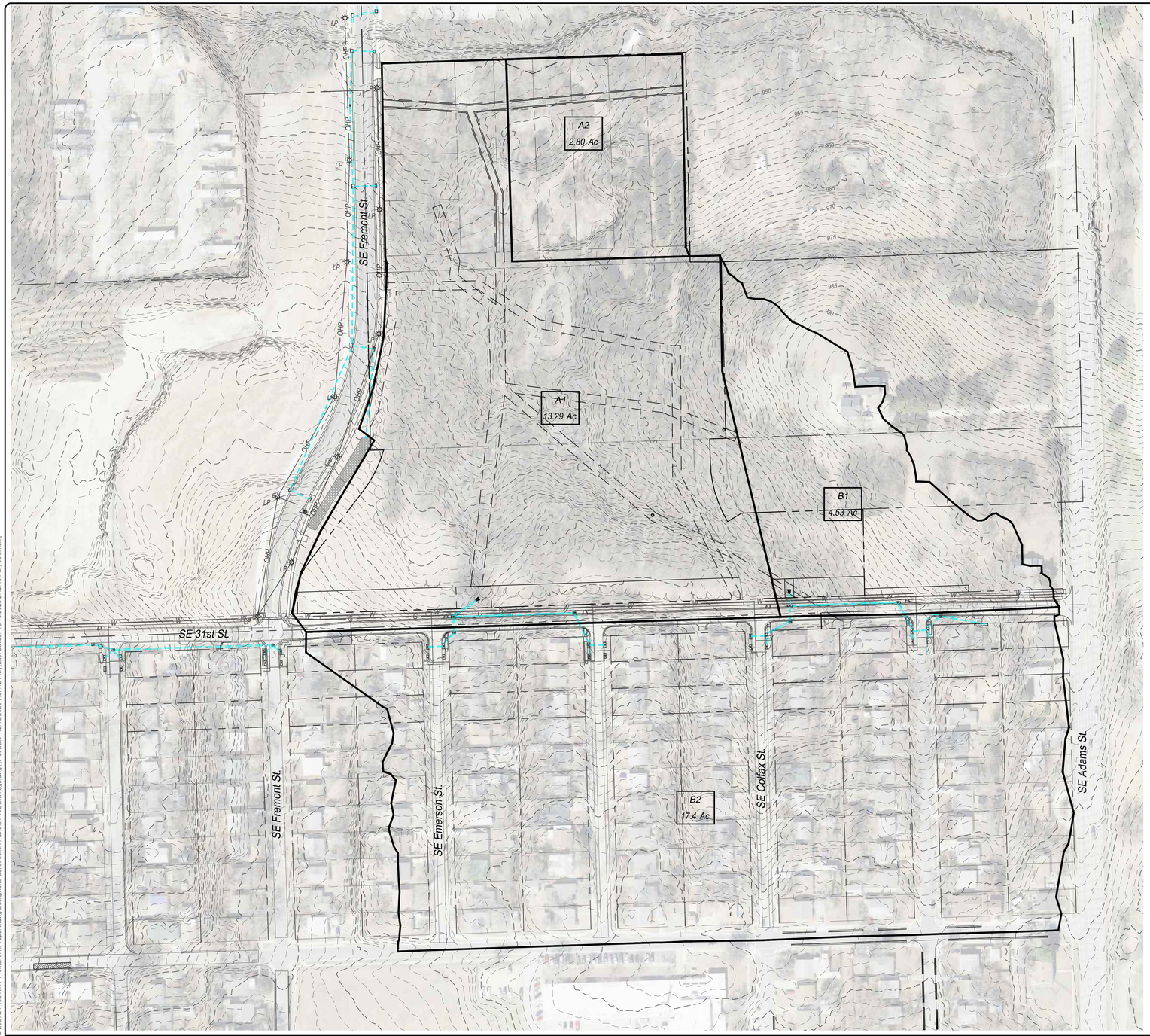
Overall Site Plan

DATE: 12/18/2025
SHEET: 7 OF 87
281381.00, 501144.00, 401139.00
PROJ.:

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Site.dwg] [Plot Date: 12/18/2025 7:02:50 PM] [Last Saved: 12/18/2025 11:29:43 AM: Lcoonnor]



EXISTING DRAINAGE AREA RUNOFF SUMMARY

DRAINAGE AREA		HYDROGRAPH #	Curve Numbers	AREA "A" (ACRES)	TIME OF CONC. "Tc" (MIN)	RUNOFF "Q_2/ Q_{10}/ Q_{100}"	Total Existing On Site Flows (Hyd#8) "Q2/ Q10/Q100"	Total Existing Off Site Flows (Hyd#7) "Q2/ Q10/Q100"	Total Existing On & Off Site Flows "Q2/ Q10/Q100"
						(cfs)	(cfs)	(cfs)	(cfs)
Existing On Site Conditions	Onsite A1	3	77	13.29	20.00	21.25	26.13	-----	83.9
						41.21			
						78.81			
	Onsite A2	4	77	2.80	15.00	4.90	50.50		
						9.45	96.33		143.9
						18.00			
Existing Off Site Conditions	From Offsite B1 (Bypass through Site)	5	77	4.53	15.00	7.93	-----	57.7	
						15.29			
						29.12		93.4	252.5
	From Offsite B2 (Bypass Through Site)	6	91	17.40	18.00	49.84			
						78.40		156.2	
						127.87			

PROPOSED DRAINAGE AREA RUNOFF SUMMARY

DRAINAGE AREA		HYDROGRAPH #	Curve Numbers	AREA "A" (ACRES)	TIME OF CONC. "Tc" (MIN)	RUNOFF "Q_2/ Q_{10}/ Q_{100}"	Total Existing On Site Flows (Hyd#11) "Q2/ Q10/Q100"	Total Existing Off Site Flows (Hyd#7) "Q2/ Q10/Q100"	Total Proposed On & Off Site Flows (Hyd#13) "Q2/ Q10/Q100"
						(cfs)	(cfs)	(cfs)	(cfs)
Proposed On Site Conditions	Onsite A1	9	85	13.29	18.00	30.71	39.61	-----	59.4
						52.35			
						90.72	66.51		
	Onsite A2	10	92	2.80	12.00	10.20			
						15.81	113.24		135.2
						25.52			
Existing/Proposed Off Site Conditions	From Offsite B1 (Bypass through Site)	5	77	4.53	15.00	7.93	-----	53.0	
						15.29			
						29.12		88.7	249.1
	From Offsite B2 (Bypass Through Site)	6	91	17.40	18.00	49.84			
						78.40		152.0	
						127.87			

N

Scale: 1" = 100'
0 200

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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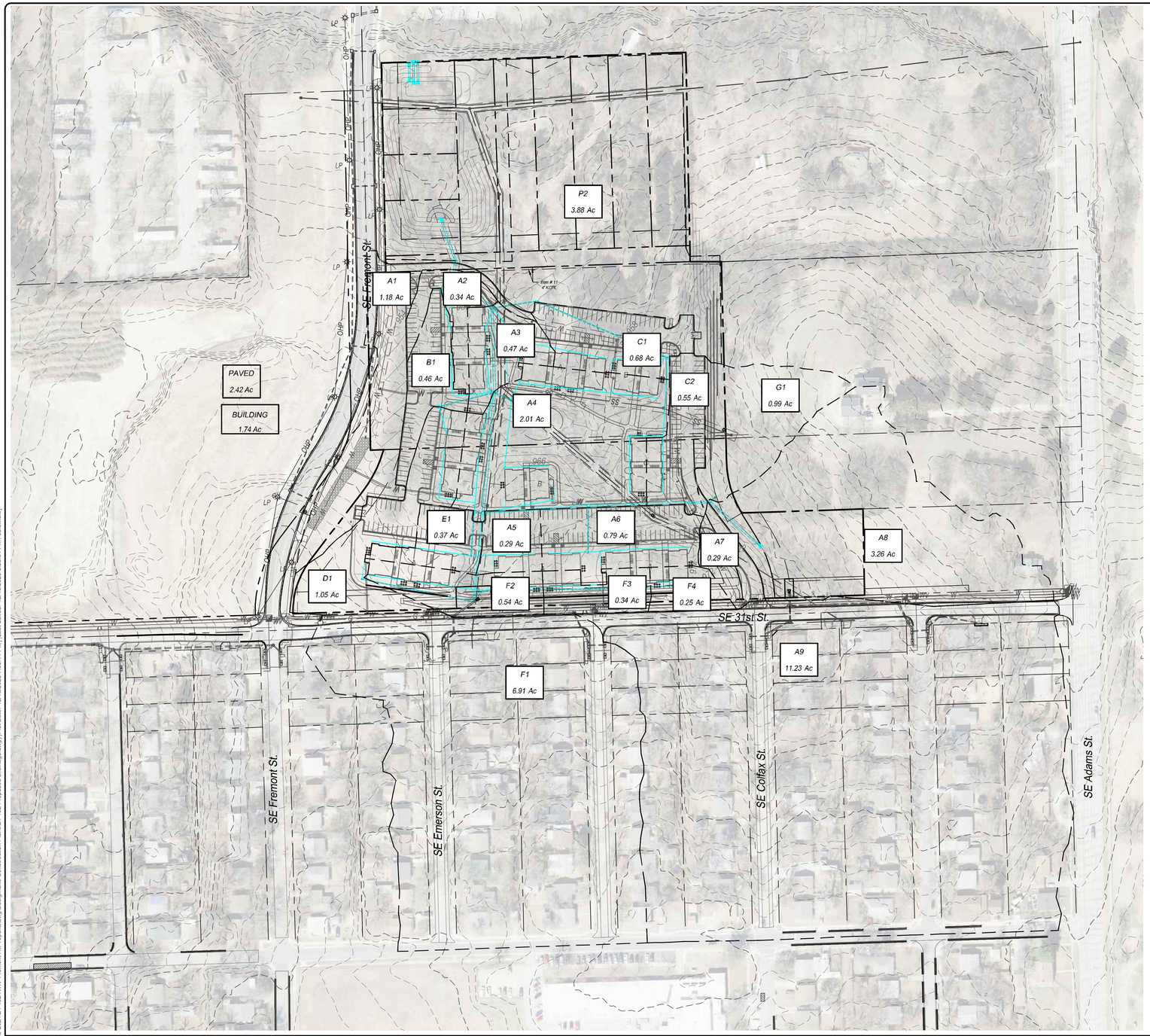
Existing Drainage Areas

DATE: 12/18/2025
SHEET: 8 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Drainage.dwg] [Plot Date: 12/18/2025 7:07:42 PM] [Last Saved: 12/18/2025 2:49:40 PM - Jbielinski]



PROPOSED DRAINAGE AREA RUNOFF SUMMARY

DRAINAGE AREA		HYDROGRAPH #	Curve Numbers	AREA "A" (ACRES)	TIME OF CONC. "Tc" (MIN)	RUNOFF "Q_5/ Q_{10}/ Q_{100}" (cfs)	Total Existing On Site Flows (Hyd#11) "Q2/ Q10/Q100" (cfs)	Total Existing Off Site Flows (Hyd#7) "Q2/ Q10/Q100" (cfs)	Total Proposed On & Off Site Flows (Hyd#13) "Q2/ Q10/Q100" (cfs)
Proposed On Site Conditions	Onsite A1	9	85	13.29	18.00	30.71	39.61	-----	59.4
						52.35			
	Onsite A2	10	92	2.80	12.00	90.72	66.51		
						10.30			
						15.81	113.24		135.2
						25.52			
Existing/Proposed Off Site Conditions	From Offsite B1 (Bypass through Site)	5	77	4.53	15.00	7.93	-----	53.0	
						15.29			
	From Offsite B2 (Bypass Through Site)	6	91	17.40	18.00	29.12		88.7	249.1
						49.84			
						78.40		152.0	
						127.87			

DRAINAGE AREA AND INLET DATA

Drainage Area	Structure	Area (Ac)	c	T_c (Min)	I_{10}	Sub-Area Q_{10} (cfs)	Q_{10} Bypass Inflow	Total Q_{10} (cfs)	(Q_i/Q)	Q_{10} In (cfs)	Inlet Type
A1	A1	1.18	0.40	15	5.00	2.36	0.00	2.36	1.00	2.36	Type I Curb Inlet, L=6'
A2	A2	0.34	0.90	5	8.38	2.56	0.00	2.56	1.00	2.56	Type I Curb Inlet, L=6'
B1	B1	0.46	0.90	5	8.38	3.47	0.00	3.47	1.00	3.47	Type I Curb Inlet, L=6'
D1	D1	1.05	0.80	5	8.38	7.04	0.00	7.04	1.00	7.04	Type I Curb Inlet, L=6'
E1	E1	0.37	0.90	5	8.38	2.79	0.00	2.79	1.00	2.79	Type I Curb Inlet, L=6'
A5	A5	0.29	0.90	5	8.38	2.19	0.00	2.19	1.00	2.19	Type I Curb Inlet, L=6'
A6	A6	0.79	0.90	5	8.38	5.96	0.00	5.96	1.00	5.96	Type I Curb Inlet, L=6'
A3	A3	0.47	0.80	5	8.38	3.15	0.00	3.15	1.00	3.15	Type I Curb Inlet, L=6'
A4	A4	2.01	0.60	5	8.38	10.11	1.00	11.11	2.00	22.21	Type I Curb Inlet, L=6'
C1	C1	0.68	0.90	5	8.38	5.13	0.00	5.13	1.00	5.13	Type I Curb Inlet, L=6'
F3	F3	0.37	0.60	5	8.38	1.86	0.00	1.86	1.00	1.86	18" Nyloplast Drain Basin
C2	C2	0.55	0.90	5	8.38	4.15	0.00	4.15	1.00	4.15	Area Inlet, Type II-P
G1	G1	0.99	0.35	15	5.00	1.73	0.00	1.73	1.00	1.73	Area Inlet, Type II-P
F4	F4	0.25	0.6	5	8.38	1.26	0.00	1.26	1.00	1.26	18" Nyloplast Drain Basin
A8	A8	3.26	0.4	15	5.00	5.71	0.00	5.71	1.00	5.71	End Section
A9	A8	11.23	0.5	15	5.00	28.08	0.00	28.08	1.00	28.08	N/A
F1	F1	6.91	0.5	15	5.00	17.28	0.00	17.28	1.00	17.28	N/A
F2	F2	0.54	0.5	5	8.38	2.26	0.00	2.26	1.00	2.26	18" Nyloplast Drain Basin
A7	A7	0.29	0.9	5	8.38	2.19	0.00	2.19	1.00	2.19	Type I Curb Inlet, L=6'

PIPE DATA

Drainage Area	Structure	ΣArea (Ac)	c	Cx	T_c (Min)	I_{10}	Q_{10}(cfs)	Pipe Length (ft)	Pipe Slope (%)	Pipe Dia (in)	n	Qcap (cfs)	Travel Time (min)
A1	A1	31.57	0.57	#	17	4.57	82.3	50	2.00	42	0.013	303.4	0.1
A2	A2	30.39	0.58	#	17	4.57	80.1	26	1.00	42	0.013	214.6	0.0
B1	B1	0.46	0.90	#	5	8.38	3.5	28	0.83	15	0.013	6.3	0.1
D1	D1	1.05	0.80	#	5	8.38	7.0	92	2.00	15	0.013	9.8	0.2
E1	E1	0.37	0.90	#	5	8.38	2.8	12	1.00	15	0.013	6.9	0.0
A5	A5	25.29	0.54	#	16	4.68	64.1	412	2.00	36	0.013	181.5	0.5
A6	A6	0.79	0.90	#	5	8.38	6.0						
A3	A3	30.05	0.57	#	17	4.68	80.6	88	1.00	42	0.013	214.6	0.1
A4	A4	2.01	0.60	#	5	8.38	10.1	30	2.00	36	0.013	181.5	0.0
A4'	A4'	28.35	0.56	#	17	4.68	73.7	30	2.00	36	0.013	181.5	0.0
C1	C1	1.23	0.90	#	6	8.38	9.3	78	1.30	18	0.013	14.5	0.2
F3	F3	0.62	0.60	#	6	7.48	2.8	204	0.60	15	0.013	5.4	0.8
C2	C2	0.55	0.90	#	5	8.38	4.1	262	2.00	15	0.013	9.8	0.6
G1	G1	0.99	0.35	#	15	5.00	1.7	16	1.00	15	0.013	6.9	0.1
F4	F4	0.25	0.60	#	5	8.38	1.3	204	0.6	15	0.013	5.4	0.8
A8	A8	14.49	0.47	#	15	5.00	33.8	148	1.0	30	0.013	69.9	0.3
A9	A8	11.23	0.50	#	15	5.00	28.1	24	0.5	30	0.013	49.4	0.1
F1	F1	6.91	0.50	#	15	5.00	17.3	51	6.3	30	0.013	175.4	0.0
F2	F2	1.16	0.55	#	7	6.99	4.5	19	0.6	18	0.013	9.9	0.1
F2'	F2'	8.07	0.51	#	15	5.00	20.5	19	1.0	30	0.013	69.9	0.0
A7	A7	15.77	0.47	#	15	5.00	36.8	412	0.6	30	0.013	54.1	1.1

N

Scale: 1" = 100'
0 200

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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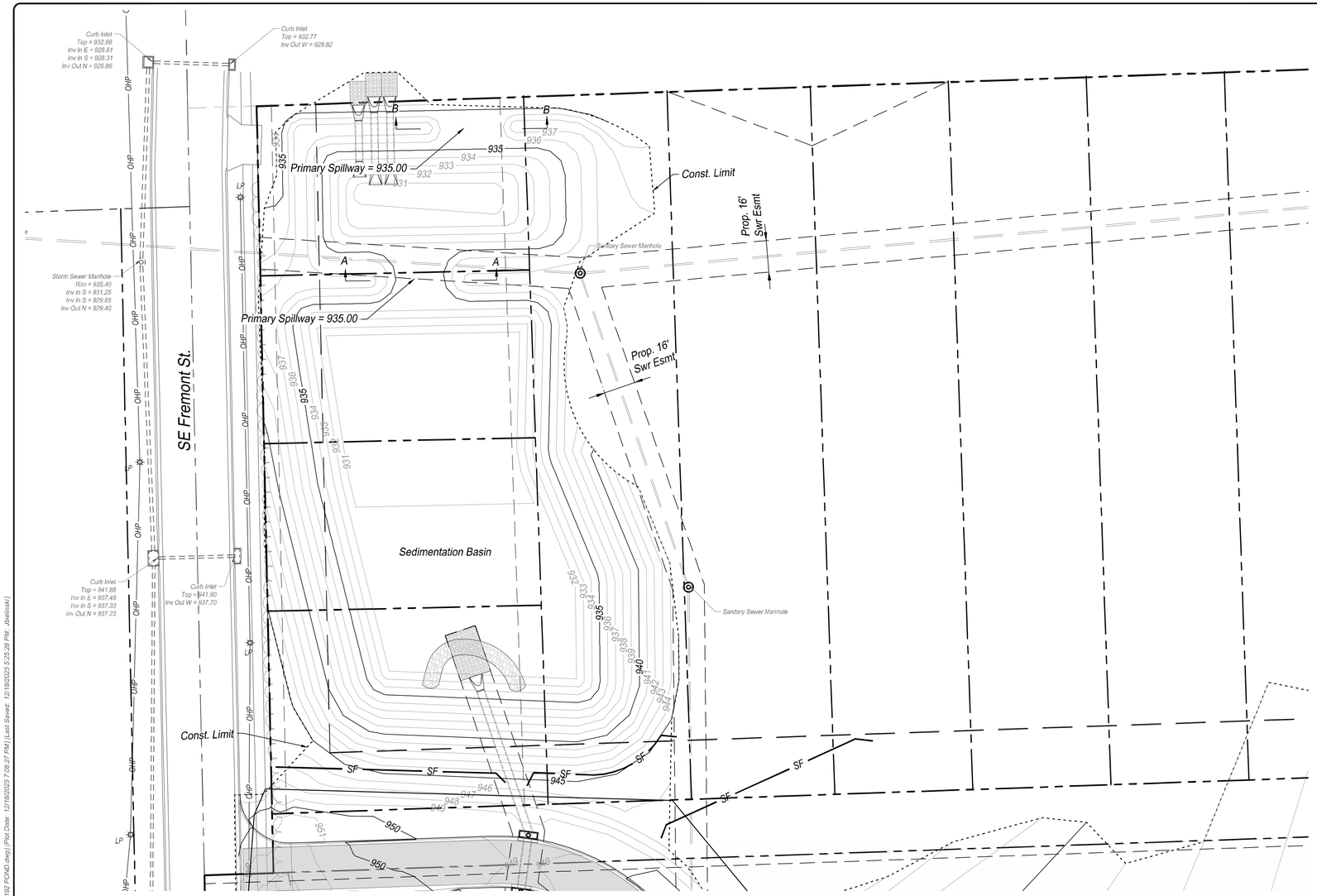
Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Proposed Drainage Areas

DATE: 12/18/2025
SHEET: 9 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Proposed Drainage.dwg] [Plot Date: 12/18/2025 7:08:11 PM] [Last Saved: 12/18/2025 5:25:01 PM - Jbolinski]



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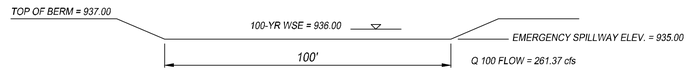
Scale: 1" = 30'

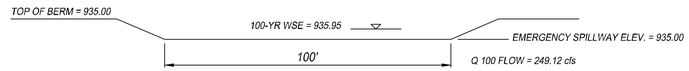
0 30'

STORMWATER STATEMENT:

The proposed detention pond is designed to accommodate the proposed stormwater flows from both Phase I and Phase II. The detention pond will also be used as a temporary sedimentation basin during construction.



SECTION A-A
OVERFLOW SPILLWAY



SECTION B-B
OVERFLOW SPILLWAY

Pre-Post Site Discharge Summary					
Design Storm	Existing On-site Hyd#8 (cfs)	Existing Offsite Bypass Hyd#7 (cfs)	Total Allowable Pond discharge Hyd#14 (cfs)	Total Pond Discharge Hyd#13 (cfs)	Total Pre/Post Flow Reduction (cfs)
2-Year	26.1	57.7	83.9	59.4	24.5
10-Year	50.50	93.4	143.9	135.2	8.8
100-Year	96.33	156.2	252.5	249.12	3.4

Water Quality Volume (Short-Cut Method)

For drainage areas less than 10 acres and one predominant type of cover

WQv=P*Rv

P = Rainfall event in inches
Rv = Volumetric runoff coefficient = 0.05 + 0.009(I)
I = Percent site imperviousness

	I (%)	P (in.)	Rv	WQv (in.)	Area (ac)	Required WQv (CF)	WQv Provided @ Elev 935.00 (CF)	Excess WQv Provided @ Elev 935.00 (CF)
Detention Pond	38	1.37	0.392	0.54	16.09	31,367	100,021	68,654

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

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APP'D BY: B. AUSTIN
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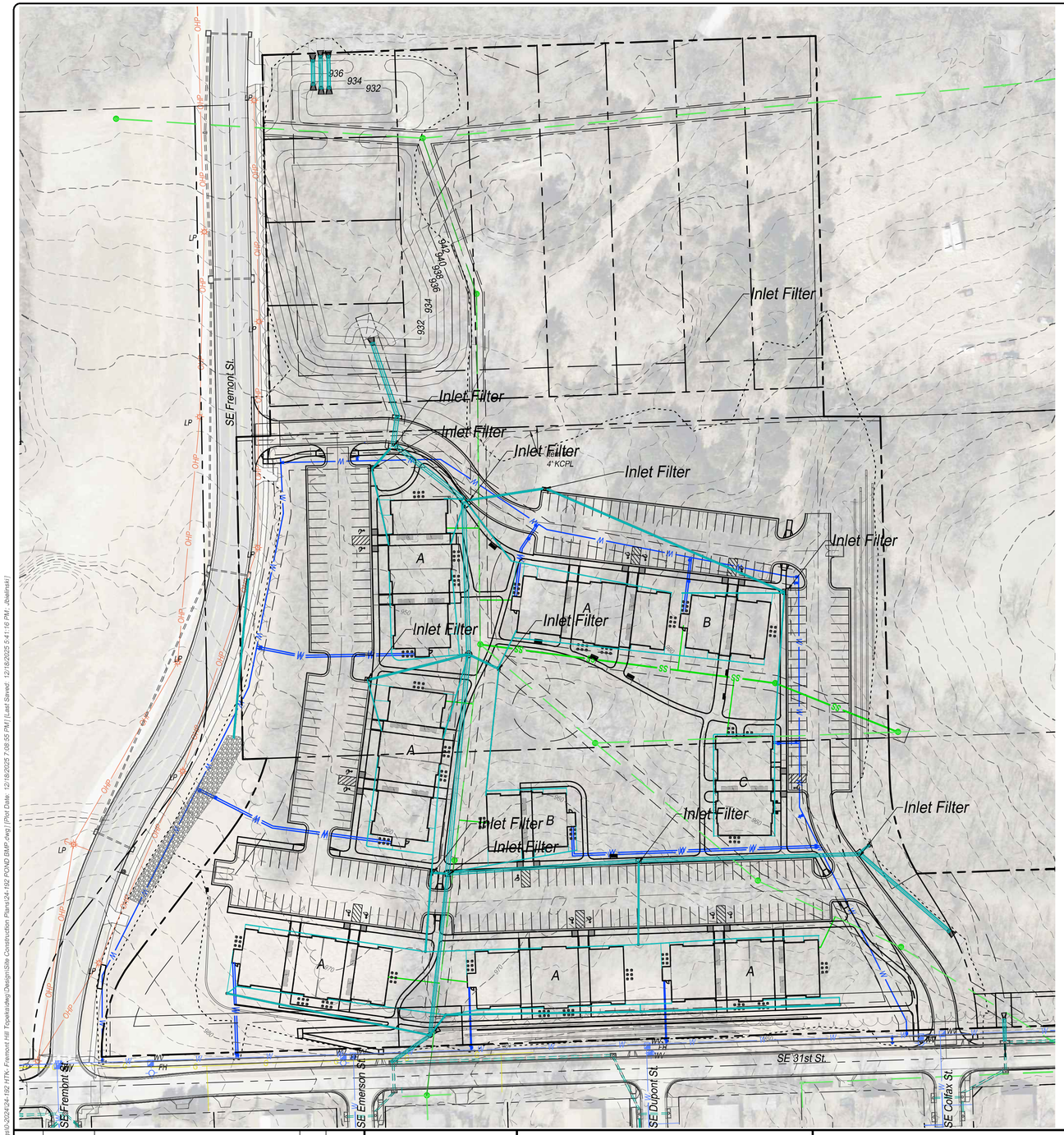
Detention Pond Plan

DATE: 12/18/2025
SHEET: 10 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-202\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 POND.dwg] [Plot Date: 12/18/2025 7:08:27 PM] [Last Saved: 12/18/2025 5:25:38 PM, JDeliniski]



KDOT District 1 Native Wildflower Mix

COMMON NAME	RATE(PLS lbs/acre)*
Black Eyed Susan	0.1
Illinois Bundleflower	1.8
Maximilian Sunflower	0.15
Purple Prairie Clover	0.4
Showy Partridge Pea	2.9
Upright Prairie Coneflower	0.1
Butterfly Milkweed	0.3
Stiff Goldenrod	0.1
Pinnate Prairie Coneflower	0.05
Lance-leaf Coreopsis	0.1
New England Aster	0.05
Pale Purple Coneflower	0.2
Plains Coreopsis	0.05
Hoary Verbena	0.05
Roundhead Lespedeza	0.3
Thickspike Gayfeather	0.4
Wild Bergamot	0.05
Smooth Oxeye	0.2
Lemon Mint	0.05
	7.35

KDOT District 1 Permanent Seed Mix

COMMON NAME	RATE(PLS lbs/acre)*
Fertilizer (15-30-15)	80
Big Bluestem Grass Seed (Kaw)	2
Canada Wildrye Grass Seed	10
Indiangrass Seed (Osage)	2
Little Bluestem Grass Seed (Aldous)	2
Side Oats Grama Grass Seed (El Reno)	6.3
Sterile Wheatgrass (Regreen/Quick Guard)	10
Switchgrass Seed (Blackwell)	0.7
Tall Dropseed	0.5
Western Wheatgrass Seed (Barton)	4
Native Wildflower Mix (See Mix at Right)	7.35

NATIVE GRASS SEEDING OPERATIONS:

1. PROVIDED SEED IN STANDARD CONTAINERS THAT IS NEW CROP SEED COMPLYING WITH AND LABELED IN ACCORDANCE WITH U.S. DEPARTMENT OF AGRICULTURE RULES AND REGULATIONS UNDER THE FEDERAL SEED ACT IN EFFECT AT THE TIME OF PURCHASE. FURNISH STATEMENT CERTIFYING THE PURITY PERCENT, GERMINATION PERCENT, AND THE SPROUTABLE SEED PERCENT FOR THE SEED. STORE THE SEED IN A COOL, DRY PLACE. SEED THAT IS MOLDY, WET, OR OTHERWISE DAMAGED WILL NOT BE ACCEPTED.
2. WATER SEEDED AREAS WITH A DEEP SOAKING ONCE A WEEK DURING DRY PERIODS UNTIL A MATURE STAND OF GRASS IS OBTAINED.
3. PERMANENT SEEDING SHALL BE COMPLETED BETWEEN SEPTEMBER 1 AND APRIL 1. TEMPORARY SEEDING BETWEEN APRIL 1 AND SEPTEMBER 1 SHALL INCLUDE SEEDING ANNUAL RYE AT A RATE OF 100 PLS LBS. PER ACRE.
4. SEEDING SHALL BE ACCOMPLISHED PER THE RATES AND SPECIFICATIONS IN THE KDOT DISTRICT 1 PERMANENT SEED MIX.

N

Scale: 1" = 60'
0 60

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

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APP'D BY: B. AUSTIN
FIELD BOOKS: -
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BMP Plan

DATE: 12/18/2025
SHEET: 11 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg Designs\Site Construction Plans\24-192 POND BMP .dwg] [Plot Date: 12/18/2025 7:08:55 PM] [Last Saved: 12/18/2025 5:41:16 PM - dhelms]

SE Fremont St.

SE 31st St.

Scale: 1" = 20'

0 20'

STA 100+88.50 Install
8" 22.5° Bend

STA 100+00.00 Install
8"x8" Tee & Block with
8" Gate Valve and Box (N) with
8" SwivelxSolid Adapter
between Tee and Valve

Prop. Water Esmt

Ex. Right-of-Way

Const. Limit

Ex. 8" Water Line (PVC) (D)

STA 103+01.09, 85.86' R Install
6" 22.5° Bend (1 Ea.) with
6" Fire Line (E) (123.3 LF)

STA 103+03.30 Install
8"x2" Tapping Saddle & Corp Stop with
2" Service Line (E) (182.3 LF).
Install 2" Meter, Meter Pit, and Top (1 Ea.)

STA 103+03 20.9' R
Lid Elev: 968.32

Inv 963.29

Remove & Reset
Rip Rap (3,604.3 SF) as
needed for Water Line
Construction

Curb Inlet
Top = 974.55
Inv In ESE = 969.90
Inv Out NNE = 969.80

Curb Inlet
Top = 974.52
Inv Out WNW = 970.32

STA 104+18.76 Install
8" 22.5° Bend

STA 104+59.28, 48.05' R Install
6" 22.5° Bend (1 Ea.) with
6" Fire Line (E) (114.8 LF)

STA 104+61 4.1' R
Lid Elev: 959.94

STA 104+59.28 Install
8"x6" Tee & Block (1 Ea.) with
6" Gate Valve (E) (1 Ea.) and
6" Fire Line (SE) (60.0 LF)

STA 104+61.33 Install
8"x2" Tapping Saddle & Corp Stop with
2" Service Line (E) (144.4 LF).
Install 2" Meter, Meter Pit, and Top (1 Ea.)

Curb Inlet
Top = 958.40
Inv In E = 953.70
Inv In SSW = 953.60
Inv Out N = 953.55

Curb Inlet
Top = 958.31
Inv In S = 954.11
Inv Out W = 954.06

STA 106+55.65 Install
8" MJ Cap

STA 106+51.65 Install
8"x8" Tee & Block

Prop. 16' Water Esmt

STA 106+00.00 Install
8" 22.5° Bend

8" Water Line A

8" Water Line B

L1 L2 L3 L4

100+00 101+00 102+00 103+00 104+00 105+00 106+00 106+56

Water Line A (Alignment Control)				
ID	Begin Station	End Station	Begin Coordinates	End Coordinates
L1	100+00.00	100+88.50	N: 255197.08 E: 1972795.22	N: 255285.58 E: 1972795.22
L2	100+88.50	104+18.76	N: 255285.58 E: 1972795.22	N: 255580.04 E: 1972944.78
L3	104+18.76	106+00.00	N: 255580.04 E: 1972944.78	N: 255757.81 E: 1972980.05
L4	106+00.00	106+55.65	N: 255757.81 E: 1972980.05	N: 255813.39 E: 1972977.20

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

SBB ENGINEERING

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101 S Kansas Ave., Topeka, KS 66603
Ph: (785) 215-8630 www.sbbeng.com

Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater
501144.00, & Sanitary 401139.00

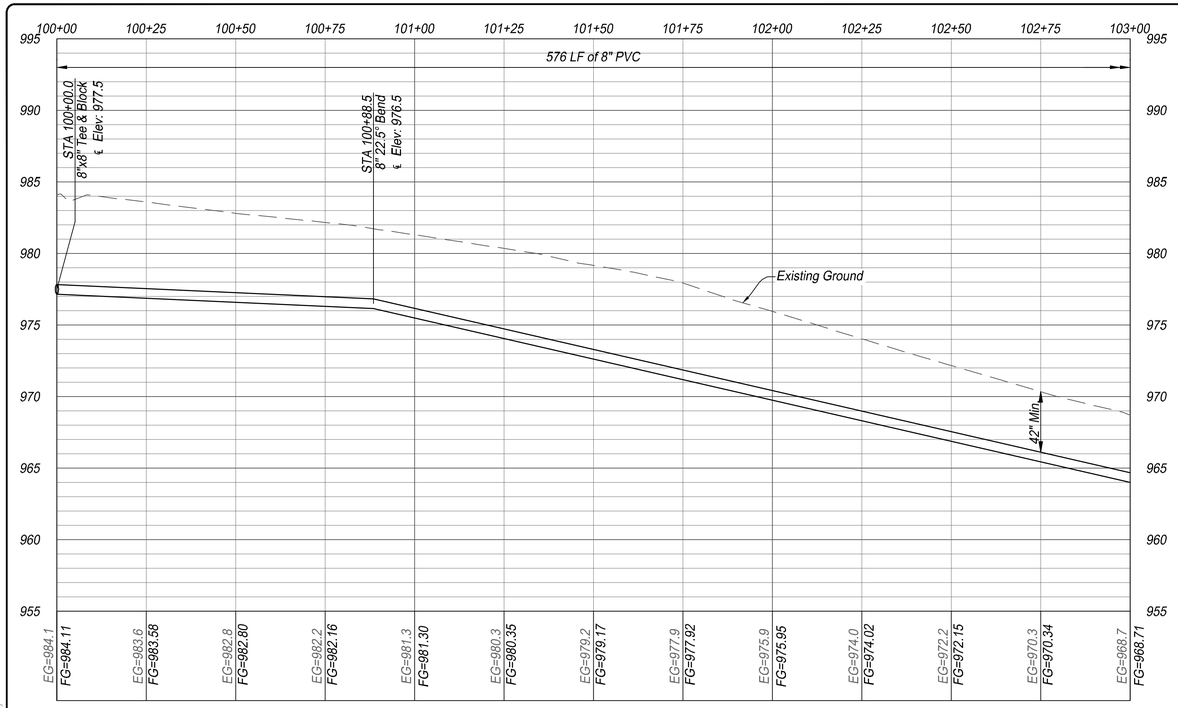
Water Line A

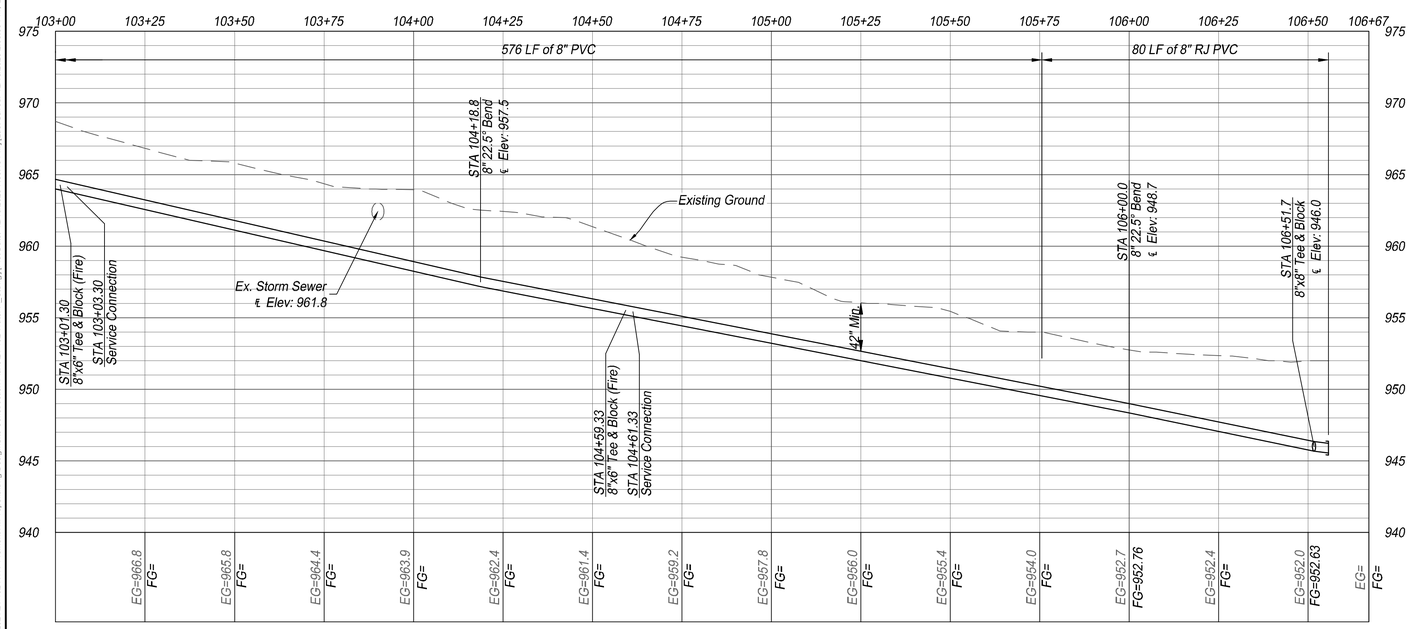
DATE: 12/18/2025

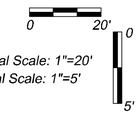
SHEET: 12 OF 87

PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\00-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Water A_C.dwg] [Plot Date: 12/18/2025 7:09:14 PM] [Last Saved: 12/18/2025 2:08:35 PM - Locornor]







Horizontal Scale: 1"=20'
Vertical Scale: 1"=5'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Water Line A
Profile

DATE: 12/18/2025
SHEET: 13 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Water-A_C.dwg] [Plot Date: 12/18/2025 7:09:18 PM] [Last Saved: 12/18/2025 2:08:35 PM - LOCONNOR]

SE Fremont St.

STA 120+78.22 Install
8"x6" Tee & Block (1 Ea.) with
Fire Hydrant (1 Ea.).
Install 6" Gate Valve & Box (1 Ea.).
Install 6" SwivelxSolid between
Tee and Valve and between
Valve and Hydrant.

STA 120+78 4.0' L
FH Elev: 950.69

Const. Limit

STA 121+63.38 Install
8" 45° Bend

STA 120+00.00 Install
8"x8" Tee & Block with
8" Gate Valve and Box (E) with
8" SwivelxSolid Adapter
between Tee and Valve

STA 122+81.50 Install
8"x6" Tee & Block (1 Ea.) with
6" Gate Valve (S) (1 Ea.) and
6" Fire Line (SW) (30.9 LF)

STA 122+83.50 Install
8"x2" Tapping Saddle & Corp Stop with
2" Service Line (SW) (76.2 LF).
Install 2" Meter, Meter Pit, and Top (1 Ea.)

STA 124+42.15 Install
8"x6" Tee & Block (1 Ea.) with
6" Gate Valve (S) (1 Ea.) and
6" Fire Line (S) (55.6 LF)

STA 124+44.16 Install
8"x2" Tapping Saddle & Corp Stop with
2" Service Line (S) (55.4 LF).
Install 2" Meter, Meter Pit, and Top (1 Ea.)

STA 122+81.50, 30.95' R Install
6" 22.5° Bend (1 Ea.) with
6" Fire Line (S) (46.3 LF)

STA 122+93.43 Install
8" 22.5° Bend

STA 122+83 18.1' R
Lid Elev: 955.14

STA 124+46 24.1' R
Lid Elev: 958.79

STA 125+47.14 Install
8" 11.25° Bend

STA 125+55.14 Install
8"x8" Tee & Block with
8" Gate Valve and box (W) with
8" SwivelxSolid Adapter
between Tee and Valve

Curb Inlet
Top In S = 958.38
Inv In S = 954.11
Inv Out W = 954.06

Sanitary Sewer Manhole
Rim = 948.02
Inv In SSW = 942.97
Inv In SE = 942.27
Inv Out N = 940.72

Prop. Util. Esmt

Prop. 16' Water Esmt

8" Water Line B

L1 L2 L3 L4

Water Line B (Alignment Control)				
ID	Begin Station	End Station	Begin Coordinates	End Coordinates
L1	120+00.00	121+63.38	N: 255809.39 E: 1972977.41	N: 255812.77 E: 1973140.75
L2	121+63.38	122+93.43	N: 255812.77 E: 1973140.75	N: 255740.97 E: 1973249.19
L3	122+93.43	125+47.13	N: 255740.97 E: 1973249.19	N: 255692.53 E: 1973498.22
L4	125+47.13	125+55.14	N: 255692.53 E: 1973498.22	N: 255692.57 E: 1973506.23

N

Scale: 1" = 20'
0 20'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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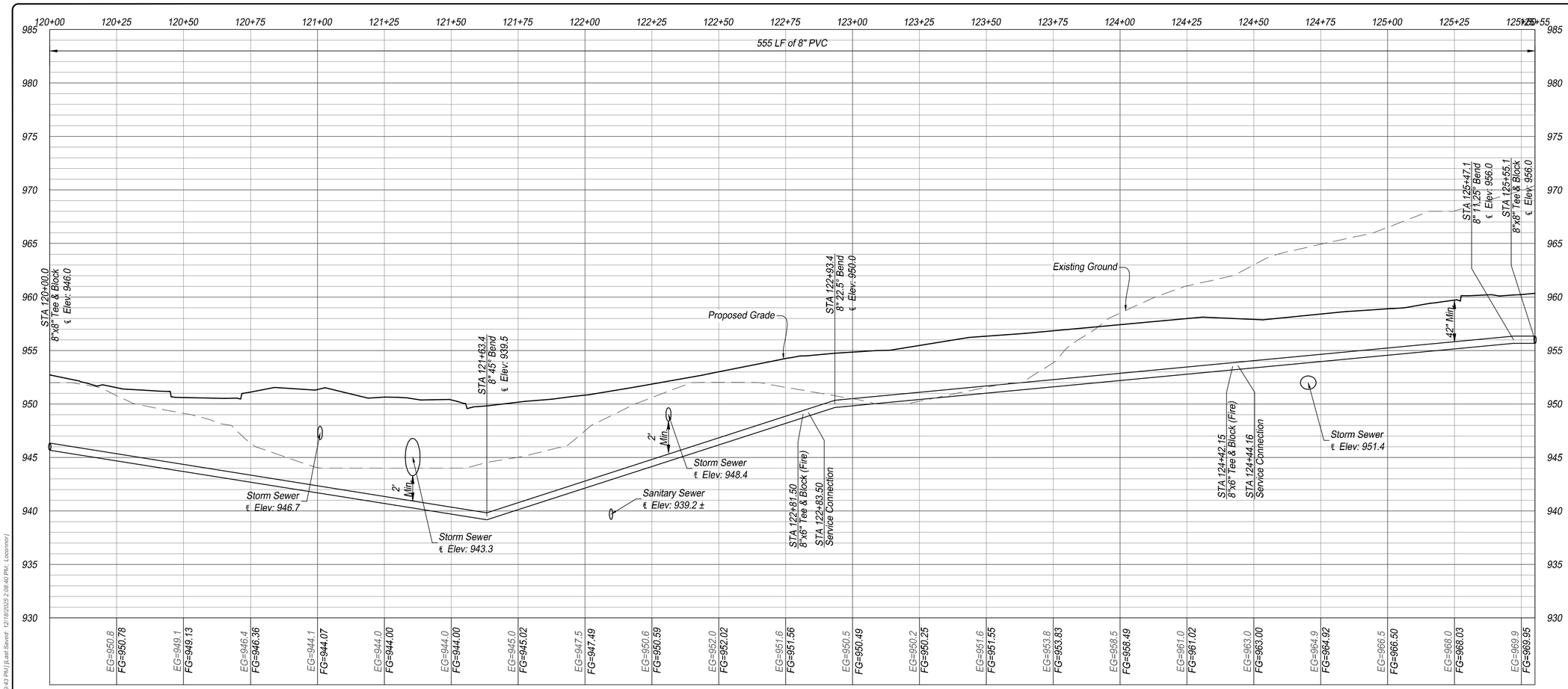
Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater
501144.00, & Sanitary 401139.00

Water Line B

DATE: 12/18/2025
SHEET: 14 OF 87
281381.00, 501144.00,
PROJ.: 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\ Design\Site Construction Plans\24-192 Water-B.dwg] [Plot Date: 12/18/2025 7:09:40 PM] [Last Saved: 12/18/2025 2:08:40 PM] [L.oconnor]



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FG=950.78	FG=949.13	FG=946.36	FG=944.07	FG=944.00	FG=944.00	FG=945.02	FG=947.49	FG=950.59	FG=952.02	FG=951.56	FG=950.49	FG=950.25	FG=951.55	FG=953.83	FG=958.49	FG=961.02	FG=963.00	FG=964.92	FG=966.50	FG=968.03	FG=969.95

Horizontal Scale: 1"=20'
Vertical Scale: 1"=5'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
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Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Water Line B
Profile

DATE: 12/18/2025
SHEET: 15 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\11 SBB Drawings\0-202\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Water-B.dwg] [Plot Date: 12/18/2025 7:09:43 PM] [Last Saved: 12/18/2025 2:08:40 PM - LOconnor]

STA 43+91.33, 45.00' L Install
6" 90° Bend (1 Ea.) with
6" Fire Line (N) (27.8 LF)

Sanitary Sewer Manhole
Rim = 953.06
Inv In E = 946.60
Inv In SE = 945.36
Inv Out NW = 945.27

STA 152+15.14 Install
8"x6" Tee & Block (1 Ea.) with
6" Gate Valve (W) (1 Ea.) and
6" Fire Line (W) (251.4 LF)

Sanitary Sewer Manhole
Rim = 962.02
Inv In SE = 951.22
Inv Out NW = 951.04

STA 152+50 4.0' L
FH Elev: 966.89

STA 152+58.67 Install
8" 22.5° Bend

STA 153+24 21.2' L
Lid Elev: 964.77

STA 153+25.86 Install
8"x6" Tee & Block (1 Ea.) with
6" Gate Valve (W) (1 Ea.) and
6" Fire Line (W) (27.0 LF)

STA 154+93.84 Install
8"x8" Tee & Block

STA 154+88 4.0' L
FH Elev: 960.25

8" Water Line B

Prop. 16' Swr Esmt

Ex. Right-of-Way

SE 31st St.

Ex. 8" Water Line (PVC) (D)

STA 152+14 3.2' L
Lid Elev: 968.76

STA 150+00.00, 14.9' L Move
Fire Hydrant Assembly (1 Ea.)

STA 150+14.48 Install
8" 22.5° Bend

8" Water Line C

L5 L6 L7

150+00 151+00 152+00 153+00 154+00 154+96

Prop. 16' Water Esmt

Prop. 16' Swr Esmt

Const. Limit

Sanitary Sewer Manhole
Rim = 968.18
Inv In SE = 955.39
Inv Out NW = 955.32

Sanitary Sewer Manhole
Rim = 974.51
Inv In NNE = 968.37
Inv Out W = 968.06

STA 152+50.00 Install
8"x6" Tee & Block (1 Ea.) with
Fire Hydrant (1 Ea.).
Install 6" Gate Valve & Box (1 Ea.).
Install 6" SwivelxSolid between
Tee and Valve and between
Valve and Hydrant.

STA 152+12.94 Install
8"x2" Tapping Saddle & Corp Stop with
2" Service Line (W) (281.2 LF).
Install 2" Meter, Meter Pit, and Top (1 Ea.)

STA 153+23.86 Install
8"x2" Tapping Saddle & Corp Stop with
2" Service Line (W) (27.0 LF).
Install 2" Meter, Meter Pit, and Top (1 Ea.)

STA 154+95.84 Install
8" MJ Cap

STA 154+87.78 Install
8"x6" Tee & Block (1 Ea.) with
Fire Hydrant (1 Ea.).
Install 6" Gate Valve & Box (1 Ea.).
Install 6" SwivelxSolid between
Tee and Valve and between
Valve and Hydrant.

STA 150+00.00 Install
8"x8" Tapping Sleeve and
8" Gate Valve (N) with
8" SwivlexSolid Adapter between
Sleeve and Valve.
Install 8"x1" Tapping Saddle for
Disinfection and Testing.

Curb Inlet
Top = 973.66
Inv In S = 966.96
Inv In E = 966.66
Inv Out N = 966.46

Curb Inlet
Top = 973.54
Inv In WSW = 967.74
Inv Out N = 967.44

Ex. Esmt

Inv 300.23

Scale: 1" = 20'
0 20'

Water Line C (Alignment Control)

ID	Begin Station	End Station	Begin Coordinates	End Coordinates
L5	150+00.00	150+14.48	N: 255224.43 E: 1973616.76	N: 255238.91 E: 1973616.28
L6	150+14.48	152+58.67	N: 255238.91 E: 1973616.28	N: 255457.39 E: 1973507.23
L7	152+58.67	154+95.84	N: 255457.39 E: 1973507.23	N: 255694.57 E: 1973506.23

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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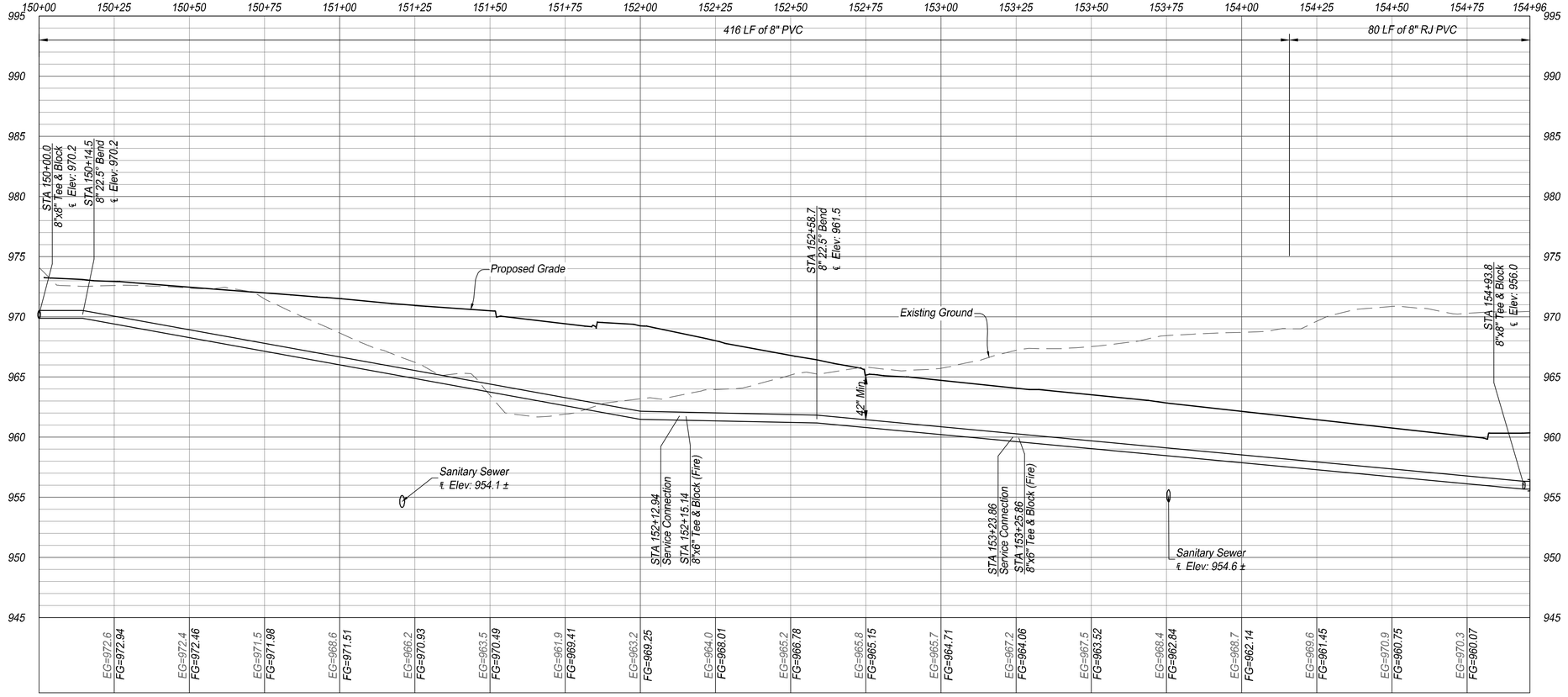
Multi-Family Residential Development
Water Line 281381.00, Stormwater
501144.00, & Sanitary 401139.00

Water Line C

DATE: 12/18/2025
SHEET: 16 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location, X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg Dosign\Site Construction Plans\24-192 Water-A_C.dwg] [Plot Date: 12/18/2025 7:10:05 PM] [Last Saved: 12/18/2025 2:08:35 PM - Loconnor]



0 20' 0

Horizontal Scale: 1"=20'
Vertical Scale: 1"=5'

5'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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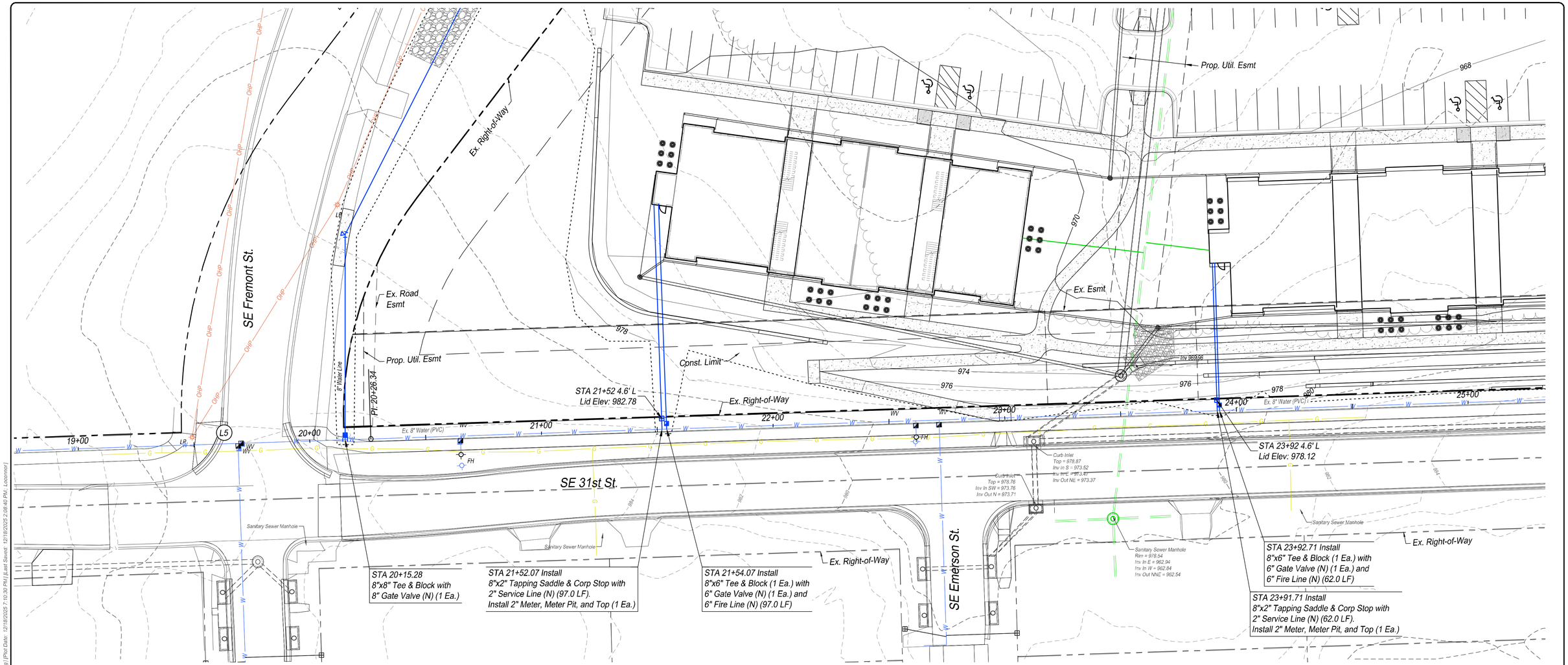
Water Line C
Profile

DATE: 12/18/2025
SHEET: 17 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-202\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Water-A_C.dwg] [Plot Date: 12/18/2025 7:10:07 PM] [Last Saved: 12/18/2025 2:08:35 PM - Locomor]



Water Line D (Alignment Control)				
ID	Begin Station	End Station	Begin Coordinates	End Coordinates
L5	19+00.00	20+26.34	N: 255193.24 E: 1972680.00	N: 255197.45 E: 1972806.28
L6	20+26.34	32+12.66	N: 255197.45 E: 1972806.28	N: 255236.92 E: 1973991.94

N

Scale: 1" = 20'
0 20'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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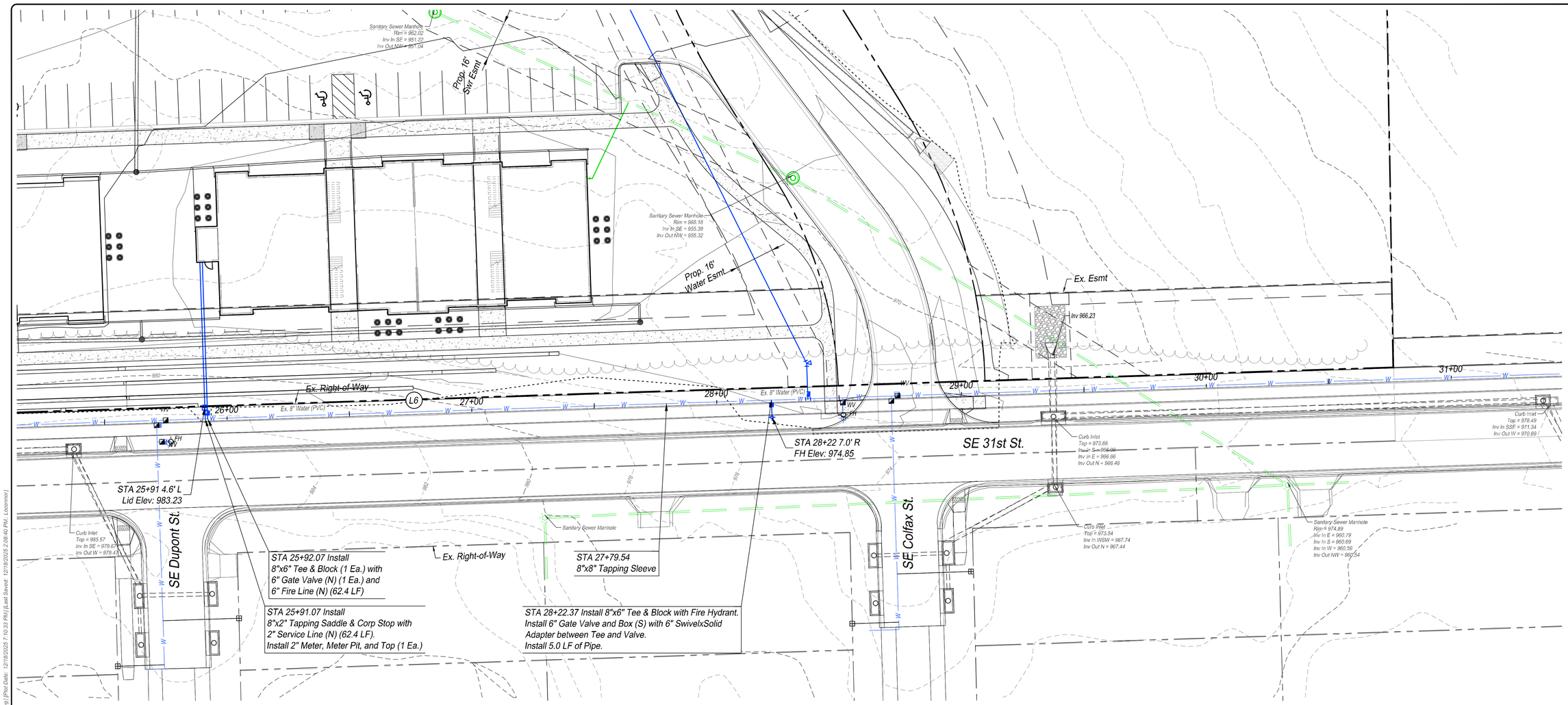
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Water Line D
(Existing 8" PVC)

DATE: 12/18/2025
SHEET: 18 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-202434-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Water-D.dwg] [Plot Date: 12/18/2025 7:10:30 PM] [Last Saved: 12/18/2025 2:08:40 PM - L.oconnor]



SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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Water Line 281381.00, Stormwater
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Water Line D
(Existing 8" PVC)

DATE: 12/18/2025
SHEET: 19 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Water-B.dwg] [Plot Date: 12/18/2025 7:10:33 PM] [Last Saved: 12/18/2025 2:08:40 PM - LoconnorJ]

SE Emerson St.

SE 31st St.

SE Dupont St.

STA 200+00.00
4' Dia. Ex. Std. Manhole, Type I (SS1)
Rim Elev: 978.46
FL Out (N): 962.91 (Ex.)

STA 201+15.4 Install
8"x4" Sanitary Sewer
Service Wye and
4" Service Line (52.5 LF)
@ 2.0% Min. (W)

STA 201+19.9 Install
8"x4" Sanitary Sewer
Service Wye and
4" Service Line (27.2 LF)
@ 2.0% Min. (E)

STA 202+83.3 Install
8"x4" Sanitary Sewer
Service Wye and
4" Service Line (28.2 LF)
@ 2.0% Min. (E)

STA 202+41.60 Remove
Exist. Brick Manhole. Construct
4' Dia. Std. Manhole, Type I (SS2).
Remove 20 LF VCP (S) and Replace with
8" Sanitary Sewer (PVC)(S)(20 LF).
Connect to Exist. 8" VCP with 8" Fernco
Strongback (1 Ea.)(N).
Rim Elev: 966.63
FL In (S): 954.75
FL Out (N): 954.70

STA 204+02.6 Install
8"x4" Sanitary Sewer
Service Wye and
4" Service Line (27.7 LF)
@ 2.0% Min. (W)

STA 204+63.79 Remove
Exist. Brick Manhole. Construct
4' Dia. Std. Manhole, Type I (SS3).
Remove 20 LF VCP (S) and Replace with
8" Sanitary Sewer (PVC)(S)(20 LF).
Connect to Exist. 8" VCP with 8" Fernco
Strongback (1 Ea.)(N).
Rim Elev: 956.84
FL In (S): 942.97
FL In (SE): 942.77
FL In (E): 941.08
FL Out (N): 940.72

STA 205+09.1 Install
8"x4" Sanitary Sewer
Service Wye and
4" Service Line (32.3 LF)
@ 2.0% Min. (E)

STA 205+82.7 Install
8"x4" Sanitary Sewer
Service Wye and
4" Service Line (33.0 LF)
@ 2.0% Min. (W)

Ex. Esmt

Prop. Util. Esmt

Prop. 16' Swr Esmt

Prop. 16' Swr Esmt

Prop. 16' Water Esmt

Const. Limit

Road B Alignment
PC: 22+40.21
PT: 23+23.48

Curb Inlet
Top = 978.76
Inv In SW = 973.76
Inv Out N = 973.71

Curb Inlet
Top = 978.87
Inv In S = 973.52
Inv In E = 973.47
Inv Out NE = 973.37

Sanitary Sewer Manhole
Rim = 978.54
Inv In E = 962.94
Inv In W = 962.84
Inv Out NNE = 962.54

Inv 969.96

Sanitary Sewer Manhole
Rim = 968.50
Inv In SSW = 954.75
Inv Out NNE = 954.70

Sanitary Sewer Manhole
Rim = 948.02
Inv In SSW = 942.97
Inv In SE = 942.27
Inv Out N = 940.72

Sanitary Sewer Manhole
Rim = 953.06
Inv In E= 946.60
Inv In SE= 945.36
Inv Out NW = 945.27

Curb Inlet
Top = 985.57
Inv In SE = 979.67
Inv Out W = 979.47

30" RCP/PP

42" RCP/PP

12" HDPE

Ex. 8" Sanitary Sewer A

Ex. 8" Sanitary Sewer B

8" Water Line B

PI: 203+41.60

PI: 204+63.79

200+00

201+00

202+00

203+00

204+00

205+00

206+00

L1

L2

Scale: 1" = 20'
0 20'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

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Ph: (785) 215-8630 www.sbbeng.com

Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater
501144.00, & Sanitary 401139.00

Sanitary Sewer A

DATE: 12/18/2025
SHEET: 20 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Sanitary-A.dwg] [Plot Date: 12/18/2025 7:10:53 PM] [Last Saved: 12/18/2025 3:50:53 PM - Loconnor]

PC: 21+28.40

21+00

22+00

Road B Alignment

PT: 22+30.14

PC: 22+40.71

206+00

207+00

208+00

209+00

L3

L4

Ex. 8" Sanitary Sewer A

Ph: 208+21.68

Sanitary Sewer Manhole
Rim = 944.39
Inv In S = 937.39
Inv Out N = 937.30

Exist. Sanitary Manhole
to remain

Prop. 16'
Swr Esmt

PC: 209+89.96

Sanitary Sewer Manhole
Rim = 937.44
Inv In S = 932.84
Inv In E = 932.64
Inv Out W = 932.55

Const. Limit

8" Water Line B

PT: 23+23.48

Prop.
16' Water
Esmt

6" Water Line B

24+00

932
934
936
938
940
942
944
946
948
950
952
954

Scale: 1" = 20'
0 20'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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Water Line 281381.00, Stormwater
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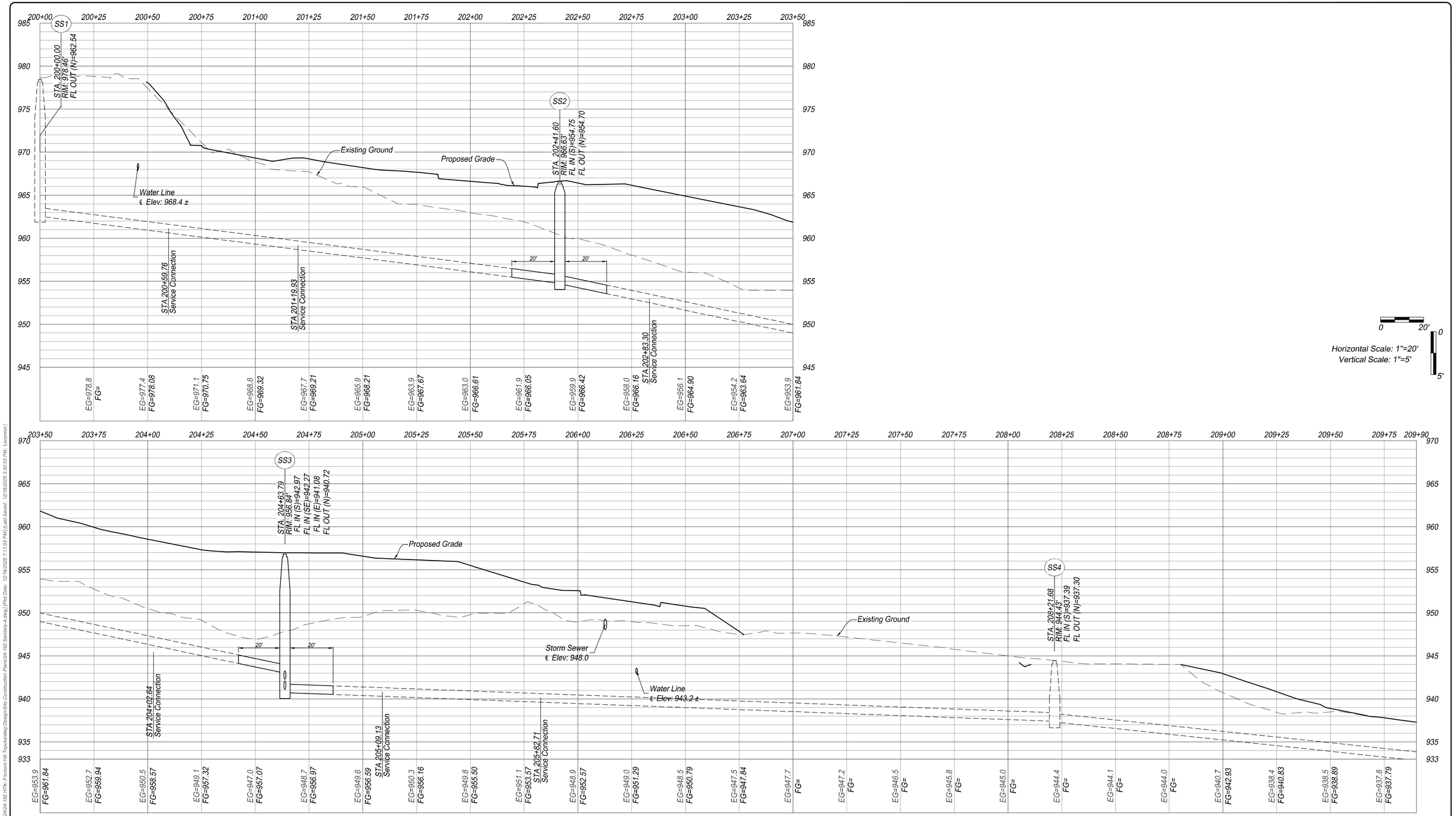
Sanitary Sewer A

DATE: 12/18/2025
SHEET: 21 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location, X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg Dosign\Site Construction Plans\24-192-Sanitary-A.dwg] [Plot Date: 12/18/2025 7:10:58 PM] [Last Saved: 12/18/2025 3:50:53 PM, Loconnor]



0 20' 0

5'

Horizontal Scale: 1"=20'
Vertical Scale: 1"=5'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Sanitary Sewer A Profile

DATE: 12/18/2025
SHEET: 22 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\10-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Sanitary-A.dwg] [Plot Date: 12/18/2025 7:11:03 PM] [Last Saved: 12/18/2025 3:50:53 PM; Loconnor]

Sanitary Sewer B (Alignment Control)

ID	Begin Station	End Station	Begin Coordinates	End Coordinates
L1	250+00.00	251+54.64	N: 255623.63 E: 1973181.15	N: 255522.96 E: 1973298.54
L2	251+54.64	253+72.17	N: 255522.96 E: 1973298.54	N: 255382.37 E: 1973464.53
L3	253+72.17	255+33.26	N: 255382.37 E: 1973464.53	N: 255314.56 E: 1973610.65
L4	255+33.26	257+70.81	N: 255314.56 E: 1973610.65	N: 255189.31 E: 1973812.49

Sanitary Sewer C (Alignment Control)

ID	Begin Station	End Station	Begin Coordinates	End Coordinates
L5	270+00.00	273+03.69	N: 255623.63 E: 1973181.15	N: 255584.13 E: 1973482.25
L6	273+03.69	274+50.00	N: 255584.13 E: 1973482.25	N: 255530.00 E: 1973618.19

STA 250+00.00 Remove
Exist. Brick Manhole. Construct
4' Dia. Std. Manhole, Type I (SS3)
Remove 20 LF VCP (SE) and Replace with
8" Sanitary Sewer (PVC)(SE)(20 LF).
Rim Elev: 956.84
FL In (S): 942.97
FL In (SE): 942.77
FL In (E): 941.08
FL Out (N): 940.72

STA 251+54.64 Remove
Exist. Brick Manhole. Construct
4' Dia. Std. Manhole, Type I (SS5)
Remove 20 LF VCP (SE) and Replace with
8" Sanitary Sewer (PVC)(SE)(20 LF).
Connect to Exist. 8" VCP with 8" Fernco
Strongback (1 Ea.)(NW).
Rim Elev: 960.84
FL In (E): 946.60 (Plug and Abandon)
FL In (SE): 945.36
FL Out (NW): 945.27

STA 253+72.17 Remove
Exist. Brick Manhole. Construct
4' Dia. Std. Manhole, Type I (SS6)
Remove 20 LF VCP (SE) and Replace with
8" Sanitary Sewer (PVC)(SE)(20 LF).
Connect to Exist. 8" VCP with 8" Fernco
Strongback (1 Ea.)(NW).
Rim Elev: 969.10
FL In (SE): 951.22
FL Out (NW): 951.04

STA 254+59.4 Install
8"x4" Sanitary Sewer
Service Wye and
4" Service Line (36.3 LF)
@ 2.0% Min. (S)

STA 255+33.26 Remove
Exist. Brick Manhole. Construct
4' Dia. Std. Manhole, Type I (SS7)
Remove 20 LF VCP (SE) and Replace with
8" Sanitary Sewer (PVC)(SE)(20 LF).
Connect to Exist. 8" VCP with 8" Fernco
Strongback (1 Ea.)(NW).
Rim Elev: 972.06
FL In (SE): 955.39
FL Out (NW): 955.32

STA 272+03.5 Install
8"x4" Sanitary Sewer
Service Wye and
4" Service Line (45.7 LF)
@ 2.0% Min. (N)

STA 272+61.8 Install
8"x4" Sanitary Sewer
Service Wye and
4" Service Line (60.3 LF)
@ 2.0% Min. (S)

STA 273+03.69 Construct
4' Dia. Std. Manhole, Type I (SS10)
Rim Elev: 961.82
FL In (E): 954.50
FL Out (W): 954.50

STA 274+38.84 Remove and Construct
4' Dia. Std. Manhole, Type I (SS9)
Connect to Ex. Sanitary Service Line (E).
Rim Elev: 975.31
FL Out (W): 959.23

Flow Fill Existing 8"
Sanitary Sewer (VCP)
and abandon in place

Scale: 1" = 20'

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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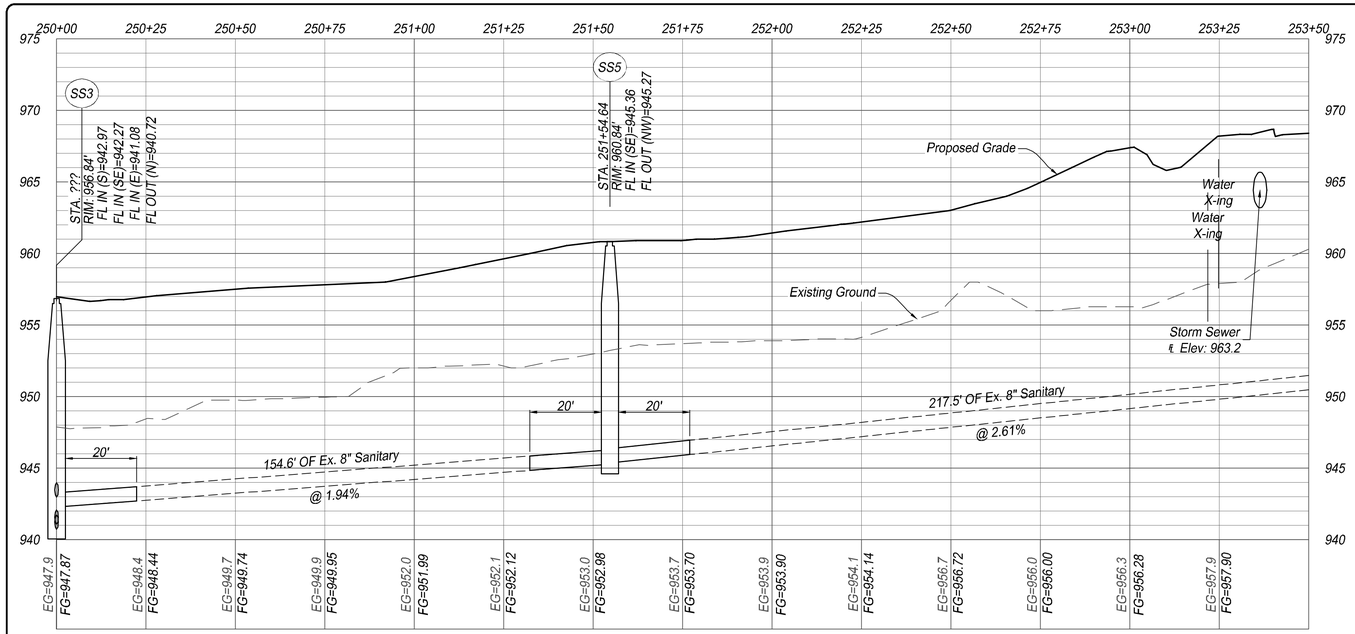
Water Line 281381.00, Stormwater
501144.00, & Sanitary 401139.00

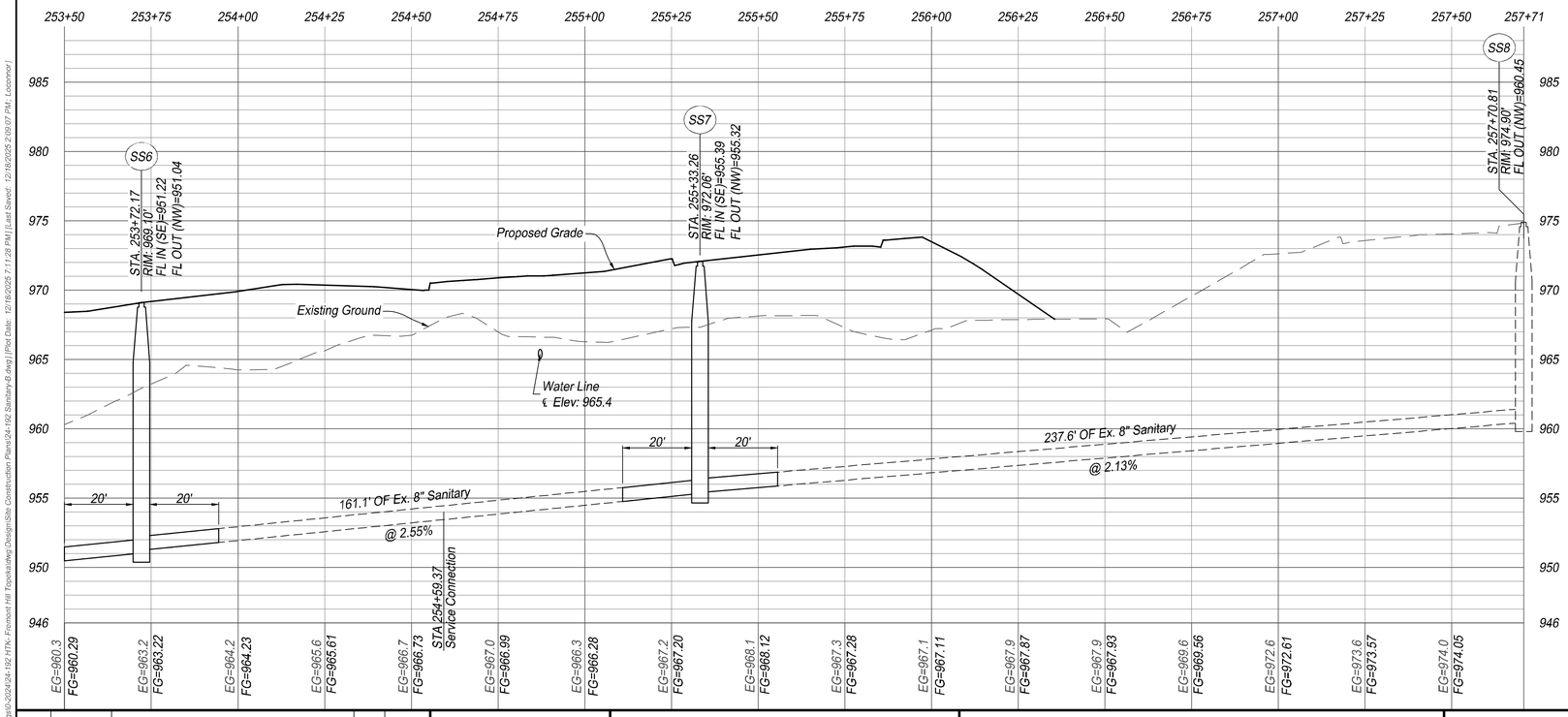
Sanitary Sewer B & C

DATE: 12/18/2025
SHEET: 23 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

SBB PROJ. NO. 24-192

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Sanitary-B.dwg] [Plot Date: 12/18/2025 7:11:24 PM] [Last Saved: 12/18/2025 2:09:07 PM, Loconnor]





0 20' 0

5'

Horizontal Scale: 1"=20'
Vertical Scale: 1"=5'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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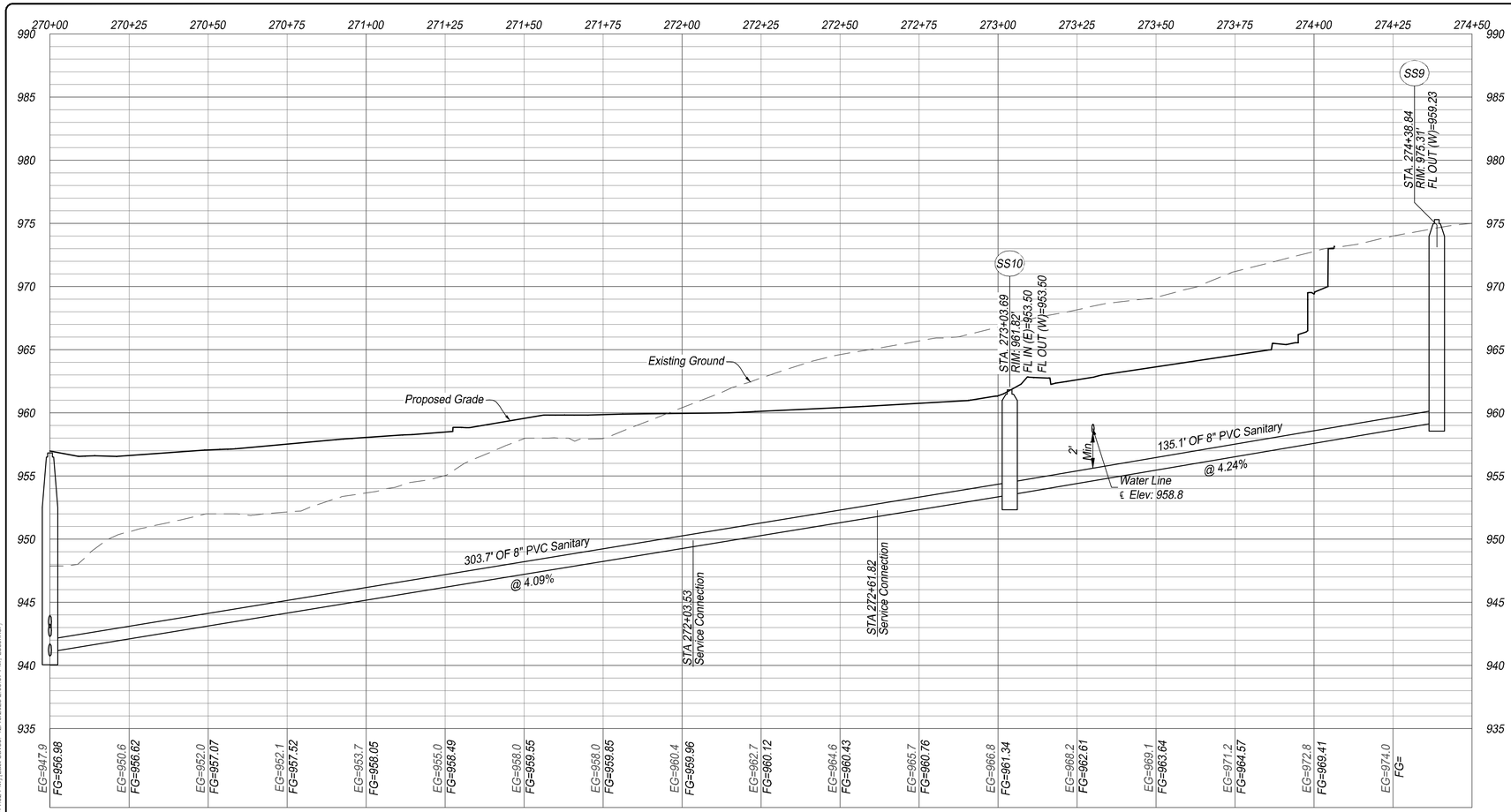
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Sanitary Sewer B Profile

DATE: 12/18/2025
SHEET: 24 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-202\24-192 HTK- Fremont Hill Tooeka\dwg\Design\Site Construction Plans\24-192 Sanitary-B.dwg] [Plot Date: 12/18/2025 7:11:28 PM] [Last Saved: 12/18/2025 2:09:07 PM, L.oconnor]



0 20' 0

Horizontal Scale: 1"=20'
Vertical Scale: 1"=5'

5'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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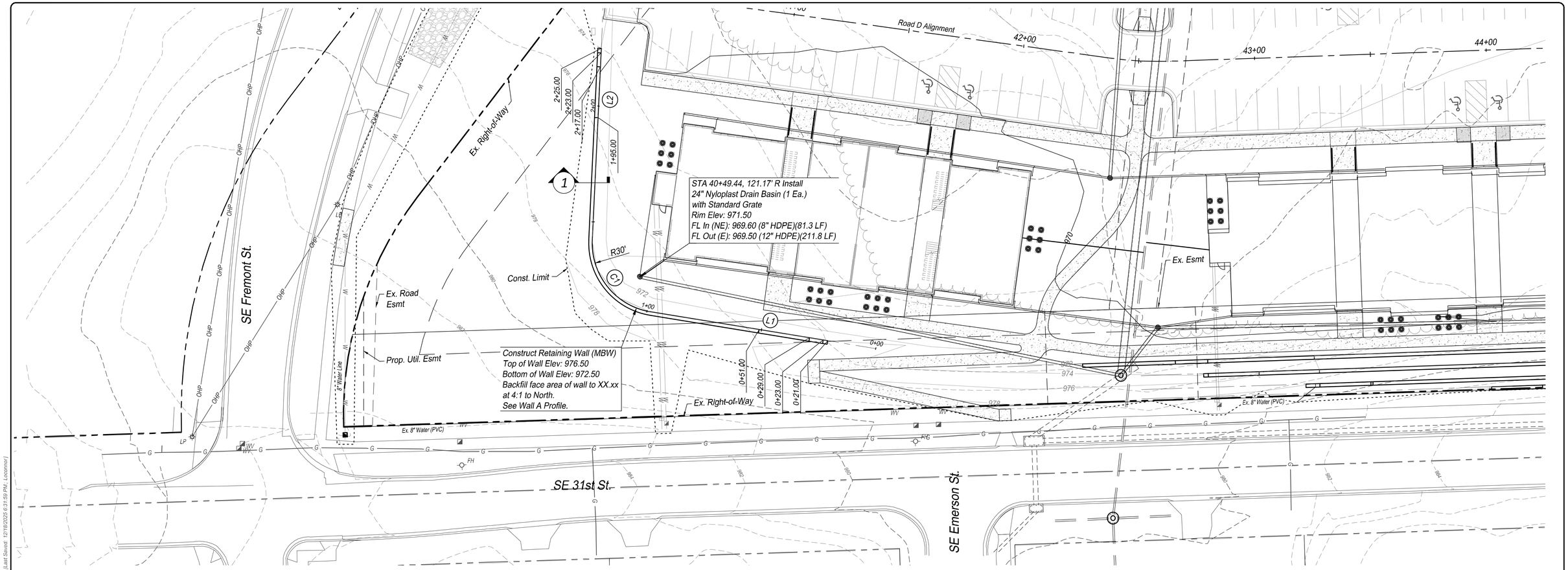
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Sanitary Sewer C Profile

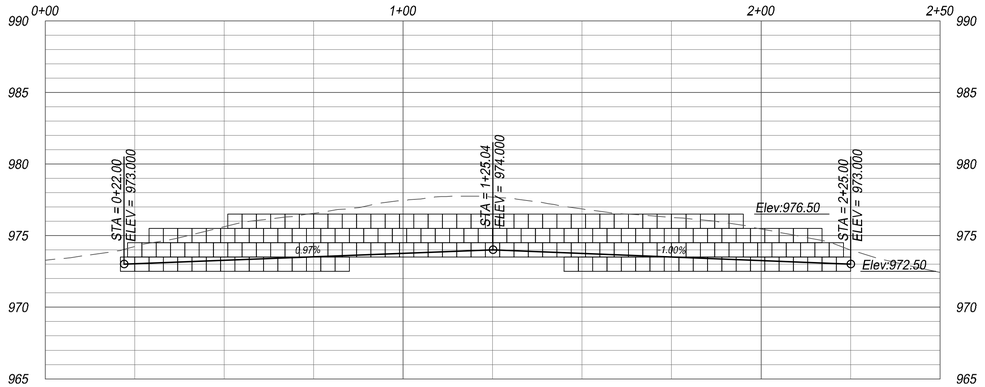
DATE: 12/18/2025
SHEET: 25 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-202424-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Sanitary-B.dwg] [Plot Date: 12/18/2025 7:11:32 PM] [Last Saved: 12/18/2025 2:09:07 PM, Locomor]

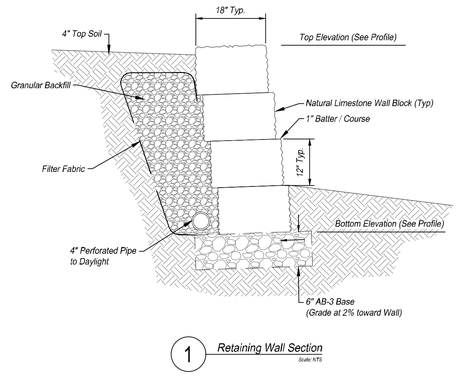


Retaining Wall A (Alignment Control)

ID	Begin Station	End Station	Begin Coordinates	End Coordinates	Curve Info
L1	0+00.00	0+98.53	N: 255236.34 E: 1973024.13	N: 255252.16 E: 1972926.88	
C1	PC: 0+98.53	PT: 1+42.12	PC: N: 255252.16 E: 1972926.88	PT: N: 255283.11 E: 1972901.79	L: 43.59' T: 26.69' R: 29.93' Δ: 83°26'33" C: 39.84'
L2	1+42.12	2+50.00	N: 255283.11 E: 1972901.79	N: 255390.87 E: 1972906.84	



Wall A Profile



1 Retaining Wall Section
Scale: NTS

N

Scale: 1" = 20'
0 20'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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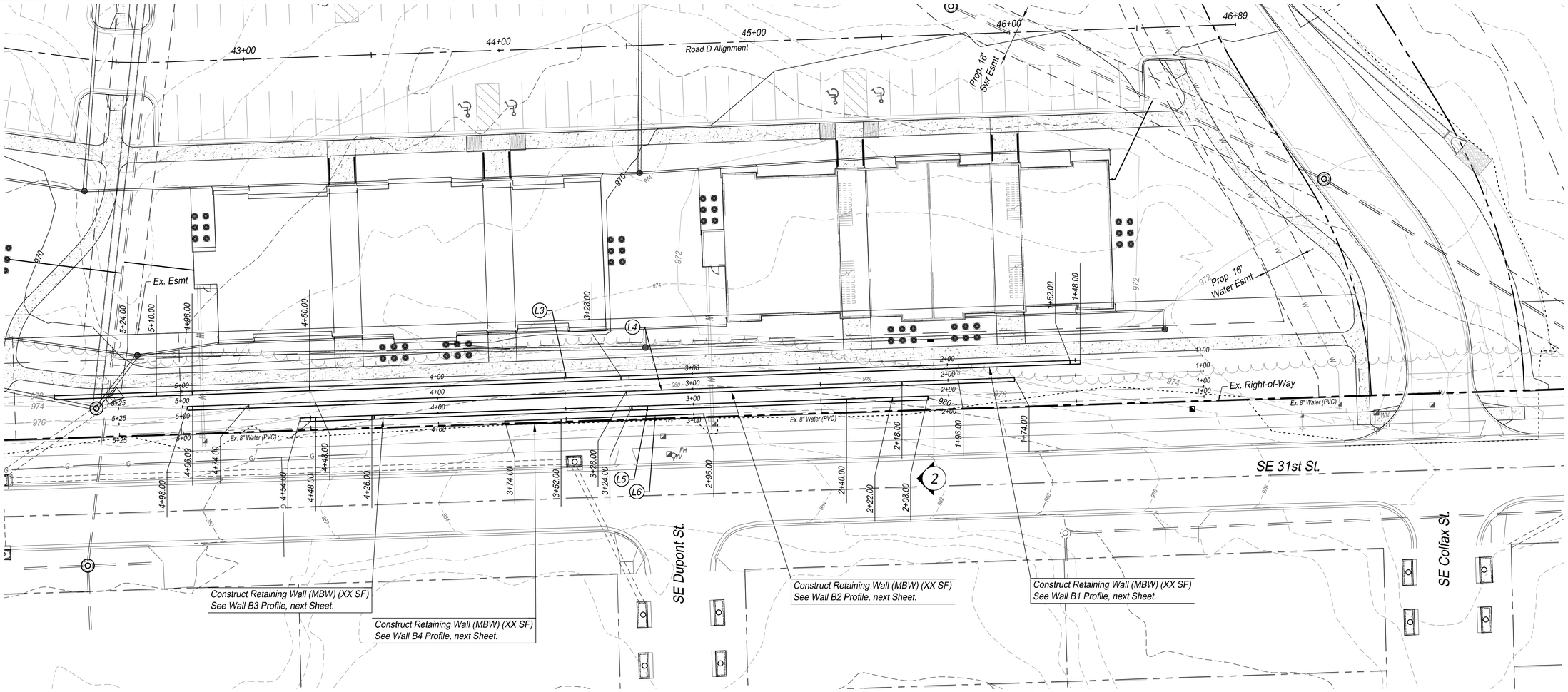
501144.00, & Sanitary 401139.00

Retaining Wall A

DATE: 12/18/2025
SHEET: 26 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Ret Wall A.dwg] [Plot Date: 12/18/2025 7:11:44 PM] [Last Saved: 12/18/2025 6:31:59 PM] [Last Saved By: Locornor]

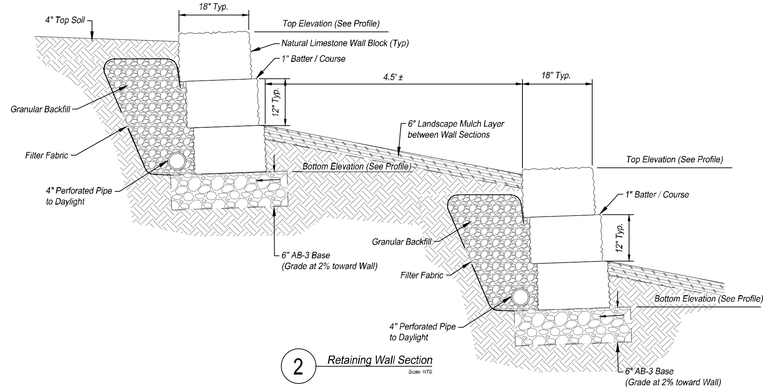


Retaining Wall B1 (Alignment Control)				
ID	Begin Station	End Station	Begin Coordinates	End Coordinates
L3	1+00.00	6+00.00	N: 255245.39 E: 1973563.09	N: 255227.94 E: 1973063.40

Retaining Wall B2 (Alignment Control)				
ID	Begin Station	End Station	Begin Coordinates	End Coordinates
L4	1+00.00	5+25.00	N: 255239.39 E: 1973563.30	N: 255224.56 E: 1973138.56

Retaining Wall B3 (Alignment Control)				
ID	Begin Station	End Station	Begin Coordinates	End Coordinates
L5	1+00.00	5+25.00	N: 255233.39 E: 1973563.51	N: 255218.56 E: 1973138.77

Retaining Wall B4 (Alignment Control)				
ID	Begin Station	End Station	Begin Coordinates	End Coordinates
L6	1+00.00	5+25.00	N: 255229.40 E: 1973563.65	N: 255214.56 E: 1973138.91



2 Retaining Wall Section
Scale: NTS

Scale: 1" = 20'
0 20'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
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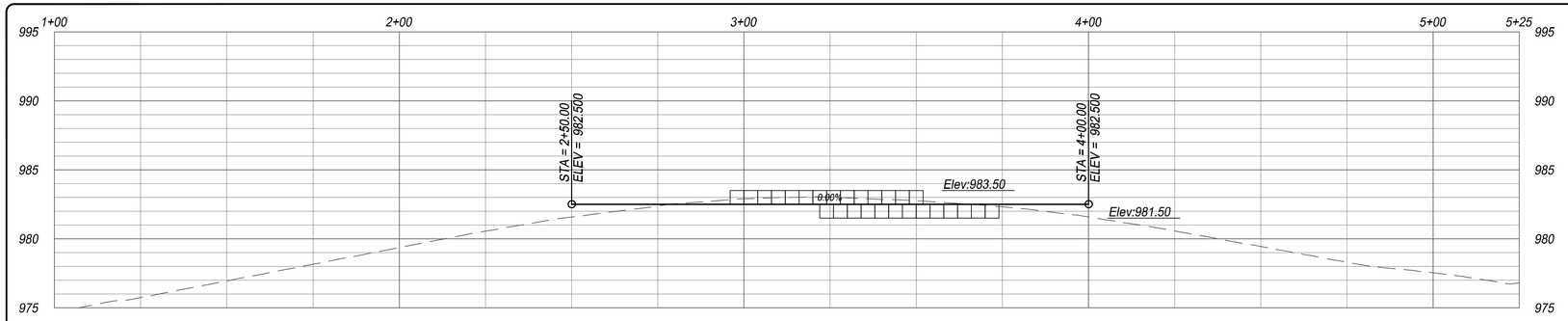
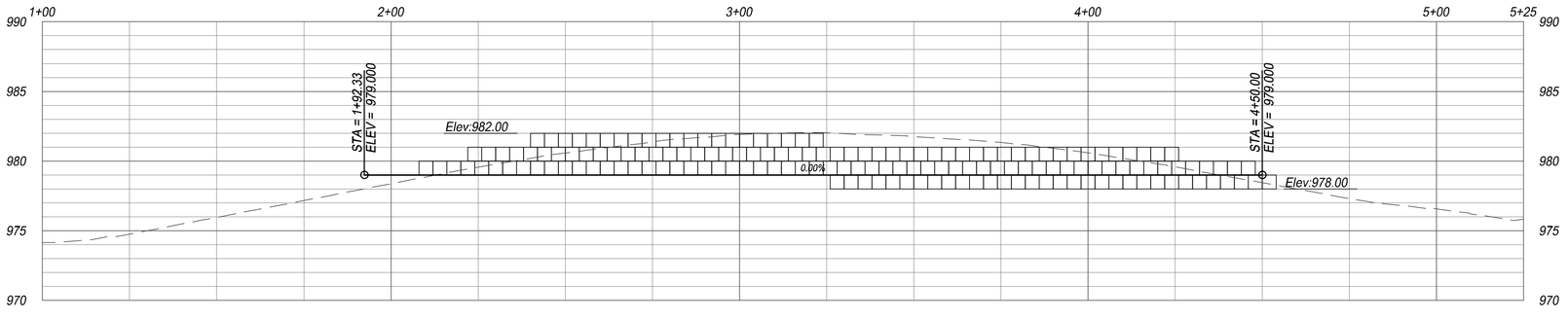
Retaining Wall B

DATE: 12/18/2025
SHEET: 27 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

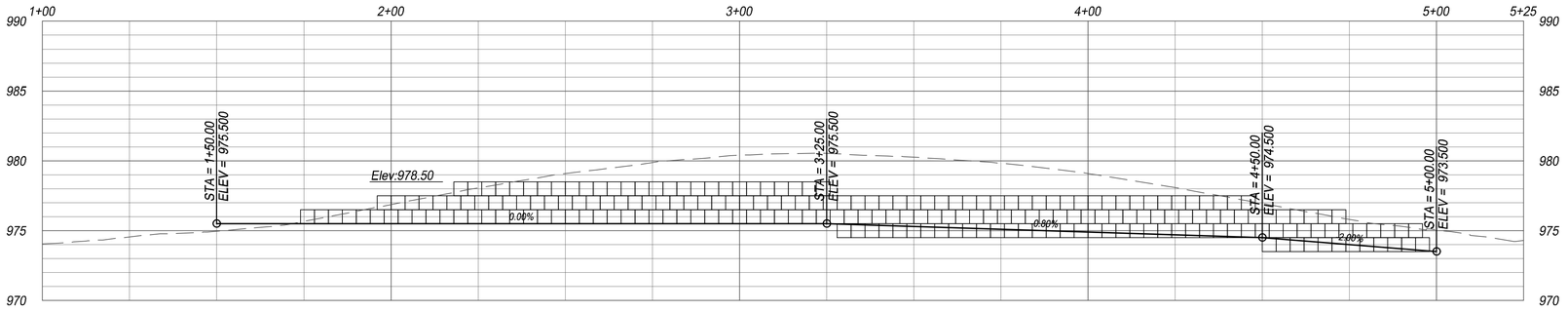
[File Location: X:\1 SBB Drawings\0-202\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Ret Wall-A.dwg] [Plot Date: 12/18/2025 7:11:48 PM] [Last Saved: 12/18/2025 6:31:59 PM - Loconnor]



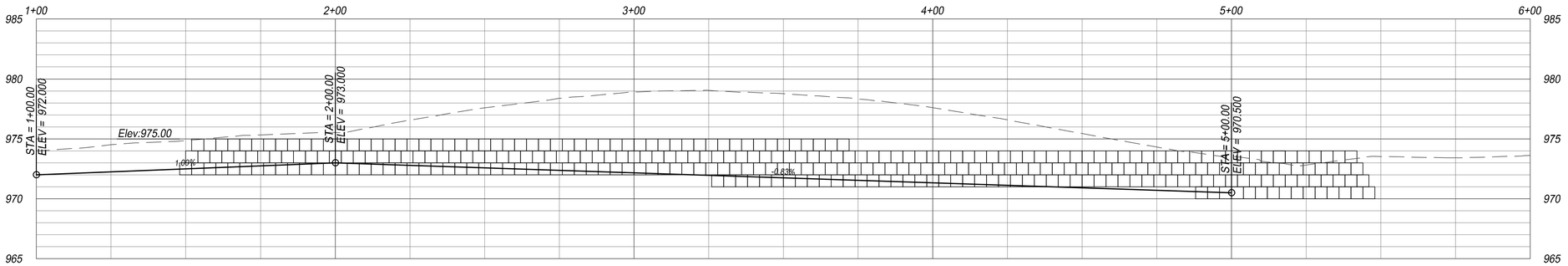
Wall B4 Profile



Wall B3 Profile



Wall B2 Profile



Wall B1 Profile

0 20' 0

Horizontal Scale: 1"=20'
Vertical Scale: 1"=5'

5'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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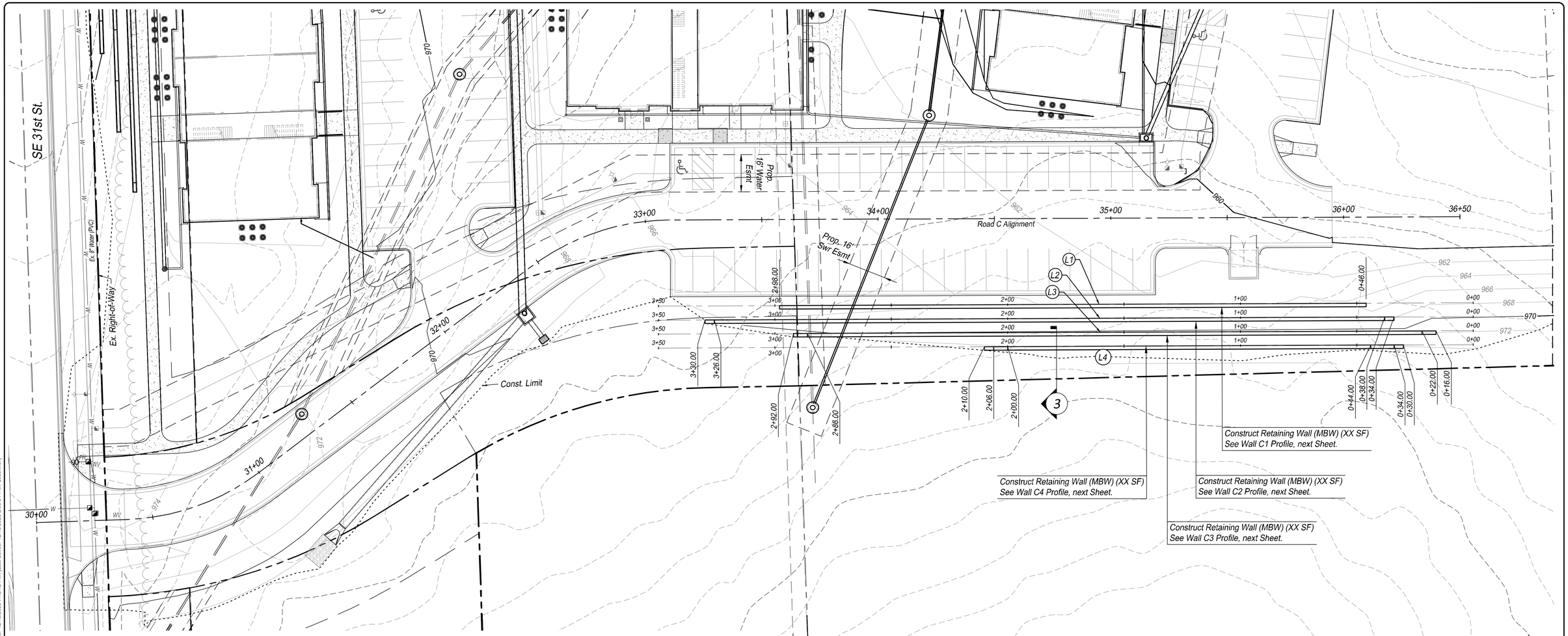
501144.00, & Sanitary 401139.00

Retaining Walls B Profile

DATE: 12/18/2025
SHEET: 28 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Ret Wall-A.dwg] [Plot Date: 12/18/2025 7:11:53 PM] [Last Saved: 12/18/2025 6:31:59 PM - Locomnor]

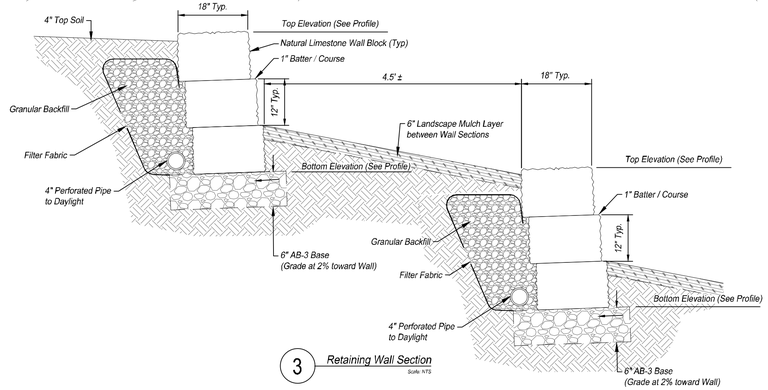


Retaining Wall C1 (Alignment Control)				
ID	Begin Station	End Station	Begin Coordinates	End Coordinates
L1	0+00.00	3+50.00	N: 255817.88 E: 1973562.71	N: 255467.88 E: 1973564.17

Retaining Wall C2 (Alignment Control)				
ID	Begin Station	End Station	Begin Coordinates	End Coordinates
L2	0+00.00	3+50.00	N: 255817.90 E: 1973568.71	N: 255467.91 E: 1973570.17

Retaining Wall C3 (Alignment Control)				
ID	Begin Station	End Station	Begin Coordinates	End Coordinates
L3	0+00.00	3+50.00	N: 255817.93 E: 1973574.71	N: 255467.93 E: 1973576.17

Retaining Wall C4 (Alignment Control)				
ID	Begin Station	End Station	Begin Coordinates	End Coordinates
L4	0+00.00	3+50.00	N: 255817.95 E: 1973580.71	N: 255467.96 E: 1973582.17



3 Retaining Wall Section
Scale: NTS

Scale: 1" = 20'
0 20'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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Multi-Family Residential Development
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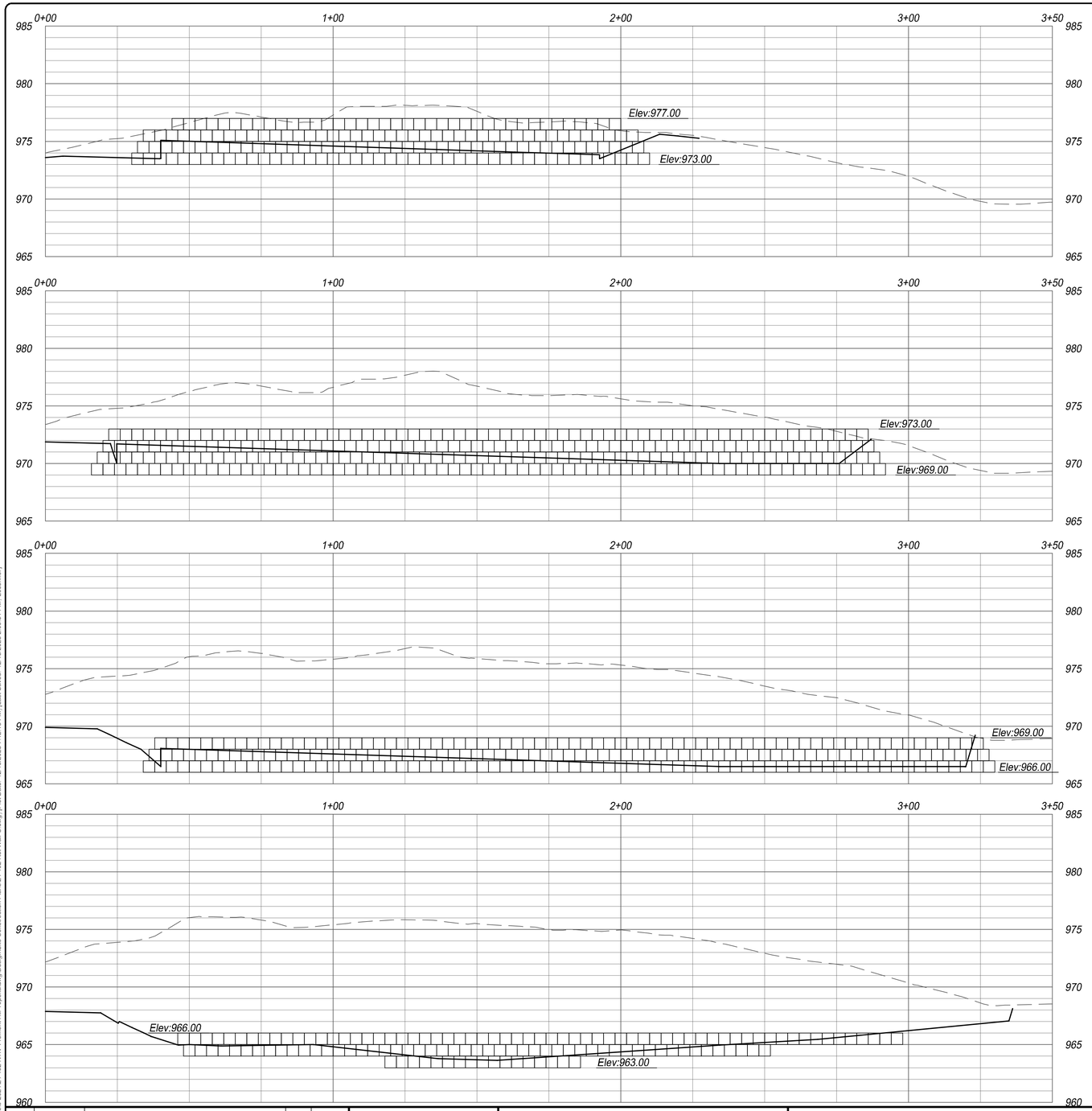
Retaining Wall C

DATE: 12/18/2025
SHEET: 29 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Rdt Wall-C.dwg] [Plot Date: 12/18/2025 7:12:12 PM] [Last Saved: 12/18/2025 2:09:31 PM - Lcoonnor]



Wall C4 Profile

Wall C3 Profile

Wall C2 Profile

Wall C1 Profile

0 20' 0

Horizontal Scale: 1"=20'
Vertical Scale: 1"=5'

5'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

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SBB Engineering, LLC
101 S Kansas Ave., Topeka, KS 66603
Ph: (785) 215-8630 www.sbbeng.com

Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater
501144.00, & Sanitary 401139.00

Retaining Walls C Profile

DATE: 12/18/2025
SHEET: 30 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Ret Wall-C.dwg] [Plot Date: 12/18/2025 7:12:18 PM] [Last Saved: 12/18/2025 2:09:31 PM] - L.oconnor]

SE Emerson St.

SE 31st St.

SE Dupont St.

Road A Alignment

Road B Alignment

Road D Alignment

Ex. Esmt

Prop. Util. Esmt

Prop. 16' Util. Esmt

Const. Limit

Ex. 8" Sanitary Sewer B

Curb Inlet
Top = 978.87
Inv In S = 973.52
Inv In E = 973.47
Inv Out NE = 973.37

Curb Inlet
Top = 978.76
Inv In SW = 973.76
Inv Out N = 973.71

Sanitary Sewer Manhole
Rim = 978.54
Inv In E = 962.94
Inv In W = 962.84
Inv Out NNE = 962.54

Inv 969.98

Sanitary Sewer Manhole
Rim = 981.50
Inv In SSW = 954.75
Inv Out NNE = 954.70

Curb Inlet
Top = 985.57
Inv In SE = 979.67
Inv Out W = 979.47

Sanitary Sewer Manhole
Rim = 953.06
Inv In E = 946.60
Inv In SE = 945.36
Inv Out NW = 945.27

Sanitary Sewer Manhole
Rim = 948.02
Inv In SSW = 942.97
Inv In SE = 942.27
Inv Out N = 940.72

STA 100+02.50 Install
5' Dia. Std. Manhole, Type I (ST1)
Rim Elev: 974.29
(Storm Sewer A Profile)

STA 100+24.88, 13.73' R Install
24" Nyloplast Drain Basin (1 Ea.)
with Standard Grate
Rim Elev: 969.50
FL In (W): 967.60 (8" HDPE)(121.2 LF)
FL In (E): 967.60 (8" HDPE)(100.3 LF)
FL In (E): 967.60 (12" HDPE)(199.0 LF)
FL Out (SW): 967.50 (12" HDPE)(23.8 LF)

STA 42+38.17, 29.65' L Install
Curb Inlet, Type I (L=6') (ST11)
Rim Elev: 966.55
(Storm Sewer C Profile)

STA 42+63.80, 29.33' L Install
Curb Inlet, Type I (L=6') (ST2)
Rim Elev: 966.41
(Storm Sewer A Profile)

STA 44+53.23, 118.42' R Install
24" Nyloplast Drain Basin (1 Ea.)
with Standard Grate
Rim Elev: 971.00
FL In (N): 968.60 (8" HDPE)(113.2 LF)
FL In (E): 968.60 (12" HDPE)(203.5 LF)
FL Out (W): 968.50 (12" HDPE)

STA 44+53.38, 49.93' R Install
24" Nyloplast Drain Basin (1 Ea.)
with Standard Grate
Rim Elev: 969.75
FL In (E): 967.85 (8" HDPE)(199.0 LF)
FL In (W): 967.85 (8" HDPE)(73.4 LF)
FL Out (N): 967.75 (12" HDPE)(85.6 LF)

STA 44+53.25, 110.85' R Install
8"x8" HDPE Tee

STA 103+93.37 Install
Type II-P Area Inlet Manhole (6' Dia.) (ST3)
Rim Elev: 958.02
(Storm Sewer A Profile)

STA 103+81.78, 32.22' R Install
Area Inlet, Type II-P (ST18)
Rim Elev: 956.50
(Storm Sewer A2 Profile)

STA 12+14.79, 29.33' R Install
Curb Inlet, Type I (L=6') (ST10)
Rim Elev: 961.30
(Storm Sewer A1 Profile)

8" Water Line B

Scale: 1" = 20'
0 20'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

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Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Storm Sewer A

DATE: 12/18/2025
SHEET: 31 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg Design\Site Construction Plans\24-192 Storm-A.dwg] [Plot Date: 12/18/2025 7:12:36 PM] [Last Saved: 12/18/2025 6:59:37 PM] [Loconnor]

14+00
14+65
21+00
PI: 106+71.07
PI: 106+43.83
950
8" Water Line B
PI: 106+39.05
107+00
Prop. 16' Util. Esmt
EP: 106+10
107+62
Install Class III Riprap (42.7 SY).
Construct Rock Ditch Check with
Class III Riprap (60.3 SY).
STA 21+26.02, 86.70' L Install
42" End Section (RC)
FL Elev: 932.25
(Storm Sewer A Profile)
STA 21+45.31, 13.00' R Install
Curb Inlet, Type I (L=10') (ST5)
Rim Elev: 949.70
(See Storm Sewer A)
STA 21+45.31, 13.00' L Install
Curb Inlet, Type I (L=10') (ST6)
Rim Elev: 949.13
(Storm Sewer A Profile)
932
934
936
938
940
942
944
Sanitary Sewer Manhole
Rim = 937.44
Inv In S = 932.84
Inv In E = 932.64
Inv Out W = 932.55
106+00
954
PI: 105+60.04
950
22+00
05+00
8" Water Line B
952
Sanitary Sewer Manhole
Rim = 944.39
Inv In S = 937.39
Inv Out N = 937.30
STA 22+53.10, 13.00' R Install
Curb Inlet, Type I (L=10') (ST4)
Rim Elev: 951.42
(Storm Sewer A Profile)
Prop. 16'
Util. Esmt
Const. Limit
23+00
24+00
Road B Alignment

N
Scale: 1" = 20'
0
20'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
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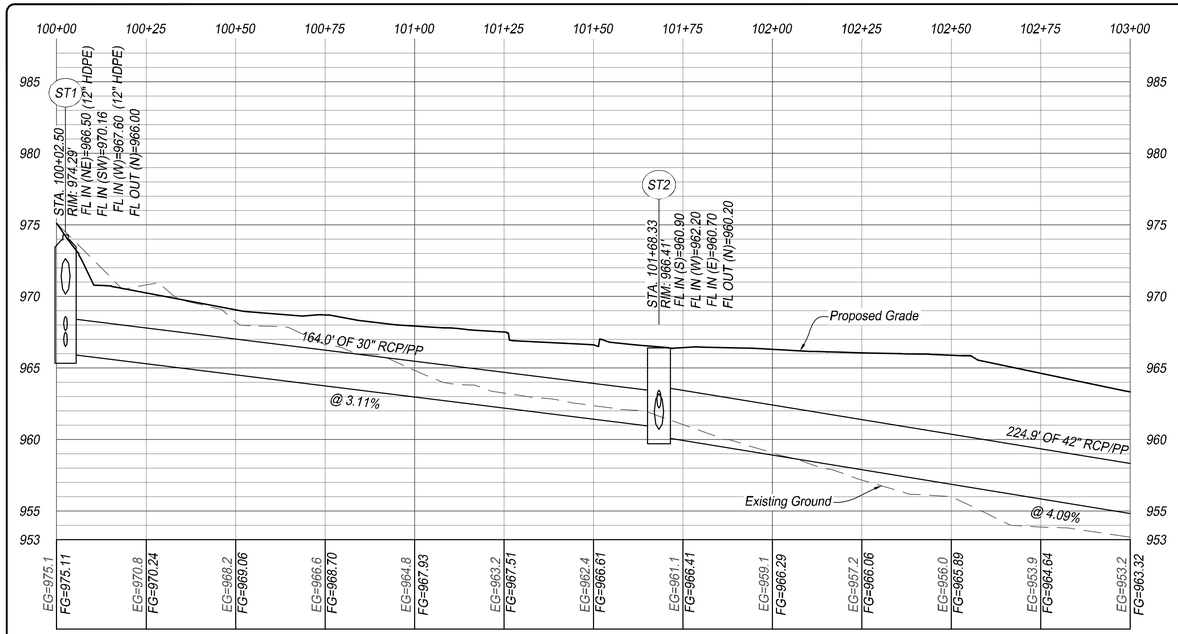
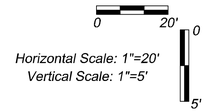
Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater
501144.00, & Sanitary 401139.00

Sanitary Sewer A

DATE: 12/18/2025
SHEET: 32 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 StormA.dwg] [Plot Date: 12/18/2025 7:12:43 PM] [Last Saved: 12/18/2025 6:59:37 PM - Loconnor]





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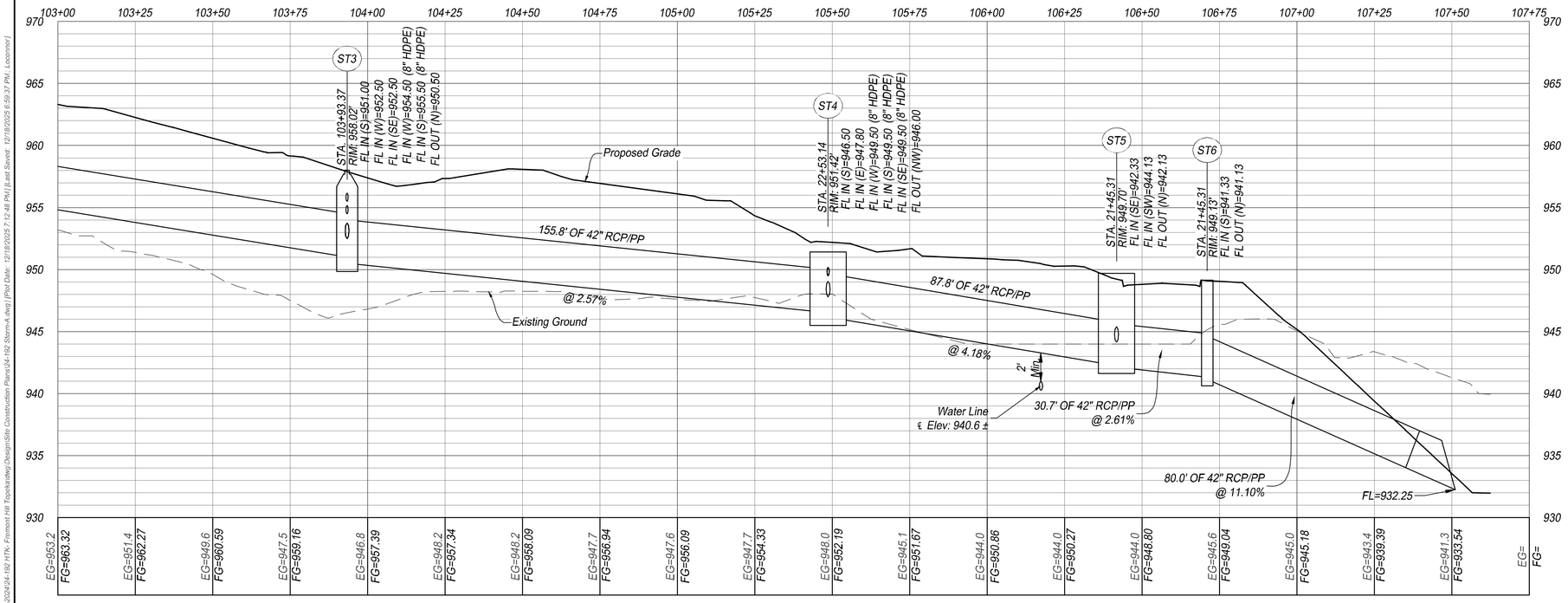

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
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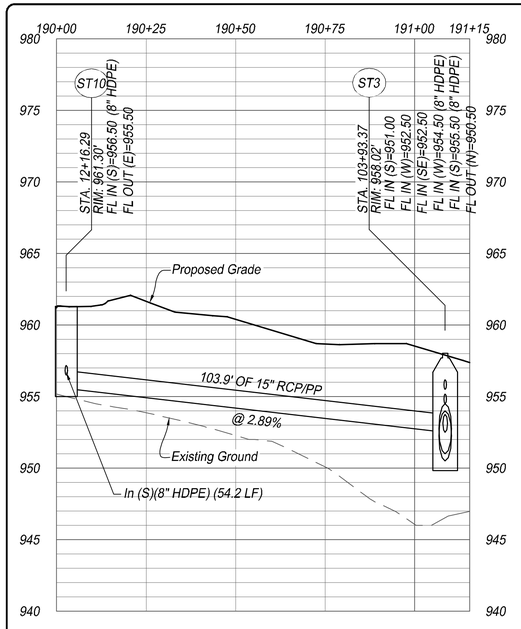
Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

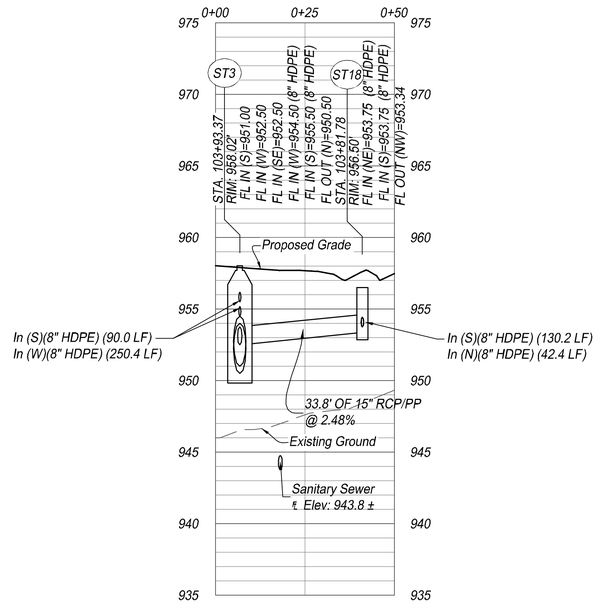
Storm Sewer A
Profile

DATE: 12/18/2025
SHEET: 33 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

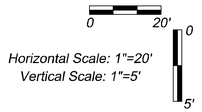
[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 StormA.dwg] [Plot Date: 12/18/2025 7:12:48 PM] [Last Saved: 12/18/2025 6:59:37 PM - Loconnor]



Storm A1 Profile



Storm A2 Profile



Horizontal Scale: 1"=20'
Vertical Scale: 1"=5'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
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Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Storm Sewer A1 & A2 Profile

DATE: 12/18/2025
SHEET: 34 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-202\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Storm-A.dwg] [Plot Date: 12/18/2025 7:12:52 PM] [Last Saved: 12/18/2025 6:59:37 PM - L.oconnor]

STA 21+26.02, 86.70' L
42" End Section
FL Elev: 932.25
(See Storm Sewer A)

STA 21+45.31, 13.00' R Install
Curb Inlet, Type I (L=10') (ST5)
Rim Elev: 949.70
(See Storm Sewer A)

Prop. 16' Util. Esmt

STA 21+45.31, 13.00' L Install
Curb Inlet, Type I (L=10') (ST6)
Rim Elev: 949.13
(See Storm Sewer A)

STA 22+53.10, 13.00' R Install
Curb Inlet, Type I (L=10') (ST4)
Rim Elev: 951.42
(See Storm Sewer A)

Const. Limit

STA 23+27.15, 33.00' L Install
Curb Inlet, Type I (L=6') (ST8)
Rim Elev: 953.98
(Storm Sewer B Profile)

STA 14+27.28, 33.08' R Install
Curb Inlet, Type I (L=6') (ST7)
Rim Elev: 951.48
(Storm Sewer B Profile)

Prop. 16' Util. Esmt

Prop. 16' Water Esmt

Prop. 16' Util. Esmt

STA 35+15.32, 33.08' L Install
Curb Inlet, Type I (L=6') (ST9)
Rim Elev: 960.18
(Storm Sewer B Profile)

Sanitary Sewer Manhole
Rim = 948.02
Inv In SSW = 942.97
Inv In SE = 942.27
Inv Out N = 940.72

Curb Inlet
Top = 956.24
Inv In S = 954.11
Inv Out W = 954.06

PT: 12+51.85

PC: 12+21.89

CP I 1/2" REBAR SBB CONT

SE Fremont St.

Road A Alignment

Road B Alignment

Road C Alignment

8" Water Line

OHP

20+00 21+00 22+00 23+00 24+00 25+00 26+00 26+12 13+00 14+00 35+00 36+00 36+50

14+65

932 934 936 938 948 950 952 954 956 958 960 962 964 966 968 970 972 974

N

Scale: 1" = 20'
0 20'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
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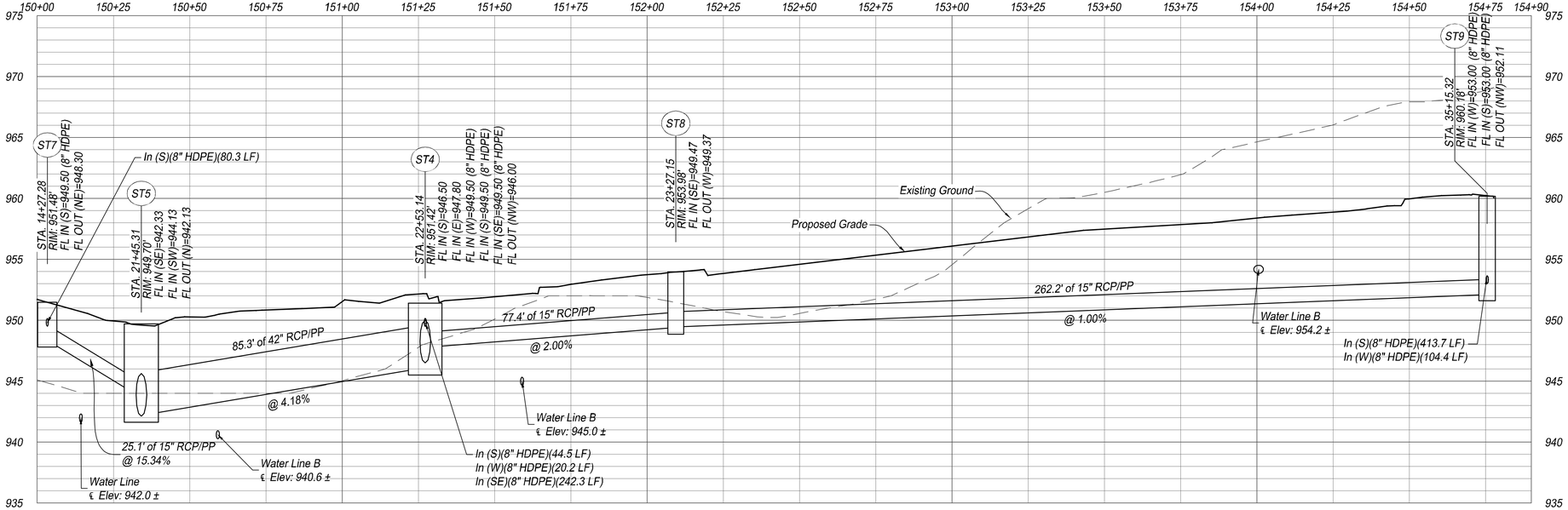
Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater
501144.00, & Sanitary 401139.00

Storm Sewer B

DATE: 12/18/2025
SHEET: 35 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Storm-B.dwg] [Plot Date: 12/18/2025 7:13:12 PM] [Last Saved: 12/18/2025 6:34:53 PM - L. Loconnor]



Storm B Profile

0 20'

0 5'

Horizontal Scale: 1"=20'
Vertical Scale: 1"=5'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
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Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Storm Sewer B
Profile

DATE: 12/18/2025
SHEET: 36 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-202\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Storm-B.dwg] [Plot Date: 12/18/2025 7:13:18 PM] [Last Saved: 12/18/2025 6:34:53 PM - L.oconnor]

~Park Area~

Sanitary Sewer Manhole
Rim = 953.06'
Inv In E = 946.40
Inv In SE = 945.36
Inv Out NW = 945.27

Sanitary Sewer Manhole
Rim = 960.50
Inv In SSW = 954.75
Inv Out NNE = 954.70

Sanitary Sewer Manhole
Rim = 974.51
Inv In NNE = 968.37
Inv Out W = 968.06

Sanitary Sewer Manhole
Rim = 962.02
Inv In SE = 951.22
Inv Out NW = 951.04

Sanitary Sewer Manhole
Rim = 968.16
Inv In SE = 955.39
Inv Out NW = 955.32

N

Scale: 1" = 20'
0 20'

12.5' of 15" RCP/PP (D)

190.6' of 30" RCP/PP (D)

324.3' of 30" RCP/PP (D)

9.6' of 18" RCP/PP (D)

6" Water Line

8" Water Line

Road D Alignment

Road C Alignment

42+00 43+00 44+00 45+00 46+00 46+89 32+00 33+00 34+00 31+00 30+00

964 966 968 970 972

STA 42+38.07, 29.65' L Install
Curb Inlet, Type I (L=6') (ST11)
Rim Elev: 966.55
(Storm Sewer D Profile)

STA 42+63.80, 29.33' L Install
Curb Inlet, Type I (L=6') (ST2)
Rim Elev: 966.41
(Storm Sewer D Profile)

STA 42+42.93, 51.41' R Install
24" Nyloplast Drain Basin (1 Ea.)
with Standard Grate
Rim Elev: 968.60
FL In (E): 965.75 (8" HDPE)(118.6 LF)
FL In (W): 967.85 (8" HDPE)(186.0 LF)
FL Out (N): 965.60 (12" HDPE)(81.1 LF)

STA 42+58.42, 114.78' R Install
24" Nyloplast Drain Basin (1 Ea.)
with Standard Grate
Rim Elev: 969.50
FL In (W): 967.60 (8" HDPE)(121.2 LF)
FL In (E): 967.60 (8" HDPE)(100.3 LF)
FL In (E): 967.60 (12" HDPE)(199.0 LF)
FL Out (SW): 967.50 (12" HDPE)(23.8 LF)

STA 44+53.25, 110.85' R Install
8"x8" HDPE Tee

STA 44+56.71, 33.00' L Install
Curb Inlet, Type I (L=6') (ST12)
Rim Elev: 967.87
(Storm Sewer D Profile)

STA 44+53.38, 49.93' R Install
24" Nyloplast Drain Basin (1 Ea.)
with Standard Grate
Rim Elev: 969.75
FL In (E): 967.85 (8" HDPE)(199.0 LF)
FL In (W): 967.85 (8" HDPE)(73.4 LF)
FL Out (N): 967.75 (12" HDPE)(85.6 LF)

STA 44+53.23, 118.42' R Install
24" Nyloplast Drain Basin (1 Ea.)
with Standard Grate
Rim Elev: 971.00
FL In (N): 968.60 (8" HDPE)(113.2 LF)
FL In (E): 968.60 (12" HDPE)(203.5 LF)
FL Out (W): 968.50 (12" HDPE)

STA 32+32.10, 13.00' R Install
Curb Inlet, Type I (L=6') (ST13)
Rim Elev: 969.00 (Storm Sewer D Profile)

STA 46+56.73, 118.42' R Install
24" Nyloplast Drain Basin (1 Ea.)
with Standard Grate
Rim Elev: 972.00
FL In (N): 970.10 (8" HDPE)(85.5 LF)
FL Out (W): 970.00 (12" HDPE)

STA 32+80.88, 51.94' L Install
Nyloplast 8" Inline Drain (1 Ea.)

STA 32+32.10, 28.18' R Install
Area Inlet, Type II-P (ST14)
Rim Elev: 967.60
(Storm Sewer D Profile)

STA 45+34.14, 58.46' L Install
Nyloplast 8" Inline Drain (1 Ea.)

STA 31+14.78, 39.90' R
30" End Section
FL Elev: 965.25

120.4' of 30" RCP/PP (D)

Curb Inlet
Top = 965.57
Inv In SE = 959.67
Inv Out W = 959.47

Curb Inlet
Top = 973.66
Inv In S = 966.96
Inv In E = 966.66
Inv Out N = 966.46

Ex. Esmt

Ex. Right-of-Way

Const. Limit

SE 31st St.

Ex. Esmt

SBB PROJ. NO. 24-192

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg Designs\Site Construction Plans\24-192 Storm-B.dwg] [Plot Date: 12/18/2025 7:13:23 PM] [Last Saved: 12/18/2025 6:34:53 PM] [Last Location: L. Loonnor]

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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Multi-Family Residential Development
Water Line 281381.00, Stormwater
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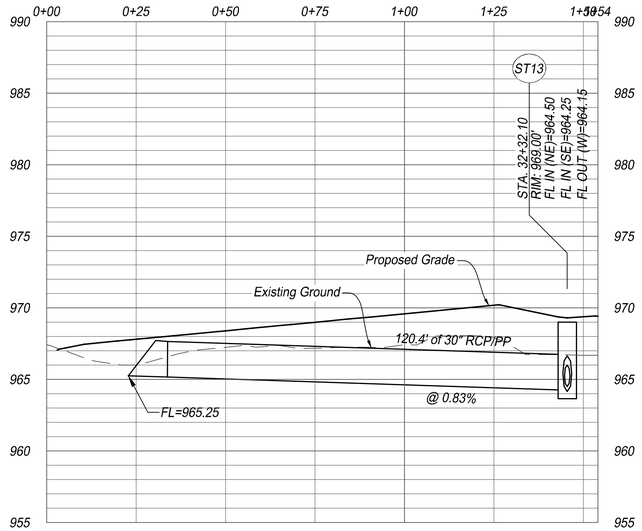
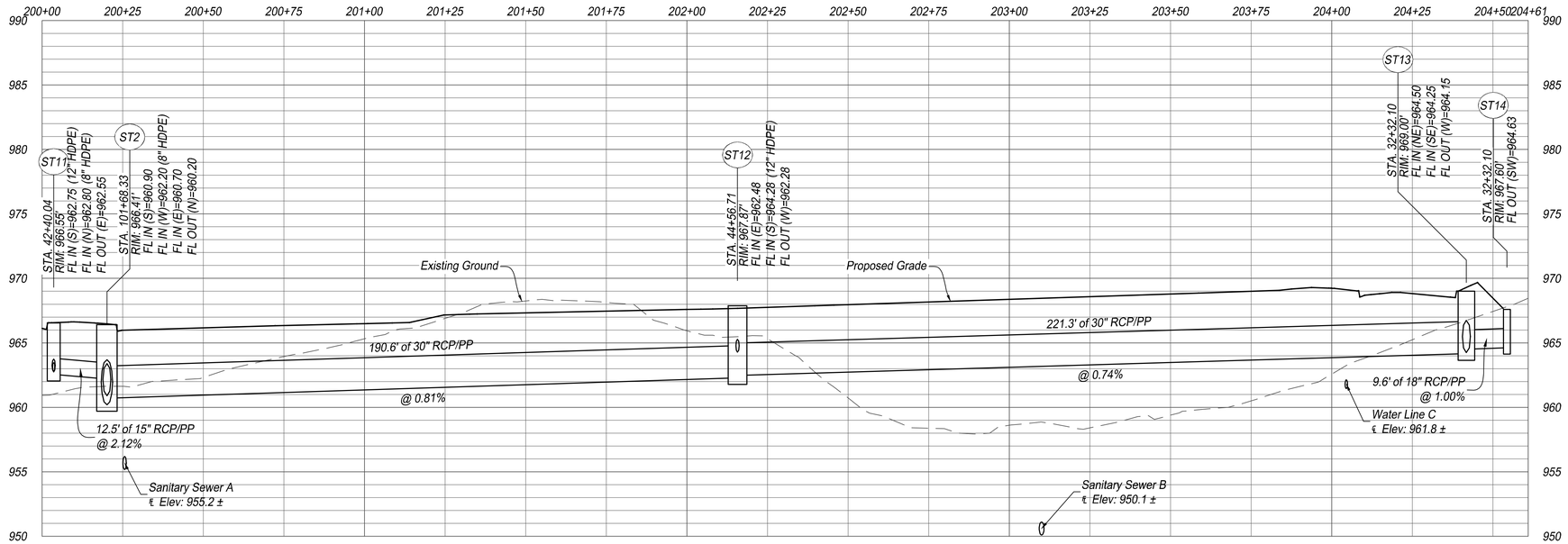
Storm Sewer C & D

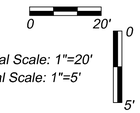
DATE: 12/18/2025
SHEET: 37 OF 87
281381.00, 501144.00,
PROJ.: 401139.00



Storm C Profile



Storm D Profile



Horizontal Scale: 1"=20'
Vertical Scale: 1"=5'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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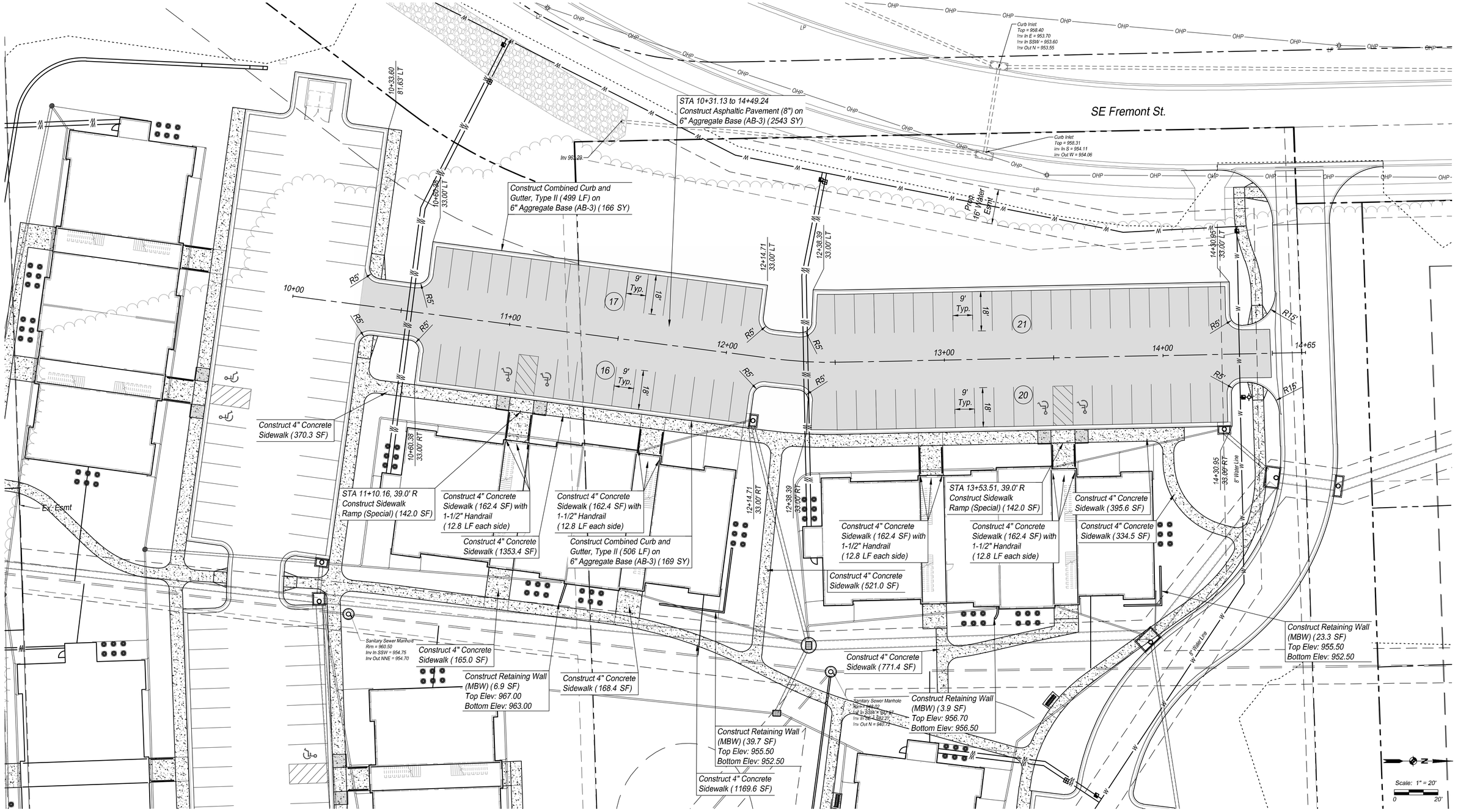
Storm Sewer C & D Profile

DATE: 12/18/2025
SHEET: 38 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Storm-B.dwg] [Plot Date: 12/18/2025 7:25:01 PM] [Last Saved: 12/18/2025 6:34:53 PM: Loconnor]



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DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
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CITY OF TOPEKA UTILITIES

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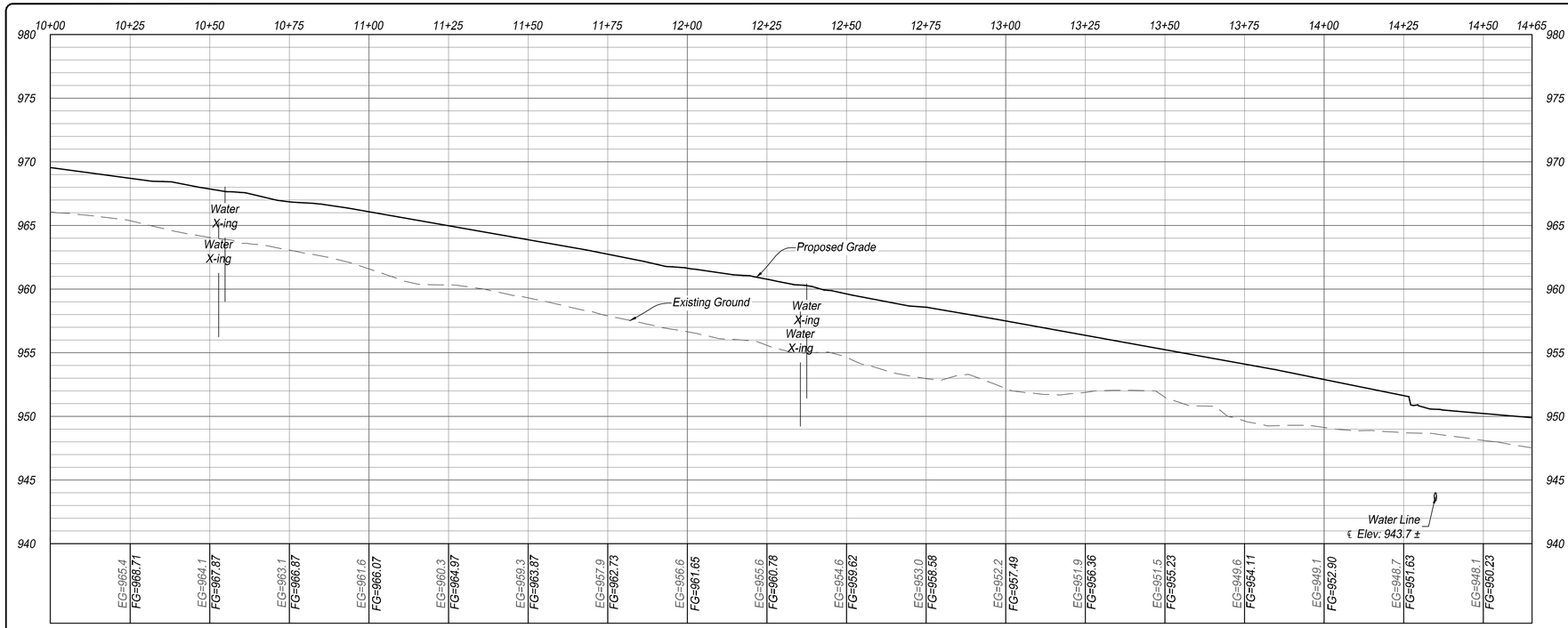
101 S Kansas Ave., Topeka, KS 66603
Ph: (785) 215-8630 www.sbbeng.com

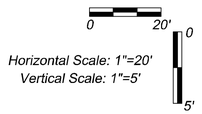
Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater
501144.00, & Sanitary 401139.00

Road A

DATE: 12/18/2025
SHEET: 39 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Road-A.dwg] [Plot Date: 12/18/2025 7:13:44 PM] [Last Saved: 12/18/2025 6:34:45 PM] [Last Saved By: LOconnor]





Horizontal Scale: 1"=20'
Vertical Scale: 1"=5'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
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Road A
Profile

DATE: 12/18/2025
SHEET: 40 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-202\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Road-A.dwg] [Plot Date: 12/18/2025 7:13:47 PM] [Last Saved: 12/18/2025 6:34:45 PM - L.oconnor]

SE Fremont St.

STA 21+07.00, 22.5' R Construct Sidewalk Ramp (54 SF)

STA 21+45.31, 13.0' L Curb Inlet, Type I (L=10') (ST6)

STA 20+63.68, 21.5' R Construct Sidewalk Ramp (51.7 SF)

Construct 4" Concrete Sidewalk (275.1 SF)

Construct Combined Curb and Gutter, Type II (72 LF) on 6" Aggregate Base (AB-3) (24 SY)

STA 20+11.89, 25.3' R Construct Sidewalk Ramp (53.9 SF)

STA 21+45.31, 13.0' R Curb Inlet, Type I (L=10') (ST5)

Construct 4" Concrete Sidewalk (1670.3 SF)

Const. Limit

STA 23+27.15, 33.0' L Curb Inlet, Type I (L=6') (ST8)

Construct Combined Curb and Gutter, Type II (1110 LF) on 6" Aggregate Base (AB-3) (370 SY)

STA 20+02.72 to 26+00.51 Construct Asphaltic Pavement (8") on 6" Aggregate Base (AB-3) (2566 SY)

Prop. 16' Water Esmt

STA 22+92.14, 33.9' R Construct 4" Concrete Pad (92.8 SF) with 6' Park Bench (1 Ea.)

STA 22+53.10, 13.0' R Curb Inlet, Type I (L=10') (ST4)

Construct 4" Concrete Sidewalk (162.4 SF) with 1-1/2" Handrail (12.8 LF each side)

Construct Combined Curb and Gutter, Type II (529 LF) on 6" Aggregate Base (AB-3) (176 SY)

STA 23+93.28, 131.4' R Construct 4" Concrete Pad (90.3 SF) with 6' Park Bench (1 Ea.)

STA 24+26.98, 39.0' R Construct Sidewalk Ramp (Special) (142.0 SF)

Construct 4" Concrete Sidewalk (162.4 SF) with 1-1/2" Handrail (12.8 LF each side)

Construct 4" Concrete Sidewalk (476.9 SF)

STA 25+29.46, 39.0' R Construct Sidewalk Ramp (Special) (142.0 SF)

Construct 4" Concrete Sidewalk (138.4 SF) with 1-1/2" Handrail (10.6 LF each side)

Construct 4" Concrete Sidewalk (232.1 SF)

Construct 4" Concrete Sidewalk (2352.1 SF)

Construct 4" Concrete Sidewalk (180.0 SF)

Construct 4" Concrete Sidewalk (371.9 SF)

Construct 4" Concrete Sidewalk (747.6 SF)

Park Area

Curb Inlet Top = 958.31 Inv In S = 954.11 Inv Out W = 954.06

Sanitary Sewer Manhole Rim = 948.02 Inv In SSW = 942.97 Inv In SE = 942.27 Inv Out N = 940.72

CP 1/2" REBAR SBB CONT

Scale: 1" = 20'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

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APP'D BY: B. AUSTIN
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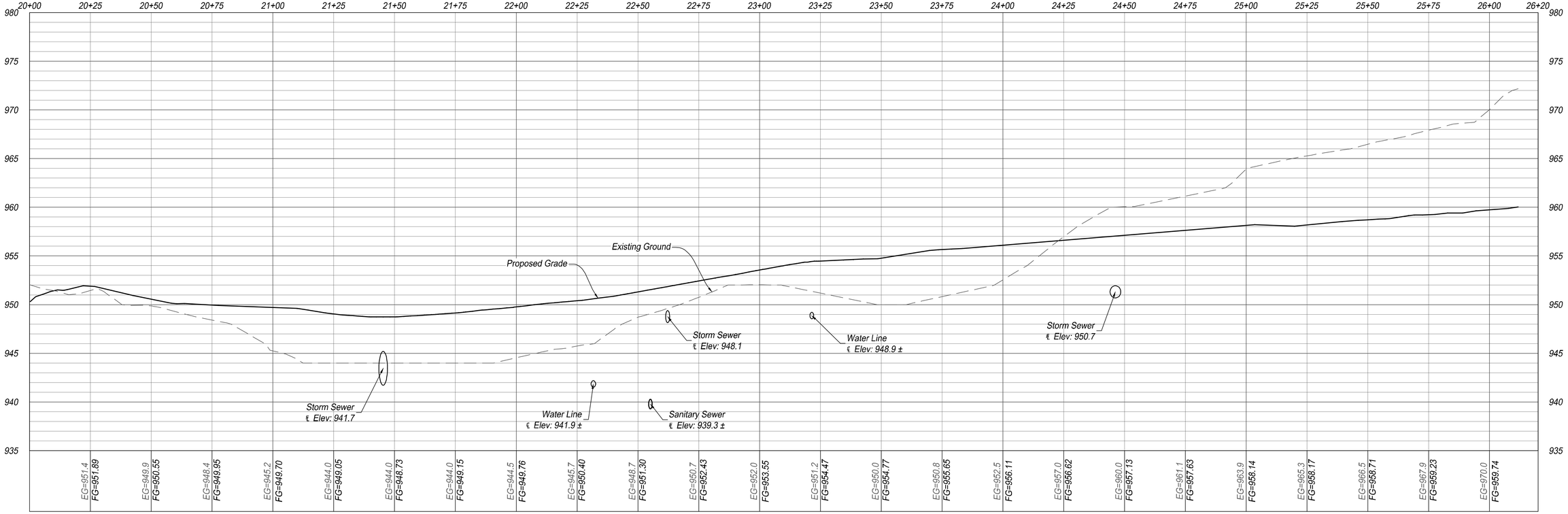
Road B

DATE: 12/18/2025
SHEET: 41 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Road-B.dwg] [Plot Date: 12/18/2025 7:14:07 PM] [Last Saved: 12/18/2025 2:10:26 PM] L. Loconnor]



0 20' 0

Horizontal Scale: 1"=20'
Vertical Scale: 1"=5'

5'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
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Road B
Profile

DATE: 12/18/2025
SHEET: 42 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\11 SBB Drawings\0-202424-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Road-B.dwg] [Plot Date: 12/18/2025 7:14:12 PM] [Last Saved: 12/18/2025 2:10:28 PM] [...Loconnor]

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Road-A.dwg] [Plot Date: 12/18/2025 7:14:30 PM] [Last Saved: 12/18/2025 6:34:45 PM - L.oconnor]

Ex. Right-of-Way

Sanitary Sewer Manhole

SE 31st St.

SE Colfax St.

STA 32+39.53, 23.2' L Construct Sidewalk Ramp (43.7 SF)

STA 31+95.59, 29.2' L Construct Sidewalk Ramp (51.0 SF)

Construct Combined Curb and Gutter, Type II (173 LF) on 6" Aggregate Base (AB-3) (58 SY)

Construct 4" Concrete Sidewalk (813.9 SF)

STA 30+21.13, 27.8' L Construct Sidewalk Ramp (58.7 SF)

Sanitary Sewer Manhole
Rim = 962.02
Inv In SE = 951.22
Inv Out NW = 951.04

STA 33+23.82, 39.0' L Construct Sidewalk Ramp (Special) (145.6 SF)

Construct 4" Concrete Sidewalk (75.8 SF)

Construct 4" Concrete Sidewalk (390.1 SF)

Construct 4" Concrete Sidewalk (721.0 SF)

Construct 4" Concrete Sidewalk (80.0 SF)

Construct Combined Curb and Gutter, Type II (326 LF) on 6" Aggregate Base (AB-3) (109 SY)

Construct 4" Concrete Sidewalk (1196.2 SF)

STA 35+15.32, 33.1' L Curb Inlet, Type I (ST9)

STA 35+37.49, 34.9' L Construct Sidewalk Ramp (43.3 SF)

STA 35+78.31, 29.8' L Construct Sidewalk Ramp (50.5 SF)

Construct 4" Concrete Sidewalk (51.2 SF)

8" Water Line C

Prop. 16' Water Esmt

Prop. 16' Swr Esmt

18" RCP/PP

30" RCP/PP

STA 32+32.10, 28.2' R Area Inlet, Type II-P (ST14)

STA 32+32.10, 13.1' R Curb Inlet, Type I (ST13)

Sanitary Sewer Manhole
Rim = 968.18
Inv In SE = 955.39
Inv Out NW = 955.32

Sanitary Sewer Manhole
Rim = 974.51
Inv In NNE = 968.37
Inv Out W = 968.06

Ex. 8" Sanitary Sewer B

STA 30+14.17 to 35+94.99 Construct Asphaltic Pavement (8") on 6" Aggregate Base (AB-3) (2334 SY)

Construct Combined Curb and Gutter, Type II (632 LF) on 6" Aggregate Base (AB-3) (211 SY)

Curb Inlet
Top = 973.54
Inv In W/SW = 967.74
Inv Out N = 967.44

Curb Inlet
Top = 973.68
Inv In S = 966.96
Inv In E = 966.66
Inv Out N = 966.46

Inv = 966.23

STA 30+21.15, 27.8' R Remove and Replace Sidewalk Ramp (58.8 SF) with 4" Concrete Sidewalk (25.0 SF)

Ex. Esmt

See Retaining Wall C Plan and Profile Sheets

Construct Dumpter Enclosure (1 Ea.) on 6" Concrete Pavement (17.8 SY) See Miscellaneous Detail Sheets.

Scale: 1" = 20'
0 20'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
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Johnson-Betts Meadows
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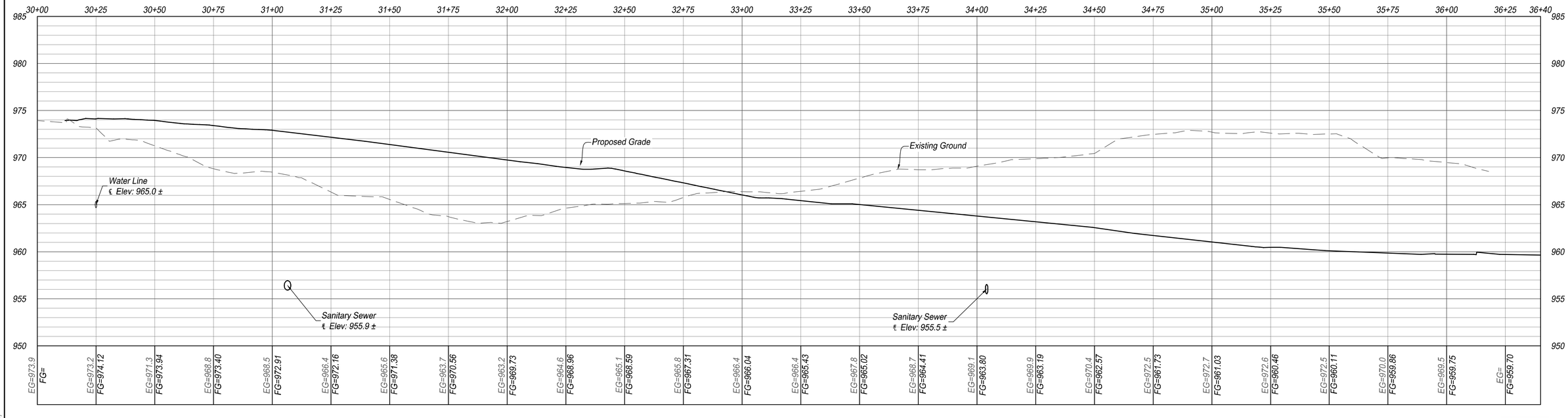
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Road C

DATE: 12/18/2025
SHEET: 43 OF 87
PROJ.: 281381.00, 501144.00, 401139.00



Horizontal Scale: 1"=20'
Vertical Scale: 1"=5'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
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Road C
Profile

DATE: 12/18/2025
SHEET: 44 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location, X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg Dosign\Site Construction Plans\24-192 Road A.dwg] [Plot Date: 12/18/2025 7:14:32 PM] [Last Saved: 12/18/2025 6:34:45 PM - Loconnor]

Scale: 1" = 20'
0 20'

Construct 4" Concrete Sidewalk (345.5 SF)
Construct Combined Curb and Gutter, Type II (101 LF) on 6" Aggregate Base (AB-3) (34 SY)
STA 40+96.34, 36.0' L Construct Sidewalk Ramp (71.6 SF)
Construct Dumpter Enclosure (1 Ea.) See Miscellaneous Detail Sheets.
Curb Inlet Top = 974.53 Inv Out WNW = 970.32
Inv 963.29
SE Fremont St.
OHP
Ex. Right-of-Way
40+38.75 33.00' LT
9' Typ.
18'
7
40+00
41+00
42+00
43+00
44+00
45+00
11
21
40
41
R5' Typ.
R6'
40+38.75 33.00' RT
Construct Combined Curb and Gutter, Type II (748 LF) on 6" Aggregate Base (AB-3) (249 SY)
Construct 4" Concrete Sidewalk (720.1 SF)
Construct 4" Concrete Sidewalk (162.4 SF) with 1-1/2" Handrail (12.8 LF each side)
STA 41+70.26, 39.0' R Construct Sidewalk Ramp (Special) (142.0 SF)
Construct 4" Concrete Sidewalk (162.4 SF) with 1-1/2" Handrail (12.8 LF each side)
STA 40+32.75 to 14+49.24 Construct Asphaltic Pavement (8") on 6" Aggregate Base (AB-3) (4132 SY)
Construct 4" Concrete Sidewalk (485.6 SF)
See Retaining Wall A Plan and Profile Sheets
Const. Limit
Ex. Right-of-Way
Construct 4" Concrete Sidewalk (970.8 SF)
SE 31st St.
Sanitary Sewer Manhole
Ex. 8" Water (PVC)
FH
WV
Curb Inlet Top = 978.87 Inv In S = 973.52 Inv ELE = 973.42 Inv Out NE = 973.37
Curb Inlet Top = 976.76 Inv In SW = 973.76 Inv Out N = 973.71
Sanitary Sewer Manhole Rim = 976.54 Inv In E = 962.94 Inv In W = 962.84 Inv Out NNE = 962.54
SE Emerson St.
30" RCP
30" RCP/PP
Ex. Esmt
Ex. 8" Sanitary Sewer A
Inv. 962.08
See Retaining Wall B Plan and Profile Sheets
Construct 4" Concrete Sidewalk (80.4 SF)
Construct 4" Concrete Sidewalk (1264.4 SF)
STA 42+51.05, 19.0' R Construct Sidewalk Ramp (42.2 SF)
42+63.86 33.00' RT
42+38.08 33.00' RT
Construct 4" Concrete Sidewalk (4031.9 SF)
Construct 4" Concrete Sidewalk (755.5 SF)
Sanitary Sewer Manhole Rim = 953.06 Inv In E = 946.60 Inv In SE = 945.36 Inv Out NW = 945.27
Construct 4" Concrete Sidewalk (82.5 SF)
STA 42+51.70, 19.1' L Construct Sidewalk Ramp (42.4 SF)
42+63.86 33.00' LT
42+38.08 33.00' LT
Sanitary Sewer Manhole Rim = 960.50 Inv In SSW = 954.75 Inv Out NNE = 954.70
Construct 4" Concrete Sidewalk (1092.9 SF)
Construct Combined Curb and Gutter, Type II (577 LF) on 6" Aggregate Base (AB-3) (192 SY)
STA 41+44.34, 36.0' L Construct Sidewalk Ramp (71.6 SF)
Construct 4" Concrete Sidewalk (1264.4 SF)
Construct 4" Concrete Sidewalk (162.4 SF) with 1-1/2" Handrail (12.8 LF each side)
STA 43+97.56, 39.0' R Construct Sidewalk Ramp (Special) (142.0 SF)
Construct 4" Concrete Sidewalk (162.4 SF) with 1-1/2" Handrail (12.8 LF each side)
Construct 4" Concrete Sidewalk (143.0 SF) with 1-1/2" Handrail (10.8 LF each side)
STA 43+44.18, 39.0' L Construct Sidewalk Ramp (Special) (142.0 SF)
Ex. 8" Sanitary Sewer B
Curb Inlet Top = 985.57 Inv In SE = 979.67 Inv Out W = 979.47
SE Dupont St.

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
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Road D

DATE: 12/18/2025
SHEET: 45 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg Design\Site Construction Plans\24-192 Road-B.dwg] [Plot Date: 12/18/2025 7:14:52 PM] [Last Saved: 12/18/2025 2:10:26 PM, Lcoconnor]

Sanitary Sewer Manhole
Rim = 953.06
Inv In E = 946.60
Inv In SE = 945.36
Inv Out NW = 945.27

STA 44+31.37, 39.0' L
Construct 4" Concrete
Pad (88.0 SF) with
6' Park Bench (1 Ea.)

Construct 4" Concrete
Sidewalk (1779.7 SF)

Ex. 8" Sanitary Sewer B

46+25.47
33.00' LT

9'
Typ.
18'
40
41

44+00
45+00
46+00
46+89

Sanitary Sewer Manhole
Rim = 962.02
Inv In SE = 951.22
Inv Out NW = 951.04

Prop. 16'
Swr Esmt

Const. Limit

Ex. 8" Sanitary Sewer B

46+52.13
33.00' RT

Construct 4" Concrete
Sidewalk (693.2 SF)

STA 45+36.09, 39.0' R
Construct Sidewalk
Ramp (Special) (142.0 SF)

Construct 4" Concrete
Sidewalk (277.9 SF)

Construct 4" Concrete
Sidewalk (162.4 SF) with
1-1/2" Handrail
(12.8 LF each side)

Construct 4" Concrete
Sidewalk (162.4 SF) with
1-1/2" Handrail
(12.8 LF each side)

Sanitary Sewer Manhole
Rim = 968.18
Inv In SE = 955.39
Inv Out NW = 955.32

Prop. 16'
Water Esmt

Ex. Esmt

Inv 966.23

Ex. Right-of-Way

Const. Limit

Ex. 8" Water (PVC)

Ex. 8" Water (PVC)

See Retaining Wall B
Plan and Profile Sheets

See Retaining Wall B
Plan and Profile Sheets

SE 31st St.

SE Dupont St.

SE Colfax St.

Curb Inlet
Top = 985.57
Inv In SE = 979.67
Inv Out W = 979.47

Sanitary Sewer Manhole

Curb Inlet
Top = 973.66
Inv In S = 966.96
Inv In E = 966.86
Inv Out N = 966.46

Curb Inlet
Top = 973.54
Inv In WSW = 967.74
Inv Out N = 967.44

N

Scale: 1" = 20'
0 20'

SBB PROJ. NO. 24-192

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APP'D BY: B. AUSTIN
FIELD BOOKS: -
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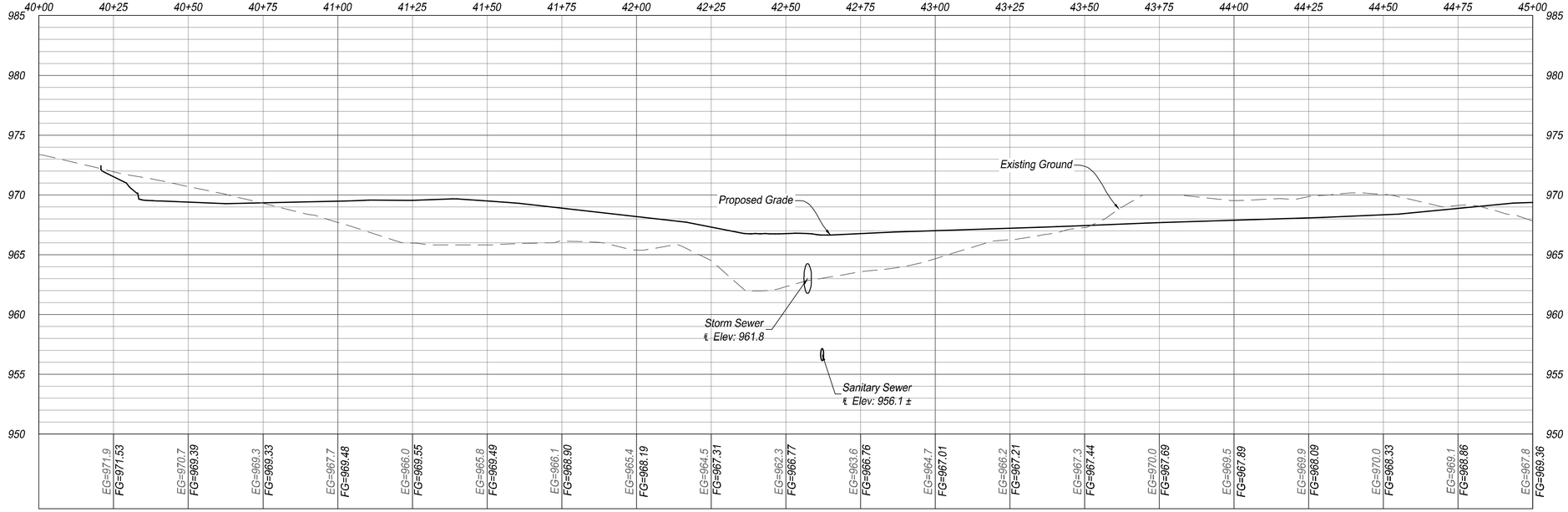
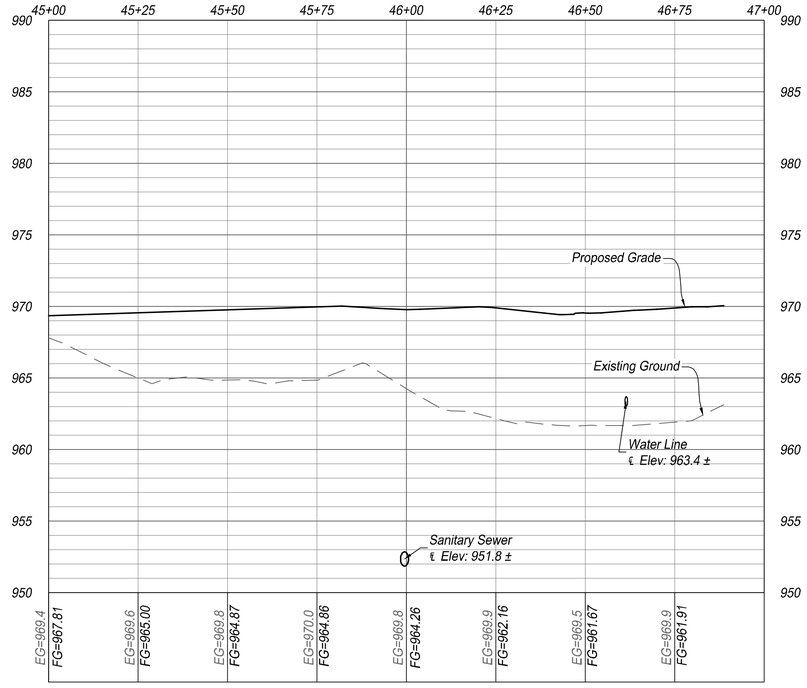
Road D

DATE: 12/18/2025
SHEET: 46 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-202\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Road-D.dwg] [Plot Date: 12/18/2025 7:14:58 PM] [Last Saved: 12/18/2025 2:10:28 PM] (_loconnor)





0 20' 0

Horizontal Scale: 1"=20'
Vertical Scale: 1"=5'

5'

SBB PROJ. NO. 24-192

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Road D
Profile

DATE: 12/18/2025
SHEET: 47 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-202\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Road-B.dwg] [Plot Date: 12/18/2025 7:15:03 PM] [Last Saved: 12/18/2025 2:10:28 PM] [...Loconnor]

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Paving-AC.dwg] [Plot Date: 12/18/2025 7:15:22 PM] [Last Saved: 12/18/2025 2:10:53 PM, Locomonr]

Prop. 16" Water Esmt

Sta. 10+60.38, 33.00' L
TC 968.54 (PT)

Sta. 10+38.13, 13.00' L
TC 968.98

Sta. 10+60.38, 18.00' L
TC 968.32 (PT)

Sta. 10+55.38, 11.00' L
TC 967.78 (PC)

Sta. 10+37.87, 13.00' R
TC 968.82

Sta. 10+55.38, 13.00' R
TC 967.94 (PC)

Sta. 10+60.38, 18.00' R
TC 967.79 (PT)

Sta. 10+60.38, 33.00' R
TC/TS 967.52 (PT)

Sta. 11+04.66, 33.00' R
TC/TS 965.54

Sta. 10+98.66, 33.00' R
TC/TS 965.65

Sta. 11+15.66, 33.00' R
TC/TS 965.86

Sta. 11+21.66, 33.00' R
TC/TS 965.24

Sta. 10+98.66, 39.00' R
TC/TS 965.74

Sta. 11+04.66, 39.00' R
TS 965.63
TC xx

Sta. 11+04.66, 52.58' R
TS 966.89

Sta. 11+21.66, 39.00' R
TC/TS 965.33

Sta. 11+15.66, 39.00' R
TS 965.95
TC xx

Sta. 11+15.66, 52.58' R
TS 966.99

Sta. 11+65.29, 39.00' R
TS 963.39

Sta. 11+65.29, 49.58' R
TS 964.09

Sta. 11+76.29, 39.00' R
TS 963.19

Sta. 11+76.29, 50.77' R
TS 964.08

Sta. 12+14.71, 33.00' L
TC 961.84 (PT)

Sta. 12+14.71, 18.00' L
TC 961.62 (PC)

Sta. 12+19.71, 13.00' L
TC 961.50 (PT)

Sta. 12+32.89, 13.00' L
TC 960.88 (PC)

Sta. 12+38.39, 33.00' L
TC 961.00 (PT)

Sta. 12+38.39, 18.07' L
TC 960.86 (PT)

Sta. 12+19.71, 13.00' R
TC 961.52 (PT)

Sta. 12+14.71, 18.00' R
TC 961.51 (PC)

Sta. 12+14.71, 33.00' R
TC/TS 961.24 (PT)

Rim (ST10): 961.30

Sta. 12+33.80, 13.00' R
TC 960.78 (PC)

Sta. 12+38.39, 17.94' R
TC 960.55 (PT)

Sta. 12+38.39, 33.00' R
TC/TS 960.27 (PT)

Sta. 12+21.15, 39.00' R
TS 961.30 (PC)

Sta. 12+25.38, 43.89' R
TS 961.20 (PT)

Sta. 12+33.58, 39.00' R
TS 960.35 (PT)

Sta. 12+29.48, 43.91' R
TS 961.12 (PC)

10+00 11+00 12+00 13+00

4.50% 1.80% 1.50% 5.00% 1.80% 6.61% 1.80% 7.52% 4.30% 2.09% 4.80% 1.50% 1.80% 3.12% 7.99% 4.80

R5' R187' R213'

Scale: 1" = 10'
0 10'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

SBB ENGINEERING

SBB Engineering, LLC
101 S Kansas Ave., Topeka, KS 66603
Ph: (785) 215-8630 www.sbbeng.com

Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Paving Plan
Road A

DATE: 12/18/2025
SHEET: 48 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

SE Fremont St.

Curb Inlet
Top = 958.31
Inv In S = 954.11
Inv Out W = 954.06

Main #21

Road Easement

LP

Prop. 16" Water Esmt

4.46%

Sta. 14+30.95, 33.00' L
TC 952.47 (PI)

Sta. 14+30.95, 18.00' L
TC 951.27 (PC)

Sta. 14+36.85, 13.00' L
TC 951.14 (PCC)

R5'

R15'

R5'

R187'

R5'

R213'

R5'

R5'

962

961

960

959

958

957

12+00

13+00

14+00

14+65

Sta. 14+37.64, 13.00' R
TC 950.78 (PC)

Sta. 14+35.95, 13.00' R
TC 950.89 (PT)

Sta. 14+30.95, 18.00' R
TC 951.54 (PC)

Sta. 14+30.95, 33.00' R
TC 951.39 (PI)

Rim (ST7): 951.57

0.50%

1.00%

7.00%

Sta. 13+59.01, 33.00' R
TC/TS 955.48

Sta. 13+48.01, 33.00' R
TC/TS 955.68

Sta. 13+65.01, 33.00' R
TC/TS 955.37

Sta. 13+42.01, 33.00' R
TC/TS 955.79

4.30%

4.80%

1.50%

1.80%

4.80%

1.80%

1.80%

1.50%

4.90%

R5' Typ.

2.09%

3.12%

7.99%

Sta. 13+42.01, 39.00' R
TC/TS 955.88

6.30%

7.65%

Sta. 13+65.01, 39.00' R
TC/TS 955.46

Sta. 13+59.01, 39.00' R
TS 955.57
TC xx

4.81%

5.17%

Sta. 14+09.01, 39.00' R
TS 953.38

Sta. 13+48.01, 39.00' R
TS 955.77
TC xx

Sta. 13+48.01, 49.60' R
TS 956.49

Sta. 13+59.01, 50.79' R
TS 956.47

Scale: 1" = 10'
0
10'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

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Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Paving Plan
Road A

DATE: 12/18/2025
SHEET: 49 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg Design\Site Construction Plans\24-192 Paving-AC.dwg] [Plot Date: 12/18/2025 7:15:27 PM] [Last Saved: 12/18/2025 2:10:53 PM - Locannor]

Sta. 20+02.24, 38.41' L
TC 948.64 (PC)

Sta. 20+27.23, 13.00' L
TC 951.87 (PT)

Sta. 21+28.40, 13.00' L
TC 949.37 (PC)

Rim (ST6): 949.13

Sta. 21+77.77, 13.00' L
TC 949.61 (Half-Pt)

20+00

21+00

22+00

23+00

950

951

949

952

953

954

955

R25'

R15'

R50'

R55'

R70'

R87'

R113'

R5' Typ.

Sta. 20+63.68, 19.00' R
TS 951.07

Sta. 20+57.68, 13.00' R
TC 950.78 (PC)

Sta. 20+26.21, 13.00' R
TC 952.67 (PT)

Sta. 20+58.12, 19.00' R
TS 951.16 (PT)

Sta. 20+41.63, 21.53' R
TS 951.93 (PC)

Sta. 20+36.66, 23.09' R
TS 952.17 (PT)

Sta. 20+01.21, 37.42' R
TC 952.38 (PC)

Sta. 20+09.35, 30.25' R
TS 953.01 (PI)

Sta. 20+21.68, 25.39' R
TS 952.87 (PC)

Sta. 20+21.68, 30.39' R
TS 952.95 (PC)

Sta. 20+63.68, 24.00' R
TS 951.15

Sta. 20+58.12, 24.00' R
TS 951.24 (PT)

Sta. 20+43.13, 26.30' R
TS 952.01 (PC)

Sta. 20+38.16, 27.86' R
TS 952.25 (PT)

Sta. 21+40.69, 19.39' R
TS 949.85 (PC)

Sta. 21+13.69, 13.00' R
TC 949.91 (PT)

Rim (ST5): 949.70

Sta. 21+01.00, 20.00' R
TC/TS 950.52

Sta. 21+07.00, 20.00' R
TS 950.41

Sta. 20+69.68, 19.00' R
TC/TS 950.97

Sta. 20+98.99, 25.00' R
TC/TS 950.72

Sta. 21+07.00, 25.00' R
TS 950.49

Sta. 20+72.14, 24.00' R
TC/TS 951.05

Sta. 21+41.50, 24.35' R
TS 949.93 (PC)

Sta. 21+72.40, 21.60' R
TS 950.30 (PC)

Sta. 21+93.19, 20.22' R
TS 950.62 (PCC)

Sta. 21+77.77, 13.00' R
TC 949.59 (Half-Pt)

Sta. 22+27.14, 13.00' L
TC 950.82 (PT)

Sta. 22+40.21, 13.00' L
TC 951.26 (PC)

Sta. 22+27.14, 13.00' R
TC 950.87 (PT)

Sta. 22+28.41, 19.00' R
TS 950.98 (PT)

Sta. 22+40.21, 13.00' R
TC 951.26 (PC)

Rim (ST4): 951.42

Sta. 22+52.32, 19.88' R
TS 952.00 (PI)

Sta. 22+60.80, 21.57' R
TS 952.40 (PC)

Const. Limit

1.62%
1.62%
4.60%
3.26%
1.60%
1.50%
1.80%

SE Fremont St.

OHP

Item #21
Road Easement

LP

Scale: 1" = 10'
0 10'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

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Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater
501144.00, & Sanitary 401139.00

Paving Plan
Road B

DATE: 12/18/2025
SHEET: 50 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location, X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg Dosign\Site Construction Plans\24-192 Paving-BD.dwg] [Plot Date: 12/18/2025 7:15:41 PM] [Last Saved: 12/18/2025 2:11:07 PM] [Last User: L.oconnor]

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Paving-BD.dwg] [Plot Date: 12/18/2025 7:15:42 PM] [Last Saved: 12/18/2025 2:11:07 PM, Loconnor]

Sta. 23+23.48, 33.00' L
TC 953.91 (PI)

Rim (ST8): 953.98

R5'

Sta. 23+23.48, 18.15' L
TC 954.35 (PT)

Sta. 23+17.38, 13.00' L
TC 954.35 (PC)

Sta. 24+45.65, 33.00' L
TC 956.35 (Mid-Pt)

Sta. 25+71.91, 32.91' L
TC 958.80 (PI)

Sta. 25+67.82, 18.64' L
TC 959.05 (PC)

R25'

R5'

Sta. 25+75.41, 13.05' L
TC 959.23 (PCC)

Sta. 23+19.24, 13.00' R
TC 955.15 (PC)

R5'

Sta. 23+23.48, 17.89' R
TC 955.38 (PT)

Prop. 16" Water Esmt

Sta. 23+23.48, 33.00' R
TC/TS 955.61 (PI)

24+00

25+00

26+00

26+12

954

955

956

957

958

959

960

5'

6'

Sta. 23+23.48, 39.00' R
TS 955.70 (PT)

1.54%

Sta. 23+60.85, 39.00' R
TS 956.26

1.50%

11'

Sta. 23+71.85, 39.00' R
TS 956.42

4.00%

7.12%

Sta. 23+60.85, 55.58' R
TS 957.80

Sta. 23+71.85, 55.58' R
TS 957.80

Sta. 24+15.48, 33.00' R
TC/TS 958.05

Sta. 24+21.48, 33.00' R
TC/TS 958.14

Sta. 24+15.48, 39.00' R
TC/TS 958.14

Sta. 24+21.48, 39.00' R
TS 958.23
TC XX

Sta. 24+21.48, 52.58' R
TS 959.32

Sta. 24+32.48, 33.00' R
TC/TS 958.30

Sta. 24+38.48, 33.00' R
TC/TS 958.39

Sta. 24+38.48, 39.00' R
TC/TS 958.48

1.50%

6.84%

Sta. 24+32.48, 39.00' R
TS 958.39
TC XX

Sta. 24+32.48, 53.77' R
TS 959.40

Sta. 24+74.00, 33.00' R
TC/TS 958.11

1.00%

Sta. 24+74.00, 39.00' R
TS 958.20

2.40%

Sta. 25+23.96, 33.00' R
TC/TS 959.21

Sta. 25+17.96, 33.00' R
TC/TS 959.12

Sta. 25+17.96, 39.00' R
TC/TS 959.21

Sta. 25+23.96, 39.00' R
TS 959.30
TC XX

7.65%

Sta. 25+23.96, 51.58' R
TS 960.30

Sta. 25+34.96, 33.00' R
TC/TS 959.37

Sta. 25+67.82, 17.95' R
TC 960.04 (PC)

Sta. 25+40.96, 33.00' R
TC/TS 959.46

Sta. 25+67.82, 33.00' R
TC/TS 960.27 (PI)

Sta. 25+69.75, 13.34' R
TC 959.98 (PCC)

R5'

R25'

Sta. 25+40.96, 39.00' R
TC/TS 959.55

6.68%

Sta. 25+34.96, 39.00' R
TS 959.46
TC XX

Sta. 25+34.96, 51.58' R
TS 960.30

N

Scale: 1" = 10'

0 10'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

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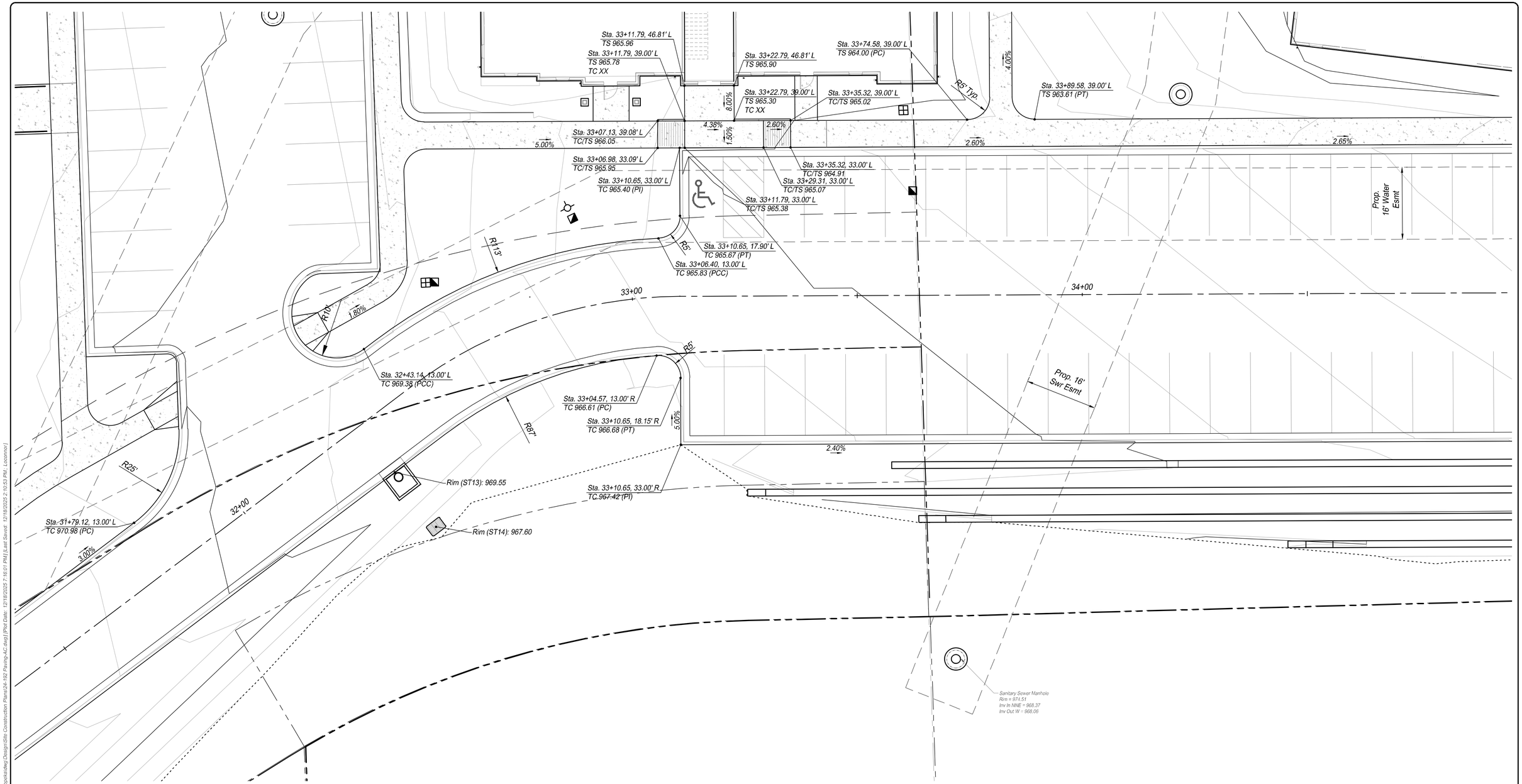
Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Paving Plan
Road B

DATE: 12/18/2025
SHEET: 51 OF 87
PROJ.: 281381.00, 501144.00, 401139.00



SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Paving Plan
Road C

DATE: 12/18/2025
SHEET: 52 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Paving-AC.dwg] [Plot Date: 12/18/2025 7:16:01 PM] [Last Saved: 12/18/2025 2:10:53 PM - Loconnor]

R5' Typ.
4.00%
2.60%
2.65%
Sta. 35+12.81, 39.00' L
TS 960.46 (PT)
R5' Typ.
Sta. 35+28.68, 37.97' L
TS 960.22 (PT)
Sta. 35+37.77, 37.36' L
TS 960.13
Sta. 35+43.95, 36.60' L
TC/TS 960.00
Sta. 35+70.43, 33.29' L
TC/TS 959.29
Sta. 35+78.62, 32.27' L
TS 959.39
Sta. 35+88.79, 31.01' L
TS 959.62
R25'
Sta. 35+43.17, 31.65' L
TC/TS 960.02
1.80%
1.80%
Rim (ST9): 960.18
Sta. 35+72.05, 28.05' L
TC/TS 959.39
Sta. 35+88.17, 26.05' L
TS 959.68
Prop. 16' Water Esmt
Sta. 35+18.99, 33.00' L
TC 960.06 (PI)
Sta. 35+37.21, 32.39' L
TS 960.11
Sta. 35+78.01, 27.31' L
TS 959.49
R25'
Sta. 35+94.99, 13.00' L
TC 959.91
R5'
34+00
35+00
36+00
36+50
Sta. 35+46.99, 13.00' R
TC 961.07 (PC)
R5'
Sta. 35+94.99, 13.00' R
TC 960.60 (PI)
Sta. 35+23.99, 13.00' R
TC 961.30 (PT)
Sta. 35+66.99, 13.00' R
TC 960.88 (PT)
Prop. 16' Swr Esmt
Sta. 35+18.99, 18.00' R
TC 961.69 (PC)
Sta. 35+18.99, 33.00' R
TC 962.42 (PI)
2.40%
Sanitary Sewer Manhole
Rim = 974.51
Inv In NNE = 968.37
Inv Out W = 968.06

Scale: 1" = 10'
0 10'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

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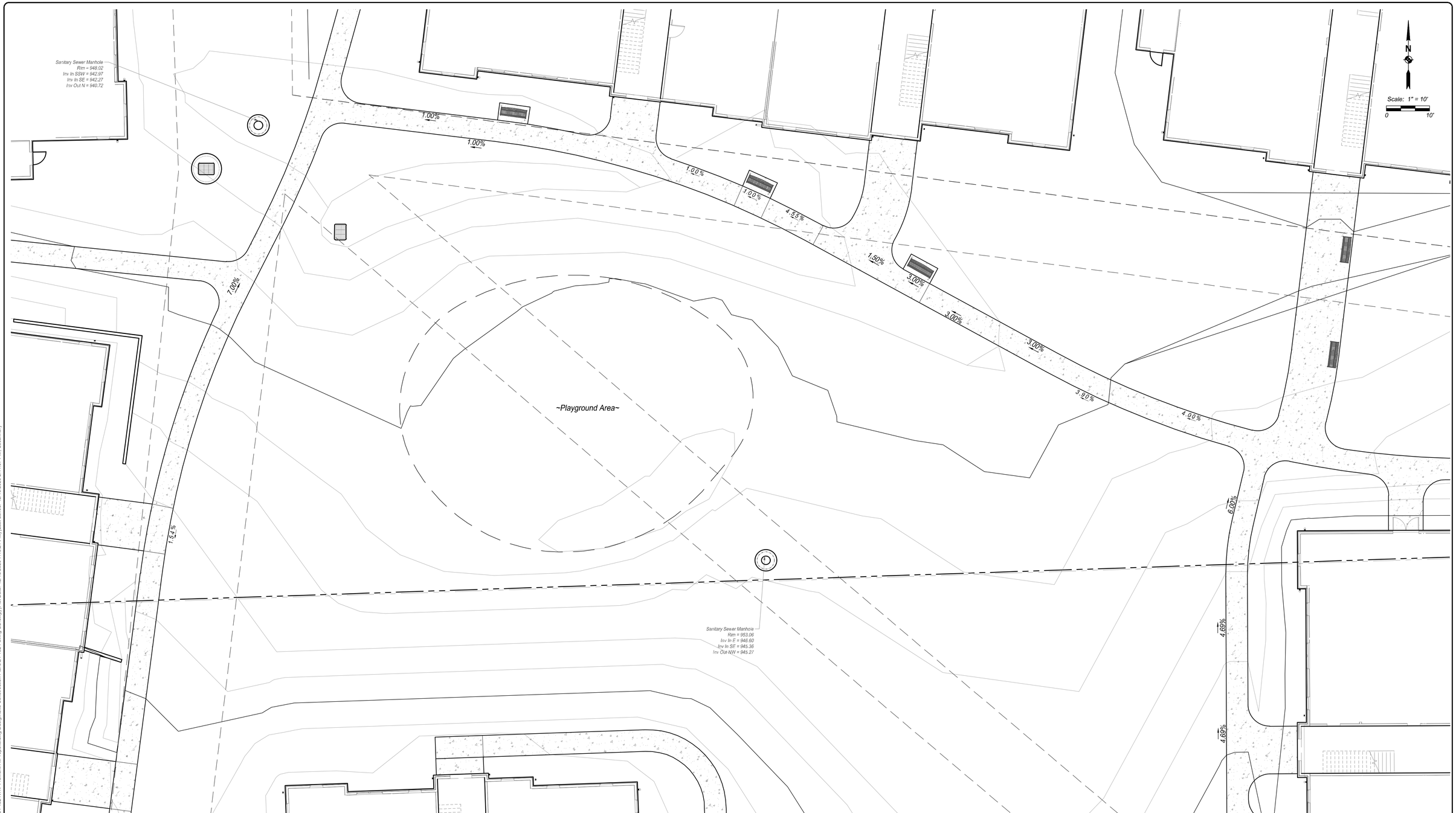
Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Paving Plan
Road C

DATE: 12/18/2025
SHEET: 53 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg Design\Site Construction Plans\24-192 Paving-AC.dwg] [Plot Date: 12/18/2025 7:16:07 PM] [Last Saved: 12/18/2025 2:10:53 PM, Locomnor]



SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Paving Plan
Playground Area

DATE: 12/18/2025
SHEET: 54 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg Design\Site Construction Plans\24-192 Paving-BD.dwg] [Plot Date: 12/18/2025 7:16:21 PM] [Last Saved: 12/18/2025 2:11:07 PM - L.oconnor]

SE Fremont St.

Sta. 40+38.75, 39.00' L
TS 969.77 (PI)

Sta. 40+96.34, 39.00' L
TS 969.19

Sta. 40+38.75, 33.00' L
TC/TS 969.69 (PI)

Sta. 40+96.34, 33.00' L
TC/TS 969.11

Sta. 41+02.34, 33.00' L
TC/TS 969.05 (PC)

Sta. 40+38.75, 17.00' L
TC 969.85 (PT)

Sta. 40+34.75, 13.00' L
TC/969.98 (PC)

Sta. 40+34.75, 13.00' R
TC 970.24 (PC)

Sta. 40+38.75, 17.00' R
TC 970.21 (PT)

Sta. 40+38.75, 33.00' R
TC/TS 970.37 (PI)

Sta. 40+38.75, 39.00' R
TS 970.45 (PI)

Sta. 41+48.30, 39.00' L
TS 968.71 (PC)

Sta. 41+44.34, 39.00' L
TS 968.80

Sta. 41+64.30, 39.00' L
TS 968.36 (PT)

Sta. 41+44.34, 33.00' L
TC/TS 968.75

Sta. 41+38.34, 33.00' L
TC/TS 968.90 (PT)

Sta. 42+41.76, 39.00' L
TS 966.66 (PC)

Sta. 42+63.05, 39.00' L
TS 966.49 (PT)

Sanitary Sewer Manhole
Rim = 969.50
Inv In SSW = 954.75
Inv Out NNE = 954.70

Sta. 42+38.08, 33.00' L
TC/TS 966.50 (PI)

Rim (ST11): 966.55

Sta. 42+63.80, 33.00' L
TC/TS 966.34 (PI)

Rim (ST2): 966.41

Sta. 42+38.08, 18.09' L
TC 966.73 (PC)

Sta. 42+63.80, 18.09' L
TC 966.61 (PT)

Sta. 42+43.76, 13.00' L
TC 966.89 (PCC)

Sta. 42+58.12, 13.00' L
TC 967.02 (PCC)

Sta. 42+42.55, 13.00' R
TC 967.59 (PCC)

Sta. 42+59.34, 13.00' R
TC 967.40 (PCC)

Sta. 42+38.08, 17.93' R
TC 967.74 (PC)

Sta. 42+63.80, 17.93' R
TC 967.54 (PT)

Sta. 42+38.08, 33.00' R
TC/TS 968.01 (PI)

Sta. 42+63.80, 33.00' R
TC/TS 967.81 (PI)

Sta. 41+04.13, 52.80' R
TS 971.94

Sta. 41+15.13, 52.80' R
TS 972.00

Sta. 41+64.76, 39.00' R
TS 971.06
TC XX

Sta. 41+64.76, 52.77' R
TS 972.00

Sta. 41+75.76, 52.80' R
TS 971.93

Sta. 41+04.13, 33.00' R
TC/TS 971.02

Sta. 41+15.13, 33.00' R
TC/TS 971.13

Sta. 41+41.29, 33.00' R
TC/TS 971.39 (PI)

Sta. 41+58.76, 33.00' R
TC/TS 971.08

Sta. 41+64.76, 33.00' R
TC/TS 970.97

Sta. 41+75.76, 33.00' R
TC/TS 970.77

Sta. 41+81.76, 33.00' R
TC/TS 970.66

Sta. 41+04.13, 39.00' R
TS 971.11

Sta. 41+15.13, 39.00' R
TS 971.22

Sta. 41+58.76, 39.00' R
TC/TS 971.04

Sta. 41+81.76, 39.00' R
TC/TS 970.63

Sta. 41+75.76, 39.00' R
TS 970.86
TC XX

40+00

41+00

42+00

43+

1.00%

1.01%

2.21%

2.40%

2.40%

0.80%

1.50%

2.56%

1.80%

2.56%

0.96%

0.41%

1.80%

1.50%

4.80%

1.16%

6.02%

5.27%

6.36%

7.70%

11'

11'

6'

6'

R4'

R5'

R5' Typ.

R137'

R163'

R45'

970

971

972

969

968

967

966

SCALE: 1" = 10'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

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Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Paving Plan
Road D

DATE: 12/18/2025
SHEET: 55 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg Design\Site Construction Plans\24-192 Paving-BD.dwg] [Plot Date: 12/18/2025 7:16:22 PM] [Last Saved: 12/18/2025 2:11:07 PM, Loconnor]

N

Scale: 1" = 10'
0 10'

4.69%
4.69%
4.69%
R5' Typ.
R5' Typ.
Sta. 45+14.54, 39.00' L
TS 967.85 (PC)
Sta. 45+29.55, 39.00' L
TS 967.97 (PT)
Sta. 45+97.58, 39.00' L
TS 968.51 (PC)
0.80%
6'
966
967
968
969
970
971
972
Sta. 46+13.59, 39.00' L
TS 968.87 (PT)
Sta. 46+33.16, 39.00' L
TS 969.22 (PC)
Sta. 46+42.04, 33.59' L
TS 969.23 (PT)
R10'
Sta. 46+35.47, 33.00' L
TC/TS 969.32 (PI)
Sta. 46+38.11, 30.30' L
TS 969.33 (PT)
Sta. 46+35.47, 19.91' L
TC 969.45 (PC)
R10'
5'
1.80%
1.00%
1.80%
Sta. 46+48.51, 21.06' L
TS 969.50
Sta. 46+51.27, 15.73' L
TC/TS 969.59
Sta. 46+44.07, 18.77' L
TS 969.56
Sta. 46+46.89, 13.32' L
TC/TS 969.67
Sanitary Sewer Manhole
Rim = 962.02
Inv In SE = 951.22
Inv Out NW = 951.04
45+00
46+00
46+89
Prop. 16' Swr Esmt
Sta. 46+66.11, 13.00' R
TC/TS 970.44
Sta. 46+60.49, 13.00' R
TC/TS 970.33
Sta. 46+54.13, 13.00' R
TC 970.20 (PC)
R25'
R25'
Sta. 46+52.13, 15.00' R
TC 970.29 (PC)
Sta. 46+64.43, 20.63' R
TS 970.49
Sta. 46+52.13, 33.00' R
TC/TS 970.61 (PI)
Sta. 46+68.87, 18.33' R
TS 970.55
1.80%
5'
1.80%
1.80%
Const. Limit
Sta. 45+30.59, 33.00' R
TC/TS 971.67
Sta. 45+24.59, 33.00' R
TC/TS 971.52
Sta. 45+41.59, 33.00' R
TC/TS 971.78
Sta. 45+47.59, 33.00' R
TC/TS 971.84
Sta. 45+91.22, 33.00' R
TC/TS 972.27
Sta. 46+02.22, 33.00' R
TC/TS 972.11
1.00%
9'
4.50%
1.50%
4.50%
3.00%
1.00%
Sta. 45+24.59, 39.00' R
TC/TS 971.78
Sta. 45+30.59, 39.00' R
TS 971.94
TC XX
Sta. 45+47.59, 39.00' R
TC/TS 972.11
Sta. 45+41.59, 39.00' R
TS 972.05
TC XX
Sta. 45+91.22, 39.00' R
TS 972.54
TC XX
Sta. 46+02.22, 39.00' R
TS 972.38
TC XX
11'
11'
6.63%
5.78%
2.42%
3.54%
Sta. 45+30.59, 51.00' R
TS 972.72
Sta. 45+41.59, 51.00' R
TS 972.58
Sta. 45+91.22, 51.00' R
TS 972.66
Sta. 46+02.22, 51.00' R
TS 972.80
1.80%
Sanitary Sewer Manhole
Rim = 968.18
Inv In SE = 955.39
Inv Out NW = 955.32

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

SBB ENGINEERING

SBB Engineering, LLC
101 S Kansas Ave., Topeka, KS 66603
Ph: (785) 215-8630 www.sbbeng.com

Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Paving Plan
Road D

DATE: 12/18/2025
SHEET: 56 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Paving-BD.dwg] [Plot Date: 12/18/2025 7:16:27 PM] [Last Saved: 12/18/2025 2:11:07 PM - Loconnor]

N

Scale: 1" = 10'
0 10'

R25'
R25'
R5' Typ.
1.80%
1.80%
1.80%
1.80%
1.00%
3.00%
3.00%
5'
971
972
977
Const. Limit
Const. Limit
Ex. Right-of-Way
Sanitary Sewer Manhole
Rim = 968.18
Inv In SE = 955.39
Inv Out NW = 955.32
Prop. 16'
Water Esmt
Item #27 Drainage
Ex. Esmt
Inv 966.23
Item
Sta. 30+64.49, 35.57' L
TS 972.92 (PC)
Sta. 30+56.86, 36.69' L
TS 973.00 (PC)
PC: 30+38.46
PI: 30+99.88
31.00
Sta. 30+23.65, 27.75' L
TS 973.41
Sta. 30+23.65, 32.75' L
TS 973.49 (PI)(M.E.)
Sta. 30+18.62, 32.77' L
TS 973.41 (PI)(M.E.)
Sta. 30+12.66, 38.01' L
TC 975.19 (PC)
Sta. 30+23.64, 17.31' L
TC/TS 975.15
Sta. 30+18.60, 21.83' L
TC/TS 975.02
Sta. 30+18.61, 27.77' L
TS 973.49
Sta. 30+23.65, 17.30' R
TC/TS 973.76
Sta. 30+18.65, 21.77' R
TC/TS 973.90
Item #26 TOE
Sta. 30+18.65, 27.77' R
TS 973.29
Sta. 30+12.68, 38.00' R
TC 973.65 (PT)
Sta. 30+23.65, 27.77' R
TS 972.74
Sta. 30+23.65, 32.77' R
TS 972.12 (PI)(M.E.)
Sta. 30+18.65, 32.77' R
TS 972.97 (PI)(M.E.)
Curb Inlet
Top = 973.66
Inv In S = 966.96
Inv In E = 966.66
Inv Out N = 966.46
SE 31st St.
30+00

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

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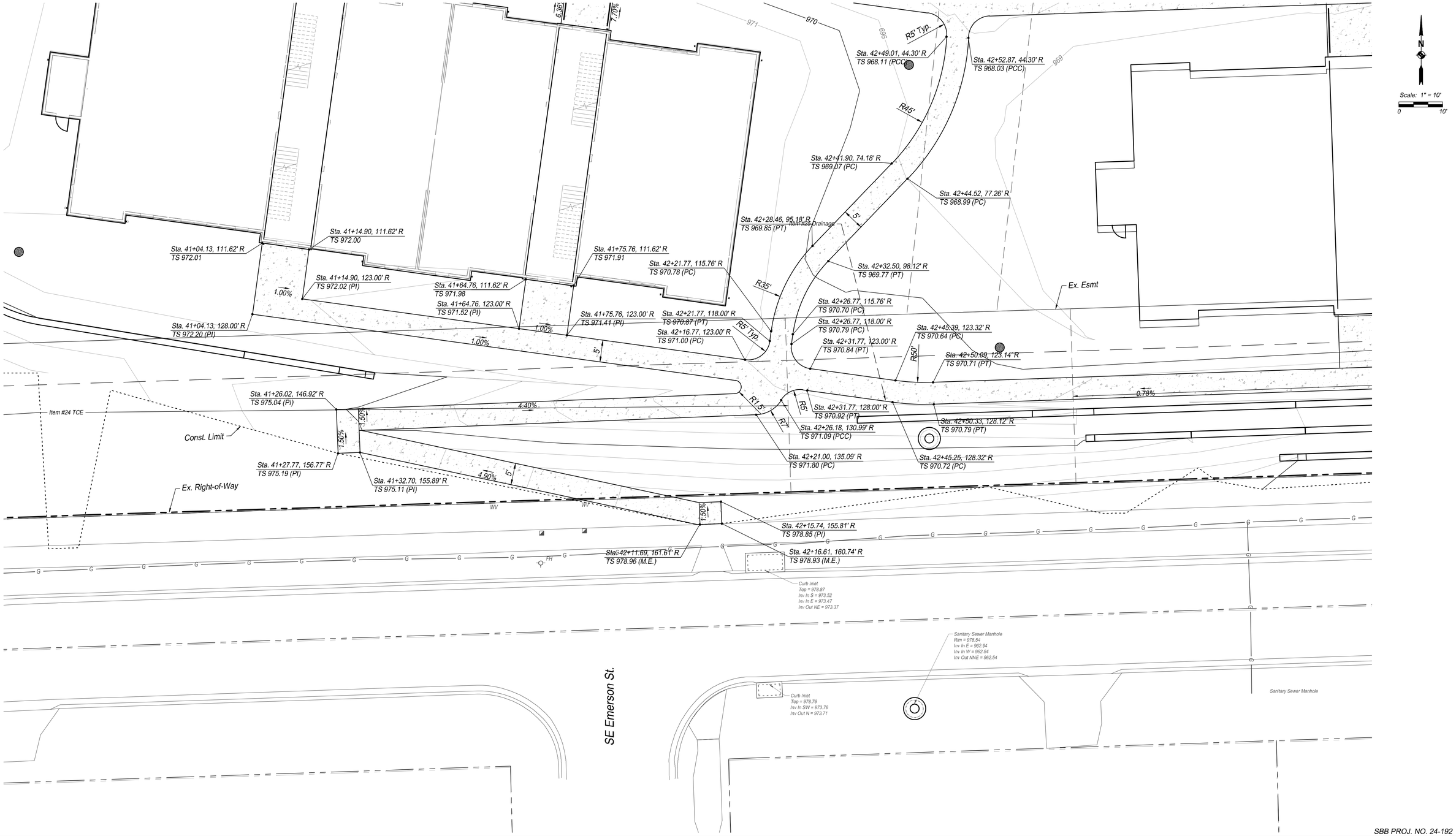
Ph: (785) 215-8630 www.sbbeng.com

Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater
501144.00, & Sanitary 401139.00

Paving Plan
South Entrance

DATE: 12/18/2025
SHEET: 57 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Paving-BID.dwg] [Plot Date: 12/18/2025 7:16:32 PM] [Last Saved: 12/18/2025 2:11:07 PM - L.oconnor]



NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

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Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater
501144.00, & Sanitary 401139.00

Paving Plan
Trail Connection

DATE: 12/18/2025
SHEET: 58 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-202424-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Paving-BD.dwg] [Plot Date: 12/18/2025 7:16:37 PM] [Last Saved: 12/18/2025 2:11:07 PM] [Last Saved By: LOconnor]

N

Scale: 1" = 10'
0 10'

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
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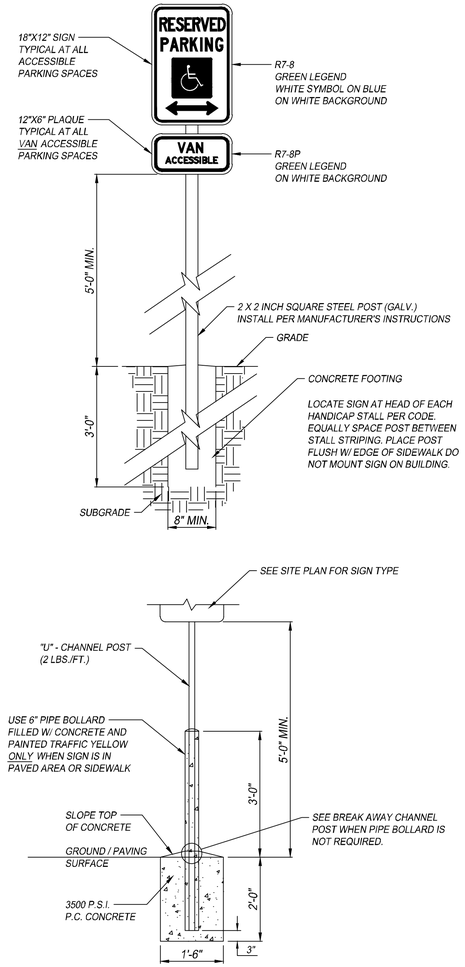
Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

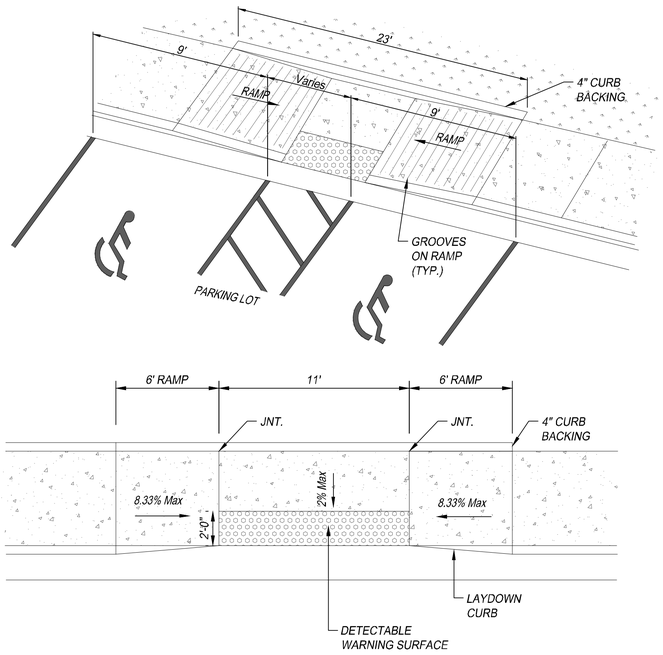
Playground Plan & Details

DATE: 12/18/2025
SHEET: 59 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

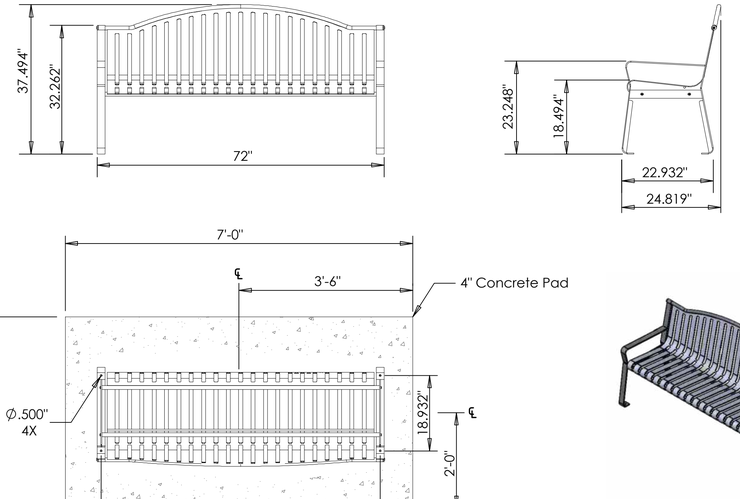
[File Location: X:\11 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 Site Landscaping Playground.dwg] [Plot Date: 12/18/2025 7:17:05 PM] [Last Saved: 12/18/2025 2:11:15 PM - Locomor]



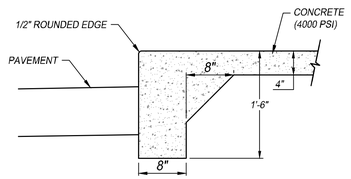
ADA (VAN) SIGN & POST DETAIL
No Scale



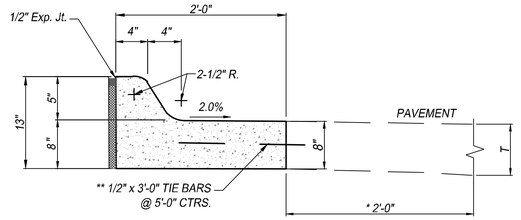
ADA SIDEWALK RAMP (SPECIAL) DETAIL
No Scale



TYPICAL 6' BENCH AND CONCRETE PAD DETAIL
No Scale



TURNDOWN SIDEWALK DETAIL (PRIVATE)
No Scale



COMBINED CURB & GUTTER-TYPE II (DRY)
No Scale

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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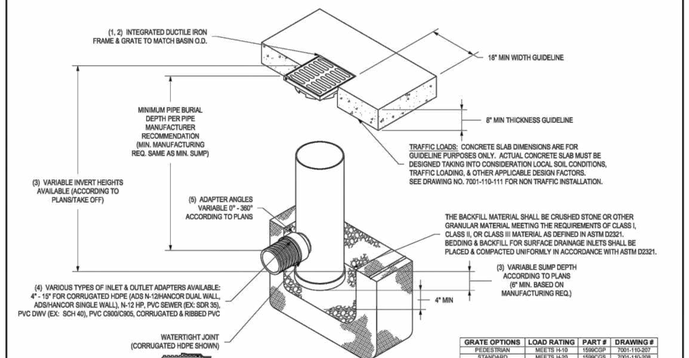
Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Miscellaneous Site Details

DATE: 12/18/2025
SHEET: 60 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\11 SBB Drawings\0-202434-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 DETAILS.dwg] [Plot Date: 12/18/2025 7:17:16 PM] [Last Saved: 12/18/2025 2:12:31 PM - Loconnor]

NYLOPLAST 15" DRAIN BASIN: 2815AG _ _ X



GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
PEDESTRIAN	MEETS H-10	1599CGP	7001-110-207
STANDARD	MEETS H-20	1599CGS	7001-110-208
SOLID COVER	MEETS H-20	1599CGC	7001-110-209
PEDESTRIAN BRONZE	N/A	1599CGPB	7001-110-210
DOME	N/A	1599CGD	7001-110-211
DROP IN GRATE	LIGHT DUTY	1501DI	7001-110-073

1 - GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-60-05, WITH THE EXCEPTION OF THE BRONZE GRATE.
2 - FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER.
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.

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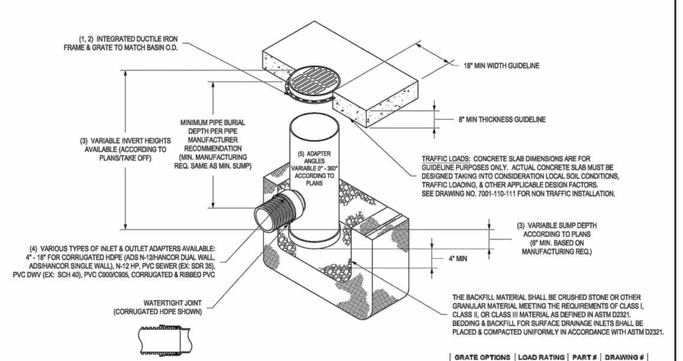
DRAWN BY	EBC	MATERIAL	
DATE	03-30-06		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	03-14-16		
DWG SIZE	A	SCALE 1:25 SHEET 1 OF 1	

ADS Nyloplast — 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-3443 FAX (770) 932-3496 www.nyloplast-us.com

TITLE: 15 IN DRAIN BASIN QUICK SPEC INSTALLATION DETAIL

DWG NO. 7001-110-190 REV E

NYLOPLAST 18" DRAIN BASIN: 2818AG _ _ X



GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
PEDESTRIAN	MEETS H-10	1699CGP	7001-110-212
STANDARD	MEETS H-20	1699CGS	7001-110-213
SOLID COVER	MEETS H-20	1699CGC	7001-110-214
DOME	N/A	1699CGD	7001-110-215
DROP IN GRATE	LIGHT DUTY	1801DI	7001-110-074

1 - GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-60-05.
2 - FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER.
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.

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DRAWN BY	EBC	MATERIAL	
DATE	04-03-06		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	03-14-16		
DWG SIZE	A	SCALE 1:30 SHEET 1 OF 1	

ADS Nyloplast — 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-3443 FAX (770) 932-3496 www.nyloplast-us.com

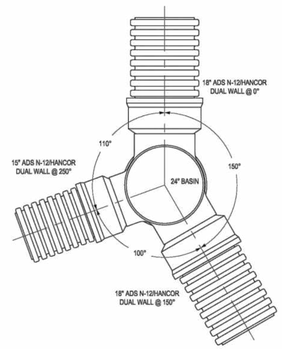
TITLE: 18 IN DRAIN BASIN QUICK SPEC INSTALLATION DETAIL

DWG NO. 7001-110-191 REV E

1. MEASURE THE ANGLE BETWEEN THE PIPE RUNS DIRECTLY FROM THE STORM DRAIN PLANS FOR EACH STRUCTURE LOCATION . THE ANGLE BETWEEN EVERY PIPE RUN MUST BE MEASURED.
2. REFER TO DRAWING NO. 7001-110-012 FOR MINIMUM ANGLE REQUIREMENTS. THE ANGLES LISTED ARE THE MINIMUM ANGLES POSSIBLE BETWEEN ADAPTERS DUE TO PRODUCTION RESTRICTIONS.
3. WHEN RECORDING THE MEASURED ANGLES ON AN ORDER FORM BE SURE TO MEASURE THE ANGLES IN A CLOCKWISE DIRECTION & LABEL THE ANGLE POSITIONS STARTING WITH 0° AT THE TOP OF THE PAGE, THE 12 O'CLOCK POSITION; 90° WOULD THEN FOLLOW AT 3 O'CLOCK, 180°AT 6 O'CLOCK, & SO FORTH (TYPICALLY YOUR OUTLET PIPE WOULD BE LABELED AT 0°).

EXAMPLE:
THE 24" BASIN TO THE RIGHT HAS THREE ADAPTERS:
18" ADS N-12/HANCOR DUAL WALL ADAPTER @ 0°
18" ADS N-12/HANCOR DUAL WALL ADAPTER @ 150°
15" ADS N-12/HANCOR DUAL WALL ADAPTER @ 250°

AT FIRST GLANCE, IT APPEARS THAT AN 18" BASIN COULD BE USED TO MANUFACTURE THIS STRUCTURE, BUT AN 18" BASIN CAN NOT BE USED BECAUSE THERE IS ONLY 150° BETWEEN ONE OF THE 18" ADAPTERS & THE 15" ADAPTER. ACCORDING TO THE MINIMUM ANGLE CHART AN 18" BASIN REQUIRES A MINIMUM OF 110° BETWEEN AN 18" & 15" ADAPTER. A 24" BASIN IS THE MINIMUM BASIN SIZE THAT CAN BE USED TO MANUFACTURE THIS STRUCTURE. ACCORDING TO THE MINIMUM ANGLE CHART A 24" BASIN REQUIRES A MINIMUM OF 84° BETWEEN AN 18" & 15" ADAPTER & THE 150° BETWEEN THE 18" & 15" ADAPTER ON THIS BASIN IS WELL ABOVE THAT MINIMUM REQUIREMENT.



DRAIN BASIN TOP VIEW
WITHOUT FRAME & GRATE

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DRAWN BY	EBC	MATERIAL	
DATE	05-01-07		
REVISED BY	CCA	PROJECT NO./NAME	
DATE	09-04-13		
DWG SIZE	A	SCALE 1:20 SHEET 1 OF 1	

ADS Nyloplast — 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-3443 FAX (770) 932-3496 www.nyloplast-us.com

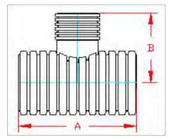
TITLE: NYLOPLAST DRAIN BASIN LAYOUT WITH MINIMUM ANGLE MEASUREMENT EXAMPLE

DWG NO. 7001-110-394 REV C

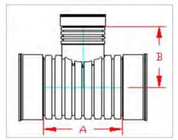
DUAL WALL FABRICATED REDUCING TEES
18"×12" - 18"×15" DIAMETER

PART #	PIPE SIZE	A	B	JOINT
1864AN	18 x 12 in (450 x 300 mm)	37.5 in (953 mm)	19.3 in (490 mm)	*
1864AN65B	18 x 12 in (450 x 300 mm)	26.8 in (681 mm)	15.5 in (393 mm)	WT
1865AN	18 x 15 in (450 x 375 mm)	40.2 in (1021 mm)	22.8 in (578 mm)	*
1865AN65B	18 x 15 in (450 x 375 mm)	29.5 in (749 mm)	17.6 in (446 mm)	WT

* = PLAIN END
ST = SOIL TIGHT
WT = WATER TIGHT



PLAIN END



WT (INCLUDES 3 GASKETS)

NOTE: ALL FITTINGS DIMENSIONS ARE FOR REFERENCE ONLY

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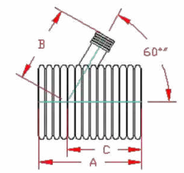
DRAWING #:	2415A	
DRAWN BY:	NJP	08.31.06
APPROVED BY:	JCB	06.26.07
REVISIONS:	NJP	06.14.07

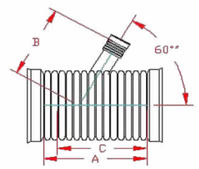
DUAL WALL FABRICATED 60° REDUCING WYES
18"×12" - 18"×15" DIAMETER

PART #	PIPE SIZE	A	B	C	JOINT
1884AN60	18 x 12 in (450 x 300 mm)	40.2 in (1021 mm)	29.5 in (750 mm)	26.2 in (666 mm)	*
1884AN6065B	18 x 12 in (450 x 300 mm)	34.8 in (885 mm)	27.6 in (701 mm)	23.5 in (598 mm)	WT
1885AN60	18 x 15 in (450 x 375 mm)	42.9 in (1089 mm)	35.5 in (903 mm)	27.6 in (700 mm)	*
1885AN6065B	18 x 15 in (450 x 375 mm)	37.5 in (953 mm)	33.0 in (837 mm)	24.9 in (632 mm)	WT

* = PLAIN END
ST = SOIL TIGHT
WT = WATER TIGHT



PLAIN END



WT (INCLUDES 3 GASKETS)

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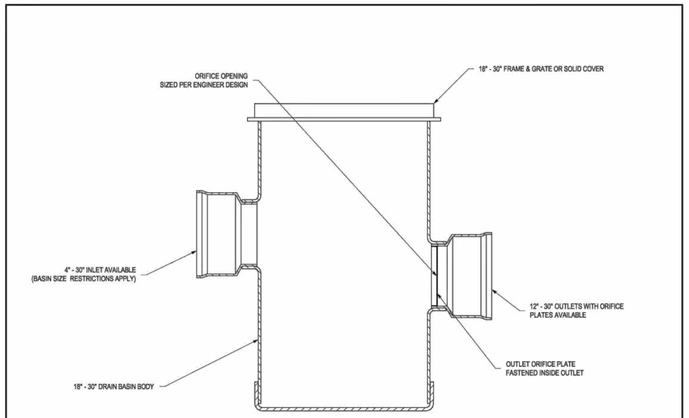
DRAWING #:	2360A	
DRAWN BY:	JCB	06.14.06
APPROVED BY:	JCB	06.26.07
REVISIONS:	NJP	06.14.07



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DATE	02-22-19		
REVISED BY	CCA	PROJECT NO./NAME	
DATE	09-04-13		
DWG SIZE	A	SCALE 1:12 SHEET 1 OF 1	

ADS Nyloplast — 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-3443 FAX (770) 932-3496 www.nyloplast-us.com

TITLE: 18 IN - 30 IN DRAIN BASIN WITH OUTLET ORIFICE PLATE

DWG NO. 7001-110-391 REV B

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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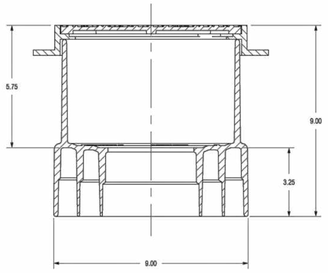
Miscellaneous Site Details

DATE: 12/18/2025
SHEET: 61 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\11 SBB Drawings\0-202434-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 DETAILS.dwg] [Plot Date: 12/18/2025 7:17:33 PM] [Last Saved: 12/18/2025 2:12:31 PM] - Loconnor]



1 - DIMENSIONS ARE FOR REFERENCE ONLY
ACTUAL DIMENSIONS MAY VARY
2 - DIMENSIONS ARE IN INCHES

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DRAWN BY	NMH	MATERIAL	
DATE	06-20-23		
APP'D BY	NMH	PROJECT NO./NAME	
DATE	06-20-23		
DWG SIZE	A	SCALE 1:3	SHEET 1 OF 1

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FAX (770) 932-2490
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TITLE: 8" UNIVERSAL INLINE DRAIN FOR PVC DIMENSIONAL DETAIL

DWG NO. 7003-110-172 REV A

S3.02 Single Wall Heavy Duty Pipe Specification

Scope

This specification describes 3- through 15-inch (75 to 375 mm) single wall high-density corrugated polyethylene heavy duty pipe for use in gravity-flow land drainage applications.

Pipe Requirements

Single wall high-density corrugated polyethylene heavy duty pipe shall have annular interior and exterior corrugations.

- 3- through 15-inch (75 to 375 mm) pipe shall meet ASTM F667.

Joint Performance

Joints for 3- to 15- inch (75 – 375 mm) shall be made with split or snap couplings. Standard connections shall meet the requirements of the ASTM F667. Gasketed connections shall incorporate a closed-cell synthetic expanded rubber gasket meeting the requirements of ASTM D1056 Grade 2A2. Gaskets, when applicable, shall be installed by the pipe manufacturer.

Fittings

Fittings shall conform to ASTM F667.

Material Properties

Pipe and fitting material shall be high density polyethylene conforming with the minimum requirements of cell classification 323410C or 333410C as defined and described in the latest version of ASTM D3350.

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in trafficked areas for 3- through 15-inch (75 to 375 mm) diameters shall be one foot (0.3 m). Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.03. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the installation guidelines.

Pipe Dimensions

Nominal Pipe I.D. in (mm)	3 (75)	4 (100)	5 (125)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)
Average Pipe I.D. in (mm)	3.6 (91)	4.6 (117)	5.8 (147)	7.0 (178)	9.5 (241)	12.0 (305)	14.5 (368)	18.0 (457)

* Pipe O.D. values are provided for reference purposes only, values stated for 12 through 60-inch are ±1 inch.
** All diameters available with or without perforations.
Contact a sales representative for exact values

8 IN - 36 IN MINIMUM ANGLE BETWEEN ADAPTERS

THIS CHART DOES NOT APPLY WHEN USING AN ENVIROHOOD OR ADD-A-BRANCH

ADAPTER SIZE	8" BASIN	10" BASIN	12" BASIN	15" BASIN	18" BASIN	24" BASIN	30" BASIN	36" BASIN
4" - 4"	70°	55°	50°	42°	35°	25°	24°	20°
4" - 6"	75°	70°	55°	47°	40°	29°	25°	24°
4" - 8"	100°	80°	65°	55°	45°	35°	28°	27°
4" - 10"	-	95°	75°	62°	52°	40°	32°	30°
4" - 12"	-	-	85°	70°	55°	45°	40°	33°
4" - 15"	-	-	-	80°	65°	51°	44°	39°
4" - 18"	-	-	-	-	78°	60°	50°	44°
4" - 24"	-	-	-	-	-	75°	62°	55°
4" - 30"	-	-	-	-	-	-	75°	73°
4" - 36"	-	-	-	-	-	-	-	74°
6" - 6"	90°	75°	65°	55°	44°	33°	30°	27°
6" - 8"	115°	85°	75°	63°	51°	39°	34°	30°
6" - 10"	-	105°	85°	70°	55°	43°	38°	33°
6" - 12"	-	-	95°	75°	63°	48°	45°	36°
6" - 15"	-	-	-	86°	72°	56°	49°	41°
6" - 18"	-	-	-	-	84°	63°	55°	47°
6" - 24"	-	-	-	-	-	77°	66°	52°
6" - 30"	-	-	-	-	-	-	75°	70°
6" - 36"	-	-	-	-	-	-	-	78°
8" - 8"	160°	90°	80°	70°	55°	44°	35°	33°
8" - 10"	-	115°	85°	70°	63°	48°	43°	36°
8" - 12"	-	-	105°	83°	70°	52°	48°	40°
8" - 15"	-	-	-	95°	78°	60°	55°	44°
8" - 18"	-	-	-	-	90°	70°	60°	50°
8" - 24"	-	-	-	-	-	82°	70°	62°
8" - 30"	-	-	-	-	-	-	80°	69°
8" - 36"	-	-	-	-	-	-	-	73°
10" - 10"	-	160°	90°	82°	70°	53°	48°	40°
10" - 12"	-	-	115°	85°	75°	58°	50°	43°
10" - 15"	-	-	-	102°	85°	65°	58°	47°
10" - 18"	-	-	-	-	97°	72°	65°	53°
10" - 24"	-	-	-	-	-	88°	75°	65°
10" - 30"	-	-	-	-	-	-	85°	72°
10" - 36"	-	-	-	-	-	-	-	84°
12" - 12"	-	-	150°	90°	82°	64°	56°	46°
12" - 15"	-	-	-	112°	87°	69°	60°	51°
12" - 18"	-	-	-	-	102°	78°	68°	57°
12" - 24"	-	-	-	-	-	92°	80°	68°
12" - 30"	-	-	-	-	-	-	90°	78°
12" - 36"	-	-	-	-	-	-	-	86°
15" - 15"	-	-	-	150°	90°	77°	69°	55°
15" - 18"	-	-	-	-	110°	84°	75°	61°
15" - 24"	-	-	-	-	-	98°	85°	72°
15" - 30"	-	-	-	-	-	-	96°	85°
15" - 36"	-	-	-	-	-	-	-	94°
18" - 18"	-	-	-	-	150°	96°	78°	67°
18" - 24"	-	-	-	-	-	108°	88°	75°
18" - 30"	-	-	-	-	-	-	102°	87°
18" - 36"	-	-	-	-	-	-	-	100°
24" - 24"	-	-	-	-	-	150°	90°	85°
24" - 30"	-	-	-	-	-	-	115°	99°
24" - 36"	-	-	-	-	-	-	-	112°
30" - 36"	-	-	-	-	-	-	150°	119°
30" - 36"	-	-	-	-	-	-	-	134°
36" - 36"	-	-	-	-	-	-	-	165°

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DATE	3-10-00		
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DATE	4-16-19		
DWG SIZE	A	SCALE 1:1	SHEET 1 OF 1

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TITLE: 8 IN - 36 IN MINIMUM ANGLE BETWEEN ADAPTERS

DWG NO. 7001-110-012 REV A

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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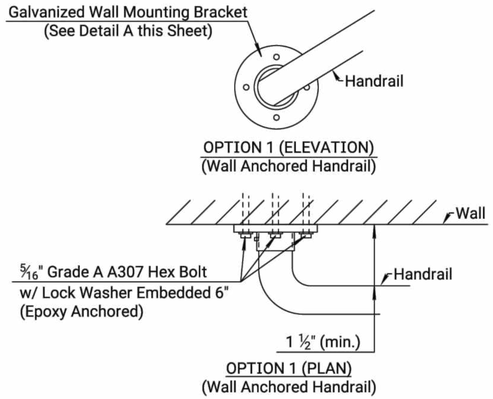
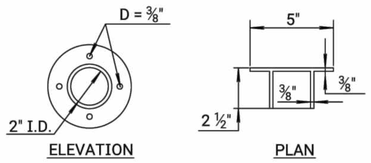
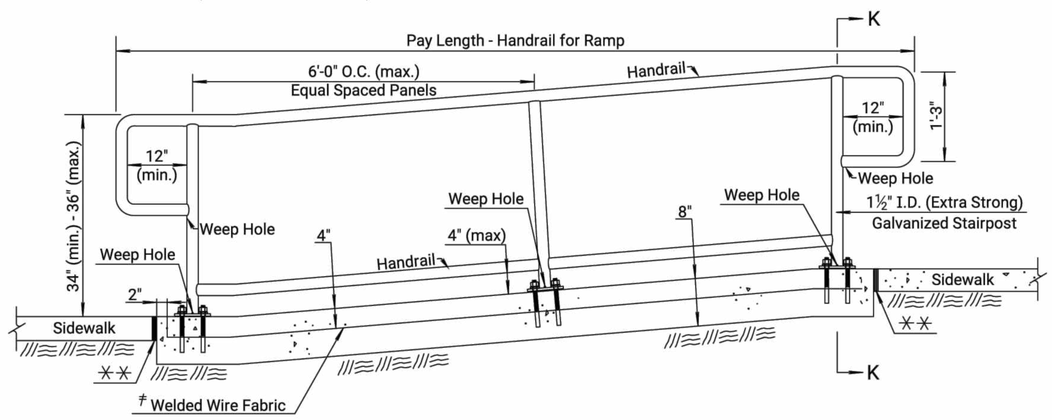
Miscellaneous Site Details

DATE: 12/18/2025
SHEET: 62 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 DETAILS.dwg] [Plot Date: 12/18/2025 7:17:36 PM] [Last Saved: 12/18/2025 2:12:31 PM] [Author: Loconnor]

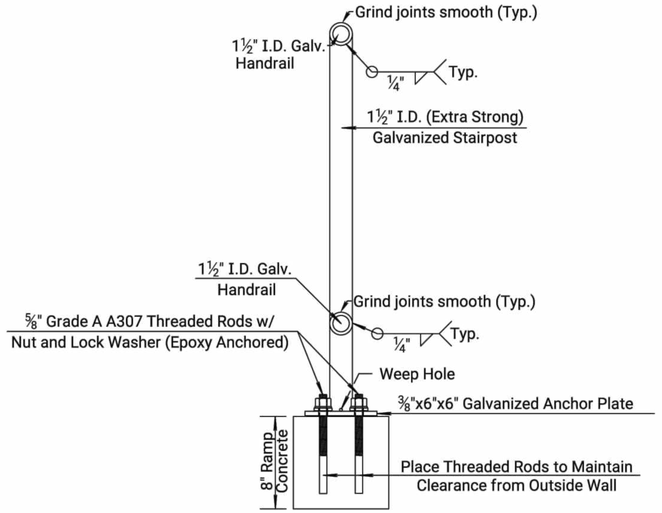




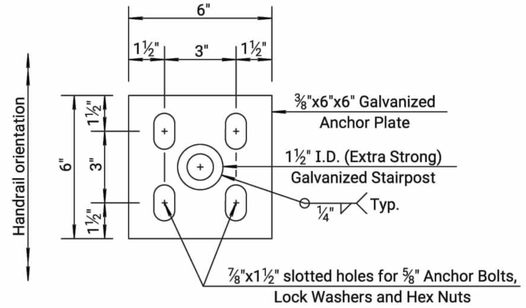


HANDRAIL WITH RAMP (ELEVATION)

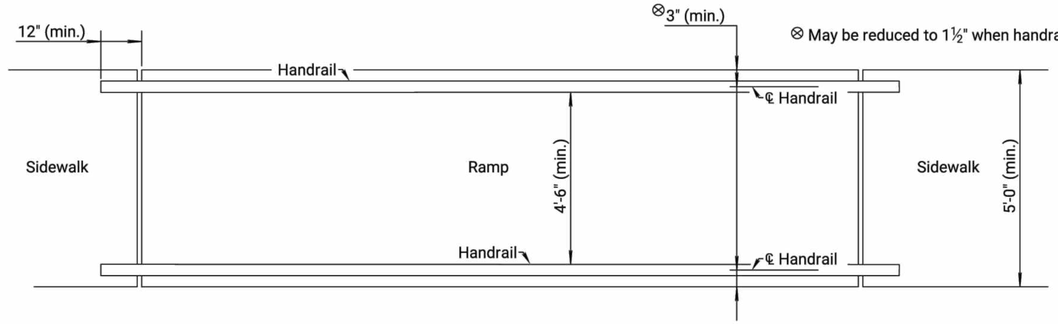
Note: Handrail with floor-anchored posts shown here. For wall anchored handrail see Option 1 this sheet along with relevant details. For handrail with steps details see Standard Drawing RD725B.



SECTION K-K



PLAN- ANCHOR PLATE



⊗ May be reduced to 1½" when handrail is wall mounted.

HANDRAIL WITH RAMP (PLAN)

GENERAL NOTES

Excavation for construction of Ramps will not be paid for directly, but will be subsidiary to the bid item "Concrete (Grade 3.0) (AE)".

Handrail is required on ramps with a rise greater than 6 inches, except for curb ramps at crossing locations. Do not use handrail for curb ramps. For a rise less than or equal to 6 inches handrail is optional. Handrail, if needed, is required on both sides of the ramp.

Fabricate handrail from 1½" I.D. Galvanized Steel Pipe for Rail and 1½" I.D. Galvanized Steel Pipe (Extra Strong) for floor-anchored posts. Handrail consists of equal spaced panels not to exceed 6'-0" O.C. (max.). Use galvanized bolts and hardware for fabrication or installation of handrail. Ground smooth all welded connections and re-galvanize any areas where the spelter coating has been damaged. Field welding is not permitted.

Details shown are typical. Shop drawings for Design shown and Alternate designs need to be submitted to the State Bridge Office for approval prior to handrail fabrication.

Required handrail materials, incidentals and labor are paid for under the bid item "Handrail". Payment for handrail is bid on a per linear foot basis measured as shown on this drawing.

ǂMacro-Fiber reinforcement may be used in lieu of welded wire. See KDOT's Standard Specifications for details.

The railing shown on this sheet is not intended for use where railing for fall protection is required.

⁑ Non-Extruding Type B joint filler or approved equivalent.

The wall mounting bracket shown on this sheet may be substituted with an approved equivalent as approved by the Engineer.

KDOT - "RD725C"

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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Standard Handrail Details

DATE: 12/18/2025
SHEET: 63 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

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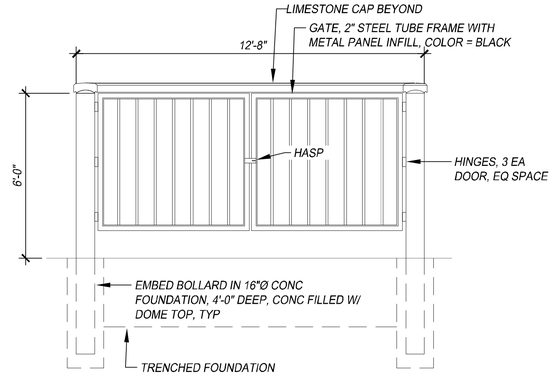
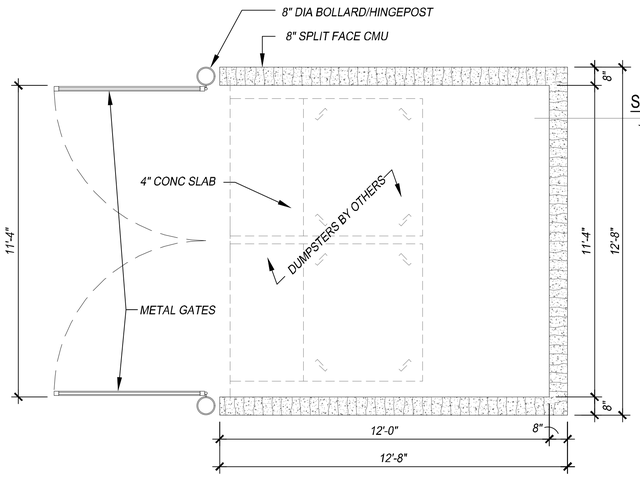
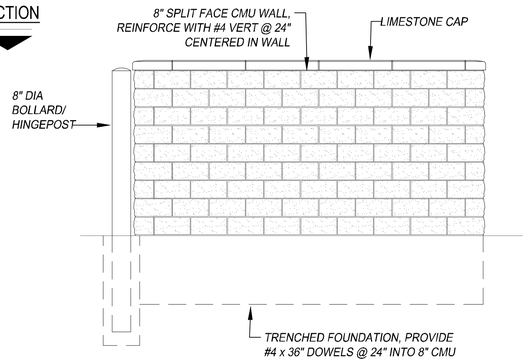


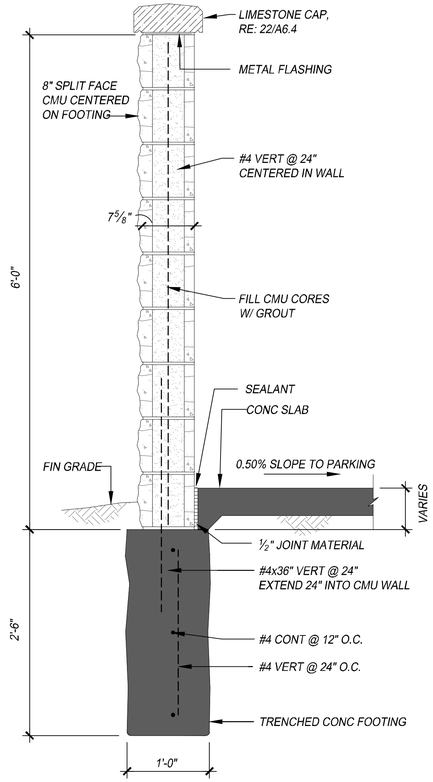
FRONT ELEVATION



PLAN



SIDE ELEVATION



SECTION

TYPICAL TRASH ENCLOSURE DETAILS

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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Multi-Family Residential Development
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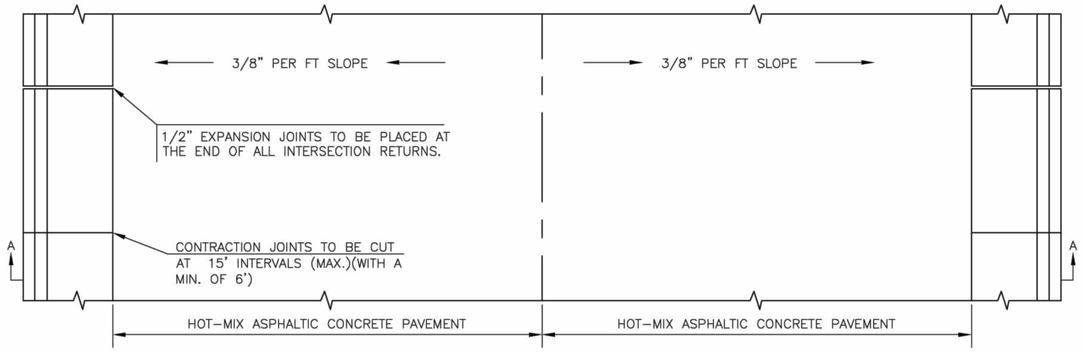
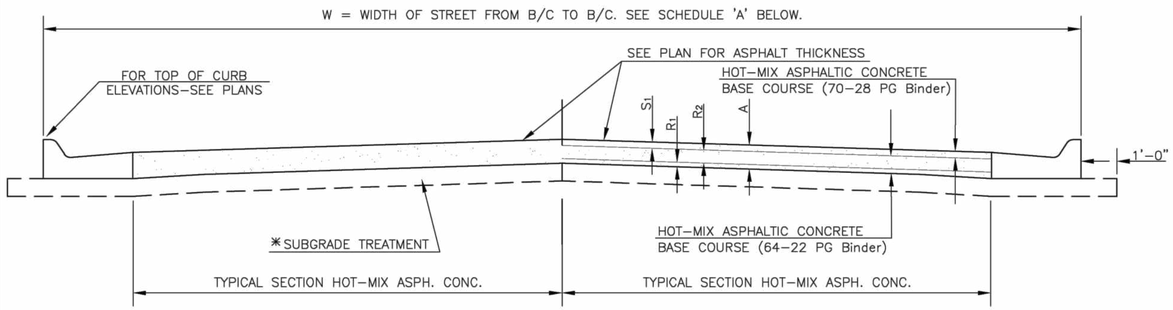
Standard Dumpster Enclosure Details

DATE: 12/18/2025
SHEET: 64 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 DETAILS.dwg] [Plot Date: 12/18/2025 7:17:37 PM] [Last Saved: 12/18/2025 2:12:31 PM] [Author: Loconnor]



PLAN



TYPICAL SECTION HOT-MIX ASPH. CONC. PAVE
SECTION A-A

PAVEMENT DETAILS

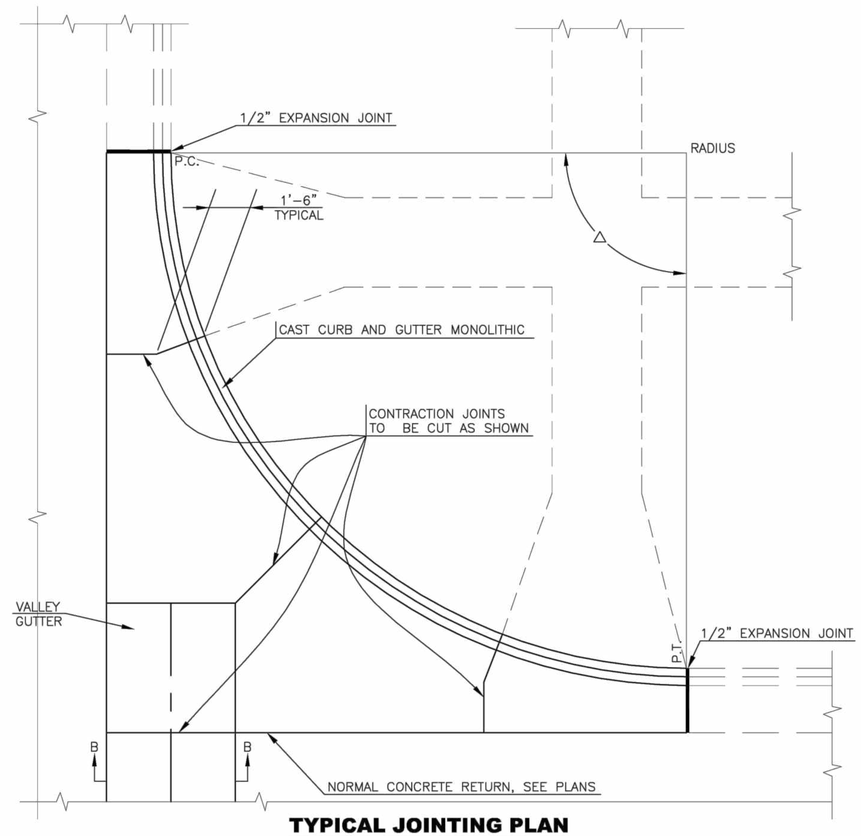
*SUBGRADE TREATMENT PER GEOTECHNICAL REPORT

SCHEDULE 'A'						
STREET	FROM	TO	W	R_1	R_2	A

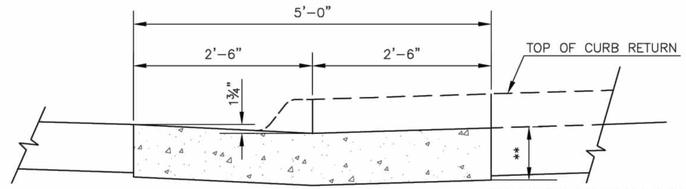
MINIMUM PAVEMENT THICKNESS					
STREET CLASSIFICATION	A	R_1	R_2	R_3	S_1
LOCAL	8"	3"	3"	N/A	2"
COLLECTOR	9"	4"	3"	N/A	2"
ARTERIAL	11 ¾"	3 ¾"	3"	3"	2"

NOTE: R denotes base courses, S denotes surface course

NOTE: THE CITY ENGINEER MAY REQUIRE FURTHER ANALYSIS TO DETERMINE PAVEMENT THICKNESS FOR SPECIFIC LOCATIONS.



TYPICAL JOINTING PLAN



SECTION B-B

**THICKNESS OF VALLEY GUTTER TO MATCH ABUTTING PAVEMENT THICKNESS OR 8" MINIMUM.

VALLEY GUTTER DETAILS

NOTES:
1. PAY LENGTH OF VALLEY GUTTER IS FROM P.C. TO P.C. ACROSS STREET INTERSECTION.
2. PAY WIDTH OF VALLEY GUTTER IS 5'.
3. PAY AREA OF VALLEY GUTTER IS PAY LENGTH X PAY WIDTH (SQ. YD.)
4. PAY CURB AND GUTTER FROM P.C. TO P.T. AROUND RADIAL.
5. NO ADDITIONAL PAYMENT FOR OTHER WORK AND MATERIALS REQUIRED TO COMPLETE RETURN AS DETAILED. SEE PLANS FOR TYPE OF RETURN TO BE CONSTRUCTED.
6. SAND IS NOT AN APPROVED FILL OR SUBGRADE MATERIAL.
7. WHERE VALLEY GUTTER ABUTS CONCRETE PAVEMENT, THE VALLEY GUTTER SECTION SHALL BE TIED TO THE CONCRETE PAVEMENT WITH 1/2" x 3'–0" DEFORMED TIE BARS AT 5'–0" CENTERS.
8. WHERE VALLEY GUTTER IS CONSTRUCTED ADJACENT TO NEW ASPHALT PAVEMENT, THE CONTRACTOR MAY, AT THEIR OPTION, CONSTRUCT A CONTINUOUS ASPHALT PAVEMENT SECTION THROUGH THE VALLEY GUTTER AREA, FOLLOWED BY SAWCUTTING AND REMOVING THE ASPHALT STRIP FOR CONSTRUCTION OF THE VALLEY GUTTER SECTION. NO PAY ADJUSTMENT SHALL BE MADE FROM PLAN QUANTITIES FOR THE ADDITIONAL ASPHALT PAVEMENT THAT IS REMOVED. SAWCUTS SHALL BE FULL DEPTH. THE SUBGRADE MUST MEET COMPACTION REQUIREMENTS IN THE REMOVAL AREA PRIOR TO PLACEMENT OF THE VALLEY GUTTER.

NO.	DATE:	REVISION	BY:	APP'D
4	July 2025	Added minimum pavement thicknesses	JAH	MS
3	March 2013	Added min jt. spacing & made bar size"	DHS	SB
2	Dec. 2009	Added to Valley Gutter Details	DHS	SB
1	Feb. 2008	Mod. Typ. Jt. Plan & Pvmt. Det.	DHS	SB

DRAWN BY: rm/mc
APP'D BY: R. Timothy Kemp

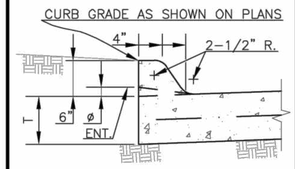
SHAWNEE COUNTY, KANSAS
PUBLIC WORKS DEPARTMENT
1515 NW SALINE
TOPEKA, KS 66618
(785) 233-7702

TOPEKA Public Works ENGINEERING
620 SE MADISON St. • 2nd Floor • TOPEKA, KS 66607
Phone: (785) 368-3842 • Fax: (785) 368-3881

STANDARD DETAILS

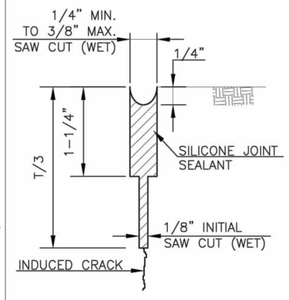
ASPHALT CONCRETE PAVEMENT DETAILS
(DT-001)

DATE: 12/18/2025
SHEET: 65 OF 87
281381.00, 501144.00,
PROJ.: 401139.00

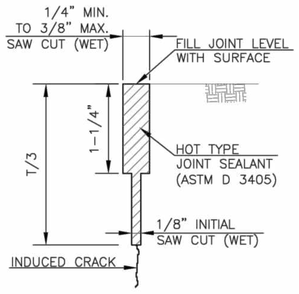


DETAIL A

6" INTEGRAL CURB
ø 1-1/2" FOR DRIVE ENTRANCES AND 3/4" FOR SIDEWALK RAMPS.



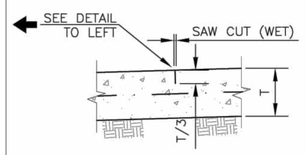
SILICONE JOINT OPTION 1

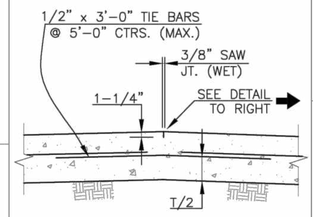


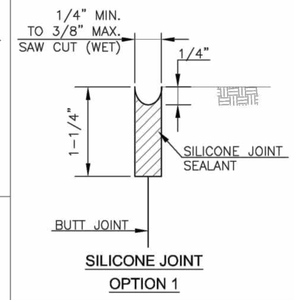
HOT TYPE JOINT OPTION 2

DETAIL B

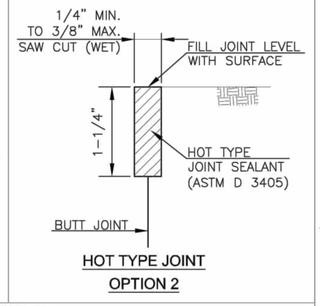
TRANSVERSE AND LONGITUDINAL CONTRACTION JOINTS







SILICONE JOINT OPTION 1

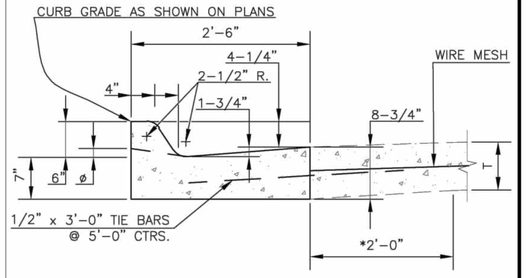


HOT TYPE JOINT OPTION 2

DETAIL C

TRANSVERSE AND LONGITUDINAL BUTT JOINTS

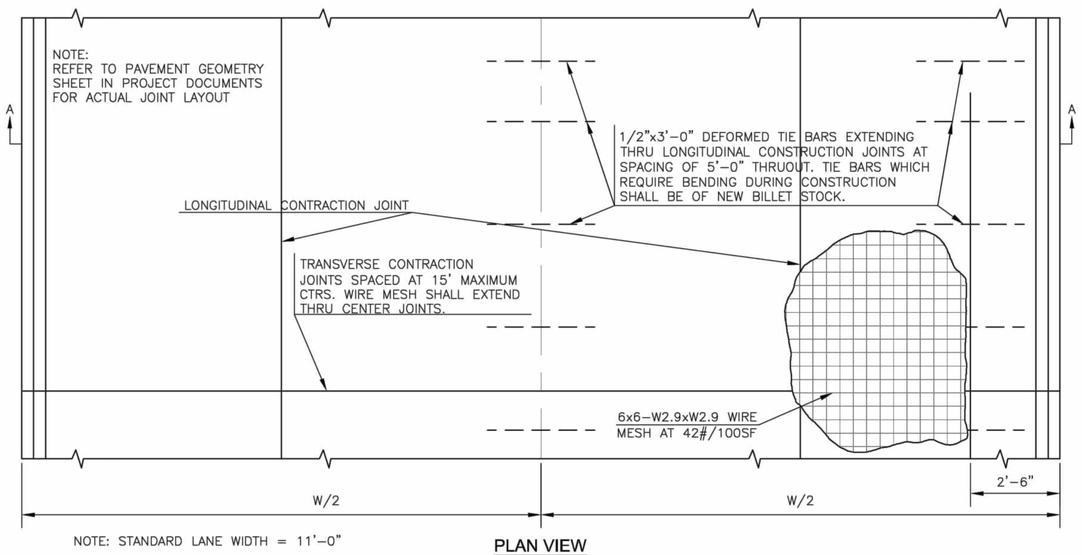
NOTE:
AT THE BEGINNING AND END OF THE PAVEMENT ON ANY GIVEN PROJECT A CONSTRUCTION JOINT AS OUTLINED IN THE STANDARD SPECIFICATIONS AND SHOWN ABOVE SHALL BE USED UNLESS THE PAVEMENT ABUTS A RIGID SURFACE. THE HEADER SHALL BE REMOVED AND THE TIE BARS BENT INTO THE GROOVE AT RIGHT ANGLES TO THE CENTERLINE OF THE PAVEMENT.



DETAIL D

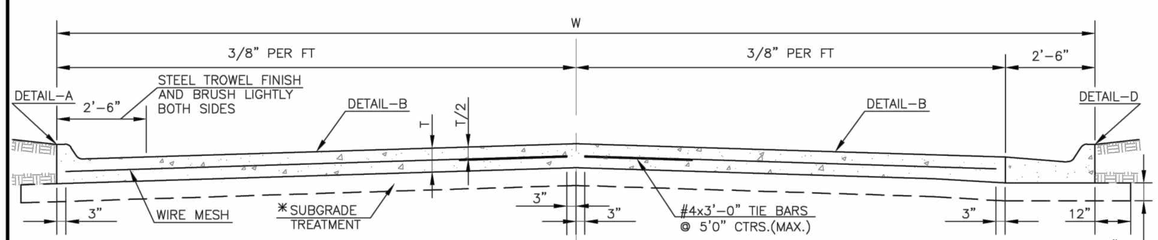
* THE CONTRACTOR HAS THE OPTION OF MAINTAINING T OR TRANSITIONING AS SHOWN AT NO ADDITIONAL COST TO OWNER.

ø 1-1/2" FOR DRIVE ENTRANCES AND 3/4" FOR SIDEWALK RAMPS.



NOTE: STANDARD LANE WIDTH = 11'-0"

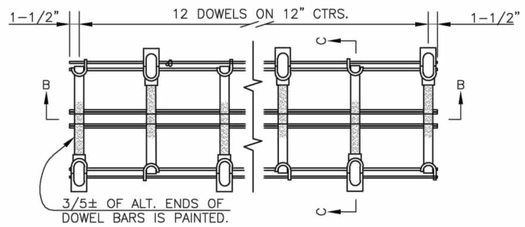
PLAN VIEW



TYPICAL PAVEMENT SECTION A-A

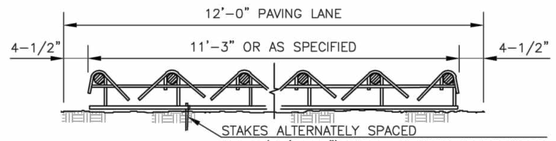
*SUBGRADE TREATMENT PER GEOTECHNICAL REPORT.

NOTE:
COMBINED CURB AND GUTTER OR INTEGRAL CURB MAY BE USED WITH CONCRETE PAVEMENT CONSTRUCTION AS DETERMINED BY THE CITY/COUNTY ENGINEER. SEE TYPICAL PAVEMENT SECTION ABOVE.

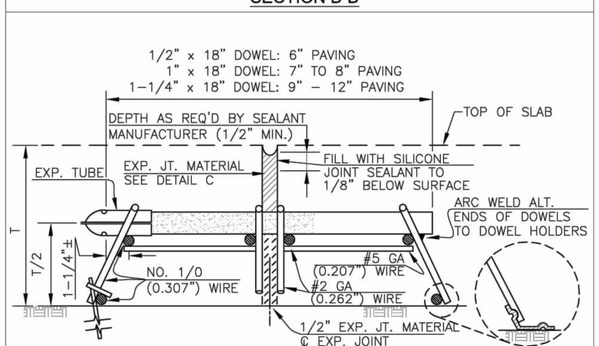


PLAN VIEW OF WELDED EXPANSION JOINT ASSEMBLY

NOTES:
1. DOWELS, PLAIN ROUND PER A.S.T.M. A-615, GRADE 40 OR AS SPECIFIED.
2. UNIT-WIRED TOGETHER FOR QUICK DISASSEMBLE AND PLACEMENT OF EXPANSION AND FILLER IN FIELD.
3. ALL WIRE SIZES SHOWN ARE MINIMUM. DOWELS, PLAIN ROUND PER A.S.T.M. A-615,GRADE



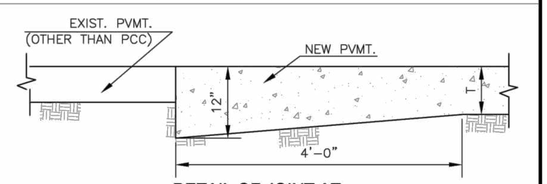
SECTION B-B



SECTION C-C

DETAIL OF LAP WIRE MESH

NOTE:
THE LAP WIRE SHALL EXTEND BEYOND THE FIRST TRANSVERSE WIRE OF EACH SHEET. THE SHEET SHALL BE WIRED SECURELY AT THE EDGES AND AT INTERVALS NOT TO EXCEED 2'-6" FOR THE FULL WIDTH OF THE SHEET. APPROXIMATE WEIGHT OF WIRE MESH = 42 LBS./100 SQ. FT. OTHER METHODS FOR FASTENING THE SHEETS OF WIRE MESH AT THE LAPS MAY BE USED WITH THE APPROVAL OF THE ENGINEER.



DETAIL OF JOINT AT EXISTING PAVEMENT

NOTES:
1. SAND IS NOT AN APPROVED FILL OR SUBGRADE MATERIAL.
2. WHERE NEW PAVEMENT ABUTS EXISTING PCC PAVEMENT, THICKENED SECTION SHALL BE ELIMINATED AND 1" DIA. SMOOTH DOWELS SHALL BE PLACED @ 12" CENTERS. THE DOWELS SHALL BE ARRANGED SIMILAR TO THE DETAIL FOR "FULL PANEL REPAIR & UTILITY CUTS" SHOWN ON MISCELLANEOUS DETAILS I (DT-017).

MINIMUM PAVEMENT THICKNESS (T)	
ROAD CLASSIFICATION	PAVEMENT THICKNESS (T)
LOCAL	6"
COLLECTOR	7"
ARTERIAL	9"

NOTE: THE CITY ENGINEER MAY REQUIRE FURTHER ANALYSIS TO DETERMINE T FOR SPECIFIC LOCATIONS.

NO.	DATE:	REVISION	BY:	APP'D
6	July 2025	Added minimum pavement thicknesses	JAH	MS
6	June 2018	Eliminated sealing butt joint at curb toe	DHS	JVH
5	March 2013	Made bar size " & added ref. to DT-017	DHS	SB
4	Dec. 2012	Changed to tie bars at Detail D	DHS	SB
3	March 2010	Eliminated keyed joint at Typical Section	DHS	SB
2	Dec. 2009	Eliminated keyed joints	DHS	SB
1	Feb. 2008	Mod. Det.'s B,C&D and Sect.'s A-A&D-D	DHS	SB

DRAWN BY: rm/mc

APP'D BY: R. Timothy Kaw

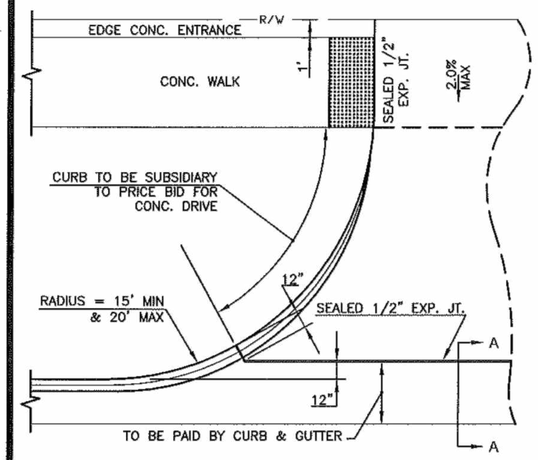
SHAWNEE COUNTY, KANSAS
PUBLIC WORKS DEPARTMENT
1515 NW SALINE
TOPEKA, KS 66618
(785) 233-7702

TOPEKA Public Works
ENGINEERING
620 SE MADISON St. • 2nd Floor • TOPEKA, KS 66607
Phone: (785) 368-3842 • Fax: (785) 368-3881

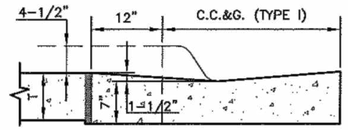
STANDARD DETAILS

CONCRETE PAVEMENT DETAILS
(DT-002)

DATE: 12/18/2025
SHEET: 66 OF 87
281381.00, 501144.00,
PROJ.: 401139.00

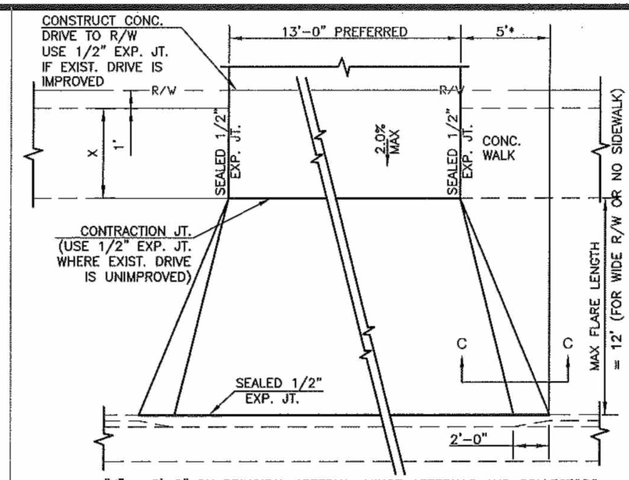


COMMERCIAL DRIVE APPROACH



SECTION A - A

T=8" NON-REINFORCED FOR COMMERCIAL DRIVE, ALLEY APPROACH, AND SIDEWALK IN DRIVE ENTRANCE.

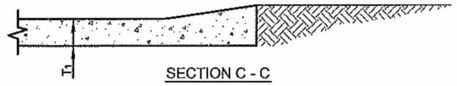


"X" = 5'-0" ON PRINCIPAL ARTERIAL, MINOR ARTERIALS AND COLLECTORS
"X" = 4'-0" ON SUB-COLLECTORS AND LOCALS

TYPICAL PRIVATE DRIVE APPROACH

NOTES:
1. A SPECIAL DETAIL WILL BE PROVIDED WHEN SIDEWALK IS CLOSER THAN 6'-0" FROM BACK OF CURB.
2. THEORETICAL CURB HEIGHT OF 6" ABOVE ℄ SHALL BE OBTAINED IN ENTRANCE PAVEMENT.

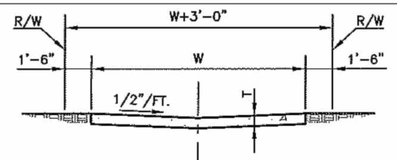
* FLARE SHALL BE 5 FEET WIDE IN NEW CONSTRUCTION. VARIANCES MAY BE MADE WITH APPROVAL OF THE CITY ENGINEER IN SPECIAL CIRCUMSTANCES FOR THE REPLACEMENT OF EXISTING DRIVEWAYS.



SECTION C - C

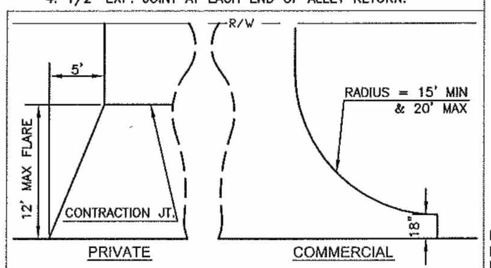
T1=6" FOR RESIDENTIAL DRIVE APPROACH AND SIDEWALK IN DRIVE ENTRANCE

ALLEY APPROACH

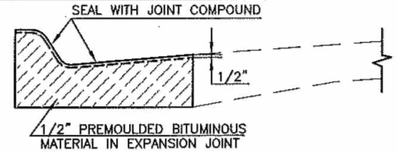


SECTION B - B

NOTES:
1. T=7" REINFORCED CONCRETE
2. WIDTH OF W WILL BE USED THROUGHOUT ON ALL ALLEY PAVING PROJECTS.
3. ALLEY RETURNS SHALL BE THE SAME THICKNESS AS THE ADJACENT STREET THICKNESS.
4. 1/2" EXP. JOINT AT EACH END OF ALLEY RETURN.

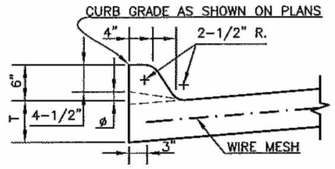


DRIVE APPROACHES ON AN UNIMPROVED ROADWAY

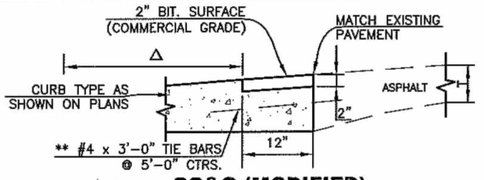


CURB AND GUTTER EXPANSION JOINT DETAILS

NOTES:
1. 1/2" EXPANSION JOINTS TO BE PLACED AT THE END OF ALL INTERSECTION RETURNS.
2. SAND IS NOT AN APPROVED FILL OR SUBGRADE MATERIAL.
3. ALL EXPANSION JOINTS SHALL BE SEALED WITH APPROVED MATERIAL.



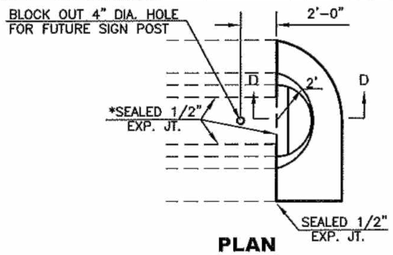
6" INTEGRAL CURB



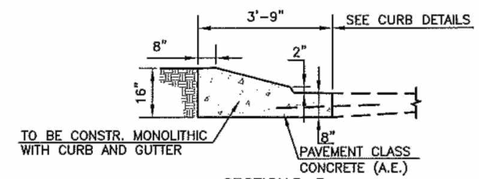
CC&G (MODIFIED)

NOTE:
CURB AND GUTTER ABUTTING EXISTING ASPHALT

Δ DIMENSION IS FROM BACK OF CURB TO TOE, SEE APPROPRIATE DETAIL FOR CURB TYPE AS SHOWN ON PLANS



PLAN

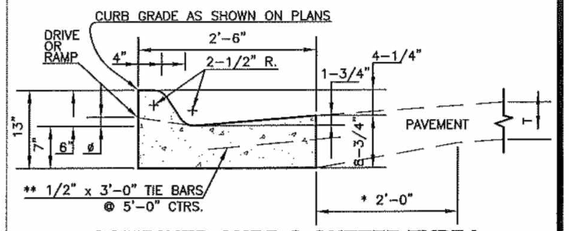


SECTION D - D

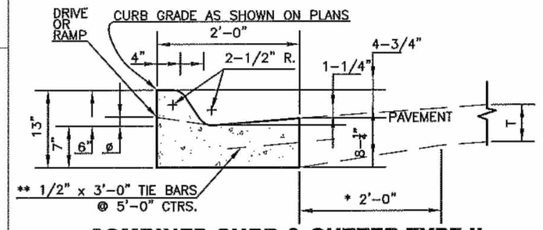
SOLID NOSE DETAILS

NOTE:
PAVEMENT CLASS CONCRETE (AE) NEEDED TO COMPLETE THE MEDIAN NOSE SHALL BE SUBSIDIARY TO THE BID ITEM FOR COMBINED CURB AND GUTTER TYPE III.

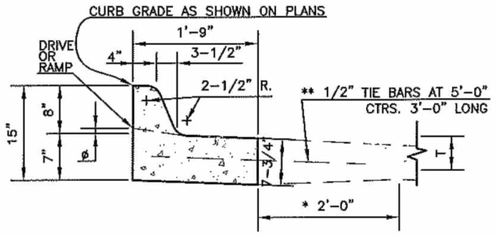
* OMIT SEALED 1/2" EXPANSION JOINT WHEN SURFACE MATERIAL USED IN MEDIAN IS OTHER THAN CONCRETE.



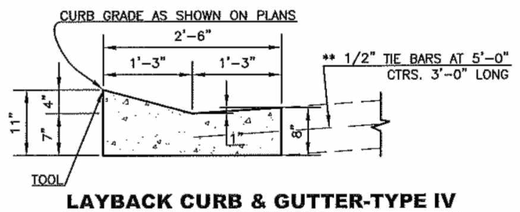
COMBINED CURB & GUTTER-TYPE I



COMBINED CURB & GUTTER-TYPE II



COMBINED CURB & GUTTER-TYPE III



LAYBACK CURB & GUTTER-TYPE IV

NOTES:
1. USE OF LAYBACK CURB AND GUTTER IS RESTRICTED TO STREET CLASSIFICATION OF SUB-COLLECTOR AND LOCAL. LAYBACK CURB AND GUTTER SHALL NOT BE USED IN INTERSECTION CURB RETURNS.
2. FOR CURB AND GUTTER ABUTTING EXISTING ASPHALT, REFER TO CC&G MODIFIED DETAIL

* THE CONTRACTOR HAS THE OPTION OF MAINTAINING OR TRANSITIONING AS SHOWN AT NO ADDITIONAL COST.

**THE TIE BARS MAY BE ELIMINATED WITH ASPHALTIC CONCRETE PAVEMENT CONSTRUCTION.

ø 1-1/2" FOR DRIVE ENTRANCES AND 3/4" FOR SIDEWALK RAMP

NO	DATE:	REVISION	BY:	APP'D
5	March 2013	C&G payment @ alley appr. & bars to "	DHS	SB
4	Dec. 2012	Changed to tie bar from rebar	DHS	SB
3	March 2010	Eliminated keyed jt. at Com. Drive Appr.	DHS	SB
2	Dec. 2009	Added Dr. Appr. on Unimpr. Rdwy., added flare verbage, mod. S/W x-slope & remv. keyed joints from C & G.	DHS	SB
1	Feb. 2008	Mod. Com. Dr. & Alley Appr.	DHS	SB

DRAWN BY: rm/mc
APP'D BY: K Chmelka-King

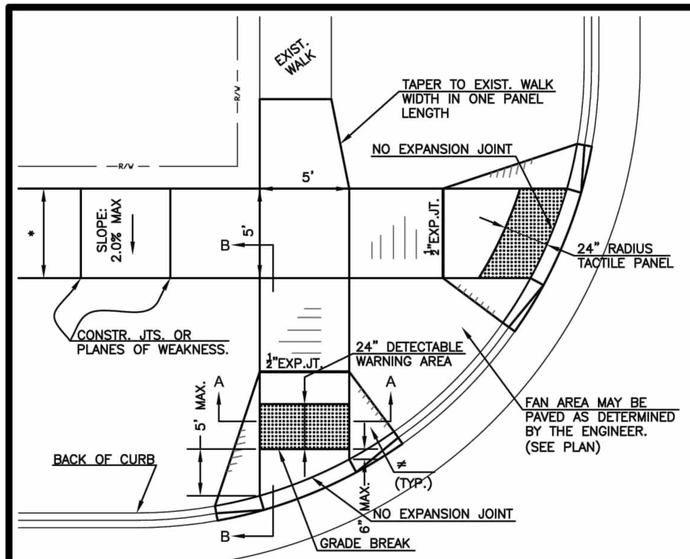
SHAWNEE COUNTY, KANSAS
PUBLIC WORKS DEPARTMENT
1515 NW SALINE
TOPEKA, KS 66618
(785) 233-7702

TOPEKA Public Works
ENGINEERING
620 SE MADISON St. • 2nd Floor • TOPEKA, KS 66607
Phone: (785) 368-3842 • Fax: (785) 368-3881

STANDARD DETAILS

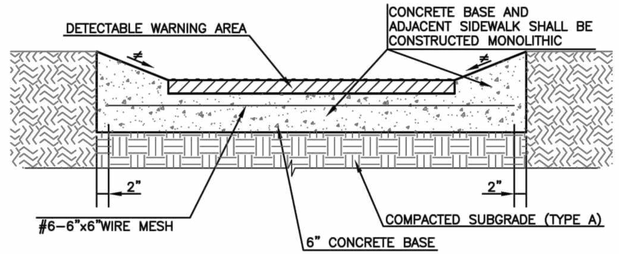
CURB & GUTTER AND APPROACH DETAILS
(DT-003)

DATE: 12/18/2025
SHEET 67 OF 87
PROJ.: 281381.00, 501144.00, 401139.00



SIDEWALK DETAILS

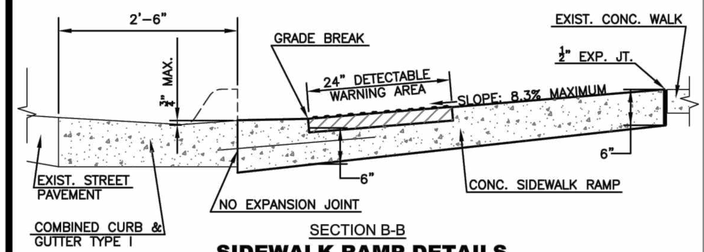
NOTES:
1. FAN AREA PAVEMENT TO BE PAID FOR AS 6" CONCRETE.
2. EXPANSION JOINTS SHALL BE THE CONSTRUCTION LIMITS OF 6" CONCRETE IN RAMP.
* 5' – PRINCIPAL ARTERIALS, MINOR ARTERIALS, COLLECTORS
4' – SUB–COLLECTORS, LOCALS
≠ 10:1 MAXIMUM AT PAVED FAN AREA, 4:1 AT STANDARD RAMP



SECTION A-A

TYPICAL SECTION OF DETECTABLE WARNING SYSTEM

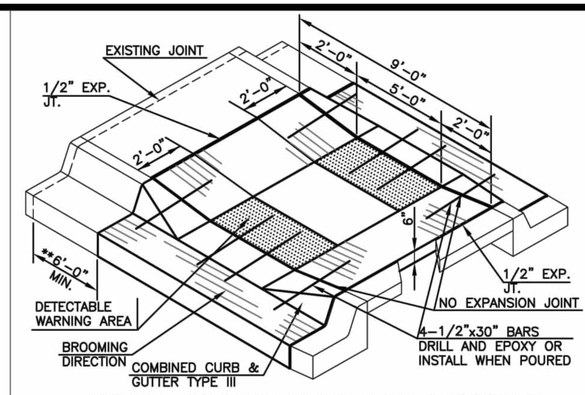
≠ 10:1 MAXIMUM AT PAVED FAN AREA, 4:1 AT STANDARD RAMP



SECTION B-B

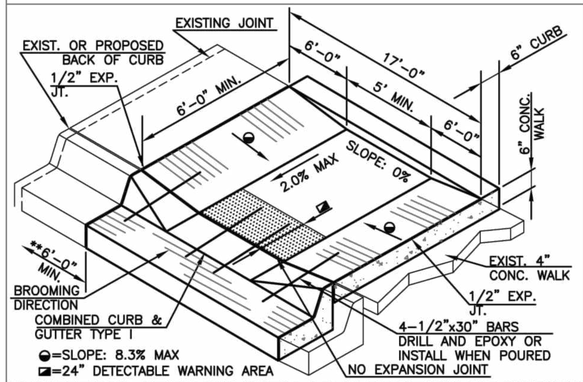
SIDEWALK RAMP DETAILS

NOTES:
1. RAMP TO BE PAID FOR AS SIDEWALK RAMP. CURB AND GUTTER TO BE INCLUDED IN THE PRICE BID FOR COMBINED CURB AND GUTTER TYPE I.
2. SIDEWALK RAMP SHALL OBTAIN A MINIMUM OF 6" ABOVE ℄ FOR NEW SIDEWALK CONSTRUCTION.



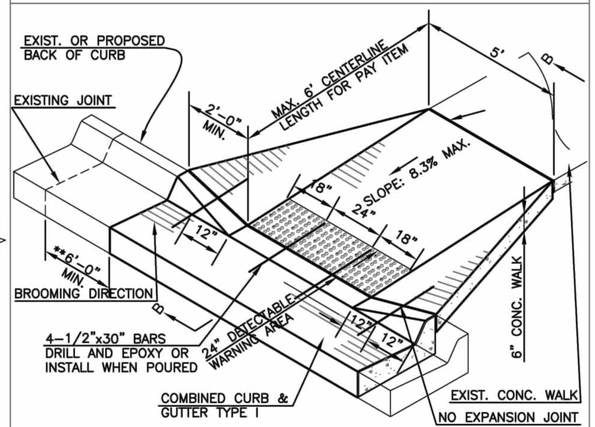
ISOMETRIC OF MEDIAN RAMP CROSSING

NOTE:
MEDIAN RAMP CROSSING SHALL BE BUILT AT LOCATIONS SHOWN ON THE PLANS. CONCRETE MEDIAN CROSSINGS TO BE PAID FOR AS SIDEWALK RAMP.

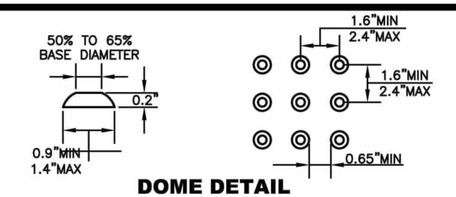


ISOMETRIC OF RAMP WITH ADJACENT WALK SHOWN

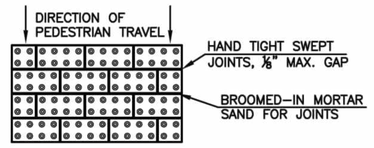
** IF CURB AND GUTTER AND/OR SIDEWALK TO BE REMOVED IS WITHIN 6'–0" OF AN EXISTING JOINT, REMOVE CURB AND GUTTER AND/OR SIDEWALK BACK TO EXISTING JOINT. JOINTS ARE TO BE PLACED AS PER SECTION 5, SUBSECTION 8 OF CITY/COUNTY STANDARD TECHNICAL SPECIFICATIONS.



ISOMETRIC OF RAMP WITH PERPENDICULAR WALK SHOWN

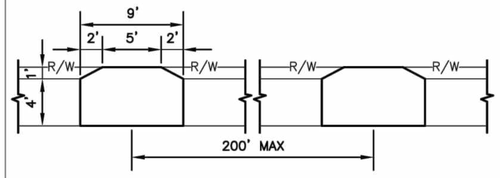


DOME DETAIL

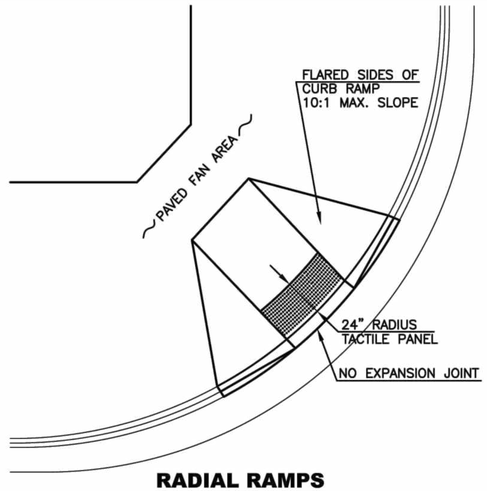


RUNNING BOND/PARALLEL ALIGNMENT AND JOINT DETAIL

Installation pattern for detectable warning paving bricks

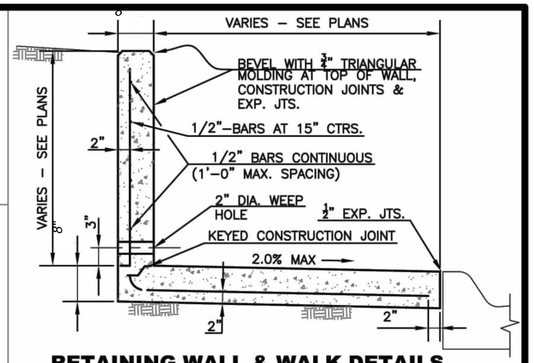


TYPICAL WHEELCHAIR PASSING ZONE FOR SUB-COLLECTOR AND LOCAL STREETS



RADIAL RAMPS

NOTE:
RADIAL RAMPS WILL NOT BE PERMITTED IN NEW TRAFFICWAY IMPROVEMENT PROJECTS, AND WILL ONLY BE ALLOWED AS DIRECTED BY THE ENGINEER IN RETRO–FIT CONSTRUCTION WHEN PERPENDICULAR RAMPS CANNOT BE CONSTRUCTED.



RETAINING WALL & WALK DETAILS

NOTE:
►THIS TYPE OF WALL MAY BE USED TO A MAXIMUM HEIGHT OF 3'–0".
►WEEP HOLES AT A MAXIMUM OF 15' CENTER TO CENTER WITH COARSE AGGREGATE PLACED AT EACH WEEP HOLE 18" IN ALL DIRECTIONS ABOVE FLOW LINE.
►CONCRETE SHALL BE CLASS "A" THROUGHOUT WITH GRADE 40 REINFORCING.
►PLACE 1/2" HARDWARE SCREEN AT WEEP HOLES TO RETAIN AGGREGATE.

SIDEWALK (RESIDENTIAL AND COMMERCIAL) CONSTRUCTION

►SIDEWALKS SHALL BE CONSTRUCTED USING 4" THICK CONCRETE, EXCEPT AT DRIVEWAY CROSSINGS, WHERE IT SHALL BE 6" THICK PAVEMENT CLASS CONCRETE, 4000 PSI (RESIDENTIAL) OR 8" THICK PAVEMENT CLASS CONCRETE, 4000 PSI (COMMERCIAL).
►FINE GRADING MATERIAL SHALL BE CRUSHED ROCK AB–3. ALLOWABLE MAXIMUM COMPACTED THICKNESS OF AB–3 SHALL BE 6".
►SAND IS NOT AN APPROVED FILL, SUBGRADE, OR FINE GRADING MATERIAL UNDER PAVEMENT, SIDEWALKS, RAMPS, OR DRIVEWAYS.
►ALL SIDEWALKS AND RAMPS WITHIN PUBLIC RIGHTS–OF–WAY SHALL MEET THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG).

SPECIAL REQUIREMENTS FOR SIDEWALK RAMP CONSTRUCTION

►SIDEWALK RAMPS SHALL BE CONSTRUCTED USING 6" THICK PAVEMENT CLASS CONCRETE (4000 PSI) AS DETAILED IN THE STANDARD TECHNICAL SPECIFICATIONS.
►EXPANSION JOINTS SHALL BE SEALED WITH APPROVED JOINT SEALANT WHERE SIDEWALKS AND DRIVE ENTRANCES (COMMERCIAL AND RESIDENTIAL) INTERSECT WITH PAVEMENT CURB.
►DETECTABLE WARNING SYSTEMS SHALL MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS.
►THE TRUNCATED DOME AREA SHALL BE A MAXIMUM WIDTH OF THE SIDEWALK RAMP OR MEDIAN RAMP. WIDER MEDIAN ISLANDS WILL RESULT IN A GAP BETWEEN THE TRUNCATED DOME AREAS.
►THE TRUNCATED DOME AREA SHALL BE A CONTRASTING COLOR TO THE ADJACENT SURFACES.
►DETECTABLE WARNING PANELS SHALL NOT BE CUT. BRICKS MAY BE SAW CUT BUT ANY BRICK SHALL NOT BE LESS THAN 25% OF A FULL BRICK.
►THE ADA SOLUTIONS CAST IN PLACE DETECTABLE WARNING PANELS, ARMORCAST DETECTABLE WARNING PANELS, PAVESTONE DETECTABLE WARNING PAVERS OR APPROVED EQUAL SHALL BE USED IN ALL SIDEWALK RAMPS.
►DETECTABLE WARNING SYSTEMS SHALL BE PLACED ALONG THE BACK OF CURB OR AT A MAXIMUM DISTANCE OF 5 FEET FROM BACK OF CURB.
►TRUNCATED DOMES SHALL BE ALIGNED WITH THE DIRECTION OF TRAVEL, OR MAY BE PLACED ON RADIAL LINES IN RADIUS TACTILE PATTERNS.
►MORTAR SAND SHALL MEET THE REQUIREMENTS IN THE STANDARD SPECIFICATIONS.
►THE SIDEWALK RAMP WILL BE BID AS "SIDEWALK RAMP" AND PAYMENT FOR THIS WORK WILL BE MEASURED BY THE SQUARE FOOT, MAXIMUM 6 FEET CENTERLINE PAY LENGTH.
►ALL MATERIALS AND LABOR TO INSTALL THE SIDEWALK RAMP SHALL BE SUBSIDIARY TO THE BID ITEM "SIDEWALK RAMP".

NO.	DATE:	REVISION	BY:	APP'D
7	May 2016	Lightened lines, added "No Exp Jt"@B/C	DHS	SB
6	June 2015	Added Grade Break at & Updated Notes	DHS	SB
5	March 2013	Mod. bar spacing @ ret wall & bar size	DHS	SB
4	Feb. 2013	Add. Radial Ramps and Rearranged sheet	DHS	BC
3	Aug. 2011	Add. Access–Tile Remv.Sys. to Spec.Req.	DHS	SB
2	Dec. 2009	Mod. S/W Details & cross slope to 2%	DHS	SB
1	Feb. 2008	Add. Armor–Tile Sys. & Mod. All Iso. Det.	DHS	SB

DRAWN BY: rm/mc
APP'D BY: [signature]

SHAWNEE COUNTY, KANSAS
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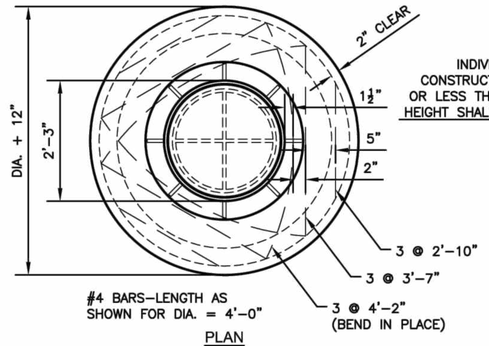
Phone: (785) 368-3842 • Fax: (785) 368-3881

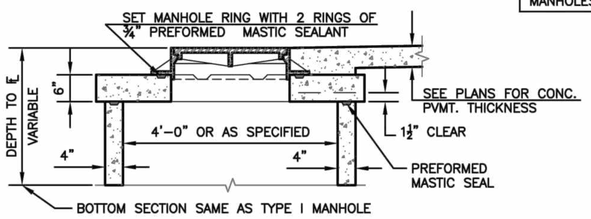
STANDARD DETAILS

RAMP & WALK DETAILS
(DT-004)

DATE: 12/18/2025
SHEET: 68 OF 87
281381.00, 501144.00,
PROJ.: 401139.00

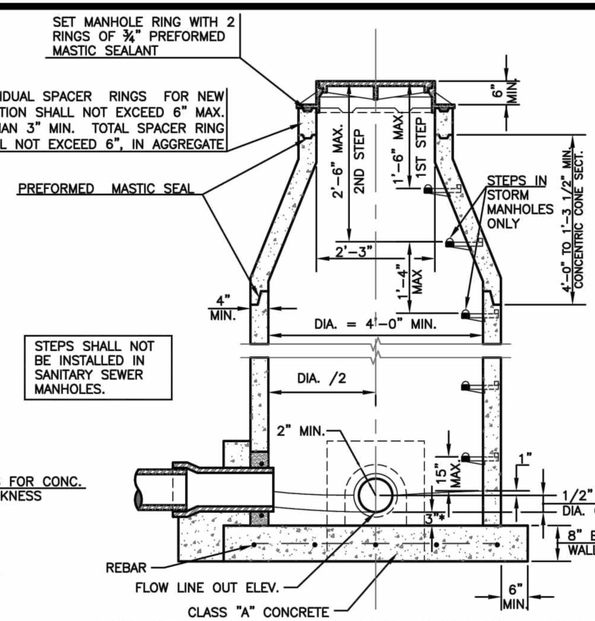


PLAN



TOP SECTION

STANDARD MANHOLE TYPE II



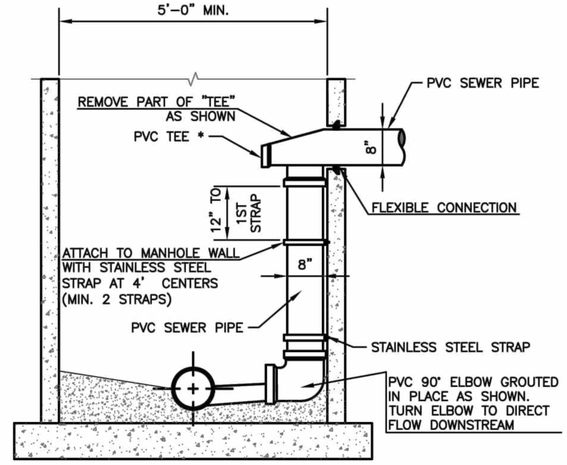
STEPS SHALL NOT BE INSTALLED IN SANITARY SEWER MANHOLES.

NOTE: THE BOTTOM SECTION OF ALL CAST-IN-PLACE MANHOLES AND PRECAST MANHOLES NOT BUILT MONOLITHICALLY WITH THE BASE SHALL BE SET INTO A STEEL REINFORCED (#4 @ 12" E.W.) CONCRETE BASE (4,000 PSI) A MINIMUM OF 4 INCHES. IN THIS CASE, THE BASE THICKNESS SHALL BE INCREASED TO 12 INCHES.

PRE-CAST STANDARD MANHOLE TYPE I

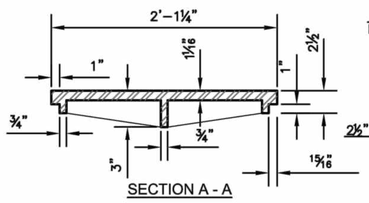
*THIS 3" TO BE ELIMINATED WHEN PRE-CAST INVERTS ARE USED.

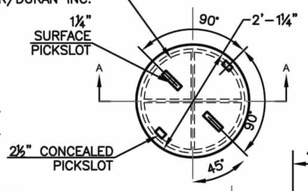
NOTES:
1. STAINLESS STEEL STRAPS (11 GAUGE – .1196") THICK x 1 1/2" WIDE SHALL BE COMPLETELY AROUND THE PIPE AND ATTACHED TO MANHOLE WALL WITH STAINLESS STEEL BOLTS AND ANCHORS. BOLTS SHALL BE 3/8" DIA. x 2" MIN. LENGTH AND ANCHORS SHALL BE 3/8" INSIDE DIA. x 2 1/4" LENGTH. HOLE SHALL BE DRILLED INTO MANHOLE WALL TO A DEPTH OF 2-1/2" AND LARGE ENOUGH IN DIA. TO ACCEPT ANCHORS.
2. THIS DETAIL IS VALID ONLY FOR A SINGLE 8" INSIDE DROP IN A 5' DIA. MANHOLE, RECEIVING AN 8" DIA. SEWER. A SPECIAL DETAIL IS REQUIRED FOR ANY OTHER CONDITIONS.



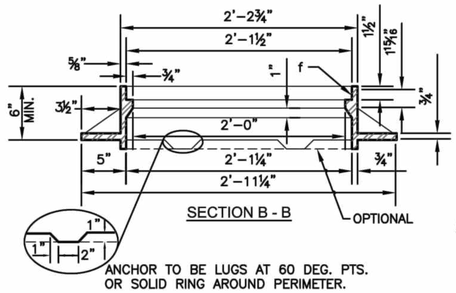
INSIDE DROP-TYPE A

NOTE: INSIDE DROP-TYPE A IS REQUIRED WHEN FLOWLINE IN AND FLOWLINE OUT ELEVATIONS DIFFER BY 1.0' OR MORE.
* A BOWL SYSTEM BY RELINER/DURAN INC. MAY ALSO BE USED.

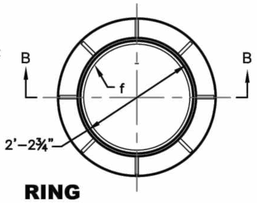




COVER

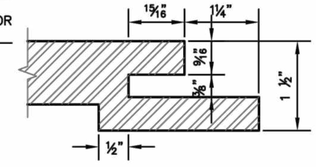


ANCHOR TO BE LUGS AT 60 DEG. PTS. OR SOLID RING AROUND PERIMETER.

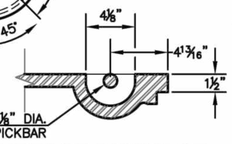


RING

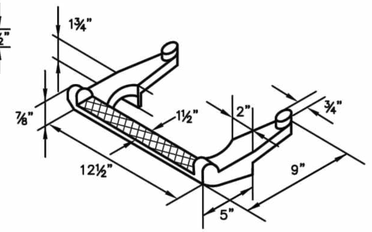
"CITY OF TOPEKA SANITARY SEWER" CAST IN 2½" BLOCK LETTERS AROUND CIRCUMFERENCE OF ALL COVERS INTENDED FOR WASTE WATER USE OR "CITY OF TOPEKA STORMWATER" IF INTENDED FOR STORMWATER USE



CONCEALED PICKSLOT DETAIL



SURFACE PICKSLOT



DETAIL OF CAST IRON MANHOLE STEP

(FOR PRECAST MANHOLE TO BE USED IN STORM SEWER SYSTEMS ONLY)

VESTAL MANUFACTURING NO. 918-P, CLAY AND BAILEY NO. 2115, NEENAH NO. R-1981-I OR EQUAL AS FURNISHED BY MANUFACTURER OF PRECAST MANHOLE.

COPOLYMER POLYPROPYLENE PLASTIC STEP, PS1-PF or PS2-PF, MANUFACTURED BY M.A. IND. INC. OR APPROVED EQUAL MAY BE USED AS AN ALTERNATE TO DETAILED CASTING. THIS STEP MAY BE CAST IN PLACE OR INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDED INSTALLATION PROCEDURE.

DETAIL OF MANHOLE CASTINGS

CASTINGS SHALL CONFORM TO THE REQUIREMENTS OF "SPECIFICATIONS FOR GRAY IRON CASTINGS" IN ACCORDANCE WITH A.S.T.M. A 48, CLASS 35B.

MINIMUM TENSILE STRENGTH OF EACH CASTING SHALL BE AT LEAST 30,000 PSI.

AVERAGE WT. COVER 185 LBS., RING 220 LBS. VARIATION IN WEIGHT WILL NOT EXCEED THE SPECIFIED WEIGHTS BY MORE THAN 4%.

CASTINGS ARE TO BE MANUFACTURED TRUE TO PATTERN AND WITH SATISFACTORY FIT OF COMPONENT PARTS. CASTINGS SHALL BE FREE OF DEFECTS. DIMENSIONS AS DETAILED ON PLAN SHALL NOT DEVIATE BY MORE THAN 1/16" PER FOOT.

SEATING SURFACES OF CASTINGS SHALL BE MACHINED AS REQUIRED TO PREVENT ROCKING.

ALL CASTINGS SHALL BE FURNISHED IN BARE METAL AND SHALL HAVE MANUFACTURER'S NAME CAST INTO CASTING.

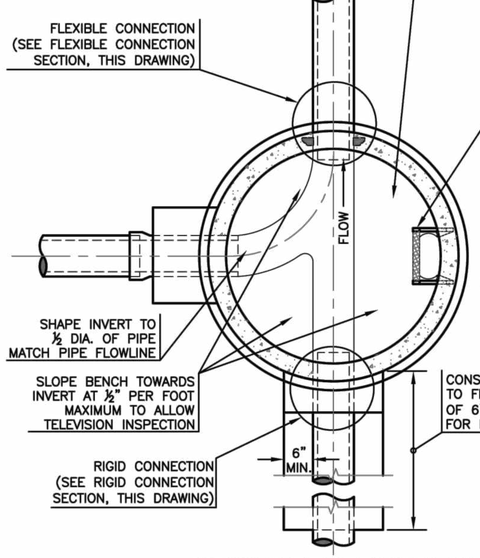
CASTINGS SHALL CONFORM TO THE PROVISIONS OF UNITED STATES CUSTOMS REGULATIONS. CASTING MANUFACTURER SHALL CARRY AT LEAST $3,000,000 PRODUCT LIABILITY INSURANCE.

TO INSURE CONFORMANCE TO TENSILE STRENGTH REQUIREMENTS, THE FOLLOWING PROCEDURE WILL BE FOLLOWED FOR EACH LOT OF CASTINGS USED ON CITY OF TOPEKA PROJECTS.

A. ALL CASTINGS SHALL BE JULIAN HEAT DATED.

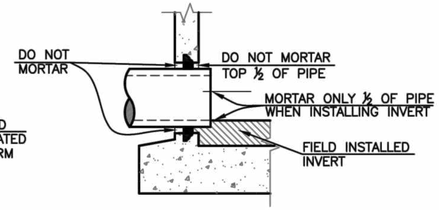
B. TWO TEST BAR SPECIMENS MUST BE POURED WHEN PRODUCING CITY OF TOPEKA CASTINGS. TEST BAR SPECIMENS SHALL BE DELIVERED TO PURCHASER.

C. TEST REPORT FROM A CITY APPROVED INDEPENDENT LABORATORY VERIFYING TENSILE STRENGTH CHEMISTRY OR BRINELL HARDNESS SHALL ACCOMPANY EACH SHIPMENT OF CASTINGS. IF REQUESTED TEST REPORT SHALL BE PAID FOR BY THE SUPPLIER. THE HEAT DATE(S) ON CASTINGS SHALL CORRESPOND TO THE TENSILE STRENGTH REPORT(S).



MANHOLE BOTTOM PLAN

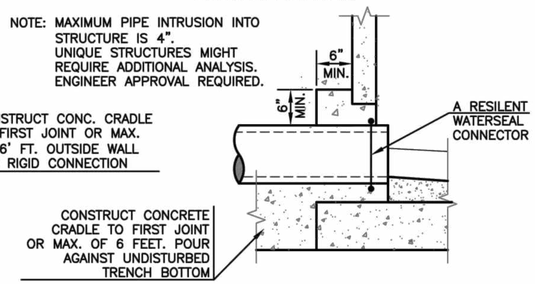
NOTE: DEADEND MANHOLES SHALL HAVE A POURED INVERT. MUST USE BOND BREAKER BETWEEN INVERT AND FLOOR.



FLEXIBLE CONNECTION SECTION

FLEXIBLE CONNECTIONS SHALL BE USED FOR ALL SEWER PIPE TYPES.

NOTE: MAXIMUM PIPE INTRUSION INTO STRUCTURE IS 4". UNIQUE STRUCTURES MIGHT REQUIRE ADDITIONAL ANALYSIS. ENGINEER APPROVAL REQUIRED.



RIGID CONNECTION SECTION

RIGID CONNECTIONS SHALL BE USED FOR CERTAIN EXISTNG MANHOLE CONNECTIONS AT ENGINEER'S DISCRETION.

MANHOLE CONSTRUCTION NOTES

ALL MANHOLE CONSTRUCTION SHALL BE WATER TIGHT.

TOP OF 8" FLOOR SLAB TO BE 3" MIN. BELOW FLOW LINE ELEV. OF THE OUTLET PIPE TO INSURE SUFFICIENT MIN. THICKNESS OF SHAPED INVERT.

ALL PRECAST CONCRETE MANHOLE SECTIONS SHALL CONFORM TO A.S.T.M. DESIGNATION C478

NO.	DATE:	REVISION	BY:	APP'D
5	June 2018	Ext pipe into MHs, Added max intr note	DHS	JVH
4	March 2014	Added rebar to cast-in-place base dwg	DHS	JH
3	March 2013	Cleaned up text at Pre-Cast MH detail	DHS	SB
2	Dec. 2009	Mod. drop notes & added Storm. to MH	DHS	SB
1	Feb. 2008	Mod. MH Bot. Plan, Rigid Sect.& Inside Dr.	DHS	SB

DRAWN BY: rm/mc

APP'D BY: [signature]

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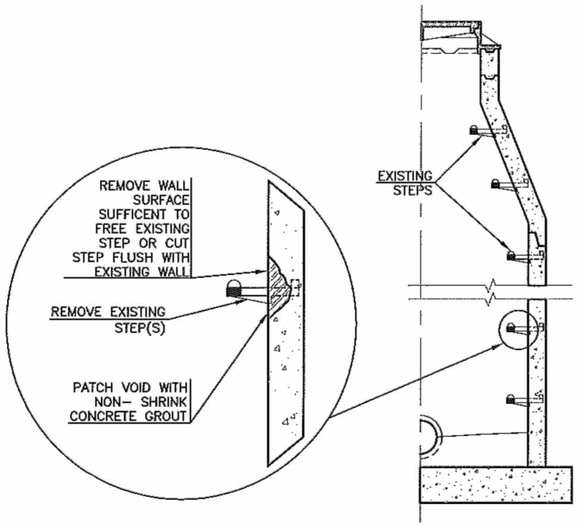
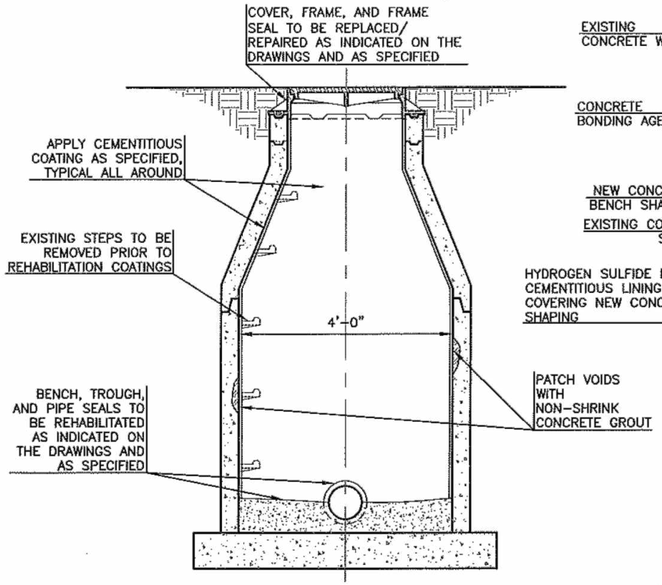
STANDARD DETAILS

STANDARD MANHOLE DETAILS
(DT-005)

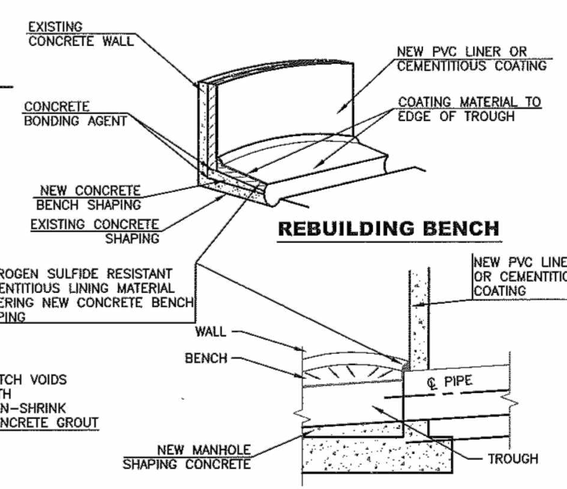
DATE: 12/18/2025
SHEET: 69 OF 87
281381.00, 501144.00, 401139.00
PROJ.:



STEP REMOVAL DETAILS



DETAIL OF REHABILITATION WITH CEMENTITIOUS COATING ON 4' DIAMETER EXISTING MANHOLES

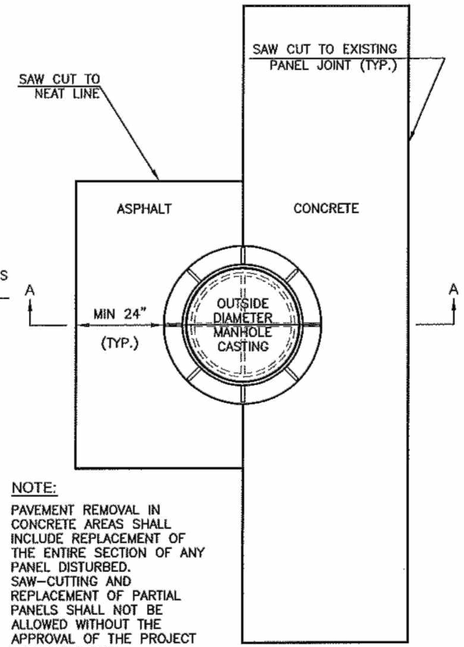


REBUILDING BENCH

REPAIR BENCH / TROUGH / PIPE SEAL DETAILS

LEGEND

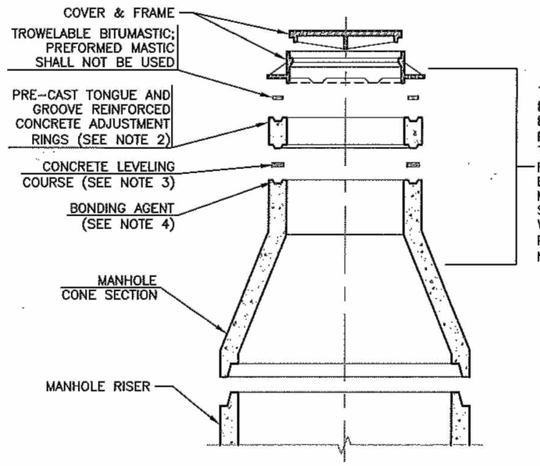
- LIQUID EPOXY
- CAST-IN-PLACE CONCRETE
- EXISTING DETERIORATED CONCRETE OR BRICK MORTAR TO BE REMOVED
- SELECT MATERIAL WITH TYPE 'A' COMPACTION
- COMPACTED TOPSOIL
- FLOWABLE FILL



PLAN VIEW

NOTE:

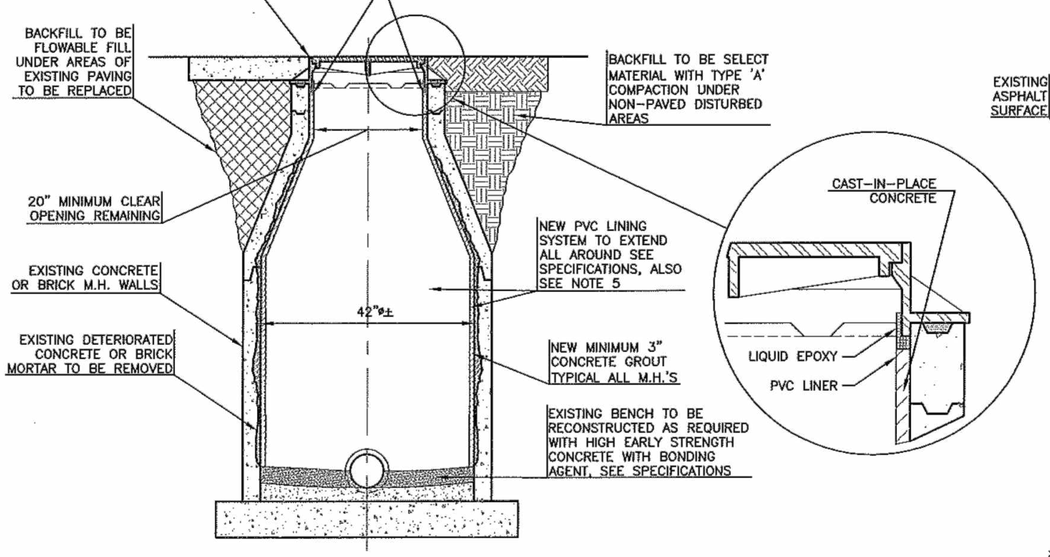
PAVEMENT REMOVAL IN CONCRETE AREAS SHALL INCLUDE REPLACEMENT OF THE ENTIRE SECTION OF ANY PANEL DISTURBED. SAW-CUTTING AND REPLACEMENT OF PARTIAL PANELS SHALL NOT BE ALLOWED WITHOUT THE APPROVAL OF THE PROJECT REPRESENTATIVE.



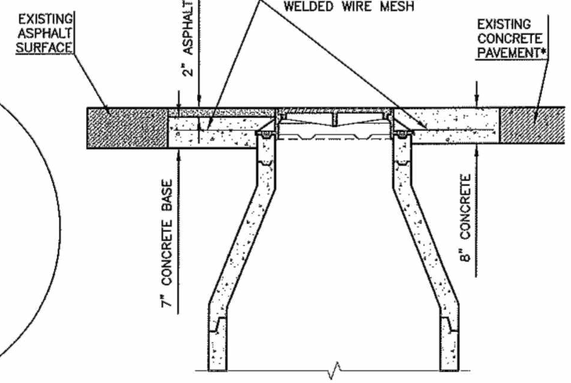
COVER, FRAME, FRAME SEAL, GRADE ADUSTMENT DETAILS

NOTES:

1. FOR COLD OR WET WEATHER CONDITIONS, USE TNEMEC 465 BLACK, SERIES 46, H.B. TNEMECOL.
2. IF MULTIPLE RINGS ARE USED, BITUMASTIC SEALER SHALL BE USED BETWEEN RINGS.
3. ALL LEVELING FOR SLOPED STREETS OR GRADES SHALL BE ACCOMPLISHED WITH THE CONCRETE LEVELING COURSE. BITUMASTIC SHALL NOT BE USED TO ACCOMPLISH LEVELING.
4. CONCRETE BONDING AGENT SHALL BE 'WELD-CRETE' (R) BY LARSEN PRODUCTS CORP. OF JESSUP, MD., OR EQUAL.
5. OVERLAPPING OR OPEN JOINTS WHERE 2 SHEETS OF PVC MEET, OR WHERE PVC HAS BEEN CUT, SHALL HAVE HEAT FUSION WELD STRIPS APPLIED.



DETAIL OF MANHOLE REHABILITATION WITH CAST-IN-PLACE CONCRETE AND PVC LINER ON 4' DIAMETER EXISTING MANHOLES



SECTION A-A

PAVEMENT REMOVAL AND REPLACEMENT DETAILS

* ANY EXISTING PANEL OF CONCRETE PAVEMENT PARTIALLY REMOVED OR DISTURBED DURING CONSTRUCTION ACTIVITIES SHALL BE COMPLETELY REMOVED AND REPLACED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND/OR TYPICAL CITY/COUNTY STANDARD SPECIFICATIONS.

NO.	DATE:	REVISION	BY:	APP'D
1	Feb. 2008	Update	DHS	SB

DRAWN BY: rm/mc

APP'D BY: R. Chumley-King

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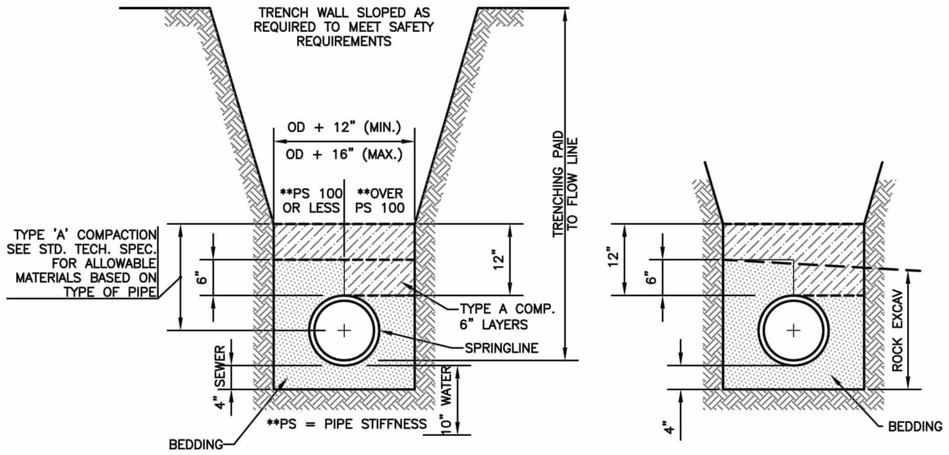
STANDARD DETAILS

MANHOLE REHABILITATION DETAILS
(DT-006)

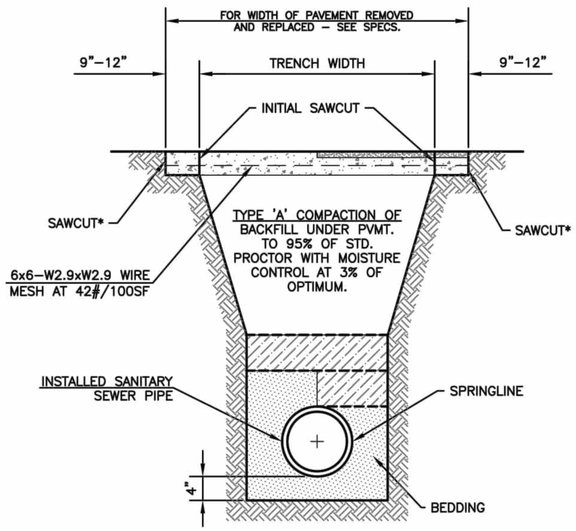
DATE: 12/18/2025
SHEET: 70 OF 87
PROJ.: 281381.00, 501144.00, 401139.00



TRENCHING DETAILS

STANDARDS FOR SETTING LINE AND GRADE FOR SEWER & WATER CONSTRUCTION:

1. STAKES, SPIKES, SHINERS, OR CROSSES SET BY TRANSIT AT THE SURFACE ON AN OFFSET FROM THE SEWER CENTER LINE.
2. STAKES ARE TO BE SET IN THE TRENCH BOTTOM ON THE SEWER LINE AS THE ROUGH GRADE FOR SEWER IS COMPLETED.
3. ELEVATIONS GIVEN FOR THE FINISHED TRENCH GRADE AND SEWER INVERT, WHILE SEWER LAYING PROGRESSES.



INSTALLATION OF SEWER UNDER EXISTING PAVEMENT

STANDARD METHODS FOR TRANSFERRING LINE AND GRADE TO SEWER TRENCH BOTTOM:

1. ELECTRONIC LASER EQUIPMENT–STAKING SHALL BE AT 25' INTERVALS FOR THE FIRST 100' AND EVERY 100' THEREAFTER UNTIL THE NEXT MANHOLE IS REACHED.
2. BATTER BOARDS AND BATTER BOARD SUPPORTS–STAKING SHALL BE EVERY 25'.

PAVEMENT PLACEMENT SCHEDULE

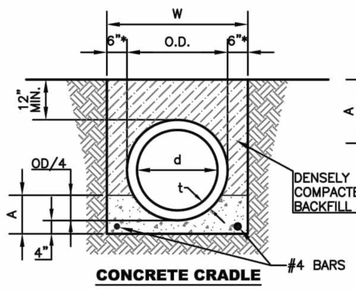
SCHEDULE TO BE USED UNLESS OTHERWISE NOTED ON PLANS.

ORIGINAL SURFACE	NEW PAVEMENT
CONCRETE	8" REINFORCED CONCRETE 4,000psi
BRICK OVER CONCRETE	7" REINFORCED CONC.BASE 4,000psi PLUS ONE–COURSE RELAID BRICK.
ASPHALT	MATCH EXISTING PAVEMENT THICKNESS WITH A MINIMUM OF 6" HOT–MIX ASPHALTIC CONCRETE.
ASPHALT OVER CONCRETE	7" REINFORCED CONCRETE BASE 4000 psi PLUS 2" HOT MIX ASPHALTIC CONCRETE. 7" REINFORCED CONCRETE BASE SHALL BE JOINED TO ADJACENT PAVEMENT. SEE "FULL PANEL REPAIR & UTILITY CUTS FOR CONCRETE PAVEMENT" DETAIL AS SHOWN ON MISCELLANEOUS DETAILS I (DT–017). THE WEARING SURFACE WILL CONFORM TO CITY/COUNTY STANDARD SPECIFICATIONS.
BRICK OVER BRICK/SUBGRADE	7" HOT–MIX ASPHALTIC CONCRETE PLUS ONE–COURSE RE–LAID BRICK.
	PAVEMENT SHALL BE SAWED AND REMOVED WITHOUT DAMAGE TO ADJACENT PAVEMENT.

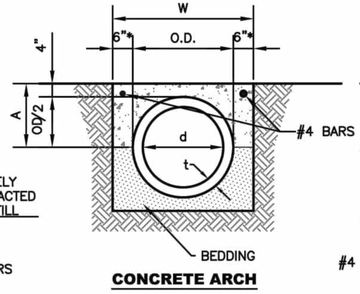
* SECOND PAVEMENT CUT TO BE MADE AND PAVEMENT REMOVED AFTER TRENCH IS PROPERLY BACKFILLED.

** CONCRETE PAVEMENT SHALL BE JOINED TO ADJACENT CONCRETE PAVEMENT AS PER "FULL PANEL REPAIR AND UTILITY CUTS FOR CONCRETE PAVEMENT" AS SHOWN ON MISCELLANEOUS DETAILS I (DT–017).

NOTES:
1. THE TRENCH SHALL BE EXCAVATED TO 4" BELOW BOTTOM OF THE PIPE BARREL & BACKFILLED AS SHOWN ABOVE WITH AN APPROVED BEDDING MATERIAL.
2. WHEN THE SEWER IS TO BE INSTALLED IN ROCK, THE TRENCH IS TO BE EXCAVATED TO A MINIMUM DEPTH OF 4" BELOW THE BOTTOM OF THE PIPE AND BACKFILLED IN 6" COMPACTED LAYERS WITH AN APPROVED BEDDING MATERIAL AS SHOWN. THE ROCK EXCAVATED TO BE PAID AS A SEPARATE BID ITEM. THE EMBEDMENT, IN ALL CASES, TO BE INCLUDED IN THE PRICE BID PER TRENCH, EXCAVATION, AND BACKFILL.

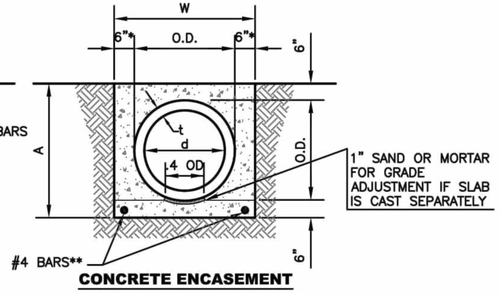


CONCRETE CRADLE



CONCRETE ARCH

*MINIMUM WIDTH



CONCRETE ENCASEMENT

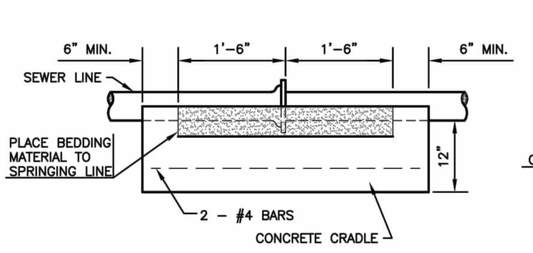
**REINFORCING SHALL BE TWO #4 BARS FOR PIPE UP TO 8" DIA; FOUR #4 BARS FOR 10" THROUGH 24" DIA; AND AS APPROVED BY THE ENGINEER FOR LARGER THAN 24" DIA.

d	O.D.	t	W	CRADLE A		ARCH A		ENCASE. A	
IN.	IN.	IN.	IN.	IN.	CY/FT	IN.	CY/FT	IN.	CY/FT
8	9.50	.750	24	6.4	.036	8.8	.039	21.5	.102
10	11.75	.875	24	6.9	.038	9.9	.047	23.8	.117
12	14	1.00	26	7.5	.043	11.0	.054	26.0	.134
15	17.5	1.25	29.5	8.4	.051	12.8	.066	29.5	.162
18	21	1.50	33	9.3	.061	14.5	.078	33.0	.191
21	24.5	1.75	36.5	10.1	.071	16.3	.093	36.5	.222
24	28	2.00	40	11.0	.085	18.0	.106	40.0	.256
27	31.5	2.25	43.5	11.9	.095	19.8	.121	43.5	.286
30	35	2.50	47	12.8	.106	21.5	.136	47.0	.321
36	41.5	2.75	53.5	14.4	.129	24.8	.167	53.5	.388

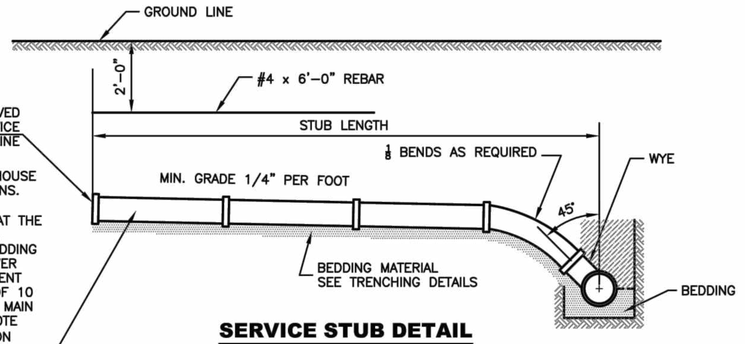
NOTE: MAXIMUM PIPE INTRUSION INTO STRUCTURE IS 4". UNIQUE STRUCTURES MIGHT REQUIRE ADDITIONAL ANALYSIS. ENGINEER APPROVAL REQUIRED.

SCHEDULE FOR CONCRETE CRADLE, CONCRETE ARCH AND CONCRETE ENCASEMENT FOR SANITARY SEWERS

NOTE: MIN. 2500 PSI CONCRETE USED FOR CRADLING.

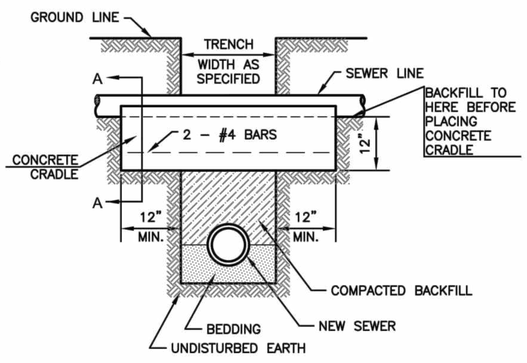


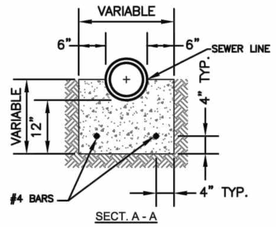
JOINT CRADLE DETAIL



MAXIMUM DEPTH AT PLUG LOCATION SHALL BE 14' BELOW TOP OF HOUSE FOUNDATION. LENGTH AND ELEVATION SHALL BE AS SHOWN ON PLANS. LINES SHALL BE PLACED AT RIGHT ANGLES FROM MAIN. ALIGNMENT CHANGES MUST BE MADE BY THE USE OF 1/8 BENDS CONNECTED AT THE WYE. UNIT PRICE BID PER LINEAL FOOT FOR SERVICE STUBS SHALL INCLUDE – TRENCHING, LAYING, BACKFILLING, PIPE, FITTINGS AND BEDDING MATERIAL. AT POINTS WHERE SEWERS CROSS WATER MAINS, THE SEWER SHALL BE CONSTRUCTED OF DUCTILE IRON, PLASTIC PIPE WITH SOLVENT WELDED JOINTS, OR PIPE ENCASED IN CONCRETE FOR A DISTANCE OF 10 FEET IN EACH DIRECTION FROM THE CROSSING UNLESS THE WATER MAIN IS AT LEAST 2 FEET ABOVE THE SEWER. FOR SIZING DATA SEE NOTE ELSEWHERE, THIS SHEET. ALSO SEE "SANITARY SEWER CAP" DETAIL ON MISCELLANEOUS DETAILS II (DT–018).

SERVICE STUB DETAIL





CRADLE DETAILS

NO.	DATE:	REVISION	BY:	APP'D
4	June 2018	Added maximum pipe intrusion note	DHS	JVH
3	March 2013	Mod. Pvmt. Place. Sch. & Bedding Amt.	DHS	SB
2	Feb. 2008	Mod. Cradle & Arch and Pvmt. Place Sch.	DHS	SB
1	Dec. 2004	Mod. Serv. Note	DHS	JH

DRAWN BY: rm/mc

APP'D BY: [signature]

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(785) 233-7702

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Phone: (785) 368-3842 • Fax: (785) 368-3881

STANDARD DETAILS

SANITARY SEWER DETAILS
(DT-007)

DATE: 12/18/2025

SHEET: 71 OF 87

281381.00, 501144.00,

PROJ.: 401139.00

MAXIMUM ALLOWABLE DEPTH OF TRENCH (IN FEET)

REINFORCED CONCRETE PIPE (RCP)

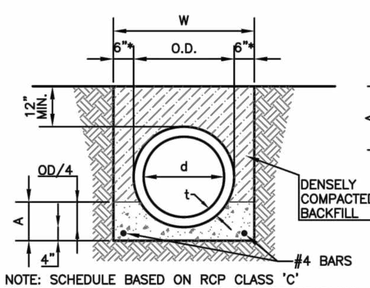
ASTM PIPE CLASS	PIPE DIAMETER (INCHES)				
	12, 15, 18, 21	24, 27, 30, 36	42, 48, 54	60, 66, 72	78, 84
II	8	11	12	15	17
III	11	14	16	18	21
IV	20	22	23	25	27

CORRUGATED STEEL PIPE (CSP), ALUMINIZED STEEL TYPE 2

PIPE DIAMETER (INCHES)	HEIGHT OF COVER ABOVE TOP OF PIPE (FEET) (H–20 LOADING)					
	CSP					
	1 – 10		11 – 15		16 – 20	
	2.66x.5	3x1	2.66x.5	3x1	2.66x.5	3x1
12	16 ga.		16 ga.		16 ga.	
15	16 ga.		16 ga.		16 ga.	
18	16 ga.		16 ga.		16 ga.	
21	16 ga.		16 ga.		16 ga.	
24	16 ga.		16 ga.		16 ga.	
27	16 ga.		16 ga.		16 ga.	
30	16 ga.		16 ga.		16 ga.	
33	16 ga.		16 ga.		16 ga.	
36	16 ga.	16 ga.	16 ga.	16 ga.	16 ga.	16 ga.
42	14 ga.	16 ga.	14 ga.	16 ga.	14 ga.	16 ga.
48	14 ga.	16 ga.	14 ga.	16 ga.	14 ga.	16 ga.
54	12 ga.	14 ga.	12ga.	14 ga.	12 ga.	14 ga.
60	10 ga.	14 ga.	10 ga.	14 ga.	10 ga.	14 ga.
66	10 ga.	14 ga.	10 ga.	14 ga.	10 ga.	14 ga.
72	10 ga.	14 ga.	10 ga.	14 ga.	10 ga.	14 ga.
78		14 ga.		14 ga.		14 ga.
84		12 ga.		12 ga.		12 ga.
90		12 ga.		12 ga.		12 ga.
96		12 ga.		12 ga.		12 ga.

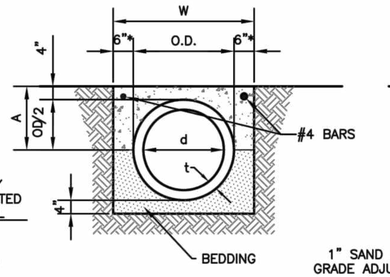
PIPE DIAMETER (INCHES)	HEIGHT OF COVER ABOVE TOP OF PIPE (FEET) (H–20 LOADING)							
	CSPA							
	END AREA (SF)		DIMENSIONS; SPAN x RISE		1 – 2		2 – 9	
	2.66x.5	3x1	2.66x.5	3x1	2.66x.5	3x1	2.66x.5	3x1
12	1.1		17x13		16 ga.		16 ga.	
15	1.6		21x15		16 ga.		16 ga.	
18	2.2		24x18		16 ga.		16 ga.	
21	2.8		28x20		16 ga.		16 ga.	
24	4.4		35x24		14 ga.		14 ga.	
27	6.4		42x29		14 ga.		14 ga.	
30	8.7		49x33		12 ga.		12 ga.	
33	11.4		57x38		12 ga.		12 ga.	
36	14.3	15.6	64x43	60x46	12 ga.	14 ga.	12 ga.	14 ga.
42	17.6	19.3	71x47	66x51	10 ga.	14 ga.	10 ga.	14 ga.
48	21.3	23.2		73x55		14 ga.		14 ga.
54	25.3	27.4		81x59		14 ga.		14 ga.
60		32.1		87x63		14 ga.		14 ga.
66		37.0		95x67		12 ga.		12 ga.
72		42.4		103x71		12 ga.		12 ga.
78		48.0		112x75		12 ga.		12 ga.

NOTE: MAXIMUM PIPE INTRUSION INTO STRUCTURE IS 6". UNIQUE STRUCTURES MIGHT REQUIRE ADDITIONAL ANALYSIS. ENGINEER APPROVAL REQUIRED.



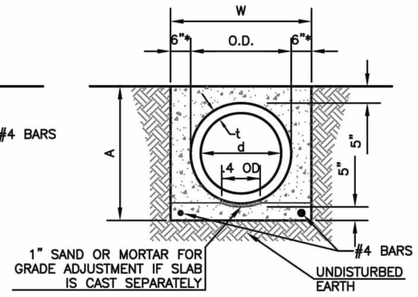
NOTE: SCHEDULE BASED ON RCP CLASS 'C' MINIMUM 2500 PSI CONCRETE USED FOR CRADLING

CONCRETE CRADLE



*MINIMUM WIDTH

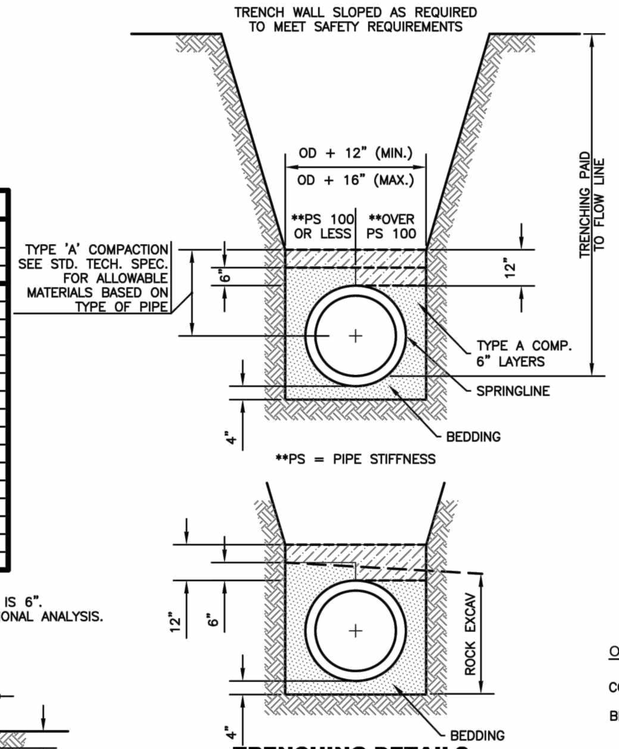
CONCRETE ARCH



CONCRETE ENCASEMENT

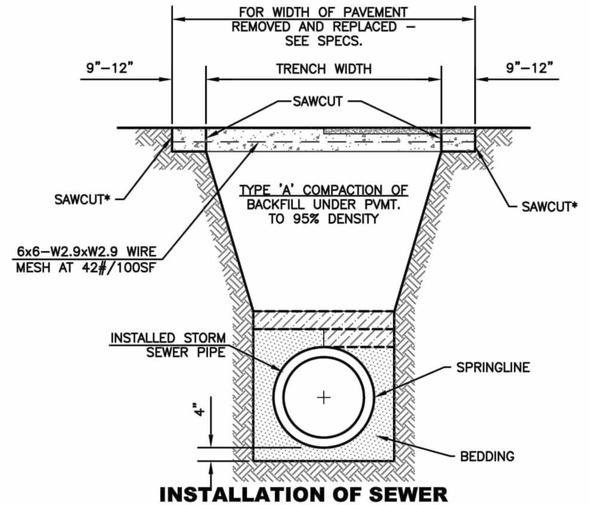
d	t	O.D.	W	CRADLE A		ARCH A		ENCASE. A	
IN.	IN.	IN.	IN.	IN.	CY/FT	IN.	CY/FT	IN.	CY/FT
15	2.25	19.5	31.5	8.9	.057	13.8	.073	29.5	.162
18	2.50	23.0	34.0	9.8	.067	15.5	.086	33.0	.190
21	2.75	26.5	38.5	10.6	.077	17.3	.100	36.5	.220
24	3.00	30.0	42.0	11.5	.089	19.0	.114	40.0	.250
27	3.25	33.5	45.5	12.4	.100	20.8	.129	43.5	.282
30	3.50	37.0	49.0	13.3	.113	22.5	.145	47.0	.316
33	3.75	40.5	52.5	14.1	.126	24.3	.162	50.5	.351
36	4.00	44.0	56.0	15.0	.140	26.0	.179	54.0	.387
42	4.50	51.0	63.0	16.8	.169	29.5	.215	61.0	.463
48	5.00	58.0	70.0	18.5	.200	33.0	.254	68.0	.545
54	5.50	65.0	77.0	20.3	.234	36.5	.296	75.0	.632
60	6.00	72.0	84.0	22.0	.270	40.0	.341	82.0	.724

SCHEDULE FOR CONCRETE CRADLE, CONCRETE ARCH, AND CONCRETE ENCASEMENT FOR STORM SEWERS



TRENCHING DETAILS

NOTES:
1. THE TRENCH SHALL BE EXCAVATED TO 4" BELOW BOTTOM OF THE PIPE BARREL & BACKFILLED AS SHOWN ABOVE WITH AN APPROVED BEDDING MATERIAL.
2. WHEN THE SEWER IS TO BE INSTALLED IN ROCK, THE TRENCH IS TO BE EXCAVATED TO A MINIMUM DEPTH OF 4" BELOW THE BOTTOM OF THE PIPE AND BACKFILLED IN 6" COMPACTED LAYERS WITH AN APPROVED BEDDING MATERIAL AS SHOWN ABOVE. THE ROCK EXCAVATED TO BE PAID AS A SEPARATE BID ITEM. THE EMBEDMENT, IN ALL CASES, TO BE INCLUDED IN THE PRICE BID PER TRENCH, EXCAVATION, AND BACKFILL.



INSTALLATION OF SEWER UNDER EXISTING PAVEMENT

PAVEMENT SHALL BE SAWED AND REMOVED WITHOUT DAMAGE TO ADJACENT PAVEMENT.

PAVEMENT PLACEMENT SCHEDULE

SCHEDULE TO BE USED UNLESS OTHERWISE NOTED ON PLANS.

ORIGINAL SURFACE	NEW PAVEMENT
CONCRETE	8" REINFORCED CONCRETE 4,000psi
BRICK OVER CONCRETE	7" REINFORCED CONC.BASE 4,000psi PLUS ONE–COURSE RELAID BRICK.
ASPHALT	MATCH EXISTING PAVEMENT THICKNESS WITH A MINIMUM OF 6" HOT–MIX ASPHALTIC CONCRETE.
ASPHALT OVER CONCRETE	7" REINFORCED CONCRETE BASE 4000 psi PLUS 2" HOT MIX ASPHALTIC CONCRETE. 7" REINFORCED CONCRETE BASE SHALL BE JOINED TO ADJACENT PAVEMENT. SEE "FULL PANEL REPAIR & UTILITY CUTS FOR CONCRETE PAVEMENT" DETAIL AS SHOWN ON MISCELLANEOUS DETAILS I (DT–017). THE WEARING SURFACE WILL CONFORM TO CITY/COUNTY STANDARD SPECIFICATIONS.
BRICK OVER BRICK/SUBGRADE	7" HOT–MIX ASPHALTIC CONCRETE PLUS ONE–COURSE RE–LAID BRICK.

PAVEMENT SHALL BE SAWED AND REMOVED WITHOUT DAMAGE TO ADJACENT PAVEMENT.

* SECOND PAVEMENT CUT TO BE MADE AND PAVEMENT REMOVED AFTER TRENCH IS PROPERLY BACKFILLED.

** CONCRETE PAVEMENT SHALL BE JOINED TO ADJACENT CONCRETE PAVEMENT AS PER "FULL PANEL REPAIR AND UTILITY CUTS FOR CONCRETE PAVEMENT" AS SHOWN ON MISCELLANEOUS DETAILS I (DT–017).

NOTES:
1. THE TRENCH SHALL BE EXCAVATED TO 4" BELOW BOTTOM OF THE PIPE BARREL & BACKFILLED AS SHOWN ABOVE WITH AN APPROVED BEDDING MATERIAL.
2. WHEN THE SEWER IS TO BE INSTALLED IN ROCK, THE TRENCH IS TO BE EXCAVATED TO A MINIMUM DEPTH OF 4" BELOW THE BOTTOM OF THE PIPE AND BACKFILLED IN 6" COMPACTED LAYERS WITH AN APPROVED BEDDING MATERIAL AS SHOWN. THE ROCK EXCAVATED TO BE PAID AS A SEPARATE BID ITEM. THE EMBEDMENT, IN ALL CASES, TO BE INCLUDED IN THE PRICE BID PER TRENCH, EXCAVATION, AND BACKFILL.

STANDARDS FOR SETTING LINE AND GRADE FOR SEWER CONSTRUCTION:

1. STAKES, SPIKES, SHINERS, OR CROSSES SET BY TRANSIT AT THE SURFACE ON AN OFFSET FROM THE SEWER CENTER LINE.
2. STAKES ARE TO BE SET IN THE TRENCH BOTTOM ON THE SEWER LINE AS THE ROUGH GRADE FOR SEWER IS COMPLETED.
3. ELEVATIONS GIVEN TO THE FINISHED TRENCH GRADE AND SEWER INVERT, WHILE SEWER LAYING PROGRESSES.

STANDARD METHODS FOR TRANSFERRING LINE AND GRADE TO SEWER TRENCH BOTTOM:

1. ELECTRONIC LASER EQUIPMENT–STAKING SHALL BE AT 25' INTERVALS FOR THE FIRST 100' AND EVERY 100' THEREAFTER UNTIL THE NEXT MANHOLE IS REACHED.
2. BATTER BOARDS AND BATTER BOARD SUPPORTS–STAKING SHALL BE EVERY 25'.

NO.	DATE:	REVISION	BY:	APP'D
3	June 2018	Added maximum pipe intrusion note	DHS	JVH
2	March 2013	Mod. Pvmt. Place. Sch. & Bedding Amt.	DHS	SB
1	Feb. 2008	Mod.Pvmt.Sch. and Cradle, Arch. & Encase.	DHS	SB

DRAWN BY: rm/mc

APP'D BY: [signature]

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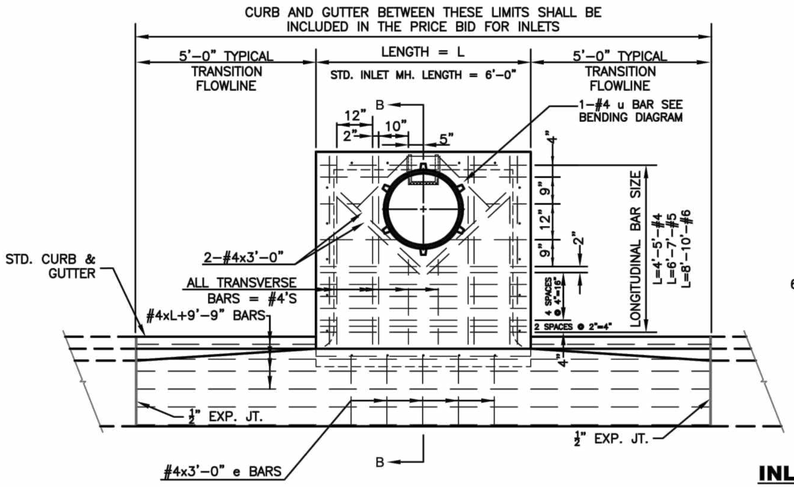
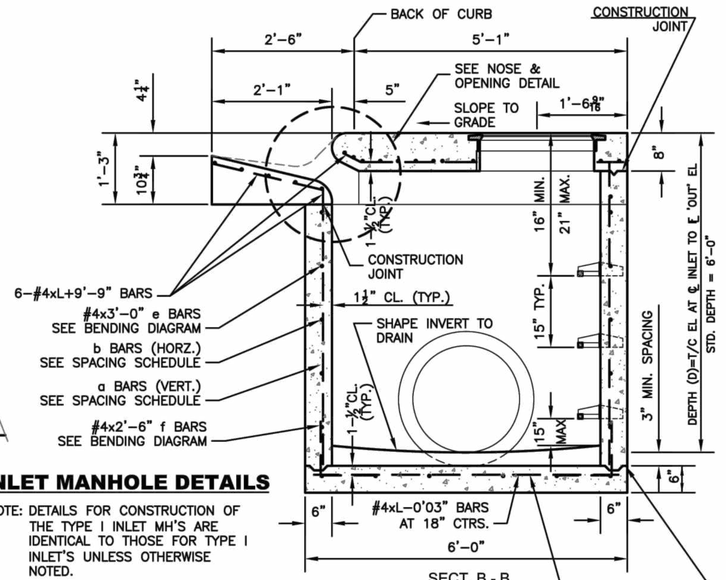
STANDARD DETAILS

STORM SEWER DETAILS
(DT-008)

DATE: 12/18/2025
SHEET: 72 OF 87
281381.00, 501144.00,
PROJ.: 401139.00

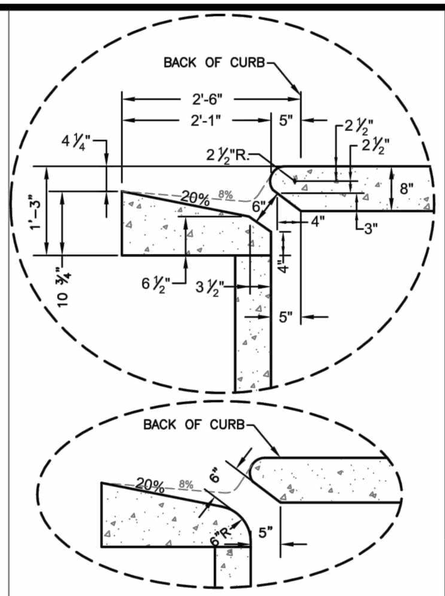

CURB AND GUTTER BETWEEN THESE LIMITS SHALL BE INCLUDED IN THE PRICE BID FOR INLETS
5'–0" TYPICAL TRANSITION FLOWLINE
LENGTH = L
STD. INLET MH. LENGTH = 6'–0"
5'–0" TYPICAL TRANSITION FLOWLINE
1–#4 u BAR SEE BENDING DIAGRAM
STD. CURB & GUTTER
2–#4x3'–0"
ALL TRANSVERSE BARS = #4'S
#4xL+9'–9" BARS
LONGITUDINAL BAR SIZE
L=4'–5" #4
L=6'–7" #5
L=8'–10"–#6
4 SPACES @ 4"=1'-4"
2 SPACES @ 2"=4"
½" EXP. JT.
#4x3'–0" e BARS



INLET MANHOLE DETAILS

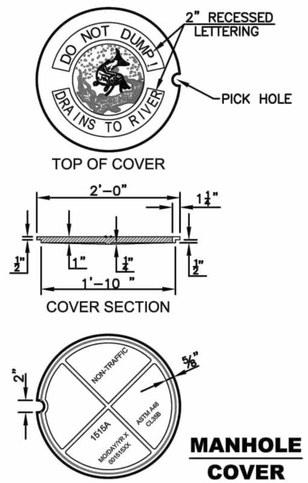
NOTE: DETAILS FOR CONSTRUCTION OF THE TYPE I INLET MH'S ARE IDENTICAL TO THOSE FOR TYPE I INLET'S UNLESS OTHERWISE NOTED.

SECT. B - B



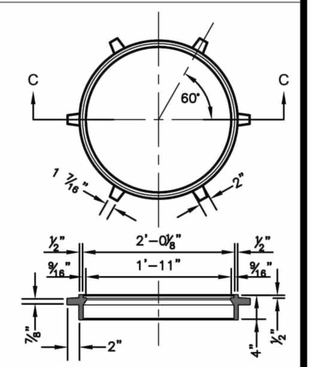
NOSE & OPENING DETAILS

EITHER OPTION MAY BE USED TO OBTAIN 6" OPENING



MANHOLE COVER

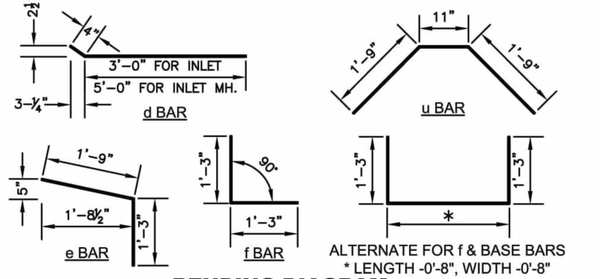
WT. 69 lbs.



SECTION C-C

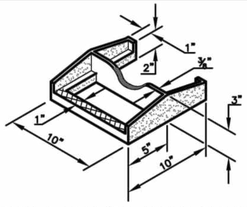
FRAME CASTING

WT. 64 lbs.
CLAY AND BAILEY NO. 3215 OR APPROVED EQUAL.



BENDING DIAGRAM

NOTE: THE e & f BARS WILL HAVE THE SAME SPACING AS THE a BARS. THE e & f BARS WILL TIE TO THE a BARS.



C.I. MH STEP CASTING DETAILS

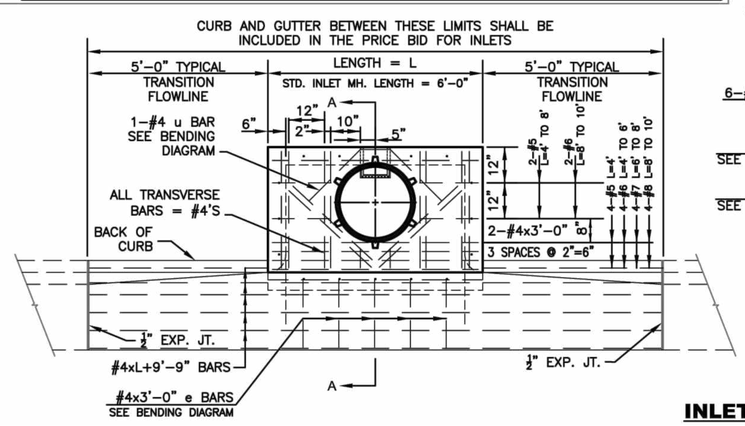
WT. 11 lbs.

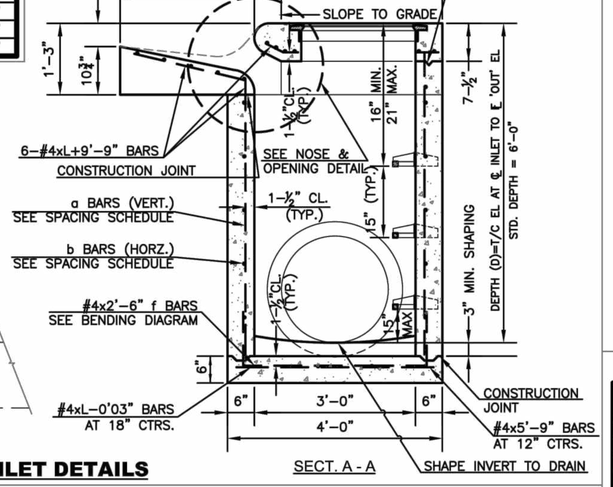
CLOW–NATIONAL NO. F–3650 CLAY AND BAILEY NO. 2113 NEENAH R–1980–E OR EQUAL

COPOLYMER POLYPROPYLENE PLASTIC STEP, PS2–PF, MANUFACTURED BY M.A. IND. INC. OR APPROVED EQUAL MAY BE USED AS AN ALTERNATE TO DETAILED CASTING. THIS STEP MAY BE CAST IN PLACE OR INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDED INSTALLATION PROCEDURE.

REINFORCING BAR SPACING SCHEDULE

D	L = 4'		L = 5'		L = 6'		L = 7'		L = 8'		L = 9'	
	a BAR	b BAR	a BAR	b BAR	a BAR	b BAR	a BAR	b BAR	a BAR	b BAR	a BAR	b BAR
3'	12"	18"	12"	18"	12"	18"	12"	18"	12"	18"	12"	18"
4'	18"	12"	12"	18"	12"	18"	12"	18"	12"	18"	12"	18"
5'	18"	12"	18"	12"	12"	18"	12"	18"	12"	18"	12"	18"
6'	18"	12"	18"	12"	18"	12"	12"	18"	12"	18"	12"	18"
7'	18"	12"	18"	12"	18"	12"	18"	12"	12"	18"	12"	18"
8'	18"	12"	18"	12"	18"	12"	18"	12"	18"	12"	12"	18"
9'	18"	12"	18"	12"	18"	12"	18"	12"	18"	12"	18"	12"
10'	18"	12"	18"	12"	18"	12"	18"	12"	18"	12"	18"	12"





INLET DETAILS

SECT. A - A

INLET SCHEDULE

STATION	LT. OR RT.	INLET (I) or INLET (MH)	L	D	EXTRA DEPTH	a BAR SPACING	b BAR SPACING

NOTES:
1. ALL TOP SLAB REINFORCING SHALL BE GRADE 60 REBAR.
2. USE CLASS 'A' CONCRETE THROUGHOUT. BEVEL ALL EXPOSED EDGES WITH A 3/4" TRIANGULAR MOLDING.
3. REINF. STEEL BARS IN INLETS OR INLET MH'S SHALL BE INCLUDED IN THE PRICE BID FOR EACH STRUCTURE. BARS TO BE BENT AROUND PIPE.
4. STEPS SHALL BE INSTALLED IN ALL INLETS OVER 4' DEEP AND LOCATED UNDER MANHOLE RING AND COVER.
5. SUPPLIERS SHALL GRIND ALL BURRS SMOOTH ON CASTINGS.
6. STANDARD INLETS AND INLET MANHOLES SHALL BE 6'–0" IN LENGTH UNLESS OTHERWISE SHOWN ON THE PLANS. LONGER OR SHORTER INLETS MAY BE SPECIFIED IN ONE FOOT INCREMENTS, AND ARE TO BE BID PER EACH FOR EACH LENGTH OF STRUCTURE AS SHOWN ON THE PLANS. INLETS OR INLET MANHOLES SHORTER THAN 6'–0" ARE TO BE BID AT THE SAME UNIT PRICE AS THE STANDARD STRUCTURES. UNIT BID PRICES ARE FOR STRUCTURES NOT EXCEEDING A DEPTH (D) OF 6'–0". EXTRA DEPTH SHALL BE PAID FOR AT THE UNIT PRICE BID FOR EXTRA DEPTH FOR EACH LENGTH OF INLET.
7. SEE SHEET ENTITLED "REINFORCING STEEL FOR INLETS AND MANHOLES" FOR DETAILS AND QUANTITIES.
8. ALL REINFORCING STEEL SHALL BE #4 @ 6" CENTERS EXCEPT WHERE NOTED OR DESIGNED BY ENGINEER. MINIMUM CLEAR DISTANCE FOR REINFORCEMENT SHALL BE 1–1/2".
9. MAXIMUM PIPE INTRUSION INTO STRUCTURE IS 6". UNIQUE STRUCTURES MIGHT REQUIRE ADDITIONAL ANALYSIS. ENGINEER APPROVAL REQUIRED.

NO.	DATE:	REVISION	BY:	APP'D
6	June 2018	Added maximum pipe intrusion note	DHS	JVH
5	April 2018	Moved leader at rt. side inlet Details to ℄	DHS	JVH
4	March 2013	Changed inlet top thickness to 8"	DHS	SB
3	Sept. 2011	Elim. dim. from inlet MH & Inlet Details	DHS	SB
2	March 2010	Eliminated keyed joints	DHS	SB
1	Feb. 2008	Mod. MH Cover & Added Notes	DHS	SB

DRAWN BY: rm/mc
APP'D BY: [signature]

SHAWNEE COUNTY, KANSAS
PUBLIC WORKS DEPARTMENT
1515 NW SALINE
TOPEKA, KS 66618
(785) 233-7702

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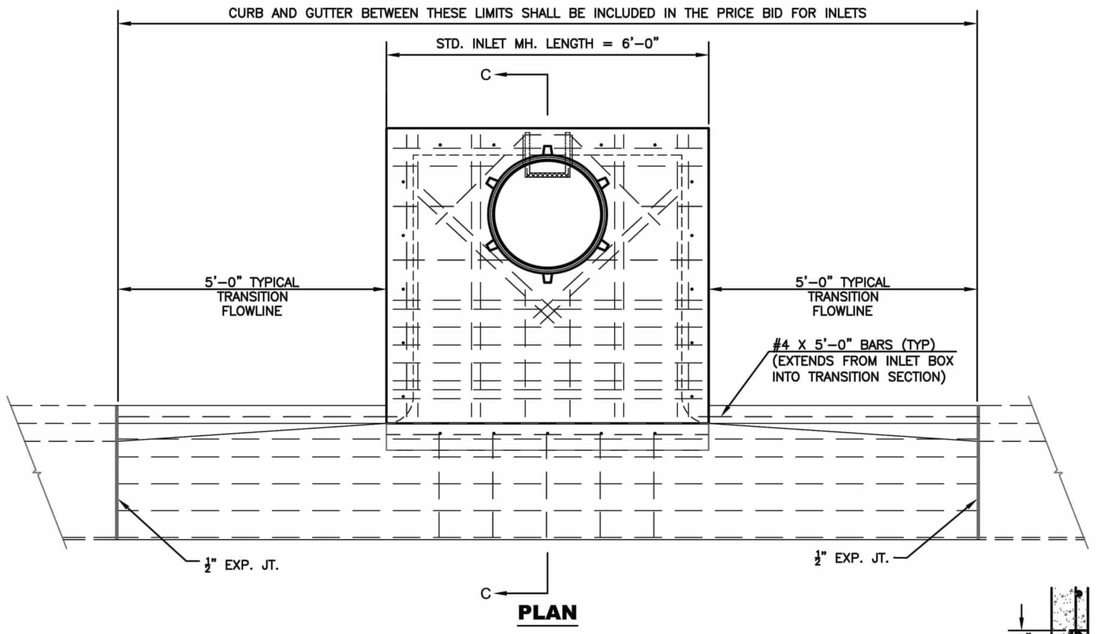
620 SE MADISON St. • 2nd Floor • TOPEKA, KS 66607
Phone: (785) 368-3842 • Fax: (785) 368-3881

STANDARD DETAILS

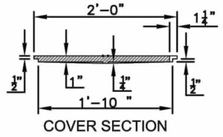
TYPE I INLETS
(DT-009)

DATE: 12/18/2025
SHEET: 73 OF 87
281381.00, 501144.00, 401139.00
PROJ.:

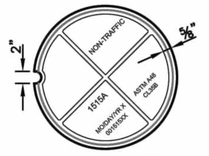


PLAN

TOP OF COVER



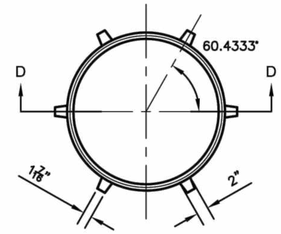
COVER SECTION

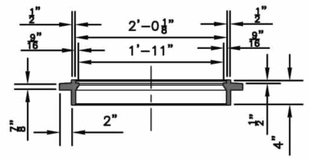


BACK OF COVER

MANHOLE COVER

WT. 69 lbs.



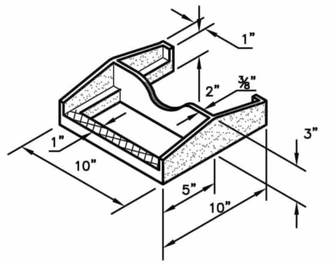


SECTION D-D

FRAME CASTING

WT. 64 lbs.

CLAY AND BAILEY NO. 3215 OR APPROVED EQUAL.

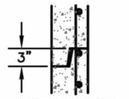


MH STEP CASTING

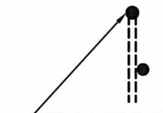
WT. 11 lbs.

CLOW–NATIONAL NO. F–3650 CLAY AND BAILEY NO. 2113 NEENAH R–1980–E OR EQUAL

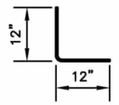
COPOLYMER POLYPROPYLENE PLASTIC STEP, PS1–PF or PS2–PF, MANUFACTURED BY M.A. IND. INC. OR APPROVED EQUAL MAY BE USED AS AN ALTERNATE TO DETAILED CASTING. THIS STEP MAY BE CAST IN PLACE OR INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDED INSTALLATION PROCEDURE.



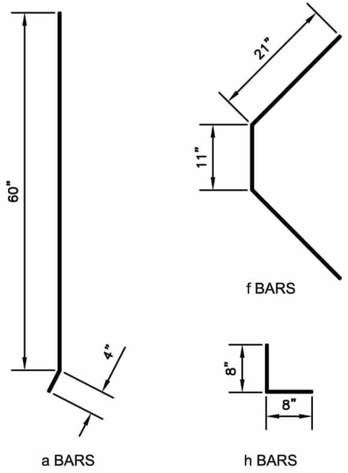
JOINT DESIGN IF MORE THAN ONE SECTION.

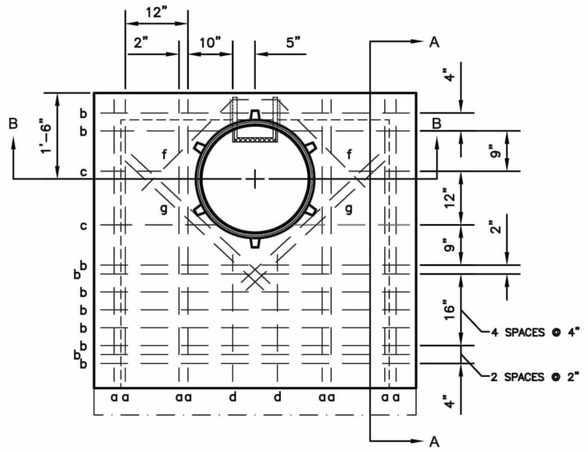


TIE ALL REBAR INTERSECTIONS IN RISER WALLS EXCEPT: #3 BAR GRADE 40 WELDED TO TOP OF VERTICAL BARS



CORNER BARS #4 BARS 24" LONG TIE @ 12" CENTERS ALL CORNERS



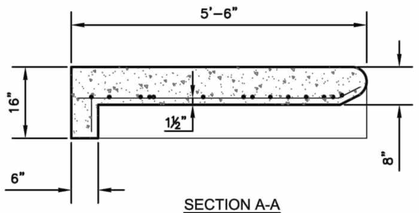


LONGITUDINAL BAR SIZE

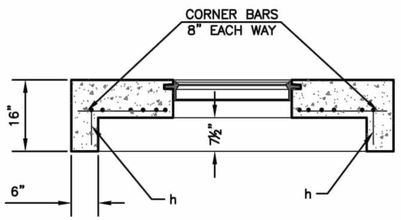
L = 4' – 5' #4 BAR
L = 6' – 7' #5 BAR
L = 8' – 10' #6 BAR
ALL TRANSVERSE BARS ARE #4'S

#4, #5, #6 BARS, ASTM A–615, GRADE 60

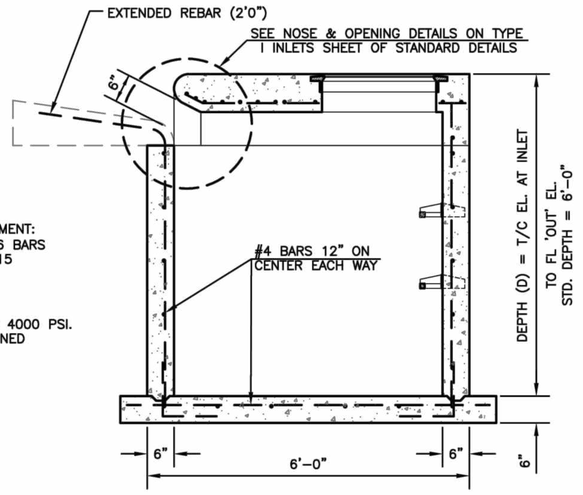
CONCRETE: 4000 PSI. AIR ENTRAINED



SECTION A-A



SECTION B-B



REINFORCEMENT:
#4, #5, #6 BARS
ASTM A–615
GRADE 60

CONCRETE: 4000 PSI.
AIR ENTRAINED

SECTION C-C

NOTES:
1. STEPS SHALL BE INSTALLED IN ALL INLETS OVER 4' DEEP AND LOCATED UNDER MANHOLE RING AND COVER.
2. SUPPLIERS SHALL GRIND ALL BURRS SMOOTH ON CASTINGS.
3. THE INLET TOP SHALL SIT SQUARELY ON TOP OF THE INLET BOTTOM SECTION. THE INLET WALLS SHALL NOT BE OFFSET MORE THAN ONE INCH BETWEEN TOP AND BOTTOM SECTIONS.
4. MAXIMUM PIPE INTRUSION INTO STRUCTURE IS 6". UNIQUE STRUCTURES MIGHT REQUIRE ADDITIONAL ANALYSIS. ENGINEER APPROVAL REQUIRED.

NO.	DATE:	REVISION	BY:	APP'D
4	June 2018	Added maximum pipe intrusion note	DHS	JVH
3	March 2013	Changed inlet top thickness to 8"	DHS	SB
2	Dec. 2009	Added #4 bar to PLAN & 3. to NOTES	DHS	SB
1	Feb. 2008	Mod. MH Cover	DHS	SB

DRAWN BY: rm/mc
APP'D BY: [signature]

SHAWNEE COUNTY, KANSAS
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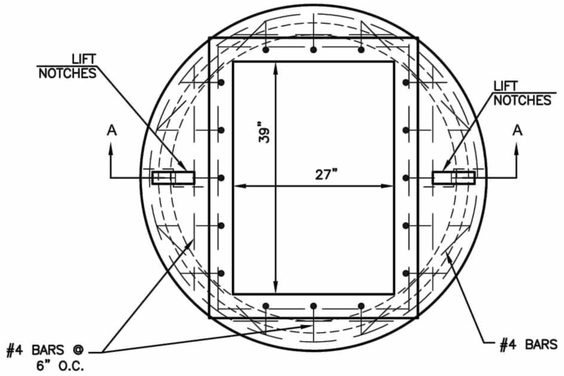
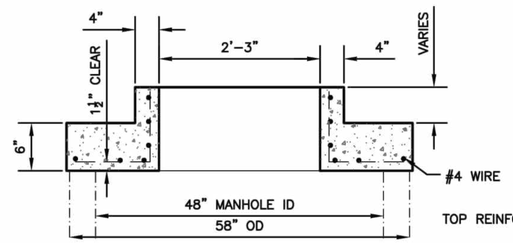
STANDARD DETAILS

TYPE I-P INLETS
(PRECAST)
(DT-010)

DATE: 12/18/2025
SHEET: 74 OF 87
281381.00, 501144.00,
PROJ.: 401139.00

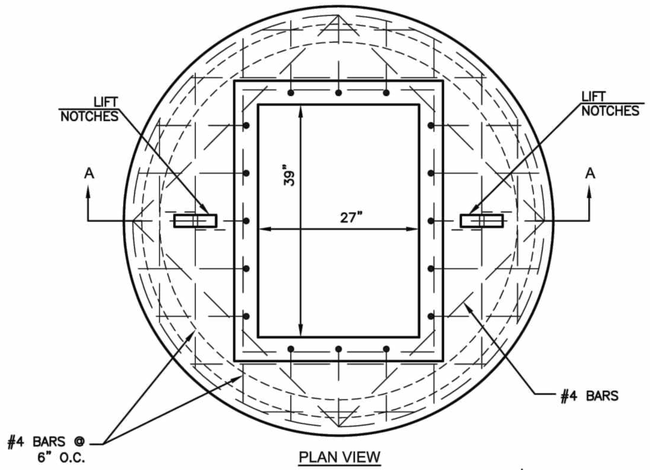


PLAN VIEW

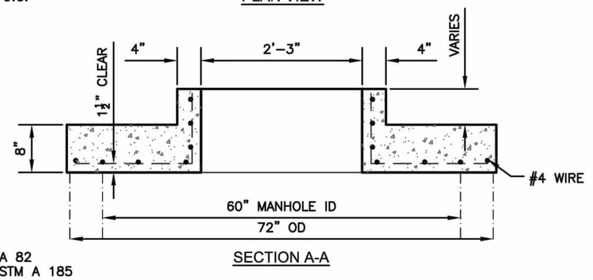


SECTION A-A

4' DIA. PRECAST TOP

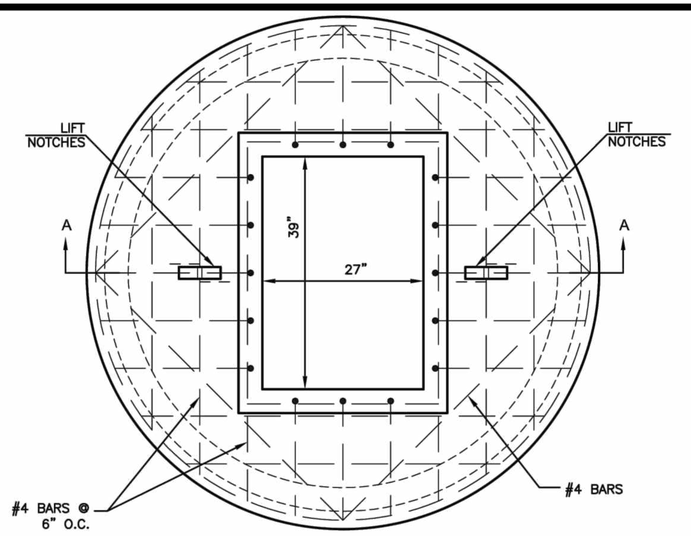


PLAN VIEW

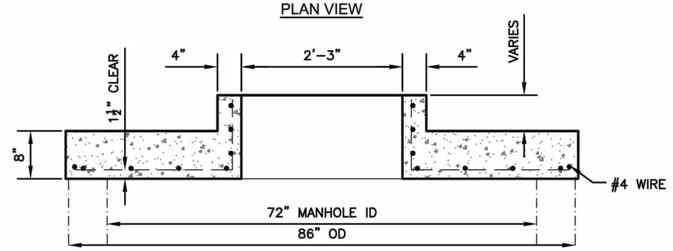


SECTION A-A

5' DIA. PRECAST TOP



PLAN VIEW



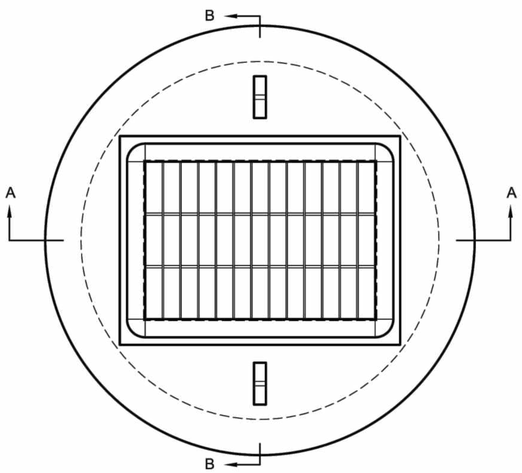
SECTION A-A

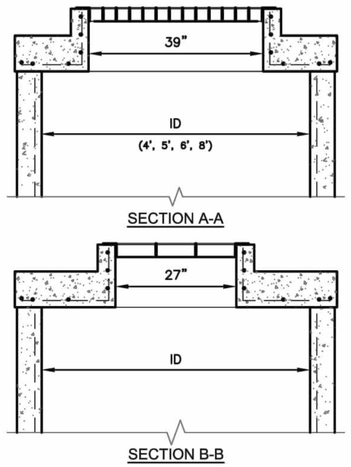
6' DIA. PRECAST TOP

TOP REINFORCEMENT :#4 WIRE, ASTM A 82
:WELDED WIRE, ASTM A 185
:#4 AND #5 BARS, ASTM A 615

TOP CONCRETE :4000 PSI (AE)

PRECAST TYPE II-P AREA INLET MANHOLE TOP

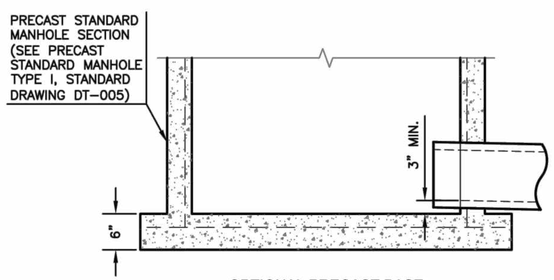




SECTION A-A

SECTION B-B

PRECAST TYPE II-P AREA INLET MANHOLE



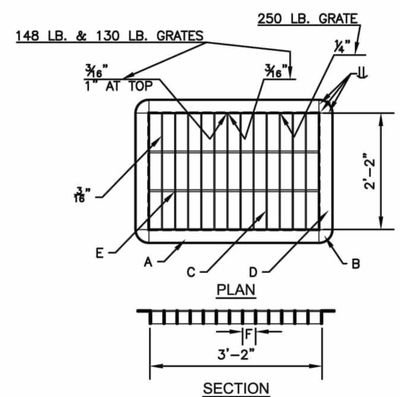
OPTIONAL PRECAST BASE

NOTE: MAXIMUM PIPE INTRUSION INTO STRUCTURE IS 6". UNIQUE STRUCTURES MIGHT REQUIRE ADDITIONAL ANALYSIS. ENGINEER APPROVAL REQUIRED.

148 LB. PEDESTRIAN GRATE	
A	2 EA. ∠ 3"x3"x3'-1½"
B	4 EA. PL ¼"X3"x0'-3"
C	25 EA. ∠ 3"x3"x2'-1⅛"
D	2 EA. ∠ 3"x3"x2'-1½"
E	52 EA. PL ⅜"x1½"x0'-1⅛"
F	1⅞" O.C.

250 LB. TRAFFIC GRATE	
A	2 EA. ∠ 3"x3"x3'-1⅛"
B	4 EA. PL ¼"X3"x0'-3"
C	12 EA. ∠ 3"x3"x2'-4"
D	2 EA. ∠ 3"x3"x2'-1"
E	26 EA. PL ⅜"øx0'-2⅛"
F	2⅛" O.C.

130 LB. YARD GRATE	
A	2 EA. ∠ 3"x3"x3'-1½"
B	4 EA. PL ¼"X3"x0'-3"
C	12 EA. PL ¼"x3"x2'-1⅛"
D	2 EA. ∠ 3"x3"x2'-1½"
E	26 EA. PL ⅜"øx0'-2⅛"
F	2⅛" O.C.



AREA INLET GRATE

NO.	DATE:	REVISION	BY:	APP'D
2	June 2018	Ext pipe into struc, Added max intr note	DHS	JVH
1	Feb. 2008	Update	DHS	SB

DRAWN BY: rm/mc

APP'D BY: [signature]

SHAWNEE COUNTY, KANSAS
PUBLIC WORKS DEPARTMENT
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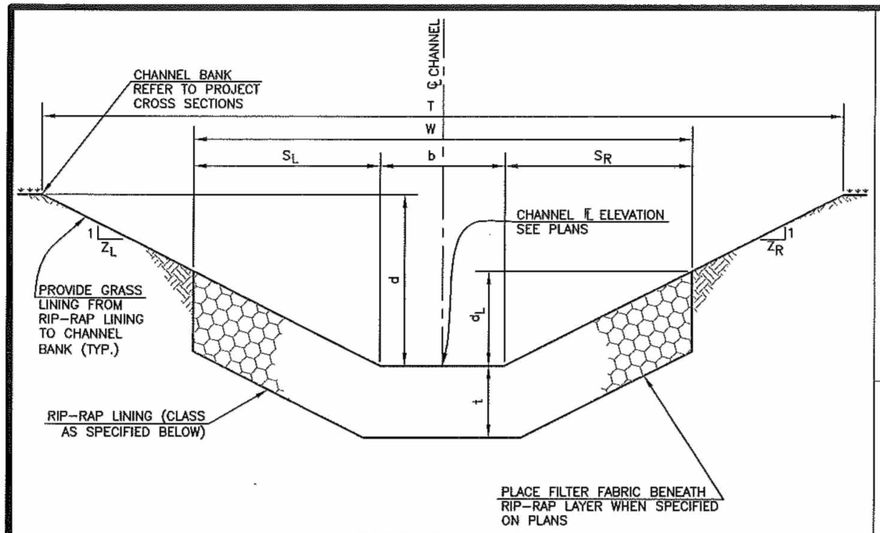
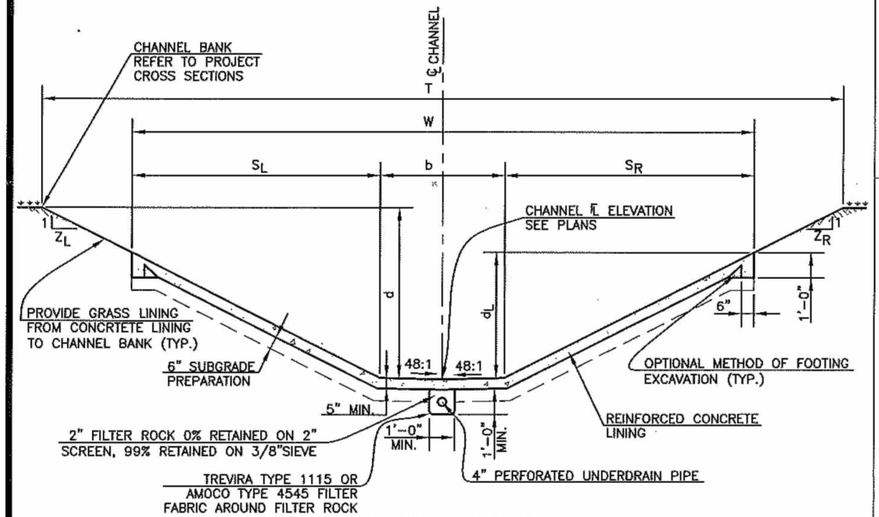
STANDARD DETAILS

TYPE II-P AREA INLET MANHOLE
(PRECAST)
(DT-013)

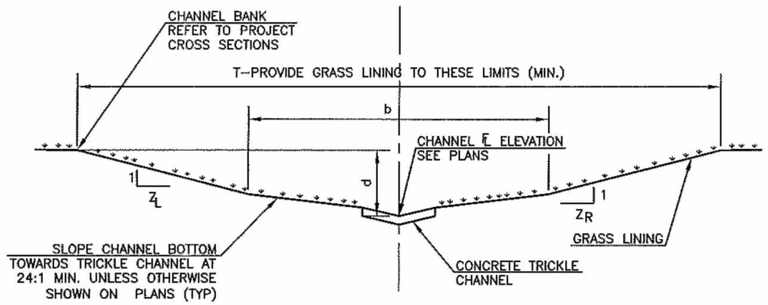
DATE: 12/18/2025
SHEET: 75 OF 87
281381.00, 501144.00,
PROJ.: 401139.00



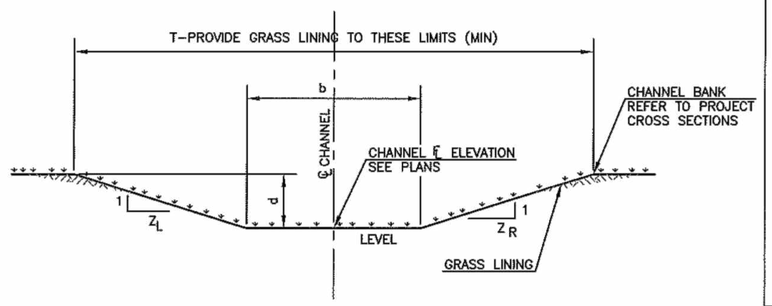
RIP-RAP LINING



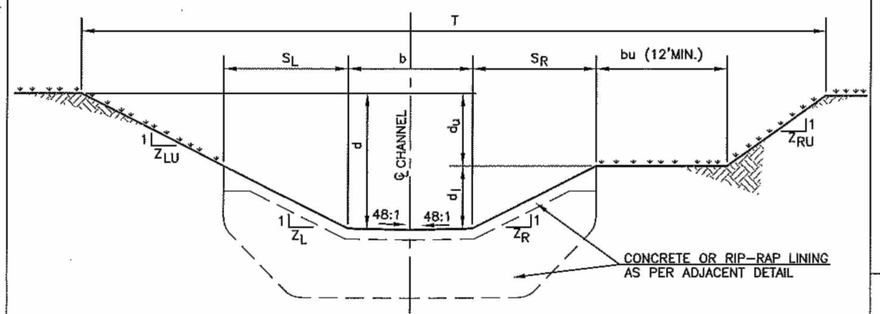
CONCRETE LINING



GRASS LINING



STANDARD SECTION



COMPOUND SECTION

NOTES - RIP-RAP LININGS

1. MATERIALS USED FOR STONE RIP–RAP SHALL CONFORM TO THE REQUIREMENTS OF THE KANSAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, LATEST EDITION. GRADATION FOR EACH CLASS OF RIP–RAP SPECIFIED SHALL BE IN ACCORDANCE WITH THE TABLE AT BOTTOM OF PAGE.
2. BROKEN CONCRETE RIP–RAP MAY BE SUBSTITUTED FOR STONE RIP–RAP PROVIDED IT MEETS GRADATION REQUIREMENTS FOR THE CLASS OF RIP–RAP SPECIFIED

NOTES - CONCRETE LININGS

1. ALL CONCRETE SHALL BE "PAVEMENT CLASS" IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
2. MIXING, PLACING, FINISHING, JOINTING AND CURING OF ALL CONCRETE SHALL BE IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF THE STANDARD TECHNICAL SPECIFICATIONS SECTION 5.8.b
3. WELDED WIRE FABRIC (WWF 6x6–W2.9xW2.9) SHALL BE USED THROUGHOUT AND CENTERED IN ALL SLABS AND FOOTINGS. WIRE FABRIC SHALL CONFORM TO ASTM A 185

NOTES - GRASS LININGS

1. SEEDING, FERTILIZING AND SODDING FOR GRASS LININGS SHALL BE IN ACCORDANCE WITH SECTION 4, OBSTRUCTIONS AND INCIDENTAL CONSTRUCTION OF THE STANDARD TECHNICAL SPECIFICATIONS. THE TYPE OF SEED OR SOD SHALL BE AS SPECIFIED ON THE PLANS. FESCUE SHALL BE APPLIED AT THE RATES GIVEN IN THE SPECIFICATIONS. SMOOTH BROME OR BERMUDA GRASS SHALL BE APPLIED AS SPECIFIED BELOW.

TYPE OF GRASS SEED	RATES OF APPLICATION LBS/AC.	LBS/SY
SMOOTH BROME	50	0.01
BERMUDA	70	0.014

2. TEMPORARY EROSION CONTROL MEASURES FOR GRASS LINED CHANNELS SHALL BE PROVIDED AS SPECIFIED ON THE PLANS.

GENERAL NOTES

1. ALL EXCAVATION, EMBANKMENT AND SUBGRADE PREPARATION REQUIRED FOR CONSTRUCTION OF OPEN CHANNELS SHALL BE IN ACCORDANCE WITH SECTION 3, EARTHWORK, OF THE STANDARD TECHNICAL SPECIFICATIONS. REFER TO THE PROJECT CROSS SECTIONS FOR EXACT LINES AND GRADES AND DETERMINATION OF EARTHWORK VOLUMES.
2. THE FOLLOWING UNITS OF MEASUREMENT SHALL APPLY TO ALL ITEMS OF WORK DETAILED ON THIS SHEET, UNLESS OTHERWISE SHOWN ON THE PROPOSAL.

CONCRETE CHANNEL LINING:	SQUARE YARD (ACTUAL
RIP–RAP CHANNEL LINING:	EXPOSED SURFACE AREA)
GRASS CHANEL LINING:	SQUARE YARD OR ACRE
4" UNDERDRAIN, IN PLACE INCLUDING FILTER ROCK AND FILTER FABRIC:	LINEAR FOOT

3. REFER TO "WASH CHECK, TRICKLE CHANNEL & FLUME" STANDARD DETAIL SHEET FOR CONCRETE TRICKLE CHANNEL DETAILS.

OPEN CHANNEL SCHEDULE

NO. OR STA. FROM – TO	STANDARD SECTION					COMPOUND SECTION					*LINING					RIP–RAP LINING	
	T	b	d	Z_L	Z_R	T	bu	du	Z_{LU}	Z_{RU}	TYPE	W	d_L	S_L	S_R	CLASS	t

*LINING TYPE: G = GRASS
Gt = GRASS WITH TRICKLE CHANNEL
R = RIP–RAP
C = CONCRETE

RIP-RAP GRADUATION REQUIREMENTS

CLASS	D	**GRADATION, MINIMUM PERCENTAGE LARGER THAN									
		2000lb	1400lb	700 lb	500 lb	200 lb	100 lb	60 lb	40 lb	25 lb	12 lb
		3' dia	2.5'dia	2' dia	1.8'dia	1.3'dia	1.0'dia	0.9'dia	0.8'dia	0.7'dia	0.5'dia
I	0.50' 0.75'						0				100
II	1.00' 1.50'			0						100	
III	2.00'	0							100		

**BASED ON UNIT WEIGHT OF 165 LB/FT^3–MINIMUM UNIT WEIGHT 150 LB/FT^3

NO.	DATE:	REVISION	BY:	APP'D
1	Feb. 2008	Mod. Rip–Rap Note	DHS	SB

DRAWN BY: rm/mc
APP'D BY: R. Chantry Kaup

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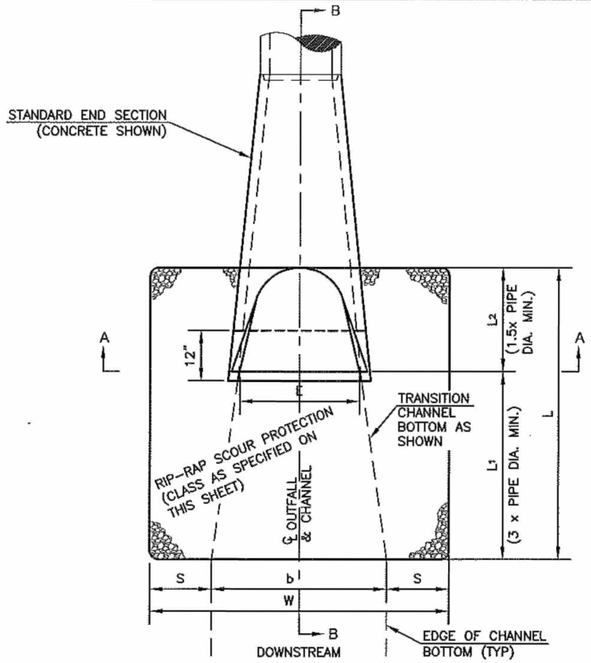
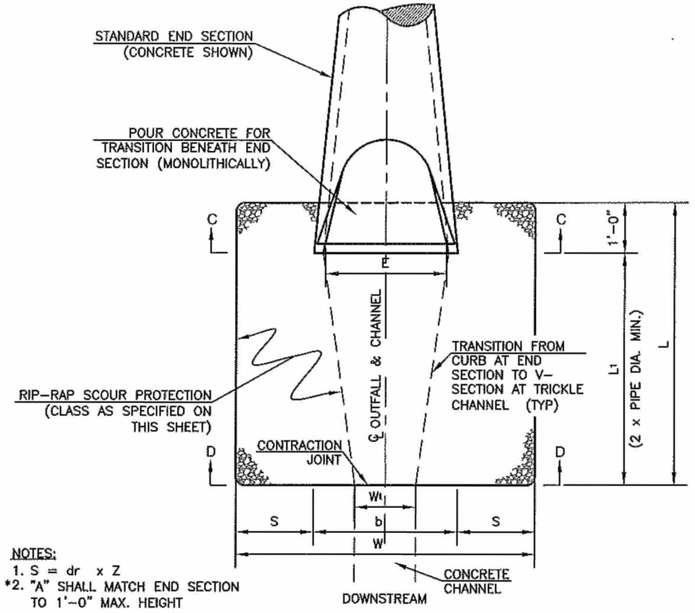
STANDARD DETAILS

CHANNEL LININGS
(DT-014)

DATE: 12/18/2025
SHEET: 76 OF 87
281381.00, 501144.00,
PROJ.: 401139.00

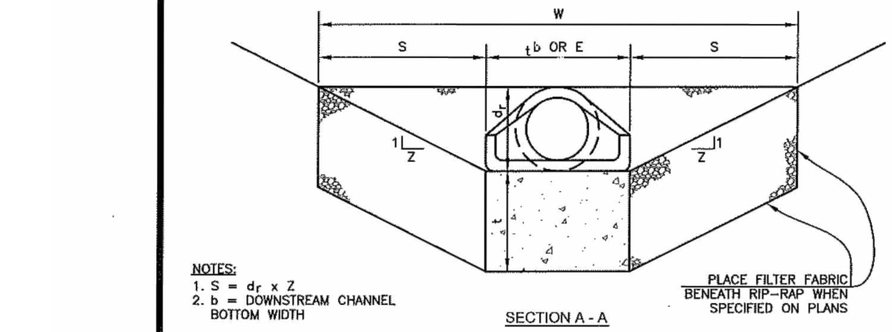


OUTFALL WITH RIP-RAP SCOUR PROTECTION



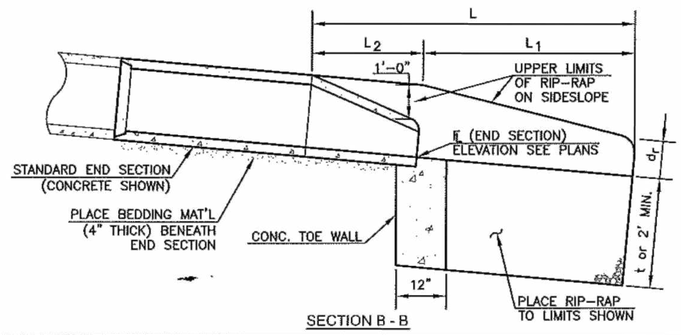
NOTES:
1. S = dr x Z
*2. "A" SHALL MATCH END SECTION TO 1'-0" MAX. HEIGHT

OUTFALL TO TRICKLE CHANNEL TRANSITION & SCOUR PROTECTION

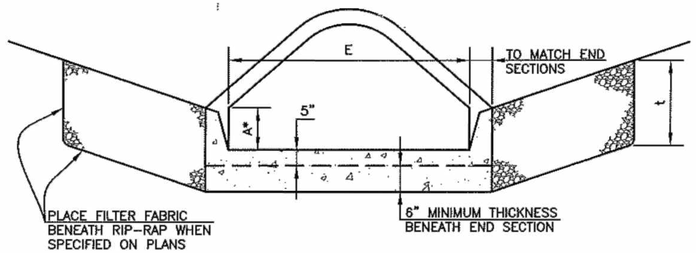


NOTES:
1. S = d_r x Z
2. b = DOWNSTREAM CHANNEL BOTTOM WIDTH

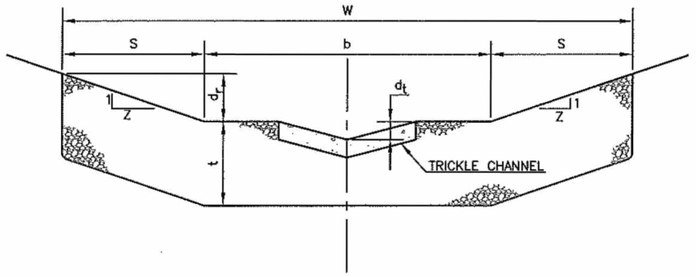
SECTION A - A



SECTION B - B



SECTION C - C



SECTION D - D

GENERAL NOTES:

1. ALL CONCRETE SHALL BE "PAVEMENT CLASS", IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
2. MIXING, PLACING, FINISHING, JOINTING AND CURING OF ALL CONCRETE SHALL BE IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF THE STANDARD SPECIFICATIONS FOR SIDEWALKS AND DRIVEWAYS.
3. WELDED WIRE FABRIC (WWF 6 x 6–W2.9 x W2.9) SHALL BE USED THROUGHOUT AND CENTERED IN ALL SLABS AND FOOTINGS. WIRE FABRIC SHALL CONFORM TO ASTM A 185.
4. MATERIALS USED FOR STONE RIP–RAP SHALL CONFORM TO THE OF THE KANSAS DEPT. OF TRANSPORTATION STANDARD SPECIFICATIONS, LATEST EDITION. GRADATION FOR EACH CLASS OF RIP–RAP SPECIFIED SHALL BE IN ACCORDANCE WITH THE ABOVE TABLE.
5. BROKEN CONCRETE RIP–RAP MAY BE SUBSTITUTED FOR STONE RIP–RAP PROVIDED IT MEETS GRADATION REQUIREMENTS FOR THE CLASS OF RIP–RAP SPECIFIED.
6. THE FOLLOWING UNITS OF MEASUREMENT SHALL APPLY TO ALL ITEMS OF WORK DETAILED ON THIS SHEET, UNLESS OTHERWISE SHOWN ON THE PROPOSAL.

   CONCRETE TRANSITION — SQUARE FOOT (ACTUAL EXPOSED SURFACE AREA)

   STONE RIP–RAP, BROKEN CONCRETE RIP–RAP — SQUARE YARD (FOR EACH CLASS OF RIP–RAP)
7. REFER TO "CONCRETE WASH CHECK, TRICKLE CHANNEL & FLUME" STANDARD DETAIL SHEET FOR CONCRETE TRICKLE CHANNEL DETAILS.

RIP-RAP GRADATION REQUIREMENTS

CLASS	D_{50}	*GRADATION, MINIMUM PERCENTAGE LARGER THAN									
		2000lb	1400lb	700 lb	500 lb	200 lb	100 lb	60 lb	40 lb	25 lb	12 lb
		3' dia	2.5'dia	2' dia	1.8'dia	1.3'dia	1.0'dia	0.9'dia	0.8'dia	0.7'dia	0.5'dia
I	0.50' 0.75'						0				100
II	1.00' 1.50'			0						100	
III	2.00'	0							100		

*BASED ON UNIT WEIGHT OF 165 lb/ft^3 – MINIMUM UNIT WEIGHT = 150 lb/ft^3

OUTFALL SCHEDULE

OUTFALL NO OR STATION	d_r	Z	S	b or E	W	L_1	L_2	L	RIP–RAP CLASS	t	TRANSITION			
											E	A	Wt	dt

NO.	DATE:	REVISION	BY:	APP'D
1	Feb. 2008	Mod. General Notes	DHS	SB

DRAWN BY: rm/mc
APP'D BY: R. Chumley-Kemp

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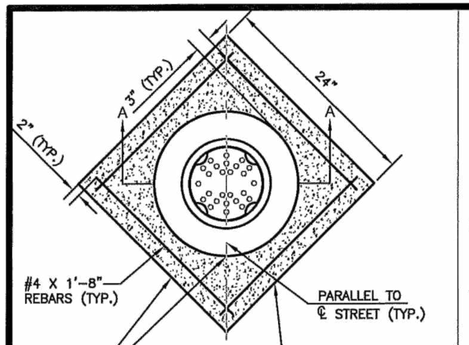
STANDARD DETAILS

PIPE OUTFALLS
(DT-015)

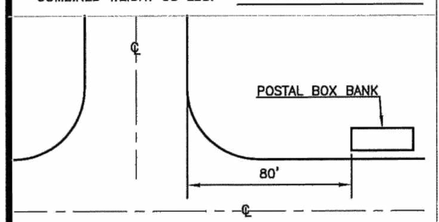
DATE: 12/18/2025
SHEET 77 OF 87
281381.00, 501144.00,
PROJ.: 401139.00



SECT. A - A

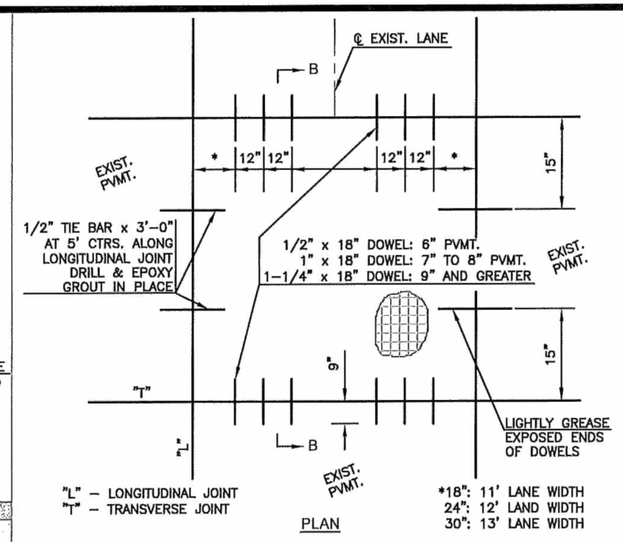
NOTES:
1. THE TOP OF THE MONUMENTATION WITHIN THE MONUMENT BOX WILL BE BELOW THE BOTTOM OF THE MONUMENT BOX AND PAVEMENT ELEVATION TO ACCOMMODATE FREE PAVEMENT MOVEMENT WITHOUT DISPLACEMENT OF THE MONUMENT. ALL MONUMENTS IN CONCRETE WILL BE PLACED IN SUCH A WAY THAT THE TOP OF CONCRETE IS A MINIMUM OF 3" CLEAR OF THE BOTTOM OF THE MONUMENT BOX AND PAVEMENT, TO ALLOW DRAINAGE PERCOLATION OF SURFACE SEEPAGE AWAY FROM THE BOX.
2. ALTERNATE INSTALLATION: 24" DIAMETER CORE DRILL CENTERED AROUND THE MONUMENT WITH #4 REBAR HOOPS MAINTAINING A 3" CLEARANCE FROM MONUMENT AND EDGE OF CONCRETE COLLAR.
3. CLAY AND BAILEY MFG. CO.
   COVER NO. 02193-01-1052
   RING NO. 02193-01-2050
   COMBINED WEIGHT 95 LBS.

CAST IRON MONUMENT BOX



NOTE:
WHERE BANKS OR GROUPS OF POSTAL BANKS ARE TO BE INSTALLED, THEY SHALL BE A MINIMUM OF EIGHTY (80) FEET FROM THE INTERSECTION BACK OF CURB.

POSTAL BOX BANKS

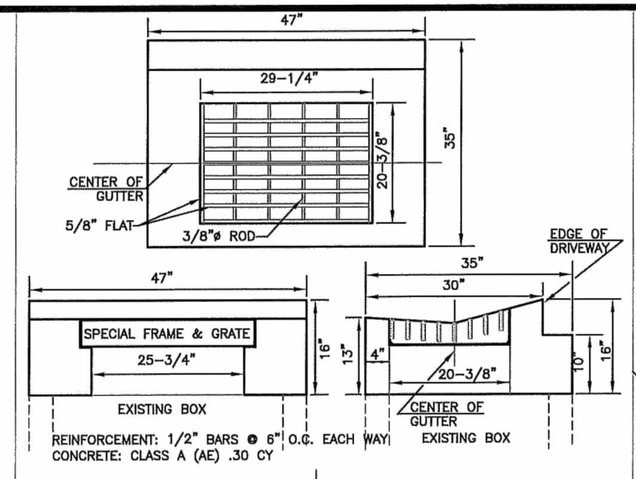


PLAN

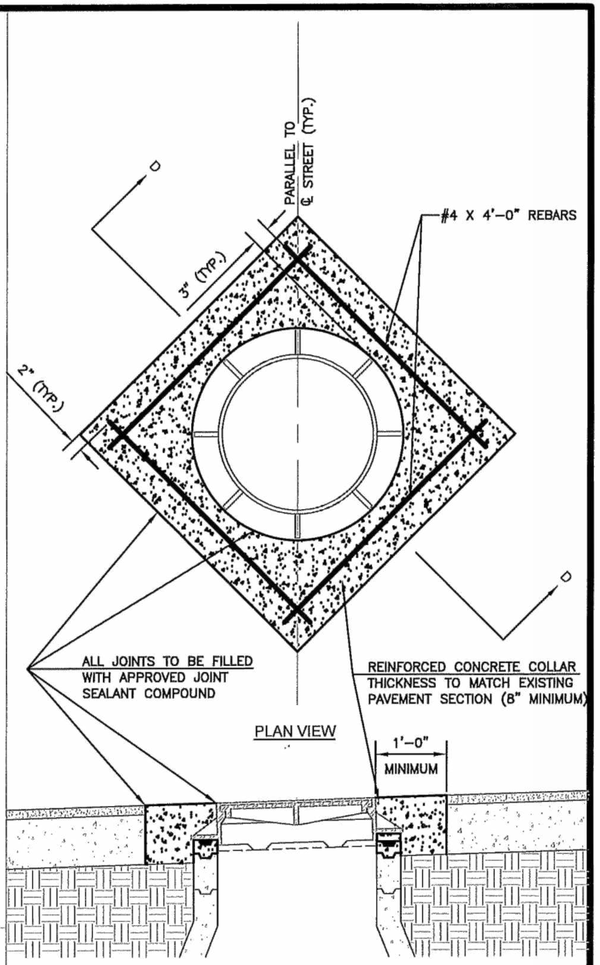
SECT. B - B

NOTES:
1. ALL MATERIAL AND METHODS SHALL BE IN ACCORDANCE WITH CITY OF TOPEKA STANDARD TECHNICAL SPECIFICATIONS, LATEST EDITION.
2. DOWEL HOLE SIZE = O.D. OF DOWEL + 1/8".
3. EPOXY GROUTING PER SEC. 830, KDOT STANDARD SPECIFICATIONS FOR STATE ROAD & BRIDGE CONSTRUCTION, LATEST EDITION.

FULL PANEL REPAIR & UTILITY CUTS FOR CONCRETE PAVEMENT



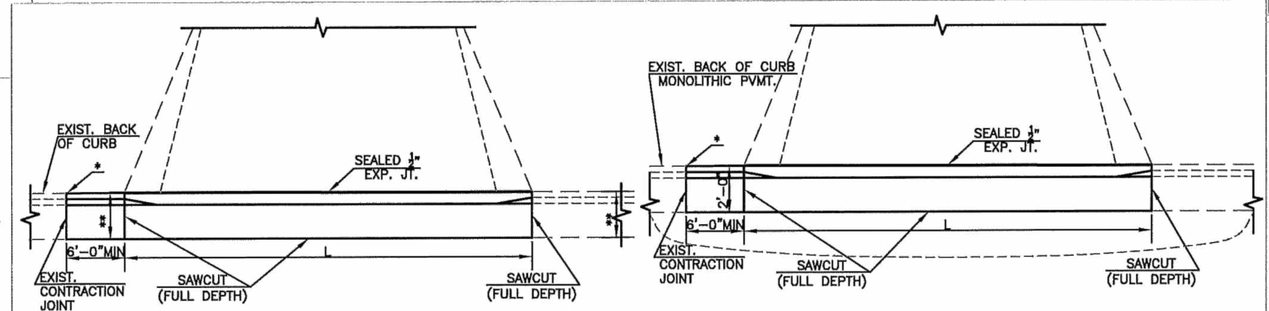
SPECIAL II-P GRATE TOP



SECT. D - D

NOTES:
1. PAVEMENT SHALL BE REMOVED BY FULL DEPTH SAW CUTTING WHILE PROTECTING NEW PAVEMENT.
2. THE ORIENTATION OF THE REINFORCED CONCRETE COLLAR SHALL BE AS SHOWN OR FIELD DETERMINED BY ENGINEER.
3. ADJUST MANHOLE RING TO MATCH PAVEMENT CROSS SLOPE USING APPROVED CONCRETE MANHOLE GRADE ADJUSTMENT RINGS AND CONCRETE BLOCKS OR APPROVED HIGH-DENSITY POLYETHYLENE MANHOLE ADJUSTMENT RINGS.
4. SET MANHOLE RING WITH 2 RINGS OF 3/4" PREFORMED MASTIC SEALANT.
5. ALL TIME AND MATERIAL NECESSARY TO PERFORM THIS WORK SHALL BE CONSIDERED SUBSIDIARY TO THE BID ITEM "MANHOLE ADJUSTMENT".

MANHOLE ADJUSTMENT



PAVEMENT WITH CURB & GUTTER

MONOLITHIC CONCRETE PAVEMENT WITH INTEGRAL CURB

* IF CURB AND GUTTER TO BE REMOVED IS WITHIN 6'-0" OF AN EXISTING JOINT, REMOVE CURB AND GUTTER BACK TO EXISTING JOINT.
L - PER CITY STANDARD DESIGN CRITERIA.
** MATCH EXISTING CURB WIDTH.

CURB CUT/REMOVAL FOR NEW RESIDENTIAL DRIVE APPROACH

NO.	DATE:	REVISION	BY:	APP'D
8	Oct. 2020	Updated cast iron monument box	JOT	BDF
7	Oct. 2017	Updated cast iron monument box	DHS	JPS
6	March 2013	Added grease to dowels & bar size to "	DHS	SB
5	Jan. 2013	Added Manhole Adjustment detail	DHS	SB
4	Jan. 2013	Removed Brick S/W & Stone Curb details	DHS	SB
3	Dec. 2012	Changed to tie bar from dowel	DHS	SB
2	Dec. 2009	Dowel size & # pvmt range and curb det.	DHS	SB

DRAWN BY: jt/rm
APP'D BY: BD Fait

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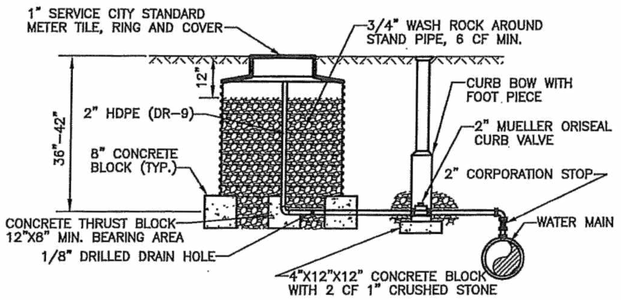
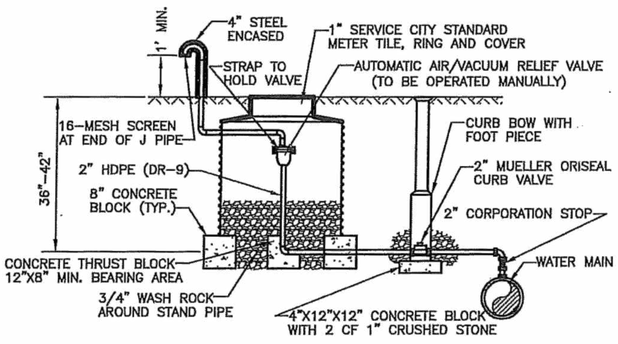
STANDARD DETAILS

MISCELLANEOUS DETAILS I
(DT-017)

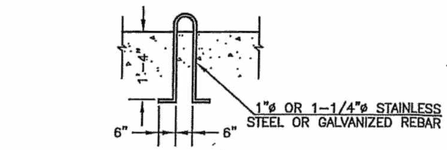
DATE: 12/18/2025
SHEET: 78 OF 87
PROJ.: 281381.00, 501144.00, 401139.00



AIR RELEASE BLOW-OFF

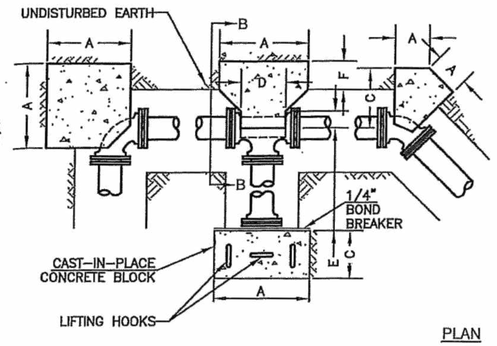


AUTOMATIC AIR/VACUUM RELEASE (OPERATED MANUALLY)

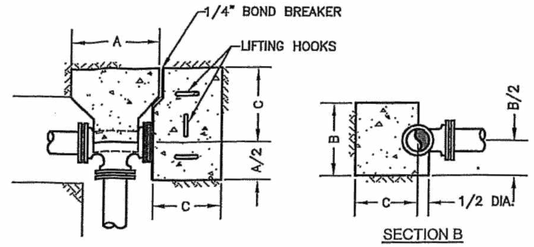


ONE (1) 1"ø HOOK FOR 16" AND SMALLER PIPING
TWO (2) 1–1/4"ø HOOKS FOR 18" AND 24" PIPING
FOUR (4) 1–1/4"ø HOOKS FOR 30" AND LARGER PIPING

LIFTING HOOK DETAIL



PLAN



SECTION B

NOTE: WHERE APPLICABLE, DO NOT COVER PIPE JOINTS OR BOLTS WITH CONCRETE.

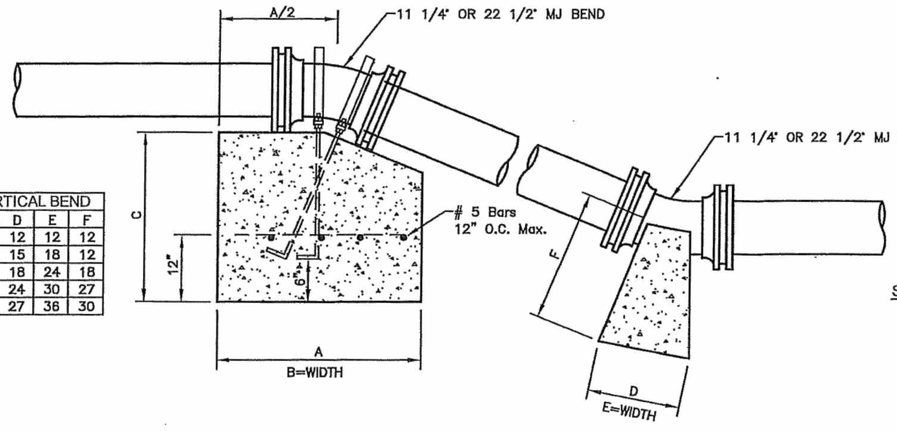
PIPE DIA.	TEES						PLUGS			90° BEND			45° BEND			22.5° BEND			11.25° BEND		
	A	B	C	D	E	F	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
4"	13	22	9	13	—	—	13	22	9	18	12	9	9	12	12	6	12	12	—	—	—
6"	24	30	16	16	6	6	24	30	12	24	18	16	10	24	12	7	18	12	—	—	—
8"	34	32	21	18	7	6	34	32	18	30	26	21	13	36	18	9	24	18	9	24	18
10"	40	42	23	22	8	6	40	42	24	35	34	24	18	38	27	12	30	27	12	30	27
12"	48	52	27	24	9	6	48	52	24	42	42	30	21	48	33	14	36	30	10	42	24
16"	54	54	32	30	12	6	54	54	24	50	42	36	24	48	40	15	42	34	10	42	24
18"	60	60	34	32	12	6	60	60	24	54	48	38	27	54	44	17	46	37	10	42	24
20"	72	66	36	36	24	10	72	66	24	72	66	54	36	66	48	18	66	42	15	48	30
24"	96	72	36	44	19	8	96	72	24	82	60	60	44	60	72	22	60	54	15	48	36
30"	108	96	60	50	20	12	108	96	24	108	72	84	54	72	84	28	72	64	17	60	36
36"	108	108	60	56	23	12	108	108	24	108	108	80	68	84	96	34	84	69	20	72	36

ALL DIMENSIONS ARE IN INCHES.
BLOCKING DESIGNED FOR 150 PSI WORKING PRESSURE AND 1500 PSF SOIL BEARING.
BLOCKING FOR REDUCED BRANCH TEES SHALL BE BASED ON BRANCH DIAMETER.
MAINTAIN MINIMUM "F" DIMENSION.

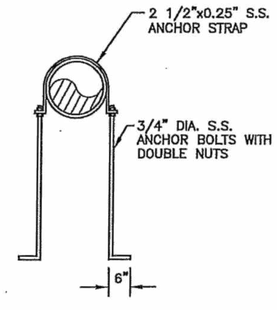
CONCRETE BLOCKING DETAILS

PIPE DIA.	45° VERTICAL BEND						22.5° VERTICAL BEND						11.25° VERTICAL BEND					
	A	B	C	D	E	F	A	B	C	D	E	F	A	B	C	D	E	F
4"	30	30	30	18	12	12	21	21	12	12	12	12	18	18	24	12	12	12
6"	36	36	36	21	24	12	21	21	18	15	18	12	21	21	27	15	18	12
8"	42	42	42	27	36	18	36	36	42	18	24	18	24	24	30	18	24	18
10"	48	48	48	36	39	27	42	42	48	24	30	27	30	30	36	24	30	27
12"	54	54	54	42	48	33	48	48	54	27	36	30	33	33	39	27	36	30

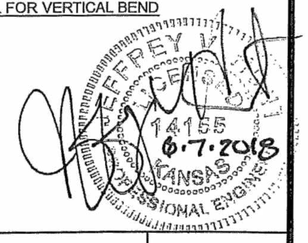
ALL DIMENSIONS ARE IN INCHES.



11 1/4°, 22 1/2°, OR 45° VERTICAL BEND BLOCKING DETAIL



STRAP DETAIL FOR VERTICAL BEND



NO.	DATE:	REVISION	BY:	APP'D
1	6/5/18	Corrected table values	DHS	PB

EDITED BY: DHS
APP'D BY: PB

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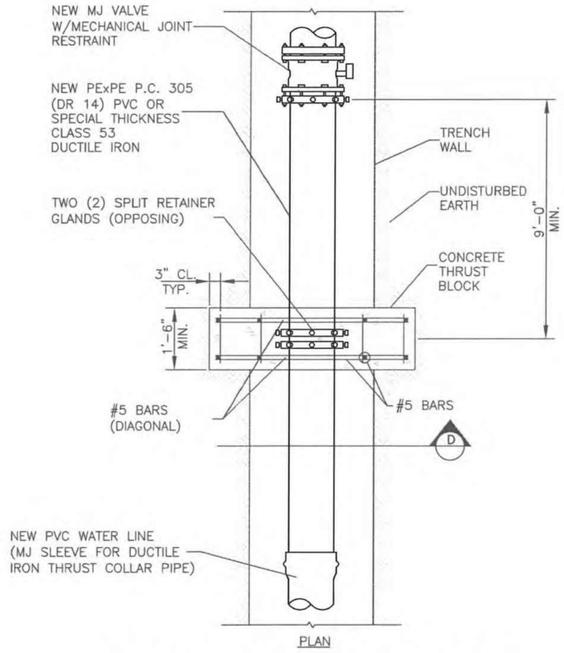
STANDARD DETAILS

WATER DETAILS I
(DT-23)

DATE: 12/18/2025
SHEET: 79 OF 87
281381.00, 501144.00,
PROJ.: 401139.00

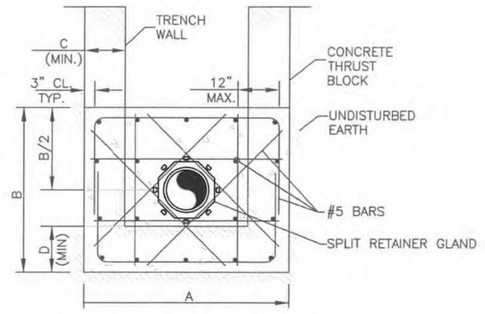


12" AND SMALLER CONCRETE THRUST COLLAR PIPE DETAIL

NO SCALE

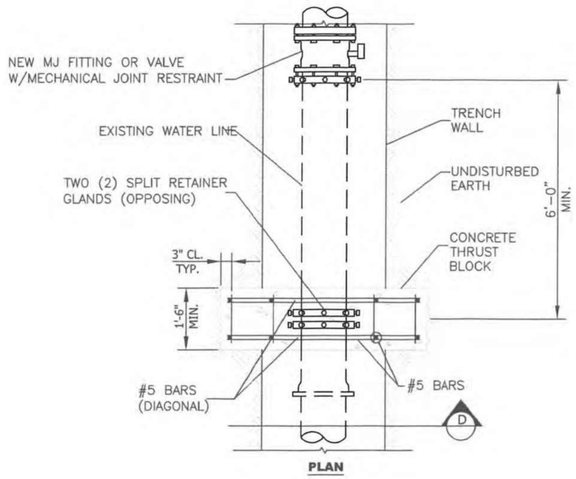
PIPE DIA.	THRUST COLLAR			
	A	B	C	D
4"	36	24	4	8
6"	46	30	8	10
8"	52	36	12	12
10"	64	42	15	14
12"	72	48	18	16

ALL DIMENSIONS ARE IN INCHES.



SECTION D

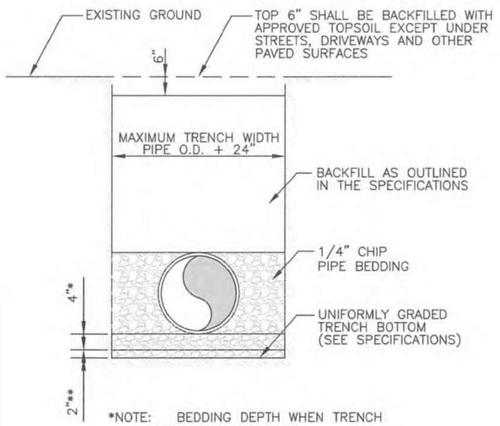
NOTE: BARS SHOWN AT MAXIMUM SPACING. MINIMUM NUMBER AND SIZE OF BARS REQUIRED AS SHOWN.



PLAN

12" AND SMALLER CONCRETE THRUST COLLAR ON EXISTING DETAIL

NO SCALE

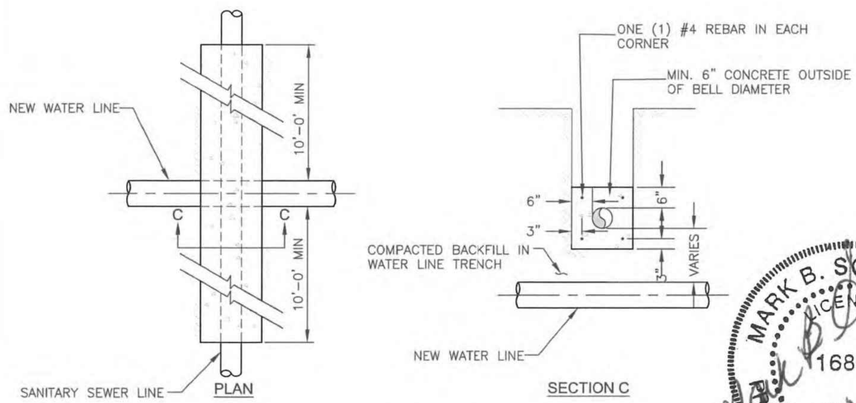


*NOTE: BEDDING DEPTH WHEN TRENCH BOTTOM IS NOT ROCK

**NOTE: ADDITIONAL BEDDING DEPTH WHEN TRENCH BOTTOM IS ROCK

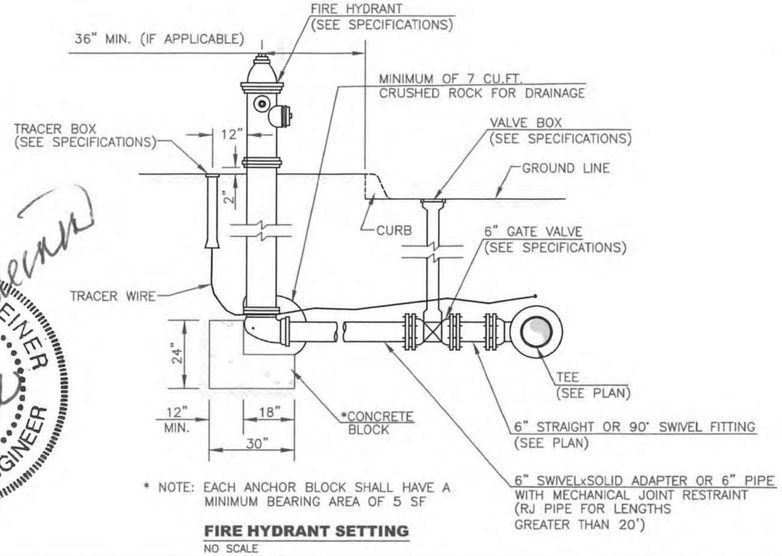
TYPICAL TRENCH & PIPE BEDDING DETAIL

NO SCALE



CONCRETE ENCASEMENT
SANITARY SEWER LINE CROSSING DETAIL

NO SCALE



* NOTE: EACH ANCHOR BLOCK SHALL HAVE A MINIMUM BEARING AREA OF 5 SF

FIRE HYDRANT SETTING

NO SCALE

NO.	DATE:	REVISION	BY:	APP'D
2	7/12/22	Updated Standard(add thrust collar detail)	MDB	MBS
1	6/9/17	Updated Standard	DHS	PB

EDITED BY: MDB

APP'D BY: MBS

SHAWNEE COUNTY, KANSAS
PUBLIC WORKS DEPARTMENT
1515 NW SALINE
TOPEKA, KS 66618
(785) 233-7702

TOPEKA Public Works ENGINEERING
620 SE MADISON St. • 2nd Floor • TOPEKA, KS 66607
Phone: (785) 368-3842 • Fax: (785) 368-3881

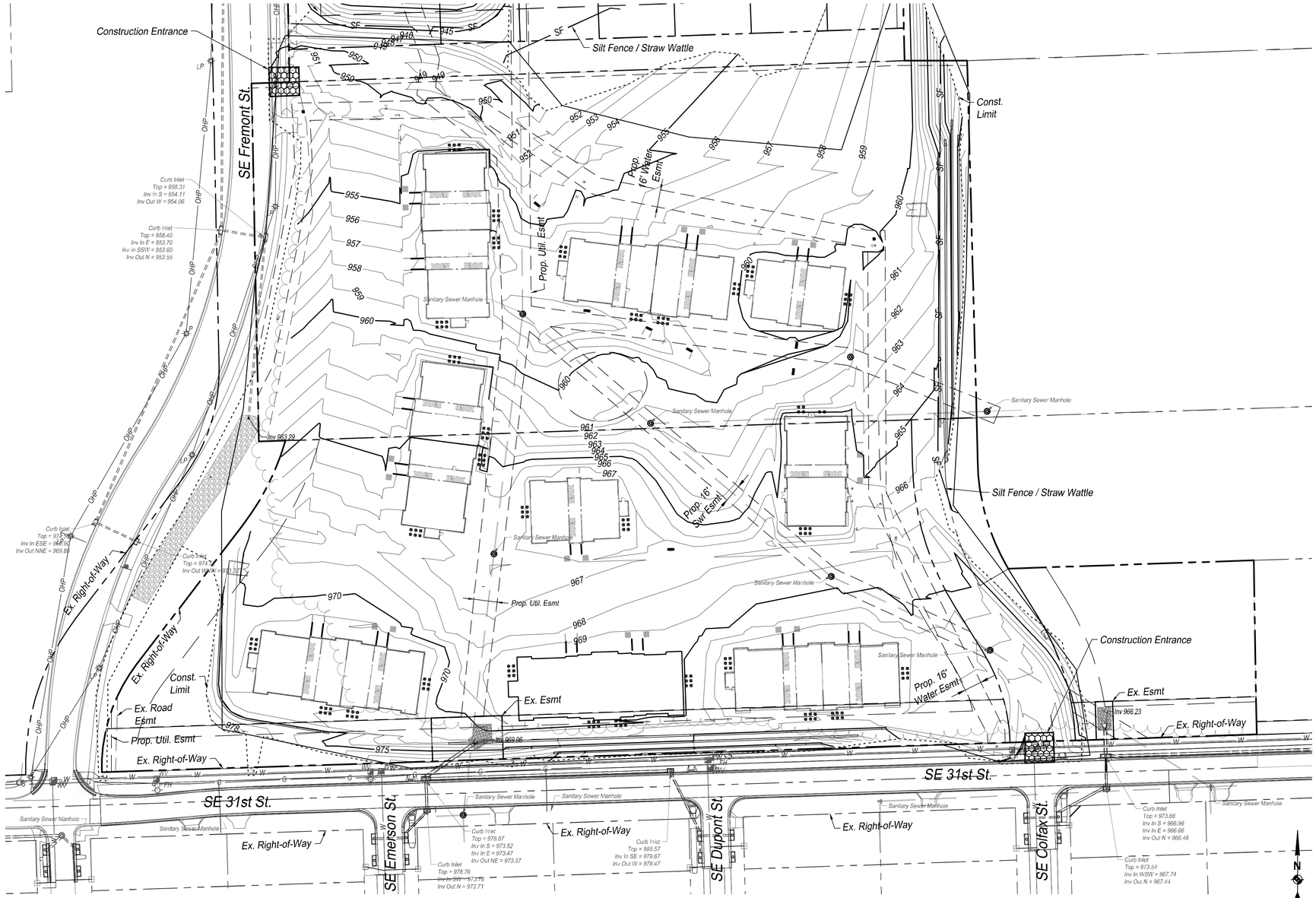
STANDARD DETAILS

WATER DETAILS 2
(DT-024)

DATE: 12/18/2025

SHEET: 80 OF 87

281381.00, 501144.00,
PROJ.: 401139.00



EROSION CONTROL NOTES:

General Notes:

- The contractor shall take all necessary measures to prevent erosion on the project and pollution of any drainage course, and shall meet the requirements of the State of Kansas stormwater runoff from construction activities general permit no. S-MCST-1703-1.
- Prior to commencement of earthwork operations, contractor shall install perimeter wattles or silt fence and construction entrance as shown on the plan. The inlet protection and additional wattles within work area shall be installed immediately after installation of the inlets and completion of rough grading.
- Erosion control measures shall be inspected and maintained by the contractor not less than weekly or within 24 hours after a rainfall event of 0.5 inches or more. Maintenance shall include but not be limited to sediment removal and silt fence repair and/or replacement. field adjustments may be made as necessary to ensure optimal performance.
- Contractor shall clear all surrounding parking lots and streets of any tracked debris by sweeping or scraping the existing pavement by the end of each workday and the contractor shall clean up soil washed off the construction site after a storm by the end of the next workday.
- During all soil disturbing activities, the contractor will take appropriate steps using accepted construction methods to minimize the time of exposure of unprotected soil and other construction materials to rainfall.
- Contractor shall keep a written log of when construction activities begin, erosion and sediment controls are installed, inspected and repaired.
- Erosion and sediment control measures shall not be removed until grass cover has been established or as directed by engineer.
- All areas shall be graded to finished grade prior to seeding and mulching. All areas not part of the hardscape or other noted landscaping shall be permanently seeded, fertilized and mulched.
- All wattles shall be straw wattle WS-12 as manufactured by North American Green, or approved equal. The wattles shall be installed per manufacturer's recommendations. The contractor may use wattles and silt fence interchangeably in areas identified on the drawings.
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Waste Disposal:

- Waste Materials: Any waste and other unusable materials will be removed from the site on a regular basis and properly disposed of in an approved site.
- Chemical Waste: All chemical waste materials will be collected and stored in a tightly sealed metal or other chemical resistant container. The container will meet all local and any state solid waste management regulations. The waste materials and all disposable materials will be transported to a commercial chemical disposal facility capable of either recycling or properly disposing of the pollutants in accordance with all applicable federal, state and local regulations. The state waste management section contact number is (785) 296-1600.
- Hazardous Waste: All hazardous waste materials, such as oil filters, petroleum products, equipment maintenance fluids and paints, shall not be stored on site and will be disposed of in the manner specified by local, state and/or federal regulations. If there are questions regarding the proper handling of hazardous wastes the contractor shall immediately contact the Kansas Department of Health and Environment Hazardous Waste Section at (785) 296-1600.
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Material Management Practices:

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Spill Prevention:

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LEGEND

- Inlet Protection
- SF — Silt Fence / Straw Wattle
- Concrete Washout

SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

CITY OF TOPEKA UTILITIES

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SBB Engineering, LLC
101 S Kansas Ave., Topeka, KS 66603
Ph: (785) 215-8630 www.sbbeng.com

Johnson-Betts Meadows
Multi-Family Residential Development
Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Erosion Control
Phase 1

DATE: 12/18/2025
SHEET: 81 OF 87
281381.00, 501144.00,
PROJ.: 401139.00

[File Location: X:\1 SBB Drawings\0-2024\24-192 HTK- Fremont Hill Topeka\dwg\Design\Site Construction Plans\24-192 EC.dwg] [Plot Date: 12/18/2025 7:19:23 PM] [Last Saved: 12/18/2025 5:25:12 PM - Jbelinski]

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SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Erosion Control
Phase 2

DATE: 12/18/2025
SHEET: 82 OF 87
PROJ.: 281381.00, 501144.00, 401139.00

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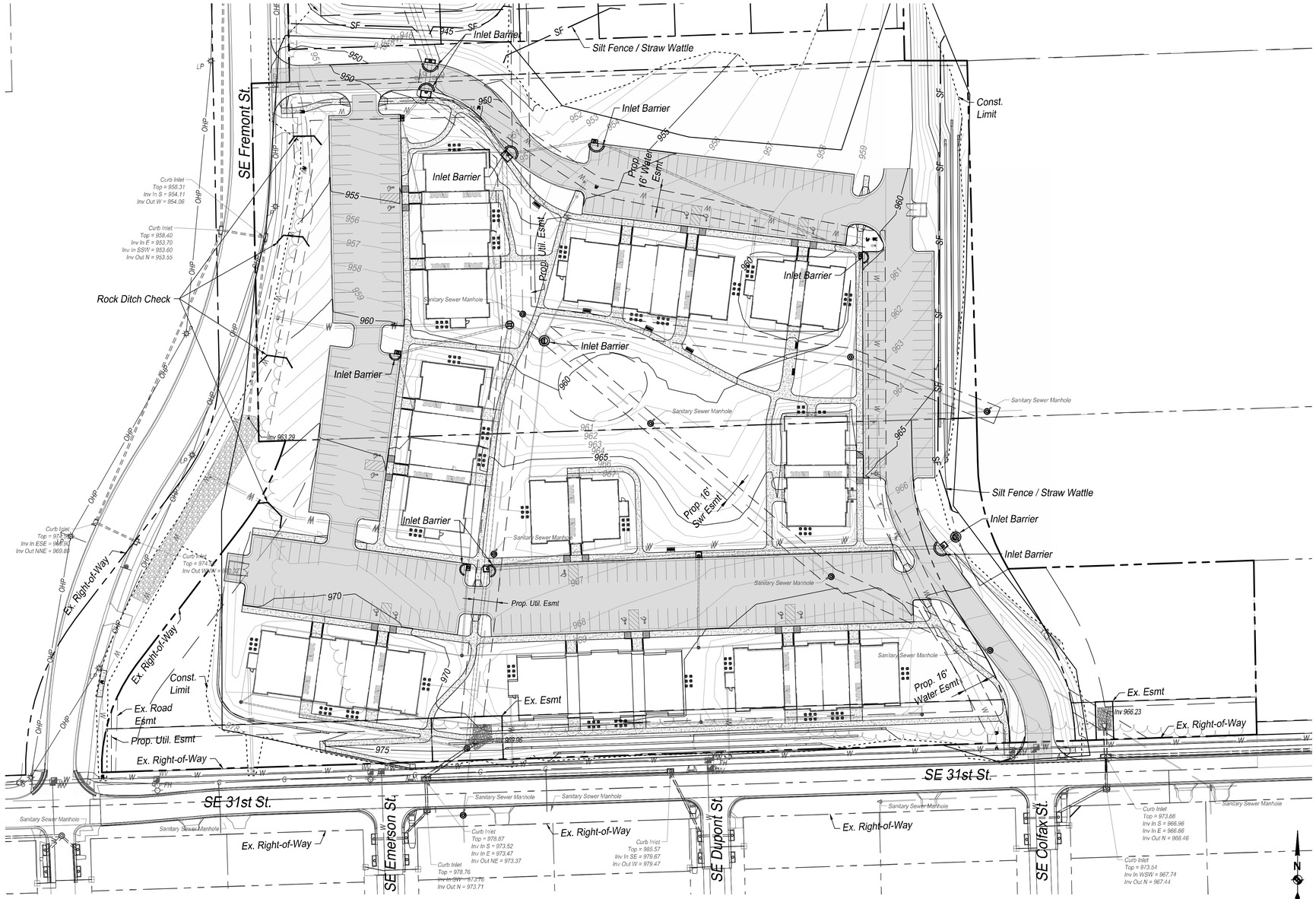

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SBB PROJ. NO. 24-192

NO.	DATE:	REVISION	BY:	APP'D

DRAWN BY: L. O'CONNOR
APP'D BY: B. AUSTIN
FIELD BOOKS: -
SURVEYED BY: SBB ENG.

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Water Line 281381.00, Stormwater 501144.00, & Sanitary 401139.00

Erosion Control
Phase 2

DATE: 12/18/2025
SHEET: 83 OF 87
281381.00, 501144.00, 401139.00
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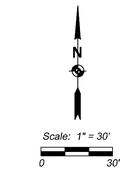

LEGEND

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SEDIMENT BASIN NOTES:

Design Requirements:

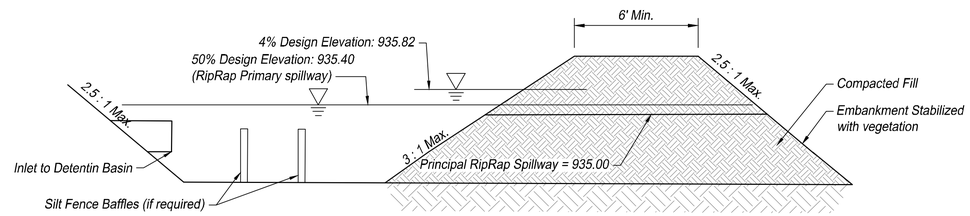
- *The Plan and Profiles are schematic in nature. Construction plans must provide specific site construction arrangements. Details given in these drawings shall be used unless alternate details are shown in plan and approved by the City.*
- *If the length to width ratio is less than 2, interior sediment fence baffles shall be provided to reduce short-circuiting the basin.*
- *Emergency Spillways to be located in a non-fill location when feasible and shall be lined with a non-erodible material such as Rip Rap or Turf Reinforcement Mat.*

Maintenance/Safety Requirements:

- *the Permit holder shall clean out deposited sediment when sediment storage has been reduced by 20% of the original design storage volume. The clean out level shall be indicated on the riser pipe with painted red horizontal line.*
- *Sediment basins shall be fenced using construction fence or other material for safety reasons and include warning signs reading: "DANGER - KEEP OUT".*

SEDIMENT BASIN DESIGN SUMMARY

Design Team	Basin #1	Units	Notes
Site Data			
Tributary Drainage Area to Pond	9.80	Acres	Total Upstream Disturbed Area in Phase I = 9.80 Acres
50% (2 Yr) Design Flow	30.7	CFS	On-Site Phase I Drainage Area A-1
4% (25 Yr) Flow	67.2	CFS	On-Site Phase I Drainage Area A-1
Pond Data			
Minimum Sediment Storage Area	1,960	CY	Type-III Rip-Rap Outlet Sediment Trap (5400 CF / Acres)
Provided Sediment Storage Area	3,704	CY	The Proposed Detention Pond Will Be Used As A Sediment Pond During Construction
Bottom Elevation	931.0	FT.	
Sediment Clean Out Elevation	0.75	FT.	Elevation equal to 20% of original design volume
Top of Riser Elevation	N/A	FT.	Top of Dry Storage Volume
Emergency Spillway Elevation	935.0	FT.	At or above Q-2 Elevation. 1.0 FT Min. above principal spillway
Top of Dam Elevation	937.0	FT.	Silt Basin is an interim use of the proposed Detention Basin
Principal Spillway Data			
Riser Pipe Dia.	N/A	IN.	
Barrel Pipe Dia.	N/A	IN.	



SEDIMENT BASIN CROSS-SECTION (NTS)

SBB PROJ. NO. 24-192

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Detention & Siltation Pond
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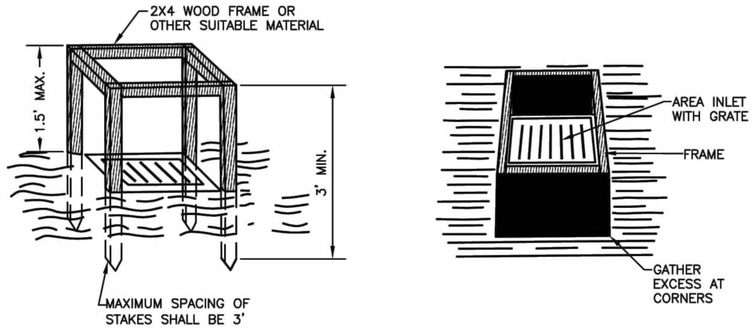
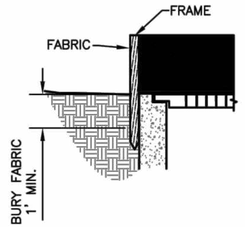


TOP VIEWS



PROFILE VIEW

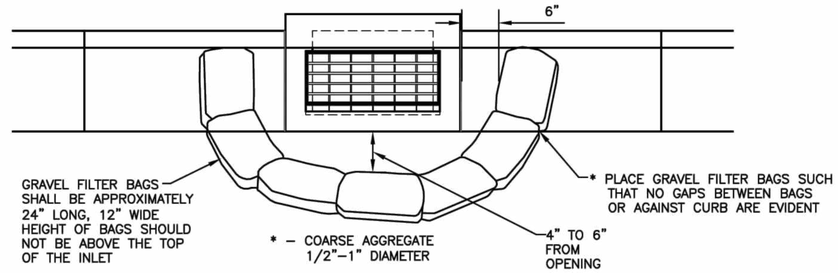
NOTES:
1. BASE OF FABRIC SHALL BE BURIED AT LEAST 1' BELOW GROUND SURFACE AND BACKFILLED WITH CRUSHED STONE OR COMPACTED MATERIAL.
2. WIRE MESH FENCE MAY BE USED TO SUPPORT FABRIC. TOP OF FENCE SHOULD BE LEVEL WITH FRAME AND BOTTOM BURIED 6" BELOW GROUND.
3. MAY BE NECESSARY TO BUILD A TEMPORARY DIKE ON DOWN-SLOPE SIDE OF STRUCTURE TO PREVENT BYPASS FLOW.
4. STRAW BALES OR GRAVEL FILLED FILTER BAGS MAY BE USED IN LIEU OF FABRIC. IF STRAW BALES ARE USED, TWO 4' (MINIMUM) LONG, 2" X 2" HARDWOOD STAKES SHALL BE DRIVEN THROUGH EACH BALE AND SET BACK 12" TO 24" FROM INLET. IF FILTER BAGS ARE USED, PLACE BAGS SUCH THAT NO GAPS ARE EVIDENT.

AREA INLET PROTECTION

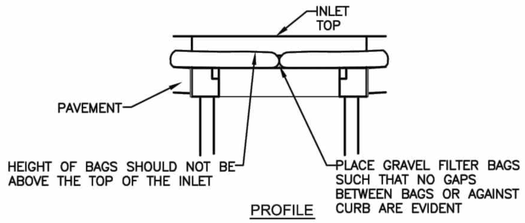
GENERAL NOTES:
1. ANY EROSION AND SEDIMENT CONTROL MEASURES INTENDED TO CONTROL EROSION OF AN EARTH DISTURBANCE OPERATION SHALL BE INSTALLED BEFORE ANY EARTH DISTURBANCE OPERATIONS TAKE PLACE.
2. THE CONTRACTOR SHALL INSPECT THE LAND DISTURBANCE SITE AFTER EACH SIGNIFICANT RAINFALL EVENT WITHIN A 24-HOUR PERIOD AND ASSURE THAT ALL EROSION AND SEDIMENT CONTROL MEASURES ARE IN WORKING CONDITION PRIOR TO ANY FORECASTED RAINFALL. SEDIMENT REMOVAL AND ALL NECESSARY REPAIRS SHALL BE MADE TO MAINTAIN THE INTEGRITY OF THE EROSION AND SEDIMENT CONTROL MEASURES. SEDIMENT SHALL BE REMOVED ONCE IT REACHES HALF OF THE INSTALLED HEIGHT OF MEASURE.
3. THE CONTRACTOR SHALL MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES DURING ALL PHASES OF CONSTRUCTION UNTIL OWNER ACCEPTS WORK AS COMPLETE. THE CONTRACTOR SHALL PROVIDE TEMPORARY SEEDING, BERMS, SILT FENCE, SEDIMENT TRAPS OR OTHER MEANS TO PREVENT SEDIMENT FROM REACHING STREAMS, PUBLIC RIGHT-OF-WAY OR ADJACENT PROPERTY.
4. SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED ONCE 70 PERCENT OF THE PERMANENT COVER IS ESTABLISHED.
5. THE CONTRACTOR SHALL TEMPORARILY SEED AND MULCH ALL DISTURBED AREAS IF THERE HAS BEEN NO CONSTRUCTION ACTIVITY ON THEM FOR A PERIOD OF 14 CALENDAR DAYS. IF THE ENGINEER DETERMINES THAT A SITE HAS A POTENTIAL FOR EROSION, STABILIZATION OF SOIL MAY BE REQUIRED. TEMPORARY SEED MIXTURE SHALL BE APPROVED BY THE ENGINEER OR AS FOLLOWS:

TYPE:	APPLICATION RATE:
WINTER WHEAT	120 LBS PER ACRE
RYEGRASS	75 LBS PER ACRE

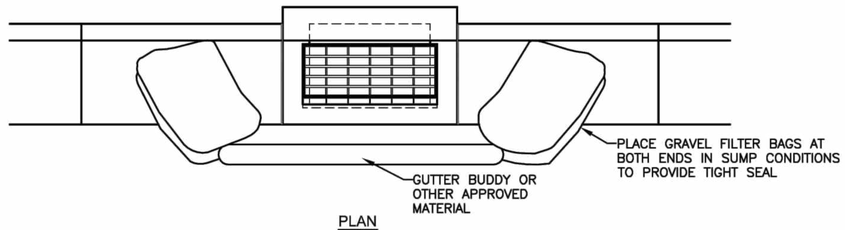
REPAIRS AND RESEEDING SHALL BE PERFORMED BY THE CONTRACTOR AT THE DIRECTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER. IF VEGETATIVE MEASURES ARE NOT EFFECTIVE, NON-VEGETATIVE OPTION MAY BE REQUIRED.



PLAN



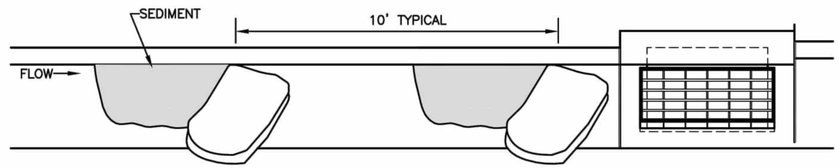
PROFILE



PLAN

SUMP CONDITIONS

NOTE:
DO NOT BLOCK INLET OPENING - STORMWATER MUST BE ALLOWED TO FLOW TO DRAIN AND NOT BYPASS TO DOWNSTREAM.



PLAN

IN GRADE CONDITIONS

NOTES:
1. OTHER APPROVED CURB INLET SEDIMENT FILTERS MAY BE USED.
2. IMMEDIATELY FOLLOWING INLET CONSTRUCTION AND PRIOR TO CONSTRUCTION OF CURB AND INLET THROAT, PROTECT INLET OPENING AROUND PERIMETER. SEE AREA INLET DETAIL THIS PAGE.
3. CONTRACTOR TO CLEAN OUT SEDIMENT AFTER EACH SIGNIFICANT RAINFALL EVENT.
4. DURING CONSTRUCTION GRAVEL FILTER BAGS SHALL BE REPLACED PRIOR TO DEGRADATION.
5. ANY SEDIMENT OR GRAVEL DEPOSITED IN INLET SHALL BE REMOVED PROMPTLY.

CURB INLET SEDIMENT PROTECTION

NO.	DATE:	REVISION	BY:	APP'D
2	May 2015	Added & Updated Notes	DHS	JDH
1	March 2013	Revised Notes	DHS	JDH

DRAWN BY: DHS
APP'D BY: JDH

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PUBLIC WORKS DEPARTMENT
COUNTY ENGINEER
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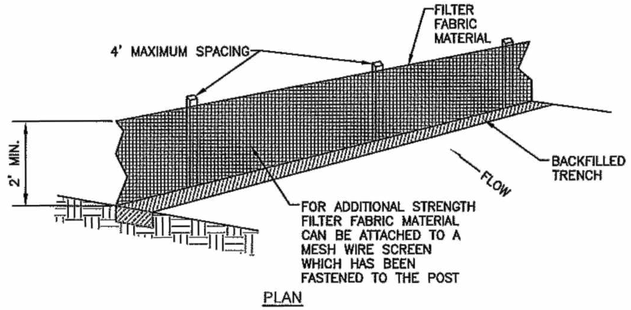
TOPEKA, KS 66618
(785) 233-7702

TOPEKA Public Works
ENGINEERING
620 SE MADISON St. • 2nd Floor • TOPEKA, KS 66607
Phone: (785) 368-3842 • Fax: (785) 368-3881

STANDARD DETAILS

EROSION & POLLUTION CONTROL
INLET PROTECTION AND GENERAL NOTES
(DT-020)

DATE: 12/18/2025
SHEET: 85 OF 87
PROJ.: 281381.00, 501144.00, 401139.00



PLAN

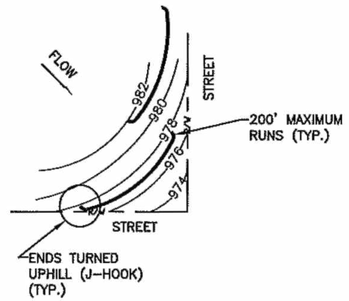
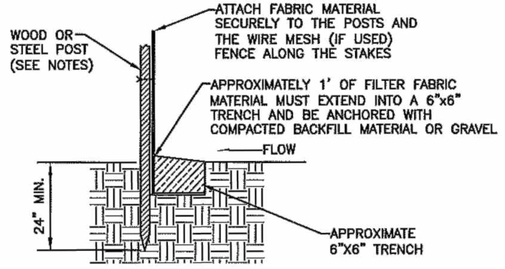


FIGURE A

Land Slope and Distance for Sediment Fence

Land Slope (percent)	Maximum Slope Distance* above Fence (feet)
Less than 2	100
2 to 5	75
5 to 10, greater than 10	50*

*Follow manufacturers' recommendations for proper spacing.



PROFILE

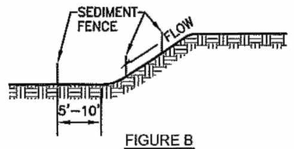
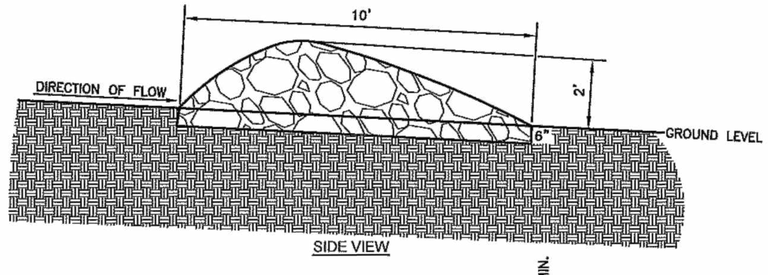


FIGURE B

NOTES:
1. THE USE OF HAY/STRAW BALES IS THE CONTRACTOR'S OPTION. IF HAY BALES ARE USED PLACE TIGHTLY TOGETHER WITH 2"X2"X4' (MIN.) LENGTH WOOD STAKES IN OUTER 1/3 SECTIONS OF BALES. BALES SHOULD EMBEDDED INTO THE SOIL A MINIMUM OF 6" WITHIN A MAXIMUM DRAINAGE AREA OF 1 ACRE OR LESS.
2. THE SEDIMENT FENCES SHALL BE PLACED ALONG CONTOUR LINES, WITH A SHORT SECTION TURNED UPGRADE (J-HOOK) AT EACH END OF THE BARRIERS TO HOLD WATER AND SEDIMENT (SEE FIGURE A).
3. AREAS THAT CONTAIN LARGER CONCENTRATIONS OF WATER SHALL BE LIMITED TO LENGTHS OF SILT FENCES TO NO LONGER THAN 200' (SEE FIGURE A). LIMIT TO 1/4 ACRE PER 100' OF FENCE. FURTHER RESTRICT AREA BY LAND SLOPE TABLE ABOVE.
4. AREAS SHOULD BE BROKEN UP WITH INTERIOR SEDIMENT FENCE TO MINIMIZE WATER CONCENTRATIONS AND LONG SLOPES (SEE FIGURE B).
5. SEDIMENT FENCES INSTALLED AT TOE OF SLOPE SHALL BE PLACED 5' TO 10' AWAY (DOWNSTREAM) TO CREATE SEDIMENT STORAGE (SEE FIGURE B).
6. DEPTH OF WATER CONCENTRATIONS SHOULD NOT EXCEED 1.5' AT ANY POINT ALONG THE FENCE.
7. PLACE SILT FENCE ONLY WHERE OVERLAND OR SHEET FLOW DISCHARGES OCCUR.
8. SILT FENCES SHOULD NOT BE USED IN CONCENTRATED FLOW CHANNELS, OR AS INLET PROTECTION DEVICES IF FLOODING CONDITIONS COULD OCCUR.
9. DO NOT USE HAY OR STRAW BALES WITH WIRE TIES.
10. WHEN SEDIMENT REACHES 1/2 HEIGHT OF SILT FENCE OR SIMILAR CONTROL MEASURE, THE CONTRACTOR SHALL REMOVE THE SEDIMENT.

SILT FENCE

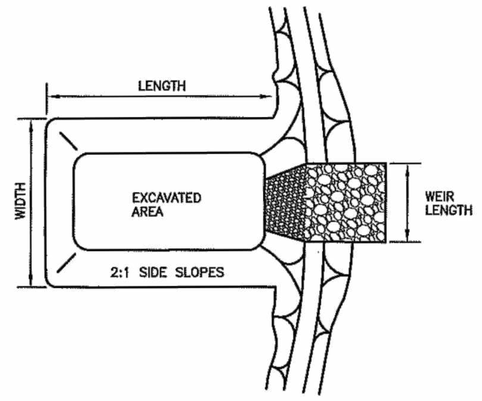


TEMPORARY ROCK DITCH CHECK SPACING

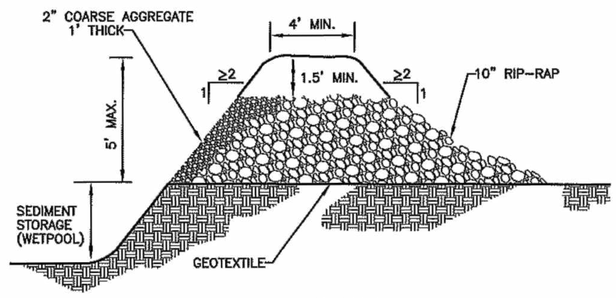
DITCH ℄ SLOPE (%)	SPACING INTERVAL (FEET)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29
THIS SPACING IS TO BE USED FOR ROCK DITCH CHECKS ONLY.	

NOTES:
1. ROCK SHALL BE CLEAN AGGREGATE, D50 = 6".
2. PLACE ROCK IN SUCH A MANNER THAT WATER WILL FLOW OVER, NOT AROUND DITCH CHECK.
3. DO NOT USE ROCK DITCH CHECKS IN CLEAR ZONE.
4. AGGREGATE EXCAVATED ON SITE MAY BE USED AS AN ALTERNATE TO THE 6" ROCK, IF APPROVED BY THE ENGINEER.

ROCK DITCH CHECK

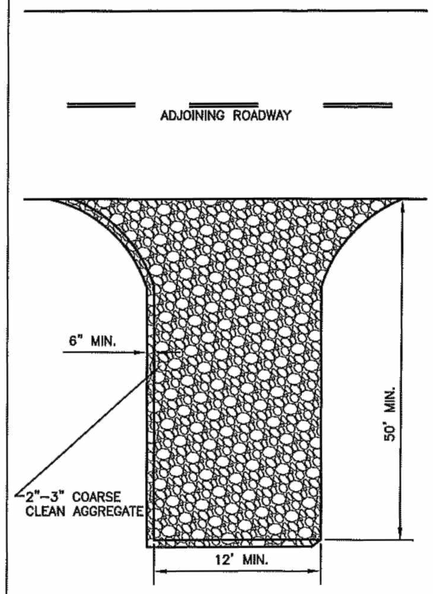


TOP VIEW



SIDE VIEW

SEDIMENT BASIN



NOTES:
1. GEOTEXTILE FABRIC MAY BE USED AS AN UNDERLINER IN WET CONDITIONS TO PROVIDE STABILITY.
2. PROVIDE SUFFICIENT WIDTH, LENGTH & TURNING RADIUS FOR CONSTRUCTION VEHICLES ENTERING & EXITING SITE.
3. MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF SEDIMENT ON TO STREETS AND KEEP THE ENTRANCE EFFECTIVE.
4. PROPERLY GRADE TO PREVENT RUNOFF FROM LEAVING CONSTRUCTION SITE THROUGH ENTRANCE/EXIT.
5. DO NOT ALLOW ROCK SPACES TO BE FILLED IN WITH DIRT -- ROCKS MUST BE KEPT LOOSE.

CONSTRUCTION ENTRANCE

NO.	DATE:	REVISION	BY:	APP'D
3	May 2015	Updated Notes & Added Rock Ditch Check	DHS	JDH
2	March 2013	Repl. Sed. Trap & Added Land Slope Table	DHS	JDH
1	Dec. 2009	Modified Stake Depth & Spacing	DHS	JDH

DRAWN BY: DHS
APP'D BY: JDH

SHAWNEE COUNTY, KANSAS
PUBLIC WORKS DEPARTMENT
COUNTY ENGINEER
1515 NW SALINE
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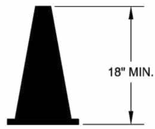
STANDARD DETAILS

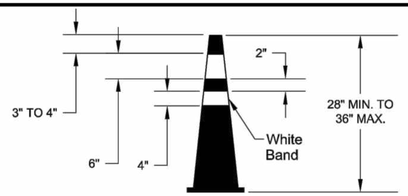
EROSION & POLLUTION CONTROL
SILT FENCE, SEDIMENT BASIN, CONSTRUCTION ENTRANCE, AND ROCK DITCH CHECK
(DT-021)

DATE: 12/18/2025
SHEET: 86 OF 87
PROJ.: 281381.00, 501144.00, 401139.00



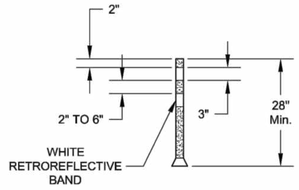
CONES

DAY TIME USE ONLY
(≤ 40 MPH)

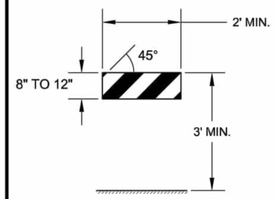


CONES

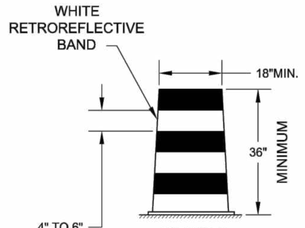
FLUORESCENT ORANGE CONE
w/ WHITE RETROREFLECTIVE BANDS



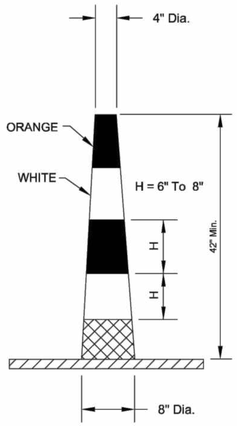
TUBULAR MARKERS



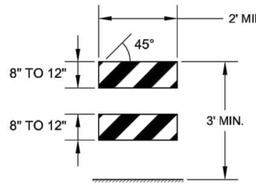
TYPE I BARRICADE



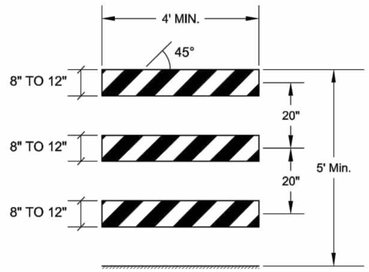
DRUM



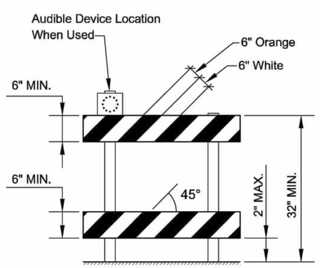
CONICAL
DELENEATOR



TYPE II BARRICADE



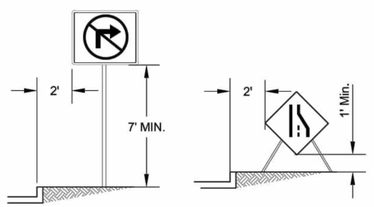
TYPE III BARRICADE



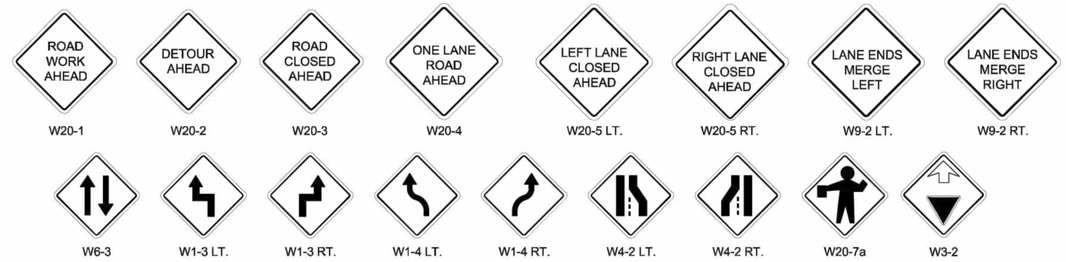
DETECTABLE PEDESTRIAN
BARRICADE/CHANNELIZER

NOTES:

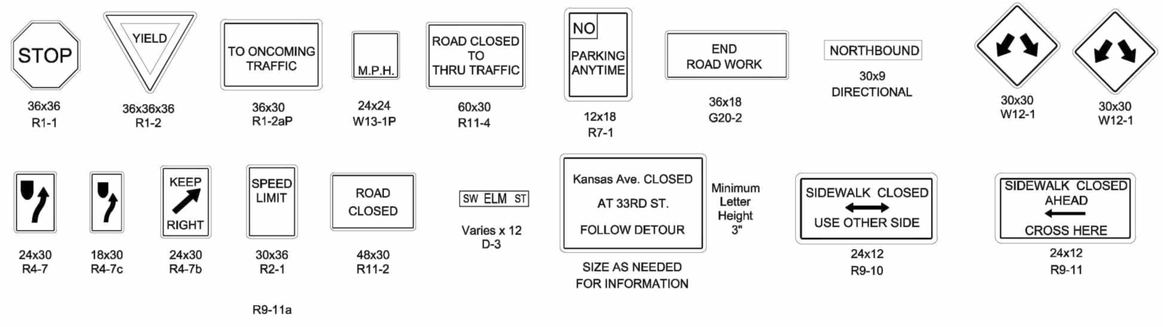
1. Barricades (Type 2 or 3) shall be used to close the entire width of the pathway.
2. Do not use warning lights on pedestrian barricades or on audible devices.
3. Upper rail shall be continuously smooth.
4. Adjacent sections of barricades shall be interlocked together, and shall have the same base color (orange or yellow).
5. Stripes are optional. As an alternate, the top rail may be orange and the bottom rail may be white.



HEIGHT AND LOCATION OF SIGNS



UNLESS OTHERWISE NOTED ALL WARNING SIGNS SHALL BE 36"x36"



Minimum Size:

Refer to Table 6F-1 of the most recent edition of MUTCD for minimum sizes of all Traffic Control Signs.

TYPICAL TRAFFIC CONTROL SIGNS USED IN CITY PROJECTS

Recapitulation of Traffic Control Quantities

Item	Quantity	Unit
Traffic Control	1	Lump Sum
Work Zone Information Signs		Each
Flashing or Sequencing Arrow Board		Each Week
Portable Changeable Message Sign		Each Week
Temporary Traffic Signal		Lump Sum
Temporary Pavement Marking (*) (**) (***)		LF
Surface Drop off Treatment		LF

(*) Type Pavement Marking: Type I, Type II, Masking
(**) Color
(***) Width

NO.	DATE:	REVISION	BY:	APP'D
1	10/30/20	MAJOR REVISION	SU	KRE

DRAWN BY: Shoeb Uddin

APP'D BY: Kristi Ericksen

TOPEKA Public Works
ENGINEERING
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Phone: (785) 368-3842 • Fax: (785) 368-3881

STANDARD DETAILS
DT - 121A

TRAFFIC CONTROL
DEVICES AND RECAP OF QUANTITIES

DATE: 12/18/2025

281381.00, 501144.00,
PROJECT: 401139.00

GENERAL REQUIREMENTS

1. CONTRACTOR SHALL PERFORM ALL WORK IN CONFORMANCE WITH THE 2021 IBC CODE, AS AMENDED BY THE CITY OF TOPEKA, KS.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION AND SHALL BE RESPONSIBLE FOR COORDINATING ALL CONTRACT DOCUMENTS, INCLUDING ALL REQUIREMENTS, OPENINGS, ETC. WHETHER SHOWN ON STRUCTURAL DRAWINGS OR NOT. CONTRACTOR SHALL REVIEW/VERIFY ALL DIMENSIONS & ELEVATIONS AND REPORT ANY DISCREPANCIES, INCONSISTENCIES, OR DIFFICULTIES AFFECTING THE WORK TO THE ARCHITECT AND ENGINEER BEFORE PROCEEDING WITH THE WORK.
3. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE WORK.
4. THESE DRAWINGS ARE FOR THIS SPECIFIC PROJECT AND NO OTHER USE IS AUTHORIZED, OR PERMITTED.
5. THE BUILDING IS NOT STRUCTURALLY STABLE UNTIL ALL FRAMING, CONNECTIONS, SHEATHING, PERMANENT BRACING, ETC. ARE COMPLETE. THE CONTRACTOR IS THE SOLE PARTY RESPONSIBLE FOR THE STABILITY OF THE BUILDING UNTIL SUCH TIME AS IT IS COMPLETE. THE DESIGN OF ALL TEMPORARY BRACING SYSTEMS IS THE RESPONSIBILITY OF THE CONTRACTOR AS A MEANS AND METHODS OF CONSTRUCTION ITEM. ALL TEMPORARY BRACING SHALL REMAIN IN PLACE UNTIL ALL STRUCTURAL WORK IS COMPLETE. THE DESIGN LOADS SHALL NOT BE EXCEEDED AT ANY TIME DURING CONSTRUCTION.
6. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE MEANS, METHODS AND SEQUENCES OF CONSTRUCTION.

USE OF CONSTRUCTION DRAWINGS

1. CONTRACTOR SHALL NOT SCALE DRAWINGS. ONLY WRITTEN DIMENSIONS OR KEYED NOTES SHALL BE USED. CONTACT ENGINEER IF CLARIFICATION OR ADDITIONAL INFORMATION IS REQUIRED.
2. DRAWINGS SHALL NOT BE REPRODUCED FOR SUBMITTALS. DRAWINGS OR PORTIONS OF DRAWINGS USED FOR SUBMITTALS WILL BE REJECTED AND RETURNED TO CONTRACTOR.
3. DIMENSIONS ARE AS FOLLOWS UNLESS NOTED OTHERWISE:
   A. FACE OF STUD
   B. TO CENTERLINE OF COLUMNS, FOOTINGS, DEMISING WALLS
   C. TO TOP OF STRUCTURAL STEEL

STRUCTURAL DESIGN CRITERIA

1. ROOF LIVE LOAD = 30 psf (+ CODE PRESCRIBED DRIFT)
2. FLOOR LIVE LOAD = 40 psf @ UNITS
   = 100 psf @ CORRIDORS & COMMON AREAS
3. STRUCTURE DEAD LOAD = ACTUAL WEIGHT OF MATERIALS
4. MISC. M.E.P. LOADS = 10 psf
5. SNOW LOAD
   GROUND SNOW LOAD, Pg = ?? psf
   ROOF SNOW LOAD, Pf = ?? psf
6. LATERAL LOADS - WIND:
   A. BASIC WIND SPEED, Vult = ?? MPH
   B. EXPOSURE = B
7. LATERAL LOADS - SEISMIC:
   A. OCCUPANCY CATEGORY = II
   B. IMPORTANCE = 1.0
   C. SITE CLASS = ? (ASSUMED/PER GEOTECH)
   D. S_{DS} = 0.???g
   E. S_{D1} = 0.???g
   F. C_S = 0.???
   G. BASE SHEAR = XX KIPS
   H. DESIGN CATEGORY = ?
   I. RESPONSE = 2
   J. ANALYSIS PROCEDURE = EQUIVALENT LATERAL FORCE PROCEDURE

COMPONENTS & CLADDING PRESSURES (PSF):

ZONE		EFFECTIVE AREA (SF)							
		10		20		50		100	
ROOF	1	27.0	-27.0	27.0	-27.0	27.0	-27.0	27.0	-27.0
	2	27.0	-27.0	27.0	-27.0	27.0	-27.0	27.0	-27.0
	3	27.0	-27.0	27.0	-27.0	27.0	-27.0	27.0	-27.0
WALL	4	27.0	-27.0	27.0	-27.0	27.0	-27.0	27.0	-27.0
	5	27.0	-27.0	27.0	-27.0	27.0	-27.0	27.0	-27.0

NOTE: C&C ELEMENTS NOT SPECIFICALLY DESIGNED ON THESE DWGS SHALL BE DESIGNED TO THE WIND PRESSURES STIPULATED BY ASCE 7-16 FOR THE TRIBUTARY AREA OF THE SPECIFIC COMPONENTS.

a = ?' (ASCE 7-16, FIG. 30.4-1)

FOUNDATION CRITERIA

1. THE GEOTECHNICAL REPORT WAS PREPARED BY ??????????????????. THE PROJECT NUMBER IS ???????, AND THE ENGINEER CAN BE REACHED AT ???.???.????.
2. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS AND RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL REPORT UNLESS SPECIFIED OR DETAILED OTHERWISE. NOTIFY ENGINEER OF ANY DISCREPANCIES, INCONSISTENCIES OR DIFFICULTIES PRIOR TO PROCEEDING WITH THE WORK.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY SOIL CONDITIONS THAT ARE IN VARIANCE WITH THE GEOTECHNICAL REPORT.
4. FOUNDATIONS, GRADE BEAMS, AND RETAINING WALLS ARE DESIGNED TO BEAR ON SOIL CAPABLE OF SAFELY SUPPORTING ?,000 psf.
5. THE CONTRACTOR SHALL PROVIDE FOR DEWATERING AT ALL EXCAVATIONS, REGARDLESS OF THE SOURCE OF WATER.
6. ALL FOUNDATION EXCAVATIONS SHALL BE INSPECTED BY A QUALIFIED GEOTECHNICAL ENGINEER, APPROVED BY THE ARCHITECT/ENGINEER, PRIOR TO PLACEMENT OF ANY FOUNDATION ELEMENT.
7. RETAINING STRUCTURES ARE DESIGNED FOR 55 psf OF EQUIVALENT FLUID PRESSURE.
8. ALL CONCRETE IN STRUCTURAL WORK, RETAINING BACKFILL, SHALL HAVE ATTAINED ITS DESIGN STRENGTH AND BE TEMPORARILY BRACED PRIOR TO BEING BACKFILLED.
9. MOISTURE CONTENT IN ALL SOILS BELOW BUILDINGS SHALL NOT BE ALLOWED TO CHANGE AFTER EXCAVATIONS AND AFTER FINAL GRADING FOR SLABS ON GRADE ARE COMPLETE. ANY SUBGRADE MATERIALS THAT BECOME DESICCATED, SOFTENED BY WATER, OR OTHERWISE DISTURBED SHALL BE RECOMPACTED TO CONFORM TO THE GEOTECHNICAL REPORT.
10. DO NOT PLACE ANY FOUNDATIONS OR CONCRETE ON FROZEN GROUND.
11. COLUMN ANCHORS AND SHEAR WALL HOLDOWN ANCHORS SHOULD BE PRE-SET IN CONCRETE WHEN POSSIBLE, OR DRILLED AND EPOXIED IF NECESSARY. PERIMETER ANCHORS MAY BE "WET" SET IN CONCRETE.

CONCRETE CRITERIA

1. ALL CONCRETE SHALL CONFORM TO THE LATEST EDITION OF THE AMERICAN CONCRETE INSTITUTE DOCUMENTS, AND CONCRETE REINFORCING STEEL INSTITUTE MANUAL OF STANDARD PRACTICE.
2. ALL CAST-IN-PLACE CONCRETE, EXCEPT EXTERIOR FLATWORK, SHALL ACHIEVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500psi. NOT LESS THAN 500 POUNDS OF CEMENT SHALL BE USED PER CUBIC YARD OF CONCRETE REGARDLESS OF STRENGTHS OBTAINED, AND NOT OVER 6 GALLONS OF WATER PER 100 POUNDS OF CEMENT. DESIGN MIX TO ACHIEVE A MAXIMUM OF 4 INCHES OF SLUMP. ALL FOOTING CONCRETE SHALL BE AIR-ENTRAINED WITH 6% +/-1% AIR. SLAB CONCRETE SHALL NOT BE AIR-ENTRAINED.
3. ALL CAST-IN-PLACE CONCRETE FOR EXTERIOR FLATWORK SHALL ACHIEVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4500psi. NOT LESS THAN 560 POUNDS OF CEMENT SHALL BE USED PER CUBIC YARD OF CONCRETE REGARDLESS OF STRENGTHS OBTAINED, AND NOT OVER 5 GALLONS OF WATER PER 100 POUNDS OF CEMENT. DESIGN MIX TO ACHIEVE A MAXIMUM OF 4 INCHES OF SLUMP. ALL EXTERIOR FLATWORK CONCRETE SHALL BE AIR-ENTRAINED WITH 6% +/-1% AIR.
4. THE PRECEDING MIX DESIGNS MAY HAVE WATER-REDUCING ADMIXTURES INCLUDED TO IMPROVE WORKABILITY. ALL WATER-REDUCING ADMIXTURES SHALL CONFORM TO ASTM C494.
5. THE PRECEDING MIX DESIGNS MAY HAVE ASTM C618 CLASS C FLY ASH SUBSTITUTED FOR UP TO 15% OF THE CEMENT CONTENT. THE TOTAL CEMENTITIOUS CONTENT MAY NOT BE REDUCED.
6. ALL INTERIOR CONCRETE SLABS ON GRADE SHALL BE PLACED ABOVE 15mil VAPOR BARRIER EQUIVALENT TO STEGO WRAP. ALL VAPOR BARRIER JOINTS SHALL BE LAPPED A MIN. OF 6" AND SEALED PER MANUFACTURER'S RECOMMENDATIONS. THE VAPOR BARRIER SHALL BE PLACED ABOVE A COURSE OF FREE-DRAINING GRANULAR MATERIAL AS SPECIFIED IN THE GEOTECHNICAL REPORT. ALL DAMAGED AREAS OF THE VAPOR BARRIER SHALL BE SEALED PER THE MANUFACTURER'S RECOMMENDATIONS PRIOR TO PLACEMENT OF CONCRETE.
7. PRIOR TO PLACEMENT OF ANY CONCRETE THE CONTRACTOR SHALL VERIFY THAT ALL DIMENSIONS, ELEVATIONS, CONCRETE INSERTS, EMBEDDED ITEMS, AND ANY OPENINGS ARE CORRECT, AND RIGIDLY SECURED. THIS APPLIES TO ALL ITEMS SHOWN ON THE STRUCTURAL, ARCHITECTURAL, AND/OR M.E.P. DRAWINGS.
8. ALL CONTRACTION JOINTS IN CONCRETE SLABS ON GRADE SHALL BE LOCATED AS SHOWN ON PLANS. WHERE NOT SHOWN, LIMIT CONTROLLED AREAS TO NOT MORE THAN 225 SQUARE FEET, AND PANELS NOT GREATER THAN 15 FEET ON ANY SIDE, NOR HAVING A PANEL LENGTH TO WIDTH RATIO GREATER THAN 1.4 TO 1.0. ALL CONTRACTION JOINTS SHALL BE CUT TO A DEPTH OF A MINIMUM OF 1/3 OF THE SLAB DEPTH, AND SHALL BE CUT WITHIN 12 HOURS OF CONCRETE PLACEMENT.
9. ALL CONCRETE IS TO BE REINFORCED UNLESS SPECIFICALLY NOTED AS UNREINFORCED. PROVIDE REINFORCING IN ALL CONCRETE NOT OTHERWISE SHOWN WITH THE SAME REINFORCING AS SIMILAR SECTIONS.
10. ALL REINFORCING SHALL BE DETAILED PER ACI 315 AND MEET THE REQUIREMENTS OF ACI 318, CURRENT EDITIONS, UNLESS NOTED OTHERWISE.
11. CONSTRUCTION JOINTS IN BEAMS, SLABS, AND GRADE BEAMS SHALL OCCUR IN THE MIDDLE THIRD OF THE SPAN UNLESS NOTED OTHERWISE. PROVIDE 2x4 HORIZONTAL KEYS AT ALL CONSTRUCTION JOINTS.
12. VERTICAL COLD JOINTS SHALL BE PROVIDED IN CONTINUOUS CONCRETE WALLS AT 25'-0" MAX.
13. NO ALUMINUM ITEMS SHALL BE EMBEDDED IN CONCRETE.
14. LIMIT CHLORIDE-ION CONTENT OF ALL ADMIXTURES TO 0.06% BY WEIGHT OF CEMENT.

REINFORCING STEEL CRITERIA

1. ALL REINFORCING SHALL BE DETAILED, FABRICATED, PLACED AND SUPPORTED IN ACCORDANCE WITH THE CURRENT EDITION OF ACI 315.
2. ALL REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60, EXCEPT FOR ALL WELDED REINFORCING WHICH SHALL CONFORM TO ASTM A706 GRADE 60. WELDING SHALL CONFORM TO AWS D1.4, STRUCTURAL WELDING CODE.
3. ALL WELDED PLAIN WIRE FABRIC SHALL BE SUPPLIED IN SHEETS AND SHALL CONFORM TO ASTM A185. PROVIDE REINFORCING CHAIRS FOR ALL SLAB-ON-GRADE REINFORCING. WWF SHALL NOT BE "PULLED UP" DURING PLACEMENT. ALL WWF SHALL BE 2" BELOW TOP OF SLAB FOR 4" THICK SLABS. OVERLAP EACH SHEET TWO FULL PANELS AND TIE CROSS WIRES ON EACH SIDE.
4. CLEAR MINIMUM COVERAGE OF CONCRETE OVER ALL REINFORCING STEEL SHALL BE AS FOLLOWS. (ALL COVERAGE SHALL BE NOMINAL BAR DIAMETER MINIMUM.)
   A. CONCRETE PLACED AGAINST EARTH 3"
   B. FORMED CONCRETE AGAINST EARTH 2"
   C. FORMED SLABS 1"
   D. BEAMS OR COLUMNS 1-1/2"
   E. OTHER 2"
5. PROVIDE CORNER BARS AT ALL WALLS, GRADE BEAMS AND BEAMS IN THE EXTERIOR FACE. ALL CORNER BARS SHALL LAP A MINIMUM OF 24" IN EACH DIRECTION, OR 40 BAR DIAMETERS. ALL CORNER BARS SHALL MATCH SIZE AND SPACING OF HORIZONTAL BARS. WHERE THERE ARE NO VERTICAL BARS IN THE EXTERIOR FACE, PROVIDE 3-#4 VERTICAL SUPPORT BARS.
6. ALL REINFORCING BARS MARKED CONTINUOUS SHALL BE LAPPED 40 BAR DIAMETERS (24" MINIMUM) AT SPLICES AND EMBEDMENTS, UNLESS NOTED OTHERWISE AS CLASS 'B' SPLICES. SPLICE ALL TOP BARS AT MIDSPAN, AND ALL BOTTOM BARS OVER SUPPORTS, UNLESS NOTED OTHERWISE.
7. ALL REINFORCING STEEL ACCESSORIES SHALL BE IN ACCORDANCE WITH THE ACI DETAILING HANDBOOK, AND THE CONCRETE REINFORCING STEEL INSTITUTE DESIGN HANDBOOK. THE MAXIMUM SPACING OF ALL ACCESSORIES SHALL BE 4'-0" ON CENTER. ALL ACCESSORIES ON EXPOSED SURFACES ARE TO HAVE PLASTIC COATED FEET.
8. ALL DOWELS SHALL BE THE SAME SIZE AND SPACING AS ADJOINING MAIN BARS (SPLICE LENGTHS SHALL BE 40 BAR DIAMETERS, OR 24" MINIMUM, UNLESS NOTED OTHERWISE).
9. AT ALL OPENINGS IN CONCRETE WALLS AND SLABS, PROVIDE 2-#5 BARS (LENGTH = R.O. + 80 BAR DIAMETERS) AT EACH OF FOUR SIDES, AND 2-#5 X 5'-0" LG DIAGONALLY AT EACH OF FOUR CORNERS.
10. ALL SLABS AND STAIRS NOT SHOWN OTHERWISE SHALL BE REINFORCED WITH #4 BARS @ 12" O.C. EACH WAY. ALL PORCHES SHALL BE DOWELED TO ADJACENT WALLS OR GRADE BEAMS WITH #4 BARS @ 12" O.C. AND SHALL BE SLOPED 1/8" PER FOOT (MINIMUM) FOR DRAINAGE, UNLESS NOTED OTHERWISE.
11. ALLOW 1 TON OF REINFORCING STEEL TO BE USED IN THE FIELD AS DIRECTED BY THE ENGINEER-OF-RECORD (DELIVERY AND LABOR FOR SAME TO BE INCLUDED).

STRUCTURAL STEEL CRITERIA

1. ALL STRUCTURAL STEEL BEAMS AND COLUMNS SHALL CONFORM TO ASTM A992, GRADE 50 STEEL. ALL MISC. STEEL SHALL BE ASTM A36 GRADE STEEL. ALL HOLLOW STRUCTURAL SECTIONS (HSS) SHALL BE ASTM A500, GRADE B.
2. ALL STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH AISC "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" IN THE 13TH EDITION OF THE AISC STEEL CONSTRUCTION MANUAL.
3. ALL WELDING SHALL CONFORM TO THE PROVISIONS OF AWS D1.1-10, AND ALL ELECTRODES SHALL BE E70XX. ALL WELDS SHALL BE PERFORMED BY CERTIFIED WELDERS.
4. ALL ANCHOR BOLTS SHALL BE 3/4" DIAMETER, ASTM F1554, GRADE 36 UNLESS NOTED OTHERWISE.
5. ALL BASE PLATES FOR COLUMNS SUPPORTING FLOORS OR ROOFS SHALL BE GROUTED BEFORE THE FLOOR OR ROOF FRAMING IS INSTALLED.
6. ALL BOLTS NOT OTHERWISE SPECIFIED SHALL BE 3/4" DIAMETER HIGH-STRENGTH BOLTS (ASTM A325-N). ALL BOLTS SHALL BE FULLY PRETENSIONED, AND ALL CONNECTIONS SHALL HAVE A MINIMUM OF 2 BOLTS. ALL BEAM CONNECTIONS SHALL BE DESIGNED PER THE AISC MANUAL OF STEEL CONSTRUCTION "FRAMED BEAM CONNECTIONS" FOR THE INDICATED REACTIONS, OR AT LEAST 0.4x BEAM TOTAL SHEAR CAPACITY SHOWN IN THE ALLOWABLE UNIFORM LOAD TABLES, WHICHEVER IS GREATER. ALL CONNECTIONS SHALL ALSO ACCOUNT FOR ECCENTRICITY WHERE REQUIRED BY AISC. CONNECTION DESIGN AND SHOP DRAWING PREPARATION SHALL BE COMPLETED BY A PROFESSIONAL ENGINEER LICENSED IN THE PROJECT STATE, AND ALL SHOP DRAWINGS AND CONNECTION CALCULATIONS SHALL BEAR THEIR SEAL. ALL BOLTED CONNECTIONS SHALL BE ASSEMBLED AND INSPECTED IN ACCORDANCE WITH RCSC-2009, SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL MISCELLANEOUS METALS, WHETHER SHOWN ON STRUCTURAL DRAWINGS OR NOT. REFERENCE ARCHITECTURAL DRAWINGS FOR ADDITIONAL MISC. METALS.
8. PROVIDE (1) L 6x3-1/2x3/8 LOOSE LINTEL FOR EACH 4" WIDTH OF MASONRY. MAX SPAN = 6'-0". LOOSE LINTELS SHALL BEAR ON 6" OF SOLID MASONRY ON EACH END. ALL LOOSE LINTELS SHALL BE GALVANIZED AND INSTALLED WITH THE LONG LEG VERTICAL (LLV).
9. ALL DESIGN, FABRICATION, AND INSTALLATION OF STEEL DECKING SHALL COMPLY WITH THE RECOMMENDATIONS OF THE STEEL DECK INSTITUTE. ANY & ALL STEEL ROOF DECKING SHALL BE GALVANIZED, UNLESS NOTED OTHERWISE.

TIMBER AND WOOD FRAMING CRITERIA

1. ALL WOOD FRAMING MEMBERS, WOOD CONSTRUCTION, AND FASTENERS SHALL BE IN ACCORDANCE WITH THE APPLICABLE CODE, AND THE CURRENT EDITION OF THE NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (NDS).
2. ALL WOOD MEMBERS USED IN BENDING (ie HEADERS, BEAMS), SHALL BE DOUGLAS FIR-LARCH #1 OR ANY SPECIES WHICH MEETS THE FOLLOWING PROPERTIES: Fb=1000psi, E=1,600,000psi.
3. ALL WOOD MEMBERS USED IN COMPRESSION (ie STUDS, POSTS), SHALL BE DOUGLAS FIR-LARCH #2 OR ANY SPECIES WHICH MEETS THE FOLLOWING PROPERTIES: Fc=1350psi, E=1,600,000psi.
4. ALL WOOD MEMBERS SHALL BE SEASONED LUMBER WITH A MOISTURE CONTENT AT OR BELOW 19% IN SERVICE.
5. ALL WOOD PLATES, SILLS AND SLEEPERS WHICH REST ON CONCRETE, MASONRY, OR WHICH ARE IN CONTACT WITH THE EARTH SHALL BE TREATED WOOD. ALL FASTENERS IN CONTACT WITH TREATED LUMBER SHALL BE GALVANIZED. ALL ANCHOR BOLTS SHALL BE 1/2" DIAMETER GALVANIZED BOLTS AT 32" O.C. UNLESS NOTED OTHERWISE. A MINIMUM OF (2) ANCHORS ARE REQUIRED PER SILL PLATE SEGMENT WITH (1) BOLT LOCATED FROM THE END OF EACH SEGMENT A MINIMUM OF 4" BUT NOT MORE THAN 12".
6. ALL JOIST HANGERS SHALL HAVE ICC APPROVAL AND SHALL BE EQUAL TO SIMPSON STRONG-TIE "LUS" HANGERS FOR TYPICAL WOOD CONSTRUCTION, "HUCQ" OR "HGLTV" HANGERS FOR ATTACHMENT OF BEAMS AND GIRDERS, "LB" OR "HB" HANGERS FOR WELD-ON APPLICATIONS TO STEEL BEAMS, AND "WMU" HANGERS FOR MASONRY ATTACHMENT, UNLESS NOTED OTHERWISE. HANGERS SHALL BE WELDED TO STEEL BEAMS UNLESS OTHERWISE APPROVED BY THE EOR. ALL HANGERS SHALL HAVE MAXIMUM NAILING PER THE MANUFACTURER'S SPECIFICATIONS.
7. ALL NAILS SHALL BE COMMON WIRE NAILS WITH SIZES AND SPACING CONFORMING TO TABLE 2304.9.1 OF THE SPECIFIED EDITION OF THE IBC.
8. ALL FLOOR SHEATHING SHALL BE 3/4" APA RATED TONGUE AND GROOVE PLYWOOD, STRUCTURAL 1, EXTERIOR GRADE PANELS. ALL FLOOR SHEATHING SHALL BE GLUED AND NAILED WITH 10d COMMON NAILS AT 12" O.C. TO ALL SUPPORTS, 6" O.C. MAX. @ PANEL EDGES, AND @ 4" O.C. MAX. AT DIAPHRAGM EDGES, EXCEPT AS NOTED IN THE ROOF/FLOOR PLAN NAILING SCHEDULE. ALL PANEL EDGES SHALL BE STAGGERED. ANY STANDING WATER THAT ACCUMULATES ON FLOORS SHALL BE REMOVED WITHIN 24 HOURS.
9. ALL ROOF SHEATHING SHALL BE 5/8" APA RATED TONGUE AND GROOVE SHEATHING (AT CONTRACTOR'S OPTION, SQUARE-EDGED PANELS MY BE USED WITH ROOF CLIPS), STRUCTURAL 1, EXPOSURE 1 PANELS. ALL ROOF SHEATHING SHALL BE ATTACHED WITH 10d COMMON NAILS AT 12" O.C. TO ALL SUPPORTS, 6" O.C. MAX. AT PANEL EDGES, AND @ 4" O.C. MAX. AT DIAPHRAGM EDGES, EXCEPT AS NOTED IN THE ROOF/FLOOR PLAN NAILING SCHEDULE. ALL PANEL EDGES SHALL BE STAGGERED.
10. ALL WALL SHEATHING SHALL BE APA RATED OSB, EXPOSURE 1, STRUCTURAL 1 PANELS. ALL WALL SHEATHING SHALL BE ATTACHED WITH 8d COMMON NAILS AT 6" O.C. MAX. AT PANEL EDGES, AND AT 12" O.C. IN THE FIELD FOR 16" STUD SPACING (6" O.C. MAX. IN THE FIELD FOR 24" STUD SPACING), EXCEPT AS NOTED IN THE SHEATHING ATTACHMENT SCHEDULE. IF NAILING LESS THAN 2" O.C. IS REQUIRED, A 3X OR (2)2X STUDS SHALL BE REQUIRED AT ADJOINING PANELS, AND NAILING SHALL BE STAGGERED.
11. ALL BEARING WALLS SHALL BE CONSTRUCTED PER STRUCTURAL DETAILS AND SHALL SUPERSEDE THE ARCHITECTURAL DRAWINGS. IF ANY DISCREPANCIES EXIST BETWEEN STRUCTURAL AND ARCHITECTURAL DRAWINGS IN THE CONSTRUCTION OR SIZE OF BEARING WALLS, THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE ARCHITECT AND ENGINEER FOR CLARIFICATION.
12. ALL STRUCTURAL HEADERS ARE TO BE CONSTRUCTED PER STRUCTURAL PLANS AND DETAILS. IF ANY OPENINGS IN BEARING WALLS GREATER THAN 1'-4" ARE NOT SPECIFIED ON THE DRAWINGS, THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE ENGINEER FOR CLARIFICATION.
13. ALL JOIST BLOCKING AND BRIDGING SHALL BE SOLID WOOD OR CROSS BRIDGING OF EITHER WOOD OR METAL STRAPS. SPACING OF BLOCKING SHALL NOT EXCEED 8'-0" O.C.
14. BRIDGING OF STUD BEARING WALLS AND SHEAR WALLS SHALL BE SOLID, AND MATCH SHEATHING JOINTS.
15. ALL LAMINATED VENEER LUMBER (LVL) SHALL BE EQUIVALENT TO TRUSS JOIST "MICROLLAM" WITH AN ALLOWABLE FLEXURAL BENDING STRESS (Fb) OF 2600psi AND A MODULUS OF ELASTICITY (E) OF 1,900,000psi.
16. ALL PARALLEL STRAND LUMBER (PSL) SHALL BE EQUIVALENT TO TRUSS JOIST "PARALLAM" WITH AN ALLOWABLE FLEXURAL BENDING STRESS (Fb) OF 2900psi AND A MODULUS OF ELASTICITY (E) OF 2,000,000psi.
17. ALL ENGINEERED WOOD ROOF AND FLOOR TRUSSES SHALL BE DESIGNED IN ACCORDANCE WITH THE TRUSS PLATE INSTITUTE'S NATIONAL DESIGN STANDARD FOR METAL-PLATE CONNECTED WOOD TRUSS CONSTRUCTION (ANSI/TPI-1 CURRENT EDITION). TRUSSES SHALL BE DESIGNED AND MANUFACTURED BY AN AUTHORIZED MEMBER OF THE WOOD TRUSS COUNCIL OF AMERICA (WTCA). TRUSS DESIGN SHALL CONFORM TO SPECIFIED CODES, ALLOWABLE STRESS INCREASES, DEFLECTION LIMITATIONS AND OTHER APPLICABLE CRITERIA OF THE GOVERNING CODE.
18. ENGINEERED WOOD TRUSS DESIGN CRITERIA:
   ROOF TRUSSES:
   TOP CHORD LIVE LOAD = 30 psf
   TOP CHORD DEAD LOAD = 10 psf
   BOTTOM CHORD LIVE LOAD = 20 psf (NON-CONCURRENT W/ TCLL)
   BOTTOM CHORD DEAD LOAD = 15 psf
   ALLOWABLE DEFLECTION = L/360 TL (1/2" MAX LL, 1" MAX TL DEFLECTION)
   (TRUSS DESIGNER TO CALCULATE AND DESIGN FOR SNOW DRIFT AS APPLICABLE)
   FLOOR TRUSSES:
   TOP CHORD LIVE LOAD = 40 psf (100 psf @ COMMON AREAS)
   TOP CHORD DEAD LOAD = 30 psf (INCLUDES 5 psf TRUSS WEIGHT)
   BOTTOM CHORD LIVE LOAD = 0 psf
   BOTTOM CHORD DEAD LOAD = 15 psf
   ALLOWABLE DEFLECTION = L/360 TL (1/2" MAX LL, 1" MAX TL DEFLECTION)
19. WOOD TRUSS SHOP DRAWINGS SHOWING COMPLETE ERECTION AND FABRICATION DETAILS AND CALCULATIONS (INCLUDING CONNECTIONS) SHALL BE SUBMITTED TO THE PROJECT ARCHITECT/ENGINEER FOR REVIEW PRIOR TO FABRICATION AND/OR ERECTION. THESE SHOP DRAWINGS SHALL BEAR THE SEAL OF A PROFESSIONAL ENGINEER, REGISTERED IN THE PROJECT STATE. SHOP DRAWINGS SHALL ALSO BE SUBMITTED TO THE LOCAL GOVERNMENT CONTROLLING AGENCY WHEN REQUIRED BY THAT AGENCY.
20. ALL WOOD TRUSSES SHALL BE SECURELY BRACED BOTH DURING ERECTION AND PERMANENTLY, AS INDICATED ON THE APPROVED TRUSS DESIGN DRAWINGS AND IN ACCORDANCE WITH TPI'S COMMENTARY AND RECOMMENDATIONS FOR HANDLING, INSTALLING AND BRACING METAL-PLATE CONNECTED WOOD TRUSSES (HIB-91, BOOKLET), THE LATEST EDITION OF THE ANSI/TPI-1, AND "THE GUIDE TO GOOD PRACTICE FOR HANDLING, INSTALLING, RESTRAINING, AND BRACING OF METAL PLATE CONNECTED WOOD TRUSSES" (BCSI 1-08) AND RELATED SUMMARY SHEETS.
21. THE TRUSS MANUFACTURER SHALL SUPPLY ALL HARDWARE AND FASTENERS FOR JOINING TRUSS MEMBERS TOGETHER AND FASTENING TRUSS MEMBERS TO THEIR SUPPORTS. METAL CONNECTOR PLATES SHALL BE MANUFACTURED BY A MEMBER OF THE WOOD TRUSS COUNCIL OF AMERICA (WTCA) AND SHALL BE 20 GAUGE MINIMUM. CONNECTOR PLATES SHALL MEET OR EXCEED ASTM A653, GRADE 33, WITH ASTM A924 GALVANIZED COATING DESIGNATION G60.
22. SHIPMENT, HANDLING, AND ERECTION OF TRUSSES SHALL BE BY EXPERIENCED, QUALIFIED PERSONS AND SHALL BE PERFORMED IN A MANNER SO AS NOT TO ENDANGER LIFE OR PROPERTY. APPARENT TRUSS DAMAGE SHALL BE REPORTED TO THE TRUSS MANUFACTURER FOR EVALUATION PRIOR TO ERECTION. CUTTING OR ALTERATION OF TRUSSES IS NOT PERMITTED.

STEEL STAIR CRITERIA

1. THE CONTRACTOR SHALL PROVIDE COMPLETE DRAWINGS AND CALCULATIONS FOR ALL STAIR CONSTRUCTION NOT SHOWN ON THE STRUCTURAL DRAWINGS. STAIR AND LANDING FRAMING SHALL BE DESIGNED AND DETAILED BY A PROFESSIONAL ENGINEER LICENSED IN THE PROJECT JURISDICTION. REFER TO PROJECT SPECIFICATIONS FOR SUBMITTAL REQUIREMENTS.
2. STEEL STAIRS AND HANDRAILS ARE A DEFERRED SUBMITTAL ITEM. STAIRS, HANDRAILS, AND REQUIRED SUPPORT ELEMENTS NOT SHOWN ON STRUCTURAL DRAWINGS SHALL BE DESIGNED BY THE CONTRACTOR PER THE REQUIREMENTS OF THE ARCHITECTURAL DRAWINGS AND BUILDING CODE.
3. STAIRWAY FRAMING, LANDINGS, AND ALL SUPPORT FRAMING SHALL BE DESIGNED FOR DEAD LOADS, SEISMIC LOADS, AND LIVE LOADS PER THE REQUIREMENTS OF THE REFERENCED BUILDING CODE.
4. REFER TO ARCHITECTURAL DRAWINGS FOR STAIRWAY WIDTHS AND CLEARANCES. MINIMUM HEADROOM CLEARANCES SHALL COMPLY WITH REQUIREMENTS OF THE REFERENCED BUILDING CODE.
5. ALL REQUIRED EMBEDDED PLATES AND ANGLES SHALL BE INCLUDED AS PART OF THE STAIR DESIGN.
6. THE STAIR MANUFACTURER SHALL PROVIDE ALL FRAMING, CONNECTIONS, AND ACCESSORIES AS NECESSARY TO SUPPORT STAIRS FROM THE PRIMARY STRUCTURE. CONNECTIONS TO PRIMARY FRAMING SHALL BE LOCATED AND DETAILED TO PROPERLY TRANSFER FORCES TO THE PRIMARY FRAMING WITHOUT CAUSING OVERLOAD OR DISTORTION OF THE SUPPORTING ELEMENTS.
7. THE CONTRACTOR SHALL COORDINATE AND PROVIDE FOOTINGS WHERE REQUIRED FOR STAIR SUPPORT AS DESIGNED BY THE STAIR FABRICATOR'S ENGINEER.
6. GROUT, WHERE NOTED ABOVE, SHALL HAVE A MINIMUM DESIGN ULTIMATE COMPRESSIVE STRENGTH OF 2,500 PSI AT 28 DAY TEST AND 3/8" MAXIMUM AGGREGATE SIZE.
7. NON-LOAD BEARING CONCRETE BLOCK WALLS SHALL BE ISOLATED FROM ADJACENT STRUCTURAL ELEMENTS WITH VERTICAL 3/8" CONTROL JOINTS AND AT THE TOP OF THE WALL WITH 1" AIR SPACE OR COMPRESSIBLE MATERIAL AND SUPPORT PER ARCHITECTURAL DETAIL.
8. WALLS SHALL BE ANCHORED TOP AND BOTTOM BY DOWELS MATCHING WALL VERTICAL REINFORCING (UNLESS NOTED OTHERWISE) FROM FLOOR SLAB BOTTOM AND BRACING ANGLES AT THE TOP, PER DETAILS ON THE DRAWINGS.

MASONRY VENEER CRITERIA

1. MASONRY VENEER SHALL HAVE A MINIMUM AVERAGE NET-AREA COMPRESSIVE STRENGTH OF 3,000 PSI. GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI.
2. WIRE TIES SHALL BE AT LEAST WIRE SIZE W1.7 (9 ga.) AND EXTEND AT LEAST HALFWAY THROUGH THE VENEER, BUT MAINTAIN AT LEAST 5/8" COVER ON THE OUTSIDE FACE. OUTER ENDS OF WIRES ARE TO BE BENT 90 DEGREES AND EXTEND 2" PARALLEL TO THE FACE OF THE VENEER.
3. ADJUSTABLE ANCHORS THAT ALLOW VERTICAL OR HORIZONTAL ADJUSTMENT BUT RESIST TENSION AND COMPRESSION FORCES PERPENDICULAR TO THE PLANE OF THE WALL SHALL BE USED FOR ATTACHMENT OVER SHEATHING TO WOOD STUDS. WIRE COMPONENTS OF ADJUSTABLE ANCHORS SHALL CONFORM TO THE SIZE AND INSTALLATION REQUIREMENTS OF THAT ANCHOR TYPE. ALL ANCHORS SHALL BE GALVANIZED.
4. CORRUGATED OR SHEET METAL ANCHORS ARE NOT ALLOWED.
5. MASONRY VENEER ANCHORS SHALL BE PROVIDED AT 32" ON CENTER HORIZONTALLY AND AT 16" ON CENTER VERTICALLY. AT LEAST ONE ANCHOR SHALL BE PROVIDED FOR EVERY 3.5 SQ. FT. OF WALL AREA (REDUCED TO 2.67 SQ

IBC TABLE 2304.10.1
FASTENING SCHEDULE

CONNECTION	NUMBER AND TYPE OF FASTENER	SPACING AND LOCATION
ROOF		
1. BLOCKING BETWEEN CEILING JOISTS, RAFTERS, OR TRUSSES TO TOP PLATE OR OTHER FRAMING BELOW	3-8d COMMON (2 1/2"x0.131") 3-10d BOX (3"x0.128") 3-3" x 0.131" NAILS 3-3" 14 GAGE STAPLES, 7/16" CROWN	EACH END, TOENAIL
BLOCKING BETWEEN RAFTERS OR TRUSS NOT AT THE WALL TOP PLATE, TO RAFTER OR TRUSS	2-8d COMMON (2 1/2"x0.131") 2-3" x 0.131" NAILS 2-3" 14 GAGE STAPLES	EACH END, TOENAIL
	2-16d COMMON (3 1/2"x0.162") 3-3" x 0.131" NAILS 3-3" 14 GAGE STAPLES	END NAIL
FLAT BLOCKING TO TRUSS AND WEB FILLER	16d COMMON (3 1/2"x0.162") 3" x 0.131" NAILS 3" 14 GAGE STAPLES	FACE NAIL @ 6" O.C.
2. CEILING JOISTS TO TOP PLATE	3-8d COMMON (2 1/2"x0.131") 3-10d BOX (3"x0.128") 3-3" x 0.131" NAILS 3-3" 14 GAGE STAPLES, 7/16" CROWN	EACH JOIST, TOENAIL
3. CEILING JOIST NOT ATTACHED TO PARALLEL RAFTER, LAPS OVER PARTITIONS (NO THRUST); SEE SECTION 2308.7.3.1, TABLE 2308.7.3.1	3-16d COMMON (3 1/2"x0.162") 4-10d BOX (3"x0.128") 4-3" x 0.131" NAILS 4-3" 14 GAGE STAPLES, 7/16" CROWN	FACE NAIL
4. CEILING JOIST ATTACHED TO PARALLEL RAFTER (HEEL JOINT); SEE SECTION 2308.7.3.1, TABLE 2308.7.3.1)	PER TABLE 2308.7.3.1	FACE NAIL
5. COLLAR TIE TO RAFTER	3-10d COMMON (3"x0.148") 4-10d BOX (3"x0.128") 4-3" x 0.131" NAILS 4-3" 14 GAGE STAPLES, 7/16" CROWN	FACE NAIL
6. RAFTER OR ROOF TRUSS TO TOP PLATE (SEE SECTION 2308.7.5, TABLE 2308.7.5)	3-10d COMMON (3"x0.148") 3-16d BOX (3 1/2"x0.135") 4-10d BOX (3"x0.128") 4-3" x 0.131" NAILS 4-3" 14 GAGE STAPLES, 7/16" CROWN	TOENAIL[c]
7. ROOF RAFTERS TO RIDGE VALLEY OR HIP RAFTERS, OR ROOF RAFTERS TO 2" RIDGE BEAM	2-16d COMMON (3 1/2"x0.162") 3-10d BOX (3"x0.128") 3-3" x 0.131" NAILS 3-3" 14 GAGE STAPLES, 7/16" CROWN	END NAIL
	3-10d COMMON (3 1/2"x0.148") 4-16d BOX (3 1/2"x0.135") 4-10d BOX (3"x0.128") 4-3" x 0.131" NAILS 4-3" 14 GAGE STAPLES, 7/16" CROWN	TOENAIL
WALL		
8. STUD TO STUD (NOT AT BRACED WALL PANELS)	16d COMMON (3 1/2"x0.162")	FACE NAIL @ 24" O.C.
	10d BOX (3"x0.128") 3" x 0.131" NAILS 3" 14 GAGE STAPLES, 7/16" CROWN	FACE NAIL @ 16" O.C.
9. STUD TO STUD AND ABUTTING STUDS AT INTERSECTING WALL CORNERS (AT BRACED WALL PANELS)	16d COMMON (3 1/2"x0.162")	FACE NAIL @ 16" O.C.
	16d BOX (3 1/2"x0.135")	FACE NAIL @ 12" O.C.
	3"x0.131" NAILS 3" 14 GAGE STAPLES, 7/16" CROWN	FACE NAIL @ 12" O.C.
10. BUILT-UP HEADER (2" TO 2" HEADER)	16d COMMON (3 1/2"x0.162")	FACE NAIL @ 16" O.C. EA. EDGE
	16d BOX (3 1/2"x0.135")	FACE NAIL @ 12" O.C. EA. EDGE
11. CONTINUOUS HEADER TO STUD	4-8d COMMON (2 1/2"x0.131") 4-10d BOX (3"x0.128")	TOENAIL
12. TOP PLATE TO TOP PLATE	16d COMMON (3 1/2"x0.162")	FACE NAIL @ 16" O.C.
	10d BOX (3"x0.128") 3" x 0.131" NAILS 3" 14 GAGE STAPLES, 7/16" CROWN	FACE NAIL @ 12" O.C.
13. TOP PLATE TO TOP PLATE, AT END JOINTS	8-16d COMMON (3 1/2"x0.162") 12-10d BOX (3"x0.128") 12-3" x 0.131" NAILS 12-3" 14 GAGE STAPLES, 7/16" CROWN	EACH SIDE OF END JOINT, FACE NAIL (MIN. 24" LAP SPLICE LENGTH EACH SIDE OF END JOINT)
14. BOTTOM PLATE TO JOIST, RIM JOIST, BAND JOIST, OR BLOCKING (NOT AT BRACED WALL PANELS)	16d COMMON (3 1/2"x0.162")	FACE NAIL @ 16" O.C.
	16d BOX (3 1/2"x0.135") 3" x 0.131" NAILS 3" 14 GAGE STAPLES, 7/16" CROWN	FACE NAIL @ 12" O.C.
15. BOTTOM PLATE TO JOIST, RIM JOIST, BAND JOIST, OR BLOCKING AT BRACED WALL PANELS	2-16d COMMON (3 1/2"x0.162") 3-16d BOX (3 1/2"x0.135") 4-3" x 0.131" NAILS 4-3" 14 GAGE STAPLES, 7/16" CROWN	FACE NAIL @ 16" O.C.
16. STUD TO TOP OR BOTTOM PLATE	4-8d COMMON (2 1/2"x0.131") 4-10d BOX (3"x0.128") 4-3" x 0.131" NAILS 4-3" 14 GAGE STAPLES, 7/16" CROWN	TOENAIL
	2-16d COMMON (3 1/2"x0.162") 3-10d BOX (3"x0.128") 3-3" x 0.131" NAILS 3-3" 14 GAGE STAPLES, 7/16" CROWN	END NAIL
17. TOP PLATES, LAPS AT CORNERS AND INTERSECTIONS	2-16d COMMON (3 1/2"x0.162") 3-10d BOX (3"x0.128") 3-3" x 0.131" NAILS 3-3" 14 GAGE STAPLES, 7/16" CROWN	FACE NAIL
18. 1" BRACE TO EACH STUD AND PLATE	2-8d COMMON (2 1/2"x0.131") 2-10d BOX (3"x0.128") 2-3" x 0.131" NAILS 2-3" 14 GAGE STAPLES, 7/16" CROWN	FACE NAIL
19. 1" x 6" SHEATHING TO EACH BEARING	2-8d COMMON (2 1/2"x0.131") 2-10d BOX (3"x0.128")	FACE NAIL
20. 1" x 8" AND WIDER SHEATHING TO EACH BEARING	3-8d COMMON (2 1/2"x0.131") 3-10d BOX (3"x0.128")	FACE NAIL
(CONTINUED)		

IBC TABLE 2304.10.1
FASTENING SCHEDULE (CONT.)

CONNECTION	NUMBER AND TYPE OF FASTENER	SPACING AND LOCATION
FLOOR		
21. JOIST TO SILL, TOP PLATE, OR GIRDER	3-8d COMMON (2 1/2"x0.131") 3-10d BOX (3"x0.128") 3-3" x 0.131" NAILS 3-3" 14 GAGE STAPLES, 7/16" CROWN	TOENAIL
22. RIM JOIST, BAND JOIST, OR BLOCKING TO TOP PLATE, SILL, OR OTHER FRAMING BELOW	8d COMMON (2 1/2"x0.131") 10d BOX (3"x0.128") 3-3" x 0.131" NAILS 3-3" 14 GAGE STAPLES	TOENAIL @ 6" O.C.
23. 1" x 6" SUBFLOOR OR LESS TO EACH JOIST	2-8d COMMON (2 1/2"x0.131") 2-10d BOX (3"x0.128")	FACE NAIL
24. 2 SUBFLOOR TO JOIST OR GIRDER	2-16d COMMON (3 1/2"x0.162")	FACE NAIL
25. 2" PLANKS (PLANK & BEAM - FLOOR & ROOF)	2-16d COMMON (3 1/2"x0.162")	EACH BEARING, FACE NAIL
26. BUILT-UP GIRDERS AND BEAMS, 2" LUMBER LAYERS	20d COMMON (4"x0.192")	FACE NAIL AT T&B @ 32" O.C. STAGGERED ON OPP. SIDES
	10d BOX (3"x0.128") 3" x 0.131" NAILS 3" 14 GAGE STAPLES, 7/16" CROWN	FACE NAIL AT T&B @ 24" O.C. STAGGERED ON OPP. SIDES
	AND: 2-20d COMMON (4"x0.192") 3-10d BOX (3"x0.128") 3-3" x 0.131" NAILS 3-3" 14 GAGE STAPLES, 7/16" CROWN	FACE NAIL @ ENDS AND AT EACH SPLICE
27. LEDGER STRIP SUPPORTING JOISTS OR RAFTERS	3-16d COMMON (3 1/2"x0.162") 4-10d BOX (3"x0.128") 4-3" x 0.131" NAILS 4-3" 14 GAGE STAPLES, 7/16" CROWN	FACE NAIL EACH JOIST OR RAFTER
28. JOIST TO BAND JOIST OR RIM JOIST	3-16d COMMON (3 1/2"x0.162") 4-10d BOX (3"x0.128") 4-3" x 0.131" NAILS 4-3" 14 GAGE STAPLES, 7/16" CROWN	END NAIL
29. BRIDGING OR BLOCKING TO JOIST, RAFTER, OR TRUSS	2-8d COMMON (2 1/2"x0.131") 2-10d BOX (3"x0.128") 2-3" x 0.131" NAILS 2-3" 14 GAGE STAPLES, 7/16" CROWN	TOENAIL EACH END
WOOD STRUCTURAL PANELS, SUBFLOOR, ROOF, AND INTERIOR WALL SHEATHING TO FRAMING AND PARTICLEBOARD WALL SHEATHING TO FRAMING[a]		
		EDGES (INCHES) / INTERMEDIATE SUPPORTS (INCHES)
30. 3/8" - 1/2"	6d COMMON OR DEFORMED (2"x0.113") (SUBFLOOR AND WALL)	6 / 12
	8d COMMON OR DEFORMED (2 1/2"x0.131") (ROOF) OR RSRS-01 (2 3/8"x0.113") NAIL (ROOF)[d]	6 / 12
	2 3/8"x0.113" NAIL (SUBFLOOR AND WALL)	6 / 12
	1 3/4" 16 GAGE STAPLE, 7/16" CROWN (ROOF)	4 / 8
	2 3/8"x0.113" NAIL (ROOF)	4 / 8
	1 3/4" 16 GAGE STAPLE, 7/16" CROWN (ROOF)	3 / 6
31. 19/32" - 3/4"	4-8d COMMON (2 1/2"x0.131") 4-10d BOX (3"x0.128")	6 / 12
	16d COMMON (3 1/2"x0.162")	6 / 12
	10d BOX (3"x0.128") 3" x 0.131" NAILS 3" 14 GAGE STAPLES, 7/16" CROWN	4 / 8
32. 7/8" - 1 1/4"	8-16d COMMON (3 1/2"x0.162") 12-10d BOX (3"x0.128") 12-3" x 0.131" NAILS 12-3" 14 GAGE STAPLES, 7/16" CROWN	6 / 12
OTHER EXTERIOR WALL SHEATHING		
33. 1/2" FIBERBOARD SHEATHING[b]	1 1/2" GALVANIZED ROOFING NAIL (7/16" HEAD DIA.) 1 1/4" 16 GAGE STAPLE w/ 7/16" OR 1" CROWN	3 / 6
34. 25/32" FIBERBOARD SHEATHING[b]	1 3/4" GALVANIZED ROOFING NAIL (7/16" HEAD DIA.) 1 1/2" 16 GAGE STAPLE w/ 7/16" OR 1" CROWN	3 / 6
WOOD STRUCTURAL PANELS, COMBINATION SUBFLOOR UNDERLAYMENT TO FRAMING		
35. 3/4" AND LESS	8d COMMON (2 1/2"x0.131") 6d DEFORMED (2"x0.113")	6 / 12
36. 7/8" - 1"	8d COMMON (2 1/2"x0.131") 8d DEFORMED (2 1/2"x0.131")	6 / 12
37. 1 1/8" - 1 1/4"	10d COMMON (3"x0.148") 8d DEFORMED (2 1/2"x0.131")	6 / 12
PANEL SIDING TO FRAMING		
38. 1/2" OR LESS	6d CORROSION-RESISTANT SIDING (1 7/8"x0.106") 6d CORROSION-RESISTANT CASING (2"x0.099")	6 / 12
39. 5/8"	8d CORROSION-RESISTANT SIDING (2 3/8"x0.128") 8d CORROSION-RESISTANT CASING (2 1/2"x0.113")	6 / 12
WOOD STRUCTURAL PANELS, SUBFLOOR, ROOF, AND INTERIOR WALL SHEATHING TO FRAMING AND PARTICLEBOARD WALL SHEATHING TO FRAMING[a]		
40. 1/4"	4d CASING (1 1/2"x0.080") 4d FINISH (1 1/2"x0.072")	6 / 12
41. 3/8"	6d CASING (2"x0.099") 6d FINISH (PANEL SUPPORTS @ 24")	6 / 12

a. NAILS SPACED AT 6" AT INTERMEDIATE SUPPORTS WHERE SPANS ARE 48" OR MORE. FOR NAILING OF WOOD STRUCTURAL PANEL AND PARTICLEBOARD DIAPHRAGMS AND SHEAR WALLS, REFER TO SECTION 2305. NAILS FOR WALL SHEATHING ARE PERMITTED TO BE COMMON, BOX, OR CASING.
b. SPACING SHALL BE 6" ON CENTER ON THE EDGES AND 12" ON CENTER AT INTERMEDIATE SUPPORTS FOR NONSTRUCTURAL APPLICATIONS. PANEL SUPPORTS AT 16" (20" IF STRENGTH AXIS IN THE LONG DIRECTION OF THE PANEL, UNLESS OTHERWISE MARKED).
c. WHERE A RAFTER IS FASTENED TO AN ADJACENT PARALLEL CEILING JOIST IN ACCORDANCE WITH THIS SCHEDULE AND THE CEILING JOIST IS FASTENED TO THE TOP PLATE IN ACCORDANCE WITH THIS SCHEDULE, THE NUMBER OF TOENAILS IN THE RAFTER SHALL BE PERMITTED TO BE REDUCED BY ONE NAIL.
d. RSRS-01 IS A ROOF SHEATHING RING SHANK NAIL MEETING THE SPECIFICATIONS IN ASTM F1667.

ABBREVIATIONS

@	AT	LG	LONG
A.B.	ANCHOR BOLT(S)	LLH	LONG LEG HORIZONTAL
A.B.C.	AGGREGATE BASE COURSE	LLV	LONG LEG VERTICAL
ADD'L	ADDITIONAL	LO	LOW
ANCH.	ANCHOR	LOC.	LOCATION OR LOCATED
APPROX.	APPROXIMATE(LY)	LT OR LGT.	LIGHT
ARCH.	ARCHITECT OR ARCHITECTURAL	LW	LIGHT WEIGHT
	DOCUMENTS	MACH.	MACHINE
AVG.	AVERAGE	MSRY	MASONRY
BLDG	BUILDING	MATL	MATERIAL
BLK	BLOCK	MAX.	MAXIMUM
BM	BEAM	M.B.	MACHINE BOLT
B.O.D.	BOTTOM OF DECK	MECH.	MECHANICAL
BOT. OR B.	BOTTOM	MEMB.	MEMBRANE
BRG	BEARING	MEZZ.	MEZZANINE
BTWN OR B/W	BETWEEN	MFR.	MANUFACTURER
BW	BUTT WELD	MID.	MIDDLE
CANT.	CANTILEVER	MIN.	MINIMUM
C-C	CENTER TO CENTER	MISC.	MISCELLANEOUS
CEIL. OR CLG.	CEILING	MTL	METAL
C.I.P.	CAST IN PLACE	N.F.	NEAR FACE
CJ	CONTROL JOINT OR CONSTRUCTION JOINT	NO.	NUMBER
		N.S.	NEAR SIDE
CL OR CLR	CLEAR	N-S	NORTH-SOUTH
CMU	CONCRETE MASONRY UNIT	N.T.S.	NOT TO SCALE
CL	CENTER LINE	NW	NORMAL WEIGHT
CLR	CLEAR	O.C.	ON CENTER
COL	COLUMN	O.D.	OUTSIDE DIAMETER
CONC	CONCRETE	O.F.	OUTSIDE FACE
CONN.	CONNECTION	O.H.	OVERHANG
CONSTR.	CONSTRUCTION	OPNG	OPENING
CONT.	CONTINUE OR CONTINUOUS	OPP	OPPOSITE
CONTR.	CONTRACTOR	OPP HD	OPPOSITE HAND
COV	COVER	PAR.	PARALLEL
CTR. OR CNTR	CENTER	P.C. OR P/C	PRECAST
CTR'D	CENTERED	PCF	POUNDS PER CUBIC FOOT
DBL	DOUBLE	PEN	PENETRATION
DEPR	DEPRESSION	PL	PLATE
DET OR DTL	DETAIL	PERP.	PERPENDICULAR
DIA.	DIAMETER	P.L.	PROPERTY LINE
DIAG.	DIAGONAL	PLF	POUNDS PER LINEAL FOOT
DIM.	DIMENSION	PLY	PLYWOOD
DN	DOWN	PRELIM.	PRELIMINARY
DP	DEEP	PSI	POUNDS PER SQUARE INCH
DWG	DRAWING(S)	PT	PRESERVATIVE TREATED OR POST-TENSIONED
DWL	DOWEL		
EA.	EACH	R OR RAD.	RADIUS
E.F.	EACH FACE	RAP	RAMMED AGGREGATE PIER
EJ	EXPANSION JOINT	RE. OR REF.	REFERENCE
E OR ELEC.	ELECTRICAL	REINF.	REINFORCED OR REINFORCING
EL. OR ELEV.	ELEVATION	REQ'D	REQUIRED
EMBED.	EMBEDMENT OR EMBEDDED	SCHED.	SCHEDULE
ENGR	ENGINEER	SECT	SECTION
EOR	ENGINEER OF RECORD	SEOR	STRUCTURAL ENGINEER OF RECORD
EQ	EQUAL	SHTHG	SHEATHING
E.S.	EACH SIDE	SH OR SHT	SHEET
E.W.	EACH WAY	SIM.	SIMILAR
E-W	EAST-WEST	SLV	SLEEVE OR SHORT LEG VERTICAL
EXC	EXCAVATE		
EXIST.	EXISTING	SLH	SHORT LEG HORIZONTAL
EXP.	EXPANSION	SOG	SLAB ON GRADE
EXT.	EXTERIOR	SP OR SPCS	SPACE(S)
FAB	FABRICATION	SPCG	SPACING
FDN OR FNDN	FOUNDATION	SPEC.	SPECIFICATION
F.F.	FAR FACE OR FINISHED FLOOR	SQ.	SQUARE
FIN.	FINISH	STD.	STANDARD
FLG.	FLANGE	STIFF.	STIFFENER
FLR.	FLOOR	STL	STEEL
F.S.	FAR SIDE	STRUCT.	STRUCTURE OR STRUCTURAL
FT.	FOOT OR FEET	SYM.	SYMMETRIC(AL)
FTG	FOOTING	T.	TOP
GA.	GAGE OR GAUGE	T&B	TOP AND BOTTOM
GALV.	GALVANIZED	T&G	TONGUE AND GROOVE
GC OR GEN CONTR	GENERAL CONTRACTOR	THK	THICK
GLU-LAM	GLUE-LAMINATED	THK'ND	THICKENED
GR OR GRD	GRADE	T.O.C.	TOP OF CONCRETE
GWB	GYPSUM WALL BOARD	T.O.F.	TOP OF FOOTING
GYP	GYPCRETE OR GYPSUM WALL BOARD	TOPG	TOPPING
H.A.S.	HEADED ANCHOR STUD	T.O.S.	TOP OF STEEL OR TOP OF SLAB
HI	HIGH	T.O.W.	TOP OF WALL
HORIZ. OR HOR.	HORIZONTAL	TR	TRUSS
HT.	HEIGHT	TYP.	TYPICAL
I.D.	INSIDE DIAMETER	U.N.O	UNLESS NOTED OTHERWISE
I.F.	INSIDE FACE	VERT.	VERTICAL
ILO	IN LIEU OF	W/	WITH
IN.	INCH	W/O	WITHOUT
INCL	INCLUDE	WD	WOOD
INFO	INFORMATION	WOL.	WOLMANIZED
INT.	INTERIOR	W.P.	WORKING POINT
JT.	JOINT	WT. OR WGT.	WEIGHT
K	KIP (1000 LBS)	WWF OR WWM	WELDED WIRE FABRIC
LB	POUND(S)	X-BRACE	CROSS BRACING

CONCRETE STRENGTH=4000 psi					CONCRETE STRENGTH=4500 psi					CONCRETE STRENGTH=5000 psi				
CASE / BAR SIZE	DEVELOPMENT LENGTH OR CLASS A LAP		CLASS B LAP		CASE / BAR SIZE	DEVELOPMENT LENGTH OR CLASS A LAP		CLASS B LAP		CASE / BAR SIZE	DEVELOPMENT LENGTH OR CLASS A LAP		CLASS B LAP	
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS		TOP BARS	OTHER BARS	TOP BARS	OTHER BARS		TOP BARS	OTHER BARS	TOP BARS	OTHER BARS
#3	19	15	24	19	#3	18	14	23	18	#3	17	13	22	17
#4	25	19	33	25	#4	24	18	31	24	#4	23	17	29	23
#5	31	24	41	31	#5	30	23	38	30	#5	28	22	36	28
#6	37	29	49	37	#6	35	27	46	35	#6	34	26	43	34
#7	54	42	71	54	#7	51	40	67	51	#7	49	38	63	49
#8	62	48	81	62	#8	59	45	76	59	#8	56	43	72	56
#9	70	54	91	70	#9	66	51	86	66	#9	63	48	81	63
#10	79	61	102	79	#10	74	57	96	74	#10	70	54	92	70
#11	87	67	113	87	#11	82	64	107	82	#11	78	60	102	78

NOTES:
1. UNLESS SPECIFICALLY INDICATED OTHERWISE ON THE CONTRACT DRAWINGS, USE THE MINIMUM LENGTH FOR A CLASS B LAP SPLICE OR THE MINIMUM DEVELOPMENT LENGTH INDICATED IN THE TABLES ABOVE MULTIPLIED BY THE APPLICABLE FACTOR(S) LISTED BELOW.
2. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS.
3. WHERE THE CLEAR SPACING BETWEEN BARS LAP SPLICED OR EMBEDDED AT ANY SECTION IS LESS THAN 2 BAR DIAMETERS, OR WHERE THE BAR COVER IS LESS THAN OR EQUAL TO THE BAR DIAMETER. INCREASE THE TABULATED BAR SPLICE OR DEVELOPMENT LENGTH BY 50%.
4. TABLE IS FOR 1 OR 2 BAR BUNDLES ONLY. FOR DEVELOPMENT LENGTHS AND TENSION LAP SPLICE LENGTHS OF BUNDLED BARS REFER TO ACI 318-14, 25.6 OR CONTACT THE STRUCTURAL ENGINEER.
5. MECHANICAL COUPLERS MAY BE SUBSTITUTED FOR TENSION LAP SPLICED BARS PROVIDED THAT THEY MEET THE REQUIREMENTS OF ACI 318-14, 25.5.7.

PRINTS ISSUED

12/18/25 - 95% CDs

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PRELIMINARY
NOT FOR
CONSTRUCTION

JOHNSON-BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
STRUCTURAL GENERAL NOTES

PROJECT NUMBER: 25144

SHEET NUMBER:

S-002

DRAWN BY: SMR CHECKED BY: SMR

12/18/2025 12:57:39 PM
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STATEMENT OF SPECIAL INSPECTIONS

This Statement of Special Inspections is submitted in accordance with the requirements of the 2021 International Building Code (IBC) Sections 1704 and 1705.

Special Inspections and Structural Observations applicable to this project:

• Special Inspections for Standard Buildings (per IBC 1704.2)	REQUIRED
• Special Inspections for Seismic Resistance (per IBC 1705.12)	NOT REQUIRED
• Special Inspections for Wind Resistance (per IBC 1705.11)	NOT REQUIRED
• Structural Observations for Seismic Resistance (per IBC 1704.6.2)	NOT REQUIRED
• Structural Observations for Wind Resistance (per IBC 1704.6.3)	NOT REQUIRED

This Statement of Special Inspections is intended to apply only to items within the scope of work of the Structural Engineer. See Statement of Special Inspections prepared by the design professional in responsible charge for additional special inspection requirements applicable to other disciplines.

The following Schedules of Special Inspections summarize the Special Inspections and Tests required. Special Inspectors shall refer to the approved plans and specifications for detailed special inspection requirements. Any additional tests and inspections required by the approved plans and specifications shall also be performed.

Special Inspections and Testing shall be performed in accordance with the approved plans and specifications, this statement and IBC Sections 1704 and 1705. The owner shall retain and directly pay for the special inspections and testing as required by IBC section 1704.2.

Interim Special Inspection Reports shall be submitted to the Building Official and the Registered Design Professional in Responsible Charge in accordance with IBC Section 1704.2.4. A Final Report of Special Inspections shall be submitted to the Building Official and the Registered Design Professional in Responsible Charge in accordance with IBC Section 1704.2.4.

This Statement of Special Inspections has been developed with the understanding that the Building Official will:
• Review and approve the qualifications of the Special Inspectors who will perform the inspections.
• Monitor special inspection activities on the job site to assure that the Special Inspectors are qualified and are performing their duties as called for in this Statement of Special Inspections.
• Review submitted inspection reports.
• Perform inspections as required by IBC Section 110 and the local building code.

Structural Observations, when required, will be performed by a registered professional engineer from **Rosemann & Associates, P.C.** or a specified delegate. At the conclusion of the work included in the permit, the structural observer shall submit to the Building Official a written statement that the site visits have been made and identify any reported deficiencies that, to the best of the structural observer's knowledge, have not been resolved.

Structural Observation does not include or waive the responsibility for the Special Inspections included in this Statement of Special Inspections or the inspections required by IBC Section 110.

STANDARD BUILDING SPECIAL INSPECTION REQUIREMENTS (per IBC Section 1704.2):
Provide inspections required in the Schedule of Special Inspections for Standard Buildings.

SEISMIC RESISTANCE SPECIAL INSPECTION AND TESTING REQUIREMENTS (per IBC Section 1705.12):
In addition to the inspections required in the Schedule of Special Inspections for Standard Buildings, provide inspection and testing for Seismic Resistance for the following systems:

Special Inspection:
1. The seismic-force-resisting systems as follows:
   a. Conduct special inspection for structural steel construction as described in the Schedule of Special Inspections for Seismic Resistance in structures assigned to Seismic Design Category B, C, D, E or F.
   b. Conduct special inspection for structural wood construction as described in the Schedule of Special Inspections for Seismic Resistance in structures assigned to Seismic Design Category C, D, E or F.
   c. Conduct special inspection for cold-formed steel light-gage construction as described in the Schedule of Special Inspections for Seismic Resistance in structures assigned to Seismic Design Category C, D, E or F.
2. Designated seismic systems in structures assigned to Seismic Design Category C, D, E or F as described in the Schedule of Special Inspections for Seismic Resistance.
3. Architectural components as described in the Schedule of Special Inspections for Seismic Resistance in structures assigned to Seismic Design Category D, E or F.
4. Plumbing, mechanical, and electrical components as described in the Schedule of Special Inspections for Seismic Resistance.
5. Storage racks in structures assigned to Seismic Design Category D, E or F as described in the Schedule of Special Inspections for Seismic Resistance.
6. Seismic isolation systems as described in the Schedule of Special Inspections for Seismic Resistance in structures assigned to Seismic Design Category B, C, D, E or F.
7. Cold-formed steel special bolted moment frames assigned to Seismic Design Category D, E, or F as described in the Schedule of Special Inspections for Seismic Resistance.

Testing and Qualification for Seismic Resistance:
1. The seismic force-resisting systems in structures assigned to Seismic Design Category B, C, D, E or F as follows:
   a. Perform testing and qualification for structural steel as described in the Schedule of Special Inspections for Seismic Resistance (1705.13.1).
2. Provide seismic certification of nonstructural components in structures assigned to Seismic Design Category B, C, D, E or F as described in the Schedule of Special Inspections for Seismic Resistance.
3. Provide seismic certification of designated seismic systems in structures assigned to Seismic Design Category C, D, E or F as described in the Schedule of Special Inspections for Seismic Resistance.
4. Provide seismic testing of the seismic isolation system in seismically isolated structures assigned to Seismic Design Category B, C, D, E or F as described in the Schedule of Special Inspections for Seismic Resistance (1705.13.4).

REMOVE SECTION IF NOT REQUIRED

WIND RESISTANCE SPECIAL INSPECTION REQUIREMENTS (per IBC Section 1705.11):
In addition to the inspections required in the Schedule of Special Inspections for Standard Buildings, provide inspection for Wind Resistance for the following systems:
1. Structural wood gluing operations for elements of the main windforce-resisting system and nailing, bolting, anchoring, and other fastening of elements of the main windforce-resisting system, including wood shear walls, wood diaphragms, drag struts, braces, and hold-downs.
2. Cold-formed steel light-frame construction welding operations of elements of the main windforce-resisting system and screw attachment, bolting, anchoring, and other fastening of elements of the main windforce-resisting system, including shear walls, braces, diaphragms, collectors (drag struts), and hold-downs.
3. Wind-resisting components fastening of the following systems and components:
   a. Roof covering, roof deck, and roof framing connections
   b. Exterior wall covering and wall connections to roof and floor diaphragms and framing

REMOVE SECTION IF NOT REQUIRED

STRUCTURAL OBSERVATION REQUIREMENTS:
The contractor shall notify the structural observer 1 week in advance of the required structural observations for scheduling purposes. Failure by the contractor to meet this requirement may require removal of any subsequent work for observation.
Structural observations shall be performed at the following stages of construction:
1. Foundation construction:
   a. After placement of reinforcing and prior to placement of concrete for lateral element foundations.
2. Wood construction:
   a. After wood framing has been completed, but before installation of gypsum wallboard begins.
3. Steel construction:
   a. After first tier has been erected and plumbed, and bolt tightening and joint welding is in progress.
   b. After first floor level of steel deck is in place, welded shear studs are in place and slab reinforcing placement is in progress.
   c. After roof level steel deck is in place.
4. Concrete construction:
   a. After placement of first level column and wall reinforcing and prior to closing of forms.
   b. For concrete moment frames, after or during placement of beam reinforcement and prior to closing of beam forms.
   c. After placement of first level of slab reinforcing and prior to placement of slab concrete.

MATERIAL / ACTIVITY	SERVICE	Y/N	EXTENT
1705.2 STEEL CONSTRUCTION			
1. FABRICATOR AND ERECTOR DOCUMENTS (VERIFY REPORTS AND CERTIFICATES AS LISTED IN AISC 360, CHAPTER N, PARAGRAPH 3.2 FOR COMPLIANCE WITH CONSTRUCTION DOCUMENTS)	SUBMITTAL REVIEW	Y	EACH SUBMITTAL
2. MATERIAL VERIFICATION OF STRUCTURAL STEEL	SHOP (3) AND FIELD INSPECTION	Y	PERIODIC
3. EMBEDMENTS (VERIFY DIAMETER, GRADE, TYPE, LENGTH, EMBEDMENT. SEE 1705.3 FOR ANCHORS)	FIELD INSPECTION	Y	PERIODIC
4. VERIFY MEMBER LOCATIONS, BRACES, STIFFENERS, AND APPLICATION OF JOINT DETAILS AT EACH CONNECTION COMPLY WITH CONSTRUCTION DOCUMENTS	FIELD INSPECTION	Y	PERIODIC
5. STRUCTURAL STEEL WELDING:			
A. INSPECTION TASKS PRIOR TO WELDING (OBSERVE, OR PERFORM FOR EACH WELDED JOINT OR MEMBER, THE QA TASKS LISTED IN AISC 360, TABLE N5.4-1)	SHOP (3) AND FIELD INSPECTION	Y	OBSERVE OR PERFORM AS NOTED (4)
B. INSPECTION TASKS DURING WELDING (OBSERVE, OR PERFORM FOR EACH WELDED JOINT OR MEMBER, THE QA TASKS LISTED IN AISC 360, TABLE N5.4-2)	SHOP (3) AND FIELD INSPECTION	Y	OBSERVE (4)
C. INSPECTION TASKS AFTER WELDING (OBSERVE, OR PERFORM FOR EACH WELDED JOINT OR MEMBER, THE QA TASKS LISTED IN AISC 360, TABLE N5.4-3)	SHOP (3) AND FIELD INSPECTION	Y	OBSERVE OR PERFORM AS NOTED (4)
D. NONDESTRUCTIVE TESTING (NDT) OF WELDED JOINTS: *SEE COMMENTARY*			
1) COMPLETE PENETRATION GROOVE WELDS 5/16" OR GREATER IN *RISK CATEGORY* III OR IV	SHOP (3) OR FIELD ULTRASONIC TESTING - 100%	Y	PERIODIC
2) COMPLETE PENETRATION GROOVE WELDS 5/16" OR GREATER IN *RISK CATEGORY* II	SHOP (3) OR FIELD ULTRASONIC TESTING - 10% OF WELDS MINIMUM	Y	PERIODIC
3) THERMALLY CUT SURFACES OF ACCESS HOLES WHEN MATERIAL T > 2"	SHOP (3) OR FIELD MAGNETIC PARTICAL OR PENETRANT TESTING	N	PERIODIC
4) WELDED JOINTS SUBJECT TO FATIGUE WHEN REQUIRED BY AISC 360, APPENDIX 3, TABLE A-3.1	SHOP (3) OR FIELD RADIOGRAPHIC OR ULTRASONIC TESTING	Y	PERIODIC
5) FABRICATOR'S NDT REPORTS WHEN FABRICATOR PERFORMS NDT	VERIFY REPORTS	Y	EACH SUBMITTAL (5)
6. STRUCTURAL STEEL BOLTING:	SHOP (3) AND FIELD INSPECTION		
A. INSPECTION TASKS PRIOR TO BOLTING (OBSERVE, OR PERFORM TASKS FOR EACH BOLTED CONNECTION, IN ACCORDANCE WITH QA TASKS LISTED IN AISC 360, TABLE N5.6-1)		Y	OBSERVE OR PERFORM AS NOTED (4)
B. INSPECTION TASKS DURING BOLTING (OBSERVE THE QA TASKS LISTED IN AISC 360, TABLE N5.6-2)		Y	OBSERVE (4)
1) PRE-TENSIONED AND SLIP-CRITICAL JOINTS		Y	
A) TURN-OF-NUT WITH MATCHING MARKINGS		N	PERIODIC
B) DIRECT TENSION INDICATOR		Y	PERIODIC
C) TWIST-OFF TYPE TENSION CONTROL BOLT		Y	PERIODIC
D) TURN-OF-NUT WITHOUT MATCHING MARKINGS		N	CONTINUOUS
E) CALIBRATED WRENCH		Y	CONTINUOUS
2) SNUG-TIGHT JOINTS		N	PERIODIC
C. INSPECTION TASKS AFTER BOLTING (PERFORM TASKS FOR EACH BOLTED CONNECTION IN ACCORDANCE WITH QA TASKS LISTED IN AISC 360, TABLE N5.6-3)			PERFORM (4)
7. INSPECTION OF STEEL ELEMENTS OF COMPOSITE CONSTRUCTION PRIOR TO CONCRETE PLACEMENT IN ACCORDANCE WITH QA TASKS LISTED IN AISC 360, TABLE N6.1	SHOP (3) AND FIELD INSPECTION AND TESTING	Y	OBSERVE OR PERFORM AS NOTED (4)

MATERIAL / ACTIVITY	SERVICE	Y/N	EXTENT
1705.2 STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL			
1. MATERIAL VERIFICATION OF COLD-FORMED STEEL DECK:			
A. IDENTIFICATION MARKINGS	FIELD INSPECTION	N	PERIODIC
B. MANUFACTURER'S CERTIFIED TEST REPORTS	SUBMITTAL REVIEW	N	EACH SUBMITTAL
2. CONNECTION OF COLD-FORMED STEEL DECK TO SUPPORTING STRUCTURE:	SHOP (3) AND FIELD INSPECTION	N	
A. WELDING		N	PERIODIC
B. OTHER FASTENERS (IN ACCORDANCE WITH AISC 360,SECTION N6)		N	
1) VERIFY FASTENERS ARE IN CONFORMANCE WITH APPROVED SUBMITTAL		N	PERIODIC
2) VERIFY FASTENER INSTALLATION IS IN CONFORMANCE WITH APPROVED SUBMITTAL AND MANUFACTURER'S RECOMMENDATIONS		N	PERIODIC
3. REINFORCING STEEL	SHOP (3) AND FIELD INSPECTION		
A. VERIFICATION OF WELDABILITY OF STEEL OTHER THAN ASTM A706		N	PERIODIC
B. REINFORCING STEEL RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, BOUNDARY ELEMENTS OF SPECIAL CONCRETE STRUCTURAL WALLS AND SHEAR REINFORCEMENT		Y	CONTINUOUS
C. SHEAR REINFORCEMENT		Y	CONTINUOUS
D. OTHER REINFORCING STEEL		Y	PERIODIC
4. COLD-FORMED STEEL TRUSSES SPANNING 60 FEET OR GREATER			
A. VERIFY TEMPORARY AND PERMANENT RESTRAINT/BRACING ARE INSTALLED IN ACCORDANCE WITH THE APPROVED TRUSS SUBMITTAL PACKAGE	FIELD INSPECTION	N	PERIODIC

MATERIAL / ACTIVITY	SERVICE	Y/N	EXTENT
1705.3 INSPECTION OF CONCRETE CONSTRUCTION			
1. INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS AND PLACEMENT	SHOP (3) AND FIELD INSPECTION	Y	PERIODIC
2. REINFORCING BAR WELDING:	FIELD INSPECTION	Y	
A. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706; B. INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16"; C. INSPECT ALL OTHER WELDS			PERIODIC PERIODIC CONTINUOUS
3. INSPECTION OF ANCHORS CAST IN CONCRETE	FIELD INSPECTION	Y	PERIODIC
4. INSPECTION OF ANCHORS INSTALLED IN HARDENED CONCRETE	FIELD INSPECTION	Y	
A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4A			PERIODIC OR AS REQUIRED BY MANUF.
5. VERIFYING USE OF REQUIRED DESIGN MIX	FIELD INSPECTION	Y	PERIODIC
6. AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP & AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	FIELD TESTING	Y	CONTINUOUS
7. INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	FIELD INSPECTION	Y	CONTINUOUS
8. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES	FIELD INSPECTION	Y	PERIODIC
9. INSPECTION OF PRESTRESSED CONCRETE:	FIELD INSPECTION	Y	
A. APPLICATION OF PRESTRESSING FORCES B. GROUTING OF BONDED PRESTRESSING TENDONS IN THE SEISMIC-FORCE-RESISTING SYSTEM			CONTINUOUS CONTINUOUS
10. ERECTION OF PRECAST CONCRETE MEMBERS	FIELD INSPECTION	Y	
A. INSPECT IN ACCORDANCE WITH CONSTRUCTION DOCUMENTS B. PERFORM INSPECTIONS OF WELDING AND BOLTING IN ACCORDANCE WITH SECTION 1705.2			PERIODIC PER SECTION 1705.2
11. VERIFICATION OF IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	FIELD INSPECTION AND TESTING	Y	PERIODIC
12. INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED	FIELD INSPECTION	Y	PERIODIC
13. CONCRETE STRENGTH TESTING AND VERIFICATION OF COMPLIANCE WITH CONSTRUCTION DOCUMENTS	FIELD TESTING	Y	PERIODIC

NOTE: ADDITIONAL INSPECTION MAY BE REQUIRED FOR THE SEISMIC FORCE RESISTING SYSTEMS PER IBC 1707.

MATERIAL / ACTIVITY	SERVICE	Y/N	EXTENT
1705.6 INSPECTION OF SOILS			
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY	FIELD INSPECTION	Y	PERIODIC
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL	FIELD INSPECTION	Y	PERIODIC
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS	FIELD INSPECTION	Y	PERIODIC
4. VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF CONTROLLED FILL	FIELD INSPECTION	Y	CONTINUOUS
5. PRIOR TO PLACEMENT OF CONTROLLED FILL, OBSERVE SUBGRADE AND VERIFY THAT THE SITE HAS BEEN PREPARED PROPERLY	FIELD INSPECTION	Y	PERIODIC

MATERIAL / ACTIVITY	SERVICE	Y/N	EXTENT
1705.11 INSPECTION OF WOOD CONSTRUCTION			
1. VERIFY FABRICATION/QUALITY CONTROL AT FABRICATION PLANT FOR PREFABRICATED WOOD STRUCTURAL ELEMENTS AND ASSEMBLIES	SHOP (3) AND FIELD INSPECTION	Y	PERIODIC
2. FOR HIGH LOAD DIAPHRAGMS, VERIFICATION OF GRADE AND THICKNESS OF STRUCTURAL PANEL SHEATHING	SHOP (3) AND FIELD INSPECTION	Y	PERIODIC
3. FOR HIGH LOAD DIAPHRAGMS, VERIFICATION OF NOMINAL SIZE OF FRAMING MEMBERS AT ADJOINING PANEL EDGES NAIL OR STAPLE DIAMETER AND LENGTH, NUMBER OF FASTENER LINES, AND SPACING BETWEEN FASTENERS IN EACH LINE AND AT EDGE MARGINS AGREES WITH CONTRACT DOCUMENTS.	FIELD INSPECTION	Y	PERIODIC
4. INSPECTION OF FIELD GLUING OPERATIONS OF ELEMENTS OF THE LATERAL FORCE RESISTING SYSTEM	FIELD INSPECTION	Y	CONTINUOUS
5. INSPECTION OF NAILING, BOLTING, ANCHORING, AND OTHER FASTENING OF COMPONENTS WITHIN THE LATERAL FORCE RESISTING SYSTEM, INCLUDING WOOD SHEAR WALLS, WOOD DIAPHRAGMS, DRAG STRUTS, BRACES, SHEAR PANELS, AND HOLDDOWNS (WHERE FASTENER SPACING IS 4" ON CENTER OR LESS)	FIELD INSPECTION	Y	PERIODIC

NOTE: ADDITIONAL INSPECTION MAY BE REQUIRED FOR THE WIND/SEISMIC FORCE RESISTING SYSTEMS PER IBC 1706 & 1707.

MATERIAL / ACTIVITY	SERVICE	Y/N	EXTENT
1705.16 EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS)			
1. VERIFY MATERIALS, DETAILS AND INSTALLATIONS ARE PER THE APPROVED CONSTRUCTION DOCUMENTS	FIELD INSPECTION	Y	PERIODIC
2. INSPECTION OF WATER-RESISTIVE BARRIER OVER SHEATHING SUBSTRATE	FIELD INSPECTION	Y	PERIODIC

MATERIAL / ACTIVITY	SERVICE	Y/N	EXTENT
1705.17 FIRE-RESISTANT PENETRATIONS AND JOINTS			
1. INSPECT PENETRATION FIRESTOP SYSTEMS	FIELD TESTING	Y	PER ASTM E2174
2. INSPECT FIRE-RESISTANT JOINT SYSTEMS	FIELD TESTING	Y	PER ASTM E2393

(3) SPECIAL INSPECTIONS AS REQUIRED BY SECTION 1704.2.5 ARE NOT REQUIRED WHERE THE FABRICATOR IS APPROVED IN ACCORDANCE WITH IBC SECTION 1704.2.5.1

(4) OBSERVE ON A RANDOM BASIS; OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS. PERFORM THESE TASKS FOR EACH WELDED JOINT, BOLTED CONNECTION, OR STEEL ELEMENT.

(5) NDT OF WELDS COMPLETED IN AN APPROVED FABRICATOR'S SHOP MAY BE PERFORMED BY THAT FABRICATOR WHEN APPROVED BY THE AJH. REFER TO AISC 360, N7.

PRINTS ISSUED
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JOHNSON-BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
SPECIAL INSPECTIONS

PROJECT NUMBER: 25144

SHEET NUMBER:

S-003

DRAWN BY: SMR CHECKED BY: SMR

12/18/2025 12:57:42 PM
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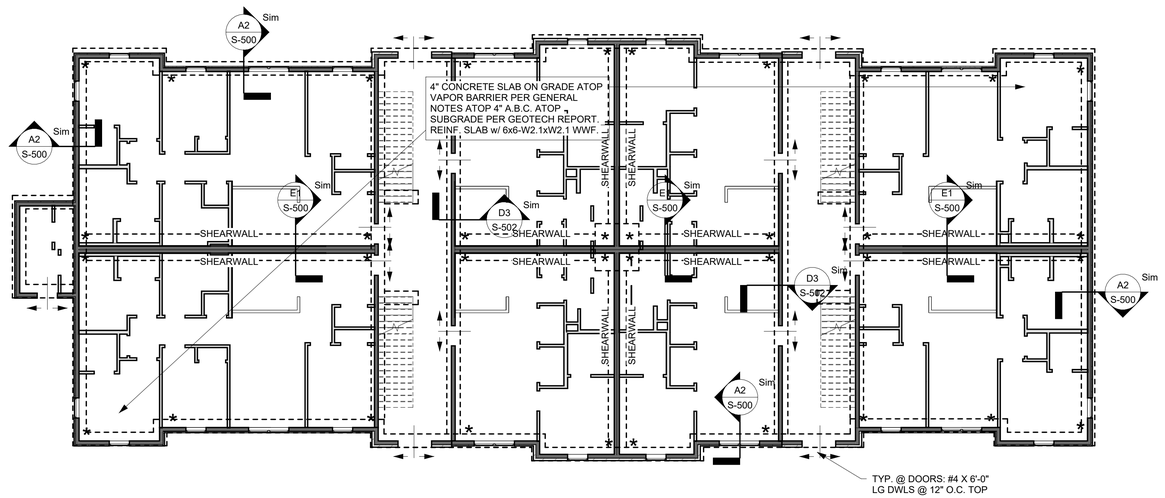
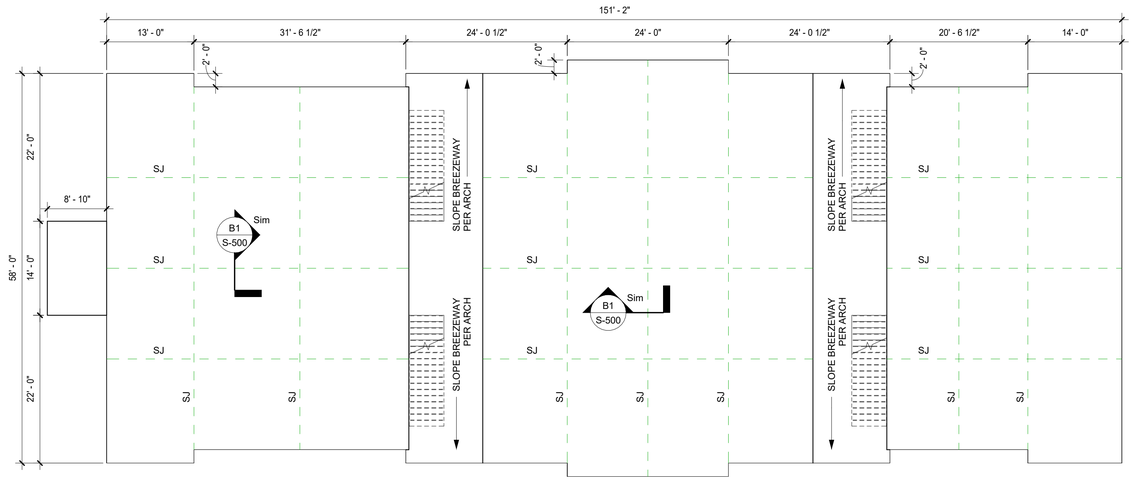
COLUMN SCHEDULE		
MARK	COLUMN	BASE PLATE & ANCHOR BOLTS
A	HSS 8x8x3/8	15"x15"x1" w/ (8)1" DIA. X 18" LG BOLTS & 1" NON-SHRINK GROUT
B	HSS 5x5x1/4	11"x11"x3/4" w/ (4)1" DIA. X 18" LG BOLTS & 1" NON-SHRINK GROUT
C	HSS 5x5x1/4	11"x6"x3/4" w/ (4)1" DIA. X 18" LG BOLTS & 1" NON-SHRINK GROUT
D	NOT USED	NOT USED
E	NOT USED	NOT USED
F	6x6 DFL POST	SIMPSON CB BASE (CAST IN FOOTING) & CC/ECC/ECCL CAP

FOOTING SCHEDULE		
MARK	FOOTING SIZE	REINFORCING (TOP & BOTTOM)
3.0	3'-0"x3'-0"x18" DP	#6 @ 12" O.C.
3.1	3'-0"x3'-0"x36" DP	#6 @ 12" O.C.
4.0	4'-0"x4'-0"x18" DP	#6 @ 12" O.C.
4.1	4'-0"x4'-0"x36" DP	#6 @ 12" O.C.
5.0	5'-0"x5'-0"x18" DP	#6 @ 12" O.C.
6.0	6'-0"x6'-0"x21" DP	#6 @ 12" O.C.



NOTES:
1. * INDICATES SHEAR WALL HOLDOWNS PER DETAILS.
2. REFERENCE ARCHITECTURAL DWGS FOR DIMENSIONS AND ELEVATIONS.
3. REFERENCE MEP FOR ALL MECHANICAL UNIT WEIGHTS AND LOCATIONS.

2 Foundation Plan - Building A
3/32" = 1'-0"



NOTES:
1. ALL DIMENSIONS ARE TO EDGE OF SLAB OR CENTERLINE OF COLUMN.
2. REFERENCE ARCH. DRAWINGS FOR INTERIOR DIMENSIONS AND ELEVATIONS.

1 Slab Plan - Building A
3/32" = 1'-0"

PRINTS ISSUED
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JOHNSON-BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
BUILDING A - SLAB PLAN & FOUNDATION PLAN

PROJECT NUMBER: 25144

SHEET NUMBER:

S-100

DRAWN BY: SMR CHECKED BY: SMR

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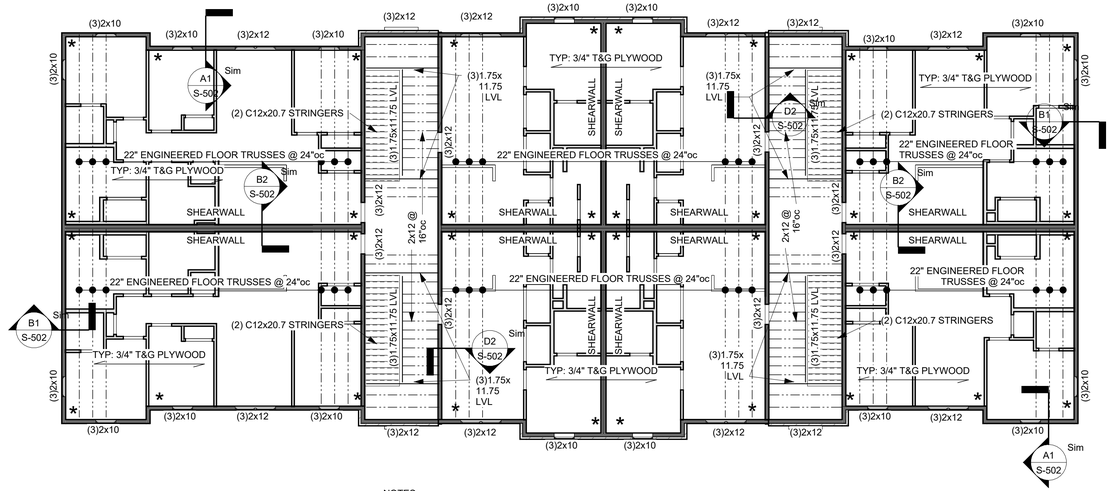
SHEATHING ATTACHMENT SCHEDULE

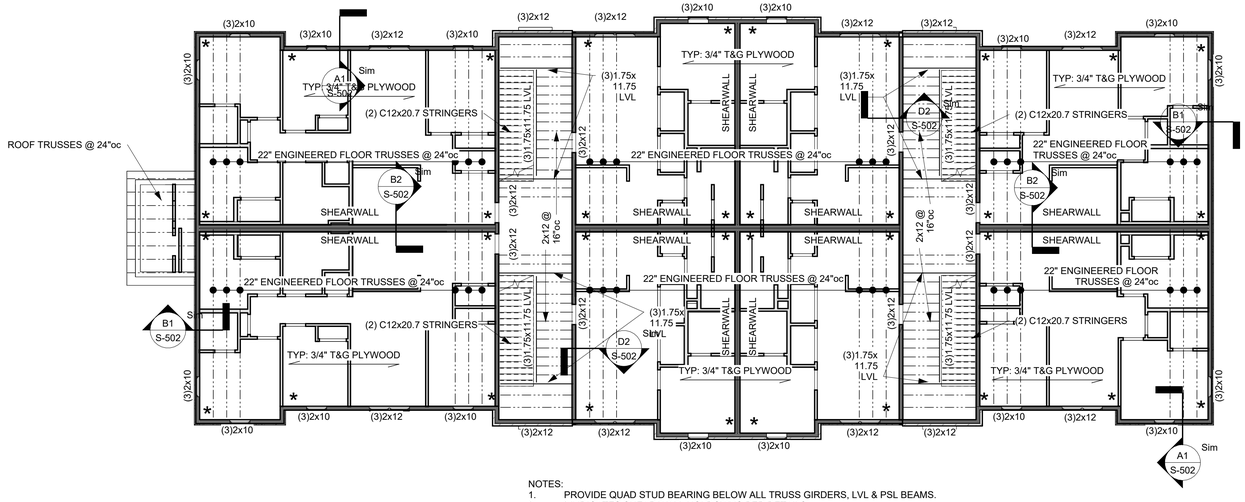
FLOOR	WALL TYPE		
	"SHEAR WALLS"	EXTERIOR	CORRIDOR
3RD	5/8" GYP BD w/ 6d NAILS @ 7" O.C. - UNBLOCKED	7/16" OSB SHEATHING ON EXTERIOR SIDE w/ 8d NAILS @ 6" O.C. & 5/8" GYP BD ON INT. SIDE w/ 6d NAILS @ 7" O.C.	5/8" GYP BD DIRECTLY APPLIED TO ONE SIDE w/ 6d NAILS @ 7" O.C. - UNBLOCKED
2ND	TWO-PLY 5/8" GYP BD: BASE SHEET: 6d NAILS @ 9" O.C. - BLOCKED FACE SHEET: 8d NAILS @ 7" O.C. - BLOCKED	7/16" OSB SHEATHING ON EXTERIOR SIDE w/ 8d NAILS @ 6" O.C. & 5/8" GYP BD ON INT. SIDE w/ 6d NAILS @ 7" O.C.	5/8" GYP BD DIRECTLY APPLIED TO ONE SIDE w/ 6d NAILS @ 7" O.C. - UNBLOCKED
1ST	7/16" OSB SHEATHING ON "SHEAR WALL" SIDE w/ 8d NAILS @ 6" O.C.	7/16" OSB SHEATHING ON EXTERIOR SIDE w/ 8d NAILS @ 6" O.C. & 5/8" GYP BD ON INT. SIDE w/ 6d NAILS @ 7" O.C.	5/8" GYP BD DIRECTLY APPLIED TO ONE SIDE w/ 6d NAILS @ 7" O.C. - UNBLOCKED

NOTES:
1. NAILING SHALL BE TO ALL STUDS, TOP AND BOTTOM PLATES, AND BLOCKING WHERE INDICATED
2. FOR ALL WOOD SHEATHING, PROVIDE BLOCKING AT PANEL EDGES. NAIL SPACING INDICATED IS AT PANEL EDGES. PROVIDE NAILING @ 12" O.C. IN FIELD OF PANEL.



NOTES:
1. PROVIDE QUAD STUD BEARING BELOW ALL TRUSS GIRDERS, LVL & PSL BEAMS.
2. * INDICATES SHEAR WALL HOLDOWNS PER DETAILS.
3. REFERENCE ARCHITECTURAL DWGS FOR DIMENSIONS AND ELEVATIONS.
4. REFERENCE MEP FOR ALL MECHANICAL UNIT WEIGHTS AND LOCATIONS.
5. ALL BEAMS ARE UPSET, U.N.O.

2 3rd Floor Framing Plan - Building A
3/32" = 1'-0"



NOTES:
1. PROVIDE QUAD STUD BEARING BELOW ALL TRUSS GIRDERS, LVL & PSL BEAMS.
2. * INDICATES SHEAR WALL HOLDOWNS PER DETAILS.
3. REFERENCE ARCHITECTURAL DWGS FOR DIMENSIONS AND ELEVATIONS.
4. REFERENCE MEP FOR ALL MECHANICAL UNIT WEIGHTS AND LOCATIONS.
5. ALL BEAMS ARE UPSET, U.N.O.

1 2nd Floor Framing Plan - Building A
3/32" = 1'-0"

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JOHNSON-BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
BUILDING A - 2ND & 3RD FLOOR FRAMING PLANS

PROJECT NUMBER: 25144

SHEET NUMBER:

S-101

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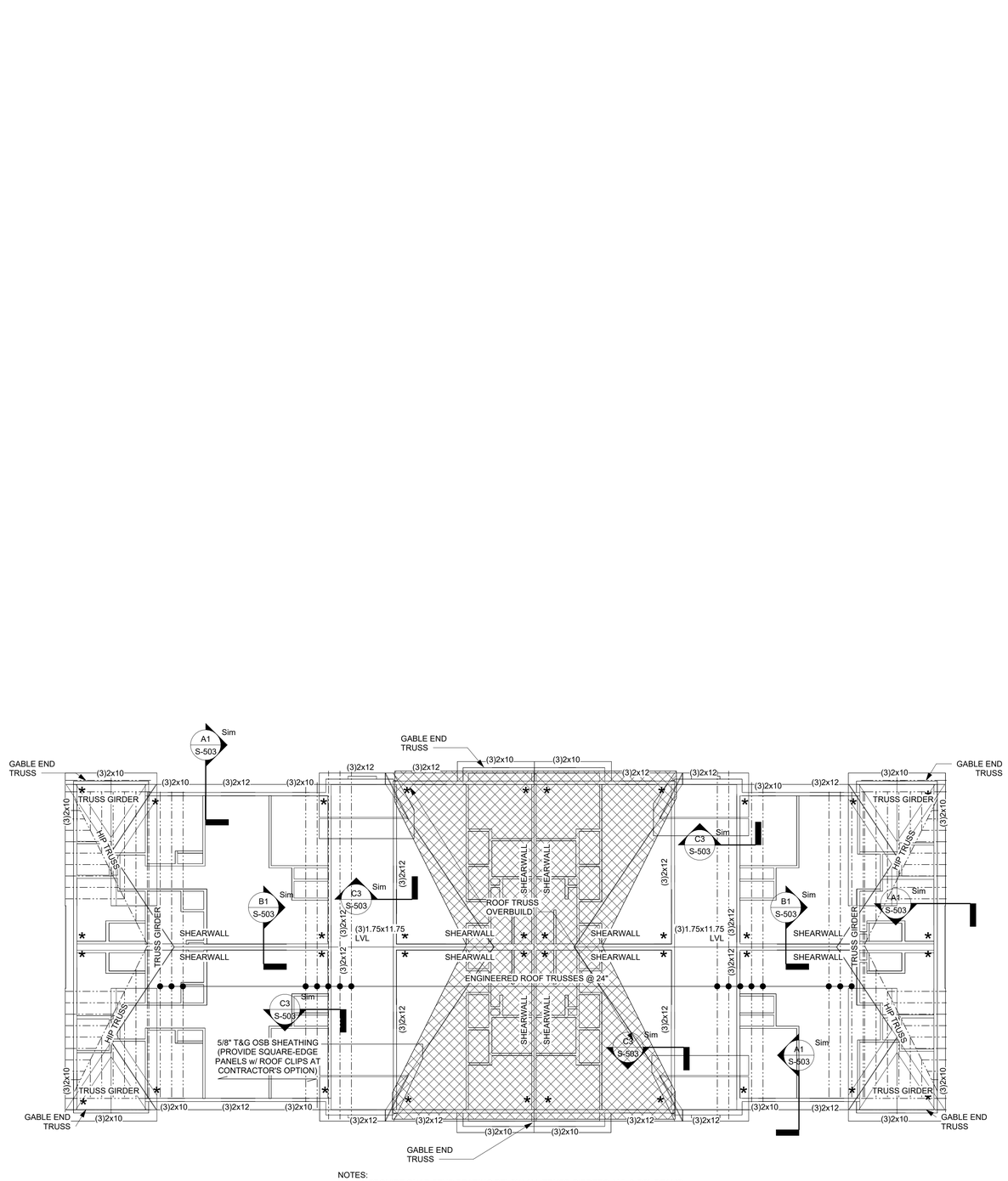

NOTES:

1. PROVIDE QUAD STUD BEARING BELOW ALL TRUSS GIRDERS, LVL & PSL BEAMS.
2. REFERENCE ARCHITECTURAL ROOF PLAN FOR LOCATIONS, EXTENTS AND CONFIGURATION OF OVERBUILD. PROVIDE AS ROOF TRUSS OVERBUILD BY TRUSS SUPPLIER.
3. * INDICATES SHEAR WALL HOLDOWNS PER DETAILS.
4. REFERENCE ARCHITECTURAL DWGS FOR ALL DIMENSIONS AND ELEVATIONS.
5. REFERENCE MEP FOR ALL MECHANICAL UNIT WEIGHTS AND LOCATIONS.
6. ALL BEAMS ARE UPSET, U.N.O.

1 Roof Framing Plan - Building A
3/32" = 1'-0"

JOHNSON-BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
BUILDING A - ROOF FRAMING PLAN

PROJECT NUMBER: 25144

SHEET NUMBER:

S-102

DRAWN BY: SMR CHECKED BY: SMR

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COLUMN SCHEDULE

MARK	COLUMN	BASE PLATE & ANCHOR BOLTS
A	HSS 8x8x3/8	15"x15"x1" w/ (8)1" DIA. X 18" LG BOLTS & 1" NON-SHRINK GROUT
B	HSS 5x5x1/4	11"x11"x3/4" w/ (4)1" DIA. X 18" LG BOLTS & 1" NON-SHRINK GROUT
C	HSS 5x5x1/4	11"x6"x3/4" w/ (4)1" DIA. X 18" LG BOLTS & 1" NON-SHRINK GROUT
D	NOT USED	NOT USED
E	NOT USED	NOT USED
F	6x6 DFL POST	SIMPSON CB BASE (CAST IN FOOTING) & CC/ECC/ECCL CAP

FOOTING SCHEDULE

MARK	FOOTING SIZE	REINFORCING (TOP & BOTTOM)
3.0	3'-0"x3'-0"x18" DP	#6 @ 12" O.C.
3.1	3'-0"x3'-0"x36" DP	#6 @ 12" O.C.
4.0	4'-0"x4'-0"x18" DP	#6 @ 12" O.C.
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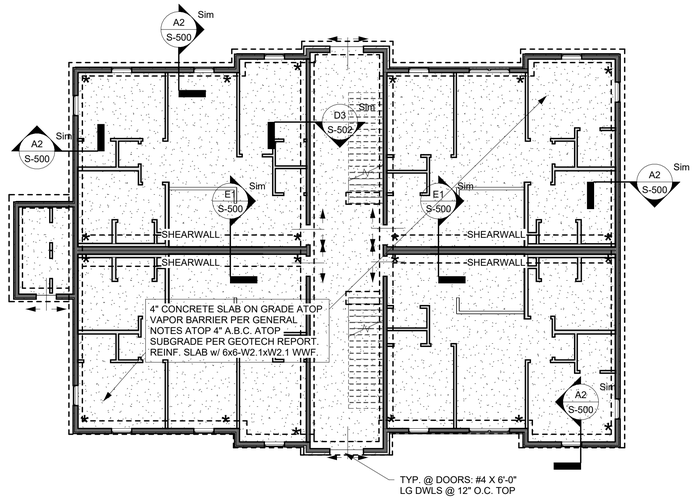
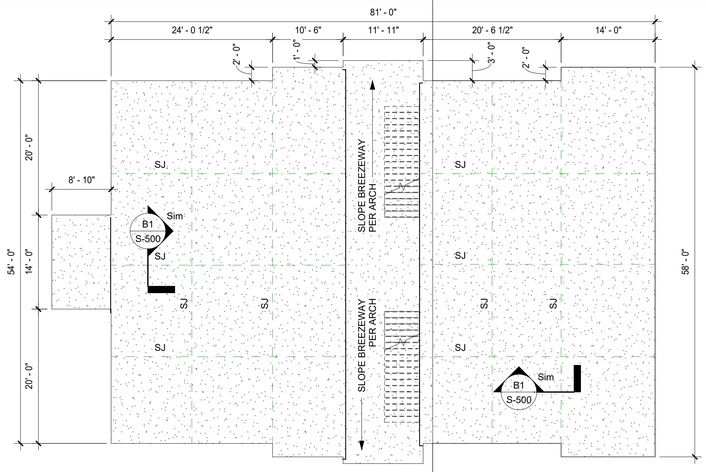
5.0	5'-0"x5'-0"x18" DP	#6 @ 12" O.C.
6.0	6'-0"x6'-0"x21" DP	#6 @ 12" O.C.



NOTES:
1. * INDICATES SHEAR WALL HOLDOWNS PER DETAILS.
2. REFERENCE ARCHITECTURAL DWGS FOR DIMENSIONS AND ELEVATIONS.
3. REFERENCE MEP FOR ALL MECHANICAL UNIT WEIGHTS AND LOCATIONS.

1 Slab Plan - Building B
3/32" = 1'-0"



NOTES:
1. ALL DIMENSIONS ARE TO EDGE OF SLAB OR CENTERLINE OF COLUMN.
2. REFERENCE ARCH. DRAWINGS FOR INTERIOR DIMENSIONS AND ELEVATIONS.

2 Foundation Plan - Building B
3/32" = 1'-0"

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JOHNSON-BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
BUILDING B - SLAB PLAN & FOUNDATION PLAN

PROJECT NUMBER: 25144

SHEET NUMBER:

S-103

DRAWN BY: SMR CHECKED BY: SMR

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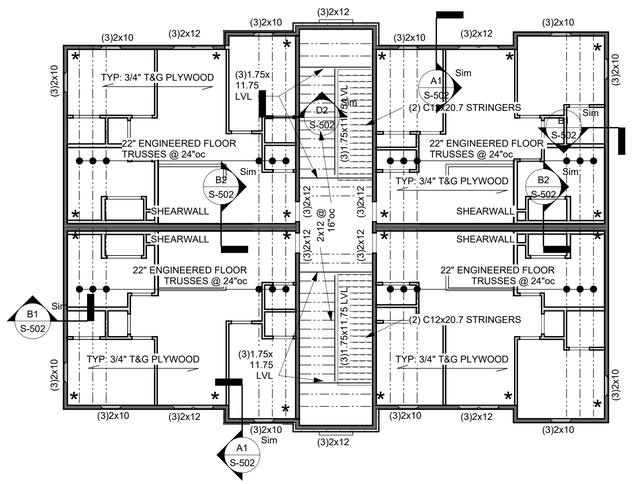
SHEATHING ATTACHMENT SCHEDULE

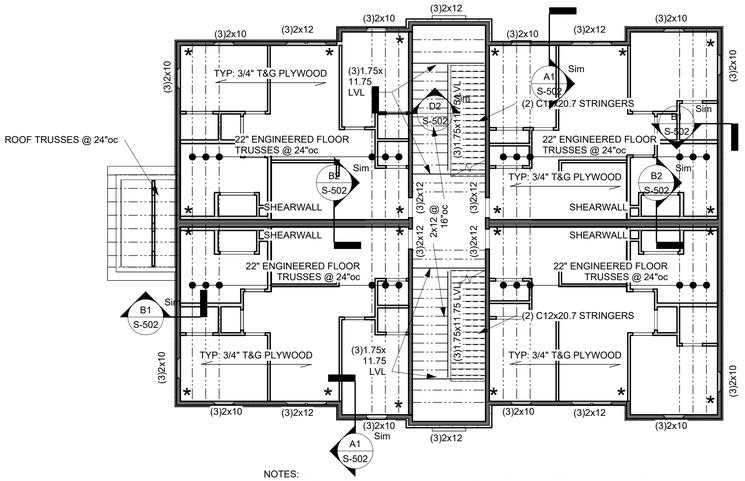
FLOOR	WALL TYPE		
	"SHEAR WALLS"	EXTERIOR	CORRIDOR
3RD	5/8" GYP BD w/ 6d NAILS @ 7" O.C. - UNBLOCKED	7/16" OSB SHEATHING ON EXTERIOR SIDE w/ 8d NAILS @ 6" O.C. & 5/8" GYP BD ON INT. SIDE w/ 6d NAILS @ 7" O.C.	5/8" GYP BD DIRECTLY APPLIED TO ONE SIDE w/ 6d NAILS @ 7" O.C. - UNBLOCKED
2ND	TWO-PLY 5/8" GYP BD: BASE SHEET: 6d NAILS @ 9" O.C. - BLOCKED FACE SHEET: 8d NAILS @ 7" O.C. - BLOCKED	7/16" OSB SHEATHING ON EXTERIOR SIDE w/ 8d NAILS @ 6" O.C. & 5/8" GYP BD ON INT. SIDE w/ 6d NAILS @ 7" O.C.	5/8" GYP BD DIRECTLY APPLIED TO ONE SIDE w/ 6d NAILS @ 7" O.C. - UNBLOCKED
1ST	7/16" OSB SHEATHING ON "SHEAR WALL" SIDE w/ 8d NAILS @ 6" O.C.	7/16" OSB SHEATHING ON EXTERIOR SIDE w/ 8d NAILS @ 6" O.C. & 5/8" GYP BD ON INT. SIDE w/ 6d NAILS @ 7" O.C.	5/8" GYP BD DIRECTLY APPLIED TO ONE SIDE w/ 6d NAILS @ 7" O.C. - UNBLOCKED

NOTES:
1. NAILING SHALL BE TO ALL STUDS, TOP AND BOTTOM PLATES, AND BLOCKING WHERE INDICATED
2. FOR ALL WOOD SHEATHING, PROVIDE BLOCKING AT PANEL EDGES. NAIL SPACING INDICATED IS AT PANEL EDGES. PROVIDE NAILING @ 12" O.C. IN FIELD OF PANEL.



NOTES:
1. PROVIDE QUAD STUD BEARING BELOW ALL TRUSS GIRDERS, LVL & PSL BEAMS.
2. * INDICATES SHEAR WALL HOLDOWNS PER DETAILS.
3. REFERENCE ARCHITECTURAL DWGS FOR DIMENSIONS AND ELEVATIONS.
4. REFERENCE MEP FOR ALL MECHANICAL UNIT WEIGHTS AND LOCATIONS.
5. ALL BEAMS ARE UPSET, U.N.O.

2 3rd Floor Framing Plan - Building B
3/32" = 1'-0"



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5. ALL BEAMS ARE UPSET, U.N.O.

1 2nd Floor Framing Plan - Building B
3/32" = 1'-0"

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JOHNSON-BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
BUILDING B - 2ND & 3RD FLOOR FRAMING PLANS

PROJECT NUMBER: 25144

SHEET NUMBER:

S-104

DRAWN BY: SMR CHECKED BY: SMR

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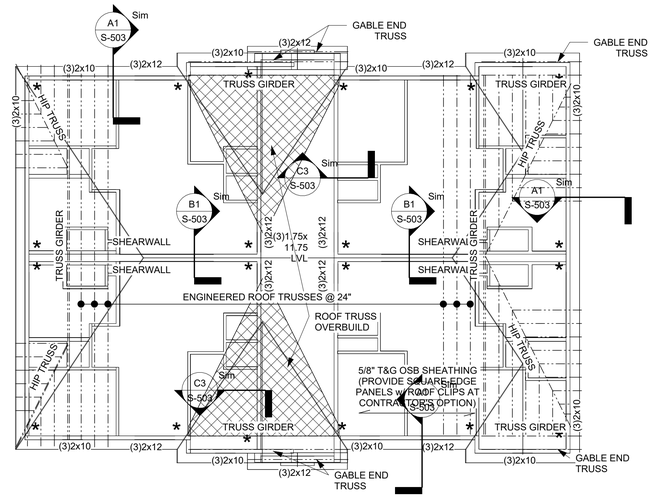

NOTES:

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6. ALL BEAMS ARE UPSET, U.N.O.

1 Roof Framing Plan - Building B
3/32" = 1'-0"

JOHNSON-BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
BUILDING B - ROOF FRAMING PLAN

PROJECT NUMBER: 25144

SHEET NUMBER:

S-105

DRAWN BY: SMR CHECKED BY: SMR

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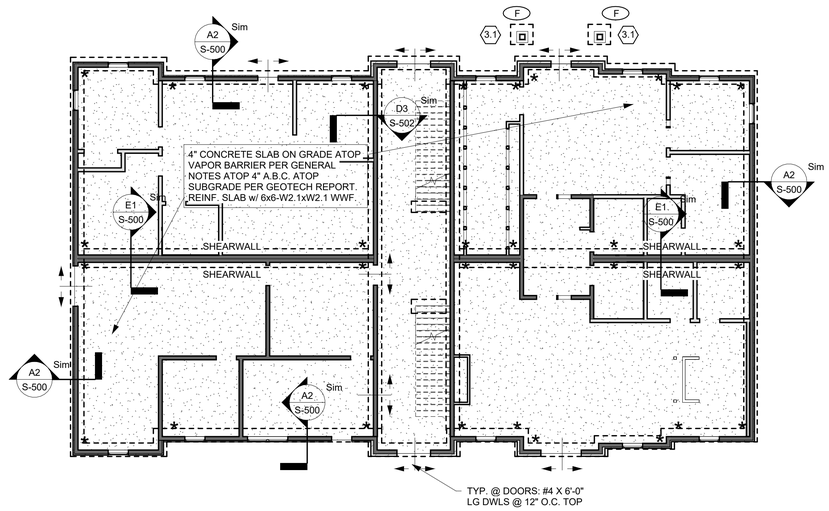
COLUMN SCHEDULE		
MARK	COLUMN	BASE PLATE & ANCHOR BOLTS
A	HSS 8x8x3/8	15"x15"x1" w/ (8)1" DIA. X 18" LG BOLTS & 1" NON-SHRINK GROUT
B	HSS 5x5x1/4	11"x11"x3/4" w/ (4)1" DIA. X 18" LG BOLTS & 1" NON-SHRINK GROUT
C	HSS 5x5x1/4	11"x6"x3/4" w/ (4)1" DIA. X 18" LG BOLTS & 1" NON-SHRINK GROUT
D	NOT USED	NOT USED
E	NOT USED	NOT USED
F	6x6 DFL POST	SIMPSON CB BASE (CAST IN FOOTING) & CC/ECC/ECCL CAP

FOOTING SCHEDULE		
MARK	FOOTING SIZE	REINFORCING (TOP & BOTTOM)
3.0	3'-0"x3'-0"x18" DP	#6 @ 12" O.C.
3.1	3'-0"x3'-0"x36" DP	#6 @ 12" O.C.
4.0	4'-0"x4'-0"x18" DP	#6 @ 12" O.C.
4.1	4'-0"x4'-0"x36" DP	#6 @ 12" O.C.
5.0	5'-0"x5'-0"x18" DP	#6 @ 12" O.C.
6.0	6'-0"x6'-0"x21" DP	#6 @ 12" O.C.



NOTES:
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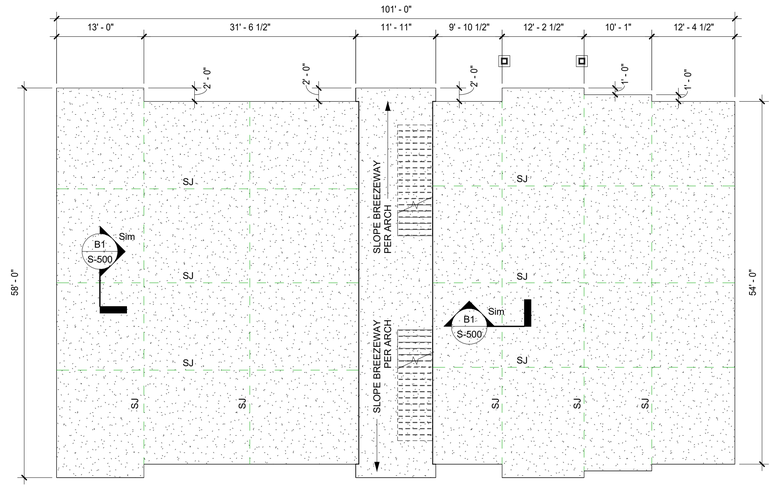
2. REFERENCE ARCHITECTURAL DWGS FOR DIMENSIONS AND ELEVATIONS.
3. REFERENCE MEP FOR ALL MECHANICAL UNIT WEIGHTS AND LOCATIONS.

2 Foundation Plan - Building C
3/32" = 1'-0"



NOTES:
1. ALL DIMENSIONS ARE TO EDGE OF SLAB OR CENTERLINE OF COLUMN.
2. REFERENCE ARCH. DRAWINGS FOR INTERIOR DIMENSIONS AND ELEVATIONS.

1 Slab Plan - Building C
3/32" = 1'-0"

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JOHNSON-BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
BUILDING C - SLAB PLAN & FOUNDATION PLAN

PROJECT NUMBER: 25144

SHEET NUMBER:

S-106

DRAWN BY: SMR CHECKED BY: SMR

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SHEATHING ATTACHMENT SCHEDULE

FLOOR	WALL TYPE		
	"SHEAR WALLS"	EXTERIOR	CORRIDOR
3RD	5/8" GYP BD w/ 6d NAILS @ 7" O.C. - UNBLOCKED	7/16" OSB SHEATHING ON EXTERIOR SIDE w/ 8d NAILS @ 6" O.C. & 5/8" GYP BD ON INT. SIDE w/ 6d NAILS @ 7" O.C.	5/8" GYP BD DIRECTLY APPLIED TO ONE SIDE w/ 6d NAILS @ 7" O.C. - UNBLOCKED
2ND	TWO-PLY 5/8" GYP BD: BASE SHEET: 6d NAILS @ 9" O.C. - BLOCKED FACE SHEET: 8d NAILS @ 7" O.C. - BLOCKED	7/16" OSB SHEATHING ON EXTERIOR SIDE w/ 8d NAILS @ 6" O.C. & 5/8" GYP BD ON INT. SIDE w/ 6d NAILS @ 7" O.C.	5/8" GYP BD DIRECTLY APPLIED TO ONE SIDE w/ 6d NAILS @ 7" O.C. - UNBLOCKED
1ST	7/16" OSB SHEATHING ON "SHEAR WALL" SIDE w/ 8d NAILS @ 6" O.C.	7/16" OSB SHEATHING ON EXTERIOR SIDE w/ 8d NAILS @ 6" O.C. & 5/8" GYP BD ON INT. SIDE w/ 6d NAILS @ 7" O.C.	5/8" GYP BD DIRECTLY APPLIED TO ONE SIDE w/ 6d NAILS @ 7" O.C. - UNBLOCKED

NOTES:
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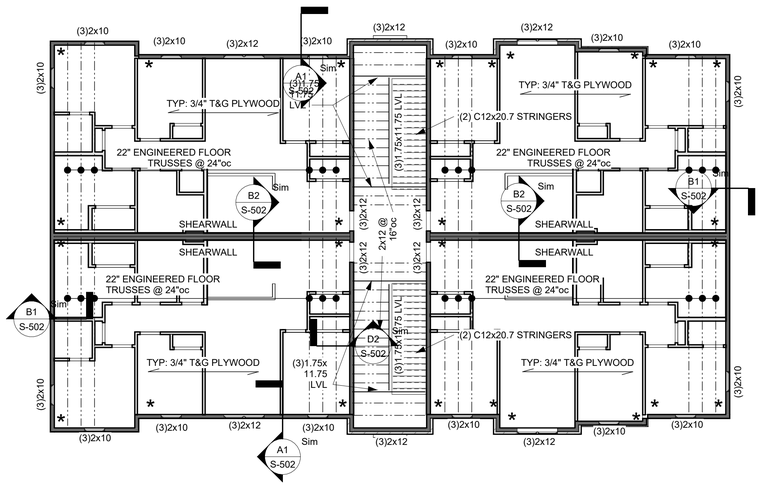

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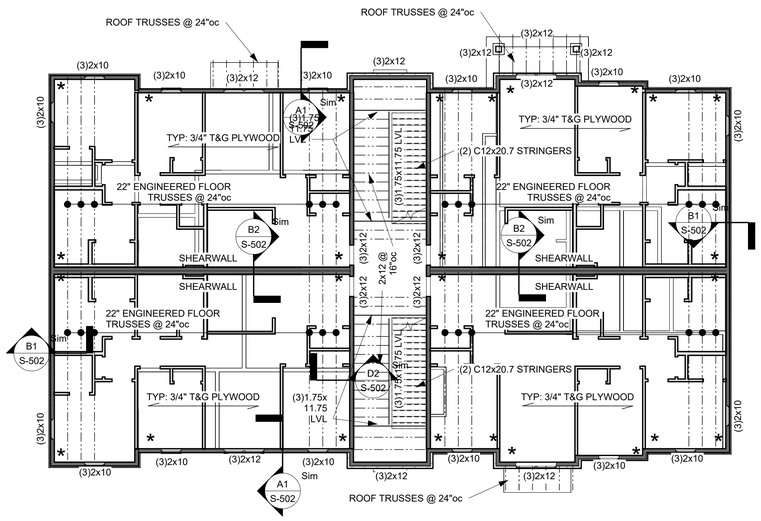
2 3rd Floor Framing Plan - Building C
3/32" = 1'-0"



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1 2nd Floor Framing Plan - Building C
3/32" = 1'-0"

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JOHNSON-BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
BUILDING C - 2ND & 3RD FLOOR FRAMING PLANS

PROJECT NUMBER: 25144

SHEET NUMBER:

S-107

DRAWN BY: SMR CHECKED BY: SMR

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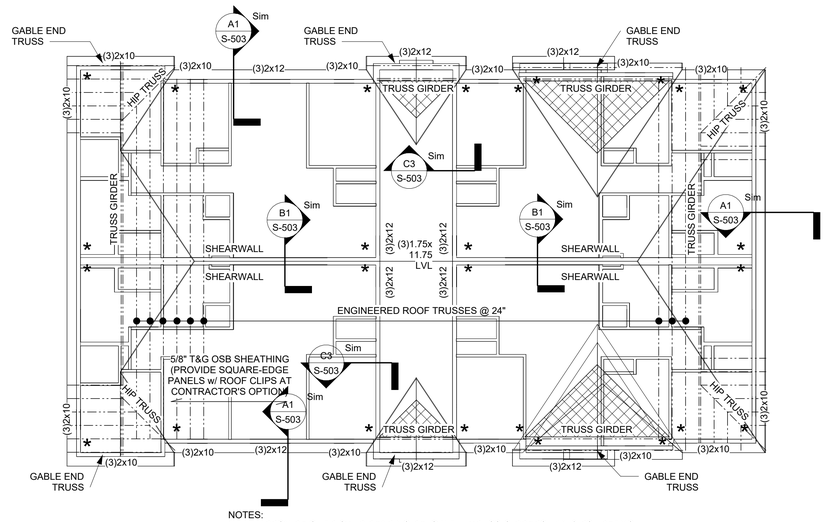

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3/32" = 1'-0"

JOHNSON-BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
BUILDING C - ROOF FRAMING PLAN

PROJECT NUMBER: 25144

SHEET NUMBER:

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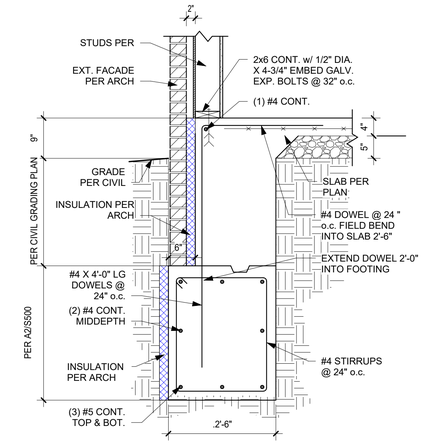
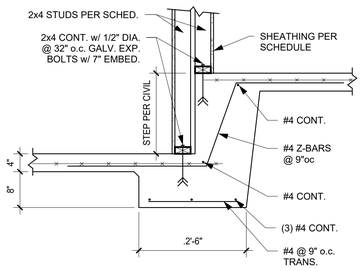
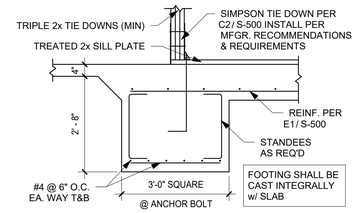


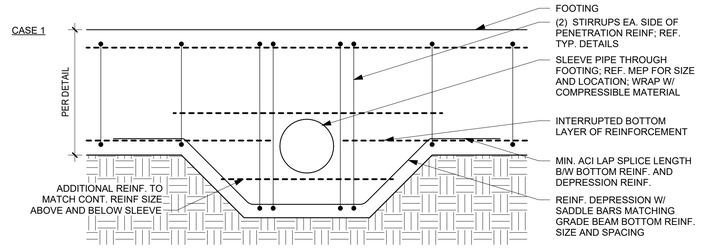
E4 STEPPED FOOTING AND ENDWALL DETAIL1
3/4" = 1'-0"



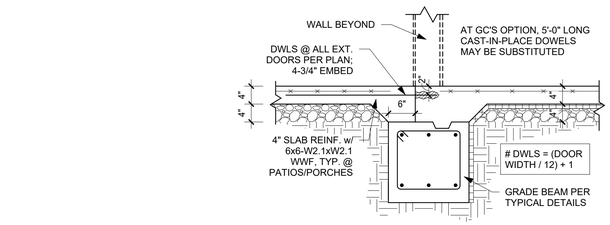
D4 STEPPED FOOTING
3/4" = 1'-0"



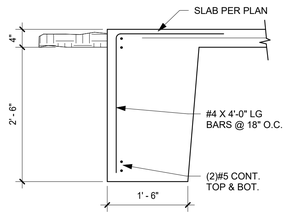
C4 SHEAR WALL FOUNDATION DETAIL
1/2" = 1'-0"



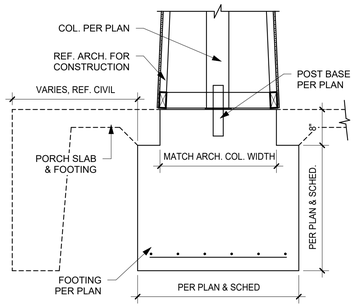
B3 FOOTING PENETRATION
3/4" = 1'-0"



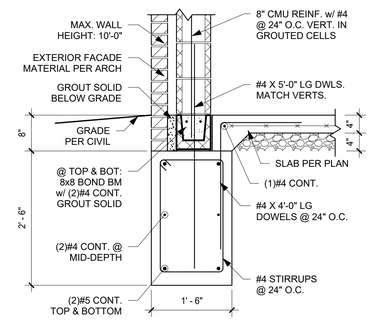
E3 TYP. FNDN @ EXTERIOR DOOR
3/4" = 1'-0"



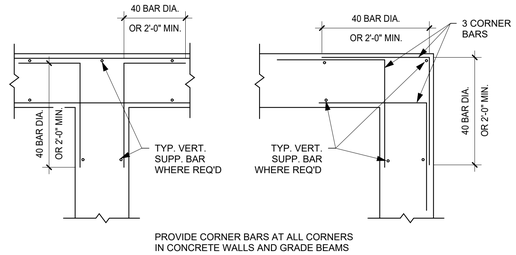
D3 PORCH TURNDOWN
3/4" = 1'-0"



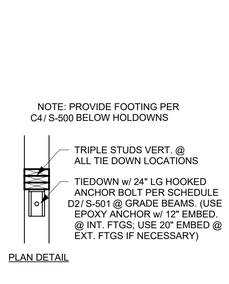
C3 FOOTING @ EXT. COLUMNS
3/4" = 1'-0"



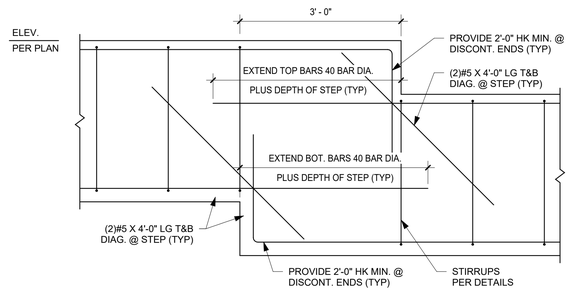
E2 SCREEN WALL FOUNDATION
3/4" = 1'-0"



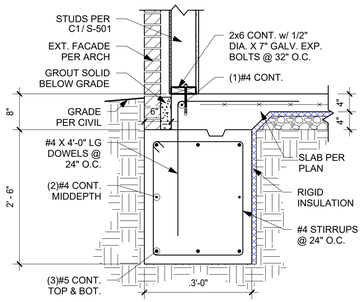
D2 TYP. CORNER BARS
3/4" = 1'-0"



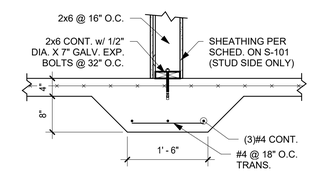
C2 SHEAR WALL FOUNDATION ANCHOR
3/4" = 1'-0"



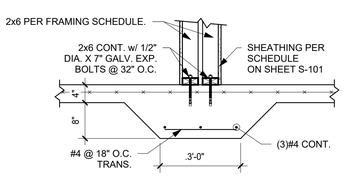
B2 FOOTING STEP DETAIL
3/4" = 1'-0"



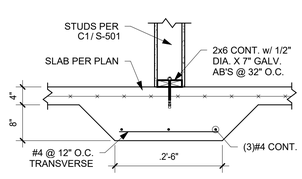
A2 EXTERIOR GRADE BEAM
3/4" = 1'-0"



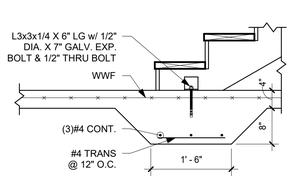
F1 THICKENED SLAB AT SHEAR WALL
3/4" = 1'-0"



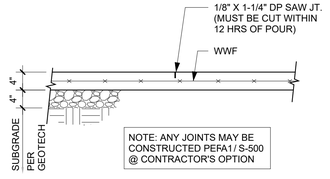
E1 THICKENED SLAB AT SHEAR WALL
3/4" = 1'-0"



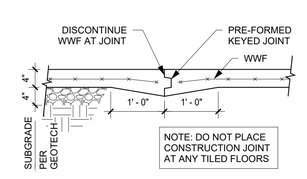
D1 THICKENED SLAB AT CORRIDOR
3/4" = 1'-0"



C1 THICKENED SLAB AT STAIR
3/4" = 1'-0"



B1 TYP. SAW JOINT
3/4" = 1'-0"



A1 TYP. CONSTRUCTION JOINT
3/4" = 1'-0"

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JOHNSON-BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
STRUCTURAL DETAILS

PROJECT NUMBER: 25144

SHEET NUMBER:

S-500

DRAWN BY: SMR CHECKED BY: SMR

12/18/2025 12:58:45 PM
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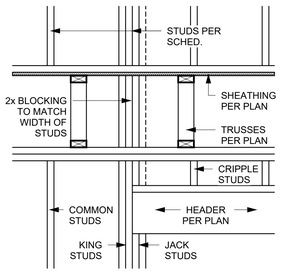
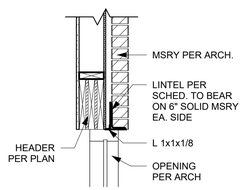
KING STUD SCHEDULE

LOCATION / LEVEL	UP TO 4'-0" OPENING		UP TO 6'-0" OPENING		UP TO 10'-0" OPENING	
	INTERIOR	EXTERIOR	INTERIOR	EXTERIOR	INTERIOR	EXTERIOR
ALL FLOORS	(1) 2x KING	(1) 2x KING	(1) 2x KING	(2) 2x KING	(2) 2x KING	(3) 2x KING

E4 KING STUD SCHEDULE
1/8" = 1'-0"



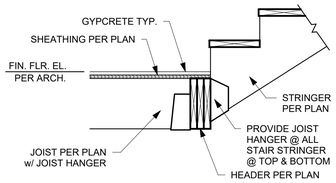
E3 TYP. BLOCKING DETAIL AT HEADERS
3/4" = 1'-0"



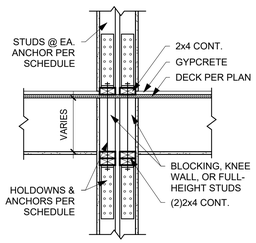
LINTEL	SPAN
L 6"x3-1/2"x3/8"	UP TO 6'-0"
7"x3-1/2"x3/8" BENT PL	>6'-0" TO 9'-0"
8"x3-1/2"x3/8" BENT PL	>9'-0" TO 12'-0"

NOTE: ALL LOOSE LINTELS SHALL BE GALVANIZED

E2 TYP. LOOSE LINTEL DETAIL
3/4" = 1'-0"



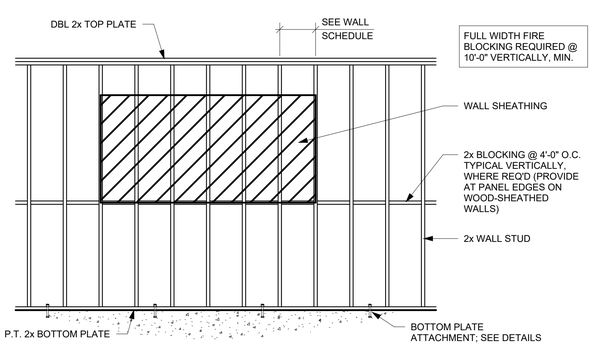
D3 TYP. STAIR FRAMING
3/4" = 1'-0"



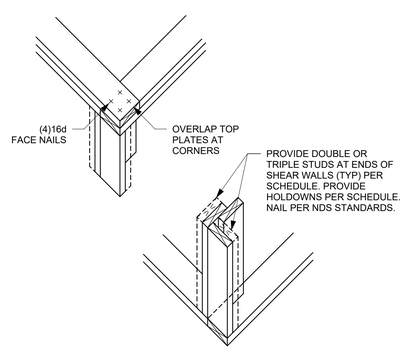
SHEAR WALL ANCHORAGE			
FLOOR	HOLDOWN	ANCHOR	STUDS
3RD	HDU4-SDS2.5	5/8" DIA.	(2)2x4
2ND	HDU8-SDS2.5	7/8" DIA.	(3)2x4
1ST	HD12	1" DIA.	(4)2x4

NOTE:
PROVIDE REQ'D FASTENERS PER MANUF. SPECS.

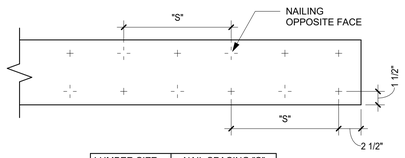
D2 SHEAR WALL HOLDOWN SCHEDULE
3/4" = 1'-0"



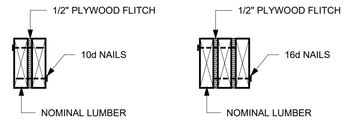
E1 TYP. WOOD STUD WALL CONSTRUCTION
N.T.S.



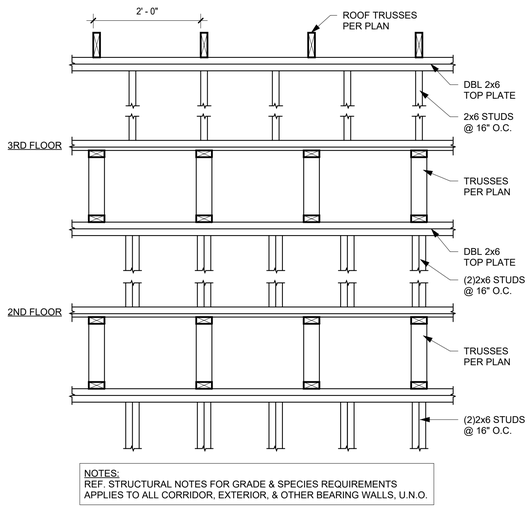
C4 TYP. 2x CORNER FRAMING DETAILS
N.T.S.



LUMBER SIZE:	NAIL SPACING "S":
2x6 OR 2x8	12" O.C. EACH FACE
2x10	8" O.C. EACH FACE
2x12	6" O.C. EACH FACE

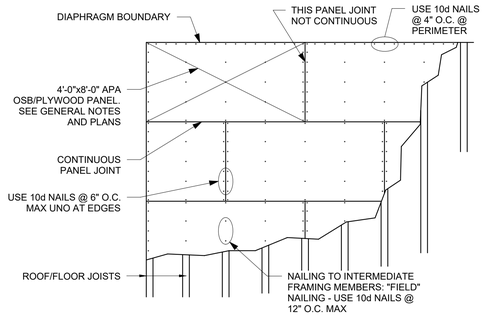


C3 TYP. BUILT-UP BEAM DETAIL
1 1/2" = 1'-0"

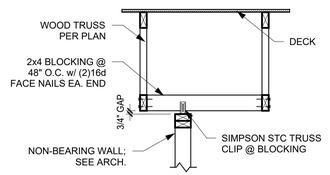


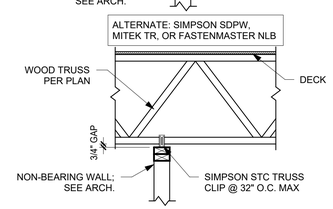
NOTES:
REF. STRUCTURAL NOTES FOR GRADE & SPECIES REQUIREMENTS APPLIES TO ALL CORRIDOR, EXTERIOR, & OTHER BEARING WALLS, U.N.O.

C1 WALL FRAMING SCHEDULE
3/4" = 1'-0"

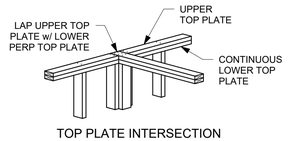


B4 ROOF/FLOOR PLAN NAILING SCHEDULE
N.T.S.

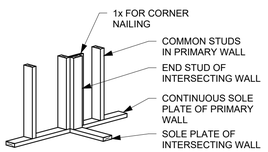




B3 TYP. NON-BEARING PARTITION WALL
N.T.S.

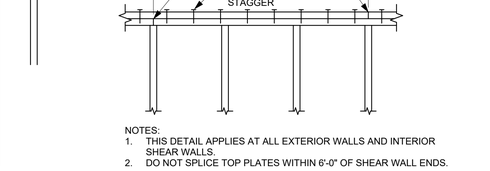


TOP PLATE INTERSECTION



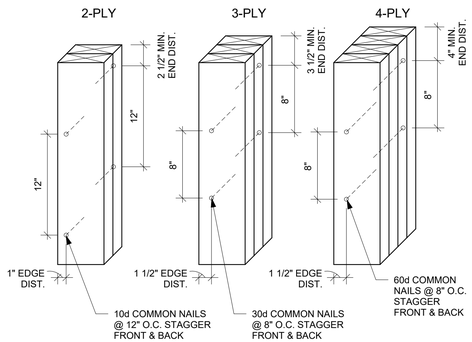
SOLE PLATE INTERSECTION

B2 TYP. INTERSECTION FRAMING DETAILS
N.T.S.

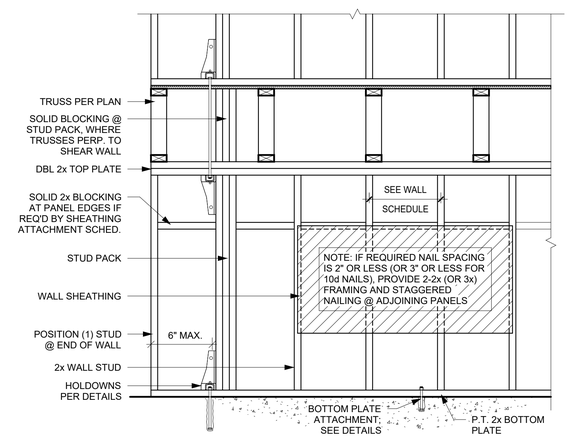


NOTES:
1. THIS DETAIL APPLIES AT ALL EXTERIOR WALLS AND INTERIOR SHEAR WALLS.
2. DO NOT SPLICE TOP PLATES WITHIN 6'-0" OF SHEAR WALL ENDS.

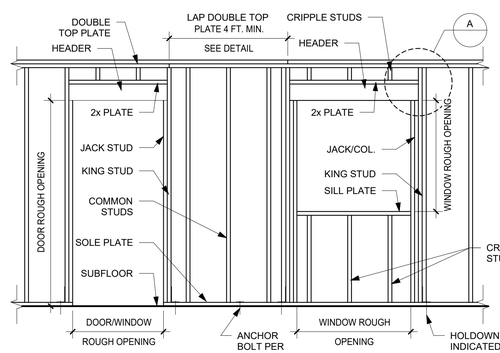
A4 TYP. TOP PLATE LAP SPLICE DETAIL
N.T.S.

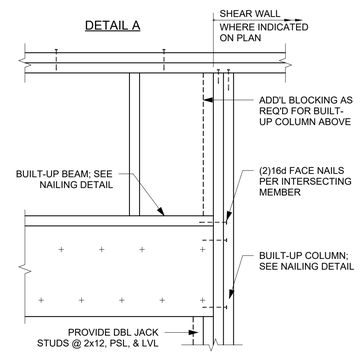


A3 TYP. 2x BUILT-UP JACK/TRIMMER STUDS
N.T.S.



TYP. WOOD SHEARWALL CONSTRUCTION
A2 N.T.S.





B1 TYP. OPENING IN LOAD BEARING WALL
N.T.S.

PRINTS ISSUED
12/18/25 - 95% CDs

REVISIONS:

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON-BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
STRUCTURAL DETAILS

PROJECT NUMBER: 25144

SHEET NUMBER:

S-501

DRAWN BY: SMR CHECKED BY: SMR

12/18/2025 12:58:47 PM
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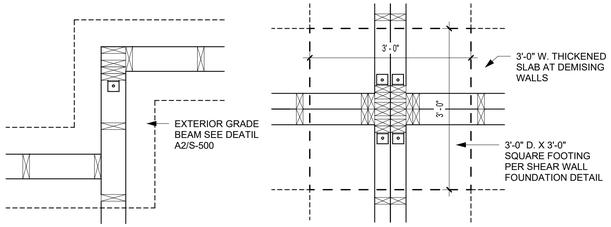
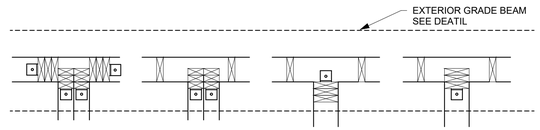


HOLDOWN AT EXTERIOR/ DEMISING WALL CORNER

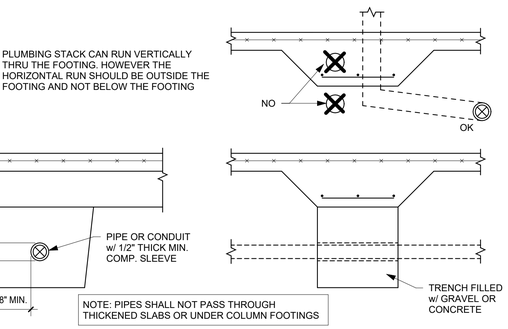
HOLDOWNS AT INTERIOR PARTY-WALL CORNER



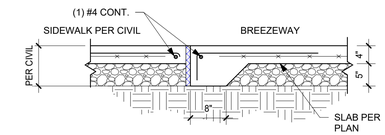
HOLDOWN AT EXTERIOR/ DEMISING SHEAR WALL INTERSECTION

HOLDOWN OPTIONS AT EXTERIOR/DEMISING WALL

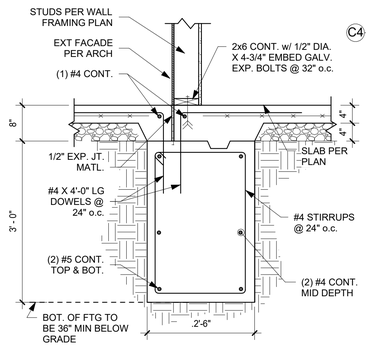
NOTE: ALL FRAMING NOT SHOWN FOR CLARITY



B4 PIPE TRENCH @ THICKENED SLAB1
3/4" = 1'-0"

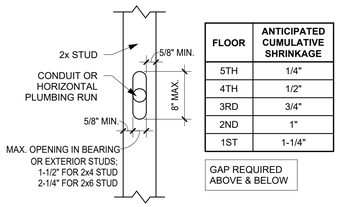


E3 BREEZEWAY LANDING TO SIDEWALK DETAIL
3/4" = 1'-0"



D3 BREEZEWAY GRADE BEAM
3/4" = 1'-0"

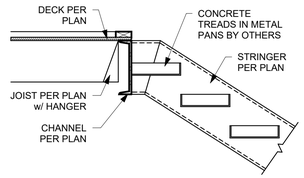
C4 SHEAR WALL HOLDOWN DETAILS1
3/4" = 1'-0"



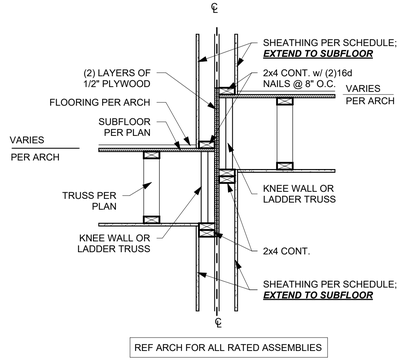
FLOOR	ANTICIPATED CUMULATIVE SHRINKAGE
5TH	1/4"
4TH	1/2"
3RD	3/4"
2ND	1"
1ST	1-1/4"

GAP REQUIRED ABOVE & BELOW

C3 STUD PENETRATION - SHRINKAGE
N.T.S.

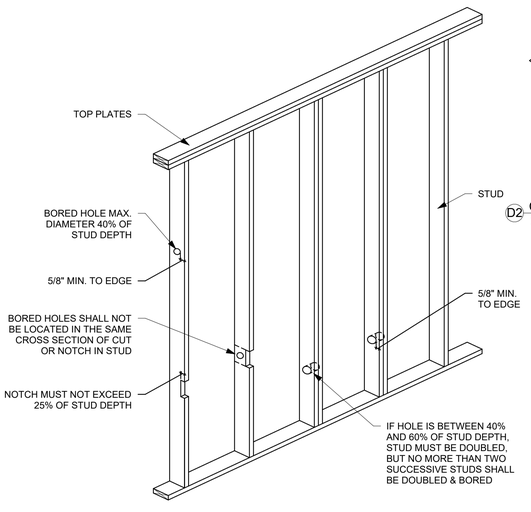


B3 TYP. STAIR FRAMING STL
3/4" = 1'-0"

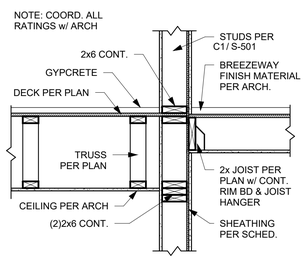


REF ARCH FOR ALL RATED ASSEMBLIES

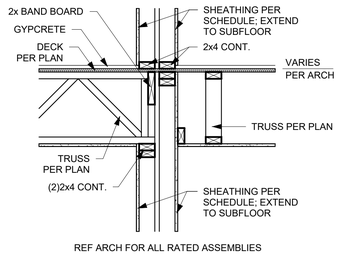
A3 BEARING SHEAR WALL w/ STEP
3/4" = 1'-0"



E1 STUDS - BORED OR NOTCHED
N.T.S.

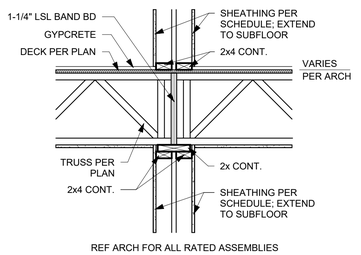


D2 CORRIDOR BEARING DETAIL
3/4" = 1'-0"



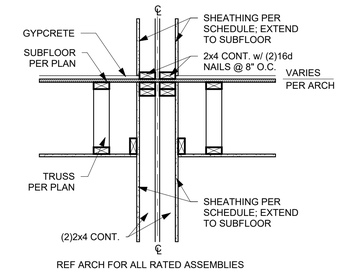
REF ARCH FOR ALL RATED ASSEMBLIES

C2 PARTY WALL BEARING
3/4" = 1'-0"



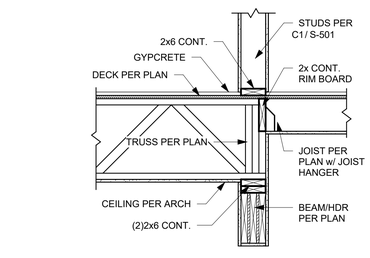
REF ARCH FOR ALL RATED ASSEMBLIES

B2 PARTY WALL BEARING
3/4" = 1'-0"

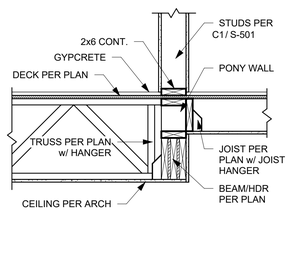


REF ARCH FOR ALL RATED ASSEMBLIES

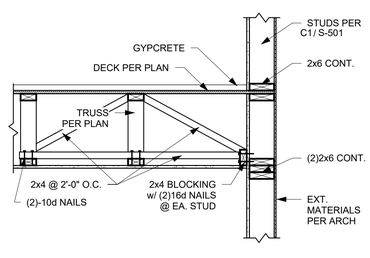
A2 PARTY WALL NON-BEARING
3/4" = 1'-0"



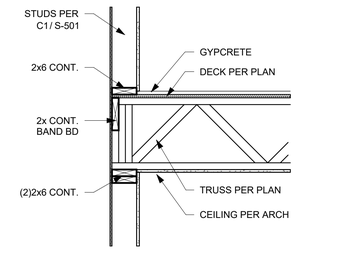
D1 CORRIDOR BEAM BEARING DETAIL
3/4" = 1'-0"



C2 PARTY WALL BEARING
3/4" = 1'-0"



B1 EXTERIOR NON-BEARING DETAIL
3/4" = 1'-0"



A1 EXTERIOR BEARING DETAIL
3/4" = 1'-0"

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REVISIONS:

PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON-BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
STRUCTURAL DETAILS

PROJECT NUMBER: 25144

SHEET NUMBER:

S-502

DRAWN BY: SMR CHECKED BY: SMR

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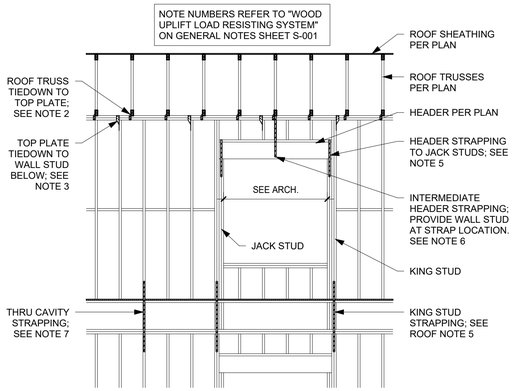
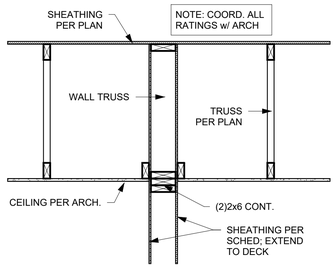
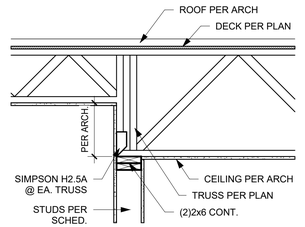


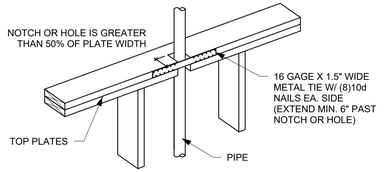
E3 ROOF TIEDOWN/STRAPPING DETAIL
1/4" = 1'-0"



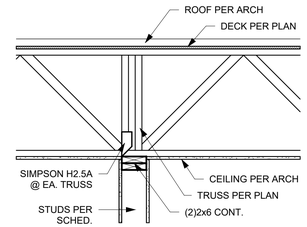
C3 ROOF TRUSS PARALLEL TO SHEAR WALL
3/4" = 1'-0"



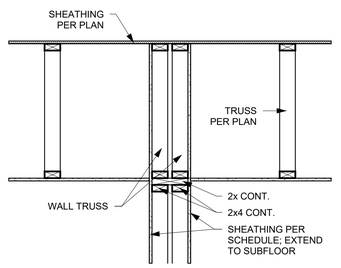
B3 ROOF TRUSS @ CORRIDOR
3/4" = 1'-0"



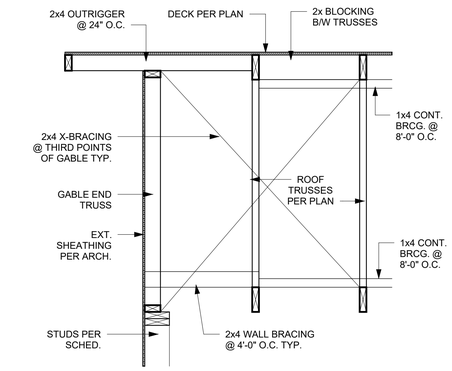
A4 PLATE PENETRATION
N.T.S.



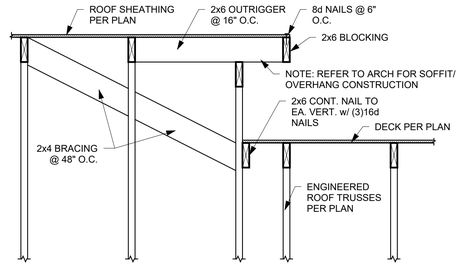
A3 ROOF TRUSS @ CORRIDOR
3/4" = 1'-0"



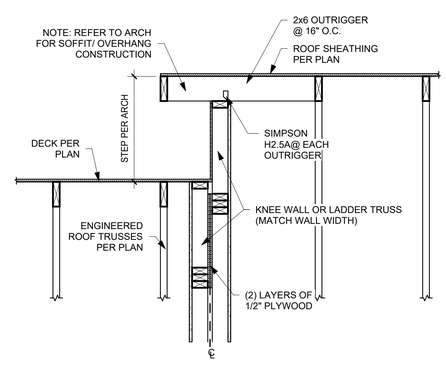
E2 ROOF TRUSS @ SHEAR WALL
3/4" = 1'-0"



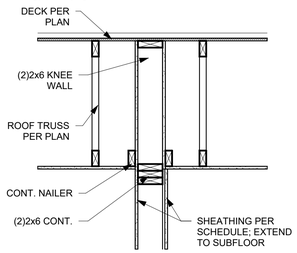
D2 GABLE END DETAIL
3/4" = 1'-0"



C2 ROOF STEP DETAIL
3/4" = 1'-0"

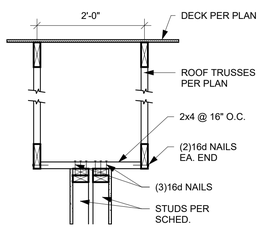


A2 ROOF STEP DETAIL
3/4" = 1'-0"

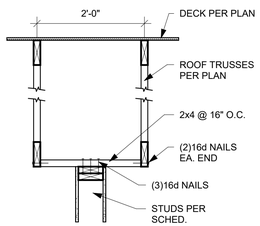


NOTES:
1. REF ARCH FOR ALL RATED ASSEMBLIES
2. WHERE SMOKE WALL IS PERP. TO TRUSSES, CUT GYP. BD TO FIT AROUND TRUSSES

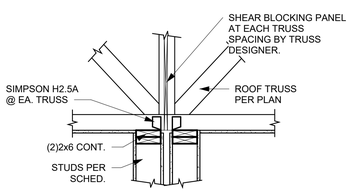
E1 SMOKE WALL @ ROOF
3/4" = 1'-0"



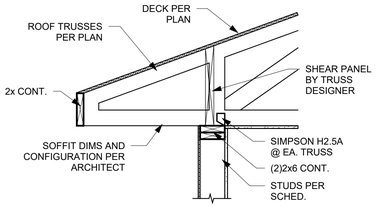
D1 ROOF TRUSS @ SHEAR WALL
3/4" = 1'-0"



C1 ROOF TRUSS @ SHEAR WALL
3/4" = 1'-0"



B1 ROOF TRUSS @ DEMISING
3/4" = 1'-0"



A1 ROOF TRUSS BEARING DETAIL
3/4" = 1'-0"

12/30/2025 12:58:51 PM
C:\Revit Local Files\25144 - Johnson Betts_STRUCTURAL_R24_ursmcn3467.rvt

PRINTS ISSUED
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CONSTRUCTION

JOHNSON-BETTS MEADOWS

TOPEKA, KS

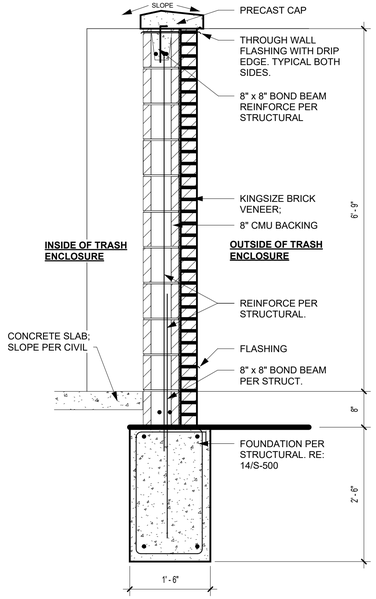
SHEET TITLE
STRUCTURAL DETAILS

PROJECT NUMBER: 25144

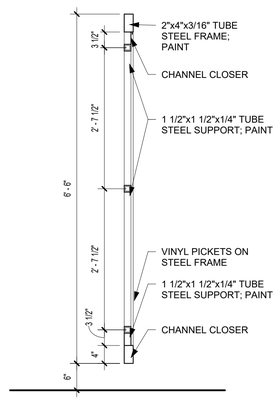
SHEET NUMBER:

S-503

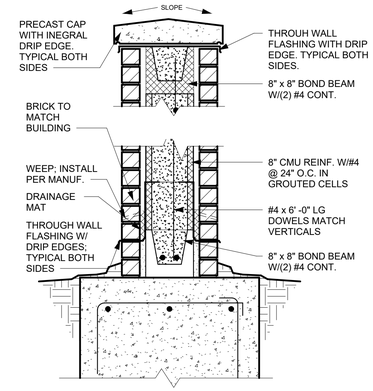
DRAWN BY: SMR CHECKED BY: SMR



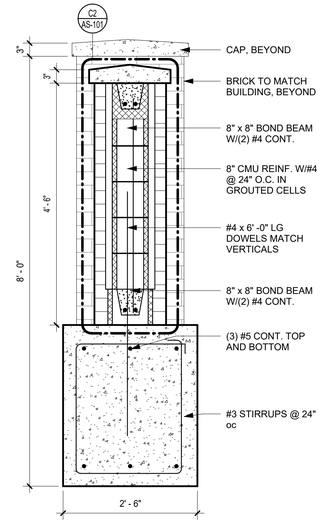
C4 TRASH ENCLOSURE SECTION
3/4" = 1'-0"



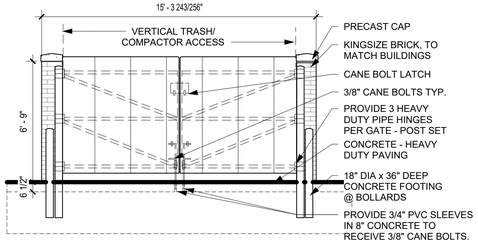
C3 TRASH ENCLOSURE GATE SECTION
3/4" = 1'-0"



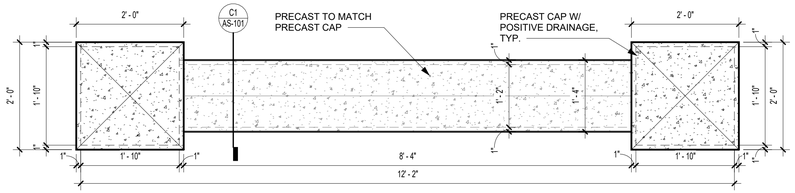
C2 MONUMENT SIGN SECTION
1" = 1'-0"



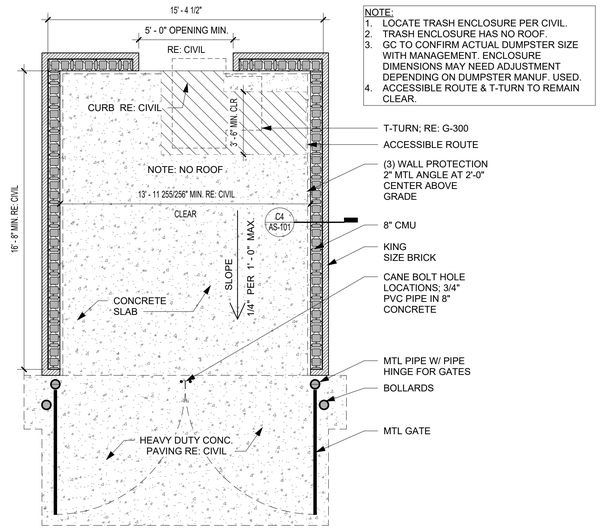
C1 MONUMENT SIGN SECTION
3/4" = 1'-0"



B2 TRASH ENCLOSURE ELEVATION
1/4" = 1'-0"

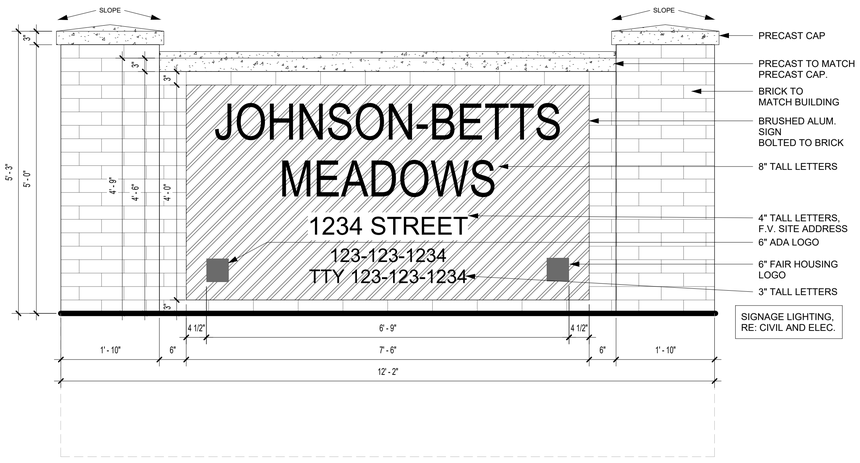


B1 MONUMENT SIGN PLAN
3/4" = 1'-0"



NOTE:
1. LOCATE TRASH ENCLOSURE PER CIVIL.
2. TRASH ENCLOSURE HAS NO ROOF.
3. GC TO CONFIRM ACTUAL DUMPSTER SIZE WITH MANAGEMENT. ENCLOSURE DIMENSIONS MAY NEED ADJUSTMENT DEPENDING ON DUMPSTER MANUF. USED.
4. ACCESSIBLE ROUTE & T-TURN TO REMAIN CLEAR.

A2 TRASH ENCLOSURE FLOOR PLAN
1/4" = 1'-0"



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

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
ARCHITECTURAL SITE AMENITIES

PROJECT NUMBER: 25144

SHEET NUMBER:

AS-101

12/18/2025 3:55:40 AM
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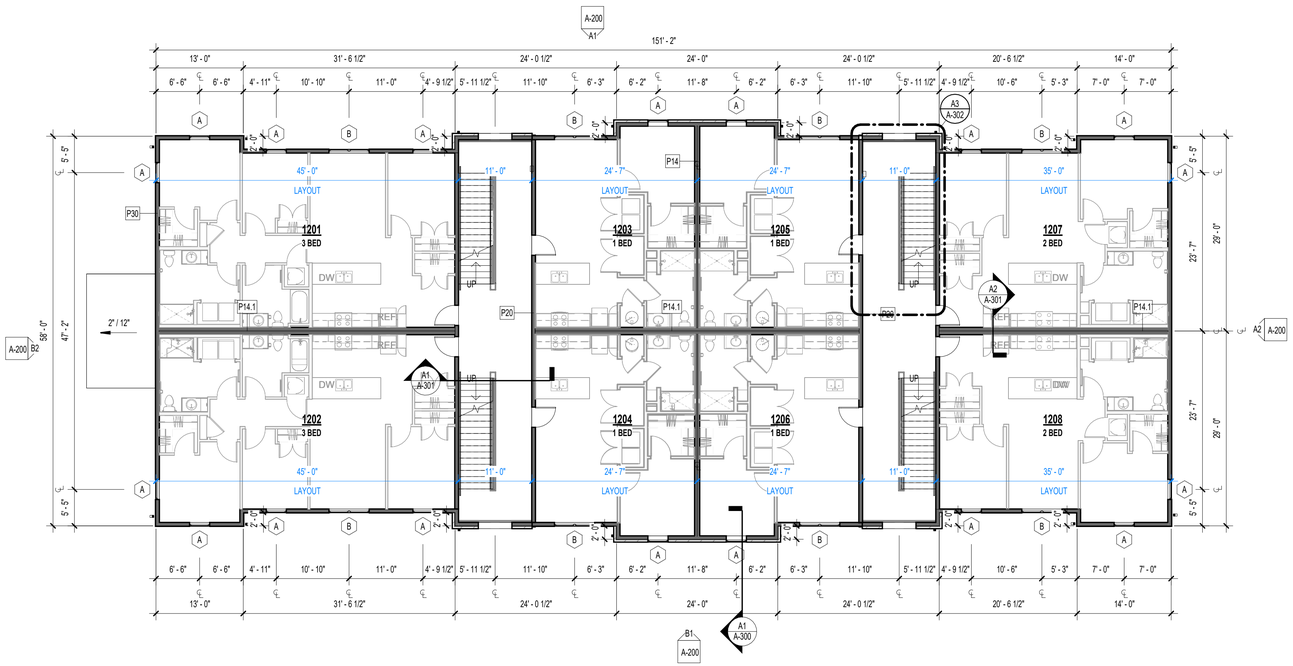
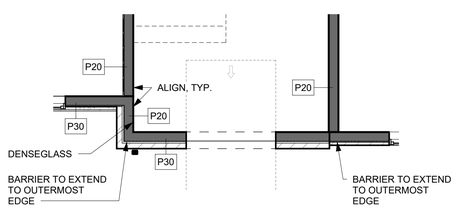
REFERENCE G-003 FOR GENERAL NOTES

PLAN LEGEND

- PARTIAL HEIGHT PARTITION
- NON-RATED PARTITION; SEE ASSEMBLIES
- 1 HR RATED PARTITION; SEE ASSEMBLIES
- 2 HR RATED PARTITION; SEE ASSEMBLIES
- A1 — WINDOW TYPE; SEE WINDOW SCHEDULE
- 101 — DOOR TYPE; SEE DOOR SCHEDULE
- P7 — PARTITION TYPE; SEE ASSEMBLIES
- 6' - 0" — FRAMING DIMENSIONS
- 6' - 0" LAYOUT — LAYOUT LINE DIMENSION
- HEARING/VISIBILITY
- ADA/ACCESSIBLE UNITS



B2 2ND FLOOR PLAN - BUILDING A
3/32" = 1'-0"



B1 TYP. BREEZEWAY WALL DETAIL
1/4" = 1'-0"

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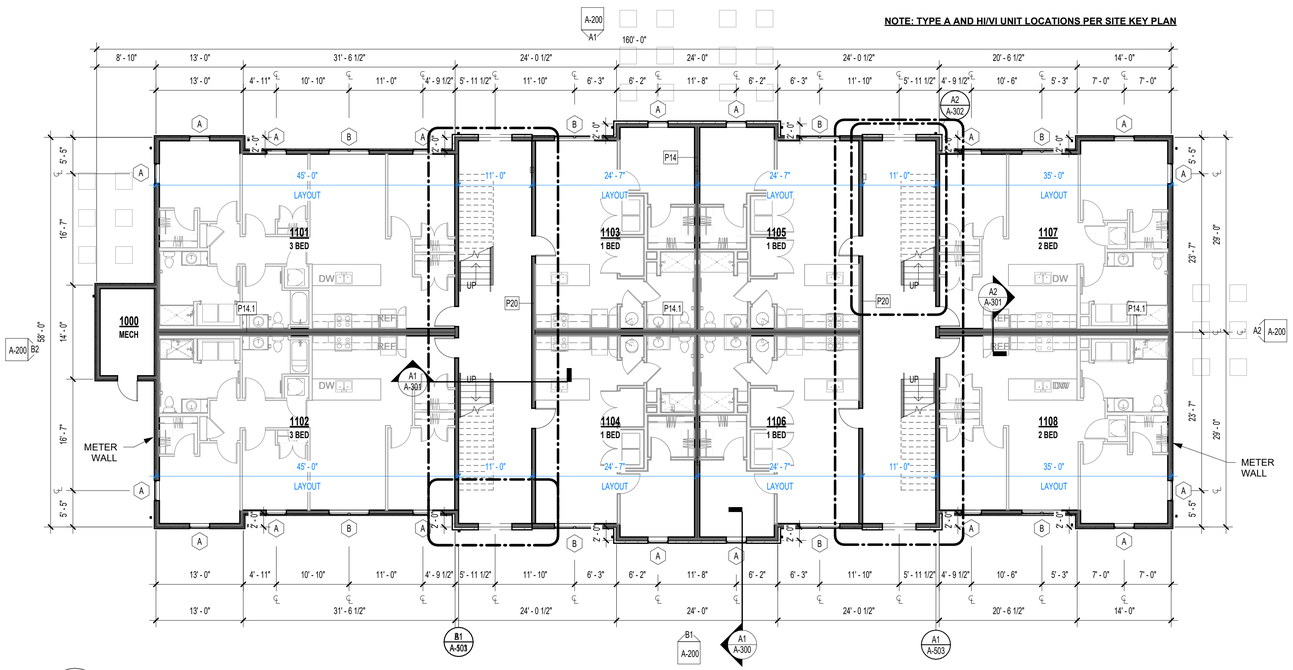
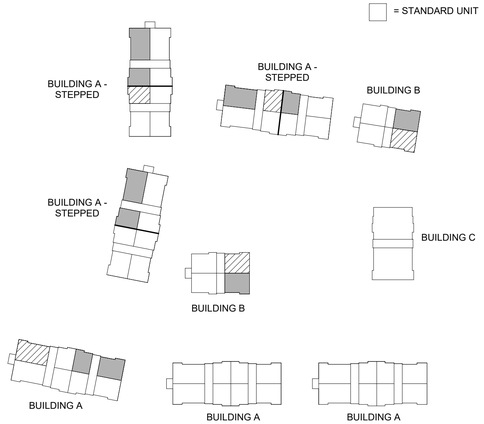


A2 1ST FLOOR PLAN - BUILDING A
3/32" = 1'-0"

NOTE: ALL UPPER FLOOR UNITS ARE STANDARD

NOTE: BUILDING ADDRESSES PER CIVIL

= TYPE A UNIT
= HI/VI UNIT
= STANDARD UNIT



A1 SITE KEY PLAN
1" = 100'-0"

N

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
FIRST & SECOND FLOOR PLANS - BUILDING A

PROJECT NUMBER: 25144

SHEET NUMBER:

A-101

12/18/2025 9:17:05 AM
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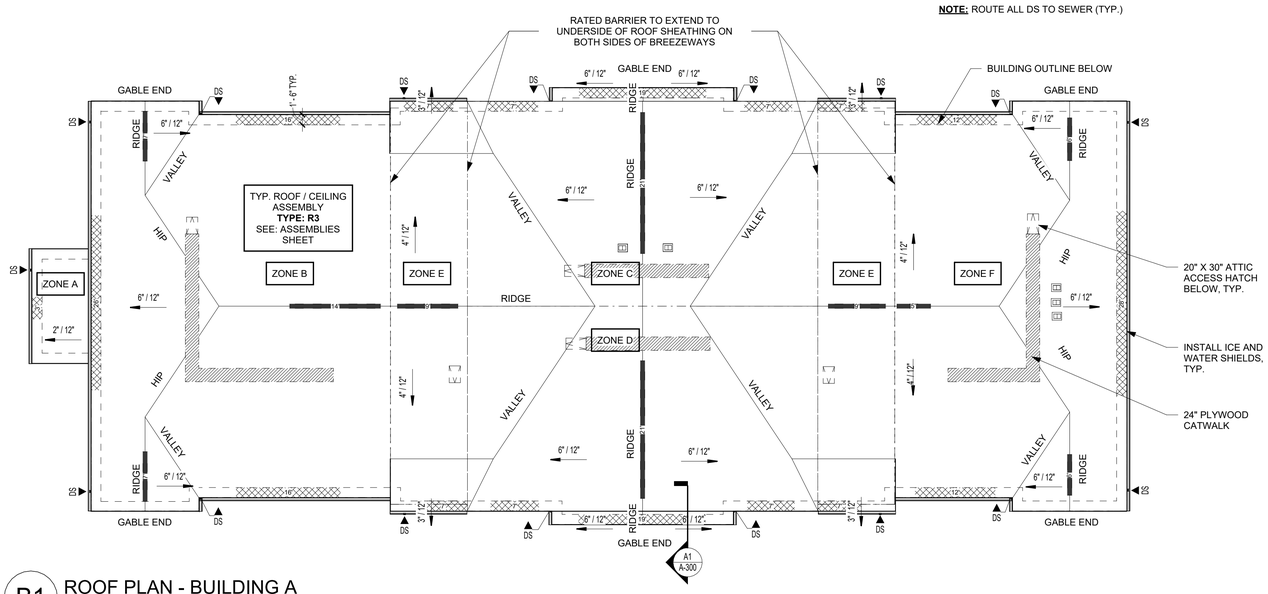
REFERENCE G-003 FOR GENERAL NOTES
REFERENCE A-101 FOR PLAN LEGEND



B1 ROOF PLAN - BUILDING A
3/32" = 1'-0"

ZONE A					
AREA TO BE VENTED				**142 S.F.**	
VENTING CALCULATION FACTOR PER	IBC			300	
TOTAL REQUIRED VENTING	=	(142 S.F. x 144) / 300 =		**68 SQ.IN.**	
HIGH ROOF VENTING	=	68 SQ.IN. x **0.5** =		34 SQ.IN.	
LOW ROOF VENTING	=	68 SQ.IN. x **0.5** =		34 SQ.IN.	
HIGH ROOF VENTING				**34 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING			⚠	**50 SQ.IN.**	**PROVIDED** ☒
(0) RIDGE VENT	@	18 NFA =		0 SQ.IN./FT NFA	
(1) BOX VENT	@	50 NFA =		50 SQ.IN./FT NFA	
LOW ROOF VENTING				**34 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING				**39 SQ.IN.**	**PROVIDED** ☒
(3) CONT. LF SOFFIT VENT	@	13 NFA =		39 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED				**89 SQ.IN.**	**PROVIDED** ☒

TOTAL HIGH ROOF VENTING NFA EXCEEDS 50% MAX

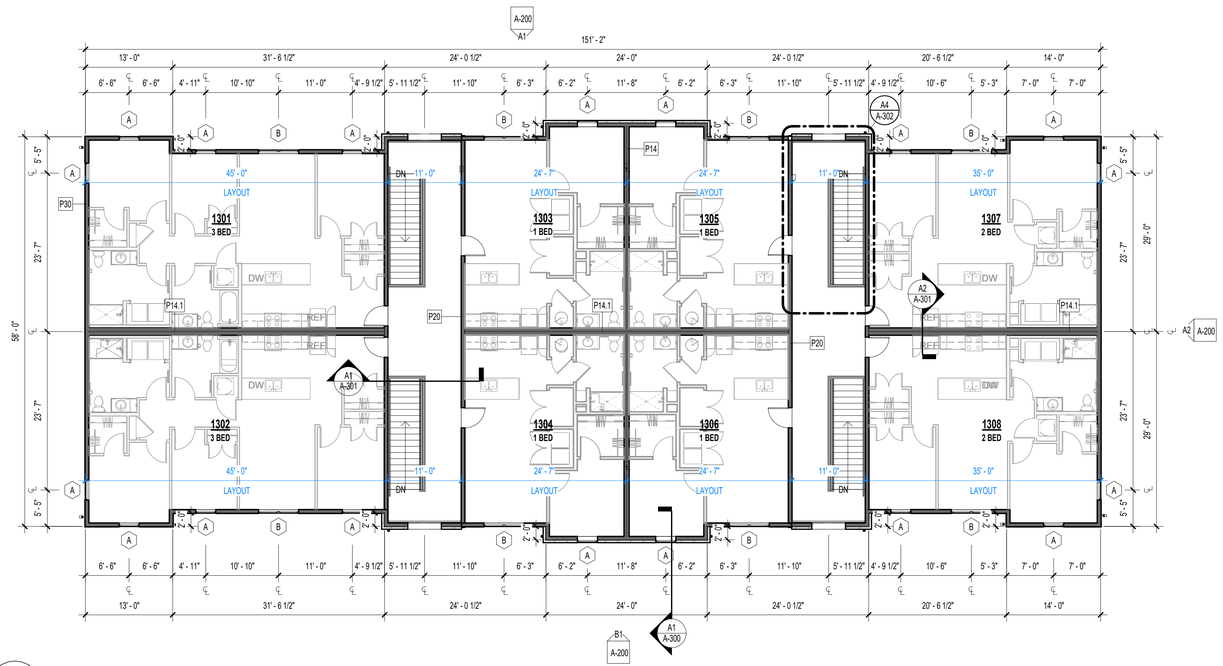
ZONE D					
AREA TO BE VENTED				**1645 S.F.**	
VENTING CALCULATION FACTOR PER	IBC			300	
TOTAL REQUIRED VENTING	=	(1645 S.F. x 144) / 300 =		**790 SQ.IN.**	
HIGH ROOF VENTING	=	790 SQ.IN. x **0.47** =		371 SQ.IN.	
LOW ROOF VENTING	=	790 SQ.IN. x **0.53** =		419 SQ.IN.	
HIGH ROOF VENTING				**371 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING				**378 SQ.IN.**	**PROVIDED** ☑
(21) RIDGE VENT	@	18 NFA =		378 SQ.IN./FT NFA	
(0) BOX VENT	@	50 NFA =		0 SQ.IN./FT NFA	
LOW ROOF VENTING				**419 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING				**429 SQ.IN.**	**PROVIDED** ☑
(33) CONT. LF SOFFIT VENT	@	13 NFA =		429 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED				**807 SQ.IN.**	**PROVIDED** ☑

ZONE B					
AREA TO BE VENTED				**2602 S.F.**	
VENTING CALCULATION FACTOR PER	IBC			300	
TOTAL REQUIRED VENTING	=	(2602 S.F. x 144) / 300 =		**1249 SQ.IN.**	
HIGH ROOF VENTING	=	1249 SQ.IN. x **0.4** =		500 SQ.IN.	
LOW ROOF VENTING	=	1249 SQ.IN. x **0.6** =		749 SQ.IN.	
HIGH ROOF VENTING				**500 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING				**504 SQ.IN.**	**PROVIDED** ☑
(28) RIDGE VENT	@	18 NFA =		504 SQ.IN./FT NFA	
(0) BOX VENT	@	50 NFA =		0 SQ.IN./FT NFA	
LOW ROOF VENTING				**749 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING				**754 SQ.IN.**	**PROVIDED** ☑
(58) CONT. LF SOFFIT VENT	@	13 NFA =		754 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED				**1258 SQ.IN.**	**PROVIDED** ☑

ZONE E					
AREA TO BE VENTED				**1374 S.F.**	
VENTING CALCULATION FACTOR PER	IBC			300	
TOTAL REQUIRED VENTING	=	(1374 S.F. x 144) / 300 =		**660 SQ.IN.**	
HIGH ROOF VENTING	=	660 SQ.IN. x **0.47** =		310 SQ.IN.	
LOW ROOF VENTING	=	660 SQ.IN. x **0.53** =		350 SQ.IN.	
HIGH ROOF VENTING				**310 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING				**324 SQ.IN.**	**PROVIDED** ☑
(18) RIDGE VENT	@	18 NFA =		324 SQ.IN./FT NFA	
(0) BOX VENT	@	50 NFA =		0 SQ.IN./FT NFA	
LOW ROOF VENTING				**350 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING				**364 SQ.IN.**	**PROVIDED** ☑
(28) CONT. LF SOFFIT VENT	@	13 NFA =		364 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED				**688 SQ.IN.**	**PROVIDED** ☑

ZONE C					
AREA TO BE VENTED				**1645 S.F.**	
VENTING CALCULATION FACTOR PER	IBC			300	
TOTAL REQUIRED VENTING	=	(1645 S.F. x 144) / 300 =		**790 SQ.IN.**	
HIGH ROOF VENTING	=	790 SQ.IN. x **0.47** =		371 SQ.IN.	
LOW ROOF VENTING	=	790 SQ.IN. x **0.53** =		419 SQ.IN.	
HIGH ROOF VENTING				**371 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING				**378 SQ.IN.**	**PROVIDED** ☑
(21) RIDGE VENT	@	18 NFA =		378 SQ.IN./FT NFA	
(0) BOX VENT	@	50 NFA =		0 SQ.IN./FT NFA	
LOW ROOF VENTING				**419 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING				**429 SQ.IN.**	**PROVIDED** ☑
(33) CONT. LF SOFFIT VENT	@	13 NFA =		429 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED				**807 SQ.IN.**	**PROVIDED** ☑

ZONE F					
AREA TO BE VENTED				**2307 S.F.**	
VENTING CALCULATION FACTOR PER	IBC			300	
TOTAL REQUIRED VENTING	=	(2307 S.F. x 144) / 300 =		**1107 SQ.IN.**	
HIGH ROOF VENTING	=	1107 SQ.IN. x **0.4** =		443 SQ.IN.	
LOW ROOF VENTING	=	1107 SQ.IN. x **0.6** =		664 SQ.IN.	
HIGH ROOF VENTING				**443 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING				**456 SQ.IN.**	**PROVIDED** ☑
(17) RIDGE VENT	@	18 NFA =		306 SQ.IN./FT NFA	
(3) BOX VENT	@	50 NFA =		150 SQ.IN./FT NFA	
LOW ROOF VENTING				**664 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING				**676 SQ.IN.**	**PROVIDED** ☑
(52) CONT. LF SOFFIT VENT	@	13 NFA =		676 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED				**1132 SQ.IN.**	**PROVIDED** ☑



A1 3RD FLOOR PLAN - BUILDING A
3/32" = 1'-0"

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
THIRD FLOOR PLAN & ROOF PLAN
- BUILDING A

PROJECT NUMBER: 25144

SHEET NUMBER:

A-102

12/18/2025 8:57:22 AM
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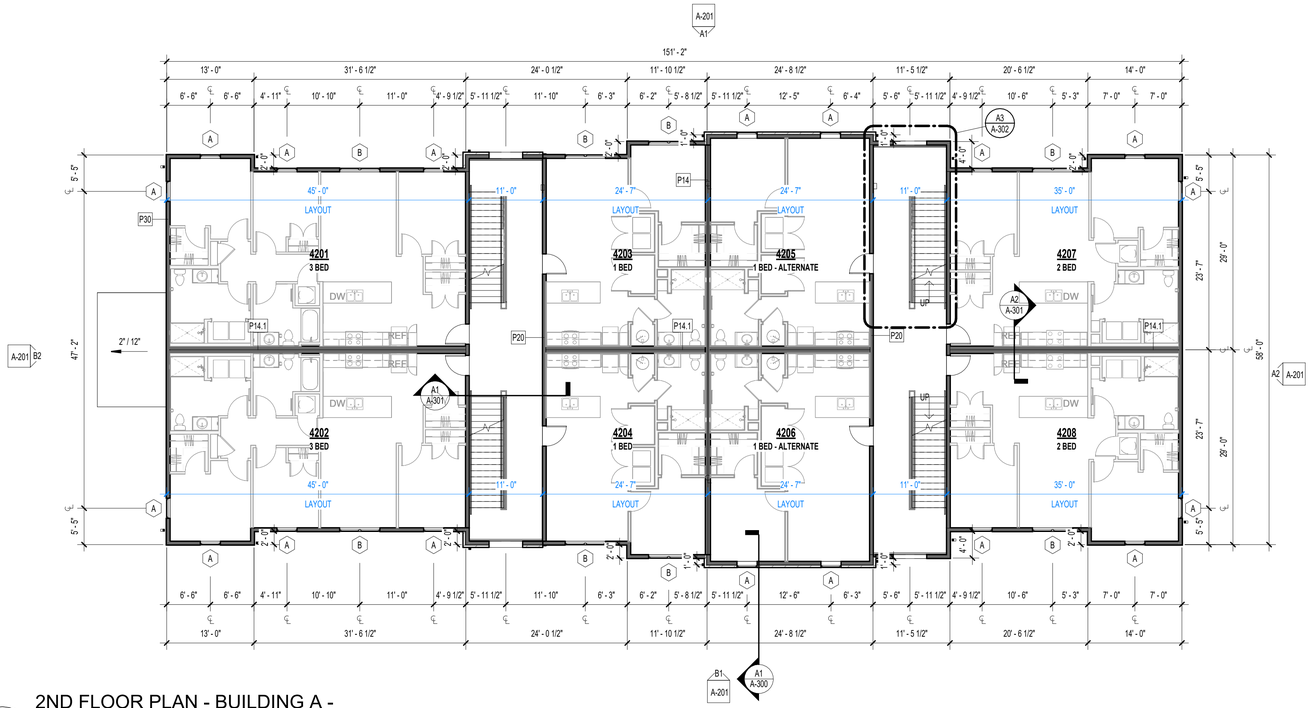
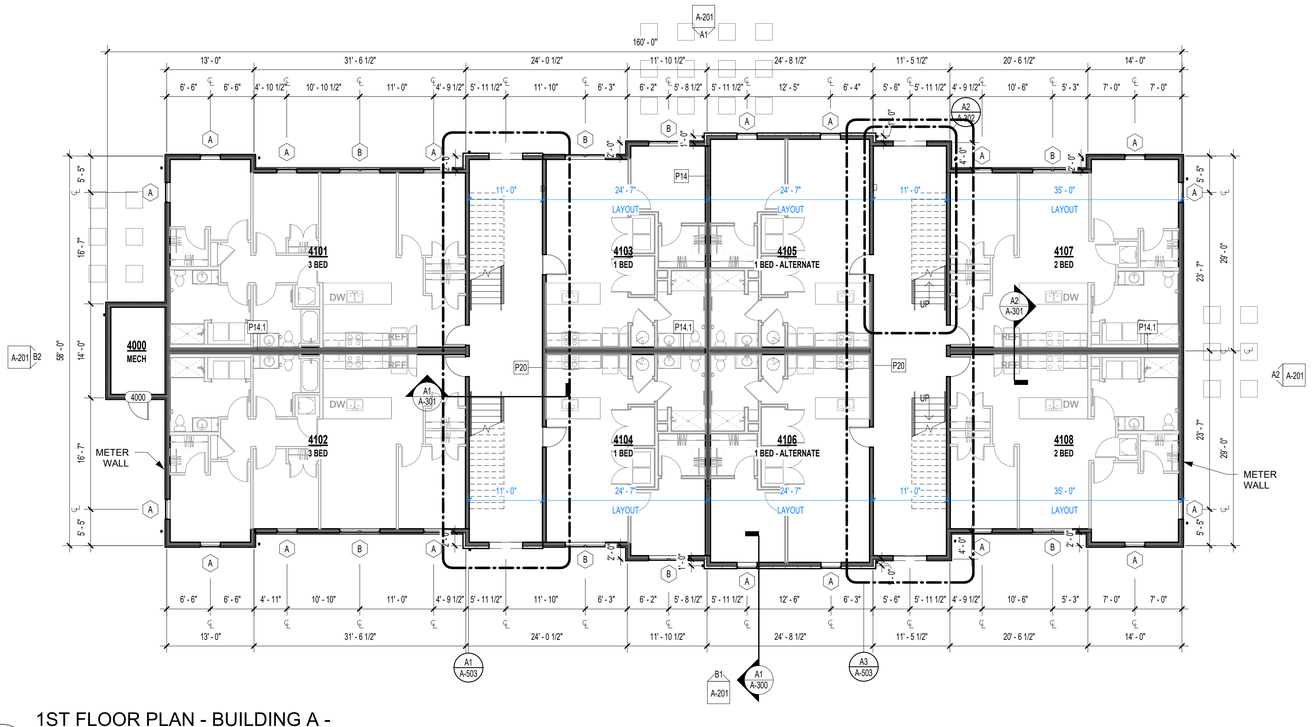


2ND FLOOR PLAN - BUILDING A - STEPPED

B2 — 3/32" = 1'-0"



1ST FLOOR PLAN - BUILDING A - STEPPED

A2 — 3/32" = 1'-0"

REFERENCE G-003 FOR GENERAL NOTES

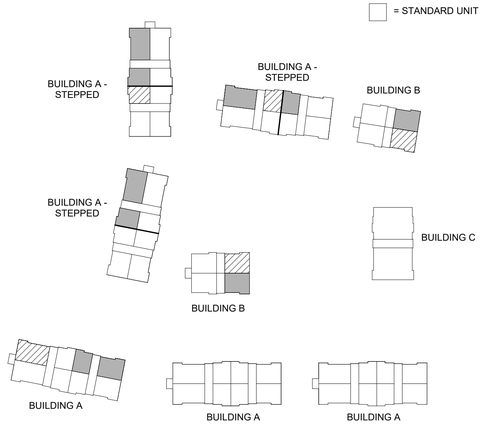
PLAN LEGEND

- PARTIAL HEIGHT PARTITION
- NON-RATED PARTITION; SEE ASSEMBLIES
- 1 HR RATED PARTITION; SEE ASSEMBLIES
- 2 HR RATED PARTITION; SEE ASSEMBLIES
- A1 — WINDOW TYPE; SEE WINDOW SCHEDULE
- 101 — DOOR TYPE; SEE DOOR SCHEDULE
- P7 — PARTITION TYPE; SEE ASSEMBLIES
- 6' - 0" — FRAMING DIMENSIONS
- 6' - 0" LAYOUT — LAYOUT LINE DIMENSION
- HEARING/VISIBILITY
- ADA/ACCESSIBLE UNITS

NOTE: ALL UPPER FLOOR UNITS ARE STANDARD

NOTE: BUILDING ADDRESSES PER CIVIL

- = TYPE A UNIT
- = HI/VI UNIT
- = STANDARD UNIT



SITE KEY PLAN

A1 — 1" = 100'-0"

N

PRINTS ISSUED
12/18/25 - 95% CDs

REVISIONS:

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
FIRST & SECOND FLOOR PLANS - BUILDING A - STEPPED

PROJECT NUMBER: 25144

SHEET NUMBER:

A-103

12/18/2025 9:57:36 AM
C:\Users\Laura\Documents\25144 - johnson Betts_R24_rolocorCSMT.rvt

ZONE A					
AREA TO BE VENTED				**142 S.F.**	
VENTING CALCULATION FACTOR PER	IBC			300	
TOTAL REQUIRED VENTING	=	(142 S.F. x 144)	/ 300 =	**68 SQ.IN.**	
HIGH ROOF VENTING	=	68 SQ.IN. x **0.5**	=	34 SQ.IN.	
LOW ROOF VENTING	=	68 SQ.IN. x **0.5**	=	34 SQ.IN.	
HIGH ROOF VENTING				**34 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING				**50 SQ.IN.**	**PROVIDED** ☒
(0) RIDGE VENT	@	18 NFA	=	0 SQ.IN./FT NFA	
(1) BOX VENT	@	50 NFA	=	50 SQ.IN./FT NFA	
LOW ROOF VENTING				**34 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING				**39 SQ.IN.**	**PROVIDED** ☒
(3) CONT. LF SOFFIT VENT	@	13 NFA	=	39 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED				**89 SQ.IN.**	**PROVIDED** ☒

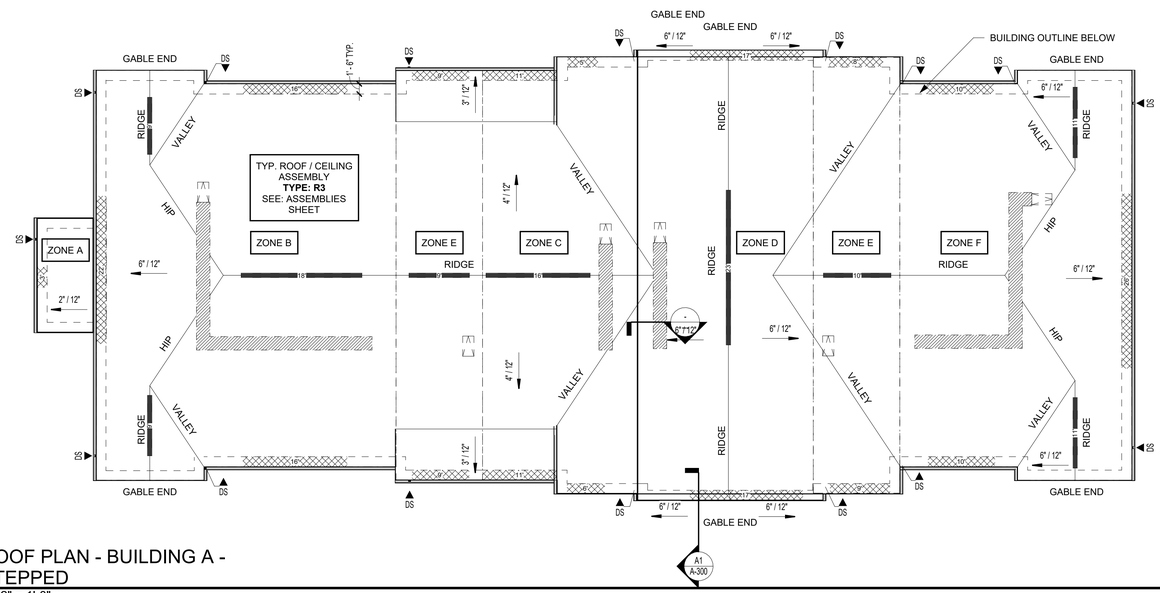
ZONE B					
AREA TO BE VENTED				**2607 S.F.**	
VENTING CALCULATION FACTOR PER	IBC			300	
TOTAL REQUIRED VENTING	=	(2607 S.F. x 144)	/ 300 =	**1251 SQ.IN.**	
HIGH ROOF VENTING	=	1251 SQ.IN. x **0.4**	=	500 SQ.IN.	
LOW ROOF VENTING	=	1251 SQ.IN. x **0.6**	=	751 SQ.IN.	
HIGH ROOF VENTING				**500 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING				**514 SQ.IN.**	**PROVIDED** ☑
(23) RIDGE VENT	@	18 NFA	=	414 SQ.IN./FT NFA	
(2) BOX VENT	@	50 NFA	=	100 SQ.IN./FT NFA	
LOW ROOF VENTING				**751 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING				**754 SQ.IN.**	**PROVIDED** ☑
(58) CONT. LF SOFFIT VENT	@	13 NFA	=	754 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED				**1268 SQ.IN.**	**PROVIDED** ☑

ZONE C					
AREA TO BE VENTED				**1456 S.F.**	
VENTING CALCULATION FACTOR PER	IBC			300	
TOTAL REQUIRED VENTING	=	(1456 S.F. x 144)	/ 300 =	**699 SQ.IN.**	
HIGH ROOF VENTING	=	699 SQ.IN. x **0.4**	=	280 SQ.IN.	
LOW ROOF VENTING	=	699 SQ.IN. x **0.6**	=	419 SQ.IN.	
HIGH ROOF VENTING				**280 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING				**288 SQ.IN.**	**PROVIDED** ☑
(16) RIDGE VENT	@	18 NFA	=	288 SQ.IN./FT NFA	
(0) BOX VENT	@	50 NFA	=	0 SQ.IN./FT NFA	
LOW ROOF VENTING				**419 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING				**429 SQ.IN.**	**PROVIDED** ☑
(33) CONT. LF SOFFIT VENT	@	13 NFA	=	429 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED				**717 SQ.IN.**	**PROVIDED** ☑

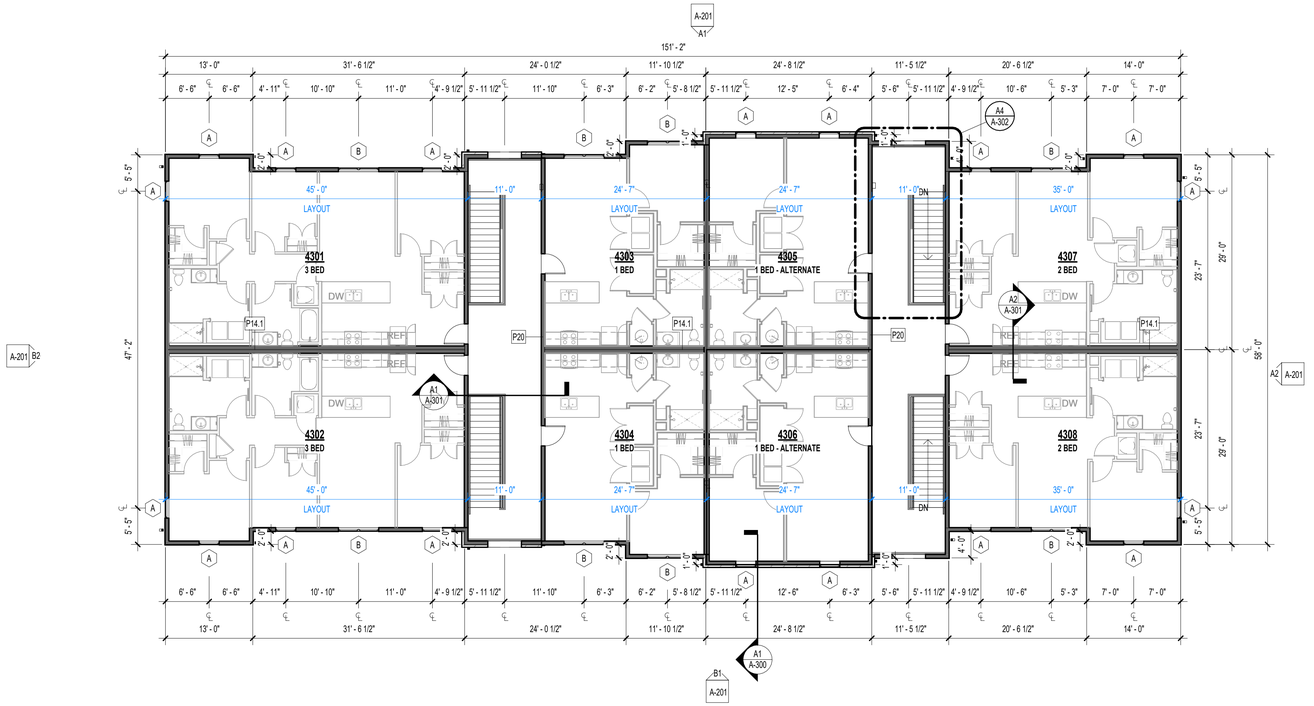
ZONE D					
AREA TO BE VENTED				**1756 S.F.**	
VENTING CALCULATION FACTOR PER	IBC			300	
TOTAL REQUIRED VENTING	=	(1756 S.F. x 144)	/ 300 =	**843 SQ.IN.**	
HIGH ROOF VENTING	=	843 SQ.IN. x **0.48**	=	405 SQ.IN.	
LOW ROOF VENTING	=	843 SQ.IN. x **0.52**	=	438 SQ.IN.	
HIGH ROOF VENTING				**405 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING				**414 SQ.IN.**	**PROVIDED** ☑
(23) RIDGE VENT	@	18 NFA	=	414 SQ.IN./FT NFA	
(0) BOX VENT	@	50 NFA	=	0 SQ.IN./FT NFA	
LOW ROOF VENTING				**438 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING				**442 SQ.IN.**	**PROVIDED** ☑
(34) CONT. LF SOFFIT VENT	@	13 NFA	=	442 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED				**856 SQ.IN.**	**PROVIDED** ☑

ZONE E					
AREA TO BE VENTED				**1621 S.F.**	
VENTING CALCULATION FACTOR PER	IBC			300	
TOTAL REQUIRED VENTING	=	(1621 S.F. x 144)	/ 300 =	**778 SQ.IN.**	
HIGH ROOF VENTING	=	778 SQ.IN. x **0.42**	=	327 SQ.IN.	
LOW ROOF VENTING	=	778 SQ.IN. x **0.58**	=	451 SQ.IN.	
HIGH ROOF VENTING				**327 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING				**342 SQ.IN.**	**PROVIDED** ☑
(19) RIDGE VENT	@	18 NFA	=	342 SQ.IN./FT NFA	
(0) BOX VENT	@	50 NFA	=	0 SQ.IN./FT NFA	
LOW ROOF VENTING				**451 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING				**455 SQ.IN.**	**PROVIDED** ☑
(35) CONT. LF SOFFIT VENT	@	13 NFA	=	455 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED				**797 SQ.IN.**	**PROVIDED** ☑

ZONE F					
AREA TO BE VENTED				**2037 S.F.**	
VENTING CALCULATION FACTOR PER	IBC			300	
TOTAL REQUIRED VENTING	=	(2037 S.F. x 144)	/ 300 =	**978 SQ.IN.**	
HIGH ROOF VENTING	=	978 SQ.IN. x **0.4**	=	391 SQ.IN.	
LOW ROOF VENTING	=	978 SQ.IN. x **0.6**	=	587 SQ.IN.	
HIGH ROOF VENTING				**391 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING				**396 SQ.IN.**	**PROVIDED** ☑
(22) RIDGE VENT	@	18 NFA	=	396 SQ.IN./FT NFA	
(0) BOX VENT	@	50 NFA	=	0 SQ.IN./FT NFA	
LOW ROOF VENTING				**587 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING				**598 SQ.IN.**	**PROVIDED** ☑
(46) CONT. LF SOFFIT VENT	@	13 NFA	=	598 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED				**994 SQ.IN.**	**PROVIDED** ☑



B1 ROOF PLAN - BUILDING A - STEPPED
3/32" = 1'-0"



A1 3RD FLOOR PLAN - BUILDING A - STEPPED
3/32" = 1'-0"

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12/18/25 - 95% CDs

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TOPEKA, KS

SHEET TITLE
THIRD FLOOR PLAN & ROOF PLAN - BUILDING A - STEPPED

PROJECT NUMBER: 25144

SHEET NUMBER:

A-104

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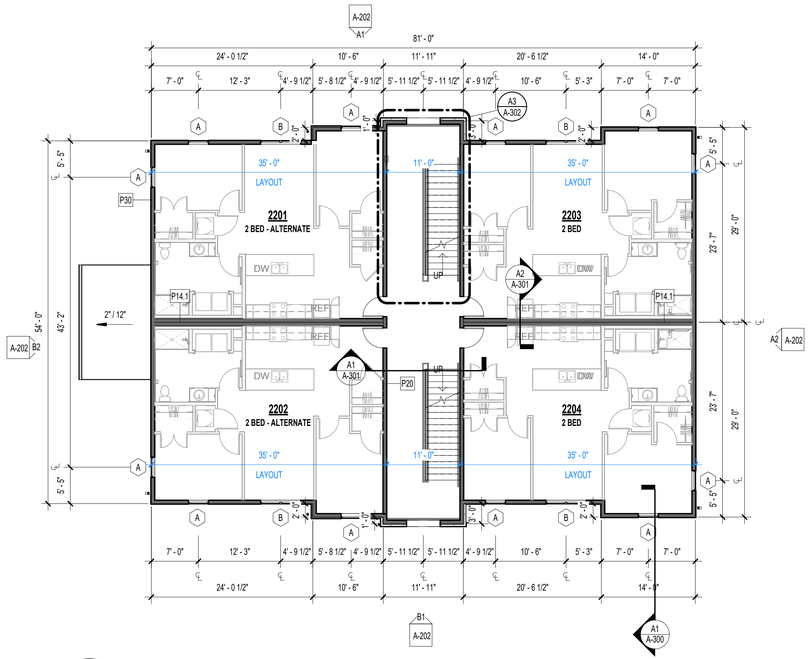
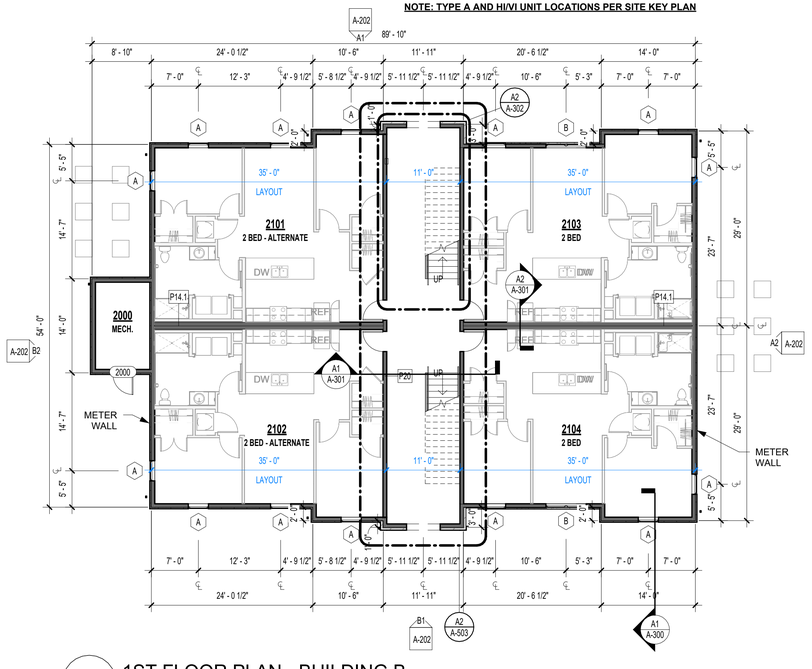


B2 2ND FLOOR PLAN - BUILDING B
3/32" = 1'-0"

NOTE: TYPE A AND HI/VI UNIT LOCATIONS PER SITE KEY PLAN

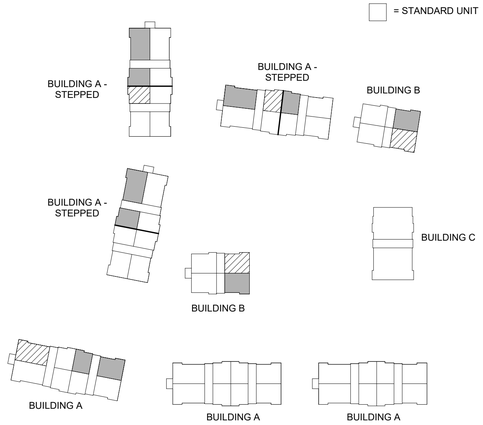


A2 1ST FLOOR PLAN - BUILDING B
3/32" = 1'-0"

NOTE: ALL UPPER FLOOR UNITS ARE STANDARD

NOTE: BUILDING ADDRESSES PER CIVIL

= TYPE A UNIT
= HI/VI UNIT
= STANDARD UNIT



A1 SITE KEY PLAN
1" = 100'-0"

N

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
FIRST & SECOND FLOOR PLANS - BUILDING B

PROJECT NUMBER: 25144

SHEET NUMBER:

A-105

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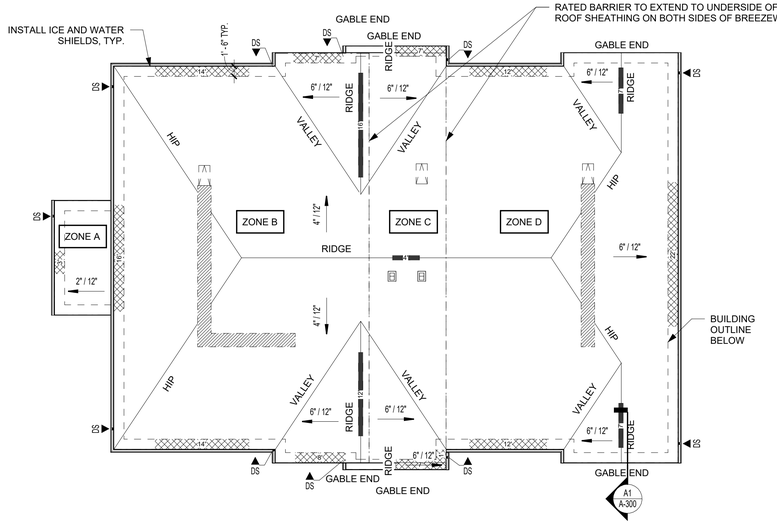
ZONE A						
AREA TO BE VENTED					**142 S.F.**	
VENTING CALCULATION FACTOR PER	IBC				300	
TOTAL REQUIRED VENTING	=	(142 S.F. x 144)	/	300 =	**68 SQ.IN.**	
HIGH ROOF VENTING	=	68 SQ.IN. x **0.5**		=	34 SQ.IN.	
LOW ROOF VENTING	=	68 SQ.IN. x **0.5**		=	34 SQ.IN.	
HIGH ROOF VENTING					**34 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING					**50 SQ.IN.**	**PROVIDED** ☒
(0) CONT. LF RIDGE VENT		@	18 NFA	=	0 SQ.IN./FT NFA	
(1) BOX VENT		@	50 NFA	=	50 SQ.IN./FT NFA	
LOW ROOF VENTING					**34 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING					**39 SQ.IN.**	**PROVIDED** ☒
(3) CONT. LF SOFFIT VENT		@	13 NFA	=	39 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED					**89 SQ.IN.**	**PROVIDED** ☒

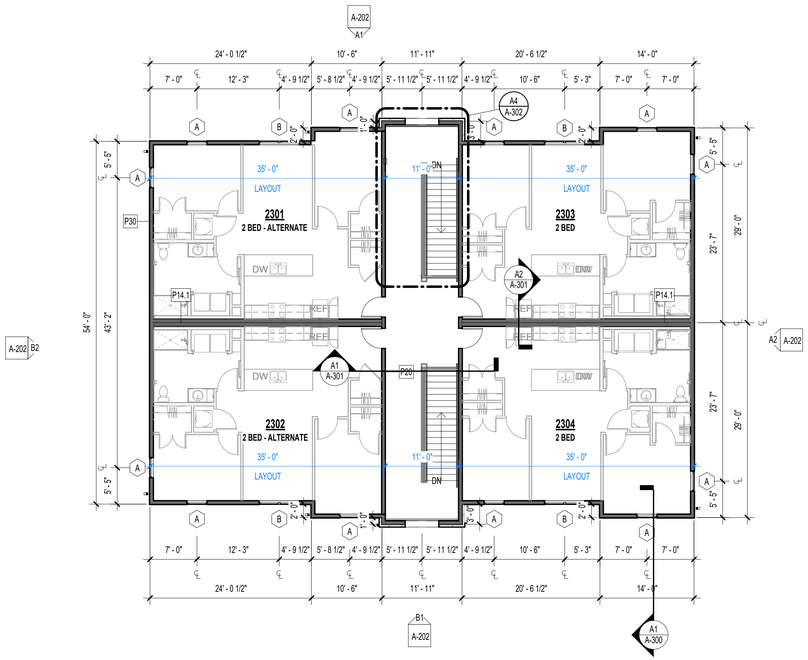
ZONE B						
AREA TO BE VENTED					**2221 S.F.**	
VENTING CALCULATION FACTOR PER	IBC				300	
TOTAL REQUIRED VENTING	=	(2221 S.F. x 144)	/	300 =	**1066 SQ.IN.**	
HIGH ROOF VENTING	=	1066 SQ.IN. x **0.47**		=	501 SQ.IN.	
LOW ROOF VENTING	=	1066 SQ.IN. x **0.53**		=	565 SQ.IN.	
HIGH ROOF VENTING					**501 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING					**504 SQ.IN.**	**PROVIDED** ☑
(28) CONT. LF RIDGE VENT		@	18 NFA	=	504 SQ.IN./FT NFA	
(0) BOX VENT		@	50 NFA	=	0 SQ.IN./FT NFA	
LOW ROOF VENTING					**565 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING					**572 SQ.IN.**	**PROVIDED** ☑
(44) CONT. LF SOFFIT VENT		@	13 NFA	=	572 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED					**1076 SQ.IN.**	**PROVIDED** ☑

ZONE C						
AREA TO BE VENTED					**729 S.F.**	
VENTING CALCULATION FACTOR PER	IBC				300	
TOTAL REQUIRED VENTING	=	(729 S.F. x 144)	/	300 =	**350 SQ.IN.**	
HIGH ROOF VENTING	=	350 SQ.IN. x **0.47**		=	165 SQ.IN.	
LOW ROOF VENTING	=	350 SQ.IN. x **0.53**		=	186 SQ.IN.	
HIGH ROOF VENTING					**165 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING					**172 SQ.IN.**	**PROVIDED** ☑
(4) CONT. LF RIDGE VENT		@	18 NFA	=	72 SQ.IN./FT NFA	
(2) BOX VENT		@	50 NFA	=	100 SQ.IN./FT NFA	
LOW ROOF VENTING					**186 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING					**195 SQ.IN.**	**PROVIDED** ☑
(15) CONT. LF SOFFIT VENT		@	13 NFA	=	195 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED					**367 SQ.IN.**	**PROVIDED** ☑

ZONE D						
AREA TO BE VENTED					**2037 S.F.**	
VENTING CALCULATION FACTOR PER	IBC				300	
TOTAL REQUIRED VENTING	=	(2037 S.F. x 144)	/	300 =	**978 SQ.IN.**	
HIGH ROOF VENTING	=	978 SQ.IN. x **0.4**		=	391 SQ.IN.	
LOW ROOF VENTING	=	978 SQ.IN. x **0.6**		=	587 SQ.IN.	
HIGH ROOF VENTING					**391 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING					**406 SQ.IN.**	**PROVIDED** ☑
(17) CONT. LF RIDGE VENT		@	18 NFA	=	306 SQ.IN./FT NFA	
(2) BOX VENT		@	50 NFA	=	100 SQ.IN./FT NFA	
LOW ROOF VENTING					**587 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING					**598 SQ.IN.**	**PROVIDED** ☑
(46) CONT. LF SOFFIT VENT		@	13 NFA	=	598 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED					**1004 SQ.IN.**	**PROVIDED** ☑



B1 ROOF PLAN - BUILDING B
3/32" = 1'-0"



A1 3RD FLOOR PLAN - BUILDING B
3/32" = 1'-0"

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TOPEKA, KS

SHEET TITLE
THIRD FLOOR PLAN & ROOF PLAN - BUILDING B

PROJECT NUMBER: 25144

SHEET NUMBER:

A-106

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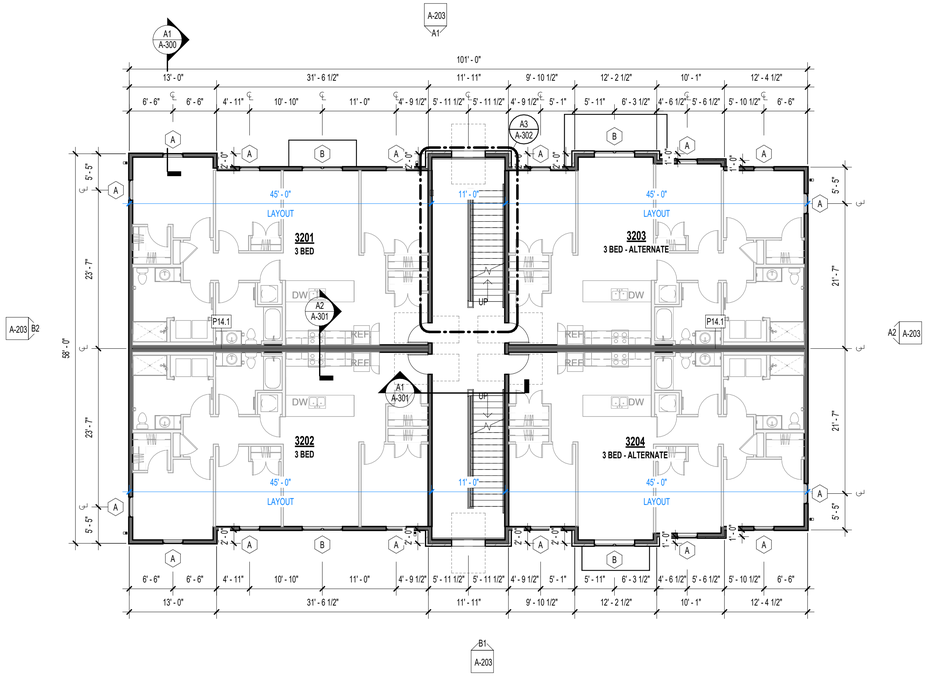
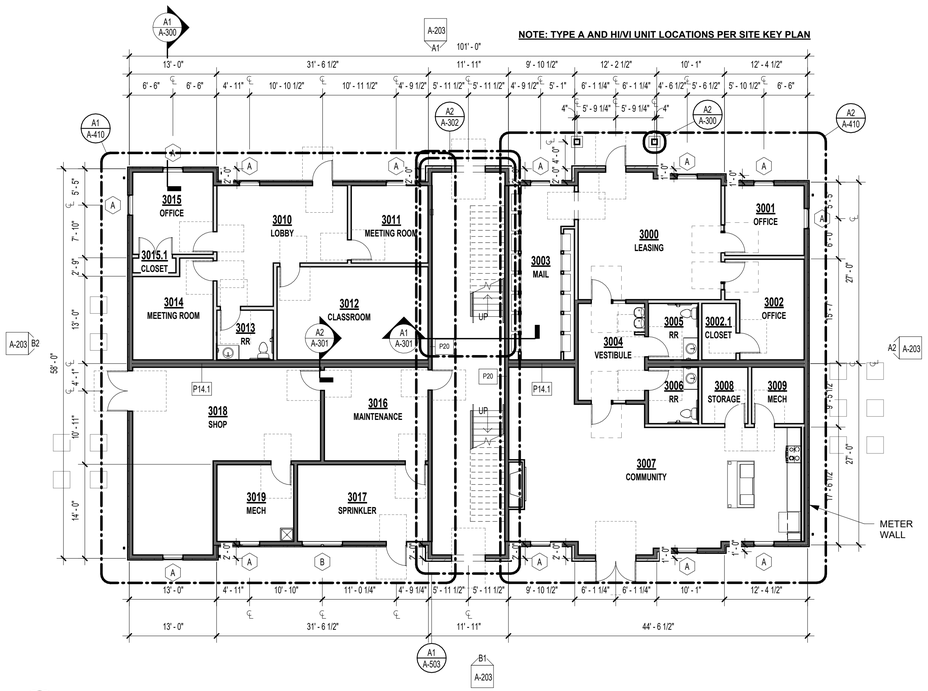
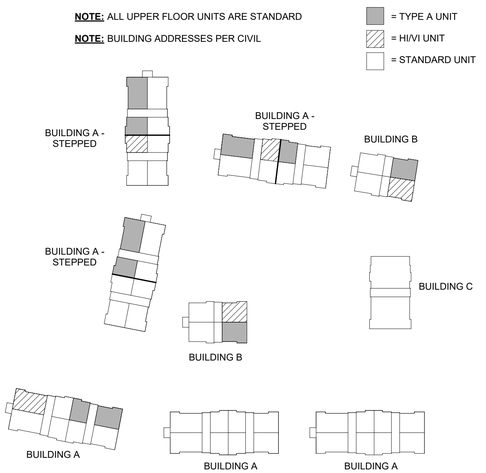


B2 2ND FLOOR PLAN - BUILDING C
3/32" = 1'-0"



A2 1ST FLOOR PLAN - BUILDING C
3/32" = 1'-0"



A1 SITE KEY PLAN
1" = 100'-0"

PRINTS ISSUED
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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
FIRST & SECOND FLOOR PLANS - BUILDING C

PROJECT NUMBER: 25144

SHEET NUMBER:

A-107

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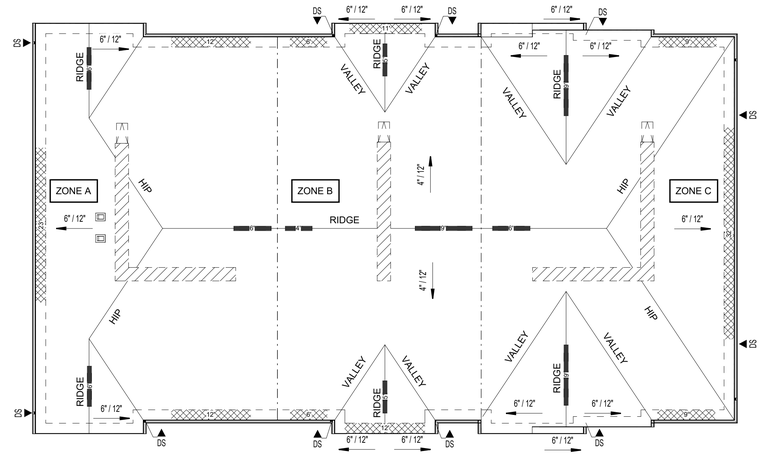
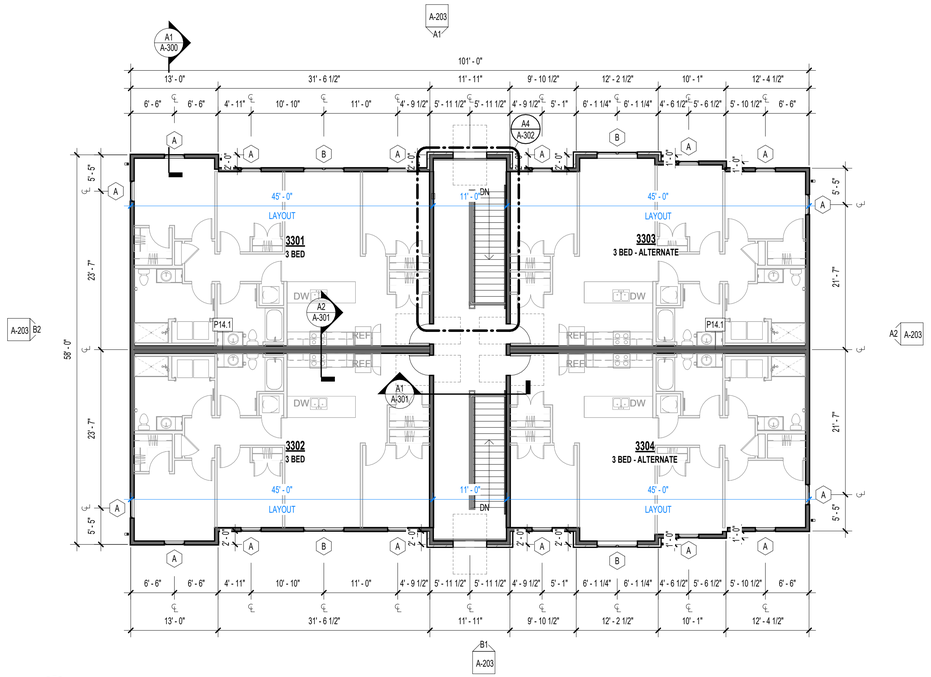


B1 ROOF PLAN - BUILDING C
3/32" = 1'-0"

ZONE A					
AREA TO BE VENTED				**2116 S.F.**	
VENTING CALCULATION FACTOR PER	IBC			300	
TOTAL REQUIRED VENTING	=	(2116 S.F. x 144) / 300 =		**1016 SQ.IN.**	
HIGH ROOF VENTING	=	1016 SQ.IN. x **0.4** =		406 SQ.IN.	
LOW ROOF VENTING	=	1016 SQ.IN. x **0.6** =		610 SQ.IN.	
HIGH ROOF VENTING				**406 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING				**424 SQ.IN.**	**PROVIDED** ☑
(18) CONT. LF RIDGE VENT		@	18 NFA =	324 SQ.IN./FT NFA	
(2) BOX VENT		@	50 NFA =	100 SQ.IN./FT NFA	
LOW ROOF VENTING				**610 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING				**611 SQ.IN.**	**PROVIDED** ☑
(47) SOFFIT VENT		@	13 NFA =	611 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED				**1035 SQ.IN.**	**PROVIDED** ☑

ZONE B					
AREA TO BE VENTED				**1789 S.F.**	
VENTING CALCULATION FACTOR PER	IBC			300	
TOTAL REQUIRED VENTING	=	(1789 S.F. x 144) / 300 =		**859 SQ.IN.**	
HIGH ROOF VENTING	=	859 SQ.IN. x **0.48** =		412 SQ.IN.	
LOW ROOF VENTING	=	859 SQ.IN. x **0.52** =		447 SQ.IN.	
HIGH ROOF VENTING				**412 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING				**414 SQ.IN.**	**PROVIDED** ☑
(23) CONT. LF RIDGE VENT		@	18 NFA =	414 SQ.IN./FT NFA	
(0) BOX VENT		@	50 NFA =	0 SQ.IN./FT NFA	
LOW ROOF VENTING				**447 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING				**455 SQ.IN.**	**PROVIDED** ☑
(35) SOFFIT VENT		@	13 NFA =	455 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED				**869 SQ.IN.**	**PROVIDED** ☑

ZONE C					
AREA TO BE VENTED				**2228 S.F.**	
VENTING CALCULATION FACTOR PER	IBC			300	
TOTAL REQUIRED VENTING	=	(2228 S.F. x 144) / 300 =		**1069 SQ.IN.**	
HIGH ROOF VENTING	=	1069 SQ.IN. x **0.4** =		428 SQ.IN.	
LOW ROOF VENTING	=	1069 SQ.IN. x **0.6** =		641 SQ.IN.	
HIGH ROOF VENTING				**428 SQ.IN.**	**REQUIRED**
PROVIDED HIGH ROOF VENTING				**432 SQ.IN.**	**PROVIDED** ☑
(24) CONT. LF RIDGE VENT		@	18 NFA =	432 SQ.IN./FT NFA	
(0) BOX VENT		@	50 NFA =	0 SQ.IN./FT NFA	
LOW ROOF VENTING				**641 SQ.IN.**	**REQUIRED**
PROVIDED LOW ROOF VENTING				**650 SQ.IN.**	**PROVIDED** ☑
(50) SOFFIT VENT		@	13 NFA =	650 SQ.IN./FT NFA	
TOTAL ROOF VENTING PROVIDED				**1082 SQ.IN.**	**PROVIDED** ☑



A1 3RD FLOOR PLAN - BUILDING C
3/32" = 1'-0"

12/19/2025 8:45:25 AM
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PRINTS ISSUED
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JOHNSON - BETTS MEADOWS

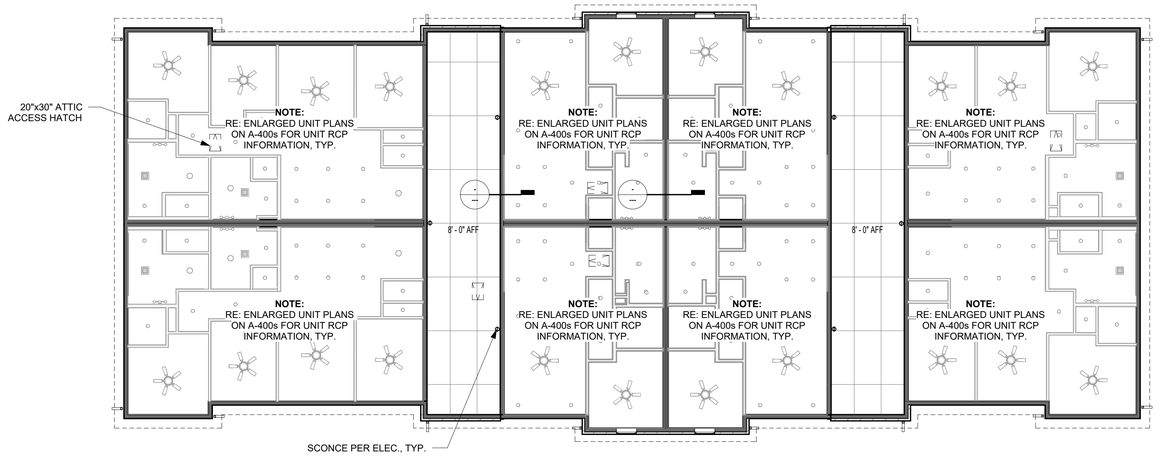
TOPEKA, KS

SHEET TITLE
THIRD FLOOR PLAN & ROOF PLAN
- BUILDING C

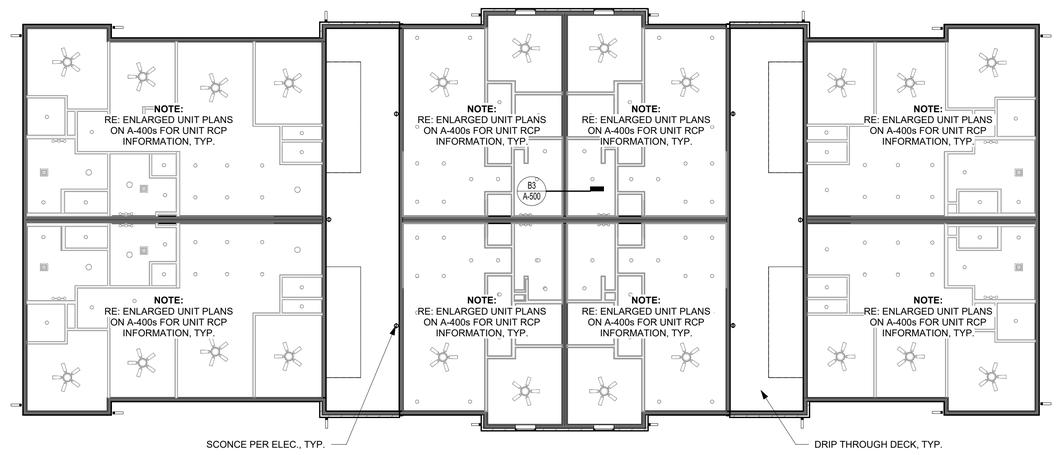
PROJECT NUMBER: 25144

SHEET NUMBER:

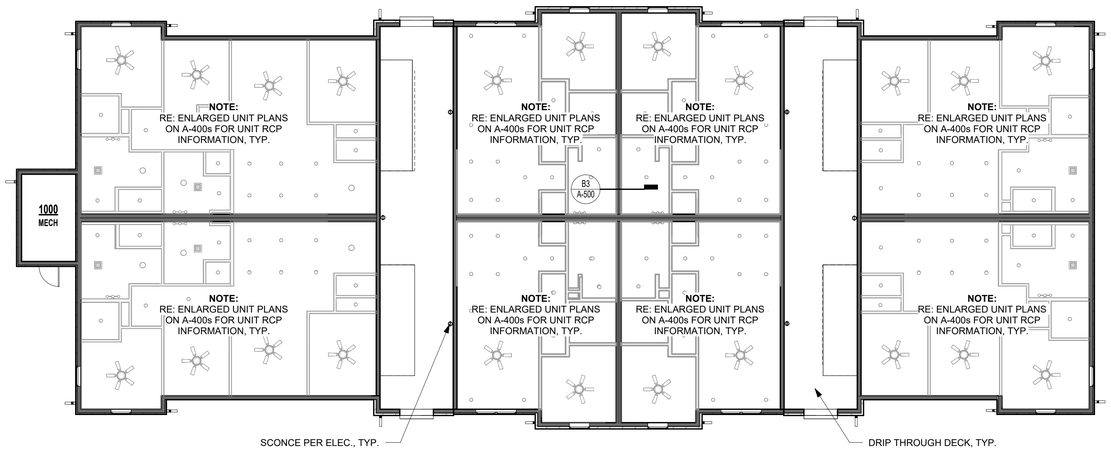
A-108



C1 3RD FLOOR RCP - BUILDING A
3/32" = 1'-0"



B1 2ND FLOOR RCP - BUILDING A
3/32" = 1'-0"



A1 1ST FLOOR RCP - BUILDING A
3/32" = 1'-0"

REFERENCE G-003 FOR GENERAL NOTES

RCP LEGEND

- **C1** - 2' X 2' ACT SYSTEM 15/16" THICKNESS- ANGULAR TEGULAR EDGE, PER 095113
- **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
- **C5** - TONGUE & GROOVE (INTERIOR) - SIZE: 2X6

9' - 0" AFF INDICATES CEILING HEIGHT

PRINTS ISSUED
12/18/25 - 95% CDs

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
FIRST & SECOND FLOOR REFLECTED CEILING PLANS - BUILDING A

PROJECT NUMBER: 25144

SHEET NUMBER:

A-120

12/18/2025 9:55:56 AM
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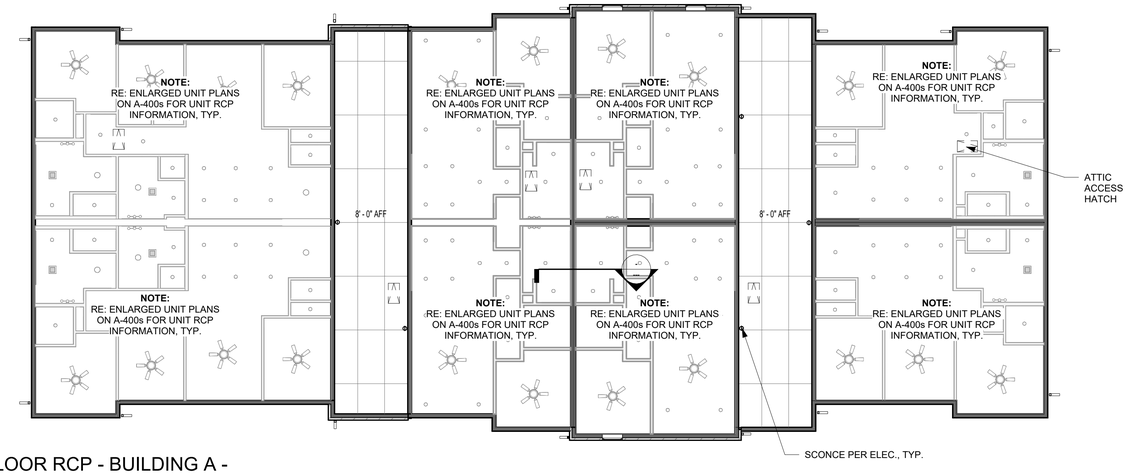
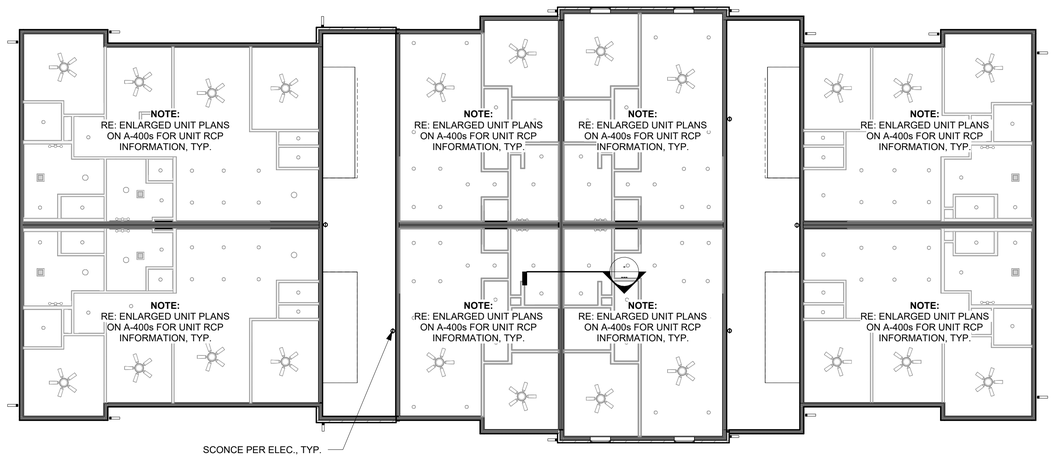
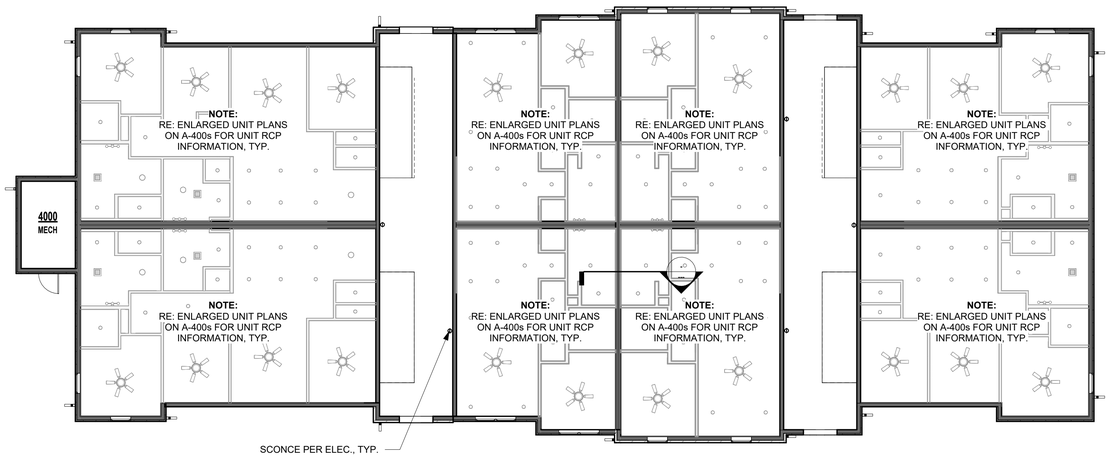


C1 3RD FLOOR RCP - BUILDING A - STEPPED
3/32" = 1'-0"



B1 2ND FLOOR RCP - BUILDING A - STEPPED
3/32" = 1'-0"



A1 1ST FLOOR RCP - BUILDING A - STEPPED
3/32" = 1'-0"

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

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SHEET TITLE
THIRD FLOOR REFLECTED CEILING PLAN - BUILDING A

PROJECT NUMBER: 25144

SHEET NUMBER:

A-121

12/18/2025 9:55:19 AM
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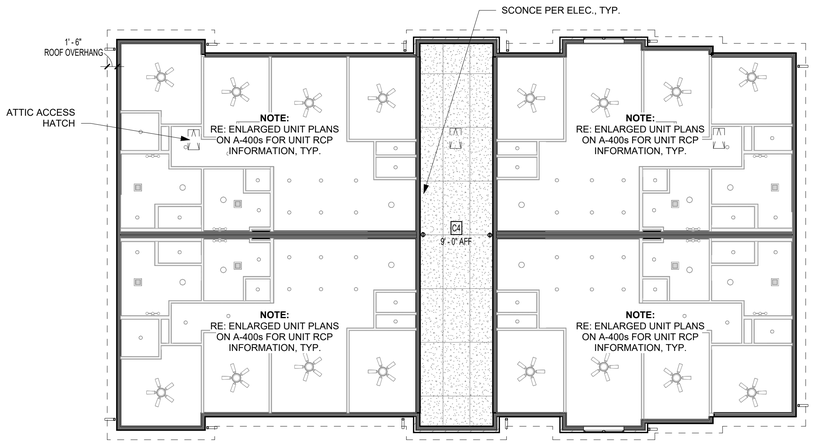
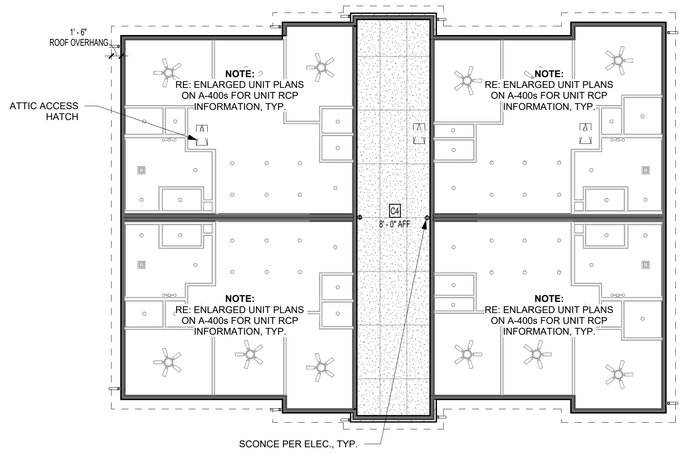
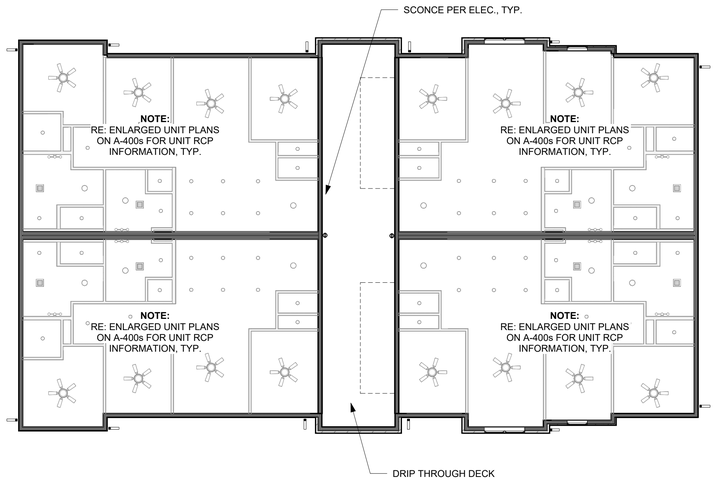
REFERENCE G-003 FOR GENERAL NOTES
REFERENCE A-120 FOR RCP LEGEND



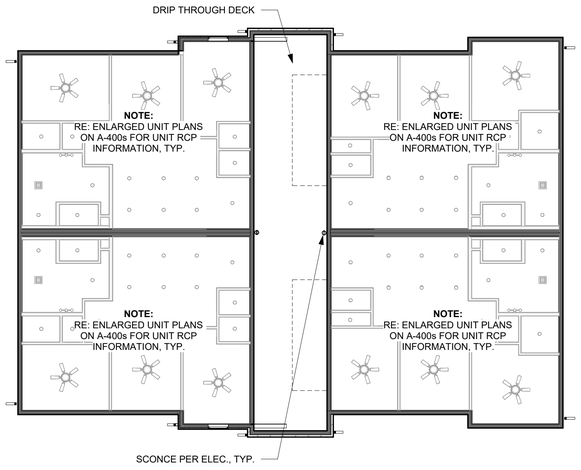
C2 3RD FLOOR RCP -BUILDING C
3/32" = 1'-0"



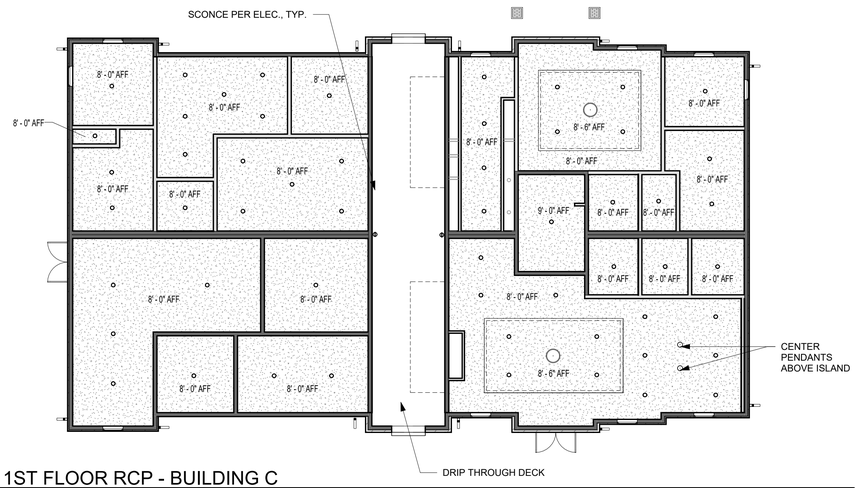
C1 3RD FLOOR RCP - BUILDING B
3/32" = 1'-0"



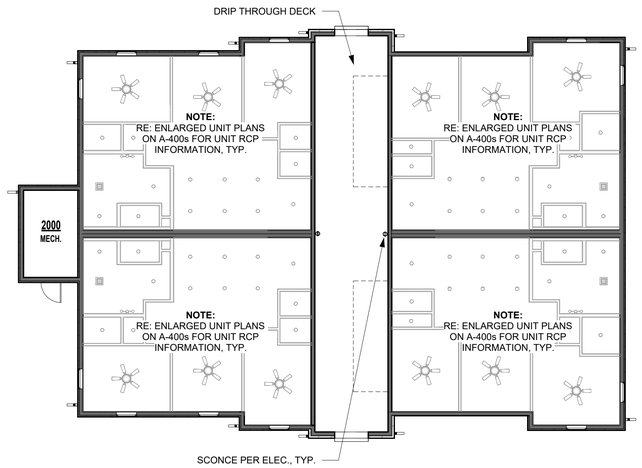
B2 2ND FLOOR RCP - BUILDING C
3/32" = 1'-0"



B1 2ND FLOOR RCP - BUILDING B
3/32" = 1'-0"



A2 1ST FLOOR RCP - BUILDING C
3/32" = 1'-0"



A1 1ST FLOOR RCP - BUILDING B
3/32" = 1'-0"

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
FIRST & SECOND FLOOR REFLECTED CEILING PLANS - BUILDING B & C

PROJECT NUMBER: 25144

SHEET NUMBER:

A-122

12/18/2025 9:59:40 AM
C:\Revit Local\25144-Johnson-Betts_R24_vlitzow@C3457.rvt

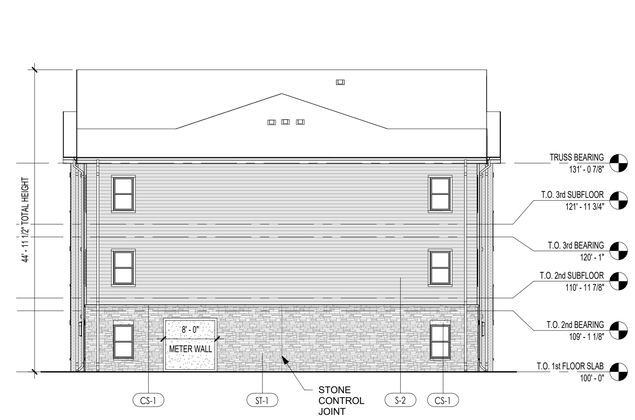
REFERENCE G-003 FOR GENERAL NOTES

MATERIAL LEGEND

	S-1	8" PREFINISHED FIBER LAP SIDING COLOR 1
	S-2	8" PREFINISHED FIBER LAP SIDING COLOR 2
	BR-1	FACE BRICK
	ST-1	STONE
	SP-1	SMOOTH FIBERCEMENT PANEL
	CS-1	CAST STONE BANDING, WINDOW SILLS AND CAPS
	CMU-1	SPLIT FACE CMU
	TR-1	PREFINISHED FIBER TRIM - 3-1/2" & 5-1/2" AT WINDOW 11-1/4" AT BANDING 3-1/2" VERTICAL OUTSIDE / INSIDE CORNER TRIM

B2 BUILDING A - WEST ELEVATION
3/32" = 1'-0"

B1 BUILDING A - SOUTH ELEVATION
3/32" = 1'-0"



A2 BUILDING A - EAST ELEVATION
3/32" = 1'-0"

A1 BUILDING A - NORTH ELEVATION
3/32" = 1'-0"

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SHEET TITLE
EXTERIOR ELEVATIONS - BUILDING A

PROJECT NUMBER: 25144

SHEET NUMBER:

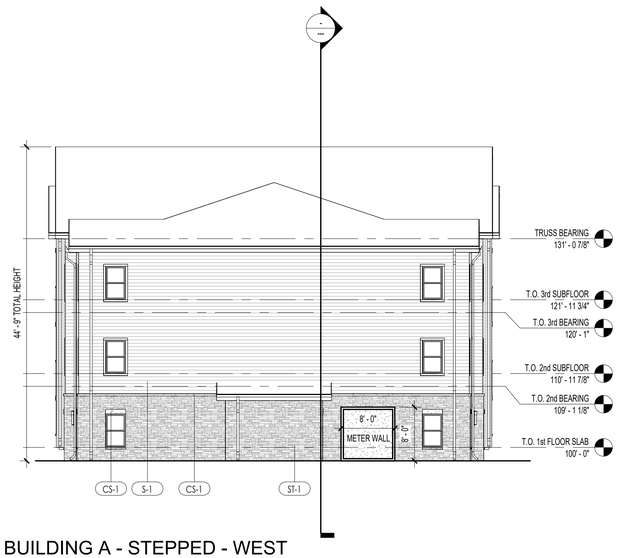
A-200

12/18/2025 9:55:36 AM
C:\Users\Lauren\Documents\25144 - Johnson Betts_R24_rosemannCHART.rvt

REFERENCE G-003 FOR GENERAL NOTES

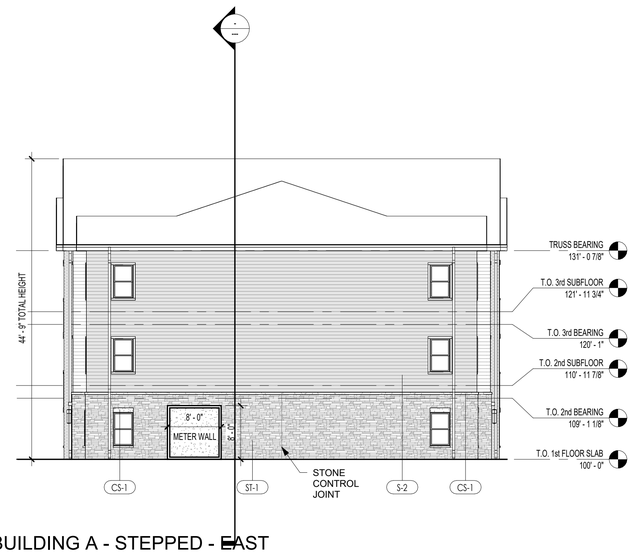
MATERIAL LEGEND

	S-1	8" PREFINISHED FIBER LAP SIDING COLOR 1
	S-2	8" PREFINISHED FIBER LAP SIDING COLOR 2
	BR-1	FACE BRICK
	ST-1	STONE
	SP-1	SMOOTH FIBERCEMENT PANEL
	CS-1	CAST STONE BANDING, WINDOW SILLS AND CAPS
	CMU-1	SPLIT FACE CMU
	TR-1	PREFINISHED FIBER TRIM - 3-1/2" & 5-1/2" AT WINDOW 11-1/4" AT BANDING 3-1/2" VERTICAL OUTSIDE / INSIDE CORNER TRIM



B2 BUILDING A - STEPPED - WEST ELEVATION
3/32" = 1'-0"

B1 BUILDING A - STEPPED - SOUTH ELEVATION
3/32" = 1'-0"



A2 BUILDING A - STEPPED - EAST ELEVATION
3/32" = 1'-0"

A1 BUILDING A - STEPPED - NORTH ELEVATION
3/32" = 1'-0"

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SHEET TITLE
EXTERIOR ELEVATIONS - BUILDING A - STEPPED

PROJECT NUMBER: 25144

SHEET NUMBER:

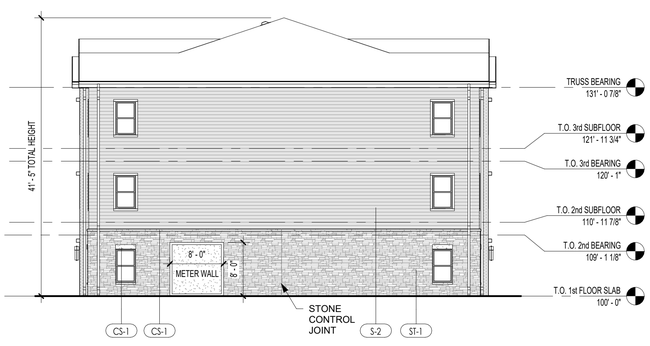
A-201

12/18/2025 8:00:07 AM
C:\Revit Local Files\25144-Johnson Betts_R24_cmoeK3487.rvt

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

B2 BUILDING B - WEST ELEVATION
3/32" = 1'-0"

B1 BUILDING B - SOUTH ELEVATION
3/32" = 1'-0"



A2 BUILDING B - EAST ELEVATION
3/32" = 1'-0"

A1 BUILDING B - NORTH ELEVATION
3/32" = 1'-0"

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SHEET TITLE
EXTERIOR ELEVATIONS -
BUILDING B

PROJECT NUMBER: 25144

SHEET NUMBER:

A-202

12/18/2025 10:00:19 AM
C:\Revit Local Files\25144_Johnson Betts_R24_cmcwo53467.rvt

B2 BUILDING C - NORTH ELEVATION

3/32" = 1'-0"

B1 BUILDING C - WEST ELEVATION

3/32" = 1'-0"

A2 BUILDING C - SOUTH ELEVATION

3/32" = 1'-0"

A1 BUILDING C - EAST ELEVATION

3/32" = 1'-0"

PRINTS ISSUED

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TOPEKA, KS

SHEET TITLE
EXTERIOR ELEVATIONS - BUILDING C

PROJECT NUMBER: 25144

SHEET NUMBER:

A-203

12/18/2025 12:20:31 AM
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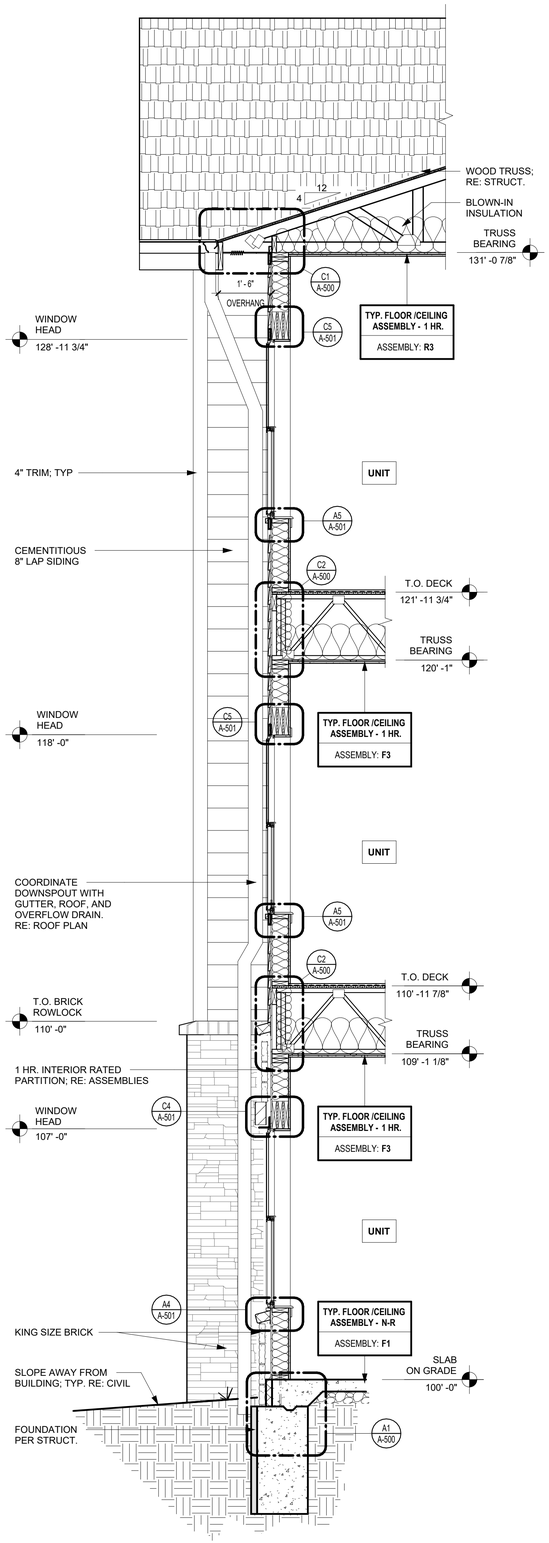
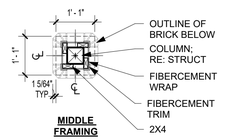
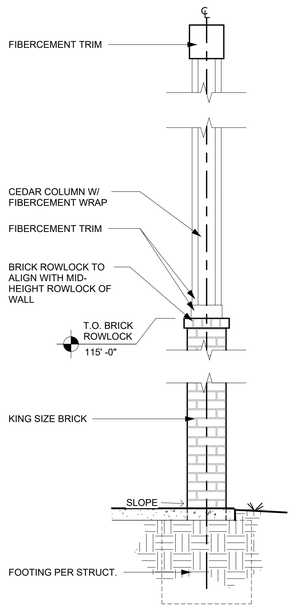


A3 WALL SECTION
1/2" = 1'-0"

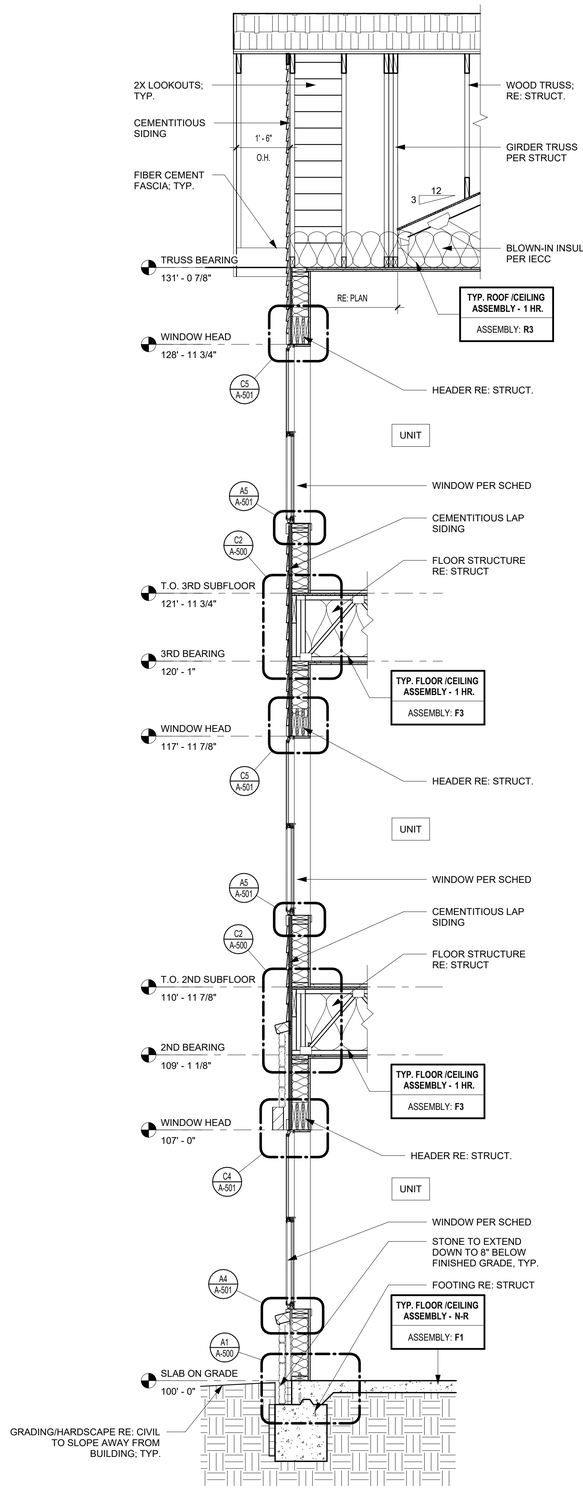


MIDDLE FRAMING



ELEVATION

A2 COLUMN SECTION
1/2" = 1'-0"



A1 SECTION @ TYP. EXTERIOR WALL
1/2" = 1'-0"

REFERENCE G-003 FOR GENERAL NOTES

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TOPEKA, KS

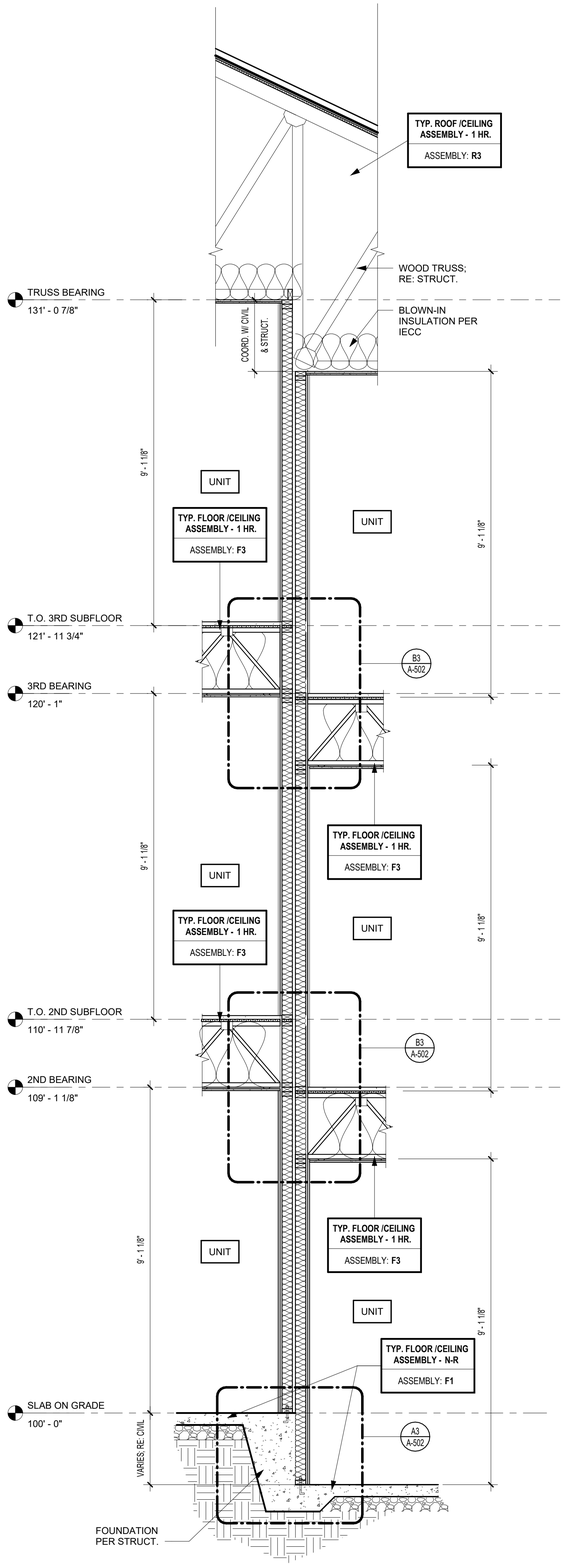
SHEET TITLE
WALL SECTIONS - APARTMENT BUILDING

PROJECT NUMBER: 25144

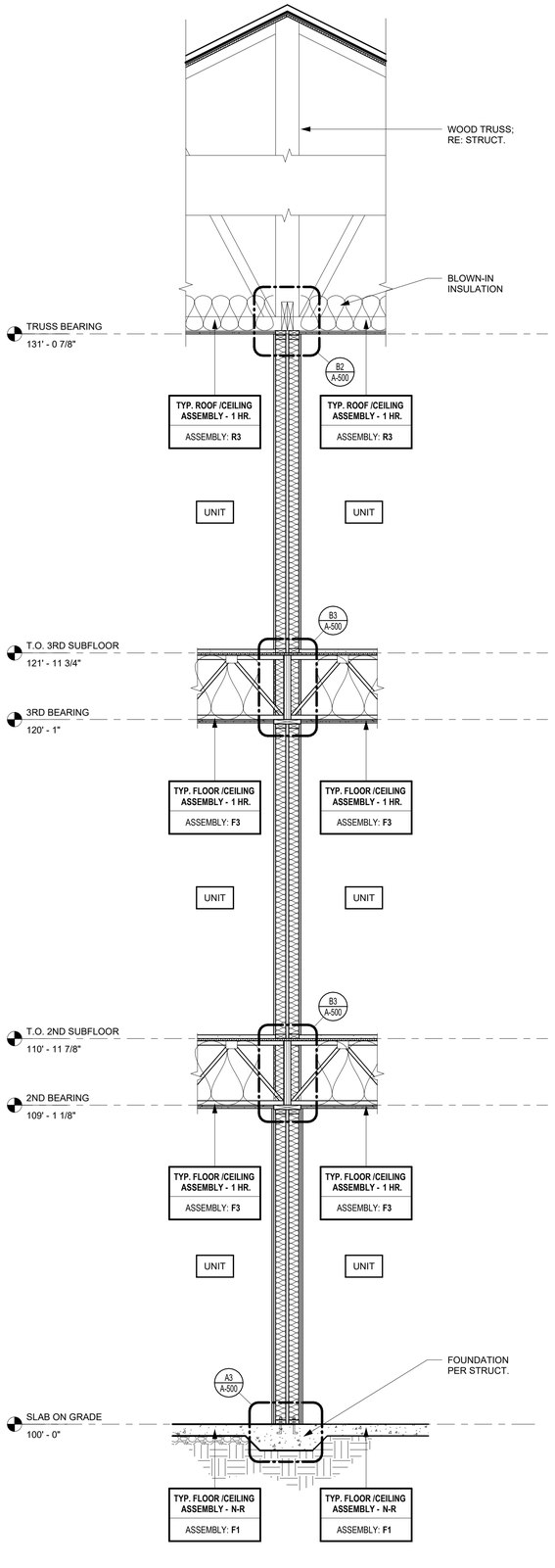
SHEET NUMBER:

A-300

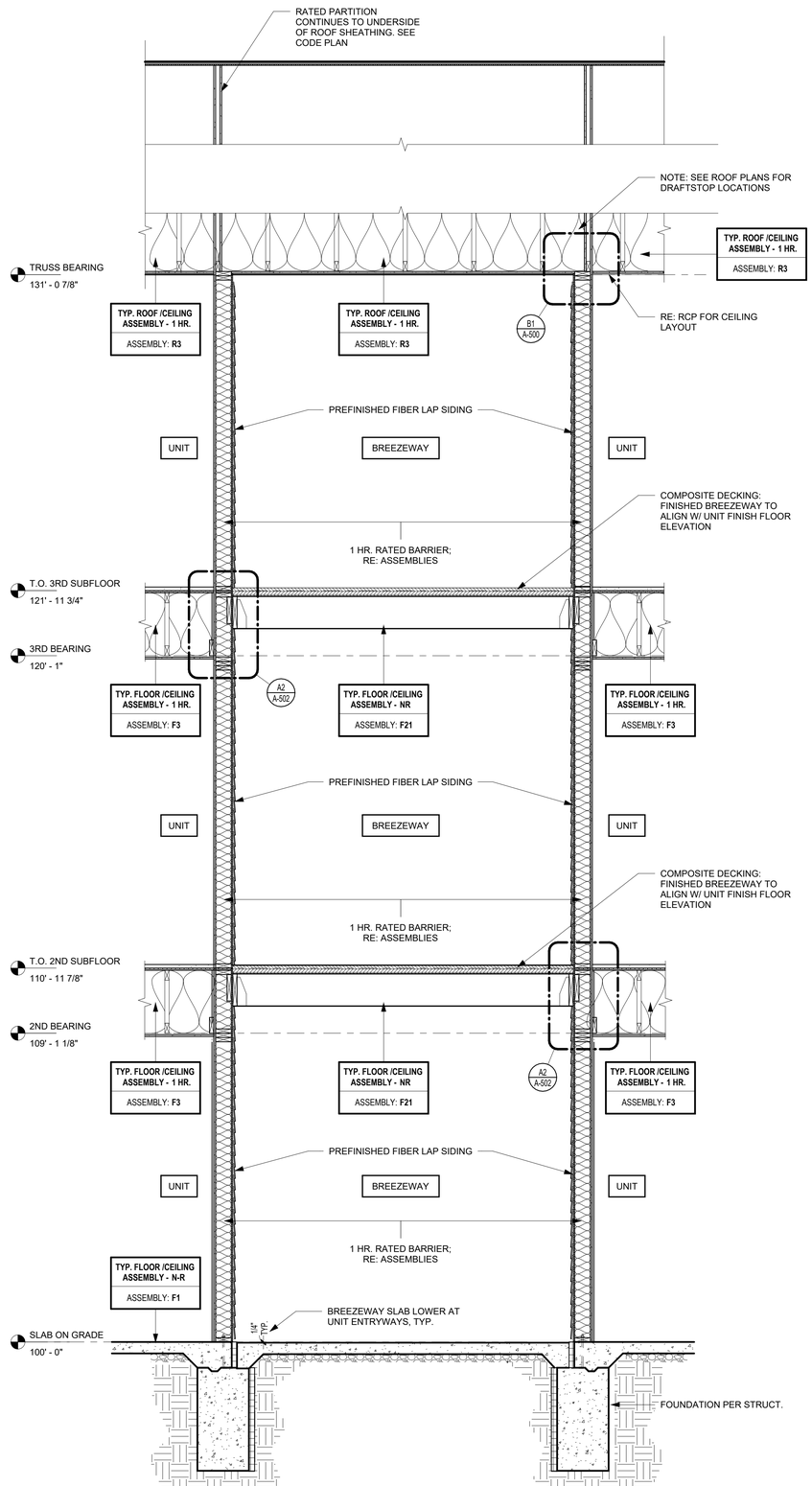
12/18/2025 10:20:34 AM
C:\Users\JonathanSchmidt\ROSEMANN & ROSEMANN\Documents\Revit Local Files\25144 - Johnson Betts_R24_rvtxxxC3A6T.rvt



A3 SECTION @ UNIT DEMISING WALL
1/2" = 1'-0"



A2 SECTION @ UNIT DEMISING WALL
1/2" = 1'-0"



A1 SECTION @ BREEZEWAY
1/2" = 1'-0"

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JOHNSON - BETTS MEADOWS

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SHEET TITLE
WALL SECTIONS - APARTMENT BUILDING

PROJECT NUMBER: 25144

SHEET NUMBER:

A-301

12/18/2025 10:00:36 AM
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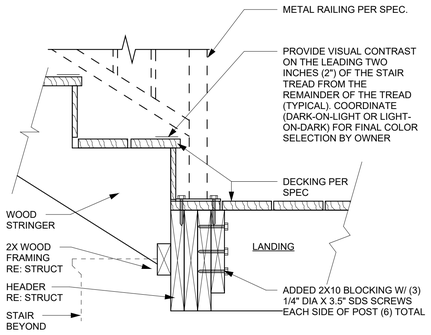
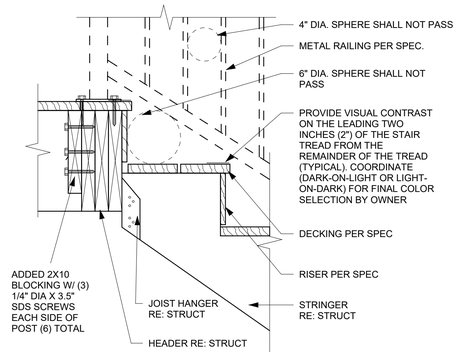
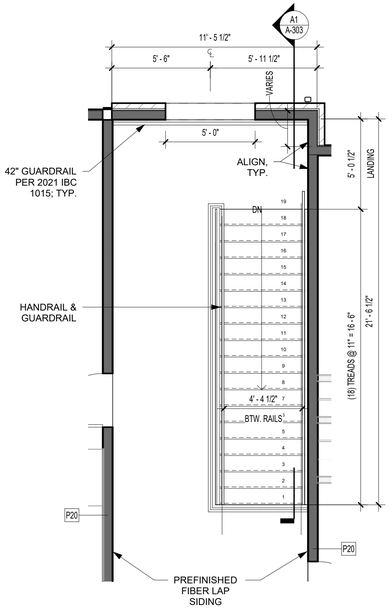


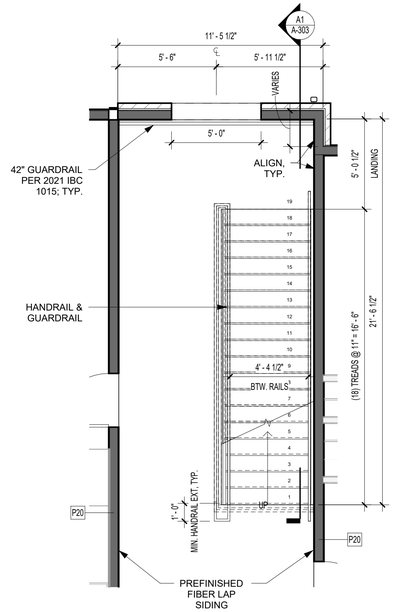
C4 STAIR - (WOOD) LANDING @ BASE
1 1/2" = 1'-0"



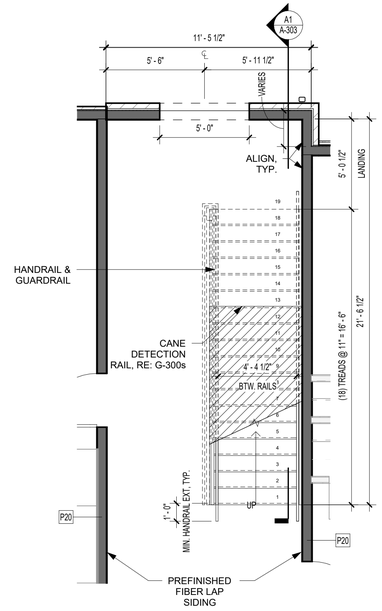
C3 STAIR - (WOOD) TOP @ FLOOR
1 1/2" = 1'-0"



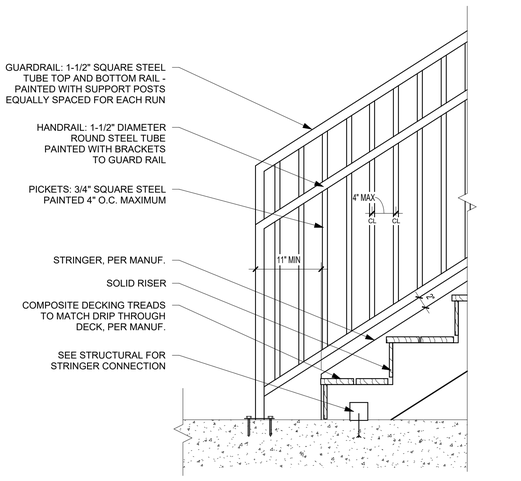
A4 3RD FLOOR STAIR PLAN
1/4" = 1'-0"



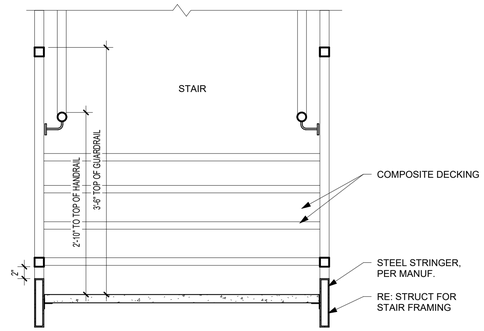
A3 2ND FLOOR STAIR PLAN
1/4" = 1'-0"



A2 1ST FLOOR STAIR PLAN
1/4" = 1'-0"



B1 STAIR DETAIL @ CONC. SLAB
1" = 1'-0"



A1 STAIR DETIAL, TYP.
1" = 1'-0"

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
STAIR PLANS & DETAILS

PROJECT NUMBER: 25144

SHEET NUMBER:

A-302

12/18/2025 10:05:52 AM
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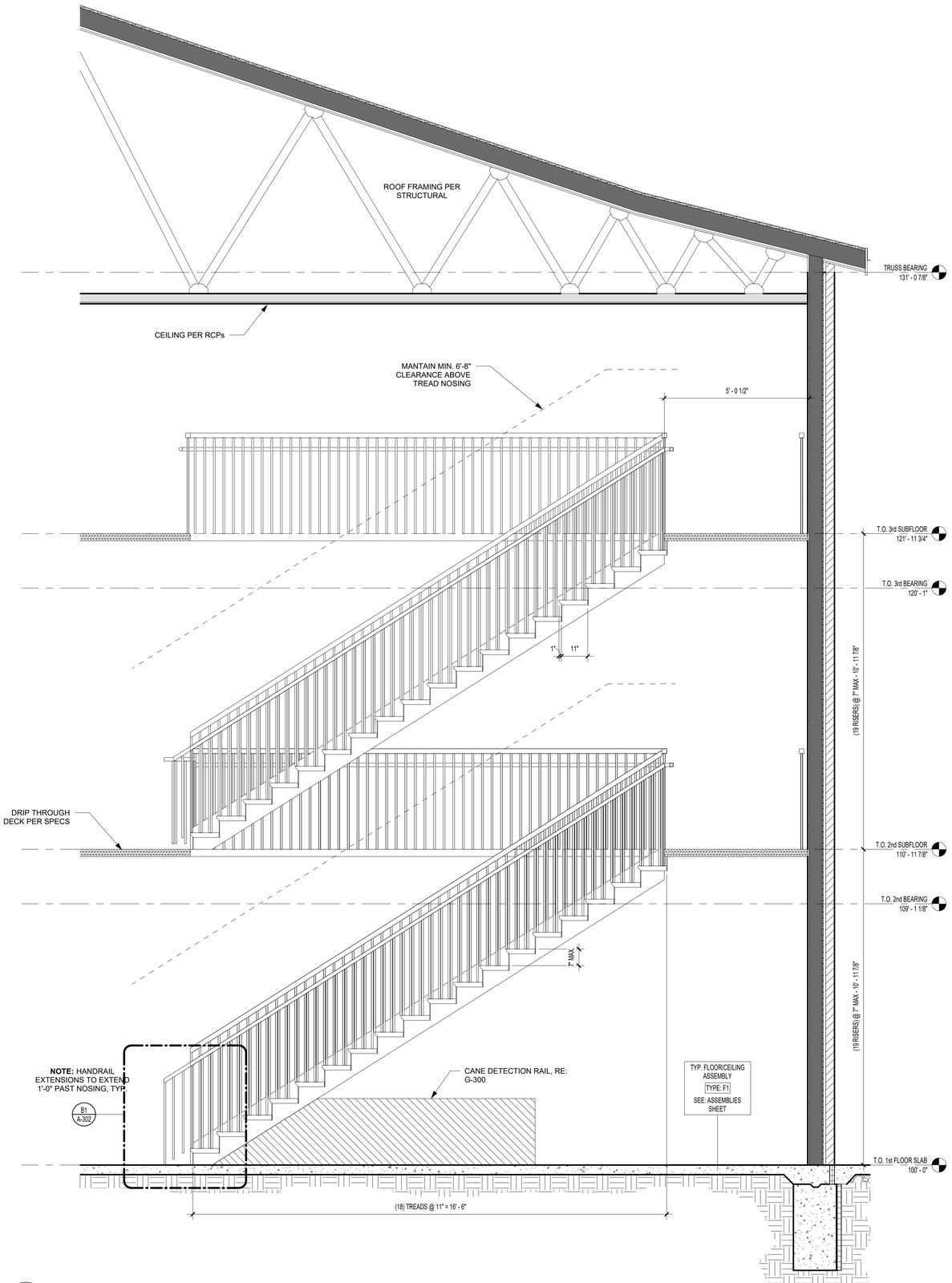

NOTE: FLOOR IDENTIFICATION SIGNS
- A SIGN SHALL BE PROVIDED AT EACH FLOOR LANDING IN EXIT ENCLOSURES DESIGNATING THE FLOOR LEVEL, THE TERMINUS OF THE TOP AND BOTTOM OF THE EXIT ENCLOSURE, AND THE IDENTIFICATION OF THE STAIR
- STORY NUMBER
- THE DIRECTION TO THE EXIT DISCHARGE
- LOCATED 5 FEET ABOVE THE FLOOR LANDING IN A POSITION THAT IS READILY VISIBLE WHEN THE DOORS ARE IN THE OPEN AND CLOSED POSITIONS
- FLOOR LEVEL IDENTIFICATION SIGNS IN TACTILE CHARACTERS COMPLYING WITH ICC A117.1 SHALL BE LOCATED AT EACH FLOOR LEVEL LANDING ADJACENT TO THE DOOR LEADING FROM THE ENCLOSURE INTO THE CORRIDOR TO IDENTIFY THE FLOOR LEVEL

NOTE:
STAIRWAY IDENTIFICATION SIGNS SHALL COMPLY WITH ALL OF THE FOLLOWING REQUIREMENTS:
1. THE SIGNS SHALL BE A MINIMUM OF 18 INCHES BY 12 INCHES
2. THE LETTERS DESIGNATING THE IDENTIFICATION OF THE STAIR ENCLOSURES SHALL BE A MINIMUM OF 1 1/2" IN HEIGHT
3. THE NUMBER DESIGNATING THE FLOOR LEVEL SHALL BE A MINIMUM OF 5 INCHES IN HEIGHT AND LOCATED IN THE CENTER OF THE SIGN
4. ALL OTHER LETTERING AND NUMBERS SHALL BE A MINIMUM OF 2 INCH IN HEIGHT
5. CHARACTERS AND THEIR BACKGROUND SHALL HAVE A NONGLARE FINISH. CHARACTERS SHALL CONTRAST WITH THEIR BACKGROUND, WITH EITHER LIGHT CHARACTERS ON

A1 STAIR SECTION
1/2" = 1'-0"

12/19/2025 10:05:58 AM
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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
STAIR SECTION

PROJECT NUMBER: 25144

SHEET NUMBER:

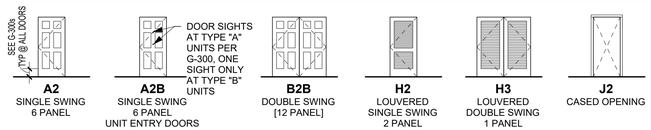
A-303

REFERENCE G-003 FOR GENERAL NOTES
REFERENCE A-600 FOR DOOR SCHEDULES

ROOM FINISH SCHEDULE - 1 BED TYPE A						
Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish	Comments
001	ENTRY	LVP-1	WB-1, PT-3	PT-2	PT-2	
003	LIVING	LVP-1	WB-1, PT-3	PT-2	PT-2	
004	KITCHEN	LVP-1	WB-1, PT-3	PT-2	PT-2	CABS. W/ PL COUNTER
005	MECH	LVP-1	--	--	--	
006	LAUNDRY	LVP-1	WB-1, PT-3	PT-2	PT-2	
008	STORAGE	LVP-1	WB-1, PT-3	PT-2	PT-2	
009	BATHROOM	SV-1	WB-1, PT-3	PT-2	PT-2	CABS. W/ PL COUNTER W/ SPLASH
010	BEDROOM	LVP-1	WB-1, PT-3	PT-2	PT-2	
011	CLOSET	LVP-1	WB-1, PT-3	PT-2	PT-2	

DOOR SCHEDULE - 1 BED TYPE A											
Mark	Width	Height	Thickness	Fire Rating (Minutes)	Door Type	Door Material	Door Finish	Frame Material	Frame Finish	Comments
001	3' - 0"	7' - 0"	1 3/8"	60	A2B	WD S.C.	PT-3	INSUL. MTL.	PT-3	THRESHOLD, WEATHER GASKET, SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE, HD DOOR KICKS AND CORNER GUARDS
005	3' - 0"	6' - 8"	1 3/8"		H2	WD H.C.	PT-3	WD	PT-3	
006	5' - 0"	6' - 8"	1 3/8"		H3	WD H.C.	PT-3	WD	PT-3	
008	5' - 0"	6' - 8"	1 3/8"		B2B	WD H.C.	PT-3	WD	PT-3	
009	3' - 0"	6' - 8"	1 3/8"		A2	WD H.C.	PT-3	WD	PT-3	
010	3' - 0"	6' - 8"	1 3/8"		A2	WD H.C.	PT-3	WD	PT-3	
011	3' - 0"	6' - 8"	1 3/8"		A2	WD H.C.	PT-3	WD	PT-3	

DOOR TYPES



A2 SINGLE SWING 6 PANEL

A2B SINGLE SWING 6 PANEL UNIT ENTRY DOORS

B2B DOUBLE SWING [12 PANEL]

H2 LOUVERED SINGLE SWING 2 PANEL

H3 LOUVERED DOUBLE SWING 1 PANEL

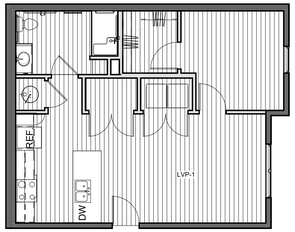
J2 CASED OPENING

PLAN LEGEND

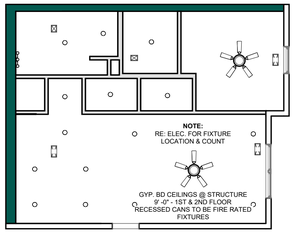
- PARTIAL HEIGHT PARTITION
- NON-RATED PARTITION; SEE ASSEMBLIES
- 1 HR RATED PARTITION; SEE ASSEMBLIES
- 2 HR RATED PARTITION; SEE ASSEMBLIES
- A1 — WINDOW TYPE; SEE WINDOW SCHEDULE
- 101 — DOOR TYPE; SEE DOOR SCHEDULE
- P7 — PARTITION TYPE; SEE ASSEMBLIES
- 6' - 0" — FRAMING DIMENSIONS
- 6' - 0" LAYOUT — LAYOUT LINE DIMENSION
- HEARING/VISIBILITY
- ADA/ACCESSIBLE UNITS

UNIT FINISH LEGEND

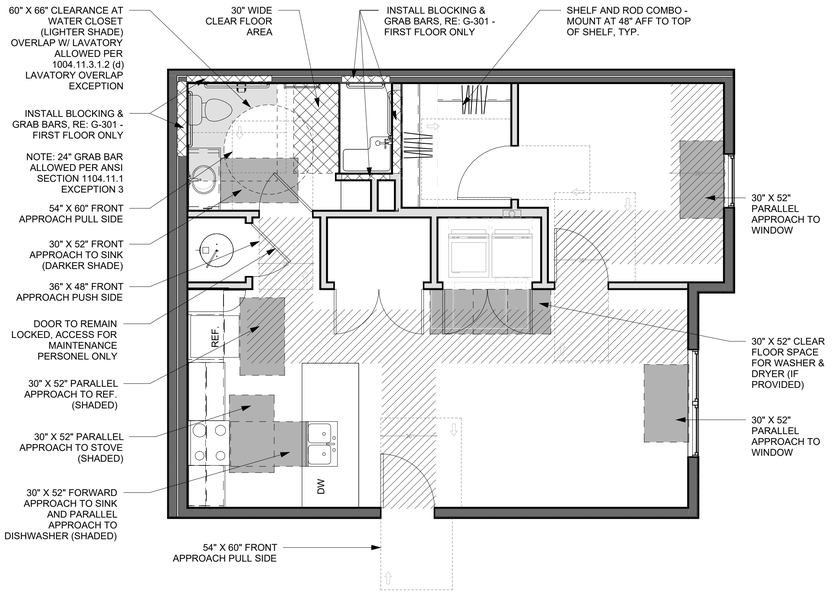
- SV-1 SHEET VINYL
- LVP-1 VINYL PLANK



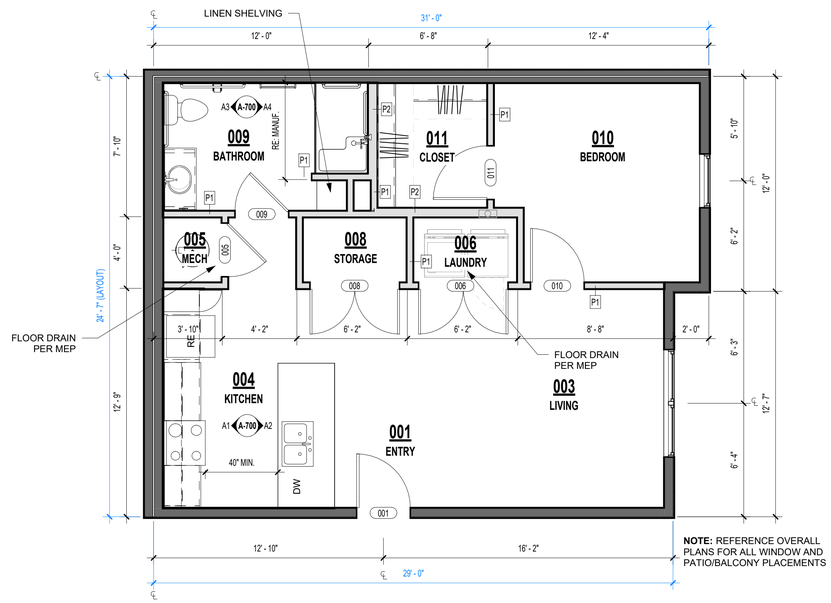
B3 1 BEDROOM UNIT - TYPE A - FINISH FLOOR PLAN
1/8" = 1'-0"



A3 1 BEDROOM UNIT - TYPE A - REFLECTED CEILING PLAN
1/8" = 1'-0"



A2 1 BEDROOM UNIT - TYPE A - CLEAR SPACE PLAN
1/4" = 1'-0"



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

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
1 BEDROOM UNIT PLAN - TYPE A

PROJECT NUMBER: 25144

SHEET NUMBER:

A-400

12/18/2025 12:21:25 AM
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REFERENCE G-003 FOR GENERAL NOTES
REFERENCE A-600 FOR DOOR SCHEDULES

PRINTS ISSUED
12/18/25 - 95% CDs

REVISIONS:

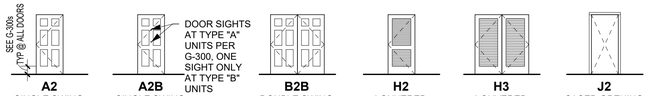
ROOM FINISH SCHEDULE - 1 BED TYPE B

Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish	Comments
001	ENTRY	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	CABS. W/ PLCOUNTER
005	MECH	LVP-1	--	--	--	
006	LAUNDRY	LVP-1	WB-1, PT-3	PT-1	PT-2	
008	STORAGE	LVP-1	WB-1, PT-3	PT-1	PT-2	
009	BATHROOM	SV-1	WB-1, PT-3	PT-1	PT-2	CABS. W/ PL COUNTER W/ SPLASH
010	BEDROOM	CPT-2	WB-1, PT-3	PT-1	PT-2	
011	CLOSET	CPT-2	WB-1, PT-3	PT-1	PT-2	

DOOR SCHEDULE - 1 BED TYPE B

Mark	Width	Height	Thickness	Fire Rating (Minutes)	Door Type	Door Material	Door Finish	Frame Material	Frame Finish	Comments
001	3' - 0"	7' - 0"	1 3/8"	60	A2B	WD S.C.	PT-3	INSUL. MTL.	PT-3	THRESHOLD, WEATHER GASKET, SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE, HD DOOR KICKS AND CORNER GUARDS
005	3' - 0"	6' - 8"	1 3/8"		H2	WD H.C.	PT-3	WD	PT-3	
006	5' - 0"	6' - 8"	1 3/8"		H3	WD H.C.	PT-3	WD	PT-3	
008	5' - 0"	6' - 8"	1 3/8"		B2B	WD H.C.	PT-3	WD	PT-3	
009	3' - 0"	6' - 8"	1 3/8"		A2	WD H.C.	PT-3	WD	PT-3	
010	3' - 0"	6' - 8"	1 3/8"		A2	WD H.C.	PT-3	WD	PT-3	
011	3' - 0"	6' - 8"	1 3/8"		A2	WD H.C.	PT-3	WD	PT-3	

DOOR TYPES



A2 SINGLE SWING 6 PANEL

A2B SINGLE SWING 6 PANEL UNIT ENTRY DOORS

B2B DOUBLE SWING [12 PANEL]

H2 LOUVERED SINGLE SWING 2 PANEL

H3 LOUVERED DOUBLE SWING 1 PANEL

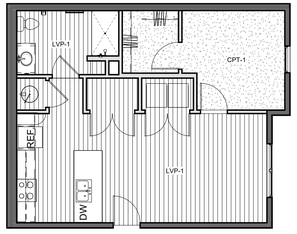
J2 CASED OPENING

PLAN LEGEND

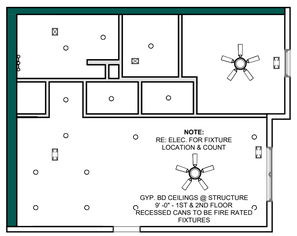
- PARTIAL HEIGHT PARTITION
- NON-RATED PARTITION; SEE ASSEMBLIES
- 1 HR RATED PARTITION; SEE ASSEMBLIES
- 2 HR RATED PARTITION; SEE ASSEMBLIES
- A1 — WINDOW TYPE; SEE WINDOW SCHEDULE
- 101 — DOOR TYPE; SEE DOOR SCHEDULE
- P7 — PARTITION TYPE; SEE ASSEMBLIES
- 6' - 0" — FRAMING DIMENSIONS
- 6' - 0" LAYOUT — LAYOUT LINE DIMENSION
- HEARING/VISIBILITY
- ADA/ACCESSIBLE UNITS

UNIT FINISH LEGEND

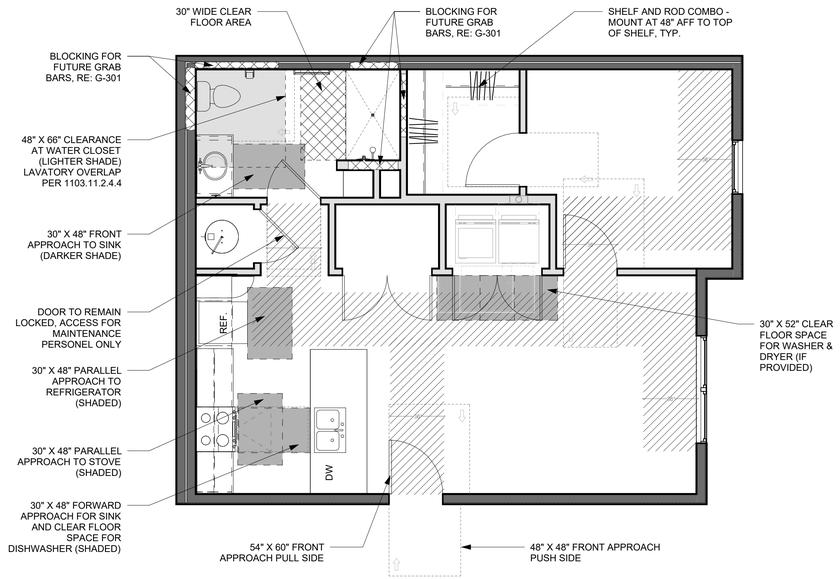
- SV-1 SHEET VINYL
- LVP-1 VINYL PLANK
- CPT-1 CARPET



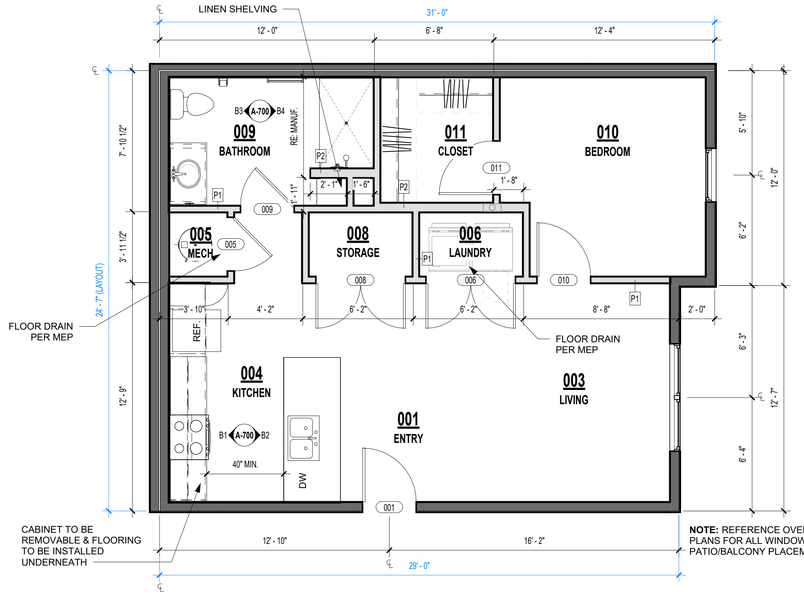
B3 1 BEDROOM UNIT - TYPE B - FINISH FLOOR PLAN
1/8" = 1'-0"



A3 1 BEDROOM UNIT - TYPE B - REFLECTED CEILING PLAN
1/8" = 1'-0"



A2 1 BEDROOM UNIT - TYPE B - CLEAR SPACE PLAN
1/4" = 1'-0"



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

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
1 BEDROOM UNIT PLAN - TYPE B

PROJECT NUMBER: 25144

SHEET NUMBER:

A-401

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REFERENCE G-003 FOR GENERAL NOTES
REFERENCE A-600 FOR DOOR SCHEDULES

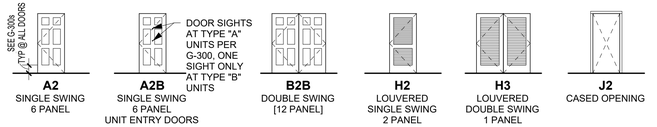
ROOM FINISH SCHEDULE - 1 BED TYPE B - ALTERNATE

Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish	Comments
001	ENTRY	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	CABS. W/ PL COUNTER
005	MECH	LVP-1	--	--	--	
006	LAUNDRY	LVP-1	WB-1, PT-3	PT-1	PT-2	
008	STORAGE	LVP-1	WB-1, PT-3	PT-1	PT-2	
009	BATHROOM	SV-1	WB-1, PT-3	PT-1	PT-2	CABS. W/ PL COUNTER W/ SPLASH
010	BEDROOM	CPT-2	WB-1, PT-3	PT-1	PT-2	
011	CLOSET	CPT-2	WB-1, PT-3	PT-1	PT-2	

DOOR SCHEDULE - 1 BED TYPE B - ALTERNATE

Mark	Width	Height	Thickness	Fire Rating (Minutes)	Door Type	Door Material	Door Finish	Frame Material	Frame Finish	Comments
001	3' - 0"	7' - 0"	1 3/8"	60	A2B	WD S.C.	PT-3	INSUL. MTL.	PT-3	THRESHOLD, WEATHER GASKET, SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE, HD DOOR KICKS AND CORNER GUARDS
005	3' - 0"	6' - 8"	1 3/8"		H2	WD H.C.	PT-3	WD	PT-3	
006	5' - 0"	6' - 8"	1 3/8"		H3	WD H.C.	PT-3	WD	PT-3	
008	5' - 0"	6' - 8"	1 3/8"		B2B	WD H.C.	PT-3	WD	PT-3	
009	3' - 0"	6' - 8"	1 3/8"		A2	WD H.C.	PT-3	WD	PT-3	
010	3' - 0"	6' - 8"	1 3/8"		A2	WD H.C.	PT-3	WD	PT-3	
011	3' - 0"	6' - 8"	1 3/8"		A2	WD H.C.	PT-3	WD	PT-3	

DOOR TYPES



A2 SINGLE SWING 6 PANEL

A2B SINGLE SWING 6 PANEL UNIT ENTRY DOORS

B2B DOUBLE SWING [12 PANEL]

H2 LOUVERED SINGLE SWING 2 PANEL

H3 LOUVERED DOUBLE SWING 1 PANEL

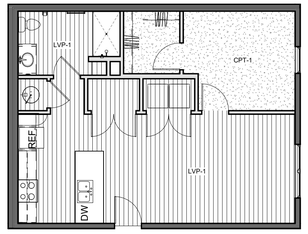
J2 CASED OPENING

PLAN LEGEND

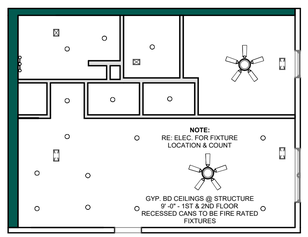
- PARTIAL HEIGHT PARTITION
- NON-RATED PARTITION; SEE ASSEMBLIES
- 1 HR RATED PARTITION; SEE ASSEMBLIES
- 2 HR RATED PARTITION; SEE ASSEMBLIES
- A1 — WINDOW TYPE; SEE WINDOW SCHEDULE
- 101 — DOOR TYPE; SEE DOOR SCHEDULE
- P7 — PARTITION TYPE; SEE ASSEMBLIES
- 6' - 0" — FRAMING DIMENSIONS
- 6' - 0" LAYOUT — LAYOUT LINE DIMENSION
- HEARING/VISIBILITY
- ADA/ACCESSIBLE UNITS

UNIT FINISH LEGEND

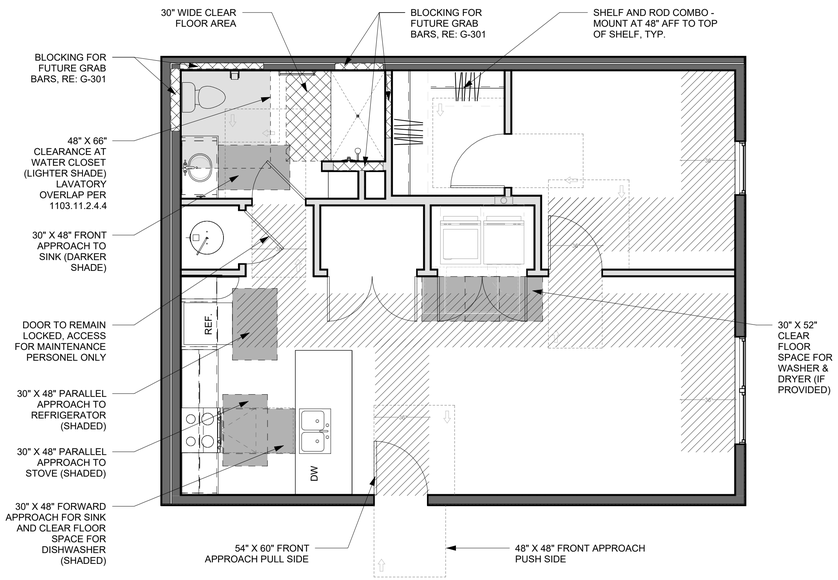
- SV-1 SHEET VINYL
- LVP-1 VINYL PLANK
- CPT-1 CARPET



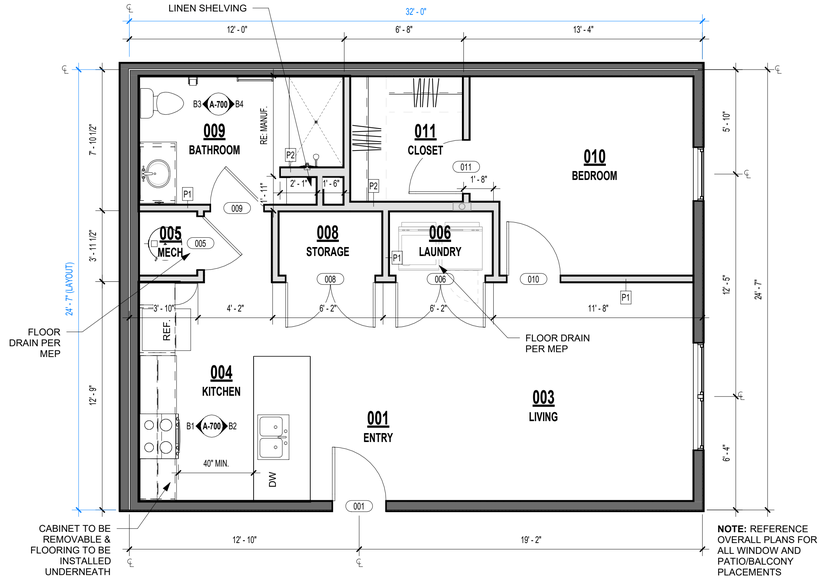
B3 1 BEDROOM UNIT ALTERNATE - TYPE B - FINISH FLOOR PLAN
1/8" = 1'-0"



A3 1 BEDROOM UNIT ALTERNATE - TYPE B - REFLECTED CEILING PLAN
1/8" = 1'-0"



A2 1 BEDROOM UNIT ALTERNATE - TYPE B - CLEAR SPACE PLAN
1/4" = 1'-0"



A1 1 BEDROOM UNIT ALTERNATE - TYPE B - FLOOR PLAN
1/4" = 1'-0"

PRINTS ISSUED
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REVISIONS:

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
1 BEDROOM UNIT PLAN ALTERNATE - TYPE B

PROJECT NUMBER: 25144

SHEET NUMBER:

A-402

12/18/2025 10:20:18 AM
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REFERENCE G-003 FOR GENERAL NOTES
REFERENCE A-600 FOR DOOR SCHEDULES

ROOM FINISH SCHEDULE - 2 BED TYPE A

Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish	Comments
001	ENTRY	LVP-1	WB-1, PT-1	PT-1	PT-2	
002	STORAGE	LVP-1	WB-1, PT-1	PT-1	PT-2	
003	LIVING	LVP-1	WB-1, PT-1	PT-1	PT-2	
004	KITCHEN	LVP-1	WB-1, PT-1	PT-1	PT-2	CABS. W/ PL-1 COUNTER W/ SPLASH
005	MECH	--	--	--	--	
006	LAUNDRY	SV-1	WB-1, PT-1	PT-1	PT-2	
008	BATH	SV-1	WB-1, PT-1	PT-1	PT-2	CABS. W/ PL-1 COUNTER W/ SPLASH
009	BEDROOM	LVP-1	WB-1, PT-1	PT-1	PT-2	
010	CLOSET	LVP-1	WB-1, PT-1	PT-1	PT-2	
012	BEDROOM	LVP-1	WB-1, PT-1	PT-1	PT-2	
013	CLOSET	LVP-1	WB-1, PT-1	PT-1	PT-2	

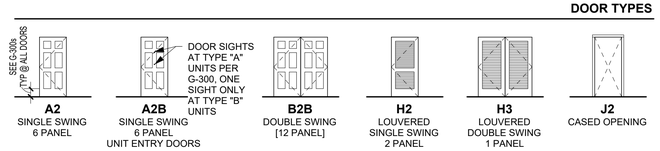
DOOR SCHEDULE - 2 BED TYPE A

Mark	Width	Height	Thickness	Fire Rating (Minutes)	Door Type	Door Material	Door Finish	Frame Material	Frame Finish	Comments
001	3' - 0"	7' - 0"	1 3/4"	60	A2B	INSUL. MTL.	PT-3	WD	PT-3	THRESHOLD, WEATHER GASKET, SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE, HD DOOR KICKS AND CORNER GUARDS
002	4' - 0"	6' - 8"	1 3/4"		B2B	WD H.C.	PT-3	WD	PT-3	
005	3' - 0"	6' - 8"	1 3/4"		H2	WD H.C.	PT-3	WD	PT-3	
006	5' - 0"	6' - 8"	1 3/4"		J2	WD H.C.	PT-3	WD	PT-3	
008	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
009	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
010	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
012	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
013	4' - 0"	6' - 8"	1 3/4"		B2B	WD H.C.	PT-3	WD	PT-3	

PLAN LEGEND

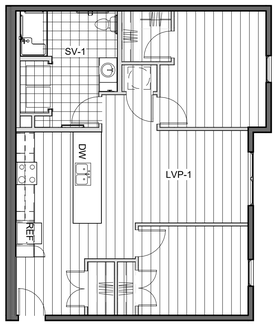
- PARTIAL HEIGHT PARTITION
- NON-RATED PARTITION; SEE ASSEMBLIES
- 1 HR RATED PARTITION; SEE ASSEMBLIES
- 2 HR RATED PARTITION; SEE ASSEMBLIES
- A1 — WINDOW TYPE; SEE WINDOW SCHEDULE
- 101 — DOOR TYPE; SEE DOOR SCHEDULE
- P7 — PARTITION TYPE; SEE ASSEMBLIES
- 6' - 0" — FRAMING DIMENSIONS
- 6' - 0" LAYOUT — LAYOUT LINE DIMENSION
- HEARING/VISIBILITY
- ADA/ACCESSIBLE UNITS

DOOR TYPES

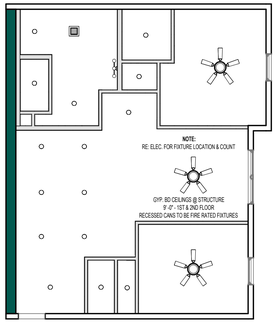


UNIT FINISH LEGEND

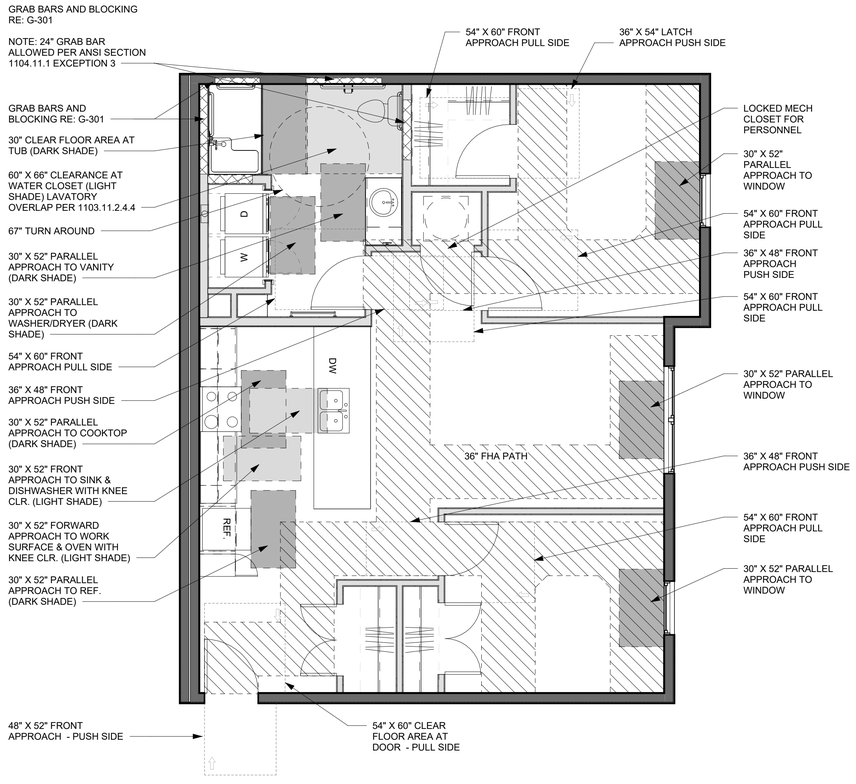
- SV-1 SHEET VINYL
- LVP-1 VINYL PLANK



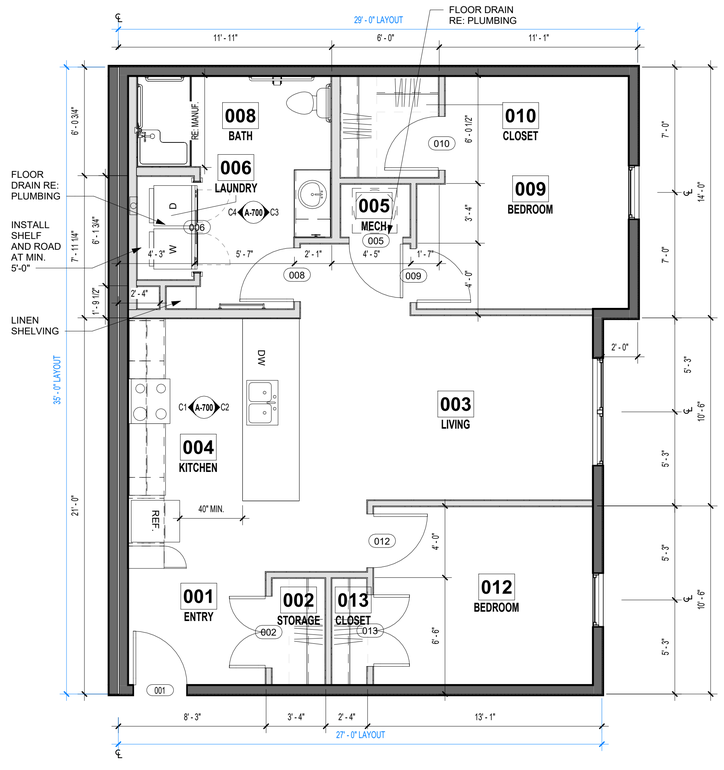
B3 2 BEDROOM UNIT - TYPE A - FINISH FLOOR PLAN
1/8" = 1'-0"



A3 2 BEDROOM UNIT - TYPE A - REFLECTED CEILING PLAN
1/8" = 1'-0"



A2 2 BEDROOM UNIT - TYPE A - CLEAR SPACE PLAN
1/4" = 1'-0"



A1 2 BEDROOM UNIT - TYPE A - FLOOR PLAN
1/4" = 1'-0"

PRINTS ISSUED
12/18/25 - 95% CDs

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
2 BEDROOM UNIT PLAN - TYPE A

PROJECT NUMBER: 25144

SHEET NUMBER:

A-403

2/19/2026 10:53:47 AM
C:\Revit Local Files\25144 - Johnson Betts_RSA_rvtcentr34457.rvt

REFERENCE G-003 FOR GENERAL NOTES
REFERENCE A-600 FOR DOOR SCHEDULES

ROOM FINISH SCHEDULE - 2 BED TYPE B

Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish	Comments
001	ENTRY	LVP-1	WB-1, PT-1	PT-1	PT-2	
002	STORAGE	LVP-1	WB-1, PT-1	PT-1	PT-2	
003	LIVING	LVP-1	WB-1, PT-1	PT-1	PT-2	
004	KITCHEN	LVP-1	WB-1, PT-1	PT-1	PT-2	CABS. W/ PL-1 COUNTER W/ SPLASH
005	MECH	--	--	--	--	
006	LAUNDRY	SV-1	WB-1, PT-1	PT-1	PT-2	
008	BATH	SV-1	WB-1, PT-1	PT-1	PT-2	CABS. W/ PL-1 COUNTER W/ SPLASH
009	BEDROOM	LVP-1	WB-1, PT-1	PT-1	PT-2	
010	CLOSET	LVP-1	WB-1, PT-1	PT-1	PT-2	
012	BEDROOM	LVP-1	WB-1, PT-1	PT-1	PT-2	
013	CLOSET	LVP-1	WB-1, PT-1	PT-1	PT-2	

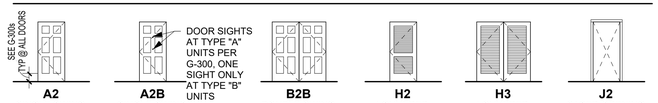
DOOR SCHEDULE - 2 BED TYPE B

Mark	Width	Height	Thickness	Fire Rating (Minutes)	Door Type	Door Material	Door Finish	Frame Material	Frame Finish	Comments
001	3' - 0"	7' - 0"	1 3/4"	60	A2B	WD S.C.	PT-3	INSUL. MTL.	PT-3	THRESHOLD, WEATHER GASKET, SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE, HD DOOR KICKS AND CORNER GUARDS
002	4' - 0"	6' - 8"	1 3/4"		B2B	WD H.C.	PT-3	WD	PT-3	
005	3' - 0"	6' - 8"	1 3/4"		H2	WD H.C.	PT-3	WD	PT-3	
006	5' - 0"	6' - 8"	1 3/4"		J2	WD H.C.	PT-3	WD	PT-3	
008	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
009	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
010	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
012	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
013	4' - 0"	6' - 8"	1 3/4"		B2B	WD H.C.	PT-3	WD	PT-3	

PLAN LEGEND

- PARTIAL HEIGHT PARTITION
- NON-RATED PARTITION; SEE ASSEMBLIES
- 1 HR RATED PARTITION; SEE ASSEMBLIES
- 2 HR RATED PARTITION; SEE ASSEMBLIES
- A1 — WINDOW TYPE; SEE WINDOW SCHEDULE
- 101 — DOOR TYPE; SEE DOOR SCHEDULE
- P7 — PARTITION TYPE; SEE ASSEMBLIES
- 6' - 0" — FRAMING DIMENSIONS
- 6' - 0" LAYOUT — LAYOUT LINE DIMENSION
- HEARING/VISIBILITY
- ADA/ACCESSIBLE UNITS

DOOR TYPES



A2 SINGLE SWING 6 PANEL

A2B SINGLE SWING 6 PANEL UNIT ENTRY DOORS

B2B DOUBLE SWING [12 PANEL]

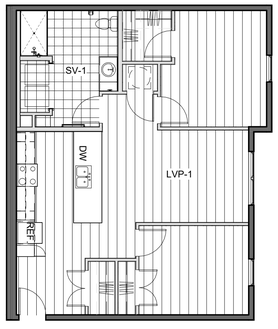
H2 LOUVERED SINGLE SWING 2 PANEL

H3 LOUVERED DOUBLE SWING 1 PANEL

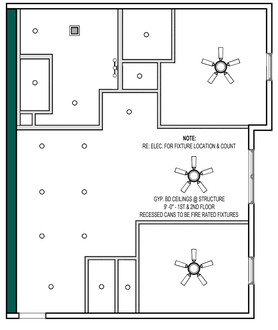
J2 CASED OPENING

UNIT FINISH LEGEND

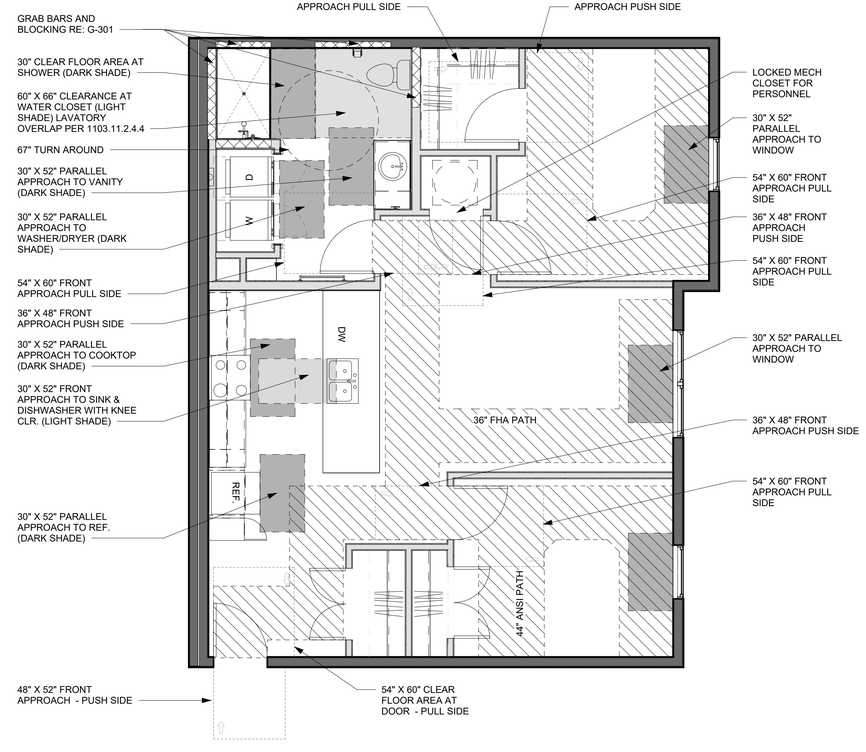
- SV-1 SHEET VINYL
- LVP-1 VINYL PLANK
- CPT-1 CARPET



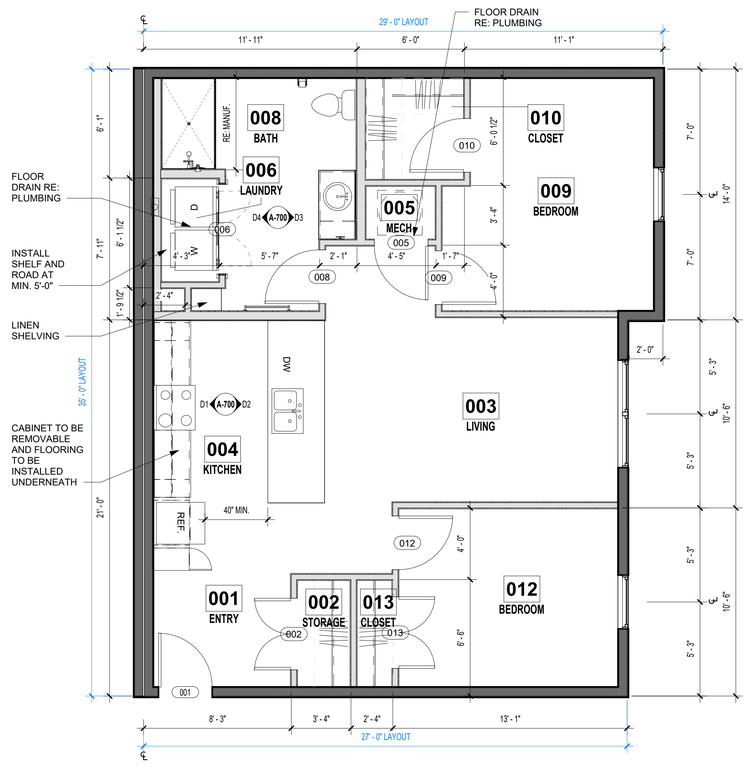
B3 2 BEDROOM UNIT - TYPE B - FINISH FLOOR PLAN
1/8" = 1'-0"



A3 2 BEDROOM UNIT - TYPE B - REFLECTED CEILING PLAN
1/8" = 1'-0"



A2 2 BEDROOM UNIT - TYPE B - CLEAR SPACE PLAN
1/4" = 1'-0"



A1 2 BEDROOM UNIT - TYPE B - FLOOR PLAN
1/4" = 1'-0"

PRINTS ISSUED
12/18/25 - 95% CDs

REVISIONS:

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
2 BEDROOM UNIT PLAN - TYPE B

PROJECT NUMBER: 25144

SHEET NUMBER:

A-404

12/18/2025 10:03:14 AM
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REFERENCE G-003 FOR GENERAL NOTES
REFERENCE A-600 FOR DOOR SCHEDULES

ROOM FINISH SCHEDULE - 2 BED TYPE B - ALTERNATE

Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish	Comments
001	ENTRY	LVP-1	WB-1, PT-1	PT-1	PT-2	
002	STORAGE	LVP-1	WB-1, PT-1	PT-1	PT-2	
003	LIVING	LVP-1	WB-1, PT-1	PT-1	PT-2	
004	KITCHEN	LVP-1	WB-1, PT-1	PT-1	PT-2	CABS. W/ PL-1 COUNTER W/ SPLASH
005	MECH	--	--	--	--	
006	LAUNDRY	SV-1	WB-1, PT-1	PT-1	PT-2	
008	BATH	SV-1	WB-1, PT-1	PT-1	PT-2	CABS. W/ PL-1 COUNTER W/ SPLASH
009	BEDROOM	LVP-1	WB-1, PT-1	PT-1	PT-2	
010	CLOSET	LVP-1	WB-1, PT-1	PT-1	PT-2	
012	BEDROOM	LVP-1	WB-1, PT-1	PT-1	PT-2	
013	CLOSET	LVP-1	WB-1, PT-1	PT-1	PT-2	

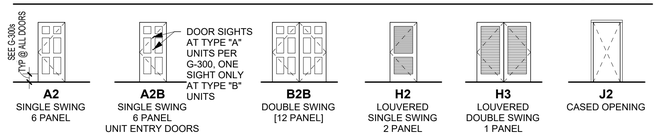
DOOR SCHEDULE - 2 BED TYPE B - ALTERNATE

Mark	Width	Height	Thickness	Fire Rating (Minutes)	Door Type	Door Material	Door Finish	Frame Material	Frame Finish	Comments
001	3' - 0"	7' - 0"	1 3/4"	60	A2B	WD S.C.	PT-3	INSUL. MTL.	PT-3	THRESHOLD, WEATHER GASKET, SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE, HD DOOR KICKS AND CORNER GUARDS
002	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
005	3' - 0"	6' - 8"	1 3/4"		H2	WD H.C.	PT-3	WD	PT-3	
006	5' - 0"	6' - 8"	1 3/4"		J2	WD H.C.	PT-3	WD	PT-3	
008	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
009	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
010	4' - 0"	6' - 8"	1 3/4"		B2B	WD H.C.	PT-3	WD	PT-3	
012	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
013	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	

PLAN LEGEND

- PARTIAL HEIGHT PARTITION
- NON-RATED PARTITION; SEE ASSEMBLIES
- 1 HR RATED PARTITION; SEE ASSEMBLIES
- 2 HR RATED PARTITION; SEE ASSEMBLIES
- A1 — WINDOW TYPE; SEE WINDOW SCHEDULE
- 101 — DOOR TYPE; SEE DOOR SCHEDULE
- P7 — PARTITION TYPE; SEE ASSEMBLIES
- 6' - 0" — FRAMING DIMENSIONS
- 6' - 0" LAYOUT — LAYOUT LINE DIMENSION
- HEARING/VISIBILITY
- ADA/ACCESSIBLE UNITS

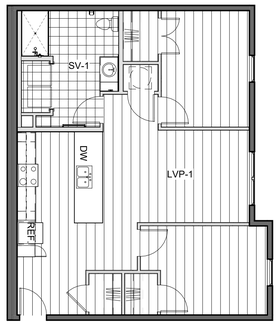
DOOR TYPES



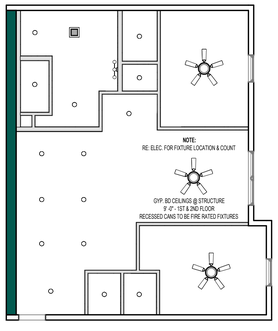
A2 SINGLE SWING 6 PANEL
A2B SINGLE SWING 6 PANEL UNIT ENTRY DOORS
B2B DOUBLE SWING [12 PANEL]
H2 LOUVERED SINGLE SWING 2 PANEL
H3 LOUVERED DOUBLE SWING 1 PANEL
J2 CASED OPENING

UNIT FINISH LEGEND

- SV-1 SHEET VINYL
- LVP-1 VINYL PLANK
- CPT-1 CARPET

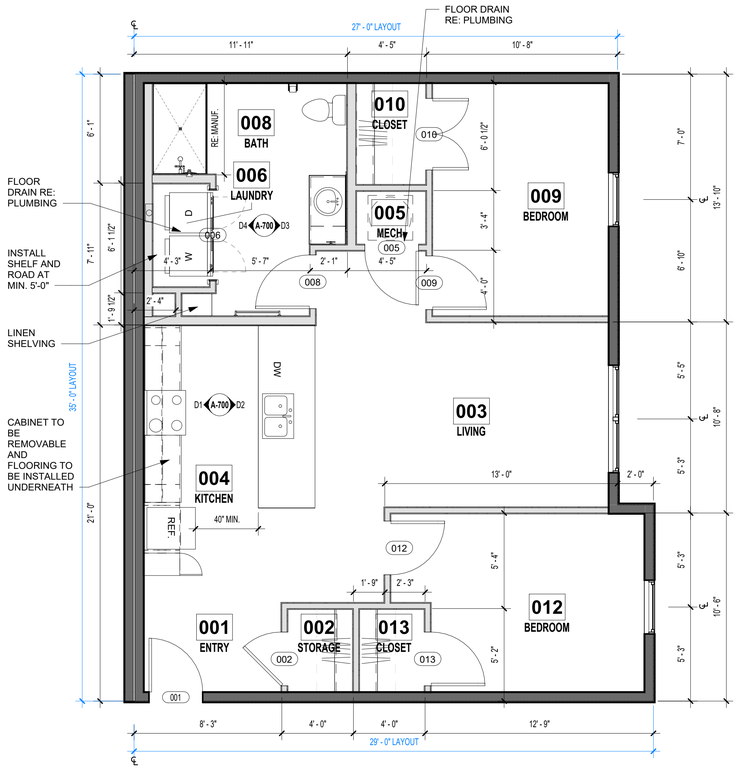


B3 2 BEDROOM UNIT ALTERNATE - TYPE B - FINISH FLOOR PLAN
1/8" = 1'-0"



A3 2 BEDROOM UNIT ALTERNATE - TYPE B - REFLECTED CEILING PLAN
1/8" = 1'-0"

A2 2 BEDROOM UNIT ALTERNATE - TYPE B - CLEAR SPACE PLAN
1/4" = 1'-0"



A1 2 BEDROOM UNIT ALTERNATE - TYPE B - FLOOR PLAN
1/4" = 1'-0"

PRINTS ISSUED
12/18/25 - 95% CDs

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CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
2 BEDROOM UNIT PLAN
ALTERNATE - TYPE B

PROJECT NUMBER: 25144

SHEET NUMBER:

A-405

12/18/2025 10:53:38 AM
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REFERENCE G-003 FOR GENERAL NOTES
REFERENCE A-600 FOR DOOR SCHEDULES

ROOM FINISH SCHEDULE - 3 BED TYPE A

Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish	Comments
001	ENTRY	LVP-1	WB-1, PT-3	PT-1	PT-2	
002	STORAGE	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	CABS. W/ PL-1 COUNTER W/ SPLASH
005	MECH.	--	--	--	--	
006	W/D	SV-1	WB-1, PT-3	PT-1	PT-2	
007	HALL	LVP-1	WB-1, PT-3	PT-1	PT-2	
008	BATH 1	SV-1	WB-1, PT-3	PT-1	PT-2	CABS. W/ PL-1 COUNTER W/ SPLASH
009	BED 1	LVP-1	WB-1, PT-3	PT-1	PT-2	
010	CL	LVP-1	WB-1, PT-3	PT-1	PT-2	
011	BATH 2	SV-1	WB-1, PT-3	PT-1	PT-2	CABS. W/ PL-1 COUNTER W/ SPLASH
012	BED 2	LVP-1	WB-1, PT-3	PT-1	PT-2	
013	CL	LVP-1	WB-1, PT-3	PT-1	PT-2	
014	BED 3	LVP-1	WB-1, PT-3	PT-1	PT-2	
015	CL	LVP-1	WB-1, PT-3	PT-1	PT-2	
018	LINEN					

DOOR SCHEDULE - 3 BED TYPE A

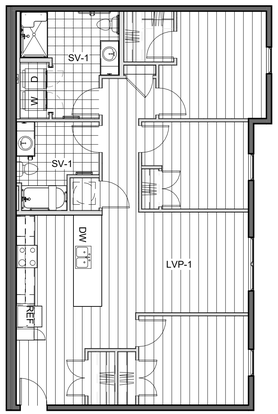
Mark	Width	Height	Thickness	Fire Rating (Minutes)	Door Type	Door Material	Door Finish	Frame Material	Frame Finish	Comments
001	3' - 0"	7' - 0"	1 3/4"	60	A2B	WD S.C.	PT-3	INSUL. MTL.	PT-3	THRESHOLD, WEATHER GASKET, SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE, HD DOOR KICKS AND CORNER GUARDS
002	4' - 0"	6' - 8"	1 3/4"		B2B	WD H.C.	PT-3	WD	PT-3	
005	3' - 0"	6' - 8"	1 3/4"		H2	WD H.C.	PT-3	WD	PT-3	
006	5' - 0"	6' - 8"	1 3/4"		J2	WD H.C.	PT-3	WD	PT-3	
008	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
009	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
010	4' - 0"	6' - 8"	1 3/4"		B2B	WD H.C.	PT-3	WD	PT-3	
011	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
012	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
013	4' - 0"	6' - 8"	1 3/4"		B2B	WD H.C.	PT-3	WD	PT-3	
014	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
015	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
018	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	

PLAN LEGEND

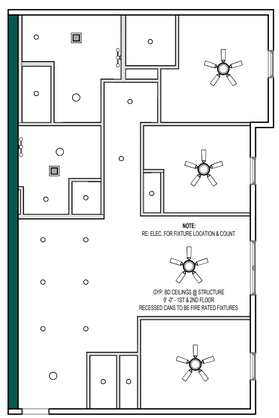
- PARTIAL HEIGHT PARTITION
- NON-RATED PARTITION; SEE ASSEMBLIES
- 1 HR RATED PARTITION; SEE ASSEMBLIES
- 2 HR RATED PARTITION; SEE ASSEMBLIES
- A1 — WINDOW TYPE; SEE WINDOW SCHEDULE
- 101 — DOOR TYPE; SEE DOOR SCHEDULE
- P7 — PARTITION TYPE; SEE ASSEMBLIES
- 6' - 0" — FRAMING DIMENSIONS
- 6' - 0" LAYOUT — LAYOUT LINE DIMENSION
- HEARING/VISIBILITY
- ADA/ACCESSIBLE UNITS

UNIT FINISH LEGEND

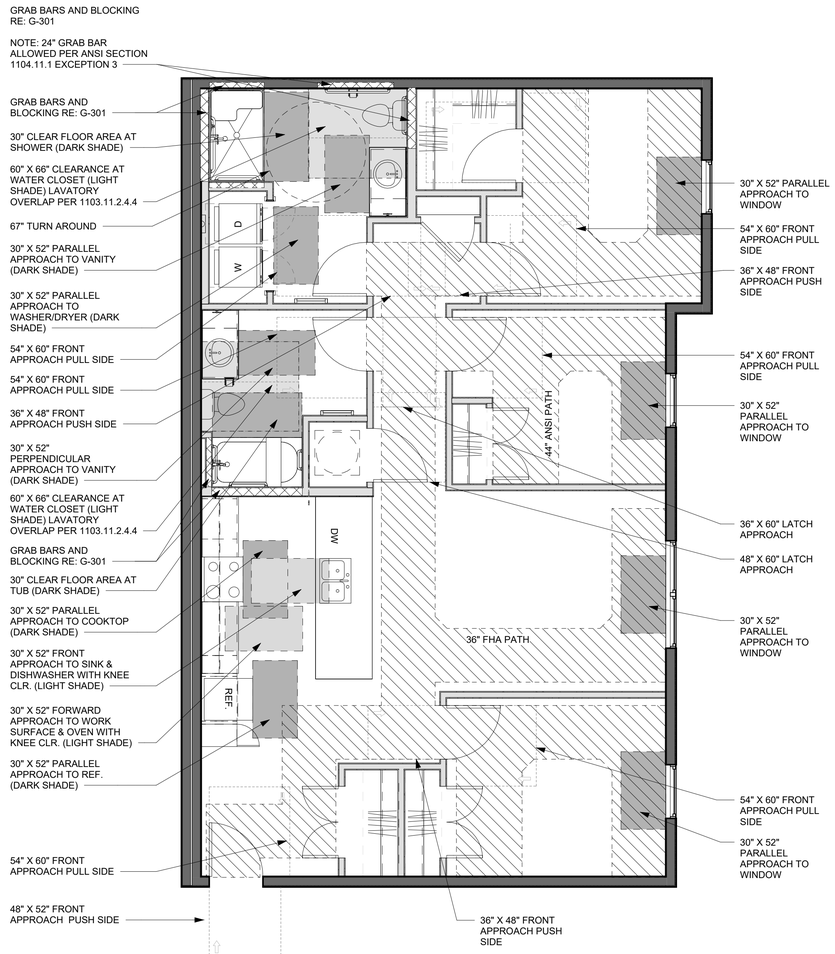
- SV-1 SHEET VINYL
- LVP-1 VINYL PLANK



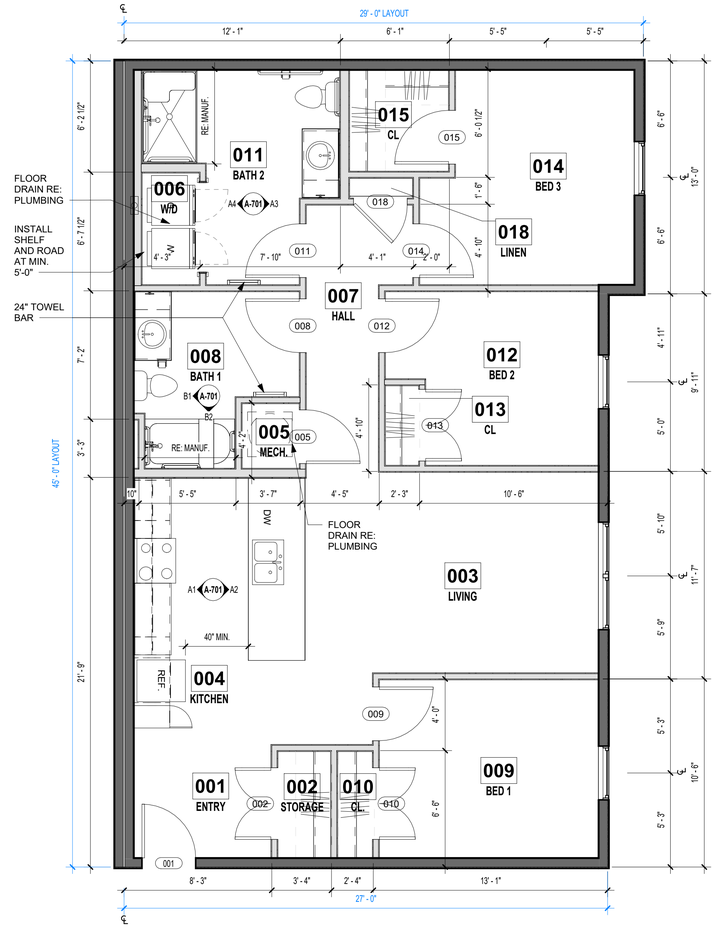
B3 3 BEDROOM UNIT - TYPE A - FINISH FLOOR PLAN
1/8" = 1'-0"



A3 3 BEDROOM UNIT - TYPE A - REFLECTED CEILING PLAN
1/8" = 1'-0"



A2 3 BEDROOM UNIT - TYPE A - CLEAR SPACE PLAN
1/4" = 1'-0"



A1 3 BEDROOM UNIT - TYPE A - FLOOR PLAN
1/4" = 1'-0"

PRINTS ISSUED
12/18/25 - 95% CDs

REVISIONS:

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INTERIOR DESIGN
ENGINEERING
PLANNING
1526 Grand Boulevard
Kansas City, MO 64108-1404
p: 816.472.1448
w: www.rosemann.com

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
3 BEDROOM UNIT PLAN - TYPE A

PROJECT NUMBER: 25144

SHEET NUMBER:

A-406

12/19/2025 10:04:09 AM
C:\Revit Local Files\25144 - Johnson Betts_R24_mlevel2467.rvt

REFERENCE G-003 FOR GENERAL NOTES
REFERENCE A-600 FOR DOOR SCHEDULES

ROOM FINISH SCHEDULE - 3 BED TYPE B

Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish	Comments
001	ENTRY	LVP-1	WB-1, PT-3	PT-1	PT-2	
002	STORAGE	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	CABS. W/ PL-1 COUNTER W/ SPLASH
005	MECH.	--	--	--	--	
006	W/D	SV-1	WB-1, PT-3	PT-1	PT-2	
007	HALL	LVP-1	WB-1, PT-3	PT-1	PT-2	
008	BATH 1	SV-1	WB-1, PT-3	PT-1	PT-2	CABS. W/ PL-1 COUNTER W/ SPLASH
009	BED 1	LVP-1	WB-1, PT-3	PT-1	PT-2	
010	CL.	LVP-1	WB-1, PT-3	PT-1	PT-2	
011	BATH 2	SV-1	WB-1, PT-3	PT-1	PT-2	CABS. W/ PL-1 COUNTER W/ SPLASH
012	BED 2	LVP-1	WB-1, PT-3	PT-1	PT-2	
013	CL	LVP-1	WB-1, PT-3	PT-1	PT-2	
014	BED 3	LVP-1	WB-1, PT-3	PT-1	PT-2	
015	CL	LVP-1	WB-1, PT-3	PT-1	PT-2	
018	LINEN					

DOOR SCHEDULE - 3 BED TYPE B

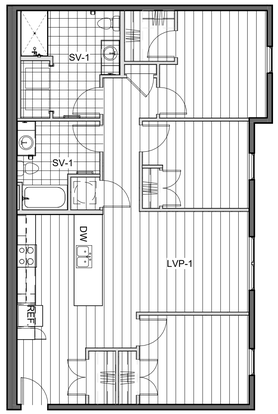
Mark	Width	Height	Thickness	Fire Rating (Minutes)	Door Type	Door Material	Door Finish	Frame Material	Frame Finish	Comments
001	3' - 0"	7' - 0"	1 3/4"	60	A2B	WD S.C.	PT-3	WD	PT-3	THRESHOLD, WEATHER GASKET, SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE, HD DOOR KICKS AND CORNER GUARDS
002	4' - 0"	6' - 8"	1 3/4"		B2B	WD H.C.	PT-3	WD	PT-3	
005	3' - 0"	6' - 8"	1 3/4"		H2	WD H.C.	PT-3	WD	PT-3	
006	5' - 0"	6' - 8"	1 3/4"		J2	WD H.C.	PT-3	WD	PT-3	
008	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
009	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
010	4' - 0"	6' - 8"	1 3/4"		B2B	WD H.C.	PT-3	WD	PT-3	
011	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
012	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
013	4' - 0"	6' - 8"	1 3/4"		B2B	WD H.C.	PT-3	WD	PT-3	
014	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
015	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
018	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	

PLAN LEGEND

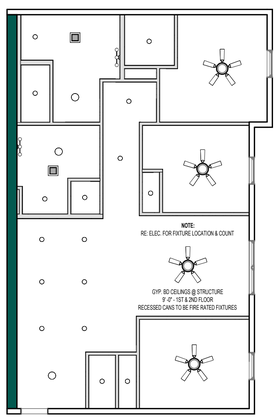
- PARTIAL HEIGHT PARTITION
- NON-RATED PARTITION; SEE ASSEMBLIES
- 1 HR RATED PARTITION; SEE ASSEMBLIES
- 2 HR RATED PARTITION; SEE ASSEMBLIES
- A1 — WINDOW TYPE; SEE WINDOW SCHEDULE
- 101 — DOOR TYPE; SEE DOOR SCHEDULE
- P7 — PARTITION TYPE; SEE ASSEMBLIES
- 6' - 0" — FRAMING DIMENSIONS
- 6' - 0" LAYOUT — LAYOUT LINE DIMENSION
- HEARING/VISIBILITY
- ADA/ACCESSIBLE UNITS

UNIT FINISH LEGEND

- SV-1 SHEET VINYL
- LVP-1 VINYL PLANK

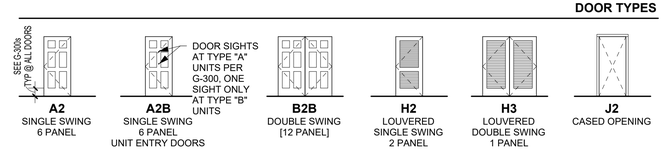


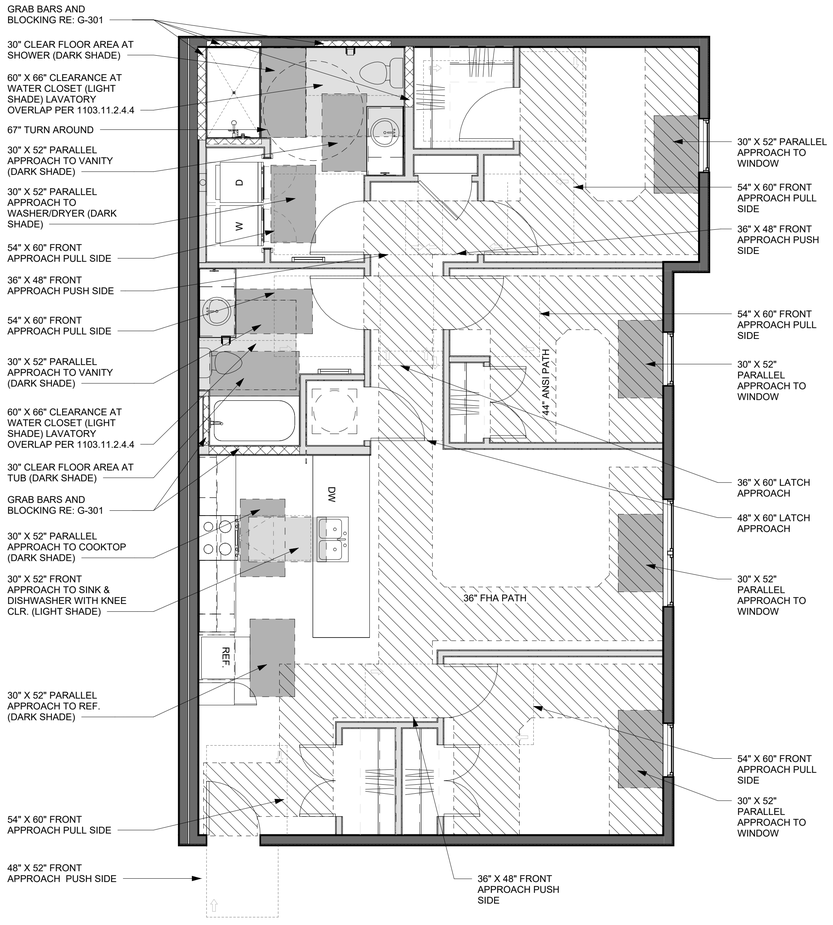
B3 3 BEDROOM UNIT - TYPE B - FINISH FLOOR PLAN
1/8" = 1'-0"



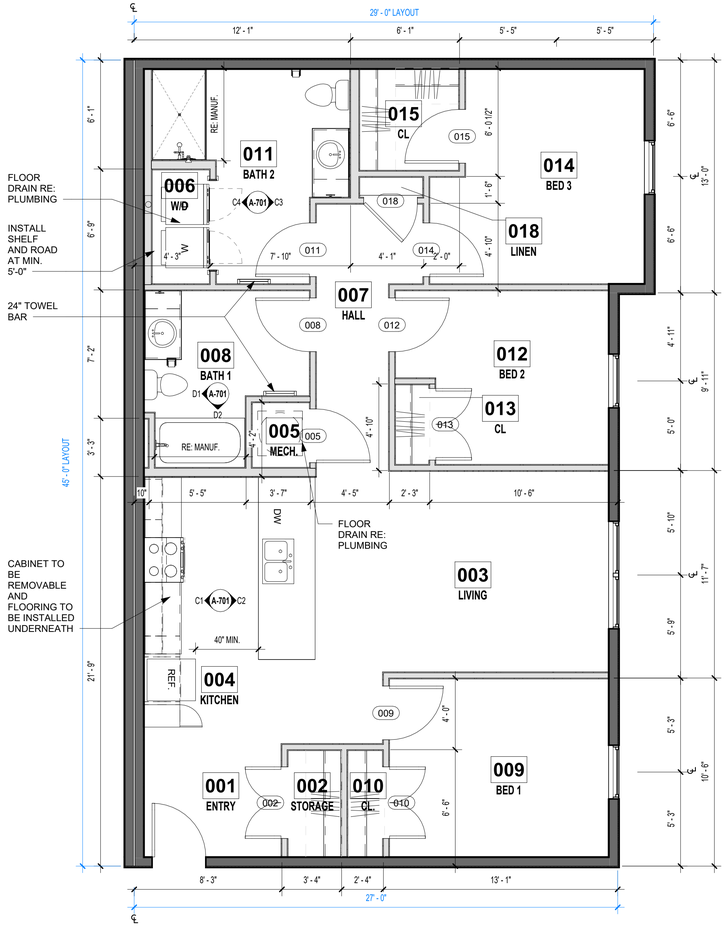
A3 3 BEDROOM UNIT - TYPE B - REFLECTED CEILING PLAN
1/8" = 1'-0"

DOOR TYPES





A2 3 BEDROOM UNIT - TYPE B - CLEAR SPACE PLAN
1/4" = 1'-0"



A1 3 BEDROOM UNIT - TYPE B - FLOOR PLAN
1/4" = 1'-0"

PRINTS ISSUED
12/18/25 - 95% CDs

REVISIONS:

rosemann & ASSOCIATES P.C.
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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
3 BEDROOM UNIT PLAN - TYPE B

PROJECT NUMBER: 25144

SHEET NUMBER:

A-407

12/18/2025 10:04:29 AM
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REFERENCE G-003 FOR GENERAL NOTES
REFERENCE A-600 FOR DOOR SCHEDULES

ROOM FINISH SCHEDULE - 3 BED TYPE B - ALTERNATE

Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish	Comments
001	ENTRY	LVP-1	WB-1, PT-3	PT-1	PT-2	
002	STORAGE	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	CABS. W/ PL-1 COUNTER W/ SPLASH
005	MECH.	--	--	--	--	
006	W/D	SV-1	WB-1, PT-3	PT-1	PT-2	
007	HALL	LVP-1	WB-1, PT-3	PT-1	PT-2	
008	BATH 1	SV-1	WB-1, PT-3	PT-1	PT-2	CABS. W/ PL-1 COUNTER W/ SPLASH
009	BED 1	LVP-1	WB-1, PT-3	PT-1	PT-2	
010	CL	LVP-1	WB-1, PT-3	PT-1	PT-2	
011	BATH 2	SV-1	WB-1, PT-3	PT-1	PT-2	CABS. W/ PL-1 COUNTER W/ SPLASH
012	BED 2	LVP-1	WB-1, PT-3	PT-1	PT-2	
013	CL	LVP-1	WB-1, PT-3	PT-1	PT-2	
014	BED 3	LVP-1	WB-1, PT-3	PT-1	PT-2	
015	CL	LVP-1	WB-1, PT-3	PT-1	PT-2	
018	LINEN					

DOOR SCHEDULE - 3 BED TYPE B - ALTERNATE

Mark	Width	Height	Thickness	Fire Rating (Minutes)	Door Type	Door Material	Door Finish	Frame Material	Frame Finish	Comments
001	3' - 0"	7' - 0"	1 3/4"	60	A2B	WD S.C.	PT-3	INSUL. MTL.	PT-3	THRESHOLD, WEATHER GASKET, SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE, HD DOOR KICKS AND CORNER GUARDS
002	4' - 0"	6' - 8"	1 3/4"		B2B	WD H.C.	PT-3	WD	PT-3	
005	3' - 0"	6' - 8"	1 3/4"		H2	WD H.C.	PT-3	WD	PT-3	
006	5' - 0"	6' - 8"	1 3/4"		J2	WD H.C.	PT-3	WD	PT-3	
008	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
009	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
010	4' - 0"	6' - 8"	1 3/4"		B2B	WD H.C.	PT-3	WD	PT-3	
011	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
012	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
013	4' - 0"	6' - 8"	1 3/4"		B2B	WD H.C.	PT-3	WD	PT-3	
014	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
015	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	
018	3' - 0"	6' - 8"	1 3/4"		A2	WD H.C.	PT-3	WD	PT-3	

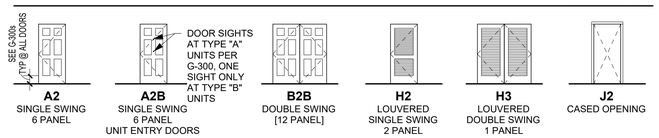
PLAN LEGEND

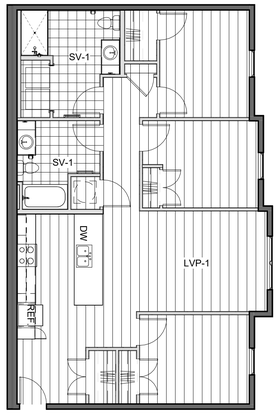
- PARTIAL HEIGHT PARTITION
- NON-RATED PARTITION; SEE ASSEMBLIES
- 1 HR RATED PARTITION; SEE ASSEMBLIES
- 2 HR RATED PARTITION; SEE ASSEMBLIES
- A1 — WINDOW TYPE; SEE WINDOW SCHEDULE
- 101 — DOOR TYPE; SEE DOOR SCHEDULE
- P7 — PARTITION TYPE; SEE ASSEMBLIES
- 6' - 0" — FRAMING DIMENSIONS
- 6' - 0" LAYOUT — LAYOUT LINE DIMENSION
- HEARING/VISIBILITY
- ADA/ACCESSIBLE UNITS

UNIT FINISH LEGEND

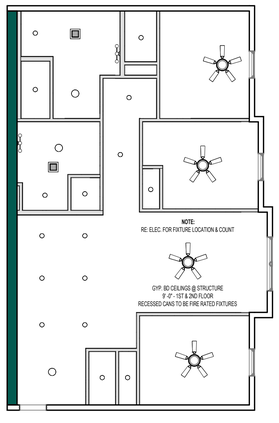
- SV-1 SHEET VINYL
- LVP-1 VINYL PLANK

DOOR TYPES

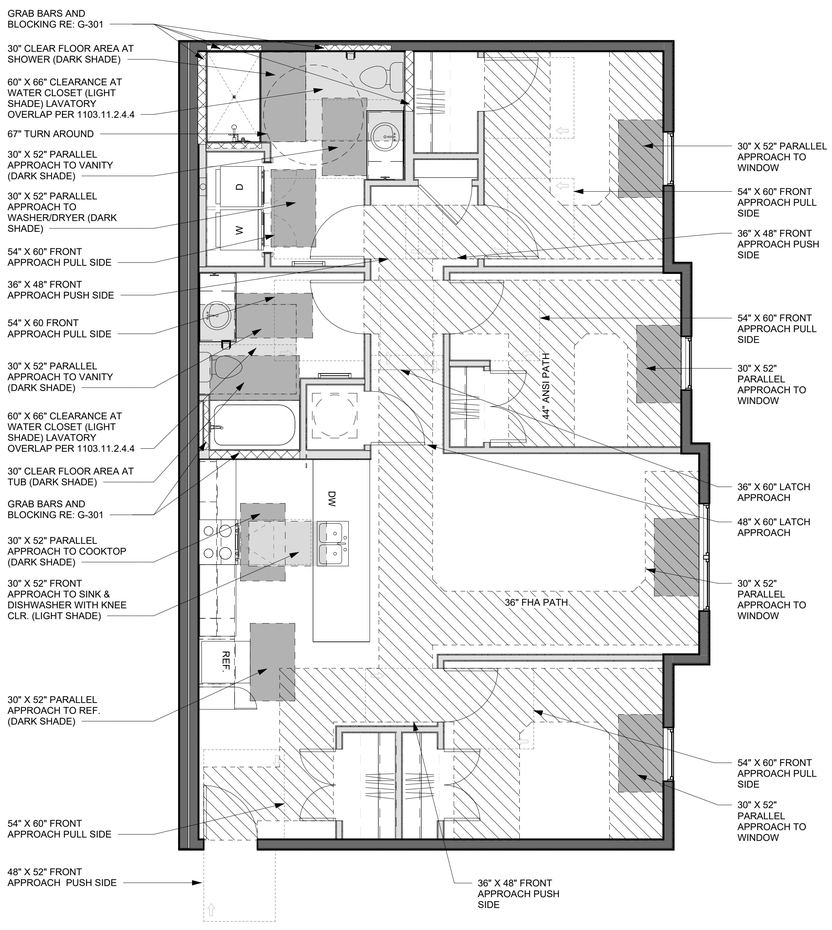




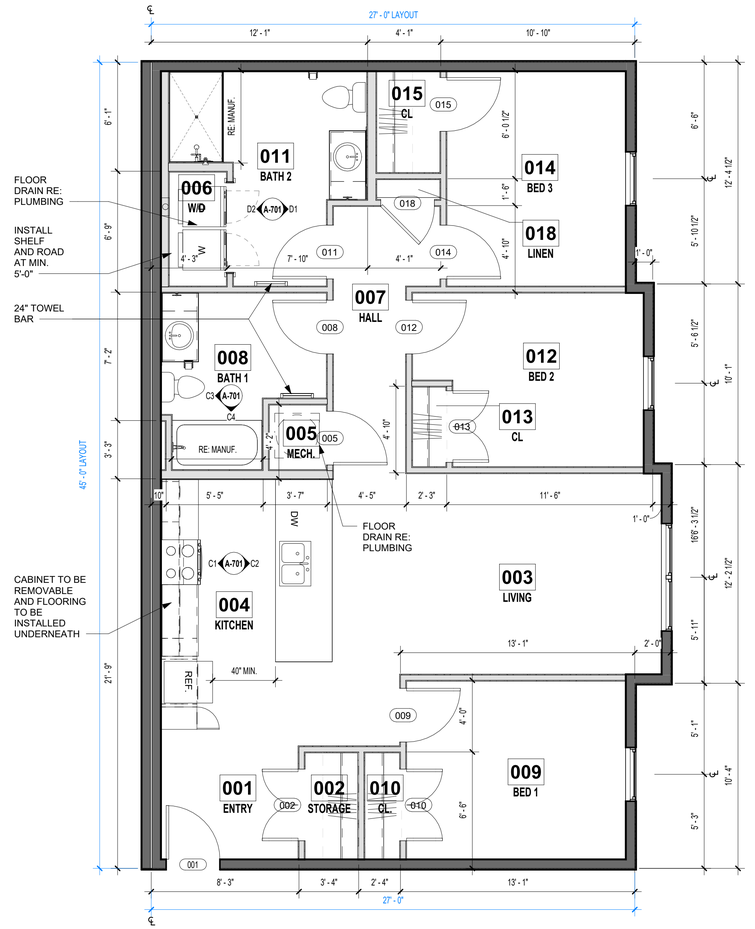
B3 3 BEDROOM UNIT ALTERNATE - TYPE B - FINISH FLOOR PLAN
1/8" = 1'-0"



A3 3 BEDROOM UNIT ALTERNATE - TYPE B - REFLECTED CEILING PLAN
1/8" = 1'-0"



A2 3 BEDROOM UNIT ALTERNATE - TYPE B - CLEAR SPACE PLAN
1/4" = 1'-0"



A1 3 BEDROOM UNIT ALTERNATE - TYPE B - FLOOR PLAN
1/4" = 1'-0"

PRINTS ISSUED
12/18/25 - 95% CDs

REVISIONS:

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
3 BEDROOM UNIT PLAN
ALTERNATE - TYPE B

PROJECT NUMBER: 25144

SHEET NUMBER:

A-408

12/18/2025 10:05:04 AM
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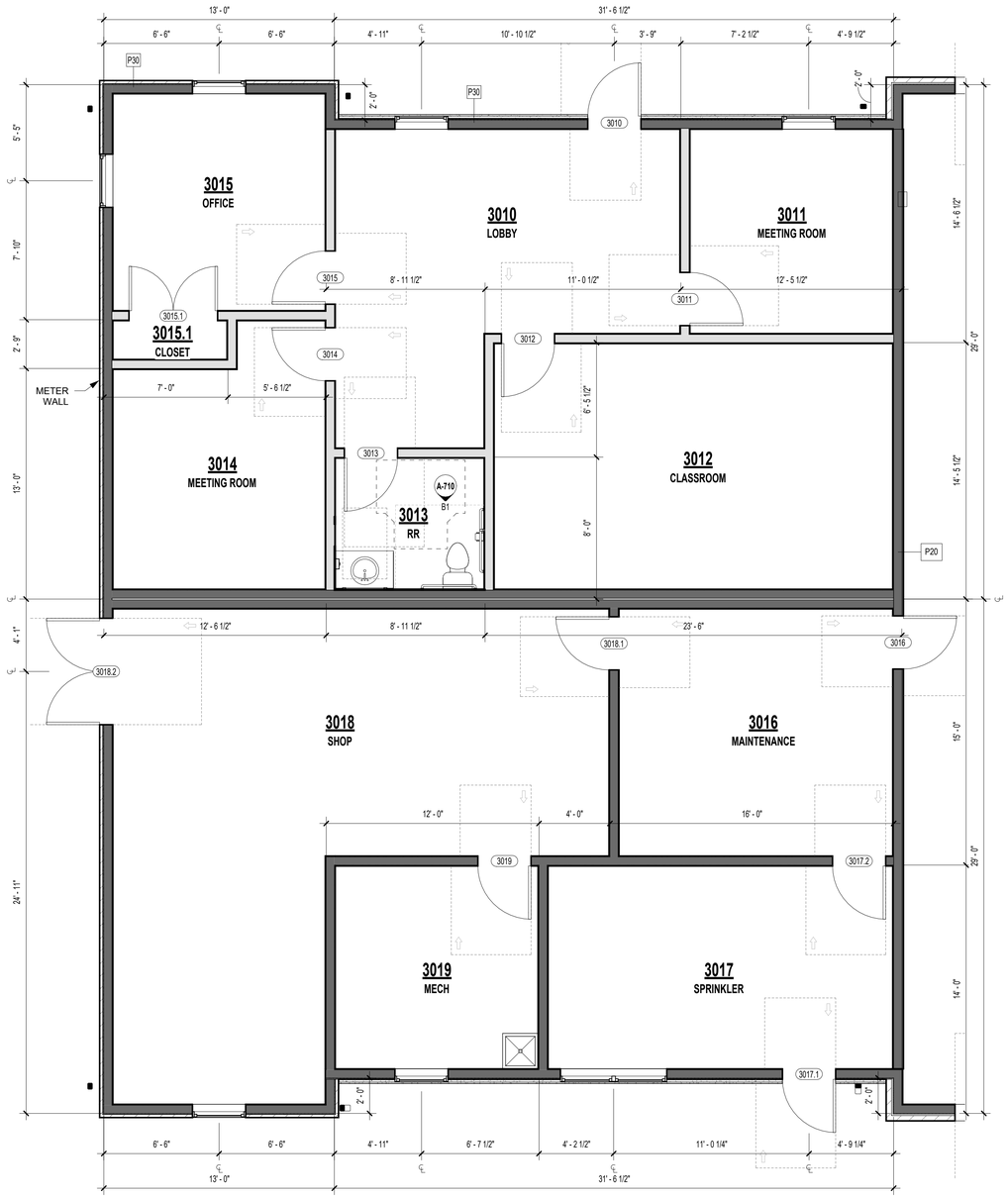
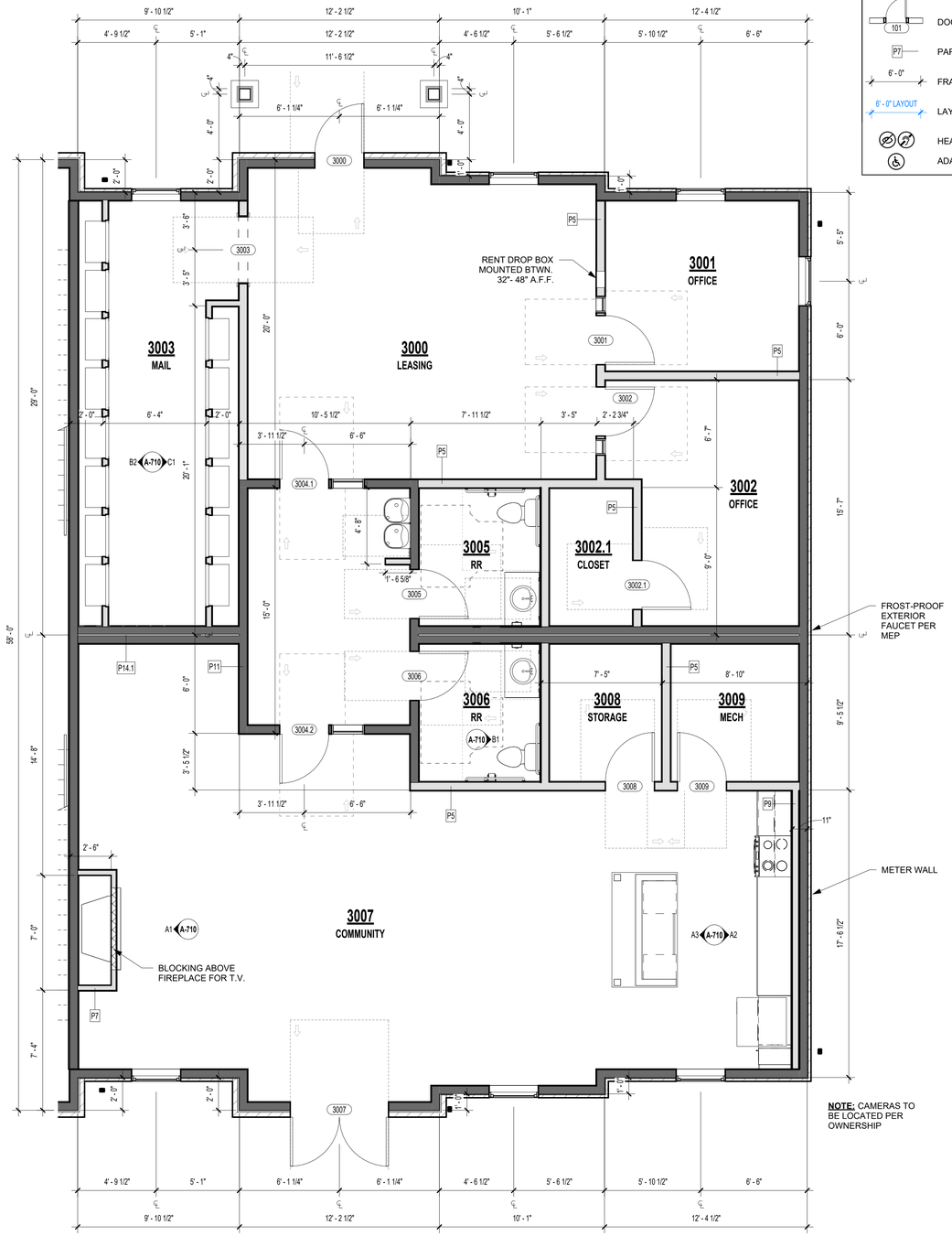
REFERENCE G-003 FOR GENERAL NOTES

PLAN LEGEND

- PARTIAL HEIGHT PARTITION
- NON-RATED PARTITION; SEE ASSEMBLIES
- 1 HR RATED PARTITION; SEE ASSEMBLIES
- 2 HR RATED PARTITION; SEE ASSEMBLIES
- A1 — WINDOW TYPE; SEE WINDOW SCHEDULE
- 101 — DOOR TYPE; SEE DOOR SCHEDULE
- P7 — PARTITION TYPE; SEE ASSEMBLIES
- 6' - 0" — FRAMING DIMENSIONS
- 6' - 0" LAYOUT — LAYOUT LINE DIMENSION
- HEARING/VISIBILITY
- ADA/ACCESSIBLE UNITS



A1 ENLARGED PLAN - SOCIAL SERVICES & BUILDING SUPPORT
1/4" = 1'-0"



A2 ENLARGED PLAN - LEASING & COMMUNITY
1/4" = 1'-0"

PRINTS ISSUED
12/18/25 - 95% CDs

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
ENLARGED COMMON AREAS

PROJECT NUMBER: 25144

SHEET NUMBER:

A-410

12/19/2025 10:05:11 AM
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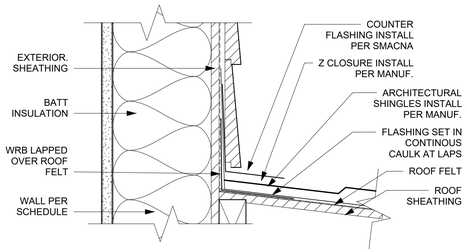
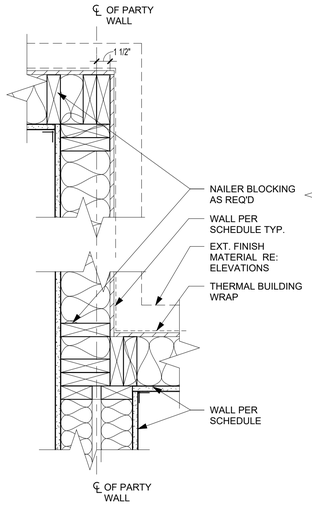
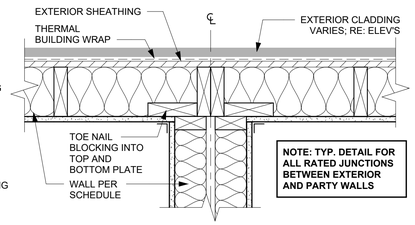
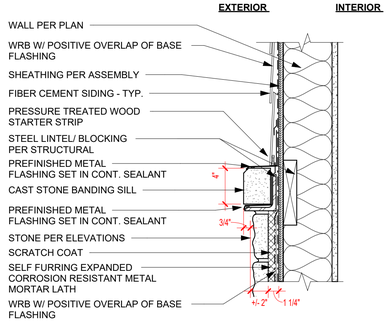


D5 ROOF CONNECTION
3" = 1'-0"

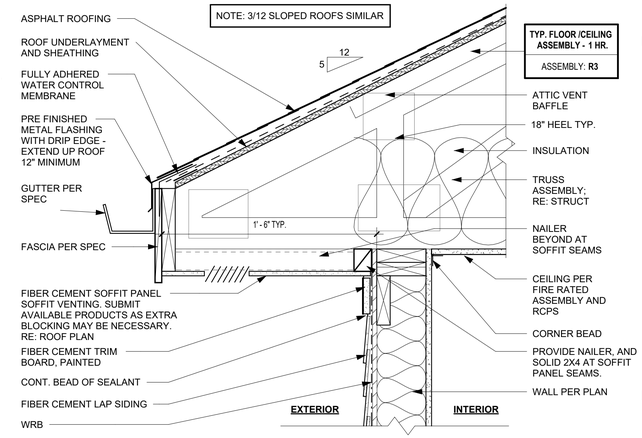




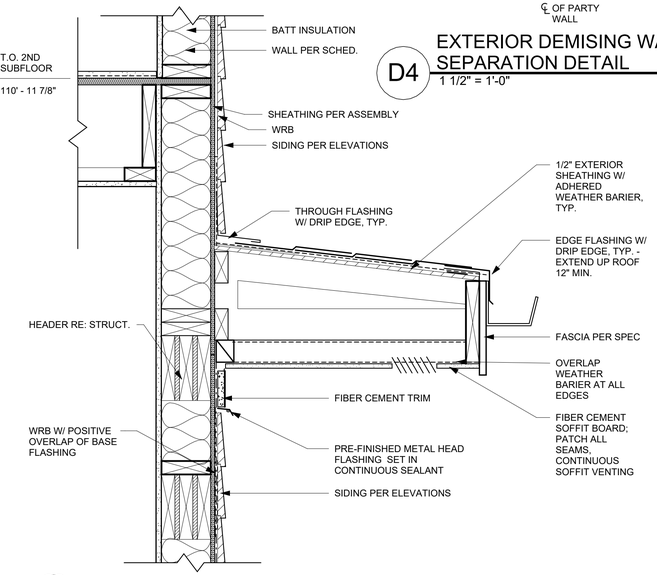
D3 DEMISING WALL FIRE SEPARATION PLAN DETAIL
1 1/2" = 1'-0"



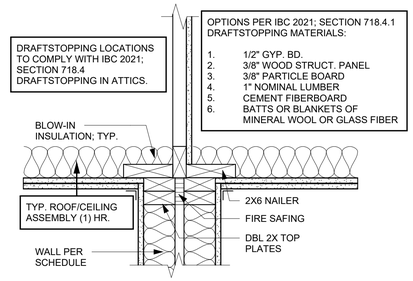
D2 STONE TO SIDING TRANSITION
1 1/2" = 1'-0"



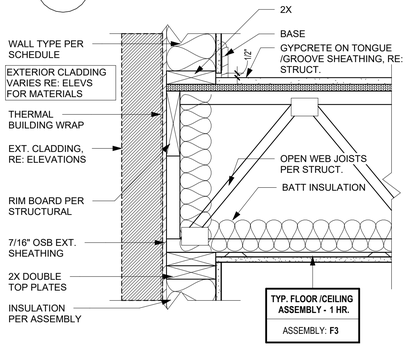
C1 TYP. 5/12 EAVE DETAIL @ SIDING
1 1/2" = 1'-0"



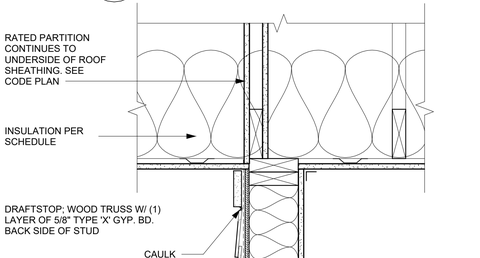
D4 EXTERIOR DEMISING WALL FIRE SEPARATION DETAIL
1 1/2" = 1'-0"



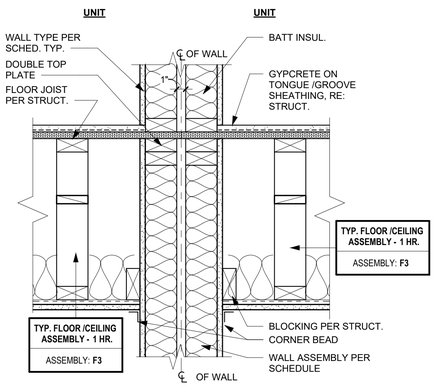
C3 DRAFT STOP @ DEMISING WALL
1 1/2" = 1'-0"



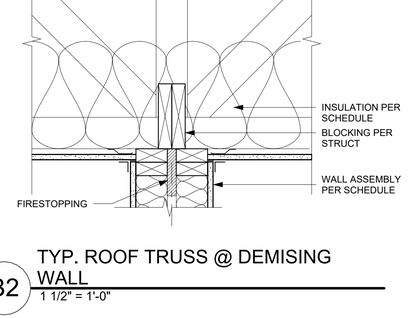
C2 FRAMING FLOOR / CEILING DETAIL
1 1/2" = 1'-0"



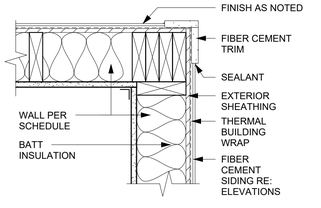
B1 BREEZEWAY PARTITION @ DRAFTSTOPPING
1 1/2" = 1'-0"



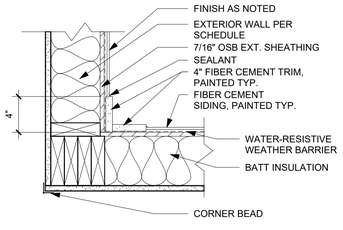
B3 FRAMING FLOOR/CEILING DETAIL @ DEMISING WALL
1 1/2" = 1'-0"



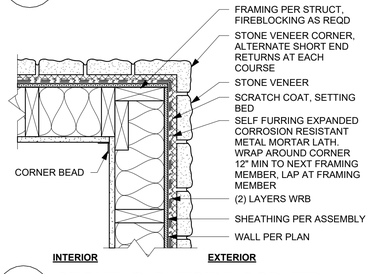
B2 TYP. ROOF TRUSS @ DEMISING WALL
1 1/2" = 1'-0"



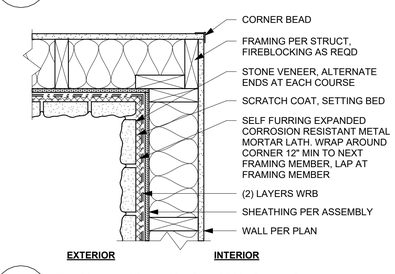
B5 SIDING @ OUTSIDE CORNER
1 1/2" = 1'-0"



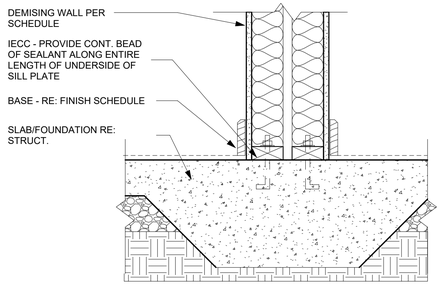
B4 SIDING @ INSIDE CORNER
1 1/2" = 1'-0"



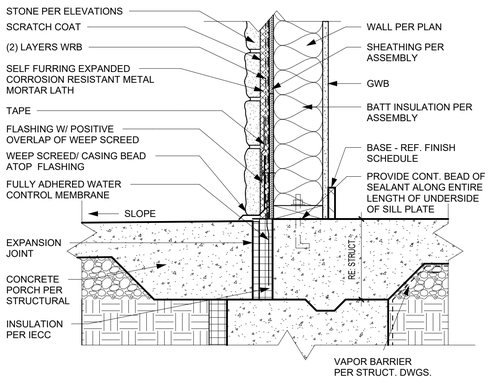
A5 STONE @ OUTSIDE CORNER
1 1/2" = 1'-0"



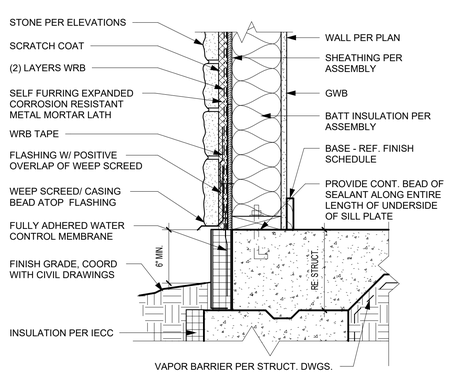
A4 STONE @ INSIDE CORNER
1 1/2" = 1'-0"



A3 TYP. FOUNATION @ DEMISING WALL
1 1/2" = 1'-0"



A2 FOUNDATION DETAIL @ STONE HARDSCAPE
1 1/2" = 1'-0"



A1 FOUNDATION DETAIL - STONE @ GRADE - SLAB INSUL
1 1/2" = 1'-0"

REFERENCE G-003 FOR GENERAL NOTES

PRINTS ISSUED
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REVISIONS:

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
DETAILS

PROJECT NUMBER: 25144

SHEET NUMBER:

A-500

12/18/2025 10:05:15 AM
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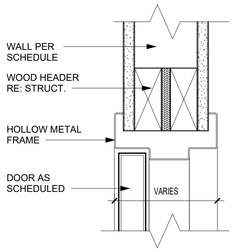
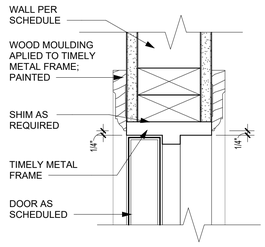
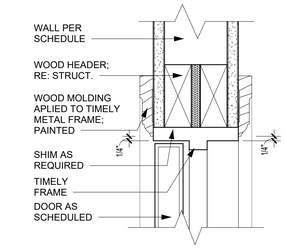
REFERENCE G-003 FOR GENERAL NOTES



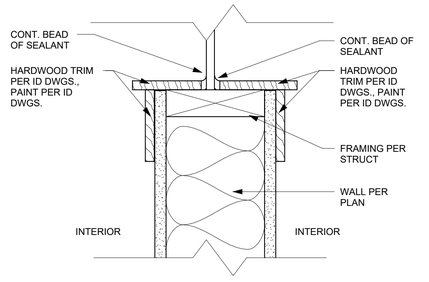
D4 INT. DOOR HEAD METAL FRAME
3" = 1'-0"



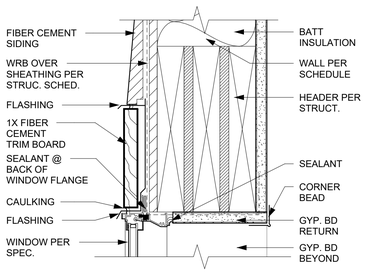
D3 INT. DOOR JAMB WOOD FRAME
3" = 1'-0"

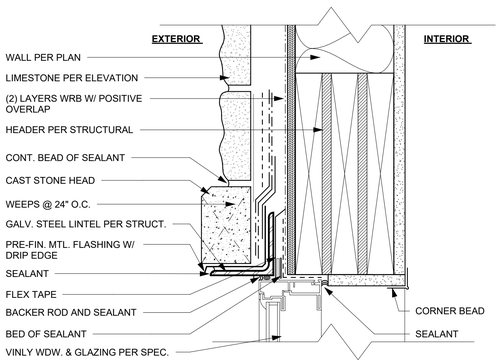


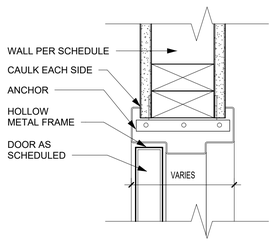
D2 INT. DOOR HEAD WOOD FRAME
3" = 1'-0"

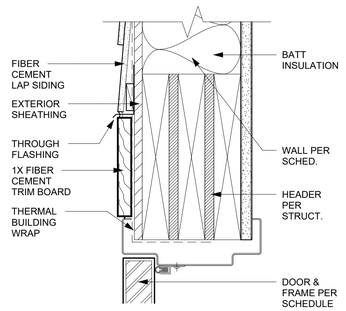


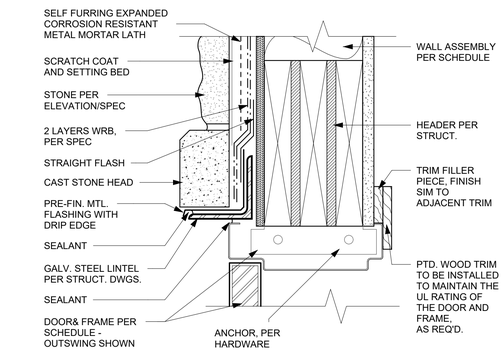
D1 INTERIOR WINDOW SILL - COMM. BLDG.
3" = 1'-0"



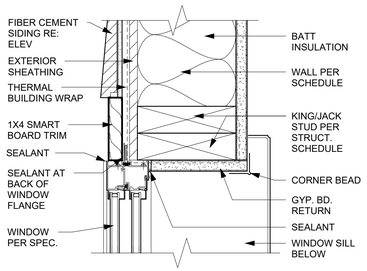




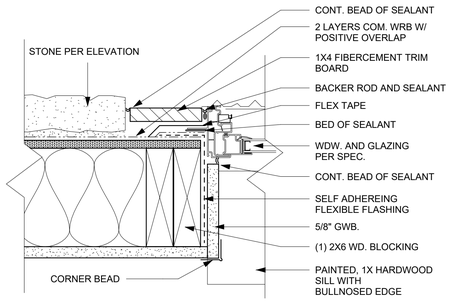




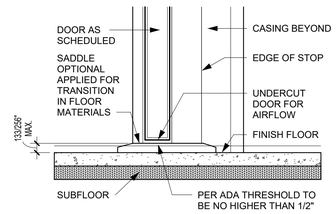
C5 WINDOW HEAD @ SIDING
3" = 1'-0"



C4 WINDOW HEAD @ STONE
3" = 1'-0"



C3 INT. DOOR JAMB METAL FRAME
3" = 1'-0"

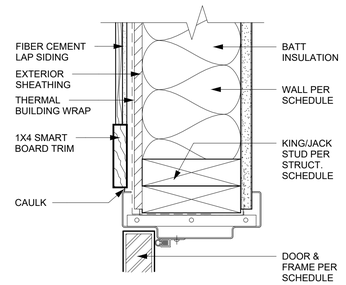


B5 WINDOW JAMB @ SIDING
3" = 1'-0"

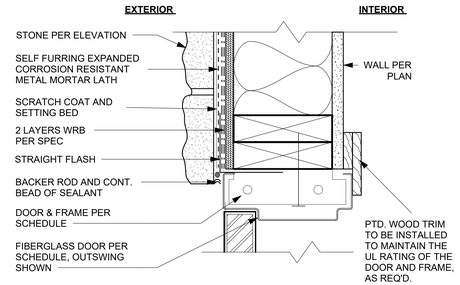
B4 WINDOW JAMB @ STONE
3" = 1'-0"

B3 INT. DOOR SILL DETAIL
3" = 1'-0"

C2 EXT. DOOR HEAD @ SIDING
3" = 1'-0"

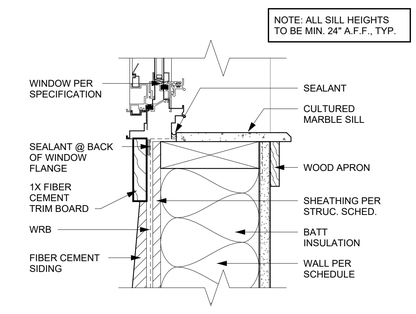


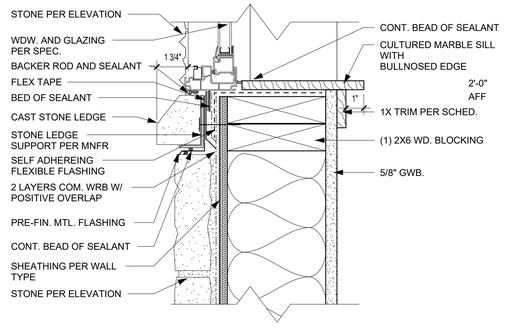
C1 EXT. DOOR HEAD @ STONE
3" = 1'-0"

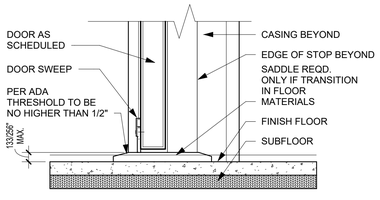


B2 EXT. DOOR JAMB @ SIDING
3" = 1'-0"

B1 EXT. DOOR JAMB @ STONE
3" = 1'-0"



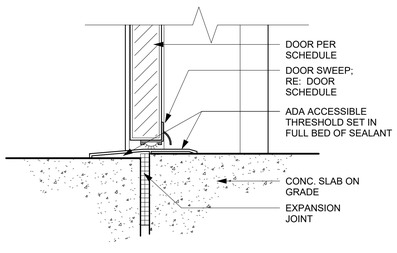




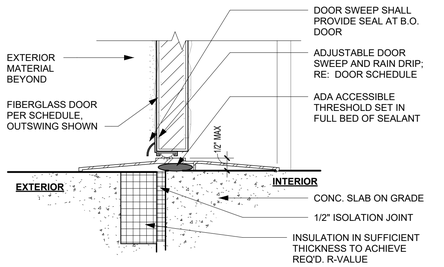
A5 WINDOW SILL @ SIDING
3" = 1'-0"

A4 WINDOW SILL @ STONE
3" = 1'-0"

A3 INT. DOOR SILL @ RATED DOOR
3" = 1'-0"



A2 EXT. THRESHOLD @ SIDING
3" = 1'-0"



A1 EXT. THRESHOLD @ STONE
3" = 1'-0"

10/30/2025 12:25:19 AM
C:\Users\Lance\Documents\25144 - johnson Betts_R24_nlscad134t7.rvt

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

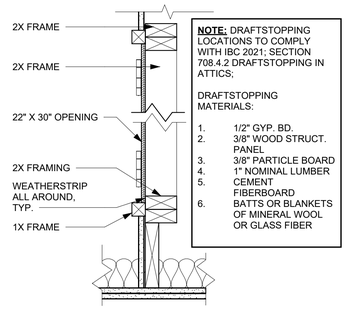
TOPEKA, KS

SHEET TITLE
DETAILS

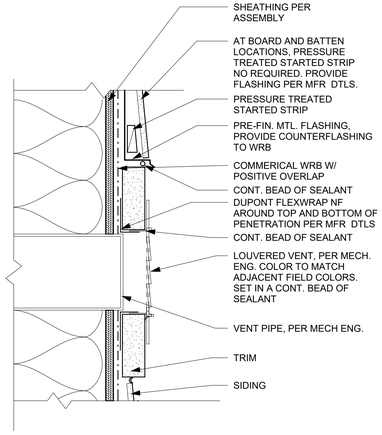
PROJECT NUMBER: 25144

SHEET NUMBER:

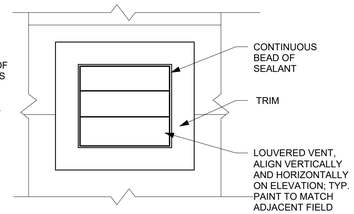
A-501



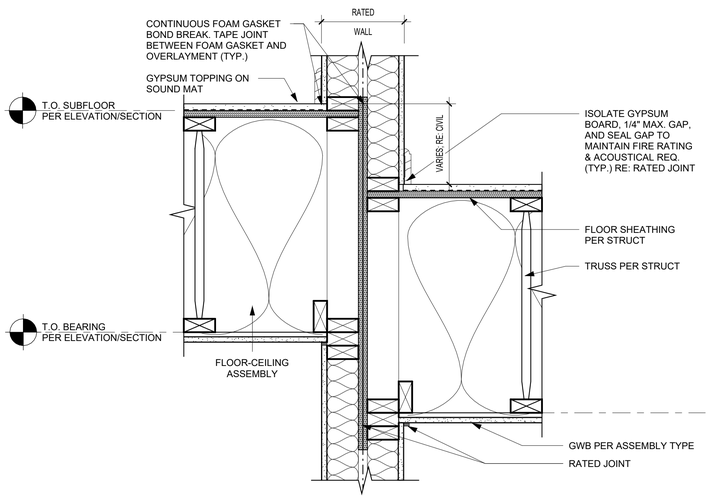
D3 DRAFT STOP ACCESS PANEL
1 1/2" = 1'-0"



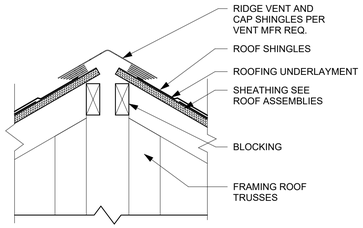
NOTE: EXHAUST VENTS NOT SHOWN ON DWGS - COORDINATE WITH ARCHITECT FOR LOCATIONS PRIOR TO INSTALL. PAINT VENTS TO MATCH ADJACENT WALL COLOR, ALIGN VERTICALLY AND HORIZONTALLY WITH ADJACENT EXHAUST VENTS; COORDINATE W/ SPEC.



C1 SIDING @ EXHAUST VENT
3" = 1'-0"



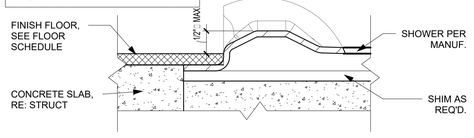
B3 STEP FLOOR TRUSS @ 1-HOUR DEMISING WALL
1 1/2" = 1'-0"



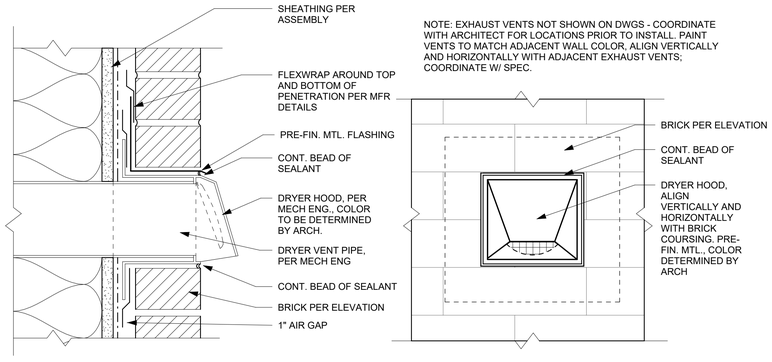
NOTE:
1) NOT TO BE USED ON ROOFS 3/12 AND LESS
2) GC TO COORD. W/ DRAFTSTOPPING
3) SEE ROOF PLAN FOR LOCATIONS

C2 ROOF RIDGE VENT
1 1/2" = 1'-0"

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

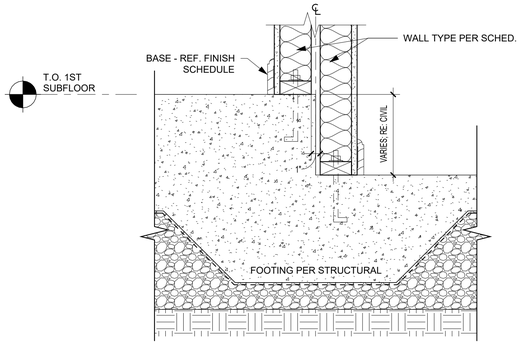


B2 ROLL-IN SHOWER TRANSITION DETAIL - 1ST FLOOR
3/4" = 1'-0"

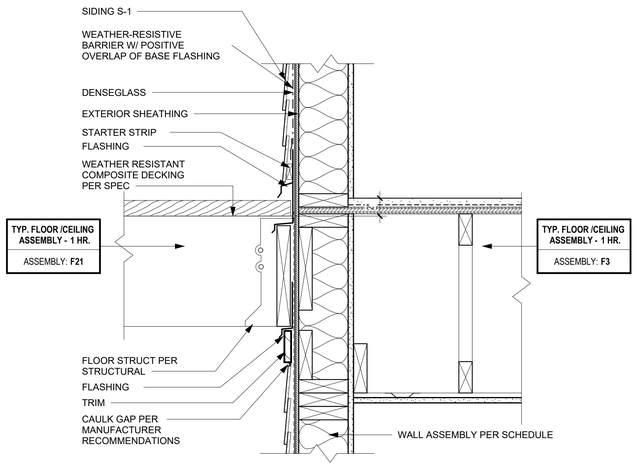


NOTE: EXHAUST VENTS NOT SHOWN ON DWGS - COORDINATE WITH ARCHITECT FOR LOCATIONS PRIOR TO INSTALL. PAINT VENTS TO MATCH ADJACENT WALL COLOR, ALIGN VERTICALLY AND HORIZONTALLY WITH ADJACENT EXHAUST VENTS; COORDINATE W/ SPEC.

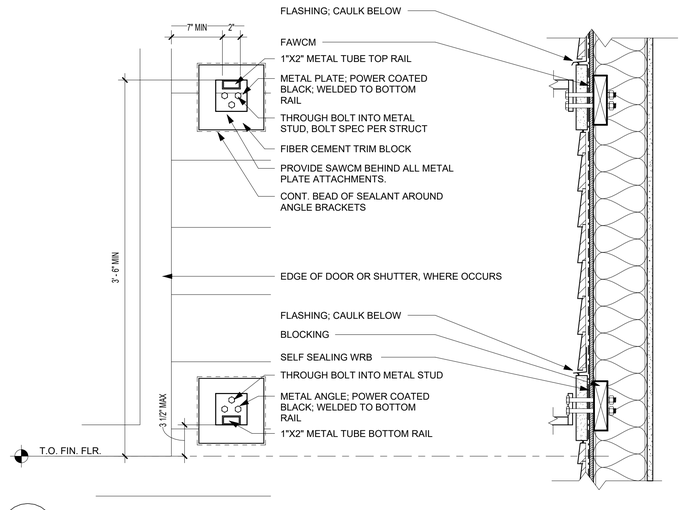
B1 BRICK @ EXHAUST VENT
3" = 1'-0"



A3 STEP FOOTING 1-HOUR DEMISING WALL
1 1/2" = 1'-0"



A2 FLOOR/CEILING DETAIL @ BREEZEWAY
1 1/2" = 1'-0"



A1 RAILING - CONNECTIONS @ SIDING
1 1/2" = 1'-0"

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
DETAILS

PROJECT NUMBER: 25144

SHEET NUMBER:

A-502

12/18/2025 10:05:23 AM
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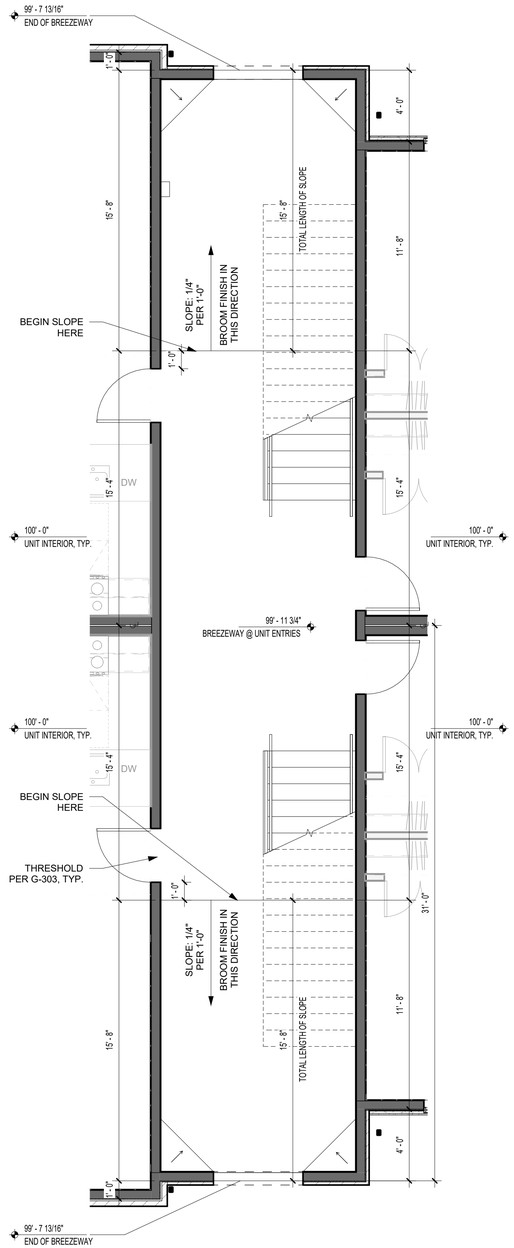
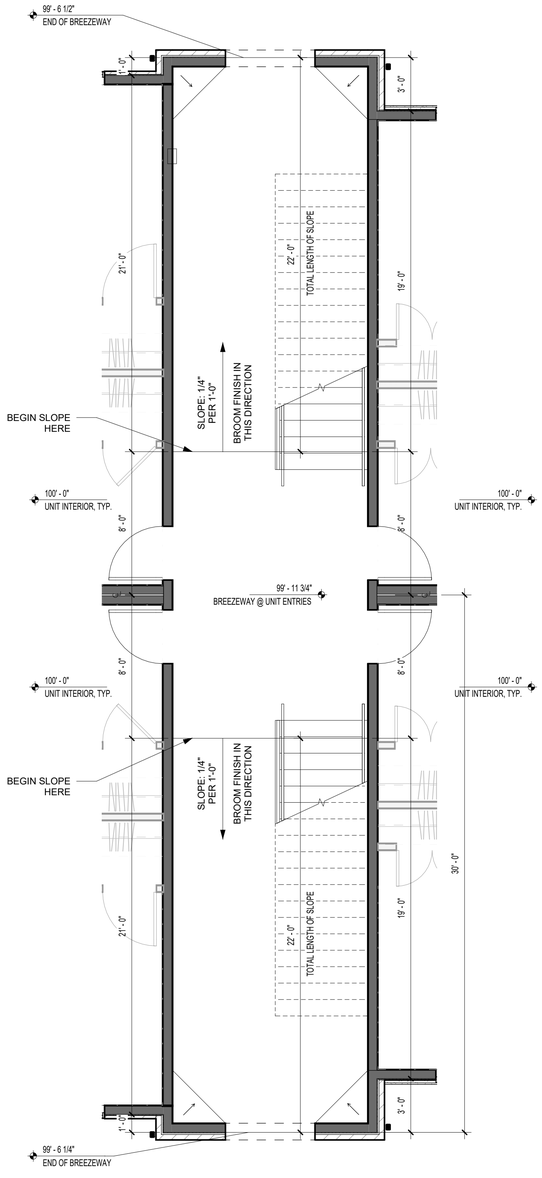
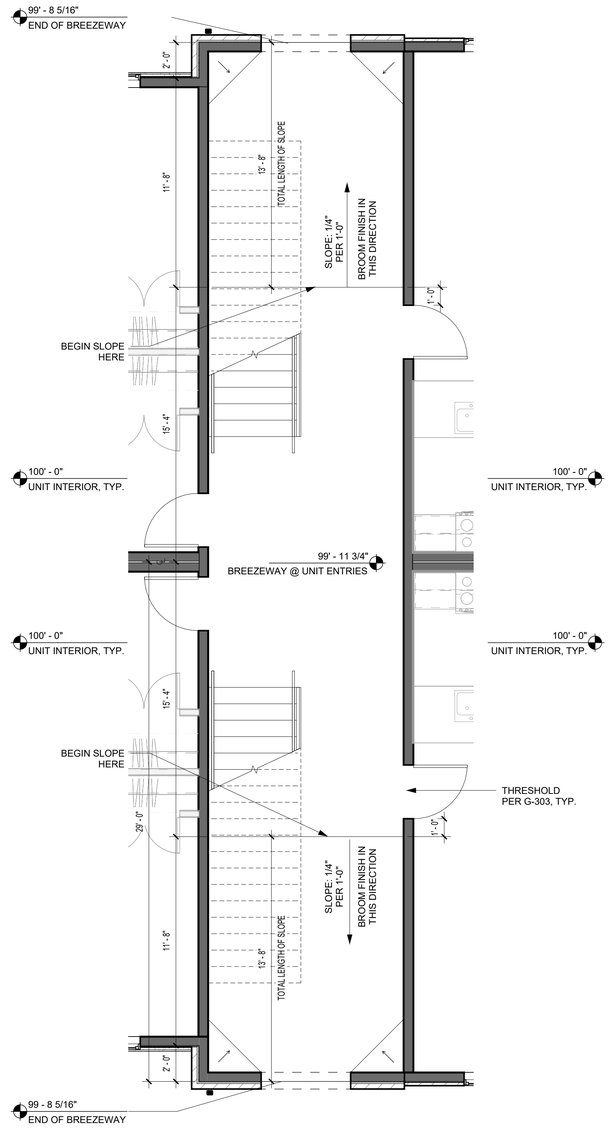


A3 BREEZEWAY PLAN 3
1/4" = 1'-0"



A2 BREEZEWAY PLAN 2
1/4" = 1'-0"



A1 BREEZEWAY PLAN 1
1/4" = 1'-0"

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

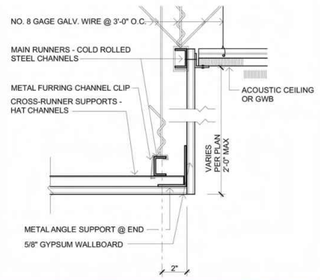
SHEET TITLE
DETAILS

PROJECT NUMBER: 25144

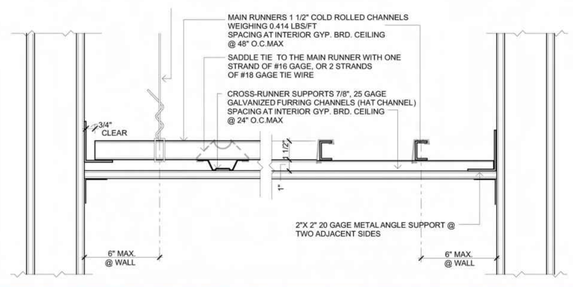
SHEET NUMBER:

A-503

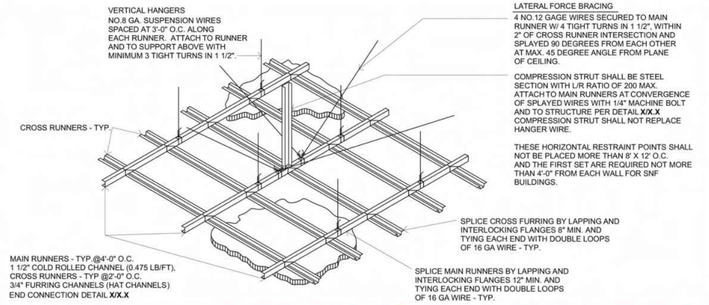
REFERENCE G-003 FOR GENERAL NOTES



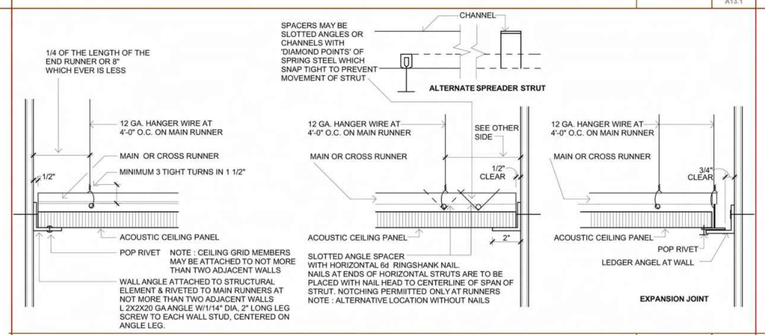
SUSPENDED CEILING/SOFFIT TRANSITION 3" = 1'-0" 20 A13.1



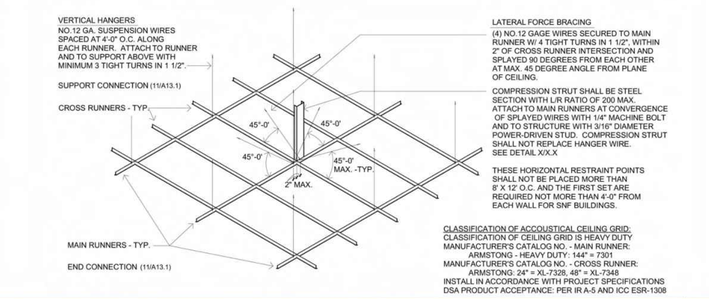
SUSPENDED GYPSUM WALL BOARD CEILING - CONNECTION DETAIL 3" = 1'-0" 12 A13.1



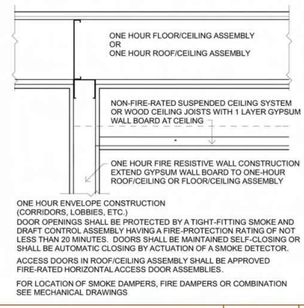
SUSPENDED GYPSUM BOARD CEILING GRID 1 1/2"= 1'-0" 4 A13.1



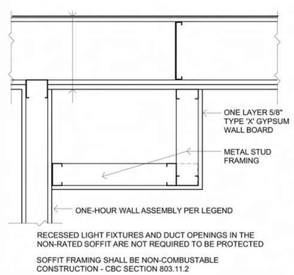
SUSPENDED LAY-IN CEILING - CONNECTION DETAIL 3" = 1'-0" 11 A13.1



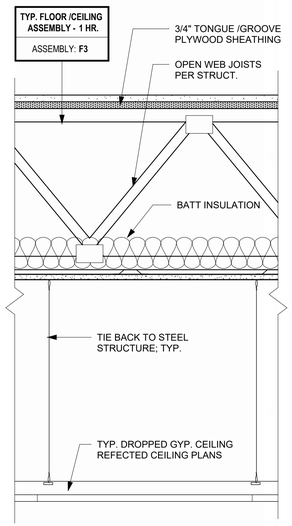
SUSPENDED LAY-IN CEILING GRID 1 1/2"= 1'-0" 3 A13.1



CORRIDOR CONSTRUCTION 1 1/2"= 1'-0" 14 A13.1



METAL STUD SOFFIT FRAMING 1 1/2"= 1'-0" 13 A13.1



SUSPENDED CEILING AT WOOD FRAMING 1 1/2"= 1'-0" 9 A13.1

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
SUSPENDED CEILING DETAILS

PROJECT NUMBER: 25144

SHEET NUMBER:

A-504

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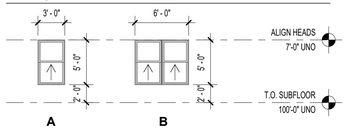
WINDOW COMMENTS:

1. GLAZING DEEMED TO BE IN A HAZARDOUS LOCATION SHALL BE TEMPERED / SAFETY GLAZING.
2. EACH PANE OF SAFETY GLAZING INSTALLED IN HAZARDOUS LOCATIONS SHALL BE IDENTIFIED BY MFR'S DESIGNATION.
3. CONFIRM OPERATION OF SASH LOCKS AT "TYPE A" UNITS WILL BE WITHIN 48" REQUIRED REACH RANGE PER - / ---
4. ALL WINDOWS IN PUBLIC SPACES SHALL RECEIVE TRIM PER ---
5. SEE A1 / A-600 FOR EXTERIOR WINDOW & DOOR TRIM.
6. REFER TO CODE SHEET FOR ALL FIRE RATINGS.
7. WINDOW LOCATIONS PER A-400s, UNO.
8. 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.
9. PROVIDE WINDOW OPENING CONTROL DEVICES (WOCDs) THAT COMPLY WITH ASTM F2090.
10. WINDOWS WITH SILL AT OR ABOVE 36" AFF AND/OR 72" ABOVE GRADE SHALL HAVE FALL PROTECTION THAT COMPLIES WITH ASTM F2090 PER IBC 1015.8 OPTION 3.
11. WINDOW HEADERS TO ALIGN WITH ADJACENT DOOR HEADERS, U.N.O.

WINDOW TYPES



A SINGLE HUNG SINGLE

B SINGLE HUNG DOUBLE

WINDOW SCHEDULE			
Type Mark	Width	Height	Comments
A	3' - 0"	5' - 0"	
B	6' - 0"	5' - 0"	

DOOR COMMENTS:

1. BOTTOM RAIL TO BE MINIMUM 10" TO ALLOW FOR A 10" KICK PLATE; TYPICALL ALL DOORS. SEE: - / ---
2. SEE SPECIFICATIONS FOR DOOR HARDWARE SCHEDULE; FINAL HARDWARE SCHEDULE AND FINAL GROUPS TO BE DETERMINED BY DOOR SUB-CONTRACTOR. VERIFY FINAL HARDWARE INSTALLATION WITH CLIENT AND ARCHITECT.
3. DOOR HARDWARE SHALL NOT REQUIRE TIGHT GRASPING, TIGHT PINCHING, OR TWISTING OF THE WRIST TO OPERATE.
4. SEE A1 / A-600 FOR DOOR EXTERIOR AND INTERIOR TRIM.
5. DOOR FRAMES TO BE FINISHED PER SCHEDULE.
6. VERIFY KEYING SCHEDULE WITH OWNER. ALL KEYS TO BE GIVEN TO OWNER AT SUBSTANTIAL COMPLETION.
7. ALL DOOR HARDWARE TO BE LEVER TYPE HARDWARE, UNO.
8. ALL COMMON AREA RATED DOORS TO HAVE SMOKE SEALS (GASKETS), CLOSURES, AND LATCH HARDWARE.
9. UNIT ENTRY DOORS TO HAVE SPRING HINGES & LATCH HARDWARE, TYP. UNO.
10. ALL DOORS INTENDED FOR PASSAGE TO HAVE 32" CLEAR WIDTH PER ICC ANSI A117.1

PUBLIC FINISH LEGEND

CARPET:
CPT-1 MOHAWK PROPERTIES COLLECTION: BROADLOOM (SMARTSTRAND W/ NANOLOC), PM395 NEUTRAL SHIFT, #859 TWILIGHT JUNGLE
CPT-2 SHAW: PATH TILE-57034 PORTABELLA #34761, AS SPECIFIED
CPT-3 MOHAWK GROUP: UNCHARTERED RESTORE TILE, 359 ECOACTIVE, QUARTER TURN
CPT-4 MOHAWK GROUP: UNCHARTERED SOLVE II TILE, 360 ECOACTIVE, BRICK ASHLAR PATTERN

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

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

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

BASE:
WB-1 WOOD BASE, FJ623, 9/16" X 3.25" COLONIAL, PT3; WOOD SHOE MOLD, FJ129, 7/16" X 11/16" 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

ROOM FINISH SCHEDULE						
Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish	Comments
3000	LEASING	LVP-1	WB-1	PT-1	PT-2	
3001	OFFICE	CPT-3	WB-1	PT-1	PT-2	
3002	OFFICE	CPT-3	WB-1	PT-1	PT-2	
3002.1	CLOSET	CPT-3	WB-1	PT-1	PT-2	
3003	MAIL	LVP-1	WB-1	PT-1	PT-2	
3005	RR	LVP-1	WB-1	PT-1	PT-2	
3006	RR	LVP-1	WB-1	PT-1	PT-2	
3007	COMMUNITY	LVP-1	WB-1	PT-1	PT-2	
3008	STORAGE	LVP-1	WB-1	PT-1	PT-2	
3009	MECH	LVP-1	WB-1	PT-1	PT-2	
3010	LOBBY	LVP-1	WB-1	PT-1	PT-2	
3011	MEETING ROOM	CPT-3	WB-1	PT-1	PT-2	
3012	CLASSROOM	CPT-3	WB-1	PT-1	PT-2	
3013	RR	LVP-1	WB-1	PT-1	PT-2	
3014	MEETING ROOM	CPT-3	WB-1	PT-1	PT-2	
3015	OFFICE	CPT-3	WB-1	PT-1	PT-2	
3015.1	CLOSET	CPT-3	WB-1	PT-1	PT-2	
3016	MAINTENANCE		WB-1	PT-1	PT-2	
3017	SPRINKLER		WB-1	PT-1	PT-2	
3018	SHOP		WB-1	PT-1	PT-2	
3019	MECH		WB-1	PT-1	PT-2	

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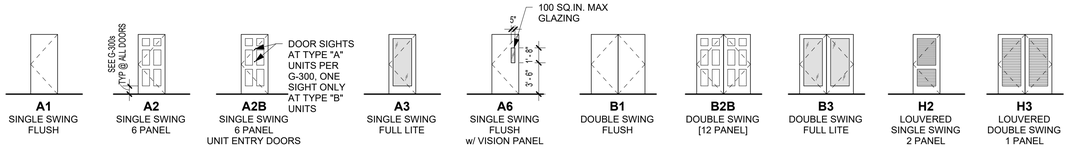
REFERENCE A-501 FOR DOOR AND WINDOW DETAILS

DOOR TYPES



A1 SINGLE SWING FLUSH

A2 SINGLE SWING 6 PANEL

A2B SINGLE SWING 6 PANEL UNIT ENTRY DOORS

A3 SINGLE SWING FULL LITE

A6 SINGLE SWING FLUSH w/ VISION PANEL

B1 DOUBLE SWING FLUSH

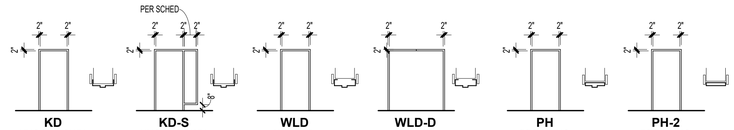
B2B DOUBLE SWING [12 PANEL]

B3 DOUBLE SWING FULL LITE

H2 LOUVERED SINGLE SWING 2 PANEL

H3 LOUVERED DOUBLE SWING 1 PANEL

FRAME TYPES



KD KNOCK DOWN w/ TRIM

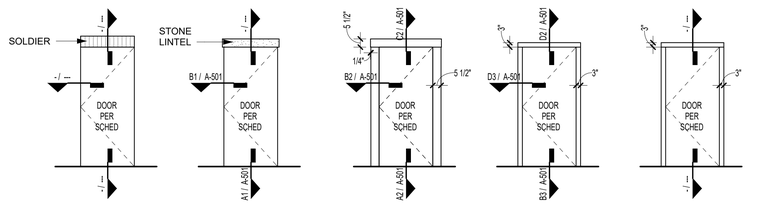
KD-S KNOCK DOWN w SIDE LITE w/ TRIM

WLD WELDED w/ APPLIED TRIM

WLD-D WELDED DUAL EGRESS w/ APPLIED TRIM

PH PRE-HUNG w/ TRIM

PH-2 PRE-HUNG NO RABBET w/ TRIM



TYPICAL EXTERIOR DOOR TRIM (@ BRICK)

TYPICAL EXTERIOR DOOR TRIM (@ STONE)

TYPICAL EXTERIOR DOOR TRIM (@ SIDING)

TYPICAL INTERIOR DOOR CASING (WOOD)

TYPICAL INTERIOR DOOR CASING (CMU)

A1 DOOR TRIM & CASING - TYPICAL
1/4" = 1'-0"

DOOR SCHEDULE ABBREVIATIONS:							
ALUM	ALUMINUM	**FGL / FBG**	FIBERGLASS	**N/A**	NOT APPLICABLE	**STL**	NOT APPLICABLE
ANO	ANODIZED	**HC WOOD / HCWD**	HOLLOW CORE WOOD	**PER MFR**	PER MANUFACTURER	**WD CLAD**	WOOD CLAD
BLK	BLACK	**HM**	HOLLOW METAL	**PRE-FIN**	PRE-FINISHED		
BRZ	BRONZE	**INSUL MTL**	INSULATED METAL	**PT / PTD**	PAINTED		
CLR	CLEAR	**MTL**	METAL	**SC WOOD / SCWD**	SOLID CORE WOOD		

DOOR SCHEDULE - COMMON AREA DOORS

Mark	Location	Width	Height	Thickness	Fire Rating (Minutes)	Access Control (AC)	Panic Hardware	Door Type	Door Material	Door Finish	Frame Type	Frame Finish	Comments
3000		3' - 0"	6' - 8"	1 3/4"			Yes	A3	ALUM.	PRE-FINISH ALUM.	SA	PRE-FINISH ALUM.	CLOSER, WEATHER GASKETS, PUSH PULL BARS, THRESHOLD, TEMPERED, RAIN DRIP, TRANSOM, KEY FOB ACCESS
3001	OFFICE	3' - 0"	6' - 8"	1 3/4"			No	A1	WD S.C.	PT	KD-HM	PT	CLOSER, LATCH HARDWARE
3002	OFFICE	3' - 0"	6' - 8"	1 3/4"			No	A1	WD S.C.	PT	KD-HM	PT	CLOSER, LATCH HARDWARE
3002.1	OFFICE	3' - 0"	6' - 8"	1 3/4"			No	A1	WD S.C.	PT	KD-HM	PT	CLOSER, LATCH HARDWARE
3003	MAIL	4' - 0"	7' - 0"	1 3/4"			No	J2	WD S.C.	PT	KD-HM	PT	CLOSER, LATCH HARDWARE
3004.1	LEASING	3' - 0"	6' - 8"	1 3/4"	20		No	A3	WD S.C.	PT	KD-HM	PT	CLOSER, LATCH HARDWARE, FIRE EXIT HARDWARE
3004.2	COMMUNITY	3' - 0"	6' - 8"	1 3/4"	20		No	A3	WD S.C.	PT	KD-HM	PT	CLOSER, LATCH HARDWARE, FIRE EXIT HARDWARE
3005	RR	3' - 0"	6' - 8"	1 3/4"	20		No	A1	WD S.C.	PT	KD-HM	PT	CLOSER, SWEEPS, LATCH HARDWARE, PRIVACY SET, FIRE EXIT HARDWARE
3006	RR	3' - 0"	6' - 8"	1 3/4"	20		No	A1	WD S.C.	PT	KD-HM	PT	CLOSER, SWEEPS, LATCH HARDWARE, PRIVACY SET, FIRE EXIT HARDWARE
3007		6' - 0"	7' - 0"	1 3/4"			Yes	B3	ALUM.	PRE-FINISH ALUM.	SA	PRE-FINISH ALUM.	CLOSER, WEATHER GASKETS, PUSH PULL BARS, THRESHOLD, TEMPERED, RAIN DRIP, TRANSOM, REMOVABLE CENTER MULLION
3008	STORAGE	3' - 0"	6' - 8"	1 3/4"			No	A1	WD S.C.	PT	KD-HM	PT	CLOSER, LATCH HARDWARE
3009	MECH	3' - 0"	6' - 8"	1 3/4"			No	A1	WD S.C.	PT	KD-HM	PT	SPRING HINGES, SMOKE SEALS, SWEEPS, LATCH HARDWARE
3010		3' - 0"	7' - 0"	1 3/4"			Yes	A1	ALUM.	PRE-FINISH ALUM.	SA	PRE-FINISH ALUM.	CLOSER, WEATHER GASKETS, PUSH PULL BARS, THRESHOLD, TEMPERED, RAIN DRIP, TRANSOM
3011	MEETING ROOM	3' - 0"	6' - 8"	1 3/4"			No	A1	WD S.C.	PT	KD-HM	PT	CLOSER, LATCH HARDWARE
3012	CLASSROOM	3' - 0"	6' - 8"	1 3/4"			No	A1	WD S.C.	PT	KD-HM	PT	CLOSER, LATCH HARDWARE
3013	RR	3' - 0"	6' - 8"	1 3/4"			No	A1	WD S.C.	PT	KD-HM	PT	CLOSER, SWEEPS, LATCH HARDWARE, PRIVACY SET
3014	MEETING ROOM	3' - 0"	6' - 8"	1 3/4"			No	A1	WD S.C.	PT	KD-HM	PT	CLOSER, LATCH HARDWARE
3015	OFFICE	3' - 0"	6' - 8"	1 3/4"			No	A1	WD S.C.	PT	KD-HM	PT	CLOSER, LATCH HARDWARE
3015.1	OFFICE	5' - 0"	6' - 8"	1 3/4"			No	B1	WD S.C.	PT	KD-HM	PT	CLOSER, LATCH HARDWARE
3016		3' - 0"	6' - 8"	1 3/4"	60		No	A1	INSUL. MTL.	PT	WLD INSUL.	PT	CLOSER, WEATHER GASKET, RAIN DRIP, LATCH HARDWARE, THRESHOLD, FIRE EXIT HARDWARE
3017.1		3' - 0"	6' - 8"	1 3/4"			No	A1	INSUL. MTL.	PT	WLD INSUL.	PT	CLOSER, WEATHER GASKET, RAIN DRIP, LATCH HARDWARE, THRESHOLD
3017.2	SPRINKLER	3' - 0"	6' - 8"	1 3/4"	20		No	A1	INSUL. MTL.	PT	WLD INSUL.	PT	CLOSER, LATCH HARDWARE, FIRE EXIT HARDWARE
3018.1	SHOP	3' - 0"	6' - 8"	1 3/4"	20		No	A1	INSUL. MTL.	PT	WLD INSUL.	PT	CLOSER, LATCH HARDWARE, FIRE EXIT HARDWARE
3018.2		6' - 0"	7' - 0"	1 3/4"			Yes	B2	INSUL. MTL.	PT	WLD INSUL.	PT	CLOSER, WEATHER GASKET, RAIN DRIP, LATCH HARDWARE, THRESHOLD, REMOVEABLE CENTER MULLION
3019	MECH	3' - 0"	6' - 8"	1 3/4"	20		No	A1	INSUL. MTL.	PT	WLD INSUL.	PT	CLOSER, LATCH HARDWARE, FIRE EXIT HARDWARE

PRINTS ISSUED
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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS
TOPEKA, KS

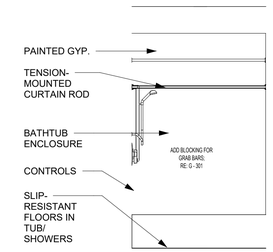
SHEET TITLE
WINDOW / DOOR / FINISH SCHEDULES

PROJECT NUMBER: 25144

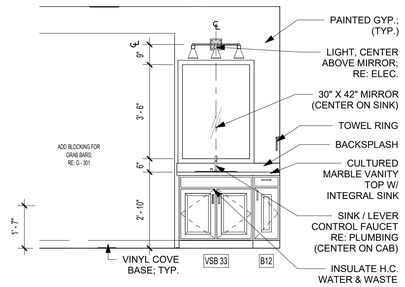
SHEET NUMBER:

A-600

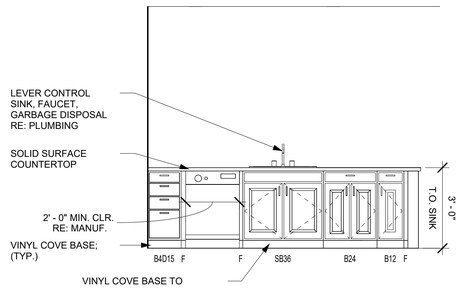
REFERENCE G-003 FOR GENERAL NOTES



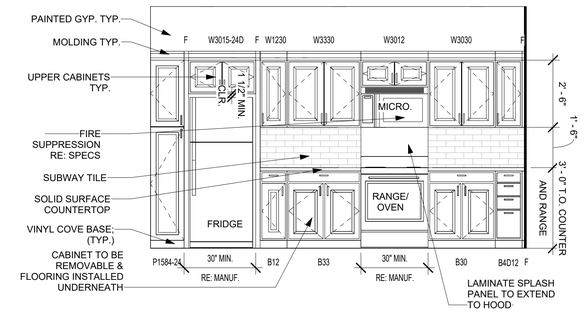
D4 2 BED TYPE B - BATH - SHOWER
3/8" = 1'-0"



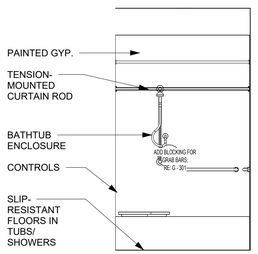
D3 2 BED TYPE B - BATH - SINK
3/8" = 1'-0"



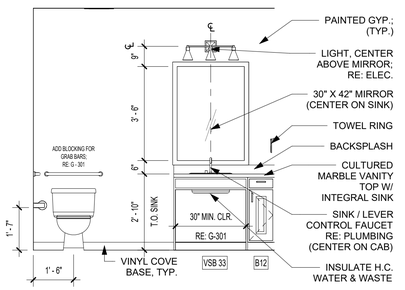
D2 2 BED TYPE B - KITCHEN - SINK
3/8" = 1'-0"



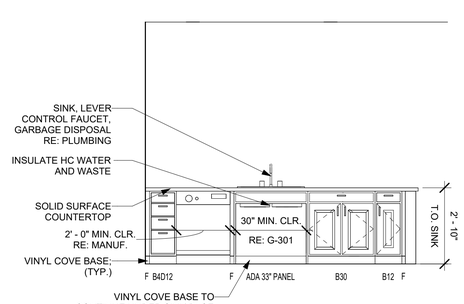
D1 2 BED TYPE B - KITCHEN - RANGE
3/8" = 1'-0"



C4 2 BED TYPE A - BATH - SHOWER
3/8" = 1'-0"

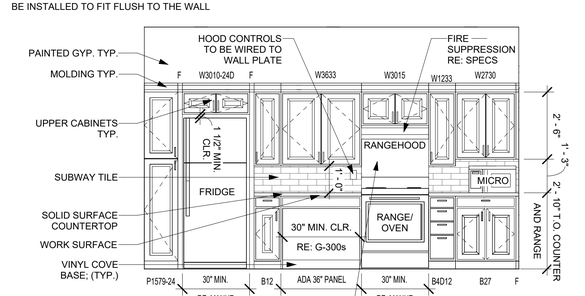


C3 2 BED TYPE A - BATH - SINK
3/8" = 1'-0"

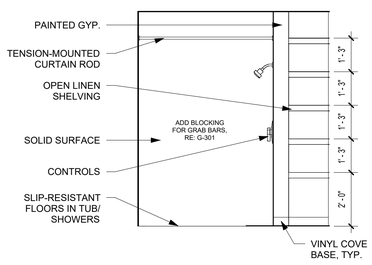


C2 2 BED TYPE A - KITCHEN - SINK
3/8" = 1'-0"

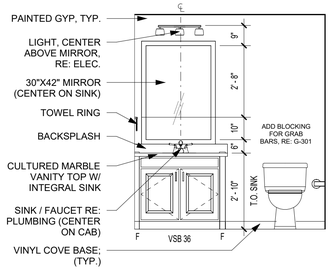
NOTE: INSTALL ANTI-TIP DEVICES ON ALL KITCHEN RANGES. MUST BE SECURELY FASTENED TO FLOOR. RANGES MUST BE INSTALLED TO FIT FLUSH TO THE WALL



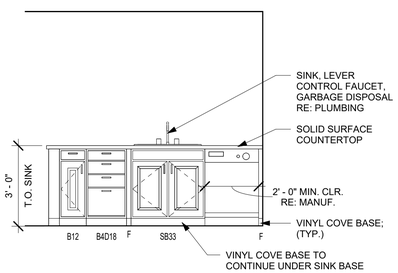
C1 2 BED TYPE A - KITCHEN - RANGE
3/8" = 1'-0"



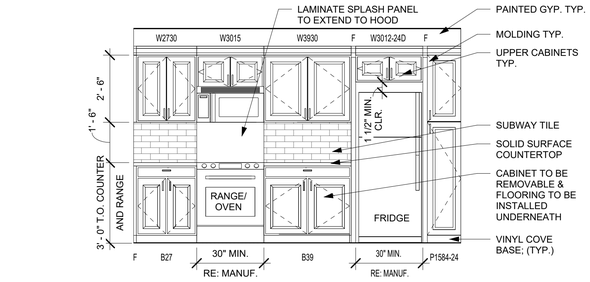
B4 1 BED TYPE B - BATH - SHOWER
3/8" = 1'-0"



B3 1 BED TYPE B - BATH - SINK
3/8" = 1'-0"

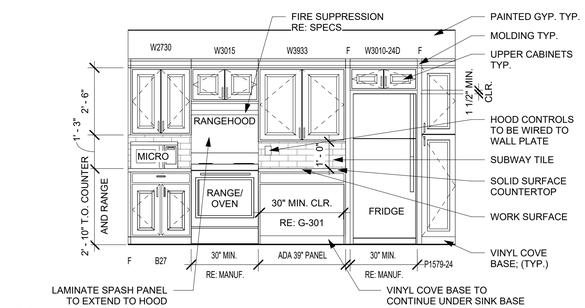


B2 1 BED TYPE B - KITCHEN - SINK
3/8" = 1'-0"



B1 1 BED TYPE B - KITCHEN - RANGE
3/8" = 1'-0"

NOTE: INSTALL ANTI-TIP DEVICED ON ALL KITCHEN RANGES. MUST BE SECURELY FASTENED TO FLOOR. RANGES MUST BE INSTALLED TO FIT FLUSH TO THE WALL



A1 1 BED TYPE A - KITCHEN - RANGE
3/8" = 1'-0"

13/8/2025 10:06:33 AM
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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

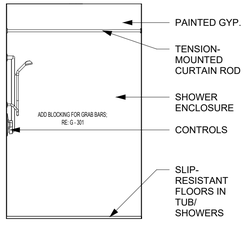
TOPEKA, KS

SHEET TITLE
INTERIOR ELEVATIONS - UNITS

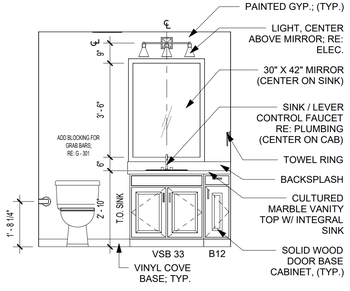
PROJECT NUMBER: 25144

SHEET NUMBER:

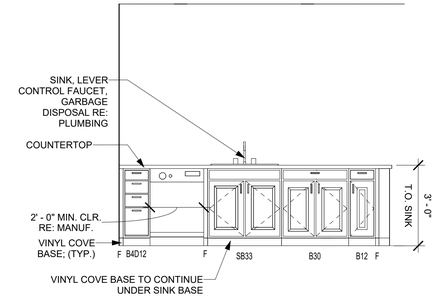
A-700



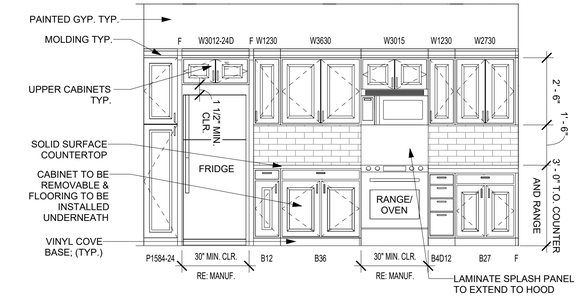
C4 3 BED TYPE B - BATH 1 - SHOWER
3/8" = 1'-0"



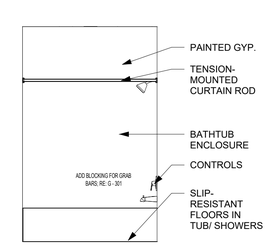
C3 3 BED TYPE B - BATH 1 - SINK
3/8" = 1'-0"



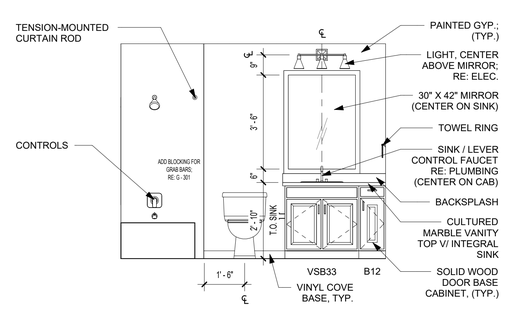
C2 3 BED TYPE B - KITCHEN - SINK
3/8" = 1'-0"



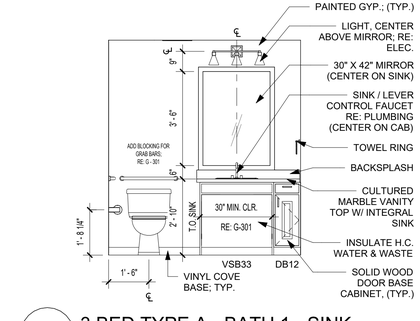
C1 3 BED TYPE B - KITCHEN - RANGE
3/8" = 1'-0"



B2 3 BED TYPE A - BATH 2 - SHOWER
3/8" = 1'-0"

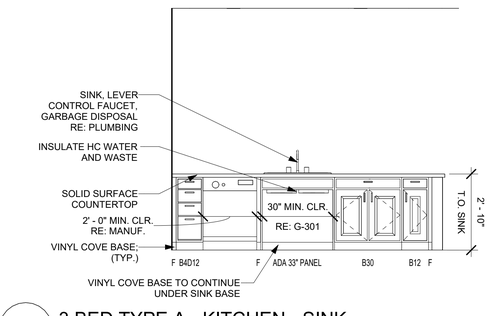


D1 3 BED TYPE B - BATH 2 - SINK
3/8" = 1'-0"

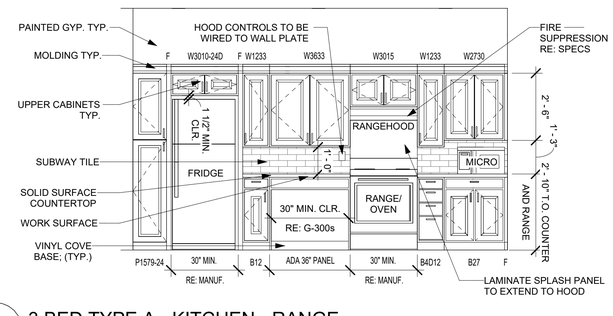


A4 3 BED TYPE A - BATH 1 - SHOWER
3/8" = 1'-0"

A3 3 BED TYPE A - BATH 1 - SINK
3/8" = 1'-0"



A2 3 BED TYPE A - KITCHEN - SINK
3/8" = 1'-0"



A1 3 BED TYPE A - KITCHEN - RANGE
3/8" = 1'-0"

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
INTERIOR ELEVATIONS - UNITS

PROJECT NUMBER: 25144

SHEET NUMBER:

A-701

12/18/2025 10:10:24 AM
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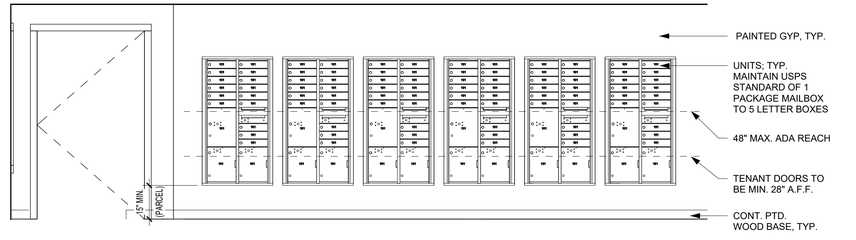
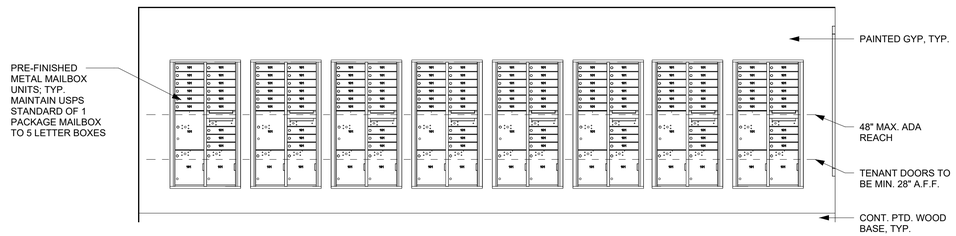
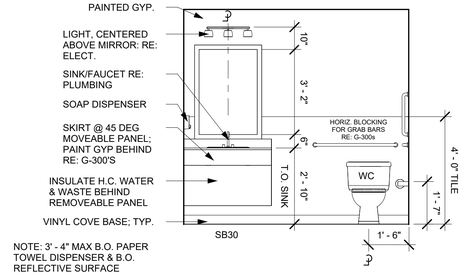
REFERENCE G-003 FOR GENERAL NOTES



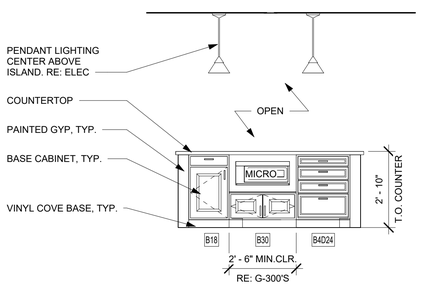
C1 MAIL - 2
3/8" = 1'-0"



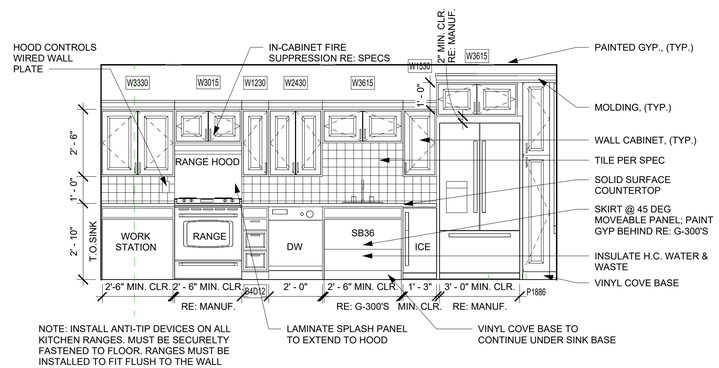
B2 MAIL - 1
3/8" = 1'-0"



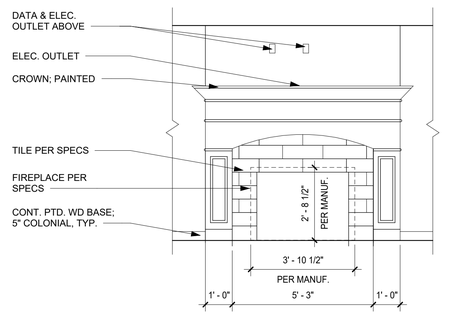
B1 COMMUNITY BATHROOM - SINK
3/8" = 1'-0"



A3 COMMUNITY KITCHEN - ISLAND
3/8" = 1'-0"



A2 COMMUNITY KITCHEN - SINK / RANGE
3/8" = 1'-0"



A1 TYP. FIREPLACE ELEVATION
3/8" = 1'-0"

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
INTERIOR ELEVATIONS - COMMON AREAS

PROJECT NUMBER: 25144

SHEET NUMBER:

A-710

12/18/2025 10:15:43 AM
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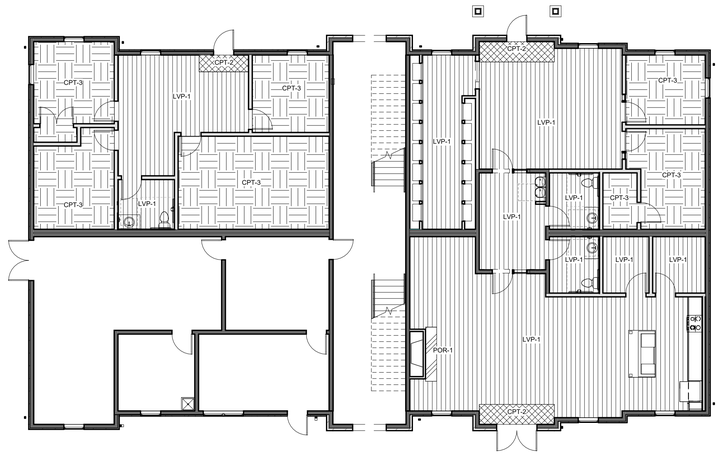
REFERENCE G-003 FOR GENERAL NOTES

FINISH LEGEND

- WOM-1 - WALK-OFF-MAT
- CPT-1 - CARPET (COMMON)
- CPT-2 - CARPET (CORRIDORS)
- CPT-3 - CARPET (BROADLOOM)
- LVP-1 - LUXURY VINYL PLANK
- SV-1 - SHEET VINYL
- CT-1 - CERAMIC TILE



A1 1ST FLOOR FINISH PLAN - BUILDING C
3/32" = 1'-0"

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
COMMUNITY AREAS FINISH PLAN

PROJECT NUMBER: 25144

SHEET NUMBER:

A-720

12/18/2025 12:10:48 AM
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ELECTRICAL SYMBOL LEGEND

SOME SYMBOLS AND ABBREVIATIONS ON THIS LEGEND MAY NOT BE USED

CIRCUITING

- HOME RUN (2#12 1#12G UNO)
- INDICATES 2 PHASE, 1 N, & 1 GRD CONDUCTOR
- HOME RUN: INDICATES SHARED CIRCUIT
- HOME RUN: INDICATES #10 CONDUCTORS ENTIRELY

UTILITIES

- UGE — UNDERGROUND ELECTRICAL
- OHE — OVERHEAD ELECTRICAL
- TELE — TELECOMMUNICATIONS CONDUIT
- UGT — UNDERGROUND TELECOMMUNICATIONS CONDUIT

LIGHTING

- FLUORESCENT LIGHT FIXTURE
- FLUORESCENT STRIP FIXTURE
- SURFACE/RECESSED LIGHT FIXTURE
- WALL-MOUNTED LIGHT FIXTURE
- POLE-MOUNTED LIGHT FIXTURE
- EXIT LIGHT
- BATTERY-OPERATED EMERGENCY LIGHT (WALL MTD)
- BATTERY-OPERATED EMERGENCY LIGHT (CEILING MTD)
- WALL-MOUNTED COMBINATION EXIT LIGHT/ BATTERY-OPERATED EMERGENCY LIGHT
- $ LIGHT SWITCH – SINGLE POLE
- $3 LIGHT SWITCH – 3-WAY
- $4 LIGHT SWITCH – 4-WAY
- $K LIGHT SWITCH – KEY
- $D LIGHT SWITCH – DIMMER
- $PL LIGHT SWITCH – PILOT LIGHT
- $2P LIGHT SWITCH – 2 POLE
- $3D LIGHT SWITCH – 3-WAY DIMMER
- $M WALL-MOUNTED MOTION SWITCH
- (M) CEILING-MOUNTED MOTION SWITCH
- FD1 DIMMER BOARD
- RCS-1 REMOTE CONTROL SWITCH AS SCHEDULED
- TC TIMECLOCK – REFER TO PLANS / DETAILS

EQUIPMENT

- DISCONNECT SWITCH. RE: PLANS FOR INFORMATION.
- MAGNETIC MOTOR STARTER
- COMBINATION DISCONNECT SWITCH / MOTOR STARTER
- TOGGLE-TYPE DISCONNECT. FURNISH WITH THERMAL MOTOR PROTECTION WHERE SERVING FANS/PUMPS.
- SURFACE PANELBOARD
- RECESSED PANELBOARD

GENERAL SYMBOLS

- INDICATES CONNECT TO EXISTING
- INDICATES ELEVATION

POWER DEVICES

- DUPLEX RECEPTACLE.
- LINE THRU DEVICE INDICATES ABOVE COUNTER
- GFI SPECIAL DUPLEX RECEPTACLE (GFCI, ISOLATED GROUND, ETC.)
- QUADPLEX RECEPTACLE
- 5-50R SIMPLEX RECEPTACLE W/NEMA CONFIG AS NOTED
- 5-50R MULTI-POLE RECEPTACLE W/NEMA CONFIG AS NOTED
- CEILING MOUNTED RECEPTACLE
- RECEPTACLE/DEVICE MOUNTED IN "TOMBSTONE"
- POKE-THRU WITH POWER
- POKE-THRU WITH TELECOMMUNICATIONS
- POKE-THRU W/POWER AND TELECOM
- TG SINGLE GANG FLOOR BOX (2, 3, 4 GANG SIMILAR)
- PLUG MOLD / WIRE MOLD AS SPECIFIED
- J JUNCTION BOX
- T THERMOSTAT – ELECTRIC
- PUSH BUTTON
- MOTOR

TELEPHONE/DATA

- TELEPHONE OUTLET
- LINE THRU DEVICE INDICATES ABOVE COUNTER
- DATA OUTLET
- TELEPHONE/DATA OUTLET
- 1V PHONE OUTLET WITH NUMBER OF PHONE JACKS AS INDICATED – SEE DETAILS FOR ADD'L INFO.
- 1D DATA OUTLET WITH NUMBER OF PHONE JACKS AS INDICATED – SEE DETAILS FOR ADD'L INFO.
- 1D/1V PHONE/DATA OUTLET WITH NUMBER OF PHONE/DATA JACKS AS INDICATED – SEE DETAILS FOR ADD'L INFO.
- W WALL-MOUNTED WIRELESS INTERNET TRANSMITTER
- W CEILING-MOUNTED WIRELESS INTERNET TRANSMITTER

AUDIO/VISUAL

- TV TELEVISION OUTLET
- S WALL SPEAKER
- S CEILING SPEAKER
- S WALL SPEAKER – HORN TYPE
- S CEILING SPEAKER – HORN TYPE
- SSUB CEILING SPEAKER – SUBWOOFER
- SS CEILING SPEAKER – SOUND SYSTEM
- V VOLUME CONTROL
- I INTERCOM CALL STATION
- INTERCOM HANDSET
- SOUND SYSTEM AUDIO JACK
- RM REMOTE MICROPHONE CONTROL
- PAS PUBLIC ADDRESS SYSTEM AMPLIFIER
- IMS INTERCOM MASTER STATION

FIRE ALARM

- F MANUAL PULL STATION
- D CEILING SMOKE DETECTOR
- D DUCT SMOKE DETECTOR
- H HEAT DETECTOR
- ■ WF WATERFLOW SWITCH
- ■ TS TAMPER SWITCH
- 75 VISIBLE NOTIFICATION DEVICE WITH CANDELA RATING. 15cd RATING UNLESS OTHERWISE NOTED ON PLANS.
- 30 AUDIBLE/VISIBLE NOTIFICATION DEVICE WITH CANDELA RATING. 15cd UNLESS OTHERWISE NOTED ON PLANS.
- HORN
- 75 CEILING-MOUNTED STROBE LIGHT WITH CANDELA RATING. MINIMUM OF 15cd RATING.
- 30 CEILING-MOUNTED COMBINATION HORN/STROBE WITH CANDELA RATING. MIN. OF 15cd RATING.
- CEILING-MOUNTED HORN
- CEILING-MOUNTED SPEAKER
- R RELAY
- FACP FIRE ALARM CONTROL PANEL
- FAAP FIRE ALARM ANNUNCIATOR PANEL
- FARA REMOTE ANNUNCIATOR PANEL
- FAEC FIRE ALARM EXTENDER CABINET
- DH DOOR HOLDER
- D120V SINGLE / MULTI-STATION 120V SMOKE ALARM
- ZAM ZONE ADDRESSABLE MODULE
- IAM INDIVIDUAL ADDRESSABLE MODULE
- HFSS KITCHEN HOOD FIRE SUPPRESSION SYSTEM PANEL
- H KITCHEN HOOD REMOTE PULL STATION
- ARA AREA OF RESCUE ASSISTANCE STATION
- ARAM AREA OF RESCUE ASSISTANCE MASTER STATION

MECHANICAL AND PLUMBING SYMBOL LEGEND

SOME SYMBOLS AND ABBREVIATIONS ON THIS LEGEND MAY NOT BE USED

SHEET METAL

- HIGH EFFICIENCY ROUND DUCT TAKEOFF (WITH & WITHOUT MANUAL DAMPER)
- SPIN-IN ROUND DUCT TAKEOFF (WITH & WITHOUT MANUAL DAMPER)
- CONICAL BELLMOUTH ROUND TAKEOFF
- ROUND DUCT RUNOUT WITH FLEX DUCT
- DUCTWORK ELBOW (WITH & WITHOUT TURNING VANES)
- FD/SD FD:FIRE DAMPER FS:FIRE/SMOKE DAMPER SD:SMOKE DAMPER BD:BACKDRAFT DAMPER (GRAVITY)
- MD AUTOMATIC MOTORIZED DAMPER
- RD RADIATION DAMPER
- 8"ø A 225 SUPPLY DIFFUSER AND DIFFUSER CALLOUT (NECK SIZE, TYPE AND CFM)
- LINEAR/SLOT DIFFUSER
- RETURN GRILLE OR EXHAUST REGISTER
- SUPPLY AIR FLOW INDICATOR
- RETURN AND EXHAUST AIR FLOW INDICATOR
- THERMOSTAT
- TEMPERATURE SENSOR
- H HUMIDISTAT
- CONTROL WIRING

GENERAL SYMBOLS

- INDICATES CONNECT TO EXISTING
- INDICATES ELEVATION

MECHANICAL PIPING

- RL REFRIGERANT LIQUID
- RS REFRIGERANT SUCTION
- D DRAIN (CONDENSATE)
- CA COMPRESSED AIR

PLUMBING PIPING

- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- RECIRCULATING DOMESTIC HOT WATER
- SAN WASTE ABOVE GRADE OR FLOOR
- SAN WASTE BELOW GRADE OR FLOOR
- ST STORM ABOVE GRADE OR FLOOR
- ST STORM BELOW GRADE OR FLOOR
- ST/O STORM OVERFLOW ABOVE GRADE OR FLOOR
- ST/O STORM OVERFLOW BELOW GRADE OR FLOOR
- V PLUMBING VENT
- W WATER SERVICE
- G GAS (NATURAL)
- PD FROM SUMP PUMP DISCHARGE
- CA COMPRESSED AIR
- LP PROPANE
- SCW SOFT DOMESTIC COLD WATER
- SHW SOFT DOMESTIC HOT WATER
- SRW SOFT RECIRCULATING HOT WATER

FIRE SPRINKLER

- F FIRE PROTECTION PIPING
- SPRINKLER HEAD
- SIDEWALL SPRINKLER HEAD
- FIRE PROTECTION SIAMESE CONNECTION
- POST INDICATOR VALVE

PIPING SYMBOLS

- SHUTOFF VALVE
- SHUTOFF VALVE IN RISER
- BALANCING VALVE
- PLUG VALVE
- AUTO FLOW CONTROL VALVE
- PIPING ELBOW UP
- PIPING ELBOW DOWN
- PIPING TEE
- PIPING ELBOW
- PIPING TEE UP
- PIPING TEE DOWN
- INCREASER / REDUCER
- UNION
- CAP
- PIPE FLEX
- STRAINER
- CHECK VALVE
- INLINE STRAINER
- TEST PLUG
- GUIDE
- ANCHOR
- TRIPLE DUTY VALVE
- AUTOMATIC 2-WAY CONTROL VALVE
- AUTOMATIC 3-WAY CONTROL VALVE
- SOLENOID VALVE

PIPING SPECIALTIES

- P T PRESS/ TEMP GAUGE WITH COCK
- THERMOMETER.
- HI LOW PRESSURE REDUCING VALVE
- RELIEF VALVE
- WATER HAMMER ARRESTER

PLUMBING FIXTURES/EQUIPMENT

- HB HOSE BIBB
- WH WALL HYDRANT
- CLEAN OUT
- RPZ REDUCED PRESSURE BACKFLOW PREVENTER
- DCBP DOUBLE CHECK BACKFLOW PREVENTER
- WC-1 S-1 PLUMBING FIXTURE AND CALLOUT
- FD-1 FD: FLOOR DRAIN, AD: AREA DRAIN, FS: FLOOR SINK
- RD-1 RD: ROOF DRAIN ORD: OVERFLOW ROOF DRAIN

SHEET INDEX

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MEP101	MEP SITE PLAN
MEP200	MEP PENETRATION DETAILS
MEP201	MEP PENETRATION DETAILS
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M102	THIRD FLOOR HVAC PLAN - BUILDING A
M103	FIRST & SECOND FLOOR HVAC PLANS - BUILDING B
M104	THIRD HVAC PLAN - BUILDING B
M105	FIRST & SECOND FLOOR HVAC PLANS - BUILDING C
M106	THIRD FLOOR HVAC PLAN - BUILDNG C
M211	ENLARGED UNITS HVAC PLANS
M212	ENLARGED UNITS HVAC PLANS
M301	MECHANICAL SCHEDULES
P101	FIRST & SECOND FLOOR PLUMBING PLANS - BUILDING A
P102	THIRD FLOOR PLUMBING PLAN - BUILDING A
P103	FIRST & SECOND FLOOR PLUMBING PLANS - BUILDING B
P104	THIRD FLOOR PLUMBING PLAN - BUILDING B
P105	FIRST & SECOND FLOOR PLUMBING PLANS - BUILDING C
P106	THIRD FLOOR PLUMBING PLAN - BUILDING C
P211	ENLARGED UNITS PLUMBING PLANS
P212	ENLARGED UNITS PLUMBING PLANS
P301	PLUMBING RISER DIAGRAMS
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E101	FIRST & SECOND FLOOR ELECTRICAL PLANS - BUILDING A
E102	THIRD FLOOR ELECTRICAL PLAN - BUILDING A
E103	FIRST & SECOND FLOOR ELECTRICAL PLANS - BUILDING B
E104	THIRD FLOOR ELECTRICAL PLAN - BUILDING B
E105	FIRST & SECOND FLOOR ELECTRICAL PLANS - BUILDING C
E106	THIRD FLOOR ELECTRICAL PLAN - BUILDING C
E111	ENLARGED UNITS LIGHTING PLANS
E112	ENLARGED UNITS LIGHTING PLANS
E113	ENLARGED BLDG. C COMMUNITY LIGHTING PLAN
E211	ENLARGED UNITS POWER PLANS
E212	ENLARGED UNITS POWER PLANS
E213	ENLARGED BLDG. - C COMMUNITY POWER PLAN
E301	ELECTRICAL RISER DIAGRAM
E302	ELECTRICAL LOAD CALCULATIONS
E303	ELECTRICAL LOAD CALCULATIONS
E401	ELECTRICAL SCHEDULES
E501	ELECTRICAL DETAILS

ABBREVIATIONS

A/E	ARCHITECT / ENGINEER	ELEV	ELEVATION	MH	MANHOLE
AFF	ABOVE FINISHED FLOOR	EM	EMERGENCY FIXTURE/DEVICE	MLO	MAIN LUGS ONLY
AFG	ABOVE FINISHED GRADE	EWT	ENTERING WATER TEMPERATURE	NFA	NET FREE AREA
AG	ABOVE GRADE	EX	EXISTING ITEM	NL	NIGHT LIGHT
AHJ	AUTHORITY HAVING JURISDICTION	FFA	FROM FLOOR ABOVE	OA	OUTSIDE AIR
AHU	AIR HANDLING UNIT	FFB	FROM FLOOR BELOW	ORD	OVERFLOW ROOF DRAIN
ARCH	ARCHITECT	FFCO	FINISHED FLOOR CLEAN OUT	P/C	PLUMBING CONTRACTOR
BFP	BACKFLOW PREVENTER	FGCO	FLUSH GRADE CLEAN OUT	PSI	POUNDS PER SQUARE INCH
BG	BELOW GRADE	FL	FLOW LINE	PVC	POLYVINYLCHLORIDE
BLDG	BUILDING	FLR	FLOOR	RA	RETURN AIR
BMS	BUILDING MANAGEMENT SYSTEM	FP	FIRE PROTECTION	RE/REF	REFER / REFERENCE
C	CONDUIT	FPM	FEET PER MINUTE	RF	RELIEF FAN
CD	CANDELA	FWCO	FLUSH WALL CLEAN OUT	RL	RELOCATED ITEM
CD	COLD DECK	G	GROUND / GANG	RPZ	REDUCED PRESSURE ZONE
CLG	COOLING	G/C	GENERAL CONTRACTOR	RR	RESTROOM
CM	COORDINATE MOUNTING HEIGHT	GFI	GROUND FAULT CIRCUIT INTERUPTER	SA	SUPPLY AIR
CO	CLEAN OUT	GFIP	GFI-PROTECTED DEVICE	SPD	SURGE PROTECTIVE DEVICE
CTE	CONNECT TO EXISTING	GPM	GALLONS PER MINUTE	ST	SHUNT TRIP
DCVA	DOUBLE CHECK VALVE ASSEMBLY	HD	HOT DECK	TA	TRANSFER AIR
DCW	DOMESTIC COLD WATER	HTG	HEATING	TFA	TO FLOOR ABOVE
DDC	DIRECT DIGITAL CONTROLS	IG	ISOLATED GROUND	TFB	TO FLOOR BELOW
DF	DRINKING FOUNTAIN	JB	JUNCTION BOX	TP	TAMPERPROOF
DHW	DOMESTIC HOT WATER	LED	LIGHT EMITTING DIODE	TYP	TYPICAL
DHWR	DOMESTIC HOT WATER RETURN	LWT	LEAVING WATER TEMPERATURE	UNO	UNLESS NOTED OTHERWISE
DIA	DIAMETER	M/C	MECHANICAL CONTRACTOR	VRF	VARIABLE REFRIGERANT FLOW
DN	DOWN	MA	MIXED AIR	VTR	VENT THROUGH ROOF
E/C	ELECTRICAL CONTRACTOR	MAU	MAKE UP AIR UNIT	WCO	WALL CLEANOUT
EA	EXHAUST AIR	MCB	MAIN CIRCUIT BREAKER	WG	WIRE GUARD
EDF	ELECTRIC DRINKING FOUNTAIN	MECH	MECHANICAL	WP	WEATHERPROOF

GEN. MECHANICAL NOTES

1. COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED VERSION OF THE INTERNATIONAL MECHANICAL CODE, LOCAL AND STATE CODES, AND REQUIREMENTS OF THE AHJ.
2. ANY POWER FOR CONTROL SYSTEMS TO BE PROVIDED BY E/C IS INDICATED ON ELECTRICAL PLANS. ANY ADDITIONAL LINE VOLTAGE OR LOW VOLTAGE POWER REQUIRED BY THE M/C OR SUBCONTRACTORS TO HAVE A FULLY FUNCTIONING SYSTEM SHALL BE PROVIDED BY THE M/C CONTRACTOR OR SUBS.
3. ALL EQUIPMENT SHALL BE ADEQUATELY AND PROPERLY SUPPORTED AND FASTENED FROM STRUCTURE.
4. ALL EQUIPMENT AND ACCESSORIES INSTALLED IN CONCEALED SPACES REQUIRING ACCESS SHALL BE PROVIDED WITH ACCESS DOORS MEETING ANY FIRE REQUIREMENTS OF THE WALL/CEILING THEY ARE INSTALLED.
5. EACH AIR HANDLING UNIT OVER 20000CFM SHALL BE PROVIDED WITH A SMOKE DETECTOR TO SHUT DOWN THE UNIT PER IMC 606 AS REQUIRED BY AHJ. COORDINATE WITH OTHER TRADES.
6. START UP AND ADJUST ALL EQUIPMENT AND VERIFY ALL MECHANICAL SYSTEMS IN OPERATE IN ACCORDANCE WITH THEIR INTENDED PURPOSES. SUBMIT BALANCE AND START UP REPORTS TO THE A/E. REFER TO SPECIFICATIONS FOR ANY ADDITIONAL REQUIREMENTS.

COORDINATION NOTES

1. COORDINATE REQUIREMENTS FOR INSTALLATION OF SYSTEMS AND EQUIPMENT WITH ALL OTHER TRADES.
2. THE CONTRACTOR SHALL COORDINATE THE ROUTING AND PATH OF ALL SYSTEMS, CONDUITS, PIPES, DUCTS, ETC WITH THE POSITION AND LAYOUT OF THE STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING NECESSARY OFFSETS, TURNS, RISES AND DROPS FOR SYSTEMS AND COMPONENTS AS NEEDED TO INSTALL THE MEP SYSTEMS TO CLEAR STRUCTURE, CEILINGS, ETC AND OTHER SYSTEMS IN POTENTIAL CONFLICT WITH ROUTING.
3. COORDINATE WORK WITH OTHER TRADES TO INSTALL SYSTEMS ABOVE CEILING HEIGHTS INDICATED ON ARCHITECTURAL PLANS.
4. CHECK SPACE REQUIREMENTS WITH OTHER TRADES AND STRUCTURE/CONSTRUCTION TO ENSURE THAT ALL MATERIALS AND EQUIPMENT CAN BE INSTALLED IN THE SPACE ALLOTTED INCLUDING FINISHED SUSPENDED CEILINGS AND OTHER SPACES, CHASES, ETC WITHIN THE BUILDING. MAKE MODIFICATIONS THERETO AS REQUIRED AND APPROVED.
5. TRANSMIT TO OTHER TRADES ALL INFORMATION REQUIRED FOR WORK TO BE PROVIDED UNDER THEIR RESPECTIVE SECTIONS IN AMPLE TIME FOR INSTALLATION.
6. WHEREVER WORK INTERCONNECTS WITH WORK OF OTHER TRADES, COORDINATE WITH THOSE TRADES TO ENSURE THAT ALL SUBCONTRACTORS HAVE THE INFORMATION NECESSARY SO THAT THEY MAY PROPERLY INSTALL ALL CONNECTIONS AND EQUIPMENT. IDENTIFY ALL ITEMS OF WORK THAT REQUIRE ACCESS SO THAT THE CEILING TRADE WILL KNOW WHERE TO INSTALL ACCESS DOORS AND PANELS.
7. COORDINATE, PROJECT AND SCHEDULE WORK WITH OTHER TRADES IN ACCORDANCE WITH THE CONSTRUCTION SEQUENCE.
8. DRAWINGS SHOW THE GENERAL RUNS OF CONDUITS, PIPING AND DUCTWORK AND APPROXIMATE LOCATION OF OUTLETS. ANY SIGNIFICANT CHANGES IN LOCATION OF ITEMS NECESSARY IN ORDER TO MEET FIELD CONDITIONS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT/ENGINEER AND RECEIVE HIS APPROVAL BEFORE SUCH ALTERATIONS ARE MADE. ALL SUCH MODIFICATIONS SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION AND REPAIR OF SURFACES, AREAS AND PROPERTY THAT MAY BE DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES.
10. ADJUST LOCATION OF PIPING, DUCTWORK, ETC. TO PREVENT INTERFERENCES, BOTH ANTICIPATED AND ENCOUNTERED. DETERMINE THE EXACT ROUTE AND LOCATION OF EACH ITEM PRIOR TO FABRICATION. MAKE OFFSETS, TRANSITIONS AND CHANGES IN DIRECTION IN SYSTEMS AS REQUIRED TO MAINTAIN ADEQUATE CLEARANCES AND HEADROOM.
11. WHEREVER THE WORK IS OF SUFFICIENT COMPLEXITY, PREPARE ADDITIONAL COORDINATION DRAWINGS AND ORGANIZE ON-SITE MEETINGS WITH ALL RELATED SUBCONTRACTORS TO COORDINATE THE WORK BETWEEN TRADES . DRAWINGS SHALL CLEARLY SHOW THE WORK AND ITS RELATION TO THE WORK OF OTHER TRADES, AND BE SUBMITTED FOR REVIEW PRIOR TO COMMENCING SHOP FABRICATION OR ERECTION IN THE FIELD.
12. COORDINATE WITH LOCAL UTILITY PROVIDERS FOR THEIR REQUIREMENTS FOR SERVICE CONNECTIONS AND PROVIDE ALL NECESSARY PAYMENTS, MATERIALS, LABOR AND TESTING TO ACCOMPLISH THE WORK.
13. COORDINATE THE MOUNTING OF SUSPENDED LIGHT FIXTURES UTILIZING INDIRECT LIGHT SO THAT CONDUIT, DUCTWORK, STRUCTURAL MEMBERS, ETC. ARE NOT LOCATED DIRECTLY ABOVE THE LIGHT FIXTURE. MAINTAIN A MINIMUM OF 24" CLEARANCE FROM THESE ITEMS WHENEVER POSSIBLE.

GENERAL NOTES

1. SOME ROOM NAMES MAY NOT BE SHOWN FOR PURPOSE OF CLARIFYING PLAN. REFER TO ARCHITECTURAL PLANS FOR REFERENCE TO ROOM NAMES NOT SHOWN.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN AND KEEP AT THE JOB SITE, AN UP TO DATE SET OF "RECORD AND KEEP" DRAWINGS" SHOWING ALL CHANGES FROM THE ORIGINAL PLANS. THE CONTRACTOR SHALL DELIVER THE "RECORD DRAWINGS" TO THE ENGINEER AT THE CONCLUSION OF THE PROJECT ELECTRONICALLY.
3. THESE DRAWINGS ARE DIAGRAMMATIC. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS (NEW AND EXISTING), DIMENSIONS, AND CLEARANCES PRIOR TO THE COMMENCEMENT OF WORK AND SHALL INCLUDE ALL COSTS, EQUIPMENT, MATERIAL, ACCESSORIES, ETC. REQUIRED FOR A FULLY COMPLETE, FUNCTIONAL AND CODE COMPLIANT INSTALLATION.
4. FINAL LOCATIONS OF ALL DEVICES, LIGHT FIXTURES, EQUIPMENT ETC SHALL BE INDICATED ON THE ARCHITECTURAL DRAWINGS. ALL DIMENSIONAL INFORMATION SHALL BE OBTAINED FROM ARCHITECTURAL PLANS. NO DIMENSIONAL INFORMATION SHALL BE OBTAINED FROM MEP DRAWINGS.
5. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS, APPROVALS, LICENSES, ETC. AS NEEDED FOR THE COMPLETE INSTALLATION AND PROJECT. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR ALL FEES AND DATA NEEDED FOR THIS.

GENERAL ELECTRICAL NOTES

1. COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED VERSION OF THE NATIONAL ELECTRICAL CODE, LOCAL AND STATE CODES, AND REQUIREMENTS OF THE AHJ.
2. COORDINATE LOCATIONS OF RECEPTACLES, SWITCHES, ETC. WITH ARCHITECTURAL CASEWORK AND ELEVATIONS.
3. REFER TO MOUNTING HEIGHTS DETAIL FOR MOUNTING HEIGHTS OF ALL DEVICES NOT INDICATED OTHERWISE.
4. PROVIDE ALL EMPTY CONDUITS WITH PULL STRINGS AND BUSHED ENDS.
5. CONTRACTOR SHALL CONCEAL ALL CONDUIT, FITTINGS, AND DEVICES FROM VIEW WHERE REASONABLY POSSIBLE.
6. ALL CONDUCTOR SIZES INDICATED ON DRAWINGS ARE FOR COPPER CONDUCTORS UNLESS SPECIFICALLY NOTED OTHERWISE. ALUMINUM CONDUCTORS MAY BE USED ONLY UNDER THE FOLLOWING CONDITIONS:
   - 6.1. CONTRACTOR SHALL INCLUDE A DEDUCT ALTERNATE FOR USE OF SAME WITH BIDS, FOR OWNER ACCEPTANCE.
   - 6.2. AL CONDUCTORS MAY ONLY BE USED ON FEEDERS 100A OR GREATER – NO EXCEPTIONS.
   - 6.3. ALUMINUM CABLING SHALL BE COMPACTED ALUMINUM (STABILOY).
   - 6.4. PROVIDE COMPRESSION-TYPE ONE-HOLE OR TWO-HOLE LUG TERMINATIONS.
   - 6.5. PROVIDE ANTI-OXIDANT COMPOUND AT TERMINATIONS.
   - 6.6. CABLE TERMINATIONS SHALL BE MARKED "AL/CU".
   - 6.7. FINAL SIZES OF CONDUCTORS TO BE CONFIRMED BY ENGINEER.
   - 6.8. ALUMINUM SERVICE CONDUCTORS MUST HAVE "AA-8000" SERIES LABELING ON CABLE JACKETS PER EVERGY REQUIREMENTS – NO EXCEPTIONS.

   ENGINEER RESERVES FINAL RIGHT TO ACCEPT/DENY USE OF ALUMINUM CONDUCTORS FOR PART OR ALL OF PROJECT.

GENERAL PLUMBING NOTES

1. COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED VERSION OF THE INTERNATIONAL PLUMBING CODE, LOCAL AND STATE CODES, AND REQUIREMENTS OF THE AHJ.
2. NO PIPING SHALL BE INSTALLED WHERE IT WILL SUBJECT TO FREEZING TEMPERATURES. PIPING IN EXTERIOR WALLS SHALL BE INSTALLED ON THE WARM SIDE OF BUILDING INSULATION, INSULATED AND THE CHASE SHALL BE VENTILATED WITH GRILLES ALLOWING INDOOR AMBIENT CONDITIONS TO CIRCULATE THROUGH THE CHASE.
3. PROVIDE CLEAN OUTS IN THE FOLLOWING LOCATIONS:
   - 3.1. IN ALL HORIZONTAL DRAINS (WITHIN THE BUILDING) NOT MORE THAN 100 FEET APART.
   - 3.2. IN BUILDING SEWERS LOCATED NO MORE THAN 100 FEET APART MEASURED FROM THE UPSTREAM ENTRANCE OF THE CLEANOUT.
   - 3.3. EACH CHANGE OF DIRECTION OF THE BUILDING DRAIN OR HORIZONTAL WASTE OR SOIL LINES GREATER THAN 45 DEGREES. WHERE MORE THAN ONE CHANGE OF DIRECTION OCCURS IN A RUN OF PIPING, ONLY ONE CLEANOUT SHALL BE REQUIRED FOR EACH 40 FEET OF DEVELOPED LENGTH OF THE DRAINAGE PIPING.
   - 3.4. AT THE BASE OF EACH WASTE OR SOIL STACK.
   - 3.5. NEAR THE JUNCTION OF THE BUILDING DRAIN AND BUILDING SEWER.

FIRE SEALING NOTES

1. COORDINATE CONSTRUCTION OF OPENINGS AND PENETRATING ITEMS TO ENSURE THAT THROUGH-PENETRATION FIRESTOP SYSTEMS ARE INSTALLED ACCORDING TO SPECIFIED AND APPLICABLE UL REQUIREMENTS.
2. COORDINATE SIZING OF SLEEVES, OPENINGS, CORE-DRILLED HOLES, OR CUT OPENINGS TO ACCOMMODATE THROUGH-PENETRATION FIRESTOP SYSTEMS.
3. DO NOT COVER UP THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATIONS UNTIL EXAMINED BY INSPECTOR, IF REQUIRED BY AUTHORITIES HAVING JURISDICTION.
4. COMPATIBILITY: PROVIDE THROUGH-PENETRATION FIRESTOP SYSTEMS THAT ARE COMPATIBLE WITH ONE ANOTHER; WITH THE SUBSTRATES FORMING OPENINGS; AND WITH THE ITEMS, IF ANY, PENETRATING THROUGH-PENETRATION FIRESTOP SYSTEMS, UNDER CONDITIONS OF SERVICE AND APPLICATION, AS DEMONSTRATED BY THROUGH-PENETRATION FIRESTOP SYSTEM MANUFACTURER BASED ON TESTING AND FIELD EXPERIENCE.
5. PROVIDE COMPONENTS FOR EACH THROUGH-PENETRATION FIRESTOP SYSTEM THAT ARE NEEDED TO INSTALL FILL MATERIALS. USE ONLY COMPONENTS SPECIFIED BY THROUGH-PENETRATION FIRESTOP SYSTEM MANUFACTURER AND APPROVED BY QUALIFIED TESTING AND INSPECTING AGENCY FOR FIRESTOP SYSTEMS INDICATED.
6. PROVIDE SLEEVES THROUGH ALL FIRE-RATED WALLS AND FILL VOIDS SURROUNDING SLEEVES AND INTERIOR TO SLEEVES AROUND PIPING WITH FIRE STOP PUTTY WITH U.L. LISTED 3 HOUR RATING INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS.
7. FIRE SEAL ALL PIPING, CONDUIT, CABLE, ETC PENETRATIONS ROUTED THROUGH FIRE RATED WALLS.
8. PROVIDE FIRE RATED ENCLOSURES OR WRAPS ON LIGHT FIXTURES AND OTHER ITEMS PENETRATING FIRE RATED CEILINGS, FLOOR/CEILING/ CEILING/ROOF ASSEMBLIES TO MAINTAIN UL LISTING FOR CONSTRUCTION.

BUILDING MOVEMENT NOTES

WOOD SHRINKAGE NOTES:

ENGINEER TAKES NO RESPONSIBILITY FOR THE NATURALLY-OCCURRING SHRINKAGE THAT WILL OCCUR IN A WOOD STRUCTURE OR THE IMPACT THE MOVEMENT WILL HAVE ON THE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING SYSTEMS. FAILURE TO FOLLOW THE CONSIDERATIONS BELOW CAN RESULT IN A FAILURE OF THE IMPACTED COMPONENTS IN THE SYSTEM.

THE FOLLOWING IS A LIST OF RECOMMENDATIONS TO MINIMIZE POTENTIAL ISSUES RELATED TO WOOD SHRINKAGE AND VENEER EXPANSION. VENEER EXPANSION IS SEASONABLE AND VARIABLE DEPENDING ON SUN EXPOSURE.

MEP SYSTEM CONSIDERATIONS

A. POSTPONE MEP INSTALLATION AS LONG AS POSSIBLE TO ALLOW AS MUCH DEAD LOAD TO BE APPLIED AS POSSIBLE--ALLOWING CONSTRUCTION GAPS TO CLOSE.

B. PROVIDE OVERSIZED AND VERTICALLY SLOTTED HOLES AT PIPE HORIZONTAL PENETRATIONS AND NOTCHES. REFER TO TYPICAL NOTCHING AND CUTTING OF STUD WALL DETAIL FOR ADDITIONAL CONSIDERATIONS AND SIZE LIMITATIONS.

C. PLUMBING PIPE AND ELECTRICAL CONDUIT JOINTS AND CONNECTIONS SHALL BE FLEXIBLE AND ALLOW FOR EXPANSION/CONTRACTION TO PREVENT A RIGID ASSEMBLY.

D. HANGERS AND NECESSARY RIGID CONNECTIONS SHALL BE ADJUSTED PRIOR TO COMPLETION OF CONSTRUCTION OR CLOSING OF WALL/CEILING ASSEMBLY.

E. HORIZONTAL VENT PENETRATIONS THROUGH EXTERIOR VENEERS SHALL BE PROVIDED WITH DOUBLE FLASHING.

F. ALL SHEET METAL VERTICAL DOWN SPOUTS SHALL HAVE INTERMEDIATE SLIP JOINTS.

G. ROOF DRAINS SHALL UTILIZE ADJUSTABLE FITTINGS THAT ARE ADJUSTED BACK TO THE ROOF FINISH SHEATHING ELEVATION AT THE COMPLETION OF CONSTRUCTION AND SHALL BE ADJUSTED AS REQUIRED TO MAINTAIN PROPER DRAINAGE.

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

pkmr ENGINEERS

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25.401

PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

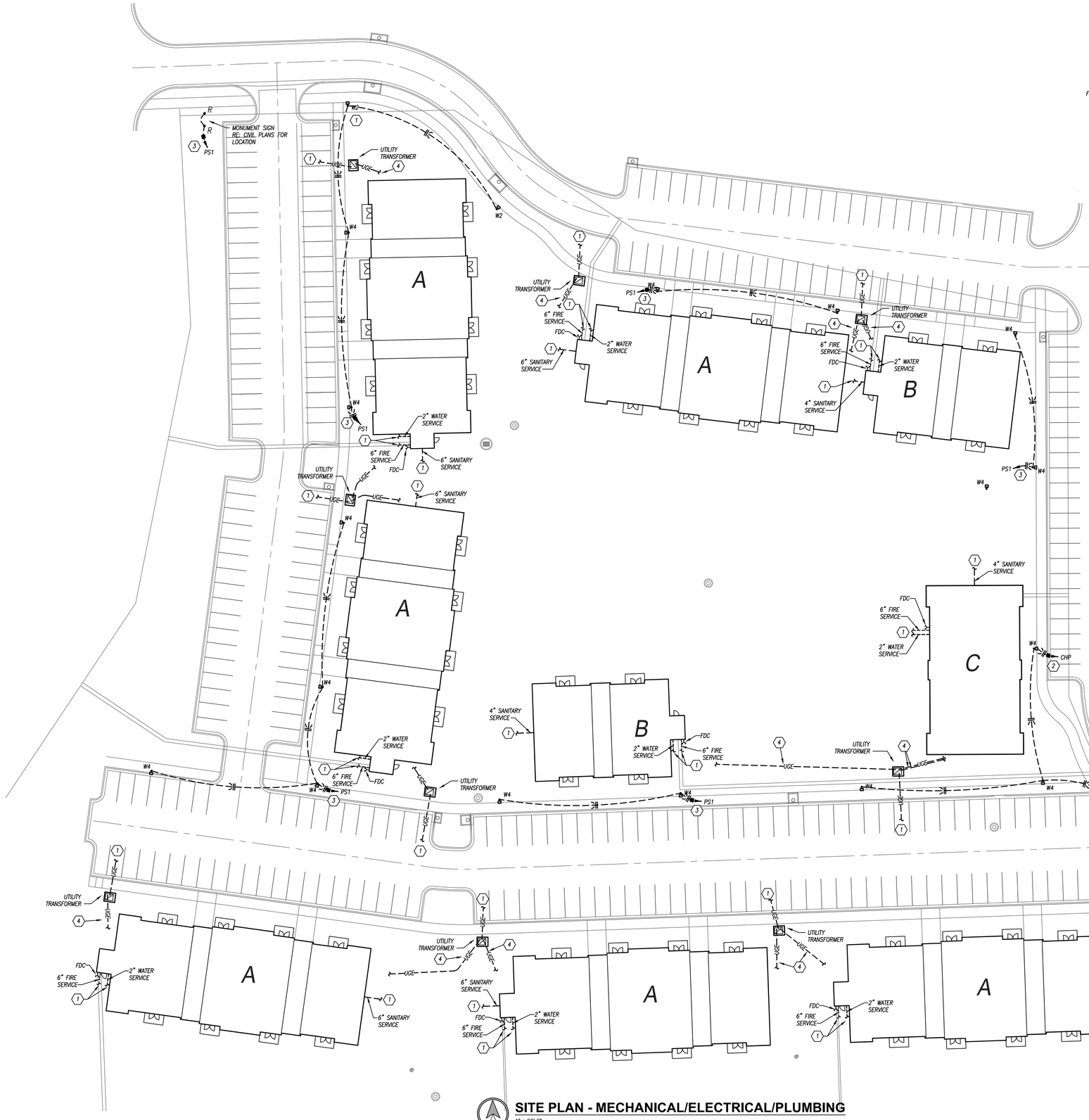
TOPEKA, KS

SHEET TITLE
COVER SHEET

PROJECT NUMBER: 25144

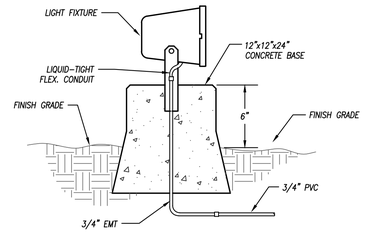
SHEET NUMBER:

MEP000



SITE PLAN - MECHANICAL/ELECTRICAL/PLUMBING

1" = 30'-0"



FLOOD LIGHT DETAIL

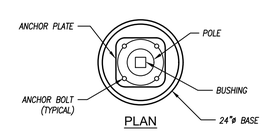
NOT TO SCALE

GENERAL SITE PLAN NOTES

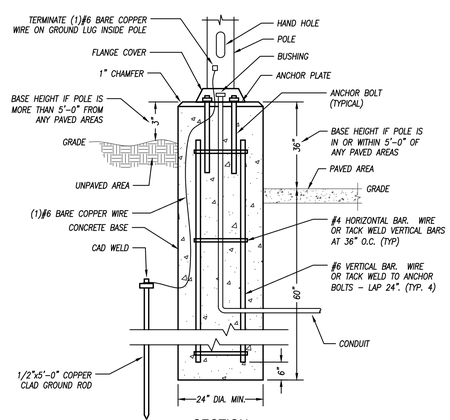
1. REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.
2. REFER TO CIVIL PLANS FOR CONTINUATION OF SERVICES BEYOND 5'-0" FROM BUILDING UNLESS OTHERWISE SHOWN.
3. REFER TO RESPECTIVE FLOOR PLANS FOR CONTINUATION OF SERVICES INSIDE BUILDING AND/OR EXACT LOCATIONS OF EQUIPMENT.
4. CONTACT UTILITY LOCATING SERVICE TO LOCATE EXACT LOCATION OF ALL EXISTING UTILITIES BELOW GRADE.

SITE PLAN KEYED NOTES

1. REFER TO CIVIL PLANS FOR CONTINUATION OF SERVICES.
2. ROUTE THROUGH REMOTE CONTROL SWITCH RCS-2 IN COMMUNITY BUILDING THEN HOMERUN.
3. HOMERUN TO NEAREST PS1 PANELBOARD IN BUILDING SPRINKLER ROOM.
4. REFER TO RISER DIAGRAM FOR FEEDER/CONDUIT SIZES.



PLAN



SECTION

POLE BASE DETAIL

NOT TO SCALE

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

pkmr ENGINEERS
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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

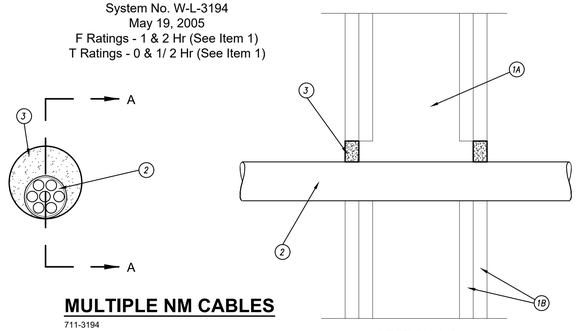
SHEET TITLE
MEP SITE PLAN

PROJECT NUMBER: 25144

SHEET NUMBER:

MEP101

System No. W-L-3194
May 19, 2005
F Ratings - 1 & 2 Hr (See Item 1)
T Ratings - 0 & 1/ 2 Hr (See Item 1)



MULTIPLE NM CABLES

711-3194

SECTION A-A

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 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 IN. BY 4 IN. (51 MM BY 102 MM) LUMBER SPACED 16 IN. (406 MM) OC. STEEL STUDS TO BE MIN 3–1/2 IN. (89 MM) WIDE SPACED MAX 24 IN. (610 MM) OC.
   B. GYPSUM BOARD* – THE GYPSUM BOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 2–1/2 IN. (64 MM).

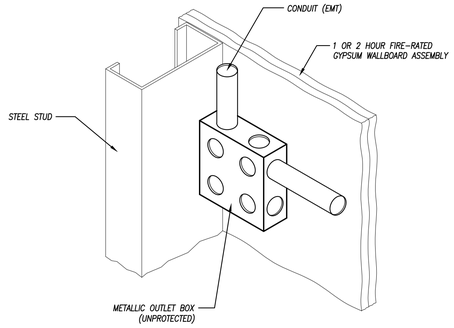
   THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.
   THE HOURLY T RATING IS 0 AND 1/2 HR FOR 1 AND 2 HR RATED ASSEMBLIES, RESPECTIVELY.

2. CABLE – ONE CABLE INSTALLED ECCENTRICALLY OR CONCENTRICALLY WITHIN OPENING. ANNULAR SPACE BETWEEN CABLE AND PERIPHERY OF OPENING TO BE MIN 0 IN. (POINT CONTACT) TO MAX 1 IN. (0 MM TO MAX 25 MM). CABLE TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF THE WALL. THE FOLLOWING TYPES AND SIZES OF CABLE MAY BE USED:
   A. MAX 200 PAIR NO. 22 AWG (OR SMALLER) COPPER CONDUCTOR WITH POLYVINYL CHLORIDE (PVC) INSULATION AND JACKETING MATERIAL.
   B. MAX 1/C NO. 350 KCMIL (OR SMALLER) COPPER CONDUCTOR CABLE WITH CROSS–LINKED POLYETHYLENE (XLPE) OR PVC JACKET.
   C. MAX 7/C NO. 12 AWG (OR SMALLER) COPPER CONDUCTOR POWER AND CONTROL CABLES WITH XLPE OR PVC INSULATION WITH XLPE OR PVC JACKET.
   D. MAX 3/C NO. 2/0 AWG (OR SMALLER) COPPER OR ALUMINUM CONDUCTOR SER CABLES WITH XLPE OR PVC INSULATION AND JACKET.
   E. MAX 4/C NO. 2/0 AWG (OR SMALLER) COPPER CONDUCTOR, ALUMINUM CLAD OR STEEL CLAD TECK 90 CABLE WITH OR WITHOUT PVC JACKETED.
   F. MAX 110/125 FIBER OPTIC (F.O.) CABLE WITH PVC INSULATION AND JACKET.
   G. MAX 3/C WITH GROUND NO. 8 AWG (OR SMALLER) COPPER CONDUCTOR NM CABLE WITH PVC INSULATION AND JACKET.
   H. MAX RG/U COAXIAL CABLE WITH FLUORINATED ETHYLENE INSULATION AND JACKET.
   I. MAX 4 PAIR NO. 24 AWG (OR SMALLER) COPPER CONDUCTOR DATA CABLE WITH HYLAR JACKET AND INSULATION.
   J. THROUGH PENETRATING PRODUCT* – ANY CABLES, ARMORED CABLE+ OR METAL CLAD CABLE+ CURRENTLY CLASSIFIED UNDER THE THROUGH PENETRATING PRODUCT CATEGORY.
      SEE THROUGH PENETRATING PRODUCT (XHLY) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS

3. FILL, VOID OR CAVITY MATERIAL* – CAULK OR SEALANT – MIN 5/8 IN. (16 MM) THICKNESS OF CAULK APPLIED WITHIN ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. MIN 1/4 IN. (6 MM) DIAM BEAD OF CAULK APPLIED TO GYPSUM BOARD/CABLE INTERFACE AT POINT CONTACT LOCATION ON BOTH SIDES OF WALL.
   3M COMPANY – IC 15WB+, CP 25WB+ CAULK OR FB–3000 WT SEALANT

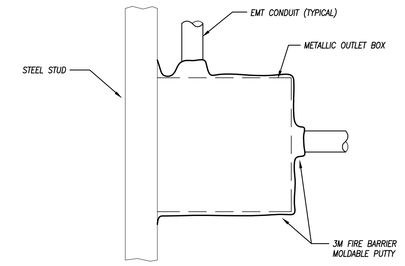
*BEARING THE UL CLASSIFICATION MARKING

INSTALLATION DETAIL FOR
3M FIRE BARRIER MOLDABLE
PUTTY ON ELECTRICAL OUTLET BOXES

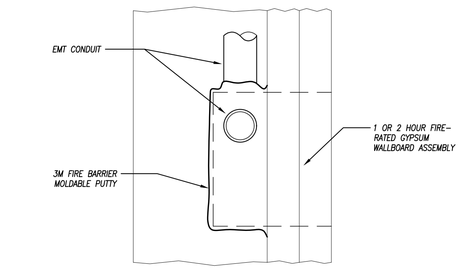


3M PUTTY PAD FOR OUTLET BOXES

711-1000

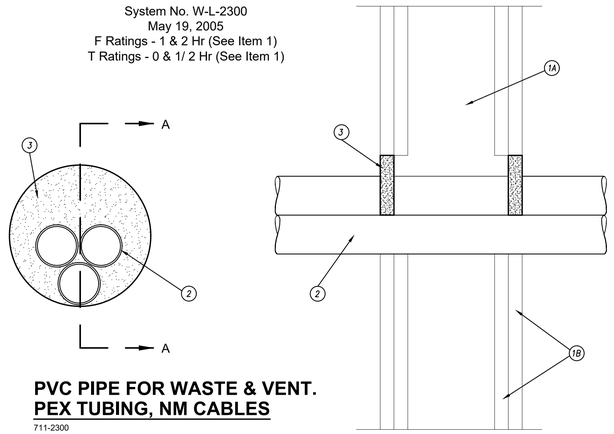


FRONT VIEW



SIDE VIEW

System No. W-L-2300
May 19, 2005
F Ratings - 1 & 2 Hr (See Item 1)
T Ratings - 0 & 1/ 2 Hr (See Item 1)



PVC PIPE FOR WASTE & VENT.
PEX TUBING, NM CABLES

711-2300

SECTION A-A

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 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 IN. BY 4 IN. (51 MM BY 102 MM) LUMBER SPACED 16 IN. (406 MM) OC. STEEL STUDS TO BE MIN 3–1/2 IN. (89 MM) WIDE SPACED MAX 24 IN. (610 MM) OC.
   B. GYPSUM BOARD* – THE GYPSUM BOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 4 IN. (102 MM).

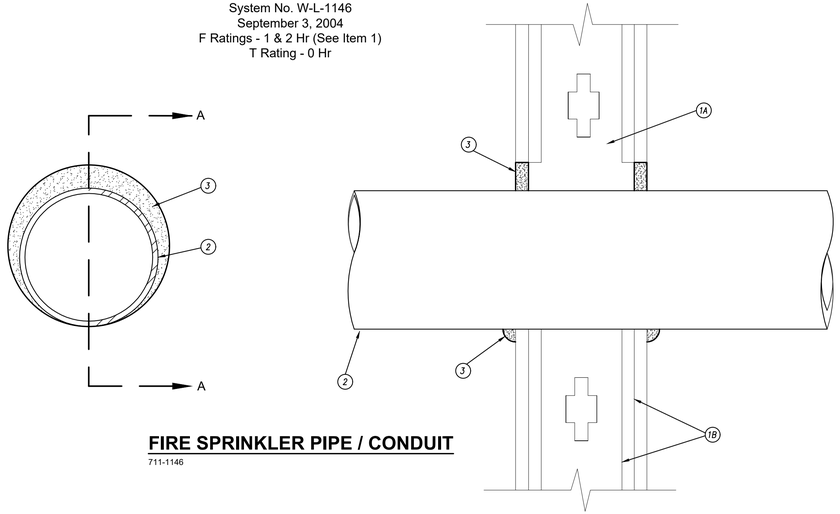
   THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.
   THE HOURLY T RATING IS 0 AND 1/2 HR FOR 1 AND 2 HR RATED ASSEMBLIES, RESPECTIVELY.

2. THROUGH PENETRANTS – ONE OR MORE NONMETALLIC PIPES, CONDUITS OR TUBES INSTALLED CONCENTRICALLY OR ECCENTRICALLY WITHIN OPENING. ANNULAR SPACE BETWEEN PENETRANTS AND PERIPHERY OF OPENING TO BE MIN 0 IN. (POINT CONTACT) TO MAX 1 IN. (0 MM TO MAX 25 MM). SPACE BETWEEN PENETRANTS SHALL BE MIN 0 IN. (POINT CONTACT) TO MAX 1 IN. (0 MM TO MAX 25 MM). PENETRANTS TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL. THE FOLLOWING TYPES AND SIZES OF PENETRANTS MAY BE USED:
   A. POLYVINYL CHLORIDE (PVC) PIPE – NOM 1–1/2 IN. (38 MM) DIAM (OR SMALLER) SCHEDULE 40 SOLID OR CELLULAR CORE PVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE OR VENT) PIPING SYSTEMS.
   B. RIGID NONMETALLIC CONDUIT++ – NOM 1–1/2 IN. (38 MM) DIAM (OR SMALLER) SCHEDULE 40 PVC CONDUIT INSTALLED IN ACCORDANCE WITH ARTICLE 347 OF THE NATIONAL ELECTRICAL CODE (NFPA NO. 70).
   C. CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE – NOM 1–1/2 IN. (38 MM) DIAM (OR SMALLER) SDR13.5 CPVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) PIPING SYSTEMS.
   D. CROSSLINKED POLYETHYLENE (PEX) TUBING – NOM 1 IN. (25 MM) DIAM (OR SMALLER) SDR 9 PEX TUBING FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE OR VENT) PIPING SYSTEMS.

3. FILL, VOID OR CAVITY MATERIAL* – CAULK OR SEALANT – MIN 5/8 IN. (16 MM) THICKNESS OF CAULK APPLIED WITHIN ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. MIN 1/4 IN. (6 MM) DIAM BEAD OF CAULK APPLIED TO GYPSUM BOARD/PENETRANT INTERFACE AT POINT CONTACT LOCATION ON BOTH SIDES OF WALL.
   3M COMPANY – IC 15WB+, CP 25WB+ CAULK OR FB–3000 WT SEALANT
   (NOTE: CP 25WB+ NOT SUITABLE FOR USE WITH CPVC PIPES.)

*BEARING THE UL CLASSIFICATION MARKING

System No. W-L-1146
September 3, 2004
F Ratings - 1 & 2 Hr (See Item 1)
T Rating - 0 Hr



FIRE SPRINKLER PIPE / CONDUIT

711-1146

SECTION A-A

1. WALL ASSEMBLY – THE 1 OR 2 HR FIRE RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 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 IN. BY 4 IN. (51 MM BY 102 MM) LUMBER SPACED 16 IN. (406 MM) OC. STEEL STUDS TO BE MIN 3–1/2 IN. (89 MM) WIDE AND SPACED MAX 24 IN. (610 MM) OC. WHEN STEEL STUDS ARE USED AND THE DIAM OF OPENING EXCEEDS THE WIDTH OF STUD CAVITY, THE OPENING SHALL BE FRAMED ON ALL SIDES USING LENGTHS OF STEEL STUD INSTALLED BETWEEN THE VERTICAL STUDS AND SCREW–ATTACHED TO THE STEEL STUDS AT EACH END. THE FRAMED OPENING IN THE WALL SHALL BE 4 IN. TO 6 IN. (102 TO 152 MM) WIDER AND 4 IN. TO 6 IN. (102 TO 152 MM) HIGHER THAN THE DIAM OF THE PENETRATING ITEM SUCH THAT, WHEN THE PENETRATING ITEM IS CENTERED IN THE OPENING, A 2 IN. TO 3 IN. (51 MM TO 76 MM) CLEARANCE IS PRESENT BETWEEN THE PENETRATING ITEM AND THE FRAMING IN ALL FOUR SIDES.
   B. GYPSUM BOARD* – THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 26 IN. (660 MM) FOR STEEL STUD WALLS. MAX DIAM OF OPENING IS 14–1/2 IN. (368 MM) FOR WOOD STUD WALLS.

   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 INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PIPE, CONDUIT OR TUBING AND PERIPHERY OF OPENING SHALL BE MIN OF 0 IN. (POINT CONTACT) TO MAX 2 IN. (0 MM TO 51 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 24 IN. (610 MM) DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
   B. IRON PIPE – NOM 24 IN. (610 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. FILL, VOID OR CAVITY MATERIALS* – CAULK OR SEALANT – MIN 5/8 IN. (16 MM) THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. MIN 1/2 IN. (13 MM) DIAM BEAD OF CAULK APPLIED TO THE PENETRANT/WALLBOARD INTERFACE AT THE POINT CONTACT LOCATION ON BOTH SIDES OF WALL.
   3M COMPANY – CP 25WB+ CAULK OR FB–3000 WT SEALANT.

*BEARING THE UL CLASSIFICATION MARK

PRINTS ISSUED
12/18/25 95% CHECK SET

REVISIONS:

pkmr ENGINEERS
PEARSON KENT MCKINLEY RAAF ENGINEERS LLC
13300 W 98TH STREET LENEXA, KS 66215
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25.401

PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

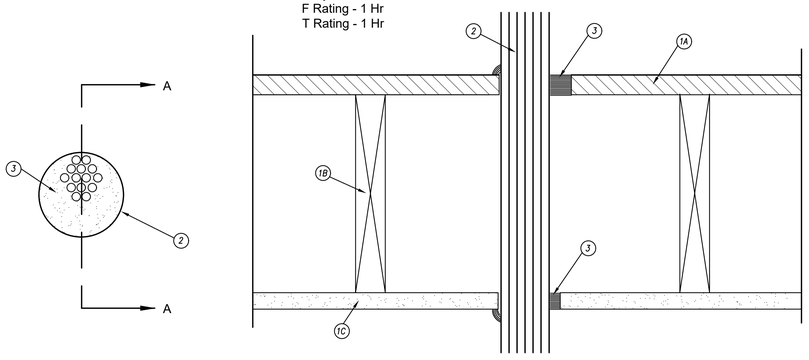
SHEET TITLE
MEP PENETRATION DETAILS

PROJECT NUMBER: 25144

SHEET NUMBER:

MEP200

System No. F-C-3070
May 19, 2005
F Rating - 1 Hr
T Rating - 1 Hr



SECTION A-A

1. *FLOOR–CEILING ASSEMBLY – THE 1 HR FIRE–RATED SOLID OR TRUSSED LUMBER JOIST FLOOR–CEILING ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL L500 SERIES FLOOR–CEILING DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY. THE GENERAL CONSTRUCTION DETAILS OF THE FLOOR–CEILING ASSEMBLY ARE SUMMARIZED BELOW:*
   A. FLOORING SYSTEM – LUMBER OR PLYWOOD SUBFLOOR WITH FINISH FLOOR OF LUMBER, PLYWOOD OR FLOOR TOPPING MIXTURE AS SPECIFIED IN THE INDIVIDUAL FLOOR–CEILING DESIGN. MAX DIAM OF OPENING IS 3 IN. (76 MM).*
   B. WOOD JOISTS – NOM 10 IN. (254 MM) DEEP (OR DEEPER) LUMBER, STEEL OR COMBINATION LUMBER AND STEEL JOISTS, TRUSSES OR STRUCTURAL WOOD MEMBERS WITH BRIDGING AS REQUIRED AND WITH ENDS FIRESTOPPED.*
   C. GYPSUM BOARD – NOM 4 FT (122 CM) WIDE BY 5/8 IN. (16 MM) THICK AS SPECIFIED IN THE INDIVIDUAL FLOOR–CEILING DESIGN. MAX DIAM OF OPENING IS 3 IN. (76 MM).*

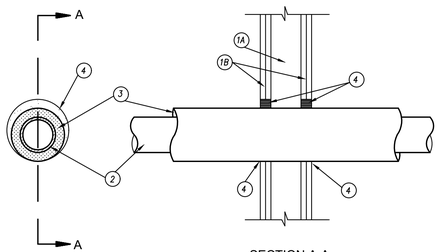
1.1 CHASE WALL (OPTIONAL, NOT SHOWN) – THE THROUGH PENETRANTS (ITEM NO. 2) MAY BE ROUTED THROUGH A FIRE–RATED SINGLE, DOUBLE OR STAGGERED WOOD STUD/GYPSUM BOARD CHASE WALL HAVING A FIRE RATING CONSISTENT WITH THAT OF THE FLOOR–CEILING ASSEMBLY. THE CHASE WALL SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   A. STUDS – NOM 2 IN. BY 6 IN. (51 MM BY 152 MM) OR DOUBLE NOM 2 IN. BY 4 IN. (51 MM BY 102 MM) LUMBER STUDS.
   B. SOLE PLATE – NOM 2 IN. BY 6 IN. (51 MM BY 152 MM) OR PARALLEL 2 IN. BY 4 IN. (51 MM BY 102 MM) LUMBER PLATES, TIGHTLY BUTTED. MAX DIAM OF OPENING IS 3 IN. (76 MM).
   C. TOP PLATE – THE DOUBLE TOP PLATE SHALL CONSIST OF TWO NOM 2 IN. BY 6 IN. (51 MM BY 152 MM) OR TWO SETS OF PARALLEL 2 IN. BY 4 IN. (51 MM BY 102 MM) LUMBER PLATES, TIGHTLY BUTTED. MAX DIAM OF OPENING IS 3 IN. (76 MM).
   D. GYPSUM BOARD – THICKNESS, TYPE, NUMBER OF LAYERS AND FASTENERS SHALL BE AS SPECIFIED IN INDIVIDUAL WALL AND PARTITION DESIGN.*

2. *CABLES – MAX 2 IN. DIAM CABLE BUNDLE INSTALLED ECCENTRICALLY OR CONCENTRICALLY WITHIN OPENING. ANNULAR SPACE BETWEEN CABLE BUNDLE AND PERIPHERY OF OPENING TO BE MIN 0 IN. (POINT CONTACT) TO MAX 1 IN. (0 MM TO 25 MM). CABLE BUNDLE TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL. THE FOLLOWING TYPES AND SIZES OF CABLES MAY BE USED:*
   A. MAX 200 PAIR NO. 22 AWG (OR SMALLER) COPPER CONDUCTOR WITH POLYVINYL CHLORIDE (PVC) INSULATION AND JACKETING MATERIAL.
   B. MAX 1/C NO. 350 KCMIL (OR SMALLER) COPPER CONDUCTOR CABLE WITH CROSS–LINKED POLYETHYLENE (XLPE) OR PVC JACKET.
   C. MAX 7/C NO. 12 AWG (OR SMALLER) COPPER CONDUCTOR POWER AND CONTROL CABLES WITH XLPE OR PVC INSULATION WITH XLPE OR PVC JACKET.
   D. MAX 3/C NO. 2/0 AWG (OR SMALLER) COPPER OR ALUMINUM CONDUCTOR SER CABLES WITH XLPE OR PVC INSULATION AND JACKET.
   E. MAX 4/C NO. 2/0 AWG (OR SMALLER) COPPER CONDUCTOR, ALUMINUM CLAD OR STEEL CLAD TECK 90 CABLE WITH OR WITHOUT PVC JACKETED.
   F. MAX 110/125 FIBER OPTIC (F.O.) CABLE WITH PVC INSULATION AND JACKET.
   G. MAX 3/C WITH GROUND NO. 8 AWG (OR SMALLER) COPPER CONDUCTOR NM CABLE WITH PVC INSULATION AND JACKET.
   H. MAX RG/U COAXIAL CABLE WITH FLUORINATED ETHYLENE INSULATION AND JACKET.
   I. MAX 4 PAIR NO. 24 AWG (OR SMALLER) COPPER CONDUCTOR DATA CABLE WITH HYLAR JACKET AND INSULATION.
   J. THROUGH PENETRATING PRODUCT – ANY CABLES, ARMORED CABLE+ OR METAL CLAD CABLE+ CURRENTLY CLASSIFIED UNDER THE THROUGH PENETRATING PRODUCT CATEGORY. SEE THROUGH PENETRATING PRODUCT (XHLY) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS*

3. *FILL, VOID OR CAVITY MATERIALS* – CAULK OR SEALANT – MIN 3/4 IN. (19 MM) THICKNESS OF CAULK APPLIED WITHIN ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR SOLE PLATE. MIN 5/8 IN. (16 MM) THICKNESS OF CAULK APPLIED WITHIN ANNULUS, FLUSH WITH BOTTOM SURFACE OF CEILING OR TOP PLATE. MIN 1/4 IN. (6 MM) DIAM BEAD OF CAULK APPLIED AT POINT CONTACT LOCATIONS AT CABLE BUNDLE/FLOOR OR SOLE PLATE INTERFACE ON TOP SURFACE OF FLOOR OR SOLE PLATE AND AT CABLE BUNDLE/CEILING OR TOP PLATE INTERFACE.*
   3M COMPANY – CP 25WB+, IC 15WB+ CAULK OR FB–3000 WT SEALANT

**BEARING THE UL CLASSIFICATION MARKING*

System No. W-L-5040
September 7, 2004
F Ratings - 1 and 2 HR (See Item 1)
T Ratings - 1/4, 1/2 and 3/4 HR (See Item 2)



SECTION A-A

1. *WALL ASSEMBLY – THE 1 OR 2 HR FIRE–RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:*
   A. STUDS – WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 3–5/8 IN. WIDE AND SPACED MAX 24 IN. OC.
   B. GYPSUM BOARD – NOM 5/8 IN. THICK, 4 FT WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX DIAM OF OPENING IN WALLBOARD LAYERS IS 7 IN.*
   THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS 1 HR WHEN INSTALLED IN A 1 HR FIRE RATED WALL AND 2 HR WHEN INSTALLED IN A 2 HR FIRE RATED WALL.

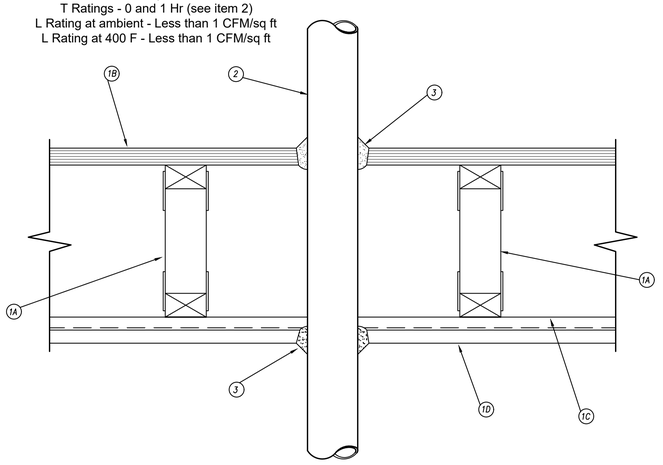
2. *THROUGH PENETRANTS – ONE METALLIC PIPE OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. PIPE OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR TUBING MAY BE USED:*
   A. STEEL PIPE – NOM 4 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE. WHEN STEEL PIPE IS USED, T RATING IS 3/4 HR.
   B. COPPER TUBING – NOM 4 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING. T RATING IS 3/4 HR FOR COPPER TUBING OF NOM 2 IN. DIAM AND SMALLER. FOR COPPER TUBING GREATER THAN NOM 2 IN. DIAM, T RATING IS 1/4 AND 1/2 HR WHEN INSTALLED IN 1 AND 2 HR RATED WALLS, RESPECTIVELY.
   C. COPPER PIPE – NOM 4 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE. T RATING IS 3/4 HR FOR COPPER PIPE OF NOM 2 IN. DIAM AND SMALLER. FOR COPPER PIPE GREATER THAN NOM 2 IN. DIAM, T RATING IS 1/4 AND 1/2 HR WHEN INSTALLED IN 1 AND 2 HR RATED WALL RESPECTIVELY.

3. *PIPE INSULATION – PLASTICS# – NOM 3/4 IN. THICK ACRYLONITRILE BUTADIENE/POLYVINYL CHLORIDE (AB/PVC) FLEXIBLE FOAM FURNISHED IN THE FORM OF TUBING. THE ANNULAR SPACE BETWEEN THE INSULATED PIPE AND THE EDGE OF THE THROUGH OPENING SHALL BE MIN ZERO IN. (POINT CONTACT) TO MAX 1–1/4 IN.*
   SEE PLASTICS# (QMFZZ) CATEGORY IN THE RECOGNIZED COMPONENT DIRECTORY FOR NAMES OF MANUFACTURERS. ANY RECOGNIZED COMPONENT TUBE INSULATION MATERIAL MEETING THE ABOVE SPECIFICATIONS AND HAVING A UL94 FLAMMABILITY CLASSIFICATION OF 94–5VA MAY BE USED.

4. *FILL, VOID OR CAVITY MATERIALS* – CAULK OR SEALANT – MIN 5/8 IN. THICKNESS OF CAULK APPLIED WITHIN THE ANNULAR SPACE, FLUSH WITH EACH SURFACE OF WALL. A MIN 1/2 IN. DIAM BEAD OF CAULK SHALL BE APPLIED TO THE PIPE INSULATION/ WALLBOARD INTERFACE AT THE POINT CONTACT LOCATION ON BOTH SIDES OF WALL.*
   3M COMPANY – CP 25WB+ CAULK OR FB–3000 WT SEALANT

**BEARING THE UL CLASSIFICATION MARKING*

System No. F-C-1006
April 03, 2007
F Rating - 1 Hr
T Ratings - 0 and 1 Hr (see item 2)
L Rating at ambient - Less than 1 CFM/sq ft
L Rating at 400 F - Less than 1 CFM/sq ft



1. *FLOOR–CEILING ASSEMBLY – THE 1 HR FIRE RATED WOOD JOIST, WOOD TRUSS OR COMBINATION WOOD AND STEEL TRUSS FLOOR–CEILING ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL L500–SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY, AS SUMMARIZED BELOW:*
   A. JOISTS OR TRUSSES – NOM 2 BY 10 IN. (51 BY 254 MM) LUMBER JOISTS, MIN 12 IN. (305 MM) DEEP PARALLEL CHORD TRUSSES FABRICATED FROM NOM 2 BY 4 IN. (51 BY 102 MM) LUMBER IN CONJUNCTION WITH GALV STEEL TRUSS PLATES OR STRUCTURAL WOOD MEMBERS WITH BRIDGING AS REQUIRED.*
   B. FLOORING – NOM 3/4 IN. (19 MM) THICK PLYWOOD FLOORING WITH OR WITHOUT FLOOR TOPPING MIXTURE. DIAM OF CIRCULAR CUTOUTS IS 1/4 TO 1/2 IN. (6 TO 13 MM) LARGER THAN OUTSIDE DIAM OF THE PIPE.*
   C. FURRING CHANNELS – RIGID OR RESILIENT GALV STEEL FURRING CHANNELS INSTALLED PERPENDICULAR TO BOTTOM CHORD OF TRUSSES.
   D. GYPSUM BOARD – NOM 4 FT (1.2 M) WIDE BY 5/8 IN. (16 MM) THICK, SCREW–ATTACHED TO FURRING CHANNELS. DIAM OF CIRCULAR CUTOUTS IS 1/4 TO 1/2 IN. (6 TO 13 MM) LARGER THAN OUTSIDE DIAM OF THE PIPE.*

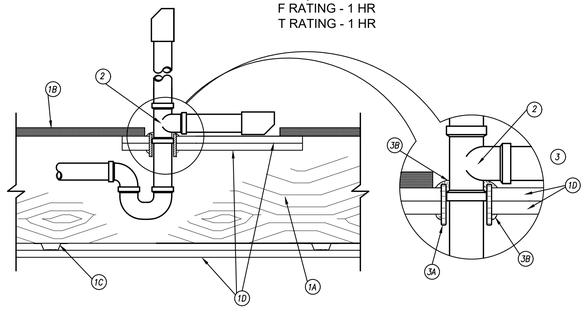
1.1 CHASE WALL (OPTIONAL, NOW SHOWN) – THE THROUGH PENETRANTS (ITEM NO. 2) MAY BE ROUTED THROUGH A 1 HR FIRE–RATED SINGLE, DOUBLE OR STAGGERED WOOD STUD/GYPSUM WALLBOARD CHASE WALL CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   A. STUDS – NOM 2 BY 6 IN. (51 BY 152 MM) OR DOUBLE NOM 2 BY 4 IN. (51 BY 102 MM) LUMBER STUDS.
   B. SOLE PLATE – NOM 2 BY 6 IN. (51 BY 152 MM) OR PARALLEL 2 BY 4 IN. (51 BY 102 MM) LUMBER PLATES, TIGHTLY BUTTED. DIAM OF CIRCULAR CUTOUTS IS 1/4 TO 1/2 IN. (6 TO 13 MM) LARGER THAN OUTSIDE DIAM OF THE PIPE.
   C. TOP PLATE – THE DOUBLE TOP PLATE SHALL CONSIST OF TWO NOM 2 BY 6 IN. (51 BY 152 MM) OR TWO SETS OF PARALLEL 2 BY 4 IN. (51 BY 102 MM) LUMBER PLATES, TIGHTLY BUTTED. DIAM OF CIRCULAR CUTOUTS IS 1/4 TO 1/2 IN. (6 TO 13 MM) LARGER THAN OUTSIDE DIAM OF THE PIPE.
   D. GYPSUM BOARD – THICKNESS, TYPE, NUMBER OF LAYERS AND FASTENERS SHALL BE AS SPECIFIED IN INDIVIDUAL WALL AND PARTITION DESIGN.*

2. *THROUGH PENETRANT – NOM 10 IN. (254 MM) DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE OR CAST IRON PIPE, NOM 4 IN. (102 MM) DIAM (OR SMALLER) STEEL CONDUIT OR STEEL EMT OR NOM 3 IN. (76 MM) DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING. PIPE TO BE INSTALLED APPROX MIDWAY BETWEEN JOISTS OR TRUSSES AND CENTERED IN CIRCULAR CUTOUTS. ANNULAR SPACE BETWEEN PENETRANT AND PERIPHERY OF OPENING SHALL BE MIN 1/8 IN. (3 MM) TO MAX 1/4 IN. (6 MM). PIPE TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR–CEILING ASSEMBLY. T RATING IS 1 HR FOR NOM 4 IN. (102 MM) DIAM (OR SMALLER) PENETRANTS. T RATING IS 0 HR FOR ALL PENETRANTS GREATER THAN NOM 4 IN. (102 MM) DIAM.*

3. *FILL, VOID OR CAVITY MATERIALS* – CAULK OR SEALANT – MIN 3/4 IN. (19 MM) THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR SOLE PLATE. MIN 5/8 IN. (16 MM) THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTTOM SURFACE OF CEILING OR TOP PLATE. AN ADDITIONAL MIN 1/4 IN. (6 MM) CROWN OF FILL MATERIAL APPLIED TO PERIMETER OF PENETRANT AT ITS EGRESS FROM THE TOP OF FLOORING AND UNDERSIDE OF CEILING OR FROM TOP OF SOLE PLATE AND UNDERSIDE OF TOP PLATE.*
   3M COMPANY – CP 25WB+ OR FB–3000 WT

**BEARING THE UL CLASSIFICATION MARKING*

SYSTEM NO. F-C-2026
May 18, 2005
F RATING - 1 HR
T RATING - 1 HR



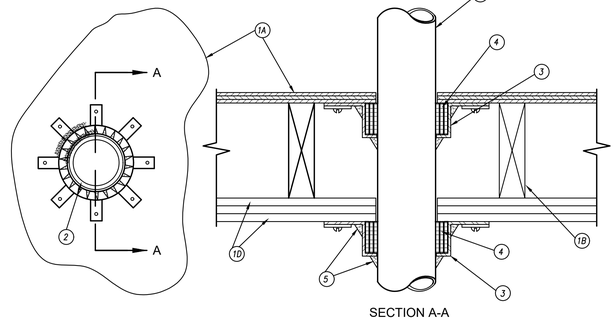
1. *FLOOR–CEILING ASSEMBLY – THE FIRE–RATED SOLID OR TRUSSED LUMBER JOIST FLOOR–CEILING ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL L500 SERIES FLOOR–CEILING DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:*
   A. JOISTS – NOM 10 IN. (254 MM) DEEP (OR DEEPER) LUMBER, STEEL OR COMBINATION LUMBER AND STEEL JOISTS, TRUSSES OR STRUCTURAL WOOD MEMBERS WITH BRIDGING AS REQUIRED AND WITH ENDS FIRESTOPPED.*
   B. FLOORING SYSTEM – LUMBER OR PLYWOOD SUBFLOOR WITH FINISH FLOOR OF LUMBER, PLYWOOD OR FLOOR TOPPING MIXTURE AS SPECIFIED IN THE INDIVIDUAL FLOOR–CEILING DESIGN. RECTANGULAR CUTOUT IN FLOORING TO ACCOMMODATE THE BATHTUB DRAIN PIPING (ITEM 2) TO BE MAX 8 BY 12 IN. (203 MM BY 305 MM).*
   C. FURRING CHANNELS – RIGID OR RESILIENT GALV STEEL FURRING CHANNELS INSTALLED PERPENDICULAR TO JOISTS.
   D. GYPSUM BOARD – NOM 4 FT (122 CM) WIDE BY 5/8 IN. (16 MM) THICK. WALLBOARD SCREW–ATTACHED TO FURRING CHANNELS AS SPECIFIED IN THE INDIVIDUAL FLOOR–CEILING DESIGN. TWO PIECES OF GYPSUM WALLBOARD, EACH MIN 4 IN. (102 MM) LONGER AND WIDER THAN THE CUTOUT IN THE FLOORING, SCREW–ATTACHED TO BOTTOM OF FLOORING CONCENTRIC WITH CUTOUT. DIAM OF OPENING HOLE–SAWED THROUGH BOTH LAYERS OF THE GYPSUM WALLBOARD PATCH TO BE 1/2 IN. TO 5/8 IN. (13 MM TO 16 MM) LARGER THAN OUTSIDE DIAM OF BATHTUB DRAIN PIPING (ITEM 2).*

2. *DRAIN PIPING – NOM 1–1/2 IN. (38 MM) DIAM SCHEDULE 40 PVC PIPE AND DRAIN FITTINGS CEMENTED TOGETHER AND PROVIDED WITH PVC BATHTUB WASTE/OVERFLOW FITTING.*

3. *FIRESTOP SYSTEM – 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 PVC DRAIN PIPING (FOIL SIDE EXPOSED), SECURED WITH TWO STEEL WIRE TIES, AND SLID INTO HOLE–SAWED OPENING IN GYPSUM WALLBOARD PATCH (ITEM 1D). BOTTOM EDGE OF WRAP STRIP TO PROJECT APPROX 1/2 IN. (13 MM) BELOW BOTTOM SURFACE OF GYPSUM WALLBOARD PATCH.*
      3M COMPANY – FS–195+
   B. FILL, VOID OR CAVITY MATERIALS – CAULK OR SEALANT – NOM 1/4 IN. (6 MM) DIAM BEAD OF CAULK TO BE APPLIED TO PERIMETER OF WRAP STRIP AT ITS EGRESS FROM THE UNDERSIDE OF THE GYPSUM WALLBOARD PATCH. NOM 1/4 IN. (6 MM) THICKNESS OF CAULK TO BE APPLIED TO THE EXPOSED EDGE OF THE WRAP STRIP LAYER AND TO FILL ALL GAPS BETWEEN THE WRAP STRIP LAYER AND THE TEE OF THE DRAIN FITTING ON THE TOP SURFACE OF THE GYPSUM WALLBOARD PATCH.*
      3M COMPANY – CP 25WB+, IC 15 WB+, FIREDAM 150+ CAULK OR FB–3000 WT SEALANT

**BEARING THE UL CLASSIFICATION MARKING*

SYSTEM NO. F-C-2002
May 18, 2005
F RATING - 2 HR
T RATING - 2 HR
L RATING AT AMBIENT- 7 CFM/sq ft
L RATING AT 400° F - LESS THAN 1 CFM/sq ft



SECTION A-A

1. *FLOOR–CEILING ASSEMBLY – THE FIRE–RATED WOOD JOIST FLOOR–CEILING ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN DESIGN NO. L505, L511 OR L536 IN THE UL FIRE RESISTANCE DIRECTORY, AS SUMMARIZED BELOW:*
   A. FLOORING SYSTEM – LUMBER OR PLYWOOD SUBFLOOR WITH FINISH FLOOR OF LUMBER, PLYWOOD OR FLOOR TOPPING MIXTURE AS SPECIFIED IN THE INDIVIDUAL FLOOR–CEILING DESIGN. MAX DIAM OF OPENING IN FLOORING IS 4–3/4 IN. (121 MM).*
   B. WOOD JOISTS – NOM 2 IN. BY 10 IN. (51 MM BY 254 MM) LUMBER JOISTS SPACED 16 IN. OC WITH NOM 1 IN. BY 3 IN. (25 MM BY 76 MM) LUMBER BRIDGING AND WITH ENDS FIRESTOPPED.
   C. FURRING CHANNELS (NOT SHOWN) – RESILIENT GALV STEEL FURRING CHANNELS INSTALLED PERPENDICULAR TO WOOD JOISTS BETWEEN FIRST AND SECOND LAYERS OF WALLBOARD (ITEM 1D) AND SPACED MAX 24 IN (610 MM) OC.
   D. GYPSUM BOARD – NOM 4 FT (122 CM) WIDE BY 5/8 IN. (16 MM) THICK AS SPECIFIED IN THE INDIVIDUAL FLOOR–CEILING DESIGN. FIRST LAYER OF WALLBOARD NAILED TO WOOD JOISTS. SECOND LAYER OF WALLBOARD SCREW–ATTACHED TO FURRING CHANNELS. THE SECONDARY FIRESTOP SYSTEM (ITEMS 3, 4 AND 5) MUST BE INSTALLED IN THE JOIST CAVITY PRIOR TO INSTALLATION OF THE GYPSUM WALLBOARD CEILING.*

2. *NONMETALLIC PIPE – NOM 4 IN. DIAM (OR SMALLER) SCHEDULE 40 SOLID CORE POLYVINYL CHLORIDE (PVC) PIPE OR SCHEDULE 40 CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE, VENT) PIPING SYSTEMS. DIAM OF CIRCULAR OPENINGS HOLE–SAWED THROUGH FLOORING SYSTEM AND THROUGH TWO–LAYER GYPSUM WALLBOARD CEILING TO BE NO GREATER THAN 1/8 IN. (3.2 MM) LARGER THAN OUTSIDE DIAM OF PIPE. PIPE TO BE INSTALLED APPROX MIDWAY BETWEEN WOOD JOISTS AND CENTERED IN CIRCULAR OPENINGS.*

3. *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 STRIPS TIGHTLY WRAPPED AROUND NONMETALLIC PIPE (FOIL SIDE EXPOSED) WITH THE EDGES BUTTED AGAINST THE UNDERSIDE OF THE SUBFLOOR (SECONDARY FIRESTOP SYSTEM) AND AGAINST THE FINISHED GYPSUM WALLBOARD CEILING (PRIMARY FIRESTOP SYSTEM). WRAP STRIPS FOR PRIMARY AND SECONDARY FIRESTOP SYSTEMS TO BE INSTALLED IDENTICALLY. FOR NOM 1/2 IN. TO NOM 2 IN. (13 MM TO NOM 51 MM) DIAM PIPES, A MIN OF ONE LAYER OF WRAP STRIP IS REQUIRED. FOR NOM 2–1/2 IN. AND NOM 3 IN. (64 MM AND NOM 76 MM) DIAM PIPES, A MIN OF TWO LAYERS OF WRAP STRIP IS REQUIRED. FOR NOM 3–1/2 IN. AND NOM 4 IN. (89 MM AND NOM 102 MM) DIAM PIPES, A MIN OF THREE LAYERS OF WRAP STRIP IS REQUIRED. EACH LAYER OF WRAP STRIP TO BE INSTALLED WITH BUTTED SEAM, WITH BUTTED SEAMS IN SUCCESSIVE LAYERS STAGGERED. WRAP STRIP LAYER(S) TEMPORARILY HELD IN POSITION USING ALUMINUM FOIL TAPE, STEEL WIRE TIE, OR EQUIVALENT.*
   3M COMPANY – FS–195+

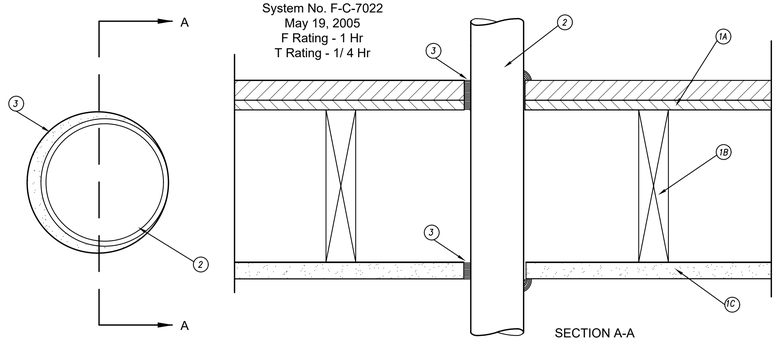
4. *STEEL COLLAR – NOM 2 IN. (51 MM) DEEP COLLAR WITH 1–1/4 IN. (32 MM) WIDE BY 2 IN. (51 MM) LONG ANCHOR TABS AND MIN 3/4 IN. (19 MM) LONG TABS TO RETAIN WRAP STRIP LAYERS. COILS OF PRECUT 0.016 IN. (0.41 MM) THICK (30 GAUGE) GALV SHEET STEEL AVAILABLE FROM WRAP STRIP MANUFACTURER. AS AN ALTERNATE, COLLAR MAY BE FIELD–FABRICATED FROM MIN 0.016 IN. (0.41 MM) THICK (30 GAUGE) GALV SHEET STEEL IN ACCORDANCE WITH INSTRUCTION SHEET SUPPLIED BY WRAP STRIP MANUFACTURER. STEEL COLLAR, WITH ANCHOR TABS BENT OUTWARD 90 DEG, WRAPPED TIGHTLY AROUND WRAP STRIP LAYERS WITH MIN 1 IN. (25 MM) OVERLAP AT THE SEAM. WITH STEEL ANCHOR TABS PRESSED TIGHTLY AGAINST THE SUBFLOOR (SECONDARY FIRESTOP SYSTEM) OR THE FINISHED GYPSUM WALLBOARD CEILING (PRIMARY FIRESTOP SYSTEM), COMPRESS COLLAR AROUND WRAP STRIP LAYERS USING A MIN 1/2 IN. (13 MM) WIDE BY 0.028 IN. (0.71 MM) THICK STAINLESS STEEL BAND CLAMP WITH WORM DRIVE TIGHTENING MECHANISM AT THE COLLAR MIDHEIGHT. AS AN ALTERNATE TO THE BAND CLAMPS, COLLARS MAY BE SECURED BY A MEANS NO 10 IN. BY 1/2 IN. (13 MM) LONG SHEET METAL SCREWS INSTALLED IN THE VERTICAL AXIS AT THE CENTER OF THE 1 IN. (25 MM) OVERLAP ALONG THE PERIMETER JOINT OF THE COLLAR. A MIN OF THREE SCREWS IS REQUIRED. SECURE COLLAR TO SUBFLOOR (SECONDARY FIRESTOP SYSTEM) USING MIN 3/4 IN. (19 MM) LONG STEEL SCREWS IN CONJUNCTION WITH 1–1/4 IN. (32 MM) DIAM STEEL TENDER WASHERS. SECURE COLLAR TO FINISHED GYPSUM WALLBOARD CEILING (PRIMARY FIRESTOP SYSTEM) USING 3/16 IN. (5 MM) DIAM STEEL TOGGLE BOLTS (1–7/8 IN. (48 MM) GRIP) IN CONJUNCTION WITH 1–1/4 IN. (32 MM) DIAM STEEL FENDER WASHERS. MIN OF THREE FASTENERS, SYMMETRICALLY LOCATED, REQUIRED FOR NOM 1/2 IN. TO NOM 3 IN. (13 MM AND NOM 76 MM) DIAM PIPES. MIN OF FOUR FASTENERS, SYMMETRICALLY LOCATED, REQUIRED FOR NOM 3–1/2 IN. AND NOM 4 IN. (89 MM AND NOM 102 MM) AND NOM 4 IN. DIAM PIPES. AS A FINAL STEP, BEND WRAP STRIP RETAINER TABS 90 DEG TOWARD PIPE TO LOCK WRAP STRIP LAYERS IN POSITION.*

5. *FILL, VOID OR CAVITY MATERIALS* – CAULK OR SEALANT – GENEROUS BEAD OF CAULK TO BE APPLIED AROUND THE PERIMETER OF THE STEEL COLLAR (ITEM 4) AT ITS INTERFACE WITH THE SUBFLOOR (SECONDARY FIRESTOP SYSTEM) AND GYPSUM WALLBOARD CEILING (PRIMARY FIRESTOP SYSTEM). A NOM 1/4 IN. (6 MM) DIAM BEAD OF CAULK SHALL BE APPLIED AROUND THE PERIMETER OF THE NONMETALLIC PIPE AT ITS INTERFACE WITH THE WRAP STRIP LAYERS.*
   3M COMPANY – CP 25WB+, IC 15WB+, FIREDAM 150+ CAULK OR FB–3000 WT SEALANT
   (NOTE: CP 25WB+ NOT SUITABLE FOR USE WITH CPVC PIPES.)

6. *FIRESTOP DEVICE* (NOT SHOWN) – AS AN ALTERNATE TO ITEMS 3 AND 4 FOR NOM 1–1/2 IN., 2 IN., 3 IN. OR 4 IN. (38 MM, 51 MM, 76 MM OR 102 MM) MM) DIAM NONMETALLIC PIPES, A FIRESTOP DEVICE CONSISTING OF A SHEET–STEEL SPLIT COLLAR LINED WITH INTUMESCENT MATERIAL AND PROVIDED WITH STEEL CLIPS FOR ATTACHMENT MAY BE USED. FIRESTOP DEVICE TO BE INSTALLED ON UNDERSIDE OF SUBFLOOR AND AGAINST THE FINISHED GYPSUM WALLBOARD CEILING IN ACCORDANCE WITH THE ACCOMPANYING INSTALLATION INSTRUCTIONS.*
   3M COMPANY – PPD 150, PPD 200, PPD 300, PPD 400

**BEARING THE UL CLASSIFICATION MARKING*

System No. F-C-7022
May 19, 2005
F Rating - 1 Hr
T Rating - 1/ 4 Hr



SECTION A-A

1. *FLOOR–CEILING ASSEMBLY – THE 1 HR FIRE–RATED SOLID OR TRUSSED LUMBER JOIST FLOOR–CEILING ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL L500 SERIES FLOOR–CEILING DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY. THE GENERAL CONSTRUCTION DETAILS OF THE FLOOR–CEILING ASSEMBLY ARE SUMMARIZED BELOW:*
   A. FLOORING SYSTEM – LUMBER OR PLYWOOD SUBFLOOR WITH FINISH FLOOR OF LUMBER, PLYWOOD OR FLOOR TOPPING MIXTURE AS SPECIFIED IN THE INDIVIDUAL FLOOR–CEILING DESIGN. MAX DIAM OF OPENING IS 11 IN. (279 MM).*
   B. WOOD JOISTS – NOM 10 IN. (254 MM) DEEP (OR DEEPER) LUMBER, STEEL OR COMBINATION LUMBER AND STEEL JOISTS, TRUSSES OR STRUCTURAL WOOD MEMBERS WITH BRIDGING AS REQUIRED AND WITH ENDS FIRESTOPPED.*
   C. GYPSUM BOARD – NOM 4 FT. (122 CM) WIDE BY 5/8 IN. (16 MM) THICK AS SPECIFIED IN THE INDIVIDUAL FLOOR–CEILING DESIGN. MAX DIAM OF OPENING IS 11 IN. (279 MM).*

2. *STEEL DUCT – NOM 10 IN. (254 MM) (OR SMALLER) NO. 28 GAUGE (OR HEAVIER) STEEL DUCT OR NOM 5 IN. (127 MM) (OR SMALLER) NO. 30 GAUGE (OR HEAVIER) STEEL DUCT TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN OPENING. THE ANNULAR SPACE BETWEEN DUCT AND PERIPHERY OF OPENING SHALL BE MIN 0 IN. (POINT CONTACT) TO MAX 1 IN. (0 MM TO MAX 25 MM). DUCT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR ASSEMBLY.*

3. *FILL, VOID OR CAVITY MATERIALS* – CAULK OR SEALANT – MIN 3/4 IN. (19 MM) THICKNESS OF CAULK APPLIED WITHIN ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR. MIN 5/8 IN. (16 MM) THICKNESS OF CAULK APPLIED WITHIN ANNULUS, FLUSH WITH BOTTOM SURFACE OF CEILING. MIN 1/4 IN. (6 MM) DIAM BEAD OF CAULK APPLIED AT POINT CONTACT LOCATIONS AT DUCT/FLOOR INTERFACE ON TOP SURFACE OF FLOOR AND AT DUCT/CEILING INTERFACE.*
   3M COMPANY – CP 25WB+, IC 15WB+ CAULK OR FB–3000 WT SEALANT

**BEARING THE UL CLASSIFICATION MARKING*

PRINTS ISSUED
12/18/25 95% CHECK SET

REVISIONS:

pkmr ENGINEERS
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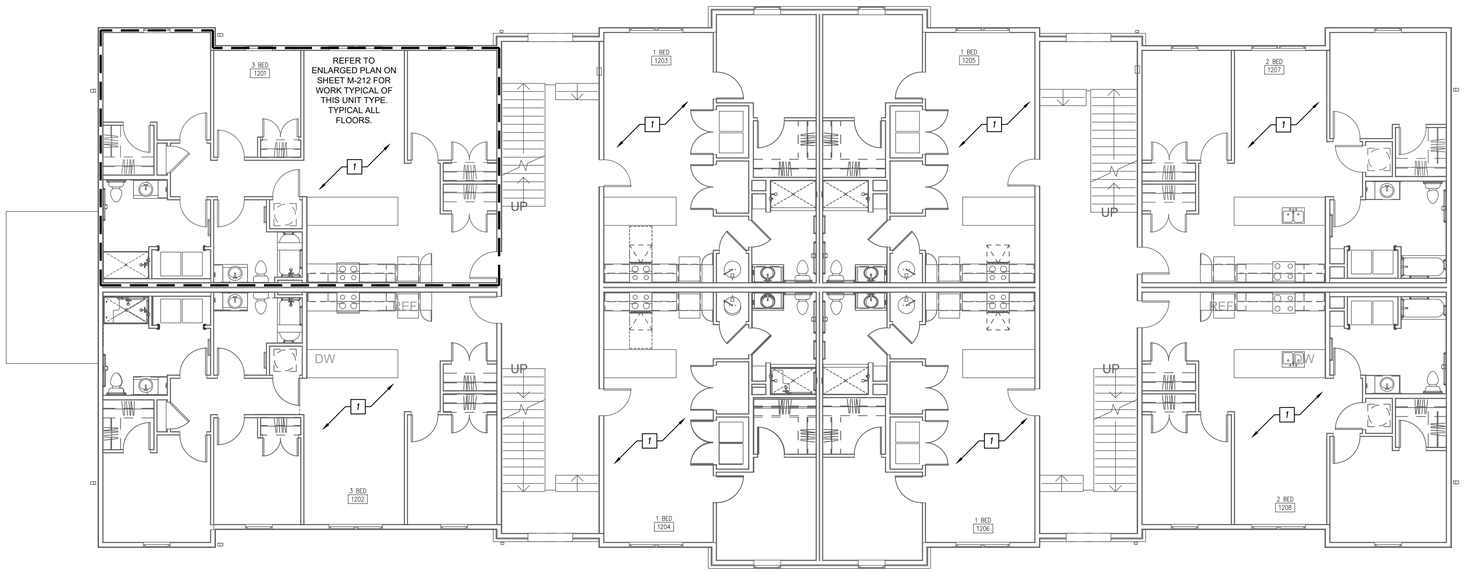
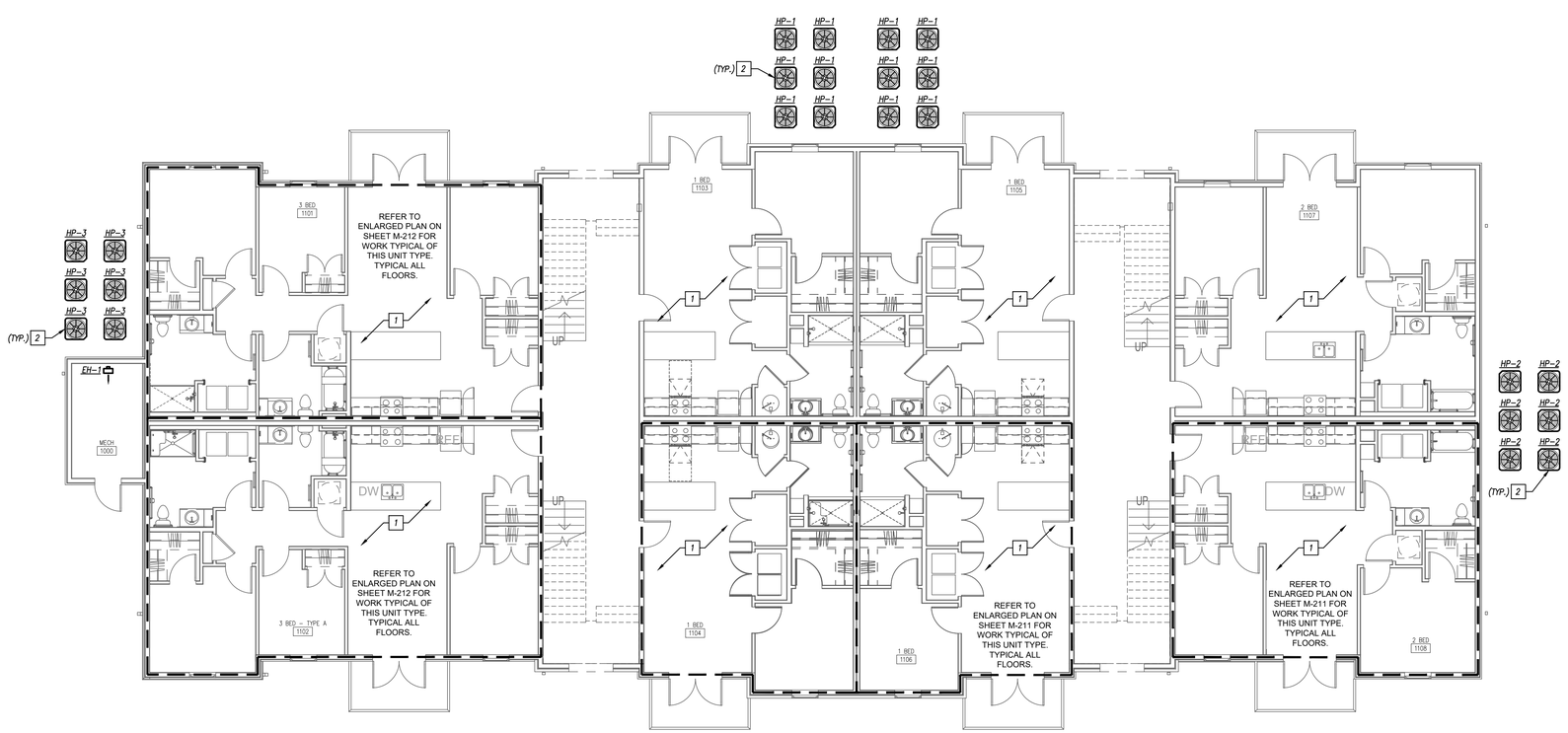
13300 W 98TH STREET LENEXA, KS



SECOND FLOOR HVAC PLAN - BLDG A

1/8" = 1'-0"



FIRST FLOOR HVAC PLAN - BLDG A

1/8" = 1'-0"

GENERAL HVAC NOTES

1. *REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.*

HVAC PLAN KEYED NOTES

1 *SEE UNIT PLANS FOR MORE DETAIL.*

2 *PROVIDE HEAT PUMPS WITH 4" CONCRETE HOUSEKEEPING PADS. ROUTE REFRIGERANT LINES INTO BUILDING AND THROUGH STRUCTURE TO CORRESPONDING AIR HANDLER. COORDINATE PIPE PENETRATION WITH STRUCTURAL AND ARCHITECT. REFER TO PIPE THROUGH EXTERIOR WALL DETAIL.*

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

pkmr ENGINEERS

25.401

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913.492.2400 WWW.PKMRENG.COM

PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
FIRST & SECOND FLOOR HVAC PLANS - BUILDING A

PROJECT NUMBER: 25144

SHEET NUMBER:

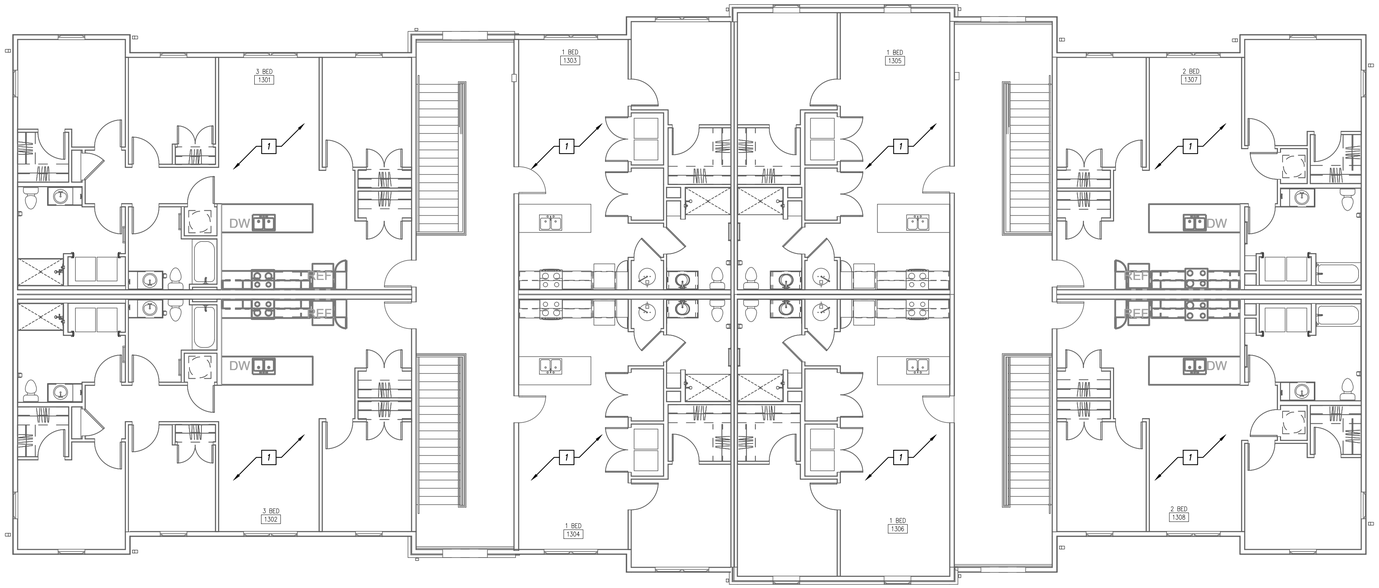
M101

GENERAL HVAC NOTES

1. REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.

HVAC PLAN KEYED NOTES

1 SEE UNIT PLANS FOR MORE DETAIL.



THIRD FLOOR HVAC PLAN - BLDG A

1/8" = 1'-0"

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

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NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
THIRD FLOOR HVAC PLAN -
BUILDING A

PROJECT NUMBER: 25144

SHEET NUMBER:

M102

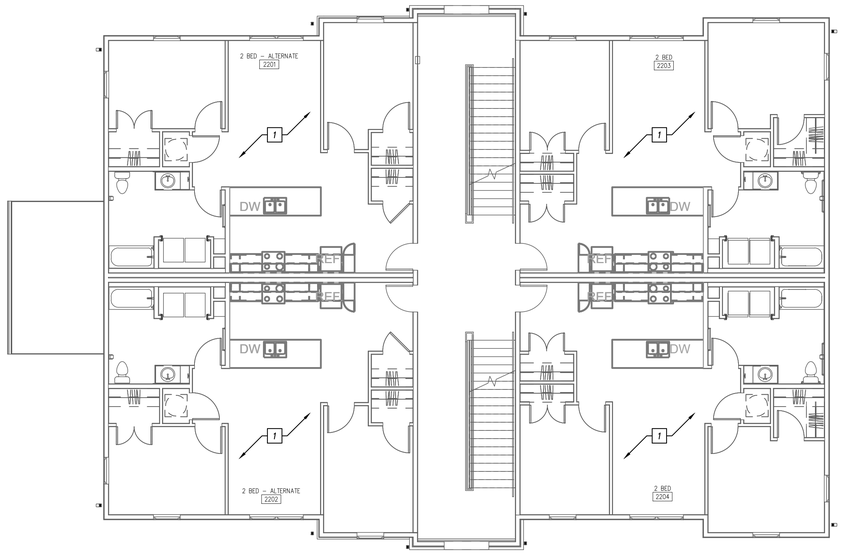
GENERAL HVAC NOTES

1. REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.

HVAC PLAN KEYED NOTES

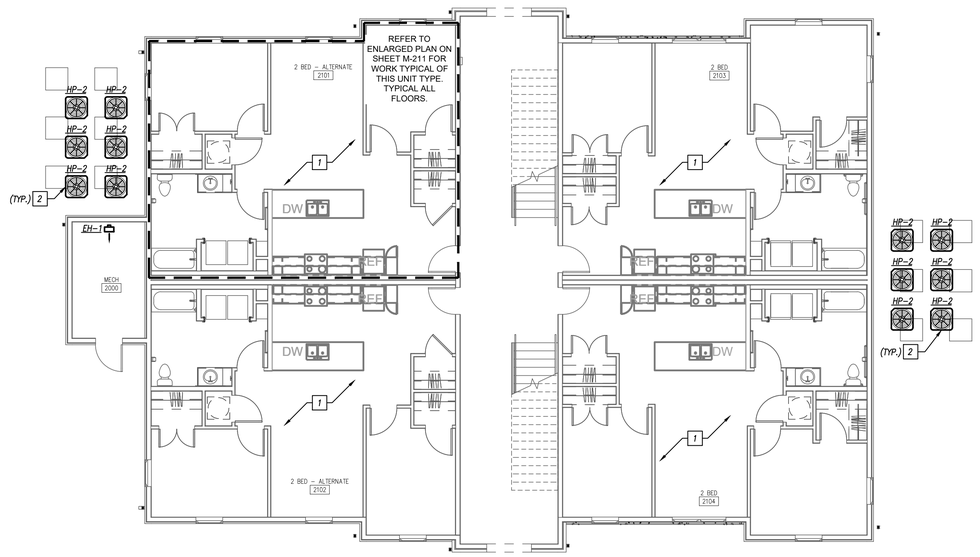
1 SEE UNIT PLANS FOR MORE DETAIL.

2 PROVIDE HEAT PUMPS WITH 4" CONCRETE HOUSEKEEPING PADS. ROUTE REFRIGERANT LINES INTO BUILDING AND THROUGH STRUCTURE TO CORRESPONDING AIR HANDLER. COORDINATE PIPE PENETRATION WITH STRUCTURAL AND ARCHITECT. REFER TO PIPE THROUGH EXTERIOR WALL DETAIL.



SECOND FLOOR HVAC PLAN - BLDG B

1/8" = 1'-0"



FIRST FLOOR HVAC PLAN - BLDG B

1/8" = 1'-0"

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

25.401

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PRELIMINARY
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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
FIRST & SECOND FLOOR HVAC PLANS - BUILDING B

PROJECT NUMBER: 25144

SHEET NUMBER:

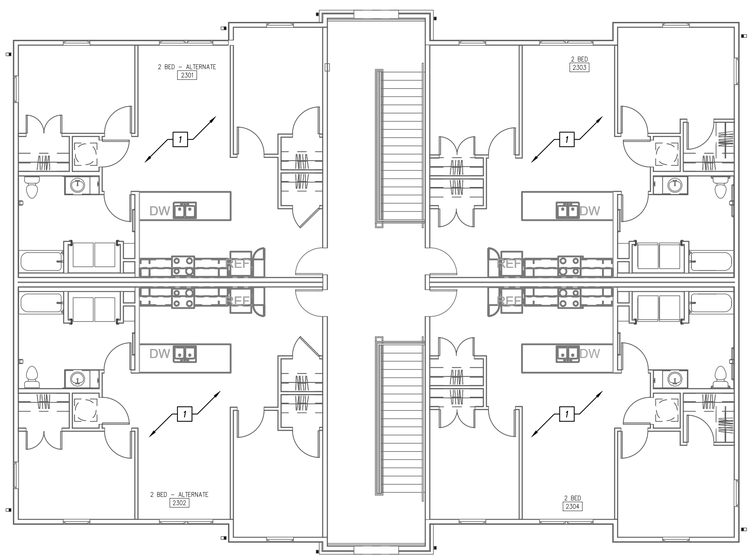
M103

GENERAL HVAC NOTES

1. REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.

HVAC PLAN KEYED NOTES

1 SEE UNIT PLANS FOR MORE DETAIL.



FIRST FLOOR HVAC PLAN - BLDG B

1/8" = 1'-0"

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

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PRELIMINARY
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JOHNSON - BETTS MEADOWS

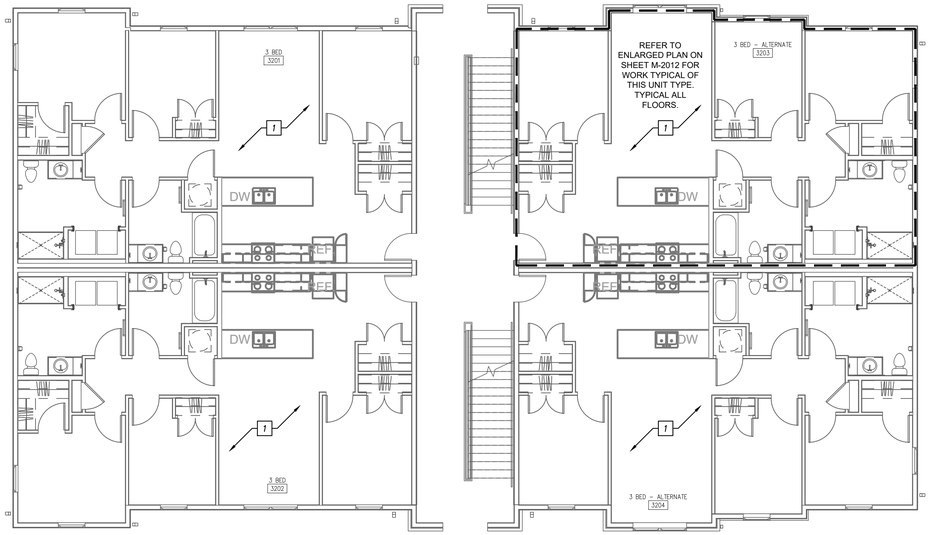
TOPEKA, KS

SHEET TITLE
THIRD FLOOR HVAC PLAN - BUILDING B

PROJECT NUMBER: 25144

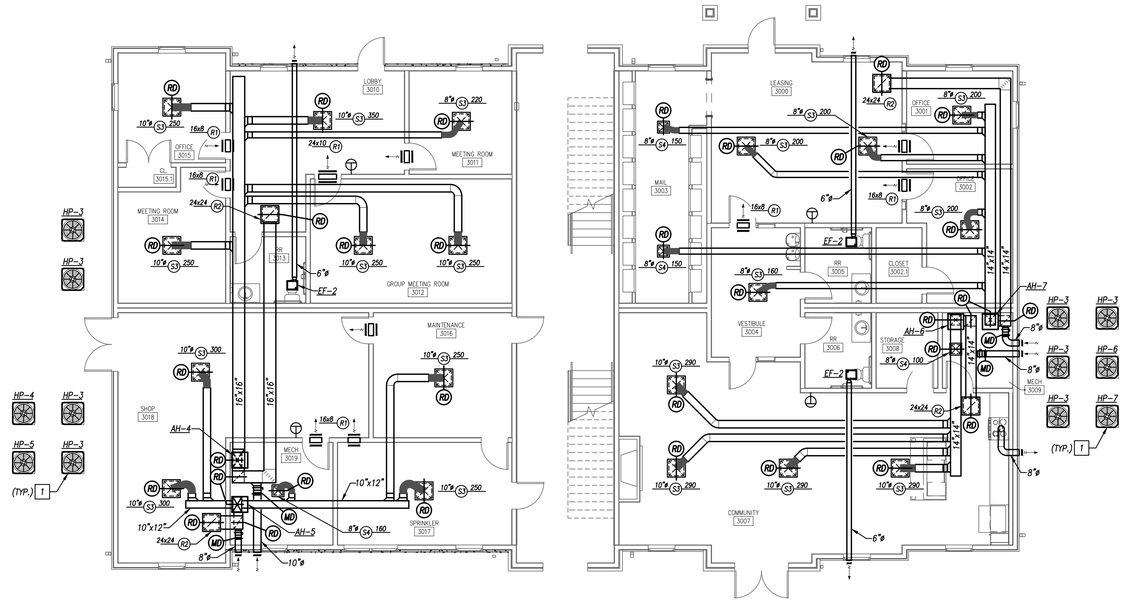
SHEET NUMBER:

M104



SECOND FLOOR HVAC PLAN - BLDG C

1/8" = 1'-0"



FIRST FLOOR HVAC PLAN - BLDG C

1/8" = 1'-0"

GENERAL HVAC NOTES

1. *REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.*

HVAC PLAN KEYED NOTES

1 *PROVIDE HEAT PUMPS WITH 4" CONCRETE HOUSEKEEPING PADS. ROUTE REFRIGERANT LINES INTO BUILDING AND THROUGH STRUCTURE TO CORRESPONDING AIR HANDLER. COORDINATE PIPE PENETRATION WITH STRUCTURAL AND ARCHITECT. REFER TO PIPE THROUGH EXTERIOR WALL DETAIL.*

2 *6" HOODED WALL CAP.*

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

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PRELIMINARY
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JOHNSON - BETTS MEADOWS

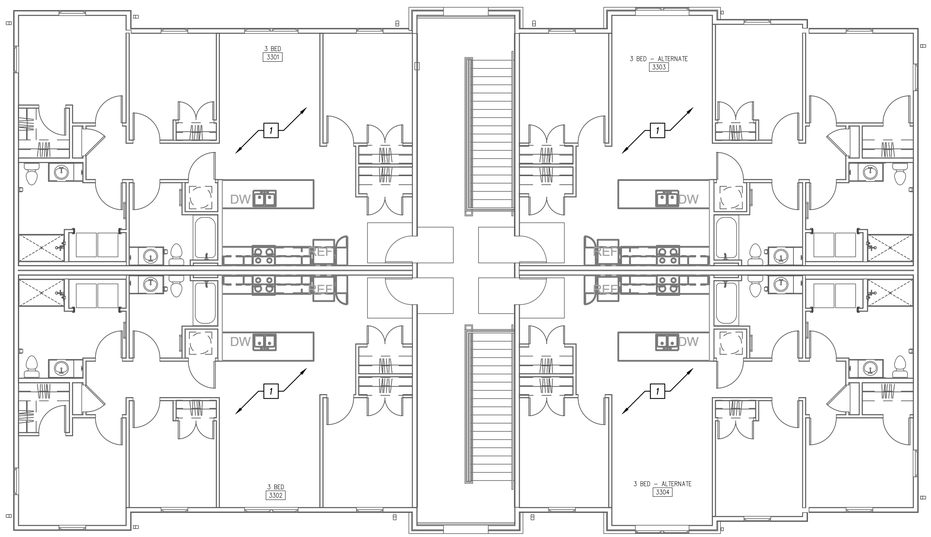
TOPEKA, KS

SHEET TITLE
FIRST & SECOND FLOOR HVAC PLANS - BUILDING B

PROJECT NUMBER: 25144

SHEET NUMBER:

M105



THIRD FLOOR HVAC PLAN - BLDG C

1/8" = 1'-0"

GENERAL HVAC NOTES

1. *REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.*

HVAC PLAN KEYED NOTES

1 *SEE UNIT PLANS FOR MORE DETAIL.*

PRINTS ISSUED

12/18/25 95% CHECK SET

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PRELIMINARY
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JOHNSON - BETTS MEADOWS

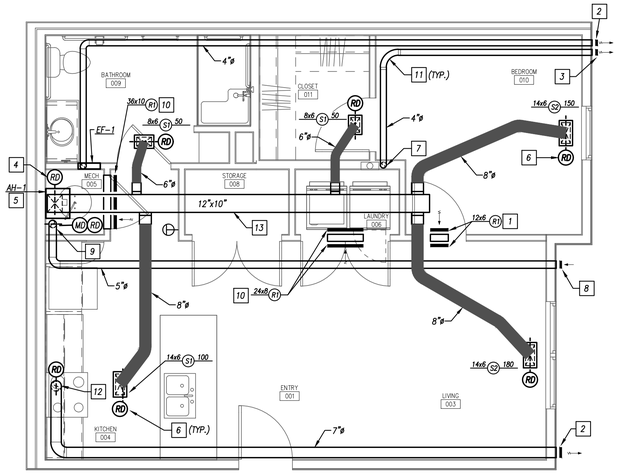
TOPEKA, KS

SHEET TITLE
THIRD FLOOR HVAC PLAN -
BUILDING C

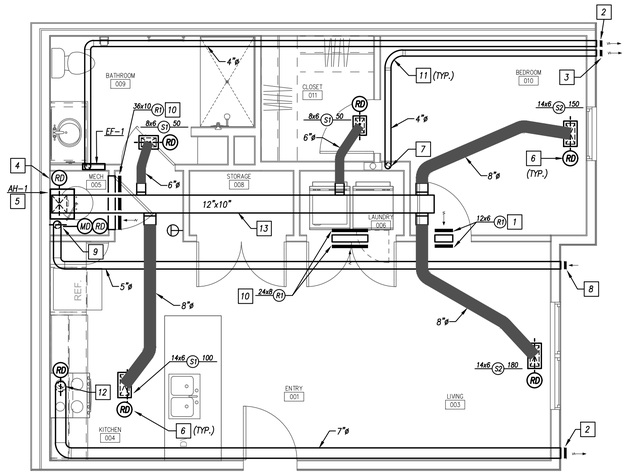
PROJECT NUMBER: 25144

SHEET NUMBER:

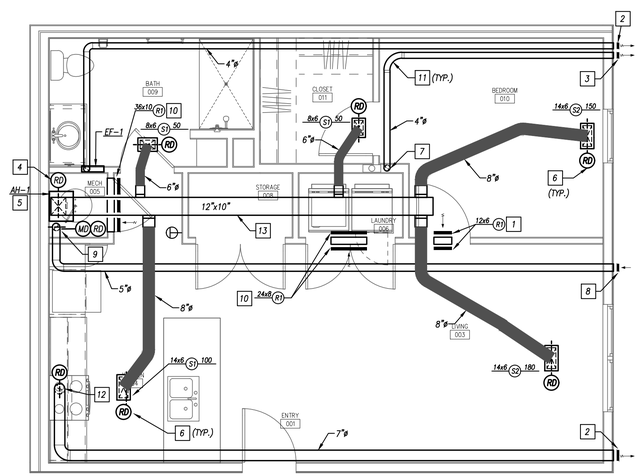
M106



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



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



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

GENERAL HVAC NOTES

1. *REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.*
2. *ROUND BRANCH DUCT RUNOUTS AND FLEXIBLE DUCT SHALL BE THE SAME SIZE AS THE DIFFUSER NECK UNLESS NOTED OTHERWISE.*
3. *ALL AIR DISTRIBUTION DEVICES SHALL HAVE LOCKABLE VOLUME CONTROL DEVICES.*
4. *ALL 90 DEGREE TURNING ELBOWS SHALL BE SMOOTH ROUND OR SQUARE WITH TURNING VANES.*
5. *DUCT SIZES SHOWN ON PLANS ARE INSIDE FREE AREA.*
6. *PROVIDE ACCESS DOORS IN DUCTS AHEAD OF ALL AUTOMATIC, FIRE, AND SMOKE DAMPERS.*
7. *FOR BALANCING THE OUTSIDE AIRFLOW QUANTITIES, REFER TO HVAC SCHEDULES.*
8. *INSTALL RIGID DUCT WORK OR PULL ALL FLEX DUCTS WITH NO PINCHES AND SUPPORT AT INTERVALS OF 4' OR LESS.*

HVAC PLAN KEYED NOTES

1. *RETURN AIR TRANSFER GRILLES CENTERED ABOVE DOOR. PROVIDE WITH METAL-FRAMED BAFFLE BETWEEN GRILLES FOR SOUND ATTENUATION. TAMARACK RAP OR EQUAL.*
2. *EXHAUST DUCT WALL CAP WITH BACKDRAFT DAMPER AND BUG SCREEN. MAINTAIN A MINIMUM CLEARANCE OF 3FT FROM ALL BUILDING OPENINGS.*
3. *DRYER EXHAUST WALL CAP. MAINTAIN A MINIMUM CLEARANCE OF 3FT FROM ALL BUILDING OPENINGS.*
4. *ROUTE SUPPLY DUCT UP INTO RATED FLOOR/CEILING ASSEMBLY. PROVIDE RADIATION DAMPER AT RATED CEILING PENETRATION.*
5. *WALL MOUNTED AIR HANDLING UNIT. ROUTE CONDENSATE DRAIN PIPE TO FLOOR DRAIN IN MECHANICAL CLOSET. REFER TO DETAIL.*
6. *PROVIDE RADIATION DAMPER FOR ALL DIFFUSERS/GRILLES PENETRATING RATED CEILING.*
7. *PROVIDE DRYER BOX TO THE RIGHT OF THE WASHING MACHINE. REFER TO DETAIL. WHERE EXHAUST DUCT EQUIVALENT LENGTH EXCEEDS 35 FEET, THE EQUIVALENT LENGTH OF THE EXHAUST DUCT SHALL BE IDENTIFIED ON A PERMANENT LABEL OR TAG LOCATED WITHIN 6 FEET OF THE EXHAUST DUCT CONNECTION.*
8. *TERMINATE O.A. DUCT WITH WALL CAP. MAINTAIN A MINIMUM CLEARANCE OF 10' FROM ALL EXHAUST OUTLETS.*
9. *ROUTE OUTSIDE AIR DUCT DOWN FROM RATED FLOOR/CEILING ASSEMBLY AND CONNECT TO AIR HANDLER O.A. KNOCKOUT. PROVIDE RADIATION DAMPER AT RATED CEILING PENETRATION. PROVIDE WITH BALANCING DAMPER AND ADJUST TO MATCH AIRFLOW LISTED IN AIR HANDLER SCHEDULE. PROVIDE MOTORIZED DAMPER AND VENTILATION CONTROLLER, HONEYWELL Y8150 AND W8150.*
10. *RETURN AIR GRILLE CENTERED ABOVE DOOR.*
11. *PROVIDE LONG SWEEP ELBOWS FOR DRYER DUCT.*
12. *7" EXHAUST DUCT DOWN TO KITCHEN RANGE HOOD. PROVIDE RADIATION DAMPER AT RATED CEILING PENETRATION.*
13. *COORDINATE DUCT ROUTING WITH STRUCTURE.*

PRINTS ISSUED
12/18/25 95% CHECK SET

REVISIONS:

pkmr ENGINEERS
PEARSON KENT MCKINLEY RAAF ENGINEERS LLC
13300 W 98TH STREET LENEXA, KS 66215
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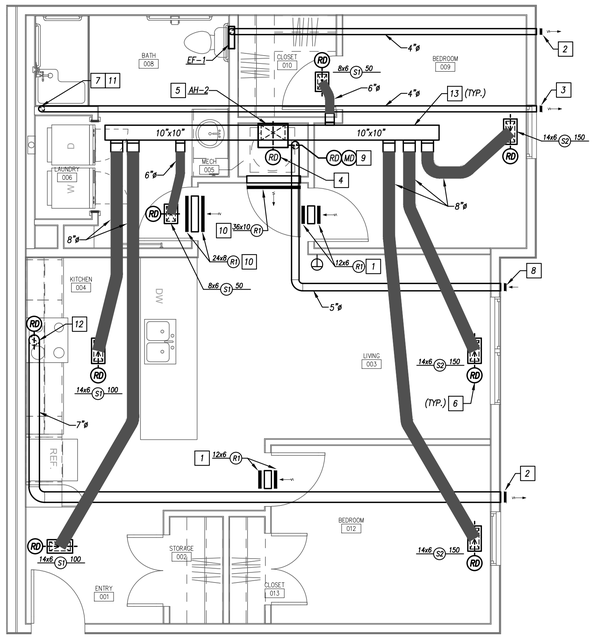
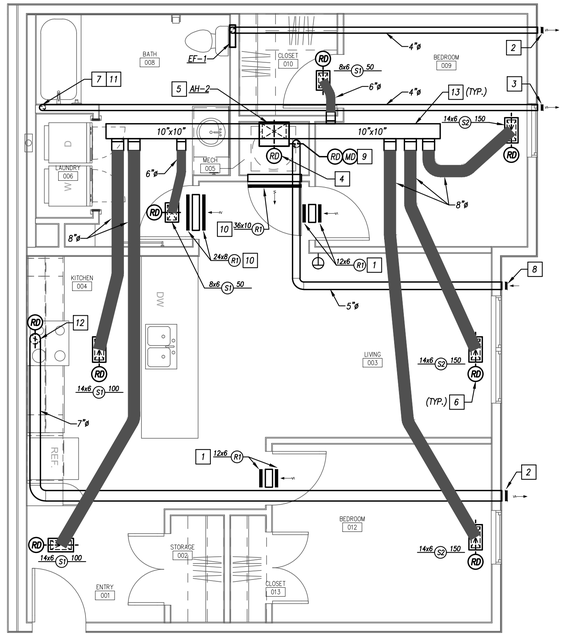
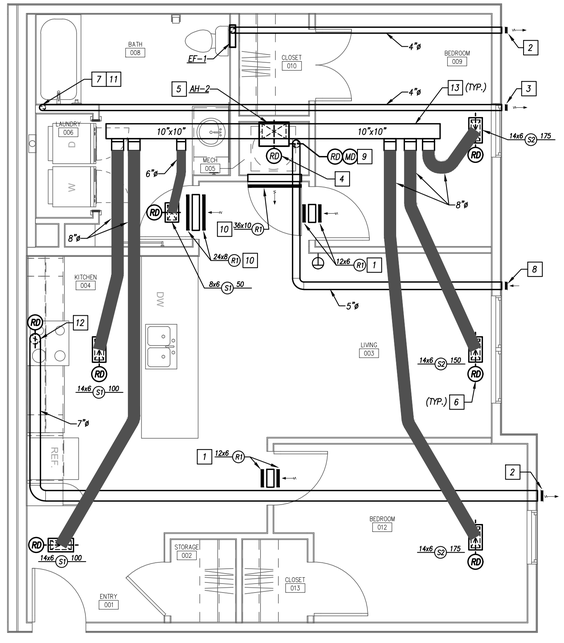


TYPE A - TWO BEDROOM
TYPICAL UNIT - FLOOR PLAN
1/4" = 1'-0"



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



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

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
ENLARGED UNITS HVAC PLANS

PROJECT NUMBER: 25144

SHEET NUMBER:

M211

GENERAL HVAC NOTES

1. *REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.*
2. *ROUND BRANCH DUCT RUNOUTS AND FLEXIBLE DUCT SHALL BE THE SAME SIZE AS THE DIFFUSER NECK UNLESS NOTED OTHERWISE.*
3. *ALL AIR DISTRIBUTION DEVICES SHALL HAVE LOCKABLE VOLUME CONTROL DEVICES.*
4. *ALL 90 DEGREE TURNING ELBOWS SHALL BE SMOOTH ROUND OR SQUARE WITH TURNING VANES.*
5. *DUCT SIZES SHOWN ON PLANS ARE INSIDE FREE AREA.*
6. *PROVIDE ACCESS DOORS IN DUCTS AHEAD OF ALL AUTOMATIC, FIRE, AND SMOKE DAMPERS.*
7. *FOR BALANCING THE OUTSIDE AIRFLOW QUANTITIES, REFER TO HVAC SCHEDULES.*
8. *INSTALL RIGID DUCT WORK OR PULL ALL FLEX DUCTS WITH NO PINCHES AND SUPPORT AT INTERVALS OF 4' OR LESS.*

HVAC PLAN KEYED NOTES

1. *RETURN AIR TRANSFER GRILLES CENTERED ABOVE DOOR. PROVIDE WITH METAL-FRAMED BAFFLE BETWEEN GRILLES FOR SOUND ATTENUATION. TAMARACK RAP OR EQUAL.*
2. *EXHAUST DUCT WALL CAP WITH BACKDRAFT DAMPER AND BUG SCREEN. MAINTAIN A MINIMUM CLEARANCE OF 3FT FROM ALL BUILDING OPENINGS.*
3. *DRYER EXHAUST WALL CAP. MAINTAIN A MINIMUM CLEARANCE OF 3FT FROM ALL BUILDING OPENINGS.*
4. *ROUTE SUPPLY DUCT UP INTO RATED FLOOR/CEILING ASSEMBLY. PROVIDE RADIATION DAMPER AT RATED CEILING PENETRATION.*
5. *WALL MOUNTED AIR HANDLING UNIT. ROUTE CONDENSATE DRAIN PIPE TO FLOOR DRAIN IN MECHANICAL CLOSET. REFER TO DETAIL.*
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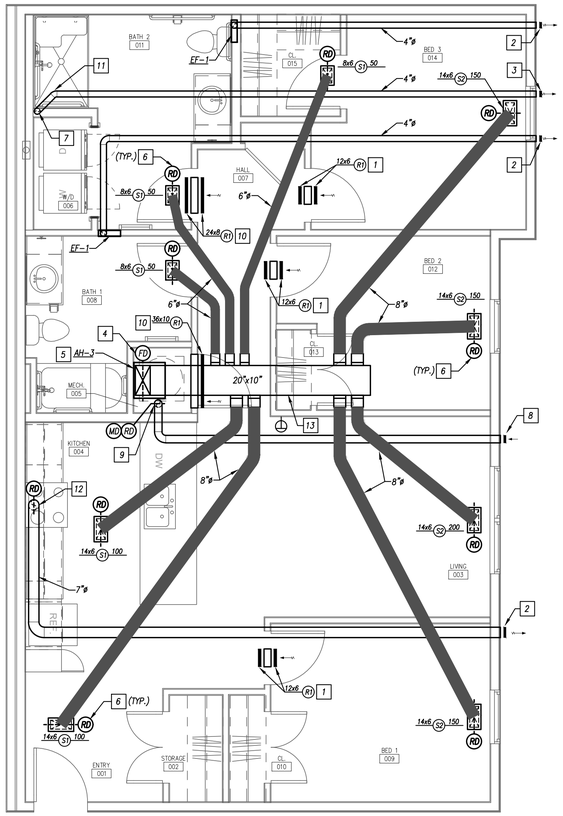
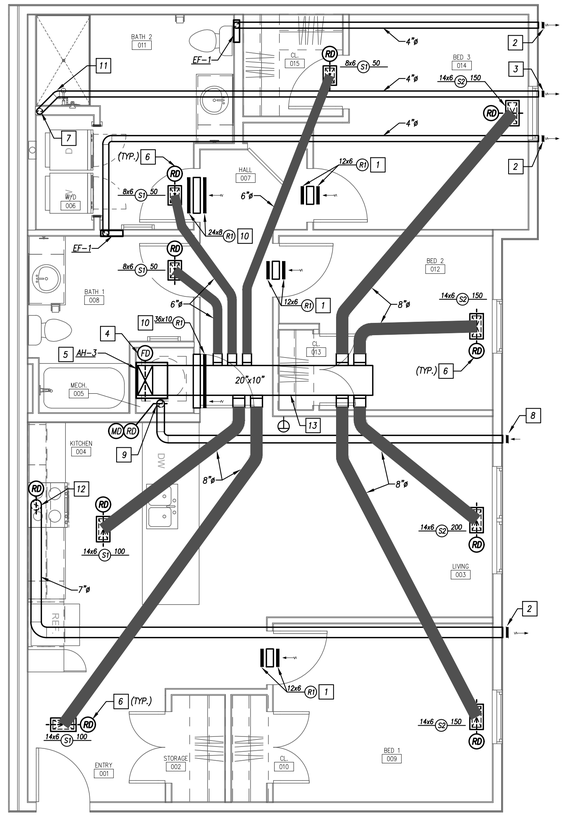
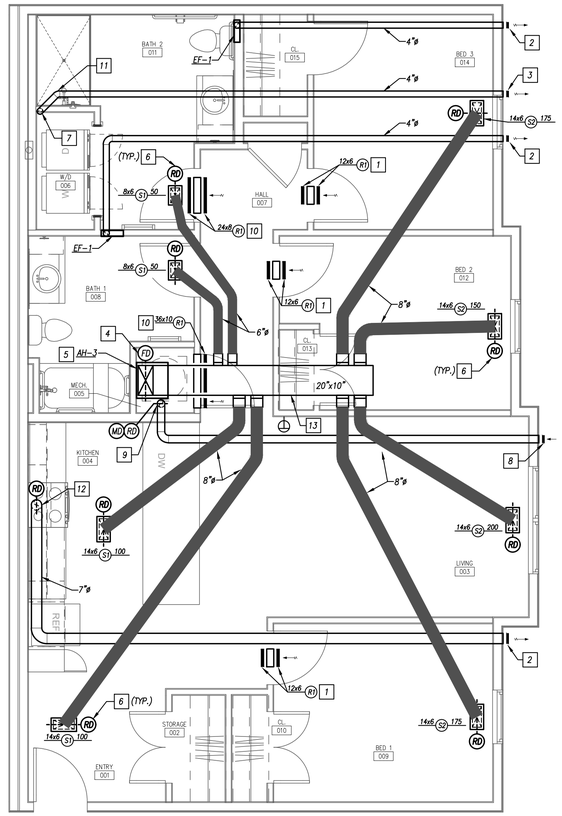


TYPE A - THREE BEDROOM
TYPICAL UNIT - FLOOR PLAN
1/4" = 1'-0"



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



TYPE B - THREE BEDROOM - ALTERNATE
TYPICAL UNIT - FLOOR PLAN
1/4" = 1'-0"

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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
ENLARGED UNITS HVAC PLANS

PROJECT NUMBER: 25144

SHEET NUMBER:

M212

HVAC PIPING MATERIAL SCHEDULE

PIPING SYSTEM	SIZE	TYPE/SCHED	MATERIAL	ACCEPTABLE FITTINGS	FIELD TEST PRESSURE/TIME	ALLOWABLE IN PLENUMS	INSULATION TYPE	INSULATION THICKNESS
CONDENSATE DRAIN INTERIOR	3/4" – 2"	SCH. 40	CPVC	SOLVENT JOINED	10 FT – 1/2HR	YES	FIBERGLASS W/ ASJ	1/2" (PLENUM ONLY)
CONDENSATE DRAIN INTERIOR	1/2" – 2"	L	COPPER	SOLDER, PRO-PRESS	10 FT – 1/2HR	YES	FIBERGLASS W/ ASJ	1/2" (PLENUM ONLY)
REFRIGERANT LINES	1/2" – 2"	ACR	COPPER	BRAZED		YES	ELASTOMERIC	3/4"

NOTES:
1. ALL PIPING AND MATERIALS IN PLENUMS MUST MEET ASTM E84 FLAME/SMOKE RATING OF 25/50.
2. ALL INSULATION THICKNESSES SHALL MEET ASHRAE 90.1 – 2007 REQUIREMENTS AT A MINIMUM.
3. REFER TO SPECIFICATIONS FOR MORE DETAILED INFORMATION.

DUCTWORK INSULATION SCHEDULE

DUCT PURPOSE	DUCT DUTY	DUCT LOCATION	DUCT STYLE	INSULATION MATERIAL	INSULATION APPLICATION	INSULATION THICKNESS	NOTES
SUPPLY	LOW PRESSURE/VELOCITY	CONCEALED	RECTANGULAR	FIBERGLASS	LINED	1/2"	---
		CONCEALED	ROUND	MINERAL FIBER	WRAPPED	1-1/2"	---
	ALL	UNCONDITIONED ATTICS (CZ 1-4)	ALL	FIBERGLASS & MINERAL FIBER	LINED & WRAPPED (R-6 MIN)	1/2" & 2.2"	6
RETURN	LOW PRESSURE/VELOCITY	CONCEALED	RECTANGULAR	FIBERGLASS	LINED	1/2"	---
		CONCEALED	ROUND	MINERAL FIBER	WRAPPED	1-1/2"	---
		RETURN/TRANSFER BOOTS	RECTANGULAR	FIBERGLASS	LINED	1/2"	---
	ALL	UNCONDITIONED ATTICS (CZ 1-4)	ALL	FIBERGLASS & MINERAL FIBER	LINED & WRAPPED (R-6 MIN)	1/2" & 2.2"	6
EXHAUST	LOW PRESSURE/VELOCITY	CONCEALED	RECTANGULAR	FIBERGLASS	LINED	1/2"	---
		CONCEALED	ROUND	FIBERGLASS	LINED	1/2"	1
OUTSIDE AIR	ALL	CONCEALED OR MECH. SPACE	RECTANGULAR	MINERAL FIBER	WRAPPED	1-1/2"	---
		CONCEALED OR MECH. SPACE	ROUND	MINERAL FIBER	WRAPPED	1-1/2"	---

NOTES:
1. PROVIDE LINER ONLY WITHIN 10' OF FAN FOR ACCOUSTICS.
2. THICKNESS SHALL ENCAPSULATE DUCT CONSTRUCTION.
3. CONTRACTOR OPTION TO USE ROUND DUCT LINER OR PROVIDE PERFORATED LINER DOUBLE WALL DUCT (SOLID LINER FOR OUTSIDE AIR DUCTS).
4. IN ADDITION TO OTHER SCHEDULED INSULATION.
5. INSTALL FROM UNIT DISCHARGE TO FIRST DUCT ELBOW, THEN 10' FURTHER. NOT REQUIRED INSIDE CHASES OR MECHANICAL ROOMS, BUT SHALL BE INSTALLED ON REMAINING DUCTWORK WHEN 10' DIMENSION FALLS OUTSIDE ROOM.
6. PROVIDE ALUMINUM JACKETING OVER EXTERIOR DUCTWORK INSULATION.

GENERAL REMARKS (APPLICABLE TO ALL TYPES):
1) ALL DUCTWORK, INSULATION AND MATERIALS IN PLENUMS MUST MEET ASTM E84 FLAME/SMOKE RATING OF 25/50.
2) ALL INSULATION THICKNESSES SHALL MEET ASHRAE 90.1 – 2016 REQUIREMENTS AT A MINIMUM.
3) REFER TO SPECIFICATIONS FOR MORE DETAILED INFORMATION FOR INSULATION PRODUCTS AND SYSTEMS.

GRILLE, REGISTER & DIFFUSER SCHEDULE

PLAN MARK	MANUFACTURER	MODEL NUMBER	STYLE	DESCRIPTION	SERVICE	NECK SIZE (IN)	FACE SIZE (IN)	VOLUME DAMPER	RADIATION DAMPER	MATERIAL	FINISH COLOR	REMARKS
S1	HART AND COOLEY	682	CEILING / SIDEWALL	2-WAY DEFLECTION	SUPPLY	AS INDICATED	NECK + 1-3/4"	YES	YES	STEEL	WHITE	1
S2	HART AND COOLEY	683	CEILING / SIDEWALL	3-WAY DEFLECTION	SUPPLY	AS INDICATED	NECK + 1-3/4"	YES	YES	STEEL	WHITE	1
S3	HART AND COOLEY	24	CEILING DIFFUSER	SQUARE STEP DOWN	SUPPLY	AS INDICATED	24"x24"	YES	YES	STEEL	WHITE	1
S3	HART AND COOLEY	24	CEILING DIFFUSER	SQUARE STEP DOWN	SUPPLY	AS INDICATED	12"x12"	YES	YES	STEEL	WHITE	1
R1	HART AND COOLEY	650	CEILING / SIDEWALL	20 DEG LOUVERED RETURN 1/3" BLADE SPACING	RETURN	AS INDICATED	NECK + 1-3/4"	NO	NO	STEEL	WHITE	---
R2	HART AND COOLEY	650	CEILING / SIDEWALL	20 DEG LOUVERED RETURN 1/3" BLADE SPACING	RETURN	AS INDICATED	NECK + 1-3/4"	NO	YES	STEEL	WHITE	---

REMARKS:
1. VOLUME DAMPER SHALL BE ADJUSTABLE BY OCCUPANT FROM FACE OF GRILLE.

EXHAUST FAN SCHEDULE

PLAN MARK	MANUFACTURER	MODEL NUMBER	TYPE	SERVICE	FAN DATA CFM	FAN DATA E.S.P. (IN)	FAN DATA HP	FAN DATA DRIVE	FAN DATA SONES	FAN DATA RPM	ELECTRICAL	CONTROL	REMARKS
EF-1	BROAN	LP510R	WALL CABINET	BATHROOM	80	0.250	7W	DIRECT	0.9	1,334	120V / 1PH	WALL SWITCH	1,2
EF-2	BROAN	XB80	CEILING CABINET	BATHROOM	80	0.250	12W	DIRECT	0.3	---	120V / 1PH	WALL SWITCH	2

REMARKS:
1. LOW PROFILE FAN TO BE INSTALLED IN 4" STUD WALL.
2. PROVIDE WITH UL LISTED CEILING RADIATION DAMPER WHEN FAN IS INSTALLED IN RATED CEILING ASSEMBLY.

AIR HANDLER SCHEDULE

PLAN MARK	MANUFACTURER	MODEL NUMBER	CFM	O.A. CFM	E.S.P. (IN. W.C.)	FAN HP	NOMINAL COOLING CAPACITY (MBH)	HEATING COIL KW	HEATING ΔT	ELECTRICAL VOLTAGE	ELECTRICAL MCA	ELECTRICAL MOCP	REMARKS
DWELLING UNITS													
AH-1	DAIKIN	AWST18SU1305	530	30	0.5"	1/3	18.0	5.0	29.8	240V / 1PH	28.3	30	1,2,3,4
AH-2	DAIKIN	AWST24SU1308	750	45	0.5"	1/3	24.0	8.0	33.7	240V / 1PH	41.3	45	1,2,3,4
AH-3	DAIKIN	AWST30LU1310	1,030	60	0.5"	1/2	30.0	10.0	30.7	240V / 1PH	54.8	60	1,2,3,4
PUBLIC SPACES													
AH-4	DAIKIN	AMST48CU13	1,570	x	0.5"	3/4	48.0	14.4	29.0	240V / 1PH	82.1	90	1,2,3,5,6
AH-5	DAIKIN	AMST36CU13	1,260	x	0.5"	3/4	36.0	9.6	24.1	240V / 1PH	57.0	60	1,2,3,5
AH-6	DAIKIN	AMST36CU13	1,260	x	0.5"	3/4	36.0	9.6	24.1	240V / 1PH	57.0	60	1,2,3,5
AH-7	DAIKIN	AMST36CU13	1,260	x	0.5"	3/4	36.0	9.6	24.1	240V / 1PH	57.0	60	1,2,3,5

REMARKS:
1. ACCEPTABLE ALTERNATE MANUFACTURERS: AMERICAN STANDARD, CARRIER, GOODMAN, LENNOX, OXBOX, TRANE, YORK, OR OTHER APPROVED EQUAL.
2. PROVIDE WITH WIRED, PROGRAMMABLE THERMOSTAT FOR HEAT PUMP SYSTEM WITH OUTSIDE TEMPERATURE SENSOR. HEAT PUMP AND ELECTRIC HEAT SHALL NOT OPERATE SIMULTANEOUSLY.
3. PROVIDE WITH INTEGRAL CIRCUIT BREAKER DISCONNECT.
4. PROVIDE WITH OUTSIDE AIR DUCT TO OUTDOORS WITH MOTORIZED DAMPER, BALANCING DAMPER, AND VENTILATION CONTROLLER (HONEYWELL YB150 FRESH AIR VENTILATION SYSTEM, W8150 FRESH AIR VENTILATION CONTROL).
5. PROVIDE WITH OUTSIDE AIR DUCT TO OUTDOORS WITH MOTORIZED DAMPER AND BALANCING DAMPER. ADJUST BALANCING DAMPER TO AIRFLOW LISTED IN SCHEDULE. MOTORIZED DAMPER SHALL OPEN WHEN AHU FAN IS ENERGIZED AND BE CLOSED WHEN IT IS NOT. REFER TO OUTSIDE AIR DAMPER WIRING SCHEMATIC.
6. PROVIDE WITH SINGLE-POINT ELECTRICAL CONNECTION KIT.

HEAT PUMP UNIT SCHEDULE

PLAN MARK	MANUFACTURER	MODEL NUMBER	COOLING CAPACITY (MBH)	HEATING CAPACITY (MBH)	MINIMUM SEER2	MINIMUM HSPF2	AMBIENT TEMP. (°F)	ELECTRICAL VOLTS / PH	ELECTRICAL M.C.A.	ELECTRICAL M.O.C.P.	REMARKS
DWELLING UNITS											
HP-1	DAIKIN	DH4SEA18	17.4	17.4 / 10.0	14.5	7.5	105°	240V / 1PH	11.4	15	ALL
HP-2	DAIKIN	DH4SEA24	23.0	22.0 / 13.0	14.3	7.5	105°	240V / 1PH	13.8	20	ALL
HP-3	DAIKIN	DH4SEA30	27.6	28.6 / 17.0	15.2	7.8	105°	240V / 1PH	17.0	25	ALL
PUBLIC SPACES											
HP-4	DAIKIN	DH4SEA48	44.5	46.0 / 27.8	15.2	7.8	105°	240V / 1PH	25.5	40	ALL
HP-5	DAIKIN	DH4SEA36	33.8	35.0 / 21.6	15.0	7.5	105°	240V / 1PH	21.5	35	ALL
HP-6	DAIKIN	DH4SEA36	33.8	35.0 / 21.6	15.0	7.5	105°	240V / 1PH	21.5	35	ALL
HP-7	DAIKIN	DH4SEA36	33.8	35.0 / 21.6	15.0	7.5	105°	240V / 1PH	21.5	35	ALL

REMARKS:
1. COOLING CAPACITY BASED ON A SUCTION TEMPERATURE OF 49°F.
2. HEATING CAPACITIES LISTED ARE AT 47°F AND 17°F.
3. PROVIDE 4" CONCRETE HOUSEKEEPING PAD.
4. DIV. 26 TO PROVIDE DISCONNECT SWITCH FOR OUTDOOR UNIT.
5. ACCEPTABLE ALTERNATE MANUFACTURERS: AMERICAN STANDARD, CARRIER, GOODMAN, LENNOX, OXBOX, TRANE, YORK, OR OTHER APPROVED EQUAL.

ELECTRIC HEATER SCHEDULE

PLAN MARK	MANUFACTURER	MODEL NUMBER	TYPE	CFM	KW	VOLTAGE	REMARKS
EH-1	QMARK	MUH0321	UNIT HEATER	350	3.0	240V / 1PH	ALL

REMARKS:
1. PROVIDE WITH WALL-MOUNTED THERMOSTAT.
2. PROVIDE WALL MOUNTING BRACKET.

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JOHNSON - BETTS MEADOWS

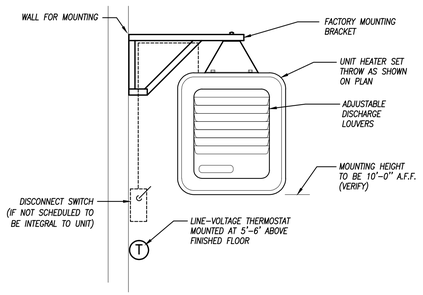
TOPEKA, KS

SHEET TITLE
MECHANICAL SCHEDULES

PROJECT NUMBER: 25144

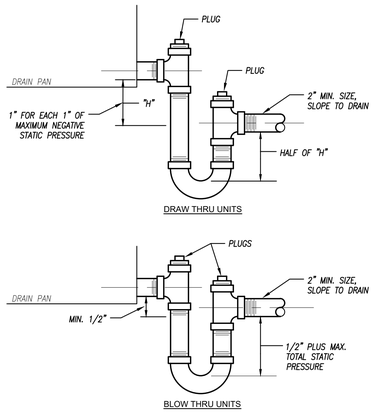
SHEET NUMBER:

M301



ELECTRIC UNIT HEATER DETAIL

NOT TO SCALE



CONDENSATE TRAP DETAIL

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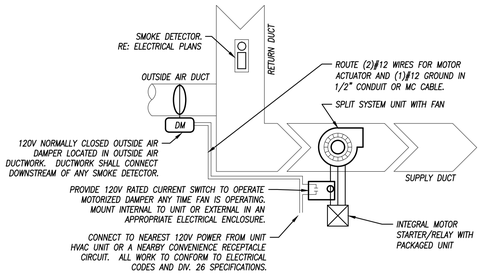
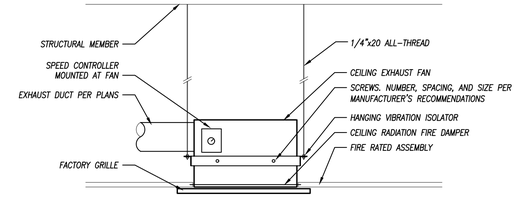


OUTSIDE AIR DAMPER WIRING SCHEMATIC

NOT TO SCALE



EXHAUST FAN WITH CEILING RADIATION DAMPER MOUNTING DETAIL

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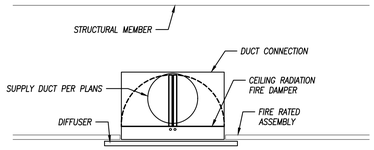
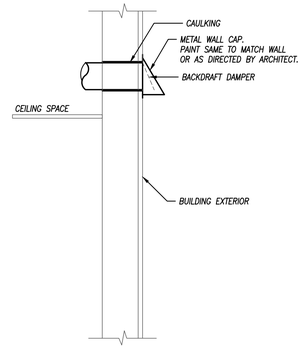


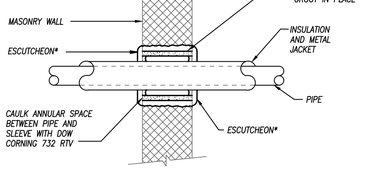
DIFFUSER WITH CEILING RADIATION DAMPER MOUNTING DETAIL

NOT TO SCALE



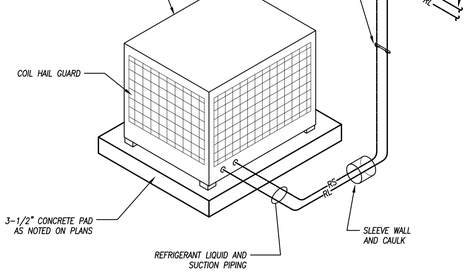
EXHAUST/VENT CAP AT EXTERIOR WALL

NOT TO SCALE



PIPE THROUGH EXTERIOR WALL

NOT TO SCALE



CONDENSING UNIT / HEAT PUMP DETAIL

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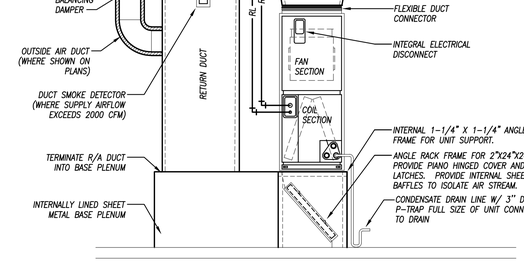
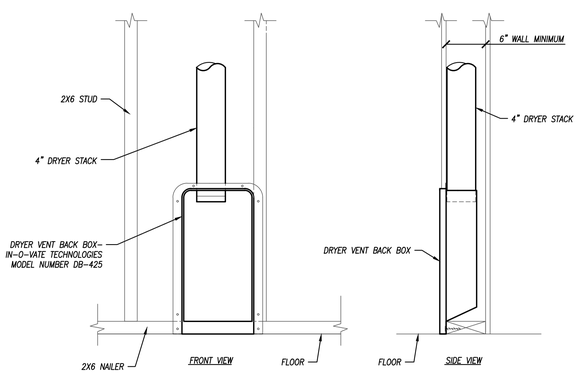


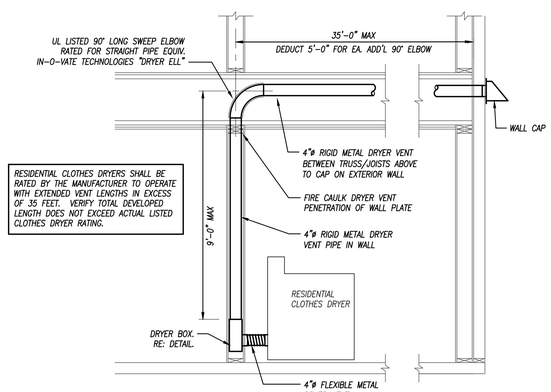
AIR HANDLING UNIT DETAIL

NOT TO SCALE



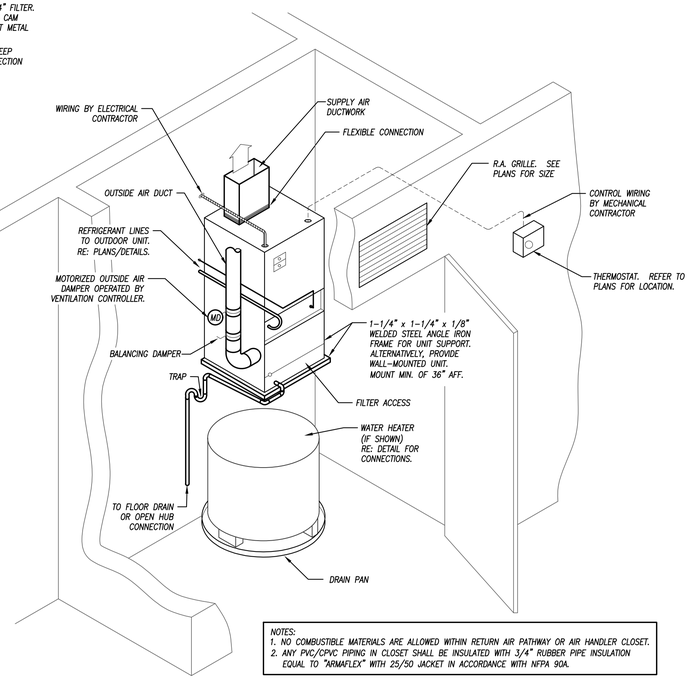
DRYER BOX DETAIL

NOT TO SCALE



CLOTHES DRYER VENT W/ FLOOR/CEILING ASSEMBLY DETAIL

NOT TO SCALE



AIR HANDLING UNIT IN CLOSET DETAIL

NOT TO SCALE

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

25.401

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

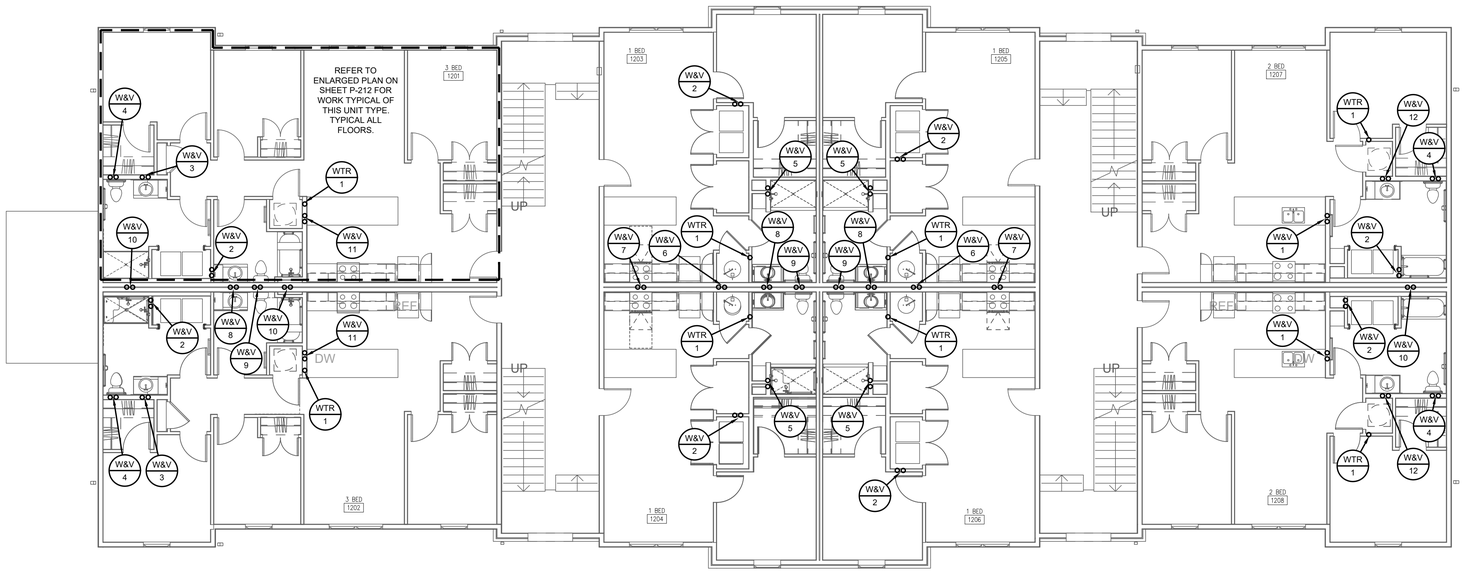
TOPEKA, KS

SHEET TITLE
MECHANICAL DETAILS

PROJECT NUMBER: 25144

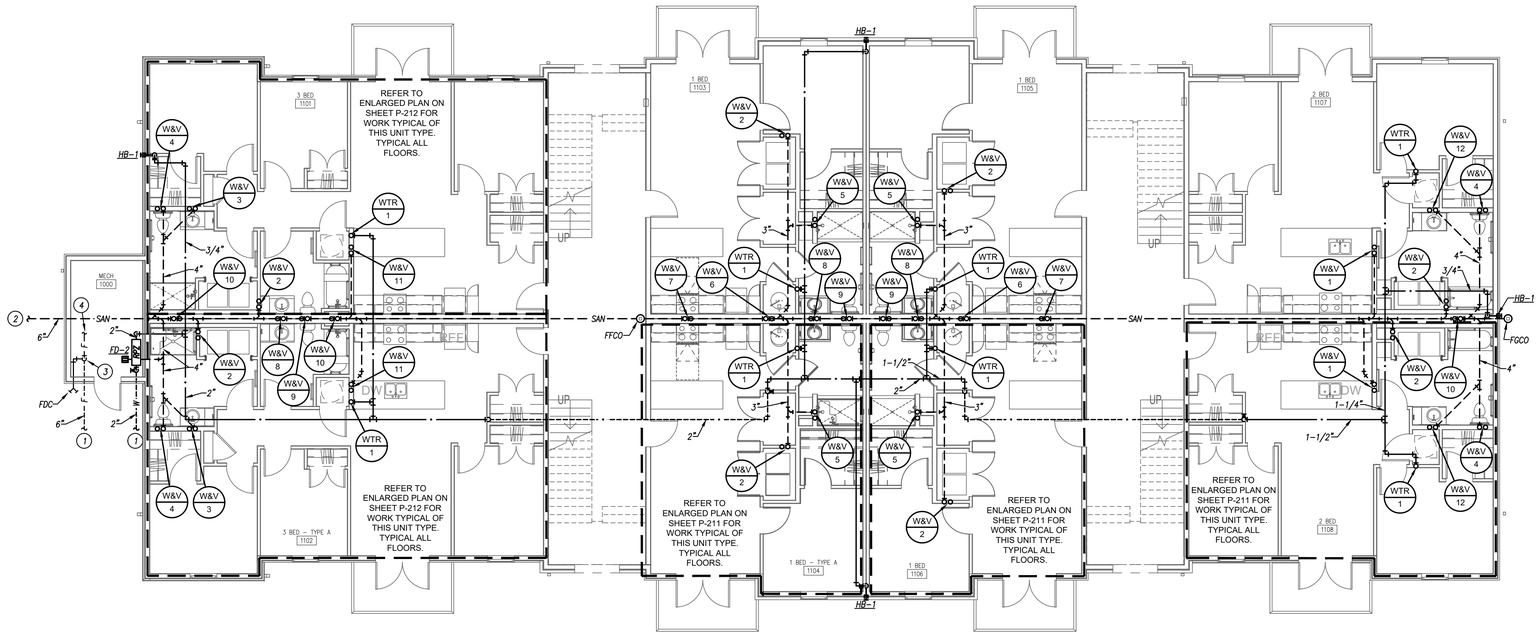
SHEET NUMBER:

M401



SECOND FLOOR PLUMBING PLAN - BLDG A

1/8" = 1'-0"



FIRST FLOOR PLUMBING PLAN - BLDG A

1/8" = 1'-0"

GENERAL PLUMBING NOTES

1. *REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.*
2. *REFER TO PLUMBING FIXTURE / DRAIN SCHEDULES FOR PIPING SIZES FOR INDIVIDUAL CONNECTIONS TO FIXTURES AND RISERS NOT SHOWN ON PLANS.*
3. *NO SANITARY OR VENT PIPING BELOW GRADE SHALL BE LESS THAN 2".*
4. *NO DOMESTIC WATER PIPING SHALL BE SMALLER THAN 3/4" UNLESS NOTED OTHERWISE.*
5. *ALL VENT PIPING SHOWN IS DIAGRAMMATIC. USE APPROPRIATE FITTINGS FOR VENT PIPING BELOW FLOOD RIM OF FIXTURE.*
6. *NOT ALL INTERIOR CLEANOUTS ARE SHOWN FOR DRAWING CLARITY. CONTRACTOR SHALL INSTALL ALL CODE-REQUIRED CLEANOUTS (RE: GENERAL NOTES ON COVER SHEET). COORDINATE EXACT LOCATIONS OF CLEANOUTS WITH ARCHITECT.*
7. *ALL FLOOR DRAIN TRAPS SHALL BE PROTECTED BY: ONE OF THE FOLLOWING METHODS, TO BE INSTALLED AT CONTRACTOR'S DISCRETION AND IN COMPLIANCE WITH ADOPTED VERSION OF PLUMBING CODE AND/OR AHJ.*
   - *7.1. PROVIDE TRAP SEALS LISTED FOR PROPOSED USE.*
   - *7.2. PROVIDE TRAP PRIMERS. 1/2" TRAP PRIMER PIPING TO NEAREST TRAP PRIMER VALVE. PIPING SHALL BE TYPE "K" SOFT COPPER SEAMLESS WITH NO JOINTS FROM VALVE TO DRAIN.*

PLUMBING PLAN KEYED NOTES

1. *FIRE AND WATER SERVICE ENTRY LOCATIONS AND FIRE DEPARTMENT CONNECTIONS VARY FOR DIFFERENT BUILDINGS. REFER TO SITE PLAN EXACT LOCATIONS. REFER TO CIVIL PLANS FOR CONTINUATION.*
2. *SANITARY SERVICE EXIT LOCATION IS MIRRORED FOR SOME BUILDINGS. REFER TO SITE PLAN FOR EXIT LOCATION, AND MIRROR FITTINGS TO MATCH. REFER TO CIVIL PLANS FOR CONTINUATION.*
3. *FIRE RISER. REFER TO DETAIL FOR PIPING ARRANGEMENT.*
4. *REFER TO FIRE SPRINKLER DRAWINGS FOR CONTINUATION. DO NOT ROUTE FIRE PIPING THROUGH EXPOSED BREEZEWAYS OR UNCONDITIONED SPACES.*

PRINTS ISSUED

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JOHNSON - BETTS MEADOWS

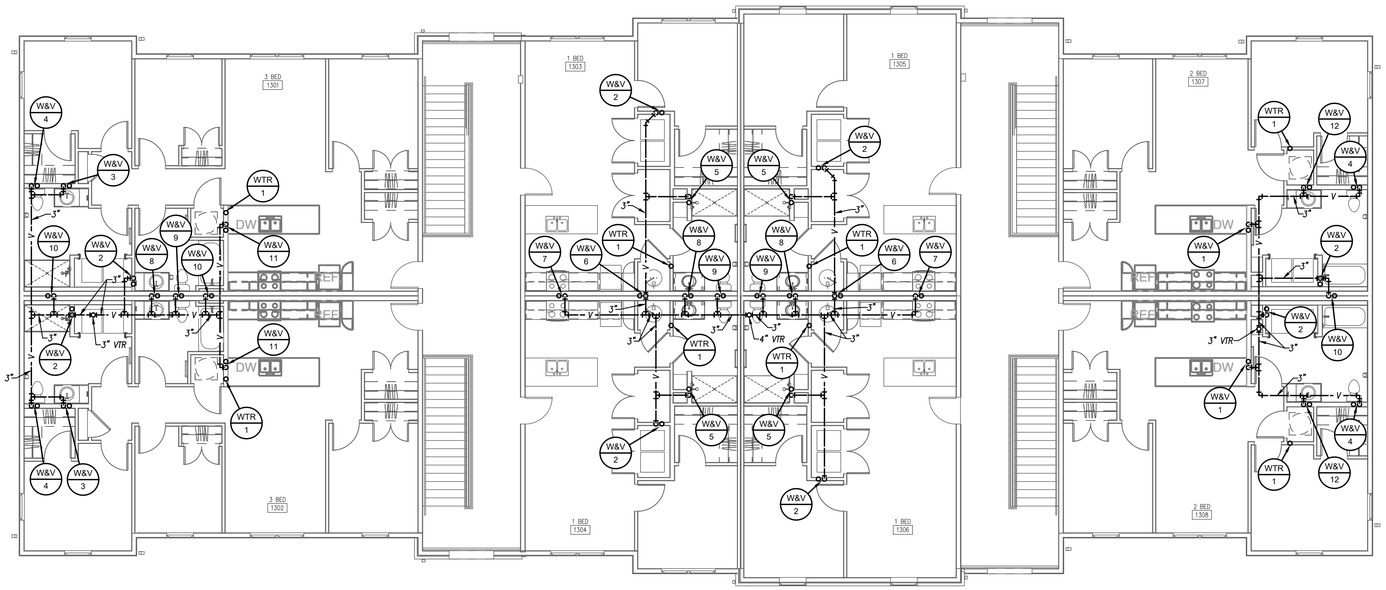
TOPEKA, KS

SHEET TITLE
FIRST & SECOND FLOOR PLUMBING PLANS - BUILDING A

PROJECT NUMBER: 25144

SHEET NUMBER:

P101



THIRD FLOOR PLUMBING PLAN - BLDG A

1/8" = 1'-0"

GENERAL PLUMBING NOTES

1. *REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.*
2. *REFER TO PLUMBING FIXTURE / DRAIN SCHEDULES FOR PIPING SIZES FOR INDIVIDUAL CONNECTIONS TO FIXTURES AND RISERS NOT SHOWN ON PLANS.*
3. *NO SANITARY OR VENT PIPING BELOW GRADE SHALL BE LESS THAN 2".*
4. *NO DOMESTIC WATER PIPING SHALL BE SMALLER THAN 3/4" UNLESS NOTED OTHERWISE.*
5. *ALL VENT PIPING SHOWN IS DIAGRAMMATIC. USE APPROPRIATE FITTINGS FOR VENT PIPING BELOW FLOOD RIM OF FIXTURE.*
6. *NOT ALL INTERIOR CLEANOUTS ARE SHOWN FOR DRAWING CLARITY. CONTRACTOR SHALL INSTALL ALL CODE-REQUIRED CLEANOUTS (RE: GENERAL NOTES ON COVER SHEET). COORDINATE EXACT LOCATIONS OF CLEANOUTS WITH ARCHITECT.*
7. *ALL FLOOR DRAIN TRAPS SHALL BE PROTECTED BY ONE OF THE FOLLOWING METHODS, TO BE INSTALLED AT CONTRACTOR'S DISCRETION AND IN COMPLIANCE WITH ADOPTED VERSION OF PLUMBING CODE AND/OR AHJ.*
   - 7.1. *PROVIDE TRAP SEALS LISTED FOR PROPOSED USE.*
   - 7.2. *PROVIDE TRAP PRIMERS. 1/2" TRAP PRIMER PIPING TO NEAREST TRAP PRIMER VALVE. PIPING SHALL BE TYPE "K" SOFT COPPER SEAMLESS WITH NO JOINTS FROM VALVE TO DRAIN.*

PLUMBING PLAN KEYED NOTES

1. *FIRE AND WATER SERVICE ENTRY LOCATIONS AND FIRE DEPARTMENT CONNECTIONS VARY FOR DIFFERENT BUILDINGS. REFER TO SITE PLAN EXACT LOCATIONS. REFER TO CIVIL PLANS FOR CONTINUATION.*
2. *SANITARY SERVICE EXIT LOCATION IS MIRRORED FOR SOME BUILDINGS. REFER TO SITE PLAN FOR EXIT LOCATION, AND MIRROR FITTINGS TO MATCH. REFER TO CIVIL PLANS FOR CONTINUATION.*
3. *FIRE RISER. REFER TO DETAIL FOR PIPING ARRANGEMENT.*
4. *REFER TO FIRE SPRINKLER DRAWINGS FOR CONTINUATION. DO NOT ROUTE FIRE PIPING THROUGH EXPOSED BREEZEWAYS OR UNCONDITIONED SPACES.*

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

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JOHNSON - BETTS MEADOWS

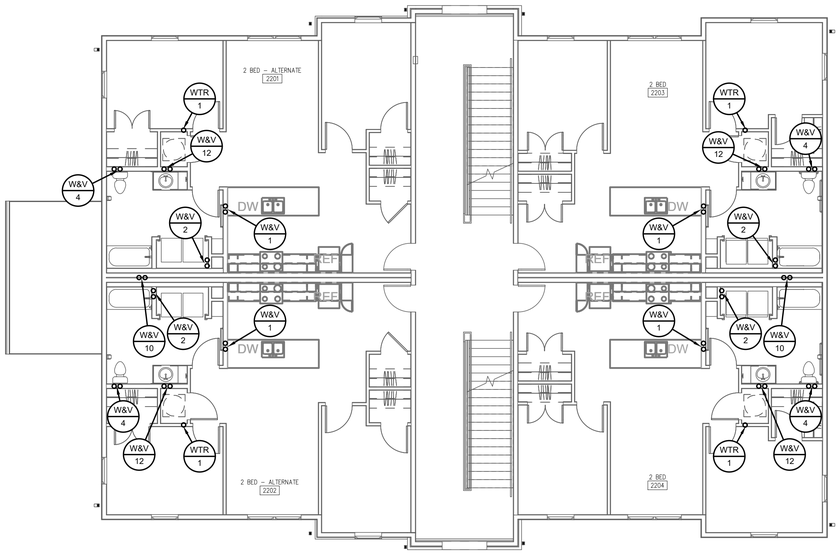
TOPEKA, KS

SHEET TITLE
THIRD FLOOR PLUMBING PLAN - BUILDING A

PROJECT NUMBER: 25144

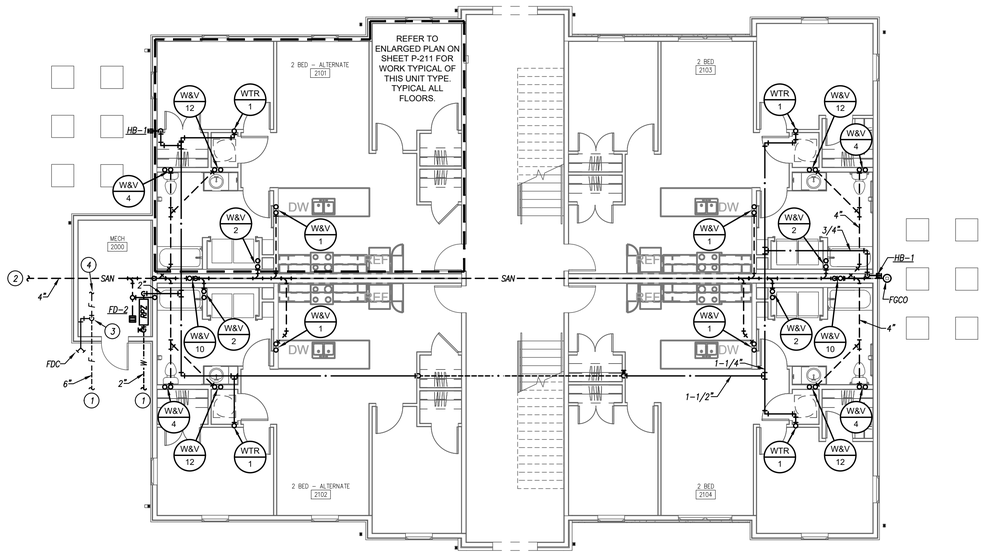
SHEET NUMBER:

P102



SECOND FLOOR PLUMBING PLAN - BLDG B

1/8" = 1'-0"



FIRST FLOOR PLUMBING PLAN - BLDG B

1/8" = 1'-0"

GENERAL PLUMBING NOTES

1. *REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.*
2. *REFER TO PLUMBING FIXTURE / DRAIN SCHEDULES FOR PIPING SIZES FOR INDIVIDUAL CONNECTIONS TO FIXTURES AND RISERS NOT SHOWN ON PLANS.*
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PLUMBING PLAN KEYED NOTES

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PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

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PRELIMINARY
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JOHNSON - BETTS MEADOWS

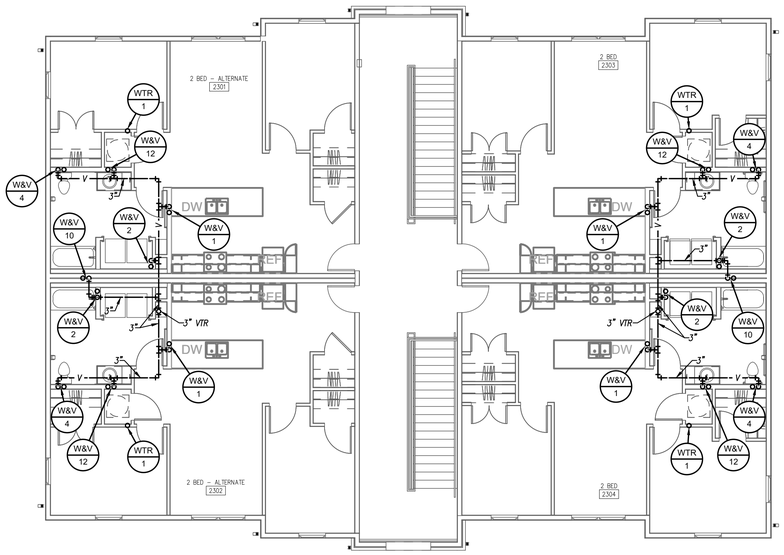
TOPEKA, KS

SHEET TITLE
FIRST & SECOND FLOOR PLUMBING PLANS - BUILDING B

PROJECT NUMBER: 25144

SHEET NUMBER:

P103



THIRD FLOOR PLUMBING PLAN - BLDG B

1/8" = 1'-0"

GENERAL PLUMBING NOTES

1. *REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.*
2. *REFER TO PLUMBING FIXTURE / DRAIN SCHEDULES FOR PIPING SIZES FOR INDIVIDUAL CONNECTIONS TO FIXTURES AND RISERS NOT SHOWN ON PLANS.*
3. *NO SANITARY OR VENT PIPING BELOW GRADE SHALL BE LESS THAN 2".*
4. *NO DOMESTIC WATER PIPING SHALL BE SMALLER THAN 3/4" UNLESS NOTED OTHERWISE.*
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   - *7.1. PROVIDE TRAP SEALS LISTED FOR PROPOSED USE.*
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PLUMBING PLAN KEYED NOTES

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2. *SANITARY SERVICE EXIT LOCATION IS MIRRORED FOR SOME BUILDINGS. REFER TO SITE PLAN FOR EXIT LOCATION, AND MIRROR FITTINGS TO MATCH. REFER TO CIVIL PLANS FOR CONTINUATION.*
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4. *REFER TO FIRE SPRINKLER DRAWINGS FOR CONTINUATION. DO NOT ROUTE FIRE PIPING THROUGH EXPOSED BREEZEWAYS OR UNCONDITIONED SPACES.*

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

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PRELIMINARY
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JOHNSON - BETTS MEADOWS

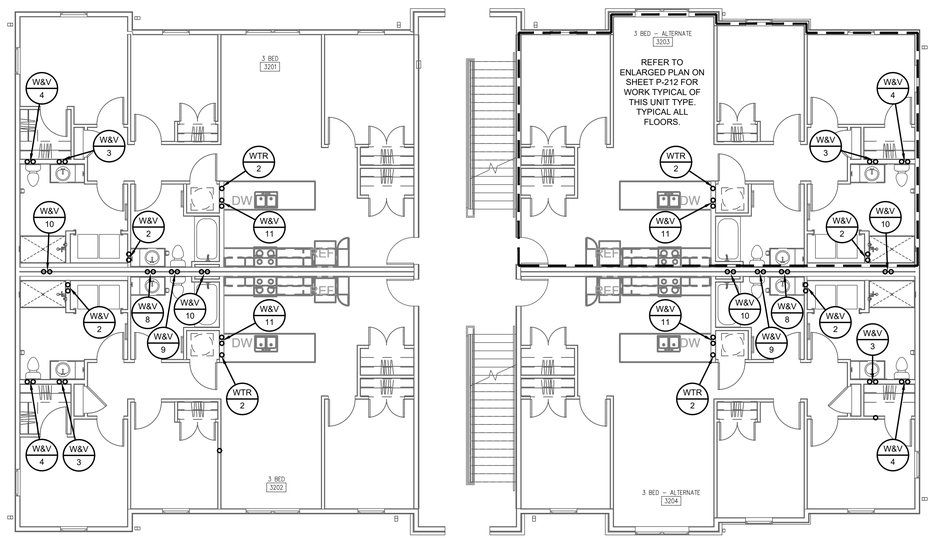
TOPEKA, KS

SHEET TITLE
THIRD FLOOR PLUMBING PLAN - BUILDING B

PROJECT NUMBER: 25144

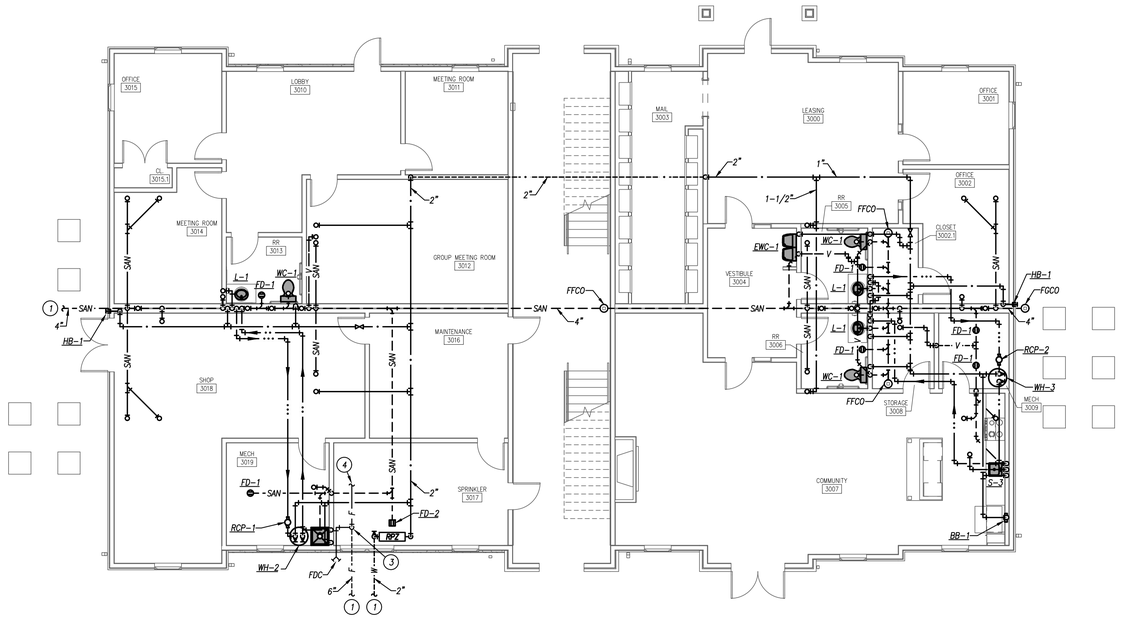
SHEET NUMBER:

P104



SECOND FLOOR PLUMBING PLAN - BLDG C

1/8" = 1'-0"



FIRST FLOOR PLUMBING PLAN - BLDG C

1/8" = 1'-0"

GENERAL PLUMBING NOTES

1. *REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.*
2. *REFER TO PLUMBING FIXTURE / DRAIN SCHEDULES FOR PIPING SIZES FOR INDIVIDUAL CONNECTIONS TO FIXTURES AND RISERS NOT SHOWN ON PLANS.*
3. *NO SANITARY OR VENT PIPING BELOW GRADE SHALL BE LESS THAN 2".*
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   - *7.1. PROVIDE TRAP SEALS LISTED FOR PROPOSED USE.*
   - *7.2. PROVIDE TRAP PRIMERS, 1/2" TRAP PRIMER PIPING TO NEAREST TRAP PRIMER VALVE. PIPING SHALL BE TYPE "K" SOFT COPPER SEAMLESS WITH NO JOINTS FROM VALVE TO DRAIN.*

PLUMBING PLAN KEYED NOTES

1. *REFER TO CIVIL PLANS FOR CONTINUATION.*
2. *FIRE RISER. REFER TO DETAIL FOR PIPING ARRANGEMENT.*
3. *REFER TO FIRE SPRINKLER DRAWINGS FOR CONTINUATION. DO NOT ROUTE FIRE PIPING THROUGH EXPOSED BREEZEWAYS OR UNCONDITIONED SPACES.*

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

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PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

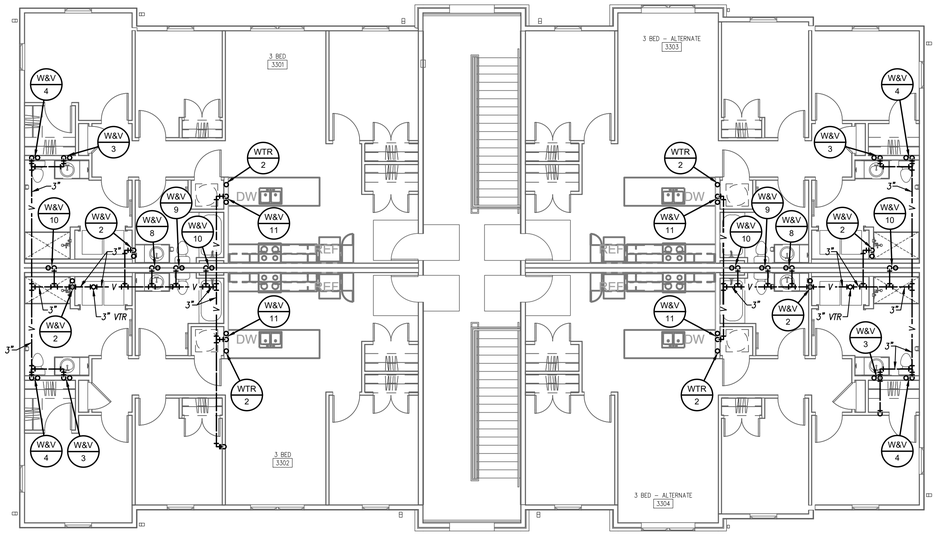
TOPEKA, KS

SHEET TITLE
FIRST & SECOND FLOOR PLUMBING PLANS - BUILDING C

PROJECT NUMBER: 25144

SHEET NUMBER:

P105



THIRD FLOOR PLUMBING PLAN - BLDG C

1/8" = 1'-0"

GENERAL PLUMBING NOTES

1. REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.
2. REFER TO PLUMBING FIXTURE / DRAIN SCHEDULES FOR PIPING SIZES FOR INDIVIDUAL CONNECTIONS TO FIXTURES AND RISERS NOT SHOWN ON PLANS.
3. NO SANITARY OR VENT PIPING BELOW GRADE SHALL BE LESS THAN 2".
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   7.2. PROVIDE TRAP PRIMERS, 1/2" TRAP PRIMER PIPING TO NEAREST TRAP PRIMER VALVE. PIPING SHALL BE TYPE "K" SOFT COPPER SEAMLESS WITH NO JOINTS FROM VALVE TO DRAIN.

PLUMBING PLAN KEYED NOTES

(1) REFER TO CIVIL PLANS FOR CONTINUATION.

(2) FIRE RISER. REFER TO DETAIL FOR PIPING ARRANGEMENT.

(3) REFER TO FIRE SPRINKLER DRAWINGS FOR CONTINUATION. DO NOT ROUTE FIRE PIPING THROUGH EXPOSED BREEZEWAYS OR UNCONDITIONED SPACES.

PRINTS ISSUED

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JOHNSON - BETTS MEADOWS

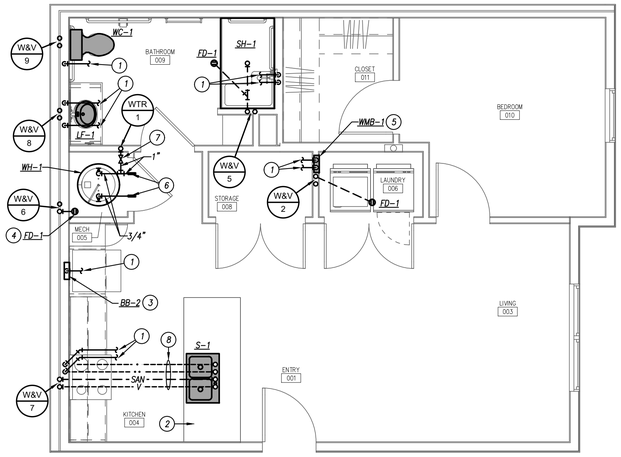
TOPEKA, KS

SHEET TITLE
THIRD FLOOR PLUMBING PLAN - BUILDING C

PROJECT NUMBER: 25144

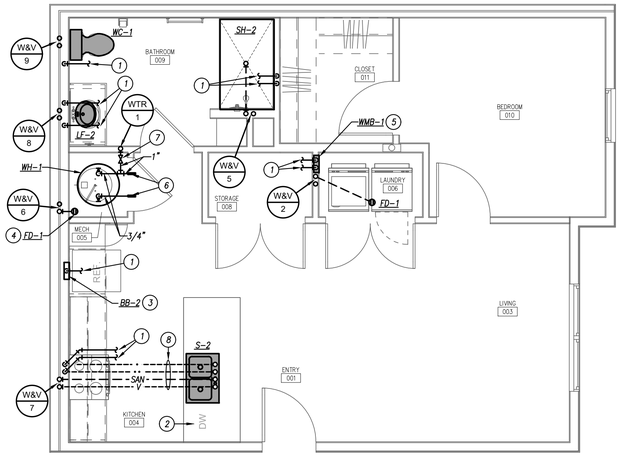
SHEET NUMBER:

P106



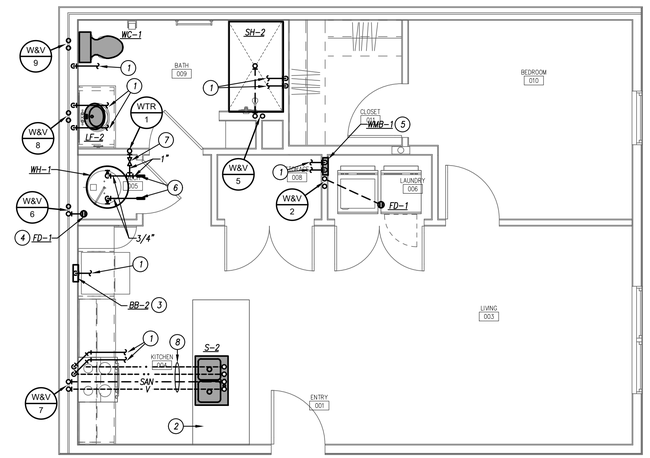
TYPE A - ONE BEDROOM
TYPICAL UNIT - FLOOR PLAN

1/4" = 1'-0"



TYPE B - ONE BEDROOM
TYPICAL UNIT - FLOOR PLAN

1/4" = 1'-0"



TYPE B - ONE BEDROOM - ALTERNATE
TYPICAL UNIT - FLOOR PLAN

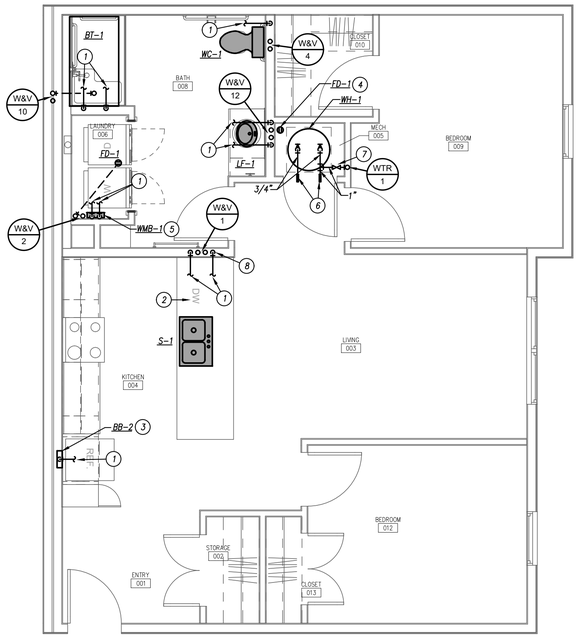
1/4" = 1'-0"

GENERAL PLUMBING NOTES

1. REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.
2. REFER TO PLUMBING FIXTURE / DRAIN SCHEDULES FOR PIPING SIZES FOR INDIVIDUAL CONNECTIONS TO FIXTURES AND RISERS NOT SHOWN ON PLANS.
3. NO SANITARY OR VENT PIPING BELOW GRADE SHALL BE LESS THAN 2".
4. NO DOMESTIC WATER PIPING SHALL BE SMALLER THAN 3/4" UNLESS NOTED OTHERWISE.
5. ALL VENT PIPING SHOWN IS DIAGRAMMATIC. USE APPROPRIATE FITTINGS FOR VENT PIPING BELOW FLOOD RIM OF FIXTURE.
6. NOT ALL INTERIOR CLEANOUTS ARE SHOWN FOR DRAWING CLARITY. CONTRACTOR SHALL INSTALL ALL CODE-REQUIRED CLEANOUTS (RE: GENERAL NOTES ON COVER SHEET). COORDINATE EXACT LOCATIONS OF CLEANOUTS WITH ARCHITECT.
7. ALL FLOOR DRAIN TRAPS SHALL BE PROTECTED BY ONE OF THE FOLLOWING METHODS, TO BE INSTALLED AT CONTRACTOR'S DISCRETION AND IN COMPLIANCE WITH ADOPTED VERSION OF PLUMBING CODE AND/OR AHJ.
   7.1. PROVIDE TRAP SEALS LISTED FOR PROPOSED USE.
   7.2. PROVIDE TRAP PRIMERS, 1/2" TRAP PRIMER PIPING TO NEAREST TRAP PRIMER VALVE. PIPING SHALL BE TYPE "K" SOFT COPPER SEAMLESS WITH NO JOINTS FROM VALVE TO DRAIN.

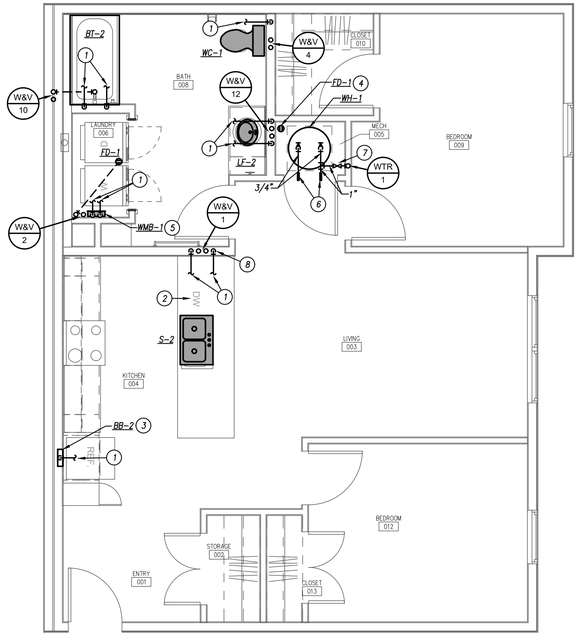
PLUMBING PLAN KEYED NOTES

1. 1/2" DOMESTIC WATER PEX PIPE BACK TO PEX HEADER.
2. ROUTE 1/2" DHW CONNECTION FROM SINK TO STOP VALVE FOR DISHWASHER. CONNECT DISHWASHER TO SINK WASTE WITH FLEX HOSE. REFER TO DETAIL.
3. 1/2" DCW CONNECTION TO STOP VALVE FOR ICEMAKER. PROVIDE FIRE RATED BACK BOXES IN FIRE RATED WALLS. REFER TO ARCHITECTURAL PLANS.
4. EXTEND 3/4" AIR HANDLER CONDENSATE DRAIN PIPE AND WATER HEATER T&P TO 2" FLOOR DRAIN.
5. WASHING MACHINE SHALL ALWAYS BE LOCATED TO THE LEFT OF THE DRYER.
6. PROVIDE PEX MANIFOLD FOR 1" DCW PIPE AND 3/4" DHW PIPE. ROUTE 1/2" DCW PEX PIPE TO EACH PLUMBING FIXTURE. ROUTE 1/2" DHW PEX PIPE TO SINK, LAVATORY, WASHER BOX, AND SHOWER.
7. PROVIDE APARTMENT SHUTOFF VALVE IN ACCESSIBLE LOCATION, CLEARLY MARKED WITH SIGNAGE.
8. ROUTE DHW, DCW, WASTE, AND VENT PIPING UNDER FLOOR TO CONNECT TO SINK AND DISHWASHER.



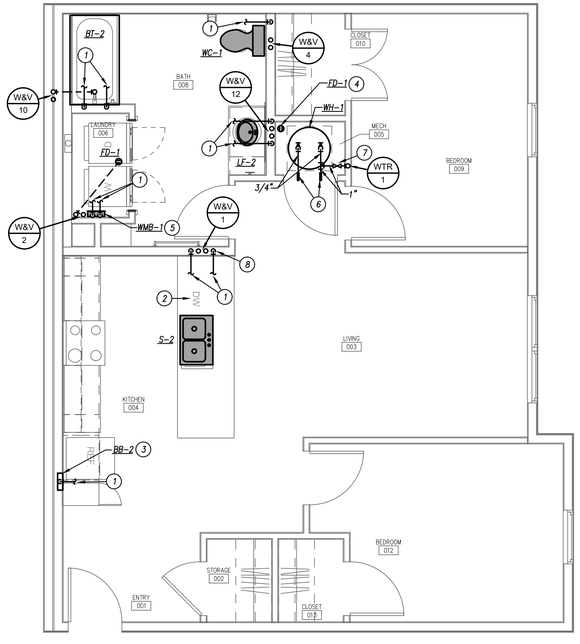
TYPE A - TWO BEDROOM
TYPICAL UNIT - FLOOR PLAN

1/4" = 1'-0"



TYPE B - TWO BEDROOM
TYPICAL UNIT - FLOOR PLAN

1/4" = 1'-0"



TYPE B - TWO BEDROOM - ALTERNATE
TYPICAL UNIT - FLOOR PLAN

1/4" = 1'-0"

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

pkmr ENGINEERS

PEARSON KENT MCKINLEY RAAF ENGINEERS LLC
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PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
ENLARGED UNITS PLUMBING PLANS

PROJECT NUMBER: 25144

SHEET NUMBER:

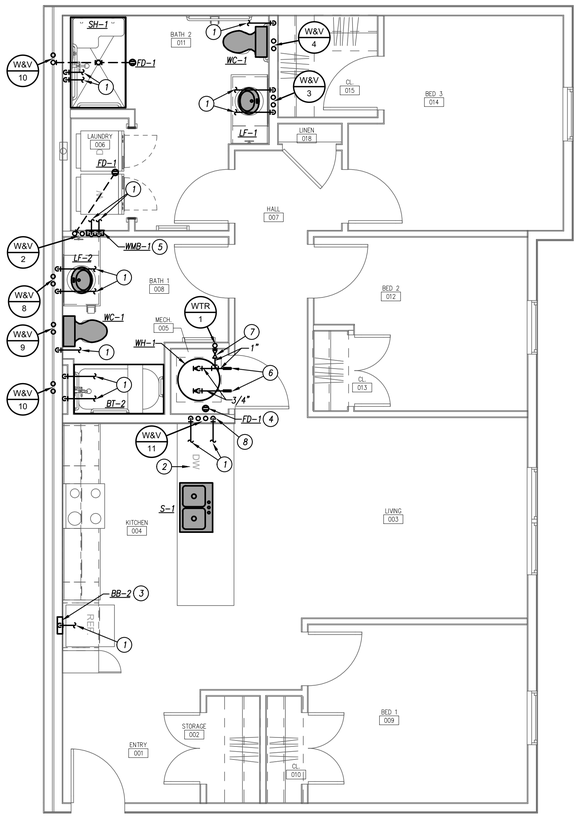
P211

GENERAL PLUMBING NOTES

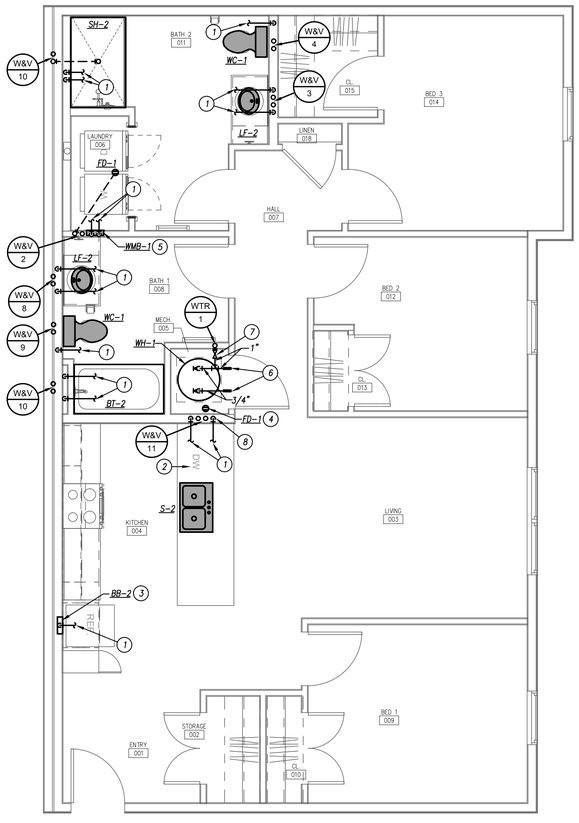
1. *REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.*
2. *REFER TO PLUMBING FIXTURE / DRAIN SCHEDULES FOR PIPING SIZES FOR INDIVIDUAL CONNECTIONS TO FIXTURES AND RISERS NOT SHOWN ON PLANS.*
3. *NO SANITARY OR VENT PIPING BELOW GRADE SHALL BE LESS THAN 2".*
4. *NO DOMESTIC WATER PIPING SHALL BE SMALLER THAN 3/4" UNLESS NOTED OTHERWISE.*
5. *ALL VENT PIPING SHOWN IS DIAGRAMMATIC. USE APPROPRIATE FITTINGS FOR VENT PIPING BELOW FLOOD RIM OF FIXTURE.*
6. *NOT ALL INTERIOR CLEANOUTS ARE SHOWN FOR DRAWING CLARITY. CONTRACTOR SHALL INSTALL ALL CODE-REQUIRED CLEANOUTS (RE: GENERAL NOTES ON COVER SHEET). COORDINATE EXACT LOCATIONS OF CLEANOUTS WITH ARCHITECT.*
7. *ALL FLOOR DRAIN TRAPS SHALL BE PROTECTED BY ONE OF THE FOLLOWING METHODS, TO BE INSTALLED AT CONTRACTOR'S DISCRETION AND IN COMPLIANCE WITH ADOPTED VERSION OF PLUMBING CODE AND/OR AHJ.*
   - *7.1. PROVIDE TRAP SEALS LISTED FOR PROPOSED USE.*
   - *7.2. PROVIDE TRAP PRIMERS. 1/2" TRAP PRIMER PIPING TO NEAREST TRAP PRIMER VALVE. PIPING SHALL BE TYPE "K" SOFT COPPER SEAMLESS WITH NO JOINTS FROM VALVE TO DRAIN.*

PLUMBING PLAN KEYED NOTES

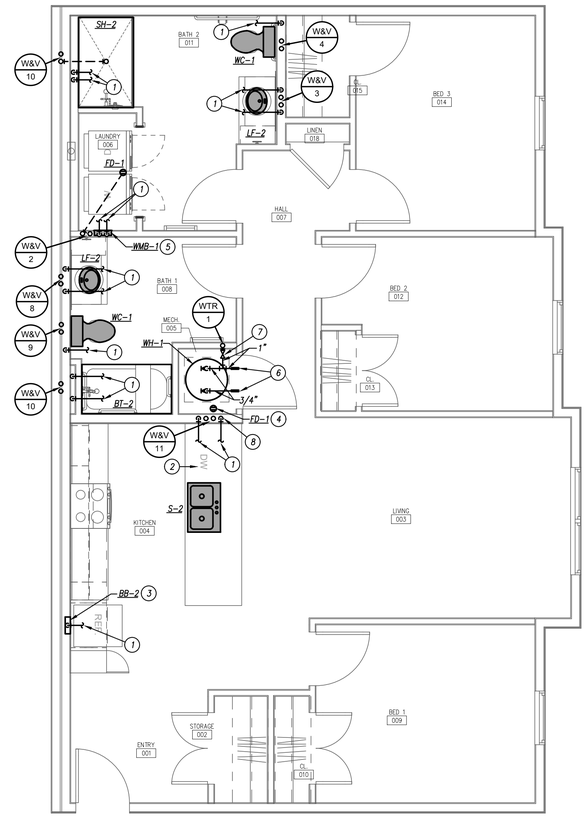
1. *1/2" DOMESTIC WATER PEX PIPE BACK TO PEX HEADER.*
2. *ROUTE 1/2" DHW CONNECTION FROM SINK TO STOP VALVE FOR DISHWASHER. CONNECT DISHWASHER TO SINK WASTE WITH FLEX HOSE. REFER TO DETAIL.*
3. *1/2" DCW CONNECTION TO STOP VALVE FOR ICEMAKER. PROVIDE FIRE RATED BACK BOXES IN FIRE RATED WALLS. REFER TO ARCHITECTURAL PLANS.*
4. *EXTEND 3/4" AIR HANDLER CONDENSATE DRAIN PIPE AND WATER HEATER T&P TO 2" FLOOR DRAIN.*
5. *WASHING MACHINE SHALL ALWAYS BE LOCATED TO THE LEFT OF THE DRYER.*
6. *PROVIDE PEX MANIFOLD FOR 1" DCW PIPE AND 3/4" DHW PIPE. ROUTE 1/2" DCW PEX PIPE TO EACH PLUMBING FIXTURE. ROUTE 1/2" DHW PEX PIPE TO SINK, LAVATORY, WASHER BOX, AND SHOWER.*
7. *PROVIDE APARTMENT SHUTOFF VALVE IN ACCESSIBLE LOCATION, CLEARLY MARKED WITH SIGNAGE.*
8. *ROUTE DHW, DCW, WASTE, AND VENT PIPING UNDER FLOOR TO CONNECT TO SINK AND DISHWASHER.*



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



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



TYPE B - THREE BEDROOM - ALTERNATE
TYPICAL UNIT - FLOOR PLAN
1/4" = 1'-0"

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

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PRELIMINARY
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JOHNSON - BETTS MEADOWS

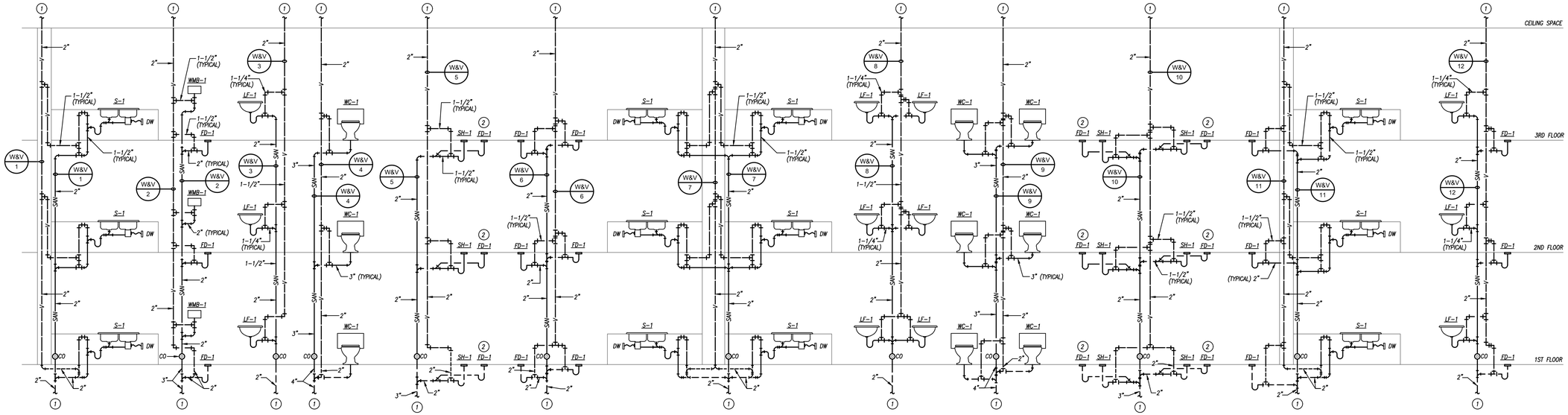
TOPEKA, KS

SHEET TITLE
ENLARGED UNITS PLUMBING PLANS

PROJECT NUMBER: 25144

SHEET NUMBER:

P212



SANITARY & VENT RISER DIAGRAMS

NOT TO SCALE

RISER GENERAL NOTES:

1. *PLUMBING RISERS ARE DIAGRAMMATIC – REFER TO THE FLOOR PLAN TO COORDINATE EXACT ROUTING OF PLUMBING SERVICES.*
2. *REFER TO PLUMBING FIXTURE SCHEDULE FOR INDIVIDUAL CONNECTION SIZES AND TRAP REQUIREMENTS.*
3. *PROVIDE TRAP SEALS FOR ALL FLOOR DRAINS.*
4. *WRAP ALL SANITARY AND VENT STACKS WITH COMPRESSIBLE INSULATION ANYWHERE THEY PENETRATE THE SLAB SO THEY ARE NOT DAMAGED WHEN CONCRETE CONTRACTS.*

RISER KEYED NOTES

(1) *REFER TO FLOORPLANS FOR CONTINUATION.*

(2) *NOT ALL ROOMS HAVE SHOWER AND FLOOR DRAIN ON SAME STACK. REFER TO PLAN LAYOUT EXACT LAYOUT.*

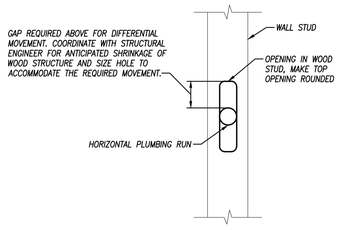
REFER TO STRUCTURAL DRAWINGS FOR INFORMATION ON ANTICIPATED WOOD SHRINKAGE.

THE FOLLOWING IS A LIST OF RECOMMENDATIONS TO MINIMIZE POTENTIAL ISSUES RELATED TO WOOD SHRINKAGE AND VENEER EXPANSION.

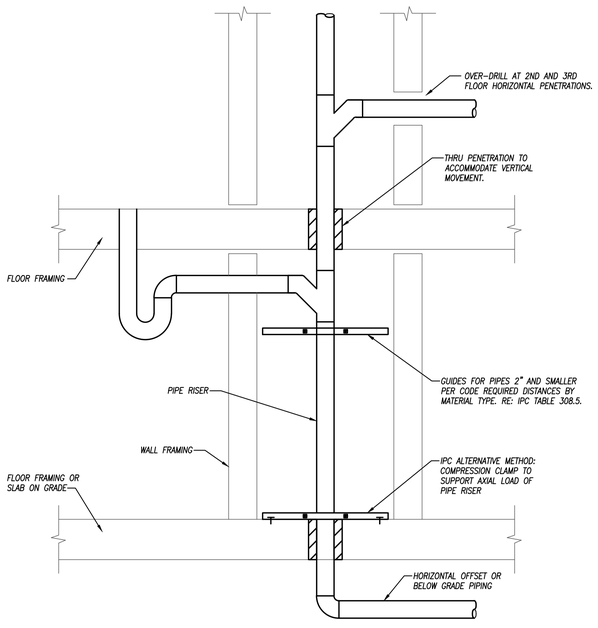
A. *PROVIDE OVERSIZED AND VERTICALLY SLOTTED HOLES AT PIPE HORIZONTAL PENETRATIONS AND NOTCHES AT THE 2ND AND 3RD FLOORS, THIS APPLIES TO ALL PIPE MATERIALS WITH THE EXCEPTION OF PEX. REFER TO WALL STUD OVER-DRILLING DETAIL FOR ADDITIONAL CONSIDERATIONS AND SIZE LIMITATIONS. DRYWALL AND OTHER WALL PENETRATIONS TO BE OVERSIZED IN A SIMILAR FASHION.*

B. *THE EXCEPTION TO IPC SECTION 308.5 ALLOWS DEVIATION FROM THE REQUIRED INTERVALS OF PIPING SUPPORT TO PROVIDE FOR EXPANSION/CONTRACTION AND REFERS TO ALTERNATIVE ENGINEERED DESIGN OF SUPPORTS PER IPC SECTION 316.1. THE ALTERNATIVE ENGINEERED DESIGN IS TO RIGIDLY SUPPORT PIPE RISERS AT THE BASE OF STACKS AND ALLOW THE BUILDING TO MOVE FREELY ALONG THE HEIGHT OF THE RISER. REFER TO RISER STACK SUPPORT DETAIL.*

C. *A SITE OBSERVATION SHALL BE SCHEDULED WITH A REPRESENTATIVE OF THE DESIGN TEAM AND CONTRACTOR PRIOR TO CLOSING OF WALL/CEILING ASSEMBLIES TO REVIEW ALL HANGERS AND CONNECTIONS TO DETERMINE ANY ADJUSTMENTS THAT ARE TO BE MADE.*



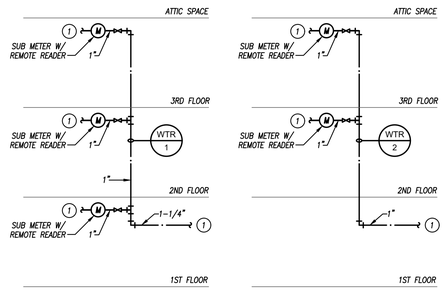
WALL STUD OVER-DRILLING DETAIL



RISER STACK SUPPORT DETAIL

WOOD SHRINKAGE COMPENSATION DETAILS

NOT TO SCALE



COLD WATER RISER DIAGRAMS

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REVISIONS:

PRELIMINARY
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JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
PLUMBING RISER DIAGRAMS

PROJECT NUMBER: 25144

SHEET NUMBER:

P301

PIPING MATERIAL SCHEDULE

PIPING SYSTEM	SIZE	TYPE/SCHED	MATERIAL	ACCEPTABLE FITTINGS	FIELD TEST PRESSURE/TIME	ALLOWABLE IN PLENUMS	INSULATION TYPE	INSULATION THICKNESS
DOMESTIC COLD WATER	1/2"-2-1/2"	L	COPPER	SOLDER, PRO-PRESS	130 PSI - 1/2HR	YES	FIBERGLASS W/ ASJ	1/2"
DOMESTIC COLD WATER	1-1/4" - 2"	SDR-11 (CTS)	CPVC	SOLVENT JOINED	131 PSI - 1/2HR	YES	---	---
DOMESTIC COLD WATER	1/2" - 2"	PEX-a OR PEX-b	PEX	PRO-PRESS / COLD EXPANSION - BRASS OR POLY	130 PSI - 1/2HR	YES	ELASTOMERIC	1/2"
DOMESTIC HOT WATER & HW RETURN	1/2" - 2"	PEX-a OR PEX-b	PEX	PRO-PRESS / COLD EXPANSION - BRASS OR POLY	130 PSI - 1/2HR	YES	ELASTOMERIC	1"
DOM. HOT & COLD BELOW GRADE	1/2"-2"	PEX-a OR PEX-b	PEX	PRO-PRESS / COLD EXPANSION - BRASS OR POLY	130 PSI - 1/2HR	YES	ELASTOMERIC	3/4" (HOT ONLY)
SOIL & WASTE ABOVE GRADE	1-1/2"-6"	NO HUB / SERVICE WT.	CAST IRON	NO HUB	10 FT - 1/2HR	YES	-	-
SOIL & WASTE ABOVE GRADE	2"-8"	SCH. 40	PVC	SOLVENT JOINED	10 FT - 1/2HR	NO	-	-
SOIL & WASTE BELOW GRADE	2"-8"	SCH. 40	PVC	SOLVENT JOINED	10 FT - 1/2HR	NO	-	-
FIRE SERVICE BELOW GRADE	4"-8"	AWWA C151	DUCTILE IRON	AWWA C111. MECH JOINTS	130 PSI - 1/2HR	YES	-	-
DOM. WATER SERVICE BELOW GRADE	1"-3"	K	COPPER	CONTINUOUS TUBING, BRAZED	130 PSI - 1/2HR	YES	-	-
CONDENSATE DRAIN INTERIOR	3/4"-2"	SCH. 40	CPVC	SOLVENT JOINED	10 FT - 1/2HR	YES	FIBERGLASS W/ ASJ	1/2" (PLENUM ONLY)

NOTES
1. ALL PIPING AND MATERIALS IN PLENUMS MUST MEET ASTM E84 FLAME/SMOKE RATING OF 25/50.
2. ALL INSULATION THICKNESSES SHALL MEET ASHRAE 90.1 - 2007 REQUIREMENTS AT A MINIMUM.
3. REFER TO SPECIFICATIONS FOR MORE DETAILED INFORMATION.

BACKFLOW PREVENTION DEVICE SCHEDULE

FIXTURE TYPE	CONNECTION SIZE	BACKFLOW TYPE	SIMILAR TO	LISTING	REMARKS
DOMESTIC WATER SERVICE	1/2" - 2"	REDUCED PRESSURE ZONE	WATTS LF009	ASSE 1013	1
FIRE SPRINKLER SERVICE	ALL	DOUBLE CHECK	WATTS 757DCDA	ASSE 1014	2,3

REMARKS:
1. LEAD-FREE DEVICE.
2. MAY BE MOUNTED HORIZONTALLY OR VERTICALLY.
3. DETECTOR ASSEMBLY. MODEL WITHOUT DETECTOR MAY BE FURNISHED IF ALLOWED BY LOCAL AHJ.

GENERAL COMMENTS (APPLICABLE TO ALL BACKFLOW DEVICES)
1. ALL BACKFLOW PREVENTERS SHALL BE ON THE LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES AS PUBLISHED BY THE USC FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH.
2. ALL BACKFLOW PREVENTERS SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION. RPZS SHALL BE INSTALLED AT A MINIMUM OF 12" A.F.F. AND A MAXIMUM OF 48" A.F.F.
3. VERIFY ALL REQUIREMENTS AND APPROPRIATE DEVICE TYPE FOR BACKFLOW PREVENTION WITH AHJ AND/OR STATE CROSS CONNECTION REQUIREMENTS.

PLUMBING FIXTURE BRANCH CONNECTION SCHEDULE

FIXTURE TYPE	TRAP	PLUMBING FIXTURE PIPE SIZES WASTE	VENT	DCW	DHW
WATER CLOSET (FLUSH VALVE)	INTEGRAL	4"	2"	1"	---
URINAL (FLUSH VALVE)	INTEGRAL	2"	2"	3/4"	---
FLUSH TANK WATER CLOSET	INTEGRAL	4"	2"	1/2"	---
LAVATORY	PROVIDE TRAP	2"	1-1/2"	1/2"	1/2"
SINK	PROVIDE TRAP	4"	2"	1/2"	1/2"
MOP SINK	PROVIDE DEEP SEAL TRAP	3"	2"	1/2"	1/2"
FLOOR DRAIN	PROVIDE DEEP SEAL TRAP	AS SCHEDULED	1-1/2"	---	---
FLOOR SINK	PROVIDE TRAP	AS SCHEDULED	1-1/2"	---	---
DRINKING FOUNTAINS/EWC'S	PROVIDE TRAP	1-1/2"	1-1/2"	1/2"	---
SHOWERS/TUBS	PROVIDE TRAP	2"	1-1/2"	1/2"	1/2"
SHOWERS	PROVIDE TRAP	2"	1-1/2"	1/2"	1/2"
ICE MACHINE HOOKUP BOX		---	---	1/2"	---
WASHER HOOKUP BOXES	PROVIDE TRAP	2"	1-1/2"	1/2"	1/2"

WATER HEATER SCHEDULE - ELECTRIC

PLAN MARK	MANUFACTURER	MODEL NUMBER	GALLONS	WATTS	UEF	VOLTAGE/ PHASE	REMARKS
WH-1	A.O. SMITH	ENJ-40	40.0	4,500	0.93	240V / 1PH	1,2
WH-2	A.O. SMITH	ENL-30	28.0	4,500	0.91	240V / 1PH	3,4,5
WH-3	A.O. SMITH	ENL-30	28.0	4,500	0.91	240V / 1PH	3,4

REMARKS:
1. "LOWBOY"-TYPE WATER HEATER FOR DWELLING UNITS. ROUTE DRAIN PIPE TO FLOOR DRAIN. REFER TO DETAIL.
2. PROVIDE THERMAL EXPANSION PRESSURE RELIEF VALVE ON COLD WATER SUPPLY PIPE. ROUTE RELIEF VALVE DRAIN PIPE TO FLOOR DRAIN. REFER TO DETAIL.
3. WATER HEATER FOR PUBLIC PLUMBING FIXTURES. ROUTE DRAIN PIPE TO FLOOR DRAIN. REFER TO DETAIL.
4. PROVIDE STATE ECT-2X EXPANSION TANK OR EQUAL.
5. MOUNT WATER HEATER ON SHELF ABOVE MOP SINK. REFER TO DETAIL.

DOMESTIC RECIRCULATION PUMP SCHEDULE

PLAN MARK	MANUFACTURER	MODEL NUMBER	GPM	HEAD (FT. WC)	HP	MAX. RPM	ELECTRICAL	NOTES
RCP-1	BELL & GOSSETT	ECOCIRC 20-18	3.0	15.0	70W	VARI	120V / 1 PH	ALL
RCP-2	BELL & GOSSETT	ECOCIRC 20-18	3.0	15.0	70W	VARI	120V / 1 PH	ALL

REMARKS:
1. PUMP SHALL BE NSF-61 CERTIFIED FOR POTABLE WATER SYSTEMS.
2. PROVIDE WITH AQUASTAT AND TIMER FOR OPERATION OF PUMP.
3. MOUNT PUMP AND ACCESSORIES NEAR WATER HEATER AND NO HIGHER THAN 6' AFF.
4. ECM MOTOR WITH INTEGRAL SPEED CONTROL AND TEMPERATURE SWITCH AND DISCONNECT.

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE MODEL	FIXTURE DESCRIPTION	FITTINGS AND TRIM FITTINGS MODEL	FITTINGS AND TRIM FITTINGS AND DESCRIPTION	REMARKS	PLUMBING FIXTURE PIPE SIZES WASTE	VENT	DCW	DHW
WC-1	BRIGGS 4834	ADA-COMPLIANT, 1.28 GPF, FLUSH TANK WATER CLOSET. WHITE VITREOUS CHINA ELONGATED BOWL AND TANK. 17" HIGH. TWO PIECE, 12" ROUGH-IN. FURNISH WITH FLUSH ACTUATOR ON WIDE SIDE OF STALL.	CHURCH 7200SLEC	WHITE, SOLID PLASTIC, CLOSED-FRONT SEAT FOR ELONGATED BOWL. INTEGRAL BUMPERS. EASY CLOSE, NON-CORROSIVE BOLTS AND WING NUTS.	3,6	4"	2"	1/2"	---
LF-1	CFG CA40712 (COMMUNITY/UNIT)	TYPE-A DWELLING UNIT LAVATORY FAUCET: SINGLE HANDLE CAST BRASS MIXING FAUCET, 4" CENTERS, 4-3/4" SPOUT, 1.5GPM VANDAL PROOF AERATOR, 4-5/8" METAL LEVER HANDLE. CERAMIC VOLUME CONTROL & HOT WATER LIMIT STOP CARTRIDGE. WITH POP UP. CHROME. 1.2 GPM MAX. PROVIDE WITH DELTA 33T290-1DC OFFSET DRAIN OR EQUAL.			1,2,7	2"	2"	1/2"	1/2"
LF-2	CFG CA40712 (COMMUNITY/UNIT)	TYPE-B DWELLING UNIT LAVATORY FAUCET: SINGLE HANDLE CAST BRASS MIXING FAUCET, 4" CENTERS, 4-3/4" SPOUT, 1.5GPM VANDAL PROOF AERATOR, 4-5/8" METAL LEVER HANDLE. CERAMIC VOLUME CONTROL & HOT WATER LIMIT STOP CARTRIDGE. WITH POP UP. CHROME. 1.2 GPM MAX			1,2,7	2"	2"	1/2"	1/2"
S-1	DAYTON GE23322 IN-SINK-ERATOR BADGER 5	TYPE-A DWELLING UNIT DOUBLE COMPARTMENT KITCHEN SINK. ADA-COMPLIANT. SEAMLESS #22 GAUGE, TYPE 300 SERIES STAINLESS STEEL. SATIN FINISH, BOTTOM ONLY UNDERCOATED, 5.375" BOWL DEPTH. 1-3/4" RADIUS COVED CORNERS. SELF RIMMING. 3 HOLE CONFIGURATION 4" ON CTR. GARBAGE DISPOSAL. 1/2 HP MOTOR, STAINLESS STEEL GALVANIZED STEEL CONSTRUCTION AND GRINDING ELEMENTS, PERMANENTLY LUBRICATED BEARINGS. PROVIDE WITH STAINLESS STEEL SINK FLANGE AND STOPPER.	CFG/MOEN CA40512	SINGLE HANDLE KITCHEN SINK FAUCET. 1.5 GPM AERATOR, CHROME FINISH. PROVIDE WITH OFFSET DRAIN.	2,3,5,8	2"	2"	1/2"	1/2"
S-2	DAYTON K23322 IN-SINK-ERATOR BADGER 5	TYPE-B DWELLING UNIT DOUBLE COMPARTMENT KITCHEN SINK. SEAMLESS #20 GAUGE, TYPE 300 SERIES STAINLESS STEEL. SATIN FINISH, BOTTOM ONLY UNDERCOATED, HOLES AT 4" O.C. 6" BOWL DEPTH. 1-3/4" RADIUS COVED CORNERS. SELF RIMMING. 3 HOLE CONFIGURATION 4" ON CTR. GARBAGE DISPOSAL. 1/2 HP MOTOR, STAINLESS STEEL GALVANIZED STEEL CONSTRUCTION AND GRINDING ELEMENTS, PERMANENTLY LUBRICATED BEARINGS. PROVIDE WITH STAINLESS STEEL SINK FLANGE AND STOPPER.	CFG/MOEN CA40512	SINGLE HANDLE KITCHEN SINK FAUCET. 1.5 GPM AERATOR, CHROME FINISH.	2,3,5,8	2"	2"	1/2"	1/2"
S-3	DAYTON K23322 (COMMUNITY KITCHEN SINK) IN-SINK-ERATOR BADGER 5	ADA-COMPLIANT DOUBLE COMPARTMENT SINK. SEAMLESS #20 GAUGE, TYPE 300 SERIES STAINLESS STEEL. SATIN FINISH, BOTTOM ONLY UNDERCOATED, HOLES AT 4" O.C. 6" BOWL DEPTH. 1-3/4" RADIUS COVED CORNERS. SELF RIMMING. 3 HOLE CONFIGURATION 4" ON CTR. GARBAGE DISPOSAL. 1/2 HP MOTOR, STAINLESS STEEL GALVANIZED STEEL CONSTRUCTION AND GRINDING ELEMENTS, PERMANENTLY LUBRICATED BEARINGS. PROVIDE WITH STAINLESS STEEL SINK FLANGE AND STOPPER.	MOEN CAMERIST 7545	ADA-COMPLIANT SINGLE HANDLE KITCHEN SINK FAUCET WITH. PROVIDE ESCUTCHEON PLATE, 1.5 GPM AERATOR, CLASSIC STAINLESS FINISH. PROVIDE WITH OFFSET DRAIN.	2,3,5,8	2"	2"	1/2"	1/2"
SH-1	AQUATIC 1603 BFSD	TYPE-A DWELLING UNIT SHOWER. ADA-COMPLIANT WITH INSIDE DIMENSIONS OF 60"W x 34"D x 75.625"H. PROVIDE WITH GRAB BARS, CURTAIN ROD, L-SHPAED FOLD-UP CUSHIONED SEAT. FITTINGS TO REMAIN AS SHOWN ON PLANS. PROVIDE IN WHITE WITH TILE LOOK.	CFG 40316C-VALVE ONLY TRIM CFG 45320 CFG 40124	VALVE-ONLY SHOWER TRIM. METAL LEVER HANDLE WITH ESCUTCHEON. PRESSURE BALANCING SHOWER CYCLING IN-WALL VALVE WITH 1/2" PEX CONNECTION WITH STOPS. ADA-COMPLIANT CHROME HANDHELD SHOWER HEAD, 59" METAL HOSE, AND GRAB BAR/SLIDE BAR. 1.5 GPM.	---	1-1/2"	1-1/2"	1/2"	1/2"
SH-2	AQUATIC 1483TSTH	TYPE-B DWELLING UNIT SHOWER. 48"W x 34.25"D x 73"H INSIDE DIMENSIONS. FACTORY INSTALLED GRAB BARS AND INTEGRAL MOLDED SEAT. PROVIDE WITH 18" GRAB BAR MOUNTED ON BACK WALL HORIZONTALLY. CURTAIN ROD. FITTINGS TO REMAIN AS SHOWN ON PLANS. PROVIDE IN WHITE WITH TILE LOOK. PROVIDE THRESHOLD.	CFG 40315C - SHOWER ONLY TRIM CFG 45320	SHOWER TRIM. INCLUDES SHOWER HEAD, SHOWER ARM, AND METAL LEVER HANDLE WITH ESCUTCHEON. PRESSURE BALANCING SHOWER CYCLING IN-WALL VALVE WITH 1/2" PEX CONNECTION WITH STOPS.	---	1-1/2"	1-1/2"	1/2"	1/2"
BT-1	AQUATIC 2603 CTH	TYPE-A DWELLING UNIT BATHTUB. ADA-COMPLIANT. DIMENSIONS OF 60"x33.25"X74.25". 1-PIECE CONSTRUCTION WITH WHITE TILE LOOK. SLIP-RESISTANT, TEXTURED FLOOR. ACRYLIC SURFACE. PROVIDE WITH SEAT AND GRAB BARS.	CFG 40311CGR - TUB/SHOWER TRIM CFG 45320 CFG 40124	TUB/SHOWER TRIM. INCLUDES SHOWER HEAD, SHOWER ARM, METAL LEVER HANDLE WITH ESCUTCHEON, AND TUB SPOUT. PRESSURE BALANCING TUB/SHOWER CYCLING IN-WALL VALVE WITH 1/2" PEX CONNECTION WITH STOPS. ADA-COMPLIANT CHROME HANDHELD SHOWER HEAD, 59" METAL HOSE, AND GRAB BAR/SLIDE BAR. 1.5 GPM.	---	2"	1-1/2"	1/2"	1/2"
BT-2	AQUATIC 2603 CTH	TYPE-B DWELLING UNIT BATHTUB. DIMENSIONS OF 60"x33.25"X74.25". 1-PIECE CONSTRUCTION WITH WHITE TILE LOOK. SLIP-RESISTANT, TEXTURED FLOOR. ACRYLIC SURFACE.	CFG 40311CGR - TUB/SHOWER TRIM CFG 45320	TUB/SHOWER TRIM. INCLUDES SHOWER HEAD, SHOWER ARM, METAL LEVER HANDLE WITH ESCUTCHEON, AND TUB SPOUT. PRESSURE BALANCING TUB/SHOWER CYCLING IN-WALL VALVE WITH 1/2" PEX CONNECTION WITH STOPS.	---	2"	1-1/2"	1/2"	1/2"
EWC-1	HALSEY-TAYLOR HTHB-HAC8WF	ADA-COMPLIANT, BARRIER-FREE, ELECTRIC WATER COOLER. PROVIDES 8.0 GPH OF 50°F WATER AT 90°F AMBIENT. ADA-COMPLIANT FRONT AND SIDE PUSHBARS. LEAD FREE. INTEGRAL FILTER. MOUNT WITH MIN. 27" KNEE CLEARANCE AND SPOUT AT NO MORE THAN 36" A.F.F.	HALSEY-TAYLOR HTHB-HACDWF	BOTTLE FILLER SHALL INCLUDE ELECTRONIC SENSOR FOR NO-TOUCH ACTIVATION WITH AUTOMATIC 20-SECOND SHUT-OFF. SHALL PROVIDE 1.1 GPM LAMINAR FLOW. ANTI-MICROBIAL PROTECTED PLASTIC COMPONENTS.	4	2"	2"	1/2"	
BB-1	OATEY 12K	ICE MAKER BACK BOX. PROVIDE WITH STOP VALVE.	---	---	---	---	---	---	---
BB-2	OATEY 38486	FIRE RATED ICE MAKER BACK BOX. PROVIDE WITH STOP VALVE.	---	---	---	---	---	---	---
WMB-1	OATEY 38530	WASHING MACHINE SUPPLY AND DRAIN BACK BOX. PROVIDE WITH DRAIN AND DRAIN FITTINGS.	---	---	---	---	2"	2"	1/2"	1/2"
HB-1	ZURN Z1310	EXPOSED, AUTOMATIC DRAINING, NON-FREEZE, ANIT-SIPHON WALL HYDRANT COMPLETE WITH INTEGRAL BACKFLOW PREVENTER. BRASS CASING, ALL-BRONZE INTERIOR PARTS. NON-TURNING OPERATING ROD WITH FREE-FLOATING COMPRESSION CLOSURE VALVE. REPLACEABLE BRONZE SEAT AND SEAT WASHER. COMBINATION 3/4" FEMALE AND 1" MALE IP INLET CONNECTION STANDARD. INCLUDES OPERATING KEY.	---	---	---	---	---	---	---
JS-1	FIAT MSB-100	JANITORS SINK: 24"x24"x10", WHITE, ONE-PIECE MOLDED STONE MOP BASIN. UNIT SHALL BE ONE HOMOGENOUS PIECE. STAINLESS STEEL INTEGRAL DRAIN BODY WITH CAULKED CONNECTION FOR 3" PIPE. PROVIDE STAINLESS STEEL BUMPER AND WALL GUARDS, MOP BRACKETS, HOSE RACK.	CHICAGO FAUCET 897-CP	C.P. SERVICE SINK FITTING WITH VACUUM BREAKER, 3/4" HOSE THREAD ON SPOUT, ADJUSTABLE WALL BRACE, PAIL HOOK, AND 1/2" FLANGED FEMALE ADJUSTABLE ARMS WITH INTEGRAL STOPS. CAULK BETWEEN WALL AND FLANGE WITH GE SILICONE SEALANT. 3" C.I. "P" TRAP.	---	3"	2"	1/2"	1/2"

REMARKS:
1. PROVIDE CHROME-PLATED BRASS TAILPIECE AND GRID DRAIN.
2. PROVIDE CHROME-PLATED BRASS P-TRAP.
3. PROVIDE LOOSE KEY STOPS AND FLEXIBLE RISERS.
4. PROVIDE CONCEALED ARM TYPE CARRIER WITH SQUARE, TUBULAR STEEL UP-RIGHTS AND BLOCK TYPE BASES.
5. INSULATE EXPOSED TAILPIECE, P-TRAP, AND WATER RISERS. REFER TO SPECIFICATIONS FOR INSULATION METHODS.
6. PROVIDE FLUSH VALVE HANDLE ON WIDE SIDE OF STALL.
7. PROVIDE HANDLE STOPS AND FLEXIBLE RISERS.
8. PROVIDE CHROME-PLATED BRASS TAILPIECE AND BASKET STRAINER.

GENERAL NOTES (APPLICABLE TO ALL FIXTURES):
1) ALL PUBLIC LAVATORIES AND SINKS SHALL BE PROVIDED WITH ANTI-SCALD ASSE 1016 LISTED VALVE ON HOT WATER SUPPLY.

FLOOR / ROOF DRAIN SCHEDULE

PLAN MARK	MANUFACTURER	MODEL NUMBER	SERVICE	TOP/GRATE SIZE	WASTE SIZE	REMARKS
FD-1	WADE	1100	FLOOR DRAIN	6"Ø	2"	1,3
FD-2	WADE	2340	FLOOR DRAIN	12"x12"	4"	2,3

REMARKS:
1. PROVIDE WITH NICKEL BRONZE TOP.
2. PROVIDE WITH CAST IRON GRATE.
3. PROVIDE WITH TRAP SEAL.

PRINTS ISSUED
12/18/25 95% CHECK SET

REVISIONS:

pkmr ENGINEERS
PEARSON KENT MCKINLEY RAAF ENGINEERS LLC
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25.401

PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

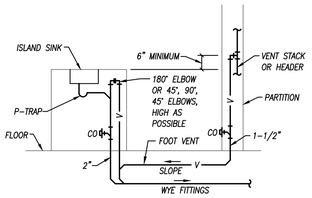
TOPEKA, KS

SHEET TITLE
PLUMBING SCHEDULES

PROJECT NUMBER: 25144

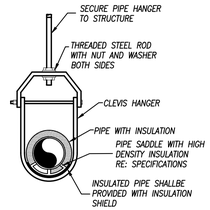
SHEET NUMBER:

P302



ISLAND SINK VENTING DETAIL

NOT TO SCALE



PIPE HANGER DETAIL

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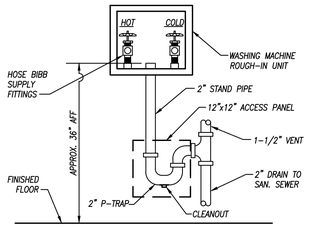

WASHING MACHINE HOOK-UP DETAIL

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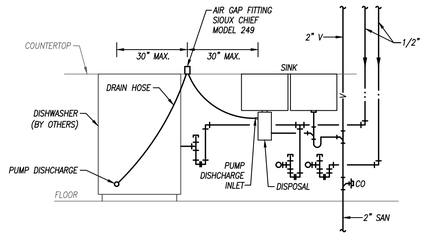
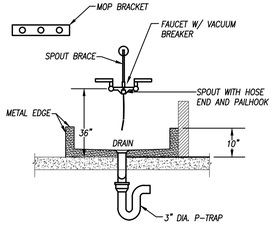


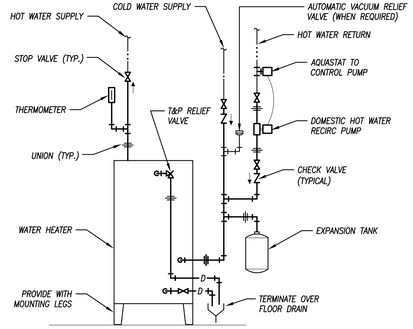
KITCHEN SINK WITH GARBAGE DISPOSAL AND DISHWASHER DETAIL

NOT TO SCALE



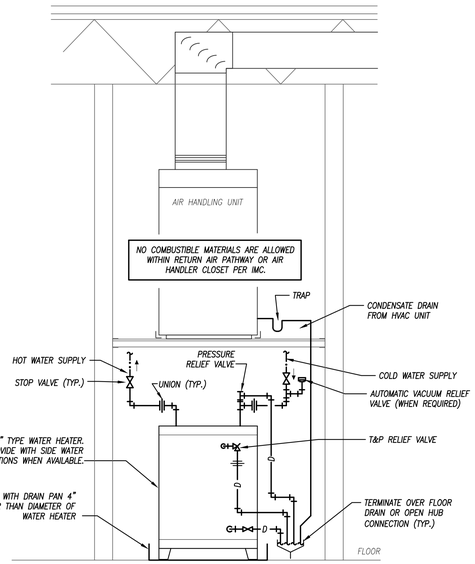
MOP SINK DETAIL

NOT TO SCALE



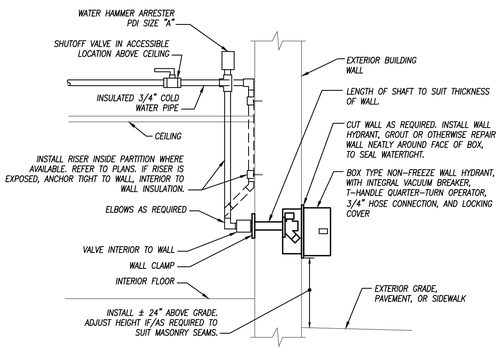
ELECTRIC WATER HEATER

NOT TO SCALE



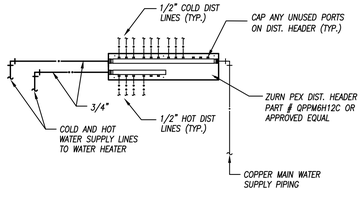
DWELLING UNIT WATER HEATER BELOW AIR HANDLER DETAIL

NOT TO SCALE



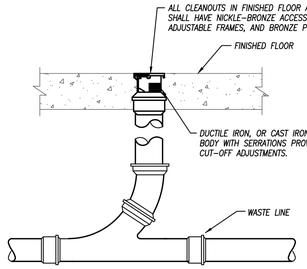
NON-FREEZE WALL HYDRANT DETAIL

NOT TO SCALE



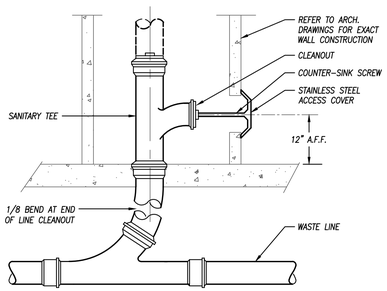
RESIDENTIAL PEX HEADER DETAIL

NOT TO SCALE



FLOOR CLEANOUT DETAIL

NOT TO SCALE



WALL CLEANOUT DETAIL

NOT TO SCALE

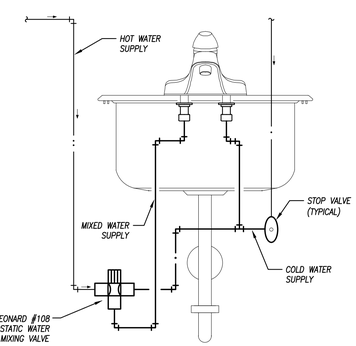
FIRE SPRINKLER SCOPE

A FULLY ENGINEERED SYSTEM SHALL BE PROVIDED BY THE CONTRACTOR AND SUBMITTED TO PROPER REGULATORY AGENCIES AND DIVISIONS.

PROVIDE AN NFPA 13R SYSTEM THROUGHOUT THE ENTIRE FACILITY. REFER TO ARCHITECTURAL PLANS FOR CEILING CONSTRUCTION.

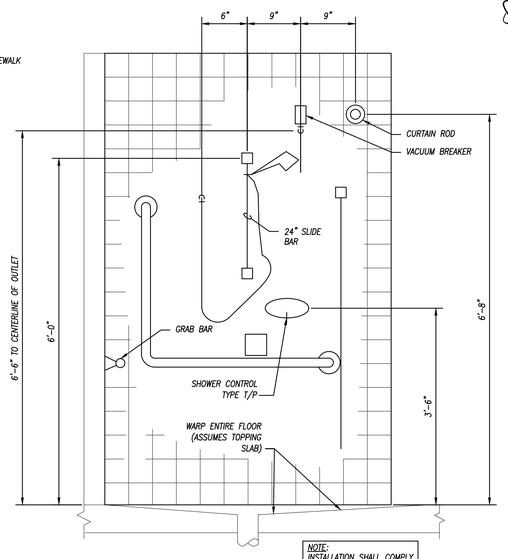
BACKFLOW PREVENTER MAY BE INSTALLED HORIZONTALLY OR VERTICALLY IF APPROVED BY THE AUTHORITY HAVING JURISDICTION. INSTALLATION MUST ALLOW VALVES TO BE SERVICED WHILE STANDING ON THE FLOOR.

INTERIOR SPACES
PROVIDE WET SPRINKLER SYSTEM IN ALL AREAS WITH DROP CEILINGS AND ALL RESIDENT ROOMS. RESIDENT ROOMS SHALL BE SERVED BY ROUTING MAINS THROUGH HALLWAYS THEN ROUTING LATERALS THROUGH WALLS INTO EACH SPACE. ALL WET PIPING SHALL BE LOCATED IN CONDITIONED SPACES THAT ARE NOT SUBJECT TO FREEZING.



HAND WASHING SINK/LAVATORY TEMPERED WATER SCHEMATIC

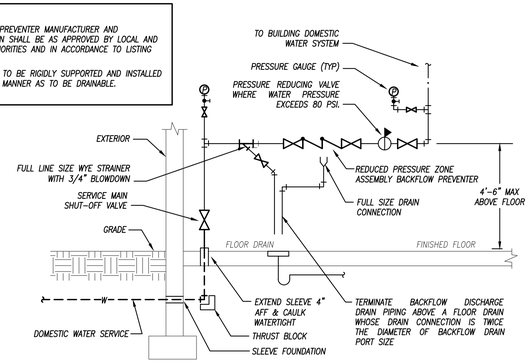
NOT TO SCALE



ACCESSIBLE TYPE-A SHOWER DETAIL (ANSI A117.1)

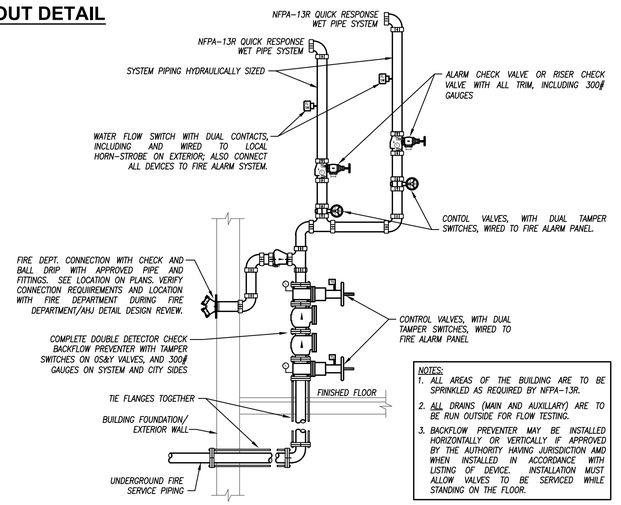
NOT TO SCALE

NOTES:
1. BACKFLOW PREVENTER MANUFACTURER AND INSTALLATION SHALL BE AS APPROVED BY LOCAL AND STATE AUTHORITIES AND IN ACCORDANCE TO LISTING OF DEVICE.
2. ALL PIPING TO BE RIGIDLY SUPPORTED AND INSTALLED IN SUCH A MANNER AS TO BE DRAINABLE.



WATER SERVICE REDUCED PRESSURE BACKFLOW PREVENTER DETAIL

NOT TO SCALE



NOTES:
1. ALL AREAS OF THE BUILDING ARE TO BE SPRINKLED AS REQUIRED BY NFPA-13R.
2. ALL DRAINS (MAIN AND AUXILLARY) ARE TO BE RUN OUTSIDE FOR FLOW TESTING.
3. BACKFLOW PREVENTER MAY BE INSTALLED HORIZONTALLY OR VERTICALLY IF APPROVED BY THE AUTHORITY HAVING JURISDICTION AMD WHEN INSTALLED IN ACCORDANCE WITH LISTING OF DEVICE. INSTALLATION MUST ALLOW VALVES TO BE SERVICED WHILE STANDING ON THE FLOOR.

FIRE SPRINKLER RISER DETAIL

NOT TO SCALE

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

25.401

PEARSON KENT MCKINLEY RAAF ENGINEERS LLC
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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

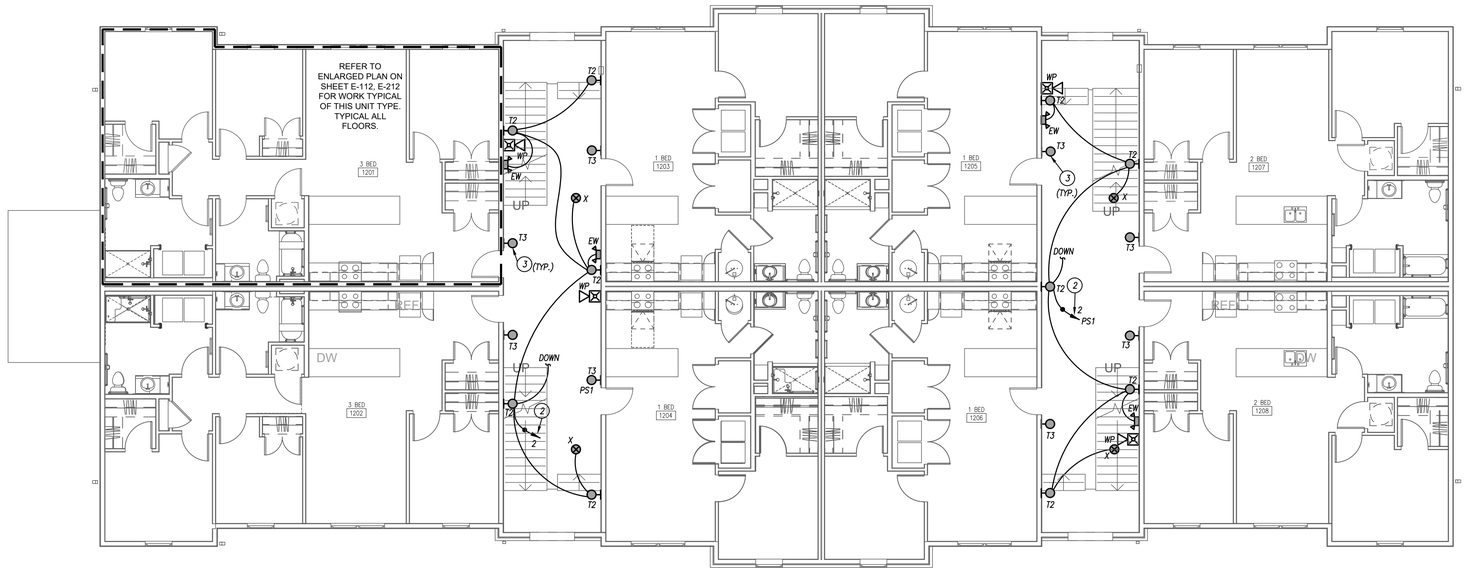
TOPEKA, KS

SHEET TITLE
PLUMBING DETAILS

PROJECT NUMBER: 25144

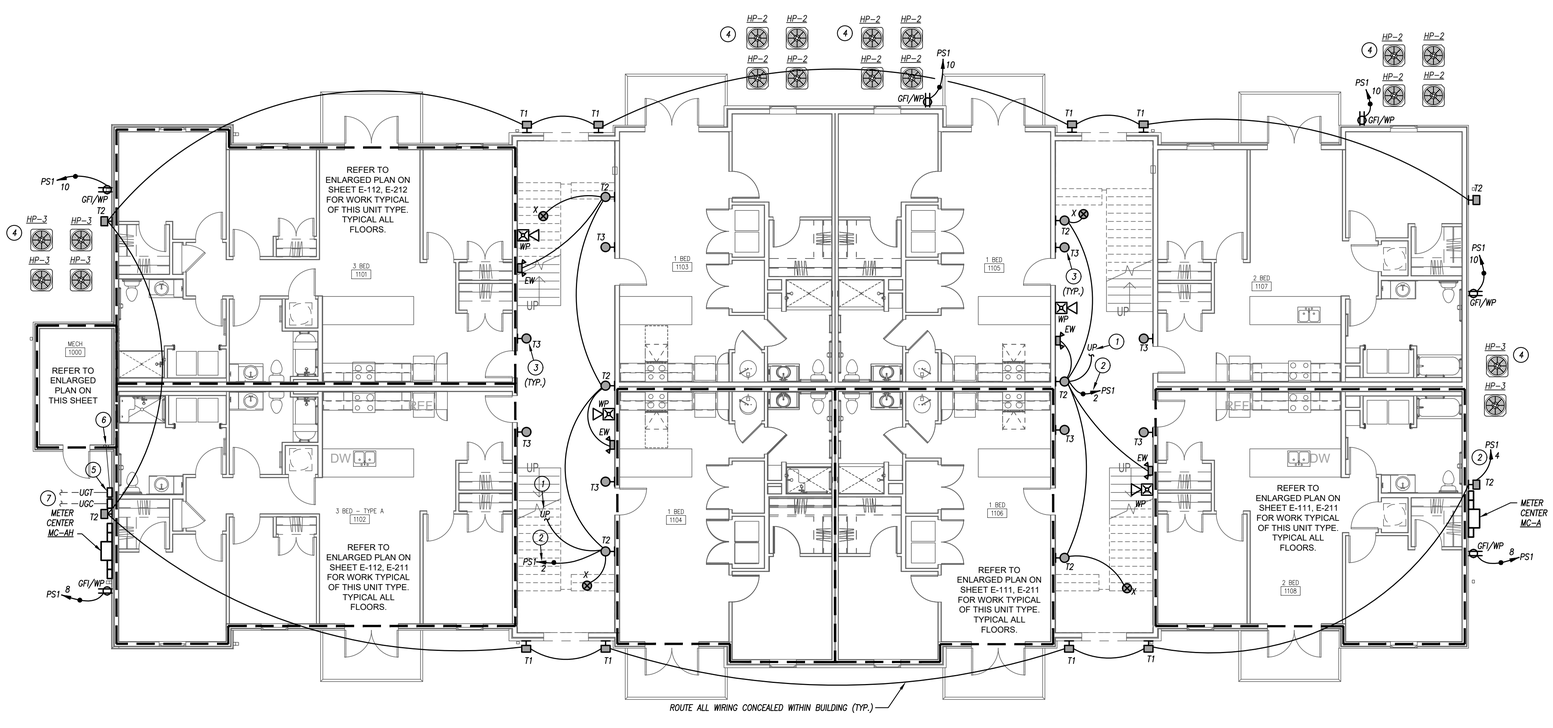
SHEET NUMBER:

P401



SECOND FLOOR ELECTRICAL PLAN - BLDG A

1/8" = 1'-0"



FIRST FLOOR ELECTRICAL PLAN - BLDG A

1/8" = 1'-0"

GENERAL POWER NOTES

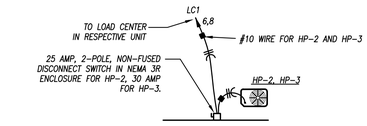
1. *REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.*
2. *COORDINATE EXACT NEMA CONFIGURATIONS OF RECEPTACLES SERVING EQUIPMENT WITH EXACT EQUIPMENT BEING FURNISHED.*
3. *REFER TO THE SPECIFICATIONS FOR ADDITIONAL LOCATIONS/REQUIREMENTS FOR RECEPTACLES, INCLUDING GFCI, WEATHER-RESISTANT, HOSPITAL-GRADE, AND TAMPER-RESISTANT RECEPTACLES.*
4. *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.*
5. *COORDINATE EXACT LOCATIONS OF SMOKE DETECTORS WITH CEILING FANS, HVAC DIFFUSERS, SPRINKLER HEADS, ETC. PER NFPA REQUIREMENTS.*

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. 2.1.*

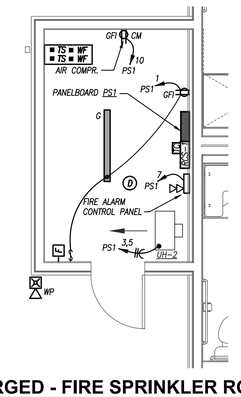
ELECTRICAL PLAN KEYED NOTES

1. *PROVIDE UNSWITCHED "HOT" TO EMERGENCY FIXTURES.*
2. *ROUTE THROUGH RCS-1, THEN HOMERUN.*
3. *FIXTURE IS WIRED TO RESIDENT LOAD CENTER AND CONTROLLED FROM WITHIN RESIDENT UNIT. REFER TO UNIT LIGHTING PLAN.*
4. *REFER TO DETAIL ON SHEET E101 FOR WIRING OF RESIDENT UNIT HEAT PUMPS.*
5. *TELECOMMUNICATION SERVICES. COORDINATE ALL WORK WITH SERVICE PROVIDERS.*
6. *EXTEND TWO (2) 1" EMPTY CONDUITS WITH PULL STRING INTO FIRE SPRINKLER ROOM. STUB-UP AT BACK WALL OF FIRE SPRINKLER ROOM. CAP BOTH ENDS.*
7. *TWO (2) 4" CONDUITS WITH PULL STRINGS TO PROPERTY LINE FOR TELE/DATA SERVICE. COORDINATE WORK WITH SERVICE PROVIDERS.*
8. *POWER FOR RADON FAN. COORDINATE LOCATION AND REQUIREMENTS WITH RADON MITIGATION SYSTEM PROVIDER.*



HEAT PUMP WIRING DIAGRAM TYPICAL FOR ALL DWELLING UNITS

NOT TO SCALE



ENLARGED - FIRE SPRINKLER ROOM

1/4" = 1'-0"

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

25.401

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13300 W 98TH STREET LENEXA, KS 66215
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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

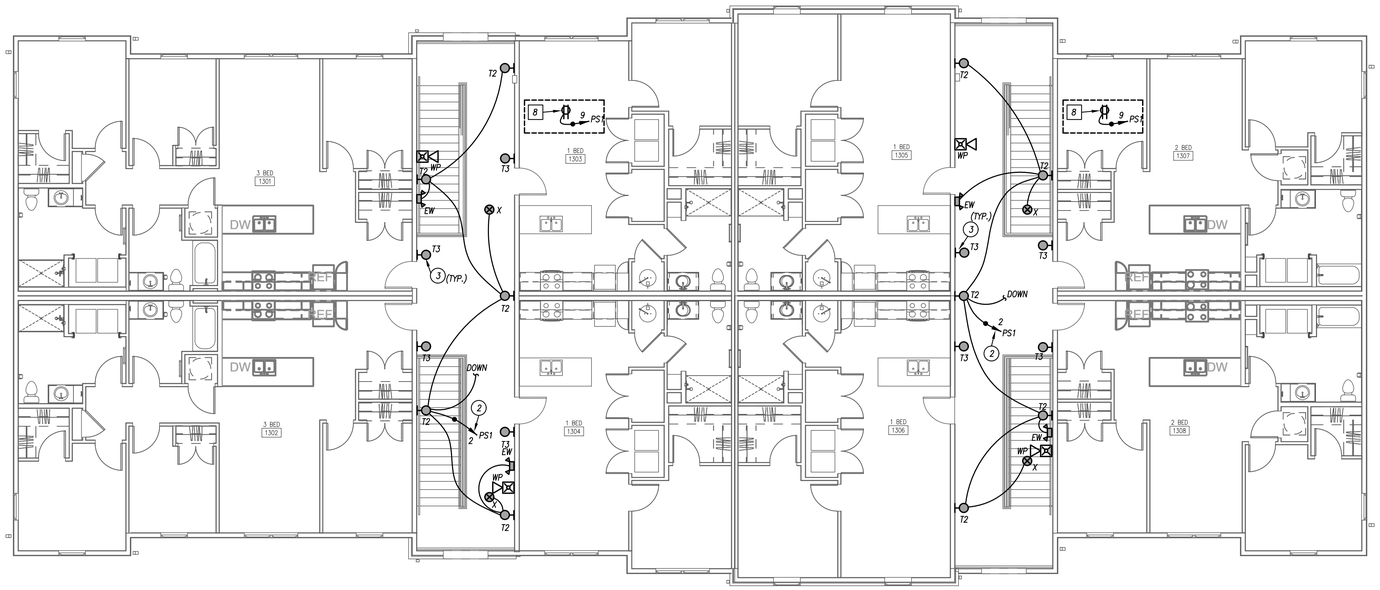
TOPEKA, KS

SHEET TITLE
FIRST & SECOND FLOOR ELECTRICAL PLANS - BUILDING A

PROJECT NUMBER: 25144

SHEET NUMBER:

E101



THIRD FLOOR ELECTRICAL PLAN - BLDG A
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. REFER TO THE SPECIFICATIONS FOR ADDITIONAL LOCATIONS/REQUIREMENTS FOR RECEPTACLES, INCLUDING GFCI, WEATHER-RESISTANT, HOSPITAL-GRADE, AND TAMPER-RESISTANT RECEPTACLES.
4. 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.
5. COORDINATE EXACT LOCATIONS OF SMOKE DETECTORS WITH CEILING FANS, HVAC DIFFUSERS, SPRINKLER HEADS, ETC. PER NFPA REQUIREMENTS.

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.
   2.1.

ELECTRICAL PLAN KEYED NOTES

(1) PROVIDE UNSWITCHED "HOT" TO EMERGENCY FIXTURES.
(2) ROUTE THROUGH RCS-1, THEN HOMERUN.
(3) FIXTURE IS WIRED TO RESIDENT LOAD CENTER AND CONTROLLED FROM WITHIN RESIDENT UNIT. REFER TO UNIT LIGHTING PLAN.
(4) REFER TO DETAIL ON SHEET E101 FOR WIRING OF RESIDENT UNIT HEAT PUMPS.
(5) TELECOMMUNICATION SERVICES. COORDINATE ALL WORK WITH SERVICE PROVIDERS.
(6) EXTEND TWO (2) 1" EMPTY CONDUITS WITH PULL STRING INTO FIRE SPRINKLER ROOM. STUB-UP AT BACK WALL OF FIRE SPRINKLER ROOM. CAP BOTH ENDS.
(7) TWO (2) 4" CONDUITS WITH PULL STRINGS TO PROPERTY LINE FOR TELE/DATA SERVICE. COORDINATE WORK WITH SERVICE PROVIDERS.
(8) POWER FOR RADON FAN. COORDINATE LOCATION AND REQUIREMENTS WITH RADON MITIGATION SYSTEM PROVIDER.

PRINTS ISSUED
12/18/25 95% CHECK SET

REVISIONS:

pkmr ENGINEERS
25.401
PEARSON KENT MCKINLEY RAAF ENGINEERS LLC
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913.492.2400 WWW.PKMRENG.COM

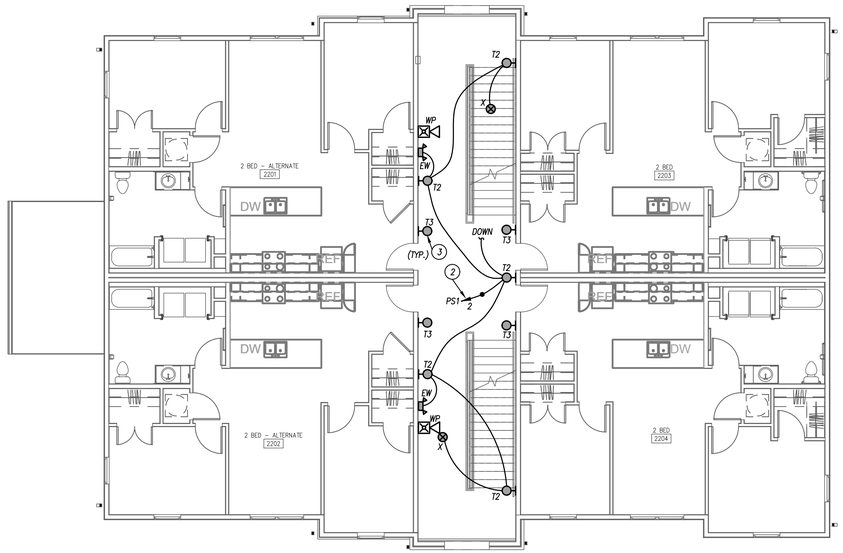
PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS
TOPEKA, KS

SHEET TITLE
THIRD FLOOR ELECTRICAL PLAN - BUILDING A

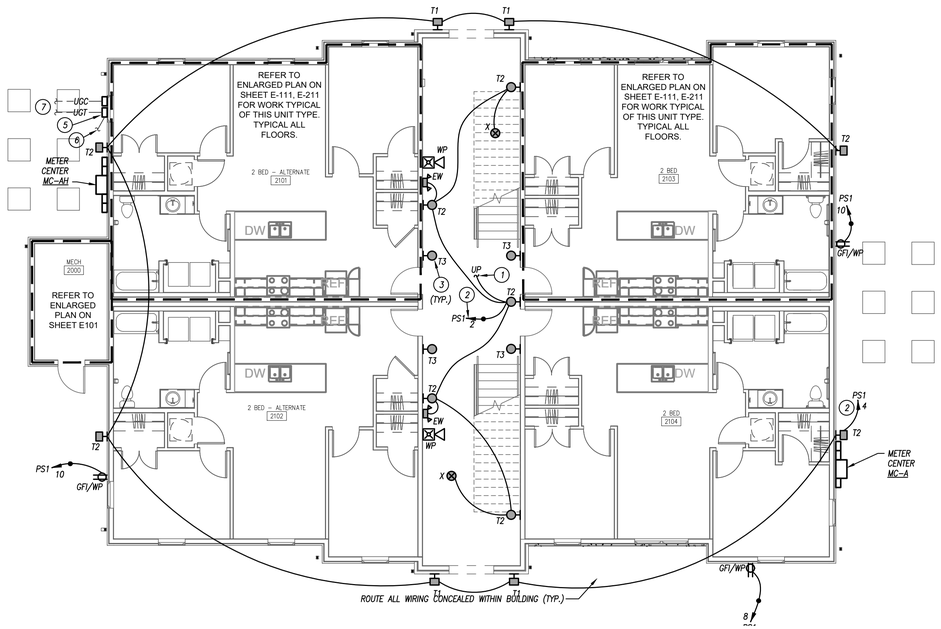
PROJECT NUMBER: 25144

SHEET NUMBER:
E102



SECOND FLOOR ELECTRICAL PLAN - BLDG B

1/8" = 1'-0"



FIRST FLOOR ELECTRICAL PLAN - BLDG B

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. REFER TO THE SPECIFICATIONS FOR ADDITIONAL LOCATIONS/REQUIREMENTS FOR RECEPTACLES, INCLUDING GFCI, WEATHER-RESISTANT, HOSPITAL-GRADE, AND TAMPER-RESISTANT RECEPTACLES.
4. 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.
5. COORDINATE EXACT LOCATIONS OF SMOKE DETECTORS WITH CEILING FANS, HVAC DIFFUSERS, SPRINKLER HEADS, ETC. PER NFPA REQUIREMENTS.

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.
   2.1.

ELECTRICAL PLAN KEYED NOTES

(1) PROVIDE UNSWITCHED "HOT" TO EMERGENCY FIXTURES.

(2) ROUTE THROUGH RCS-1, THEN HOMERUN.

(3) FIXTURE IS WIRED TO RESIDENT LOAD CENTER AND CONTROLLED FROM WITHIN RESIDENT UNIT. REFER TO UNIT LIGHTING PLAN.

(4) REFER TO DETAIL ON SHEET E101 FOR WIRING OF RESIDENT UNIT HEAT PUMPS.

(5) TELECOMMUNICATION SERVICES. COORDINATE ALL WORK WITH SERVICE PROVIDERS.

(6) EXTEND TWO (2) 1" EMPTY CONDUITS WITH PULL STRING INTO FIRE SPRINKLER ROOM. STUB-UP AT BACK WALL OF FIRE SPRINKLER ROOM. CAP BOTH ENDS.

(7) TWO (2) 4" CONDUITS WITH PULL STRINGS TO PROPERTY LINE FOR TELE/DATA SERVICE. COORDINATE WORK WITH SERVICE PROVIDERS.

(8) POWER FOR RADON FAN. COORDINATE LOCATION AND REQUIREMENTS WITH RADON MITIGATION SYSTEM PROVIDER.

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

pkmr ENGINEERS

PEARSON KENT MCKINLEY RAAF ENGINEERS LLC
13300 W 98TH STREET LENEXA, KS 66215
913.492.2400 WWW.PKMRENG.COM

25.401

PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

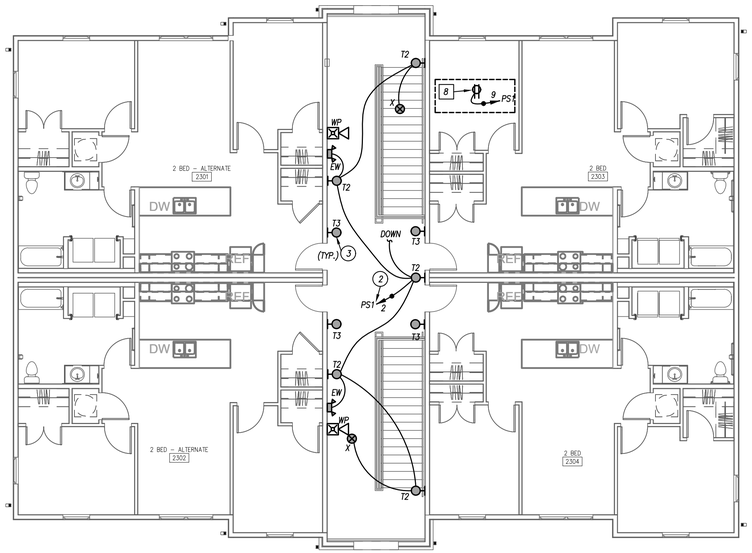
TOPEKA, KS

SHEET TITLE
FIRST & SECOND FLOOR ELECTRICAL PLANS - BUILDING B

PROJECT NUMBER: 25144

SHEET NUMBER:

E103



THIRD FLOOR ELECTRICAL PLAN - BLDG B
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. *REFER TO THE SPECIFICATIONS FOR ADDITIONAL LOCATIONS/REQUIREMENTS FOR RECEPTACLES, INCLUDING GFCI, WEATHER-RESISTANT, HOSPITAL-GRADE, AND TAMPER-RESISTANT RECEPTACLES.*
4. *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.*
5. *COORDINATE EXACT LOCATIONS OF SMOKE DETECTORS WITH CEILING FANS, HVAC DIFFUSERS, SPRINKLER HEADS, ETC. PER NFPA REQUIREMENTS.*

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.*
   2.1.

ELECTRICAL PLAN KEYED NOTES

(1) *PROVIDE UNSWITCHED "HOT" TO EMERGENCY FIXTURES.*
(2) *ROUTE THROUGH RCS-1, THEN HOMERUN.*
(3) *FIXTURE IS WIRED TO RESIDENT LOAD CENTER AND CONTROLLED FROM WITHIN RESIDENT UNIT. REFER TO UNIT LIGHTING PLAN.*
(4) *REFER TO DETAIL ON SHEET E101 FOR WIRING OF RESIDENT UNIT HEAT PUMPS.*
(5) *TELECOMMUNICATION SERVICES. COORDINATE ALL WORK WITH SERVICE PROVIDERS.*
(6) *EXTEND TWO (2) 1" EMPTY CONDUITS WITH PULL STRING INTO FIRE SPRINKLER ROOM. STUB-UP AT BACK WALL OF FIRE SPRINKLER ROOM. CAP BOTH ENDS.*
(7) *TWO (2) 4" CONDUITS WITH PULL STRINGS TO PROPERTY LINE FOR TELE/DATA SERVICE. COORDINATE WORK WITH SERVICE PROVIDERS.*
(8) *POWER FOR RADON FAN. COORDINATE LOCATION AND REQUIREMENTS WITH RADON MITIGATION SYSTEM PROVIDER.*

PRINTS ISSUED
12/18/25 95% CHECK SET

REVISIONS:

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PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

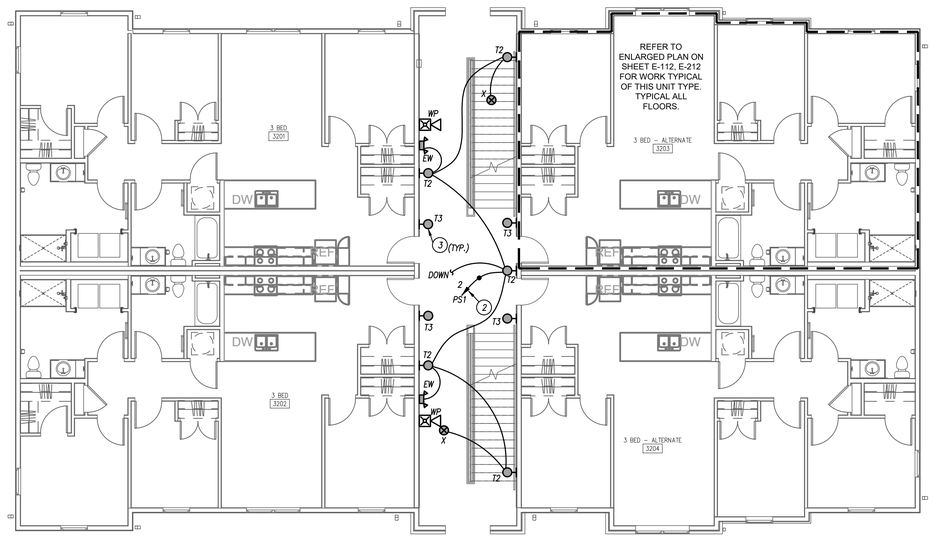
TOPEKA, KS

SHEET TITLE
THIRD FLOOR ELECTRICAL PLAN - BUILDING B

PROJECT NUMBER: 25144

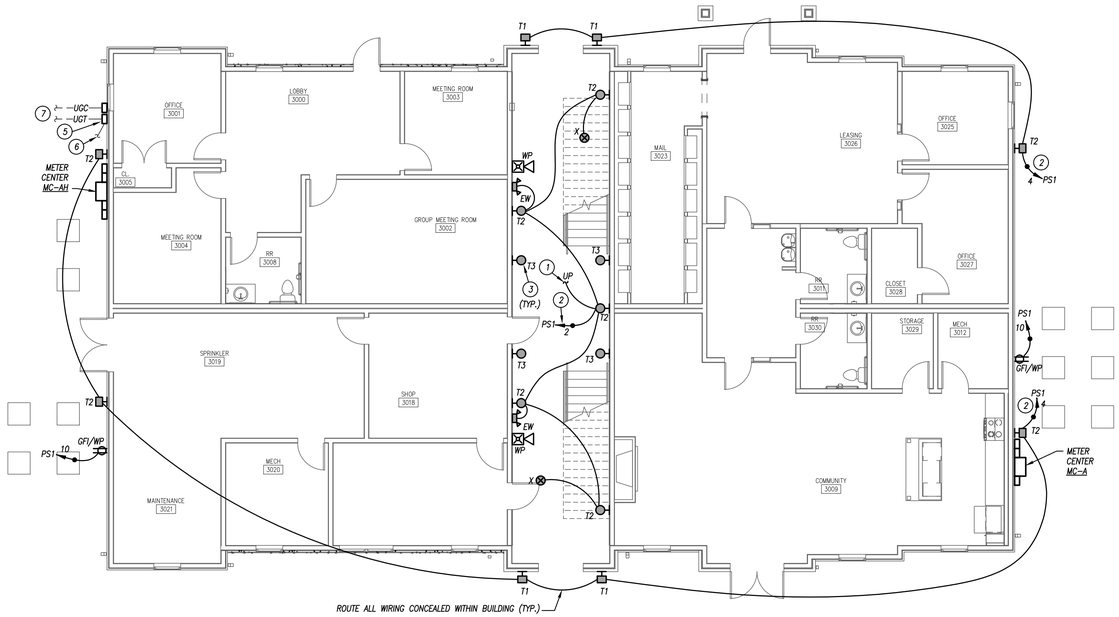
SHEET NUMBER:

E104



SECOND FLOOR ELECTRICAL PLAN - BLDG C

1/8" = 1'-0"



FIRST FLOOR ELECTRICAL PLAN - BLDG C

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. REFER TO THE SPECIFICATIONS FOR ADDITIONAL LOCATIONS/REQUIREMENTS FOR RECEPTACLES, INCLUDING GFCI, WEATHER-RESISTANT, HOSPITAL-GRADE, AND TAMPER-RESISTANT RECEPTACLES.
4. 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.
5. COORDINATE EXACT LOCATIONS OF SMOKE DETECTORS WITH CEILING FANS, HVAC DIFFUSERS, SPRINKLER HEADS, ETC. PER NFPA REQUIREMENTS.

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.
   2.1.

ELECTRICAL PLAN KEYED NOTES

(1) PROVIDE UNSWITCHED "HOT" TO EMERGENCY FIXTURES.
(2) ROUTE THROUGH RCS-1, THEN HOMERUN.
(3) FIXTURE IS WIRED TO RESIDENT LOAD CENTER AND CONTROLLED FROM WITHIN RESIDENT UNIT. REFER TO UNIT LIGHTING PLAN.
(4) REFER TO DETAIL ON SHEET E101 FOR WIRING OF RESIDENT UNIT HEAT PUMPS.
(5) TELECOMMUNICATION SERVICES. COORDINATE ALL WORK WITH SERVICE PROVIDERS.
(6) EXTEND TWO (2) 1" EMPTY CONDUITS WITH PULL STRING INTO FIRE SPRINKLER ROOM. STUB-UP AT BACK WALL OF FIRE SPRINKLER ROOM. CAP BOTH ENDS.
(7) TWO (2) 4" CONDUITS WITH PULL STRINGS TO PROPERTY LINE FOR TELE/DATA SERVICE. COORDINATE WORK WITH SERVICE PROVIDERS.
(8) POWER FOR RADON FAN. COORDINATE LOCATION AND REQUIREMENTS WITH RADON MITIGATION SYSTEM PROVIDER.

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

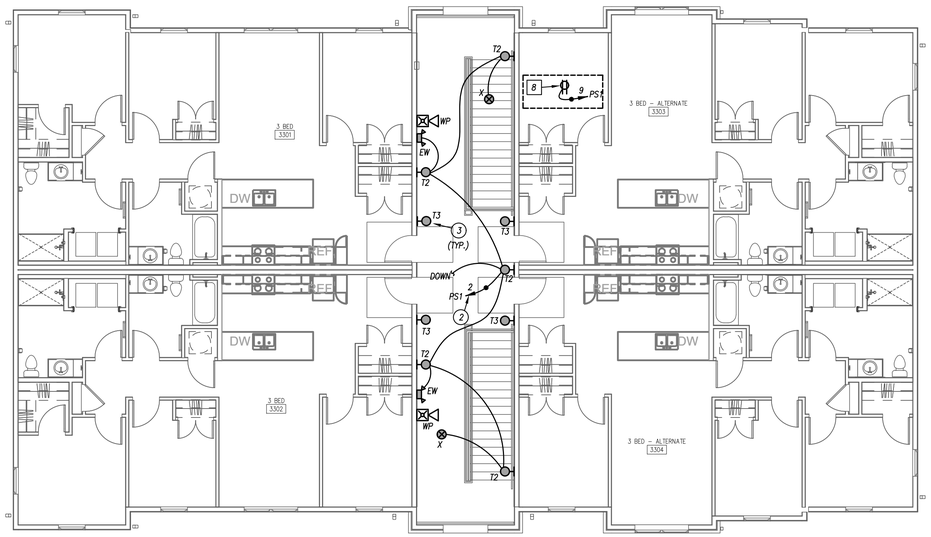
TOPEKA, KS

SHEET TITLE
FIRST & SECOND FLOOR ELECTRICAL PLANS - BUILDING C

PROJECT NUMBER: 25144

SHEET NUMBER:

E105



THIRD FLOOR ELECTRICAL PLAN - BLDG C
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. *REFER TO THE SPECIFICATIONS FOR ADDITIONAL LOCATIONS/REQUIREMENTS FOR RECEPTACLES, INCLUDING GFCI, WEATHER-RESISTANT, HOSPITAL-GRADE, AND TAMPER-RESISTANT RECEPTACLES.*
4. *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.*
5. *COORDINATE EXACT LOCATIONS OF SMOKE DETECTORS WITH CEILING FANS, HVAC DIFFUSERS, SPRINKLER HEADS, ETC. PER NFPA REQUIREMENTS.*

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.*
   2.1.

ELECTRICAL PLAN KEYED NOTES

1. *PROVIDE UNSWITCHED "HOT" TO EMERGENCY FIXTURES.*
2. *ROUTE THROUGH RCS-1, THEN HOMERUN.*
3. *FIXTURE IS WIRED TO RESIDENT LOAD CENTER AND CONTROLLED FROM WITHIN RESIDENT UNIT. REFER TO UNIT LIGHTING PLAN.*
4. *REFER TO DETAIL ON SHEET E101 FOR WIRING OF RESIDENT UNIT HEAT PUMPS.*
5. *TELECOMMUNICATION SERVICES. COORDINATE ALL WORK WITH SERVICE PROVIDERS.*
6. *EXTEND TWO (2) 1" EMPTY CONDUITS WITH PULL STRING INTO FIRE SPRINKLER ROOM. STUB-UP AT BACK WALL OF FIRE SPRINKLER ROOM. CAP BOTH ENDS.*
7. *TWO (2) 4" CONDUITS WITH PULL STRINGS TO PROPERTY LINE FOR TELE/DATA SERVICE. COORDINATE WORK WITH SERVICE PROVIDERS.*
8. *POWER FOR RADON FAN. COORDINATE LOCATION AND REQUIREMENTS WITH RADON MITIGATION SYSTEM PROVIDER.*

PRINTS ISSUED
12/18/25 95% CHECK SET

REVISIONS:

25.401

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PRELIMINARY
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JOHNSON - BETTS MEADOWS

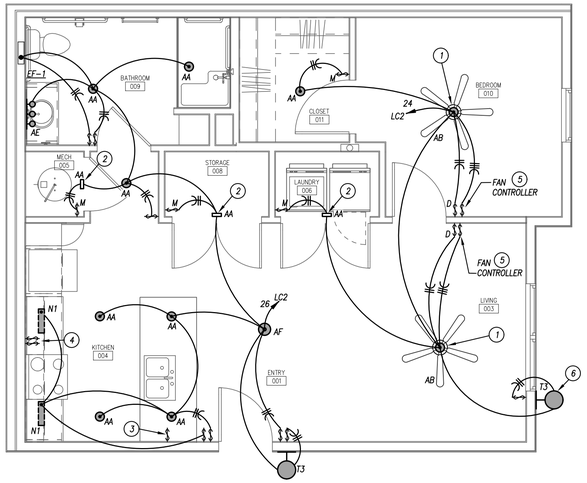
TOPEKA, KS

SHEET TITLE
THIRD FLOOR ELECTRICAL PLAN - BUILDING C

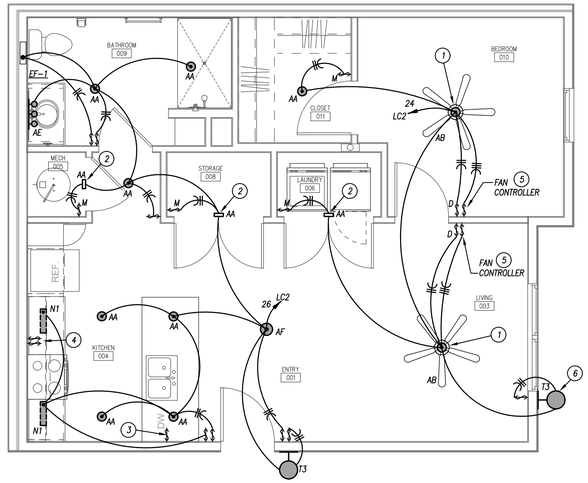
PROJECT NUMBER: 25144

SHEET NUMBER:

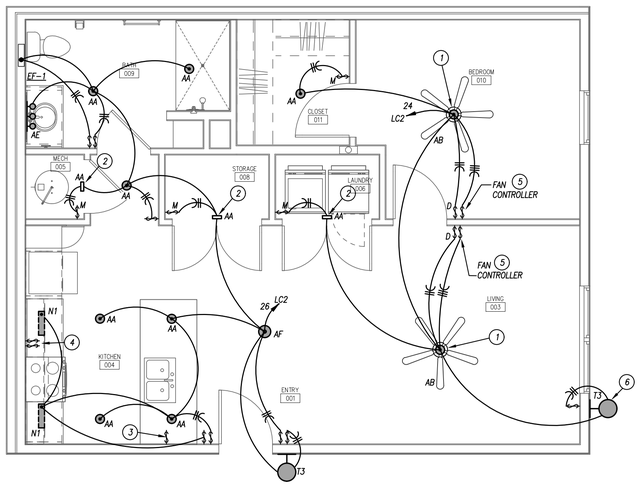
E106



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



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



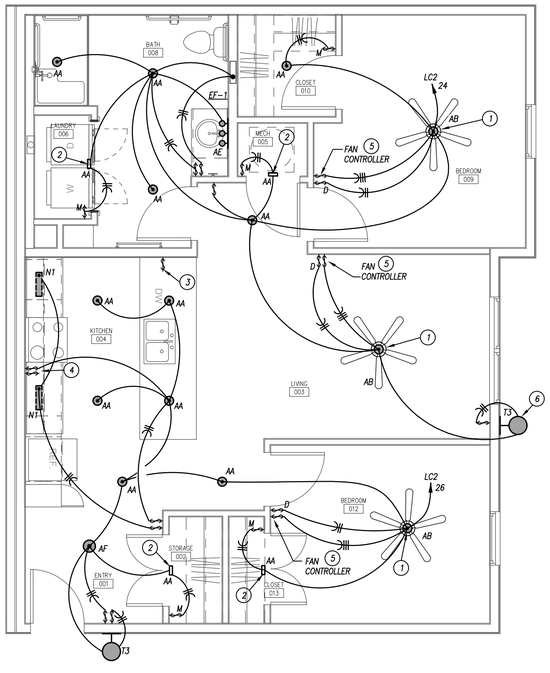
TYPE B - ONE BEDROOM - ALTERNATE
TYPICAL UNIT - FLOOR PLAN
1/4" = 1'-0"

GENERAL LIGHTING NOTES

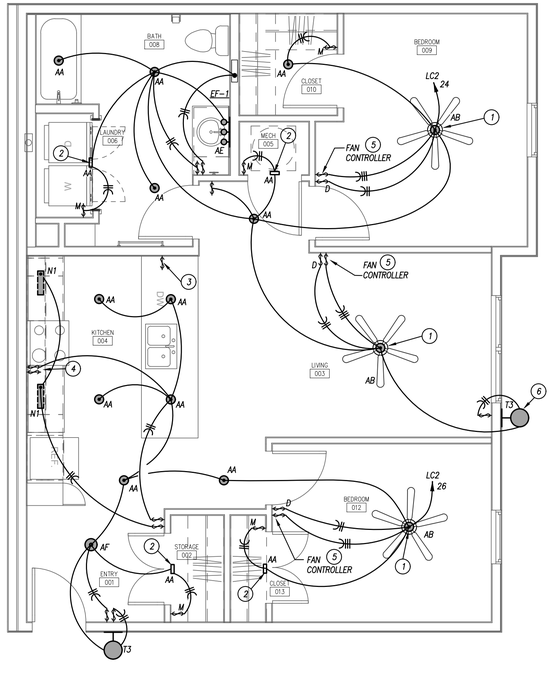
1. *REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.*
2. *LIGHT FIXTURES INDICATED AS EMERGENCY FIXTURES ARE TO FUNCTION AS NIGHT LIGHTS UNLESS SPECIFICALLY SHOWN SWITCHED.*
3. *ALL CIRCUITING SHOWN ON THIS PLAN IS DIAGRAMMATIC.*
   - 3.1. *ALL FIXTURES SHALL BE FED FROM JUNCTION BOXES WITH LIGHT FIXTURE WHIPS (<6'). DAISY-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

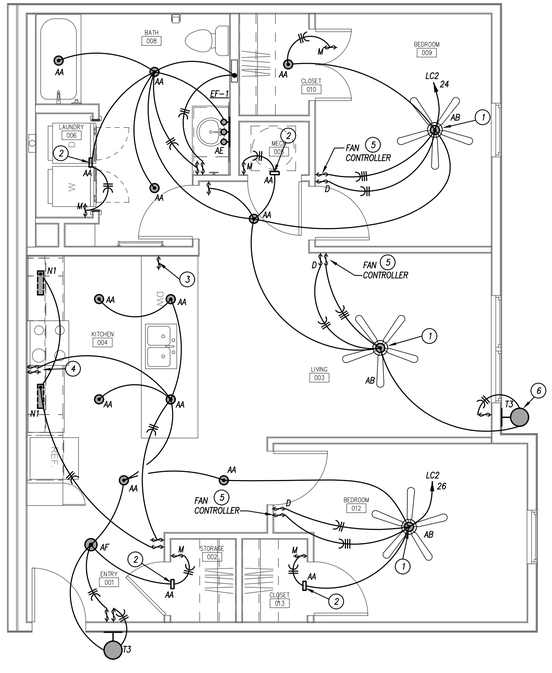
1. *SWITCH FAN AND LIGHT SEPARATELY.*
2. *MOUNT FIXTURE VERTICALLY ON WALL ABOVE DOOR.*
3. *DISPOSAL SWITCH. SEE POWER PLAN.*
4. *ACCESSIBLE SWITCHES FOR HOOD FAN AND LIGHT. SEE POWER PLAN.*
5. *PROVIDE 3-SPEED TO OFF FAN SPEED CONTROLLER COMPATIBLE WITH CEILING FAN PROVIDED.*
6. *EXTERIOR LIGHT FIXTURE AND SWITCH ONLY ON FIRST FLOOR UNITS WITH PATIO. REFER TO ARCHITECTURAL SHEETS.*



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



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



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

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

pkmr ENGINEERS
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25.401

PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
ENLARGED UNITS LIGHTING PLANS

PROJECT NUMBER: 25144

SHEET NUMBER:

E111

GENERAL LIGHTING NOTES

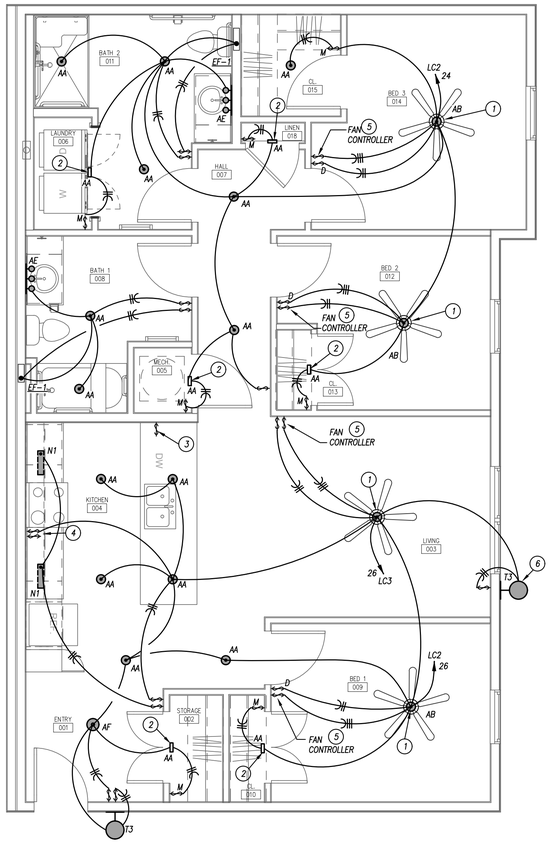
1. REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.

2. LIGHT FIXTURES INDICATED AS EMERGENCY FIXTURES ARE TO FUNCTION AS NIGHT LIGHTS UNLESS SPECIFICALLY SHOWN SWITCHED.

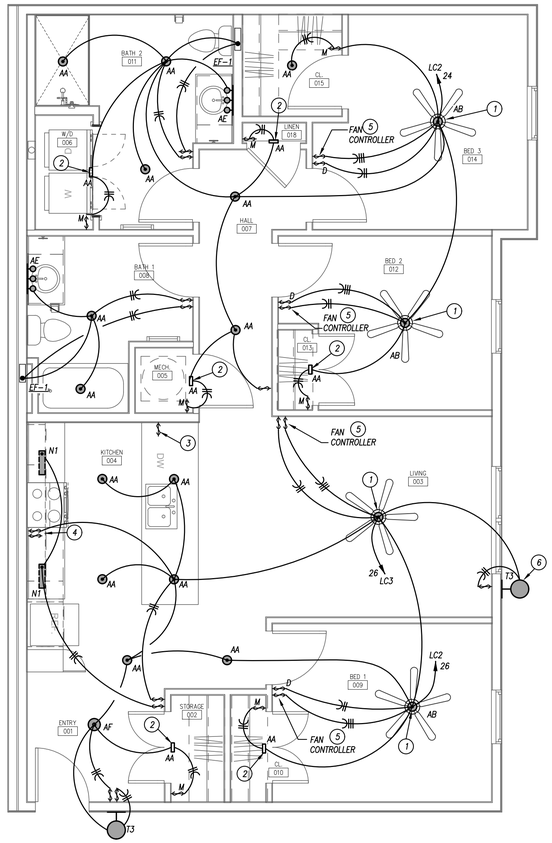
3. ALL CIRCUITING SHOWN ON THIS PLAN IS DIAGRAMMATIC.
   - 3.1. ALL FIXTURES SHALL BE FED FROM JUNCTION BOXES WITH LIGHT FIXTURE WHIPS (<6'). DAISY-CHAINING OF FIXTURES IS NOT ALLOWED.
   - 3.2. SWITCH BOX LOCATIONS SHALL BE WIRED SO THAT A NEUTRAL WIRE IS AVAILABLE AT THE SWITCH BOX LOCATION, EITHER 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

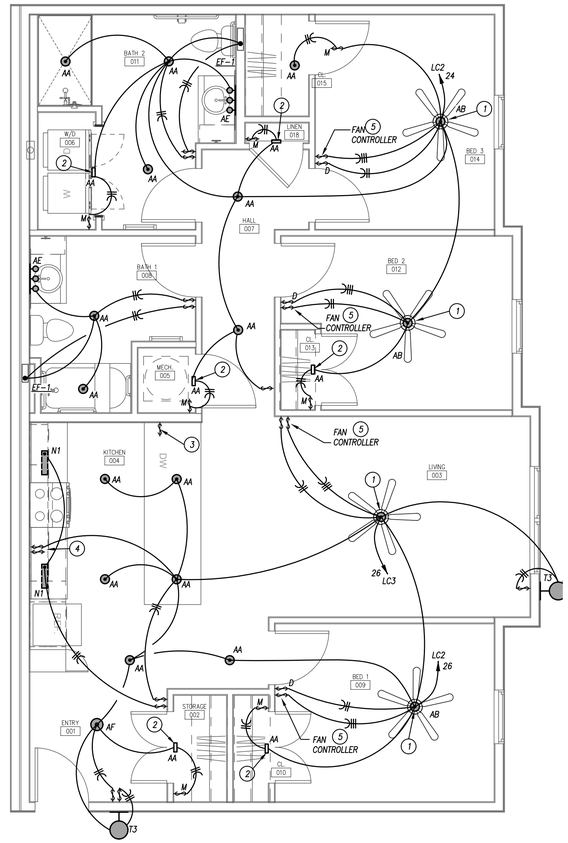
1. SWITCH FAN AND LIGHT SEPARATELY.
2. MOUNT FIXTURE VERTICALLY ON WALL ABOVE DOOR.
3. DISPOSAL SWITCH. SEE POWER PLAN.
4. ACCESSIBLE SWITCHES FOR HOOD FAN AND LIGHT. SEE POWER PLAN.
5. PROVIDE 3-SPEED TO OFF FAN SPEED CONTROLLER COMPATIBLE WITH CEILING FAN PROVIDED.
6. EXTERIOR LIGHT FIXTURE AND SWITCH ONLY ON FIRST FLOOR UNITS WITH PATIO. REFER TO ARCHITECTURAL SHEETS.



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



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



TYPE B - THREE BEDROOM - ALTERNATE
TYPICAL UNIT - FLOOR PLAN
1/4" = 1'-0"

PRINTS ISSUED
12/18/25 95% CHECK SET

REVISIONS:

pkmr ENGINEERS
25.401
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PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
ENLARGED UNITS LIGHTING PLANS

PROJECT NUMBER: 25144

SHEET NUMBER:

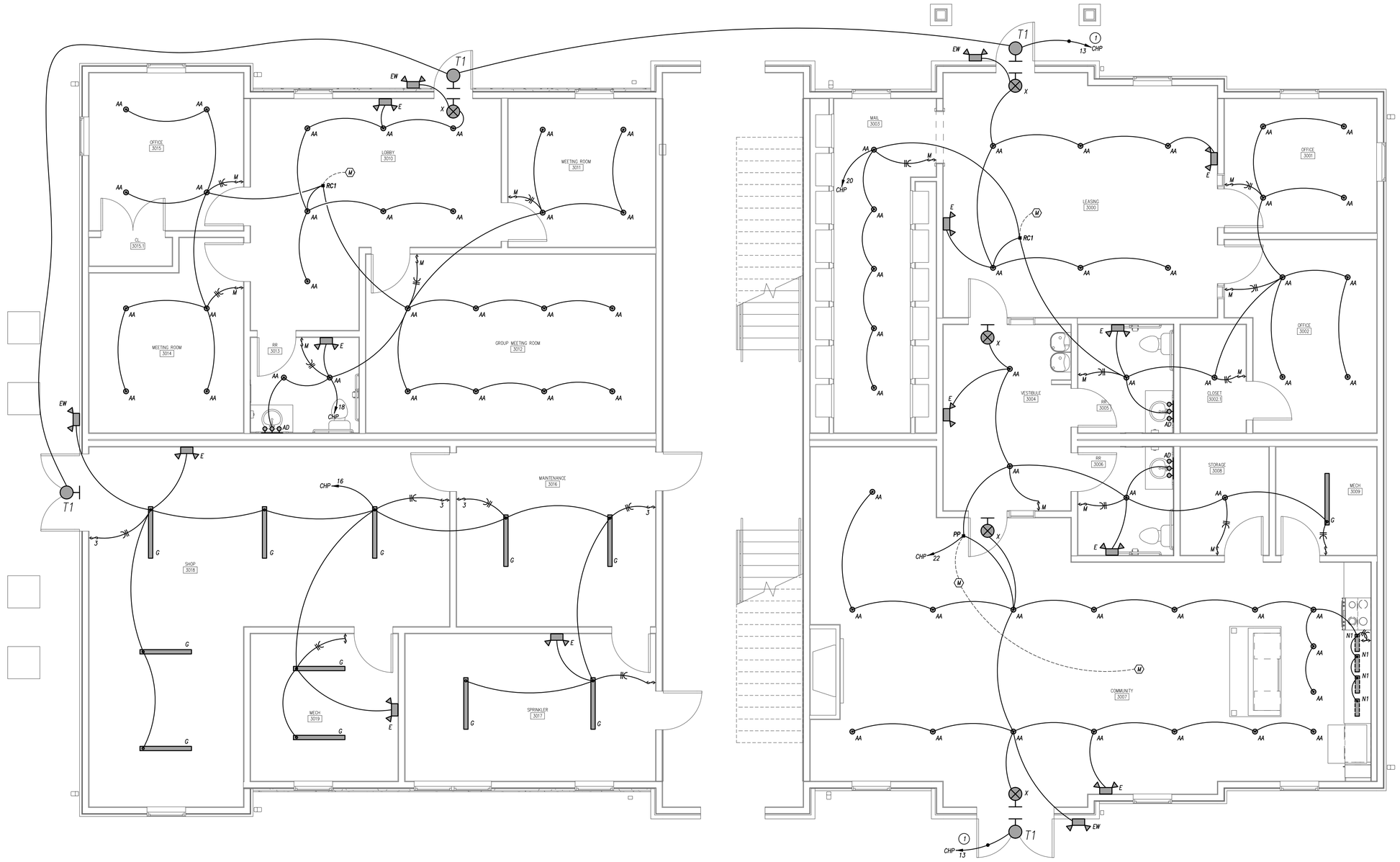
E112

LIGHTING PLAN KEYED NOTES

(1) MOUNT PHOTOCELL ON ROOF. LIGHTS CONTROLLED BY PHOTOCELL FOR AUTOMATIC ON/OFF.

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'). DAISY-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.



ENLARGED - BLDG. - C
COMMUNITY FLOOR PLAN

1/4" = 1'-0"

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

pkmr ENGINEERS

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PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

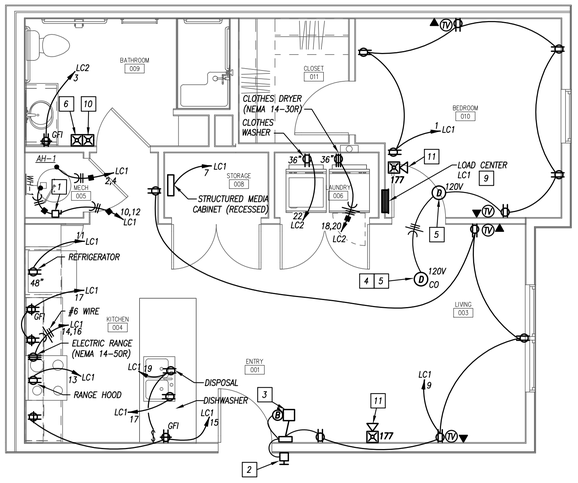
TOPEKA, KS

SHEET TITLE
ENLARGED - BLDG. - C
COMMUNITY LIGHTING PLAN

PROJECT NUMBER: 25144

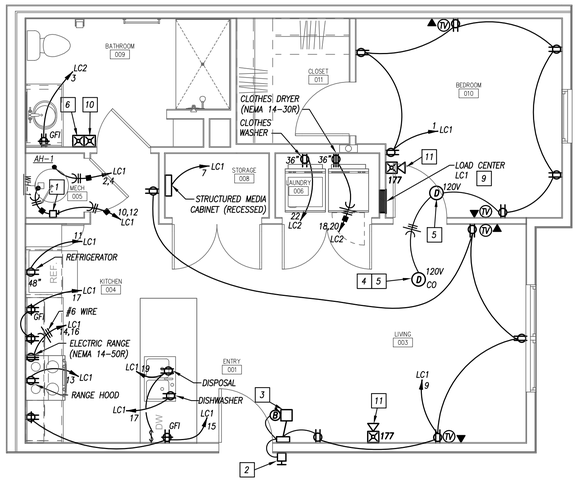
SHEET NUMBER:

E113



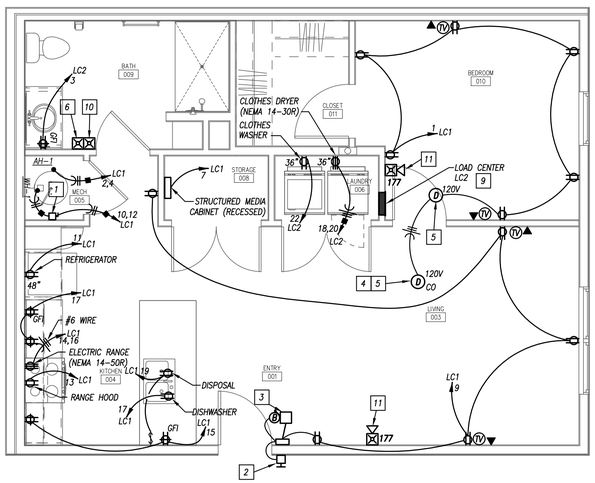
TYPE A - ONE BEDROOM
TYPICAL UNIT - FLOOR PLAN

1/4" = 1'-0"



TYPE B - ONE BEDROOM
TYPICAL UNIT - FLOOR PLAN

1/4" = 1'-0"



TYPE B - ONE BEDROOM
TYPICAL UNIT - FLOOR PLAN - ALTERNATE

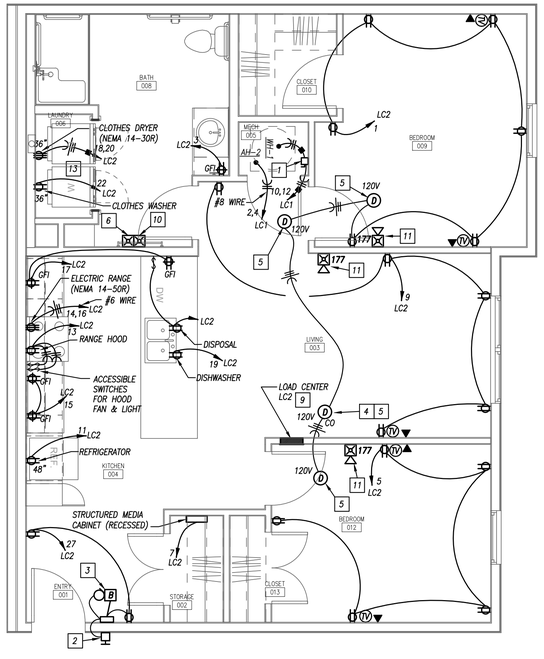
1/4" = 1'-0"

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. *REFER TO THE SPECIFICATIONS FOR ADDITIONAL LOCATIONS/REQUIREMENTS FOR RECEPTACLES, INCLUDING GFCI, WEATHER-RESISTANT, HOSPITAL-GRADE, AND TAMPER-RESISTANT RECEPTACLES.*
4. *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.*
5. *COORDINATE EXACT LOCATIONS OF SMOKE DETECTORS WITH CEILING FANS, HVAC DIFFUSERS, SPRINKLER HEADS, ETC. PER NFPA REQUIREMENTS.*
6. *REFER TO SHEETS G-300 AND G-301 FOR MOUNTING HEIGHTS OF DEVICES AND CONTROLS.*
7. *REFER TO ARCHITECT PLANS FOR UNIT TYPES AND SPECIFIC ACCESSIBLE AND/OR HI/VI UNIT TYPES.*

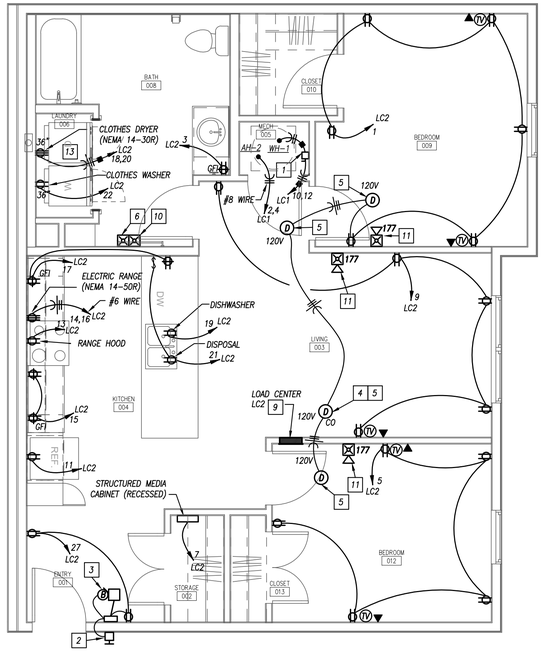
POWER PLAN KEYED NOTES

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. *COMBINATION SMOKE ALARM AND CARBON MONOXIDE DETECTOR.*
5. *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.*
6. *PROVIDE 120 VOLT 177 CD STROBE IN HEARING IMPAIRED UNITS ONLY. WIRE TO SMOKE DETECTORS IN UNIT. REFER TO ARCHITECTURAL PLANS FOR UNIT TYPES.*
7. *30 AMP, 2-POLE, NON-FUSED DISCONNECT SWITCH IN NEMA 3R ENCLOSURE. MOUNT AT UNIT WITH ADEQUATE CLEARANCES.*
8. *MOUNT DEVICE HORIZONTALLY.*
9. *INSTALL LOAD CENTER SUCH THAT TOP BREAKER IS AT 48" AFF.*
10. *PROVIDE DEVICE IN HEARING AND VISUALLY IMPAIRED UNIT ONLY. PROVIDE ROUGH-IN AND WIRING FOR FUTURE DEVICE IN ALL OTHER LIVING UNITS.*
11. *PROVIDE 177cd HORN/STROBE IN HEARING AND VISUALLY-IMPAIRED LIVING UNITS. PROVIDE MINI-HORN IN ALL OTHER UNITS.*
12. *EXTERIOR RECEPTACLE ONLY FOR FIRST FLOOR UNITS WITH PATIO. REFER TO ARCHITECTURAL SHEETS.*
13. *WASHER AND DRYER SHALL ALWAYS BE ORIENTED WITH WASHER ON LEFT AND DRYER ON RIGHT.*



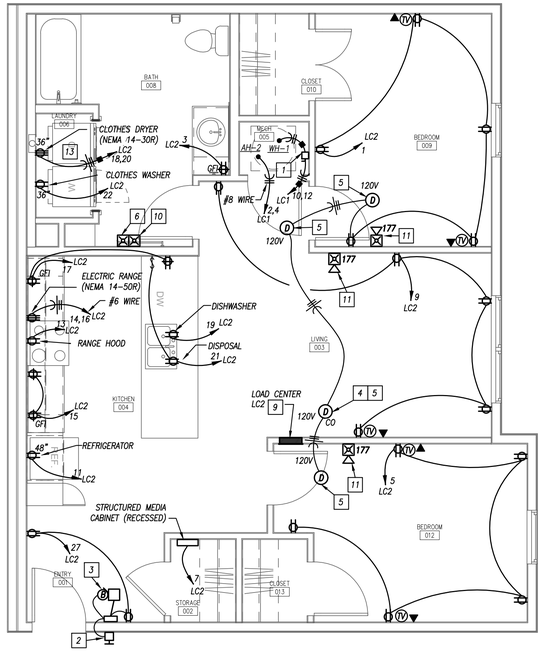
TYPE A - TWO BEDROOM
TYPICAL UNIT - FLOOR PLAN

1/4" = 1'-0"



TYPE B - TWO BEDROOM
TYPICAL UNIT - FLOOR PLAN

1/4" = 1'-0"



TYPE B - TWO BEDROOM
TYPICAL UNIT - FLOOR PLAN - ALTERNATE

1/4" = 1'-0"

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

pkmr ENGINEERS

PEARSON KENT MCKINLEY RAAF ENGINEERS LLC
13300 W 98TH STREET LENEXA, KS 66215
913.492.2400 WWW.PKMRENG.COM

25.401

PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
ENLARGED UNITS POWER PLANS

PROJECT NUMBER: 25144

SHEET NUMBER:

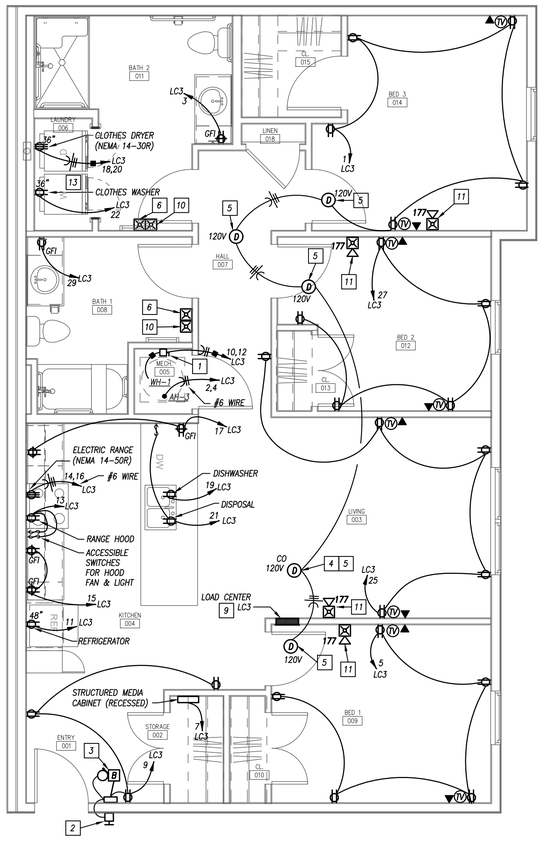
E211

GENERAL POWER NOTES

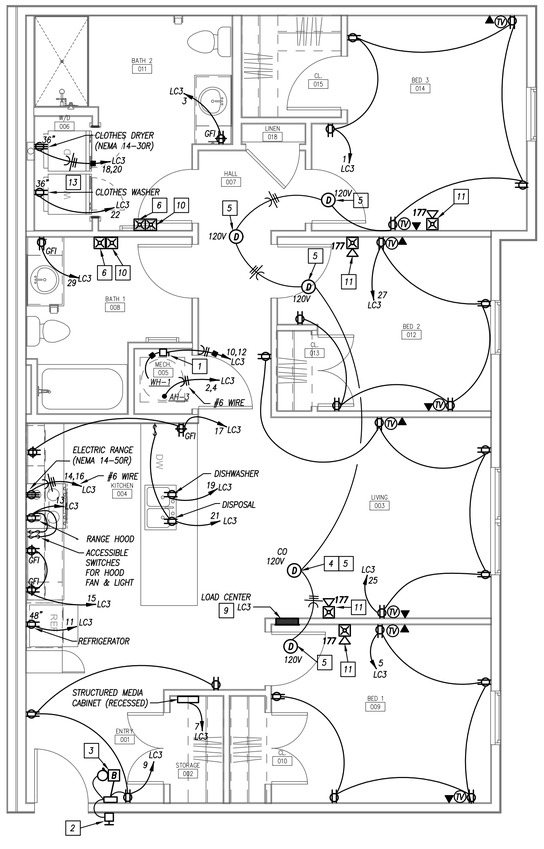
1. *REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.*
2. *COORDINATE EXACT NEMA CONFIGURATIONS OF RECEPTACLES SERVING EQUIPMENT WITH EXACT EQUIPMENT BEING FURNISHED.*
3. *REFER TO THE SPECIFICATIONS FOR ADDITIONAL LOCATIONS/REQUIREMENTS FOR RECEPTACLES, INCLUDING GFCI, WEATHER-RESISTANT, HOSPITAL-GRADE, AND TAMPER-RESISTANT RECEPTACLES.*
4. *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.*
5. *COORDINATE EXACT LOCATIONS OF SMOKE DETECTORS WITH CEILING FANS, HVAC DIFFUSERS, SPRINKLER HEADS, ETC. PER NFPA REQUIREMENTS.*
6. *REFER TO SHEETS G-300 AND G-301 FOR MOUNTING HEIGHTS OF DEVICES AND CONTROLS.*
7. *REFER TO ARCHITECT PLANS FOR UNIT TYPES AND SPECIFIC ACCESSIBLE AND/OR HI/VI UNIT TYPES.*

POWER PLAN KEYED NOTES

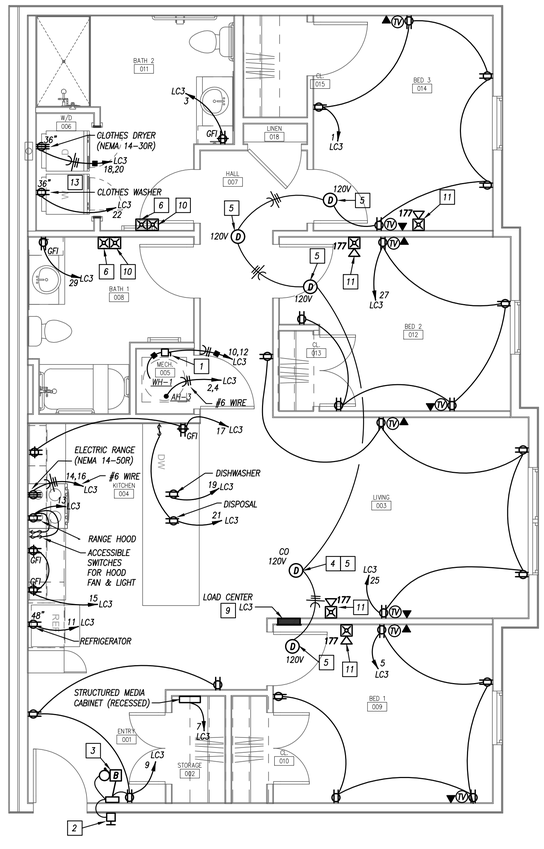
1. *30 AMP, 2-POLE, NON-FUSED DISCONNECT SWITCH IN NEMA 1 ENCLOSURE. MOUNT AT UNIT WITH ADEQUATE CLEARANCES.*
2. *DOORBELL AND DOORBELL POWER SUPPLY. HEATH-ZENITH 57/M SERIES OR SIMILAR HARD-WIRED DOORBELL AND CHIME.*
3. *FOR HEARING/VISUALLY-IMPAIRED UNIT(S) ONLY, PROVIDE DOORBELL SIGNALER WITH INTEGRAL STROBE AND CHIME IN LIEU OF CHIME ONLY.*
4. *COMBINATION SMOKE ALARM AND CARBON MONOXIDE DETECTOR.*
5. *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.*
6. *PROVIDE 120 VOLT 177 CD STROBE IN HEARING IMPAIRED UNITS ONLY. WIRE TO SMOKE DETECTORS IN UNIT. REFER TO ARCHITECTURAL PLANS FOR UNIT TYPES.*
7. *30 AMP, 2-POLE, NON-FUSED DISCONNECT SWITCH IN NEMA 3R ENCLOSURE. MOUNT AT UNIT WITH ADEQUATE CLEARANCES.*
8. *MOUNT DEVICE HORIZONTALLY.*
9. *INSTALL LOAD CENTER SUCH THAT TOP BREAKER IS AT 48" AFF.*
10. *PROVIDE DEVICE IN HEARING AND VISUALLY IMPAIRED UNIT ONLY. PROVIDE ROUGH-IN AND WIRING FOR FUTURE DEVICE IN ALL OTHER LIVING UNITS.*
11. *PROVIDE 177cd HORN/STROBE IN HEARING AND VISUALLY-IMPAIRED LIVING UNITS. PROVIDE MINI-HORN IN ALL OTHER UNITS.*
12. *EXTERIOR RECEPTACLE ONLY FOR FIRST FLOOR UNITS WITH PATIO. REFER TO ARCHITECTURAL SHEETS.*
13. *WASHER AND DRYER SHALL ALWAYS BE ORIENTED WITH WASHER ON LEFT AND DRYER ON RIGHT.*



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



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



TYPE B - THREE BEDROOM
TYPICAL UNIT - FLOOR PLAN - ALTERNATE
1/4" = 1'-0"

PRINTS ISSUED
12/18/25 95% CHECK SET

REVISIONS:

25.401

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PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

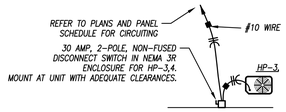
TOPEKA, KS

SHEET TITLE
ENLARGED UNITS POWER PLANS

PROJECT NUMBER: 25144

SHEET NUMBER:

E212



HEAT PUMP WIRING DIAGRAM TYPICAL FOR COMMON AREA UNITS

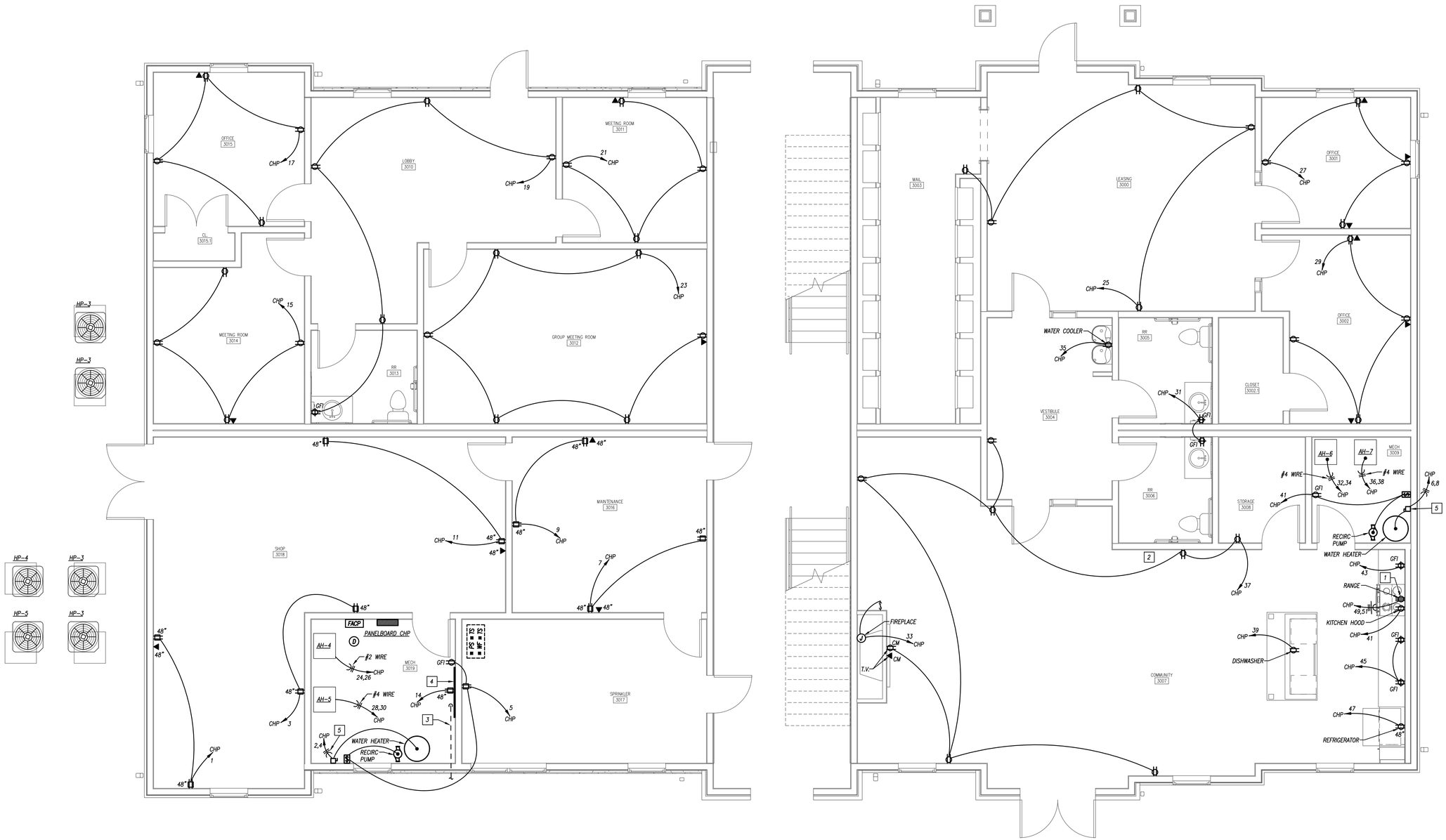
NOT TO SCALE

POWER PLAN KEYED NOTES

1. COORDINATE EXACT NEMA RATING OF THE PLUG WITH THE EXACT RANGE PROVIDED. PROVIDE A BREAKER EQUAL TO THE AMPACITY OF THE PLUG.
2. 60A, 2-POLE, NON-FUSED, NEMA-3R, HEAVY DUTY DISCONNECT SWITCH. (2)#6, #10G, 1/2"C.
3. 2" CONDUIT FROM SPRINKLER ROOM TO PROPERTY LINE FOR TELEPHONE SERVICE.
4. PROVIDE 3/4" THICK, 4'x4' PLYWOOD BACKBOARD, FIRE-RETARDANT AND STAMPED FRT.
5. 30A, 2-POLE, NON-FUSED, HEAVY DUTY DISCONNECT SWITCH. (2)#12, #12G IN 1/2"C.

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. REFER TO THE SPECIFICATIONS FOR ADDITIONAL LOCATIONS/REQUIREMENTS FOR RECEPTACLES, INCLUDING GFCI, WEATHER-RESISTANT, HOSPITAL-GRADE, AND TAMPER-RESISTANT RECEPTACLES.
4. 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.
5. COORDINATE EXACT LOCATIONS OF SMOKE DETECTORS WITH CEILING FANS, HVAC DIFFUSERS, SPRINKLER HEADS, ETC. PER NFPA REQUIREMENTS.



ENLARGED - BLDG. - C COMMUNITY FLOOR PLAN

1/4" = 1'-0"

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

25.401

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

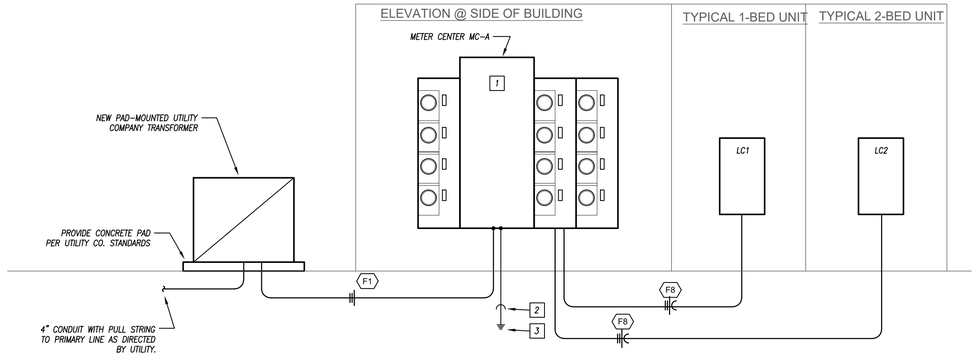
TOPEKA, KS

SHEET TITLE
ENLARGED - BLDG. - C COMMUNITY POWER PLAN

PROJECT NUMBER: 25144

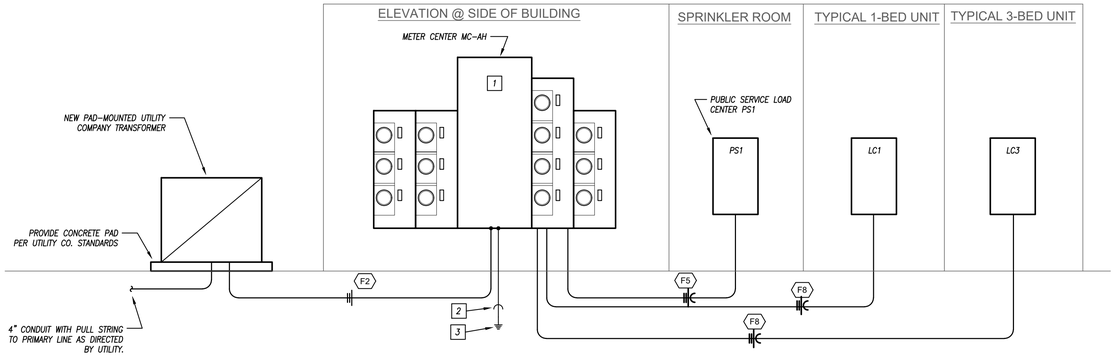
SHEET NUMBER:

E213



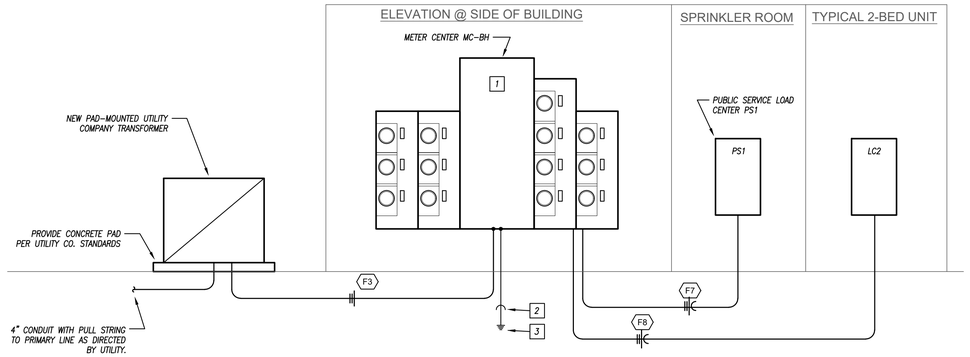
ELECTRICAL RISER DIAGRAM - BUILDING A

NOT TO SCALE



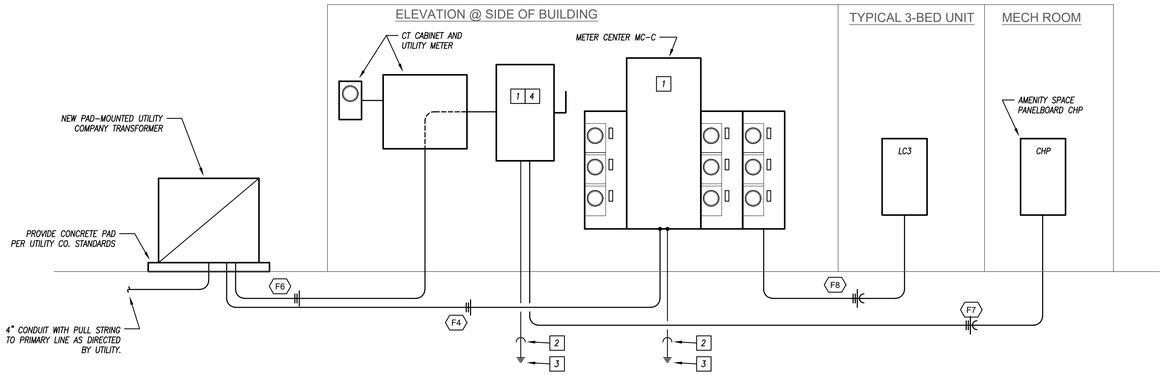
ELECTRICAL RISER DIAGRAM - BUILDING A WITH HOUSE SERVICE

NOT TO SCALE



ELECTRICAL RISER DIAGRAM - BUILDING B WITH HOUSE SERVICE

NOT TO SCALE

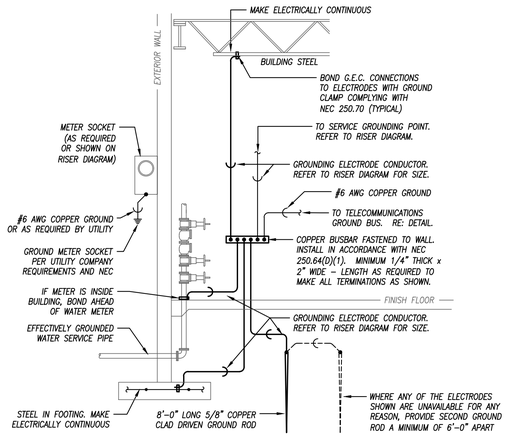


ELECTRICAL RISER DIAGRAM - BUILDING C WITH HOUSE SERVICE

NOT TO SCALE

RISER DIAGRAM KEYED NOTES

1. INSTALL ON BUILDING WALL PER UTILITY COMPANY STANDARDS.
2. (1)#3/0 GROUNDING ELECTRODE CONDUCTOR IN 1" CONDUIT.
3. REFER TO ELECTRICAL SERVICE GROUNDING DETAIL.
4. 600 AMP, 3-POLE, CIRCUIT BREAKER DISCONNECT IN NEMA 3R ENCLOSURE WITH EXTERNALLY OPERABLE HANDLE. BREAKER SHALL BE SUITABLE FOR SERVICE ENTRANCE EQUIPMENT AND FURNISHED WITH GROUND BUS.



ELECTRICAL SERVICE GROUNDING DETAIL

NOT TO SCALE

SINGLE-SECTION PANELBOARD SCHEDULE

PANEL DESIGNATION: **PS1**
MOUNTING: *SURFACE*
LOCATION: *SPRINKLER ROOM*
MAIN LUG AMPS: *125*
MAIN BREAKER: *100*
VOLTAGE: *240/120*
PHASE/WIRE: *1Ø, 3W*

	DESCRIPTION	PHASE A	PHASE B	C/B TRIP	C/B POLE	CIRCUIT #		C/B POLE	C/B TRIP	PHASE A	PHASE B	DESCRIPTION
	LTS AND RECEPTACLE	*244*		*20*	*1*	1	2	*1*	*20*	*1000*		*AIR COMPRESSOR*
	UNIT HEATER UH-1		*1500*	*20*	*2*	3	4	*1*	*20*		*1200*	*LTS: BUILDING MOUNTED*
		1500				5	6	*1*	*20*	*500*		*TELECOM EQUIPMENT*
FA	*MONITORING PANEL*		*500*	*20*	*1*	7	8	*1*	*20*		*720*	*REC: EXTERIOR*
	RADON FANS	*1200*		*20*	*1*	9	10	*1*	*20*	*720*		*REC: EXTERIOR*
	SPARE		–	*20*	*1*	11	12	*1*	*20*		*180*	*TELECOM EQUIPMENT*
	SPACE	–		–	*1*	13	14	*1*	–	–		*SPACE*
	SPACE		–	–	*1*	15	16	*1*	–		–	*SPACE*
	SPACE	–		–	*1*	17	18	*1*	–	–		*SPACE*
	TOTALS	*2944*	*2000*							*2220*	*2100*	TOTALS

PANELBOARD SIZING LOAD

LOAD DESCRIPTION	CONNECTED	DEMAND	CODE MIN. (VA)
LIGHTS	*1,264*	*1.25*	*1,580*
RECEPTACLES	*2,300*	*10KVA + 50% REST*	*2,300*
MOTORS	*1,000*	*1.25 x LARGEST + SUM OF REST*	*1,250*
AIR CONDITIONING	*0*	*0.00*	*0*
SPACE HEATING	*3,000*	*1.00*	*3,000*
CONTINUOUS	*0*	*1.25*	*0*
NON-CONTINUOUS	*1,700*	*1.00*	*1,700*
		SIZING LOAD:	9,830
		SIZING LOAD (AMPS):	41

CONNECTED PHASE LOADS

PHASE	VA	AMPS
A	*5,164*	*43.0*
B	*4,100*	*34.2*
TOTALS	9,264	38.6

REMARKS:
1. CUTLER-HAMMER POW-R-LINE 1A OR EQUAL.

PANELBOARD BREAKER KEYED NOTES

6. FURNISH GFCI-PROTECTED BREAKER.
FA. BREAKER SHALL BE PAINTED OR FURNISHED RED AND PROVIDED WITH A LOCK-ON DEVICE.

METER CENTER SCHEDULE

PLAN MARK	SERVICE	MANUFACTURER	VOLTAGE	MAIN SERVICE MODULE MODEL	MAIN SERVICE MODULE LOAD (A)	MAIN SERVICE MODULE RATING (A)	METER STACKS MODEL	METER STACKS METER SIZE	METER STACKS BUS RATING	METER STACKS 3 METERS	METER STACKS 4 METERS	METER STACKS 5 METERS	NOTES
MC-A	*BUILDING A*	*CUTLER-HAMMER*	*240V*	*1MCB*	*757*	*800*	*1MM*	*125 AMPS*	*800 AMPS*	–	*3*	–	*1,2,4,5*
MC-AH	*BUILDING A*	*CUTLER-HAMMER*	*240V*	*1MCB*	*788*	*800*	*1MM*	*125 AMPS*	*800 AMPS*	*3*	*1*	–	*1,2,3,4,5*
MC-BH	*BUILDING B*	*CUTLER-HAMMER*	*240V*	*1MCB*	*819*	*1,000*	*1MM*	*125 AMPS*	*800 AMPS*	*3*	*1*	–	*1,2,3,4,6*
MC-CH	*BUILDING C*	*CUTLER-HAMMER*	*208V*	*1MCB*	*389*	*400*	*1MM*	*125 AMPS*	*800 AMPS*	*3*	–	–	*1,2,3,4,7*

REMARKS:
1. NEMA 3R ENCLOSURE, COPPER BUS.
2. PROVIDE 125A MAIN BREAKER AT EACH RESIDENT UNIT METER.
3. PROVIDE 100A MAIN BREAKER AT HOUSE SERVICE METER.
4. REFER TO LOAD CALCULATIONS THIS SHEET FOR SIZING OF EQUIPMENT.
5. PROVIDE 800A MAIN CIRCUIT BREAKER SERVICE DISCONNECT.
6. PROVIDE 1000A MAIN CIRCUIT BREAKER SERVICE DISCONNECT.
7. PROVIDE 400A MAIN CIRCUIT BREAKER SERVICE DISCONNECT.

EQUIPMENT FEEDER SCHEDULE

FEEDER NO.	EQUIPMENT	LOAD (AMPS)	FEEDER SETS	FEEDER # OF WIRES	FEEDER SIZE	FEEDER GROUND	FEEDER MATERIAL	CONDUIT SIZE	CONDUIT TYPE
F1	*METER CENTER MC-A*	*756.2*	*2*	*3*	*500 MCM*	–	*COPPER*	*3-1/2"*	*RNC-80*
F2	*METER CENTER MC-AH*	*826.2*	*3*	*3*	*400 MCM*	–	*COPPER*	*3"*	*RNC-80*
F3	*METER CENTER MC-BH*	*826.3*	*3*	*3*	*400 MCM*	–	*COPPER*	*3"*	*RNC-80*
F4	*METER CENTER MC-C*	*396.2*	*2*	*3*	*350 MCM*	–	*COPPER*	*3"*	*RNC-80*
F5	*PANELBOARD PS1*	*41.0*	*1*	*3*	*#1*	*#8*	*COPPER*	*1-1/2"*	*RNC-40*
F6	*COMMUNITY SPACE DISCONNECT*	*420.2*	*2*	*3*	*350 MCM*	–	*COPPER*	*3"*	*RNC-40*
F7	*PANELBOARD CHP*	*420.2*	*2*	*3*	*350 MCM*	*#1*	*COPPER*	*3"*	*RNC-40*
F8	*TYPICAL LOAD CENTER*	*102.6*	*1*	*3*	*#2/0*	*#4*	*ALUMINUM*	*2"*	*EMT*

VOLTAGE DROP

FEEDERS TO LOAD CENTERS SHALL BE ADJUSTED AS LISTED BELOW FOR GIVEN LENGTHS OF FEEDER RUNS:

FEEDER < 250' = (3)#2/0 AL WIRE WITH #4 GROUND

FEEDER > 250' = (3)#3/0 AL WIRE WITH #4 GROUND AND FURNISH LOAD CENTER RATED AT 150A TO ACCOMMODATE LUGS FOR #3/0 WIRE.

LOAD CENTER FEEDER ALTERNATE:
WHERE ALLOWABLE AND AS PERMITTED THE LOAD CENTER FEEDERS MAY BE ALUMINUM SER CABLE, 3-CONDUCTOR #2/0 WIRE WITH GROUND IF ROUTED ABOVE GRADE. INSTALLATION SHALL MEET ALL REQUIREMENTS OF NEC ARTICLE 338. FEEDERS TO BE INCREASED PROPORTIONAL FOR VOLTAGE DROP AS DESCRIBED BELOW.

EQUIPMENT FAULT CURRENT RATING SCHEDULE

EQUIPMENT	SCA	AIC	NOTES
METER CENTER MC-A	*32,473*	*65,000*	*1*
METER CENTER MC-AH	*34,830*	*65,000*	*1*
METER CENTER MC-BH	*34,830*	*65,000*	*1*
METER CENTER MC-C	*31,097*	*65,000*	*1*
PANELBOARD PS1	*19,626*	*22,000*	*1,2*
PANELBOARD CHP	*27,219*	*35,000*	*1,2*
TYP. LOAD CENTER < 65' FEEDER	*10,932*	*22,000*	*1,2*
TYP. LOAD CENTER > 65' FEEDER	*10,290*	*22,000*	*1*

NOTES:
1. RATING BASED ON AN ASSUMED FAULT AT UTILITY CO. TRANSFORMER OF 43,490 AIC.
2. EQUIPMENT MAY BE SERIES RATED.
CALCULATIONS PERFORMED USING BUSSMANN POINT-TO-POINT METHOD.

PRINTS ISSUED
12/18/25 95% CHECK SET

REVISIONS:

25.401

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PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS
TOPEKA, KS

SHEET TITLE
ELECTRICAL RISER DIAGRAM

PROJECT NUMBER: 25144

SHEET NUMBER:

E301

LOAD CENTER SCHEDULE

LOAD CENTER DESIGNATION: **LC1**
MOUNTING: *RECESSED*
LOCATION: *BEDROOM*
MAIN LUG AMPS: *125*
MAIN BREAKER *M.L.O.*
VOLTAGE: *240/120V*
PHASE/WIRE: *1PH/3W*

	DESCRIPTION	C/B TRIP	C/B POLE	CIRCUIT NO.		C/B POLE	C/B TRIP	DESCRIPTION
A	MASTER BEDROOM	15	1	1	2	2	30	AIR HANDLING UNIT AH-1
	BATHROOM	15	1	3	4			
A	HALL	20	1	5	6	2	15	HEAT PUMP HP-1
A	STRUCTURED MEDIA CABINET	15	1	7	8			
A	LIVING ROOM / ENTRY	15	1	9	10	2	30	WATER HEATER WH-1
B	REFRIGERATOR	15	1	11	12			
B	RANGE HOOD / MICROWAVE	20	1	13	14	2	40	ELECTRIC RANGE
A	KITCHEN RECEPTACLES	20	1	15	16			
A	KITCHEN RECEPTACLES	20	1	17	18	2	30	CLOTHES DRYER
B	DISHWASHER	15	1	19	20			
B	DISPOSAL	15	1	21	22	1	20	CLOTHES WASHER
A	SPARE	15	1	23	24	1	15	SPARE
	SPARE	15	1	25	26	1	15	SPARE
	SPARE	20	1	27	28	1	–	SPACE
	SPARE	20	1	29	30	1	–	SPACE

REMARKS:
1. CUTLER HAMMER 'CH' LOAD CENTER OR EQUAL.
2. THIS SCHEDULE TYPICAL FOR LOAD CENTERS IN ALL 1 BEDROOM LIVING UNITS.

A BREAKERS SHALL BE ARC-FAULT PROTECTED.

B BREAKERS SHALL BE DUAL FUNCTION AFCI/GFCI.

C BREAKERS SHALL BE GFCI PROTECTED.

LOAD CENTER SCHEDULE

LOAD CENTER DESIGNATION: **LC2**
MOUNTING: *RECESSED*
LOCATION: *BEDROOM*
MAIN LUG AMPS: *125*
MAIN BREAKER *M.L.O.*
VOLTAGE: *240/120V*
PHASE/WIRE: *1PH/3W*

	DESCRIPTION	C/B TRIP	C/B POLE	CIRCUIT NO.		C/B POLE	C/B TRIP	DESCRIPTION
A	MASTER BEDROOM	15	1	1	2	2	60	AIR HANDLING UNIT AH-2
	BATHROOM	15	1	3	4			
A	SECOND BEDROOM	20	1	5	6	2	30	HEAT PUMP HP-2
A	STRUCTURED MEDIA CABINET	15	1	7	8			
A	HALL REC./LTS & KITCHEN LIGHTS	15	1	9	10	2	30	WATER HEATER WH-1
B	REFRIGERATOR	15	1	11	12			
B	RANGE HOOD / MICROWAVE	20	1	13	14	2	40	ELECTRIC RANGE
A	KITCHEN RECEPTACLES	20	1	15	16			
A	KITCHEN RECEPTACLES	20	1	17	18	2	30	CLOTHES DRYER
B	DISHWASHER	15	1	19	20			
B	DISPOSAL	15	1	21	22	1	20	CLOTHES WASHER
A	LIVING ROOM	15	1	23	24	1	15	SPARE
	BATH 2	15	1	25	26	1	15	SPARE
	SPARE	20	1	27	28	1	15	SPARE
	SPARE	20	1	29	30	1	–	SPACE

REMARKS:
1. CUTLER HAMMER 'CH' LOAD CENTER OR EQUAL.
2. THIS SCHEDULE TYPICAL FOR LOAD CENTERS IN ALL 2 BEDROOM LIVING UNITS.

A BREAKERS SHALL BE ARC-FAULT PROTECTED.

B BREAKERS SHALL BE DUAL FUNCTION AFCI/GFCI.

C BREAKERS SHALL BE GFCI PROTECTED.

LOAD CENTER SCHEDULE

LOAD CENTER DESIGNATION: **LC3**
MOUNTING: *RECESSED*
LOCATION: *BEDROOM*
MAIN LUG AMPS: *125*
MAIN BREAKER *M.L.O.*
VOLTAGE: *240/120V*
PHASE/WIRE: *1PH/3W*

	DESCRIPTION	C/B TRIP	C/B POLE	CIRCUIT NO.		C/B POLE	C/B TRIP	DESCRIPTION
A	MASTER BEDROOM	15	1	1	2	2	60	AIR HANDLING UNIT AH-3
	BATH 2	15	1	3	4			
A	SECOND BEDROOM	20	1	5	6	2	35	HEAT PUMP HP-3
A	STRUCTURED MEDIA CABINET	15	1	7	8			
A	HALL REC./LTS & KITCHEN LIGHTS	15	1	9	10	2	30	WATER HEATER WH-1
B	REFRIGERATOR	15	1	11	12			
B	RANGE HOOD / MICROWAVE	20	1	13	14	2	40	ELECTRIC RANGE
B	KITCHEN RECEPTACLES	20	1	15	16			
B	KITCHEN RECEPTACLES	20	1	17	18	2	30	CLOTHES DRYER
B	DISHWASHER	15	1	19	20			
B	DISPOSAL	15	1	21	22	1	20	CLOTHES WASHER
A	ENTRY/HALL RECEPTACLES	15	1	23	24	1	15	SPARE
A	LIVING ROOM	15	1	25	26	1	15	SPARE
A	THIRD BEDROOM	15	1	27	28	1	15	SPARE
	BATH 1	20	1	29	30	1	15	SPARE

REMARKS:
1. CUTLER HAMMER 'CH' LOAD CENTER OR EQUAL.
2. THIS SCHEDULE TYPICAL FOR LOAD CENTERS IN ALL 3 BEDROOM LIVING UNITS.

A BREAKERS SHALL BE ARC-FAULT PROTECTED.

B BREAKERS SHALL BE DUAL FUNCTION AFCI/GFCI.

C BREAKERS SHALL BE GFCI PROTECTED.

Optional Method Load Calculation for One-Family Dwellings

UNIT DESIGNATION: **UNIT 1-Bed** | LOAD CENTER DESIGNATION: **LC1** | VOLTAGE: *240/120V* | PHASE/WIRE: *1PH/3W* | TOTAL AREA: *829*

1	General Lighting and Receptacle Loads 220.82(B)(1) — Do not include open porches, garages, and unused or unfinished spaces not adaptable for future use.	3 x 829 (sq ft using outside dimensions) =	1	2,487
2	Small Appliance Branch-Circuits 220.82(B)(2) — At least two small appliance branch-circuits must be included. 210.11(C)(1)	1,500 x 2 (minimum of two) =	2	3,000
3	Laundry Branch Circuit 220.82(B)(2) — At least one laundry branch-circuit must be included. 210.11(C)(2)	1,500 x 1 (minimum of one) =	3	1,500
4	Appliances 220.82(B)(3) and (4) — Use the nameplate rating of ALL appliances (fastened-in-place, permanently connected, or connected to a specific circuit), ranges, ovens, cook tops, motors, and clothes dryers.	Do not include any heating or air-conditioning equipment in this section	Total volt-amperes of all appliances LISTED BELOW	4	22,500
		Electric Range / 10,000	Clothes Dryer / 5,000		
		Microwave / 1,200	– / –		
		Dishwasher / 1,000	– / –	Water Heater / 4,500	
		Disposal / 800	– / –	– / –	
5	Apply 220.82(B) demand factor to the total of lines 1 through 4	29,487 (total of lines 1 through 4) – 10,000 = 19,487 x 40% = 7,795 + 10,000 =	5	17,795
6	Heating or Air-Conditioning System 220.82(C) Use the nameplate rating(s) in volt-amperes for all applicable systems in lines a through f			
a)	100 percent of air-conditioning and cooling system(s)	3,053 x 100% = a) 3,053	d) Electric space-heating equipment, if less than four seperately controlled units:	5,000 x 65% = d) 3,250
b)	100 percent of heat pump system(s), where the heat pump is used without any supplemental heating	2,204 x 100% = b) 2,204	e) Electric space-heating equipment, if four or more seperately controlled units:	– x 40% = e) –
c)	100 percent of heat pump compressor(s) and 65 percent of the supplemental electric heating, where both can operate at the same time.	2,204 x 100% + 5,000 x 65% = c) –	f) Electric thermal storage and other heating systems where the usual load is expected to be continuous at full name plate value. Systems qualifying under this selection shall not be figured under any other selection in 220.82(C).	– x 100% = f) –	
7	Total Volt-Ampere Demand Load:	3,250 (largest VA rating from line 6a through 6e) + 17,795 (line 5) =	7	21,045
8	Minimum Amperes — Divide the total volt-amperes by the voltage	21,045 (line 15) / 240 (voltage) =	8 88 (minimum amperes)	9 Minimum Size Service and/or Feeder (240.6(A)) 9 125

Optional Method Load Calculation for One-Family Dwellings

UNIT DESIGNATION: **UNIT 2-Bed** | LOAD CENTER DESIGNATION: **LC2** | VOLTAGE: *208/120V* | PHASE/WIRE: *1PH/3W* | TOTAL AREA: *853*

1	General Lighting and Receptacle Loads 220.82(B)(1) — Do not include open porches, garages, and unused or unfinished spaces not adaptable for future use.	3 x 853 (sq ft using outside dimensions) =	1	2,559
2	Small Appliance Branch-Circuits 220.82(B)(2) — At least two small appliance branch-circuits must be included. 210.11(C)(1)	1,500 x 2 (minimum of two) =	2	3,000
3	Laundry Branch Circuit 220.82(B)(2) — At least one laundry branch-circuit must be included. 210.11(C)(2)	1,500 x 1 (minimum of one) =	3	1,500
4	Appliances 220.82(B)(3) and (4) — Use the nameplate rating of ALL appliances (fastened-in-place, permanently connected, or connected to a specific circuit), ranges, ovens, cook tops, motors, and clothes dryers.	Do not include any heating or air-conditioning equipment in this section	Total volt-amperes of all appliances LISTED BELOW	4	22,500
		Electric Range / 10,000	Clothes Dryer / 5,000		
		Microwave / 1,200	– / –		
		Dishwasher / 1,000	– / –	Water Heater / 4,500	
		Disposal / 800	– / –	– / –	
5	Apply 220.82(B) demand factor to the total of lines 1 through 4	29,559 (total of lines 1 through 4) – 10,000 = 19,559 x 40% = 7,824 + 10,000 =	5	17,824
6	Heating or Air-Conditioning System 220.82(C) Use the nameplate rating(s) in volt-amperes for all applicable systems in lines a through f			
a)	100 percent of air-conditioning and cooling system(s)	3,449 x 100% = a) 3,449	d) Electric space-heating equipment, if less than four seperately controlled units:	8,000 x 65% = d) 5,200
b)	100 percent of heat pump system(s), where the heat pump is used without any supplemental heating	2,019 x 100% = b) 2,019	e) Electric space-heating equipment, if four or more seperately controlled units:	– x 40% = e) –
c)	100 percent of heat pump compressor(s) and 65 percent of the supplemental electric heating, where both can operate at the same time.	2,019 x 100% + 8,000 x 65% = c) –	f) Electric thermal storage and other heating systems where the usual load is expected to be continuous at full name plate value. Systems qualifying under this selection shall not be figured under any other selection in 220.82(C).	– x 100% = f) –	
7	Total Volt-Ampere Demand Load:	5,200 (largest VA rating from line 6a through 6e) + 17,824 (line 5) =	7	23,024
8	Minimum Amperes — Divide the total volt-amperes by the voltage	23,024 (line 15) / 208 (voltage) =	8 111 (minimum amperes)	9 Minimum Size Service and/or Feeder (240.6(A)) 9 125

Optional Method Load Calculation for One-Family Dwellings

UNIT DESIGNATION: **UNIT 3-Bed** | LOAD CENTER DESIGNATION: **LC3** | VOLTAGE: *240/120V* | PHASE/WIRE: *1PH/3W* | TOTAL AREA: *1080*

1	General Lighting and Receptacle Loads 220.82(B)(1) — Do not include open porches, garages, and unused or unfinished spaces not adaptable for future use.	3 x 1,080 (sq ft using outside dimensions) =	1	3,240
2	Small Appliance Branch-Circuits 220.82(B)(2) — At least two small appliance branch-circuits must be included. 210.11(C)(1)	1,500 x 2 (minimum of two) =	2	3,000
3	Laundry Branch Circuit 220.82(B)(2) — At least one laundry branch-circuit must be included. 210.11(C)(2)	1,500 x 1 (minimum of one) =	3	1,500
4	Appliances 220.82(B)(3) and (4) — Use the nameplate rating of ALL appliances (fastened-in-place, permanently connected, or connected to a specific circuit), ranges, ovens, cook tops, motors, and clothes dryers.	Do not include any heating or air-conditioning equipment in this section	Total volt-amperes of all appliances LISTED BELOW	4	22,500
		Electric Range / 10,000	Clothes Dryer / 5,000		
		Microwave / 1,200	– / –		
		Dishwasher / 1,000	– / –	Water Heater / 4,500	
		Disposal / 800	– / –	– / –	
5	Apply 220.82(B) demand factor to the total of lines 1 through 4	30,240 (total of lines 1 through 4) – 10,000 = 20,240 x 40% = 8,096 + 10,000 =	5	18,096
6	Heating or Air-Conditioning System 220.82(C) Use the nameplate rating(s) in volt-amperes for all applicable systems in lines a through f			
a)	100 percent of air-conditioning and cooling system(s)	3,981 x 100% = a) 3,981	d) Electric space-heating equipment, if less than four seperately controlled units:	8,000 x 65% = d) 5,200
b)	100 percent of heat pump system(s), where the heat pump is used without any supplemental heating	2,019 x 100% = b) 2,019	e) Electric space-heating equipment, if four or more seperately controlled units:	– x 40% = e) –
c)	100 percent of heat pump compressor(s) and 65 percent of the supplemental electric heating, where both can operate at the same time.	2,019 x 100% + 8,000 x 65% = c) –	f) Electric thermal storage and other heating systems where the usual load is expected to be continuous at full name plate value. Systems qualifying under this selection shall not be figured under any other selection in 220.82(C).	– x 100% = f) –	
7	Total Volt-Ampere Demand Load:	5,200 (largest VA rating from line 6a through 6e) + 18,096 (line 5) =	7	23,296
8	Minimum Amperes — Divide the total volt-amperes by the voltage	23,296 (line 15) / 208 (voltage) =	8 112 (minimum amperes)	9 Minimum Size Service and/or Feeder (240.6(A)) 9 125

Optional Method Load Calculation for Multi-Family Dwellings

EQUIPMENT DESIGNATION: **MC-BH** | SERVICE/BUILDING/AREA: **BUILDING B** | VOLTAGE: *240V* | PHASE/WIRE: *1PH/3W* | # OF UNITS: *12*

1	General Lighting and Receptacle Loads 220.84(C)(1) — Do not include open porches, garages, and unused or unfinished spaces not adaptable for future use.	3 x 10,236 (total sq. ft. of all units) =	1	30,708
2	Small Appliance Branch-Circuits 220.84(C)(2)	1,500 x 2 (avg. # per unit) x 12 (number of units) =	2	36,000
3	Laundry Branch Circuit 220.84(C)(2)	1,500 x 1 (avg. # per unit) x 12 (number of units) =	3	18,000
4 through 11	Appliances and Motors 220.84(C)(3) and (4) — Use the nameplate rating of ALL appliances (fastened-in place, permanently connected, or connected to a specific circuit), ranges, wall-mounted ovens, counter-mounted cooking units, motors, water heaters, and clothes dryers. Number of units indicates only those units containing the respective appliance. Load values for appliances are the average value per unit for the building or area.	Microwave / 1,200 (volt-amperes each) x 12 (number) =	4	14,400
		Dishwasher / 1,000 (volt-amperes each) x 12 (number) =	5	12,000
		Disposal / 800 (volt-amperes each) x 12 (number) =	6	9,600
		Water Heater / 4,500 (volt-amperes each) x 12 (number) =	7	54,000
		Electric Range / 10,000 (volt-amperes each) x 12 (number) =	8	120,000
		Clothes Dryer / 5,000 (volt-amperes each) x 12 (number) =	9	60,000
		– / – (volt-amperes each) x – (number) =	10	0
11	Heating or Air-Conditioning System (Compare the heat and A/C, and omit the smaller.) 220.84(C)(5) — Include the air handler when using either one. For heat pumps, include the compressor and the maximum amount of electric heat that can be energized while the compressor is running.		11	102,336
12	Total Volt-Ampere Demand Load: — Multiply total VA by Table 220.84 demand factor percent.	457,044 (total volt-amperes from lines 1 through 11) x 41% (Table 220.84) =	12	187,388
13	House Load 220.84(B) (If present, other wise skip to line 14) — Compute in accordance with Article 220, Part III. Do not include in Table 220.84 Demand Factors.		13	9,264
14	Total Volt-Ampere Demand Load: Add lines 12 and 13 to find the minimum required volt-amperes.		14	196,652
15	Minimum Amperes — Divide the total volt-amperes by the voltage	196,652 (line x) / 240 (voltage) =	15 819 (minimum amperes)	16 Minimum Size Service and/or Feeder (240.6(A)) 16 1,000

Optional Method Load Calculation for Multi-Family Dwellings

EQUIPMENT DESIGNATION: **MC-A** | SERVICE/BUILDING/AREA: **BUILDING A** | VOLTAGE: *240V* | PHASE/WIRE: *1PH/3W* | # OF UNITS: *12*

1	General Lighting and Receptacle Loads 220.84(C)(1) — Do not include open porches, garages, and unused or unfinished spaces not adaptable for future use.	3 x 11,604 (total sq. ft. of all units) =	1	34,812
2	Small Appliance Branch-Circuits 220.84(C)(2)	1,500 x 2 (avg. # per unit) x 12 (number of units) =	2	36,000
3	Laundry Branch Circuit 220.84(C)(2)	1,500 x 1 (avg. # per unit) x 12 (number of units) =	3	18,000
4 through 11	Appliances and Motors 220.84(C)(3) and (4) — Use the nameplate rating of ALL appliances (fastened-in place, permanently connected, or connected to a specific circuit), ranges, wall-mounted ovens, counter-mounted cooking units, motors, water heaters, and clothes dryers. Number of units indicates only those units containing the respective appliance. Load values for appliances are the average value per unit for the building or area.	Microwave / 1,200 (volt-amperes each) x 12 (number) =	4	14,400
		Dishwasher / 1,000 (volt-amperes each) x 12 (number) =	5	12,000
		Disposal / 800 (volt-amperes each) x 12 (number) =	6	9,600
		Water Heater / 4,500 (volt-amperes each) x 12 (number) =	7	54,000
		Electric Range / 10,000 (volt-amperes each) x 12 (number) =	8	120,000
		Clothes Dryer / 5,000 (volt-amperes each) x 12 (number) =	9	60,000
		– / – (volt-amperes each) x – (number) =	10	0
11	Heating or Air-Conditioning System (Compare the heat and A/C, and omit the smaller.) 220.84(C)(5) — Include the air handler when using either one. For heat pumps, include the compressor and the maximum amount of electric heat that can be energized while the compressor is running.		11	84,336
12	Total Volt-Ampere Demand Load: — Multiply total VA by Table 220.84 demand factor percent.	443,148 (total volt-amperes from lines 1 through 11) x 41% (Table 220.84) =	12	181,691
13	House Load 220.84(B) (If present, other wise skip to line 14) — Compute in accordance with Article 220, Part III. Do not include in Table 220.84 Demand Factors.		13	0
14	Total Volt-Ampere Demand Load: Add lines 12 and 13 to find the minimum required volt-amperes.		14	181,691
15	Minimum Amperes — Divide the total volt-amperes by the voltage	181,691 (line x) / 240 (voltage) =	15 757 (minimum amperes)	16 Minimum Size Service and/or Feeder (240.6(A)) 16 800

Optional Method Load Calculation for Multi-Family Dwellings

EQUIPMENT DESIGNATION: **MC-AH** | SERVICE/BUILDING/AREA: **BUILDING A** | VOLTAGE: *240V* | PHASE/WIRE: *1PH/3W* | # OF UNITS: *12*

1	General Lighting and Receptacle Loads 220.84(C)(1) — Do not include open porches, garages, and unused or unfinished spaces not adaptable for future use.	3 x 10,092 (total sq. ft. of all units) =	1	30,276
2	Small Appliance Branch-Circuits 220.84(C)(2)	1,500 x 2 (avg. # per unit) x 12 (number of units) =	2	36,000
3	Laundry Branch Circuit 220.84(C)(2)	1,500 x 1 (avg. # per unit) x 12 (number of units) =	3	18,000
4 through 11	Appliances and Motors 220.84(C)(3) and (4) — Use the nameplate rating of ALL appliances (fastened-in place, permanently connected, or connected to a specific circuit), ranges, wall-mounted ovens, counter-mounted cooking units, motors, water heaters, and clothes dryers. Number of units indicates only those units containing the respective appliance. Load values for appliances are the average value per unit for the building or area.	Microwave / 1,200 (volt-amperes each) x 12 (number) =	4	14,400
		Dishwasher / 1,000 (volt-amperes each) x 12 (number) =	5	12,000
		Disposal / 800 (volt-amperes each) x 12 (number) =	6	9,600
		Water Heater / 4,500 (volt-amperes each) x 12 (number) =	7	54,000
		Electric Range / 10,000 (volt-amperes each) x 12 (number) =	8	120,000
		Clothes Dryer / 5,000 (volt-amperes each) x 12 (number) =	9	60,000
		– / – (volt-amperes each) x – (number) =	10	0
11	Heating or Air-Conditioning System (Compare the heat and A/C, and omit the smaller.) 220.84(C)(5) — Include the air handler when using either one. For heat pumps, include the compressor and the maximum amount of electric heat that can be energized while the compressor is running.		11	84,336
12	Total Volt-Ampere Demand Load: — Multiply total VA by Table 220.84 demand factor percent.	438,612 (total volt-amperes from lines 1 through 11) x 41% (Table 220.84) =	12	179,831
13	House Load 220.84(B) (If present, other wise skip to line 14) — Compute in accordance with Article 220, Part III. Do not include in Table 220.84 Demand Factors.		13	9,264
14	Total Volt-Ampere Demand Load: Add lines 12 and 13 to find the minimum required volt-amperes.		14	189,095
15	Minimum Amperes — Divide the total volt-amperes by the voltage	189,095 (line x) / 240 (voltage) =	15 788 (minimum amperes)	16 Minimum Size Service and/or Feeder (240.6(A)) 16 800

PRINTS ISSUED
12/18/25 95% CHECK SET

REVISIONS:

pkmr ENGINEERS
PEARSON KENT MCKINLEY RAAF ENGINEERS LLC
13300 W 98TH STREET LENEXA, KS 66215
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25.401

PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
ELECTRICAL LOAD CALCULATIONS

PROJECT NUMBER: 25144

SHEET NUMBER:

E302

SINGLE-SECTION PANELBOARD SCHEDULE

PANEL DESIGNATION: **CHP**

MOUNTING: *SURFACE*
LOCATION: *SPRINKLER*

MAIN LUG AMPS: *600*
MAIN BREAKER: *M.L.O.*
VOLTAGE: *240/120*
PHASE/WIRE: *1Ø, 3W*

	DESCRIPTION	PHASE A	PHASE B	C/B TRIP	C/B POLE	CIRCUIT #		C/B POLE	C/B TRIP	PHASE A	PHASE B	DESCRIPTION
	REC: MAINTENANCE/1	720		20	1	1	2	2	20	2250		WATER HEATER WH-1
	REC: MAINTENANCE/2		720	20	1	3	4				2250	
	REC: MECH/SPRINKLER	540		20	1	5	6	2	20	2250		WATER HEATER WH-1
	REC: SHOP/1		720	20	1	7	8				2250	
	REC: SHOP/2	720		20	1	9	10	1	20	70		RECIRCULATION PUMP
	REC: MAINTENANCE/3		720	20	1	11	12	1	20		–	SPARE
	REC: RR	180		20	1	13	14	1	20	360		REC: TELECOM BOARD
	REC: MEETING ROOM		720	20	1	15	16	1	20		466	LTG: SOUTH-WEST CORNER
	REC: OFFICE	720		20	1	17	18	1	20	762		LTG: NORTH-WEST CORNER
	REC: LOBBY		720	20	1	19	20	1	20		647	LTG: NORTH-EAST CORNER
	REC: MEETING ROOM	720		20	1	21	22	1	20	734		LTG: SOUTH-EAST CORNER
	REC: GROUP MEETING ROOM		1080	20	1	23	24	2	90		9852	AIR HANDLER AH-4
	REC: LEASING/MAIL	900		20	1	25	26			9852		
	REC: OFFICE		720	20	1	27	28	2	60		6840	AIR HANDLER AH-5
	REC: OFFICE	720		20	1	29	30			6840		
	REC: RR/RR		360	20	1	31	32	2	60		6840	AIR HANDLER AH-6
	FIREPLACE	700		15	1	33	34			6840		
G	WATER COOLER		350	20	1	35	36	2	60		6840	AIR HANDLER AH-7
	REC: COMMUNITY/STORAGE	1260		20	1	37	38			6840		
G	REC: DISHWASHER		700	20	1	39	40	2	40		2448	HEAT PUMP HP-4
	REC: MECH	180		20	1	41	42			2448		
	REC: COUNTER/1		180	20	1	43	44	2	35		2064	HEAT PUMP HP-5
	REC: COUNTER/2	360		20	1	45	46			2064		
	REC: REFRIGERATOR		1500	20	1	47	48	2	35		2064	HEAT PUMP HP-6
G	ELECTRIC RANGE	5000		50	2	49	50			2064		
			5000			51	52	2	35		2064	HEAT PUMP HP-7
	SPARE	–		20	1	53	54			2064		
	SPARE		–	20	1	55	56	1	20		–	SPARE
	SPARE	–		20	1	57	58	1	20	–		SPARE
	SPARE		–	20	1	59	60	1	20		–	SPARE
	TOTALS:	12720	13490							45438	44625	TOTALS

PANELBOARD SIZING LOAD

LOAD DESCRIPTION	CONNECTED	DEMAND	CODE MIN. (VA)
LIGHTS	2,608	1.25	3,261
RECEPTACLES	15,870	10KVA + 50% REST	12,935
MOTORS	70	1.25 x LARGEST + 50% OF REST	88
AIR CONDITIONING	17,280	0.00	0
SPACE HEATING	61,444	1.00	61,444
CONTINUOUS	0	1.25	0
NON-CONTINUOUS	9,000	1.00	9,000
		SIZING LOAD:	100,855
		SIZING LOAD (AMPS):	420

CONNECTED PHASE LOADS

PHASE	VA	AMPS
A	58,158	484.6
B	58,115	484.3
TOTALS	116,272	484.5

REMARKS:

1. *CUTLER HAMMER POW-R_LINE 1A OR EQUAL.*
2. *MINIMUM 22k AIC ARC FAULT CURRENT RATING.*

G *PROVIDE GFCI-PROTECTED BREAKER.*

Optional Method Load Calculation for Multi-Family Dwellings

EQUIPMENT DESIGNATION: **MC-C**
SERVICE/BUILDING/AREA: **BUILDING C**
VOLTAGE: *208V*
PHASE/WIRE: *3PH/4W*
 # OF UNITS: *8*

1 *General Lighting and Receptacle Loads* *220.84(C)(1)*
Do not include open porches, garages, and unused or unfinished spaces not adaptable for future use.
3 x 8,840 (total sq. ft. of all units) = **1** 26,520

2 *Small Appliance Branch-Circuits* *220.84(C)(2)*
1,500 x 2 (avg. # per unit) x 8 (number of units) = **2** 24,000

3 *Laundry Branch Circuit* *220.84(C)(2)*
1,500 x 1 (avg. # per unit) x 8 (number of units) = **3** 12,000

4 through 11 *Appliances and Motors* *220.84(C)(3) and (4)*
Use the nameplate rating of ALL appliances (fastened-in place, permanently connected, or connected to a specific circuit), ranges, wall-mounted ovens, counter-mounted cooking units, motors, water heaters, and clothes dryers. Number of units indicates only those units containing the respective appliance. Load values for appliances are the average value per unit for the building or area.

Microwave	1,200 (volt-amperes each)	x	8 (number)	=	**4** 9,600
Dishwasher	1,000 (volt-amperes each)	x	8 (number)	=	**5** 8,000
Disposal	800 (volt-amperes each)	x	8 (number)	=	**6** 6,400
Water Heater	4,500 (volt-amperes each)	x	8 (number)	=	**7** 36,000
Electric Range	10,000 (volt-amperes each)	x	8 (number)	=	**8** 80,000
Clothes Dryer	5,000 (volt-amperes each)	x	8 (number)	=	**9** 40,000
–	– (volt-amperes each)	x	– (number)	=	**10** 0

11 *Heating or Air-Conditioning System (Compare the heat and A/C, and omit the smaller.)* *220.84(C)(5)*
Include the air handler when using either one. For heat pumps, include the compressor and the maximum amount of electric heat that can be energized while the compressor is running.
11 89,408

12 *Total Volt-Ampere Demand Load:*
Multiply total VA by Table 220.84 demand factor percent.
331,928 (total volt-amperes from lines 1 through 11) x 43% (Table 220.84) = **12** 142,729

13 *House Load 220.84(B) (If present, other wise skip to line 14)*
Compute in accordance with Article 220, Part III. Do not include in Table 220.84 Demand Factors.
13 0

14 *Total Volt-Ampere Demand Load:* *Add lines 12 and 13 to find the minimum required volt-amperes.*
14 142,729

15 *Minimum Amperes*
Divide the total volt-amperes by the voltage
142,729 (line x) / 208√3 (voltage) = **15** 396 (minimum amperes)
16 Minimum Size Service and/or Feeder (240.6(A)) **16** 600

PRINTS ISSUED
12/18/25 95% CHECK SET

REVISIONS:

25.401

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PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS
TOPEKA, KS

SHEET TITLE
ELECTRICAL LOAD CALCULATIONS

PROJECT NUMBER: 25144

SHEET NUMBER:

E303

LIGHT FIXTURE SCHEDULE

FIXTURE TYPE	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	LAMP NUMBER / DESCRIPTION	VOLTAGE	REMARKS
CA	NORA LIGHTING	NLOPAC	5" SURFACE MOUNTED DOWNLIGHT. MOUNTS TO STANDARD JUNCTION BOX. INTEGRAL LINE VOLTAGE DIMMABLE LED DRIVER. UL-LISTED FOR WET CELING LOCATIONS. SUITABLE FOR USE IN CLOSETS.	ONE (1) 16.5 WATT, 1100 LUMEN, LED MODULE. 3000K CCT.	120	1
CB	PROGRESS	P4328-09	23" DIAMETER FIVE-LIGHT CHANDELIER. ETCHED GLASS SHADES, BRUSHED NICKEL FINISH. 24 1/2" HEIGHT, OVERALL HT W/CHAIN 99". 6-1/2" DIA GLASS. 6' 9 GUAGE CHAIN SUPPLIED.	FIVE (5) 100 WATT A19 MEDIUM BASE.	120	1,2,3
CC	PROGRESS	P5068-09	AVALON ENERGY STAR MINI-PENDANT, ALABASTER GLASS SHADE, BRUSHED NICKEL FINISH, CEILING STEM MOUNT	ONE (1) 100 WATT A19 INCANDESCENT.	120	1,2,3
CD	PROGRESS	P7250-0930K9	FLUSH MOUNTED LED FIXTURE. 17-3/4" Ø. BRUSHED NICKEL FINISH WITH WHITE ACRYLIC DIFFUSER.	ONE (1) 30 WATT, 1765 LUMEN, LED MODULE. 3000K CCT.	120	1,2
CE	HALO	H750ICAT ML56	6" ROUND RECESSED HOUSING AND LIGHT FIXTURE MODULE. DIE-FORMED STEEL PAN WITH FINNED, EXTRUDED ALUMINUM PASSIVE HEAT SINK. SEMI-SPECULAR LOW IRIDESCENT FINISH ALUMINUM REFLECTOR WITH WIDE BEAM ANGLE/DISTRIBUTION AND FLUSH LENS. INTEGRAL LED DRIVER. UL-LISTED WET LOCATION UNDER COVERED CEILING.	ONE (1) 9 WATT, 600 LUMEN. 3000K CCT.	120	1
CF	PROGRESS	P2501-09	52" BUILDER AIR PRO ENERGY STAR CEILING FAN, BRUSHED NICKEL FINISH, FIVE (5) REVERSIBLE CHERRY/NATURAL CHERRY BLADES, REVERSIBLE, 12 DEGREE PITCH	--	120	1,2
CG	PROGRESS	P2010-09	3 LIGHT VANITY FIXTURE IN BRUSHED NICKEL FINISH WITH ETCHED GLASS FLUTED SHADES, 21-1/2" WIDE X 6-5/8" HIGH. FURNISH IN "DOWN" POSITION.	THREE (3) 100 WATT A19 INCANDESCENT.	120	1,2,3
E	DUAL-LITE	EV SERIES	LOW-PROFILE EMERGENCY LIGHTING UNIT. FLAME-RATED, UV-STABLE THERMOPLASTIC HOUSING. TWO (2) SEMI-RECESSED, ADJUSTABLE "EYEBALL" HEADS WITH GLASS LENS. WHITE FINISH. MAINTENANCE-FREE BATTERY FOR 90 MINUTE OPERATION OF LAMPS. INTEGRAL TEST SWITCH AND AC-ON INDICATOR.	TWO (2) 1.1 WATT 1W LED LED.	120	1
EW	DUAL-LITE	PG SERIES	EXTERIOR WALL-MOUNTED EMERGENCY LIGHTING FIXTURE. DIE-CAST HOUSING WITH ALUMINUM REFLECTOR AND ACRYLIC LENS. FURNISH WITH OPTIONAL BATTERY HEATER. UL-LISTED WET LOCATION. DARK BRONZE FINISH.	FOUR (4) HIGH-OUTPUT LEDS - TOTAL POWER CONSUMPTION = 15.2 WATTS.	120	1
G	METALUX	SERIES 39	4'-0" LONG SURFACE MOUNTED WRAP-AROUND LED FIXTURE. STEEL HOUSING WITH CLEAR EXTRUDED ACRYLIC DIFFUSER. SQUARE WHITE END CAPS. WHITE POWDER COAT FINISH. INTEGRAL LED DRIVER.	ONE (1) 42.4 WATT, 4000 LUMEN, 40SL LED MODULE. 3000K CCT.	120	1
R	RAB LIGHTING	FFLED18	EXTERIOR GROUND-MOUNTED FIXTURE. ONE-PIECE, DIE-CAST ALUMINUM HOUSING. IMPACT-RESISTANT, TEMPERED GLASS LENS. INTEGRAL LED DRIVER WITH HEAT SINK. FINISH AS DIRECTED BY ARCHITECT. UL LISTED WET LOCATION. FURNISH FIXTURE WITH STANCHION FOR MOUNTING ON GRADE. SET BASE IN CONCRETE AS DIRECTED BY FIXTURE MANUFACTURER - REFER TO DETAIL ON SITE PLAN FOR ADDITIONAL BASE WORK.	ONE (1) LED ARRAY. 18 WATTS, 2069 LUMENS. 3000K CCT.	120	1
R2	RAB LIGHTING	LFLOOD MIGHTY POST	COMPACT BULLET STYLE LIGHT. SPOT DISTRIBUTION. DIE-CAST ALUMINUM HOUSING, HOOD, AND MOUNTING ARM WITH SET SCREW. CLEAR TEMPERED GLASS LENS AND ONE PIECE STAMPED SILICONE GASKET. COLD WEATHER RATED FOR -40°F STARTING. POWDER COAT BRONZE FINISH OR AS DIRECTED BY ARCHITECT. UL LISTED WET LOCATION. 2-1/2" PVC MOUNTING POST WITH METAL CAP. CAST IN CONCRETE PER MANUFACTURER'S RECOMMENDATIONS. FINISH SAME AS FIXTURE HOUSING.	ONE (1) 13 WATT LED, 3000K, 84 CRI	120	1
T1	PROGRESS	P5761-108	DECORATIVE, WALL-MOUNTED LIGHT FIXTURE. 8-1/2" WIDE x 16-3/4" HIGH DIE CAST ALUMINUM, OIL-RUBBED BRONZE POWDER COAT FINISH, CLEAR BEVELED GLASS PANELS.	TWO (2) 60 WATT CANDELABRA BASE SOCKETS.	120	1,2,3
T2	RAB LIGHTING	SLIM26	LOW-PROFILE EXTERIOR WALL-MOUNTED FIXTURE. ONE-PIECE, DIE-CAST ALUMINUM HOUSING. IMPACT-RESISTANT, TEMPERED GLASS LENS. FORWARD THROW OPTICS. INTEGRAL LED DRIVER WITH HEAT SINK. POWDER COAT FINISH DARK BRONZE - COORDINATE WITH ARCHITECT/BUILDING OWNER. UL LISTED WET LOCATION. FURNISH WITH OPTIONAL PHOTOCELL FOR ON/OFF CONTROL OF LIGHT FIXTURE.	ONE (1) LED ARRAY. 26 WATTS, 3580 LUMENS. 3000K CCT.	120	1
W3	RAB LIGHTING	ALED FIELD ADJUSTABLE	ARCHITECTURAL POLE-MOUNTED FIXTURE. DIE-CAST ALUMINUM HOUSING. DIE-CAST DOOR FRAME WITH CAM LATCH, INTEGRAL HINGE, AND FULL SILICONE GASKETING. IES TYPE III DISTRIBUTION . CAST ALUMINUM SUPPORT ARM. INTEGRAL 0-10V DIMMING LED DRIVER. UL-LISTED WET LOCATION. PROVIDE WITH 25' HIGH, SQUARE STRAIGHT STEEL POLE. POWDER COAT FINISH DARK BRONZE - COORDINATE EXACT COLOR WITH ARCHITECT.	FOUR (4) LED LIGHT BARS. TOTAL OF 78 WATTS, 10371 LUMENS. 3000K CCT.	208	1
W3H	RAB LIGHTING	ALED FIELD ADJUSTABLE	SAME AS "W3", EXCEPT FURNISH WITH HOUSE SIDE SHIELD.		208	1
X	DUAL-LITE	SEWL SERIES	COMPACT, LOW-PROFILE EXIT SIGN. CAST ALUMINUM CONSTRUCTION. WHITE FINISH WITH RED LETTERS. END, TOP, OR WALL MOUNTED IN SINGLE/DOUBLE FACE CONFIGURATION WITH DIRECTIONAL ARROWS AS INDICATED ON PLANS. FURNISH WITH EMERGENCY OPTION FOR MAINTENANCE-FREE NICKEL-CADMIUM BATTERY FOR 2 HOUR OPERATION WITH INTEGRAL TEST SWITCH AND AC-ON LIGHT. WET LOCATION LISTED.	FOUR (4) HIGH-OUTPUT LEDS - TOTAL POWER CONSUMPTION = 3.8 WATTS.	120	1
X1	DUAL-LITE	EVE SERIES 122	COMPACT, LOW-PROFILE EXIT SIGN. UV STABLE THERMOPLASTIC HOUSING. WHITE FINISH WITH RED LETTERS. SIDE, TOP, OR WALL MOUNTED IN SINGLE/DOUBLE FACE CONFIGURATION WITH DIRECTIONAL ARROWS AS INDICATED ON PLANS. FURNISH WITH EMERGENCY OPTION FOR MAINTENANCE-FREE NICKEL-METAL-HYDRIDE BATTERY FOR 2 HOUR OPERATION WITH INTEGRAL TEST SWITCH AND AC-ON LIGHT. REMOTE ADJUSTABLE GIMBAL FIXTURE. RECESSED MOUNTED. MATTE WHITE.	SIX (6) HIGH-OUTPUT LEDS - TOTAL POWER CONSUMPTION = 2 WATTS.	120	1
AA	NORA LIGHTING	NLOPAC	5" SURFACE MOUNTED DOWNLIGHT. MOUNTS TO STANDARD JUNCTION BOX. INTEGRAL LINE VOLTAGE DIMMABLE LED DRIVER. UL-LISTED FOR WET CELING LOCATIONS. SUITABLE FOR USE IN CLOSETS.	ONE (1) 16.5 WATT, 1100 LUMEN, LED MODULE. 3000K CCT.	120	1
AB	PROGRESS	P2612-09 P2501-09	CEILING FAN LIGHT KIT. BRUSHED NICKEL FINISH. WHITE, WASHED ALABASTER STYLE GLASS. SPRING CLIP GLASS ATTACHEMENT. CEILING FAN. 52" DIAMETER WITH FIVE (5) BLADES AND 3-SPEED REVERSIBLE MOTOR. BRUSHED NICKEL FINISH HOUSING. REVERSIBLE CHERRY OR NATURAL CHERRY BLADES.	FOUR (4) 4.3 WATT A19 INCANDESCENT. -	120	1,2,3
AC	PROGRESS	P7181-09	TORINO DECORATIVE WALL SCONCE. PROVIDE LED MEDIUM BASE REPLACEABLE LAMP. COORDINATE MOUNTING HEIGHT AND FINISH WITH ARCHITECT.	MAX = 100W INCANDESCENT	120	1,2,3
AD	PROGRESS	P2010-09	3 LIGHT VANITY FIXTURE IN BRUSHED NICKEL FINISH WITH ETCHED GLASS FLUTED SHADES, 21-1/2" WIDE X 6-5/8" HIGH. FURNISH IN "DOWN" POSITION.	THREE (3) 100 WATT A19 INCANDESCENT.	120	1,2,3
AF	PROGRESS	P3925-09	FLUSHMOUNT 13 1/4" X 5-7/8", BRUSHED NICKEL FINISH, ALABASTER GLASS. SOLID TRIM AND DECORATIVE KNOBS. DAMP LOCATION LISTED.	TWO (2) 100 WATT A19 INCANDESCENT.	120	1,2,3
AG	PROGRESS	P5068-09	AVALON ENERGY STAR MINI-PENDANT, ALABASTER GLASS SHADE, BRUSHED NICKEL FINISH, CEILING STEM MOUNT	ONE (1) 100 WATT A19 INCANDESCENT.	120	1,2,3
N1	KICHLER	4U	22" LONG LOW-PROFILE UNDER-CABINET FIXTURE. FLAT, FROSTED DIFFUSE LENS. INTEGRAL LED DRIVER. WHITE FINISH. COORDINATE LENGTH WITH MILLWORK SHOP DRAWINGS.	ONE (1) 10 WATT, 551 LUMEN, LINEAR LED MODULE. 3000K CCT.	120	1,2
T3	PROGRESS	P5986-31MD	DECORATIVE, WALL-MOUNTED LIGHT FIXTURE. 4-5/8" WIDE x 6-1/2" HIGH DIE CAST ALUMINUM, OIL-RUBBED BRONZE POWDER COAT FINISH, ETCHED SEEDED GLASS PANELS.	ONE (1) 100 WATT A19 INCANDESCENT.	120	1,2,3

REMARKS:
1. FURNISH WITH AND INSTALL ALL NECESSARY HARDWARE AND MOUNTING BRACKETS.
2. FIXTURE HAS BEEN SELECTED BY OWNER. IN GENERAL, NO SUBSTITUTIONS WILL BE ALLOWED - COORDINATE SAME WITH OWNER.
3. FURNISH FIXTURE WITH CREE SCRE-IN OMNIDIRECTIONAL LED LAMPS IN LIEU OF INCANDESCENT LAMPS. USE 9W LAMPS FOR 60W INCANDESCENT, 6W FOR 40W, 13.5W FOR 75W, AND 18W FOR 100W.
4. FIXTURE TO BE MOUNTED OUTSIDE THE CLOSET STORAGE SPACE AS DEFINED BY NEC 410.2, OR ALTERNATE FIXTURE SUITABLE FOR USE IN CLOSET STORAGE SPACE MUST BE SUBSTITUTED.

GENERAL NOTES (APPLICABLE TO ALL FIXTURES):
1) SUBSTITITION REQUESTS FOR DECORATIVE FIXTURES SHALL BE APPROVED PRIOR TO BIDDING. REFER TO SPECIFICATIONS FOR SUBSTITUTIONS PROCEDURE.
2) ALL FIXTURES WITH PAINTED METAL PARTS SHALL BE PAINTED AFTER FABRICATION.
3) LUMENS LISTED FOR LED FIXTURES ARE GENERALLY DELIVERED LUMENS UNLESS NOTED OTHERWISE.
4) ALL EXTERIOR LED FIXTURES ARE FULL CUTOFF UNLESS NOTED OTHERWISE.
5) ALL FIXTURES SHALL BE IC RATED OR PROVIDED WITH INSULATION SHIELDS WHEN INSTALLED IN INSULATED AREAS OF THE TRUSS SPACE.
6) FOR ALL FIXTURES INSTALLED IN RATED ASSEMBLIES, FURNISH AND INSTALL APPROVED FIRE BARRIER (E.Z. BARRIER OR TENMAT FF109 SERIES) OVER FIXTURE TO MAINTAIN 1 HOUR CEILING ASSEMBLY RATING.

SCHEDULE OF REMOTE CONTROL SWITCHES

RCS NUMBER	NUMBER OF POLES	CONTROL DATA			LOAD DATA			CONTROL	NOTES
		VOLTAGE	CIRCUIT #	PANELBOARD	LOAD	VOLTAGE	PANEL & CIRCUITS CONTROLLED		
RCS-1	4	120	1	PS1	BLDG EXT. LTS	120	PS1-4	PHOTOCELL ON / PHOTOCELL OFF	1,2,3
RCS-2	12	120	18	CHP	BLDG EXT LTS, SITE LTS	120/240	CHP-23/25,31	PHOTOCELL ON / PHOTOCELL OFF	1,2,4

REMARKS:
1. INSTALL IN NEMA 1 ENCLOSURE WITH MANUAL HOA SWITCH IN HINGED FRONT COVER.
2. REFER TO DETAIL THIS SHEET.
3. LOCATED IN FIRE SPRINKLER ROOM.
4. LOCATED IN COMMUNITY BLDG MAINTENANCE ROOM.

PRINTS ISSUED
12/18/25 95% CHECK SET

REVISIONS:

25.401

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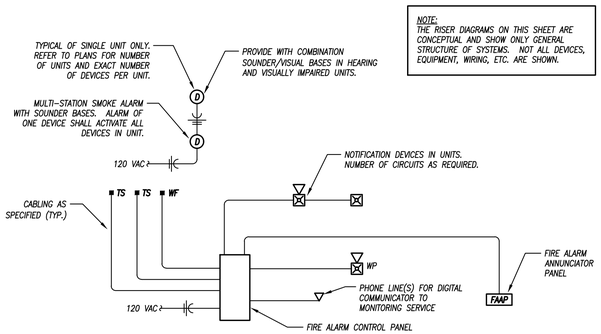
PRELIMINARY
NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS
TOPEKA, KS

SHEET TITLE
ELECTRICAL SCHEDULES

PROJECT NUMBER: 25144

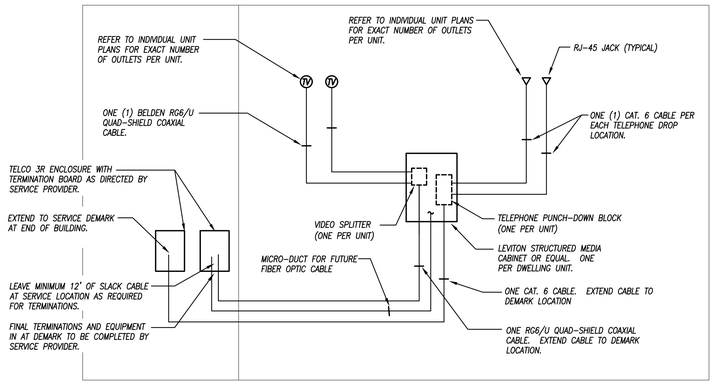
SHEET NUMBER:
E401



NOTE:
THE RISER DIAGRAMS ON THIS SHEET ARE CONCEPTUAL AND SHOW ONLY GENERAL STRUCTURE OF SYSTEMS. NOT ALL DEVICES, EQUIPMENT, WIRING, ETC. ARE SHOWN.

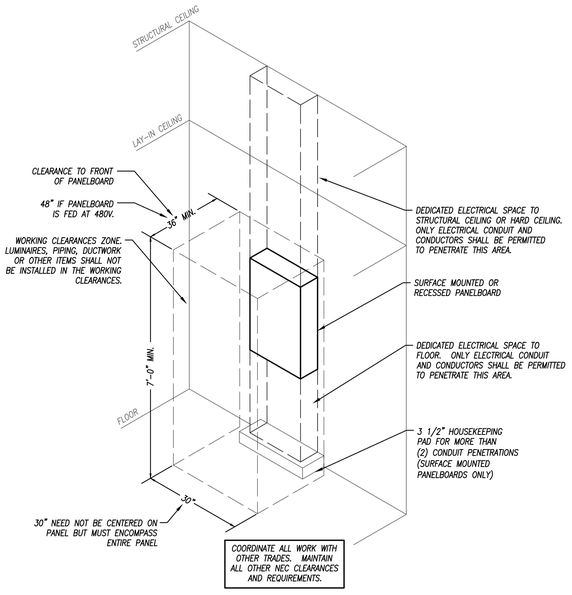
FIRE ALARM SYSTEM RISER DIAGRAM

NOT TO SCALE



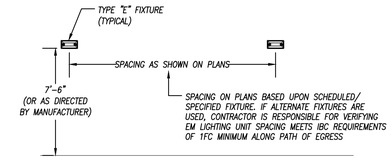
TYPICAL LOW-VOLTAGE CABLING RISER

NOT TO SCALE



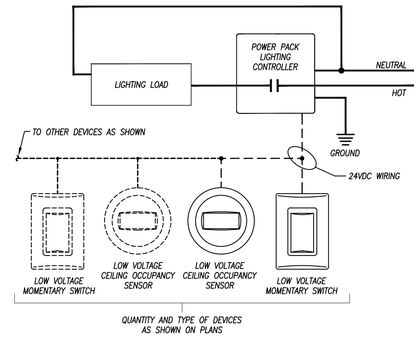
TYPICAL PANELBOARD INSTALLATION DETAIL

NOT TO SCALE



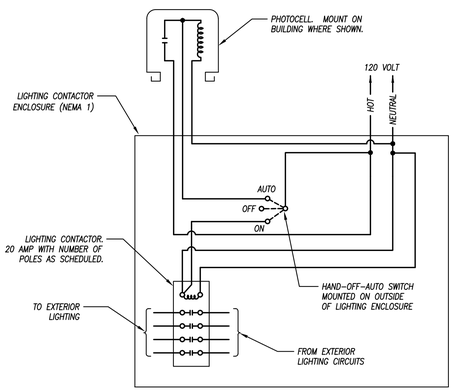
EMERGENCY LIGHTING FIXTURES DETAIL

NOT TO SCALE



TYPICAL LIGHTING CONTROL SCHEMATIC WIRING DIAGRAM

NOT TO SCALE



EXTERIOR LIGHTING CONTROL

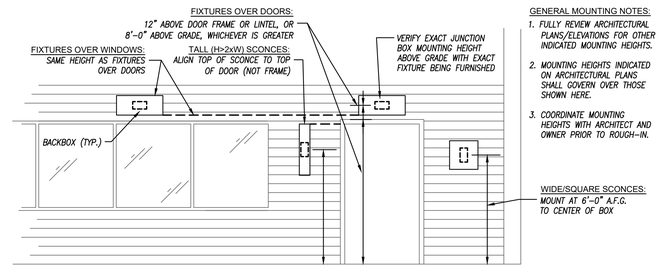
NOT TO SCALE

STRUCTURED MEDIA CABINET

PROVIDE RECESSED STRUCTURED MEDIA CABINET WITH VENTED DOOR. RF TRANSPARENT. 20" TALL ENCLOSURE. LEVITON OR EQUAL. PROVIDE WITH:

1. 1 X 8 TELEPHONE DISTRIBUTION PANEL.
2. 1 X 6 PREMIUM VIDEO SPLITTER.
3. NECESSARY PATCH CABLES.
4. AC POWER SURGE PROTECTIVE MODULE WITH DUPLEX RECEPTACLE.
5. UNIVERSAL SHELF/MOUNTING BRACKETS.

NOTE: ALL CABLING TO BE INSTALLED CONCEALED. PROVIDE FOR SLACK AND TERMINATE ALL CABLE AT EACH END. COORDINATE WORK WITH THE SERVICE PROVIDER. ALL WORK TO BE COMPLETED TO SERVICE PROVIDERS STANDARD.



EXTERIOR BUILDING-MOUNTED LIGHT FIXTURE MOUNTING HEIGHTS DETAIL

NOT TO SCALE

PRINTS ISSUED

12/18/25 95% CHECK SET

REVISIONS:

25.401

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PRELIMINARY NOT FOR CONSTRUCTION

JOHNSON - BETTS MEADOWS

TOPEKA, KS

SHEET TITLE
ELECTRICAL DETAILS

PROJECT NUMBER: 25144

SHEET NUMBER:

E501