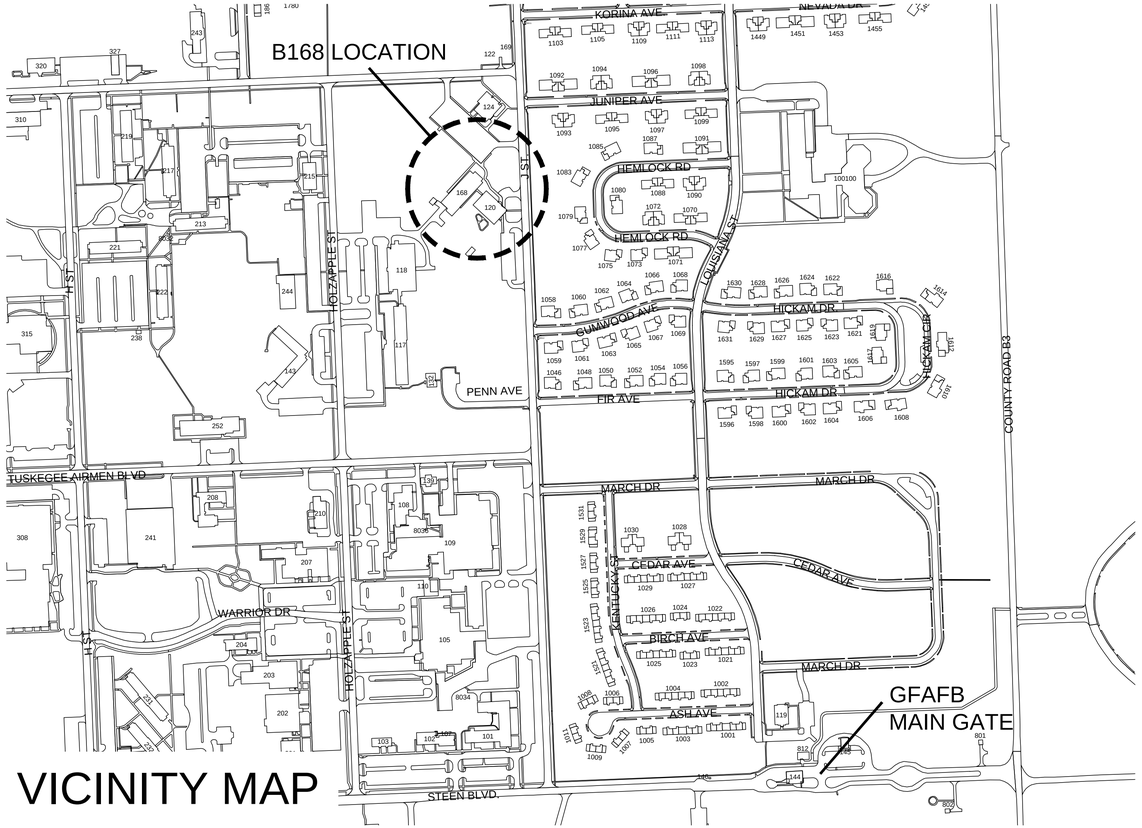
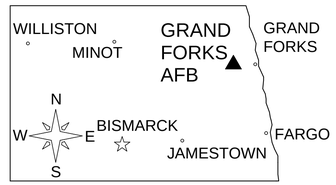
GRAND FORKS AIR FORCE BASE GRAND FORKS, ND

ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

TYPE B 100% FINAL SUBMITTAL



VICINITY MAP



STATE OF NORTH DAKOTA - VICINITY MAP

NO SCALE

GENERAL NOTES:

1. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK. ANY DISCREPANCIES BETWEEN THESE DRAWINGS AND OTHER DRAWINGS SHALL BE BROUGHT TO THE CONTRACTING OFFICERS ATTENTION.
2. DIMENSIONS ON DRAWINGS ARE APPROXIMATE, DRAWINGS ARE NOT TO BE SCALED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS AND PHYSICAL DIMENSIONS THAT INFLUENCE THE CONSTRUCTION AREA. DIMENSIONAL DISCREPANCIES AND QUESTIONS SHALL BE BROUGHT TO THE CONTRACTING OFFICERS ATTENTION.
3. DIMENSIONS INDICATED ARE TO OUTSIDE FACE OF MASONRY FOR EXTERIOR WALL, CENTER LINE OF FRAMING FOR INTERIOR WALL, OR TO FACE OF EXISTING WALL UNLESS OTHERWISE NOTED.
4. GENERAL, MECHANICAL, AND ELECTRICAL CONTRACTORS MUST COORDINATE WORK AND EQUIPMENT LOCATIONS PRIOR TO CONSTRUCTION. NOT ALL MECHANICAL & ELECTRICAL EQUIPMENT IS SHOWN ON ARCHITECTURAL DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL WORK AND SHALL ANTICIPATE AREAS WHERE THE INSTALLATION OF MECHANICAL AND ELECTRICAL WORK WILL BE RESTRICTED, CONGESTED OR OTHERWISE DIFFICULT TO INSTALL AND SHALL COORDINATE WORK BETWEEN TRADES.
5. FIELD FINISH EXPOSED MATERIALS WHICH DO NOT HAVE A FACTORY FINISH.
6. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL UTILITIES ON SITE. CONTRACTOR SHALL EXERCISE CAUTION TO AVOID ANY DAMAGE WHEN PERFORMING EARTHWORK, PAVING OR ANY CONSTRUCTION IN VICINITY OF EXISTING UTILITIES, BUILDINGS AND LANDSCAPING. WHEN NEAR EXPECTED UTILITY LINE LOCATION HAND-DIG OR HYDRO-EXCAVATE TO LOCATE UTILITIES PRIOR TO MACHINE DIGGING.
7. ALL INTERIOR WALL ASSEMBLIES TO EXTEND TO UNDERSIDE OF ROOF DECK UNLESS NOTED OTHERWISE.
8. PRIOR TO THE INSTALLATION OF GWB, THE CONTRACTORS SHALL REVIEW ALL ELECTRICAL ROUGH-IN LOCATIONS AND LOCATIONS FOR BLOCKING. CONTRACTOR SHALL PROVIDE BLOCKING OR BACKING FOR THE ATTACHMENT OF WALL-MOUNTED MONITORS, CASEWORK, DOOR STOPS, LIGHT FIXTURES AND OTHER WALL MOUNTED ACCESSORIES.
9. CONTRACTOR SHALL PROTECT EXISTING BUILDING AND SITE MATERIALS SCHEDULED TO REMAIN AND SHALL BE RESPONSIBLE FOR DAMAGE TO SAME RESULTING FROM WORK UNDER THIS CONTRACT. CONTRACTOR SHALL RESTORE DAMAGED EXISTING BUILDING AND SITE MATERIALS TO THEIR ORIGINAL CONDITION. CONTRACTOR SHALL REMOVE ALL CONSTRUCTION RELATED MATERIALS AND DEBRIS FROM ALL BUILDING AND SITE AREAS.
10. ALL WORK SHALL COMPLY WITH APPLICABLE CODES, REGULATIONS AND ORDINANCES.
11. CONTRACTOR SHALL COORDINATE AND SCHEDULE ALL NECESSARY UTILITY OUTAGES WITH GOVERNMENT CONTRACTING OFFICER PRIOR TO PROCEEDING WITH SUCH WORK TO INSURE THAT OPERATIONS IN ADJACENT OCCUPIED PORTIONS OF THE BUILDING ARE NOT INTERRUPTED OR RESTRICTED WITHOUT PRIOR APPROVAL.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR WEATHERTIGHTNESS OF EXISTING BUILDING AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR SHALL INCLUDE ALL NECESSARY PROVISIONS TO ACCOMPLISH THIS, INCLUDING BUT NOT LIMITED TO SEALING OF ALL ROOF AND WALL PENETRATIONS AT END OF EACH WORKING DAY.
13. AT ALL EXISTING GWB TO REMAIN EXPOSED, FILL ALL HOLES, GOUGES, ETC. AND FINISH TO MATCH EXISTING ADJACENT GWB.

ABBREVIATIONS

@	At	C.	Channel	DBL	Double	F/A	Fire Alarm	H	High	M.	Men	OHD	Overhead	REQD	Required	STL	Steel	UG	Underground
∠	Angle	CAB	Cabinet	D.C.S.	Double Compartment Sink	F.A.	Fresh Air	H.B.	Hose Bib	MAS	Masonry	OLF	Occupant Load Factor	RET	Return	STM	Steam	U.H.	Unit Heater
A.B.	Anchor Bolt	CASG	Casing	DET	Detail	F.B.	Face Brick	H.C.	Hose Cabinet	MAT	Material	OPG	Opening	REV	Revisions	STOR	Storage	UNEX	Unexcavated
AC	Acoustic	C.B.	Chalk Board/Catch Basin	D.F.	Drinking Fountain	F.C.O.	Floor Clean-out	HC	Hollow Core Precast	MAX	Maximum	OPP	Opposite	RFG	Roofing	STRUCT	Structural	UNFIN	Unfinished
A.C.	Air Conditioning	C.C	Center to Center	DIA/ø	Diameter	F.D.	Floor Drain	H.D.	Heavy Duty	M.B.	Machine Bolt/Mop Basin	ORIG	Original	RGR	Regulator	SUP	Supplier	U.O.N.	Unless Otherwise Noted
A.D.	Access Door	C.C.J.	Construction Control Joint	DIM	Dimension	F.D.V.	Fire Department Valve	HDBD	Hardboard	M.C.	Mechanical Contractor	O_2	Oxygen	R.H.	Robe Hook/Right Hand	SUSP	Suspended	UR	Urinal
ADD	Addition	CEM	Cement	DISC	Disconnect	F.E.	Fire Extinguisher	HDR	Header	M.D.O.	Medium Density Overlaid	OZ	Ounce	R.H.W.	Recirculating Hot Water	SW	Switch	U.S.	Urinal Screen
A.F.F.	Above Finish Floor	CER	Ceramic	DIV-15	Division 15-Mechanical	F.E.C.	Fire Extinguisher Cabinet	HDWE	Hardware	MECH	Mechanical	PART	Partition/Particle	R.I.	Rough-In	SWBD	Switchboard	UT	Utility
AGG	Aggregate	CFCI	Contractor Furnish Contractor Install	DIV-16	Division 16-Electrical	F.F.	Finish Floor	H.M.	Hollow Metal	MED	Medicine	PC	Precast Concrete	R.L.	Rain Leader	S.Y.	Square Yard	U.V.	Unit Ventilator
A.H.U.	Air Handling Unit			DK	Deck	FG	Fiberglass	HORIZ	Horizontal	MEMB	Membrane	PF	Pre-Finished	RM	Room				
ALT	Alternate	C.F.M.	Cubic Feet per Minute	DN	Down	F.H.	Flat Head	H.P.	Horsepower	MET/MTL	Metal	℄	Plate	R.O.	Roof Opening			V	Volt/Vent
ALUM/AL	Aluminum	CFOI	Contractor Furnish Owner Install	DO	Ditto	F.H.C.	Fire Hose Cabinet	HR	Hour	MFGR	Manufacturer	P.LAM.	Plastic Laminate	R & S	Rod & Shelf	T	Tile	(V)	Verify
ANCH	Anchor			DR	Door	FIN	Finish	HT	Height	M.H.	Man Hole	PLAS	Plaster	R.T.	Rubber Tile	TB	Tackboard	VAC	Vacuum
ANOD	Anodized	C&G	Curb & Gutter	DS/DNSPT	Downspout	F.O.	Finished Opening	HTG	Heating	MK	Mark	PLBG	Plumbing	R.T.A.H.	Roof Top Air Handling Unit	T.C.	Towel Cabinet	V.B.	Vacuum Breaker/ Vapor Barrier/ Vinyl Base
A.P.	Access Panel	C.H.	Coat Hook	D.T.	Double Tee/DrainTile	FLR	Floor	HTR	Heater	MKBD	Markerboard	PLWD	Plywood			TELE	Telphone		
APPROX	Approximate	C.I.	Cast Iron	DW	Dishwasher	FND	Foundation	H & V	Heating & Ventilating	MIN	Minimum	PNL	Panel	RUB	Rubber	TEMP	Temperature/Temporary		
ARCH	Architectural	C.J.	Control Joint	DWL	Dowel	FP	Fire Proofing	H.W.	Hot Water	MISC	Miscellaneous	PNT	Paint	R.V.	Relief Vent	TER	Terrazzo	V.C.P.	Vitrified Clay Pipe
ASPH	Asphalt	CL	Center Line			FR	Frame			M.L.	Metal Lath	POL	Polish(ed)			TERM	Terminal	V.C.T.	Vinyl Composition Tile
A.T.C.	Automatic Temp Control	CLG	Ceiling			F.R.	Fire Rated	I.D.	Inside Diameter	M.O.	Masonry Opening	PORT	Portland	S	Sink/Sewer/South	T & G	Tongue & Groove	VENT	Ventilate(r)(ing)
		CLR	Clear	E	East	FREQ	Frequency	I.J.	Isolation Joint	MON	Monument	P.P.G.	Polished Plate Glass	S.A.	Stud Anchor/Supply Air	T.H.	Towel Hook	VERT	Vertical
B.B	Bond Beam	CLT or CLO	Closet	EA	Each	F.S.	Floor Sink	INSUL	Insulation/Insulated	MTD	Mounted	PR	Pair	SAN	Sanitary	THK	Thick	VOL	Volume
BD	Board/Bead	C.M.P.	Corrugated Metal Pipe	E.A.	Exhaust Air	FT	Foot/Feet	INT	Interior/Internal	MTL	Metal	PRV	Pressure Relief Valve(Vent)	S.B.	Soil Boring/Splash Block	THLD	Threshold	V.ST.	Vent Stack
BDY	Boundary	CMU	Concrete Masonry Unit	E.B.	Erection Bolt	F.T./F.R.T.	Fire-Retardent-Treated	INV	Invert	MULL	Mullion	PT	Point	SCHED	Schedule	T.O.	Top of	V.T.R.	Vent Thru Roof
B.F.	Both Faces	C.O.	Clean Out	E.C.	Electrical Contractor	FTG	Footing					P.V.	Plumbing Vent	S.D.	See Detail	T.O.B.	Top of Beam	VWC	Vinyl Wall Covering
BIT	Bituminous	COL	Column	E.F.	Each Face/Exhaust Fan	FUR	Furring	JAN	Janitor	#	Number/Pound	P.V.C.	Polyvinyl Chloride	SECT	Section	T.O.F.	Top of Footing	V.W.F.	Vinyl Wall Fabric
BLDG	Building	COMP	Composition	E.J.	Expansion Joint	F.W.	Fire Wall	JST	Joist	N	North	PVMT	Pavement	S.F.	Square Foot	T.O.FLR.	Top of Floor		
BLK	Block	CONC	Concrete	EL	Elevation	G	Gas	JT	Joint	N.I.C.	Not in Contract	PWR	Power	S.F.P.	Sand Float Plaster	TOIL	Toilet	W	Wide/West/Women
BLKG	Blocking	CONST	Construction	ELEC	Electrical	GA	Gauge			NOM	Nominal			SGL	Single	T.O.J.	Top of Joist	W/	Width/With
BLT.	Bolt	CONT	Continuous	ELEV	Elevator	GAL	Gallon	KV	Kilovolt	N.T.S.	Not to Scale	Q.T.	Quarry Tile	S.G.T.	Structural Glazed Tile	TOPO	Topographical	W.C.	Water Closet
BM	Beam	CONTR	Contractor	EMER	Emergency	GALV	Galvanized	KW	Kilowatt			QTR	Quarter	SHR	Shower	T.O.S.	Top of Steel	WD	Wood
B.M.	Bench Mark	CONV	Convector	ENT	Entrance	G.B.	Grab Bar							SHT	Sheet	T.P.	Toilet Partition	WDW	Window
B.O.	By Others	COR	Corner	E.P.	Electrical Panel	G.C.	General Contractor	LAV/L	Lavatory	O.A.	Outside Air	R	Riser/Radius	SIM	Similar	T.P.H.	Toilet Paper Holder	W.F.	Wash Fountain
BOT	Bottom	CORR	Corridor	E.P.S.	Expanded Polystyrene	G.C.O.	Ground Cleanout	L.H.	Left Hand	O.A.L.	Overall Length	R.A.	Return Air	S.J.	Steel Joist	T.P.P.	Thermal Plastic Piping	W.H.	Wall Hydrant
BRG	Bearing	C.P.	Cement Plaster/ Chrome Plated	EQUIP	Equipment	GEN	General	LKR	Locker	OBS	Obscure	RAD	Radiation	SPECS	Specifications	TR	Tread	W.I.	Wrought Iron
BRK	Brick	CPT	Carpet	E.W.	Each Way	GL	Glass	L.L.H.	Long Leg Horizontal	O.C.	On Center	R.A.F.	Return Air Fan	SPK	Speaker	TRANS	Transverse	W/O	Without
BRKT	Bracket	CSG	Casing	E.W.C.	Electric Water Cooler	G.N.	Gooseneck	L.L.V.	Long Leg Vertical	O.D.	Outside Diameter	R.A.G.	Return Air Grille	SPR	Sprinkler	TRANSF	Transformer	W.P.	Waterproofing/ Whirlpool/ Weatherproof
BSMT	Basement	C.T.	Ceramic Tile	EXC	Excavate	GND	Ground	LOC	Location	O.F.	Outside Face	R.C.	Remote Control	SQ	Square	TUB	Tubular		
BTWN	Between	CTR	Counter/Center	EXH	Exhaust	GR	Grille	LONG.	Longitudinal	OFCI	Owner Furnished Contractor Installed	R.C.P.	Reinforced Concrete Pipe	S.S.	Stainless Steel/ Service Sink	TYP	Typical	WSCT	Wainscot
B.U.R.	Built-Up Roofing	CTSK	Countersink	EXIST	Existing	G.W.B.	Gypsum Wall Board	L.P.	Low Pressure	OFOI	Owner Furnished Owner Installed	RD/ø	Round	ST.	Storm	TV	Television	W.ST.	Waste Stack
		C.U.H.	Cabinet Unit Heater	EXP	Expansion	GYP	Gypsum	L.S.J.	Long Span Joist			R.D.	Roof Drain	STA	Station			W & V	Waste & Vent
		CUST	Custodian	EXTR	Exterior			L.T.	Laundry Tray			REC	Recessed	STAG	Staggered			W.W.F.	Welded Wire Fabric
		C.W.	Cold Water					LT	Light			REF	Refrigerator	STD	Standard				
		C.Y.	Cubic Yard					L.W.C.	Lightweight Contrete			REINF	Reinforcing					YD	Yard
												REM	Remove						

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FOSS ARCHITECTURE +INTERIORS
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I HERBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.

SIGNATURE:

REGISTRATION NAME:
BENJAMIN M. MENNE

ND REGISTRATION NO.: 2741

U.S. AIR FORCE

Symbol	Description	Date	Approved

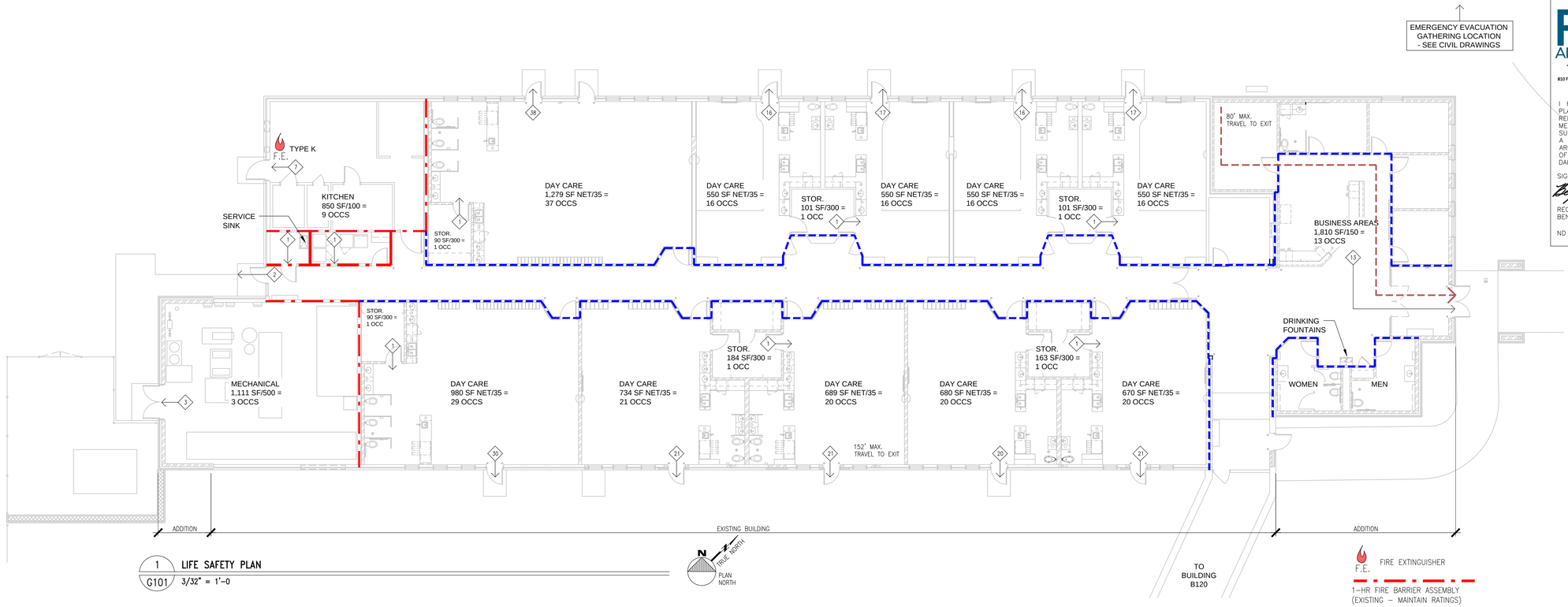
DESIGNED BY: BMM
DWN BY: BMM
CHK BY: RAA
SUBMITTED BY: BMM
DATE: 22 APRIL 2022
PLOT DATE: AS SHOWN
PLOT SCALE: AS SHOWN
DRAWING NUMBER: AS SHOWN

DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND
GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

TITLE SHEET

SHEET REFERENCE NUMBER
G-001



1 G101 LIFE SAFETY PLAN
3/32" = 1'-0

CODE INFORMATION

APPLICABLE BUILDING CODES

BUILDING CODE:

UFC 1-200-01 / 2018 INTERNATIONAL BUILDING CODE (IBC)
UFC 3-410-01 / 2018 INTERNATIONAL MECHANICAL CODE (IMC)
UFC 3-420-01 / 2018 INTERNATIONAL PLUMBING CODE (IPC)
UFC 3-600-1 / 2018 INTERNATIONAL FIRE CODE (IFC)
NFPA 54 & NFPA 58 / 2018 INTERNATIONAL FUEL GAS CODE (IFGC)
UFC 1-200-02 / 2018 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
UFC 3-501-01 / NFPA 70 / NATIONAL ELECTRIC CODE
UFC 3-530-01 DESIGN: INTERIOR AND EXTERIOR LIGHTING AND CONTROLS
NFPA 101 LIFE SAFETY CODE
UFC 4-021-01 MASS NOTIFICATION SYSTEMS
FC 4-740-14F FACILITIES CRITERIA DESIGN: AIR FORCE CHILD DEVELOPMENT CENTERS
ARCHITECTURAL BARRIERS AT ACCESSIBILITY GUIDELINES (ABAAG)
AFSA 1-10-10 DESIGN REQUIREMENTS FOR A CHILD DEVELOPMENT CENTER
AFMAN 32-1084 FACILITY REQUIREMENT STANDARDS
UFC 3-120-01 DESIGN: SIGN STANDARDS
UFC 3-120-10 INTERIOR DESIGN
UFC 4-010-01 DOD MINIMUM ANTITERRORISM STANDARDS FOR BUILDINGS
ETL 04-03 DESIGN CRITERIA FOR PREVENTION OF MOLD IN AIR FORCE FACILITIES
ETL 07-4 AIR FORCE CARPET STANDARD
AIR FORCE CORPORATE FACILITIES STANDARDS (AFCFS)

PROJECT INFORMATION

A. PROJECT TITLE:
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168
ADDRESS:
B168 – GRAND FORKS AIR FORCE BASE, NORTH DAKOTA

PROJECT DESCRIPTION:
PROJECT CONSISTS OF A NEW OFFICE/ENTRY ADDITION, MECHANICAL ROOM ADDITION AND RENOVATION OF EXISTING CHILD DEVELOPMENT CENTER

B. TYPE OF CONSTRUCTION
II-B

C. OCCUPANCY:
INSTITUTIONAL GROUP I-4, DAY CARE FACILITIES

D. GROSS SQUARE FEET:
13,633 SF EXISTING
2,518 SF ADDITION
16,151 SF TOTAL

HEIGHT OF BUILDING:
HEIGHT 23'-6"
STORIES 1

E. OCCUPANT LOAD:
MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT (NFPA 101 TABLE 7.3.1.2)
SEE LIFE SAFETY PLANS ABOVE FOR OCCUPANT INFORMATION (NOTE THAT OCCUPANT FIGURES ARE ROUNDED UP ON LIFE SAFETY PLAN)

TOTAL = 242 OCCUPANTS

GENERAL BUILDING HEIGHT AND AREA LIMITATIONS (IBC CHAPT. 5)

CONSTRUCTION TYPE: II-B SPRINKLERED BUILDING: YES
ALLOWABLE BUILDING HEIGHT IN FEET ABOVE GRADE PLANE (TABLE 504.3): 75 FEET
ALLOWABLE NUMBER OF STORIES ABOVE GRADE PLANE (TABLE 504.4): 3 STORIES

BASE ALLOWABLE BUILDING AREA PER FLOOR FOR SINGLE-STORY BUILDING WITH AUTOMATIC SPRINKLERED SYSTEM (TABLE 506.2): 52,000 SF

PROPOSED BUILDING AREA: 16,151 SF
PROPOSED BUILDING AREA DOES NOT EXCEED TABULAR ALLOWABLE BUILDING AREA – AREA INCREASE DUE TO FRONTAGE NOT CALCULATED

RATING REQUIREMENTS (IBC CHAPT. 6)

BUILDING ELEMENT	TYPE II-B
STRUCTURAL FRAME	0 HR.
BEARING WALLS – EXTERIOR (FIRE SEPARATION DISTANCE GREATER THAN 10FT)	0 HR.
BEARING WALLS – INTERIOR	0 HR.
NONBEARING WALLS – EXTERIOR (FIRE SEPARATION DISTANCE GREATER THAN 10FT)	0 HR.
NONBEARING PARTITIONS – INTERIOR	0 HR.
FLOORS AND FLOOR CEILINGS	0 HR.
ROOFS AND ROOF CEILINGS	0 HR.

INTERIOR FINISHES (NFPA 101 CHAPT. 10)

INTERIOR FINISH SHALL APPLY PER CHAPTER 16 (10.2.2.1)
INTERIOR WALL AND CEILING FINISH (16.3.3.2)
CORRIDORS & LOBBIES: CLASS A
ALL OTHER OCCUPIED AREAS: CLASS A OR CLASS B
INTERIOR FLOOR FINISH (16.3.3.3)
EXIT ACCESS CORRIDORS AND SPACES NOT SEPARATED FROM THEM BY WALLS: NOT LESS THAN CLASS II.

FIRE PROTECTION INFORMATION

FIRE SAFETY SYSTEM — TYPE:
AUTOMATIC FIRE SPRINKLER SYSTEM — NFPA 13
FIRE ALARM SYSTEM
SMOKE & CO DETECTION SYSTEM

PORTABLE FIRE EXTINGUISHERS
PORTABLE FIRE EXTINGUISHERS PER NFPA 101 – PROVIDE TYPE K FIRE EXTINGUISHER @ KITCHEN

FC 4-740-14F STATES TO PROVIDE PORTABLE FIRE EXTINGUISHERS PER UFC 3-600-01, WHICH REFERENCES TO PROVIDE WHERE REQUIRED PER NFPA 101. NFPA 101 ONLY REQUIRES PORTABLE FIRE EXTINGUISHER PROTECTION IN THE COMMERCIAL KITCHEN SPACE WITH A CLASS K FIRE EXTINGUISHER PER NFPA 96

MEANS OF EGRESS (NFPA 101 CHAPT. 7 & 16)

MAXIMUM FLOOR AREA ALLOWANCES PER OCC. (TABLE 7.3.1.2):	SEE LIFE SAFETY PLANS
COMMON PATH OF EGRESS TRAVEL (16.2.5.3.1):	100' MAX. – SPINKLERED
MINIMUM DOOR CLEAR WIDTH (7.2.1.2.3.1):	32" MIN.
EXIT ACCESS TRAVEL DISTANCE (16.2.6.2 & 16.2.6.3):	150' MAX. FROM ANY ROOM EXIT ACCESS DOOR TO AN EXIT 200' MAX. FROM ANY POINT IN A ROOM TO AN EXIT
CORRIDOR FIRE RATINGS (16.3.6):	0 (ZERO) HOURS IN SUPERVISED SPRINKLERED BUILDING WALLS TO BE CONSTRUCTED AS SMOKE PARTITIONS

INTERIOR ENVIRONMENT (CHAPT. 12)

TOILET AND BATHROOM REQUIREMENTS (SECT. 1210):
RESTROOM FLOOR FINISH MATERIAL SHALL HAVE A SMOOTH, HARD, NONABSORBENT SURFACE – INTERSECTION OF FLOOR WITH WALL SHALL HAVE A SMOOTH, HARD, NONABSORBENT VERTICAL BASE THAT EXTENDS UPWARDS FOR NOT LESS THAN 4 INCHES. WALLS AND PARTITIONS WITHIN 2 FEET OF SERVICE SINKS, URINALS AND WATER CLOSETS SHALL HAVE A SMOOTH, HARD, NONABSORBENT SURFACE TO A HEIGHT OF NOT LESS THAN 4 FEET ABOVE THE FLOOR.

PLUMBING CALCULATIONS - TABLE 2902.1

AREA/OCCUPANCY	OCCUPANCY LOAD TOTAL	OCCUPANCY LOAD MEN	OCCUPANCY LOAD WOMEN	REQUIRED: WATER CLOSETS	REQUIRED: LAVATORIES	REQUIRED: BATHTUB OR SHOWER	REQUIRED: DRINKING FOUNTAIN	REQUIRED: SERVICE SINK	PROVIDED: CHILD UNI-SEX WC	PROVIDED: CHILD UNI-SEX LAV	PROVIDED: ADULT UNI-SEX WC	PROVIDED: ADULT UNI-SEX LAV	PROVIDED: WOMEN WC	PROVIDED: WOMEN LAV	PROVIDED: BATHTUB OR SHOWER	PROVIDED: DRINKING FOUNTAIN	PROVIDED: SERVICE SINK
INSTITUTIONAL – CHILD DAY CARE	242	121	121	17	17	1	3	1	11	15	2	1	2	1	0	2	1
BUILDING TOTALS									11*	15	2	1	2	2	0	2**	1

PLUMBING RATIOS:

INSTITUTIONAL – CHILD DAY CARE
WATER CLOSETS: 1 PER 15
LAVATORIES: 1 PER 15
BATHTUBS OR SHOWERS: 1 PER BUILDING
DRINKING FOUNTAIN: 1 PER 100
SERVICE SINK: 1 PER BUILDING

* NOTE: FACILITY IS NOT IN COMPLIANCE WITH THE CALCULATED NUMBER OF WATER CLOSET FIXTURES REQUIRED. REQUEST THAT AHJ APPROVES PROJECT AS DESIGNED CONSIDERING THE FOLLOWING JUSTIFICATIONS:
– 6 LOCATIONS ARE PLUMBED & CAPPED FOR FUTURE WATER CLOSET INSTALLATION IF NEEDED AT INFANT/PRE-TODDLER CHILD ACTIVITY ROOMS
– A SIGNIFICANT PORTION OF THE BUILDING OCCUPANTS ARE OF AN AGE WHERE WATER CLOSET FIXTURES ARE NOT UTILIZED

** STAFF MEMBERS CAN GIVE ACCESS TO DRINKING WATER @ FOOD PREP SINKS & BOTTLE FILLING FAUCETS IN EACH CHILD ACTIVITY ROOM

–GFAFB IS NOT REQUIRING A BATHTUB OR SHOWER TO BE PROVIDED AT THIS DAYCARE FACILITY

FOSS ARCHITECTURE +INTERIORS
810 First Avenue North | Fargo, North Dakota 58102
701.282.5505 | fossarch.com

I HERBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.

SIGNATURE:

REGISTRATION NAME:
BENJAMIN M. MENNE

ND REGISTRATION NO.: 2741

U.S. AIR FORCE

Symbol	Description	Date	Approved

DESIGNED BY: BMM
DRN BY: BMM
CHK BY: RAA
DATE: 22 APRIL 2022
SUBMITTED BY: BMM
PLOT DATE: AS SHOWN
PLOT SCALE: AS SHOWN
DRAWING NUMBER: AS SHOWN

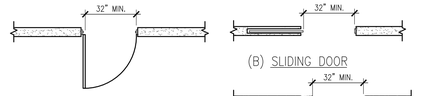
DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND

GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

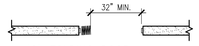
CODE INFORMATION & LIFE SAFETY PLAN

SHEET REFERENCE NUMBER
G-101



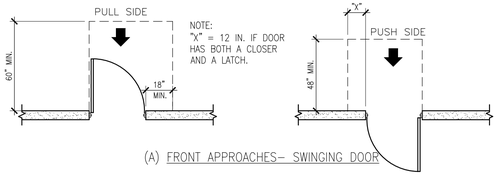
(A) HINGED DOOR

(B) SLIDING DOOR

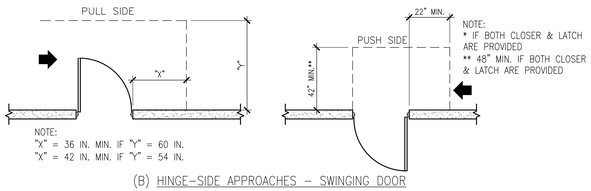


(C) FOLDING DOOR

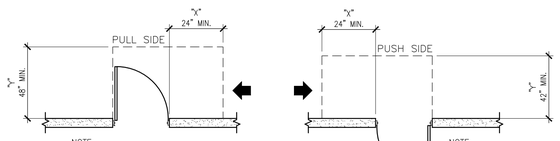
CLEAR DOORWAY WIDTH AND DEPTH



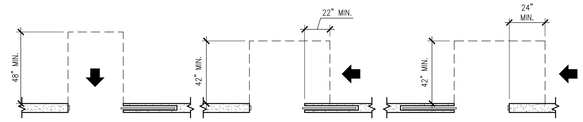
(A) FRONT APPROACHES– SWINGING DOOR



(B) HINGE–SIDE APPROACHES – SWINGING DOOR



(C) LATCH–SIDE APPROACHES – SWINGING DOOR



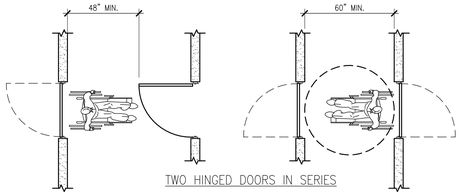
(D) FRONT APPROACHES– SLIDING AND FOLDING DOORS

(E) SLIDING SIDE APPROACHES– SLIDING AND FOLDING DOORS

(E) LATCH SIDE APPROACHES– SLIDING AND FOLDING DOORS

NOTE:
ALL DOORS IN ALCOVES SHALL COMPLY WITH THE CLEARANCES FOR FRONT APPROACHES.

MANEUVERING CLEARANCES AT DOORS



TWO HINGED DOORS IN SERIES

FLOOR OR GROUND SURFACE WITHIN THE REQUIRED MANEUVERING SPACES SHALL HAVE A SLOPE NOT STEEPER THAN 1:48 AND SHALL BE CLEAR.

THRESHOLDS, IF PROVIDED, AT DOORWAYS SHALL BE 1/2 IN. (13 M.M.) HIGH MAXIMUM.

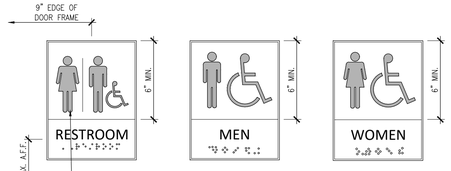
HANDLES, PULLS, LATCHES, LOCKS, AND OTHER OPERABLE PARTS ON ACCESSIBLE DOORS SHALL HAVE A SHAPE THAT IS EASY TO GRASP WITH ONE HAND AND DOES NOT REQUIRE TIGHT GRASPING, TIGHT PINCHING, OR TWISTING OF THE WRIST TO OPERATE. WHEN SLIDING DOORS ARE IN THE FULLY OPEN POSITION, OPERATING HARDWARE SHALL BE EXPOSED AND USABLE FROM BOTH SIDES.

DOOR CLOSURES SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 90 DEGREES, THE TIME REQUIRED TO MOVE THE DOOR TO AN OPEN POSITION OF 12 DEGREES WILL BE 5 SECONDS MINIMUM.

FIRE DOORS SHALL HAVE THE MINIMUM OPENING FORCE ALLOWABLE BY THE APPROPRIATE ADMINISTRATIVE AUTHORITY. THE REQUIRED FORCE FOR PUSHING OPEN OR PULLING OPEN DOORS OTHER THAN FIRE DOORS SHALL BE AS FOLLOWS:
– INTERIOR HINGED DOOR: 5.0 LB. (22.2 N.) MAXIMUM
– SLIDING / FOLDING DOOR: 5.0 LB. (22.2. N.) MAXIMUM
THESE FORCES DO NOT APPLY TO THE FORCE REQUIRED TO RETRACT LATCH BOLTS OR DISENGAGE OTHER DEVICES THAT HOLD THE DOOR IN A CLOSED POSITION.

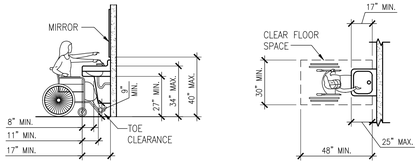
THE BOTTOM 10 IN. (255 M.M.) OF ALL DOORS EXCEPT AUTOMATIC DOORS, POWER ASSISTED DOORS, AND SLIDING DOORS SHALL HAVE A SMOOTH UNINTERRUPTED SURFACE TO ALLOW THE DOOR TO BE OPENED BY A WHEELCHAIR FOOTREST WITHOUT CREATING A TRAP OR HAZARDOUS CONDITION. DOOR SURFACES WITHIN 10 INCHES OF THE FLOOR, MEASURED VERTICALLY, SHALL BE A SMOOTH SURFACE ON THE PUSH SIDE EXTENDING THE FULL WIDTH OF THE DOOR. PARTS CREATING HORIZONTAL OR VERTICAL JOINTS IN SUCH SURFACE SHALL BE WITHIN 1/16" (1.6 M.M.) OF THE SAME PLANE AS THE OTHER. CAVITIES CREATED BY ADDED KICK PLATES SHALL BE CAPPED.

DOORS
N.T.S.



PROVIDE ONE SIGN PER ACCESSIBLE RESTROOM, SIGN TO HAVE RAISED & BRAILLE CHARACTERS AND PICTORIAL SYMBOL OF ACCESSIBILITY. MOUNT 60" TO CENTERLINE A.F.F. NOTE – EMBLEMS & LETTERING MUST BE RAISED OR DEPRESSED MIN. 1/32" TYPICAL.

COMMUNICATION ELEMENTS & FEATURES
N.T.S.

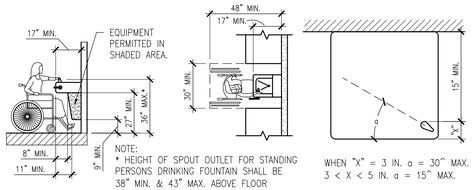


LEG CLEARANCE SPACE AT LAVATORIES & SINKS

CLEAR FLOOR SPACE AT LAVATORIES AND SINKS

WATER SUPPLY AND DRAIN PIPES UNDER LAVATORIES OR SINKS SHALL BE INSULATED OR OTHERWISE CONFIGURED TO PROTECT AGAINST CONTACT. THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER LAVATORIES AND SINKS.

LAVATORIES AND SINKS
N.T.S.



(A) SPOUT HEIGHT AND LEG CLEARANCE

CANTILEVERED DRINKING FOUNTAINS AND WATER COOLERS

WHEN "X" = 3 IN. α = 30° MAX.
3 < X < 5 IN. α = 15° MAX.

(B) CLEAR FLOOR SPACE

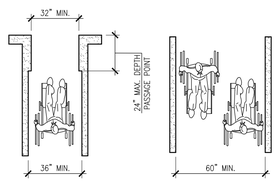
HORIZONTAL ANGLE OF WATER STREAM PLAN VIEW

SPOUTS OF CANTILEVERED DRINKING FOUNTAINS AND WATER COOLERS WITH KNEE AND TOE CLEARANCES, SHALL BE LOCATED 15 IN. (380 M.M.) MINIMUM FROM THE VERTICAL SUPPORT AND 5 IN. (125 M.M.) MAXIMUM FROM THE FRONT EDGE.

SPOUTS SHALL PROVIDE A FLOW OF WATER 4 IN. (100 M.M.) HIGH MINIMUM. RELATIVE TO THE FRONT FACE OF THE UNIT, THE ANGLE OF THE WATER STREAM FROM SPOUTS LOCATED WITHIN 3 IN. (75 M.M.) OF THE FRONT OF THE UNIT SHALL BE 30 DEGREES MAXIMUM AND SPOUTS LOCATED BETWEEN 3 IN. AND 5 IN. (75 M.M. AND 125 M.M.) FROM THE FRONT SHALL BE 15 DEGREES MAXIMUM.

OPERABLE PARTS SHALL BE LOCATED AT OR NEAR THE FRONT EDGE OF THE FOUNTAIN OR WATER COOLER.

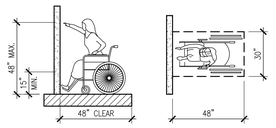
DRINKING FOUNTAINS AND WATER COOLERS
N.T.S.



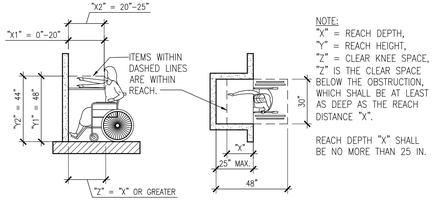
SINGLE WHEELCHAIR

TWO WHEELCHAIRS

WHEELCHAIR PASSAGE WIDTH
N.T.S.

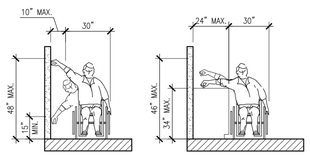


UNOBSTRUCTED FORWARD REACH LIMIT

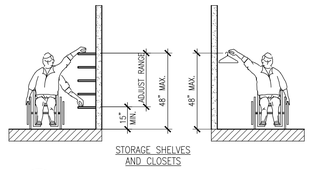


FORWARD REACH OVER AN OBSTRUCTION

FORWARD REACH
N.T.S.

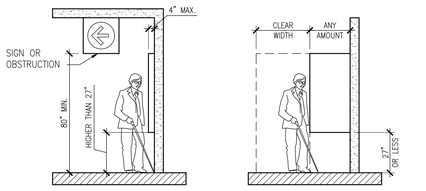


SIDE REACH
N.T.S.

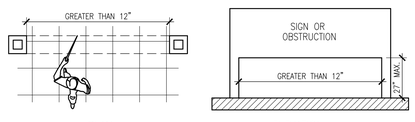


STORAGE SHELVES AND CLOSETS

STORAGE
N.T.S.



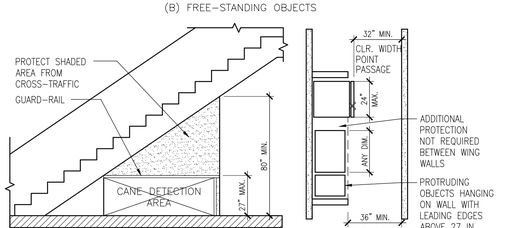
(A) WALKING PARALLEL TO WALL



PLAN

ELEVATION

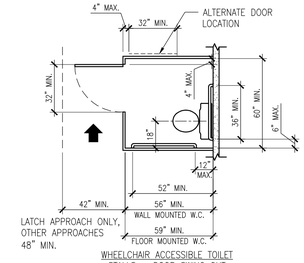
(B) FREE–STANDING OBJECTS



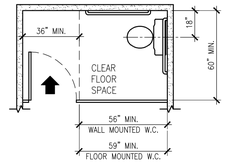
(C) OVERHANG HAZARDS

(D) EXAMPLE OF PROTECTION AROUND WALL MOUNTED OBJECTS AND MEASUREMENTS OF CLEAR WIDTH

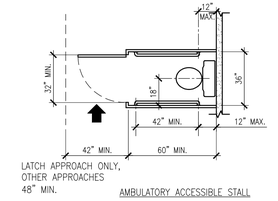
PROTRUDING OBJECTS
N.T.S.



WHEELCHAIR ACCESSIBLE TOILET STALLS – DOOR SWING OUT



WHEELCHAIR ACCESSIBLE TOILET STALLS – DOOR SWING IN



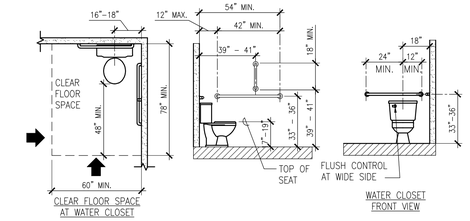
AMBULATORY ACCESSIBLE STALL

IF THE DOOR SWINGS INTO THE STALL, THE REQUIRED DEPTH SHALL BE INCREASED BY 36 IN. (915 M.M.) MINIMUM.

IN WHEELCHAIR ACCESSIBLE STALLS, THE FRONT PARTITION AND AT LEAST ONE SIDE PARTITION SHALL PROVIDE A TOE CLEARANCE OF 9 IN. (230 M.M.) MINIMUM ABOVE THE FLOOR. TOE CLEARANCE IS NOT REQUIRED IN STALLS GREATER THAN 60 IN. (1525 M.M.) DEEP.

IF THE APPROACH IS TO THE LATCH SIDE OF THE STALL DOOR, THE CLEARANCE BETWEEN THE DOOR SIDE OF THE STALL AND ANY OBSTRUCTION SHALL BE 42 IN. (1065 M.M.) MINIMUM. THE DOOR SHALL BE HINGED 4 IN. (100 M.M.) MAXIMUM FROM THE PARTITION FARTHEST FROM THE WATER CLOSET. A HANDLE SHALL BE PLACED ON THE INNER SIDE OF THE DOOR NEAR THE PIVOT POINT OR SELF–CLOSING HINGES SHALL BE PROVIDED.

TOILET STALLS
N.T.S.



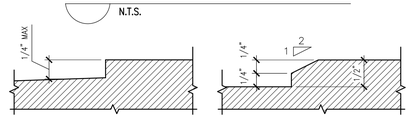
CLEAR FLOOR SPACE AT WATER CLOSET

WATER CLOSET FRONT VIEW

WATER CLOSETS SHALL BE MOUNTED ADJACENT TO A SIDE WALL OR PARTITION. THE DISTANCE FROM THE SIDE WALL OR PARTITION TO THE CENTERLINE OF THE WATER CLOSET SHALL BE 16 IN. (405 M.M.) – 18 IN. (455 M.M.).

FLUSH CONTROLS SHALL BE HAND OPERATED OR AUTOMATIC. SHALL BE MOUNTED 44 IN. (1120 M.M.) MAXIMUM ABOVE THE FLOOR ON THE WIDE SIDE OF THE TOILET STALL.

WATER CLOSETS
N.T.S.



(A) VERTICAL CHANGES IN LEVEL

(B) BEVELED CHANGES IN LEVEL

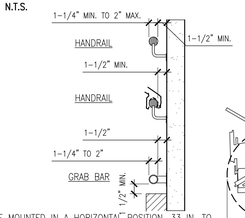
CHANGES IN LEVEL

CHANGES IN LEVEL GREATER THAN 1/2 IN. (13 M.M.) SHALL BE ACCOMPLISHED BY A RAMP

CARPET OR CARPET TILE SHALL BE SECURELY ATTACHED AND SHALL HAVE A FIRM CUSHION, PAD, OR BACKING OR NO CUSHION OR PAD. CARPET OR CARPET TILE SHALL HAVE A LEVEL LOOP, TEXTURED LOOP, LEVEL CUT PILE, OR LEVEL CUT/UNCUT PILE TEXTURE. THE PILE SHALL BE 1/2 INCH MAXIMUM IN HEIGHT. EXPOSED EDGES OF CARPET SHALL BE FASTENED TO THE FLOOR AND SHALL HAVE TRIM ALONG THE ENTIRE LENGTH OF THE EXPOSED EDGE.

OPENINGS IN FLOOR SURFACES SHALL BE OF A SIZE THAT DOES NOT PERMIT THE PASSAGE OF A 1/2 INCH DIAMETER SPHERE. ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

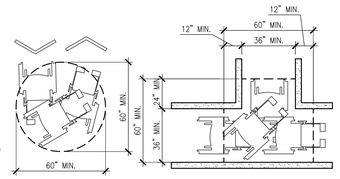
CHANGES IN LEVEL
N.T.S.



ADULT GRAB BARS SHALL BE MOUNTED IN A HORIZONTAL POSITION, 33 IN. TO 36 IN. (840 M.M. TO 915 M.M.) ABOVE THE FLOOR EXCEPT WHERE A SUPPLEMENTAL GRAB BAR IS INSTALLED IN RELATION TO A FIXTURE RIM OR SURFACE.

ALLOWABLE STRESSES IN BENDING, SHEAR AND TENSION SHALL NOT BE EXCEEDED FOR MATERIALS USED WHEN A VERTICAL OR HORIZONTAL FORCE OF ~~250 LB. (1112 N)~~ (350 LB. PER CDC REQ'S THIS PROJECT) IS APPLIED AT ANY POINT ON THE GRAB BAR, SEAT, FASTENER MOUNTING DEVICE OR SUPPORTING STRUCTURE.

HANDRAILS & GRAB BARS
N.T.S.



60" DIAMETER SPACE

T–SHAPED SPACE FOR 180 DEG. TURNS

WHEELCHAIR TURNING SPACE SHALL BE PERMITTED TO INCLUDE KNEE AND TOE CLEARANCE

WHEELCHAIR TURNING SPACE
N.T.S.

FOSS ARCHITECTURE +INTERIORS
810 First Avenue North | Fargo, North Dakota 58102
701.282.5505 | fossarch.com

I HERBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.

SIGNATURE:

REGISTRATION NAME:
BENJAMIN M. MENNE

ND REGISTRATION NO.: 2741

Symbol	Description	Date	Approved

DESIGNED BY: BMM
DWN BY: BMM
CHK BY: RAA
SUBMITTED BY: BMM
DATE: 22 APRIL, 2022
PLOT DATE: AS SHOWN
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DRAWING NUMBER: AS SHOWN

U.S. AIR FORCE

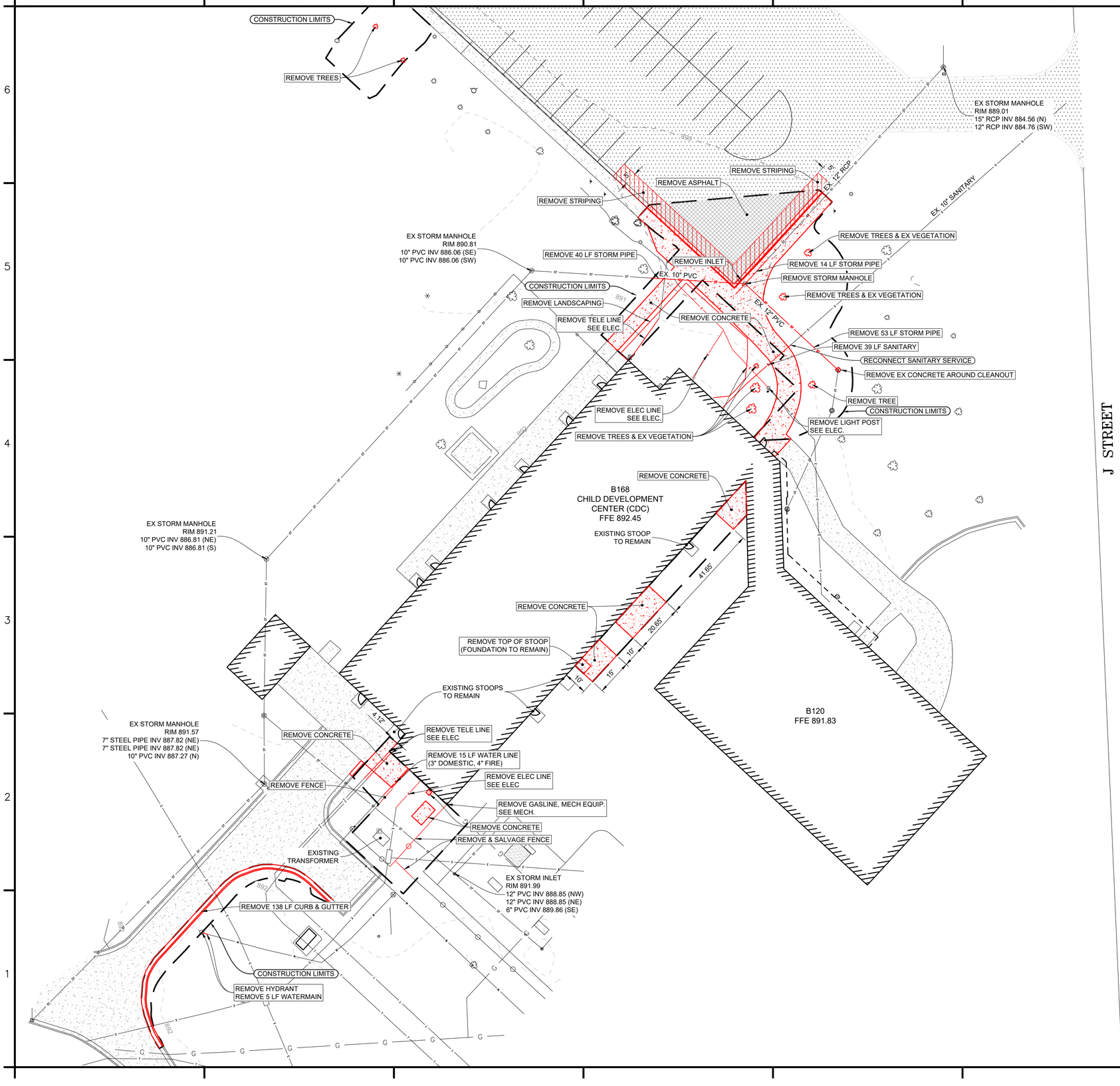
DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND

GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

ACCESSIBILITY DETAILS

SHEET REFERENCE NUMBER
G-102



LEGEND

EXISTING	ITEM	PROPOSED
	FIRE HYDRANT	
	GATE VALVE	
	CURB STOP	
	YARD HYDRANT	
	BEND	
	TEE	
	CROSS	
	REDUCER	
	VERTICAL BEND	
W	WATER MANHOLE	W
	SPRINKLER HEAD	
W	WATER METER	
	CATHODIC TEST STATION	CTS
	TRACER WIRE ACCESS BOX	TW
S	SANITARY MANHOLE	S
FM	SANITARY FORCEMAIN MANHOLE	FM
	SANITARY MANHOLE W. VALVE	
	CLEANOUT	
ST	STORM SEWER MANHOLE	ST
	CURB INLET	
	CATCH BASIN	
	POWER POLE	
	GUY WIRE	
	LIGHT POLE	
	ELECTRICAL PEDESTAL	
E	ELECTRICAL METER	
J	ELECTRICAL JUNCTION (PULL BOX)	
	ELECTRICAL BOX	
	ELECTRICAL OUTLET/PLUG-IN	
E	ELECTRICAL MANHOLE	E
T	TELEPHONE MANHOLE	T
	TELEPHONE PEDESTAL	
	CABLE TV PEDESTAL	
	FIBER OPTIC PEDESTAL	
G	GAS METER	
G	GAS MANHOLE	G
	FUEL DISPENSER	
	UTILITY MARKER	
	GAS VENT PIPE	
	TREES CONIFEROUS/ DECIDUOUS	
	BUSH/SHRUB	
	SIGN	
	CONTROL POINT	
	BENCHMARK	
	PIPE CAP	
	MAIL BOX	
	PROPERTY PIN	
	BIKE RACK	

LEGEND

EXISTING	ITEM	PROPOSED
	ASPHALT EDGE	
	BUILDING CANOPY	
TV	CABLE TV - UNDERGROUND	TV
	CENTERLINE	
	CONSTRUCTION LIMITS	
E(O)	ELECTRICAL - OVERHEAD	E(O)
E	ELECTRICAL - UNDERGROUND	E
x x	FENCE - BARBED WIRE	x x
	FENCE - CHAINLINK	
	FENCE - PLASTIC, VINYL	
	FENCE - WOOD	
	FENCE - WOVEN WIRE	
FO	FIBER - UNDERGROUND	FO
G G	GAS - UNDERGROUND	G
	GRAVEL EDGE	
FM	SANITARY SEWER FORCE MAIN	FM
S	SANITARY SEWER SERVICE LINE	
S	SANITARY SEWER (24" OR LESS)	
S	SANITARY SEWER (24" OR MORE)	
	STORM SEWER EDGEDRAIN	
ST	STORM SEWER (24" OR LESS)	
ST	STORM SEWER (24" OR MORE)	
T(O)	TELEPHONE - OVERHEAD	T(O)
T	TELEPHONE - UNDERGROUND	T
W	WATER SERVICE LINE	
W	WATER MAIN	W

N

20 0 20 40
SCALE NAVD88 FEET

REGISTERED PROFESSIONAL ENGINEER
JEREMY SEWARD
PE-8769
DATE 4/22/22
NORTH DAKOTA

KLJ

U.S. AIR FORCE

Symbol	Description	Date	Approved

DESIGNED BY: JD
DWN BY: ES
CHK BY: SK
DATE: 22 APRIL 2022
SUBMITTED BY: RAA
PLOT DATE: AS SHOWN
PLOT SCALE: AS SHOWN
DRAWING NUMBER: AS SHOWN

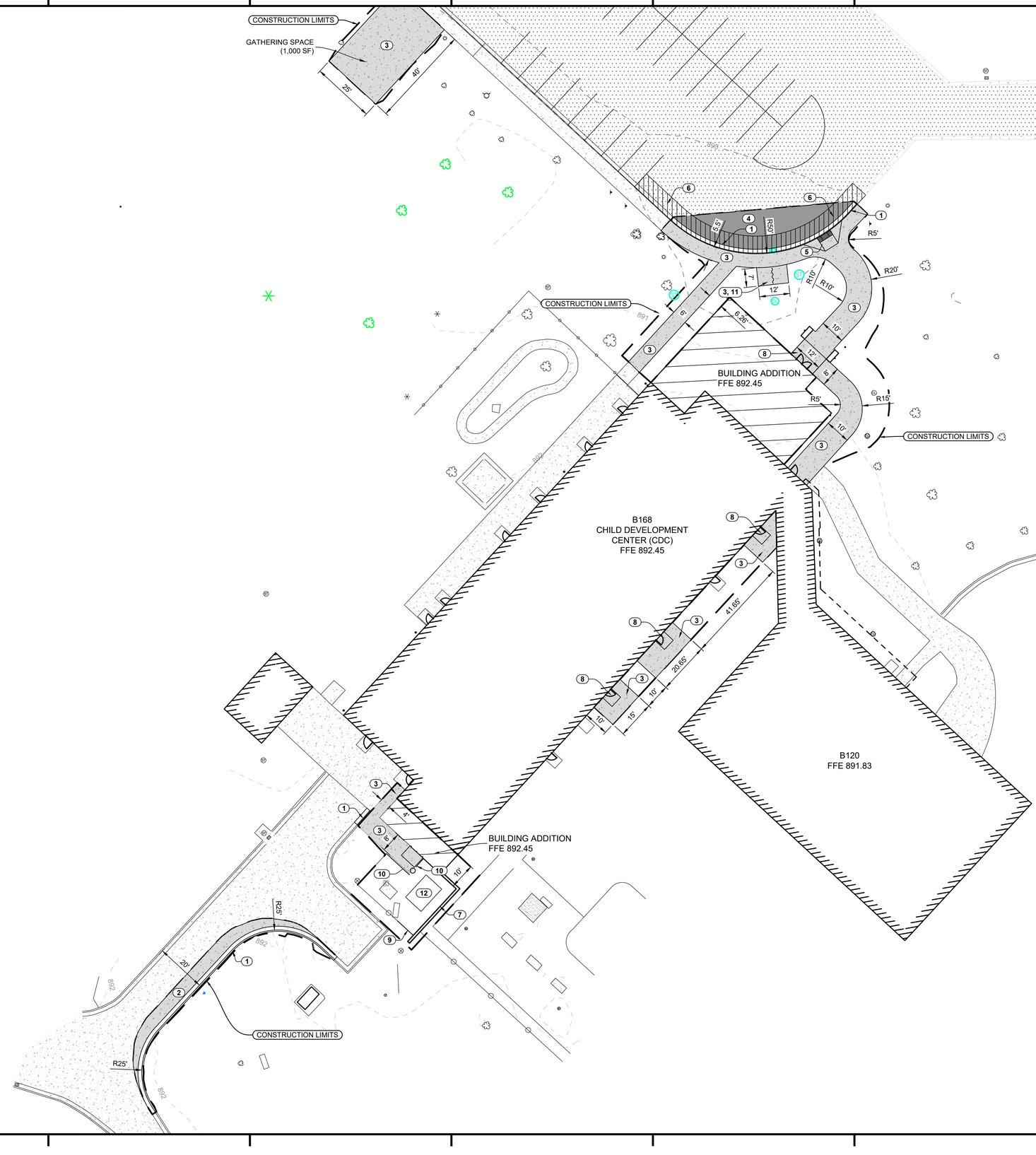
DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND

GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

EXISTING CONDITIONS & REMOVALS

SHEET REFERENCE NUMBER
C-100

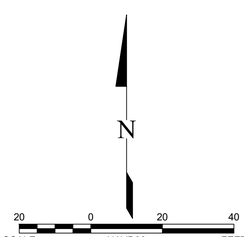


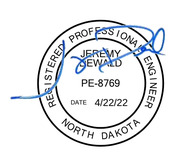
KEY:

1. CURB & GUTTER
2. CONCRETE PAVEMENT
3. CONCRETE SIDEWALK
4. ASPHALT PAVEMENT
5. ADA RAMP
6. PAVEMENT MARKING
7. SCREEN WALL - SEE ARCHITECTURAL
8. CONCRETE STOOP - SEE STRUCTURAL
9. SALVAGED FENCE
10. NEW FENCE - MATCH EXISTING MATERIAL
11. BIKE RACK - SEE NOTE 1
12. CHILLER - SEE MECHANICAL

NOTES:

1. BIKE RACK SHALL BE A WAVE STYLE WITH 5 LOOPS FOR 7 BIKES. MADE FROM 304 STAINLESS STEEL, O.D. OF 1-7/8 " OR APPROVED EQUAL. SURFACE MOUNT BIKE RACK TO CONCRETE SLAB, PER MANUFACTURER'S RECOMMENDATIONS.





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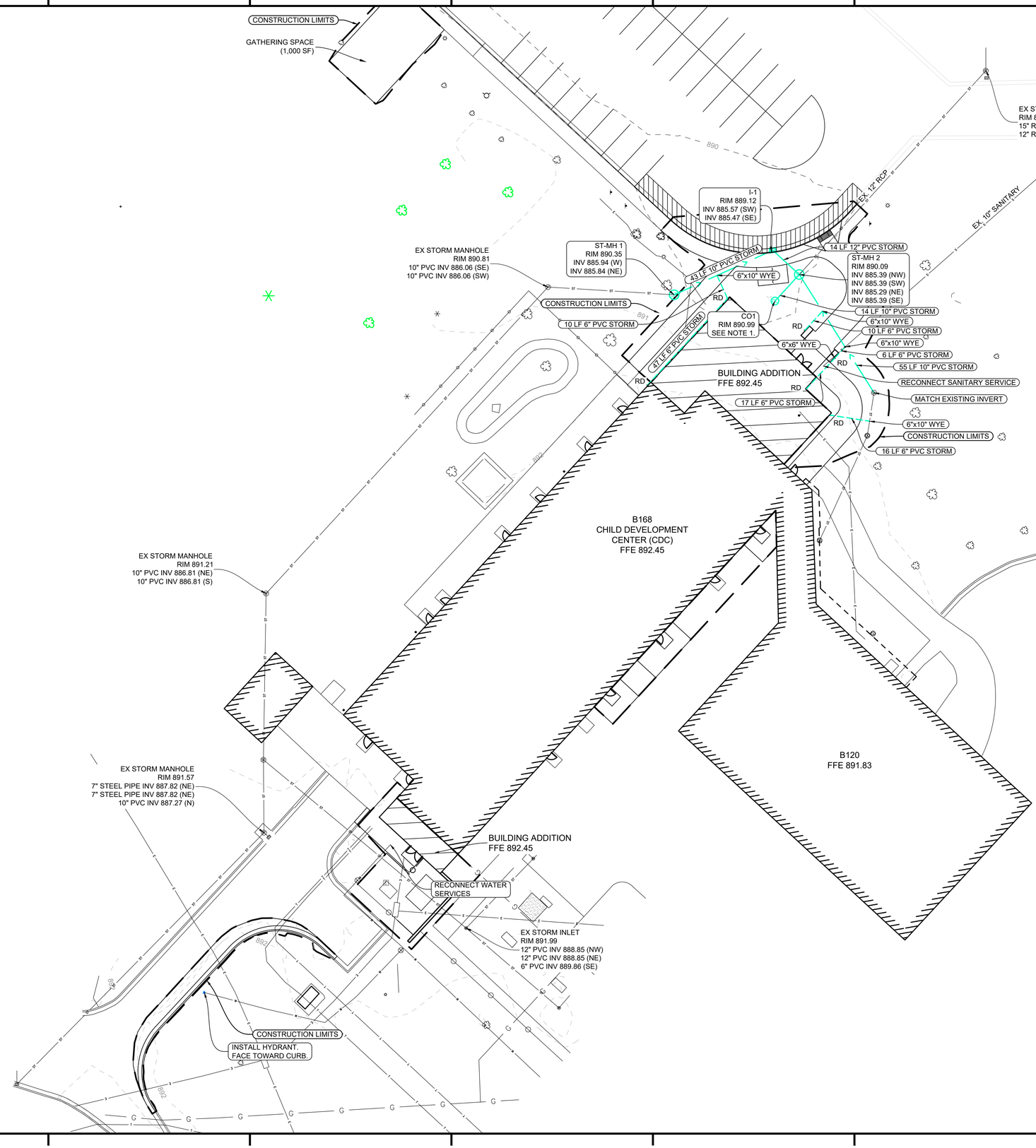
SITE LAYOUT

SHEET REFERENCE NUMBER
C-200



NOTES:

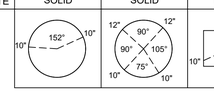
1. VERIFY STORM INVERT WITH MECHANICAL.

ABBREVIATIONS:

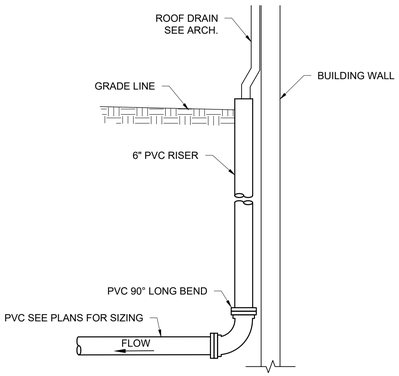
CO	CLEANOUT
INV	INVERT
MH	MANHOLE
RD	ROOFDRAIN
ST	STORM

STRUCTURE SUMMARY TABLE

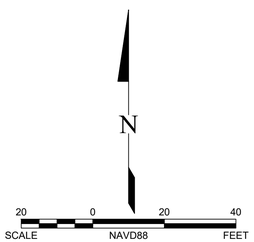
STRUCTURE NO.	STMH-1	STMH-2	I-1
SIZE/TYPE	48" MANHOLE	48" MANHOLE	24"x36" INLET
MANUFACTURER	CONCRETE	CONCRETE	CONCRETE
CASTING - FRAME	NEENAH R-1733	NEENAH R-1733	NEENAH R-3295
CASTING - GRATE	SOLID	SOLID	TYPE C



MODELS AND MANUFACTURES INCLUDED IN CASTING SCHEDULE ARE "OR EQUAL" ITEMS, CONTRACTOR MAY SUBMIT SIMILAR ALTERNATE PRODUCTS FOR REVIEW BY THE ENGINEER.



1 C-300 ROOF DRAIN CONNECTION
NOT TO SCALE



REGISTERED PROFESSIONAL ENGINEER
JEREMY SEWARD
PE-8769
DATE 4/22/22
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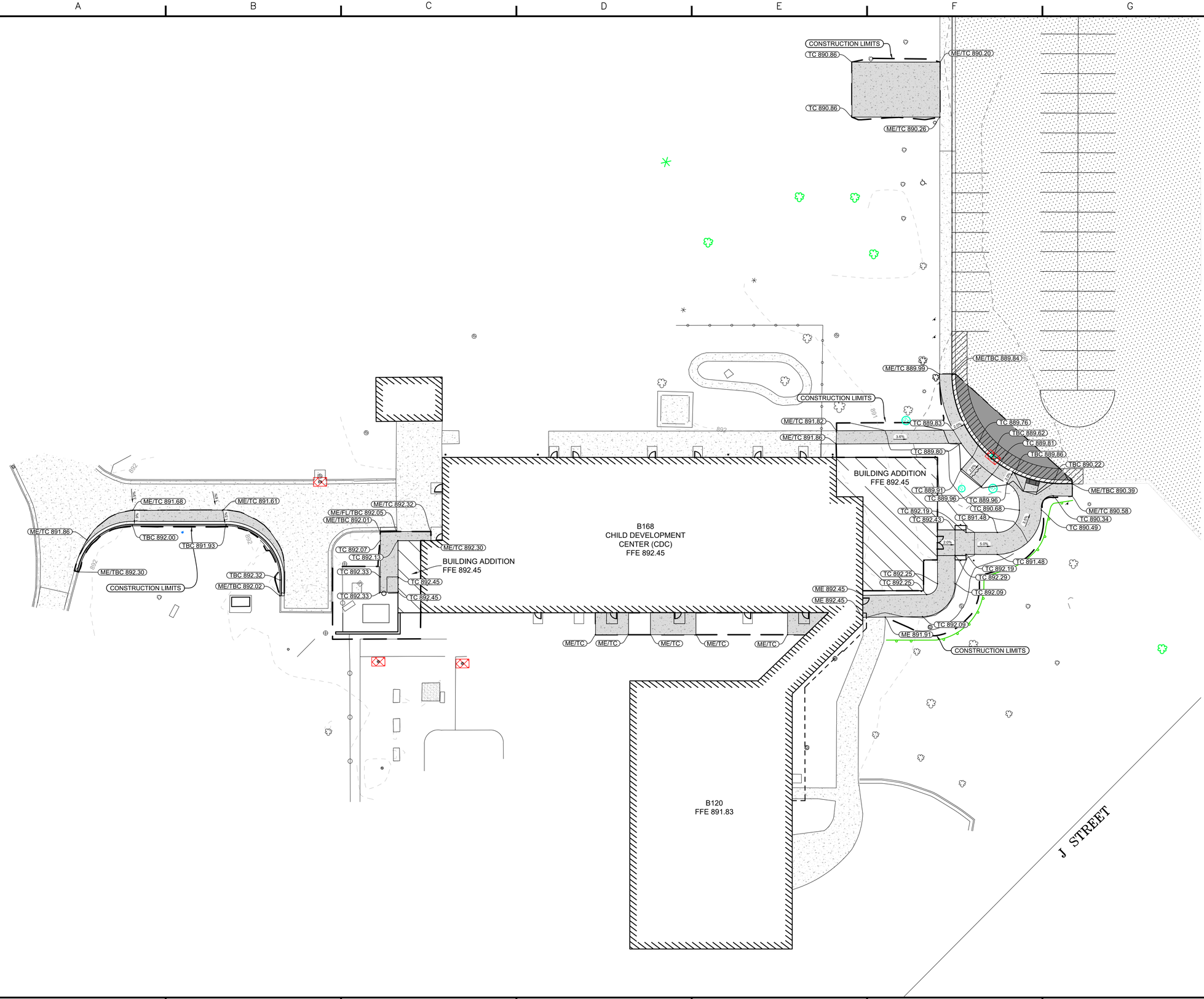
UTILITY LAYOUT

SHEET REFERENCE NUMBER
C-300



LEGEND

STRAW WATTLES/FIBER ROLLS

INLET PROTECTION

KLJ

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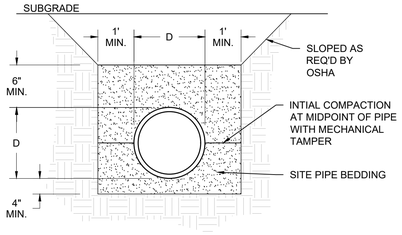
ADD/REPAIR CDC FOR COMPLIANCE &
RECAPITALIZATION B168

GRADING LAYOUT

REGISTERED PROFESSIONAL ENGINEER
JEREMY SEWARD
PE-8769
DATE 4/22/22
NORTH DAKOTA

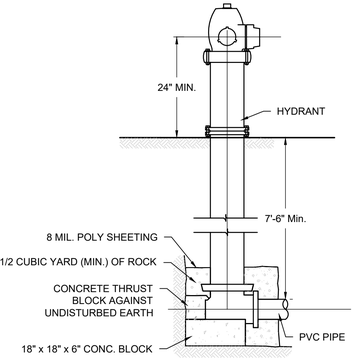
SHEET REFERENCE NUMBER
C-400



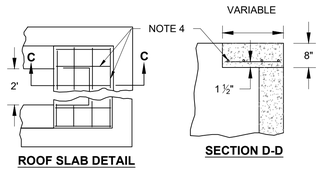
PVC, PE & RC PIPE BEDDING

NOTE:
1. REFER TO ASTM D2321 FOR ACTUAL DIMENSION AND INSTALLATION REQUIREMENTS

1 C500 SITE PIPE BEDDING
NOT TO SCALE

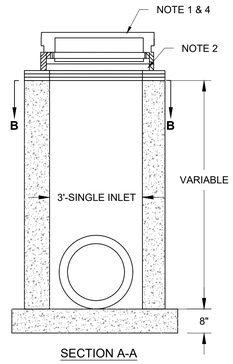


2 C500 TYPICAL HYDRANT DETAIL
NOT TO SCALE

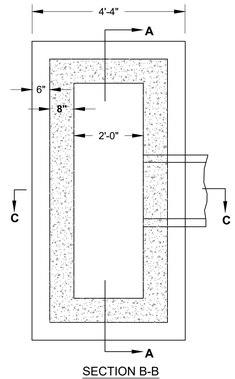


ROOF SLAB DETAIL

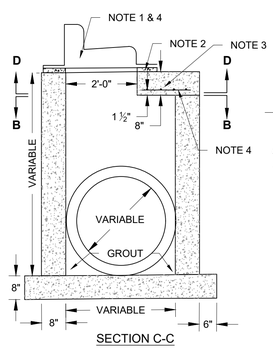
SECTION D-D



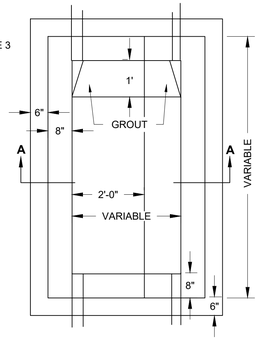
SECTION A-A



SECTION B-B

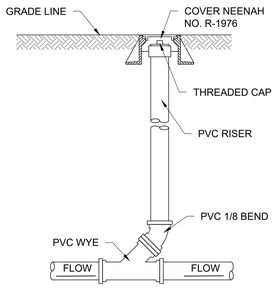


SECTION C-C

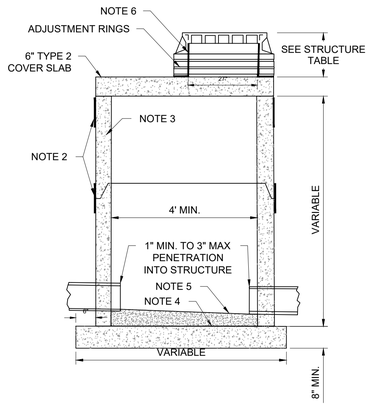


NOTES:
1. TYPE 36" INLET CASTING SHALL BE AS DEFINED IN STRUCTURE SCHEDULE.
2. ALLOWANCE FOR ADJUSTMENT SHALL BE 1-1/2" MINIMUM TO 3" MAXIMUM.
3. ALL BARS SHALL BE NO. 4. DEFORMED REINFORCING BARS SPACED 6" CENTER TO CENTER BOTH WAYS.
4. BOLTS FOR CASTING SHALL BE TEMPER FINISH, DOUBLE HEAT TREATED-1038 S.A.E. GRADE 5, WITH CAD-DICHROMATE PLATING.
5. STEPS SHALL NOT BE PLACED IN SANITARY SEWER, STORM SEWER OR AIR RELEASE MANHOLES OR INLETS UNLESS SPECIFIED. IF SPECIFIED, THE MANHOLE STEPS SHALL BE DELTA SUREFOOT OR APPROVED EQUAL. STEPS SHALL BE SPACED 16" ON CENTER.

3 C500 TYPE 36" INLET
NOT TO SCALE

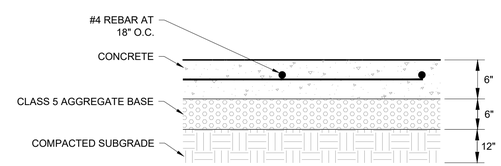


4 C500 INLINE CLEAN OUT
NOT TO SCALE



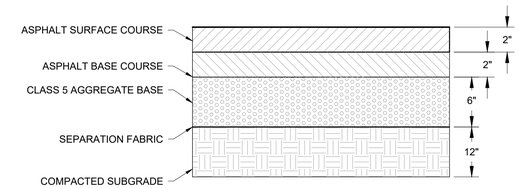
NOTES:
1. MANHOLE CASTING SHALL BE DEFINED IN STRUCTURE TABLE.
2. SINGLE OFFSET GASKETED JOINT FOR 48" MANHOLES, CONFINED GASKETED JOINT FOR ALL OTHER SIZES OF MANHOLES OR EXTERIOR SEAL BE PRESS-SEAL GASKET CORP. EZ WRAP AND EZ STIK NO. 4 PRIMER, MAR MAC CONSTRUCTION PRODUCTS "MAC WRAP", OR AN APPROVED EQUAL IF SPECIFIED.
3. PRECAST CONCRETE MANHOLES SHALL CONFORM TO ASTM C478, WALL B.
4. PRECAST REINFORCED CONCRETE MANHOLE BASES SHALL BE 8" THICK FOR MANHOLES UP TO 102" DIAMETER AND 12" THICK FOR MANHOLES 108" DIAMETER OR GREATER.
5. SLOPE FLOOR TO INVERT OF LOWEST PIPE WITH SMOOTH, TROWEL FINISHED CONCRETE.
6. I/I BARRIER AS MANUFACTURED BY STRIKE PRODUCTS OR AN APPROVED EQUAL.
7. STEPS SHALL NOT BE PLACED IN SANITARY SEWER, STORM SEWER OR AIR RELEASE MANHOLES OR INLETS UNLESS SPECIFIED. IF SPECIFIED, THE MANHOLE STEPS SHALL BE DELTA SUREFOOT OR APPROVED EQUAL. STEPS SHALL BE SPACED 16" ON CENTER.

5 C500 STORM SEWER MANHOLE
NOT TO SCALE



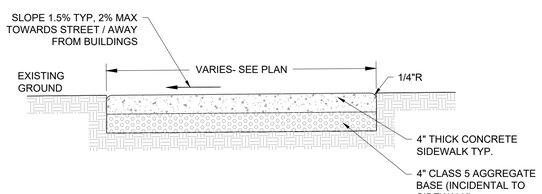
NOTES:
1. SUB-GRADE SHALL BE PREPARED AND COMPACTED IN ACCORDANCE WITH PROJECT GEOTECHNICAL CONSULTANT'S RECOMMENDATIONS. SEE NOTES SHEET.
2. CONTROL JOINT SPACING SHALL BE NO GREATER THAN 2X THE PAVEMENT THICKNESS IN FEET.
3. CONTROL JOINTS SHALL BE SAWED OR TOOLED TO 1/3 CONCRETE DEPTH (MIN.)
4. PRE-FORMED 3/4" EXPANSION JOINT FILLER SHALL BE INSTALLED FOR THE FULL THICKNESS OF THE PAVEMENT AND SHALL BE USED AT ALL JOINTS BETWEEN NEW BUILDINGS AND EXISTING CONCRETE.
5. ALL EXPANSION JOINTS SHALL BE SEALED
6. EXPANSION JOINT SPACING SHALL NOT EXCEED 100'.

6 C500 CONCRETE PAVEMENT DETAIL
NOT TO SCALE



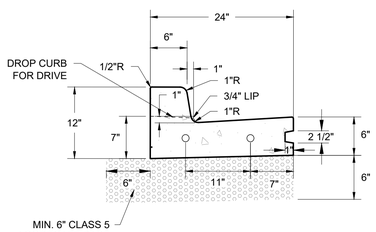
NOTES:
1. SUB-GRADE SHALL BE PREPARED AND COMPACTED IN ACCORDANCE WITH PROJECT RECOMMENDATIONS.

7 C500 ASPHALT PAVEMENT SECTION
NOT TO SCALE



NOTES:
1. 3/4" PRE-FORMED EXPANSION JOINT FILLER SHALL BE INSTALLED FOR THE FULL THICKNESS OF THE SIDEWALK AND SHALL BE USED AT ALL JOINTS BETWEEN NEW SIDEWALK AND EXISTING SIDEWALK. EXPANSION JOINT SPACING SHALL NOT EXCEED 100'.
2. DOWELED EXPANSION JOINT SHALL BE CONSTRUCTED WITH 12" LONG #4 BARS AT 12" O.C. SPACING, CENTERED IN THE JOINT AND SLAB.
3. ALL EXPANSION JOINTS SHALL BE SEALED.
4. CONTROL JOINT SPACING SHALL NOT EXCEED THE WIDTH OF THE SIDEWALK OR 8 FEET, WHICHEVER IS LESS.

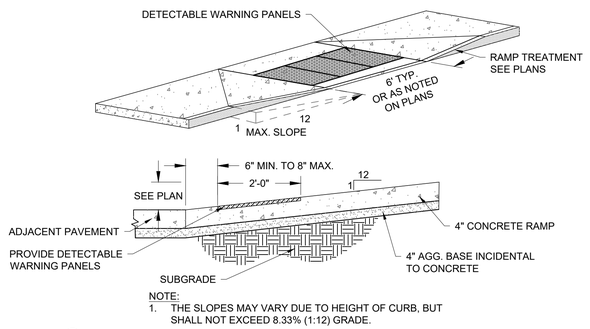
8 C500 4" CONCRETE SIDEWALK
NOT TO SCALE



STANDARD CURB & GUTTER

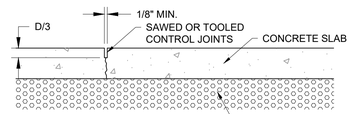
NOTES:
1. 3/4" EXPANSION JOINT WITH 3/4"x 24" SMOOTH DOWELS & 16" PAPER TUBES. DOWELS SHALL BE GREASED THE FULL LENGTH. ALL PAPER TUBES SHALL BE PLUGGED OR CRIMPED ON ONE END.
2. DOWELS SHALL BE SUPPORTED BY AN APPROVED SUPPORT MADE OF #7 AWG WIRE.
3. CONTRACTION JOINT SCORED 1/3 THE DEPTH OF THE CONCRETE.
4. ALL JOINTS SHALL BE SEALED.
5. KEYED CONSTRUCTION JOINT SHALL BE USED WHEN ADJACENT PAVEMENT IS CONCRETE, NOT REQUIRED FOR ASPHALT PAVEMENT.

9 C500 CURB & GUTTER
NOT TO SCALE



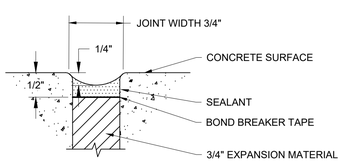
NOTE:
1. THE SLOPES MAY VARY DUE TO HEIGHT OF CURB, BUT SHALL NOT EXCEED 8.33% (1:12) GRADE.

10 C500 ACCESSIBLE RAMP & DETECTABLE PANELS
NOT TO SCALE



NOTES:
1. D = DEPTH OF CONCRETE
2. PROVIDE 1/4" RADIUS FOR TOOLED CONTROL JOINTS.

11 C500 CONTROL JOINT
NOT TO SCALE



NOTES:
1. IN LIEU OF BOND BREAKER TAPE, EXPANSION MATERIAL MAY BE HELD LOW, AND BACKER ROD MAY BE INSTALLED.

12 C500 EXPANSION JOINT SEAL
NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER
JEREMY J. EWALD
PE-8769
DATE 4/22/22
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DETAILS

SHEET REFERENCE NUMBER
C-500

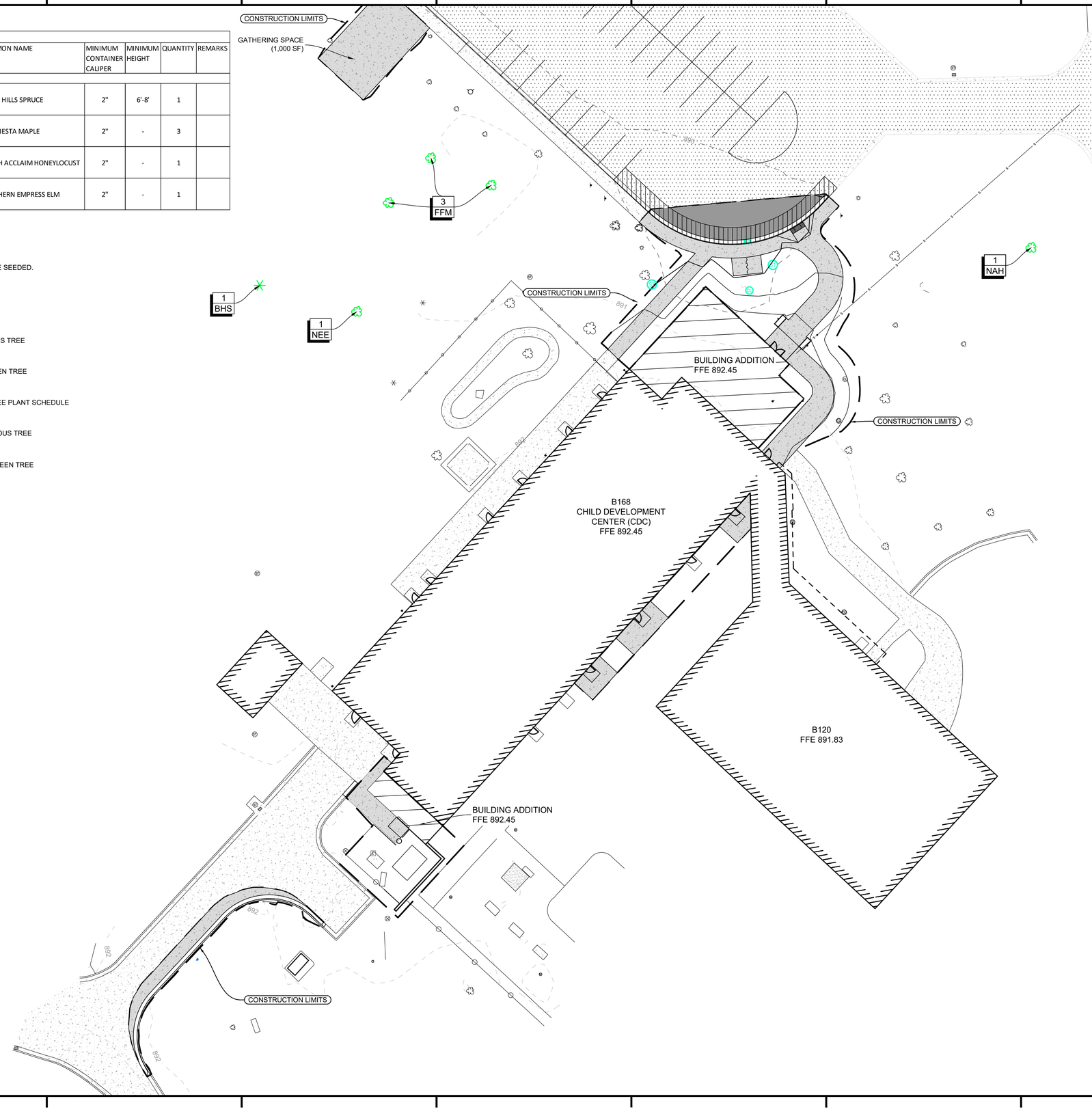
PLANT MATERIAL SCHEDULE						
SYMBOL	BOTANICAL NAME	COMMON NAME	MINIMUM CONTAINER CALIPER	MINIMUM HEIGHT	QUANTITY	REMARKS
TREES						
BHS	PICEA GLAUCA 'DENSATA'	BLACK HILLS SPRUCE	2"	6'-8'	1	
FFM	ACER SACCHARUM 'BAILSTA'	FALL FIESTA MAPLE	2"	-	3	
NAH	GLEDITSIA TRIACANTHOS 'HARVE'	NORTH ACCLAIM HONEYLOCUST	2"	-	1	
NEE	ULMUS DAVIDIANA AR. JAPONICA 'BURGUNDY GLOW'	NORTHERN EMPRESS ELM	2"	-	1	

NOTES:

1. ALL DISTURBED AREAS SHALL BE SEEDED.

LEGEND

- EXISTING DECIDUOUS TREE
- EXISTING EVERGREEN TREE
- # XXX — PLANT QUANTITY, SEE PLANT SCHEDULE
- PROPOSED DECIDUOUS TREE
- PROPOSED EVERGREEN TREE



N

20 0 20 40
SCALE NAVD88 FEET

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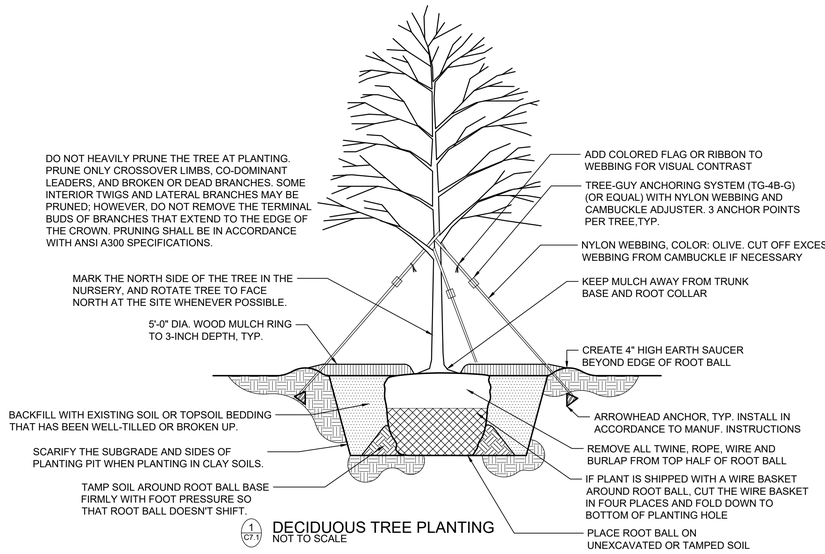
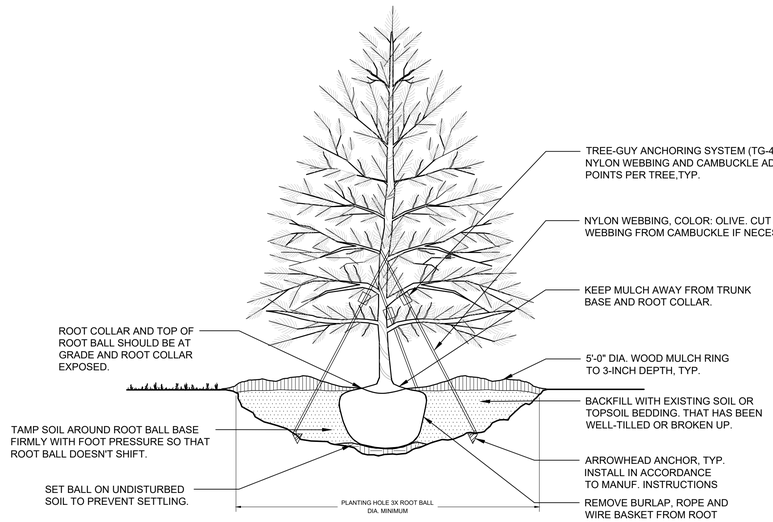
LANDSCAPE PLAN

SHEET REFERENCE NUMBER
L-100



1 C7.1 DECIDUOUS TREE PLANTING
NOT TO SCALE

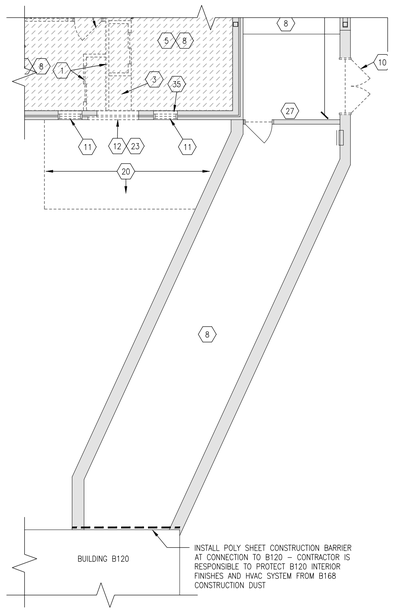


4 C7.2 CONIFEROUS TREE PLANTING
NOT TO SCALE

KLJ

U.S. AIR FORCE

Symbol	Description	Date	Approved



2 A101 **DEMOLITION PLAN**
1/8" = 1'-0

N PLAN NORTH

DEMOLITION PLAN NOTES CONTINUED:

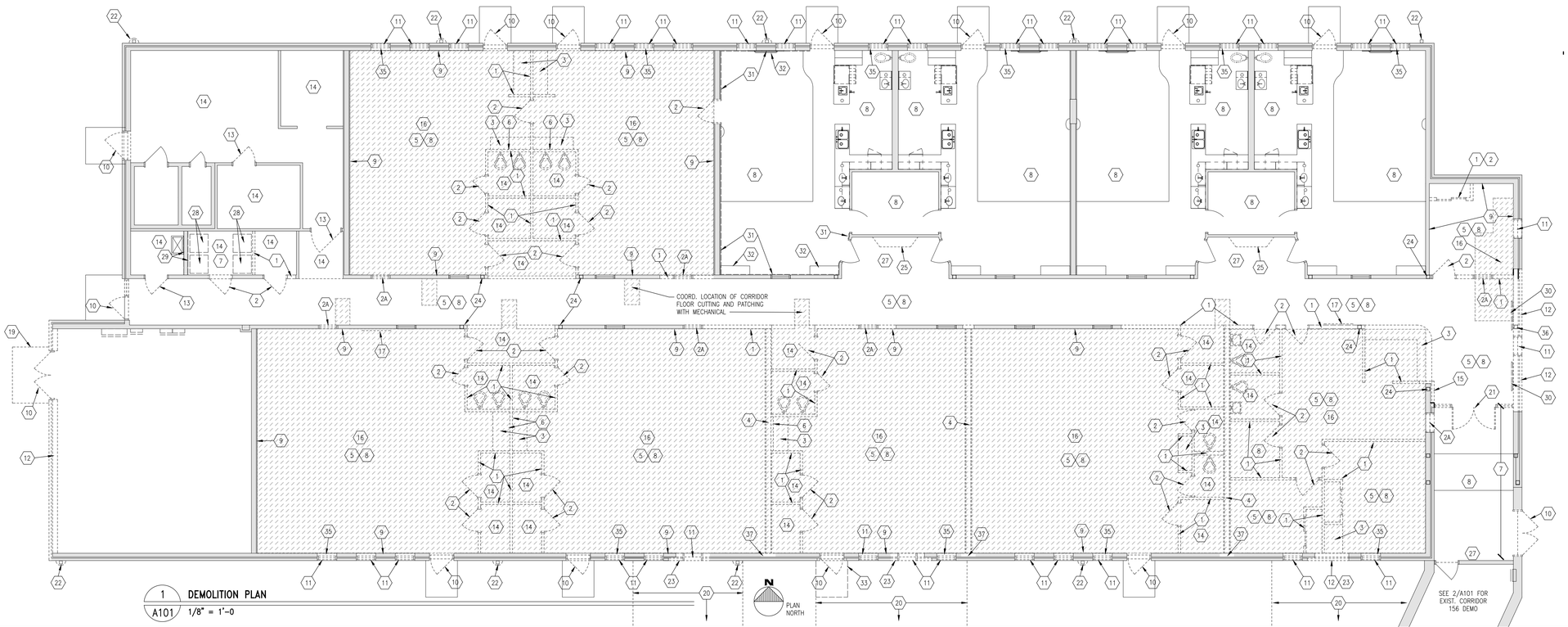
25. REMOVE CASEWORK, SALVAGE & REINSTALL @ SAME LOCATION.
26. NOT USED.
27. EXISTING GWB SOFFIT ABOVE TO REMAIN.
28. REMOVE & SALVAGE EXISTING LAUNDRY APPLIANCES & TURN OVER TO OWNER.
29. REMOVE EXISTING GWB SHEATHING (6" FRAMING TO REMAIN). REMOVE/SALVAGE EXISTING WALL SHELVING OR ACCESSORIES ON THIS WALL & REINSTALL DURING REMODEL.
30. REMOVE AND SALVAGE EXISTING TV MONITORS FOR REINSTALLATION.
31. REMOVE RIGID VINYL SHEET WALLCOVERING WAINSCOT, TACKLESS ART RAIL & WALL BASE PREP FOR NEW WALL FINISH.
32. REMOVE & REINSTALL WALL MOUNTED ITEMS AS REQ'D FOR NEW FINISHES. I.E.: STORAGE CUBBIES, MIRROR AND GRAB BARS, ETC.
33. REMOVE CONC. STOOP SLAB & FORM DECK – STOOP FOUNDATION TO REMAIN. PREP. FOR NEW CONCRETE SIDEWALK PATCH – SEE CIVIL.
34. NOT USED.
35. REMOVE WINDOW STOOL AT EXTERIOR WINDOWS & PREP. FOR NEW CAST PLASTIC WINDOW STOOL – TYP.
36. EXISTING COLUMN TO REMAIN – MODIFY COLUMN DURING RENOVATION.
37. REMOVE EXTERIOR WALL FRAMING AS REQ'S FOR NEW COLUMN INSTALL.

GENERAL DEMOLITION NOTES:

1) SEE CIVIL, MECHANICAL, ELECTRICAL & STRUCTURAL DRAWINGS, SPECIFICATIONS FOR DEMOLITION INSTRUCTIONS PERTAINING TO THEIR RESPECTIVE DISCIPLINES.
2) DEMOLITION ITEMS SHALL INCLUDE, BUT NOT BE LIMITED TO ITEMS IDENTIFIED ON THESE DRAWINGS. VISIT SITE BEFORE BIDDING AND BECOME FAMILIAR WITH WORK REQUIRED.
3) ALL FURNISHINGS, APPLIANCES, SIGNAGE & OWNER EQUIPMENT TO BE REMOVED PRIOR TO DEMOLITION, IF SUCH ITEMS REMAIN THEN REMOVE & SALVAGE FOR OWNER'S USE AS DIRECTED BY ARCHITECT OR OWNER'S REPRESENTATIVE.
4) PROTECT ALL STRUCTURAL ELEMENTS DURING DEMOLITION, INSTALL TEMPORARY SHORING AS REQUIRED IF DEMOLITION IS REQUIRED ON STRUCTURAL ELEMENTS.
5) THE OWNER RESERVES THE RIGHT OF FIRST REFUSAL ON ALL ITEMS TO BE REMOVED.
6) PATCH FLOOR AS REQUIRED @ REMOVED WALLS, CASEWORK & AT FLOORING TO RECEIVE NEW FINISHES.
7) PATCH/REPAIR WALLS AS REQUIRED @ LOCATIONS WHERE LEFT EXPOSED BY REMOVED ITEMS. FINISH TO MATCH EXISTING ADJACENT FINISH.

DEMOLITION PLAN NOTES:

1. REMOVE GWB AND STL. STUD WALL
2. REMOVE INTERIOR DOOR AND FRAME
2A. REMOVE INTERIOR WINDOW AND FRAME
3. REMOVE CASEWORK
4. REMOVE CMU AND FURRED-OUT GWB WALL – REMOVE TOP OF CONC. FOUNDATION WALL AS REQ'D FOR NEW CONC. SLAB & RADIANT HEAT PIPING. TEMP. SHORE ROOF FOR NEW BEAM INSTALL – SEE STRUCTURAL.
5. REMOVE CARPET AND/OR SHEET VINYL FLOORING AND RESILIENT BASE, PREP. FOR NEW FLOORING @ SLABS THAT REMAIN.
6. REMOVE MIRROR
7. REMOVE QUARRY TILE FLOORING & BASE
8. REMOVE SUSPENDED ACT AND GRID SYSTEM ENTIRELY
9. REMOVE VINYL WALL COVERING (FULL HEIGHT OR WAINSCOT w/CHAIR RAIL), SKIM COAT WALLS AS NEEDED, PREP FOR NEW FINISH.
10. REMOVE EXTERIOR DOOR AND FRAME
11. REMOVE EXTERIOR WINDOW & STOOL
12. REMOVE STEEL STUD AND FACE BRICK EXTERIOR WALL, SALVAGE FACE BRICK FOR REMODEL TOOTH-IN LOCATIONS.
13. REMOVE DOOR LEAF. FRAME TO REMAIN
14. REMOVE SUSP. GWB CEILING
15. REMOVE FACE BRICK
16. HATCH INDICATES REMOVAL OF 6" CONCRETE FLOOR SLAB AND IMBEDDED RADIANT HEATING LINES. REMOVE 2" UNDER SLAB RIGID INSULATION (4' HORIZONTAL @ PERIMETER)
17. REMOVE TACKBOARD OR MARKERBOARD
18. REMOVE DOWNSPOUTS (AND DOWNSPOUT GUARDS WHERE OCCURS)
19. REMOVE CONCRETE STOOP SLAB & FOUNDATIONS AS NEEDED.
20. REMOVE CONCRETE SIDEWALK & EXCAVATE AS REQ'D FOR NEW STOOP. SEE CIVIL.
21. REMOVE ALUMINUM DOOR, FRAME, GLAZING & ACCESSORIES & WALL ABOVE.
22. REMOVE DOWNSPOUT & DOWNSPOUT GUARDS.
23. CUT NEW OPENING IN EXISTING MASONRY WALL AS REQ'D FOR NEW DOOR.
24. EXISTING COLUMN TO REMAIN.



1 A101 **DEMOLITION PLAN**
1/8" = 1'-0

N PLAN NORTH

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SIGNATURE:

REGISTRATION NAME:
BENJAMIN M. MENNE

ND REGISTRATION NO.: 2741

U.S. AIR FORCE

Symbol	Description	Date	Approved

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DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND

GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
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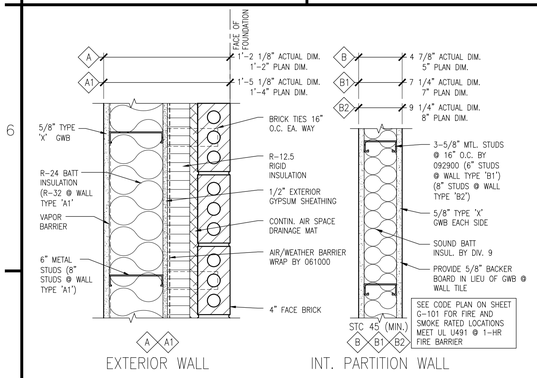
DEMOLITION PLAN

SHEET REFERENCE NUMBER
A-101



PLAN NOTES CONTINUED:

13. AUTO DOOR OPERATOR & TAP PLATES BY 087100, EXTERIOR TAP PLATE BOLLARD BY 087100 – SEE DIV. 26 FOR RELATED WORK.
14. PREFINISHED METAL OPEN FACED DOWNSPOUT BY 076000 & PROTECTIVE COVER BY 055013 INSTALLED AT EXISTING LOCATION (CONNECTS TO EXISTING SUB-GRADE DRAINAGE).
15. AUTO SLIDING ENTRANCE DOOR BY 084430.
16. RECEPTION DESK BY 064116 – S.D 1/A606 FOR ADDITIONAL INFORMATION.
17. METAL STUD & MASONRY PATCH/REPAIR AS REQ'D @ WINDOW OR DOOR REPLACEMENT.
18. INFILL EXISTING OPENING WITH GWB ON METAL STUDS – S.D. 10/A107.
19. INFILL EXISTING OPENING WITH MASONRY & GWB OVER METAL STUDS – MATCH EXISTING CONSTRUCTION – S.D. 7/A107.
20. PULL BACK EXISTING SHOCK ABSORBING CARPET AS REQ'D FOR DOOR INFILL & REINSTALL. (CARPET IS DISCONTINUED).
21. REINSTALL SALVAGED CASEWORK.
22. NEW STEEL COLUMN (AND FOOTING AS OCCURS) – SEE STRUCTURAL.
23. NEW 1-HR RATED FIRE BARRIER – NEW 5/8" TYPE 'X' MOLD/MOISTURE RESISTANT GWB OVER EXISTING METAL STUD FRAMING – PROVIDE NEW METAL STUD FRAMING ABOVE CEILING AS NEEDED TO CONTINUE NEW 1-HR FIRE RATED WALL TO ROOF DECK. REINSTALL SHELVING (VERIFY).
24. SALVAGED CLOSED CIRCUIT TV MONITORS – SEE ELECTRICAL.
25. RECESSED ENTRANCE FLOOR MAT BY 124800 (6'-0" X 9'-0").
26. INFILL OPENING AT REMOVED DOOR OR WINDOW WITH 5/8" GWB OVER METAL STUD FRAMING. INFILL GWB FINISHES TO ALIGN WITH ADJACENT WALL GWB FINISH – VERIFY REQ'D STUD FRAMING THICKNESS, FILL CAVITY WITH SOUND INSULATION.
27. PREFINISHED METAL OPEN FACED DOWNSPOUT WITH NEW CONNECTION TO SUB-GRADE DRAINAGE – SEE CIVIL.
28. LOCATION OF REMOVED MECHANICAL CONTROLS – AT GWB WALL ASSEMBLIES PATCH WALL AS REQ'D TO MATCH EXISTING, PREPARE FOR NEW WALL FINISH. AT KITCHEN COVER WITH STAINLESS STEEL PLATE.
29. (3) STACKED LAUNDRY UNITS & (1) CLOTHES DRYER – OWNER FURNISHED, CONTRACTOR INSTALLED (OFCI).
30. CABINET UNIT HEATER – SEE MECHANICAL.
31. EXISTING DRINKING FOUNTAIN & HOSE BIB LOCATED OUTSIDE BETWEEN DOORS 127A & 127B – PROVIDE PIPE CHASE (WALL TYPE 'D') TO CONCEAL PIPING IF NEEDED DUE TO EXISTING WALL BEING REMOVED, VERIFY.

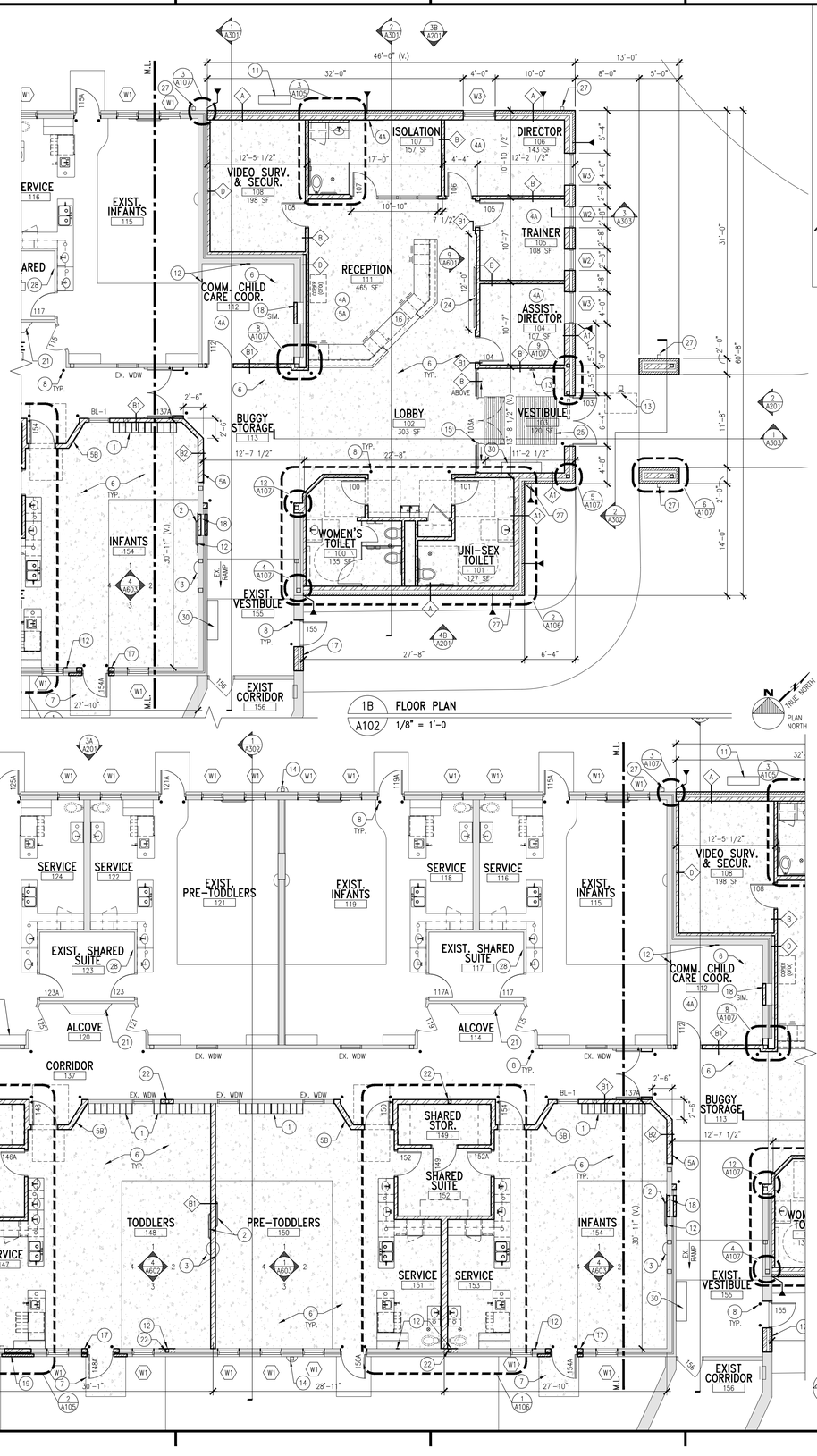
GENERAL NOTES:

1. SEE CIVIL, MECHANICAL, ELECTRICAL & STRUCTURAL DRAWINGS FOR INSTRUCTIONS PERTAINING TO THEIR RESPECTIVE DISCIPLINES.
2. PRIOR TO THE INSTALLATION OF GWB, THE CONTRACTORS SHALL REVIEW ALL ELECTRICAL LOCATIONS & LOCATIONS FOR BLOCKING. CONTRACTOR SHALL PROVIDE METAL BACKING OR SOLID FIRE-TREATED WOOD BACKING FOR THE ATTACHMENT OF GRAB BARS, LIGHT FIXTURES AND ANY OTHER WALL MOUNTED ACCESSORIES.
3. VERIFY ACTUAL OPENING DIMENSIONS WITH WINDOW/DOOR SUPPLIERS.
4. SEE 2/A102 FOR WALL TYPES. WALL TYPES ARE NOTED WITH A DIAMOND.
5. INTERIOR WALLS TO BE FILLED WITH ACOUSTICAL INSULATION & EXTEND TO ROOF DECK, AT SMOKE PARTITIONS FILL JOINTS AND SPACES AROUND PENETRATIONS WITH AN APPROVED MATERIAL TO LIMIT THE PASSAGE OF SMOKE.
6. INTERIOR DIMENSIONS ARE TYPICAL CENTERLINE TO CENTERLINE, UNLESS SHOWN OTHERWISE. WHERE A CLEAR DIMENSION IS NOTED, DIMENSION IS FROM FACE-TO-FACE OF WALL FINISH. EXTERIOR WALL DIMENSIONS ARE TO FACE OF MASONRY OR FACE OF EXTERIOR SHEATHING.
7. PROVIDE MOLD & MILDEW RESISTANT GYPSUM BOARD IN RESTROOMS, JANITOR ROOM AND AT OTHER WET LOCATIONS.
8. DOT ● INDICATES NEW CORNER GUARD BY 102600.
9. ▶ INDICATES MASONRY CONTROL JOINT.
10. SHADE INDICATES EXISTING WALL CONSTRUCTION THAT REMAINS.
11. ● INDICATES DOOR MAGNETIC HOLD OPEN – SEE ELECTRICAL.

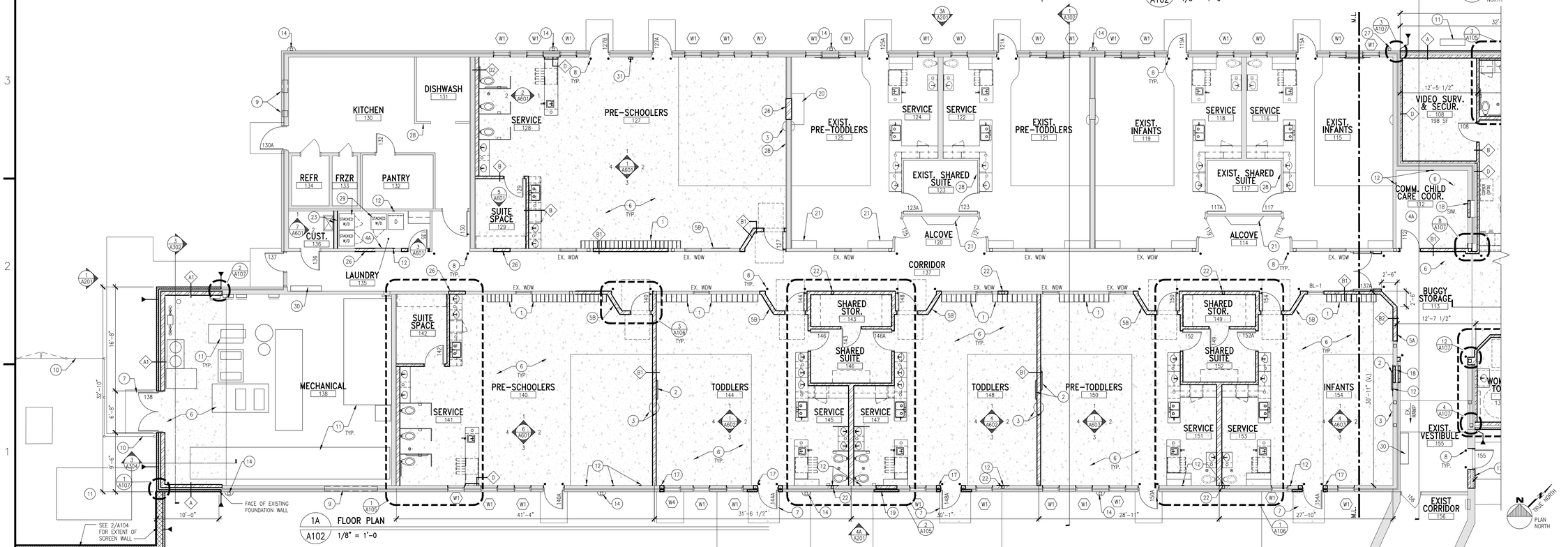
ROOM TAG LEGEND
CLASSROOM — ROOM NAME
/// — PROJECT ROOM NUMBER

PLAN NOTES:

1. WALL ANCHORED STORAGE CUBBIES BY 064116.
2. TEMPERED GLASS MIRROR & WALL MOUNTED BRUSHED STAINLESS STEEL GRAB BAR MOUNTED @ 18" A.F.F., SEE INTERIOR ELEVATIONS FOR ADDITIONAL INFO.
3. CONVEX MIRROR BY 088100, COORDINATE WITH GOV'T FOR FIELD LOCATE – TYPICAL IN ALL CHILD ACTIVITY ROOMS.
4. MAGNETIC MARKERBOARD W/ TACK DISP. RAIL & ALUMINUM TRAY BY 101100.
   A. 48"W X 36"H
   B. 36"W X 36"H
   VERIFY/COORDINATE LOCATIONS WITH GOV'T.
5. TACKBOARD BY 101100.
   A. 48"W X 36"H
   B. 36"W X 36"H
   VERIFY/COORDINATE LOCATIONS WITH GOV'T.
6. HATCH INDICATES NEW CONCRETE SLAB @ ADDITION OR CONCRETE SLAB REMOVAL & PATCHING BY GENERAL CONTRACTOR AS REQ'D FOR NEW WORK @ RENOVATION AREA – COORDINATE W/ MECHANICAL.
7. NEW CONCRETE STOOP & FOUNDATION. REMOVE & PROVIDE NEW CONCRETE PAVING AT ADJACENT SIDEWALKS TO MATCH EXISTING AS REQ'D BY STOOP EXCAVATION – SEE STRUCTURAL & CIVIL DRAWINGS.
8. CORNER GUARD BY 102600.
9. NEW LOUVER OR EXHAUST FAN ABOVE. EXISTING FACE BRICK & METAL STUD WALL – FACE BRICK TOOTH-IN/REPAIR AS REQ'D, SEE MECHANICAL FOR ADDITIONAL INFO.
10. NEW & SALVAGED FENCE – SEE CIVIL.
11. MECHANICAL OR ELECTRICAL EQUIPMENT – SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
12. PATCH/REPAIR WALL AS REQ'D AT REMOVED WALL.



1B FLOOR PLAN
A102 1/8" = 1'-0



1A FLOOR PLAN
A102 1/8" = 1'-0

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FLOOR PLAN AND WALL TYPE LEGEND

SHEET REFERENCE NUMBER
A-102

GENERAL RCP PLAN NOTES

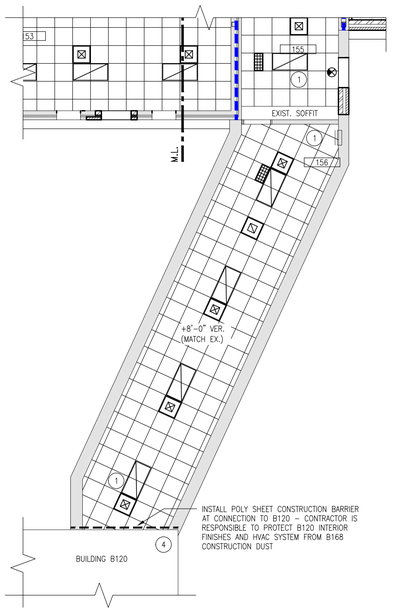
1. EXTENT OF CEILING WORK MAY NOT ALL BE SHOWN ON THIS PLAN – SEE MECHANICAL & ELECTRICAL REFLECTED CEILING PLAN DRAWINGS TO VERIFY LOCATION OF MECHANICAL AND ELECTRICAL EQUIPMENT NOT LIMITED TO BUT INCLUDING SPEAKERS, CAMERAS, FIRE ALARMS, SPRINKLER HEADS, ETC.
2. CEILINGS SHALL BE INSTALLED AT HEIGHTS INDICATED – NOTIFY ARCHITECT WHERE CONDITIONS WARRANT CHANGE TO CLG. HEIGHT.
3. FIELD CONDITIONS THAT VARY FROM THOSE INDICATED IN DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO THE CM/ARCHITECT'S ATTENTION PRIOR TO COMMENCEMENT OF THE WORK.

CEILING SYMBOLS & CEILING FIXTURES

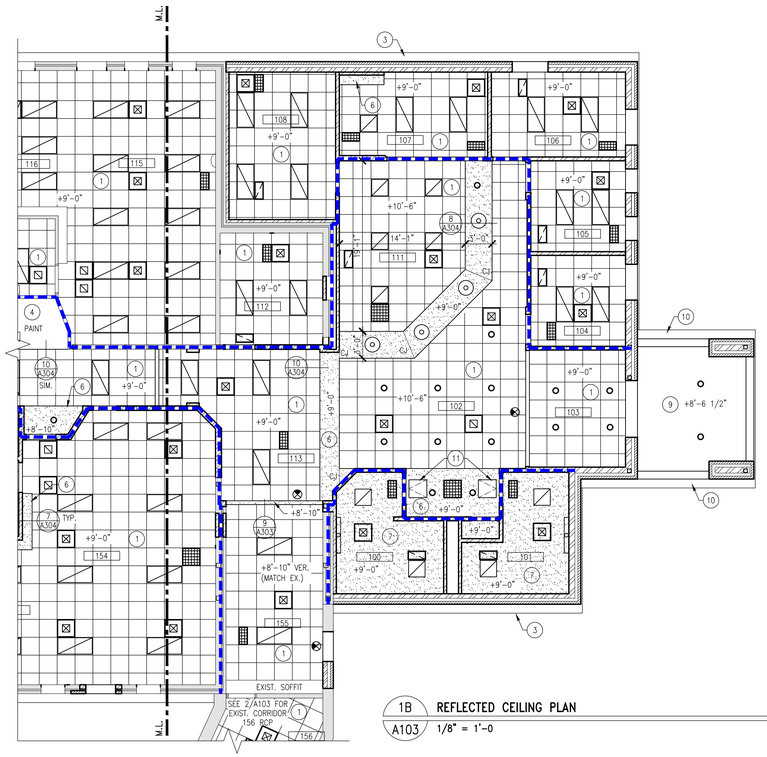
- SUSPENDED CEILING GRID
- EXIT LIGHT
- LIGHT – 2'x2'
- LIGHT – 2'x4'
- LIGHT – 1'x4'
- LIGHT – RECESSED
- (S) EXISTING SPEAKER W/ NEW GRILLE – SEE ELECT.
- MECHANICAL SUPPLY
- MECHANICAL RETURN/GRILLE
- GWB CEILING OR SOFFIT
- CLASSROOM – ROOM NAME
- ROOM TAG
- (M.E.) 9'-9" – CEILING HEIGHT A.F.F. (VERIFY IF MATCHING EXISTING)
- M.E. = MATCH EXISTING CEILING HEIGHT
- 1-HR FIRE BARRIER (EXISTING)
- SMOKE PARTITION

RCP PLAN NOTES

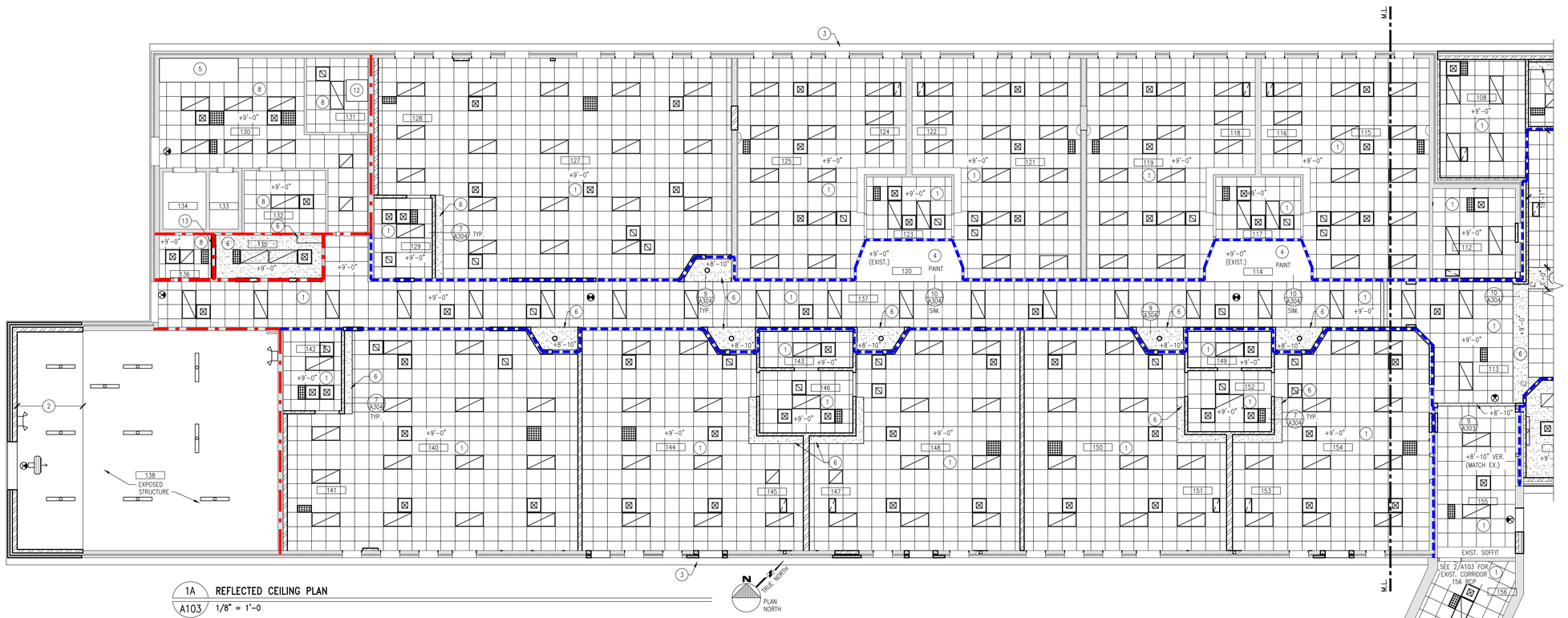
1. 24" X 24" ACOUSTICAL CEILING TILES (ACT-1); TYPICAL UNLESS NOTED OTHERWISE
2. EXPOSED STRUCTURE – PAINT BY DIV. 9 – PAINT STEEL STRUCTURE, METAL DECK, BRACING, CONDUIT, ETC.
3. PREFINISHED NON-VENTED METAL SOFFIT PANEL
4. EXISTING CEILING TO REMAIN.
5. KITCHEN HOOD – SEE MECHANICAL.
6. GYPSUM WALLBOARD SOFFIT OR CEILING – PAINTED.
7. GYPSUM WALL BOARD CEILING, PAINTED – PROVIDE MOLD/MILDEW/MOISTURE RESISTANT GWB.
8. 24" X 24" ACOUSTICAL CEILING TILES (ACT-2).
9. CANOPY CEILING – 1" STUCCO ON METAL LATH & SUSPENDED CEILING FRAMING.
10. PREFINISHED METAL VENTED SOFFIT
11. 24" X 24" CEILING ACCESS PANEL BY 083100.
12. EXISTING DISHWASHER HOOD TO REMAIN.
13. ABOVE CEILING PROVIDE NEW 1-HR RATED METAL STUD WALL ASSEMBLY, EXTEND WALL ASSEMBLY UP TO THE ROOF DECK– FIRE STOPPED.



2 / A103 REFLECTED CEILING PLAN
1/8" = 1'-0



1B / A103 REFLECTED CEILING PLAN
1/8" = 1'-0



1A / A103 REFLECTED CEILING PLAN
1/8" = 1'-0

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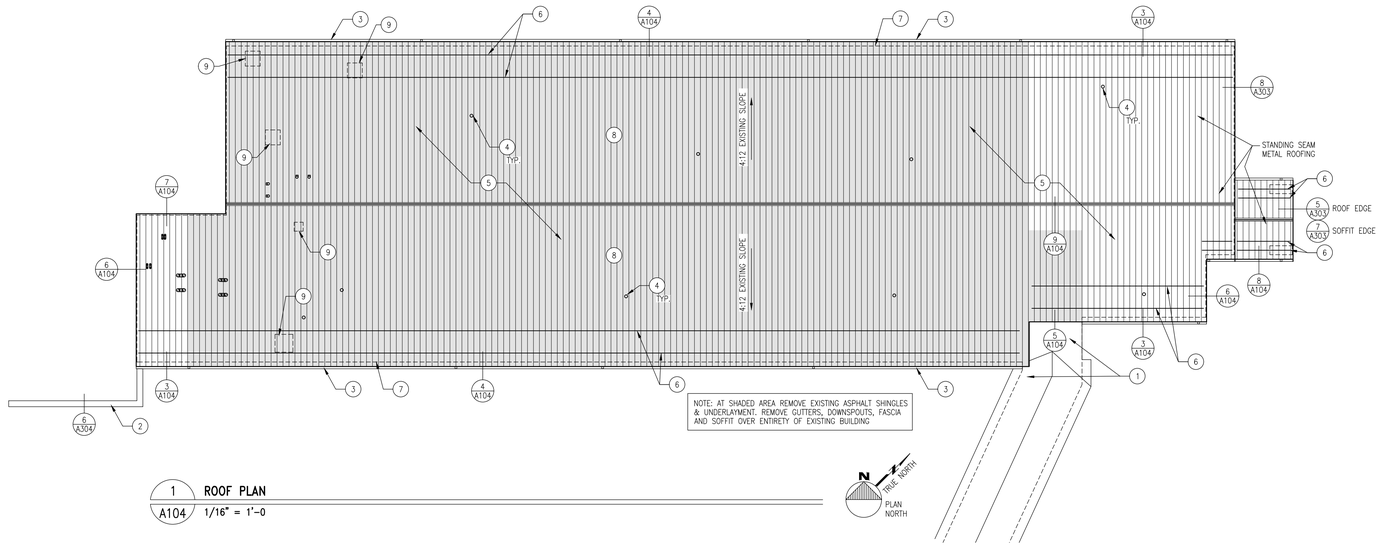
REFLECTED CEILING PLAN

SHEET REFERENCE NUMBER
A-103



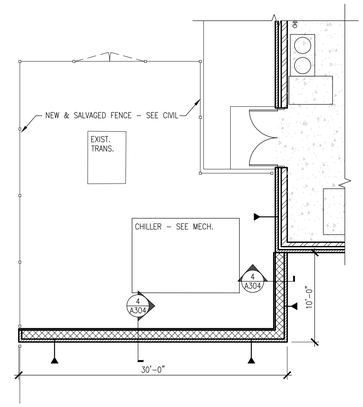
1 ROOF PLAN
A104 1/16" = 1'-0"

GENERAL ROOF PLAN NOTES:

1. CONTRACTORS SHALL VERIFY EXISTING SITE & BUILDING CONDITIONS PRIOR TO BIDDING.
2. EXISTING DIMENSIONS SHALL BE VERIFIED.
3. SEE CIVIL, MECHANICAL, ELECTRICAL & STRUCTURAL DRAWINGS & SPECIFICATIONS FOR INSTRUCTIONS PERTAINING TO THEIR RESPECTIVE DISCIPLINES.
4. COORDINATE & VERIFY LOCATIONS & QUANTITIES OF MECHANICAL ROOF EQUIPMENT, VTR'S, ETC – SEE MECH.
5. MAINTAIN ROOF IN WATERTIGHT CONDITION THRU–OUT PROJECT.

ROOF PLAN NOTES

1. EXISTING STANDING SEAM METAL ROOF TO REMAIN.
2. PREFINISHED METAL COPING BY 076000.
3. PREFINISHED METAL GUTTER & DOWNSPOUTS BY 076114. DOWNSPOUTS TO TIE INTO SUBGRADE DRAINAGE SYSTEM – SEE CIVIL.
4. VTR – SEE MECHANICAL. MECHANICAL CONTRACTOR TO CENTER ALL ROOF PENETRATION BETWEEN METAL ROOF RIBS. OFFSET EXISTING & NEW VENT LINES AS REQ'D. EPDM PIPE FLASHING BY 076114.
5. STANDING SEAM METAL ROOF SYSTEM INSTALLED ON HIGH TEMPERATURE ICE/WATER SHIELD BY 076114.
6. SNOW GUARD SYSTEM (MIN. 2 ROWS) BY 076114.
7. DASHED LINE OF FACE OF WALL HIDDEN BELOW.
8. AT SHADED AREA PROVIDE NEW ROOF SHEATHING & RIGID INSULATION OVER EXISTING ROOF SHEATHING & INSULATION. VARY RIGID INSULATION THICKNESS AS NEEDED TO ALIGN FINISHED ROOF SURFACES OF THE ADDITION ROOFS & THE MODIFIED EXISTING ROOF.
9. ROOF EQUIPMENT OR VENT BEING DELETED AT THIS LOCATION. INFILL OPENING WITH 3/16" STEEL PLATE & PATCH/REPAIR ROOF AS NEEDED TO MATCH NEW ROOF ASSEMBLY. SEE DETAIL 4/A303.



2 SCREEN WALL PLAN
A104 1/8" = 1'-0"

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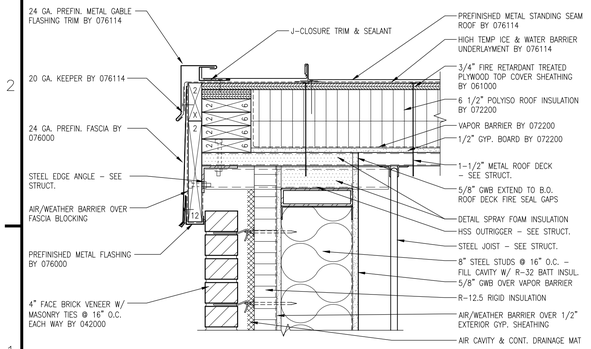
ROOF PLAN AND DETAILS

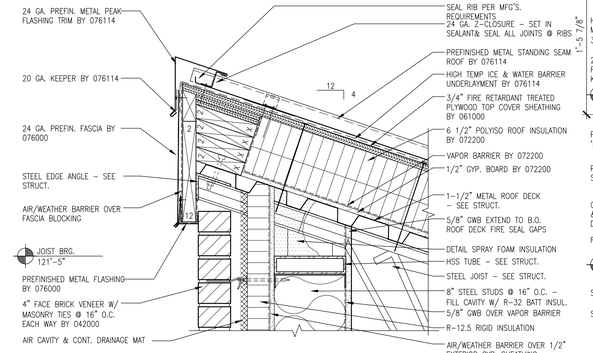
SHEET REFERENCE NUMBER
A-104

3 ROOF EDGE DETAIL – ADDITION
A104 1–1/2" = 1'–0"

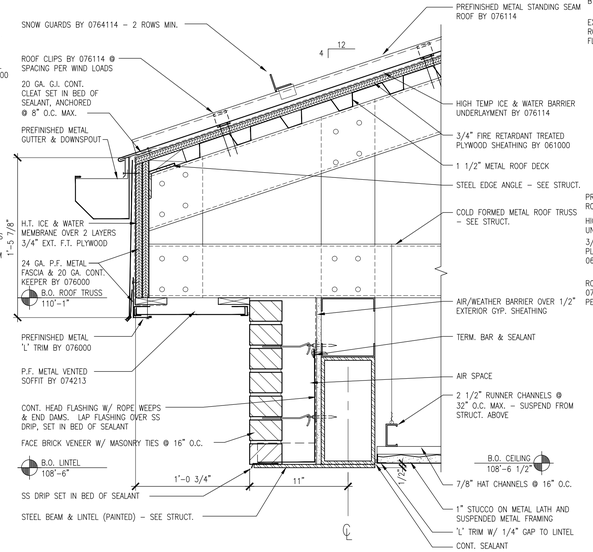
4 ROOF EDGE DETAIL – EXISTING
A104 1–1/2" = 1'–0"



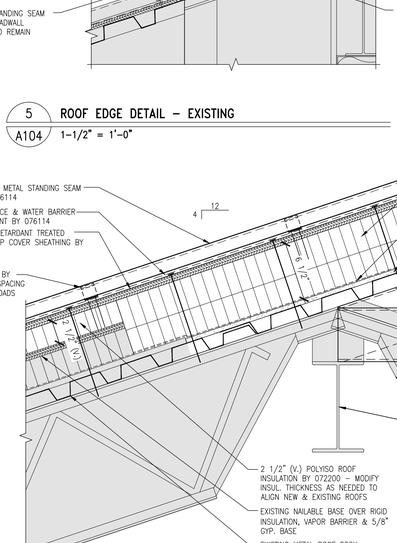
6 ROOF EDGE – GABLE END
A104 1–1/2" = 1'–0"



7 ROOF EDGE – PEAK
A104 1–1/2" = 1'–0"



8 ROOF EDGE – CANOPY
A104 1–1/2" = 1'–0"



5 ROOF EDGE DETAIL – EXISTING
A104 1–1/2" = 1'–0"

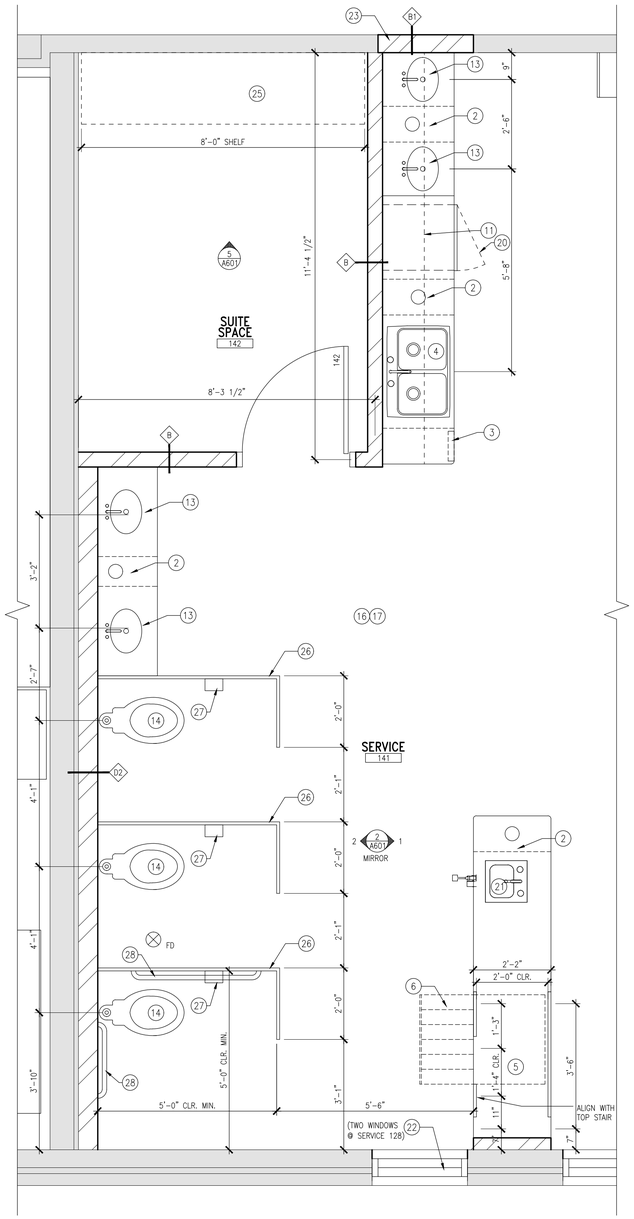
9 ROOF TRANSITION DETAIL
A104 1–1/2" = 1'–0"

GENERAL NOTES:

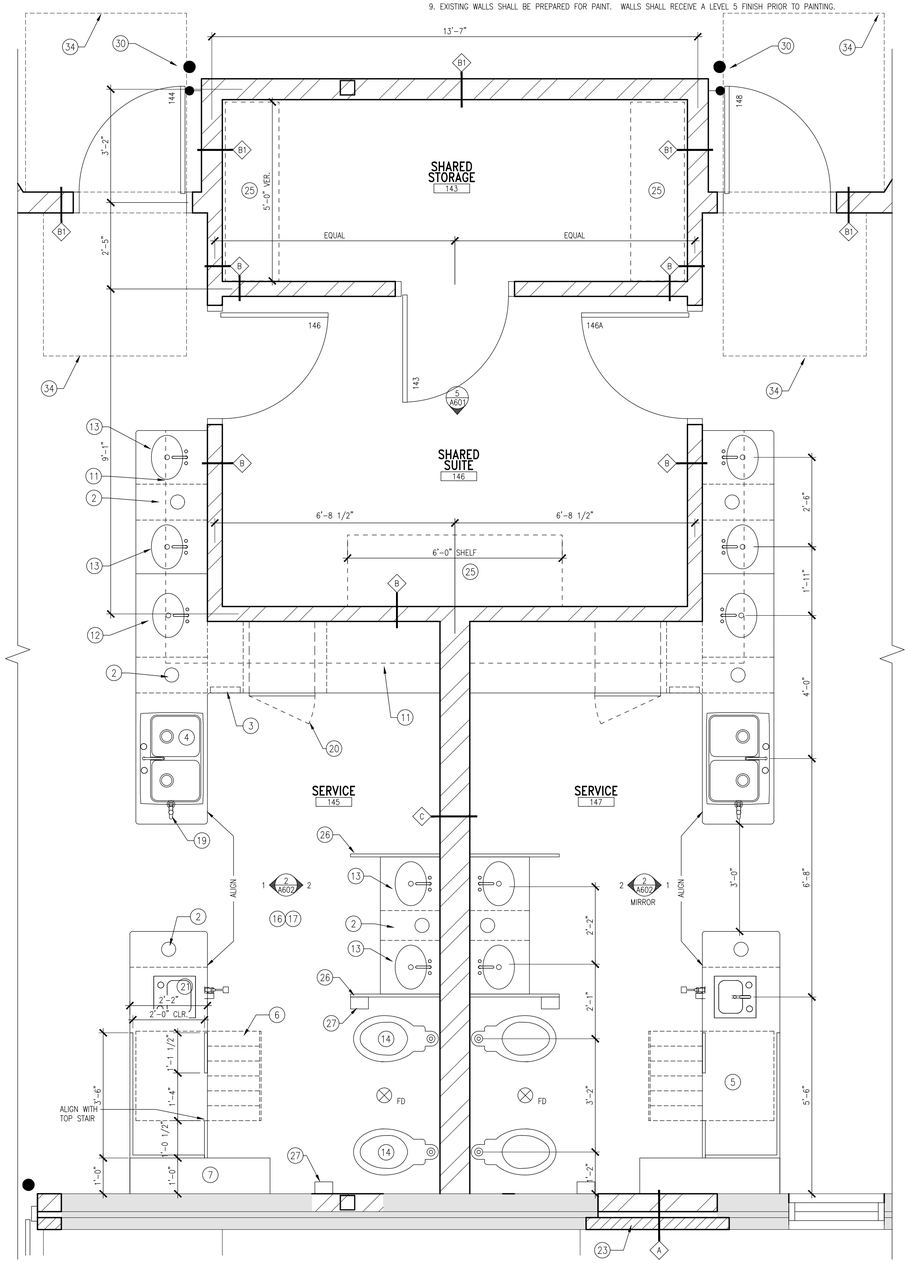
1. SEE CIVIL, STRUCTURAL, MECHANICAL & ELECTRICAL DRAWINGS FOR INSTRUCTIONS PERTAINING TO THEIR RESPECTIVE DISCIPLINES.
2. SEE 2/A102 FOR WALL TYPES. WALL TYPES ARE NOTED WITH A DIAMOND.
3. FIELD CONDITIONS THAT VARY FROM THOSE INDICATED IN DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO THE OWNER/ARCHITECT'S ATTENTION PRIOR TO COMMENCEMENT OF THE WORK.
4. DIMENSIONS INDICATED ARE TO FACE OF EXISTING WALL, AND CENTER OF CORE FOR METAL STUD INTERIOR WALL, UNLESS OTHERWISE NOTED.
5. REFER TO INTERIOR ELEVATIONS FOR CASEWORK DIMENSIONS.
6. PROVIDE BLOCKING IN WALLS FOR ALL FIXTURES, CABINETS, TOILET ACCESSORIES AND ALL OTHER WALL MOUNTED EQUIPMENT. BLOCKING SHALL RESIST 350 LB FORCE IN ANY DIRECTION.
7. ALL NEW PARTITIONS SHALL EXTEND TO BOTTOM OF ROOF DECK AND SHALL MEET OR EXCEED SOUND TRANSMITTANCE COEFFICIENT (STC) RATING OF 45. PROVIDE ACOUSTICAL SEALANT @ ALL JOINTS AND PENETRATIONS.
8. DIAPER & FOOD PREPARATION SERVICE AREA SHALL RECEIVE FLOOR DRAINS WITH INTEGRAL TRAP PRIMERS.
9. EXISTING WALLS SHALL BE PREPARED FOR PAINT. WALLS SHALL RECEIVE A LEVEL 5 FINISH PRIOR TO PAINTING.

ENLARGED PLAN NOTES:

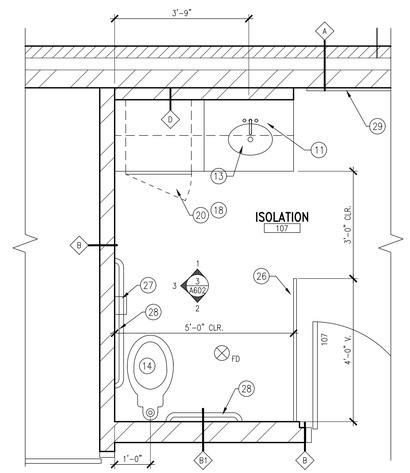
1. STAINLESS STEEL TOILET PAPER DISPENSER (JUMBO ROLL) BY 102813.
2. TRASH CHUTE – CIRCULAR COUNTERTOP TRASH CHUTE. EDGES SHALL RECEIVE 1/2" ROUNDED EDGE WITH 5-3/4" DIAMETER ROUGH OPENING. PROVIDE WASTE RECEPTACLE BELOW WITH DOOR ACCESS. SEE INTERIOR ELEVATIONS.
3. LAUNDRY CHUTE – MINIMUM 10" FLIPPER DOOR HEIGHT. SEE INTERIOR ELEVATIONS.
4. STAINLESS STEEL FOOD PREP. DOUBLE SINK – SHALLOW SINK SHALL BE LOCATED RIGHT WHILE FACING SINK.
5. DIAPER CHANGING COUNTER.
6. CUSTOM BUILT PULL OUT STEPS BELOW – SEE 6/A605 FOR ADDITIONAL INFORMATION.
7. COUNTERTOP DIAPER CUBBIES. SEE INTERIOR ELEVATIONS.
8. STAINLESS STEEL TOILET PAPER DISPENSER (DOUBLE ROLL) BY 102813.
9. SANITARY NAPKIN DISP. BY 102813 (1 PER EA. WOMEN STALL).
10. NOT USED
11. WALL MOUNTED UPPER CABINETS WITH SOFFIT ABOVE.
12. INTEGRAL MOLDED SOLID SURFACE ADULT HAND WASH SINK – SEE MECH FOR RELATED WORK.
13. INTEGRAL MOLDED SOLID SURFACE CHILD HAND WASH SINK – SEE MECH FOR RELATED WORK.
14. CHILD WATER CLOSET FIXTURE – BY DIV. 22, SEE MECH.
15. WATER CLOSET FIXTURE TO BE INSTALLED IN FUTURE. PROVIDE ROUGHED IN PLUMBING FOR SUPPLY AND DWV PIPING. ROUGHED IN PLUMBING SHALL BE ACCESSIBLE THROUGH ACCESS PANEL IN WALL/FLOOR AS APPROPRIATE.
16. PROVIDE TWO (2) PAPER TOWEL DISPENSERS PER ROOM AT SERVICE AREA, COORDINATE WITH GOV'T FOR FIELD LOCATE.
17. PROVIDE THREE (3) SOAP DISPENSERS PER ROOM, COORDINATE WITH GOV'T FOR FIELD LOCATE.
18. PROVIDE PAPER TOWEL DISP. & SOAP DISP. – ONE (1) EACH THIS ROOM, COORDINATE W/ GOV'T FOR FIELD LOCATE.
19. PUSH-DOWN TYPE GLASS FILLER – BY DIV. 22, SEE MECH.
20. UNDERCOUNTER REFRIGERATOR, CFCI.
21. SINGLE COMPARTMENT STAINLESS STEEL SINK WITH FOOT PEDAL CONTROLLER – BY DIV. 22, SEE MECH.
22. FROSTED PRIVACY FILM BY 088100 INSTALLED ON INTERIOR OF WINDOW @ TOILET AREAS.
23. INFILL WALL OPENING WITH MATERIALS TO MATCH EXISTING WALL CONSTRUCTION.
24. HEAVY DUTY ADJUSTABLE SHELVING ON WALL MOUNTED STANDARDS – S.D. 6/A603
25. HEAVY DUTY ADJUSTABLE WIRE SHELVING UNIT– S.D. 5/A601.
26. TOILET COMPARTMENT PARTITION BY 102113.
27. TOILET PAPER DISPENSER (SINGLE ROLL) BY 102813.
28. ABA COMPLIANT GRAB BARS BY 102813 – SEE 6/A602 FOR MOUNTING INFORMATION.
29. WHITEBOARD BY 101100 – SEE INTERIOR ELEVATIONS.
30. CORNER GUARDS BY 102600. SEE OVERALL FLOOR PLANS FOR ADDITIONAL LOCATIONS.
31. HIGH & LOW ELECTRIC WATER COOLERS – BY DIV. 22, SEE MECH.
32. SEMI-RECESSED PAPER TOWEL DISPENSER & TRASH RECEPTACLE BY 102813.
33. 30"x48" MIRROR W/ STAINLESS STEEL FRAME BY 102813. MOUNT SO BOTTOM EDGE OF MIRROR IS NO HIGHER THAN 40".
34. DASHED LINE INDICATES ACCESSIBLE MANEUVERING CLEARANCE OR CLEAR FLOOR SPACE.
35. WALL MOUNTED ADULT WATER CLOSET FIXTURE – BY DIV. 22, SEE MECH.



1 ENLARGED PRE-SCHOOLER PLAN
A105 1/2" = 1'-0" MIRROR @ PRE-SCHOOLER 127



2 ENLARGED TODDLER PLAN
A105 1/2" = 1'-0"



3 ENLARGED ISOLATION 107 PLAN
A105 1/2" = 1'-0"

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SIGNATURE:

REGISTRATION NAME:
BENJAMIN M. MENNE

ND REGISTRATION NO.: 2741

U.S. AIR FORCE

Symbol	Description	Date	Approved

DESIGNED BY: BMM
DWN BY: BMM
CHK BY: RAA
SUBMITTED BY: BMM
DATE: 22 APRIL 2022
PLOT DATE: AS SHOWN
PLOT SCALE: AS SHOWN
DRAWING NUMBER: AS SHOWN

DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND
GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

ENLARGED FLOOR PLANS

SHEET REFERENCE NUMBER
A-105

GENERAL NOTES:

1. SEE CIVIL, STRUCTURAL, MECHANICAL & ELECTRICAL DRAWINGS FOR INSTRUCTIONS PERTAINING TO THEIR RESPECTIVE DISCIPLINES.
2. SEE SHEET A102 FOR WALL TYPES. WALL TYPES ARE NOTED WITH A DIAMOND.
3. FIELD CONDITIONS THAT VARY FROM THOSE INDICATED IN DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO THE OWNER/ARCHITECT'S ATTENTION PRIOR TO COMMENCEMENT OF THE WORK.
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3. LAUNDRY CHUTE – MINIMUM 10" FLIPPER DOOR HEIGHT. SEE INTERIOR ELEVATIONS.
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6. CUSTOM BUILT PULL OUT STEPS BELOW – SEE 6/A605 FOR ADDITIONAL INFORMATION.
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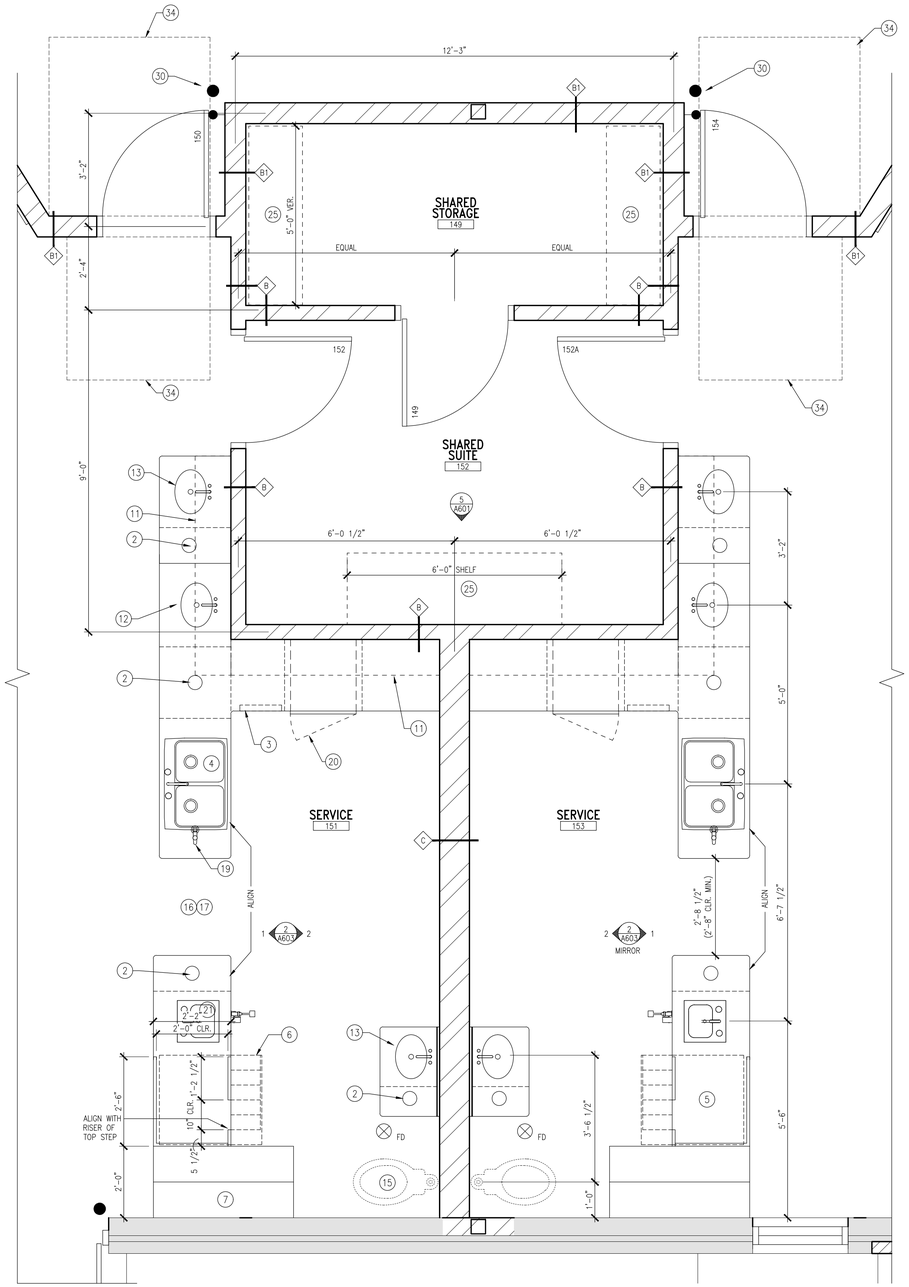
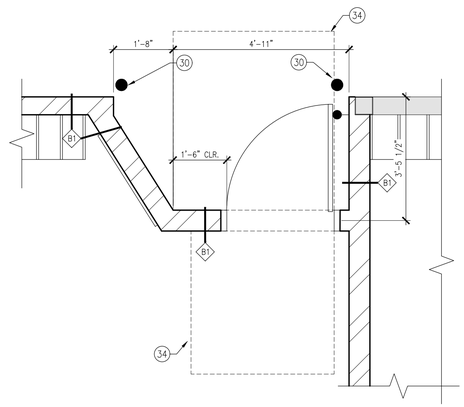
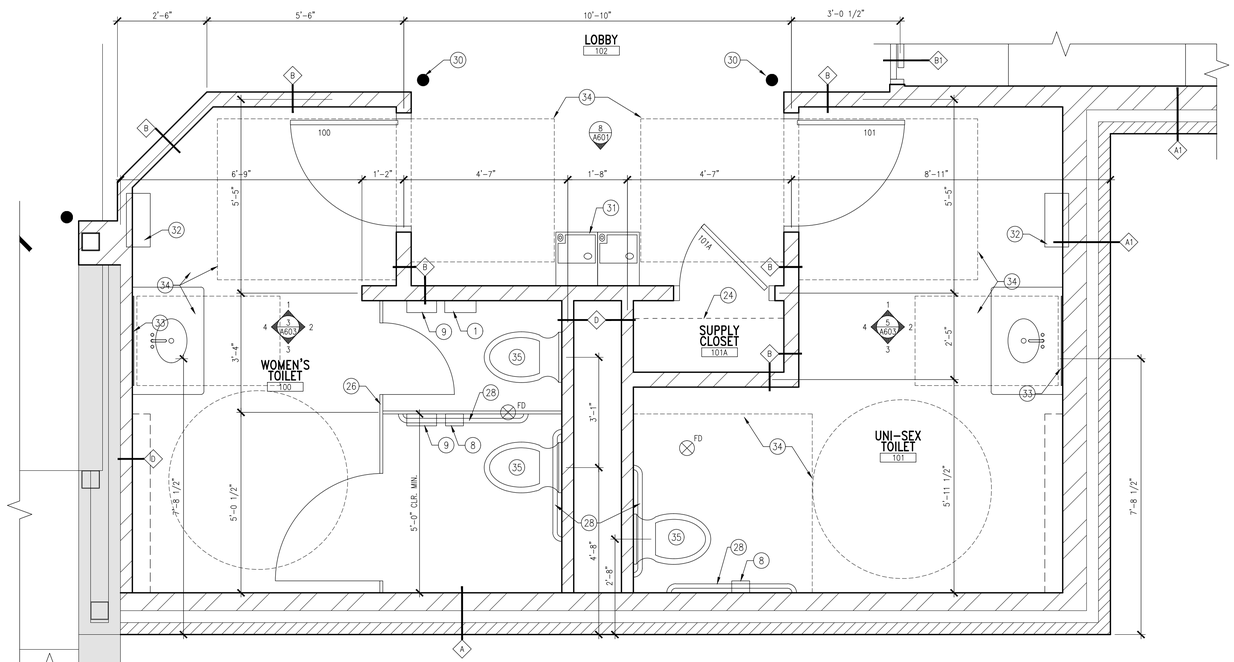


1 A106 ENLARGED INFANTS & PRE-TODDLERS PLAN
1/2" = 1'-0"



3 A106 ENLARGED ALCOVE
1/2" = 1'-0" MIRROR AS NEED – SEE OVERALL PLANS



2 A106 ENLARGED INFANTS & PRE-TODDLERS PLAN
1/2" = 1'-0"

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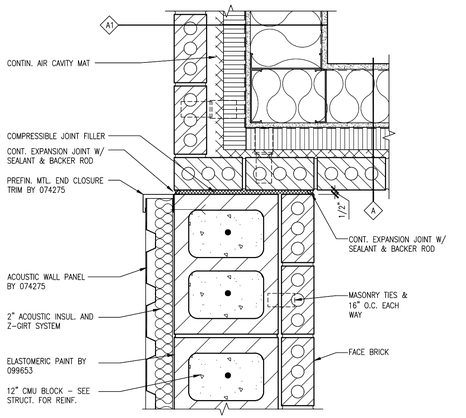
AIR COMBAT COMMAND

GRAND FORKS, ND
AIR FORCE BASE

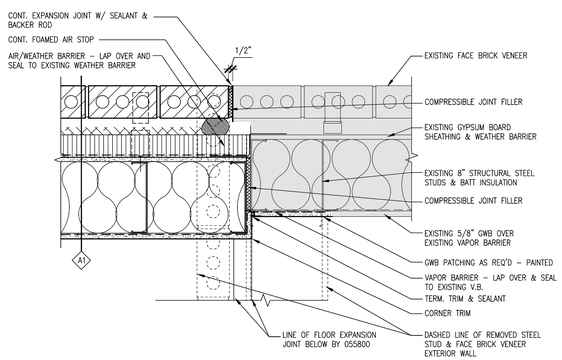
PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

ENLARGED FLOOR PLANS

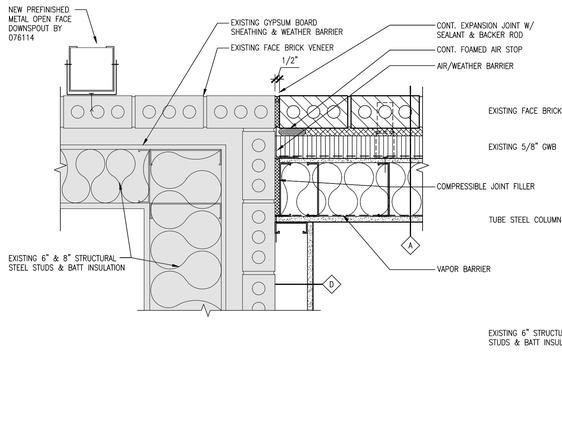
SHEET REFERENCE NUMBER
A-106



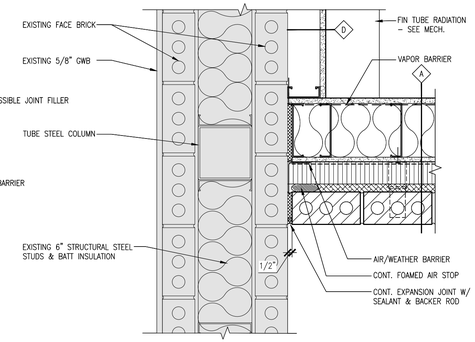
1 EXTERIOR WALL & SCREEN WALL DETAIL
A107 1-1/2" = 1'-0"



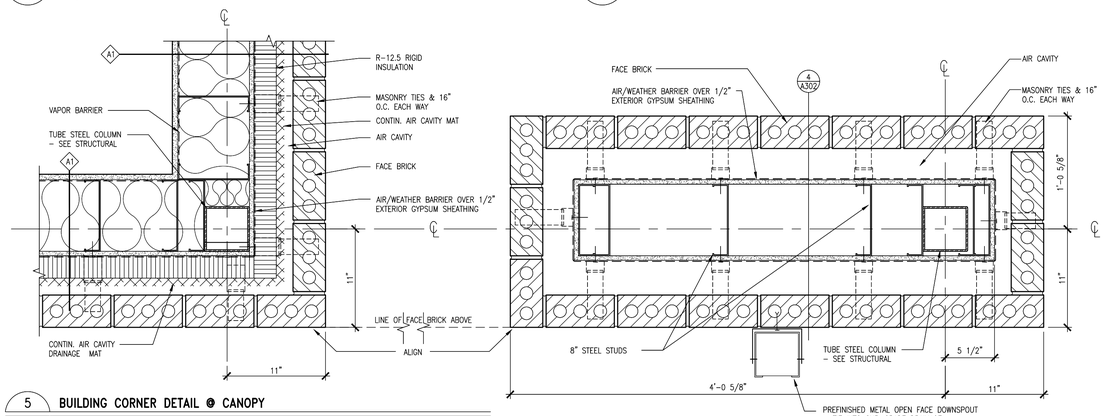
2 EXTERIOR WALL - NEW TO EXISTING DETAIL
A107 1-1/2" = 1'-0"



3 EXTERIOR WALL - NEW TO EXISTING DETAIL
A107 1-1/2" = 1'-0"

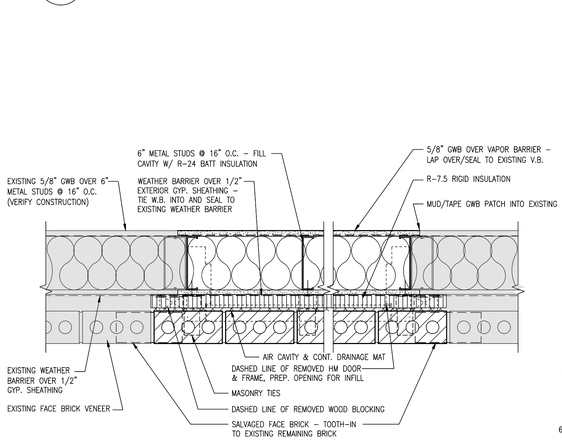


4 EXTERIOR WALL - NEW TO EXISTING DETAIL
A107 1-1/2" = 1'-0"

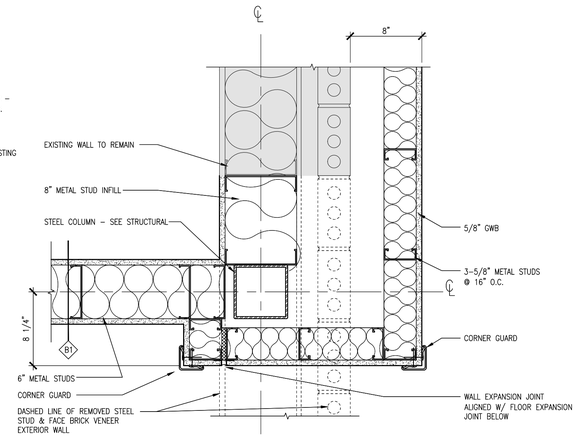


5 BUILDING CORNER DETAIL @ CANOPY
A107 1-1/2" = 1'-0"

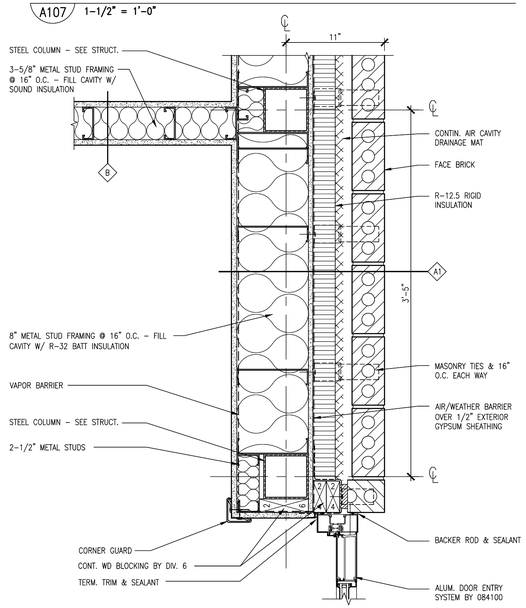
6 CANOPY COLUMN DETAIL
A107 1-1/2" = 1'-0"



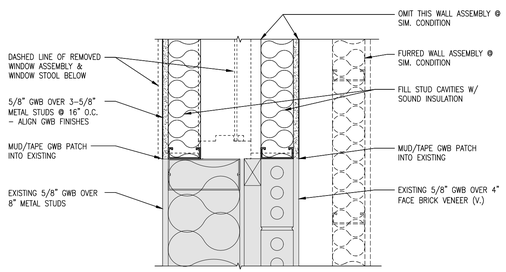
7 EXTERIOR DOOR INFILL
A107 1-1/2" = 1'-0"



8 WALL FURRING & COLUMN DETAIL
A107 1-1/2" = 1'-0"

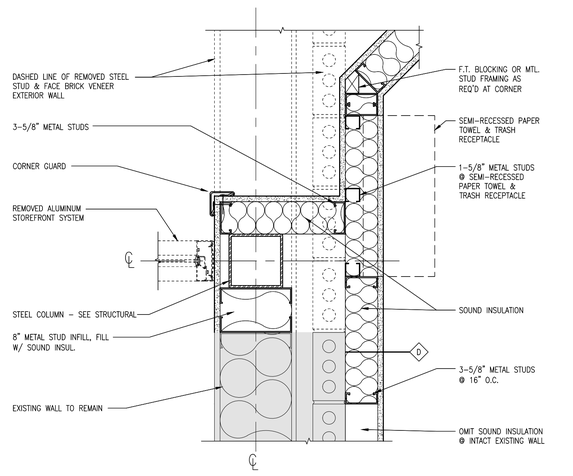


9 COLUMN PLAN DETAIL
A107 1-1/2" = 1'-0"



10 INTERIOR WINDOW INFILL
A107 1-1/2" = 1'-0"

11 NOT USED
A107 1-1/2" = 1'-0"



12 WALL FURRING & COLUMN DETAIL
A107 1-1/2" = 1'-0"

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PROJECT #JFSD201808 - 100% SUBMITTAL
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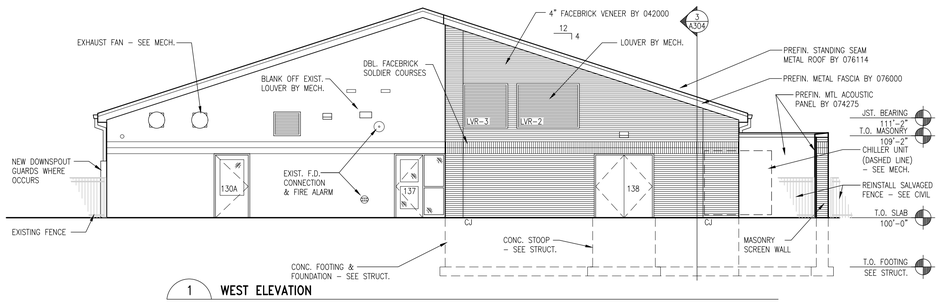
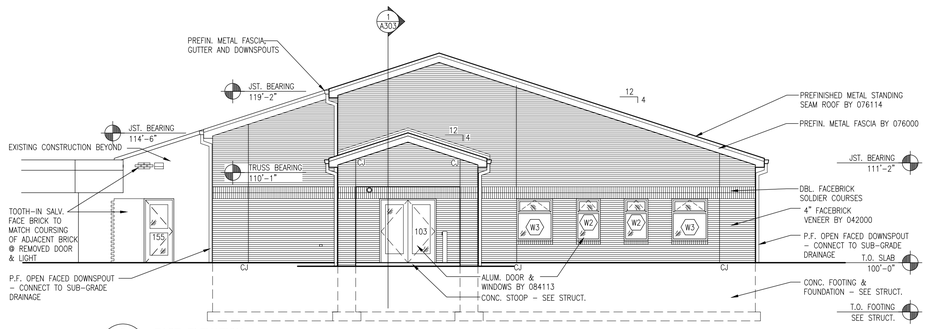
PLAN DETAILS

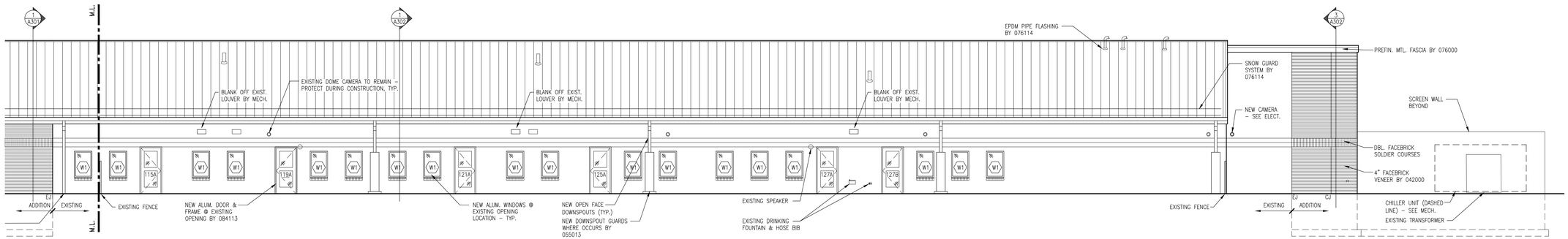
SHEET REFERENCE NUMBER
A-107



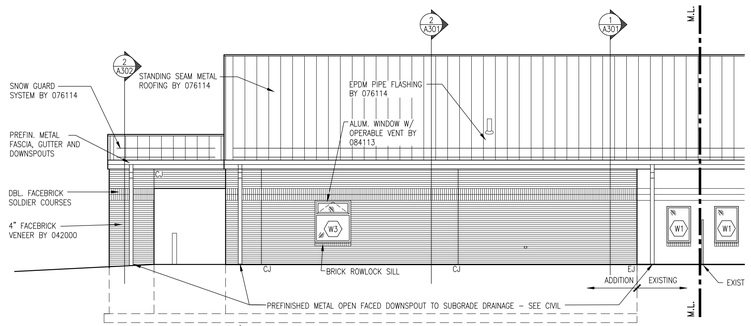
1 A201 **WEST ELEVATION**
1/8" = 1'-0



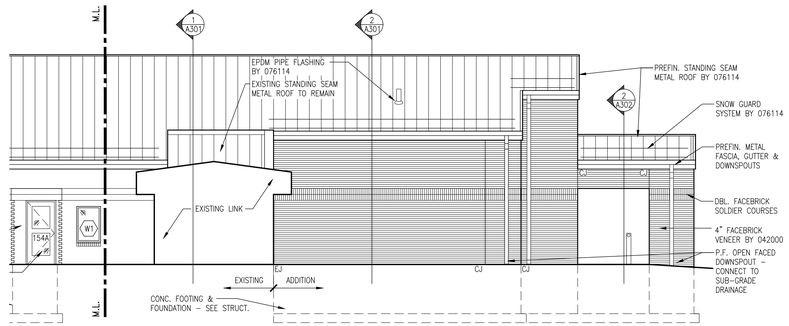
2 A201 **EAST ELEVATION**
1/8" = 1'-0



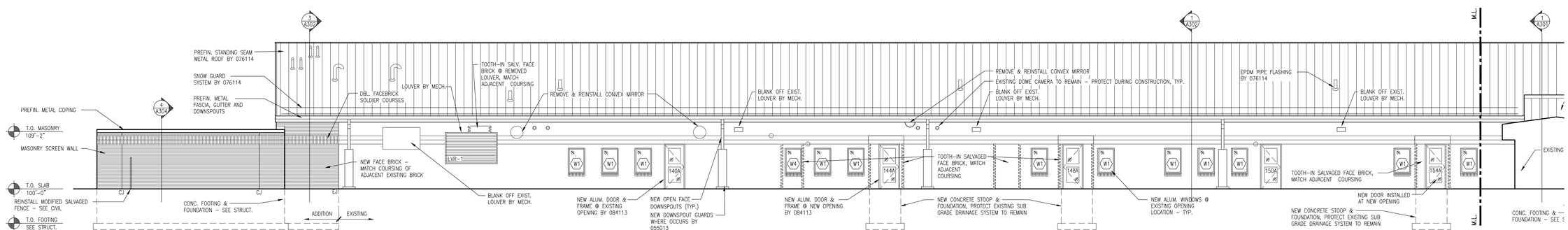
3A A201 **NORTH ELEVATION**
1/8" = 1'-0



3B A201 **NORTH ELEVATION**
1/8" = 1'-0



4B A201 **SOUTH ELEVATION**
1/8" = 1'-0



4A A201 **SOUTH ELEVATION**
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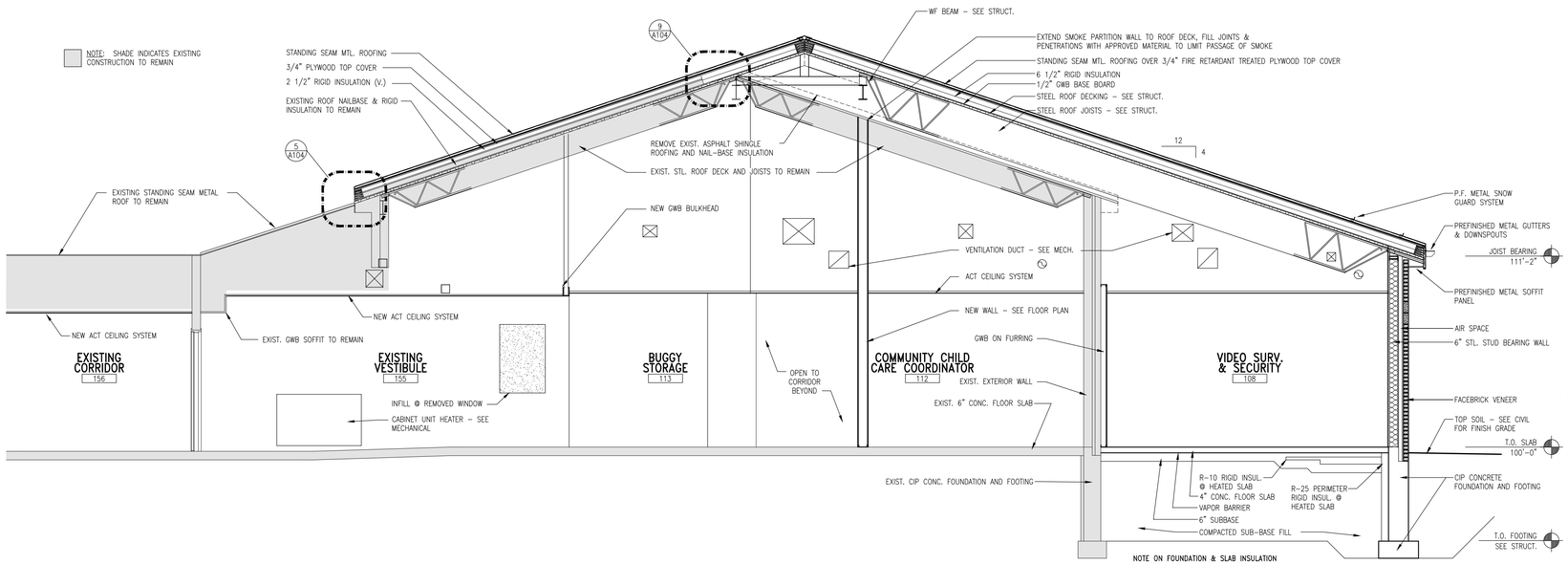
EXTERIOR ELEVATIONS

SHEET REFERENCE NUMBER
A-201



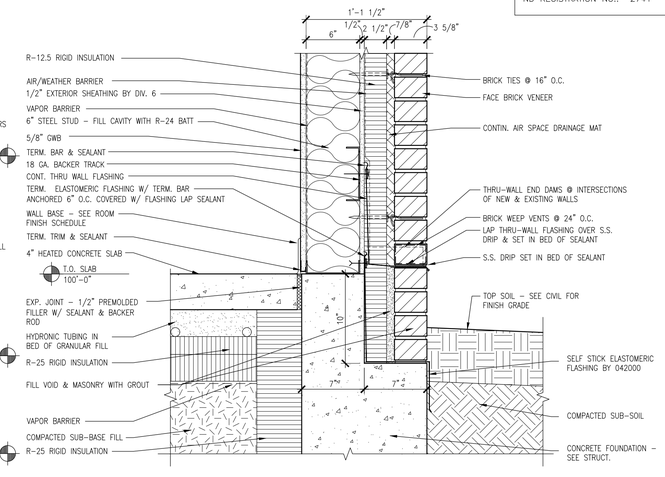
1 BUILDING SECTION THROUGH ADDITION
A301 1/4" = 1'-0

NOTE ON FOUNDATION & SLAB INSULATION

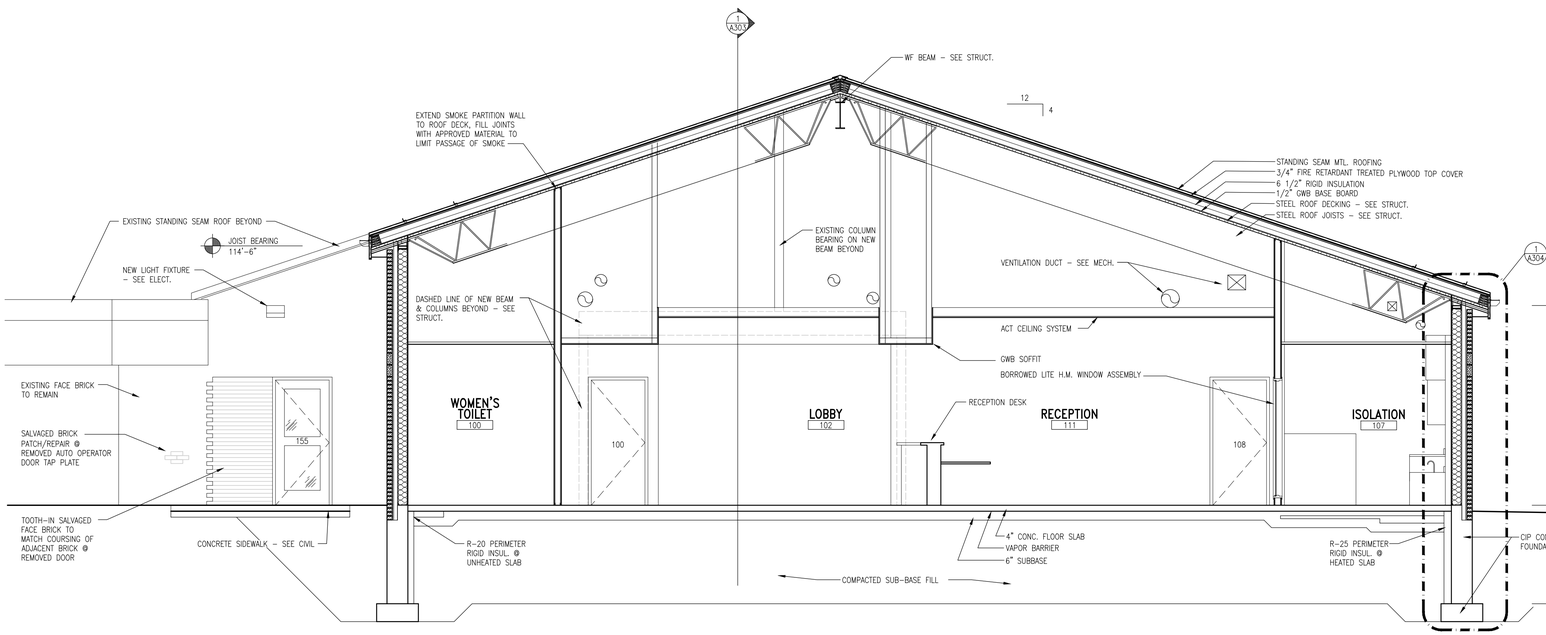
–HEATED SLABS REQ. R-10 INSULATION UNDER SLAB & R-25 VERTICAL INSULATION ON FOUNDATION WALL & 48" HORIZONTAL

–UNHEATED SLABS REQ. R-20 VERTICAL INSULATION ON FOUNDATION WALL & 24" HORIZONTAL

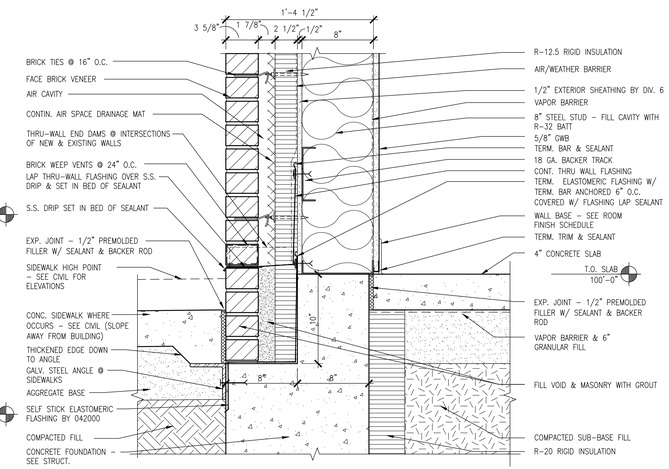
REFERENCE MECHANICAL SHEET M400 FOR RADIANT IN-FLOOR HEAT LOCATIONS.



3 BASE OF WALL DETAIL
A301 1-1/2" = 1'-0"



2 BUILDING SECTION THROUGH ADDITION
A301 1/4" = 1'-0"



4 BASE OF WALL DETAIL
A301 1-1/2" = 1'-0"

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ND REGISTRATION NO.: 2741

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CHK BY: RAA
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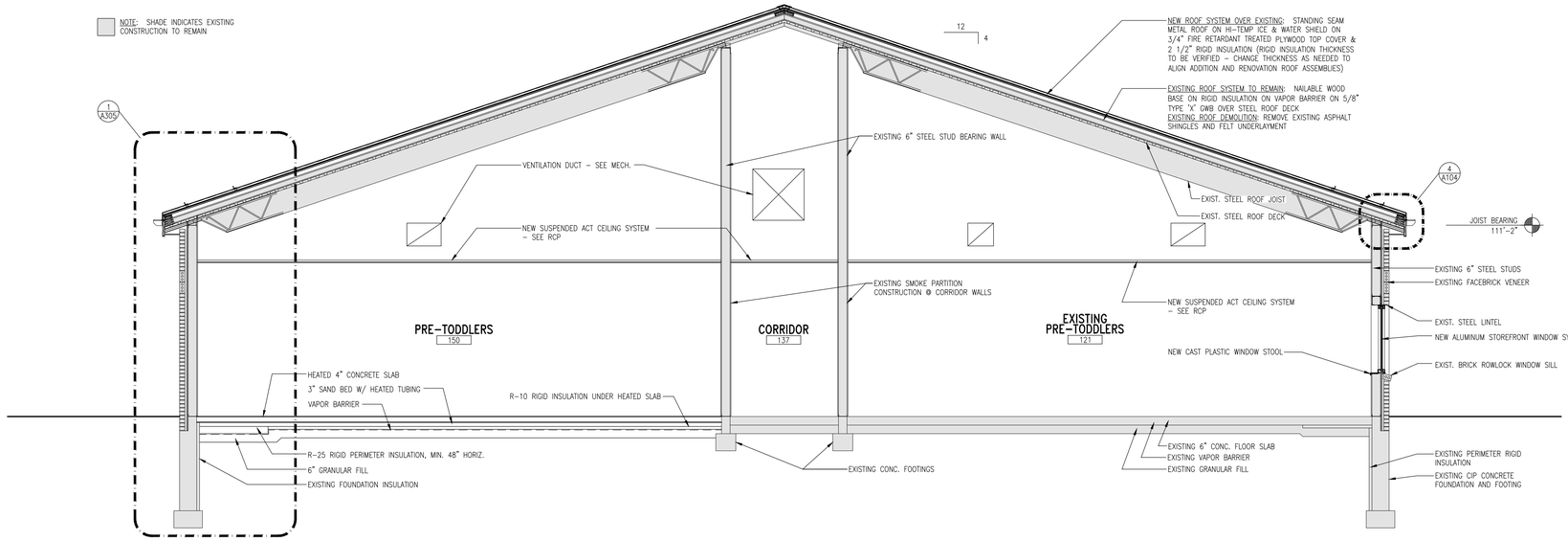
AIR COMBAT COMMAND

GRAND FORKS, ND
AIR FORCE BASE

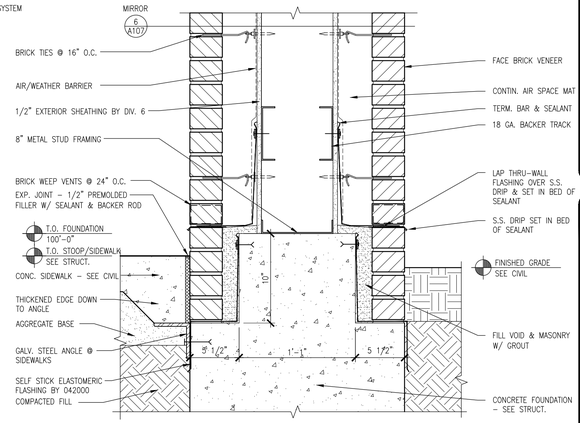
PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

BUILDING SECTIONS

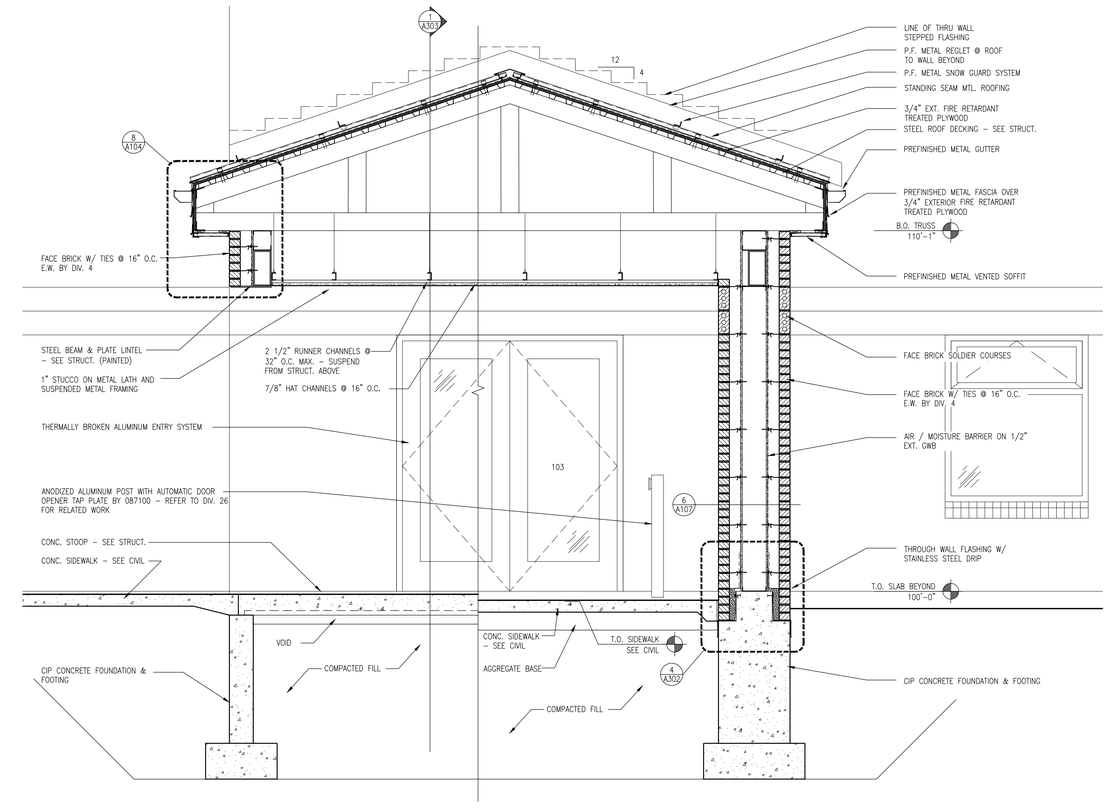
SHEET REFERENCE NUMBER
A-301



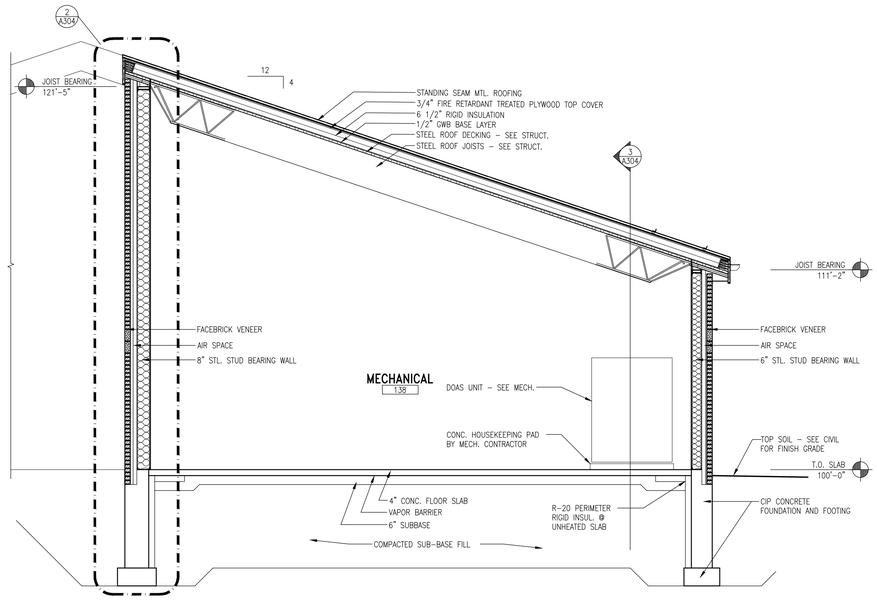
1 A302 **BUILDING SECTION THROUGH EXISTING RENOVATION AREA**
1/4" = 1'-0



4 A302 **CANOPY COLUMN BASE DETAIL**
1-1/2" = 1'-0"



2 A302 **BUILDING SECTION THROUGH PORTICO**
1/2" = 1'-0



3 A302 **BUILDING SECTION THROUGH MECHANICAL ROOM**
1/4" = 1'-0

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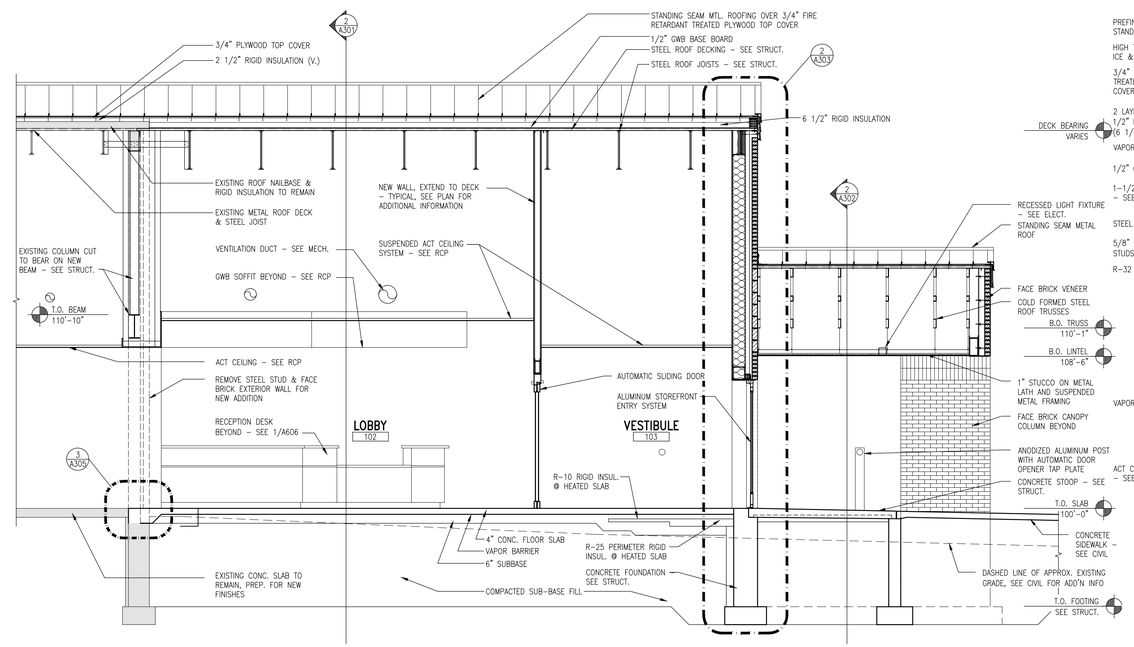
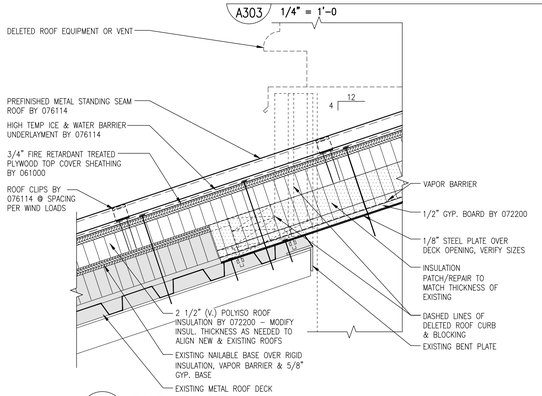
BUILDING SECTIONS

SHEET REFERENCE NUMBER
A-302

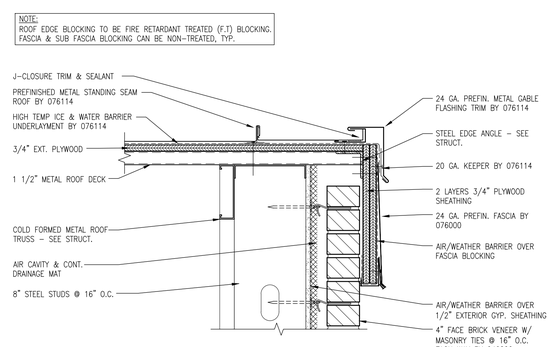


1 A303 **BUILDING SECTION THROUGH ADMINISTRATION ADDITION**
1/4" = 1'-0

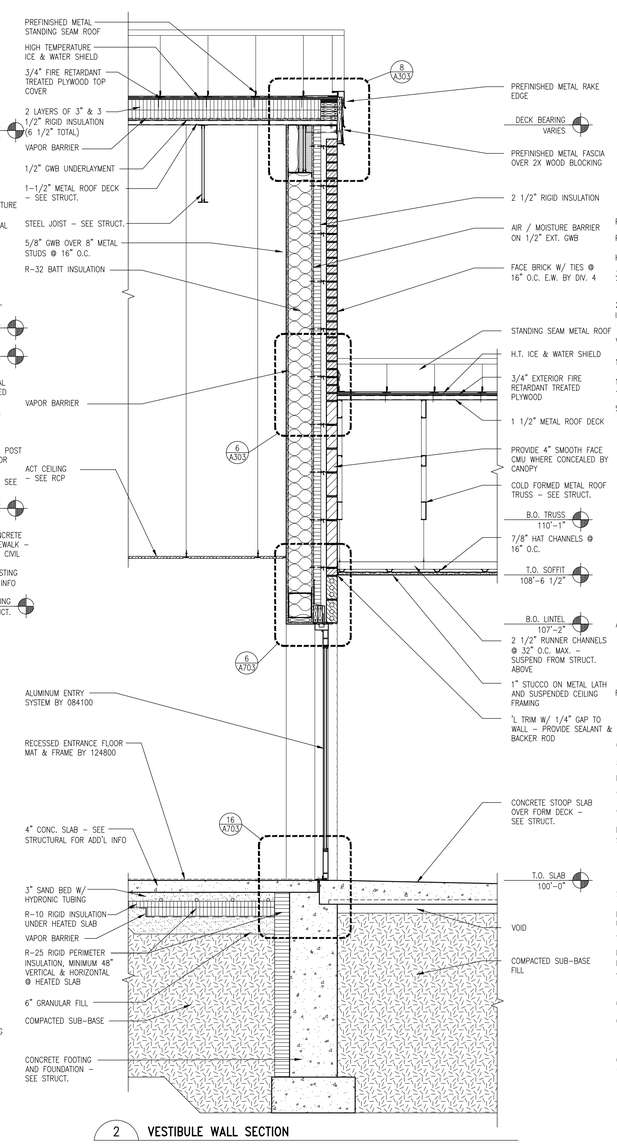


4 A303 **ROOF INFILL DETAIL**
1-1/2" = 1'-0"

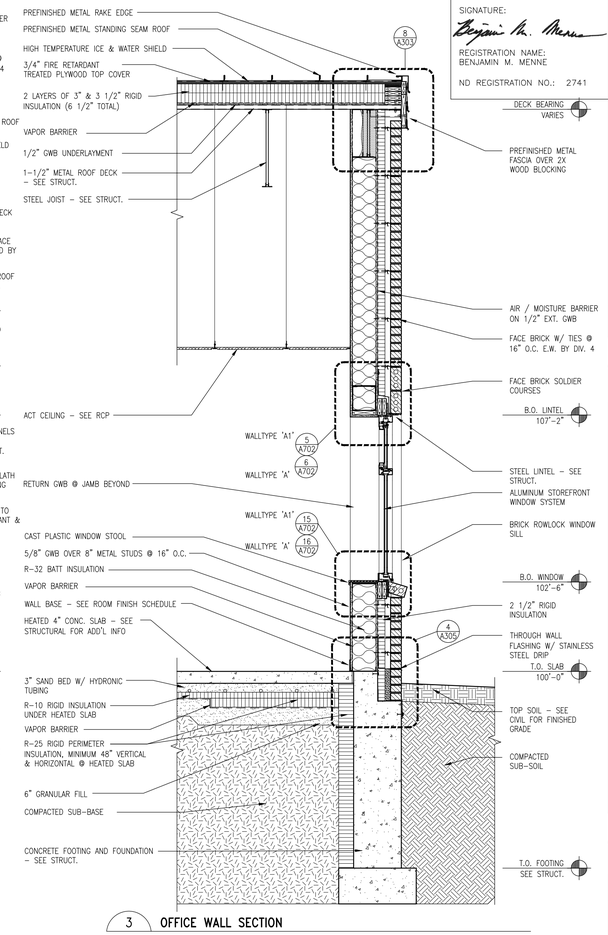
NOTE:
ROOF EDGE BLOCKING TO BE FIRE RETARDANT TREATED (F.T) BLOCKING. FASCIA & SUB FASCIA BLOCKING CAN BE NON-TREATED, TYP.



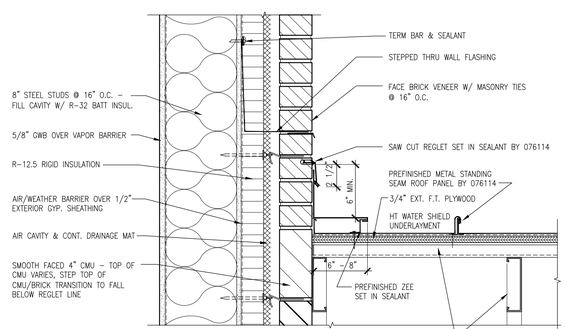
5 A303 **CANOPY ROOF EDGE DETAIL**
1-1/2" = 1'-0"



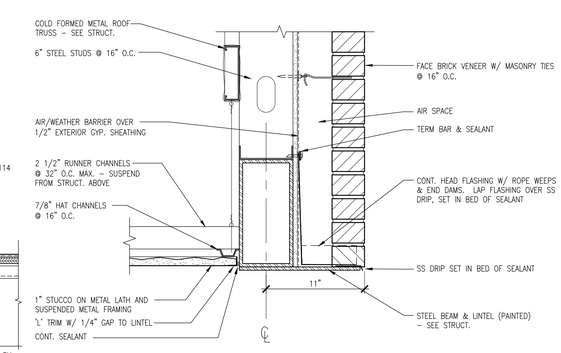
2 A303 **VESTIBULE WALL SECTION**
1/2" = 1'-0"



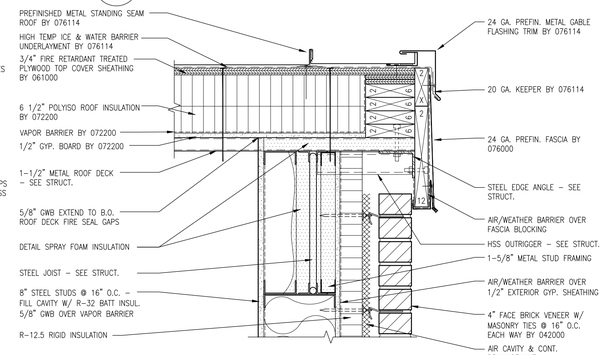
3 A303 **OFFICE WALL SECTION**
1/2" = 1'-0"



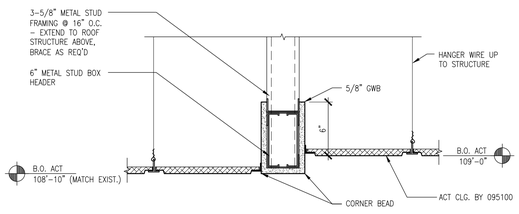
6 A303 **CANOPY ROOF WALL TRANSITION DETAIL**
1 1/2" = 1'-0"



7 A303 **CANOPY SOFFIT DETAIL**
1-1/2" = 1'-0"



8 A303 **ROOF EDGE DETAIL**
1-1/2" = 1'-0"



9 A303 **GWB BULKHEAD DETAIL**
1 1/2" = 1'-0"

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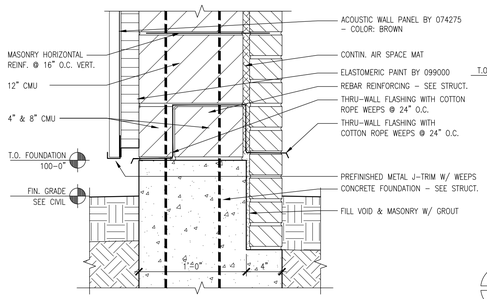
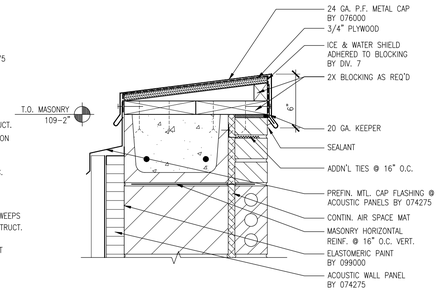
WALL SECTIONS

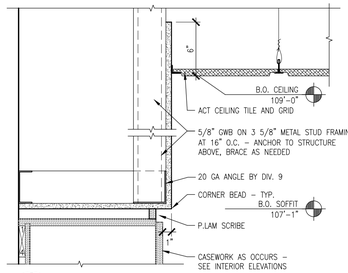
SHEET REFERENCE NUMBER
A-303



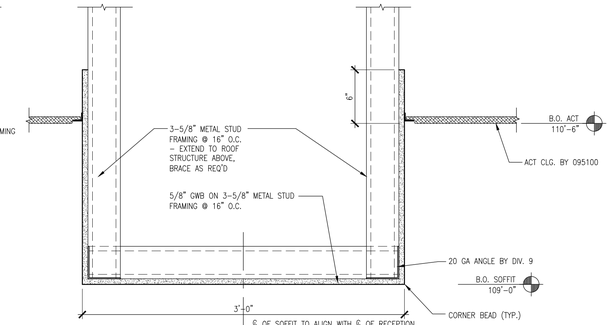
5 BASE OF SCREEN WALL DETAIL
A304 1-1/2" = 1'-0"



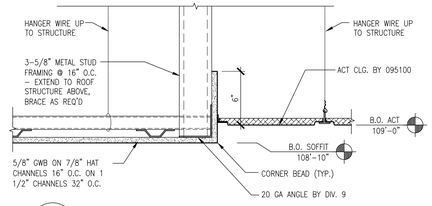
6 TOP OF SCREEN WALL DETAIL
A304 1-1/2" = 1'-0"



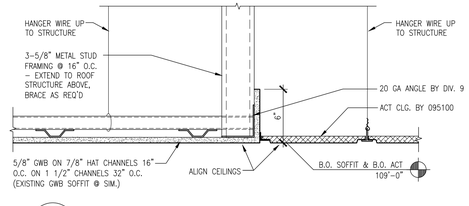
7 UPPER CABINET SOFFIT DETAIL
A304 1 1/2" = 1'-0"



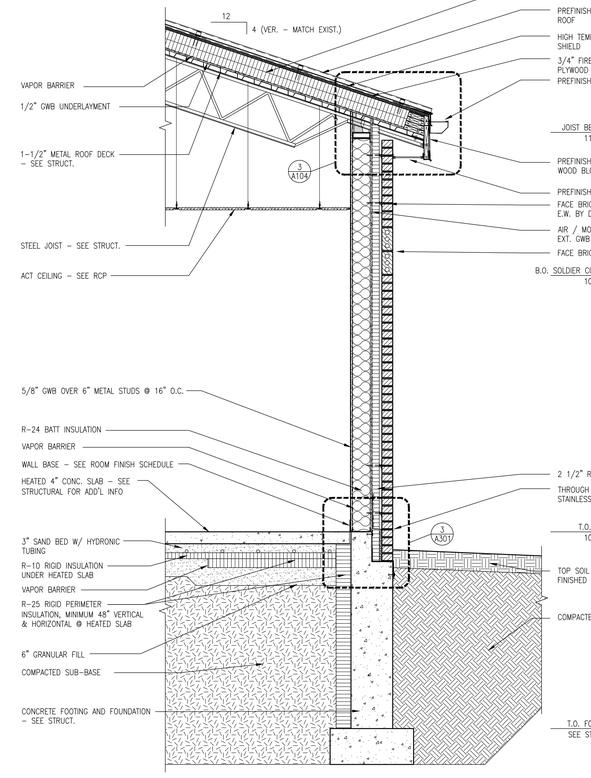
8 RECEPTION/LOBBY SOFFIT DETAIL
A304 1 1/2" = 1'-0"



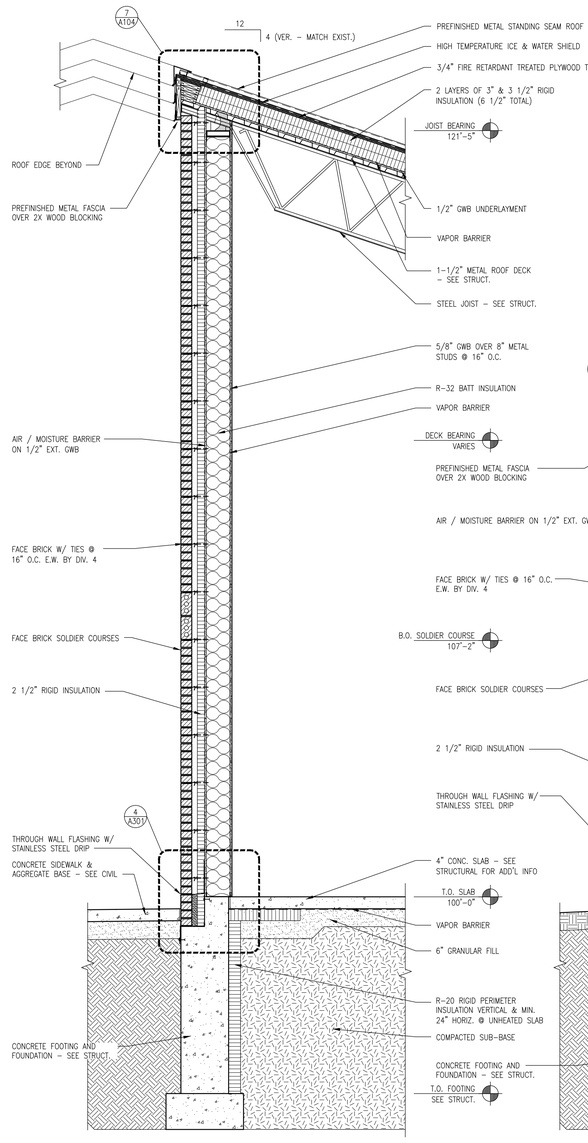
9 CORRIDOR ALCOVE SOFFIT DETAIL
A304 1 1/2" = 1'-0"



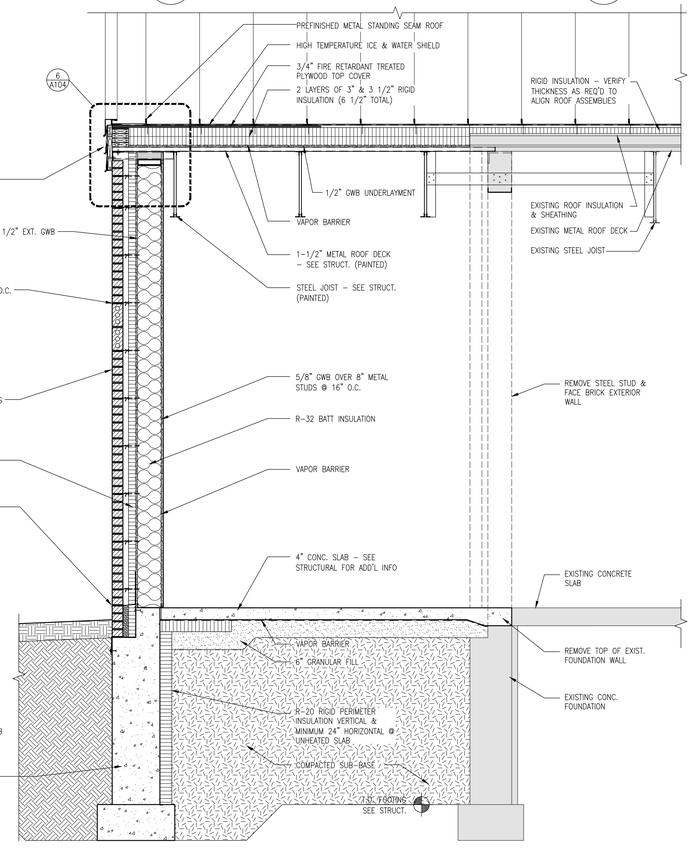
10 ACT TO GWB SOFFIT DETAIL
A304 1 1/2" = 1'-0"



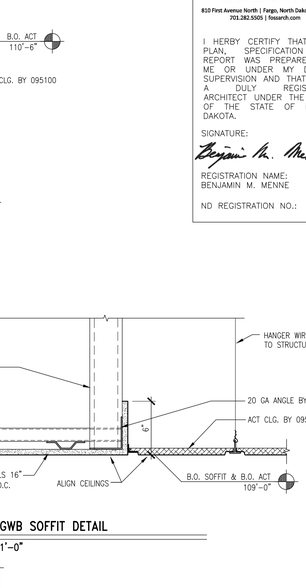
1 ADMINISTRATION ADDITION WALL SECTION
A304 1/2" = 1'-0



2 MECHANICAL ROOM ADDITION WALL SECTION
A304 1/2" = 1'-0"



3 MECHANICAL ROOM ADDITION WALL SECTION
A304 1/2" = 1'-0"



4 SCREEN WALL SECTION
A304 1/2" = 1'-0"

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WALL SECTIONS

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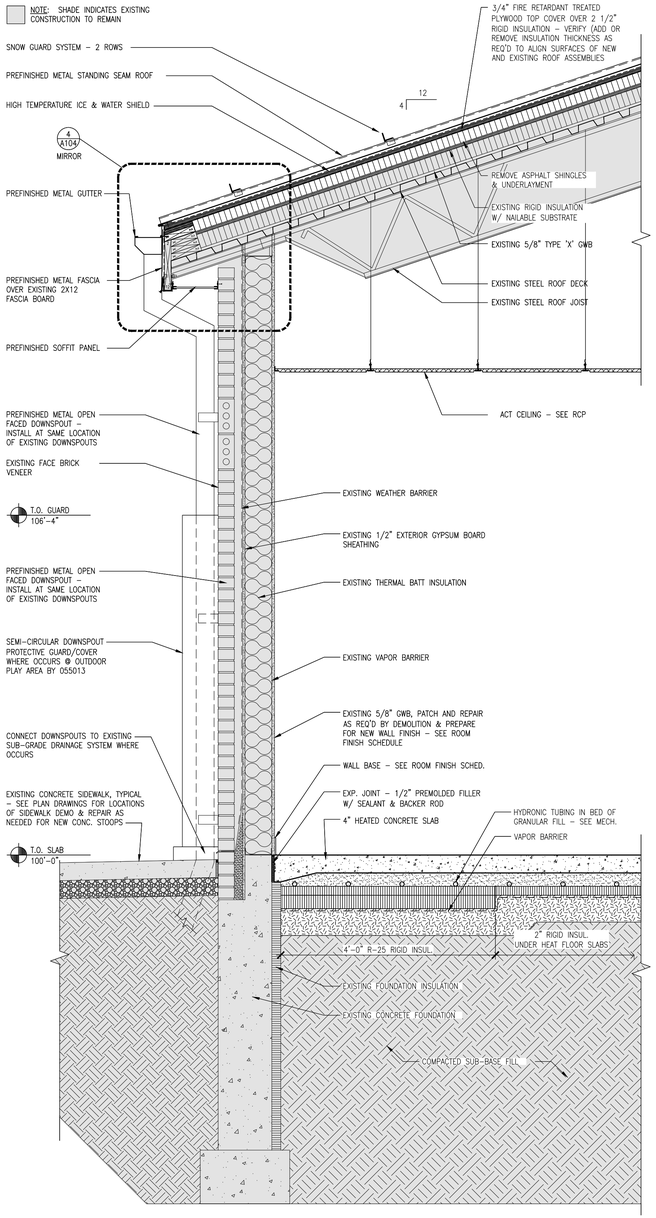
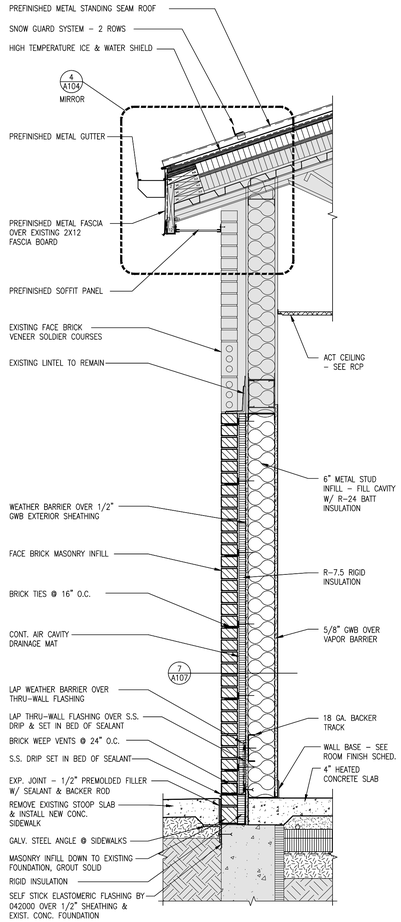
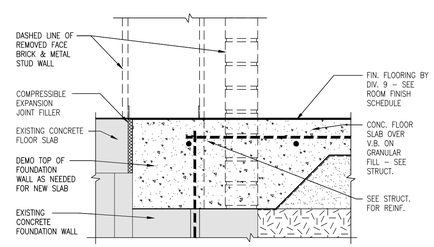
A-304



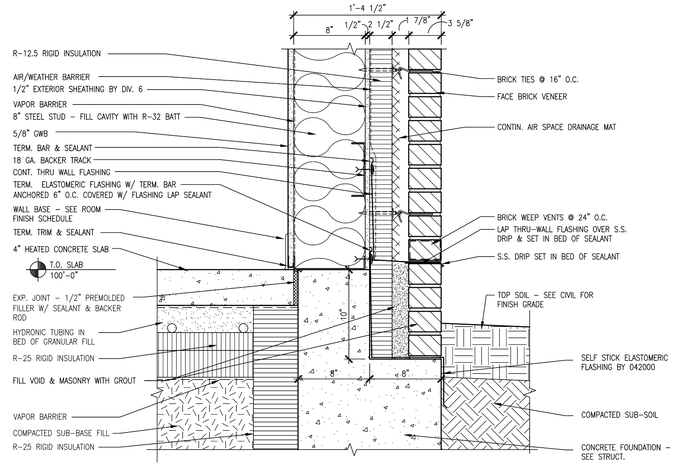
1 TYPICAL CHILD ACTIVITY ROOM EXTERIOR WALL
A305 3/4" = 1'-0



2 WALL SECTION @ DOOR INFILL
A305 3/4" = 1'-0



3 FLOOR EXPANSION JOINT
A305 1-1/2" = 1'-0"



4 BASE OF WALL DETAIL
A305 1-1/2" = 1'-0"

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WALL SECTIONS & DETAILS

SHEET REFERENCE NUMBER
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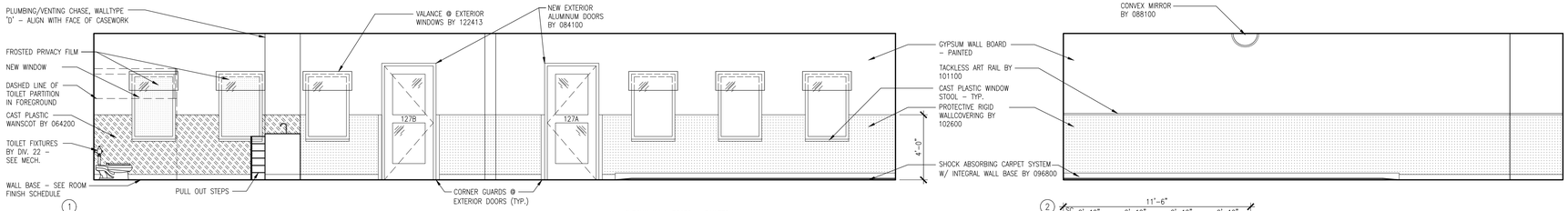
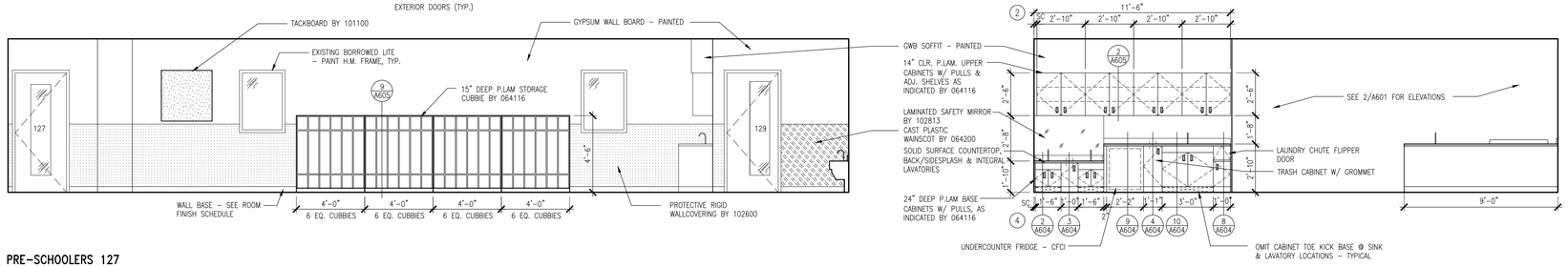
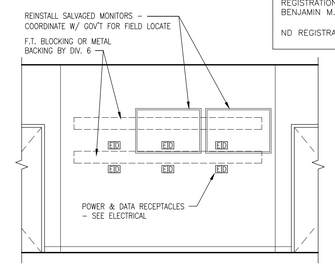




1 PRE–SCHOOLERS 127
A601 1/4" = 1'–0"



9 RECEPTION MONITORS
A601 1/4" = 1'–0"

GENERAL NOTES:
1. FLOORING MATERIAL TO BE INSTALLED UNDER ALL CABINETRY.
2. OMIT CABINET BASE AT ALL LAVATORY/SINK LOCATIONS.

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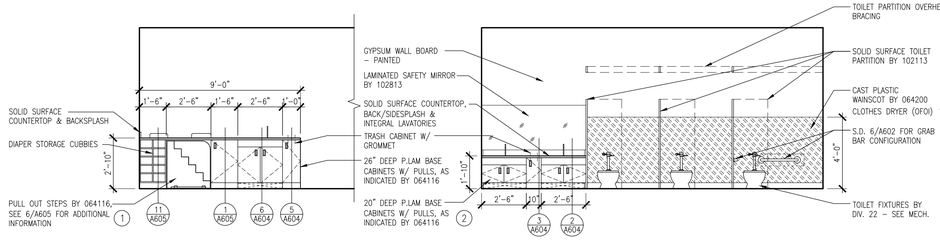
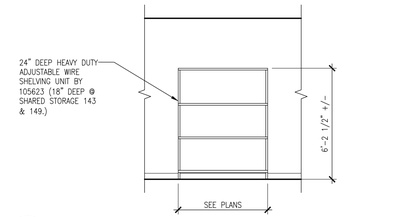


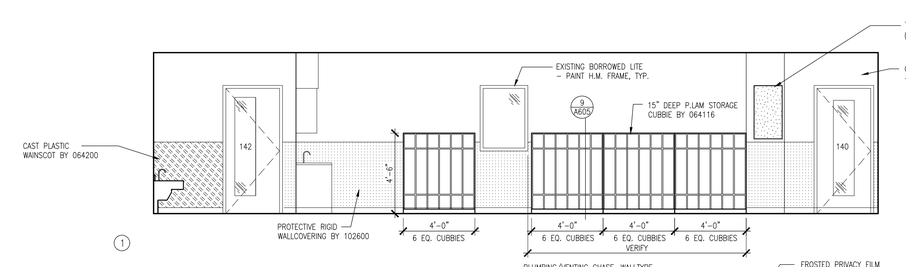
2 SERVICE 128
A601 1/4" = 1'–0" MIRROR @ SERVICE 141

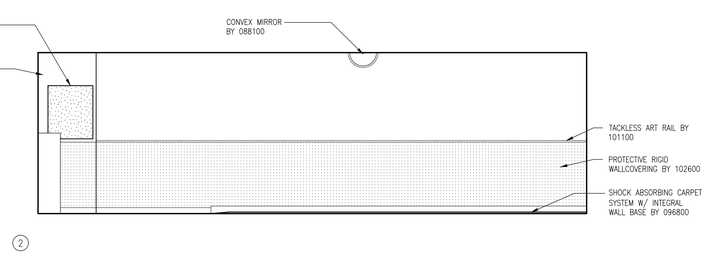
3 LAUNDRY 125
A601 1/4" = 1'–0"

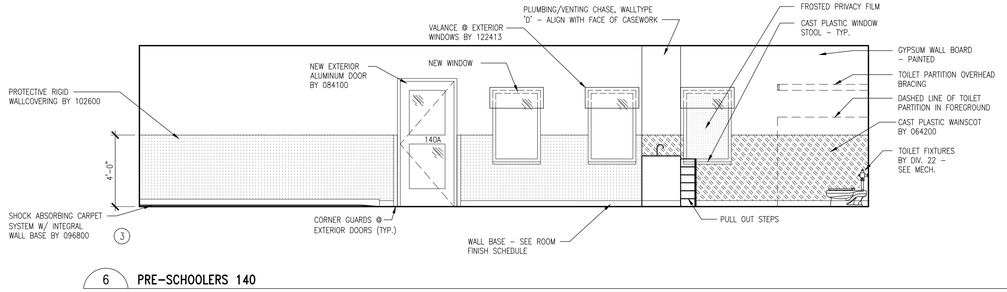
4 NOT USED
A601 1/4" = 1'–0"

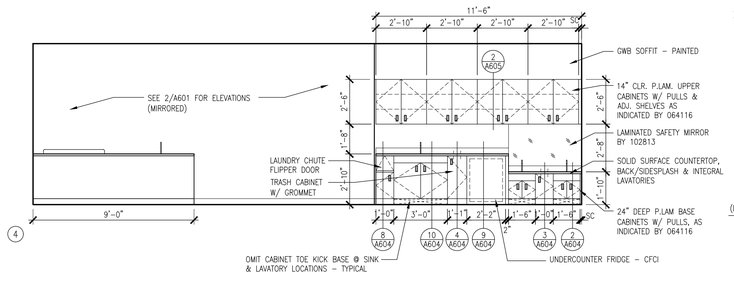


5 TYPICAL SHARED SUITE SHELVING
A601 1/4" = 1'–0"

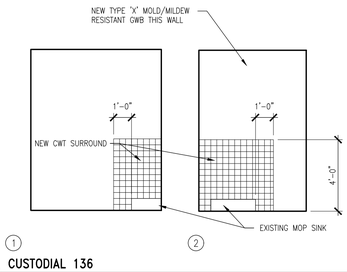




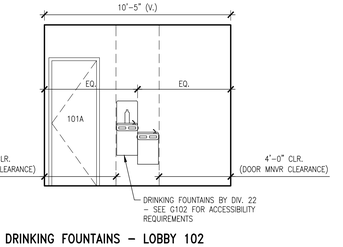




6 PRE–SCHOOLERS 140
A601 1/4" = 1'–0"



7 CUSTODIAL 136
A601 1/4" = 1'–0"



8 DRINKING FOUNTAINS – LOBBY 102
A601 1/4" = 1'–0"

DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND

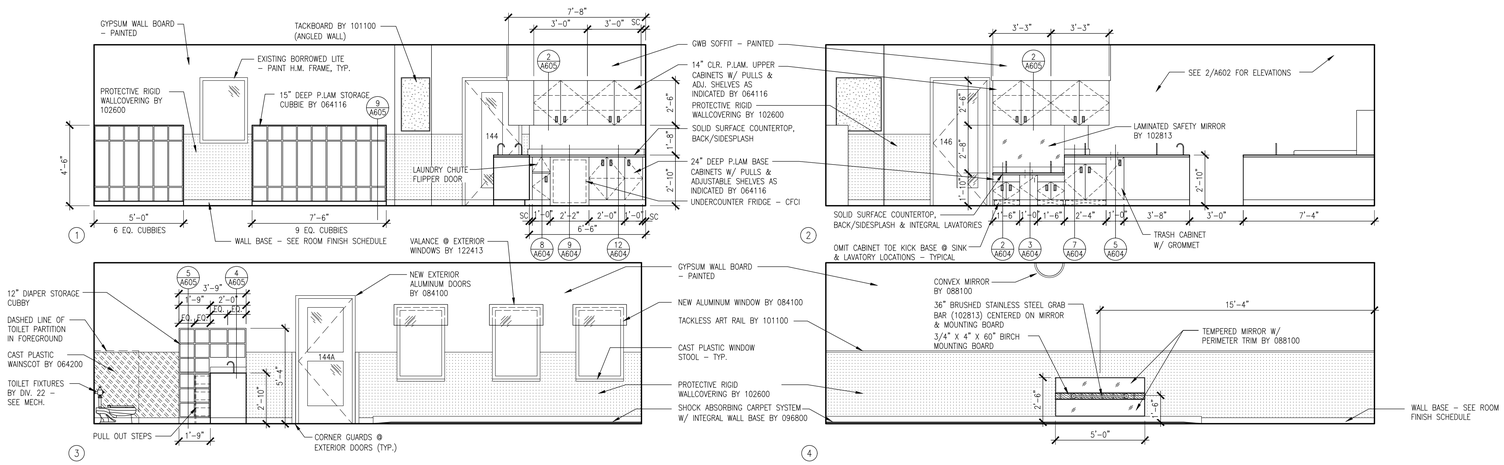
GRAND FORKS, ND
AIR FORCE BASE

DESIGNED BY: BMM
DWN BY: BMM
CHK BY: RAA
SUBMITTED BY: BMM
DATE: 22 APRIL 2022
PLOT DATE: AS SHOWN
PLOT SCALE: AS SHOWN
DRAWING NUMBER: AS SHOWN

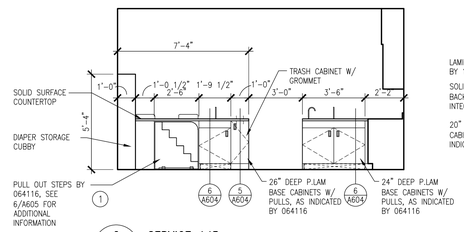
PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

INTERIOR ELEVATIONS

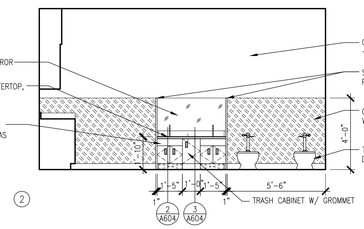
SHEET REFERENCE NUMBER
A-601

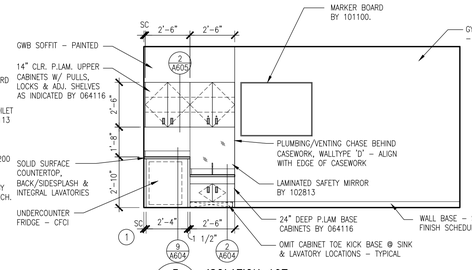


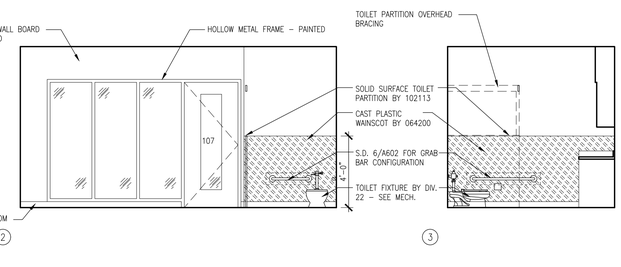
1 **TODDLERS 144**
A602 1/4" = 1'-0"



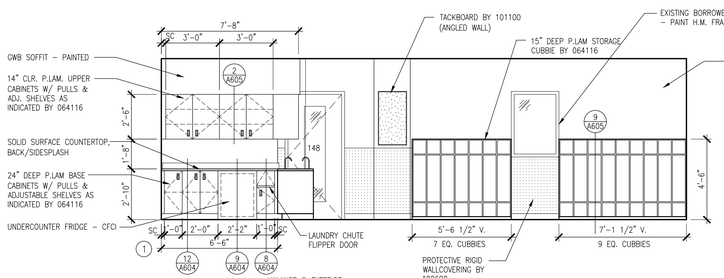
2 **SERVICE 145**
A602 1/4" = 1'-0" MIRROR @ SERVICE 147

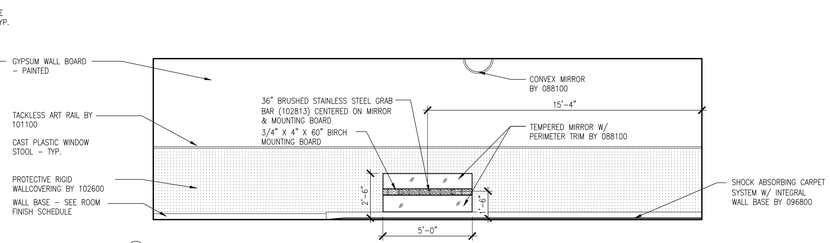


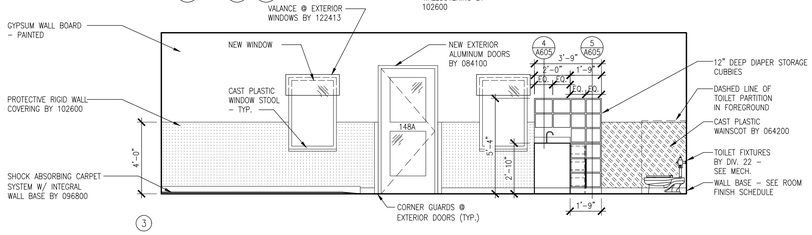


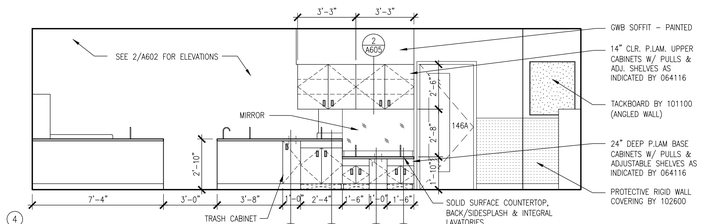


3 **ISOLATION 107**
A602 1/4" = 1'-0"

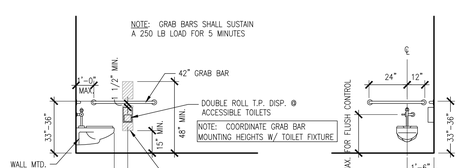




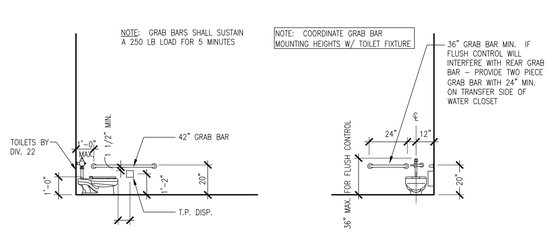




4 **TODDLERS 148**
A602 1/4" = 1'-0"



5 **GRAB BAR CONFIGURATION – ADULT TOILET**
A602 1/4" = 1'-0"



6 **GRAB BAR CONFIGURATION – CHILD TOILET**
A602 1/4" = 1'-0"

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I HERBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.

SIGNATURE:

REGISTRATION NAME:
BENJAMIN M. MENNE

ND REGISTRATION NO.: 2741

Symbol	Description	Date	Approved

DESIGNED BY: BMM
DWN BY: BMM
CHK BY: RAA
SUBMITTED BY: BMM
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DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND
GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
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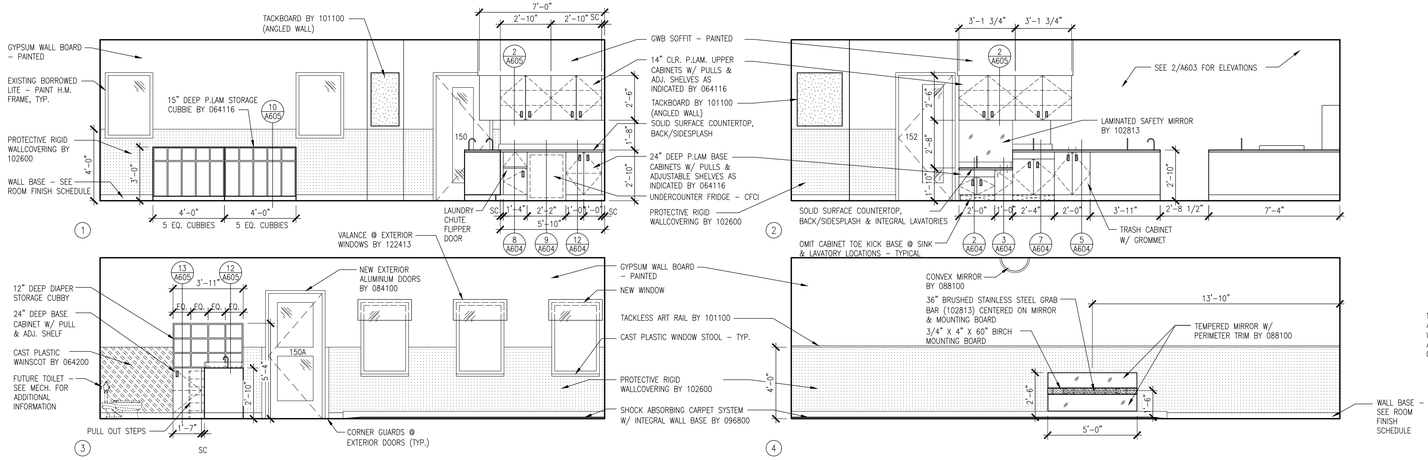
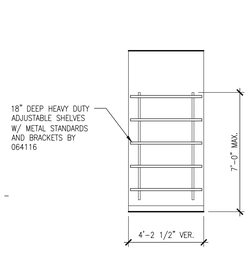
INTERIOR ELEVATIONS

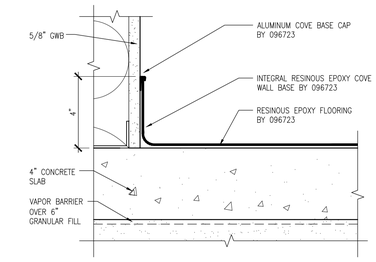
SHEET REFERENCE NUMBER
A-602



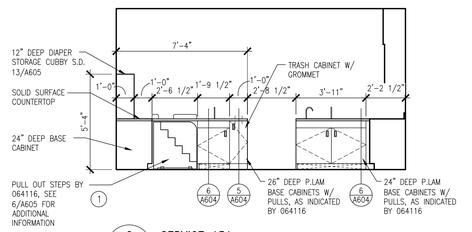
1 PRE–TODDLERS 150
A603 1/4" = 1'–0"



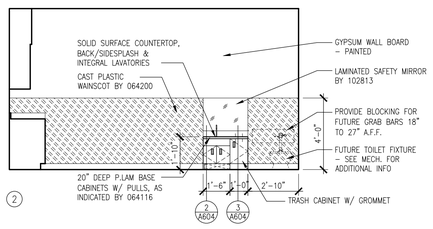
6 SUPPLY CLOSET 101A SHELVING
A603 1/4" = 1'–0"

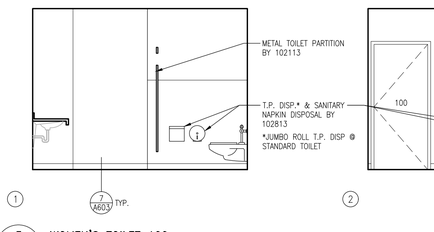


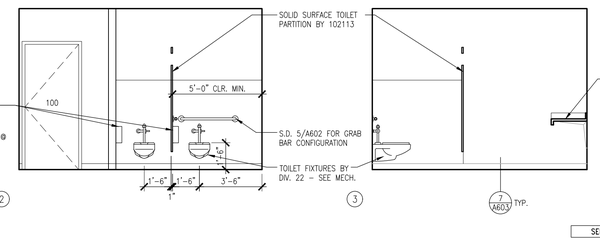
7 COVED BASE DETAIL
A603 3" = 1'–0"

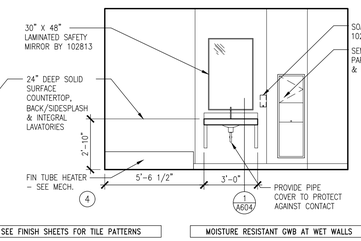


2 SERVICE 151
A603 1/4" = 1'–0"





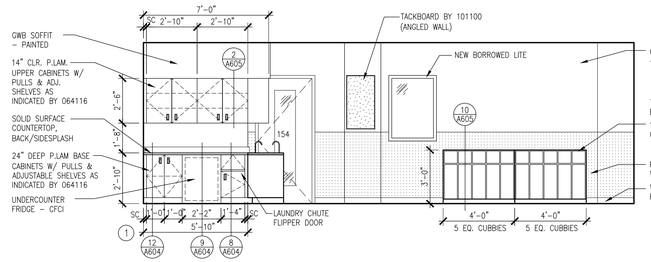


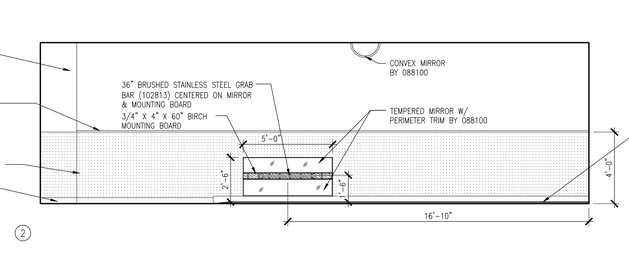


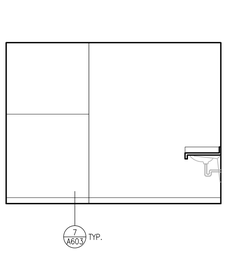
3 WOMEN'S TOILET 100
A603 1/4" = 1'–0"

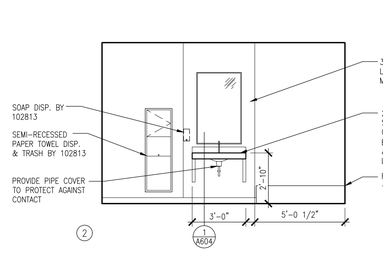
SEE FINISH SHEETS FOR TILE PATTERNS

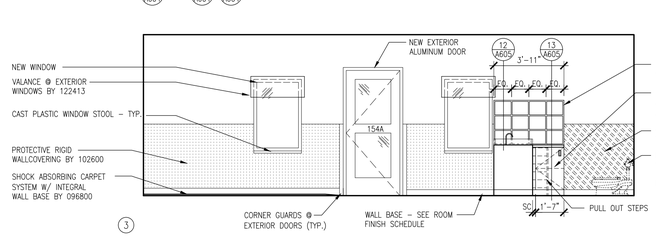
MOISTURE RESISTANT GWB AT WET WALLS

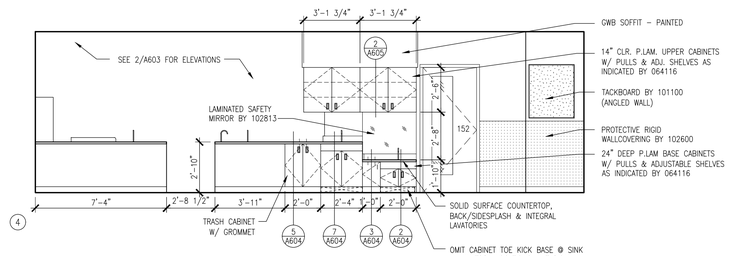


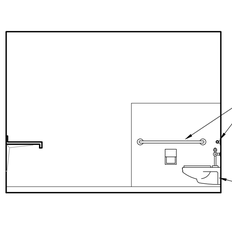


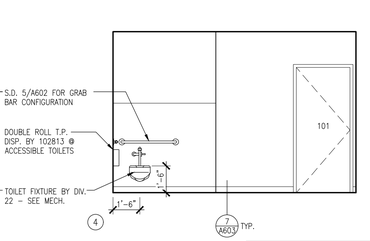












SEE FINISH SHEETS FOR TILE PATTERNS

MOISTURE RESISTANT GWB AT WET WALLS

4 INFANTS 154
A603 1/4" = 1'–0"

5 UNI–SEX TOILET 101
A603 1/4" = 1'–0"

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SIGNATURE:

REGISTRATION NAME:
BENJAMIN M. MENNE

ND REGISTRATION NO.: 2741

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DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND

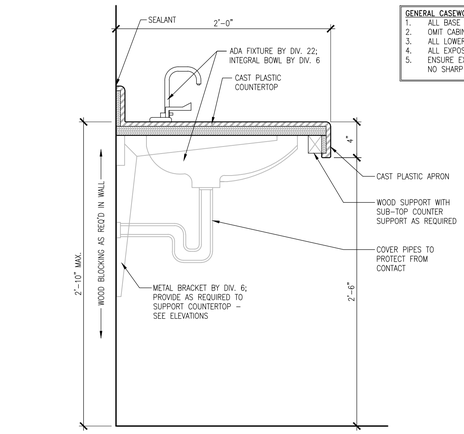
GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE &
RECAPITALIZATION B168

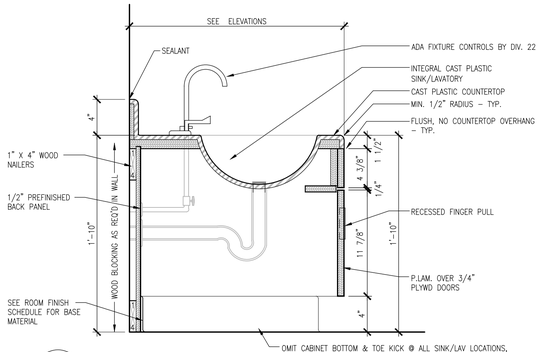
INTERIOR ELEVATIONS

SHEET REFERENCE NUMBER
A-603

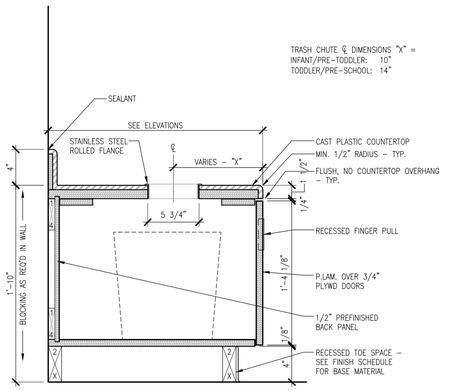
GENERAL CASEWORK NOTES:
1. ALL BASE CABINETS SHALL BE INSTALLED AFTER FINISH FLOORING HAS BEEN INSTALLED WALL TO WALL.
2. OMIT CABINET BOTTOM AT ALL SINK AND LAVATORY LOCATIONS.
3. ALL LOWER CABINETS IN CHILD ACTIVITY ROOMS SHALL HAVE CHILD PROOF LATCHES AND MAGNETIC CATCHES.
4. ALL EXPOSED SURFACES TO MATCH FINISH OF ROOM CASEWORK.
5. ENSURE EXPOSED EDGES ARE FITTED WITH VINYL NOSING OR A PROFILED HARDWOOD EDGE SO THAT THERE ARE NO SHARP EDGES.



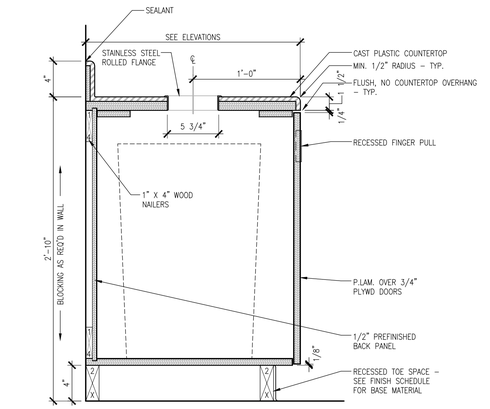
1 A604 **COUNTERTOP DETAIL WITH SINK**
SCALE: 1 1/2" = 1'–0"



2 A604 **CHILD LAVATORY**
SCALE: 1 1/2" = 1'–0"



3 A604 **CHILD TRASH CABINET**
SCALE: 1 1/2" = 1'–0"
NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED



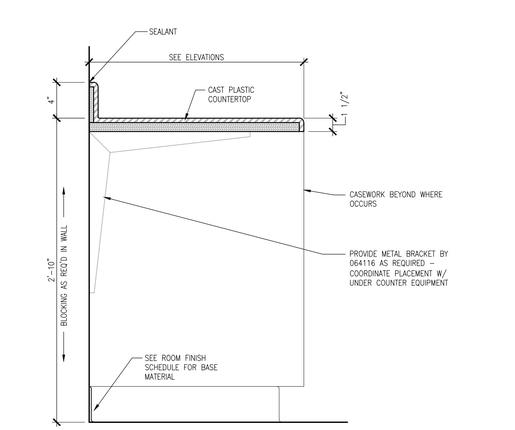
4 A604 **ADULT TRASH CABINET**
SCALE: 1 1/2" = 1'–0"
NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED

5 A604 **ADULT TRASH CABINET**
SCALE: 1 1/2" = 1'–0"
NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED

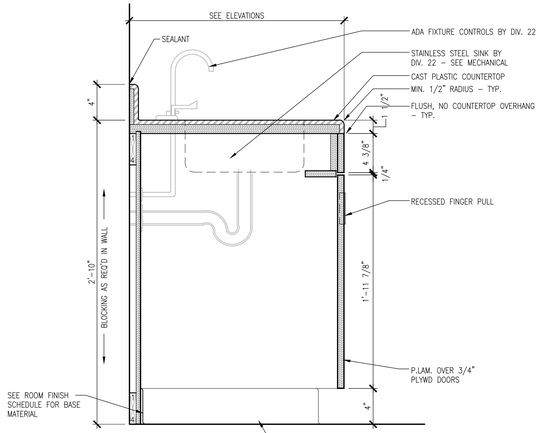
6 A604 **SERVICE AREA SINK CABINET**
SCALE: 1 1/2" = 1'–0"

7 A604 **ADULT LAVATORY**
SCALE: 1 1/2" = 1'–0"

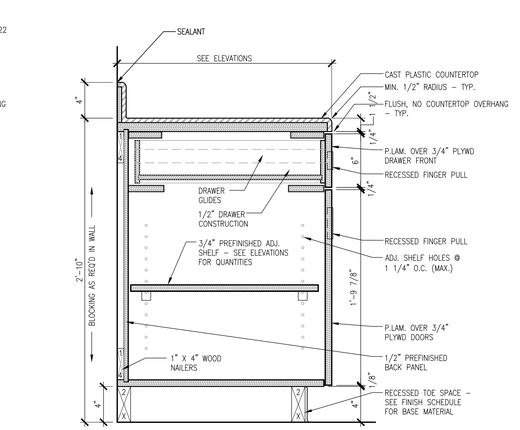
8 A604 **LAUNDRY CHUTE CABINET**
SCALE: 1 1/2" = 1'–0"
NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED



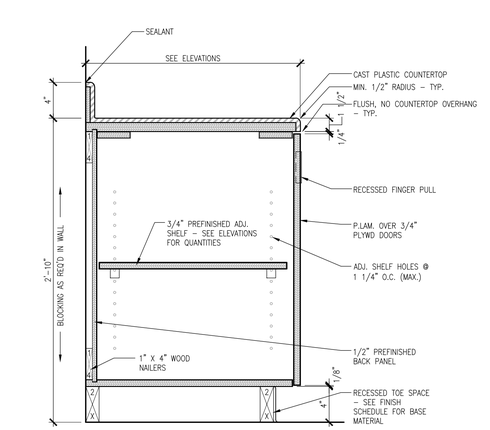
9 A604 **COUNTERTOP DETAIL**
SCALE: 1 1/2" = 1'–0"



10 A604 **SERVICE AREA SINK CABINET**
SCALE: 1 1/2" = 1'–0"



11 A604 **BASE CABINET WITH DRAWER**
SCALE: 1 1/2" = 1'–0"
NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED



12 A604 **BASE CABINET**
SCALE: 1 1/2" = 1'–0"
NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED

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SIGNATURE:

REGISTRATION NAME:
BENJAMIN M. MENNE

ND REGISTRATION NO.: 2741

U.S. AIR FORCE

Symbol	Description	Date	Approved

DESIGNED BY: BMM
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AIR COMBAT COMMAND
GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
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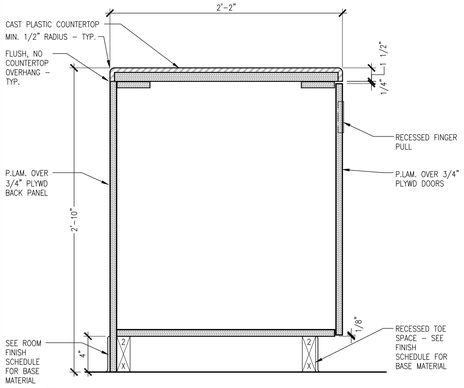
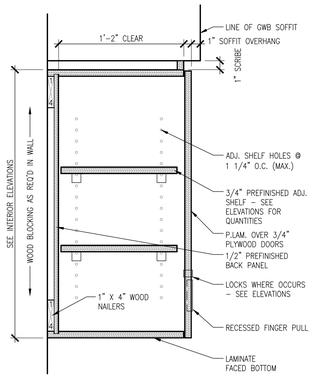
CASEWORK DETAILS

SHEET REFERENCE NUMBER
A-604



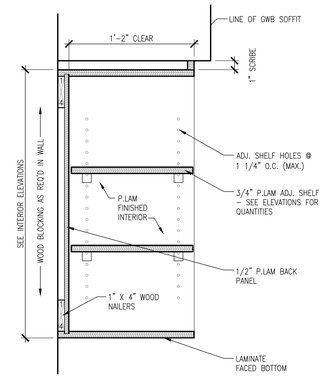
1 BASE CABINET
A605 SCALE: 1 1/2" = 1'-0"

NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED



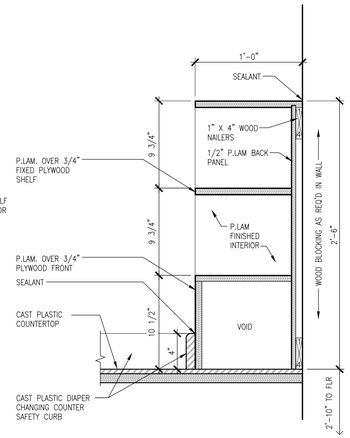
2 UPPER CABINET DETAIL
A605 SCALE: 1 1/2" = 1'-0"

NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED



3 OPEN UPPER CABINET DETAIL
A605 SCALE: 1 1/2" = 1'-0"

NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED

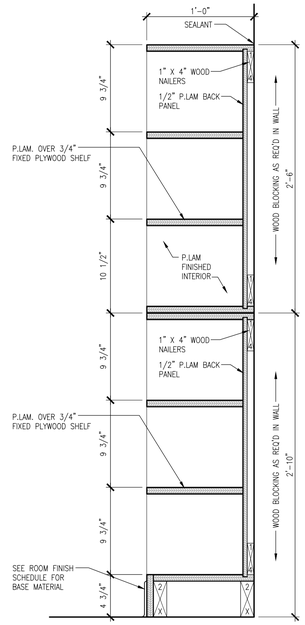


4 DIAPER STORAGE CUBBY
A605 SCALE: 1 1/2" = 1'-0"

NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED

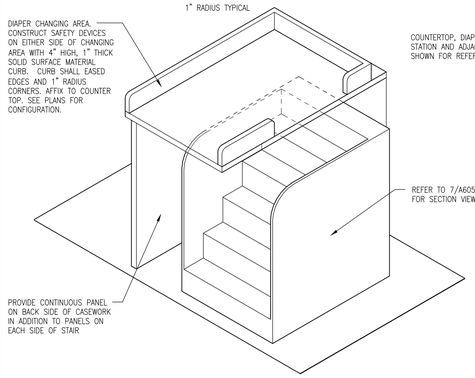
GENERAL CASEWORK NOTES:

1. ALL BASE CABINETS SHALL BE INSTALLED AFTER FINISH FLOORING HAS BEEN INSTALLED WALL TO WALL.
2. OMIT CABINET BOTTOM AT ALL SINK AND LAVATORY LOCATIONS.
3. ALL LOWER CABINETS IN CHILD ACTIVITY ROOMS SHALL HAVE CHILD PROOF LATCHES AND MAGNETIC CATCHES.
4. ALL EXPOSED SURFACES TO MATCH FINISH OF ROOM CASEWORK.
5. ENSURE EXPOSED EDGES ARE FITTED WITH VINYL NOSING OR A PROFILED HARDWOOD EDGE SO THAT THERE ARE NO SHARP EDGES.



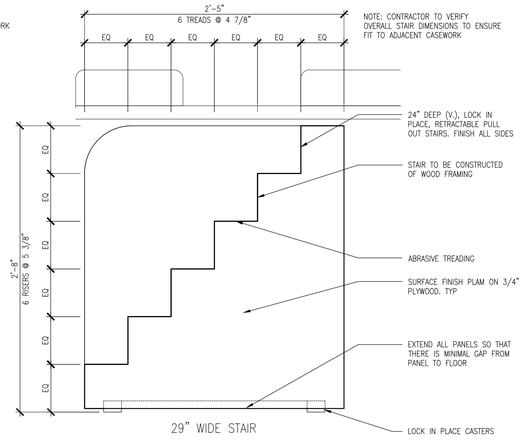
5 BASE CABINET & DIAPER STORAGE CUBBY
A605 SCALE: 1 1/2" = 1'-0"

NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED

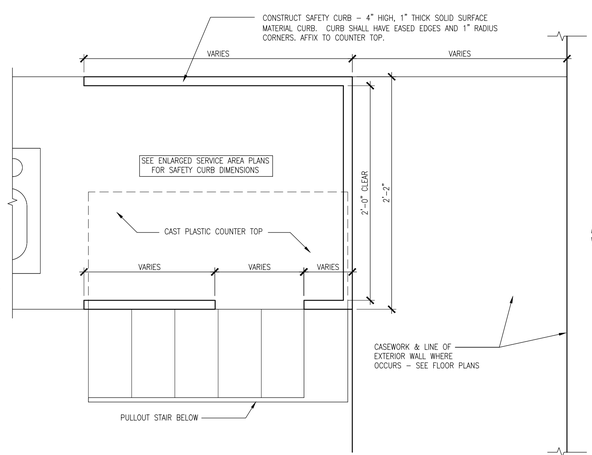


6 PULLOUT STAIR ISOMETRIC
A605 SCALE: N.T.S.

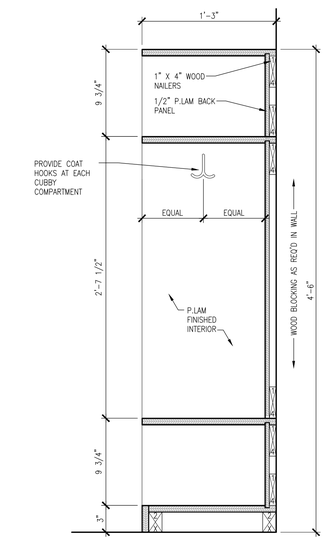
NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED



7 PULLOUT STAIR SECTION
A605 SCALE: 1 1/2" = 1'-0"

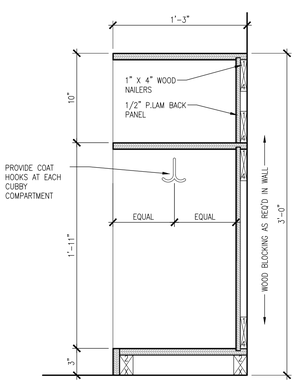


8 DIAPER STATION DIMENSIONS
A605 SCALE: 1 1/2" = 1'-0"



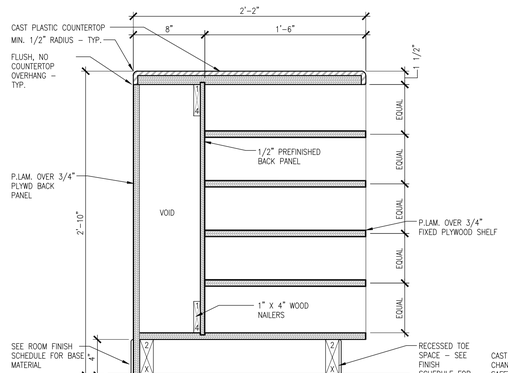
9 TODDLER & PRE-SCHOOLER STORAGE CUBBIE
A605 SCALE: 1 1/2" = 1'-0"

NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED



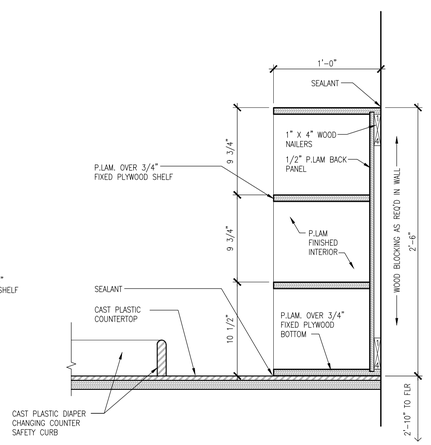
10 INFANT & PRE-TODDLER STORAGE CUBBIE
A605 SCALE: 1 1/2" = 1'-0"

NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED



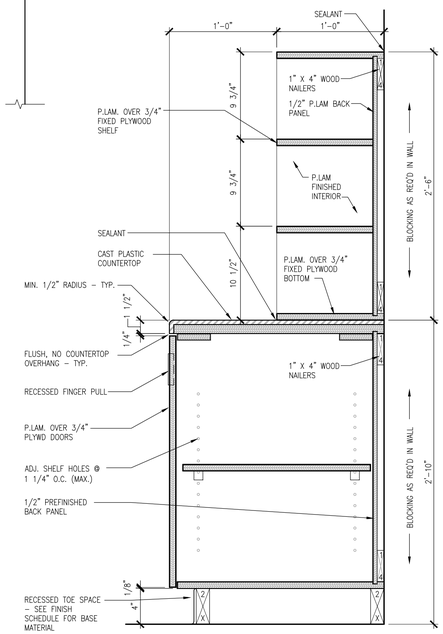
11 DIAPER STORAGE CUBBIE
A605 SCALE: 1 1/2" = 1'-0"

NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED



12 DIAPER STORAGE CUBBY
A605 SCALE: 1 1/2" = 1'-0"

NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED



13 BASE CABINET & DIAPER STORAGE CUBBY
A605 SCALE: 1 1/2" = 1'-0"

NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED

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SIGNATURE:

REGISTRATION NAME:
BENJAMIN M. MENNE

ND REGISTRATION NO.: 2741

U.S. AIR FORCE

Symbol	Description	Date	Approved

DESIGNED BY: BMM
DWN BY: BMM
CHK BY: RAA
SUBMITTED BY: BMM
DATE: 22 APRIL 2022
DRAWING NUMBER: AS SHOWN
PLOT DATE: AS SHOWN
PLOT SCALE: AS SHOWN

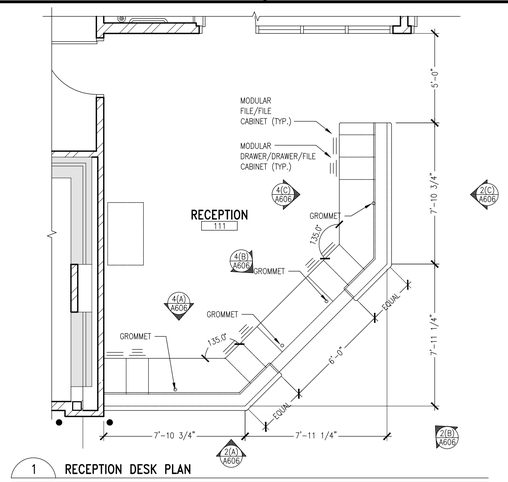
DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND

GRAND FORKS, ND
AIR FORCE BASE

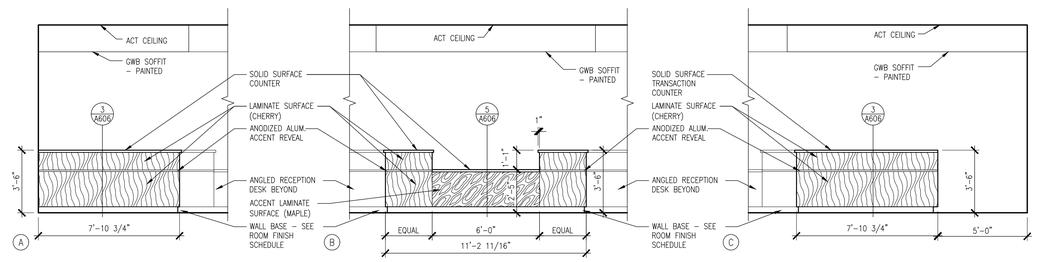
PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

CASEWORK DETAILS

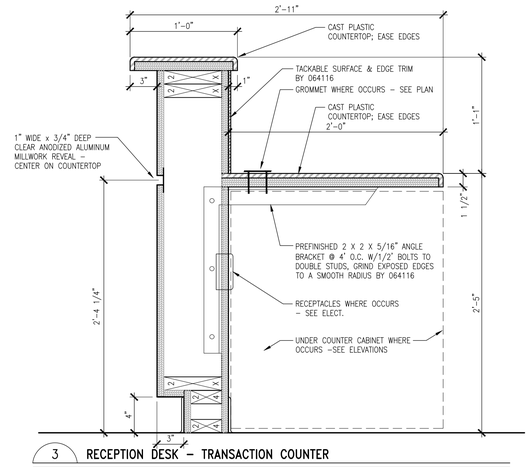
SHEET REFERENCE NUMBER
A-605



1 RECEPTION DESK PLAN
A606 SCALE: 1/4" = 1'-0"



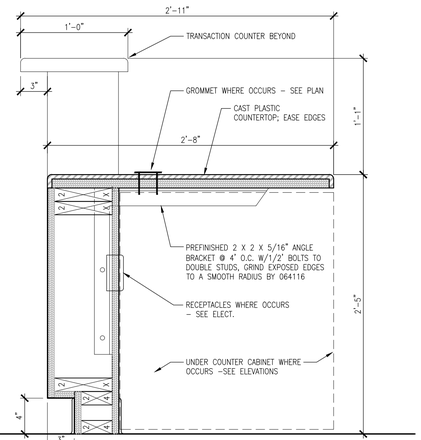
2 RECEPTION DESK FRONT ELEVATIONS
A606 SCALE: 1/4" = 1'-0"



3 RECEPTION DESK – TRANSACTION COUNTER
A606 SCALE: 1 1/2" = 1'-0"

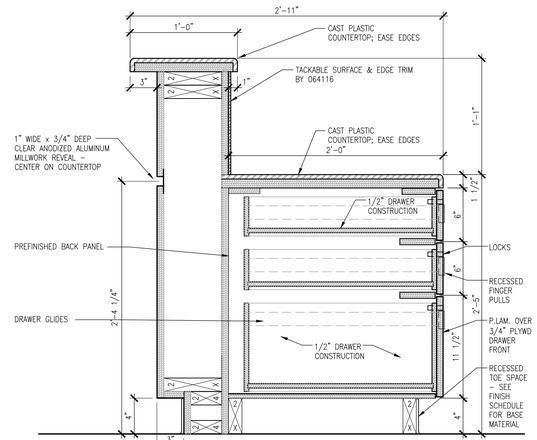
NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED

4 RECEPTION DESK FRONT ELEVATIONS
A606 SCALE: 1/4" = 1'-0"



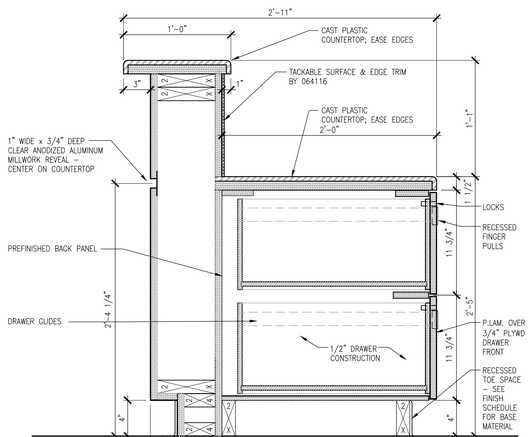
5 RECEPTION DESK – COUNTER DETAIL
A606 SCALE: 1 1/2" = 1'-0"

NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED



6 RECEPTION DESK – DRAWER/DRAWER/FILE
A606 SCALE: 1 1/2" = 1'-0"

NOTE: ALL INTERIOR SURFACES TO BE PREFINISHED



7 RECEPTION DESK – FILE/FILE
A606 SCALE: 1 1/2" = 1'-0"

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DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND

GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
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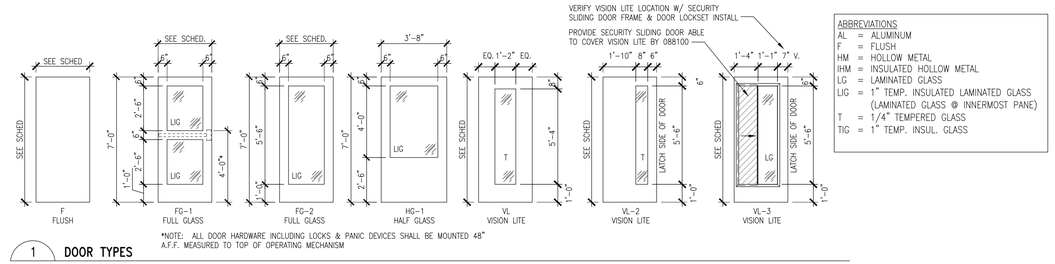
CASEWORK DETAILS

SHEET REFERENCE NUMBER
A-606

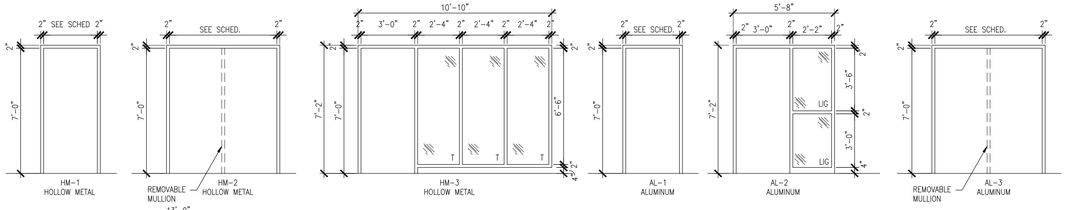


ABBREVIATIONS

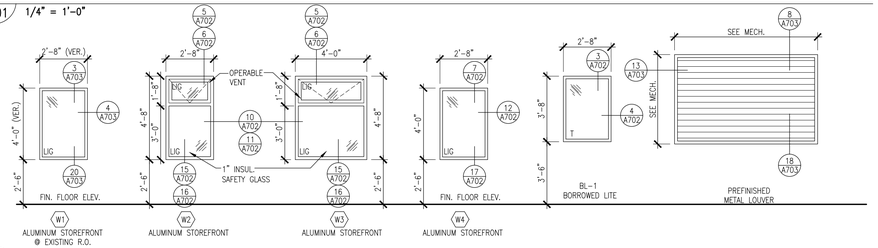
AL	=	ALUMINUM
F	=	FLUSH
HM	=	HOLLOW METAL
IHM	=	INSULATED HOLLOW METAL
LG	=	LAMINATED GLASS
LIG	=	1" TEMP. INSULATED LAMINATED GLASS (LAMINATED GLASS @ INNERMOST PANE)
T	=	1/4" TEMPERED GLASS
TIG	=	1" TEMP. INSUL. GLASS

*NOTE: ALL DOOR HARDWARE INCLUDING LOCKS & PANIC DEVICES SHALL BE MOUNTED 48" A.F.F. MEASURED TO TOP OF OPERATING MECHANISM

1 DOOR TYPES
A701 1/4" = 1'-0"



2 FRAME ELEVATIONS
A701 1/4" = 1'-0"



3 WINDOW ELEVATIONS
A701 1/4" = 1'-0"

DOOR NOTES/REMARKS:

1. EXISTING DOOR & FRAME TO REMAIN – PAINT H.M. FRAME.
2. NEW DOOR INSTALLED IN EXISTING HOLLOW METAL FRAME (PAINT). VERIFY FRAME FOR DOOR SIZE & HARDWARE INSTALL – MODIFY FRAME AS NEEDED TO ACCOMMODATE DOOR HARDWARE MOUNTING HGTS.
3. PROVIDE LAMINATED GLAZING (INNERMOST PANE @ INSULATED UNITS)
4. 156" OVERALL FRAME OPENING DIMENSION, 66" CLEAR DOOR OPENING, PROVIDE INTERMEDIATE MUNTINS

GENERAL NOTES:
–ALL DOOR HARDWARE INCLUDING DOOR LOCKS AND PANIC DEVICES SHALL BE MOUNTED 48" ABOVE FINISHED FLOOR, MEASURED TO THE TOP OF THE OPERATING MECHANISM.
–DOOR PINCH GUARDS SHALL BE CONT. FROM FINISHED FLOOR UP TO A HEIGHT OF 60". PROVIDE ON BOTH SIDES OF DOOR.
–PANIC DEVICE PUSH PAD MUST EXTEND FULL WIDTH OF THE DOOR.

DOOR SCHEDULE

OPEN NO.	FIRE RTG.	DOOR LEAF SIZE	SGL	DBL	TYPE	MATL.	FRAME ELEV.	WIDTH	DETAILS SHEET: A-702 U.N.O.				HDWR. GRP.	REMARKS
100	--	3'-0" x 7'-0" x 1-3/4"	XX		F	WD	HM-1	5 7/8"	1	2	–	–	18	
101	--	3'-0" x 7'-0" x 1-3/4"	XX		F	WD	HM-1	5 7/8"	1	2	–	–	12	
101A	--	2'-6" x 7'-0" x 1-3/4"	XX		F	WD	HM-1	5 7/8"	1	2	–	–	09	
103	--	3'-0" x 7'-0" x 1-3/4"		XX	FG-2	AL	AL-3	4 1/2"	6 A703	11 A703	16 A703	–	16	3
103A	--	AUTO SLIDING DOOR		XX			SL-1		1 A703	2 A703	–	–	01	3,4
104	--	3'-0" x 7'-0" x 1-3/4"	XX		VL	WD	HM-1	8 1/4"	1	2	–	–	05	
105	--	3'-0" x 7'-0" x 1-3/4"	XX		VL	WD	HM-1	8 1/4"	1	2	–	–	05	
106	--	3'-0" x 7'-0" x 1-3/4"	XX		VL	WD	HM-1	5 7/8"	1	2	–	–	05	
107	--	3'-0" x 7'-0" x 1-3/4"	XX		VL	WD	HM-3	5 7/8"	1	2	3	4	04	
108	--	3'-0" x 7'-0" x 1-3/4"	XX		F	WD	HM-1	5 7/8"	1	2	–	–	08	
112	--	3'-0" x 7'-0" x 1-3/4"	XX		VL	WD	HM-1	8 1/4"	1	2	–	–	05	
115	--	EXISTING											02	1
115A	--	3'-0" x 7'-0" x 1-3/4"	XX		FG-1	AL	AL-1	4 1/2"	8	13	18	–	13	3
117	--	3'-0" x 7'-0" x 1-3/4" (V.)	XX		VL-3	WD	EXIST.						19	2
117A	--	3'-0" x 7'-0" x 1-3/4" (V.)	XX		VL-3	WD	EXIST.						19	2
119	--	EXISTING											02	1
119A	--	3'-0" x 7'-0" x 1-3/4"	XX		FG-1	AL	AL-1	4 1/2"	8	13	18	–	13	3
121	--	EXISTING											02	1
121A	--	3'-0" x 7'-0" x 1-3/4"	XX		FG-1	AL	AL-1	4 1/2"	8	13	18	–	13	3
123	--	3'-0" x 7'-0" x 1-3/4" (V.)	XX		VL-3	WD	EXIST.						19	2
123A	--	3'-0" x 7'-0" x 1-3/4" (V.)	XX		VL-3	WD	EXIST.						19	2
125	--	EXISTING											02	1
125A	--	3'-0" x 7'-0" x 1-3/4"	XX		FG-1	AL	AL-1	4 1/2"	8	13	18	–	13	3
127	--	3'-0" x 7'-0" x 1-3/4"	XX		VL	WD	HM-1	8 1/4"	1	2	–	–	03	
127A	--	3'-0" x 7'-0" x 1-3/4"	XX		FG-1	AL	AL-1	4 1/2"	8	13	18	–	13	3
127B	--	3'-0" x 7'-0" x 1-3/4"	XX		FG-1	AL	AL-1	4 1/2"	8	13	18	–	13	3
129	--	3'-0" x 7'-0" x 1-3/4"	XX		VL-3	WD	HM-1	5 7/8"	1	2	–	–	19	
130	45	4'-0" x 7'-0" x 1-3/4" (V.)	XX		VL	WD	EXIST.	–	–	–	–	–	06	2
130A	--	3'-8" x 7'-0" x 1-3/4"	XX		HG-1	IHM	HM-1	8 1/4" V	9 A703	14 A703	19 A703	–	11	3
132	--	3'-0" x 7'-0" x 1-3/4" (V.)	XX		VL-2	WD	EXIST.	–	–	–	–	–	07	2
135	45	3'-0" x 7'-0" x 1-3/4" (V.)	XX		VL	WD	EXIST.	–	–	–	–	–	09	2
136	45	3'-0" x 7'-0" x 1-3/4" (V.)	XX		VL-2	WD	EXIST.	–	–	–	–	–	09	2
137	--	3'-0" x 7'-0" x 1-3/4"	XX		FG-1	AL	AL-2	4 1/2"	8	13	18	–	14	3
137A	--	3'-0" x 7'-0" x 1-3/4"		XX	F	WD	HM-1	8 1/4"	7 A703	12 A703	17 A703	–	15	
138	--	3'-2" x 7'-0" x 1-3/4"		XX	F	IHM	HM-2	14 5/8"	9	14	19	–	17	
140	--	3'-0" x 7'-0" x 1-3/4"	XX		VL	WD	HM-1	8 1/4"	1	2	–	–	03	
140A	--	3'-0" x 7'-0" x 1-3/4"	XX		FG-1	AL	AL-1	4 1/2"	8	13	18 SIM.	–	13	3
142	--	3'-0" x 7'-0" x 1-3/4"	XX		VL-3	WD	HM-1	5 7/8"	1	2	–	–	19	
143	--	3'-0" x 7'-0" x 1-3/4"	XX		VL-2	WD	HM-1	5 7/8"	1	2	–	–	10	
144	--	3'-0" x 7'-0" x 1-3/4"	XX		VL	WD	HM-1	8 1/4"	1	2	–	–	03	
144A	--	3'-0" x 7'-0" x 1-3/4"	XX		FG-1	AL	AL-1	4 1/2"	5 A703	10 A703	15 A703	–	13	3
146	--	3'-0" x 7'-0" x 1-3/4"	XX		VL-3	WD	HM-1	5 7/8"	1	2	–	–	19	
146A	--	3'-0" x 7'-0" x 1-3/4"	XX		VL-3	WD	HM-1	5 7/8"	1	2	–	–	19	
148	--	3'-0" x 7'-0" x 1-3/4"	XX		VL	WD	HM-1	8 1/4"	1	2	–	–	03	
148A	--	3'-0" x 7'-0" x 1-3/4"	XX		FG-1	AL	AL-1	4 1/2"	5 A703	10 A703	15 A703	–	13	3
149	--	3'-0" x 7'-0" x 1-3/4"	XX		VL-2	WD	HM-1	5 7/8"	1	2	–	–	10	
150	--	3'-0" x 7'-0" x 1-3/4"	XX		VL	WD	HM-1	8 1/4"	1	2	–	–	03	
150A	--	3'-0" x 7'-0" x 1-3/4"	XX		FG-1	AL	AL-1	4 1/2"	8	13	18 SIM.	–	13	3
152	--	3'-0" x 7'-0" x 1-3/4"	XX		VL-3	WD	HM-1	5 7/8"	1	2	–	–	19	
152A	--	3'-0" x 7'-0" x 1-3/4"	XX		VL-3	WD	HM-1	5 7/8"	1	2	–	–	19	
154	--	3'-0" x 7'-0" x 1-3/4"	XX		VL	WD	HM-1	8 1/4"	1	2	–	–	03	
154A	--	3'-0" x 7'-0" x 1-3/4"	XX		FG-1	AL	AL-1	4 1/2"	5 A703	10 A703	15 A703	–	13	3
155	--	3'-0" x 7'-0" x 1-3/4"	XX		FG-1	AL	AL-1	4 1/2"	8	13	18	11 A703	14	3
156	--	EXISTING											02	

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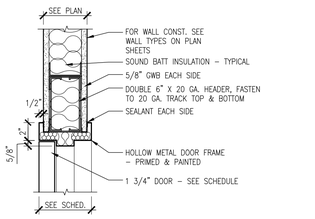
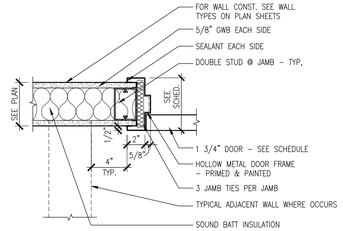
DOOR SCHEDULE & FRAME ELEVATIONS

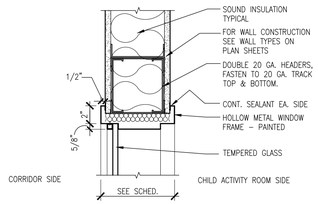
SHEET REFERENCE NUMBER
A-701



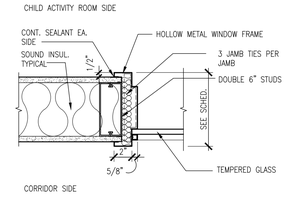
1 HM FRAME DETAIL – HEAD
A702 SCALE: 1 1/2" = 1'–0"



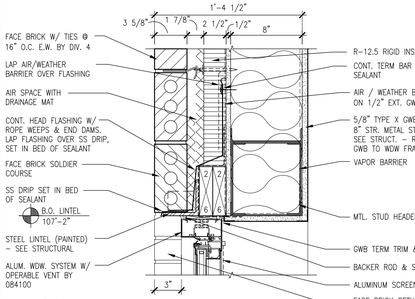
2 HM FRAME DETAIL – JAMB
A702 SCALE: 1 1/2" = 1'–0"



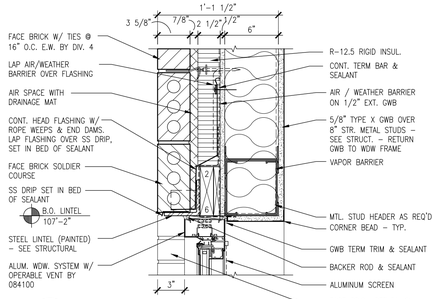
3 BORROWED LITE HEAD DETAIL (SILL SIM)
A702 SCALE: 1 1/2" = 1'–0"



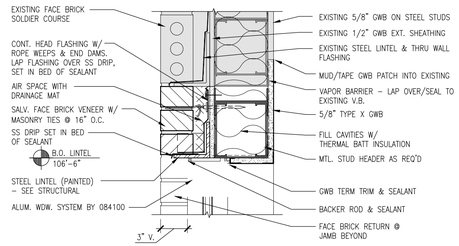
4 BORROWED LITE JAMB DETAIL
A702 SCALE: 1 1/2" = 1'–0"



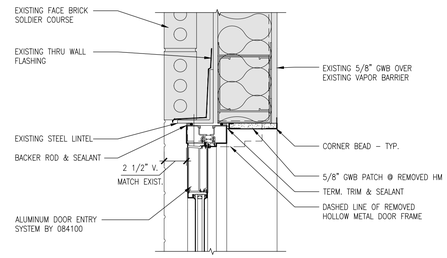
5 ALUMINUM WINDOW HEAD DETAIL
A702 SCALE: 1 1/2" = 1'–0"



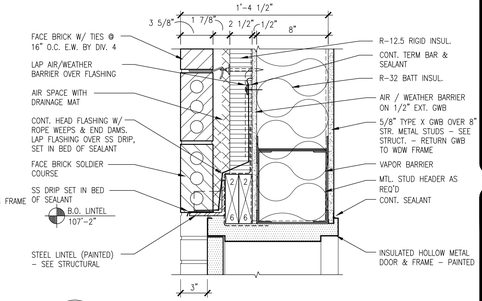
6 ALUMINUM WINDOW HEAD DETAIL
A702 SCALE: 1 1/2" = 1'–0"



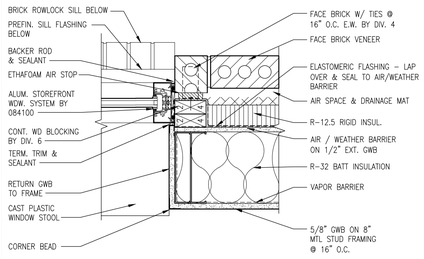
7 WINDOW W4 HEAD DETAIL @ INFILL
A702 SCALE: 1 1/2" = 1'–0"



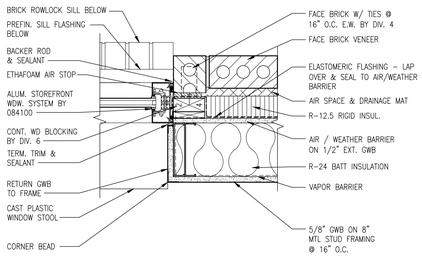
8 ALUMINUM DOOR HEAD DETAIL @ EXISTING
A702 SCALE: 1 1/2" = 1'–0"



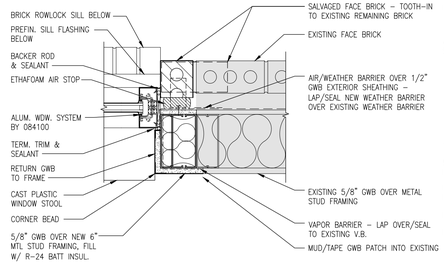
9 HOLLOW METAL DOOR HEAD DETAIL
A702 SCALE: 1 1/2" = 1'–0"



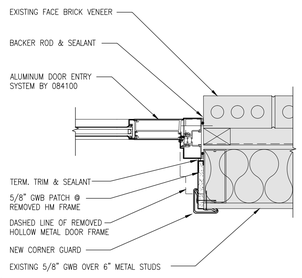
10 ALUMINUM WINDOW JAMB DETAIL
A702 SCALE: 1 1/2" = 1'–0"



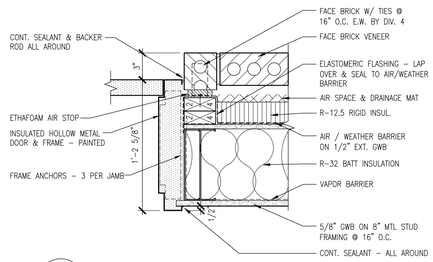
11 ALUMINUM WINDOW JAMB DETAIL
A702 SCALE: 1 1/2" = 1'–0"



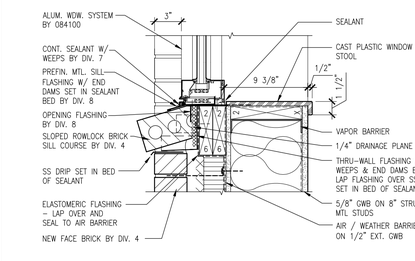
12 WINDOW W4 JAMB DETAIL @ INFILL
A702 SCALE: 1 1/2" = 1'–0"



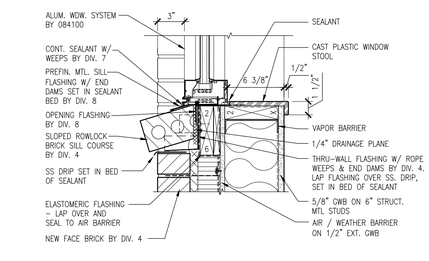
13 ALUMINUM DOOR JAMB DETAIL @ EXISTING
A702 SCALE: 1 1/2" = 1'–0"



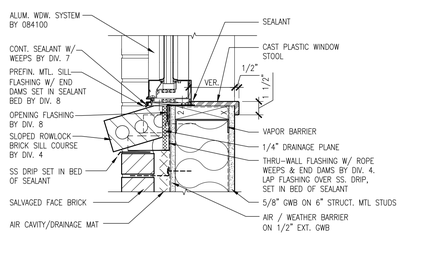
14 HOLLOW METAL DOOR JAMB DETAIL
A702 SCALE: 1 1/2" = 1'–0"



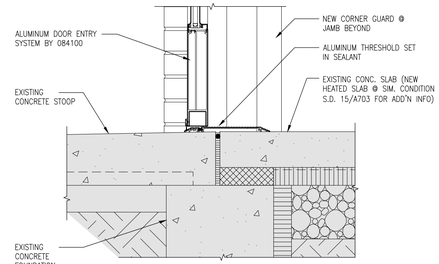
15 ALUMINUM WINDOW SILL DETAIL
A702 SCALE: 1 1/2" = 1'–0"



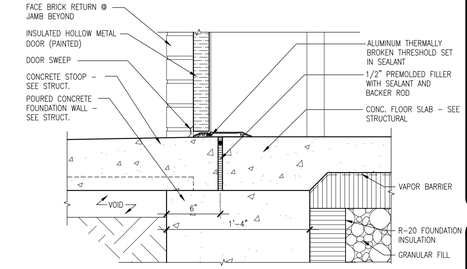
16 ALUMINUM WINDOW SILL DETAIL
A702 SCALE: 1 1/2" = 1'–0"



17 WINDOW W4 SILL DETAIL @ INFILL
A702 SCALE: 1 1/2" = 1'–0"



18 ALUMINUM DOOR THRESHOLD DETAIL @ EXISTING
A702 SCALE: 1 1/2" = 1'–0"



19 HOLLOW METAL DOOR THRESHOLD DETAIL
A702 SCALE: 1 1/2" = 1'–0"

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U.S. AIR FORCE

I HERBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.

SIGNATURE:

REGISTRATION NAME:
BENJAMIN M. MENNE

ND REGISTRATION NO.: 2741

Symbol	Description	Date
		Approved

DESIGNED BY: BMM
DWN BY: BMM
CHK BY: RAA
DATE: 22 APRIL 2022
SUBMITTED BY: BMM
PLOT DATE: AS SHOWN
PLOT SCALE: AS SHOWN
DRAWING NUMBER: AS SHOWN

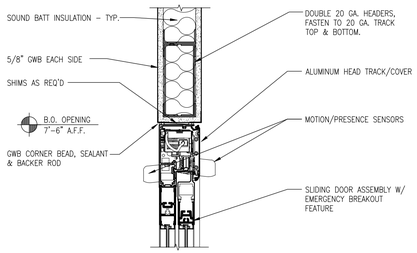
DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND

GRAND FORKS, ND
AIR FORCE BASE

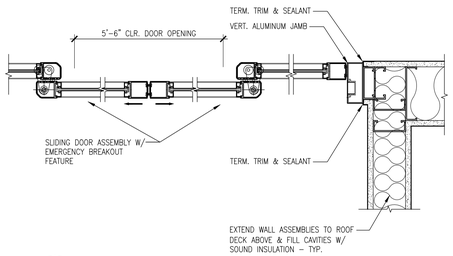
PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

DOOR & WINDOW DETAILS

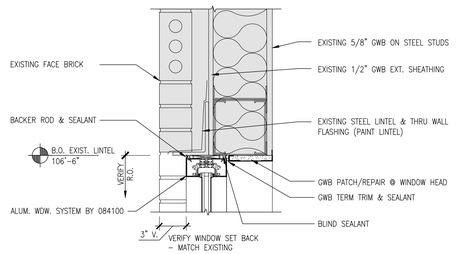
SHEET REFERENCE NUMBER
A-702



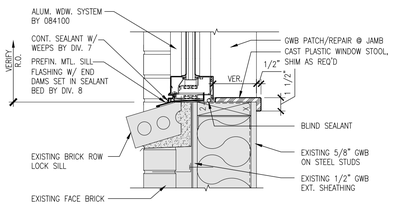
1 AUTO SLIDING DOOR – HEAD
A703 SCALE: 1 1/2" = 1'-0"



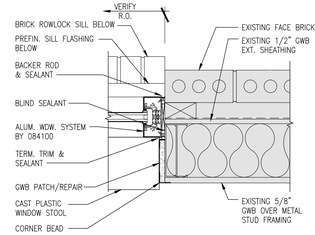
2 AUTO SLIDING DOOR – JAMB
A703 SCALE: 1 1/2" = 1'-0"



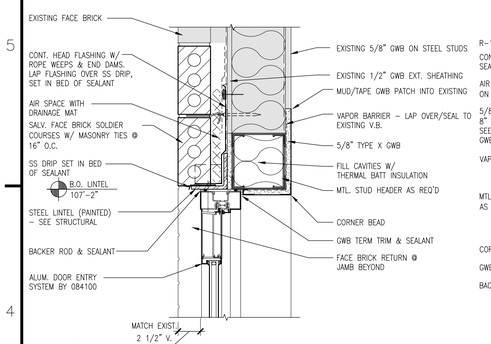
3 WINDOW W1 SILL DETAIL @ EXISTING
A703 SCALE: 1 1/2" = 1'-0"



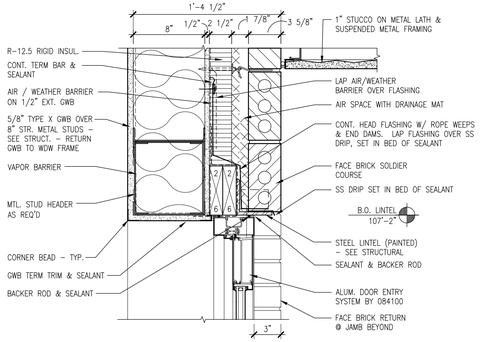
4 WINDOW W1 SILL DETAIL @ EXISTING
A703 SCALE: 1 1/2" = 1'-0"



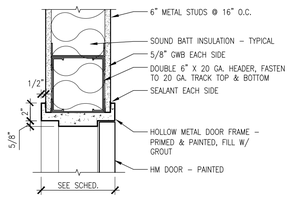
20 WINDOW W1 JAMB DETAIL @ EXISTING
A703 SCALE: 1 1/2" = 1'-0"



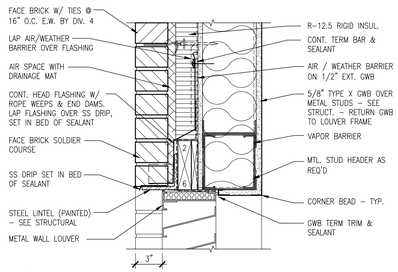
5 ALUMINUM DOOR HEAD DETAIL @ EXISTING
A703 SCALE: 1 1/2" = 1'-0"



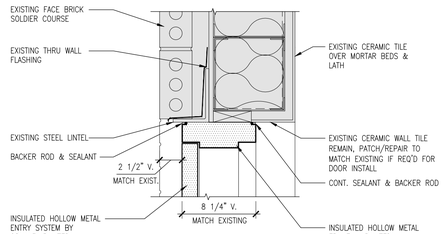
6 ALUMINUM DOOR HEAD DETAIL
A703 SCALE: 1 1/2" = 1'-0"



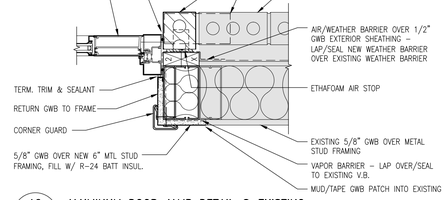
7 HM FRAME DETAIL – HEAD
A703 SCALE: 1 1/2" = 1'-0"



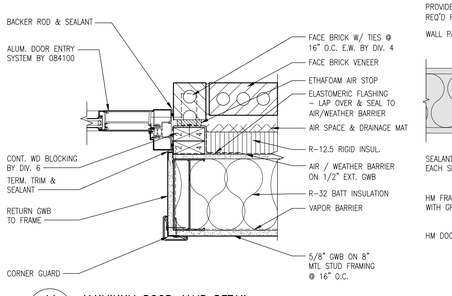
8 LOUVER HEAD DETAIL
A703 SCALE: 1 1/2" = 1'-0"



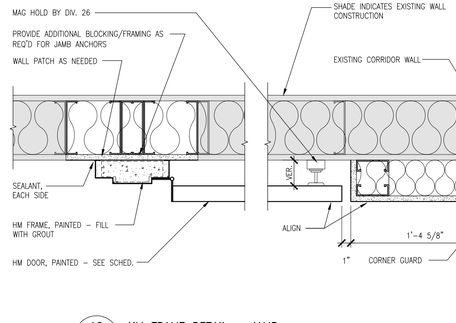
9 HOLLOW METAL DOOR HEAD
A703 SCALE: 1 1/2" = 1'-0"



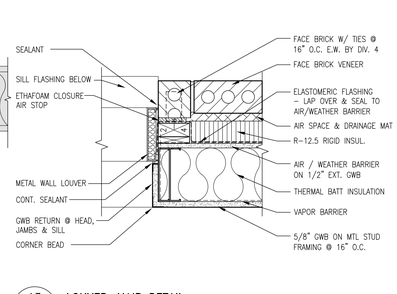
10 ALUMINUM DOOR JAMB DETAIL @ EXISTING
A703 SCALE: 1 1/2" = 1'-0"



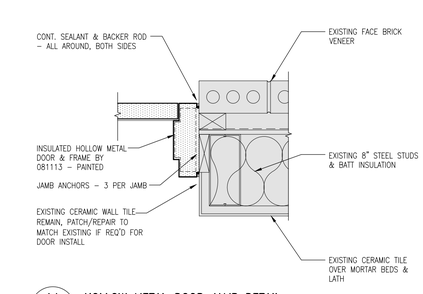
11 ALUMINUM DOOR JAMB DETAIL
A703 SCALE: 1 1/2" = 1'-0"



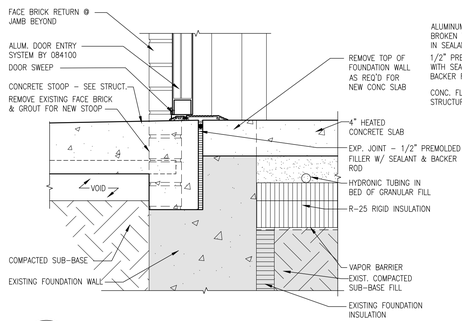
12 HM FRAME DETAIL – JAMB
A703 SCALE: 1 1/2" = 1'-0"



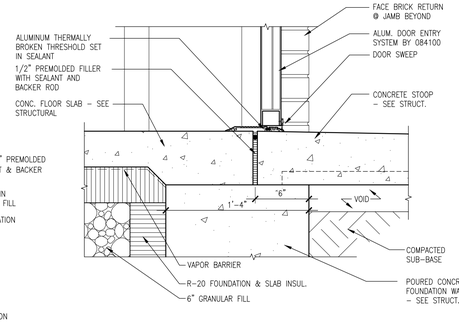
13 LOUVER JAMB DETAIL
A703 SCALE: 1 1/2" = 1'-0"



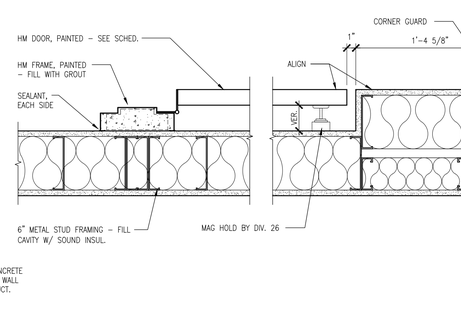
14 HOLLOW METAL DOOR JAMB DETAIL
A703 SCALE: 1 1/2" = 1'-0"



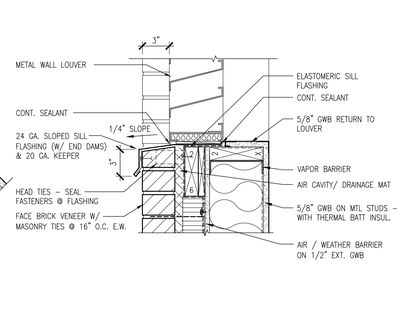
15 ALUMINUM DOOR THRESHOLD DETAIL @ EXISTING
A703 SCALE: 1 1/2" = 1'-0"



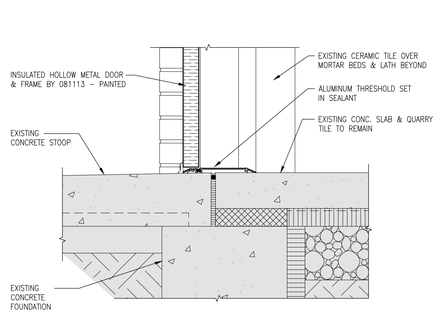
16 ALUMINUM DOOR THRESHOLD DETAIL
A703 SCALE: 1 1/2" = 1'-0"



17 HM FRAME DETAIL – JAMB
A703 SCALE: 1 1/2" = 1'-0"



18 LOUVER SILL DETAIL
A703 SCALE: 1 1/2" = 1'-0"



19 HOLLOW METAL DOOR THRESHOLD DETAIL
A703 SCALE: 1 1/2" = 1'-0"

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SIGNATURE:

REGISTRATION NAME:
BENJAMIN M. MENNE

ND REGISTRATION NO.: 2741

U.S. AIR FORCE

Symbol	Description	Date	Approved

DESIGNED BY: BMM
DWN BY: BMM
CHK BY: RAA
DATE: 22 APRIL 2022
SUBMITTED BY: BMM
PLOT DATE: AS SHOWN
PLOT SCALE: AS SHOWN
DRAWING NUMBER: AS SHOWN

DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND
GRAND FORKS, ND
AIR FORCE BASE

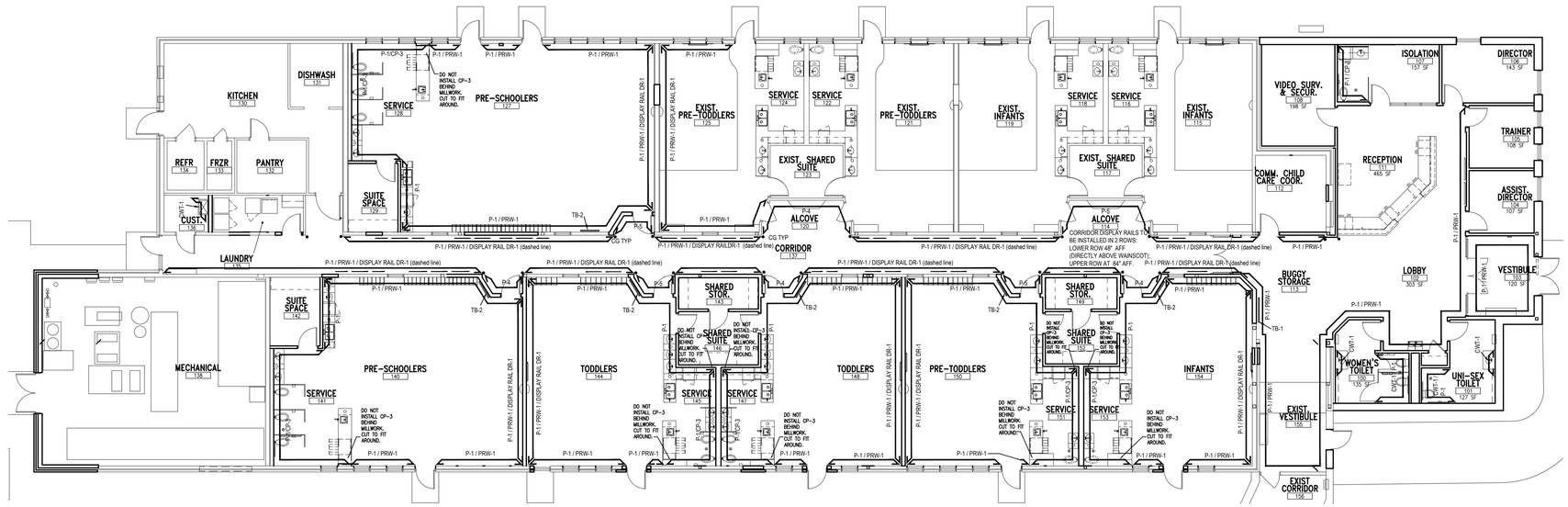
PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

DOOR & WINDOW DETAILS

SHEET REFERENCE NUMBER
A-703

ROOM NO.	ROOM NAME	FLOOR COVERING	BASE MATERIAL	NORTH WALL	EAST WALL	SOUTH WALL	WEST WALL	CEILING MATERIAL	CEIL'G HGHT.	REMARKS
100	WOMENS TOILET	EF-1	EF-1 COVED/INTEGRAL	CWT-1/P-1	CWT-1/P-1	CWT-1/P-1	CWT-1/P-1	GWB P-	SEE RCP TYP.	NOTE: 2
101	UNISEX TOILET	EF-1	EF-1 COVED/INTEGRAL	CWT-1/P-1	CWT-1/P-1	CWT-1/P-1	CWT-1/P-1	GWB P-	---	NOTE: 2
101A	SUPPLY CLOSET	RF-2	RB-1	P-1	P-1	P-1	P-1	GWB P-	---	---
102	LOBBY	RF-2, 4	RB-1	---	P-1/PRW-1	P-1/PRW-1	P-1/PRW-1	GWB P-ACT-1	---	NOTE: 3
103	VESTIBULE	RECESSED MAT/RF-2, 4	RB-1	P-1/PRW-1	P-1/PRW-1	P-1/PRW-1	P-1/PRW-1	ACT-1	---	---
104	ASSISTANT DIRECTOR	C-2	RB-1	P-1	P-1	P-1	P-1	ACT-1	---	---
105	TRAINER	C-2	RB-1	P-1	P-1	P-1	P-1	ACT-1	---	---
106	DIRECTOR	C-2	RB-1	P-1	P-1	P-1	P-1	ACT-1	---	---
107	ISOLATION	RF-1	RB-1	P-1	P-1	P-1/CP-3	P-1/CP-3	ACT-1	---	---
108	VIDEO SURV. & SECUR.	RF-2	RB-1	P-1	P-1	P-1	P-1	ACT-1	---	---
111	RECEPTION	C-2	RB-1	P-1	P-1/PRW-1	P-1	P-1	GWB P-ACT-1	---	NOTE: 1
112	COMMUNITY CHILD CARE COORDINATOR	RF-2	RB-1	P-1	P-1	P-1	P-1	ACT-1	---	---
113	BUGGY STORAGE	RF-2, 4	RB-1	P-1/PRW-1	P-1/PRW-1	P-1/PRW-1	P-1/PRW-1	ACT-1	---	NOTE: 1, 3
114	ALCOVE	RF-2, 3, 4	RB-1	P-5	P-5	---	P-5	EXIST/P-	---	NOTE: 1
115	EXIST. INFANTS	EXIST	EXIST	P-1/EXIST WALL PROTECTION	P-1/PATCH WALL PROTECTION	P-1/PATCH WALL PROTECTION	P-1/EXIST WALL PROTECTION	ACT-1	---	---
116	SERVICE	EXIST	EXIST	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	ACT-1	---	---
117	EXIST SHARED SUITE	EXIST	EXIST	P-1	P-1	P-1	P-1	ACT-1		
118	SERVICE	EXIST	EXIST	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	ACT-1	---	---
119	EXIST. INFANTS	EXIST	EXIST	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	ACT-1	---	---
120	ALCOVE	RF-2, 3, 4,	RB-1	P-4	P-4	--	P-4	EXIST/P-	---	NOTE: 1
121	EXIST. PRE-TODDLERS	EXIST	EXIST	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	ACT-1	---	---
122	SERVICE	EXIST	EXIST	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	ACT-1	---	---
123	EXIST SHARED SUITE	EXIST	EXIST	P-1	P-1	P-1	P-1	ACT-1		
124	SERVICE	EXIST	EXIST	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	P-1/EXIST WALL PROTECTION	ACT-1	---	---
125	EXIST. PRE-TODDLERS	EXIST	RB-1 TYP/ PATCH TO MATCH*	P-1/PRW-1	P-1/PRW-1	P-1/PRW-1	P-1/PRW-1	ACT-1	---	*INTEGRAL WALL BASE PATCH TO MATCH EXISTING CARPET FLOORING
126	NOT USED	--	--	--	--	--	--	---	---	---
127	PRE-SCHOOLERS	C-1/RF-1	RB-1	P-1/PRW-1	P-1/PRW-1	P-1/PRW-1	P-1	ACT-1	---	NOTE: 1, 3, 4
128	SERVICE	RF-1	RB-1	P-1/CP-3	--	P-1/CP-3	P-1/CP-3	ACT-1	---	NOTE: 1, 4

ROOM NO.	ROOM NAME	FLOOR COVERING	BASE MATERIAL	NORTH WALL	EAST WALL	SOUTH WALL	WEST WALL	CEILING MATERIAL	CEIL'G HGHT.	REMARKS
129	SUITE SPACE	RF-2	RB-1	P-1	P-1	P-1	P-1	ACT-1	SEE RCP TYP.	NOTE: 4
130	KITCHEN	NO WORK						ACT-2		
131	DISHWASHING	NO WORK						ACT-2		
132	PANTRY	NO WORK						ACT-2		
133	FREEZER	NO WORK								
134	REFRIGERATOR	NO WORK								
135	LAUNDRY	RF-2	RB-1	EP-1	EP-1	EP-1	EP-1	GWB P-	---	---
136	CUSTODIAL	EX	RB PATCH TO MATCH	P-1/CWT-1	P-1/CWT-1	P-1	P-1	ACT-2		CWT-1 48" HIGH WAINSCOT AT MOP SINK ONLY.
137	CORRIDOR	RF-2, 3, 4	RB-1	P-1/PRW-1/DR-1	--	P-1/PRW-1/DR-1	P-1	GWB P-ACT-1	---	NOTE: 3
138	MECHANICAL	EXIST/CONC	EXIST	PAINT TO MATCH*	EXIST	PAINT TO MATCH*	PAINT TO MATCH*	EXPOSED P-2		NOTE: 5 *PAINT TO MATCH AT NEW CONSTRUCTION
139	NOT USED	--	--	--	--	--	--	---	---	---
140	PRE-SCHOOLERS	C-1/RF-1	RB-1	P-1/PRW-1	P-1/PRW-1	P-1/PRW-1	P-1	ACT-1	---	NOTE: 1, 3, 4
141	SERVICE	RF-1	RB-1	P-1/CP-3	--	P-1/CP-3	P-1/CP-3	ACT-1	---	NOTE: 1, 4
142	SUITE SPACE	RF-2	RB-1	P-1	P-1	P-1	P-1	ACT-1	---	NOTE: 4
143	SHARED STORAGE	RF-2	RB-1	P-1	P-1	P-1	P-1	ACT-1	---	---
144	TODDLERS	C-1/RF-1	RB-1	P-1/PRW-1	P-1	P-1/PRW-1	P-1/PRW-1	ACT-1	---	NOTE: 1, 3, 4
145	SERVICE	RF-1	RB-1	P-1	P-1/CP-3	P-1/CP-3	--	ACT-1	---	NOTE: 1, 4
146	SHARED SUITE	RF-2	RB-1	P-1	P-1	P-1	P-1	ACT-1	---	---
147	SERVICE	RF-1	RB-1	P-1	--	P-1/CP-3	P-1/CP-3	ACT-1	---	NOTE: 1, 4
148	TODDLERS	C-1/RF-1	RB-1	P-1/PRW-1	P-1/PRW-1	P-1/PRW-1	P-1	ACT-1	---	NOTE: 1, 3, 4
149	SHARED STORAGE	RF-2	RB-1	P-1	P-1	P-1	P-1	ACT-1	---	---
150	PRE-TODDLERS	C-1/RF-1	RB-1	P-1/PRW-1	P-1	P-1/PRW-1	P-1/PRW-1	ACT-1	---	NOTE: 1, 3, 4
151	SERVICE	RF-1	RB-1	P-1	P-1/CP-3	P-1/CP-3	--	ACT-1	---	NOTE: 1
152	SHARED SUITE	RF-2	RB-1	P-1	P-1	P-1	P-1	ACT-1	---	---
153	SERVICE	RF-1	RB-1	P-1	--	P-1/CP-3	P-1/CP-3	ACT-1	---	NOTE: 1
154	INFANTS	C-1/RF-1	RB-1	P-1/PRW-1	P-1/PRW-1	P-1/PRW-1	P-1	ACT-1	---	NOTE: 1, 3
155	EXIST. VESTIBULE	EXIST	RB-1	P-1/PRW-1	P-1/PRW-1	P-1/PRW-1	P-1/PRW-1	ACT-1	---	NOTE: 1
156	EXIST. CORRIDOR	NO WORK								



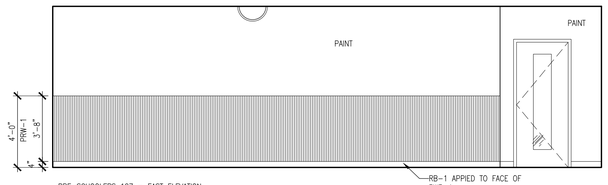
1 WALL ACCENT LOCATION PLAN
I-101 NTS

ROOM FINISH SCHEDULE ABBREVIATIONS:

ACT	ACOUSTICAL CEILING TILE
AWP	ACOUSTIC WALL PANEL
C	CARPET
CONC	CONCRETE
CG	CORNER GUARD
CWT	CERAMIC WALL TILE
EP/EPOXY	EPOXY PAINT
EF	EPOXY FLOORING
EXP	EXPOSED STRUCTURE
EXIST/EX	EXISTING
GL	GLAZING
GWB	GYPSUM WALL BOARD
LVT	LUXURY VINYL TILE
P	PAINT
PRW	PROTECTIVE RIGID WALLCOVERING
RB	RUBBER BASE
RF	RUBBER FLOORING

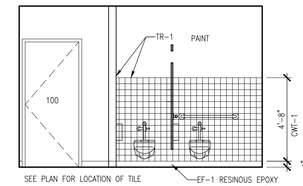
GENERAL NOTE:
* INSTALL FLOOR FINISHES UNDER BASE CABINETS – WALL TO WALL.
* PAINT ALL WALLS AS INDICATED. ITEMS THAT CAN EASILY BE REMOVED BY HANDTOOLS (DEVICE PLATES, MISC. ROOM ACCESSORIES, ETC.) SHALL BE TAKEN DOWN PRIOR TO PAINTING AND RE-INSTALLED BY THIS CONTRACTOR. INFILL ALL FASTENER HOLES AND PATCH AND REPAIR ALL DAMAGE WALL SURFACES PRIOR TO PAINTING. PROTECT CABINETS, FLOORING, WALL BASE, DEVICES, ETC. THAT REMAIN IN PLACE. PAINTING TO BE COMPLETED PRIOR TO ANY NEW CEILING INSTALLATION. ANY EXISTING NON-PAINTED SURFACES ARE TO REMAIN UNPAINTED.

ROOM FINISH SCHEDULE NOTES:
1. SEE 1/I-101 FOR ACCENT WALL LOCATIONS.
2. SEE 3/I-101 AND 4/I-101 FOR WALL TILE PATTERN.
3. SEE 1/1-102 FOR ACCENT FLOOR LOCATIONS.
4. PATCH/REPAIR & SKIM COAT WALL AS REQ'D AT REMOVED VINYL WALL COVERING. SEE DEMO PLAN FOR REMOVED VWC LOCATIONS.
5. ONLY PAINT NEW WALLS, CONDUIT & NEW EXPOSED ROOF DECK, STRUCTURE, BRACING, CONDUITS, ETC. EXISTING PAINTED ROOF STRUCTURE & PAINTED WALLS ARE TO REMAIN AS IS.



PRE-SCHOOLERS 127 – EAST ELEVATION
WHERE LOCKERS/STORAGE CUBBIES OCCUR, PRW-1 TO CONTINUE BEHIND

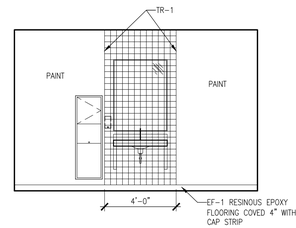
2 TYPICAL PRW HEIGHT AT CHILD ACTIVITY ROOMS
I-101 1/4" = 1'-0" PRE-SCHOOLERS 127 SHOWN / OTHERS SIMILAR



SEE PLAN FOR LOCATION OF TILE
EF-1 RESINOUS EPOXY FLOORING COVED 4" WITH CAP STRIP

TILE KEY:
CWT-1 – 4" X 4"

3 TYPICAL PLUMBING WALL TILE PATTERN AT WOMEN & UNISEX TOILETS ONLY
I-101 1/4" = 1'-0"



EF-1 RESINOUS EPOXY FLOORING COVED 4" WITH CAP STRIP

4 TYPICAL SINK WALL TILE PATTERN AT WOMEN & UNISEX TOILETS ONLY
I-101 1/4" = 1'-0"

FOSS ARCHITECTURE +INTERIORS
810 First Avenue North | Fargo, North Dakota 58102
701.282.5505 | fossarch.com

I HERBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.

SIGNATURE:

REGISTRATION NAME:
BENJAMIN M. MENNE

ND REGISTRATION NO.: 2741

U.S. AIR FORCE

Symbol	Description	Date	Approved

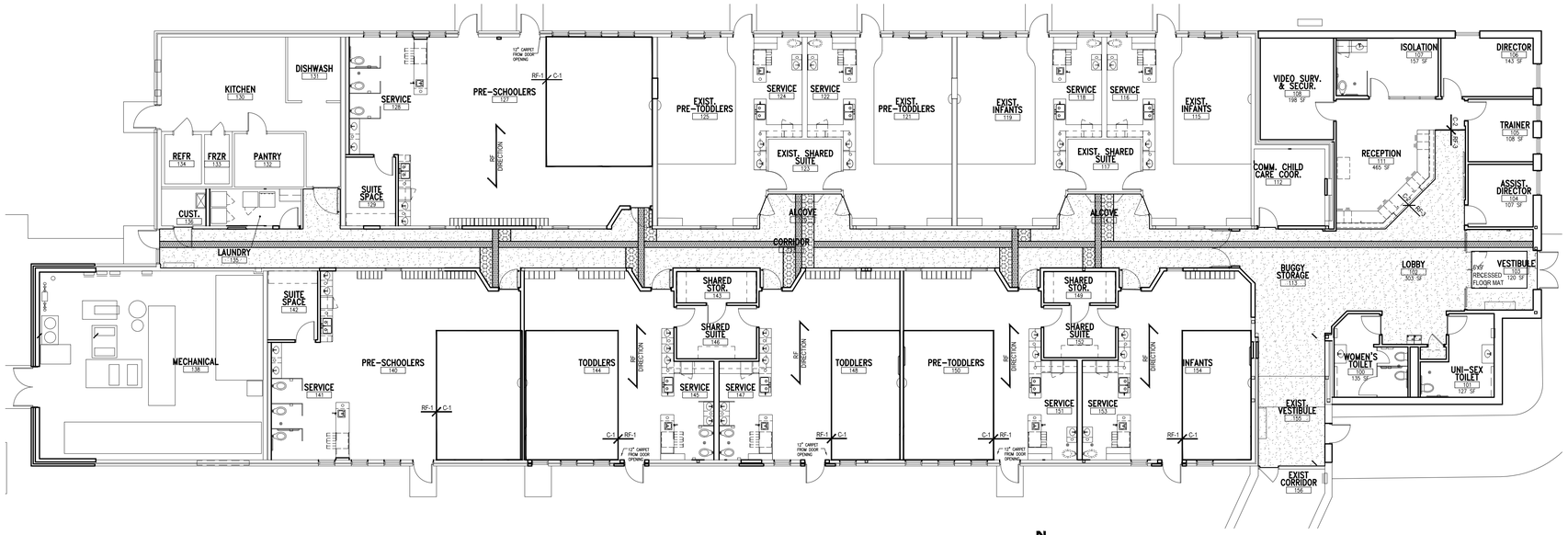
DESIGNED BY: BMM
DWN BY: BMM
CHK BY: RAA
SUBMITTED BY: BMM
DATE: 22 APRIL 2022
PLOT DATE: AS SHOWN
PLOT SCALE: AS SHOWN
DRAWING NUMBER: AS SHOWN

DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND
GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

ROOM FINISH SCHEDULE & DETAILS

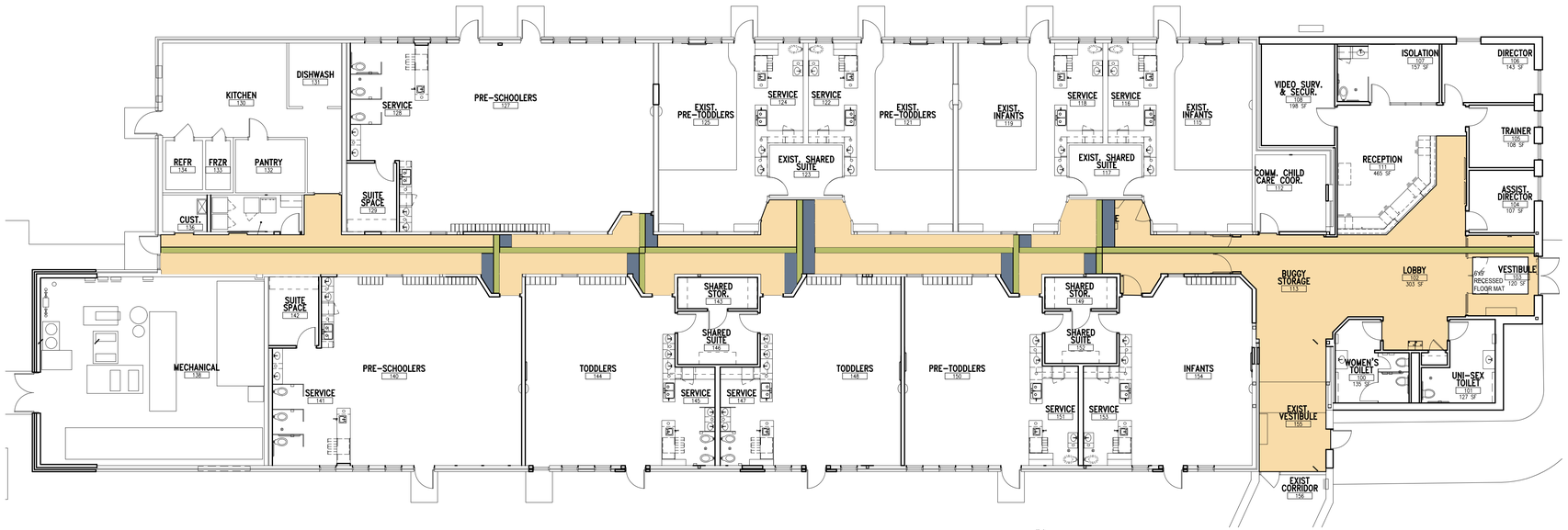
SHEET REFERENCE NUMBER
I-101



RUBBER FLOORING KEY:
- RF-2 (BEIGE)
- RF-3 (SLATE BLUE)
- RF-4 (SOFT GREEN)

1 / I-102 FLOOR ACCENT LOCATION PLAN – SHOWING RUBBER IN THE CORRIDOR
NTS

N PLAN NORTH



RUBBER FLOORING KEY:
- RF-2 (BEIGE)
- RF-3 (SLATE BLUE)
- RF-4 (SOFT GREEN)

2 / I-102 SHOWING CORRIDOR FLOORING ONLY – COLORIZED
NTS

N PLAN NORTH

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810 First Avenue North | Fargo, North Dakota 58102
701.282.5505 | fossarch.com

U.S. AIR FORCE

I HERBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.

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DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND

GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

FLOOR FINISH PLAN

SHEET REFERENCE NUMBER
I-102

GENERAL CONSTRUCTION NOTES:

1. THE INTENT OF THESE PLANS AND NOTES IS TO PRESENT THE PROJECT REQUIREMENTS FOR THE GFAFB B168 ADD/REPAIR CDC PROJECT IN EMERADO, ND.
2. THESE STRUCTURAL DRAWINGS ARE INTENDED TO BE USED IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS. SOME DIMENSIONS, SECTIONS, AND FRAMING DETAILS MAY BE SHOWN ON THE ARCHITECTURAL DRAWINGS.
3. DURING CONSTRUCTION, THE CONTRACTOR MAY ENCOUNTER EXISTING CONDITIONS THAT ARE UNKNOWN OR THAT DIFFER THAN AS DEPICTED IN THESE DRAWINGS. SUCH EXISTING CONDITIONS MAY INTERFERE WITH THE NEW CONSTRUCTION OR REQUIRED PROTECTION DURING CONSTRUCTION.
4. CONTRACTOR SHALL NOTIFY ARCHITECT/ENGINEER OF ALL ENCOUNTERED EXISTING CONDITIONS THAT INTERFERE WITH THE PROPER EXECUTION OF NEW WORK OR COMPROMISE THE STRUCTURAL INTEGRITY OF THE EXISTING STRUCTURE.
5. ALL WORK SHALL COMPLY WITH THE 2018 INTERNATIONAL BUILDING CODE, AS APPROVED BY THE STATE OF NORTH DAKOTA / CITY OF EMERADO.
6. REFERENCE STANDARDS: UNLESS OTHERWISE NOTED, ALL STANDARDS SHALL BE CURRENT EDITION, WITH LATEST ADDENDA, IF APPLICABLE.
7. THE CONTRACTOR SHALL VERIFY ALL CONTRACT DOCUMENTS, SITE ELEVATIONS, DIMENSIONS AND CONDITIONS PRIOR TO STARTING WORK AND SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR INCONSISTENCIES.
8. SPECIFIC NOTES AND DETAILS SHALL TAKE PRECEDENCE OVER GENERAL NOTES.
9. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. UNLESS OTHERWISE INDICATED, THEY DO NOT INDICATE THE MEANS, METHODS, TIMING, OR PROCEDURES USED TO COMPLETE THE CONSTRUCTION. TEMPORARY BRACING, SHORING, OR PROTECTION OF THE STRUCTURE AGAINST WIND, ERECTION AND OTHER SITE CONDITIONS DURING CONSTRUCTION OF THE BUILDING SHALL BE THE RESPONSIBILITY OF CONTRACTOR. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROTECTION OF THE STRUCTURE DURING ALL PHASES OF DEMOLITION, CONSTRUCTION, AND INSTALLATION.
10. NO AREA OF THE STRUCTURE SHALL BE LOADED WITH CONSTRUCTION MATERIALS OR EQUIPMENT THAT EXCEEDS FINAL DESIGN CRITERIA.
11. SEE MECHANICAL, ELECTRICAL, AND ARCHITECTURAL DRAWINGS FOR ALL OPENINGS AND INSERTS NOT SHOWN ON THE STRUCTURAL DRAWINGS.
12. VERIFY LOCATION OF BOX OUTS AND OPENINGS WITH MECHANICAL AND ELECTRICAL CONTRACTORS. OPENING SIZES AND LOCATIONS SHOWN FOR PIPES, DUCTS ETC ARE FOR GENERAL INFORMATION ONLY AND SHALL BE VERIFIED WITH THE MECHANICAL CONTRACTOR BEFORE COMMENCING THE WORK.
13. VERIFY SIZE, NUMBER, AND LOCATION OF ALL MECHANICAL AND ELECTRICAL EQUIPMENT. IF EQUIPMENT SIZES, WEIGHTS, OR LOCATIONS DO NOT COINCIDE WITH EQUIPMENT SHOWN ON PLANS, COORDINATE ADJUSTMENTS WITH THE STRUCTURAL ENGINEER.
14. HOLES, PIPES, SLEEVES, ETC NOT SHOWN ON THE DRAWINGS MUST BE APPROVED BY THE STRUCTURAL ENGINEER BEFORE PLACEMENT THROUGH STRUCTURAL MEMBERS.
15. CONTRACTOR SHALL PROVIDE A CAST-IN SLEEVE FOR ALL HORIZONTAL ELEMENTS THAT EXTEND THROUGH FOOTING. IE: DRAIN TILE, ELECTRICAL CONDUIT, MECHANICAL PIPING, ETC. ALL SLEEVES SHALL BE COORDINATED WITH ARCHITECT/ENGINEER.
16. SHOP DRAWINGS PREPARED BY SUPPLIERS, SUB CONTRACTORS, ETC, SHALL BE DIMENSIONED, REVIEWED, COORDINATED, AND SIGNED/STAMPED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTING TO THE STRUCTURAL ENGINEER. MANUFACTURED COMPONENTS SUCH AS TRUSSES OR PRECAST CONCRETE SHALL BE ENGINEERED AND STAMPED PRIOR TO SUBMISSION
17. FABRICATOR SHALL CLEARLY NOTE CHANGES MADE IN THE SHOP DRAWINGS WHICH DO NOT COMPLY WITH THE CONTRACT DOCUMENTS. REVIEWED APPROVAL SHOP DRAWINGS SHOWING ENGINEERS COMMENTS ACCOMPANIED WITH RECORD SET SHOP DRAWINGS, SHALL BE AVAILABLE FOR REFERENCE AT THE CONSTRUCTION SITE.
18. EXPANSION ANCHORS SHALL BE HILTI "KWIK BOLT TZ" OR EQUIVALENT (UON). INSTALL ANCHORS IN STRUCTURAL CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
19. ADHESIVE ANCHORS (AA) SHALL BE HILTI "HIT HY-200 USING 'HAS' STANDARD RODS" OR EQUIVALENT (UON). USE HILTI "HIT-ICE" FOR COLD WEATHER APPLICATIONS, SEE SPECIFICATIONS FOR USAGE. INSTALL ANCHORS IN STRUCTURAL CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
20. CONCRETE SCREW ANCHORS (CSA) SHALL BE SIMPSON "STRONG-TIE TITEN HD" OR EQUIVALENT (UON). INSTALL ANCHORS IN STRUCTURAL CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
21. DESIGN LOADS:

ROOF LIVE LOADS:
- FLAT ROOF SNOW ..... Pf = 42 psf
  - EXPOSURE FACTOR ..... Ce = 1.0
  - IMPORTANCE FACTOR ..... Is = 1.0
  - THERMAL FACTOR ..... Ct = 1.0
  - GROUND SNOW LOAD ..... Pg = 60 psf
- DRIFT SURCHARGE LOAD ..... Pd = 59 psf
- DRIFT WIDTH ..... W = 21 ft

DEAD LOADS:
- TYPICAL ROOF ..... 20 psf

LATERAL LOADS (WIND-MWFRS)
- ULTIMATE DESIGN WIND SPEED (3 SEC GUST) ..... Vult = 110 mph
- NOMINAL DESIGN WIND SPEED ..... Vasd = 85 mph
- WIND EXPOSURE ..... "C"
- INTERNAL PRESSURE COEFFICIENT ..... +/-0.18
- RISK CATEGORY II
- COMPONENTS AND CLADDING ..... qh = 13.9 psf (Velocity Pressure)

LATERAL LOADS (SEISMIC-MSFRS):
- RISK CATEGORY II
- IMPORTANCE FACTOR ..... Ie = 1.0
- MAPPED SPECTRAL RESPONSE ..... Ss = .045, S1 = .017
- SITE CLASS ..... "D"
- DESIGN SPECTRAL RESPONSE ..... Sds = .048, Sd1 = 0.027
- SEISMIC DESIGN CATEGORY ..... "A"
- BASIC SEISMIC FORCE-RESISTING SYSTEM ..... LIGHTFRAME
- DESIGN BASE SHEAR ..... V = 0.016 W
- SEISMIC RESPONSE COEFFICIENT ..... Cs = 0.016
- RESPONSE MODIFICATION FACTOR ..... R = 3
- ANALYSIS PROCEDURE ..... E.L.F.A.

GENERAL CONSTRUCTION NOTES (CONT.)

22. THE FOLLOWING STANDARD DETAILS SHALL APPLY:

FOOTING STEP - 1/S-301
FOOTING CORNER - 2/S-301
CORNER REINFORCING - 3/S-301
WALL CONSTRUCTION JOINT (WC.J) - 4/S-301
FLOOR CONSTRUCTION JOINT (CC.J) - 5/S-301
FLOOR CONTROL JOINT (C.J) - 6/S-301
STOOP DETAIL - 8/S-301
ISOLATION JOINT - 10/S-301
ADDITIONAL REINFORCING AT OPENING - 7/S-301

JOIST BRIDGING ANCHORAGE - 4/S-401
JOIST REINFORCEMENT DETAIL - 3/-S401
ROOF DECK OPENING DETAIL - 2/S-401
ROOF DECK FASTENING DETAIL - 5/S-401
STEEL BEAM CONNECTION DETAIL - 4/S-402

FOUNDATION NOTES:

1. FOOTING ELEVATIONS ARE TO TOP OF FOOTING (UON).
2. FOOTINGS ARE DESIGNED FOR A NET ALLOWABLE SOIL BEARING PRESSURE OF 2400 psf FOR CONTINUOUS AND 2800 psf FOR PAD FOOTINGS. FOUNDATION DESIGN COMPLIES WITH GEOTECHNICAL REPORT #21.F60.1888 DATED: APRIL 16, 2021 BY NORTHERN TECHNOLOGIES, LLC.
3. FOOTINGS SHALL BEAR ON NATURAL UNDISTURBED SOIL OR ENGINEERED FILL. SOILS SHALL BE OBSERVED AND APPROVED BY A GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF FOOTING CONCRETE. IF NATURAL UNDISTURBED SOILS ARE NOT ENCOUNTERED AND/OR INADEQUATE SOILS ARE NOTED AT FOOTING BEARING LEVEL. ARCHITECT/ENGINEER SHALL BE NOTIFIED PRIOR TO PROCEEDING WITH FURTHER WORK AT THOSE FOOTING LOCATIONS.
4. PROTECT FOOTINGS FROM THE ACTION OF WATER OR FREEZING.
5. FOOTINGS ARE CENTERED UNDER WALLS ABOVE (UON).
6. PRIOR TO PLACEMENT OF FOOTING CONCRETE, CLEAN FOOTING EXCAVATIONS OF SNOW, WATER, MUD, DIRT, AND DEBRIS.
7. FOOTINGS SHALL NOT BE EARTH FORMED.

EXCAVATION AND BACKFILL NOTES:

1. EXCAVATION AND BACKFILL SHALL BE EXECUTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2. BACKFILL AND COMPACTION SHALL BE INSPECTED AND CERTIFIED BY A LICENSED GEOTECHNICAL ENGINEER. REPORTS ARE TO BE SUBMITTED TO THE ARCHITECT/ENGINEER.
3. FOOTING EXCAVATIONS SHALL BE EXCAVATED TO PROPER LINE AND LEVEL TO ENSURE MINIMUM CONCRETE COVER OF FOOTING REINFORCEMENT FOR FOOTING DEPTH.
4. BACKFILL SHALL BE COMPACTED BY MECHANICAL MEANS. FLOODING OR WATER INUNDATION SHALL NOT BE PERMITTED.
5. BACKFILL SHALL BE PLACED IN 8" (ALTERNATING) LIFTS ON EACH SIDE OF THE FOUNDATION WALLS TO MAINTAIN STABILITY OF THE FOUNDATION WALLS. COMPACT EACH LIFT TO THE FOLLOWING DENSITY (ASTM D698):

98% DRY DENSITY - BELOW FOOTINGS
95% DRY DENSITY - BELOW SLABS ON GRADE
95% DRY DENSITY - EXTERIOR FOUNDATION WALL BACKFILL

6. THE CONTRACT STRUCTURAL DOCUMENTS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THE MEANS AND METHODS USED TO PERFORM THE EXCAVATION IS AT THE SOLE DISCRETION OF THE CONTRACTOR, INCLUDING THE DESIGN AND INSTALLATION OF TEMPORARY BRACING OR SHORING. CONTRACTOR IS RESPONSIBLE FOR ALL CODE AND REGULATORY SAFETY REQUIREMENTS.
7. UNLESS OTHERWISE NOTES, ALL FILL BELOW STRUCTURAL FOUNDATIONS AND SLABS ON GRADE SHALL BE TYPE SP OR SP-SM AS CLASSIFIED BY THE UNITED SOIL CLASSIFICATION SYSTEM (USCS). GRADATION FOR FILL SHALL BE 100 PERCENT PASSING THE 2" SIEVE AND LESS THAN 20 PERCENT PASSING THE #200 SIEVE. FILL SHALL BE FREE OF ORGANICS.

SPECIAL INSPECTIONS:

1. THE CONTRACTOR SHALL COORDINATE THE TESTING AND INSPECTION SERVICES IN ACCORDANCE WITH THE PROGRESS OF THE WORK. THE CONTRACTOR SHALL PROVIDE SUFFICIENT NOTICE TO THE TESTING OR INSPECTION AGENCY OF THE REQUIRED WORK TO ALLOW ALLOCATION OF PERSONNEL. THE COST OF ANY RETESTING OR ADDITIONAL INSPECTIONS AS A RESULT OF UNINSPECTED WORK, FAILED TESTS, OR REJECTED WORK, SHALL BE BORNE BY THE CONTRACTOR.
2. THE FOLLOWING TABLE INCLUDES ITEMS REQUIRING SPECIAL INSPECTION PROVIDED BY THE OWNER. SPECIAL INSPECTIONS LISTED IN THIS TABLE MAY NOT INCLUDE ALL INSPECTIONS AND/OR TESTING THAT IS REQUIRED FOR THE PROJECT PER IBC CHAPTER 17. ADDITIONAL TESTING MAY BE REQUIRED BY THE CONTRACTOR, AS PART OF THEIR CONTRACT. THESE "SPECIAL INSPECTIONS« ARE IN ADDITION TO THE INSPECTIONS BY THE BUILDING OFFICIAL THAT ARE IDENTIFIED IN SECTION 110 IBC.

REQUIRED SPECIAL INSPECTION

	DESCRIPTION OF WORK IBC CHAPTER 17	INSPECTION YES	INSPECTION NO	TESTING YES	TESTING NO	N/A	REMARK
1.	DRIVEN PILING					X	SEE TABLE 1705.7
2.	CAST-IN-PLACE CONCRETE PIERS					X	SEE TABLE 1705.8
3.	GRADING, EXCAVATION, & FILLING	X		X			SEE TABLE 1705.6
4.	CAST-IN-PLACE CONCRETE	X		X			SEE TABLE 1705.3
5.	STRUCTURAL PRECAST CONCRETE					X	SEE TABLE 1705.3
6.	ANCHOR RODS INSTALLED IN CONCRETE	X			X		PERIODIC
7.	POST-INSTALLED ANCHORS	X			X		SEE TABLE 1705.3
8.	STRUCTURAL CONCRETE REINFORCING STEEL	X			X		PERIODIC
9.	SHOTCRETE					X	SEE TABLE 1705.3
10.	STRUCTURAL MASONRY					X	SEE ACI 530 (LEVEL B QA)
11.	STRUCTURAL STEEL WELDING	X			X		SEE AISC 360 (CHAPTER N)
12.	STRUCTURAL STEEL BOLTING	X			X		SEE AISC 360 (CHAPTER N)
13.	STRUCTURAL STEEL COMPOSITE ELEMENTS					X	SEE AISC 360 (CHAPTER N)
14.	STRUCTURAL STEEL DECKING	X			X		SEE ANSI-SDI QA/QC
15.	OPEN-WEB STEEL JOISTS & JOIST GIRDERS	X			X		SEE TABLE 1705.2.3
16.	FABRICATOR & ERECTOR DOCUMENTS					X	SUBMITTAL REVIEW
17.	STRUCTURAL WOOD SHEATHING					X	SEE SECTION 1705.11.1
18.	HIGH-LOAD WOOD DIAPHRAGMS					X	SEE SECTION 1705.5.1

CONCRETE NOTES:

1. CONCRETE CONSTRUCTION SHALL CONFORM TO AMERICAN CONCRETE INSTITUTE (ACI) CODES AND SPECIFICATIONS, LATEST EDITION.

ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE"
ACI 315 "DETAILS & DETAILING OF CONCRETE REINFORCEMENT"
ACI 318-14 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE"

2. CAST-IN-PLACE CONCRETE SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH IS AS FOLLOWS:

3000 psi - FOOTINGS
3000 psi - EXTERIOR FOUNDATION WALLS
3000 psi - PIERS
4000 psi - INTERIOR SLABS ON GRADE
4500 psi - EXTERIOR SLABS ON GRADE - AIR ENTRAINED
4500 psi - EXTERIOR SLABS ON DECK - AIR ENTRAINED

3. CONCRETE MIX DESIGNS SHALL BE BY AN INDEPENDENT TESTING LABORATORY, AND SUBMITTED FOR REVIEW AND APPROVAL.
4. CAST-IN-PLACE CONCRETE SHALL BE SUBJECT TO TESTING BY AN INDEPENDENT TESTING LABORATORY. SEE PROJECT SPECIFICATIONS FOR REQUIREMENTS.
5. NON-WELDED REINFORCING STEEL SHALL BE GRADE 60 DEFORMED, BILLET-STEEL, ASTM A615, UON ALL WELDED WIRE FABRIC (WWF) SHALL BE PLAIN ASTM A185.
6. WELDED REINFORCING STEEL SHALL BE GRADE 60, LOW CARBON, ASTM A706.
7. CLEAR CONCRETE COVER FOR ALL REINFORCING SHALL BE AS FOLLOWS, UON ON THE DRAWING:

CONCRETE ON SOIL ..... 3"
SLAB ON GRADE ..... MIDHEIGHT
WALLS, STRUCTURAL SLABS
FORMED AND EXPOSED TO EARTH OR WEATHER:
#6 THROUGH #18 ..... 2"
#5 AND SMALLER ..... 1 1/2"
NOT EXPOSED TO EARTH AND WEATHER:
#11 AND SMALLER ..... 3/4"
BEAMS AND COLUMNS (COVER TO STIRRUPS OR TIES) .. 1 1/2"

8. PROVIDE EXTRA REINFORCEMENT AROUND ALL OPENINGS GREATER THAN 1'-0" SQUARE OR 1'-0" IN DIAMETER, INCLUDING DOOR OPENINGS, IN CONCRETE WALLS AND SLABS. PROVIDE 2 - #5 BARS @ 3" OC, ON EACH SIDE OF THE OPENING EXTENDING 2'-0" BEYOND THE CORNER OF THE OPENING AND 2 - #5 BARS AT 3" OC BY 3'-0" LONG DIAGONAL BARS AT EACH CORNER. PLACE DIAGONAL BARS CENTERED ON CORNER @ 2" CLEAR OF CORNER. ADDITIONAL REINFORCEMENT SHALL BE PROVIDED AT EACH LAYER OF REINFORCING.
9. REINFORCING STEEL SHALL BE BENT, SPLICED, AND PLACED IN ACCORDANCE WITH ACI 301 (LATEST EDITION).
10. PROVIDE LAP SPLICE FOR REINFORCING STEEL AS FOLLOWS:

TYPE #1 SPLICE - ONLY WHERE SPECIFICALLY SHOWN ON PLAN
TYPE #2 SPLICE - TYPICAL FOR HORIZONTAL REINFORCING BARS IN SLABS, GRADE BEAMS, FOOTINGS, AND FOUNDATION WALLS (UON)
TYPE #3 SPLICE - WHERE CONCRETE COVER IS LESS THAN Bd AND THE SPACING IS LESS THAN 2 Bd
TYPE #4 SPLICE - TYPICAL FOR VERTICAL BARS IN COLUMNS AND PIERS (UON)

REINFORCING STEEL SPLICE LENGTHS STANDARD NON-COATED BARS

CONCRETE STRENGTH	TYPE #1 SPLICE CLASS A SPLICE		TYPE #2 SPLICE CLASS B SPLICE		TYPE #3 SPLICE CLASS B SPLICE		TYPE #4 SPLICE COMPRESSION SPLICE
F'c	#6 AND SMALLER	#7 AND LARGER	#6 AND SMALLER	#7 AND LARGER	#6 AND SMALLER	#7 AND LARGER	#4 AND LARGER
3000 psi	44 Bd	55 Bd	57 Bd	71 Bd	85 Bd	107 Bd	30 Bd
3500 psi	41 Bd	51 Bd	53 Bd	66 Bd	79 Bd	98 Bd	30 Bd
4000 psi	38 Bd	47 Bd	49 Bd	62 Bd	74 Bd	92 Bd	30 Bd
5000 psi	34 Bd	42 Bd	44 Bd	55 Bd	66 Bd	83 Bd	30 Bd
6000 psi	31 Bd	38 Bd	40 Bd	50 Bd	60 Bd	76 Bd	30 Bd

(Bd = BAR DIAMETER)

NOTES:
1. MINIMUM LAP: 1'-6" FOR TYPE #1 THRU TYPE #3 AND 1'-0" FOR TYPE #4 SPLICES.
2. MULTIPLY THE SPLICE LENGTH ABOVE BY THE FOLLOWING ADJUSTMENT FACTORS:
   A. 1.0 - FOR STANDARD REBAR
   B. 1.3 - WHEN HORIZONTAL REINFORCING HAS MORE THAN 1'-0" OF FRESH CONCRETE PLACE BELOW BAR
   C. 1.3 - FOR LIGHTWEIGHT CONCRETE
   D. 1.2 - FOR TYPICAL EPOXY COATED REBAR
   E. 1.5 - FOR EPOXY COATED REBAR WITH COVER LESS THAN 3 Bd OR CLEAR SPACING LESS THAN 6 Bd
   F. Fy USED/60 - FOR REBAR STRENGTHS OTHER THAN 60 ksi
3. ALL ADJUSTMENT FACTORS THAT APPLY SHALL BE USED TO CALCULATE REQUIRED SPLICE LENGTH.

11. PROVIDE ADEQUATE SUPPORT BARS AND ACCESSORIES TO HOLD REINFORCING BARS FIRMLY IN PLACE TO SPECIFIED COVERAGES.
12. UNLESS SHOWN SPECIFICALLY ON PLAN, CONTROL JOINTS SHALL BE PLACED IN A SQUARE PATTERN WITH A MAXIMUM SPACING OF 36 TIMES THE SLAB THICKNESS. WHERE A SQUARE PATTERN IS NOT POSSIBLE, THE MAXIMUM LONG SIDE TO SHORT SIDE OF THE JOINT PATTERN SHALL NOT EXCEED A RATIO OF 1.25:1. CONSTRUCTION JOINTS SHALL BE LOCATED BY THE CONTRACTORS AS REQUIRED FOR CONSTRUCTION WITH A MAXIMUM OF 3,000 SQUARE FEET. CONTRACTOR SHALL SUBMIT A JOINT PLACEMENT PLAN TO OWNER/ARCHITECT/ENGINEER FOR REVIEW PRIOR TO POURING CONCRETE.
13. CAST DOWELS, WITH STANDARD 90 DEGREE HOOK, IN FOOTINGS FOR CONCRETE PIERS AND WALLS ABOVE. DOWELS SHALL BE THE SAME SIZE AND NUMBER AS THE VERTICAL REINFORCING (UON).

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL WORK SHALL BE PER AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) SPECIFICATION, 14TH EDITION, MATERIAL:

ASTM A992	W, S, AND M SHAPES	Fy = 50 ksi
ASTM A53	GRADE B - STANDARD PIPES	Fy = 35 ksi
ASTM A500	GRADE B - HSS PIPES	Fy = 42 ksi
ASTM A500	GRADE B - HSS TUBES	Fy = 46 ksi
ASTM A36	PLATES, BARS, MISC SHAPES (ANGLES), CHANNELS, & RODS	Fy = 36 ksi
ASTM F1554	GRADE 36 - ANCHOR RODS	Fy = 36 ksi
ASTM F3125	GRADE A325 - CONNECTION BOLTS	
ASTM A563	CONNECTION NUTS	
ASTM F436	WASHERS	
ASTM A108	HEADED STUD ANCHORS	Fy = 65 ksi
E70XX	ELECTRODES	Fy = 70 ksi

2. WELDED CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH THE LATEST RECOMMENDATIONS OF:
   AISC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION
   AWS - AMERICAN WELDING SOCIETY
3. COLUMN BASE AND CAP PLATES TO BE WELDED AROUND ALL SIDES.
4. BOTTOM PLATE OF STEEL LINTELS SHALL BE WELDED TO THE BEAM WITH 3/16" FILLET WELD (BOTH SIDES) 3" LONG @ 1'-0" OC (UON).
5. WELDS NOT SPECIFIED SHALL BE A FILLET WELD, CONTINUOUS AND/OR ALL AROUND WITH MINIMUM THROAT DIMENSION AS REQUIRED FOR MATERIAL THICKNESS PER AWS.
6. STRUCTURAL FABRICATORS SHALL SHOW ALL FIELD WELDING REQUIREMENTS ON SHOP DRAWINGS SUBMITTED TO THE ENGINEER.
7. BEFORE ENCASING STEEL COLUMNS IN CONCRETE OR MASONRY, COAT COLUMN BASES AND TOPS OF ANCHOR BOLTS WITH ASPHALTIC ROOF CEMENT.
8. BEAMS AND COLUMNS SHALL BE ERECTED TRUE AND PLUMB WITHIN AISC TOLERANCE. PROVIDE TEMPORARY BRACING AS REQUIRED.
9. BEARING PLATES FOR STEEL COLUMNS SHALL BE DRY PACKED WITH A NON-SHRINK, NON-METALLIC GROUT AS SPECIFIED.
10. BRIDGING SHALL BE SUPPLIED AND DESIGNED BY THE STEEL JOIST SUPPLIER, AS PER SJI STANDARDS, FOR THE PROJECT DESIGN LOADS. STEEL JOIST SUPPLIER TO PROVIDE CONNECTIONS TO ANCHOR BRIDGING TO MASONRY AND/OR CONCRETE WALLS. SEE STANDARD DETAILS.
11. PROVIDE DOUBLE ANGLE CONNECTIONS AS DESCRIBED IN PART 10 OF THE AISC. MANUAL OF STEEL CONSTRUCTION (14TH ED-ASD)

* CONNECTIONS SHALL BE SELECTED TO SUPPORT BEAM END REACTIONS INDICATED ON THE CONTRACT DRAWINGS.
* IF BEAM END REACTIONS ARE NOT INDICATED, CONNECTIONS SHALL BE SELECTED TO SUPPORT 1/2 THE TOTAL UNIFORM LOAD CAPACITY GIVEN IN THE ALLOWABLE UNIFORM LOAD TABLES, PART 3 - FOURTEENTH EDITION (ASD), FOR THE SPECIFIED BEAM SIZE, SPAN, AND STEEL GRADE (UON). OTHER RATIONAL ENGINEERING CONNECTION DESIGN AND STANDARD CONNECTION PRACTICES MAY BE USED WITH APPROVAL OF THE ENGINEER.
* CONNECTIONS SHALL HAVE MINIMUM ROWS OF BOLTS FOR BEAM DEPTHS AS INDICATED IN PART 10.

12. FRAMED STEEL BEAM CONNECTIONS SHALL BE "BEARING TYPE", (UON).
13. STEEL BEAM KEY:

W16x40 (5) (3/4") (-0"-0") (BEAM SIZE)
20 20 (BEAM END REACTION/MOMENT)
(5) = NUMBER OF HEADED STUDS (EQUALLY SPACED)
(3/4") = CAMBER
(-0"-0") = ELEVATION FROM T.O. STEEL

14. BEAMS SHALL BE MARKED AND ERECTED WITH NATURAL CAMBER PLACED UPWARDS.
15. LINTELS SHALL HAVE A BEARING OF 1" PER FOOT OF SPAN AT EACH END, 8" MINIMUM LINTEL ANGLES WHICH HAVE NOT BEEN SHOWN OTHERWISE, TO BE AS FOLLOWS FOR EACH 4" OF WALL THICKNESS:

SPANS TO 4'-0" - L3 1/2x3 1/2x1/4
4'-0" TO 6'-0" - L4x3 1/2x1/4
6'-0" TO 8'-0" - L5x3 1/2x1/4
FOR SPANS GREATER THAN 8'-0" CONTACT STRUCTURAL ENGINEER.

16. DO NOT PAINT STEEL SURFACES TO BE FIELD WELDED.
17. DO NOT PAINT STEEL SURFACES THAT HEADED STUD ANCHORS WILL BE WELDED TO.
18. ALL HEADED STUD ANCHORS TO BE ATTACHED TO STEEL SECTION USING ELECTRIC ARC WELDING GUN.
19. FOR STEEL TO RECEIVE SPRAY APPLIED FIREPROOFING, VERIFY STEEL SURFACE PREPARATION REQUIREMENTS MANUFACTURER.
20. STEEL JOISTS TO BE MANUFACTURED AND ERECTED IN ACCORDANCE WITH STEEL JOIST INSTITUTE SPECIFICATIONS.
21. METAL DECK TO BE MANUFACTURED AND ERECTED IN ACCORDANCE WITH STEEL DECK INSTITUTE SPECIFICATIONS.

ROOF DECK - 1 1/2" DEEP, TYPE B, 22 GA, AS MADE BY VULCRAFT OR EQUAL
STOOP DECK - 1 1/2" DEEP, TYPE C, 20 GA, GALVANIZED, AS MADE BY VULCRAFT OR EQUAL

22. VERIFY LOCATION OF ROOF OPENINGS WITH MECHANICAL CONTRACTOR. ROOF OPENINGS SHALL BE FRAMED WITH L3x3x3/8 ON FOUR SIDES (UON). SEE STANDARD DETAILS.
23. ROOF PERIMETER STEEL ELEMENTS SUCH AS ANGLES OR BENT PLATES, NOTED TO BE CONTINUOUS, SHALL BE FIELD SPLICED WITH A FULL LENGTH SQUARE GROOVE FULL PENETRATION WELD UTILIZING A MINIMUM 3/16" ROOT OPENING.

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GRAND FORKS, ND
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GENERAL STRUCTURAL NOTES

SHEET REFERENCE NUMBER
S-001

ABBREVIATIONS AND SYMBOLS:

AA	ADHESIVE ANCHOR
AR	ANCHOR ROD
APA	AMERICAN PLYWOOD ASSOCIATION
ASTM	AMERICAN SOCIETY OF TESTING MATERIALS
ARCH	ARCHITECT/ARCHITECTURAL
BB	BOND BEAM
BLDG	BUILDING
BLK	BLOCK
BM	BEAM
B.O.	BOTTOM OF
BOT	BOTTOM
BTWN	BETWEEN
BRG	BEARING
CIP	CAST IN PLACE
CL	CENTER LINE
CJ	CONTROL JOINT
CCJ	CONSTRUCTION CONTROL JOINT
CLR	CLEAR/CLEARANCE
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CRC	COLD-ROLLED CHANNEL
CSA	CONCRETE SCREW ANCHOR
DBL	DOUBLE
DET	DETAIL
DEG	DEGREES
DIA	DIAMETER
DIM	DIMENSION
DL	DEAD LOAD
DT	DRAIN TILE
DWL	DOWEL
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
ELEV	ELEVATOR
EQ	EQUAL
EW	EACH WAY
(E)	EXISTING
EXC	EXCAVATION
EXP	EXPANSION
EXT	EXTERIOR
ETC	ETCETERA
FD	FLOOR DRAIN
FDN	FOUNDATION
FTG	FOOTING
FT	FOOT/FEET
GALV	GALVANIZE
GA	GAUGE
GC	GENERAL CONTRACTOR
GT	GIRDER TRUSS
HC	HOLLOWCORE
HORIZ	HORIZONTAL
HSA	HEADED STUD ANCHOR
HSS	HOLLOW STRUCTURAL SECTION
IF	INSIDE FACE
INT	INTERIOR
JST	JOIST
K	KIPS
KLF	KIPS PER LINEAR FOOT
KSI	KIPS PER SQUARE INCH
L	ANGLE
LL	LIVE LOAD
LB	LEDGER BEAM
LBS	POUNDS
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LONG	LONGITUDINAL
MAS	MASONRY
MAX	MAXIMUM
MECH	MECHANICAL
MFG	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MTL	METAL
MO	MASONRY OPENING
N	NORTH
NTS	NOT TO SCALE
NS	NON-SHRINK
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OH	OVERHEAD
OPNG	OPENING
ORIG	ORIGINAL
OSB	ORIENTED STRAND BOARD
PAF	POWDER ACTUATED FASTENER
PART	PARTITION
PC	PRECAST CONCRETE
PLF	POUND PER LINEAR FOOT
PL	PLATE
PWD	PLYWOOD
PNL	PANEL
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
RAD	RADIUS
REINF	REINFORCING
REM	REMOVE
RQD	REQUIRED
RFG	ROOFING
RO	ROOF OPENING
SB	SOIL BORING
SCHED	SCHEDULE
SD	SEE DETAIL
SDL	SUPERIMPOSED DEAD LOAD
SLL	SUPERIMPOSED LIVE LOAD
SER	STRUCTURAL ENGINEER OF RECORD
SHT	SHEET
SIM	SIMILAR
SQ	SQUARE
SJ	STEEL JOIST
SL	SNOW LOAD
SPA	SPACE/SPACING
SPECS	SPECIFICATIONS
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
TEMP	TEMPORARY
T & B	TOP & BOTTOM
THK	THICK OR THICKENED
T.O.	TOP OF
TRANS	TRANSVERSE
TRTD	TREATED
TS	TUBE STEEL
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VER	VERIFY
VERT	VERTICAL
WF	WIDE FLANGE
WD	WOOD
WL	WIND LOAD
W/	WITH
W/O	WITH OUT
WT	WEIGHT
WWF	WELDED WIRE FABRIC
@	AT
+/-	PLUS OR MINUS

FOOTING SCHEDULE

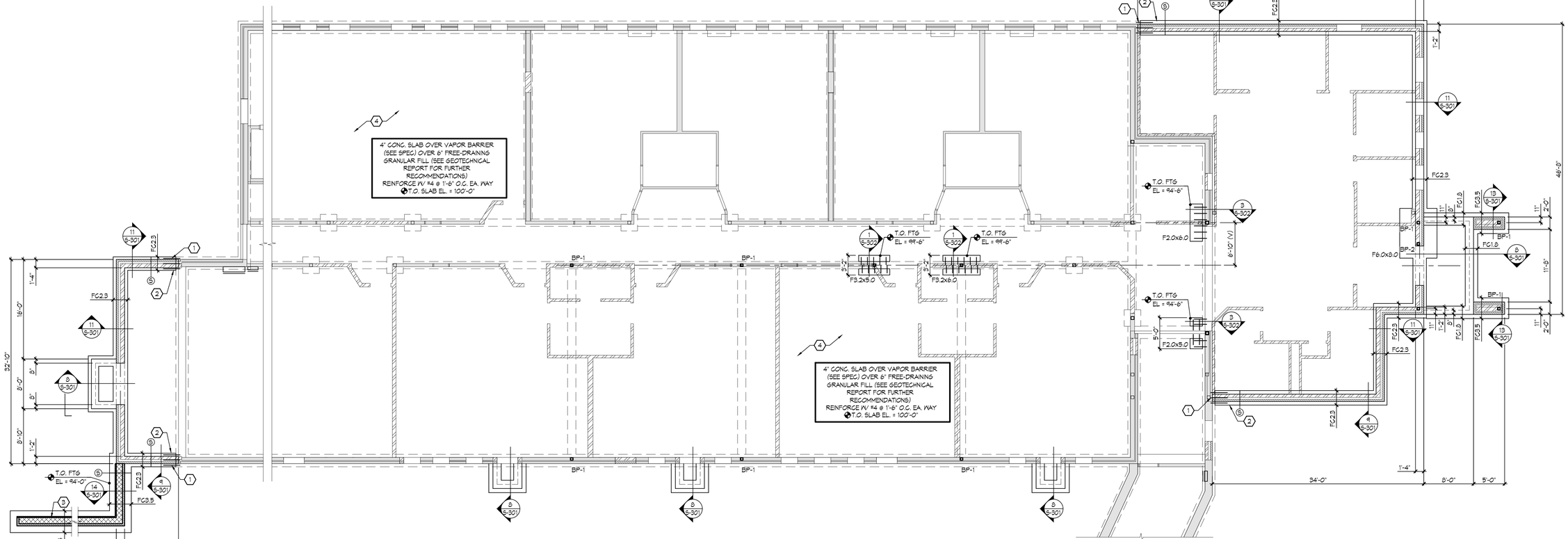
MARK	FOOTING SIZE	FOOTING DEPTH	REINFORCING TRANS	REINFORCING LONG	REMARK
FG1.0	1'-0" CONT	1'-0"	-	2- #5	@ STOOPS
FG2.3	2'-4" CONT	1'-0"	#4 @ 4'-0"	2- #5	-
FG3.5	3'-6" CONT	1'-0"	#4 @ 1'-4"	4- #5	-
F2.0x5.0	2'-0" x 5'-0"	2'-0"	8- #5	8- #5	SPLIT FTG, SEE PLAN
F2.0x8.0	2'-0" x 8'-0"	2'-0"	12- #5	4- #5	-
F3.2x5.0	3'-2" x 5'-0"	1'-6"	20- #4	8- #4	SPLIT FTG, SEE PLAN & DTL 1/S302
F3.2x6.0	3'-2" x 6'-0"	1'-6"	24- #4	8- #4	SPLIT FTG, SEE PLAN & DTL 1/S302
F6.0x8.0	6'-0" x 8'-0"	1'-0"	7- #5	9- #5	-

SHEET NOTES:

1. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL PLANS.
2. SEE SHEET S-001 FOR GENERAL STRUCTURAL NOTES.
3. (5) = STEPPED FOOTING SD 1/S-301.
4. COORDINATE LOCATIONS OF MECHANICAL & ELECTRICAL PENETRATIONS THROUGH ALL FOUNDATIONS AND SLABS.
5. ALL STOOPS SHALL BE CENTERED ON DOOR OPENINGS (UON). VERIFY DOOR OPENING LOCATIONS AND DIMENSIONS WITH ARCHITECTURAL PLANS.
6. FX OR FGX- FOOTING MARK, SEE FOOTING SCHEDULE THIS SHEET.
7. BP-X - BASE PL MARK, SEE DETAIL 4/S-302. WHERE NO MARK OCCURS, SEE DETAIL 1/S-401.
8. SEE GEOTECHNICAL REPORT FOR ALL FOUNDATION RECOMMENDATIONS.
9. VERIFY SLOPE, GRADE ELEVATION, AND EXTERIOR CONC W/ CIVIL PLANS.

KEY NOTES:

1. 3- #6 x 3'-0" DWL. DRILL & EPOXY INTO EXISTING FOOTING W/ 6" MINIMUM EMBED. #6 x 3'-0" DWL @ 1'-0" O.C. DRILL & EPOXY INTO EXISTING FOUNDATION WALL W/ 6" MINIMUM EMBED, CENTER IN WALL
2. T.O. FTG EL = MATCH EXISTING (VERIFY)
3. PROVIDE SLEEVE IN FDN WALL FOR (E) STORM WATER LINE. FIELD VERIFY SIZE, LOCATION, & ELEVATION
4. REMOVE & REPLACE CONC SLAB AS REQUIRED, SEE ARCH FOR EXTENTS, SD 2/S-302



FOOTING & FOUNDATION PLAN

1/8" = 1'-0" T.O. FTG EL = 96'-0" (U.O.N.)

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FOOTING & FOUNDATION PLANS

SHEET REFERENCE NUMBER
S-101

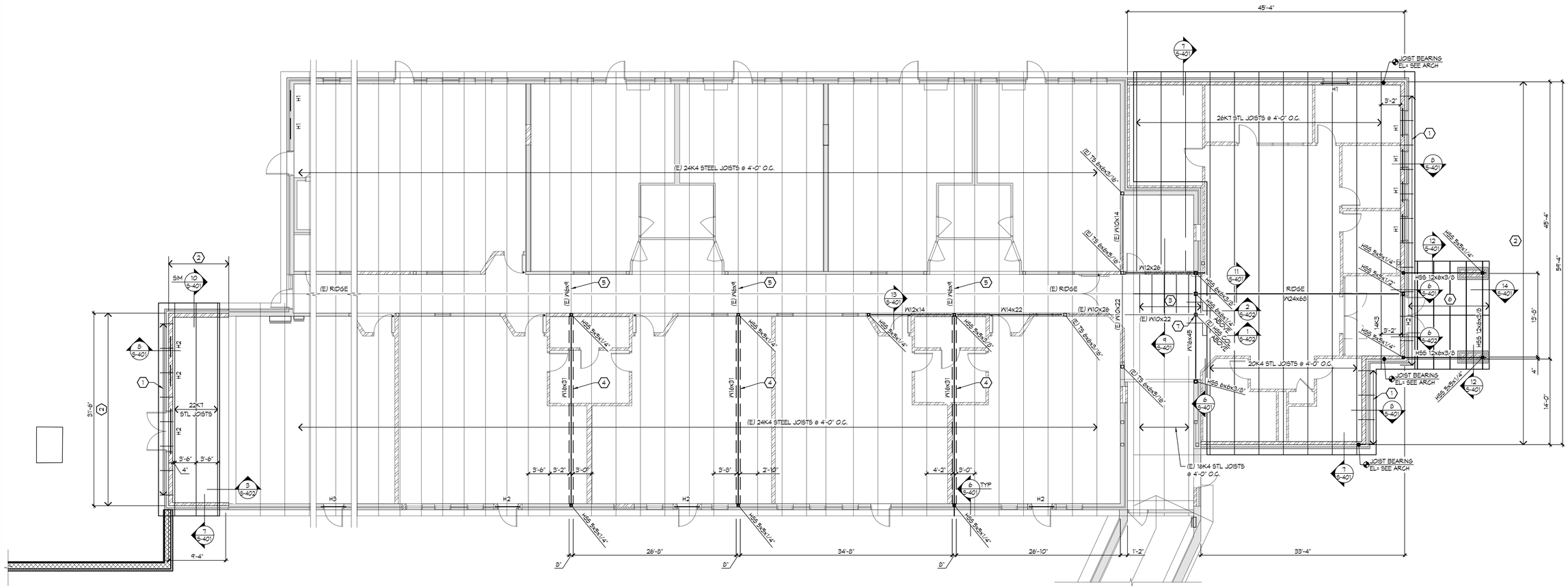
HEADER SCHEDULE		
MARK	HEADER SIZE	DETAIL
H1	2- 600S162-54 W L3 1/2X3 1/2X3/8" LOOSE LINTEL	5/S-402
H2	2- 800S162-54 W L3 1/2X3 1/2X3/8" LOOSE LINTEL	5/S-402
H3	2- 1000S200-68 W L5X3 1/2X3/8" (LLV) LOOSE LINTEL	5/S-402

SHEET NOTES:

1. SEE SHEET S-001 FOR GENERAL CONSTRUCTION NOTES.
2. ALL COLD FORMED WALLS SHALL BE 600S162-54 STUDS @ 1'-4" O.C. (U.O.N.).
3. ALL ROOF DECK SHALL BE 1 1/2", TYPE B, 22 GA. ROOF DECK BY VULCRAFT OR EQUAL. FASTEN DECK W #12 SCREWS USING 36/5 PATTERN. USE 3-#10 SIDELAP FASTENERS PER SPAN. S.D. 9/S-401.
4. ROOF JOISTS TO BE DESIGNED BY JOIST MANUFACTURER FOR NET UPLIFT OF 13 psf.

KEY NOTES:

1. HSS 2 1/2x2 1/2X1/4" OUTRIGGERS @ 4'-0" O.C.
2. COLD FORMED STEEL WALLS SHALL BE 600S162-54 @ 1'-4" O.C.
3. 600S162-54 ROOF JOIST, SD 9/S-401
4. SHORE ROOF, DEMO EXISTING CMU WALL, AND INSTALL NEW STEEL BEAM/JOIST. REMOVE JOIST BRIDGING AS REQ'D & REPLACE, ATTACHING TO NEW STEEL BEAM
5. W6 FRAME TO REMAIN, SHORE AS NECESSARY TO DEMO WALL AND WELD TO NEW COLUMN
6. COLD-FORMED METAL TRUSS @ 2'-8" O.C. DESIGNED & SUPPLIED BY COLD-FORM SUPPLIER. TRUSSES TO BE DESIGNED FOR A UNIFORM SNOW LOAD OF 175 PSF
7. CUT & REMOVE (E) STL COL FROM FLOOR TO ABOVE CEILING, SUPPORT REMAINING COL W/ NEW STL BEAM, SD 14/S-401



ROOF FRAMING PLAN

1/8" = 1'-0" ◆JOIST BRG EL = 111'-4 1/2" (U.O.N.)

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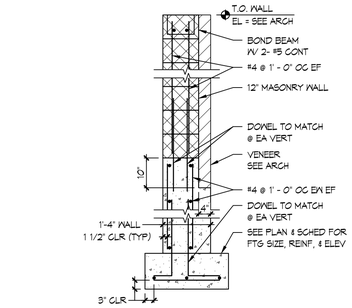
GRAND FORKS, ND
AIR FORCE BASE

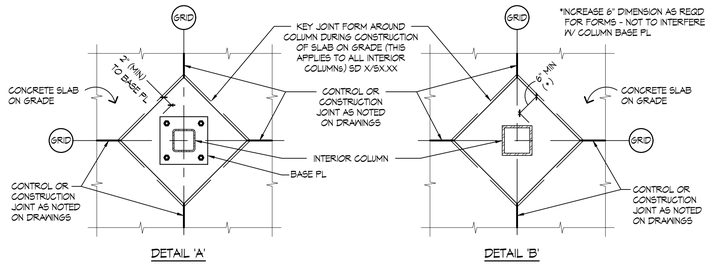
PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

ROOF FRAMING PLANS

SHEET REFERENCE NUMBER
S-201

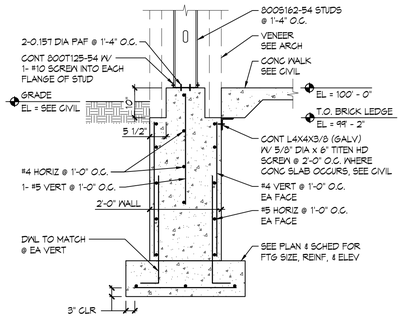


14 S-301 SCREEN WALL DETAIL
1/2" = 1'-0"

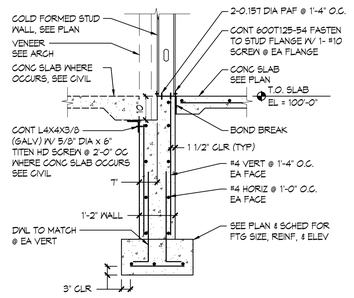


NOTE:
- USE DETAIL 'A' IF SLAB ON GRADE IS POURED PRIOR TO STEEL ERECTION
- USE DETAIL 'B' IF SLAB ON GRADE IS POURED AFTER TO STEEL ERECTION

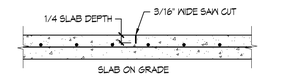
10 S-301 INTERIOR COLUMN ISOLATION JOINT
NO SCALE



13 S-301 CANOPY PIER DETAIL
1/2" = 1'-0"

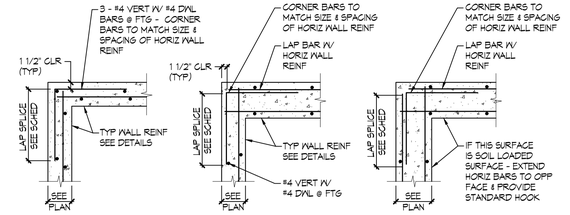


9 S-301 EXTERIOR FDN WALL DETAIL
1/2" = 1'-0"

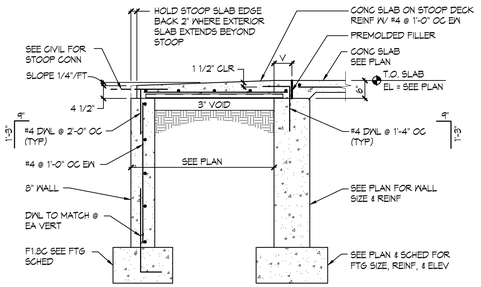


NOTE:
SAW CUT SHALL BE EXECUTED AS SOON AS CONCRETE HAS HARDENED SUFFICIENTLY TO PREVENT AGGREGATE DISLODGING BY SAW & PRIOR TO SHRINKAGE STRESS CRACKING.

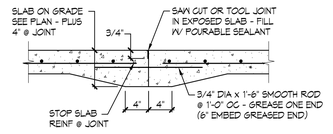
6 S-301 FLOOR CONTROL JOINT (CJ)
NO SCALE



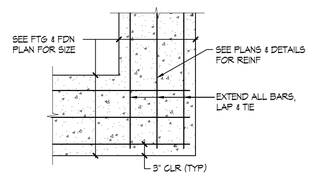
3 S-301 TYPICAL CORNER BAR DETAIL
NO SCALE



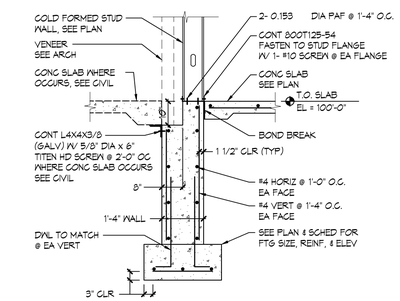
8 S-301 STOOP DETAIL
NO SCALE



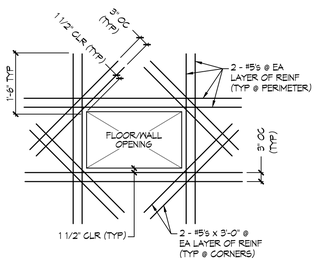
5 S-301 FLOOR CONSTRUCTION JOINT (CCJ)
NO SCALE



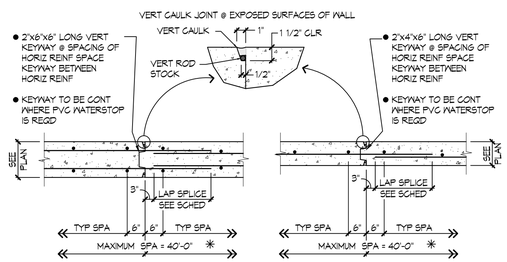
2 S-301 FOOTING CORNER REINFORCEMENT DETAIL
NO SCALE



11 S-301 EXTERIOR FDN WALL DETAIL
1/2" = 1'-0"



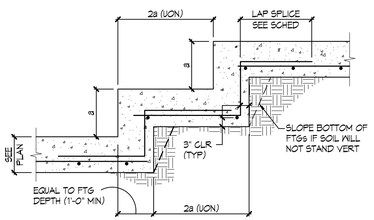
7 S-301 ADDITIONAL REINFORCING @ OPENING
NO SCALE



NOTES:
- DIMENSION MAY BE INCREASED TO 120'-0" IF WALL IS BACKFILLED ON BOTH SIDES FOR FULL HEIGHT.
- DIMENSION MAY BE INCREASED TO 80'-0" IF INTERIOR SURFACE IS NOT EXPOSED.

4 S-301 TYPICAL WALL CONSTRUCTION JOINT (WCJ)
NO SCALE

STEPPED FOOTING NOTES:
1. SEE PLAN FOR FOOTING SIZE AND REINFORCING
2. SLOPED OR STEPPED FOOTINGS SHALL BE CAST AS A UNIT
3. STEPPED FOOTING LINES SHOWN ON PLAN ARE @ BOTTOM OF FOOTING



1 S-301 STEPPED FOOTING DETAIL
NO SCALE

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REGISTERED PROFESSIONAL ENGINEER
ERIC A. GREIFF
PE-4983
DATE: 22 APR 2022
NOT VALID WITHOUT SIGNATURE

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HE: 032.0061.2021 CJK/EAG

U.S. AIR FORCE

Symbol	Description	Date	Approved

DESIGNED BY: EAG
DWN BY: CJK/AW
CHK BY: EAG
SUBMITTED BY: AW
DATE: 22 APRIL 2022
PLOT DATE: AS SHOWN
PLOT SCALE: AS SHOWN
DRAWING NUMBER: AS SHOWN

DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND
GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE &
RECAPITALIZATION B168

FOUNDATION DETAILS

SHEET REFERENCE NUMBER
S-301

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+INTERIORS
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U.S. AIR FORCE

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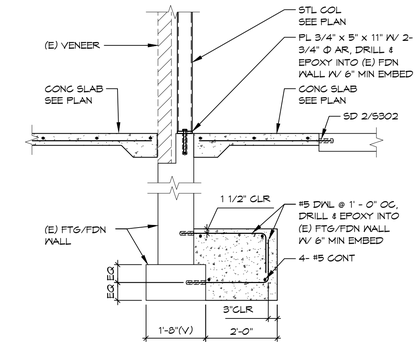
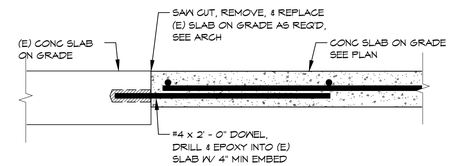
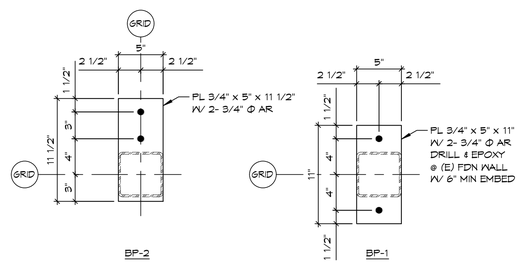


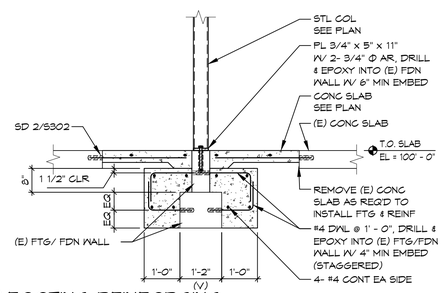
3 S-302 (E) FOOTING REINFORCING
1/2" = 1'-0"



2 S-302 NEW TO (E) SLAB-ON-GRADE CONNECTION
1 1/2" = 1'-0"



4 S-302 BASE PLATE DETAIL
1/2" = 1'-0"



1 S-302 (E) FOOTING REINFORCING
1/2" = 1'-0"

DESIGNED BY:	EAG
DWN BY:	CJK/AW
CHK BY:	EAG
DATE: 22 APRIL 2022	
SUBMITTED BY:	AW
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DEPARTMENT OF THE AIR FORCE
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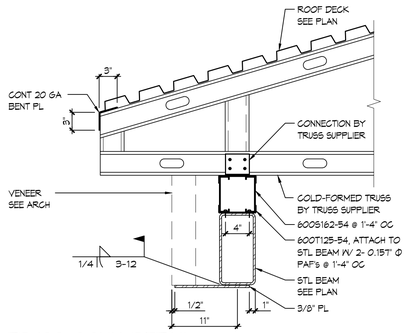
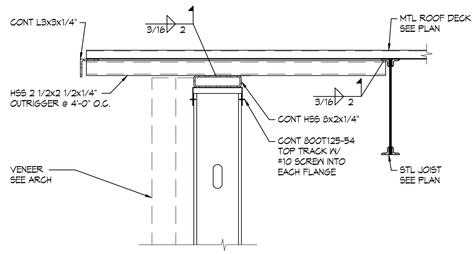
FOUNDATION DETAILS

SHEET REFERENCE NUMBER
S-302

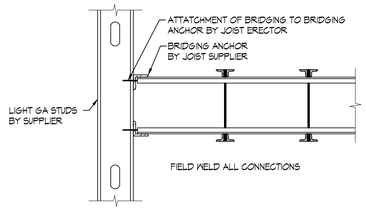


12 S-401 **TRUSS CONN DETAIL**
1" = 1'-0"



8 S-401 **OUTRIGGER DETAIL**
1" = 1'-0"

NOTES:
1. ALL BRIDGING TO BE DESIGNED BY JOIST SUPPLIER AS PER SJI STANDARDS.
2. DO NOT WELD BRIDGING TO WEB MEMBERS.
3. DO NOT HANG ANYTHING FROM BRIDGING.
4. JOIST SUPPLIER IS TO PROVIDE ALL BRIDGING & ACCESSORIES FOR PROPER INSTALLATION AS PER SJI STANDARDS.



4 S-401 **BRIDGING ANCHOR CONNECTION**
1" = 1'-0"

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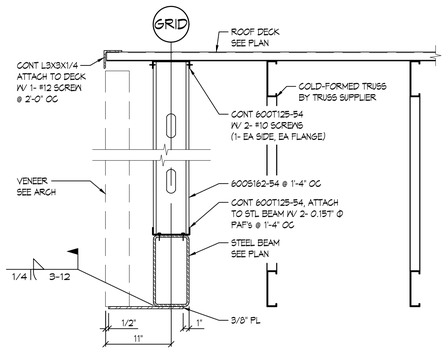
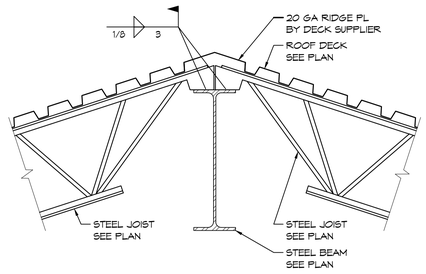
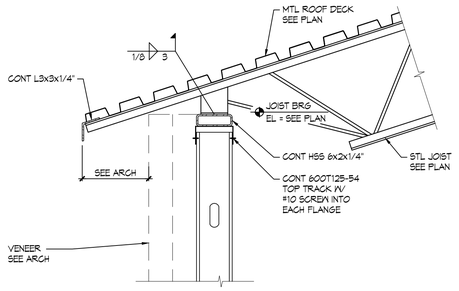


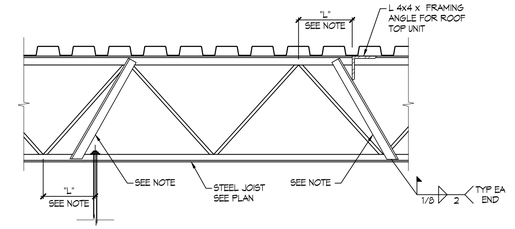
14 S-401 **DECK EDGE DETAIL**
1" = 1'-0"



11 S-401 **JOIST BRG DETAIL**
1" = 1'-0"

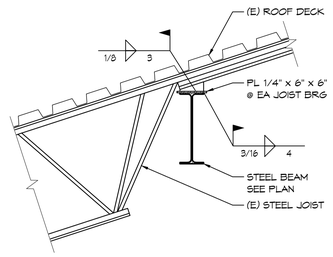


7 S-401 **JOIST BRG DETAIL**
1" = 1'-0"

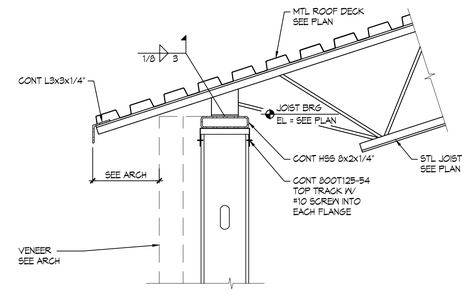


NOTE:
PROVIDE L 2x2x3/16 CHORD BRACE WHERE "L" IS GREATER THAN 3". WELDING TO JOIST SHALL BE PERFORMED BY CERTIFIED WELDERS. TAKE CARE TO AVOID DAMAGE OR LOSS OF SECTION OF JOIST COMPONENTS BY OVER-WELDING.

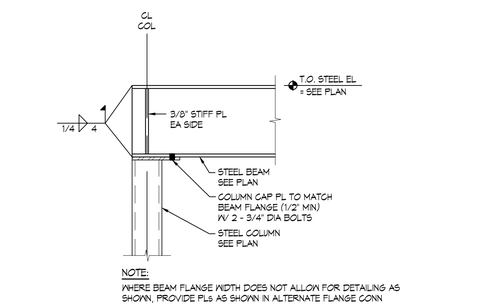
3 S-401 **JOIST DETAIL**
1" = 1'-0"



13 S-401 **JOIST BRG DETAIL**
1" = 1'-0"

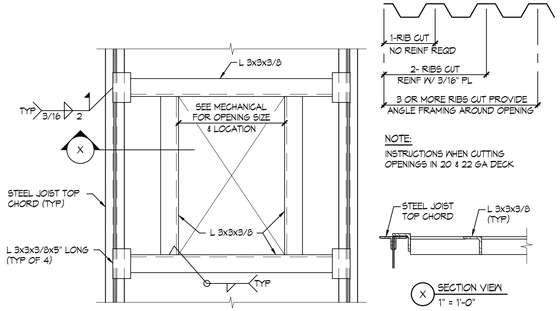


10 S-401 **JOIST BRG DETAIL**
1" = 1'-0"



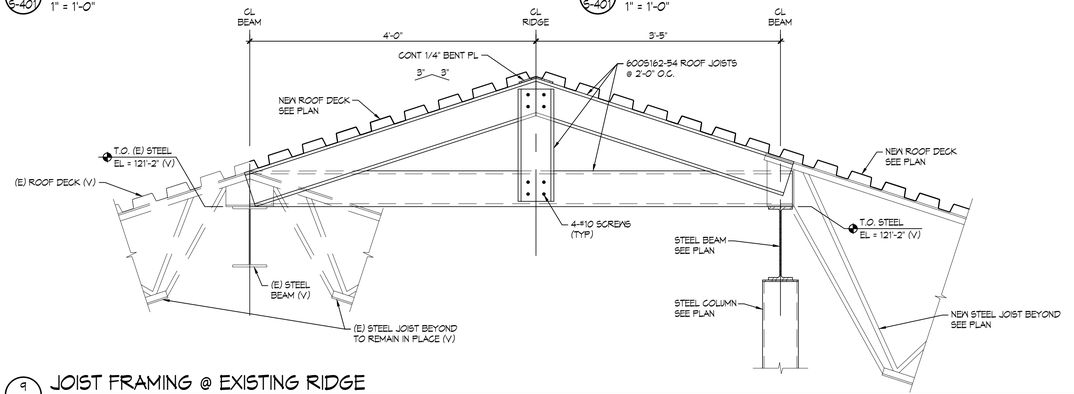
NOTE:
WHERE BEAM FLANGE WIDTH DOES NOT ALLOW FOR DETAILING AS SHOWN, PROVIDE PLS AS SHOWN IN ALTERNATE FLANGE CONN

6 S-401 **STEEL BEAM BEARING @ HSS COLUMN**
1" = 1'-0"

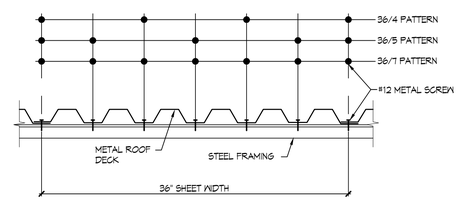


NOTE:
INSTRUCTIONS WHEN CUTTING OPENINGS IN 20 & 22 GA DECK

2 S-401 **ANGLE FRAMING @ ROOF OPENING**
1" = 1'-0"

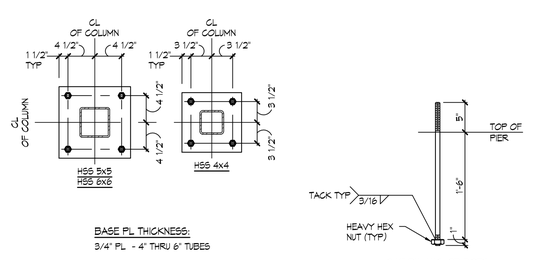


9 S-401 **JOIST FRAMING @ EXISTING RIDGE**
1" = 1'-0"



NOTE:
1. WHEN SPAN EXCEEDS 5'-0", SIDE LAPS SHALL BE FASTENED AT MID SPAN OR 3'-0" INTERVALS (WHICHEVER IS SMALLER) W/ #10 METAL SCREWS (UON).
2. LAP DECK ENDS 2" MINIMUM AND FASTEN TO SUPPORT @ 6" OC
3. SEE PLAN FOR DECK FASTENING PATTERN, USE A 36/4 FASTENING PATTERN (MIN) (UON).
4. SIDE LAP FASTENERS SHALL BE #10 METAL SCREWS (UON) - SEE PLAN FOR RQMTS

5 S-401 **ROOF DECK FASTENING**
1" = 1'-0"



BASE PL THICKNESS:
3/4" PL - 4" THRU 8" TUBES

3/4" DIA ANCHOR RODS

1 S-401 **BASE PL & ANCHOR BOLT DETAILS**
1" = 1'-0"

DESIGNED BY: EAG	DWN BY: CJK/AW	CHK BY: EAG	DATE: 22 APRIL 2022
			SUBMITTED BY: AW

PLOT DATE: AS SHOWN
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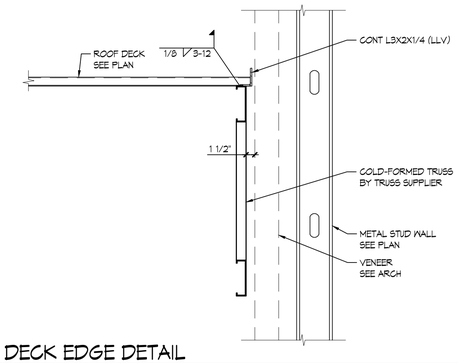
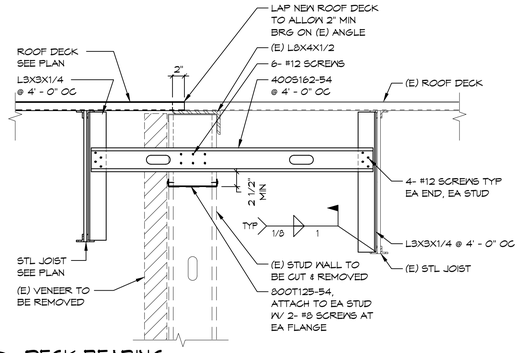
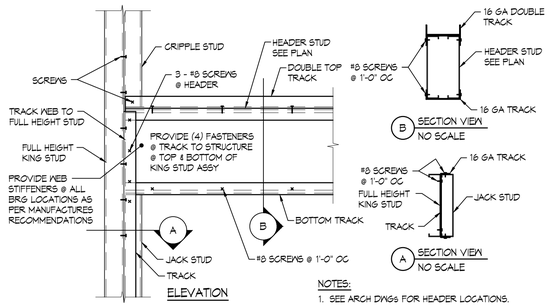


6 / S-402 DECK EDGE DETAIL
1" = 1'-0"

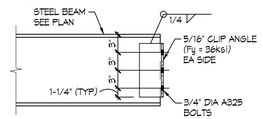


3 / S-402 DECK BEARING
1" = 1'-0"



NOTES:
1. SEE ARCH DWGS FOR HEADER LOCATIONS.
2. TRACK, CRIPPLE STUDS, JACK STUDS & KING STUDS TO BE SAME SIZE & GA AS WALL FRAMING (UON)

5 / S-402 TYPICAL STEEL STUD HEADER DETAIL
1" = 1'-0"



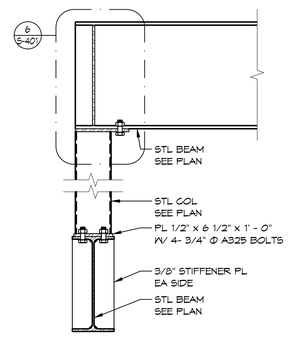
NUMBER OF ROWS	CONNECTION CAPACITY (KIPS) A992				
	BEAM WEB THICKNESS				
	3/16" *	1/4"	5/16"	3/8"	7/16"
2	24	33	37	37	37
3	37	49	55	55	55
4	——	64	74	74	74
5	——	79	93	93	93
6	——	——	——	111	111
7	——	——	——	130	130
8	——	——	——	——	148
9	——	——	——	——	167

* 3/16" FILLET WELD

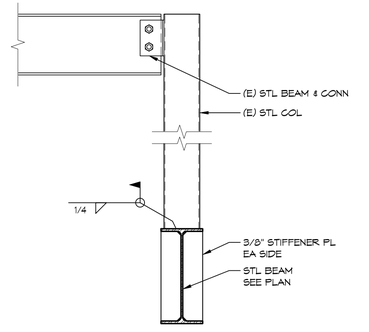
NOTE:
USE NUMBER OF ROWS OF BOLTS REQD BASED ON REACTIONS LISTED ON PLANS. USE MINIMUM ROWS AS LISTED.

BEAM SIZE	MINIMUM ROWS OF BOLTS
W 8, 10	2
W 12, 14, 16	3
W 18, 21	4
W 24, 27, 30	5

4 / S-402 STEEL BEAM CONNECTION DETAIL
1" = 1'-0"



2 / S-402 COLUMN CONNECTION
1" = 1'-0"



1 / S-402 COLUMN CONNECTION
1" = 1'-0"

DESIGNED BY: EAG
DWN BY: CJK/AW
CHK BY: EAG
DATE: 22 APRIL 2022
SUBMITTED BY: AW
PLOT DATE: AS SHOWN
PLOT SCALE: AS SHOWN
DRAWING NUMBER: AS SHOWN

DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND
GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

FRAMING DETAILS

SHEET REFERENCE NUMBER
S-402

MECHANICAL GENERAL DEMOLITION NOTES

A. OWNER WILL OCCUPY PORTIONS OF THE BUILDING IMMEDIATELY ADJACENT TO SELECTIVE DEMOLITION AREA. CONDUCT DEMOLITION SO OWNER'S OPERATION WILL NOT BE DISTURBED. PROVIDE NOT LESS THAN 48 HOURS NOTICE TO OWNER OF ACTIVITIES THAT WILL AFFECT THE OWNER'S OPERATIONS.

B. MAINTAIN EXISTING SERVICES TO OWNER OCCUPIED AREAS DURING DEMOLITION IF POSSIBLE OR COORDINATE INTERRUPTION OF SERVICES PRIOR TO DEMOLITION.

C. OWNER ASSUMES NO RESPONSIBILITY FOR CONDITION OF AREA TO BE SELECTIVELY DEMOLISHED.

D. IF MATERIALS SUSPECTED OF CONTAINING HAZARDOUS MATERIALS ARE ENCOUNTERED, DO NOT DISTURB; IMMEDIATELY NOTIFY THE OWNER. HAZARDOUS MATERIALS WILL BE REMOVED BY OWNER UNDER A SEPARATE CONTRACT.

E. VERIFY FIELD MEASUREMENTS AND EXISTING DUCTWORK AND PIPING ARRANGEMENTS ARE AS SHOWN ON DRAWINGS.

F. VERIFY THAT ABANDONED EQUIPMENT SERVES ONLY ABANDONED FACILITIES.

G. DEMOLITION DRAWINGS ARE BASED ON CASUAL FIELD OBSERVATION AND EXISTING RECORD DOCUMENTS. THE DEMOLITION DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL SCOPE OF DEMOLITION WORK AND DO NOT SHOW ALL THE CONSTRUCTION DETAIL OF THE ORIGINAL RECORD DRAWINGS. THIS CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK AND NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES BETWEEN THE "AS-BUILT" CONDITIONS AND THESE DRAWINGS. PROVIDE ADDITIONAL DEMOLITION AS REQUIRED BASED ON FIELD CONDITIONS.

H. THE CONTRACTOR SHALL VISIT THE EXISTING BUILDING AND GROUNDS AND REVIEW THE EXISTING BUILDING RECORD DRAWINGS FOR DETAILS OF EXISTING INSTALLATION TO FAMILIARIZE HIMSELF WITH EXISTING CONDITIONS PRIOR TO SUBMITTING BID. NO ALLOWANCE WILL BE MADE SUBSEQUENTLY, IN THIS CONNECTION, ON BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.

I. BEGINNING OF DEMOLITION MEANS THE CONTRACTOR ACCEPTS EXISTING CONDITIONS.

J. DISCONNECT MECHANICAL SYSTEMS IN AREAS SCHEDULED FOR REMOVAL. NOTIFY PROJECT ENGINEER AND OWNER OF AREAS TO BE AFFECTED BY MECHANICAL DEMOLITION WORK PRIOR TO COMMENCING.

K. DEMOLISH AND REMOVE FROM SITE, AND EXTEND EXISTING MECHANICAL WORK UNDER PROVISIONS OF THIS DIVISION AND AS INDICATED ON THE DRAWINGS UNLESS OTHERWISE NOTED.

L. SALVAGE ITEMS NOTED TO REMAIN THE PROPERTY OF THE OWNER SHALL BE DELIVERED TO A LOCATION TO BE DESIGNATED BY THE OWNER. CONTRACTOR SHALL REMOVE FROM CONSTRUCTION AREAS ALL TRASH OR DEBRIS AS IT ACCUMULATES AND DISPOSE OF IT OFF SITE AT NO ADDITIONAL COST TO THE OWNER. ALL CONSTRUCTION AREAS SHALL BE KEPT CLEAN, SAFE, AND ORDERLY AT ALL TIMES. AT THE COMPLETION AND ACCEPTANCE FOR WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL DEBRIS AND SURPLUS MATERIALS RESULTING FROM THIS WORK AND DISPOSE OF THEM OFF SITE AT NO ADDITIONAL COST TO THE OWNER.

M. DO NOT USE CUTTING TORCHES UNTIL WORK AREA IS CLEAR OF FLAMMABLE MATERIALS. AT CONCEALED SPACES VERIFY CONDITION AND CONTENTS OF HIDDEN SPACE BEFORE STARTING FLAME CUTTING OPERATIONS. MAINTAIN FIRE WATCH AND PORTABLE FIRE-SUPPRESSION DEVICES DURING FLAME-CUTTING OPERATIONS. MAINTAIN AND EVALUATE VENTILATION DURING FLAME-CUTTING OPERATIONS.

N. MAINTAIN VENTILATION FOR DUST CONTROL DURING SELECTIVE DEMOLITION PROCESS. VERIFY OWNER REQUIREMENTS FOR DUST CONTROL AND CONFORM TO THEIR STANDARDS FOR ALL DEMOLITION ACTIVITIES.

O. REMOVE, RELOCATE, AND EXTEND EXISTING INSTALLATIONS TO ACCOMMODATE NEW CONSTRUCTION AS REQUIRED FOR PROPER INSTALLATION AND SYSTEM OPERATION.

P. REMOVE ALL ACCESSORIES ABOVE GRADE, WHEN REMOVING EQUIPMENT OR TERMINAL DEVICES ALL ASSOCIATED PIPE, DUCT, ATC DEVICES, WIRING, ETC. SHALL BE REMOVED AND CAPPED AS REQUIRED. CUT PIPING, DUCT, TUBING, ETC. BEHIND WALLS, ABOVE CEILINGS AND BELOW FLOORS, AND PATCH SURFACES TO MATCH EXISTING CONDITIONS. FINISHES WILL BE BY OTHERS UNLESS OTHERWISE NOTED IN DOCUMENTS.

Q. NEATLY CUT OPENINGS AND HOLES PLUMB, SQUARE AND TRUE TO DIMENSION REQUIRED. USE CUTTING METHODS LEAST LIKELY TO DAMAGE CONSTRUCTION TO REMAIN OR ADJOINING CONSTRUCTION. CUT AND DRILL FROM EXPOSED SURFACES INTO CONCEALED SURFACES TO AVOID MARRING OR SPALLING OF FINISHED SURFACES. TEMPORARILY COVER OPENINGS TO REMAIN.

R. PATCH ALL OPENINGS IN FLOORS, WALLS, CEILINGS AND ROOFS CREATED BY REMOVAL OF MECHANICAL EQUIPMENT, ATC DEVICES, DUCTS, PIPES, ETC. UNLESS NOTED AS BEING PATCHED BY OTHERS. OPENINGS TO BE PATCHED TO MATCH EXISTING WITH SIMILAR MATERIALS AND FINISH UNLESS OTHERWISE NOTED.

S. FLOOR CUTTING FOR PLUMBING DEMOLITION IS DIAGRAMMATIC ONLY. CONTRACTOR TO VERIFY EXISTING INVERTS AND DEPTH OF PIPING PRIOR TO FLOOR CUTTING AND TRENCHING.

T. THIS CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND RE-INSTALLING OF EXISTING CEILING TILE NOT REMOVED BY THE GENERAL CONTRACTOR FOR THE DEMOLITION OF EXISTING PIPING, DUCTWORK, EQUIPMENT, ETC. VERIFY WITH ARCHITECTURAL PLANS FOR CEILING WORK BY THE GENERAL CONTRACTOR. ANY CEILING TILE OR GRID DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH NEW BY THIS CONTRACTOR.

U. SEAL ALL EXISTING ROOF PENETRATIONS, WHICH WILL NOT BE REUSED. ROOF PATCHING SHALL BE BY PROJECT ROOFING CONTRACTOR OR AN OWNER APPROVED ROOFING CONTRACTOR#

V. REMOVE, RELOCATE OR PROVIDE BRACKETS, HANGERS, AND OTHER ACCESSORIES AS REQUIRED.

W. REPAIR ADJACENT CONSTRUCTION AND FINISHES DAMAGED DURING DEMOLITION AND EXTENSION WORK.

X. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS, WHICH REMAIN ACTIVE.

Y. CLEAN AND REPAIR EXISTING MATERIALS AND EQUIPMENT, WHICH REMAIN OR ARE TO BE RETURNED TO THE OWNER.

Z. ALL BUILDING SURFACES DAMAGED AND OPENINGS LEFT BY NEW WORK OR THE REMOVAL OR RELOCATION OF MECHANICAL EQUIPMENT, PIPING, ETC., SHALL BE REPAIRED TO ORIGINAL CONDITION AND PAINTED BY THIS CONTRACTOR.

MECHANICAL GENERAL NOTES

A. NOTIFY THE ENGINEER OF ANY DISCREPANCIES IN, OR OMISSIONS FROM THE DRAWINGS OR DOCUMENTS. NEITHER THE OWNER NOR THE ARCHITECT WILL BE RESPONSIBLE FOR ANY ORAL INSTRUCTIONS OR MODIFICATIONS OF THE SPECIFICATIONS OR DRAWINGS. WRITTEN INTERPRETATIONS WILL BE MADE ONLY BY ADDENDA.

B. IF DISCREPANCIES ARE NOT REPORTED, THE CONTRACTOR SHALL BID THE GREATER QUANTITY OR BETTER QUALITY (HIGHEST DOLLAR VALUE), AND APPROPRIATE ADJUSTMENT WILL BE MADE AFTER CONTRACT AWARD.

C. DISCREPANCIES DISCOVERED DURING CONSTRUCTION SHALL IMMEDIATELY BE CALLED TO THE ATTENTION OF THE ARCHITECT/ENGINEER FOR CLARIFICATION.

D. ALL MINOR ITEMS NECESSARY FOR THE COMPLETION AND SUCCESSFUL OPERATION OF THE SYSTEM, WHETHER OR NOT HEREIN DEFINITELY SPECIFIED OR INDICATED ON THE DRAWINGS, SHALL BE FURNISHED AND INSTALLED.

E. OMISSION OF/OR EXPRESS REFERENCE TO ANY MATERIAL NECESSARY FOR/OR REASONABLY INCIDENTAL TO COMPLETE INSTALLATION SHALL NOT RELEASE CONTRACTOR FROM PROVIDING SUCH MATERIAL. WHERE MATERIAL IS SHOWN ON DRAWINGS BUT IS NOT SPECIFIED OR IS SPECIFIED BUT NOT SHOWN, SUCH MATERIAL SHALL BE CONSIDERED BOTH SHOWN AND SPECIFIED.

F. ANY WORK NOT CLEAR TO CONTRACTOR SHALL BE REFERRED TO ENGINEER FOR CLARIFICATION BEFORE BID IS SUBMITTED. IF NO QUESTION IS RAISED PRIOR TO OPENING OF BID, CONTRACTOR SHALL BE REQUIRED TO PROVIDE WORK IN QUESTION AS DIRECTED BY ENGINEER, WHOSE DESIGN IS FINAL, WITHOUT ADDITIONAL CHARGES.

G. BY VIRTUE OF SUBMITTING A BID, CONTRACTOR AGREES THAT HE IS SKILLED AND EXPERIENCED IN USE OF AND IN INTERPRETATION OF DRAWINGS AND SPECIFICATIONS. CONTRACTOR FURTHER AGREES THAT HE HAS CAREFULLY REVIEWED ALL DRAWINGS, ALL SPECIFICATIONS AND ALL ADDENDA, WHICH CONSTITUTE BID DOCUMENTS FOR THIS CONTRACT, AND FINDS THEM FREE OF AMBIGUITIES AND GOOD AND SUFFICIENT FOR BIDDING AND CONSTRUCTION PURPOSES.

H. THE DRAWINGS INDICATE THE EXTENT AND GENERAL LAYOUT OF THE MECHANICAL SYSTEMS INTENDED FOR THE BUILDING. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS, CONNECTIONS AND ACCESSORIES WHICH MAY BE REQUIRED. FURNISH OFFSETS, FITTINGS, VALVES, AND ACCESSORIES AS MAY BE REQUIRED, TO PRODUCE A COMPLETE AND OPERATING INSTALLATION OF TYPE SHOWN AND SPECIFIED.

I. ALL PIPING AND DUCTWORK SHALL BE ROUTED SO AS NOT TO OBSTRUCT ACCESS TO OTHER EQUIPMENT (I.E. VAV BOX CONTROLS, ELECTRICAL DEVICES, FIRE ALARM DEVICES, ETC.). MAINTAIN 3'-0" CLEAR SPACE IN FRONT OF ALL ELECTRICAL CONTROLS AND ACCESS PANELS FOR ACCESSIBILITY. ROUTING INDICATED ON DRAWINGS IS REPRESENTATIVE OF INTENDED INSTALLATION BUT SHALL BE FIELD-VERIFIED. IT SHALL BE THIS CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH OTHER TRADES FOR ACCESSIBILITY.

J. ALL EXPOSED PIPING AND DUCTWORK SHALL BE INSTALLED AS HIGH AS POSSIBLE TIGHT TO STRUCTURE ABOVE.

K. IN GENERAL, THE MECHANICAL EQUIPMENT DRAWINGS ARE DRAWN TO SCALE AS NOTED. OBTAIN DIMENSIONS AND LOCATIONS OF PARTITIONS, WALLS, ETC., FROM THE ARCHITECTURAL DRAWINGS WHEREVER POSSIBLE AND DO NOT SCALE THE MECHANICAL DRAWINGS. CONSULT THE ARCHITECTURAL DRAWINGS FOR DETAILS OF CONSTRUCTION, LOCATION OF SUSPENDED CEILING, CEILING HEIGHTS, AND OTHER PERTINENT INFORMATION. ARCHITECT'S DRAWINGS SHALL NOT TAKE PRECEDENCE OVER FIELD MEASUREMENTS.

L. ALL DRAWINGS AND SPECIFICATIONS SHALL BE CONSIDERED IN BIDDING. THE DRAWINGS AND SPECIFICATIONS ARE COMPLIMENTARY, AND WHAT IS CALLED FOR IN EITHER OF THESE SHALL BE AS BINDING AS THOUGH CALLED FOR BY BOTH. SHOULD ANY CONFLICT ARISE BETWEEN DRAWINGS AND SPECIFICATIONS, SUCH CONFLICT SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.

M. ALL APPLIANCES AND EQUIPMENT SHALL BE INSTALLED AND CONNECTED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS UNLESS SUCH INSTRUCTIONS ARE IN CONFLICT WITH THESE SPECIFICATIONS. AUXILIARY PIPING, VALVES, ELECTRICAL CONNECTIONS, ETC., RECOMMENDED BY THE MANUFACTURER OR REQUIRED FOR PROPER OPERATION SHALL BE FURNISHED AND INSTALLED COMPLETE.

N. ALL EQUIPMENT SHALL BE INSTALLED IN SUCH A MANNER AND LOCATION AS TO FACILITATE ACCESSIBILITY FOR MAINTENANCE AND/OR REPLACEMENT.

O. AS A PART OF THE WORK OF THIS CONTRACT, THE MECHANICAL CONTRACTOR SHALL MAKE ANY CHANGES IN THE PULLEYS, BELTS, AND DAMPERS, AND SHALL INSTALL ADDITIONAL DAMPERS REQUIRED FOR CORRECT BALANCE AS RECOMMENDED BY AIR BALANCE AGENCY, AT NO ADDITIONAL COST TO THE OWNER.

P. COOPERATE WITH OTHER TRADES SO AS TO AVOID INTERFERENCES. WHERE REQUIRED TO AVOID INTERFERENCES WITH OTHER WORK OR TO INCREASE THE HEADROOM, CAREFULLY CHECK ALL CONSTRUCTION DETAILS TO ASSURE THE PROPER INSTALLATION OF ALL WORK UNDER THIS SPECIFICATION. SCHEDULE THE WORK SUCH THAT IT WILL KEEP PACE WITH THE WORK OF OTHER CRAFTS AND CAUSE NO DELAY.

Q. BEFORE SUBMITTING A PROPOSAL ON THE WORK CONTEMPLATED IN THESE SPECIFICATIONS AND ACCOMPANYING DRAWINGS, EACH BIDDER SHALL EXAMINE THE SITE AND FAMILIARIZE HIMSELF WITH ALL OF THE EXISTING CONDITIONS AND LIMITATIONS. NO EXTRAS WILL BE ALLOWED BECAUSE OF CONTRACTOR'S MISUNDERSTANDING AS TO THE AMOUNT OF WORK INVOLVED OR LACK OF HIS KNOWLEDGE OF ANY CONDITION IN CONNECTION WITH THE NEW CONSTRUCTION. THIS CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK AND NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES BETWEEN THE "AS-BUILT" CONDITIONS AND THESE DRAWINGS.

R. NEATLY CUT OPENINGS AND HOLES PLUMB, SQUARE AND TRUE TO DIMENSION REQUIRED. USE CUTTING METHODS LEAST LIKELY TO DAMAGE CONSTRUCTION TO REMAIN OR ADJOINING CONSTRUCTION. CUT AND DRILL FROM EXPOSED SURFACES INTO CONCEALED SURFACES TO AVOID MARRING OR SPALLING OF FINISHED SURFACES. TEMPORARILY COVER OPENINGS TO REMAIN.

S. THIS CONTRACTOR SHALL OPEN ALL EXISTING WALLS, FLOORS, CEILINGS AND ROOFS FOR INSTALLATION OF NEW PIPING, DUCTWORK EQUIPMENT, ETC. PATCH ALL OPENINGS IN FLOORS, WALLS, CEILINGS AND ROOFS CREATED FOR INSTALLATION OF MECHANICAL EQUIPMENT, ATC DEVICES, DUCTS, PIPES, ETC. UNLESS NOTED AS BEING PATCHED BY OTHERS. OPENINGS TO BE PATCHED TO MATCH EXISTING WITH SIMILAR MATERIALS AND FINISH UNLESS OTHERWISE NOTED.

T. REFER TO AND COORDINATE WITH ARCHITECTURAL PLANS FOR CEILING TYPES, HEIGHTS, SOFFIT AREAS AND ELEVATIONS FOR INSTALLATION OF NEW PIPING, DUCTWORK, EQUIPMENT, ETC.

U. ALL SHUT-OFF VALVES, STRAINERS, CONTROL VALVES, DAMPERS, ACCESS DOORS, VAV BOXES, TERMINAL COILS, ATC DEVICES, ETC. SHALL BE INSTALLED IN ACCESSIBLE CEILINGS NOT MORE THAN 2 FEET ABOVE CEILING.

V. FLOOR CUTTING FOR PLUMBING INSTALLATION IS DIAGRAMMATIC ONLY. CONTRACTOR TO VERIFY EXISTING INVERTS AND DEPTH OF PIPING PRIOR TO FLOOR CUTTING AND TRENCHING.

W. PROVIDE ½" DRAIN VALVE AT ALL LOW POINTS OF EACH FIRE PROTECTION AND HVAC PIPING SYSTEM TO ENABLE COMPLETE DRAINAGE. PROVIDE ½" VENT VALVES AT ALL HIGH POINTS OF EACH HVAC PIPING SYSTEM TO ENABLE COMPLETE VENTING.

X. ALL OPEN ENDS OF DUCTWORK SHALL BE CAPPED AT THE END OF CONSTRUCTION EACH DAY.

Y. THIS CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND RE-INSTALLING OF EXISTING CEILING TILE NOT REMOVED BY THE GENERAL CONTRACTOR FOR THE INSTALLATION OF NEW PIPING, DUCTWORK, EQUIPMENT, ETC. VERIFY WITH ARCHITECTURAL PLANS FOR CEILING WORK BY THE GENERAL CONTRACTOR. ANY CEILING TILE OR GRID DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH NEW BY THIS CONTRACTOR.

Z. THE ENTIRE INSTALLATION SHALL BE MADE IN ACCORDANCE WITH ALL STATE AND LOCAL LAWS. IF, IN ANY INSTANCE, THE PLANS AND SPECIFICATIONS CONFLICT WITH SUCH LAWS, THE LAW SHALL TAKE PRECEDENCE. THIS, HOWEVER, SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLYING WITH ANY REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS THAT MAY BE IN EXCESS OF THE RULES AND NOT CONTRARY TO THE SAME.

AA. ALL WORK SHALL CONFORM TO APPLICABLE STATE AND LOCAL CODES, ORDINANCES, REGULATIONS AND/OR STANDARDS.

AB. ALL FIRE PROTECTION WORK SHALL ADHERE TO CURRENT NFPA 13 STANDARDS. THE ENTIRE BUILDING SHALL BE SPRINKLED, VERIFY WHERE MULTIPLE FLOORS EXIST. SPRINKLER HEADS IN LAY-IN-TILE CEILING SHALL BE LOCATED IN THE CENTER OF TILE. FIRE PROTECTION PIPING AND SPRINKLER HEADS SHOWN ARE FOR REFERENCE ONLY, THE FIRE PROTECTION CONTRACTOR SHALL PREPARE COMPLETE WORKING DRAWINGS OF THE ENTIRE SPRINKLER SYSTEM.

MECHANICAL ABBREVIATIONS

@	AT	HW	HOT WATER
ACCU	AIR COOLED CONDENSING UNIT	IJS	IN JOIST SPACE
AFF	ABOVE FINISHED FLOOR	IWS	IN WEB SPACE
AFMD	AIRFLOW MEASURING DEVICE	KW	KILOWATT
AHU	AIR HANDLING UNIT	LAT	LEAVING AIR TEMPERATURE
ARCH	ARCHITECT, ARCHITECTURAL	LAV	LAVATORY
ATC	AUTOMATIC TEMPERATURE CONTROLS	LB/HR	POUNDS PER HOUR
BDD	BACKDRAFT DAMPER	LWT	LEAVING WATER TEMPERATURE
BLDG	BUILDING	MA	MAKEUP AIR
BTUH	BRITISH THERMAL UNITS PER HOUR	MAU	MAKEUP AIR HANDLING UNIT
BVI	BALL VALVE INDICATOR	MBH	ONE THOUSAND BTU PER HOUR
CA	COMBUSTION AIR	MCA	MINIMUM CIRCUIT AMPACITY
CC	COOLING COIL	MECH	MECHANICAL
CFM	CUBIC FEET PER MINUTE	MFS	MAXIMUM FUSE SIZE
CIRC	CIRCULATING	MISC	MISCELLANEOUS
CO	FLOOR CLEANOUT	MOD	MOTOR OPERATED DAMPER
CONC	CONCRETE	N/A	NOT APPLICABLE
COND	CONDENSATE	NC	NORMALLY CLOSED
CONN	CONNECTION	NIC	NOT IN CONTRACT
CUH	CABINET UNIT HEATER	NO	NORMALLY OPEN
CW	COLD WATER	NTS	NOT TO SCALE
dB	DECIBELS	OA	OUTSIDE AIR
DB	DRY BULB TEMPERATURE	ORD	OVERFLOW ROOF DRAIN
DEMO	DEMOLISH, DEMOLITION	ORL	OVERFLOW RAIN LEADER
DIA	DIAMETER	PH	PHASE
DIV	DIVISION	PRV	PRESSURE REDUCING VALVE
DN	DOWN	PSI	POUNDS PER SQUARE INCH
DWG	DRAWING	PV	POWER VENTILATOR
(E)	EXISTING	RA	RETURN AIR
EA	EXHAUST AIR	RD	ROOF DRAIN
EAT	ENTERING AIR TEMPERATURE	RH	ROOF HOOD
EER	ENERGY EFFICIENCY RATIO	RHW	RECIRCULATING HOT WATER
EF	EXHAUST FAN	RL	RAIN LEADER
ELEC	ELECTRIC, ELECTRICAL	RPM	REVOLUTIONS PER MINUTE
ESP	EXTERNAL STATIC PRESSURE	RTU	ROOFTOP AIR HANDLING UNIT
ENT	ENTERING WATER TEMPERATURE	SA	SUPPLY AIR
EXH	EXHAUST	SD	STORM DRAIN
EXIST	EXISTING	SEER	SEASONAL ENERGY EFFICIENCY RATIO
°F	DEGREES FAHRENHEIT	SPEC	SPECIFICATION
F/SD	COMBINATION FIRE/ SMOKE DAMPER	TA	TRANSFER AIR
FD	FIRE DAMPER	TR	TEMPERATURE RISE
FD	FLOOR DRAIN	TSP	TOTAL STATIC PRESSURE
FLEX	FLEXIBLE	TYP	TYPICAL
FLA	FULL LOAD AMPERAGE	UH	UNIT HEATER
FMD	FLOW MEASURING DEVICE (LIQUID)	V	SANITARY VENT
FPM	FEET PER MINUTE	VD	VOLUME DAMPER (MANUAL OPPOSED BLADE)
FTR	FINNED TUBE RADIATION	(VER)	VERIFY SIZE AND LOCATION
GALV	GALVANIZED	VAV	VARIABLE AIR VOLUME
GCO	GRADE CLEANOUT	VTR	VENT THROUGH ROOF
GPH	GALLONS PER HOUR	W	SANITARY WASTE
GPM	GALLONS PER MINUTE	WH	WITH
HB	HOSE BIBB	WB	WET BULB TEMPERATURE
HC	HEATING COIL	WCO	WALL CLEANOUT
HP	HORSE POWER	WH	WATER HEATER
HR	HOUR	WO	WITHOUT
HVAC	HEATING, VENTILATION, AND AIR CONDITIONING		

* ALL ABBREVIATIONS DO NOT NECESSARILY APPEAR ON DRAWINGS

MECHANICAL SHEET INDEX:

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M-110	FOUNDATION PLAN - PLUMBING - DEMOLITION
M-111	MAIN FLOOR PLAN - PLUMBING - DEMOLITION
M-120	FOUNDATION PLAN - HVAC PIPING - DEMOLITION
M-121	MAIN FLOOR PLAN - HVAC PIPING - DEMOLITION
M-131	MAIN FLOOR PLAN - VENTILATION - DEMOLITION
M-201	MAIN FLOOR PLAN - FIRE PROTECTION
M-300	FOUNDATION PLAN - PLUMBING
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M-401	MAIN FLOOR PLAN - HVAC PIPING
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M-501	MAIN FLOOR PLAN - VENTILATION
M-502	MECHANICAL SECTIONS
M-503	MECHANICAL ROOF PLAN
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M-700	MECHANICAL CONTROLS
M-701	MECHANICAL CONTROLS
M-800	MECHANICAL SCHEDULES
M-801	MECHANICAL SCHEDULES

MECHANICAL SYMBOLS

- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- DOMESTIC RECIRCULATING HOT WATER
- SANITARY VENT
- SANITARY SEWER
- STORM DRAIN
- OVERFLOW STORM DRAIN
- HEATING WATER RETURN
- HEATING WATER SUPPLY
- GLYCOL HEATING RETURN
- GLYCOL HEATING SUPPLY
- CHILLED WATER RETURN
- CHILLED WATER SUPPLY
- CONDENSER WATER RETURN
- CONDENSER WATER SUPPLY
- HEAT PUMP WATER RETURN
- HEAT PUMP WATER SUPPLY
- HIGH PRESSURE STEAM
- MEDIUM PRESSURE STEAM
- LOW PRESSURE STEAM
- CONDENSATE DRAIN
- PUMPED CONDENSATE
- REFRIGERANT LIQUID
- REFRIGERANT SUCTION
- REFRIGERANT DISCHARGE
- HOT GAS BYPASS
- FUEL OIL RETURN
- FUEL OIL SUPPLY
- FUEL OIL VENT
- NATURAL GAS
- FIRM NATURAL GAS
- INTERRUPTIBLE NATURAL GAS
- PROPANE
- OXYGEN
- VACUUM
- NITROGEN
- NITROUS OXIDE
- MEDICAL AIR
- CARBON DIOXIDE
- WASTE ANESTHETIC GAS DISPOSAL
- COMPRESSED AIR
- PIPE DOWN
- PIPE UP
- BRANCH DOWN
- BRANCH UP
- PIPE BREAK
- PIPE CAP
- FLOW ARROW
- PIPE GUIDE
- PIPE ANCHOR
- CONCENTRIC REDUCER
- UNION
- FLEXIBLE PIPE CONNECTION
- PIPE FLANGE
- SHUT-OFF VALVE
- BALANCING VALVES
- GATE VALVE
- GATE ANGLE VALVE
- PISTON VALVE
- GLOBE VALVE
- GLOBE ANGLE VALVE
- CHECK VALVE
- SAFETY RELIEF VALVE
- SOLENOID VALVE
- PRESSURE REGULATOR VALVE
- GAS COCK VALVE
- NATURAL GAS OUTLET
- PRESSURE REDUCING VALVE
- 2-WAY CONTROL VALVE
- 3-WAY CONTROL VALVE
- FLOW MEASURING DEVICE (LIQUID)
- FLOW METER
- AUTOFLOW VALVE ASSEMBLY
- BALL VALVE/ STRAINER ASSEMBLY
- STRAINER
- STRAINER WITH BALL VALVE
- AUTOMATIC AIR VENT
- MANUAL AIR VENT
- FLOW SWITCH
- PRESSURE SWITCH
- RPZ BACKFLOW PREVENTOR ASSEMBLY
- PRESSURE GAUGE
- SENSOR WELL
- THERMOMETER
- AQUASTAT
- STEAM TRAP
- INLINE PUMP
- FLOOR DRAIN
- FLOOR SINK
- MEDICAL AIR MEDICAL GAS OUTLET
- OXYGEN MEDICAL GAS OUTLET
- VACUUM MEDICAL GAS OUTLET
- NITROGEN MEDICAL GAS OUTLET
- NITROUS OXIDE MEDICAL GAS OUTLET
- WAGD MEDICAL GAS OUTLET
- CARBON DIOXIDE MEDICAL GAS OUTLET
- CHROME PLATED RECESSED TYPE SPRINKLER HEAD
- WHITE CONCEALED PENDENT TYPE SPRINKLER HEAD
- BRASS UPRIGHT PENDENT TYPE SPRINKLER HEAD
- BRASS PENDENT TYPE SPRINKLER HEAD
- SIDEWALL PENDENT TYPE SPRINKLER HEAD
- BRASS UPRIGHT SIDEWALL PENDENT TYPE SPRINKLER HEAD
- FIRE DEPARTMENT CONNECTION
- FIRE DEPARTMENT HORN/STROBE

- DUCT SECTION, POSITIVE PRESSURE
- DUCT SECTION, NEGATIVE PRESSURE
- DUCT UP THROUGH FLOOR ABOVE OR ROOF
- 20x12 — RECTANGULAR DUCT, FIRST DIMENSION IS SIDE SHOWN
- 20ø — ROUND DUCT
- 20/12 — OVAL DUCT, FIRST DIMENSION IS SIDE SHOWN
- 20x12 — ACOUSTICAL LINING
- SQUARE ELBOW WITH TURNING VANES
- SQUARE ELBOW WITHOUT TURNING VANES
- RADIUS ELBOW
- VOLUME DAMPER
- FIRE DAMPER
- SMOKE DAMPER
- COMBINATION FIRE/SMOKE DAMPER
- MOTORIZED DAMPER
- RISE IN DUCT ELEVATION
- DROP IN DUCT ELEVATION
- FLEXIBLE DUCT CONNECTION
- SIDEWALL SUPPLY REGISTER
- SIDEWALL EXHAUST OR RETURN GRILLE
- 12ø — ROUND NECK CEILING DIFFUSER, FLEXIBLE DUCT FROM MAIN SEE SCHEDULE FOR FLEX DUCT SIZE
- 12x8 — SQUARE NECK CEILING DIFFUSER, FLEXIBLE DUCT FROM MAIN SEE SCHEDULE FOR FLEX DUCT SIZE
- 12x8 8x8 — CEILING MOUNTED GRILLE OR REGISTER. RIGID DUCT FROM MAIN WITH SIZE INDICATED
- 12x8 8ø — ROUND NECK RADIAL DIFFUSER, RIGID DUCT FROM MAIN WITH SIZE INDICATED
- 12x8 8ø — ROUND NECK LINEAR SLOT DIFFUSER, RIGID DUCT FROM MAIN WITH SIZE INDICATED
- 12x8 — EGG-CRATE GRILL, RIGID DUCT WITH ELBOW WITH SIZE INDICATED
- DIFFUSER OR GRILLE CONNECTED TO DOAS
- T — THERMOSTAT
- TS — TEMPERATURE SENSOR
- H — HUMIDISTAT
- S-1 / 100 — NEW DIFFUSER, GRILLE, OR REGISTER WITH TYPE AND AIRFLOW INDICATED, (TYPE S-1, 100 CFM). REFER TO SCHEDULE FOR MORE INFORMATION
- 1 — DEMOLITION OR SHEET NOTE REFERENCE
- 1 / M-1 — DETAIL NOTE REFERENCE WITH DRAWING NUMBER SHOWN (1) AND SHEET NUMBER SHOWN (M-1)
- 1 / M-1 — ELEVATION/ SECTION NOTE REFERENCE WITH DRAWING NUMBER SHOWN (1) AND SHEET NUMBER SHOWN (M-1)
- XXX — ROOM NUMBER
- 1 — REVISION NOTE REFERENCE
- CONNECT NEW TO EXISTING, VERIFY SIZE AND LOCATION OF EXISTING
- DARK DASHED INDICATE ITEMS TO BE REMOVED.

* ALL SYMBOLS DO NOT NECESSARILY APPEAR ON DRAWINGS

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REGISTERED PROFESSIONAL ENGINEER
JACOB M. SCOTT
PE - 10581
DATE: 4-22-22
NORTH DAKOTA

Symbol	Description	Date	Approved

DESIGNED BY: JCP | DATE: 22 APRIL 2022
DWN BY: TVE | CHK BY: JCP | SUBMITTED BY: RA
PLOT DATE: AS SHOWN
PLOT SCALE: AS SHOWN
DRAWING NUMBER: AS SHOWN

DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND

GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
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MECHANICAL - TITLE SHEET

SHEET REFERENCE NUMBER
M-000

FIRE PROTECTION DEMOLITION NOTES:

1. DISCONNECT AND RELOCATE PIPING IN AREAS INDICATED BY HATCHING AS REQUIRED FOR INSTALLATION OF NEW DUCT WORK, PIPING, CONDUIT, ETC.. FIRE SPRINKLER CONTRACTOR SHALL COORDINATE ALL PIPES REQUIRED TO BE RELOCATED WITH MECHANICAL & ELECTRICAL CONTRACTORS. DISCONNECT AND REMOVE EXISTING SPRINKLER HEADS FOR COORDINATION WITH CEILING WORK. PREPARE REMAINING PIPING FOR RECONNECTION. MODIFY EXISTING SPRINKLER PIPING AND HEADS TO PROVIDE COVERAGE WHEN CEILINGS ARE REMOVED DURING CONSTRUCTION.
2. DISCONNECT AND REMOVE EXISTING FIRE RISER. PREPARE PIPING FOR RECONNECTION AS REQUIRED.
3. DISCONNECT AND REMOVE EXISTING FIRE WATER PIPING. STAGE WORK TO MINIMIZE FIRE SYSTEM DOWNTIME.
4. DISCONNECT AND REMOVE EXISTING FIRE INSPECTOR TEST CONNECTION AND ASSOCIATED CONNECTING PIPING.
5. DISCONNECT AND REMOVE EXISTING FIRE PROTECTION SYSTEM FOR THE EXISTING KITCHEN GREASE HOOD INCLUDING ALL ASSOCIATED PIPING, PULL STATION, CONTROLS, ETC. PATCH WALL TO MATCH EXISTING.

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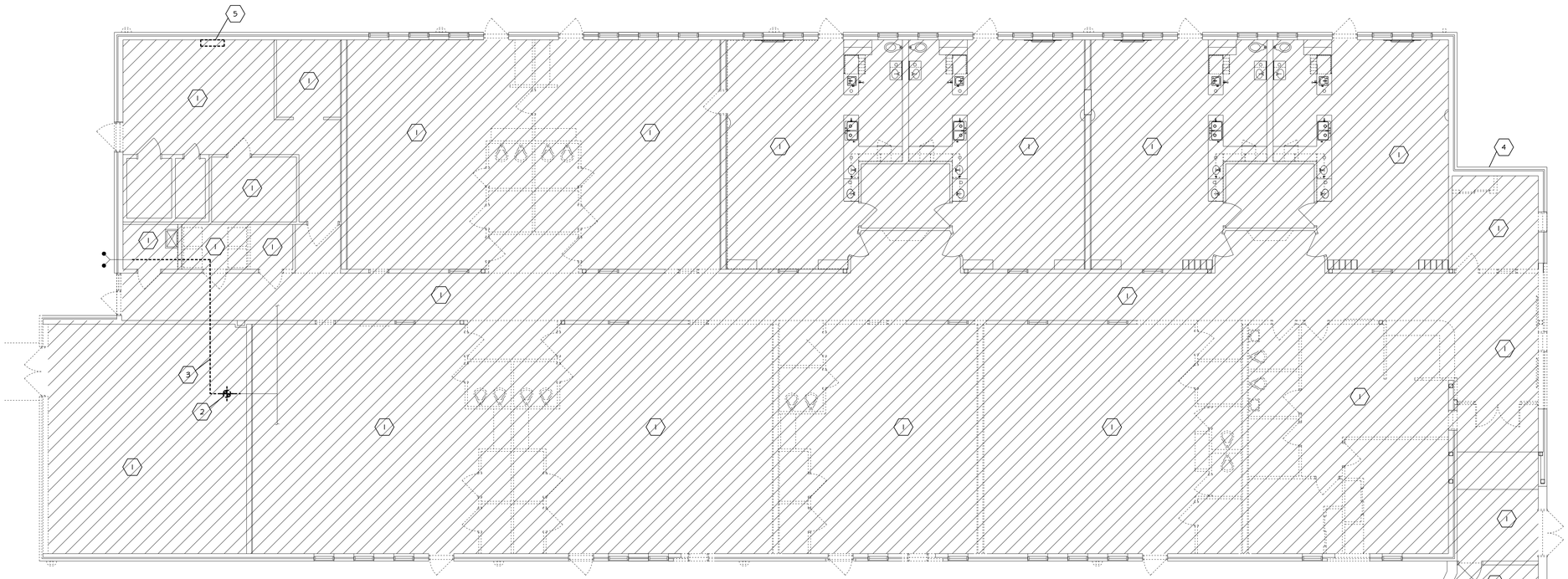
MAIN FLOOR - FIRE PROTECTION - DEMOLITION

SHEET REFERENCE NUMBER
M-101



1 / M-101 MAIN FLOOR PLAN - FIRE PROTECTION - DEMOLITION

SCALE: 1/8" = 1'-0"

FOUNDATION PLUMBING DEMOLITION NOTES:

1. DISCONNECT AND REMOVE EXISTING SANITARY WASTE PIPING. CAP EXISTING PIPING AT MAIN AS REQUIRED. PREPARE EXISTING PIPING FOR NEW CONNECTION AS REQUIRED.
2. ABANDON EXISTING DOMESTIC WATER PIPE IN PLACE. FILL WITH GROUT PER SPEC.
3. DISCONNECT AND REMOVE EXISTING LAWN IRRIGATION WATER PIPE. PREPARE EXISTING FOR NEW CONNECTION.

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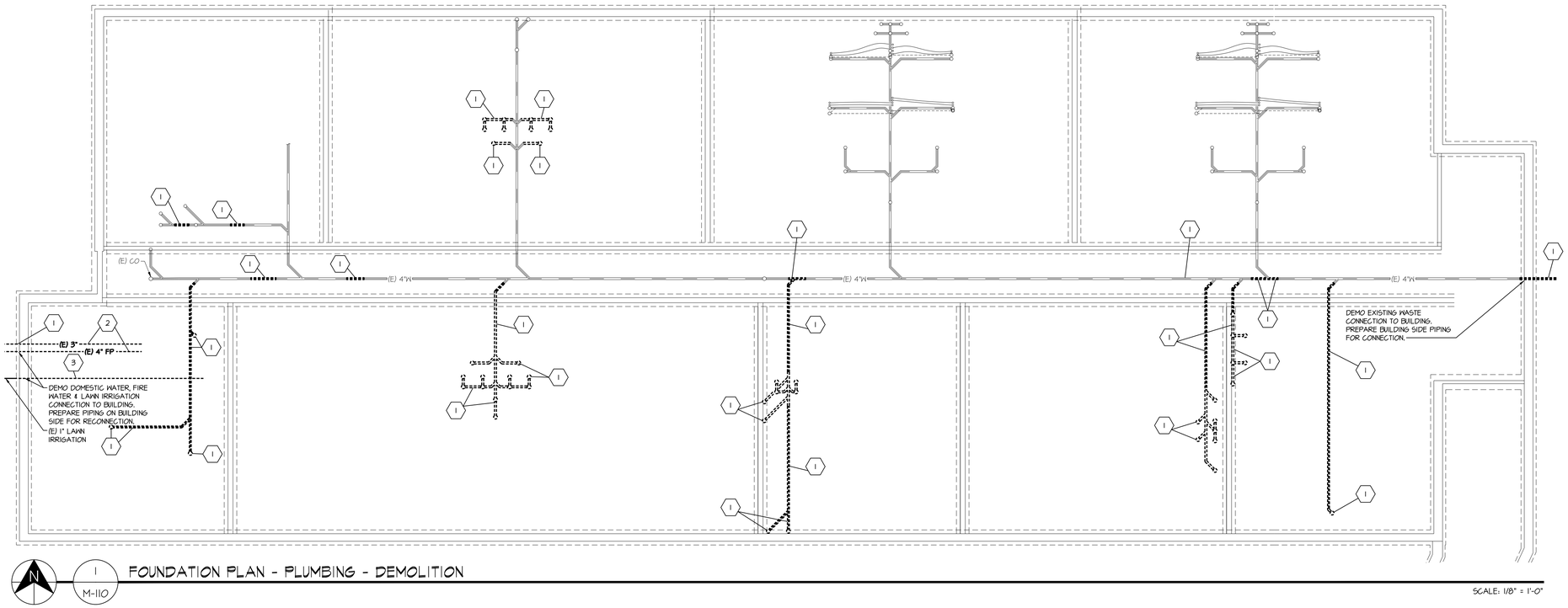

N

1 / M-110 FOUNDATION PLAN - PLUMBING - DEMOLITION

SCALE: 1/8" = 1'-0"

Symbol	Description	Date	Approved

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FOUNDATION - PLUMBING - DEMOLITION

SHEET REFERENCE NUMBER
M-110

PLUMBING DEMOLITION NOTES:

1. DISCONNECT AND REMOVE EXISTING PLUMBING FIXTURE AND ALL ASSOCIATED CARRIERS, PIPING, VALVES AND HANGERS. CAP EXISTING PIPING AT MAIN. PREPARE EXISTING PIPING FOR NEW CONNECTION.
2. DISCONNECT AND REMOVE EXISTING DOMESTIC WATER PIPING AND ALL ASSOCIATED VALVES AND HANGERS. CAP EXISTING PIPING AT MAIN. PREPARE EXISTING PIPING FOR NEW CONNECTION.
3. DISCONNECT AND REMOVE EXISTING SANITARY WASTE AND VENT PIPING AND ALL ASSOCIATED HANGERS. CAP EXISTING PIPING AT MAIN. PREPARE EXISTING PIPING FOR NEW CONNECTION.
4. DISCONNECT AND REUSE EXISTING WATER HEATER, INCLUDING ALL ASSOCIATED PIPING, HANGERS, VALVES, ETC. PREPARE EXISTING WATER HEATERS FOR REINSTALLATION. DEMOLISH EXISTING HOUSE KEEPING PAD.
5. DISCONNECT AND REMOVE EXISTING VTR. PATCH HOLE AS REQUIRED FOR NEW ROOFING.
6. REMOVE CONTROL WIRING FOR EXISTING 1" GAS SOLENOID VALVE. PREPARE TERMINALS FOR RECONNECTION TO NEW HOOD CONTROLS.
7. DISCONNECT AND REMOVE EXISTING HUMIDIFIER. REMOVE ASSOCIATED STEAM AND GAS PIPING. CAP GAS PIPING AT MAIN.
8. DISCONNECT AND REMOVE EXISTING GAS PIPING AND ALL ASSOCIATED VALVES AND HANGERS. CAP EXISTING PIPING AT MAIN. PREPARE EXISTING PIPING FOR NEW CONNECTION.

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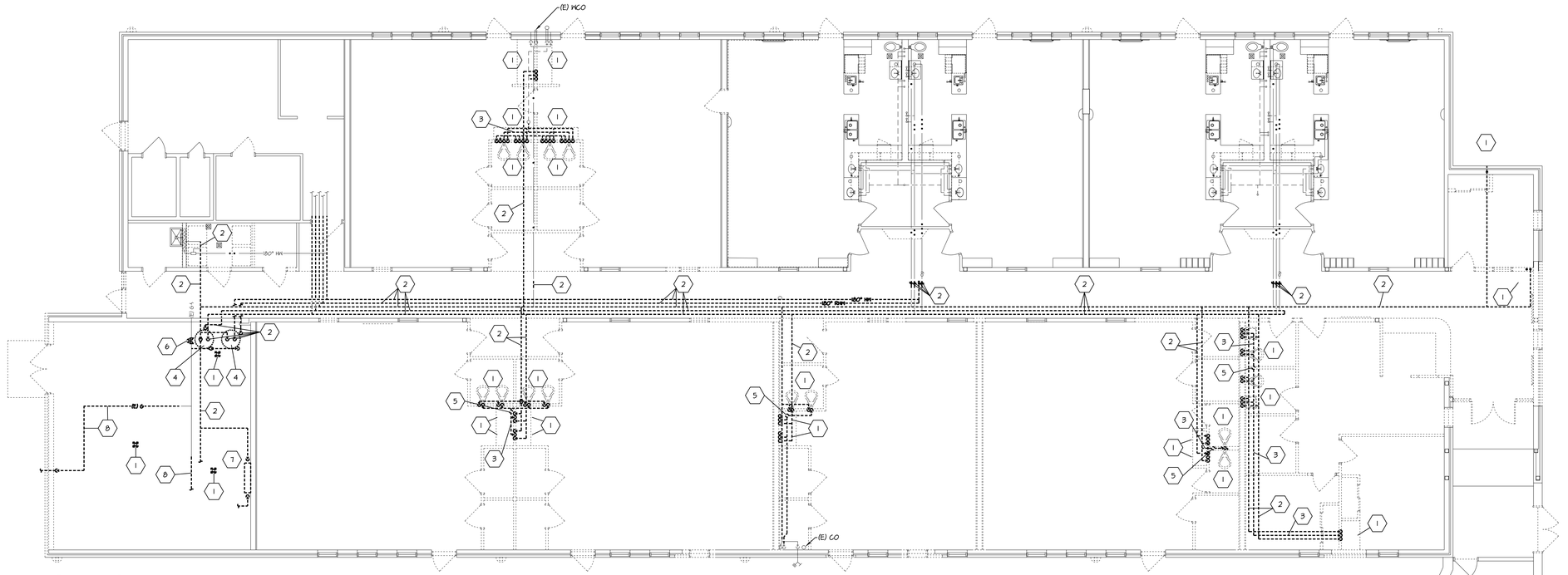
MAIN FLOOR - PLUMBING - DEMOLITION

SHEET REFERENCE NUMBER
M-111



1 / M-111 MAIN FLOOR PLAN - PLUMBING - DEMOLITION

SCALE: 1/8" = 1'-0"

HVAC PIPING DEMOLITION NOTES:

1. DISCONNECT AND REMOVE EXISTING IN-FLOOR RADIANT HEAT PIPING, VALVES, ETC. CONTOLS

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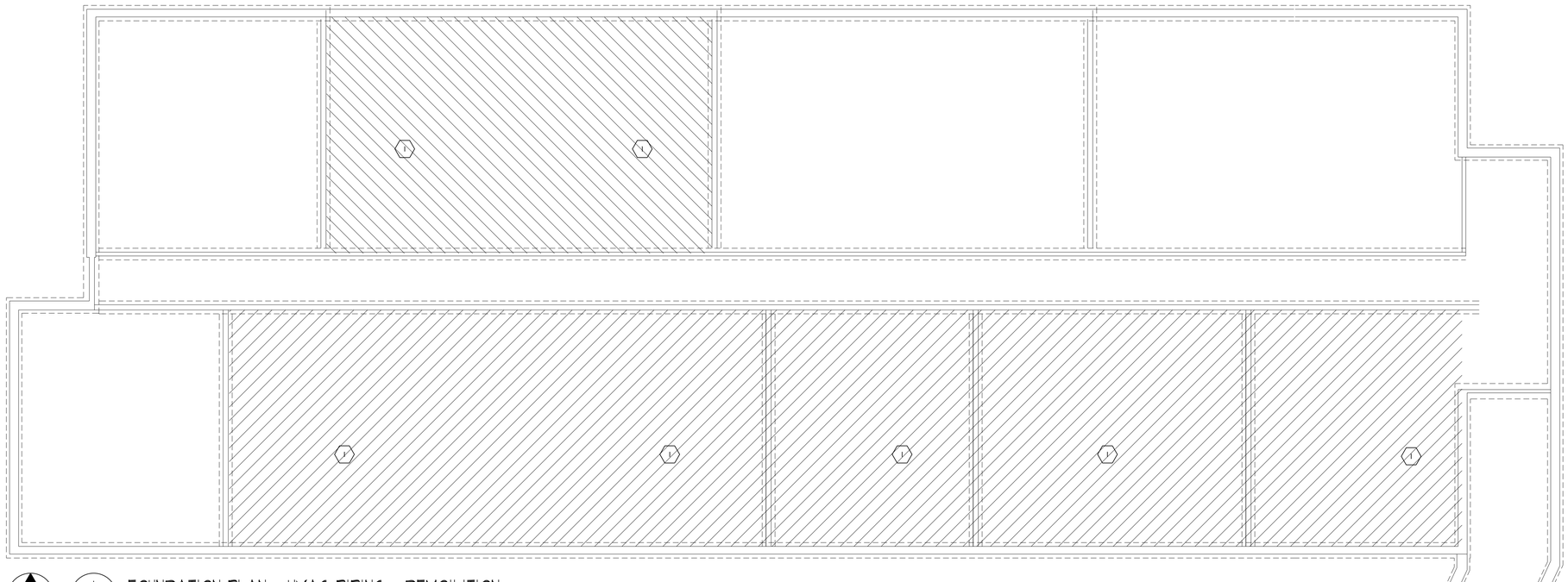
FOUNDATION - HVAC PIPING - DEMOLITION



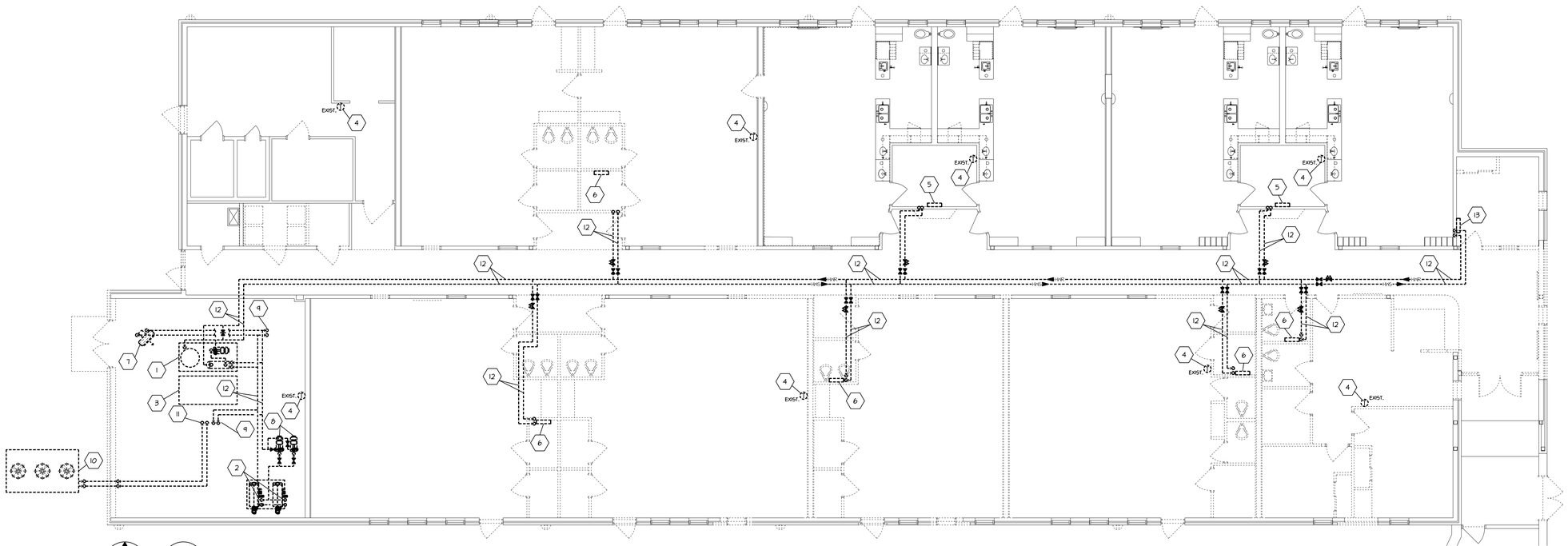
1 M-120 FOUNDATION PLAN - HVAC PIPING - DEMOILITION

SCALE: 1/8" = 1'-0"

SHEET REFERENCE NUMBER
M-120

HVAC PIPING DEMOLITION NOTES:

1. DISCONNECT AND REMOVE EXISTING RADIANT SLAB HEAT SYSTEM AND RELATED PIPING, VALVES, HANGERS, PADS, ETC.
2. DISCONNECT AND REMOVE EXISTING BOILERS AND ASSOCIATED, VALVES, CONTROLS, HOUSEKEEPING PAD ETC. PREPARE BOILERS FOR REINSTALLATION.
3. DISCONNECT AND REMOVE EXISTING REFRIGERATOR AND FREEZER CONDENSERS. PREPARE CONDENSERS FOR RECONNECTION. COORDINATE WITH OWNER TO PROVIDE UNINTERRUPTED FOOD SERVICES.
4. DISCONNECT AND REMOVE EXISTING CONTROLS INCLUDING ALL ASSOCIATED WIRING/TUBING AND CONDUIT.
5. DEMO EXISTING FLOOR HEATING MANIFOLD. PREPARE IN-FLOOR TUBING ENDS FOR RECONNECTION.
6. DEMO EXISTING FLOOR HEATING MANIFOLD.
7. DISCONNECT AND REMOVE EXITING SUSPENDED UNIT HEATER AND ALL ASSOCIATED PIPING, VALVES, FITTINGS, HANGERS AND CONTROLS.
8. DISCONNECT AND REMOVE EXISTING PUMP AND ALL ASSOCIATED PIPING, VALVES, FITTINGS, CONTROLS AND CONCRETE PAD. PATCH FLOOR TO MATCH EXISTING AS REQUIRED.
9. DISCONNECT AND REMOVE EXISTING HEATING WATER PIPING FROM EXISTING AIR HANDLING UNIT COIL AND ALL ASSOCIATED VALVES, FITTINGS AND HANGERS.
10. DISCONNECT AND REMOVE EXISTING AIR COOLED CONDENSING UNIT AND ALL ASSOCIATED PIPING, VALVES, FITTINGS, CONTROLS, AND CONCRETE PAD.
11. DISCONNECT AND REMOVE EXISTING REFRIGERATION PIPING FROM EXISTING AIR HANDLING UNIT COIL AND ALL ASSOCIATED VALVES, FITTINGS AND HANGERS.
12. DISCONNECT AND REMOVE EXISTING HEATING WATER PIPING AND ALL ASSOCIATED VALVES, FITTINGS AND HANGERS.
13. DEMO EXISTING FLOOR HEATING MANIFOLD AND ABANDON EXISTING FLOOR HEATING PIPING IN PLACE. FLUSH ALL GLYCOL FROM PIPING TO BE ABANDON. BLOW PIPING UNTIL DRY CAP PIPING ENDS. COORDINATE WITH OTHER TRADES TO CAP AND SEAL IF ABANDON PIPING LOOPS IN SLAB ARE DAMAGED DURING DEMOLITION OR CONSTRUCTION.



1 / M-121 MAIN FLOOR PLAN - HVAC PIPING - DEMOLITION

SCALE: 1/8" = 1'-0"

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JACOB M. SCOTT
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GRAND FORKS, ND
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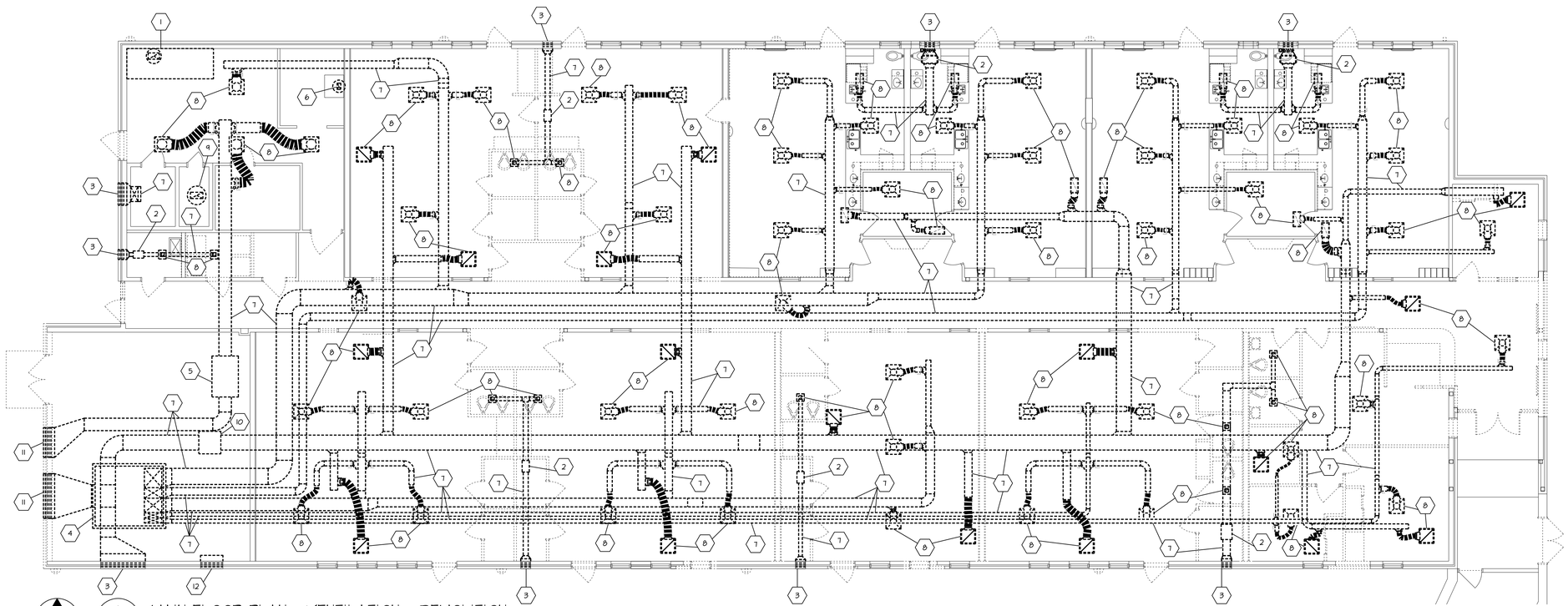
MAIN FLOOR - HVAC PIPING - DEMOLITION

SHEET REFERENCE NUMBER
M-121

VENTILATION DEMOLITION NOTES:

1. DISCONNECT AND REMOVE EXISTING KITCHEN HOOD AND ALL ASSOCIATED DUCTING, HANGERS, AND EQUIPMENT. DEMO EXISTING EXHAUST FAN ON ROOF SERVING HOOD. REMOVE CURB AND PATCH ROOF WEATHER TIGHT TO MATCH EXISTING.
2. DISCONNECT AND REMOVE EXISTING EXHAUST FAN AND ALL ASSOCIATED HANGERS, AND DUCT EQUIPMENT ETC.
3. DISCONNECT AND REMOVE EXISTING DUCTWORK FROM (E) LOUVER AND ASSOCIATED MOTORIZED DAMPER, CONTROLS, ETC. INSULATE LOUVER AND BLANK OFF.
4. DISCONNECT AND REMOVE EXISTING MULTIZONE UNIT AND ALL ASSOCIATED HANGERS, DUCTWORK, DUCT EQUIPMENT, PAD, ETC.
5. DISCONNECT AND REMOVE EXISTING MAKEUP AIR UNIT AND ALL ASSOCIATED HANGERS, DUCTWORK, ETC.
6. DISCONNECT AND REMOVE EXISTING DUCTWORK FROM (E) DISH WASHER HOOD AND ALL ASSOCIATED HANGERS, EQUIPMENT AND CONTROLS. DEMO EXISTING EXHAUST FAN ON ROOF SERVING HOOD. REMOVE CURB AND PATCH ROOF WEATHER TIGHT TO MATCH EXISTING. PREPARE HOOD FOR RECONNECTION.
7. DISCONNECT AND REMOVE EXISTING DUCTWORK AND ALL ASSOCIATED DAMPERS AND HANGERS.
8. DISCONNECT AND REMOVE EXISTING DIFFUSER, REGISTER OR GRILLE AND ALL ASSOCIATED DUCTWORK, DAMPERS AND HANGERS. PATCH WALL AND/OR CEILING TO MATCH EXISTING AS REQUIRED.
9. DISCONNECT AND REMOVE EXISTING EXHAUST FAN ON ROOF AND ALL ASSOCIATED DUCTWORK, CURB, DAMPERS AND CONTROLS. PATCH ROOF WEATHER TIGHT TO MATCH EXISTING AS REQUIRED.
10. DISCONNECT AND REMOVE EXISTING RETURN AIR FAN AND ALL ASSOCIATED DUCTWORK, FILTERS, DAMPERS, HANGERS AND CONTROLS.
11. DISCONNECT AND REMOVE EXISTING LOUVER AND ALL ASSOCIATED DUCTWORK, SLEEVES AND DAMPERS. PATCH WALL TO MATCH EXISTING.
12. DISCONNECT AND REMOVE EXISTING LOUVER AND ALL ASSOCIATED DUCTWORK, SLEEVES. PATCH WALL TO MATCH EXISTING.



1 M-131 MAIN FLOOR PLAN - VENTILATION - DEMOLITION

SCALE: 1/8" = 1'-0"

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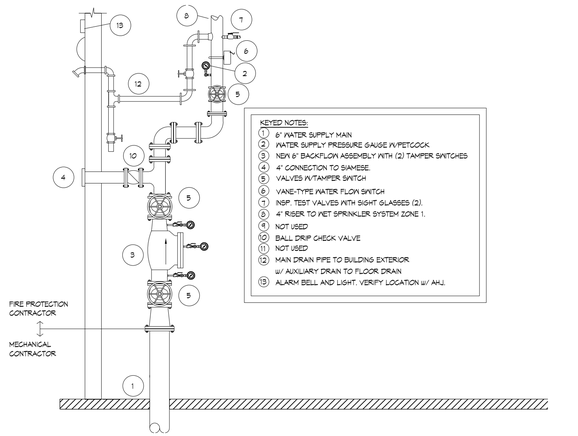
MAIN FLOOR - VENTILATION - DEMOLITION

SHEET REFERENCE NUMBER
M-131

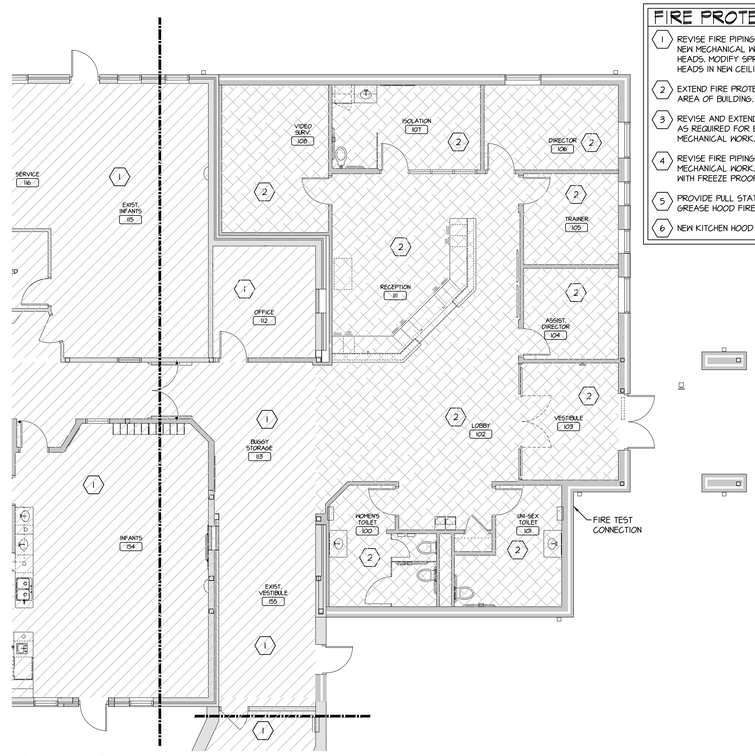


3 M-201 VERTICAL RISER

NO SCALE

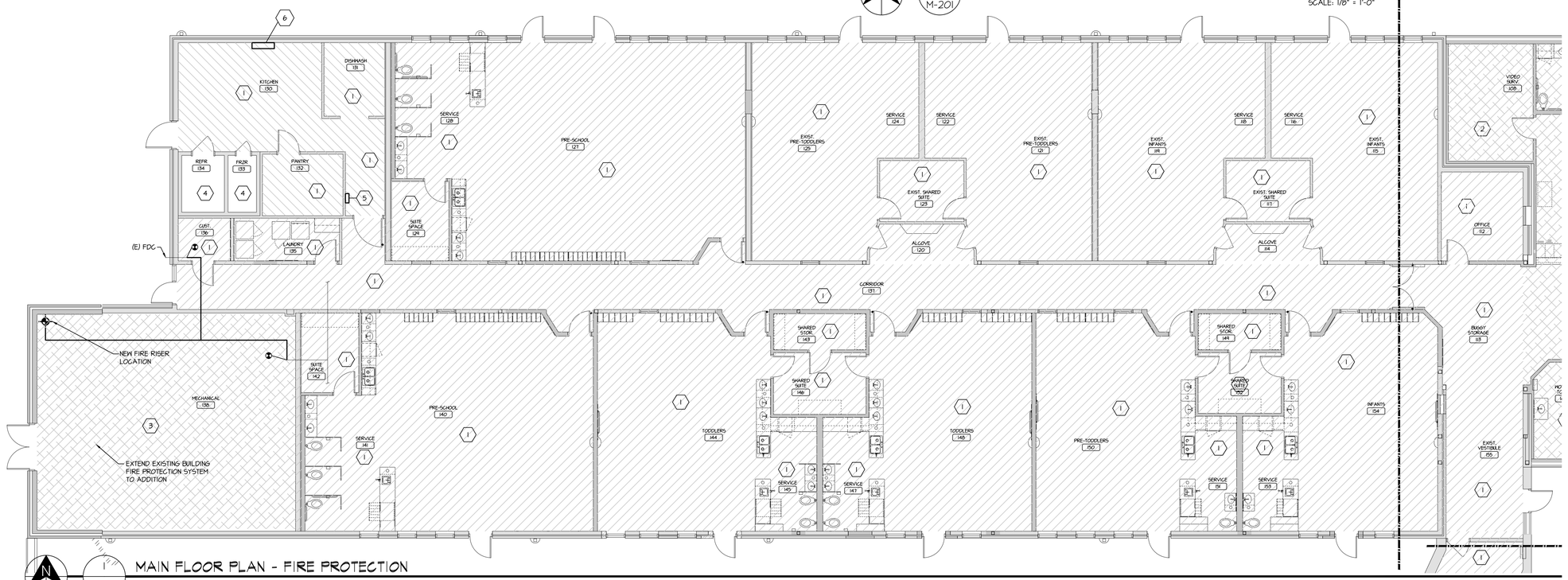
FIRE PROTECTION NOTES:

1. REVISE FIRE PIPING SYSTEM AS REQUIRED FOR NEW MECHANICAL WORK. REPLACE EXISTING HEADS. MODIFY SPRINKLER PIPING TO CENTER HEADS IN NEW CEILINGS.
2. EXTEND FIRE PROTECTION SYSTEM INTO NEW AREA OF BUILDING.
3. REVISE AND EXTEND FIRE PROTECTION SYSTEM AS REQUIRED FOR BUILDING ADDITION AND MECHANICAL WORK.
4. REVISE FIRE PIPING AS REQUIRED FOR NEW MECHANICAL WORK. REPLACE EXISTING HEAD WITH FREEZE PROOF HEAD.
5. PROVIDE PULL STATION FOR THE KITCHEN GREASE HOOD FIRE PROTECTION SYSTEM.
6. NEW KITCHEN HOOD FIRE PROTECTION PANEL



2 M-201 MAIN FLOOR PLAN - FIRE PROTECTION

SCALE: 1/8" = 1'-0"



1 M-201 MAIN FLOOR PLAN - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

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MAIN FLOOR PLAN - FIRE PROTECTION

SHEET REFERENCE NUMBER
M-201

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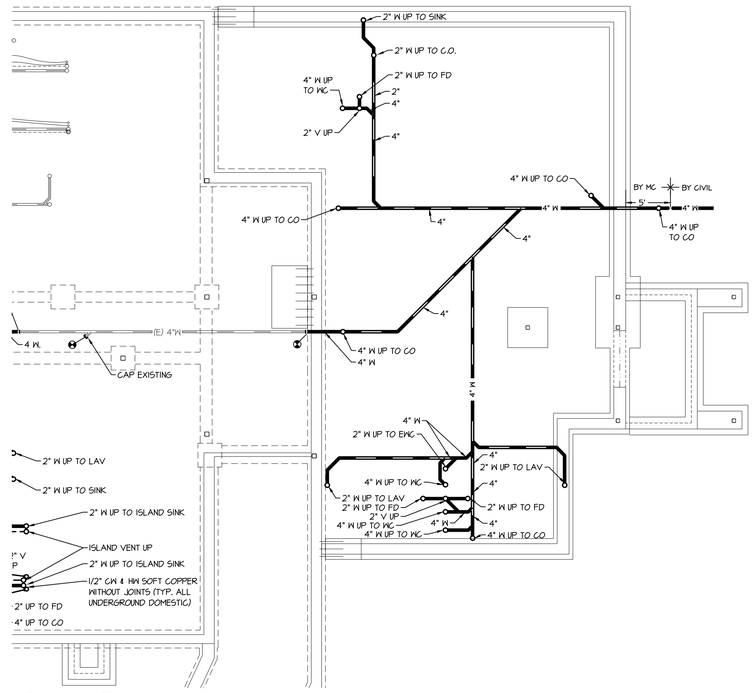
FOUNDATION - PLUMBING

SHEET REFERENCE NUMBER
M-300



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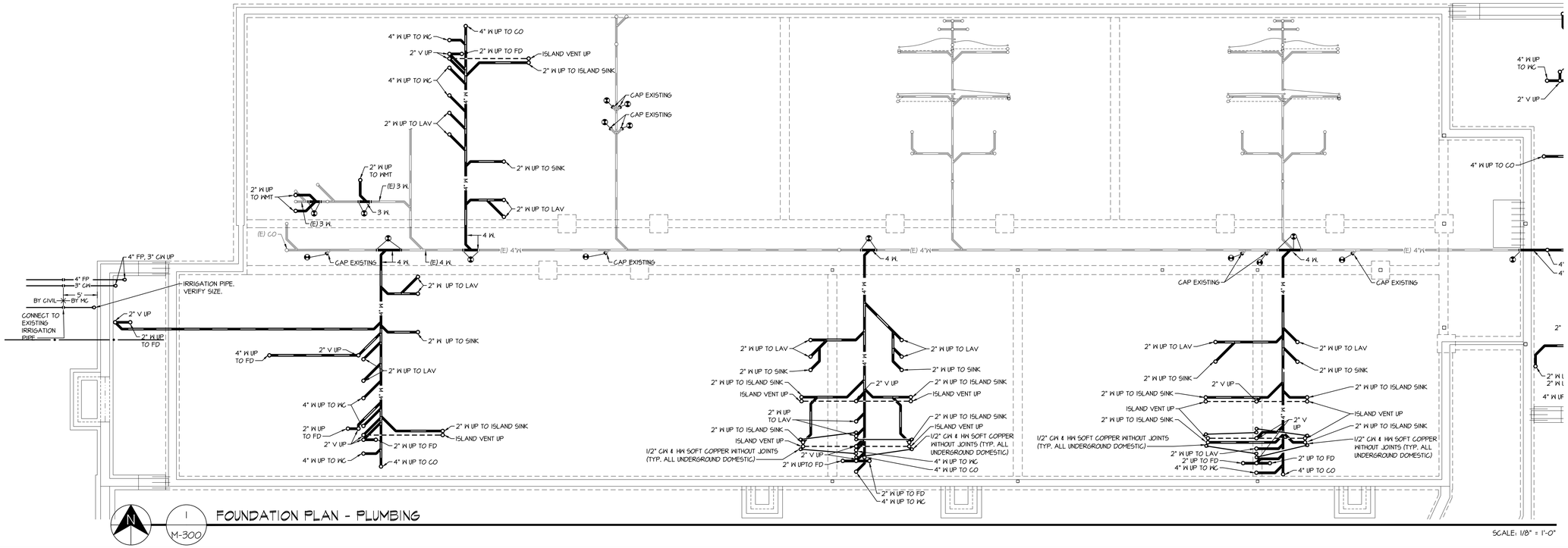
2 M-300 FOUNDATION PLAN - PLUMBING

SCALE: 1/8" = 1'-0"



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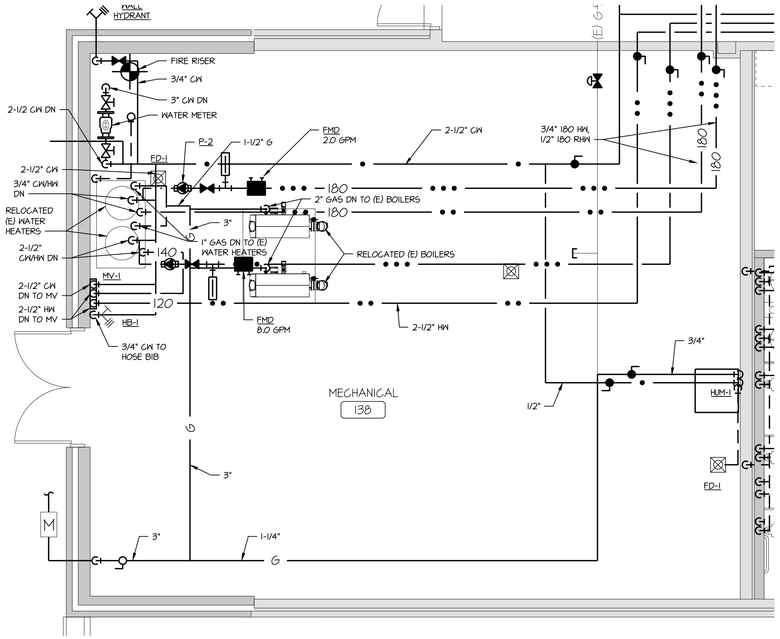
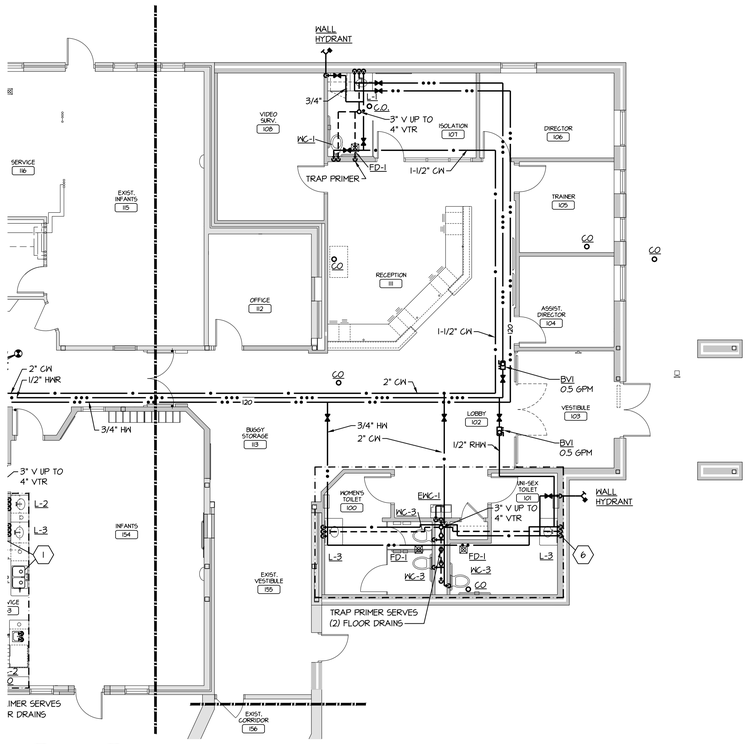
1 M-300 FOUNDATION PLAN - PLUMBING

SCALE: 1/8" = 1'-0"



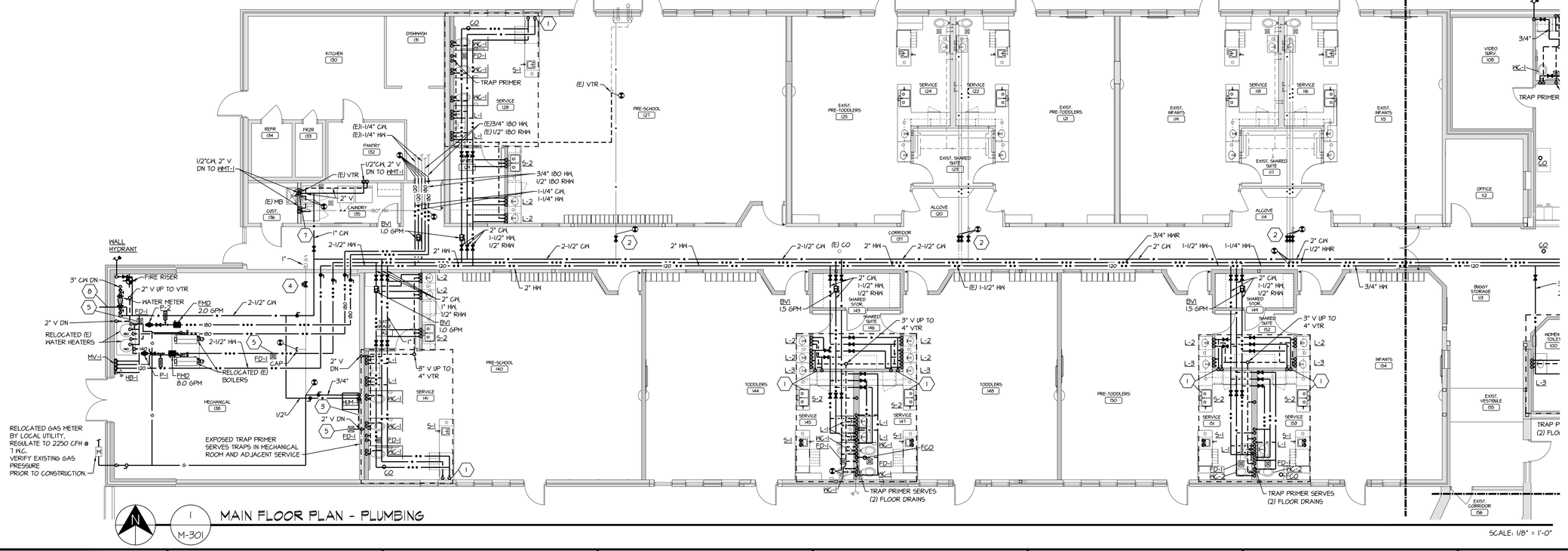
3 M-301 LARGE SCALE PLAN - PLUMBING

SCALE: 1/4" = 1'-0"



2 M-301 MAIN FLOOR PLAN - PLUMBING

SCALE: 1/8" = 1'-0"



1 M-301 MAIN FLOOR PLAN - PLUMBING

SCALE: 1/8" = 1'-0"

PLUMBING FIXTURE ROUGH-IN CONNECTION SCHEDULE

FIXTURE	WASTE	VENT	CW	HW
WALL HYDRANT	-	-	3/4"	-
CLEAN OUT	4"	-	-	-
FLOOR DRAIN	2"	2"	-	-
FLOOR SINK	3"	2"	-	-
LAVATORY	2"	2"	1/2"	1/2"
WATER CLOSET (FV)	4"	2"	1"	-
WATER CLOSET (TANK)	4"	2"	1/2"	-
URINAL	2"	2"	3/4"	-
SINK	2"	2"	1/2"	1/2"
EWC	2"	2"	1/2"	-
MIXING VALVE	-	-	3/4"	3/4"
MOP BASIN	3"	2"	3/4"	3/4"
HOSE BIBB	-	-	3/4"	-

NOTES:
1. SIZES SHALL BE AS SCHEDULED UNLESS OTHERWISE NOTED ON DRAWINGS.

PLUMBING NOTES:

1. ROUTE DOMESTIC WATER DOWN WALL, UNDER COUNTERTOP OVER TO SINK.
2. ADD NEW SHUT-OFF VALVES TO EXISTING DOMESTIC WATER LINES
3. RUN 1/2" CONDENSATE LINE FROM HUMIDIFIER TO NEAREST FLOOR DRAIN
4. EMERGENCY GAS SHUTOFF SOLINOID VALVE. CONNECT TO HOOD FIRE PROTECTION SYSTEM TO SHUT-OFF GAS TO KITCHEN IN CASE OF FIRE.
5. COORDINATE LOCATION OF NEW FLOOR DRAINS PRIOR TO INSTALLATION. KEEP CLEAR OF NEW EQUIPMENT IN THE MECHANICAL ROOM.
6. MOUNT PIPING ON INSIDE ON BATT INSULATION IN EXTERIOR WALL.
7. CONNECT NEW 2" VENT TO EXISTING 2 V"
8. CONNECT TO EXISTING IRRIGATION SYSTEM. SEE DETAIL FOR REQUIREMENTS. MATCH EXISTING LINE SIZE.

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JACOB M. SCOTT
PE - 10581
DATE: 4-22-22
NORTH DAKOTA

U.S. AIR FORCE

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CHK. BY: JCP
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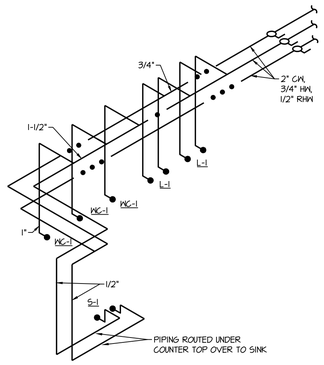
AIR COMBAT COMMAND
GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

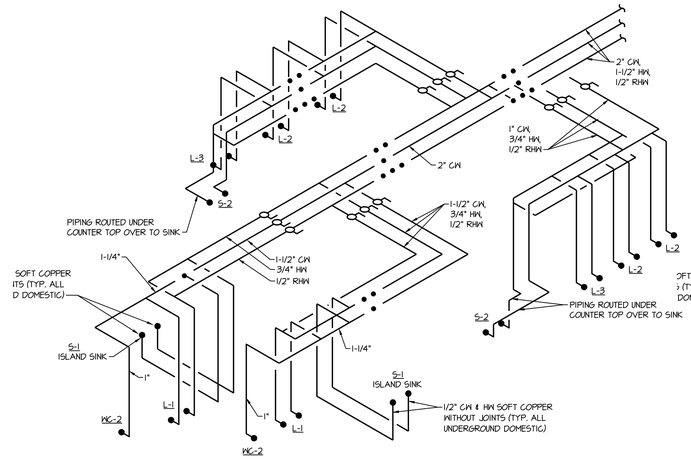
MAIN FLOOR PLAN - PLUMBING

SHEET REFERENCE NUMBER
M-301



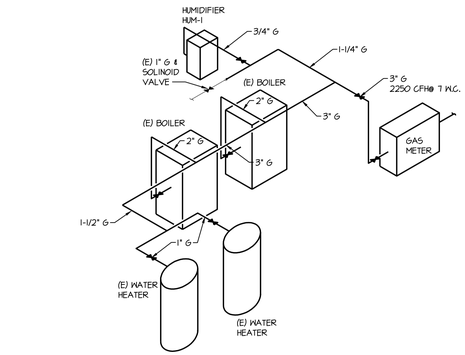
8 M-302 PRE-SCHOOL 140, SERVICE 141 DOMESTIC WATER RISER

SCALE: 1/4" = 1'-0"



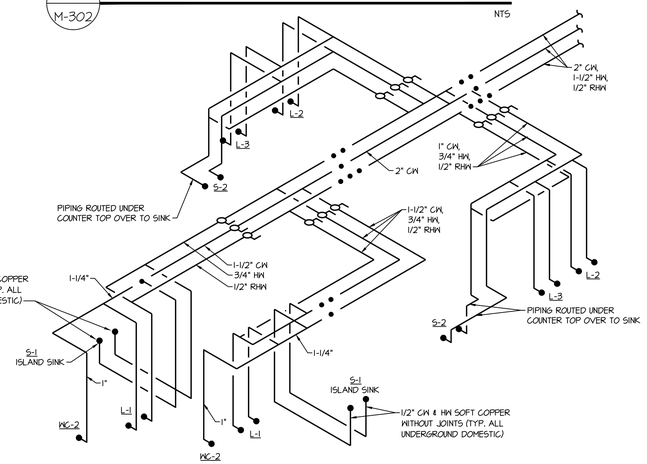
6 M-302 TODDLER 144, TODDLER 148 DOMESTIC WATER RISER

SCALE: 1/4" = 1'-0"



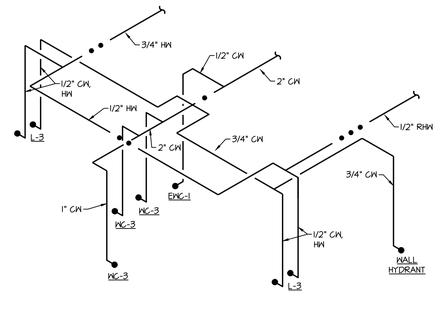
7 M-302 GAS RISER

NTS



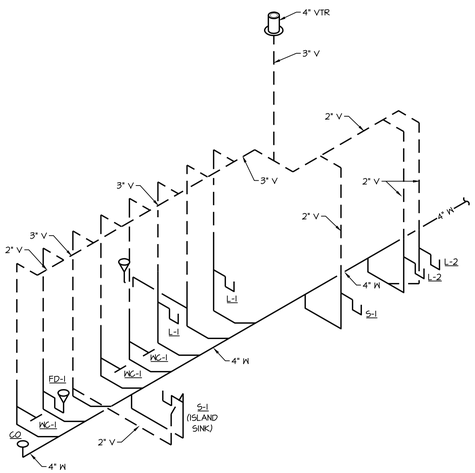
4 M-302 PRE-TODDLER 150, INFANTS 154 DOMESTIC WATER RISER

SCALE: 1/4" = 1'-0"



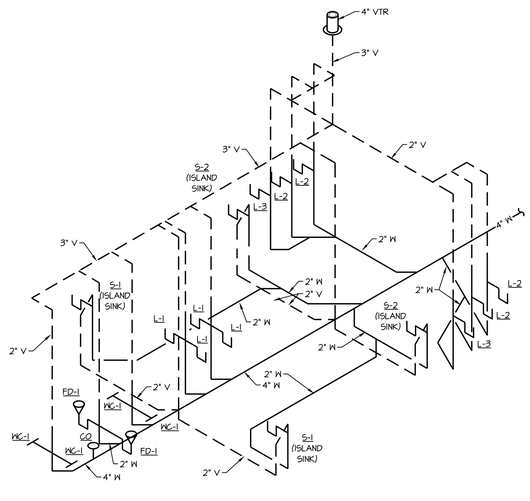
2 M-302 WOMEN'S TOILET 100, MEN'S TOILET 101 DOMESTIC WATER RISER

SCALE: 1/4" = 1'-0"



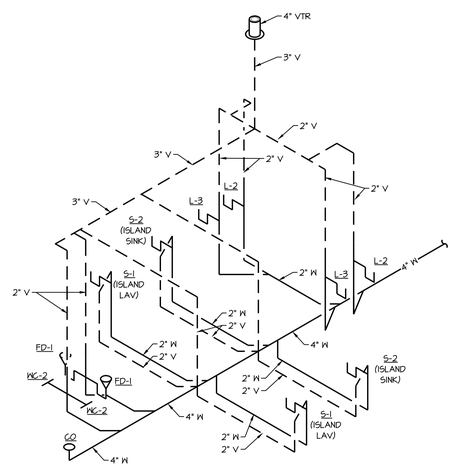
7 M-302 PRE-SCHOOL 140, SERVICE 141 WASTE & VENT RISER

SCALE: 1/4" = 1'-0"



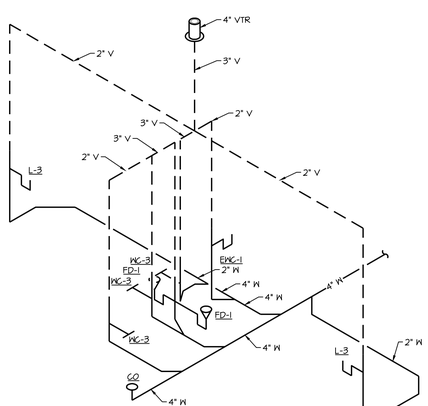
5 M-302 TODDLER 144, TODDLER 148 WASTE & VENT RISER

SCALE: 1/4" = 1'-0"



3 M-302 PRE-TODDLER 150, INFANTS 154 WASTE & VENT RISER

SCALE: 1/4" = 1'-0"



1 M-302 WOMEN'S TOILET 100, MEN'S TOILET 101 WASTE & VENT RISER

SCALE: 1/4" = 1'-0"

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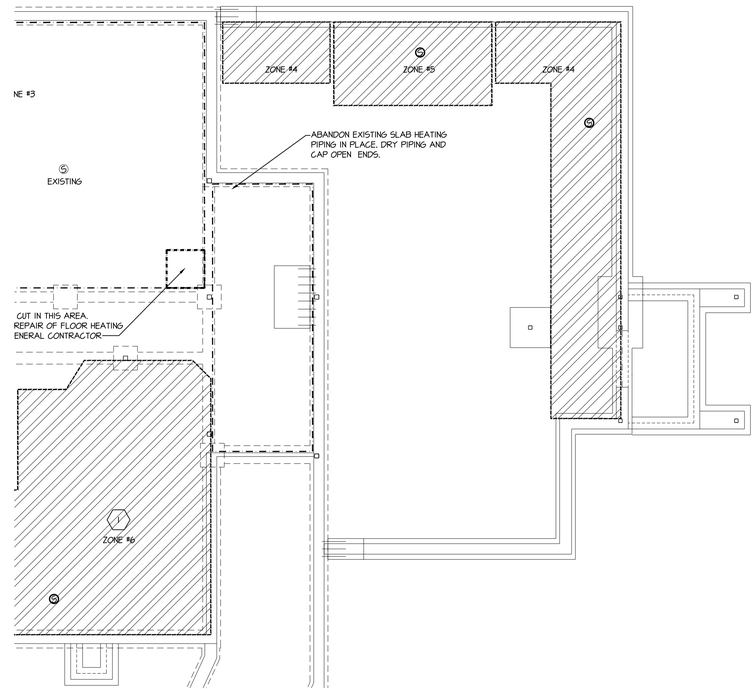
PLUMBING RISER DIAGRAMS

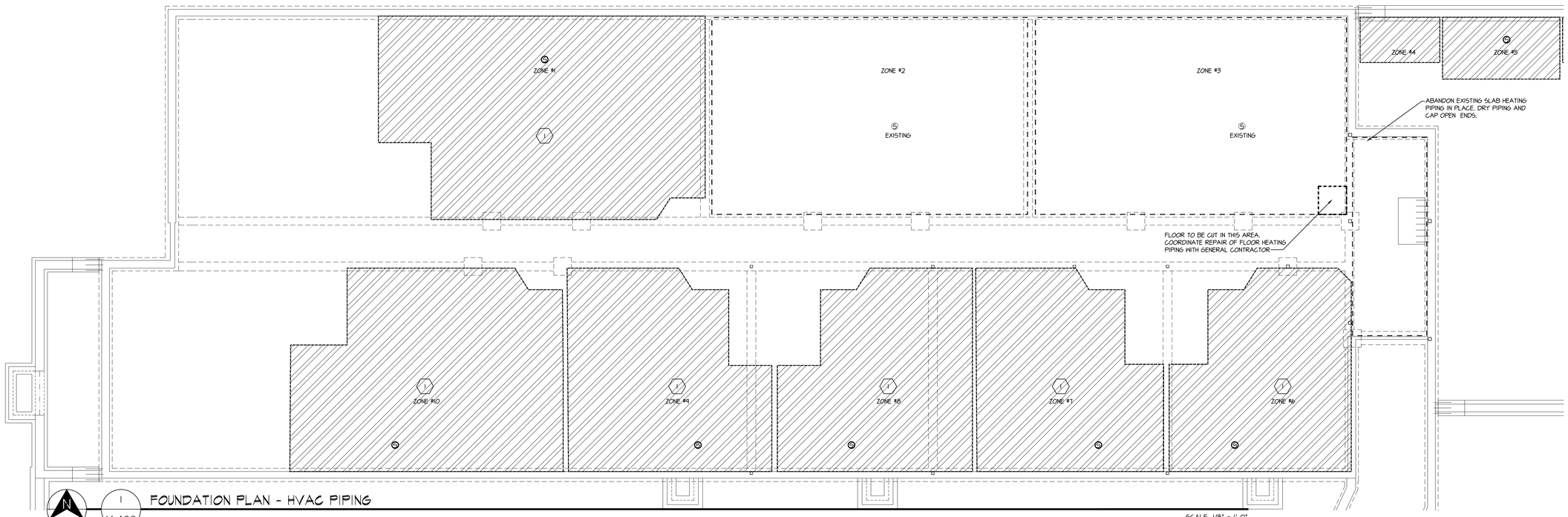
SHEET REFERENCE NUMBER
M-302

SLAB HEAT ZONE TABLE							
ZONE #	AREA	BTU/SF	GPM	PIPE SIZE	LENGTH	# of LOOPS	Pressure loss (FT)
1	1400	26	9	3/4	320	5	10
2	1275	26	8.2	-	-	-	8
3	1275	26	8.2	-	-	-	8
4	610	24	3.7	3/4	210	3	4
5	158	30	1.2	3/4	170	1	3
6	735	26	5.1	3/4	265	3	8
7	760	28	5.2	3/4	270	3	8
8	785	28	5.4	3/4	275	3	8
9	830	28	5.7	3/4	320	3	11
10	1130	26	7.3	3/4	320	4	11



N 2 M-400 FOUNDATION PLAN - HVAC PIPING

SCALE: 1/8" = 1'-0"



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FOUNDATION PLAN - HVAC PIPING

SHEET REFERENCE NUMBER
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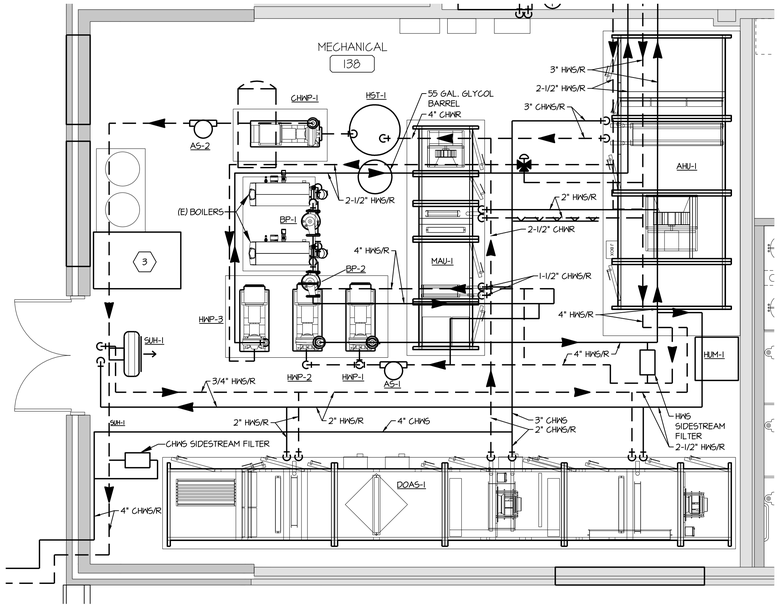
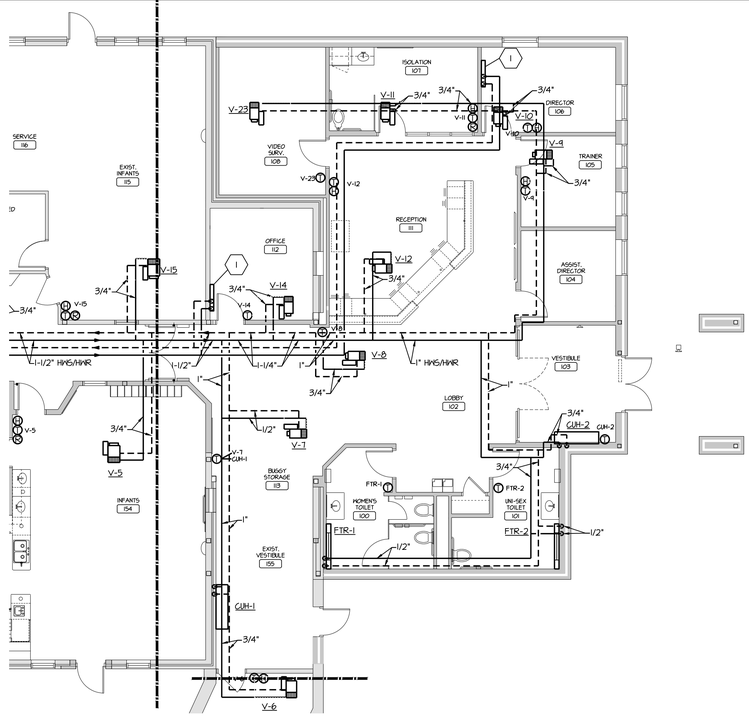


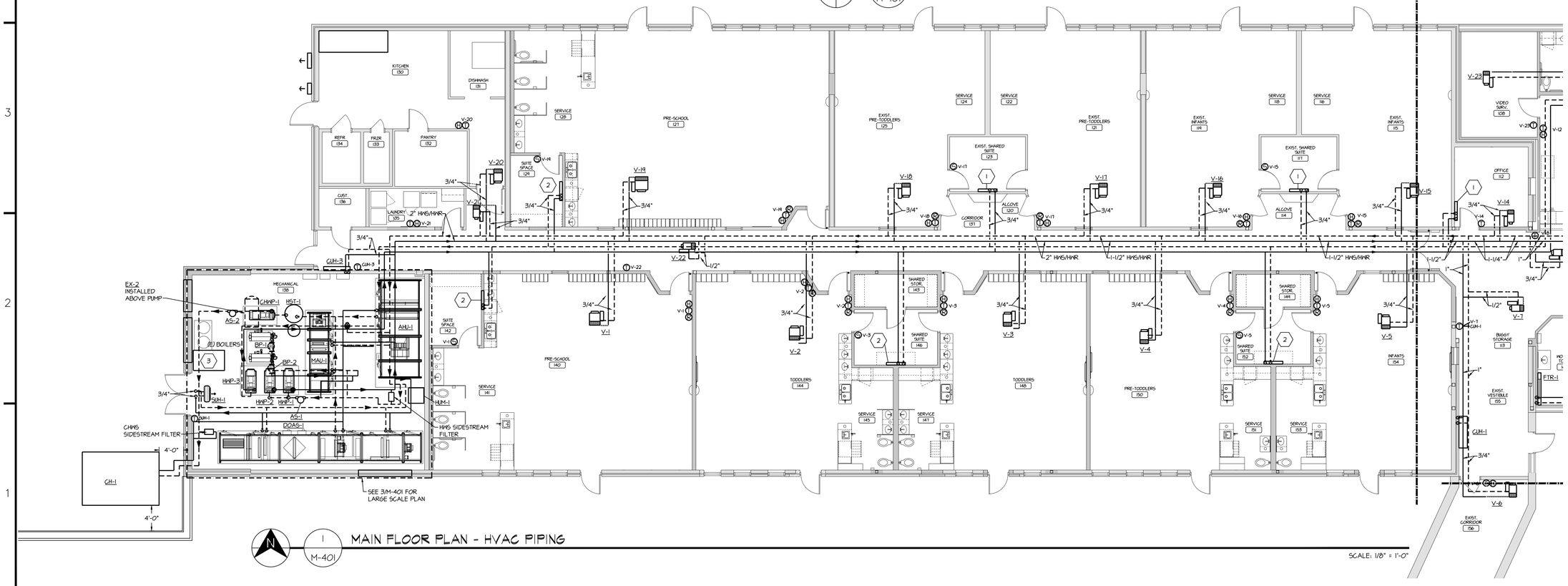
N 3 M-401 LARGE SCALE PLAN - HVAC PIPING

SCALE: 1/4" = 1'-0"



N 2 M-401 MAIN FLOOR PLAN - HVAC PIPING

SCALE: 1/8" = 1'-0"



N 1 M-401 MAIN FLOOR PLAN - HVAC PIPING

SCALE: 1/8" = 1'-0"

HVAC PIPING NOTES:

1. RADIANT FLOOR MANIFOLD AND CONTROL VALVE. CONNECT TO EXISTING RADIANT FLOOR PIPING. PROVIDE WALL ACCESS PANEL.
2. RADIANT FLOOR MANIFOLD AND CONTROL VALVE. PROVIDE WALL ACCESS PANEL.
3. REFRIGERATION CONTRACTOR TO REINSTALL EXISTING REFRIGERATION EQUIPMENT HERE. CONTRACTOR TO PROVIDE ALL NECESSARY SERVICES, PIPING, AND COMPONENTS TO RELOCATE INCLUDING EVACUATION AND RECHARGE OF REFRIGERANT.

GENERAL NOTES:

1) TEMPERATURE SENSOR (T) IS LOCATED AT 12" A.F.F.

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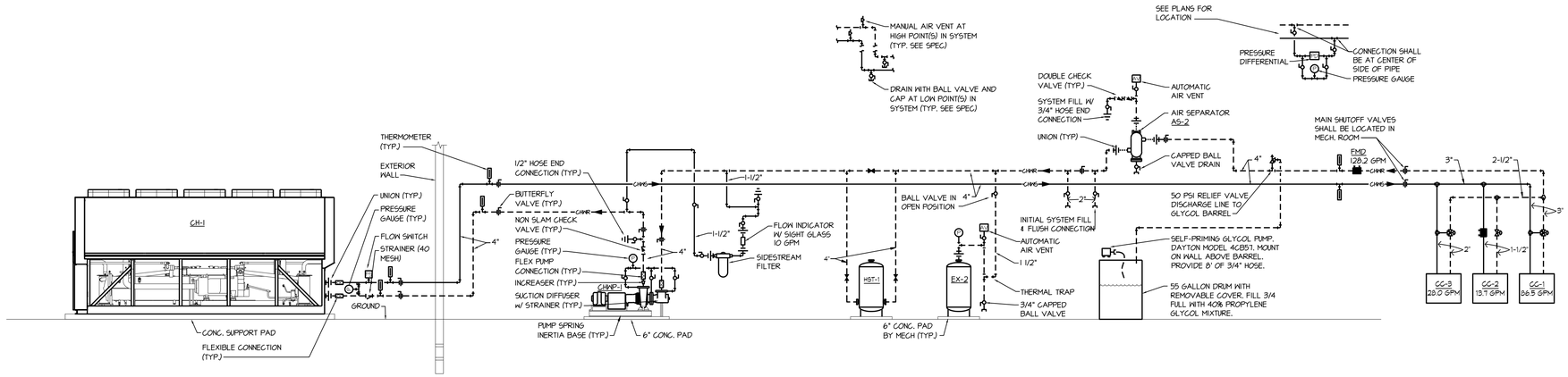
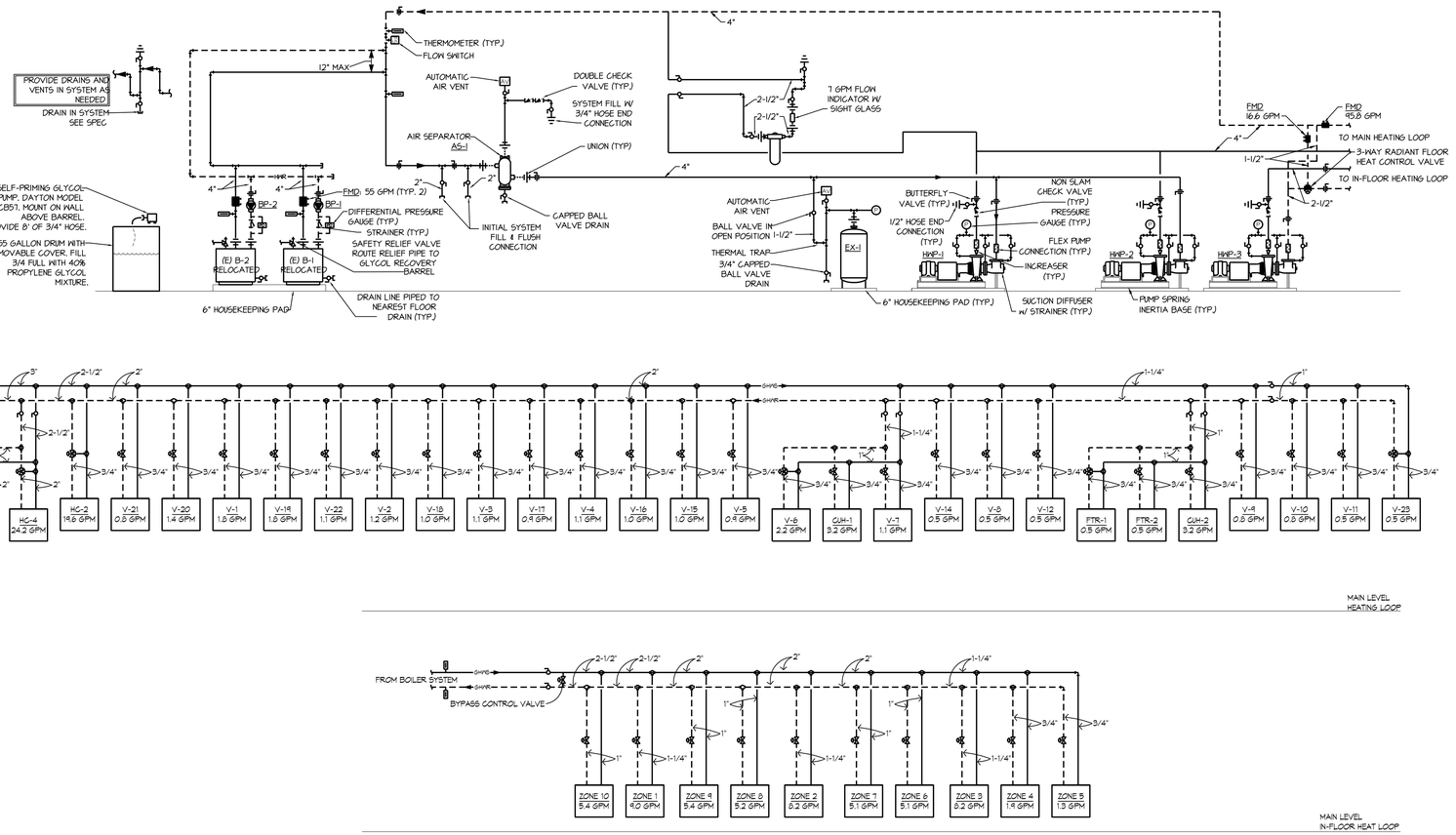
MAIN FLOOR - HVAC PIPING

SHEET REFERENCE NUMBER
M-401





HEATING AND CHILLED WATER SCHEMATIC

1 / M-402

SCALE: 1/8" = 1'-0"

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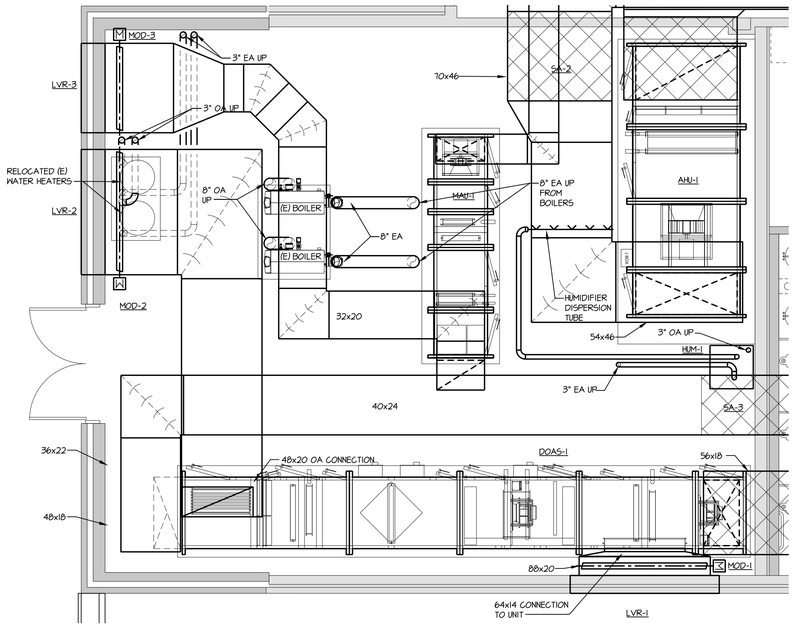
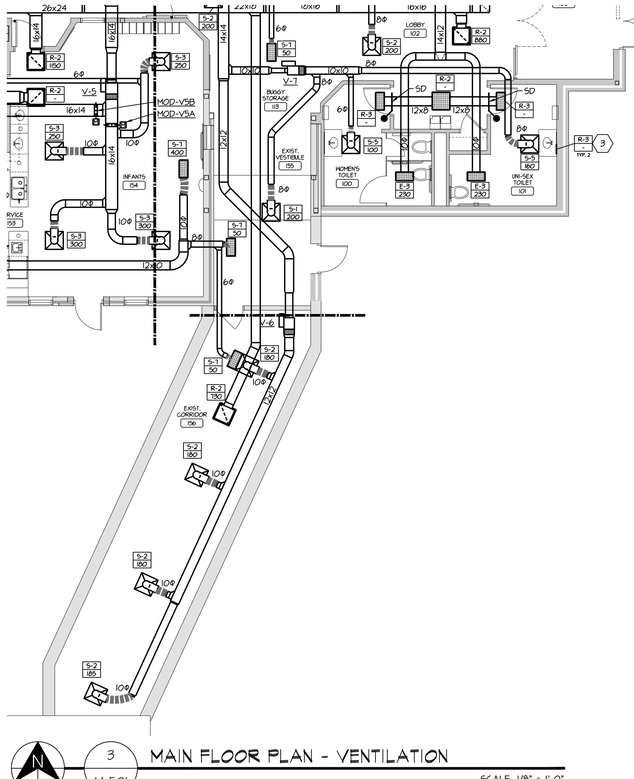
HEATING/COOLING - SCHEMATICS

SHEET REFERENCE NUMBER
M-402



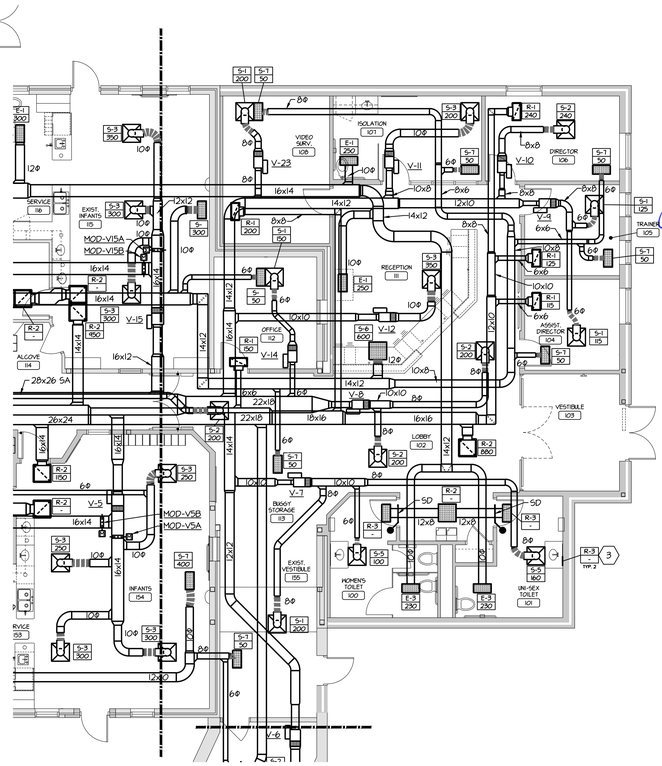
4 M-501 LARGE SCALE PLAN - VENTILATION

SCALE: 1/4" = 1'-0"



3 M-501 MAIN FLOOR PLAN - VENTILATION

SCALE: 1/8" = 1'-0"

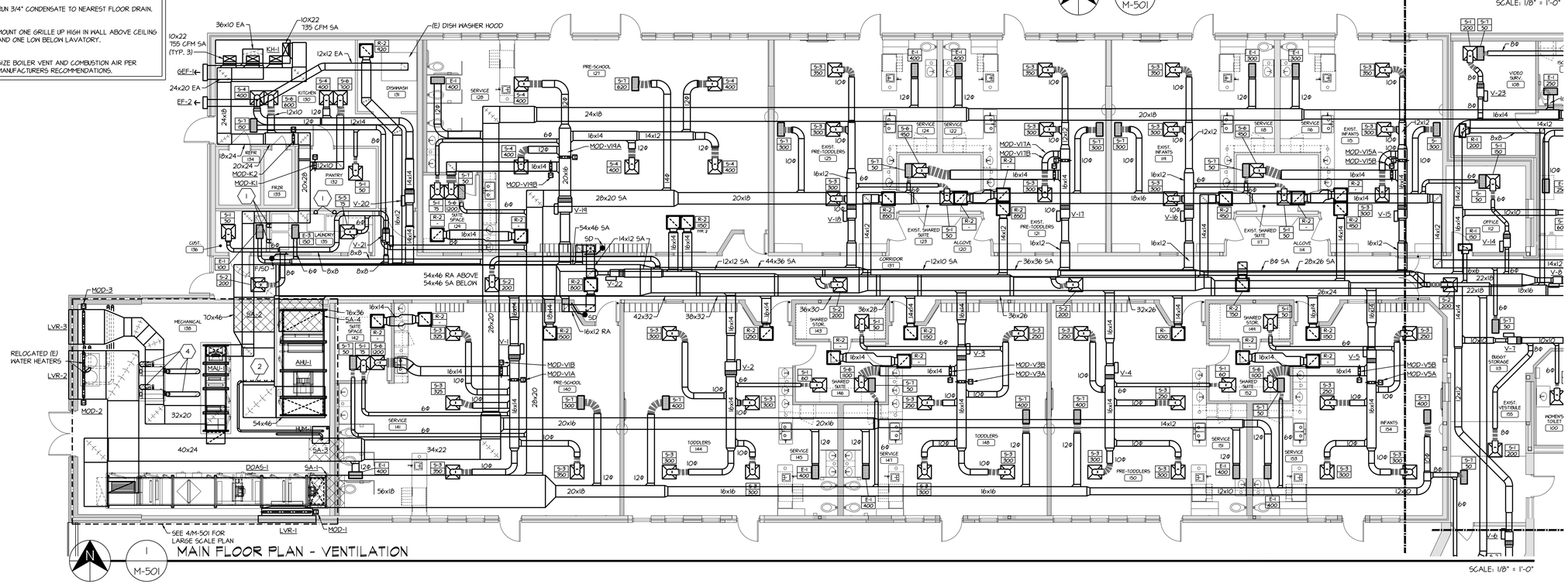


2 M-501 MAIN FLOOR PLAN - VENTILATION

SCALE: 1/8" = 1'-0"

VENTILATION NOTES:

1. 4" DRYER VENT UP THROUGH ROOF. PROVIDE WITH DRYER BOX.
2. RUN 3/4" CONDENSATE TO NEAREST FLOOR DRAIN.
3. MOUNT ONE GRILLE UP HIGH IN WALL ABOVE CEILING AND ONE LOW BELOW LAVATORY.
4. SIZE BOILER VENT AND COMBUSTION AIR PER MANUFACTURERS RECOMMENDATIONS.



1 M-501 MAIN FLOOR PLAN - VENTILATION

SCALE: 1/8" = 1'-0"

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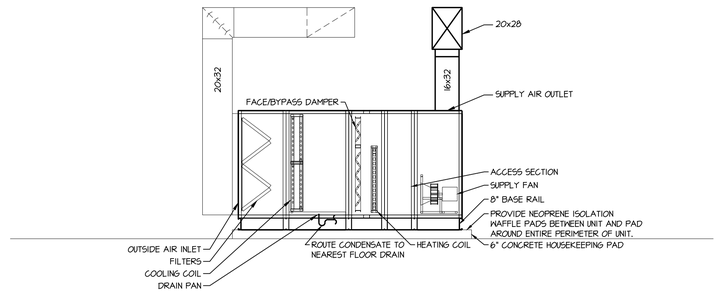
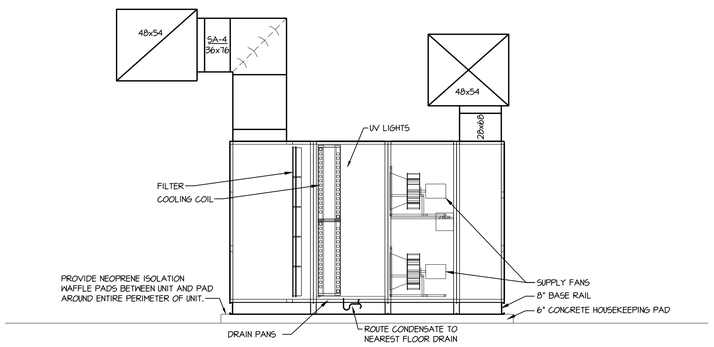
MAIN FLOOR - VENTILATION

SHEET REFERENCE NUMBER
M-501



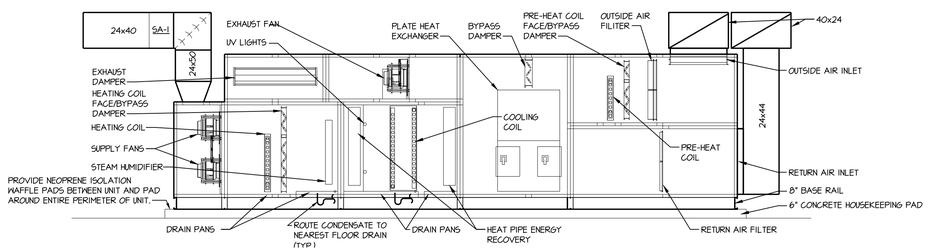
2 M-502 MAU-1 SECTION

SCALE: 1/4" = 1'-0"



3 M-502 AHU-1 SECTION

SCALE: 1/4" = 1'-0"



1 M-502 DOAS-1 SECTION

SCALE: 1/4" = 1'-0"

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MECHANICAL ROOF PLAN

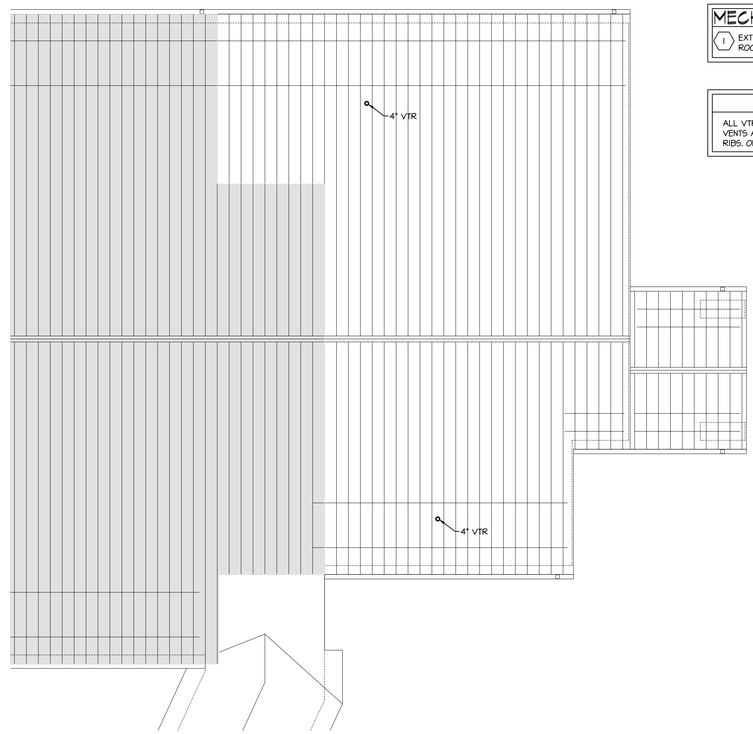
SHEET REFERENCE NUMBER
M-502

MECHANICAL ROOF NOTES:

1. EXTEND EXISTING VTR TO ACCOMMODATE NEW ROOFING

GENERAL NOTES:

ALL VTR, COMBUSTION AIR, EXHAUST AIR, AND DRYER VENTS ARE TO BE CENTERED BETWEEN ROOF PANEL RIBS. OFFSET EXISTING VTR IF NEEDED TO CENTER.

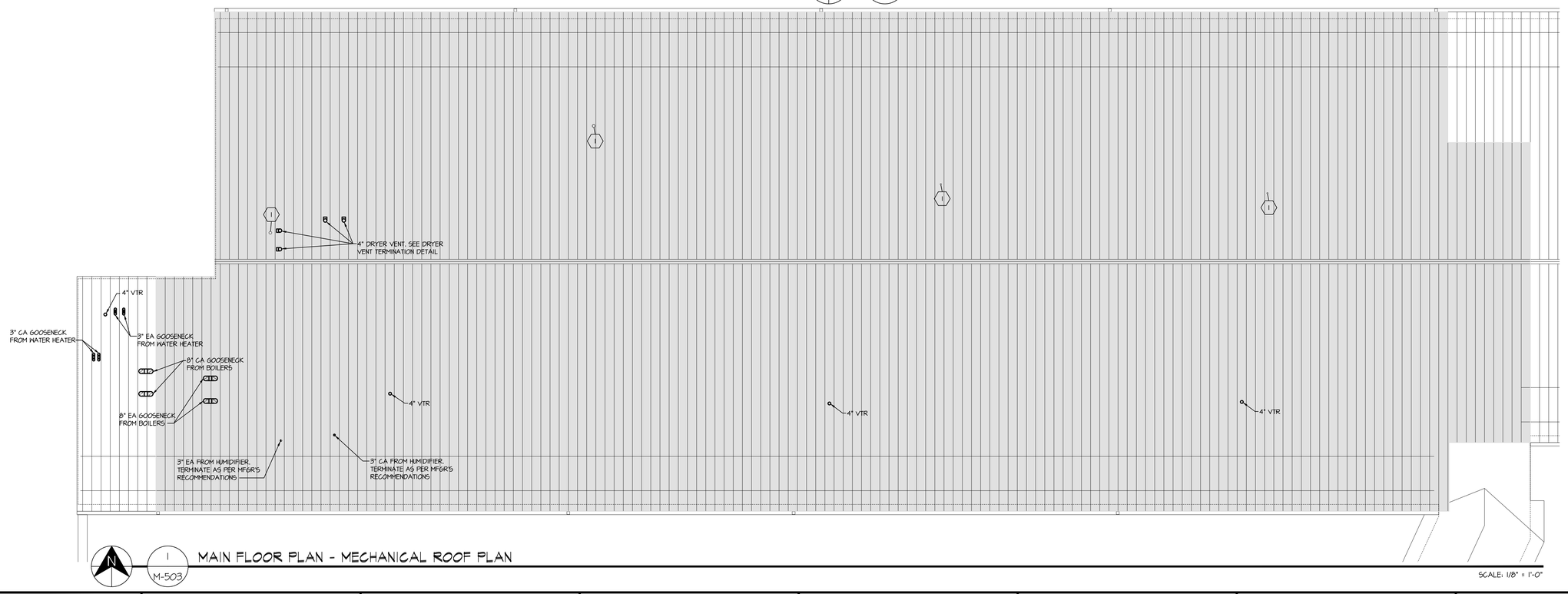


N

2 M-503

MAIN FLOOR PLAN - MECHANICAL ROOF PLAN

SCALE: 1/8" = 1'-0"



N

1 M-503

MAIN FLOOR PLAN - MECHANICAL ROOF PLAN

SCALE: 1/8" = 1'-0"

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MECHANICAL ROOF PLAN

SHEET REFERENCE NUMBER
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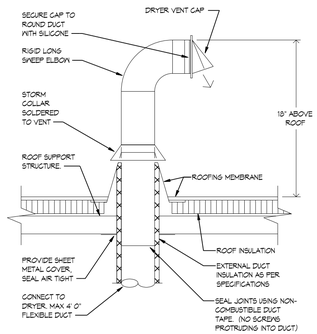
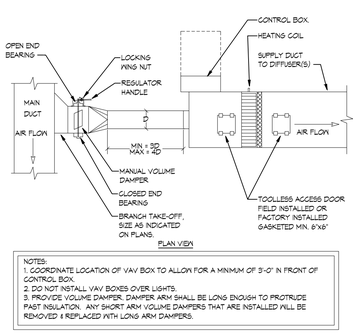


22 M-600 DRYER VENT TERMINATION DETIAL

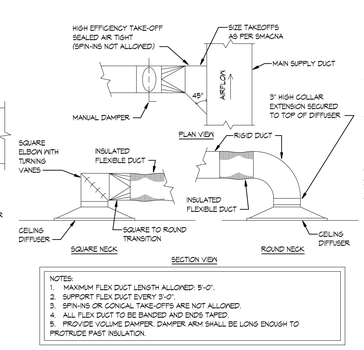
No Scale



NOTES:
1. COORDINATE LOCATION OF VAV BOX TO ALLOW FOR A MINIMUM OF 3'-0" IN FRONT OF CONTROL BOX.
2. DO NOT INSTALL VAV BOXES OVER LIGHTS.
3. PROVIDE VOLUME DAMPER. DAMPER ARM SHALL BE LONG ENOUGH TO PROTRUDE PAST INSULATION. ANY SHORT ARM VOLUME DAMPERS THAT ARE INSTALLED WILL BE REMOVED & REPLACED WITH LONG ARM DAMPERS.

VARIABLE AIR VOLUME BOX W/ HYDRONIC HEATING COIL DETAIL

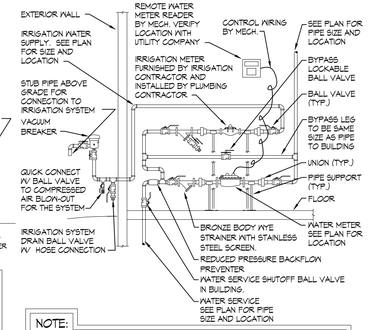
21 M-600 No Scale



NOTES:
1. MAXIMUM FLEX DUCT LENGTH ALLOWED: 5'-0".
2. SUPPORT FLEX DUCT EVERY 3'-0".
3. SPIN-INS OR CONICAL TAKE-OFFS ARE NOT ALLOWED.
4. ALL FLEX DUCT TO BE BANDED AND ENDS TAPED.
5. PROVIDE VOLUME DAMPER. DAMPER ARM SHALL BE LONG ENOUGH TO PROTRUDE PAST INSULATION.

16 M-600 SUPPLY DUCT TO DIFFUSER DETAIL

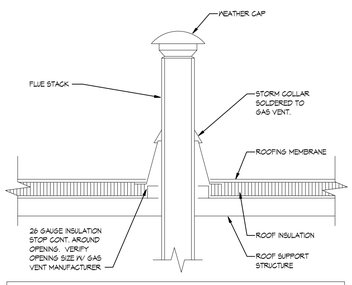
No Scale



NOTE:
1. SUBSTITUTE FLANGED VALVES WHEN PIPE SIZE IS 2-1/2" AND LARGER.

12 M-600 WATER & IRRIGATION METER DETAIL

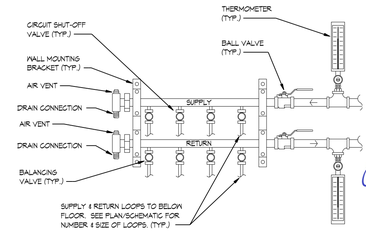
No Scale



NOTE:
1. FLUE SHALL TERMINATE A MINIMUM OF 3'-0" ABOVE ANY O.A. INTAKE, PARAPET, ETC WITHIN 10'-0".
2. PROVIDE WITH GUY WIRE SUPPORTS IF FLUE TERMINATION IS OVER 5'-0".

8 M-600 FLUE STACK TERMINATION DETAIL

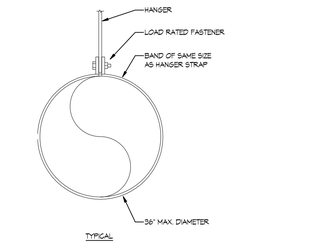
No Scale

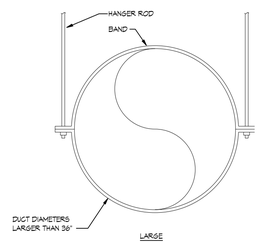


NOTES:
1. INSULATE ALL PIPING ABOVE GRADE. SEE SPECIFICATIONS FOR MORE INFORMATION.

4 M-600 IN-FLOOR HEAT MANIFOLD DETAIL

No Scale

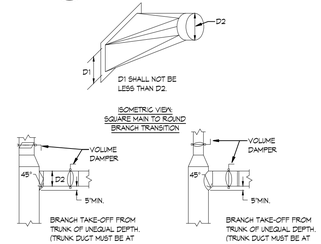




NOTES:
1. HANGERS MUST NOT DEFORM DUCT SHAPE.
2. BAND AND HANGER PER SMACNA STANDARDS.
3. IF BAR JOIST SUPPORT FROM TOP CORD OF AT PANEL WITH ADJUSTABLE BEAM CLAMPS UNLESS OTHERWISE NOTED. FIELD-VERIFY STRUCTURE.

20 M-600 ROUND DUCT HANGER DETAIL

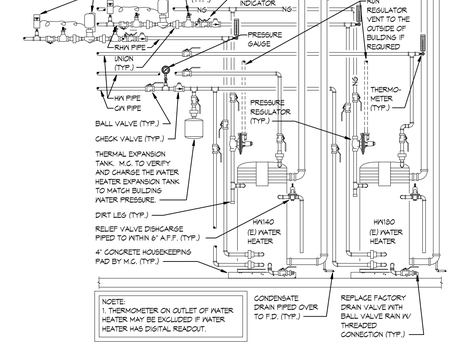
No Scale



NOTES:
1. SIZE ALL TAKEOFFS AS PER SMACNA.

15 M-600 ROUND DUCT CONNECTION DETAIL

No Scale



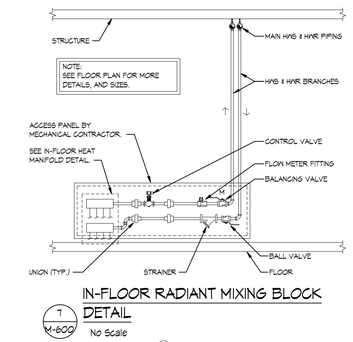
NOTE:
1. THERMOMETER ON OUTLET OF WATER HEATER MAY BE EXCLUDED IF WATER HEATER HAS DIGITAL READOUT.

CONDENSATE DRAIN PIPED OVER TO F.D. (TYP.)

REPLACE FACTORY DRAN VALVE WITH BALL VALVE RAIN W/ THREADED CONNECTION (TYP.)

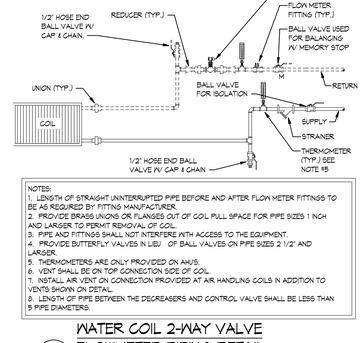
DUAL SEALED COMBUSTION GAS FIRED WATER HEATER PIPING DETAIL

11 M-600 No Scale



IN-FLOOR RADIANT MIXING BLOCK DETAIL

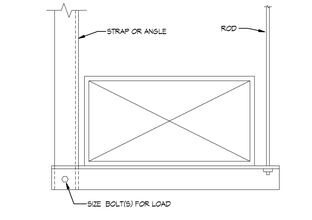
7 M-600 No Scale



NOTES:
1. LENGTH OF STRAIGHT UNINTERRUPTED PIPE BEFORE AND AFTER FLOW METER FITTINGS TO BE AS REQUIRED BY FITTING MANUFACTURER.
2. PROVIDE BRASS UNIONS OR FLANGES OUT OF COIL FULL SPACE FOR PIPE SIZES 1 INCH AND LARGER TO PERMIT REMOVAL OF COIL.
3. PIPE AND FITTINGS SHALL NOT INTERFERE WITH ACCESS TO THE EQUIPMENT.
4. PROVIDE BUTTERFLY VALVES IN LIEU OF BALL VALVES ON PIPE SIZES 2 1/2" AND LARGER.
5. THERMOMETERS ARE ONLY PROVIDED ON AHUS.
6. VENT SHALL BE ON TOP CONNECTION SIDE OF COIL.
7. INSTALL AIR VENT ON CONNECTION PROVIDED AT AIR HANDLING COILS IN ADDITION TO VENTS SHOWN ON DETAIL.
8. LENGTH OF PIPE BETWEEN THE DEGREASERS AND CONTROL VALVE SHALL BE LESS THAN 5 PIPE DIAMETERS.

WATER COIL 2-WAY VALVE FLOWMETER PIPING DETAIL

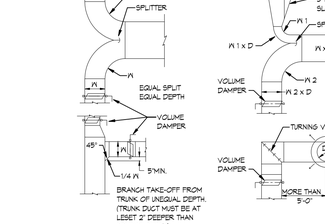
3 M-600 No Scale



NOTES:
1. HANGERS MUST NOT DEFORM DUCT SHAPE.
2. HANGER STRAP PER SMACNA STANDARDS.
3. IF BAR JOIST SUPPORT FROM TOP CORD AT PANEL POINT WITH ADJUSTABLE BEAM CLAMPS OTHERWISE NOTED. FIELD-VERIFY STRUCTURE.

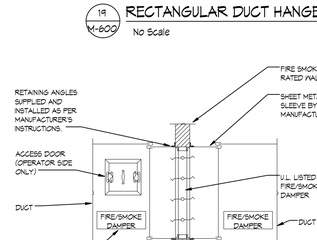
19 M-600 RECTANGULAR DUCT HANGER DETAIL

No Scale



14 M-600 DUCT CONNECTION DETAILS

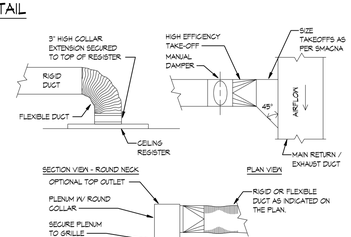
No Scale



NOTES:
1. HORIZONTAL INSTALLATION SIMILAR.
2. REFER TO UL LISTED INSTRUCTIONS WHEN SUPPORTING DAMPER.

18 M-600 FIRE SMOKE DAMPER DETAIL

No Scale

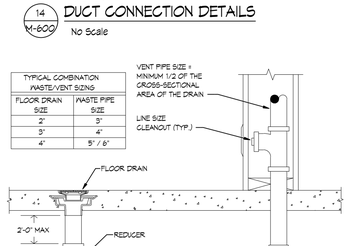


NOTES:
1. MAXIMUM FLEX DUCT LENGTH ALLOWED: 5'-0".
2. SUPPORT FLEX DUCT EVERY 3'-0".
3. SPIN-INS OR CONICAL TAKE-OFFS ARE NOT ALLOWED.
4. PROVIDE VOLUME DAMPER. DAMPER ARM SHALL BE LONG ENOUGH TO PROTRUDE PAST INSULATION.

RETURN/EXHAUST DUCT TO GRILLE DETAIL

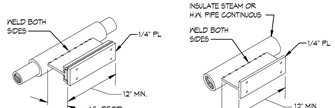
17 M-600 No Scale

TYPICAL COMBINATION WASTE/VENT SIZING	
FLOOR DRAIN SIZE	WASTE PIPE SIZE
2"	3"
3"	4"
4"	5" / 6"



COMBINATION WASTE / VENT FLOOR DRAIN DETAIL

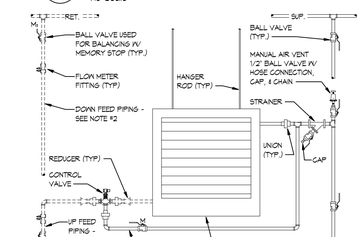
13 M-600 No Scale



NOTE:
1. PLACE GUIDES MIN DISTANCE AWAY FROM EXPANSION JOINTS/LOOPS PER ASHRAE SIZING GUIDELINES
2. BOLT 1/4" PLATE TO WALL OR STRUCTURE WITH FOUR 5/8" HIGH TENSILE BOLTS.

9 M-600 PIPE GUIDE AND ANCHOR DETAIL

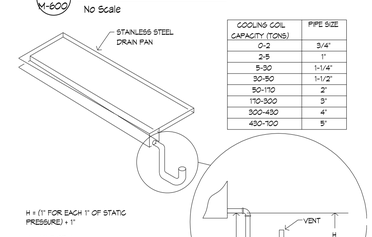
No Scale



NOTES:
1. WHEN PLANS INDICATE UP FEED RATHER THAN DOWN FEED PIPING PROVIDE MANUAL AIR VENT. STRAINER MUST BE INSTALLED IN HORIZONTAL PIPING.
2. WHEN PLANS INDICATE DOWN FEED RATHER THAN UP FEED PIPING PROVIDE DRAIN WITH BALL VALVE, HOSE CONNECTION, AND CAP.
3. LENGTH OF STRAIGHT UNINTERRUPTED PIPE BEFORE AND AFTER FLOW METER FITTINGS TO BE AS REQUIRED BY FITTING MANUFACTURER.

SUSPENDED UNIT HEATER 3-WAY VALVE FLOWMETER DETAIL

5 M-600 No Scale



COOLING COIL CAPACITY (TONS)	PIPE SIZE
0-2	3/4"
2-5	1"
5-30	1-1/4"
30-50	1-1/2"
50-110	2"
110-300	3"
300-430	4"
430-700	5"

NOTES:
1. VERIFY TOTAL STATIC PRESSURE w/ SHOP DRAWINGS/UNIT SUPPLIER.

CONDENSATE DRAIN (DRAW THRU UNIT) DETAIL

1 M-600 No Scale

FOSS ARCHITECTURE +INTERIORS
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701.282.5505 | fossarch.com

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JACOB M. SCOTT
PE - 10581
DATE: 4-22-22
REGISTERED PROFESSIONAL ENGINEER
NORTH DAKOTA

U.S. AIR FORCE

Symbol	Description	Date	Approved

DESIGNED BY: JCP
DRWN BY: TVE
CHK BY: JCP
SUBMITTED BY: RA
DATE: 22 APRIL 2022
PLOT DATE: AS SHOWN
PLOT SCALE: AS SHOWN
DRAWING NUMBER: AS SHOWN

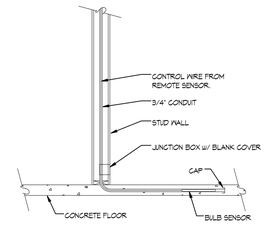
DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND

GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

MECHANICAL - DETAILS

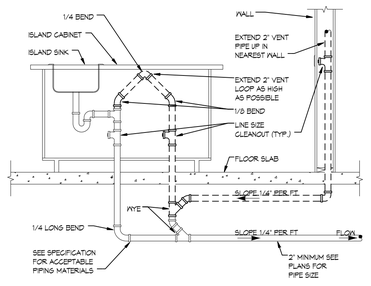
SHEET REFERENCE NUMBER
M-600



FLOOR HEAT THERMOSTAT AND TUBING SLEEVE DETAIL

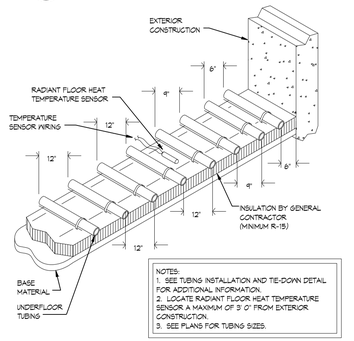
4 / M-601

No Scale



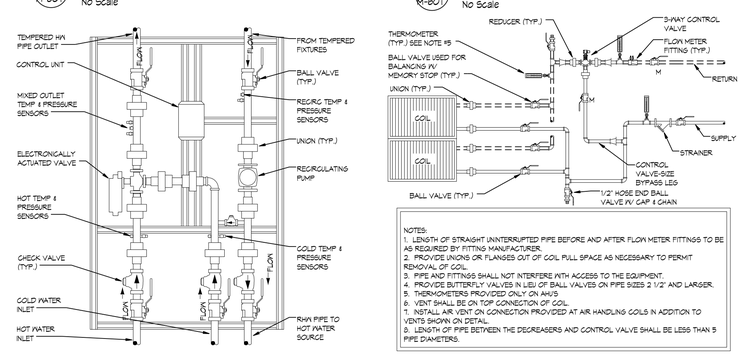
7 / M-601 ISLAND VENT PIPING DETAIL

No Scale



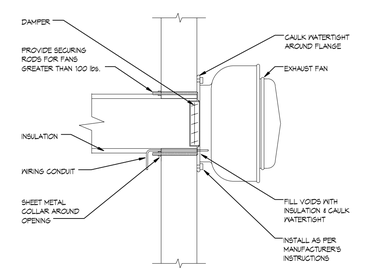
3 / M-601 IN-FLOOR RADIANT LOOP SPACING DETAIL

No Scale



6 / M-601 DIGITAL MIXING VALVE DETAIL

No Scale

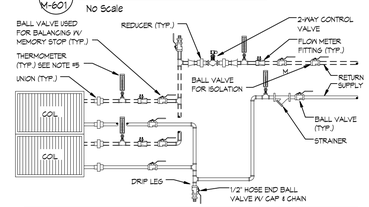


5 / M-601 SIDEWALL EXHAUST FAN DETAIL

No Scale

2 / M-601 DUAL WATER COIL 3-WAY VALVE FLOWMETER PIPING DETAIL

No Scale



1 / M-601 DUAL WATER COIL 2-WAY VALVE FLOWMETER PIPING DETAIL

No Scale

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CMTA
cmta.com | 877 380 0501

REGISTERED PROFESSIONAL ENGINEER
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DATE: 4-22-22
NORTH DAKOTA

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DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND
GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

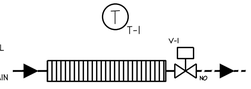
MECHANICAL - DETAILS

SHEET REFERENCE NUMBER
M-601

SEQUENCE OF OPERATION

CONTROL MODE: THE SPACE SHALL BE IN THE UNOCCUPIED OR OCCUPIED CONTROL MODE.

HEATING VALVE CONTROL: THE HEATING VALVE SHALL BE POSITIONED TO MAINTAIN SPACE SETPOINT. UPON LOSS OF POWER, THE HEATING VALVE SHALL BE OPEN.



CONTROL DEVICE	POINT NAME	POINT DESCRIPTION	POINT TYPE AI	BI	AO	BO	ALARM HI	LOW	NOTES
T-1	SpaceTempStpt	SPACE TEMPERATURE SETPOINT	X						
T-1	SpaceTemp	SPACE TEMPERATURE	X				X	X	
V-1	HtgValve	HEATING VALVE			X				

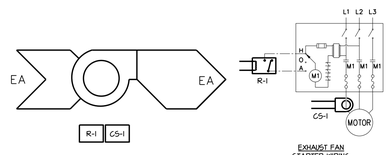
7 RADIATION CONTROL

NO SCALE

SEQUENCE OF OPERATION

GEF-1 CONTROL MODE: THE EXHAUST FAN SHALL BE CONTROLLED BY THE KITCHEN HOOD.

EF-2 CONTROL MODE: THE EXHAUST FAN SHALL BE CONTROLLED BY THE DISHWASH HOOD.



EXHAUST FAN STARTER WIRING

CONTROL DEVICE	POINT NAME	POINT DESCRIPTION	POINT TYPE AI	BI	AO	BO	ALARM HI	LOW	NOTES
R-1	ExhFanCtrl	EXHAUST FAN CONTROL RELAY				X			
CS-1	ExhFanStatus	EXHAUST FAN STATUS		X					

5 EXHAUST FAN CONTROL

NO SCALE

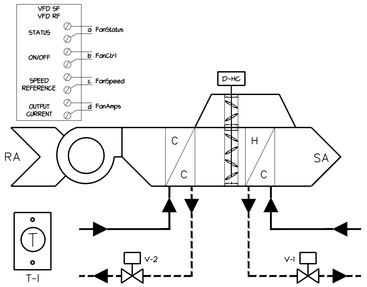
SEQUENCE OF OPERATION

CONTROL MODE: THE MAKEUP AIR UNIT SHALL BE INTERLOCKED WITH THE HOOD CONTROLS.

FAN CONTROL:
1. WHEN THE KITCHEN HOOD FAN IS ON THE FAN SHALL SUPPLY 3700 CFM.
2. WHEN THE DISHWASHER HOOD FAN IS ON THE FAN SHALL SUPPLY 1000 CFM.
3. WHEN THE KITCHEN HOOD AND THE DISHWASHER HOOD FANS ARE ON THE FAN SHALL SUPPLY 4300 CFM.

TEMPERATURE SETPOINT CONTROL: WHEN THE MAKEUP AIR UNIT IS ON, THE ACTIVE TEMPERATURE SETPOINT SHALL BE THE OCCUPIED TEMPERATURE SETPOINT THAT IS ADJUSTABLE BY THE OPERATOR.

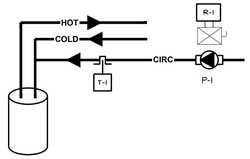
SPACE TEMPERATURE CONTROL:
1. WHEN THE SPACE TEMPERATURE IS BELOW THE ACTIVE SETPOINT, THE TWO-POSITION HEATING VALVE HEATING COIL SHALL BE OPEN AND THE HEATING COIL BYPASS DAMPER SHALL MODULATE TO MAINTAIN THE DISCHARGE TEMPERATURE AT 70 DEG F.
2. WHEN THE SPACE TEMPERATURE IS ABOVE THE ACTIVE SETPOINT, THE COOLING VALVE SHALL MODULATE TO MAINTAIN THE SPACE ACTIVE SETPOINT. THE MINIMUM DISCHARGE TEMPERATURE SHALL BE 60 DEG F ADJUSTABLE.



CONTROL DEVICE	POINT NAME	POINT DESCRIPTION	POINT TYPE AI	BI	AO	BO	ALARM HI	LOW	NOTES
T-1	SpaceTempStpt	SPACE TEMPERATURE SETPOINT	X						
T-1	SpaceTemp	SPACE TEMPERATURE	X						
V-1	HtgValve	HEATING VALVE				X			
V-2	CoolValve	COOLING VALVE				X			
D-HC	HtgDamper	HEATING COIL BYPASS DAMPER			X				

2 MAU-1 CONTROL

NO SCALE



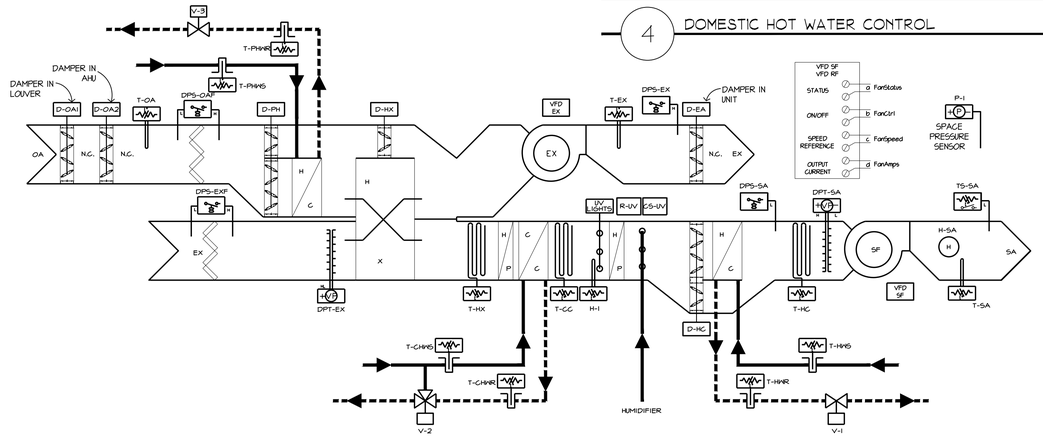
SEQUENCE OF OPERATION:

PLUMBING PUMP SHALL RUN BASED ON A TIME CLOCK. MONITOR CIRCULATION HOT WATER TEMPERATURE.

CONTROL DEVICE	POINT NAME	POINT DESCRIPTION	POINT TYPE AI	BI	AO	BO	ALARM HI	LOW	NOTES
T-1	CircTemp	CIRCULATION TEMPERATURE	X					X	
R-1	PumpCtrl	PUMP CONTROL				X			

4 DOMESTIC HOT WATER CONTROL

NO SCALE



CONTROL DEVICE	POINT NAME	POINT DESCRIPTION	POINT TYPE AI	BI	AO	BO	ALARM HI	LOW	NOTES
T-SA	DischAirTemp	DISCHARGE AIR TEMPERATURE	X						
T-OA	OaAirTemp	OUTSIDE AIR TEMPERATURE	X						
T-EX	ExAirTemp	EXHAUST AIR TEMPERATURE	X						
T-HX	HXAirTemp	LEAVING PLATE HEAT EXCHANGER AIR TEMPERATURE	X						
T-CC	CCAirTemp	LEAVING COOLING COIL AIR TEMPERATURE	X						
T-HC	HCAirTemp	LEAVING HEATING COIL AIR TEMPERATURE	X						
T-PHWS	EntPrHtgWterTemp	ENTERING PREHEATING COIL WATER TEMPERATURE	X						
T-PHWR	LeavPrHtgWterTemp	LEAVING PREHEATING WATER TEMPERATURE	X						
T-HWS	EntHtgWterTemp	ENTERING HEATING WATER TEMPERATURE	X						
T-HWR	LeavHtgWterTemp	LEAVING HEATING WATER TEMPERATURE	X						
T-CHWS	EntCldWterTemp	ENTERING COOLING WATER TEMPERATURE	X						
T-CHWR	LeavCldWterTemp	LEAVING COOLING WATER TEMPERATURE	X						
TS-SA	LowTemp	LOW DISCHARGE AIR TEMPERATURE SWITCH	X						
DPS-OAF	OAFiltStatus	OUTSIDE AIR FILTER STATUS		X					
DPS-EXF	EXFiltStatus	EXHAUST AIR FILTER STATUS		X					
DPT-SA	SupFlow	SUPPLY AIR FLOW	X						
DPT-EX	ExFlow	EXHAUST AIR FLOW	X						
DPS-SA	LowPressSw	SUPPLY LOW DUCT PRESSURE SWITCH		X				X	
DPS-EX	HiPressSw	EXHAUST HIGH DUCT PRESSURE SWITCH		X			X		
P-1	SpacePress	SPACE PRESSURE SENSOR	X				X	X	
H-1	CCHumid	RELATIVE HUMIDITY AFTER COOLING COIL	X						
H-SA	SAHumid	SUPPLY AIR RELATIVE HUMIDITY	X						
VFD-SF a	SupFanStatus	SUPPLY FAN STATUS		X					
VFD-SF b	SupFanCtrl	SUPPLY FAN CONTROL				X			
VFD-SF c	SupFanSpeed	SUPPLY FAN VFD SPEED			X				DISPLAY IN HZ
VFD-SF d	SupFanAmps	SUPPLY FAN MOTOR AMPS	X				X	X	
VFD-RF a	RetFanStatus	RETURN FAN STATUS		X					
VFD-RF b	RetFanCtrl	RETURN FAN CONTROL				X			
VFD-RF c	RetFanSpeed	RETURN FAN VFD SPEED			X				DISPLAY IN HZ
VFD-RF d	RetFanAmps	RETURN FAN MOTOR AMPS	X				X	X	
D-OA1	OADamper1	OUTDOOR AIR DAMPER (AT LOUVER)				X			
D-OA2	OADamper2	OUTSIDE AIR DAMPER (IN UNIT)				X			
D-EA	EADamper	EXHAUST AIR DAMPER				X			
D-PH	PHDamper	PREHEAT COIL FACE BYPASS DAMPER			X				
D-HX	HXDamper	PLATE HEAT EXCHANGER DAMPER			X				
D-HC	HCDamper	HEATING COIL FACE BYPASS DAMPER			X				
V-1	HtgValve	HEATING VALVE			X				
V-2	ClgValve	COOLING VALVE			X				
V-3	PHtgValve	PREHEATING VALVE			X				
R-UV	UVCtrl	UV LIGHT CONTROL				X			
CS-UV	UVStatus	UV LIGHT STATUS	X						
B-2	OASnutoff	GLOBAL - AIRBORNE HAZARD		X					

3 VAV SPACE PRESSURE CO2 SENSOR AHU CONTROL

NO SCALE

EXHAUST FAN CONTROL: THE CAPACITY OF THE EXHAUST FAN SHALL BE MEASURED BY (DPT-EX) AND CONTROLED BY VFD.
1. ON STARTUP, DAMPER D-EA1 SHALL BE PROVEN OPEN BEFORE THE EXHAUST FAN STARTS. IF DAMPERS CANNOT BE PROVEN OPEN, AN "EXHAUST AIR DAMPER FAILURE" ALARM SHALL BE GENERATED. THE EXHAUST FAN SHALL START UP AND BE MODULATED TO MAINTAIN A BUILDING PRESSURE OF 0.02" WC DURING SUPPLY FANS STARTUP. IF THE BUILDING STATIC PRESSURE EXCEEDS 0.04" WC THE SUPPLY FAN STARTUP SHALL BE DELAYED FOR 2 MINUTES TO ALLOW BUILDING PRESSURE TO STABILIZE.
2. THE EXHAUST FAN SHALL BE ON (VFD-EXb) WHENEVER THE SUPPLY FAN IS PROVEN RUNNING. THE SPEED OF THE EXHAUST FAN (VFD-EXc) SHALL MODULATE TO MAINTAIN 0.02" WC. OF BUILDING STATIC PRESSURE (P-1).
3. THE VARIABLE FREQUENCY DRIVE SHALL BE OFF AND THE SPEED SHALL BE SET TO 0 HZ IF THE SUPPLY FAN IS NOT RUNNING. DAMPER D-EA1 SHALL CLOSE WHENEVER THE EXHAUST FAN IS COMMANDED TO RUN AND THE STATUS (VFD-EXa) CANNOT BE PROVEN. AN "EXHAUST FAN FAILURE" ALARM SHALL BE GENERATED.
4. THE STATUS OF A HIGH SUPPLY AIR PRESSURE DETECTION SWITCH (DPS-EX) SHALL BE MONITORED. WHENEVER A HIGH PRESSURE CONDITION IS DETECTED, THE SUPPLY AND EXHAUST FAN SHALL BE STOPPED AND "HIGH EXHAUST AIR PRESSURE" ALARM SHALL BE DISPLAYED ON THE OPERATOR WORKSTATION. THE OPERATOR SHALL HAVE THE ABILITY TO RESTART THE SUPPLY AND EXHAUST FANS AFTER ACKNOWLEDGING THE ALARM.

FILTER STATUS: THE STATUS OF OUTDOOR AIR FILTER AND EXHAUST FILTER STATUS SWITCH (DPS-OA & DPS-EX) INSTALLED ACROSS EACH FILTER BANK SHALL BE MONITORED. WHENEVER A DIRTY FILTER CONDITION IS DETECTED, A "DIRTY FILTER" WARNING SHALL BE GENERATED.

AIRFLOW MONITORING: MONITOR THE OUTSIDE AIR VOLUME AND EXHAUST AIR VOLUME (DPT-OA & DPT-EX).

PRE-HEATING COIL CONTROL: IF THE HEATING WATER IS AVAILABLE:
1. IN THE UNOCCUPIED MODE, THE HOT WATER VALVE (V-3) SHALL MODULATE TO MAINTAIN 70 DEG F INSIDE THE DOAS CABINET.
2. IN THE OCCUPIED MODE, THE HOT WATER CONTROL VALVE (V-3) SHALL OPEN AND HEATING COIL FACE/BYPASS DAMPER (D-PH) SHALL MODULATE TO MAINTAIN THE EXHAUST AIR TEMPERATURE (T-EX) AT 35 DEG F (ADJUSTABLE).

PLATE EXCHANGER BYPASS CONTROL: IF THE EXHAUST AIR FAN SPEED (VFD-EX) EXCEEDS THE SPEED DETERMINED BY THE BALANCE CONTRACTOR THE BYPASS DAMPER (D-HX) SHALL MODULATE TO MAINTAIN THE SPEED DETURMINED BY THE BALANCE CONTRACTOR. IF THE EXHAUST AIR FAN SPEED EXCEEDS 58 Hz, THE BYPASS DAMPER (D-HX) SHALL BE IN FULL BYPASS.

MAIN COOLING COIL CONTROL: IF THE CHILLED WATER PUMP IS NOT RUNNING, THE CONTROL VALVE SHALL BE CLOSED TO PREVENT FLOW THROUGH THE COIL. IF THE CHILLED WATER PUMP IS RUNNING, THE CHILLED WATER CONTROL VALVE (V-2) SHALL BE CONTROLLED TO:
1. MAINTAIN A COOLING COIL LEAVING AIR TEMPERATURE DEW POINT OF 48 DEG F.
2. IF ANY SPACE RELATIVE HUMIDITY EXCEEDS THE RELATIVE HUMIDITY SETPOINT, THE COOLING COIL LEAVING TEMPERATURE DEW POINT SHALL BE 52 DEF F UNTIL NO SPACE IS ABOVE ITS RELATIVE HUMIDITY SETPOINT.
3. MAINTAIN A SUPPLY AIR TEMPERATURE SETPOINT OF 70 DEG F.

MAIN HEATING COIL CONTROL: IF THE HEATING WATER IS AVAILABLE:
1. THE DOAS SHALL OPEN THE HOT WATER VALVES 2 MINUTES PRIOR TO UNIT STARTUP.
2. THE HOT WATER CONTROL VALVE (V-1) SHALL OPEN AND HEATING COIL FACE/BYPASS DAMPER (D-HC) SHALL MODULATE TO MAINTAIN THE SUPPLY AIR TEMPERATURE AT TO DEG F (ADJUSTABLE).

TEMPERATURE MONITORING: MONITOR THE SUPPLY AIR TEMPERATURE (T-SA), EXHAUST AIR TEMPERATURE (T-EX), ENTERING OUTSIDE AIR TEMPERATURE (T-OA), LEAVING HEAT EXCHANGER AIR TEMPERATURE (T-HX), LEAVING HOT WATER COIL AIR TEMPERATURE (T-HC), LEAVING CHILLED WATER COIL AIR TEMPERATURE (T-CC), LEAVING PLATE HEAT EXCHANGER AIR TEMPERATURE (T-HX), ENTERING HOT WATER TEMPERATURE (T-HWS), LEAVING HOT WATER TEMPERATURE (T-HWR), ENTERING CHILLED WATER TEMPERATURE (T-CHWS), LEAVING CHILLED WATER TEMPERATURE (T-CHWR), ENTERING PREHEAT COIL WATER TEMPERATURE (T-PHWS), LEAVING PREHEAT COIL WATER TEMPERATURE (T-PHWR).

UV LIGHT CONTROL: WHENEVER THE SUPPLY AIR FAN IS PROVEN RUNNING, THE UV LIGHTS SHALL BE ON (R-UV). IF THE STATUS OF THE UV LIGHTS CANNOT BE PROVEN ON WHEN COMMANDED ON, A "UV LIGHT" ALARM SHALL DISPLAYED ON THE OPERATOR WORKSTATION.

DOAS EMERGENCY SHUTDOWN CONTROL: ON SIGNAL FROM GLOBAL AIRBORNE HAZARD INPUT, SUPPLY AND EXHAUST FANS SHALL IMMEDIATELY BE OFF AND DAMPERS D-OA1 AND D-EA SHALL CLOSE. THIS SHUTDOWN SHALL CONTINUE UNTIL GLOBAL HAZARD SIGNAL HAS STOPPED.

NO SCALE

HEATING PLANT SEQUENCE OF OPERATION: BOILER ENABLE/DISABLE: THE BOILER MANAGEMENT SYSTEM SHALL ENABLE/DISABLE BOILER. TWO BOILER PUMPS ARE PROVIDED EACH FOR THE BOILER LOOP. THE ATC CONTRACTOR SHALL PROVIDE ALL WIRING REQUIRED BETWEEN THE PUMPS, BOILERS, AND CONTROL PANEL. THE BOILER CONTROL PANEL SHALL CONTROL SEQUENCING OF BOILERS. ALL AVAILABLE POINTS SHALL BE TO THE BAS FROM THE EQUIPMENT SUPPLIED BACNET CARD FOR EACH BOILER. PROVIDE STATUS OF BOILER PUMP AND VERIFY ON BOILER STARTUP. AFTER BOILER PUMP IS ON AND FLOW IS VERIFIED, PROVIDE 5-10 MINUTE DELAY TO STARTING THE BOILER TO ALLOW FOR THE RETURN WATER TEMPERATURE AT THE BOILER TO SETTLE.

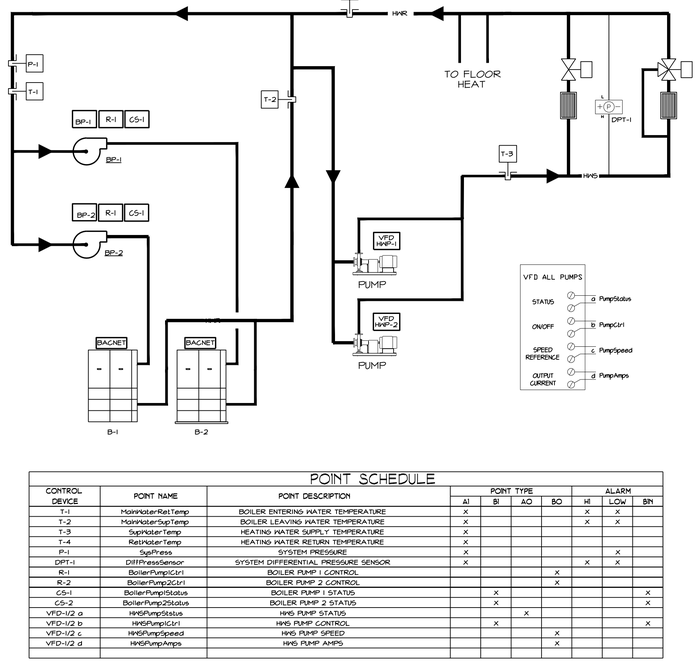
HEATING CONTROL: THE BOILERS SETPOINT SHALL BE BASED ON AN OUTSIDE AIR RESET SCHEDULE. THE BOILER SUPPLY TEMPERATURE SHALL MODULATE LINEARLY FROM 180 DEGREES (AT AN OUTSIDE AIR TEMPERATURE OF 0 DEGREES) TO 120 DEGREES (AT AN OUTSIDE AIR TEMPERATURE OF 60 DEGREES).

SYSTEM PUMP SPEED CONTROL: THE SPEED OF THE LEAD PUMP SHALL BE MODULATED TO MAINTAIN DIFFERENTIAL WATER PRESSURE IN THE HEATING PIPING SYSTEM. A DIFFERENTIAL PRESSURE SENSOR (DPT-1) SHALL BE LOCATED APPROXIMATLEY 2/3 THE WAY DOWN THE PIPING SYSTEM.

SYSTEM PRESSURE: THE SYSTEM PRESSURE SHALL BE MONITORED AND A "LOW SYSTEM PRESSURE" ALARM GENERATED IF THE SYSTEM PRESSURE DROPS BELOW 10 PSI (P-1).

BOILER MONITORING: THE FIRING RATE, BURNER STATUS, AND ALARM STATUS (AS WELL AS ALL BACNET POINTS AVAILABLE ON THE EXISTING BOILERS) SHALL BE MADE AVAILABLE AT THE OPERATOR'S WORKSTATION. BAS TO PROVIDE DATE AND TIME STAMP FOR ALL ALARMS AND BOILER SHUTDOWNS.

HOT WATER DISTRIBUTION PUMP PRESSURE SETPOINT OPTIMIZATION: THE BAS SHALL CONTINUALLY MONITOR THE HOT WATER CONTROL VALVE POSITION OF AHU-1, DOAS-1, MAU-1 AND TERMINAL DEVICES IN THE HOT WATER SYSTEM. AT HOT WATER SYSTEM STARTUP, THE HOT WATER PRESSURE SETPOINT SHALL BE 80% OF THE MAXIMUM PRESSURE SETPOINT. WHEN ALL HOT WATER VALVES ARE LESS THAN 85% OPEN, THE HOT WATER DIFFERENTIAL PRESSURE SETPOINT SHALL BE LOWERED BY 1 PSIG (ADJ.). THIS SHALL OCCUR EVERY 5 MINUTES UNTIL AT LEAST ONE VALVE IS MORE THAN 85% OPEN, OR IF THE SETPOINT IS EQUAL TO THE MINIMUM HOT WATER DIFFERENTIAL PRESSURE SETPOINT, OR IF THE PUMP VFD'S ARE AT A MINIMUM SPEED SETTING (22 HZ). WHEN ANY HOT WATER VALVE IS MORE THAN 95% OPEN, THE HOT WATER PRESSURE SETPOINT SHALL INCREASE BY 1 PSIG (ADJ.). THIS OCCURS EVERY 5 MINUTES UNTIL NO VALVE IS MORE THAN 95% OPEN, OR IF THE HOT WATER DIFFERENTIAL PRESSURE SETPOINT HAS RISEN TO THE SYSTEMS MAXIMUM SETTING, OR IF THE PUMP VFD'S ARE AT THE MAXIMUM SETTING (60 HZ).



CONTROL DEVICE	POINT NAME	POINT DESCRIPTION	POINT TYPE AI	BI	AO	BO	ALARM HI	LOW	BIN
T-1	MainWaterRetTemp	BOILER ENTERING WATER TEMPERATURE	X				X	X	
T-2	MainWaterSupTemp	BOILER LEAVING WATER TEMPERATURE	X				X	X	
T-3	SupWaterTemp	HEATING WATER SUPPLY TEMPERATURE	X						
T-4	RetWaterTemp	HEATING WATER RETURN TEMPERATURE	X						
P-1	SysPress	SYSTEM PRESSURE	X				X		
DPT-1	DiffPressSensor	SYSTEM DIFFERENTIAL PRESSURE SENSOR	X				X	X	
R-1	BoilerPump1Ctrl	BOILER PUMP 1 CONTROL				X			
R-2	BoilerPump2Ctrl	BOILER PUMP 2 CONTROL				X			
CS-1	BoilerPump1Status	BOILER PUMP 1 STATUS		X					X
CS-2	BoilerPump2Status	BOILER PUMP 2 STATUS		X					X
VFD-1/2 a	HWSPumpStatus	HWS PUMP STATUS			X				
VFD-1/2 b	HWSPumpCtrl	HWS PUMP CONTROL		X					X
VFD-1/2 c	HWSPumpSpeed	HWS PUMP SPEED				X			
VFD-1/2 d	HWSPumpAmps	HWS PUMP AMPS				X			

1 HEATING WATER PLANT CONTROL (NORTH ADDITION)

NO SCALE

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REGISTERED PROFESSIONAL ENGINEER
JACOB M. SCOTT
PE - 10581
DATE: 4-22-22
NORTH DAKOTA

U.S. AIR FORCE

SYMBOL	DESCRIPTION	DATE	APPROVED

DESIGNED BY: JCP
DRAWN BY: TVE
CHK BY: JCP
SUBMITTED BY: RA
DATE: 22 APRIL 2022
DRAWING NUMBER: AS SHOWN
SCALE: AS SHOWN
PLOT DATE: AS SHOWN

DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND
GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE &
RECAPITALIZATION B168

MECHANICAL - CONTROLS

SHEET REFERENCE NUMBER
M-700

SEQUENCE OF OPERATION

CONTROL MODE: THE VAV TERMINAL UNIT SHALL BE IN THE UNOCCUPIED OR OCCUPIED MODE. THE CONTROL MODE SHALL BE THE SAME AS THE CONTROL MODE OF THE ASSOCIATED AIR HANDLING UNIT EXCEPT THAT SIGNAL FROM B-1 SHALL PUT VAV INTO PANIC MODE. AN OVERRIDE BUTTON ON THE SPACE THERMOSTAT SHALL ALLOW THE VAV UNIT TO RETURN TO THE OCCUPIED MODE FROM UNOCCUPIED MODE FOR AN ADJUSTABLE DURATION.

TEMPERATURE SETPOINT CONTROL:

1. IN THE OCCUPIED CONTROL MODE, THE TEMPERATURE SETPOINTS SHALL BE OBTAINED FROM THE SPACE TEMPERATURE SETPOINT DIAL. SPACE TEMPERATURE SHALL BE OBTAINED FROM S-1.
2. IN THE UNOCCUPIED CONTROL MODE, THE TEMPERATURE SETPOINTS SHALL BE SEPARATE NIGHT-SETBACK/SETUP TEMPERATURE SETPOINTS THAT ARE ADJUSTABLE BY THE OPERATOR. SPACE TEMPERATURE SHALL BE OBTAINED FROM T-1.

SPACE TEMPERATURE CONTROL: THE VAV DAMPER SHALL BE MODULATED OPEN AND CLOSED TO MAINTAIN THE SPACE TEMPERATURE AT THE COOLING SETPOINT. THE AIRFLOW THROUGH THE VAV BOX INLET SHALL NOT BE ALLOWED TO EXCEED THE MAXIMUM AIRFLOW SETPOINT OR DROP BELOW THE MINIMUM AIRFLOW SETPOINT. IF THE SPACE TEMPERATURE DROPS BELOW THE HEATING SETPOINT, THE VAV DAMPER SHALL BE POSITIONED TO MAINTAIN THE AIRFLOW AT THE HEATING AIRFLOW SETPOINT. THE AIRFLOW SETPOINTS SHALL BE ADJUSTABLE BY THE OPERATOR. WHEN THE SPACE TEMPERATURE IS BELOW THE HEATING SETPOINT AND THE VAV DAMPER IS MAINTAINING THE HEATING AIRFLOW, THE HEATING VALVE ON THE SUPPLY LINE TO THE REHEAT COIL SHALL BE MODULATED TO MAINTAIN THE SPACE TEMPERATURE AT THE ACTIVE HEATING SETPOINT.

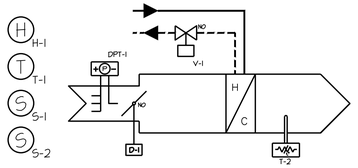
HUMIDITY CONTROL: IF THE SPACE HUMIDITY IS ABOVE THE SPACE HUMIDITY SETPOINT, THE VAV BOX SHALL OPEN TO MAXIMUM AIRFLOW SETPOINT, AND THE HEATING VALVE ON THE SUPPLY LINE TO THE REHEAT COIL SHALL BE MODULATED TO MAINTAIN THE SPACE TEMPERATURE AT THE ACTIVE HEATING SETPOINT.

AUX. HEATING VALVE CONTROL: FOR ROOMS WITH AUXILIARY HEATING UNIT, THE AUXILIARY HEATING VALVE SHALL BE POSITIONED IN PARALLEL WITH THE TERMINAL COIL HEATING VALVE. UPON LOSS OF POWER, THE HEATING VALVE SHALL BE OPEN.

PANIC MODE: VAVS V-1 THROUGH V-5 AND V-15 THROUGH V-19 SHALL ALSO HAVE A PANIC CONTROL MODE.

1. IN THE PANIC CONTROL MODE, THE TEMPERATURE SETPOINTS SHALL BE OBTAINED FROM THE LAST SETPOINT WHILE IN OCCUPIED MODE. SPACE TEMPERATURE SHALL BE OBTAINED FROM S-2.
2. THE VAV SHALL CONTROL SPACE TEMPERATURE AS IN OCCUPIED MODE EXCEPT THAT THE LOW CFM SHALL BE 500 CFM.
3. WHILE IN PANIC MODE, DAMPER D-A SHALL BE CLOSED AND DAMPER D-B SHALL BE OPEN. WHILE IN OCCUPIED OR UNOCCUPIED MODE, DAMPER D-A SHALL BE OPEN AND DAMPER D-B SHALL BE CLOSED

CONTROL DAMPER SCHEDULE		
VAV	D-A	D-B
V-1	MOD-V1A	MOD-V1B
V-2	MOD-V2A	MOD-V2B
V-3	MOD-V3A	MOD-V3B
V-4	MOD-V4A	MOD-V4B
V-5	MOD-V5A	MOD-V5B
V-15	MOD-V15A	MOD-V15B
V-16	MOD-V16A	MOD-V16B
V-17	MOD-V17A	MOD-V17B
V-18	MOD-V18A	MOD-V18B
V-19	MOD-V19A	MOD-V19B



POINT SCHEDULE									
CONTROL DEVICE	POINT NAME	POINT DESCRIPTION	POINT TYPE				ALARM		NOTES
			AI	BI	AO	BO	HI	LOW	
T-1	SpaceTempStpt	SPACE TEMPERATURE SETPOINT	X						
T-1	SpaceTemp	SPACE TEMPERATURE	X				X	X	
DPT-1	AirFlow	AIRFLOW	X						
T-2	DischTemp	DISCHARGE AIR TEMPERATURE	X						
D-1	VAVDamper	VARIABLE AIR VOLUME DAMPER			X				
V-1	HtgValve	HEATING VALVE			X				
B-1	IntruderButton	INTRUDER ALARM INPUT		X					
H-1	SpaceHumid	SPACE HUMIDITY SENSOR	X				X		
S-1	SpaceLTemp	SPACE TEMPERATURE SENSOR 12" AFF	X				X	X	
S-2	AuxSpaceTemp	AUXILIARY SPACE TEMPERATURE SENSOR	X				X	X	
D-A	RoomDamper	ROOM SHUTOFF DAMPER			X				
D-B	DivertDamper	DIVERTED SHUTOFF DAMPER			X				

7 VAV UNIT CONTROL

NO SCALE

SEQUENCE OF OPERATION:

CHILLER ENABLE/DISABLE: WHEN THERE IS A CALL FOR COOLING , THE CHILLER SHALL BE ENABLED.

CHILLER STARTUP: ON A CALL FOR COOLING, THE CHILLER SHALL START (R-3) AFTER FLOW HAS BEEN PROVEN AND AIR HANDLING UNITS/FAN COIL UNITS ARE RUNNING. MONITOR CHILLER STATUS (CS-3)

CHILLER SHUTDOWN: WHEN CHILLER IS DISABLED, THE CHILLED WATER PUMP SHALL RUN FOR 5 MINUTES AFTER THE CHILLER IS SHUT DOWN.

PUMP CONTROL: DURING OCCUPIED TIME, THE PUMP SHALL RUN ANY TIME THERE IS CALL FOR COOLING. DURING UNOCCUPIED TIME, IF A CALL FOR COOLING, THE PUMP SHALL START (R-1). IF THE STATUS OF THE PUMP CANNOT BE PROVEN (CS-1), AN ALARM SHALL BE GENERATED. WHEN ONE OF THE PUMP IS RUNNING, THE CHILLED WATER SUPPLY AND RETURN TEMPERATURES SHALL BE MONITORED AND ALARMS SHALL BE GENERATED IF THE SUPPLY WATER TEMPERATURE RISES ABOVE THE ALARM LEVEL.

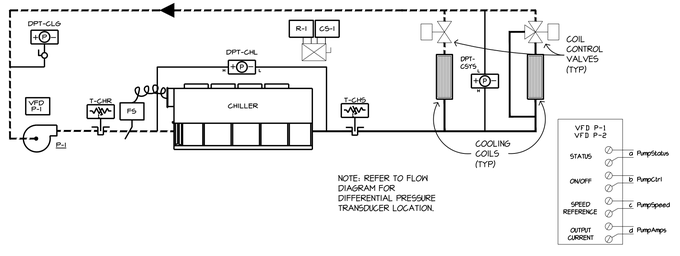
SPEED CONTROL: THE SPEED (VFD-1A) OF THE PUMP SHALL BE MODULATED TO MAINTAIN DIFFERENTIAL WATER PRESSURE IN THE PIPING SYSTEM. PRESSURES SENSOR (DPT-2) SHALL BE LOCATED APPROXIMATELY 3/4 THE WAY DOWN THE PIPING SYSTEM (VERIFY WITH ENGINEER FOR FINAL LOCATION). A DIFFERENTIAL PRESSURE SENSOR (DPT-1) SHALL MONITOR CHILLED WATER FLOW.

FLOW SWITCH: A FLOW SWITCH (FURNISHED WITH CHILLER) SHALL BE INSTALLED AND HARD WIRED TO THE CHILLER CONTROLLER FOR ITS OWN PROOF OF FLOW SIGNAL.

CHILLER CONTROL: THE NETWORK ENABLED CHILLER CONTROL PANEL SHALL BE CONNECTED TO DDC SYSTEM NETWORK FOR COMPLETE LIST OF CHILLER POINTS AND ALARMS.

CHILLER POINT: REFER TO CHILLER SPEC FOR CHILLER POINTS TO BE LISTED ON BAS.

CHILLED WATER TEMPERATURE: MONITOR INLET AND LEAVING WATER TEMPERATURES INTO CHILLER (T-CHR & T-CHS).



NOTE: REFER TO FLOW DIAGRAM FOR DIFFERENTIAL PRESSURE TRANSDUCER LOCATION.

POINT SCHEDULE									
CONTROL DEVICE	POINT NAME	POINT DESCRIPTION	POINT TYPE				ALARM		NOTES
			AI	BI	AO	BO	HI	LOW	
VFD-P1 a	PumpP1Status	PUMP P-1 STATUS		X					
VFD-P1 b	PumpP1Ctrl	PUMP P-1 CONTROL				X			
VFD-P1 c	PumpP1Speed	PUMP P-1 VFD SPEED			X				DISPLAY IN HZ
VFD-P1 d	PumpP1Amps	PUMP P-1 MOTOR AMPS	X				X	X	
V-1	CHSpsCtrlValve	COOLING SYSTEM CONTROL VALVE			X				
FS	CHFlow	COOLING SYSTEM CONTROL VALVE		X					
T-CHR	ChillerRetTemp	CHILLER RETURN TEMPERATURE	X				X	X	
T-CHS	ChillerSupTemp	CHILLER SUPPLY TEMPERATURE	X				X	X	
DPT-CSYS	ClgSysPressDiff	COOLING SYSTEM PRESSURE DIFFERENTIAL	X						
DPT-CHL	ChillerPressDiff	CHILLER PRESSURE DIFFERENTIAL	X						
DPT-CLG	ClgSysPress	SYSTEM PRESSURE	X				X	X	
R-1	ChillCtrl	CHILLER CONTROL				X			
CS-1	ChillStatus	CHILLER STATUS		X					

6 COOLING SYSTEM CONTROL

NO SCALE

SEQUENCE OF OPERATION:

OCCUPIED/UNOCCUPIED MODE: A TIME SCHEDULE SHALL CONTROL THE AIR HANDLING UNIT MODE. THE TIME SCHEDULE (AD.JUSTABLE) SHALL BE SET SO THAT THE AIR HANDLING UNIT IS IN THE OCCUPIED MODE FROM 7:00 A.M. TO 7:00 P.M. ON NON-HOLIDAY WEEKDAYS.

OCCUPIED/UNOCCUPIED MODE: THE MODE OF EACH TERMINAL UNIT SERVED BY THIS AIR-HANDLING UNIT SHALL BE MONITORED. IF ANY TERMINAL UNIT INDICATES THE OCCUPIED MODE, THE AIR-HANDLING UNIT SHALL BE IN THE OCCUPIED MODE. IF ALL TERMINAL UNITS ARE IN THE UNOCCUPIED MODE, THE AIR-HANDLING UNIT SHALL BE IN THE UNOCCUPIED MODE.

OPTIMAL START MODE: THE BAS SHALL INITIATE THE OPTIMAL START MODE SUCH THAT THE VAV AIR HANDLER IS STARTED AND VAV BOXES SERVING THE VAS ARE ENABLED PRIOR TO WHEN THE SPACE BEING SERVED BY THE VAS IS SCHEDULED TO BE OCCUPIED, TO ALLOW THE ZONE TEMPERATURE TO REACH THE PENDING OCCUPIED HEATING OR COOLING SETPOINT. THE SYSTEM SHALL WAIT AS LONG AS POSSIBLE BEFORE STARTING, SO THAT THE TEMPERATURE IN EACH ZONE REACHES THE OCCUPIED SETPOINT JUST IN TIME FOR SCHEDULED OCCUPANCY.

DISCHARGE DUCT STATIC PRESSURE SETPOINT OPTIMIZATION:

1. THE BUILDING AUTOMATION SYSTEM (BAS) SHALL CONTINUOUSLY MONITOR THE DAMPER POSITION OF ALL VAV TERMINAL UNITS. THE DISCHARGE DUCT STATIC PRESSURE SHALL BE SENSED DIRECTLY AT THE DISCHARGE OF EACH AIR HANDLER. THE SENSOR MUST BE MOUNTED IN A NON-TURBULENT LOCATION.
2. WHEN ANY VAV DAMPER IS MORE THAN 85% (AD.J) OPEN, THE SUPPLY FAN DISCHARGE DUCT STATIC PRESSURE SETPOINT SHALL BE RESET UPWARD BY 0.1 IN H.G.(AD.J), AT A FREQUENCY OF 15 MINUTES (AD.J), UNTIL NO DAMPER IS MORE THAN 80% OPEN OR THE STATIC PRESSURE SETPOINT HAS RESET UPWARD TO THE SYSTEM MAXIMUM DUCT STATIC PRESSURE SETPOINT OR THE AHU VARIABLE-FREQUENCY DRIVE IS AT THE MAXIMUM SPEED SETTING.
3. WHEN ALL VAV DAMPERS ARE LESS THAN 70% (AD.J) OPEN, THE SUPPLY FAN DISCHARGE DUCT STATIC PRESSURE SETPOINT SHALL BE RESET DOWNWARD BY 0.1 IN H.G.(AD.J), AT A FREQUENCY OF 15 MINUTES (AD.J), UNTIL AT LEAST ONE DAMPER IS MORE THAN 70% OPEN OR THE STATIC PRESSURE SETPOINT HAS RESET DOWNWARD TO THE SYSTEM MINIMUM DUCT STATIC PRESSURE SETPOINT OR THE AHU VARIABLE-FREQUENCY DRIVE IS AT THE MINIMUM SPEED SETTING.
4. THE CONTROL BANDS, SETPOINT INCREMENT VALUES, SETPOINT DECREMENT VALUES AND ADJUSTMENT FREQUENCIES SHALL BE ADJUSTED TO MAINTAIN MAXIMUM STATIC PRESSURE OPTIMIZATION WITH STABLE SYSTEM CONTROL AND MAXIMUM COMFORT CONTROL.
5. THE BAS SHALL HAVE THE CAPABILITY TO ALLOW THE OPERATOR TO EXCLUDE PROBLEM ZONES THAT SHOULD NOT BE CONSIDERED WHEN DETERMINING THE OPTIMIZED SETPOINT.
6. THE BAS SHALL ALSO READ THE STATUS OF THE SUPPLY AIR STATIC PRESSURE SENSOR AND DISPLAY THE ACTIVE DUCT STATIC PRESSURE READING ON THE STATUS SCREEN
7. THE BAS SHALL HAVE THE ABILITY TO IDENTIFY, AND DISPLAY TO THE USER, THE VAV BOX THAT SERVES THE CRITICAL ZONE (THAT IS, THE ZONE WITH THE MOST WIDE-OPEN VAV DAMPER). THIS INFORMATION SHALL UPDATE DYNAMICALLY AS THE LOCATION OF THE CRITICAL ZONE CHANGES BASED ON BUILDING LOAD, AND DUCT STATIC PRESSURE SETPOINT OPTIMIZATION CONTROL.
8. DURING THE COMMISSIONING PROCESS, THE CONTROLS CONTRACTOR SHALL DEMONSTRATE THE PERFORMANCE OF FAN PRESSURE OPTIMIZATION

NIGHT CYCLE: THE STATUS OF EACH TERMINAL UNIT SERVED BY THIS AIR-HANDLING UNIT SHALL BE MONITORED. IF ANY TERMINAL UNIT INDICATES THE NIGHT CYCLE, THE AIR-HANDLING UNIT SHALL ACTIVATE ITS NIGHT CYCLE.

HIGH STATIC PRESSURE CONTROL: THE STATUS OF A HIGH STATIC PRESSURE SWITCH (DPS-1) INSTALLED ON THE DISCHARGE SIDE OF THE SUPPLY FAN SHALL BE MONITORED. WHENEVER A HIGH STATIC PRESSURE CONDITION IS DETECTED, THE SUPPLY FAN SHALL BE STOPPED AND "HIGH STATIC PRESSURE" ALARM SHALL BE DISPLAYED ON THE OPERATOR WORKSTATION.

SUPPLY FAN CONTROL: THE CAPACITY OF THE SUPPLY FAN SHALL BE CONTROLLED BY A VARIABLE FREQUENCY DRIVE. IN THE OCCUPIED MODE [OR IN THE NIGHT CYCLE], THE SUPPLY FAN SHALL START AND THE SPEED OF THE SUPPLY FAN (VFD-SF.) SHALL MODULATE TO MAINTAIN THE SUPPLY DUCT STATIC PRESSURE (DPT-SA) AT 1.5" H.G. (AD.JUSTABLE). IN THE UNOCCUPIED MODE, THE SUPPLY FAN SHALL BE OFF AND THE SPEED SHALL BE SET TO 0 HZ. THE STATUS OF THE SUPPLY FAN (VFD SF.) SHALL BE MONITORED. WHENEVER THE SUPPLY FAN IS COMMANDED TO RUN AND THE STATUS CANNOT BE PROVEN, A "SUPPLY FAN FAILURE" ALARM SHALL BE DISPLAYED ON THE OPERATOR WORKSTATION.

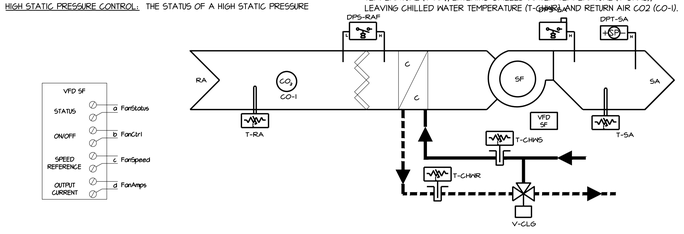
FILTER STATUS: THE STATUS OF A FILTER STATUS SWITCH (DPS-RAF) INSTALLED ACROSS EACH FILTER BANK SHALL BE MONITORED. WHENEVER A DIRTY FILTER CONDITION IS DETECTED, A "DIRTY FILTER" WARNING SHALL BE DISPLAYED ON THE OPERATOR WORKSTATION.

SUPPLY AIR TEMPERATURE CONTROL: IF THE CHILLED WATER PUMP SERVING THIS AIR HANDLING UNIT IS PROVEN RUNNING, THE CHILLED WATER CONTROL VALVE (V-CLG) SHALL MODULATE TO MAINTAIN THE SUPPLY AIR TEMPERATURE AT THE SUPPLY AIR TEMPERATURE SETPOINT. IF THE CHILLED WATER PUMP IS NOT RUNNING, THE CONTROL VALVE SHALL BE CLOSED TO PREVENT FLOW THROUGH THE COIL.

1. ON CALL FOR COOLING, THE SUPPLY AIR LEAVING TEMPERATURE SHALL BE SET FOR 60 DEG F.
2. THE BUILDING AUTOMATION SYSTEM (BAS) SHALL CONTINUOUSLY MONITOR THE DAMPER POSITION OF ALL VAV TERMINAL UNITS. THE DISCHARGE DUCT STATIC PRESSURE SHALL BE SENSED DIRECTLY AT THE DISCHARGE OF EACH AIR HANDLER. THE SENSOR MUST BE MOUNTED IN A NON-TURBULENT LOCATION.
3. WHEN ANY VAV DAMPER IS MORE THAN 95% (AD.J) OPEN, THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE RESET DOWNWARD BY 2 DEG F (AD.J), AT A FREQUENCY OF 20 MINUTES (AD.J), UNTIL NO DAMPER IS MORE THAN 85% OPEN OR THE SUPPLY AIR TEMPERATURE SETPOINT HAS RESET DOWNWARD TO THE SYSTEM MINIMUM TEMPERATURE SETPOINT (54 DEG F. AD.JUSTABLE).
4. WHEN ALL VAV DAMPERS ARE LESS THAN 60% (AD.J) OPEN, THE SUPPLY DISCHARGE TEMPERATURE SETPOINT SHALL BE RESET UPWARD BY 1 DEG F (AD.J), AT A FREQUENCY OF 20 MINUTES (AD.J), UNTIL AT LEAST ONE DAMPER IS MORE THAN 70% OPEN OR THE SUPPLY AIR TEMPERATUR HAS RESET UPWARD TO THE SYSTEM MAXIMUM TEMPERATURE SETPOINT (70 DEG F. AD.JUSTABLE)
5. THE CONTROL BANDS, SETPOINT INCREMENT VALUES AND SETPOINT DECREMENT VALUES SHALL BE ADJUSTED TO MAINTAIN MAXIMUM ENERGY OPTIMIZATION WITH STABLE SYSTEM CONTROL AND MAXIMUM COMFORT CONTROL.
6. THE BAS SHALL HAVE THE CAPABILITY TO ALLOW THE OPERATOR TO EXCLUDE PROBLEM ZONES THAT SHOULD NOT BE CONSIDERED WHEN DETERMINING THE OPTIMIZED SETPOINT.
7.

HUMIDITY CONTROL: THE BAS SHALL CONTINUOUSLY MONITOR ALL SPACE HUMIDITY SENSORS, WHEN ANY TWO SPACES HAVE HUMIDITY ABOVE THE SPACE HUMIDITY SETPOINT, THE AHU SUPPLY AIR TEMPERATURE SHALL BE SET TO 53 DEG F (AD.JUSTABLE). WHEN SPACES ARE NO LONGER ABOVE THE HUMIDITY SETPOINT, THE SUPPLY AIR TEMPERATURE SETPOINT SHALL REVERT TO THE PREVIOUS SETPOINT.

MONITORING: MONITOR THE SUPPLY AIR TEMPERATURE (T-SA), RETURN AIR TEMPERATURE (T-RA), ENTERING CHILLED WATER TEMPERATURE (T-CHWS), LEAVING CHILLED WATER TEMPERATURE (T-CHWR), AND RETURN AIR CO2 (CO-1).



POINT SCHEDULE									
CONTROL DEVICE	POINT NAME	POINT DESCRIPTION	POINT TYPE				ALARM		NOTES
			AI	BI	AO	BO	HI	LOW	
T-SA	DischAirTemp	DISCHARGE AIR TEMPERATURE	X						
T-RA	RetAirTemp	RETURN AIR TEMPERATURE	X						
CO-1	CarbonSens	CARBON DIOXIDE SENSOR	X						
T-CHWS	EntCldWtrTemp	ENTERING COOLING WATER TEMPERATURE	X						
T-CHWR	LeavCldWtrTemp	LEAVING COOLING WATER TEMPERATURE	X						
DPS-SA	HiPressSw	HIGH DUCT PRESSURE SWITCH		X					
DPS-RAF	RetFiltStatus	RETURN FILTER STATUS		X					
DPT-SA	SupDuctPress	SUPPLY DUCT PRESSURE	X						
VFD-SF a	SupFanStatus	SUPPLY FAN STATUS		X					
VFD-SF b	SupFanCtrl	SUPPLY FAN CONTROL				X			
VFD-SF c	SupFanSpeed	SUPPLY FAN VFD SPEED			X				DISPLAY IN HZ
VFD-SF d	SupFanAmps	SUPPLY FAN MOTOR AMPS	X				X	X	
V-CLG	ClgValve	COOLING VALVE			X				

5 AHU-1 CONTROLS

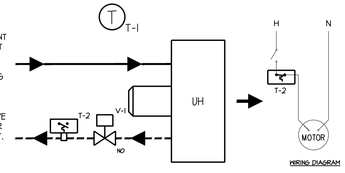
NO SCALE

SEQUENCE OF OPERATION

CONTROL MODE: THE SUSPENDED UNIT HEATER SHALL BE IN THE UNOCCUPIED OR OCCUPIED CONTROL MODE. AN OVERRIDE BUTTON ON THE SPACE TEMPERATURE SENSOR SHALL ALLOW THE UNIT TO RETURN TO THE OCCUPIED MODE FOR AN ADJUSTABLE DURATION.

TEMPERATURE SETPOINT CONTROL: IN THE OCCUPIED CONTROL MODE, THE ACTIVE TEMPERATURE SETPOINT SHALL BE OBTAINED FROM THE SPACE TEMPERATURE SETPOINT DIAL. THE OPERATOR SHALL HAVE THE ABILITY TO LIMIT THE RANGE OF THE SETPOINT DIAL AND ALSO TO DISABLE THE SETPOINT DIAL ENTIRELY. IF THE SETPOINT DIAL IS DISABLED, THE ACTIVE TEMPERATURE SETPOINT SHALL BE ADJUSTABLE BY THE OPERATOR. IN THE UNOCCUPIED CONTROL MODE, THE ACTIVE TEMPERATURE SETPOINTS SHALL BE A SEPARATE NIGHT-SETBACK TEMPERATURE SETPOINT THAT IS ADJUSTABLE BY THE OPERATOR.

SPACE TEMPERATURE CONTROL: WHEN THE SPACE TEMPERATURE IS BELOW THE ACTIVE SETPOINT, THE TWO-POSITION HEATING VALVE ON THE SUPPLY LINE TO THE UNIT HEATER COIL SHALL BE OPEN TO MAINTAIN THE SPACE TEMPERATURE AT THE ACTIVE SETPOINT. A STRAP-ON AQUASTAT ON THE RETURN LINE FROM THE UNIT HEATER COIL SHALL CYCLE THE UNIT HEATER FAN. UPON LOSS OF POWER, THE HEATING VALVE SHALL BE OPEN.



HIRING DIAGRAM

POINT SCHEDULE									
CONTROL DEVICE	POINT NAME	POINT DESCRIPTION	POINT TYPE				ALARM		NOTES
			AI	BI	AO	BO	HI	LOW	
T-1	SpaceTempStpt	SPACE TEMPERATURE SETPOINT	X						
T-1	SpaceTemp	SPACE TEMPERATURE	X						
T-2	-	AQUASTAT	<----------hard-wired---------->						
V-1	HtgValve	HEATING VALVE				X			

4 SUSPENDED UNIT HEATER CONTROL

NO SCALE

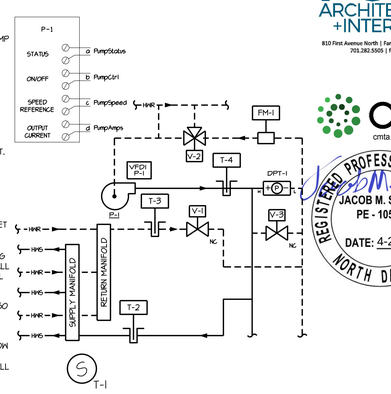
SEQUENCE OF OPERATION

SYSTEM PUMP CONTROL: WHEN THE OUTDOOR AIR TEMPERATURE DROPS BELOW 50 DEG F (AD.JUSTABLE) AND THERE IS CALL FOR SLAB HEAT, THE SYSTEM PUMP (P-1) SHALL BE ON. THE PUMP VFD SHALL MODULATE THE PUMP SPEED TO MAINTAIN THE DIFFERENTIAL PRESSURE (DPT-1) DETURMINED BY THE BALANCE CONTRACTOR. IF THE STATUS OF THE OPERATING PUMP CANNOT BE PROVEN, AN ALARM SHALL BE DISPLAYED AT THE OPERATOR WORKSTATION.

SYSTEM FLOW: THE SYSTEM BYPASS VALVE (V-3) SHALL MODULATE TO MAINTAIN THE MINIMUM SYSTEM GPM SETPOINT OF 20 GPM (AD.JUSTABLE).

LOOP TEMPERATURE CONTROL:

1. WHILE THE SYSTEM PUMP IS ON, THE THREE-WAY VALVE (V-2) SHALL MODULATE TO MAINTAIN THE SLAB HEATING WATER SUPPLY SETPOINT.
2. THE SUPPLY WATER TEMPERATURE (T-2) AND RETURN WATER TEMPERATURE (T-3) FOR EACH ZONE SHALL BE MONITORED.
3. IF THE THE SUPPLY WATER TEMPERATURE MINUS THE RETURN WATER TEMPERATURE OF ANY ZONE IS EXCEEDS 15 DEG F (AD.JUSTABLE), A "FLOOR ZONE TEMPERATURE" ALARM SHALL BE DISPLAYED AT THE OPERATOR WORKSTATION.
4. THE FLOOR HEATING WATER SUPPLY TEMPERATURE (T-4) SHALL RESET FROM 85 DEG F TO 110 DEG F (AD.JUSTABLE) AS THE OUTDOOR TEMPERATURE DROPS FROM 50 DEG F TO 10 DEG F (AD.JUSTABLE).
5. IF THE SLAB HEATING WATER SUPPLY TEMPERATURE EXCEEDS 115 DEG F A "HIGH SLAB HEATING WATER SUPPLY TEMPERATURE" ALARM SHALL BE GENERATED AND THE PUMP SHALL BE OFF. THE OPERATOR SHALL HAVE THE ABILITY TO RESTART THE SUPPLY WATER PUMP AFTER ACKNOWLEDGING THE ALARM.
6. IF THE SLAB HEATING WATER SUPPLY TEMPERATURE DROPS BELOW 50 DEG F A "LOW SLAB HEATING WATER SUPPLY" ALARM SHALL BE GENERATED.



SLAB TEMPERATURE CONTROL: WHEN THE OUTDOOR TEMPERATURE IS BELOW 50 DEG F, THE TWO WAY VALVE (V-1) SHALL MODULATE TO MAINTAIN THE FLOOR SETPOINT TEMPERATURE. THE FLOOR SETPOINT TEMPERATURE SHALL RESET FROM 65 DEG F TO 72 DEG F (AD.JUSTABLE) AS THE OUTDOOR TEMPERATURE DROPS FROM 50 DEG F TO 30 DEG F (AD.JUSTABLE).

POINT SCHEDULE									
CONTROL DEVICE	POINT NAME	POINT DESCRIPTION	POINT TYPE				ALARM		NOTES
			AI	BI	AO	BO	HI	LOW	
T-1	FLOORTEMP	FLOOR TEMPERATURE	X				X	X	
T-2	FSupplyTemp	FLOOR ZONE HEATING WATER SUPPLY TEMPERATURE	X						TYP. 11 ZONES
T-3	FReturnTemp	FLOOR ZONE HEATING WATER RETURN TEMPERATURE	X						TYP. 11 ZONES
T-4	SSupplyTemp	FLOOR HEATING WATER SUPPLY TEMPERATURE	X				X	X	
VFD P-1a	PumpP1Status	PUMP P-1 STATUS		X					
VFD P-1b	PumpP1Ctrl	PUMP P-1 CONTROL				X			
VFD P-1c	PumpP1Speed	PUMP P-1 VFD SPEED			X				DISPLAY IN HZ
VFD P-1d	PumpP1Amps	PUMP P-1 MOTOR AMPS	X				X	X	
V-1	ZHTGVALVE	ZONE HEATING VALVE			X				TYP. 11 ZONES
V-2	SypHTGVALVE	SYSTEM HEATING WATER TEMPERATURE CONTROL VALVE			X				
V-3	SysBypassValve	SYSTEM BYPASS CONTROL VALVE			X				
FM-1	SysFlow	SYSTEM LOOP FLOW METER	X						

3 INFLOOR HEATING SYSTEM CONTROL

NO SCALE

SEQUENCE OF OPERATION

OUTDOOR AIR TEMPERATURE INPUT.THE GLOBAL OUTDOOR AIR TEMPERATURE (T-1) SHALL BE MONITORED AND MADE AVAILABLE TO ALL DEVICES ON THE NETWORK. IF THE GLOBAL OUTDOOR TEMPERATURE IS NOT AVAILABLE, THEN THE LOCAL OUTDOOR AIR TEMPERATURE SENSOR INSTALLED ON THE BUILDING SHALL BE USED.

OUTDOOR AIR HUMIDITY INPUT.THE GLOBAL OUTDOOR AIR RELATIVE HUMIDITY (H-1) SHALL BE MONITORED AND MADE AVAILABLE TO ALL DEVICES ON THE NETWORK. A GLOBAL OUTDOOR AIR ENTHALPY VALUE SHALL BE CALCULATED AND MADE AVAILABLE ON THE NETWORK FOR USE IN ENTHALPY ECONOMIZER CYCLES.

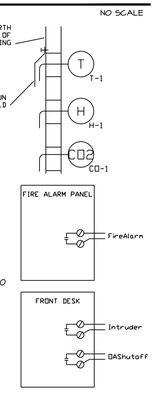
FIRE ALARM INPUT.THE STATUS OF THE INPUT FROM THE FIRE ALARM SYSTEM (FA) SHALL BE MONITORED. IF A FIRE ALARM IS DETECTED, ALL AIR HANDLING UNITS SHALL IMMEDIATELY BE PLACED IN THE FIRE-ALARM CONTROL MODE AND A "FIRE ALARM DETECTED" ALARM SHALL BE GENERATED. WHEN THE FIRE ALARM INPUT IS CLEARED, ALL AIR HANDLING UNITS SHALL RETURN TO THE SCHEDULED CONTROL MODE AND A "FIRE ALARM CLEARED" ALARM SHALL BE GENERATED. PROVIDE CONTACT CLOSURE IN FIRE ALARM PANEL AND ALL FIRE ALARM PANEL PROGRAMMING AS REQUIRED.

OUTDOOR CARBON DIOXIDE INPUT.THE GLOBAL OUTDOOR AIR CARBON DIOXIDE LEVELS (CO2) SHALL BE MONITORED AND MADE AVAILABLE TO ALL DEVICES ON THE NETWORK. IF THE GLOBAL OUTDOOR AIR CARBON DIOXIDE LEVELS ARE NOT AVAILABLE, THEN THE LOCAL OUTDOOR AIR CARBON DIOXIDE SENSOR INSTALLED ON THE BUILDING SHALL BE USED.

PANDEMIC MODE: A PANDEMIC MODE SHALL BE AVAILABLE AT THE OPERATOR'S WORKSTATION. THE PANDEMIC MODE WHEN ACTIVATED SHALL SHUT DOWN ALL SUPPLY FANS ON ALL BUILDING AIR HANDLERS. EXHAUST FANS SHALL CONTINUE TO OPERATE.

PANIC MODE: A PANIC MODE SHALL BE ACTIVATED BY THE INTRUDER BUTTON. SEE ELECTRICAL FOR LOCATION.

AIRBORNE HAZARD MODE: AN AIRBORUN HADARD MODE SHALL BE AVAILABLE AT THE OPERATOR'S WORKSTATION AND FRONT DEST, WHEN ACTIVATED SHALL SHUT DOWN THE DOAS AND ALL OUTDOOR AIR INTAKES DAMPERS SHALL CLOSE EXHAUST FANS SHALL CONTINUE TO OPERATE EXCEPT FOR THE DOAS EXHAUST FAN.



POINT SCHEDULE									
CONTROL DEVICE	POINT NAME	POINT DESCRIPTION	POINT TYPE				ALARM		
			AI	BI	AO	BO	HI	LOW	BIN
T-1	OATemp	OUTDOOR AIR TEMPERATURE	X						
H-1	OAHumid	OUTDOOR AIR RELATIVE HUMIDITY	X						
FA	FireAlarm	FIRE ALARM INPUT		X					
CO-1	OACO2	OUTDOOR AIR CARBON DIOXIDE LEVELS (PPM)	X						
B-1	IntruderButton	INTRUDER ALARM INPUT		X					
B-2	OAShutoff	AIRBORNE HAZARD INPUT		X					

2 GLOBAL CONTROL POINTS

NO SCALE

SEQUENCE OF OPERATION

CONTROL MODE: THE CABINET UNIT HEATER SHALL BE IN THE UNOCCUPIED OR OCCUPIED CONTROL MODE.

TEMPERATURE SETPOINT CONTROL: IN THE OCCUPIED CONTROL MODE, THE ACTIVE TEMPERATURE SETPOINT SHALL BE THE OCCU

MOTOR OPERATED DAMPER SCHEDULE

UNIT NO.	MANUFACTURER & MODEL NO.	SIZE D	SIZE W	SIZE H	NORMAL POSITION	MOTOR CONTROLLED TYPE	CFM	BY	NOTES
MOD-1	GREENHECK ICD-45	5"	96"	60"	N.C.	E, T, I	5600	DOAS-1	
MOD-2	GREENHECK ICD-45	5"	84"	60"	N.C.	E, T, I	2400	MAU-1	
MOD-3	GREENHECK ICD-45	5"	60"	60"	N.C.	E, T, I	5000	DOAS-1	
MOD-V1A	GREENHECK VCD-20	5"	16"	14"	N.O.	E, T, I	1400	V-1	
MOD-V1B	GREENHECK VCD-20	5"	16"	14"	N.C.	E, T, I	1200	V-1	
MOD-V3A	GREENHECK VCD-20	5"	16"	14"	N.O.	E, T, I	1200	V-3	
MOD-V3B	GREENHECK VCD-20	5"	16"	14"	N.C.	E, T, I	1200	V-3	
MOD-V5A	GREENHECK VCD-20	5"	16"	14"	N.O.	E, T, I	1200	V-5	
MOD-V5B	GREENHECK VCD-20	5"	16"	14"	N.C.	E, T, I	1200	V-5	
MOD-V15A	GREENHECK VCD-20	5"	16"	14"	N.O.	E, T, I	1200	V-15	
MOD-V15B	GREENHECK VCD-20	5"	16"	14"	N.C.	E, T, I	1200	V-15	
MOD-V17A	GREENHECK VCD-20	5"	16"	14"	N.O.	E, T, I	1200	V-17	
MOD-V17B	GREENHECK VCD-20	5"	16"	14"	N.C.	E, T, I	1200	V-17	
MOD-V19A	GREENHECK VCD-20	5"	20"	16"	N.O.	E, T, I	2050	V-19	
MOD-V19B	GREENHECK VCD-20	5"	16"	14"	N.C.	E, T, I	1200	V-19	
MOD-K1	GREENHECK VCD-20	5"	12"	10"	N.C.	E, T, I	3600	H-1	
MOD-K2	GREENHECK VCD-20	5"	20"	28"	N.C.	E, T, I	1000	(E) DISH HOOD	

E ELECTRIC
T TWO POSITION
I INTERLOCK
N.C. NORMALLY CLOSED
N.O. NORMALLY OPEN

NOTES:

DIFFUSER, REGISTER AND GRILLE SCHEDULE

UNIT NO.	MANUFACTURER & MODEL NO.	TYPE	NECK SIZE	PANEL SIZE	FRAME STYLE	NC	MOUNTING	AIR	MAX CFM	NOTES
S-1	PRICE SPD	SPD	6Φ	24x24	3I	<20	LIT	SA	130	1
S-2	PRICE SPD	SPD	8Φ	24x24	3I	<20	LIT	SA	230	1
S-3	PRICE SPD	SPD	10Φ	24x24	3I	<20	LIT	SA	350	1
S-4	PRICE SPD	SPD	12Φ	24x24	3I	<20	LIT	SA	500	1
S-5	PRICE 520	GR	10x10	12x12	F	<20	SUR	SA	400	1
S-6	PRICE SPD	SPD	15Φ	24x24	3I	<40	LIT	SA	1250	1
S-7	PRICE 85	ECG	12X22	12X24	F	<20	LIT	DO	620	1
R-1	PRICE 80	GR	12x22	12x24	F	<20	LIT	RA	800	1
R-2	PRICE 80	GR	22x22	24x24	F	<20	LIT	RA	1600	1
R-3	PRICE 530	GR	12x12	14x14	F	<20	SUR	RA	380	1
E-1	PRICE 80	GR	12x22	12x24	F	<20	LIT	EA	800	1
E-2	PRICE 80	GR	22x22	24x24	F	<20	LIT	EA	1600	1
E-3	PRICE 530	GR	12x12	14x14	F	<20	SUR	EA	380	1, 2

SPD SQUARE PLAQUE DIFFUSER
REG REGISTER
ECG EGG CRATE GRILLE
GR GRILLE
RCD ROUND CONDE DIFFUSER
DO DOAS SUPPLY AIR
LIT LAY-IN TILE
SUR SURFACE
SA SUPPLY AIR
RA RETURN AIR
EA EXHAUST AIR

NOTES:
1. S-1 INDICATES UNIT NO. ON SCHEDULE
200 INDICATES AIR QUANTITY IN 'CFM'
TYP(2) INDICATES QUANTITY OF SIMILAR UNITS IN THE SAME ROOM OR GENERAL AREA
2. PROVIDE WITH OPPOSED BLADE DAMPER.

VARIABLE AIR VOLUME UNIT SCHEDULE

UNIT NO.	MANUFACTURER & MODEL NO.	UNIT SIZE	W" x L" x H"	INLET SIZE	OUTLET SIZE	CFM MAX	CFM MIN	CFM HEAT	EAT	LAT	TOTAL MBH	ENT	FLUID	GPM	MAX WPD	NOTES
V-1	SDV-5000	14	20"x16"x18"	14"	20"x18"	1425	440	650	55.0	94.5	26.5	180	PG	1.8	3.0	ALL
V-2	SDV-5000	14	20"x16"x18"	14"	20"x18"	1260	440	440	55.0	92.1	17.6	180	PG	1.2	3.0	ALL
V-3	SDV-5000	12	16"x16"x15"	12"	16"x15"	1150	305	400	55.0	92.4	16.2	180	PG	1.1	3.0	ALL
V-4	SDV-5000	12	16"x16"x15"	12"	16"x15"	1160	305	400	55.0	92.4	16.2	180	PG	1.1	3.0	ALL
V-5	SDV-5000	12	16"x16"x15"	12"	16"x15"	1150	305	400	55.0	85.6	13.2	180	PG	0.9	3.0	ALL
V-6	SDV-5000	10	14"x16"x13"	10"	14"x13"	750	225	750	55.0	94.9	32.3	180	PG	2.2	3.0	ALL
V-7	SDV-5000	08	12"x16"x10"	8"	12"x10"	410	135	350	55.0	97.8	16.2	180	PG	1.1	3.0	ALL
V-8	SDV-5000	08	12"x16"x10"	8"	12"x10"	400	140	200	55.0	89.0	7.3	180	PG	0.5	3.0	ALL
V-9	SDV-5000	06	12"x16"x8"	6"	12"x8"	240	70	240	55.0	100.4	11.8	180	PG	0.8	3.0	ALL
V-10	SDV-5000	06	12"x16"x8"	6"	12"x8"	240	70	240	55.0	100.4	11.8	180	PG	0.8	3.0	ALL
V-11	SDV-5000	06	12"x16"x8"	6"	12"x8"	200	160	170	55.0	95.0	7.3	180	PG	0.5	3.0	ALL
V-12	SDV-5000	08	12"x16"x10"	8"	12"x10"	350	140	200	55.0	93.9	7.3	180	PG	0.5	3.0	ALL
V-14	SDV-5000	06	12"x16"x8"	6"	12"x8"	150	70	150	55.0	123.0	7.3	180	PG	0.5	3.0	ALL
V-15	SDV-5000	12	16"x16"x15"	12"	16"x15"	950	305	400	55.0	89.0	14.7	180	PG	1.0	3.0	ALL
V-16	SDV-5000	12	16"x16"x15"	12"	16"x15"	1000	305	400	55.0	89.0	14.7	180	PG	1.0	3.0	ALL
V-17	SDV-5000	12	16"x16"x15"	12"	16"x15"	950	305	400	55.0	85.6	13.2	180	PG	0.9	3.0	ALL
V-18	SDV-5000	12	16"x16"x15"	12"	16"x15"	1000	305	350	55.0	93.9	14.7	180	PG	1.0	3.0	ALL
V-19	SDV-5000	16	24"x16"x18"	16"	24"x18"	2075	570	630	55.0	93.9	26.5	180	PG	1.8	3.0	ALL
V-20	SDV-5000	12	16"x16"x15"	12"	16"x15"	970	340	500	55.0	96.4	20.6	180	PG	1.4	3.0	ALL
V-21	SDV-5000	06	12"x16"x8"	6"	12"x8"	275	70	250	55.0	98.5	11.8	180	PG	0.8	3.0	ALL
V-22	SDV-5000	10	14"x16"x13"	10"	14"x13"	800	225	400	55.0	92.4	16.2	180	PG	1.1	3.0	ALL
V-23	SDV-5000	06	12"x16"x8"	6"	12"x8"	200	70	170	55.0	95.0	7.3	180	PG	0.5	3.0	ALL

PG 40% PROPYLENE GLYCOL

NOTES:
1. MODEL BASED ON PRICE

ENERGY RECOVERY HEATPIPE SCHEDULE

UNIT NO.	UNIT SERVED	MIN. SUPPLY AIR EFF. %	SUPPLY AIR: UPSTREAM OF COOLING SUPPLY CFM	MAX S.P.	EAT DB	EAT WB	LAT DB	LAT WB	DOWNSTREAM OF COOLING MAX S.P.	EAT DB	EAT WB	LAT DB	LAT WB	NOTES
HRU-2	DOAS-1	49.6	5,600	0.80	83.6	69.2	68.4	64.4	0.77	52.7	52.5	68	58.6	

DISC DISCONNECT
MC MECHANICAL CONTRACTOR
EC ELECTRICAL CONTRACTOR

NOTES:

ENERGY RECOVERY PLATES SCHEDULE

UNIT NO.	UNIT SERVED	MODE	MIN. SUPPLY AIR EFF. %	SUPPLY AIR: SUPPLY CFM	MAX S.P.	EAT DB	EAT WB	LAT DB	LAT WB	EXHAUST: EXHAUST CFM	MAX S.P.	EAT DB	EAT WB	LAT DB	LAT WB	NOTES
HRU	DOAS	SUMMER	54.2			95	75	83.6	69.2			75	62	87.8	69.5	
1	1	WINTER	69.9	5,600	0.65	-30	-30.1	29.6	29.6	5,000	0.65	75	62	9.1	9.1	ALL

DISC DISCONNECT
MC MECHANICAL CONTRACTOR
EC ELECTRICAL CONTRACTOR

NOTES:
1. PROVIDE WITH ECONOMIZER BYPASS DAMPERS.
2. PROVIDE DEFROST CONTROL.

LOUVER SCHEDULE

UNIT NO.	MANUFACTURER & MODEL NO.	WIDTH	HEIGHT	FRAME TYPE	DEPTH	CFM	FREE AREA	PD	NOTES
LVR-1	VIBRO ACOUSTICS ALA-HV-12	100"	60"	CH	18"	5,600	41.67	0.19	1,2,3
LVR-2	GREENHECK ESD-635	84"	60"	CH	6"	5,600	18.21	0.02	1,2
LVR-3	GREENHECK EDS-635	60"	60"	CH	6"	4,300	14.98	0.02	1,2

PD PRESSURE DROP, INWG.
CH CHANNEL
F FLANGE

NOTES:
1. PROVIDE WITH STAINLESS INSECT SCREEN MESH.
2. COLOR SELECTION BY ARCHITECT
3. TWO 50" x 60" LOUVERS SIDE BY SIDE.

FAN SCHEDULE

UNIT NO.	MANUFACTURER & MODEL NO.	TYPE	CFM	TSP (IN WG.)	ELECTRICAL HP	VOLT	PH	CTRL	ECM	DISC BY	FAN RPM	DRIVE	SONES	NOTES
GEF-1	GREENHECK CUEB-180-VG	UB/SW	3600	1.75	2	208	3	MC	YES	EC	1450	B	20	2
EF-2	GREENHECK CUE-140HP- VG	UB/SW	700	1	0.5	208	3	MC	YES	EC	1247	D	11.4	1

D DIRECT DRIVE
DISC DISCONNECT
MC MECHANICAL CONTRACTOR
EC ELECTRICAL CONTRACTOR
CTRL MOTOR CONTROL
SW SIDE WALL
UB UPBLAST
GEF GREASE EXHAUST FAN
RELAY TEMPERATURE CONTROLS RELAY
ECM ELCRONICALLY COMMUTATED MOTOR

NOTES:
1. PROVIDE SELF ACTING BACKDRAFT DAMPER, BIRDSCREEN.
2. PROVIDE GEASE PAN KIT AND HINGE KIT.

AIR HANDLING UNIT COIL SCHEDULE

UNIT NO.	COIL TYPE	UNIT SERVED	CFM	MAX FV	MAX APD	EAT DB	EAT WB	LAT DB	LAT WB	SENS MBH	TOTAL MBH	FLUID	ENT	LWT	GPM	NO. OF COILS	MAX WPD	NOTES
CC-1	W	AHU-1	17,000	432	1.0	78.0	65.0	52.4	52.2	476.8	645.6	PG	42	58	86.5	2.0	14.8	
CC-2	W	MAU-1	4,300	449	0.4	87.0	70.0	66.1	63.0	98.3	104.1	PG	42	58	13.7	2.0	1.3	
CC-3	W	DOAS-1	5,600	498	0.9	80.0	67.0	54.1	53.9	158.4	221.4	PG	42	58	28.0	1.0	2.6	
HC-2	W	MAU-1	4,300	737	0.7	-30.0	-	69.4	-	-	467.2	PG	180	150	33.7	1.0	4.6	
HC-3	W	DOAS-1	5,600	933	0.5	-30.0	-	33.3	-	-	387.6	PG	180	150	28.6	1.0	6.1	1
HC-4	W	DOAS-1	5,600	700	0.3	25.0	-	81.6	-	-	346.5	PG	180	150	24.2	1.0	3.1	2

DX DIRECT EXPANSION
WPD WATER PRESSURE DROP, FT.
APD AIR PRESSURE DROP, IN
FV FACE VELOCITY
W WATER
PG 40% PROPYLENE GLYCOL

NOTES:
1. PREHEAT COIL
2. MAIN HEATING COIL

AIR HANDLING UNIT SCHEDULE

UNIT NO.	MANUFACTURER & MODEL NO.	TYPE	SUPPLY FAN: # OF FANS	WHEEL DIA	FAN TYPE	CLASS	CTRL	TOTAL CFM	ESP	HP	MAX. TEMP RISE	TOTAL HP	VOLTS	PH	DISC BY	EXHAUST FAN: # OF FANS	WHEEL DIA	FAN TYPE	CLASS	CTRL	TOTAL CFM	ESP	HP	TOTAL HP	VOLTS	PH	DISC BY	MCA	MOP	PREHEAT COIL	COOLING COIL	HEATING COIL	ENERGY RECOVERY UNIT	MIN OA CFM	FILTERS MERV	NOTES
AHU-1	DIAKIN CAH04IGDHM	H DT	2	24.5	PL	2	VFD	17,000	2.5	10	3	20	208	3	MC	-	-	-	-	-	-	-	-	-	-	-	66.4	90	-	CC-1	-	-	-	8/13	1, 2, 5
MAU-1	DIAKIN CAH011GDGM	H DT	1	14	PL	2	VFD	4,300	1.0	5	3	5	208	3	MC	-	-	-	-	-	-	-	-	-	-	-	SEE NOTE		-	CC-2	HC-2	-	-	8	2, 4, 5
DOAS-1	DIAKIN CAG010GVAM	ST DT	2	17.7	PL	2	VFD	5,600	2.0	7.38	3	14.76	208	3	MC	2	12.4	PL	2	VFD	5,000	1.5	4.14	8.28	208	3	MC	SEE NOTE		HC-3	CC-3	HC-4	HRU-1, HRU-2	5600	8/13	1, 3, 5

H HORIZONTAL
ST STACKED
DT DRAW THRU
BT BLOW THRU
PL PLENUM
CTRL MOTOR CONTROL
DISC DISCONNECT
MC MECHANICAL CONTRACTOR
EC ELECTRICAL CONTRACTOR
VFD VARIABLE FREQUENCY DRIVE
ECM ELECTRONICALLY COMMUTATED MOTOR
RELAY TEMPERATURE CONTROLS RELAY
CB COMBINATION MOTOR STARTER DISCONNECT SWITCH (PROVIDED BY EC)
MCA MIN. CURRENT AMPACITY
MOCP MAX. OVERCURRENT PROTECTION
LRA LOCK ROTOR CURRENT (AMPS)
FLA FULL LOAD CURRENT (AMPS)
MOP MAXIMUM OCERCURRENT PROTECTION

NOTES:
1. PROVIDE UV LIGHT IN UNIT.
2. SCCR: 65 KA
3. UNIT ELECTRICAL: SUPPLY FAN - MCA: 38.1 / MOCP: 50 / SCCR 100 KA-FUSED
EXHAUST FAN - MCA: 22.5 / MOCP: 30 / SCCR 100 KA-FUSED
4. UNIT ELECTRICAL: SUPPLY FAN - LRG: 101.13 / FLC: 13.8
5. PROVIDE WITH TWO (2) COMPLETE SETS OF WASHABLE FILTERS

FOSS ARCHITECTURE +INTERIORS
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REGISTERED PROFESSIONAL ENGINEER
JACOB M. SCOTT
PE - 10581
DATE: 4-22-22
NORTH DAKOTA

U.S. AIR FORCE

Symbol	Description	Date	Approved

DESIGNED BY: JCP
DRAWN BY: TVE
CHK BY: JCP
DATE: 22 APRIL 2022
SUBMITTED BY: RA
PLOT DATE: AS SHOWN
PLOT SCALE: AS SHOWN
DRAWING NUMBER: AS SHOWN

DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND

GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

MECHANICAL - SCHEDULES

SHEET REFERENCE NUMBER
M-800

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NORTH DAKOTA

HUMIDIFIER SCHEDULE

UNIT NO.	MANUFACTURER & MODEL NO.	UNIT SERVED	TYPE	CFM	EAT	ABSORB DIST	GAS MBH	DISC BY	LBS/HR	NOTES
H-1	CONDAIR 55-150 GS	DOAS-1	G	5600	55	1	37.2	EC	123	ALL

G GAS
ST STEAM
HE HEATED ELEMENT
IR INFRA RED
DISC DISCONNECT
MC MECHANICAL CONTRACTOR
EC ELECTRICAL CONTRACTOR

NOTES:
1.

FIN RADIATION SCHEDULE

UNIT NO.	MANUFACTURER & MODEL NO.	FLUID	COVER TYPE	COVER HEIGHT (IN)	COVER DEPTH (IN)	COVER LENGTH (FT)	ROWS	TUBE SIZE (IN)	FINS PER FT	FIN LENGTH (FT)	BTU PER FT	EAT	EWT	TOTAL MBH	GPM	NOTES
FTR-1	RITTLING FS3	EG	ST	14	3-15/16	5	1	3/4	40	3.0	660	65	180	2.0	0.5	ALL
FTR-2	RITTLING FS3	EG	ST	14	3-15/16	5	1	3/4	40	3.0	660	65	180	2.0	0.5	ALL

W WATER
EG ETHYLENE GLYCOL
PG PROPYLENE GLYCOL
S STEAM
ST SLOPE TOP
TO TOP OUTLET
FO FRONT OUTLET
RO ROUNDED OUTLET
BE BARE ELEMENT W/ EXPANDED METAL ENCLOSURE
W-W WALL TO WALL

NOTES:
1. BOTTOM OF COVER 4" ABOVE FLOOR
2. RETURN UNDER COVER

KITCHEN HOOD SCHEDULE

UNIT NO.	MAKE MODEL	HOOD SIZE (INCHES) WIDTH	DEPTH	HEIGHT	VENT SIZE WIDTH	DEPTH	SUPPLY SIZE WIDTH	DEPTH	EXHAUST CFM	SUPPLY CFM	SP MAX.	NOTES
KH-1	GREENHECK GGEW	120	42	24	35	9	SEE NOTE		3600	2500	1.53	ALL

SP STATIC PRESSURE

NOTES:
1. MAU-1 INTEGRATED WITH HOOD CONTROLS.
2. PROVIDE WITH INTEGRATED ANSUL SYSTEM IN WALL MOUNTED UTILITY CABINET.
3. SUPPLY AIR: PLENUM INSTALLED ON FRONT AND RIGHT THREE 10X18 DUCT CONNECTIONS ON FRONT AND ONE 10X18 DUCT CONNECTION ON RIGHT.
4. LIGHTING: PROVIDE INTEGRATED LIGHTING - FOUR 100W BULB
5. PROVIDE BACK AND LEFT HAND BACKSPLASH
6. PROVIDE WITH RIGHT END SKIRT
7. PROVIDE WITH GREASE GRABBER FILTER MEDIA.
8. FIRE PROTECTION CABINENT TO BE PROVIDED FOR REMOTE MOUNTING.

UNIT HEATER SCHEDULE

UNIT NO.	MANUFACTURER & MODEL NO.	TYPE	FLUID	CFM	EAT	LAT	OUTPUT MBH	MOTOR HP	MOTOR VOLT	MOTOR PH	DISC BY	EWT	LWT	GPM	NOTES
CUH-1	RITTLING O4, RWI-310	WH,I	PG	550	60	104	29.1	1/25	120	1	MC	180	160	3.2	ALL
CUH-2	RITTLING O4, RWI-310	WH,I	PG	550	60	104	29.1	1/25	120	1	MC	180	160	3.2	ALL
CUH-3	RITTLING O4, RWI-310	WH,I	PG	550	60	104	29.1	1/25	120	1	MC	180	160	3.2	ALL
SUH-1	RITTLING RH-63	-	PG	1120	60	98	34.8	1/10	120	1	MC	180	160	3.8	ALL

W WATER
EG ETHYLENE GLYCOL
PG 40% PROPYLENE GLYCOL
H HORIZONTAL
V VERTICAL
I INVERTED
R RECESSED
SR SEMI RECESSED
FM FLOOR MOUNTED
WH WALL HUNG
DISC DISCONNECT
MC MECHANICAL CONTRACTOR
EC ELECTRICAL CONTRACTOR

NOTES:
1.

HYDRONIC STORAGE TANK SCHEDULE

UNIT NO.	MANUFACTURER & MODEL NO.	NOMINAL GALLONS	ACTUAL GALLONS	DIA	LENGTH	ORIENTATION	NOTES
HST-1	AMTROL CWBT850-6-150	750	850.0	64"	115"	VERTICAL	ALL

NOTES:

PUMP SCHEDULE

UNIT NO.	MANUFACTURER & SERIES NO.	MODEL NO.	SERVICE	FLUID	TYPE	GPM	MIN. GPM	HEAD (FT)	MIN EFF	ELECTRICAL HP	VOLT	PH	CTRL	DISC BY	PUMP RPM	NOTES
BP-1	B&G e-90	2AAC	HWS	PG	IL	55	-	20	70%	3/4	208	3	VFD	MC	1530	3
BP-2	B&G e-90	2AAC	HWS	PG	IL	55	-	20	70%	3/4	208	3	VFD	MC	1530	3
HWP-1	B&G e-1510	2BD	HWS	PG	HES	110	60	60	68%	5	208	3	VFD	MC	1582	1, 3
HWP-2	B&G e-1510	2BD	HWS	PG	HES	110	60	60	68%	5	208	3	VFD	MC	1582	1, 3
HWP-3	B&G e-1510	1.25BC	HWS	PG	HES	65	20	70	55%	3	208	3	VFD	MC	1681	1, 3
CHWP-1	B&G e-1510	2EB	CHWS	PG	HES	135	100	75	66%	7.5	208	3	VFD	MC	1668	1, 3
P-1	B&G ECOCIRC XL	20-35	HW	W	IL	8	-	15	-	1/12	120	1	VFD	EC	2922	2
P-2	B&G ECOCIRC XL	20-35	HW180	W	IL	2	-	8	-	1/12	120	1	VFD	EC	2922	2

HES HORIZONTAL END SUCTION
IL IN LINE
HSC HORIZONTAL SPLIT CASE
HDS HORIZONTAL DOUBLE SUCTION
VDS VERTICAL DOUBLE SUCTION
VT VERTICAL TURBINE
CTRL MOTOR CONTROL
VFD VARIABLE FREQUENCY DRIVE
ECM ELECTRONICALLY COMMUTATED MOTOR
RELAY TEMPERATURE CONTROLS RELAY
CB COMBINATION MOTOR STARTER DISCONNECT SWITCH (PROVIDED BY EC)
DISC DISCONNECT
MC MECHANICAL CONTRACTOR
EC ELECTRICAL CONTRACTOR
W WATER
PG 40% PROPYLENE GLYCOL

NOTES:
1. PROVIDE WITH INERTIA BASE.
2. PUMP SHALL BE LEAD FREE CONSTRUCTION FOR DOMESTIC WATER.
3. PUMP SHALL BE SELECTED WITH THE SCHEDULED CAPACITIES AT 85% OF THE MAXIMUM IMPELLER DIAMETER FOR THAT MODEL.
4. PROVIDE WITH FACTORY SHAFT GROUNDING KIT.

SOUND ATTENUATING UNIT SCHEDULE

UNIT NO.	MANUFACTURER & MODEL NO.	SYSTEM	TYPE	UNIT SIZE DIA	L	W	H	CFM	MAX. S.P.	DYNAMIC INSERTION LOSS DB OCTVE BAND & MID-FREQUENCY (CPS) 63	125	250	500	1000	2000	4000	8000	NOTES
SA-1	RED-LV-28313	DOAS-1	EL	-	48	24	50	5600	0.25	9	14	23	32	39	35	25	20	ALL
SA-2	RD-MLV-28313	AHU-1	EL	-	36	40	24	17,000	0.11	6	11	16	14	17	11	12	10	ALL
SA-3	RD-UHV-28313	DOAS-1	ST	-	60	70	46	5600	0.04	2	7	12	17	15	13	11	9	ALL
SA-4	RED-UHV-28313	AHU-1	EL	-	48	36	76	17,000	0.2	4	6	11	15	23	20	17	15	ALL

ST STRAIGHT
EL ELBOW
TEE TEE

NOTES
1. MANUFACTURER: VIBRO-ACCOUSTICS

HOT WATER SPECIALTIES SCHEDULE

EXPANSION TANKS NO.	TYPE	MANUFACTURER & MODEL NO.	SIZE	ACC. GAL	RM TEMP INITIAL FILL PSIG	AIR CHARGE PRESSURE PSIG	DESIGN OPERATING PSIG	SYSTEM	AIR SEPARATORS NO.	MANUFACTURER & MODEL NO.	SIZE	GPM	RELIEF VALVES PSI	MBH	NOTES
EX-1	D, H	B&G SERIES D	D-200	34	15	12	30	HOT	AS-1	B&G R-4F	4	110	30	1400	ALL
EX-2	D, H	B&G SERIES D	D-60	11.3	30	12	15	CHILLED	AS-2	B&G R-4F	4	135	30	960	ALL

C COMPRESSION
B BLADDER
D DIAPHRAM
V VERTICAL
H HORIZONTAL

NOTES:
1. EXPANSION TANKS SHALL BE ASME STAMPED.
2. INCLUDE DIRT SEPARATOR WITH BLOW DOWN.

AIR COOLED CHILLER SCHEDULE

UNIT NO.	MANUFACTURER & MODEL NO.	EVAPORATOR FLUID	EWT (°F)	LWT (°F)	DESIGN GPM	PD (FT)	MIN GPM	AMBIENT TEMP (°F)	MIN EER	MIN IPLV	ELECTRICAL VOLTS	PH	MCA	MOCP	SCCR (Ka)	DISC BY	dBA	NOTES
CH-1	TRANE CGAM080A2	PG	57	42	124.7	15.3	95	95	9.7	15	208	3	354	400	65	EC	64	ALL

MCA MINIMUM CIRCUIT AMPACITY
MOCP MAXIMUM OVERCURRENT PROTECTION
EER ENERGY EFFICIENCY RATIO
IPLV INTEGRATED PART LOAD VALUE
SCCR SHORT CIRCUIT CURRENT RATING
PD PRESSURE DROP, FT. OF WATER
EWT ENTERING WATER TEMPERATURE
LWT LEAVING WATER TEMPERATURE
DISC DISCONNECT
MC MECHANICAL CONTRACTOR
EC ELECTRICAL CONTRACTOR
W WATER
EG ETHYLENE GLYCOL
PG PROPYLENE GLYCOL

NOTES:
1. dBA SCHEDULED IS SOUND PRESSURE RATING BASED ON 30 FEET FROM UNIT AND Q=2.
2. LOW SOUND KIT
3. INSULATED EVAPORATOR
4. BACNET INTERFACE FOR INTEGRATION WITH BUILDING AUTOMATION SYSTEM
5. PROVIDE FULL HEIGHT LOUVERED PANELS FOR HAIL PROTECTION
6. PROVIDE WATERSIDE ECONOMIZER/FREE COOLING COIL.

Symbol	Description	Date	Approved

DATE: 22 APRIL 2022
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CHK BY: JCP
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DWN BY: TVE
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DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND
GRAND FORKS, ND
AIR FORCE BASE

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MECHANICAL - SCHEDULES

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ELECTRICAL ABBREVIATIONS

@	AT	ELEV	ELEVATION OR ELEVATOR	MCC	MOTOR CONTROL CENTER	PRV	POWER ROOF VENTILATOR
A	AMPERE	EMT	ELECTRICAL METALLIC TUBING	MCJ	MECHANICAL CONTRACTOR	PVC	POLYVINYL-CHLORIDE (CONDUIT)
AC	ABOVE COUNTER	ENCL	ENCLOSURE	MDP	MAIN DISTRIBUTION PANEL	RGP	REFERENCE GROUND POINT
AFC	AIR CONDITIONER	ENT	ELECTRICAL NONMETALLIC TUBING	MECH	MECHANICAL	RMC	RIGID METAL CONDUIT
AFF	ABOVE FINISHED FLOOR	EQ	EQUIPMENT SUPPLIED	MEA	MEDICAL GAS ALARM PANEL	RNC	RIGID NONMETALLIC CONDUIT
AG	ABOVE GRADE	EWC	ELECTRIC WATER COOLER	MFG	MANUFACTURER	RS	RIGID STEEL (CONDUIT)
ANNC	ANNUNCIATOR	EWS	EYE WASH EMERGENCY SHOWER	MFS	MAXIMUM FUSE SIZE	SE	SERVICE ENTRANCE
AV	AUDIO/ VISUAL	EX	EXISTING	MH	MANHOLE	SPC	SINGLE POINT CONNECTION
APPROX	APPROXIMATE	EXH	EXHAUST FAN	MSWBD	MAIN SWITCHBOARD	SSS	SOLID STATE STARTER
ATS	AUTOMATIC TRANSFER SWITCH	EXP	EXPLOSION PROOF	MTD	MOUNTED	STRUC	STRUCTURE
BC	BELOW CABINET	FA	FIRE ALARM	MTS	MANUAL TRANSFER SWITCH	SUBE	SUITABLE FOR USE AS SERVICE EQUIP.
C	CONDUIT	FAA	FIRE ALARM ANNUNCIATOR	NC	NORMALLY CLOSED	SWBD	SWITCHBOARD
CAB	CABINET	FACP	FIRE ALARM CONTROL PANEL	NEC	NATIONAL ELECTRICAL CODE	TGB	TELECOMMUNICATIONS GROUND BAR
CB	CIRCUIT BREAKER	FMC	FLEXIBLE METAL CONDUIT	NEMA	NATIONAL ELEC MFG ASSOCIATION	TGR	TELECOMMUNICATIONS ROOM
CC	CRITICAL CARE	FMT	FLEXIBLE METALLIC TUBING	NEU	NEUTRAL	TELE	TELEPHONE
CCTV	CLOSED CIRCUIT TELEVISION	FO	FIBER OPTIC	NF	NON-FUSED	THRU	THROUGH
CFM	CUBIC FEET PER MINUTE	FT	FEET	NIC	NOT IN CONTRACT	TSTAT	THERMOSTAT
CKT	CIRCUIT	GC	GENERAL CONTRACTOR	NL	NIGHT LIGHT	TV	TELEVISION
GFCI	GROUND FAULT CIRCUIT INTERRUPT	GFCI	GROUND FAULT CIRCUIT INTERRUPT	NTS	NOT TO SCALE	TYP	TYPICAL
COMM	COMMUNICATION	GND	GROUND	NO	NORMALLY OPEN	UG	UNDERGROUND
CONTR	CONTRACTOR	HOA	HAND-OFF-AUTO	NUCG	NONMETALLIC UNDERGROUND CONDUIT WITH CONDUCTORS	UH	UNIT HEATER
CUH	CABINET UNIT HEATER	HP	HORSEPOWER OR HEAT PUMP			V	VOLT
DB	DIRECT BURIED	IMC	INTERMEDIATE METAL CONDUIT	P	PHASE	VA	VOLT AMPERE
DN	DOWN	LFMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT	PA	PUBLIC ADDRESS	W	WITH
DWG	DRAWING	LFNC	LIQUID TIGHT FLEXIBLE NONMETALLIC CONDUIT	PH	PHASE	WG	WIRE GUARD
E.C.	ELECTRICAL CONTRACTOR	LS	LIFE SAFETY	PHM	PULSE START METAL HALIDE	WH	WATER HEATER
ELEC	ELECTRICAL	KVA	KILOVOLT AMPS	PNL	PANELBOARD	WP	WEATHERPROOF
						XFMR	TRANSFORMER

ELECTRICAL SYMBOLS

SHEET

- SHEET NOTE REFERENCE
- DETAIL NOTE REFERENCE WITH DRAWING NUMBER SHOWN (1) AND SHEET NUMBER SHOWN (E-1)
- ELEVATION / SECTION NOTE REFERENCE WITH DRAWING NUMBER SHOWN (1) AND SHEET NUMBER SHOWN (E-1)
- REVISION NOTE REFERENCE
- DARK DASHED LINES INDICATE ITEMS TO BE REMOVED.

WIRING AND RACEWAY

- CONDUIT IN WALL OR CEILING
- CONDUIT IN FLOOR OR UNDERGROUND
- CONDUIT STUB-UP
- CONDUIT STUB-DOWN
- GROUND
- BREAK OR CONTINUATION
- STUB-OUT/TERMINATION
- CABLE TRAY (NUMBERS INDICATE SIZE)
- LADDER RACK
- NON-CONTINUOUS CABLE SUPPORTS

MISCELLANEOUS

- SYSTEMS OUTLET (# & LETTER INDICATES QUANTITY & TYPE)
- POKE-THRU FLOOR BOX (LETTER INDICATES TYPE)
- CAST-IN-PLACE FLOOR BOX (LETTER INDICATES TYPE)
- JUNCTION BOX
- WALL MOUNTED JUNCTION BOX
- THERMOSTAT BY DIVISION 23
- THERMOSTAT BY DIVISION 26
- HUMIDISTAT
- TRIPLE PUSH BUTTON
- DOUBLE PUSH BUTTON
- SINGLE PUSH BUTTON
- ADA DOOR OPENER
- ADA PUSH BUTTON DOOR OPENER

LIGHTING

- SURFACE LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- WALL MOUNTED LIGHT FIXTURE
- RESIDENT ROOM NIGHT LIGHT
- SURFACE MOUNTED LIGHT FIXTURE
- RECESSED MOUNTED LIGHT FIXTURE
- LIGHT FIXTURE ON EMERGENCY/LIFE SAFETY
- SURFACE LIGHT FIXTURE ON EMERGENCY/LIFE SAFETY
- RECESSED LIGHT FIXTURE ON EMERGENCY/LIFE SAFETY
- STRIP LIGHT
- WALL EXIT LIGHT FIXTURE
- CEILING EXIT LIGHT FIXTURE
- EMERGENCY BATTERY LIGHT FIXTURE
- EMERGENCY LIGHT/REMOTE HEAD
- CEILING EMERGENCY BATTERY LIGHT FIXTURE
- SINGLE HEAD PARKING LOT LIGHT FIXTURE
- DUAL HEAD PARKING LOT LIGHT FIXTURE
- BOLLARD TYPE SITE LIGHT FIXTURE
- IN-GRADE LIGHT FIXTURE (ARROW INDICATES AIMING DIRECTION)
- PENDANT FIXTURE

LIGHTING CONTROL

- SINGLE POLE SWITCH
- THREE-WAY SWITCH
- FOUR-WAY SWITCH
- KEYED SWITCH
- LOW-VOLTAGE SWITCH
- MOMENTARY CONTACT SWITCH
- KEYED MOMENTARY CONTACT SWITCH
- SWITCH AND PILOT LIGHT
- DIMMER SWITCH
- 3-WAY DIMMER SWITCH
- 0-10V DIMMER SWITCH
- ROOM CONTROLLER (LIGHTING / AV EQUIP)
- LIGHTING TOUCH SCREEN
- LIGHTING CONTROL DEVICE (PARTITION SENSOR, SERIAL INTERFACE, ISOLATED RELAY, ETC.) (SUBSCRIPT INDICATES TYPE)
- DIGITAL SWITCH
- DIGITAL DIMMER SWITCH
- PHOTOCELL
- TIME SWITCH

AUTOMATIC LIGHTING CONTROL

LOWER CASE LETTER INDICATES SWITCH CIRCUIT ID (IF USED). LETTER INDICATES TYPE. ARROWS INDICATE DIRECTION.

- PIR (CEILING) - STAND ALONE
- PIR (CEILING) - STAND ALONE
- PIR (WALL) - STAND ALONE (SW ID, TYPE, RELAY)
- PIR (CEILING) - DIGITAL
- PIR (CEILING) - DIGITAL
- PIR (WALL) - DIGITAL
- ULTRASONIC (CEILING) - STAND ALONE
- ULTRASONIC (CEILING) - STAND ALONE
- ULTRASONIC (CEILING) - STAND ALONE
- ULTRASONIC (WALL) - STAND ALONE
- ULTRASONIC (CEILING) - DIGITAL
- ULTRASONIC (CEILING) - DIGITAL
- ULTRASONIC (CEILING) - DIGITAL
- ULTRASONIC (WALL) - DIGITAL
- DUAL TECHNOLOGY (CEILING) - STAND ALONE
- DUAL TECHNOLOGY (CEILING) - STAND ALONE
- DUAL TECHNOLOGY (WALL) - STAND ALONE
- DUAL TECHNOLOGY (CEILING) - DIGITAL
- DUAL TECHNOLOGY (CEILING) - DIGITAL
- DUAL TECHNOLOGY (WALL) - DIGITAL
- DAYLIGHT SENSOR
- DAYLIGHT SENSOR - DIGITAL
- UL924 RELAY
- POWER PACK (LETTER INDICATES TYPE)

DISTRIBUTION

- MAGNETIC MOTOR STARTER
- COMBINATION STARTER DISCONNECT
- DISCONNECT
- RELAY
- CONTACTOR
- VARIABLE FREQUENCY DRIVE
- METER SOCKET
- LOW VOLTAGE TRANSFORMER
- TELEPHONE/DATA BACKBOARD
- PANELBOARD
- EQUIPMENT/CONTROL CABINET
- HAND OFF-AUTO SWITCH
- GROUND BAR (TMGB)
- GROUND BAR (TGB)

ELECTRICAL DEVICE

- DUPLEX 20A, 125V,2P,3W RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE
- GFCI DUPLEX RECEPTACLE
- GFCI DOUBLE DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE ON DEDICATED CIRCUIT
- DUPLEX RECEPTACLE WITH USB
- TAMPER PROOF RECEPTACLE
- HALF SWITCH DUPLEX RECEPTACLE
- EMERGENCY DUPLEX RECEPTACLE
- ISOLATED DUPLEX RECEPTACLE
- SINGLE POLE RECEPTACLE
- DUPLEX RECEPTACLE FLOOR MOUNTED
- REMOTE DEAD FRONT GFCI TEST/RESET SM
- SPECIAL RECEPTACLE
- MOTOR
- MANUAL MOTOR SWITCH
- MOTOR WITH MOTOR RATED TOGGLE SWITCH DISCONNECT
- HAND DRYER
- CAR POST HEATER
- DROP CORD OUTLET
- CEILING FAN

ELECTRIC HEATING

- ELECTRIC BASEBOARD HEAT
- CABINET UNIT HEATER (CUH)
- FAN FORCED HEATER
- CEILING RADIANT HEAT PANEL

AUDIO/VISUAL

- RECESSED CEILING SPEAKER (LETTER INDICATES TYPE)
- WALL SPEAKER
- HORN SPEAKER
- MICROPHONE OUTLET
- DUAL MICROPHONE OUTLET
- PA / INTERCOM CALL BACK SWITCH
- VOLUME CONTROL SWITCH
- CLOCK SPEAKER
- MASTER CLOCK STATION
- TIME CLOCK
- CLOCK - WALL MOUNTED
- CAMERA
- PROJECTOR
- DOOR BELL/CHIME
- AV ROUGH-IN / JACKS
- MASS NOTIFICATION DISPLAY BOARD

ACCESS

- KEYPAD
- CARD READER
- PROXIMITY READER
- DOOR POSITION SWITCH/DOOR CONTACTOR
- ELECTRIC DOOR STRIKE
- INTERCOM SWITCH
- MAGNETIC DOOR LOCK
- REQUEST TO EXIT
- POWER TRANSFER DEVICE
- POWER SUPPLY
- GARAGE DOOR SAFETY SWITCH

FIRE ALARM

- MANUAL PULL STATION
- FIRE SPRINKLER POST INDICATOR VALVE
- FIRE ALARM STROBE LIGHT
- FIRE ALARM SPEAKER
- FIRE ALARM SPEAKER/STROBE
- FIRE ALARM HORN
- COMBINATION AUDIO/VISUAL FIRE ALARM
- FIRE ALARM CHIME STROBE
- BELL
- COMBINATION RATE OF RISE HEAT DETECTOR
- FIXED TEMPERATURE HEAT DETECTOR AT SETTING
- 120V SINGLE STATION SMOKE DETECTOR
- SMOKE DETECTOR- PHOTO ELECTRIC
- SMOKE DETECTOR- WITH HEAT DETECTOR
- SMOKE DETECTOR- IONIZATION
- SMOKE DETECTOR- SOUNDER BASE
- SMOKE DETECTOR- SOUNDER BASE W / CO
- SMOKE DETECTOR- WALL MOUNTED
- DUCT SMOKE DETECTOR- PHOTO ELECTRIC
- DUCT SMOKE DETECTOR- IONIZATION
- COMBINATION SMOKE AND CARBON MONOXIDE DETECTOR
- FLAME DETECTOR
- FIRE ALARM ANNUNCIATOR PANEL
- FIRE/SMOKE DAMPER
- FIRE/SMOKE DAMPER
- REMOTE TEST SWITCH
- MOTORIZED DAMPER, INTERLOCK WITH MOTOR RX
- INDIVIDUAL ADDRESSABLE MONITOR MODULE
- INDIVIDUAL ADDRESSABLE CONTROL MODULE
- SOLENOID VALVE
- TAMPER SWITCH
- FLOW SWITCH
- FIRE ALARM RELAY
- MAGNETIC DOOR HOLDER
- FIRE ALARM OPERATOR CONSOLE

NURSE CALL

- GEN-SET ANNUNCIATOR PANEL
- NURSE CALL ANNUNCIATOR PANEL
- INTERCOM CALL SWITCH AND SPEAKER
- INTERCOM HANDSET OUTLET
- INTERCOM CALL SWITCH AND SPEAKER-SECURITY
- HEARING AID
- VISITOR INTERCOM
- NURSE CALL DUTY STATION
- NURSE CALL STATION
- VISUAL NURSE CALL STATION
- NURSE CALL STAFF STATION
- NURSE CALL BATH STATION
- NURSE CALL EMERGENCY STATION
- NURSE CALL ZONE LIGHT - 1,2 OR 4 LIGHTS
- NURSE CALL WALL LIGHT - 1,2 OR 4 LIGHTS
- NURSE CALL WALL DOUBLE SIDED LIGHT - 1,2 OR 4 LIGHTS

* ALL SYMBOLS AND ABBREVIATIONS DO NOT NECESSARILY APPEAR ON DRAWINGS *

PROJECT GENERAL ELECTRICAL DEMOLITION NOTES:

A. DEMOLISH AND EXTEND EXISTING ELECTRICAL WORK AS INDICATED ON DRAWINGS, UNDER PROVISIONS OF DIVISION 01, AND SPEC SECTION 26 0500.
B. WHERE NOTED, EQUIPMENT REMOVED AND NOT NOTED AS SALVAGE FOR REUSE SHALL BE REMOVED FROM THIS JOB SITE AND LEGALLY DISPOSED OF BY ELECTRICAL CONTRACTOR.
C. MATERIALS AND EQUIPMENT INDICATED TO BE SALVAGED: REMOVE, DEMOUNT, DISCONNECT, AND DELIVER SAME TO A LOCATION DESIGNATED FOR STORAGE. LEAVE IN GOOD CONDITION AND STORE IN ORDERLY MANNER.
D. ALL EQUIPMENT TO BE SALVAGED SHALL BE CHECKED FOR DAMAGE AND CLEANED PRIOR TO REINSTALLATION.
E. REMOVE, RELOCATE, AND EXTEND EXISTING INSTALLATIONS TO ACCOMMODATE NEW CONSTRUCTION. CONTRACTOR SHALL REVIEW ALL ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR EXTENT OF WORK.
F. REMOVE ALL ABANDONED CONDUIT, UNLESS INDICATED TO REMAIN FOR RE-USE OR FUTURE WORK, INCLUDING ABANDONED CONDUIT EXPOSED DURING DEMOLITION AND LOCATED ABOVE ACCESSIBLE CEILINGS. CUT CONCEALED ABANDONED CONDUIT FLUSH WITH WALLS AND FLOORS THAT ARE INDICATED TO REMAIN.
G. ALL ELECTRICAL EQUIPMENT SHOWN DASHED ON DEMOLITION DRAWINGS SHALL BE REMOVED COMPLETE BY THE ELECTRICAL CONTRACTOR UNLESS OTHERWISE NOTED. EQUIPMENT SHALL BE REMOVED COMPLETE WITH ALL ASSOCIATED BACK BOXES, CONDUIT, CIRCUITRY, ETC.
H. PROVIDE APPROPRIATE BLANK COVER FOR ABANDONED BOXES WHICH ARE NOT REMOVED.
I. DISCONNECT AND REMOVE LUMINAIRES COMPLETE INCLUDING BRACKETS, STEMS, HANGERS, AND OTHER ACCESSORIES AS INDICATED. COORDINATE EXTENT OF CEILING DEMOLITION WITH GENERAL CONTRACTOR, AND MECHANICAL CONTRACTOR.
J. NO EXISTING WIRING REMOVED SHALL BE REUSED. PROVIDE ALL NEW CONDUCTORS AS SPECIFIED AND INDICATED ON DRAWINGS.
K. CONDUIT AND BACK BOXES REMOVED DURING DEMOLITION THAT ARE IN GOOD CONDITION MAY BE REUSED, HOWEVER DISCRETION SHOULD BE USED AS THE ENGINEER SHALL MAKE FINAL DETERMINATION AS TO THE CONDITION OF THIS EQUIPMENT. ANY EQUIPMENT NOT DETERMINED TO BE IN GOOD CONDITION AND REUSED SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
L. REPAIR ADJACENT CONSTRUCTION & FINISHES DAMAGED DURING DEMOLITION & EXTENSION WORK. PATCH SURFACES IN ACCORDANCE WITH 26 0500.
M. MAINTAIN ACCESS TO EXISTING ELECTRICAL INSTALLATIONS WHICH REMAIN ACTIVE. MODIFY INSTALLATION OR PROVIDE ACCESS DOOR UNIT AS APPROPRIATE.
N. WHERE WALLS, CEILINGS AND/OR FLOORS ARE TO BE REMOVED, REROUTE FEEDERS AND BRANCH CIRCUITS AS REQUIRED TO MAINTAIN CONTINUITY OF CIRCUITRY TO ALL ELECTRICAL EQUIPMENT NOT REMOVED.
O. EXTEND EXISTING INSTALLATIONS USING MATERIALS AND METHODS COMPATIBLE WITH EXISTING ELECTRICAL INSTALLATIONS, AS SPECIFIED AND IN COMPLIANCE WITH CURRENT CODES.
P. THESE DRAWINGS ARE A REPRESENTATION OF EXISTING CONDITIONS AND DO NOT NECESSARILY INDICATE ALL ELECTRICAL EQUIPMENT TO BE REMOVED OR TO REMAIN INTACT. IT IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO EVALUATE ALL CONDITIONS AND PROVIDE DEMOLITION IN ACCORDANCE WITH THE OWNER.
Q. SEE SPEC SECTION 26 0500.

PROJECT GENERAL ELECTRICAL NOTES:

A. LABEL ALL RECEPTACLES PLATES AS DESCRIBED IN SPEC. SECTION IDENTIFICATION FOR ELECTRICAL SYSTEMS. INCLUDE LABELING ON BACK OF DEVICE PLATE W/ PERMANENT INK.
B. LABEL ALL ADDRESSABLE FIRE ALARM DEVICES AS DESCRIBED IN SPEC. SECTION IDENTIFICATION FOR ELECTRICAL SYSTEMS.
C. LABEL ALL PANELBOARDS AS DESCRIBED IN SPEC. SECTION IDENTIFICATION FOR ELECTRICAL SYSTEMS.
D. PROVIDE ARC FLASH LABELS AT ALL NEW EQUIPMENT PER SPEC. SECTION IDENTIFICATION FOR ELECTRICAL SYSTEMS.
E. RECEPTACLE CIRCUITING: PROVIDE A MINIMUM OF ONE 4" SQUARE 2-1/8" DEEP JUNCTION BOX AT THE ACCESSIBLE CEILING IN EACH ROOM.
F. CONDUIT FITTINGS SHALL BE STEEL WITH SET SCREWS AND INSULATED THROATS. USE WATERTIGHT FITTINGS IN WET LOCATIONS ONLY.
G. ALL DEVICES MOUNTED AT ACCESSIBLE CEILINGS SHALL BE CONNECTED FROM A JUNCTION BOX WITH FLEXIBLE METAL CONDUIT.
H. ALL FIRE ALARM CONDUIT SHALL BE RED. ALL CONDUIT FOR COMMUNICATIONS, CONTROL, AND OTHER SYSTEMS 50V OR LESS SHALL BE BLUE. EXCEPTION AREAS EXPOSED CONDUIT TO MATCH EXPOSED AREA FINISH.
I. MAKE CONNECTIONS TO VIBRATING EQUIPMENT (INCLUDING MOTORS) USING FLEXIBLE CONDUIT WITH STRANDED CONDUCTORS.
J. MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE ACCEPTABLE. PULL DEDICATED NEUTRAL CONDUCTOR IDENTIFIED WITH TRACER WIRE, COLOR TO MATCH PHASE CONDUCTOR.
K. NEUTRAL CONDUCTOR SIZE SHALL MATCH PHASE CONDUCTORS.
L. PROVIDE GROUND CONDUCTOR IN ALL FEEDERS & BRANCH CIRCUITS. SEE SPEC. SECTION GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.
M. COLOR OF SWITCH LEG CONDUCTORS SHALL MATCH PHASE CONDUCTORS AND BE IDENTIFIED WITH COLORED TAPE. THREE AND FOUR WAY SWITCH "TRAVELERS" SHALL BE PINK OR PURPLE.
N. DO NOT INSTALL FLUSH MOUNTING BOX BACK-TO-BACK IN WALLS; PROVIDE MINIMUM 6 INCHES SEPARATION. PROVIDE MINIMUM 24 INCHES SEPARATION IN ACOUSTIC RATED WALLS.
O. VAV'S SHALL BE CONNECTED TO CIRCUITS DEDICATED TO VAV'S.
P. TEMPERATURE CONTROL CABINETS SHALL BE CONNECTED TO CIRCUITS DEDICATED TO TEMPERATURE CONTROL CABINETS.
Q. COVER TERMINATION SCREWS ON WIRING DEVICES AFTER CONNECTION WITH ELECTRICAL TAPE.

SHEET INDEX

E-000	ELECTRICAL - TITLE SHEET
E-001	ELECTRICAL - SITE PLAN
E-101	ELECTRICAL - DEMOLITION
E-201	ELECTRICAL - LIGHTING
E-301	ELECTRICAL - POWER
E-401	ELECTRICAL - SYSTEMS
E-500	ELECTRICAL DETAILS
E-501	ELECTRICAL DETAILS
E-600	ELECTRICAL SCHEDULES
E-601	ELECTRICAL PANEL SCHEDULES

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REGISTERED PROFESSIONAL ENGINEER
ANDREW A. BARTSCH
PE - 6525
DATE 04-22-2022
NORTH DAKOTA

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AIR COMBAT COMMAND
GRAND FORKS, ND
AIR FORCE BASE

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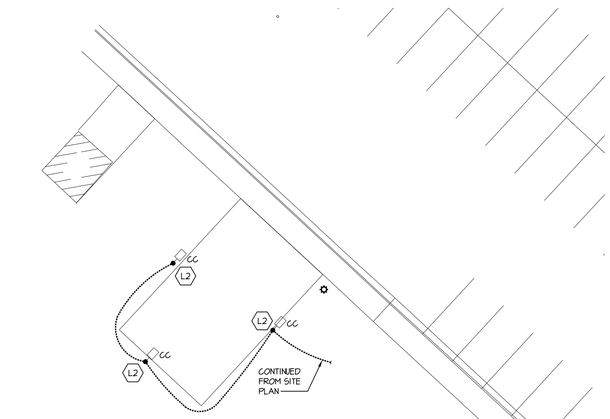
ELECTRICAL - TITLE SHEET

SHEET REFERENCE NUMBER
E-000



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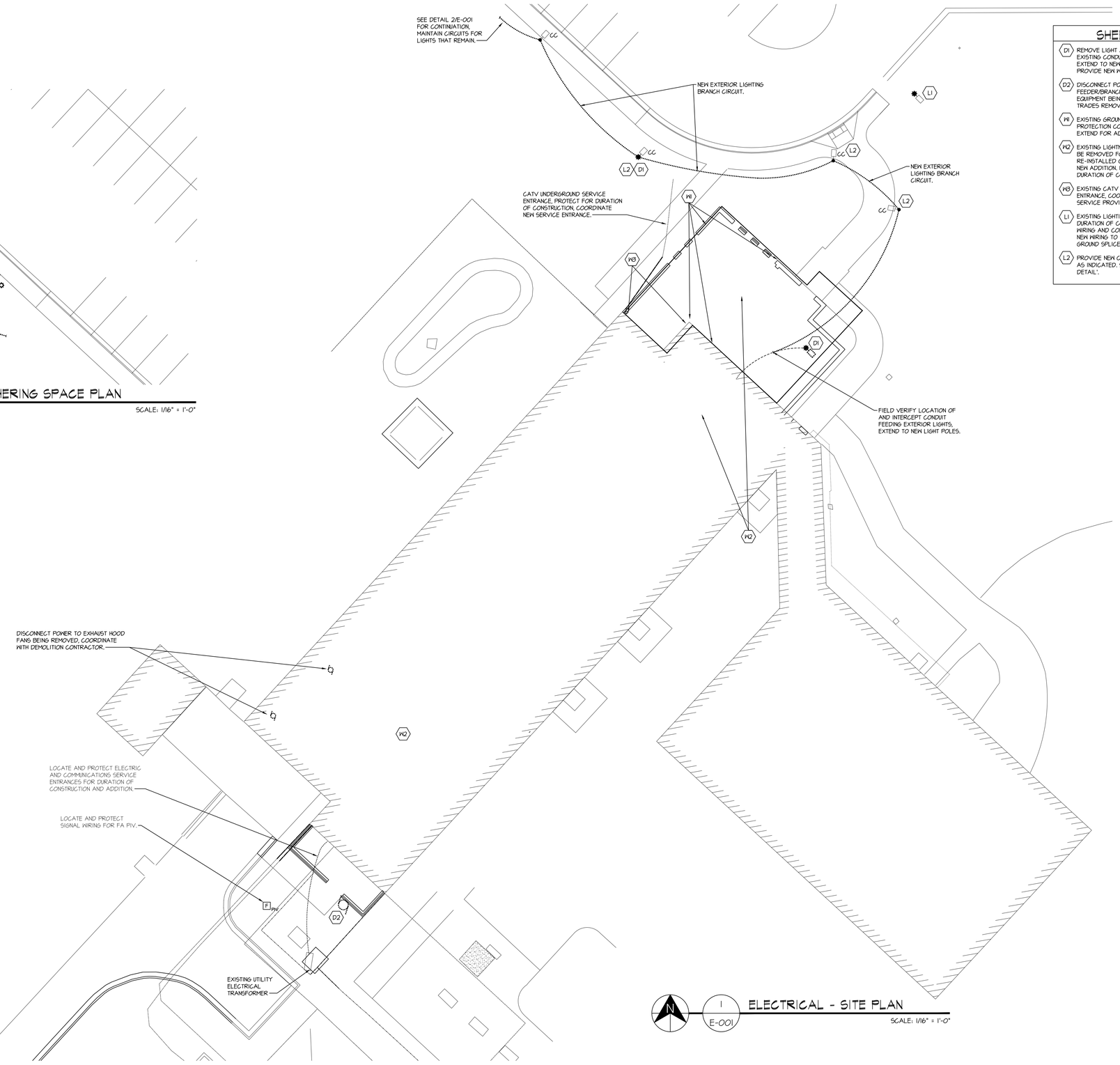
2 E-001

ELECTRICAL - GATHERING SPACE PLAN

SCALE: 1/16" = 1'-0"



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1 E-001

ELECTRICAL - SITE PLAN

SCALE: 1/16" = 1'-0"

SHEET NOTES:

- D1 REMOVE LIGHT AND POLE BASE, INTERECEPT EXISTING CONDUIT AND WIRING, SPLICE CONDUIT, EXTEND TO NEW POLE LIGHT LOCATIONS, PROVIDE NEW WIRING.
- D2 DISCONNECT POWER AND REMOVE FEEDER/BRANCH WIRING TO MECHANICAL EQUIPMENT BEING REMOVED, COORDINATE WITH TRADES REMOVING EQUIPMENT.
- W1 EXISTING GROUNDING RING AND LIGHTNING PROTECTION CONDUCTORS, INTERCEPT AND EXTEND FOR ADDITION.
- W2 EXISTING LIGHTNING PROTECTION TERMINALS TO BE REMOVED FOR ROOF DEMOLITION, AND RE-INSTALLED ON NEW ROOF AND EXTENDED TO NEW ADDITION. PROTECT CONDUCTORS FOR DURATION OF CONSTRUCTION.
- W3 EXISTING CATV PEDESTAL AND SERVICE ENTRANCE, COORDINATE RELOCATING WITH SERVICE PROVIDER.
- L1 EXISTING LIGHTING REMAINS, PROTECT FOR DURATION OF CONSTRUCTION. INTERCEPT BRANCH WIRING AND CONDUIT, SPLICE CONDUIT, PROVIDE NEW WIRING TO TERMINATE IN POLE BASE, NO IN GROUND SPLICES ACCEPTABLE.
- L2 PROVIDE NEW CONCRETE POLE BASE AND LIGHT AS INDICATED. SEE 5/E-500 'LIGHT POST BASE DETAIL'.

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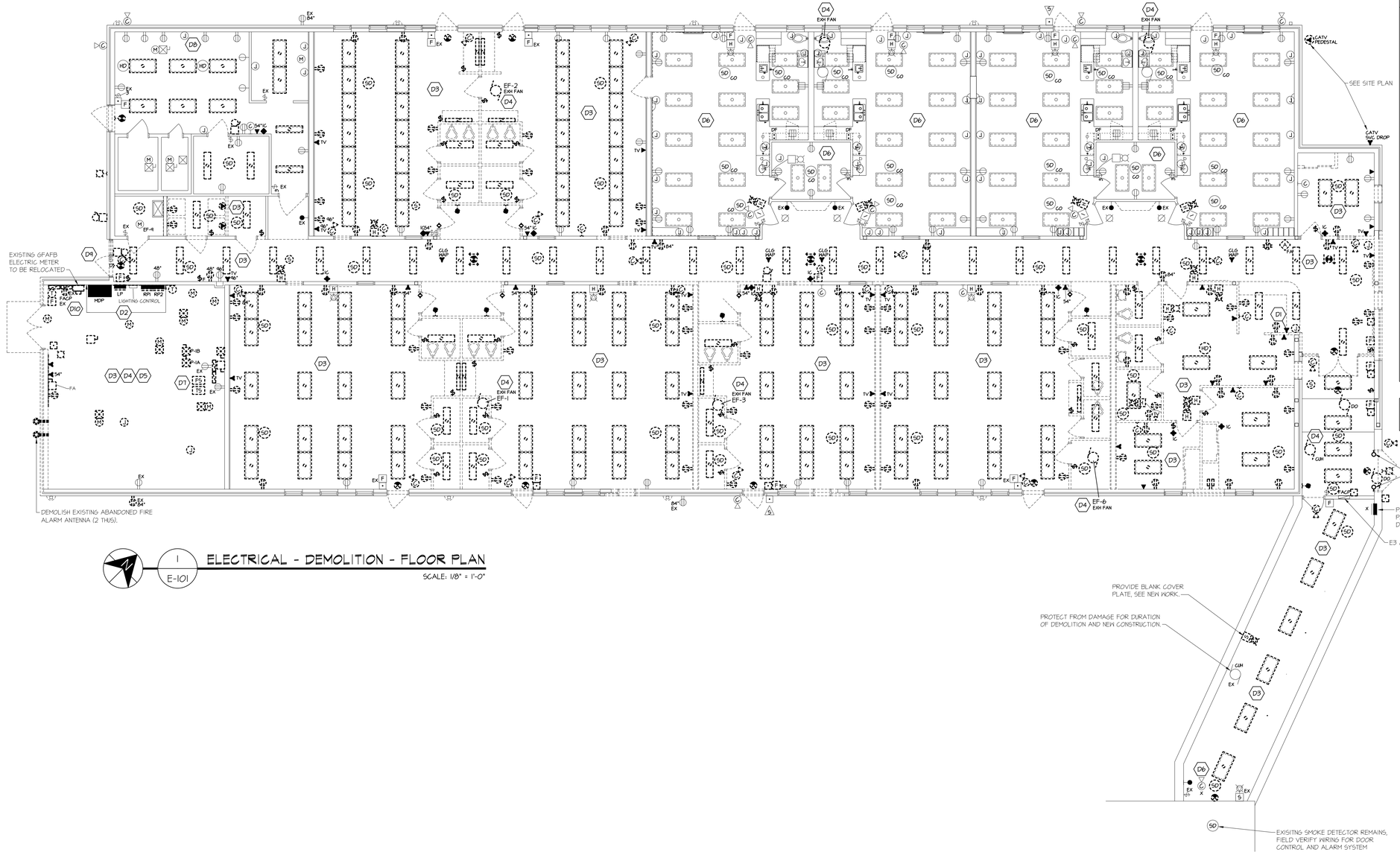
ELECTRICAL - SITE PLAN

SHEET REFERENCE NUMBER
E-001



1 E-101 ELECTRICAL - DEMOLITION - FLOOR PLAN

SCALE: 1/8" = 1'-0"

DEMOLITION NOTES:

(D1) DISCONNECT AND TURN OVER TO OWNER EXISTING INTERCOM AND CCTV EQUIPMENT.

(D2) DISCONNECT AND REMOVE SWITCHBOARD, SERVICE DISCONNECT, AND PANELBOARDS. RETAIN SERVICE ENTRANCE ENTRANCE LOAGTION, BRANCH CIRCUITS AND CONDUITS, SEE NEW WORK FOR ADDITIONAL INFORMATION.

(D3) DISCONNECT POWER AND REMOVE DEVICES ON PARTITIONS, WALLS, CEILINGS BEING REMOVED. COORDINATE WITH MECHANICAL AND ARCHITECTURAL DRAWINGS FOR EXTENT OF DEMOLITION. CONTRACTOR RESPONSIBLE TO RETAIN AND STORE DEVICES TO BE RE-INSTALLED IN NEW WORK.

(D4) DISCONNECT POWER TO MECHANICAL EQUIPMENT BEING REMOVED. COORDINATE WITH MECHANICAL DEMOLITION CONTRACTOR, FOR EXISTING EQUIPMENT BEING RELOCATED, EXTEND CIRCUITS TO NEW LOCATION.

(D5) DISCONNECT AND REMOVE LIGHT FIXTURES THIS ROOM. MODIFY WIRING AS NEEDED FOR NEW WORK.

(D6) DISCONNECT AND REMOVE CEILING DEVICES, STORE AND PROTECT FROM DAMAGE. DEVICES TO BE RE-INSTALLED IN SAME LOCATIONS. RETAIN EXISTING CIRCUITS AND CONTROLS FOR RECONNECTION. COORDINATE WITH MECHANICAL.

(D7) DISCONNECT AND RETAIN FLOW AND TAMPER WIRING AND MODULES FOR USE IN NEW WORK.

(D8) EXISITING ANSUL SYSTEM FOR KITCHEN EXHAUST HOODS REMAINS, PROTECT FOR DURATION OF CONSTRUCTION. DISCONNECT AND RECONNECT WIRING AS REQUIRED, COORDINATE WITH DEMOLITION AND MECHANICAL CONTRACTORS.

(D9) EXISTING DOOR CONTACT AND SURFACE WIRING TO ACCESSIBLE CEILING. COORDINATE WITH GENERAL CONTRACTOR FOR REMOVAL AND PROTECTION FOR DURATION OF CONSTRUCTION.

(D10) TELEPHONE ENTRANCE AND PUNCH DOWN BLOCKS TO BE RELOCATED TO NEW DATA ROOM.

GENERAL NOTES:
A. MAINTAIN CIRCUIT CONTINUITY OF EXISTING CIRCUITS FOR DEVICES THAT REMAIN.

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AIR COMBAT COMMAND

GRAND FORKS, ND
AIR FORCE BASE

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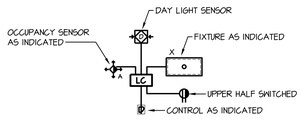
ELECTRICAL - DEMOLITION

SHEET REFERENCE NUMBER
E-101



4 E-201 TYPICAL ROOM CONTROLLER DIAGRAM

NO SCALE

LIGHTING CONTROL NOTES:

LC1 CLASSROOMS: MANUAL ON TO 100%, VACANCY OFF, DAYLIGHT HARVESTING CONTROLLED ZONE, 50% OF RECEPTACLES OFF WITH VACANCY, SEE POWER PLANS FOR CONTROLLED RECEPTACLES.

LC2 PRIVATE OFFICE; MANUAL ON TO 100% WITH DIMMING, VACANCY OFF, DAYLIGHT HARVESTING CONTROLLED ZONE, 50% OF RECEPTACLES OFF WITH VACANCY, SEE POWER PLANS FOR CONTROLLED RECEPTACLES.

LC3 CORRIDORS: TIME CLOCK ON TO 50%, 100% UPON SIGNAL FROM OCCUPANCY SENSOR, RETURN TO 50% AFTER 20 MINUTES OF NO SIGNAL FROM OCCUPANCY SENSOR. AFTER HOURS, 100% ON UPON SIGNAL FROM OCCUPANCY SENSOR.

LC4 PROVIDE MANUAL CONTROL AS INDICATED FOR SPACE.

LC5 TOILET ROOMS: FULL ON FROM SIGNAL FROM OCCUPANCY SENSOR, OFF AFTER 20 MINUTES WITH NO SIGNAL FROM OCCUPANCY SENSOR.

LIGHTING SHEET NOTES:

G1 LIGHTING CONTROLS

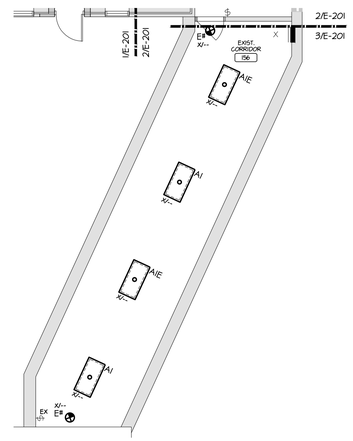
L1 CONNECT TO EXISTING LIGHTING CIRCUIT MADE AVAILABLE FROM DEMOLITION, MODIFY CIRCUITS AS NEEDED. ELECTRICAL CONTRACTOR TO VERIFY 120V, 20A CIRCUITS CONNECTED LOAD DOES NOT EXCEED 1800VA. CONTROL AS INDICATED.

L2 COORDINATE FIXTURE LOCATIONS WITH MECHANICAL EQUIPMENT, DUCTWORK AND PIPING. FIXTURES TO BE SUSPENDED FROM CEILING AS TO AVOID MECHANICAL EQUIPMENT, MIN. OF 1' AFF.

L3 INSTALL AT EXISTING LOCATION, CONNECT TO EXISTING CIRCUIT AND CONTROLS.

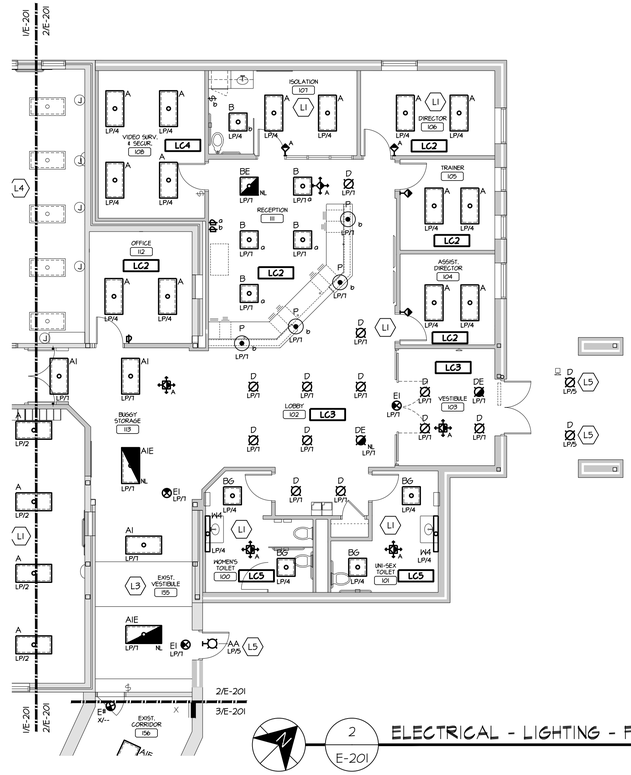
L4 RE-INSTALL EXISTING LIGHT FIXTURES REMOVED, INSTALL IN SAME LOCATION, CONNECT TO EXISTING CIRCUITS AND CONTROLS. COORDINATE WITH MECHANICAL.

L5 ROUTE CONTROL THROUGH EXTERIOR TIME CLOCK//PHOTOCELL.



3 E-201 ELECTRICAL - LIGHTING - FLOOR PLAN

SCALE: 1/8" = 1'-0"



2 E-201 ELECTRICAL - LIGHTING - FLOOR PLAN

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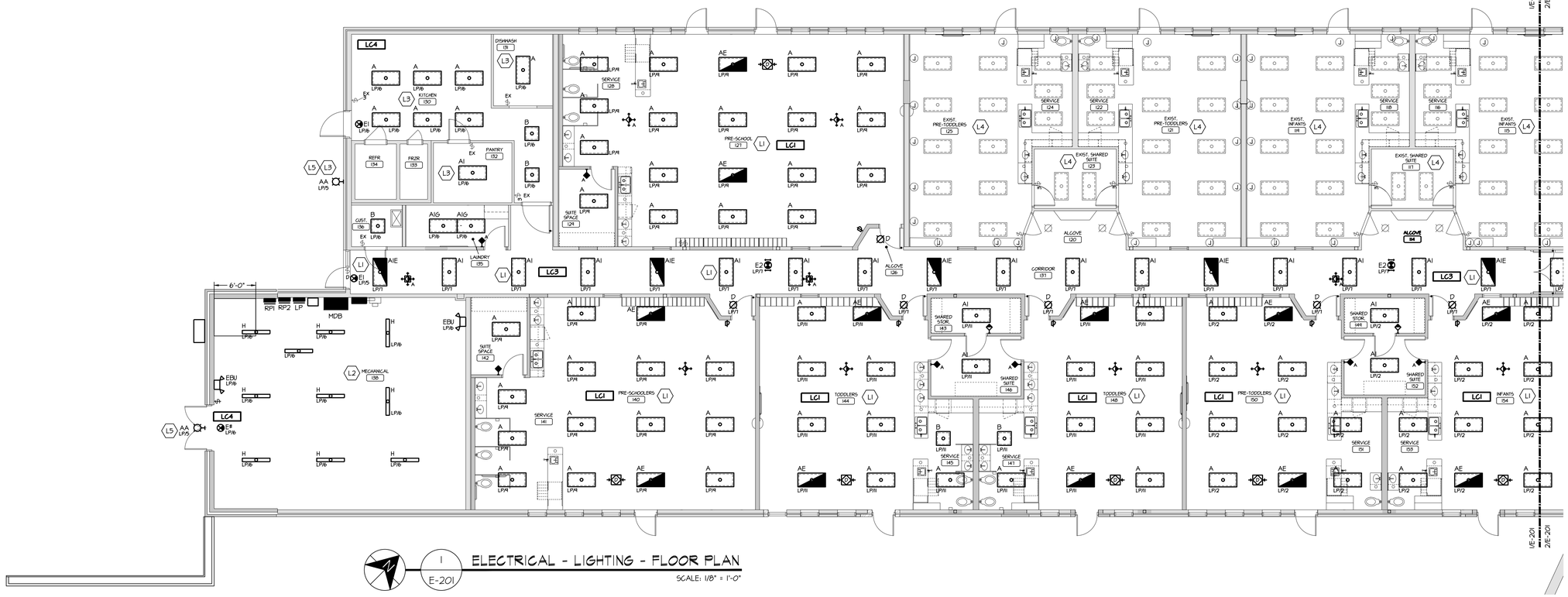

1 E-201 ELECTRICAL - LIGHTING - FLOOR PLAN

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ELECTRICAL - LIGHTING

SHEET REFERENCE NUMBER
E-201

GENERAL NOTES:

A. CIRCUIT NUMBERS ARE FOR REFERENCE, USE CIRCUITS MADE AVAILABLE FROM DEMOLITION.

B. MAINTAIN CIRCUIT CONTINUITY FOR DEVICES THAT REMAIN.

POWER SHEET NOTES:

(K1) PROVIDE POWER AND CONNECTIONS FOR SENSOR VALVES, COORDINATE LOCATION WITH PLUMBING CONTRACTOR. PROVIDE BLANK COVER PLATES WHERE CONNECTIONS ARE FOR FUTURE.

(K2) CONNECT TO EXISTING RECEPTACLE CIRCUIT SERVING THIS ROOM. CIRCUIT NUMBERS ARE FOR REFERENCE, USE AVAILABLE SPARES AS NEEDED.

(K3) PROVIDE (2) 3/4" CONDUITS, (1) FOR DOOR OPERATOR, (1) FOR KEY PAD/CARD READER AND INTERCOM. CONDUITS STUBB UP IN PEDESTAL BASE. PEDESTAL PROVIDED BY GENERAL CONTRACTOR. COORDINATE STUBB UP LOCATION WITH EQUIPMENT INSTALLER.

(K4) PROVIDE WIREWAY TO EXTEND EXISTING BRANCH CIRCUIT AND CONDUITS TO NEW PANELBOARD LOCATIONS.

(K5) VERIFY NEMA CONFIGURATION.

(K6) RE-INSTALL DEVICES REMOVED FOR CEILING WORK AND RECONNECT TO EXISTING CIRCUIT / CONTROLS SERVING AREA.

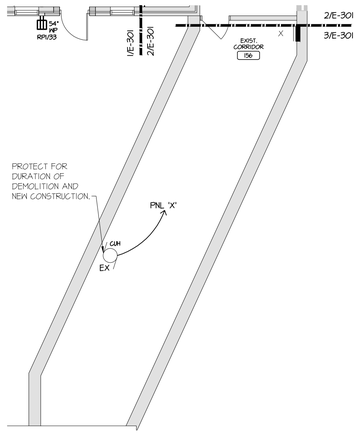
(WT) SWITCHED RECEPTACLE TO BE CONTROLLED WITH ROOM LIGHTING CONTROL.

(K8) EXTEND EXISTING CONDUIT TO NEW LOCATIONS, PROVIDE NEW WIRING FROM PANELBOARD.

(K9) PROVIDE NEW MDP (MAIN DISTRIBUTION PANEL BOARD) LOCATED AT SAME LOCATION AS EXISTING MAIN SWITCH REMOVED IN DEMOLITION.

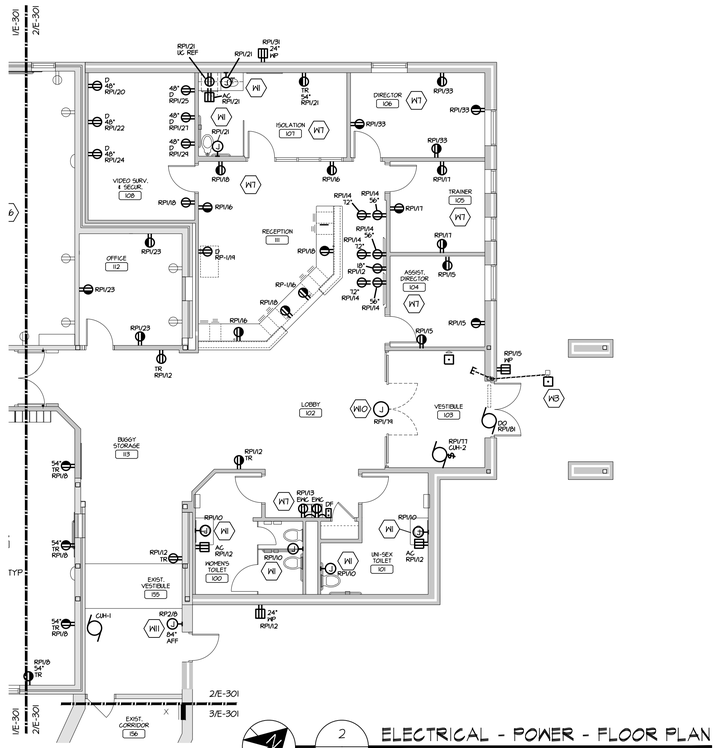
(K10) PROVIDE POWER CONNECTION TO POWER SLIDING DOOR, COORDINATE WITH DOOR INSTALLER.

(K11) PROVIDE CONNECTIONS AND INSTALLTION TO LOCAL DOOR ALARM.



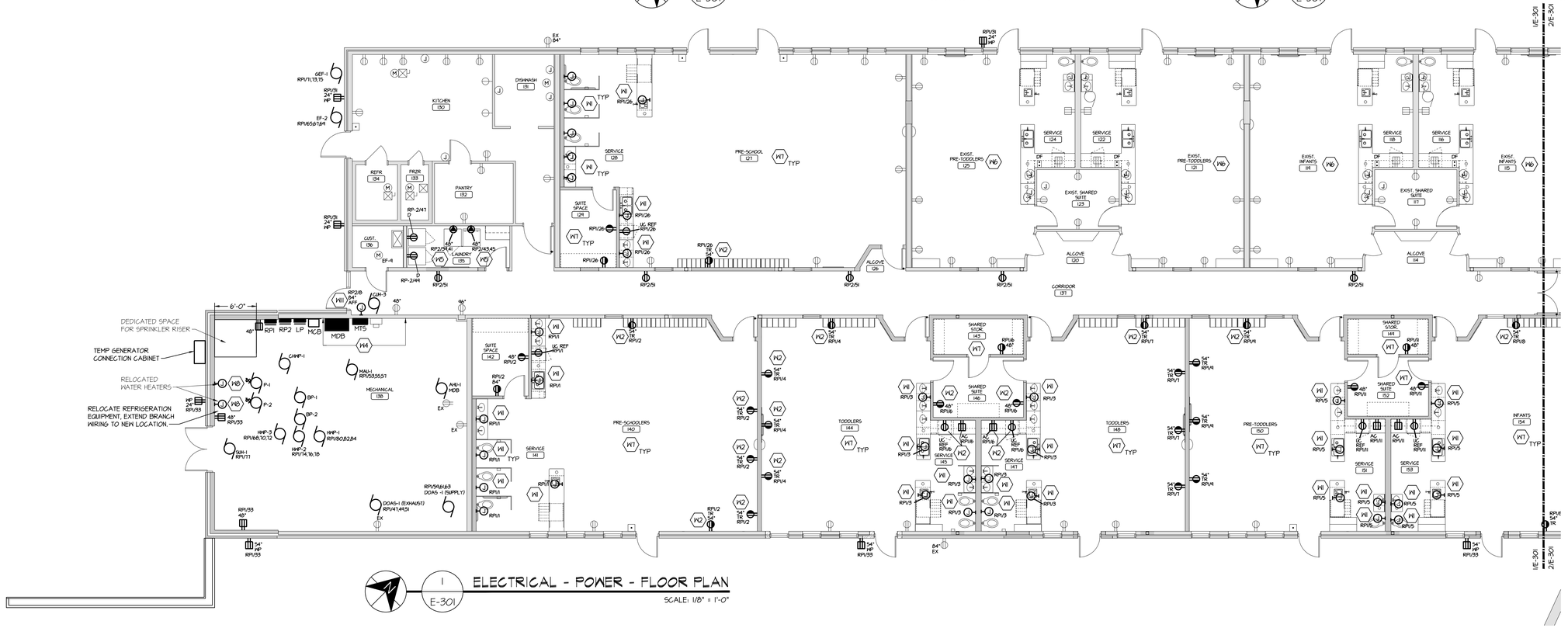
3 E-301 ELECTRICAL - POWER - FLOOR PLAN

SCALE: 1/8" = 1'-0"



2 E-301 ELECTRICAL - POWER - FLOOR PLAN

SCALE: 1/8" = 1'-0"



1 E-301 ELECTRICAL - POWER - FLOOR PLAN

SCALE: 1/8" = 1'-0"

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ELECTRICAL - POWER

SHEET REFERENCE NUMBER
E-301

SYSTEMS SHEET NOTES:

51 PANIC BUTTON MOUNTED UNDER DESK TOP. WHEN BUTTON IS PRESSED MAGNETIC DOOR HOLDERS SHALL RELEASE.

52 NEW CATV ENTRANCE, PROVIDE 4'X8'X¾" PLYWOOD PAINTED WITH FIRE RETARDANT PAINT.

53 (NOTE NOT USED)

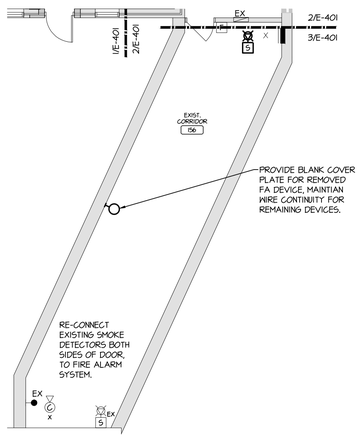
54 RE-INSTALL DEVICES; SYSTEMS, FIRE ALARM, INTERCOM, NOTIFICATION, THAT WERE REMOVED FOR CEILING WORK.

55 NEW FIRE ALARM PANEL, PROVIDE NEW WIRING AND DEVICES THROUGHOUT; MONITOR MODULES, DOOR RELEASE, DETECTORS, ETC.

56 RELOCATED TELEPHONE ENTRANCE AND EQUIPMENT, PROVIDE 4'X8'X¾" PLYWOOD PAINTED WITH RETARDENT PAINT.

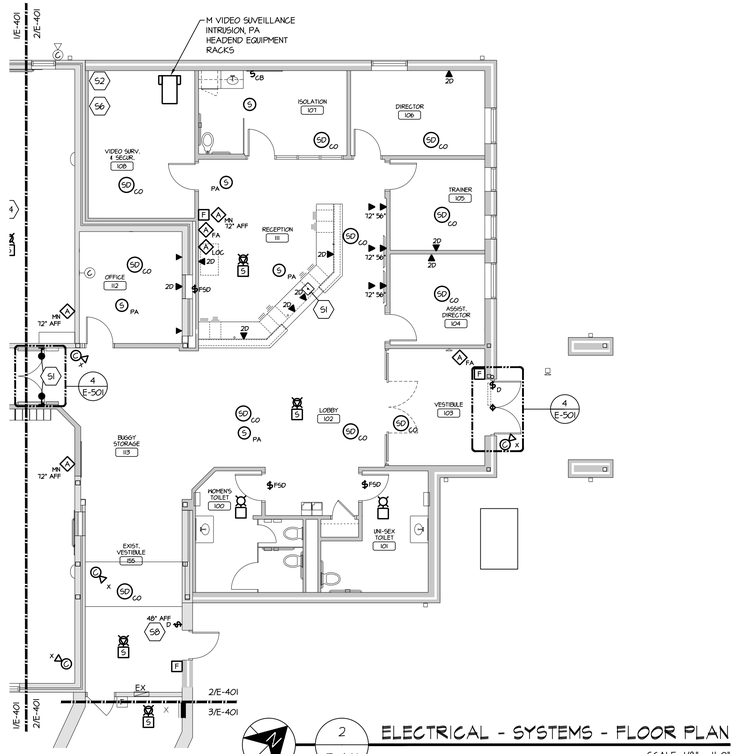
57 PROVIDE BUILDING FIRE ALARM CONNECTIONS FROM ANSUL SYSTEM, PULL STATION ROUGH-IN AT EXIT DOOR. COORDINATE WITH EQUIPMENT INSTALLER.

58 PROVIDE DOOR EXIT ALARM, EQUAL TO DETEX EAX-2500, 15 SECOND ARMING DELAY, FLUSH MOUNT WITH 24 VAC TRANSFORMER, FLUSH DOOR CONTACTS, STANDARD COLOR, STANDARD LETTERING, MORTISE CYLINDER, NO BATTERY BACK UP. INCLUDE STATUS INDICATOR. INSTALL PER MANUFACTURER'S INSTRUCTION. COORDINATE WITH DOOR HARDWARE/INSTALLER.



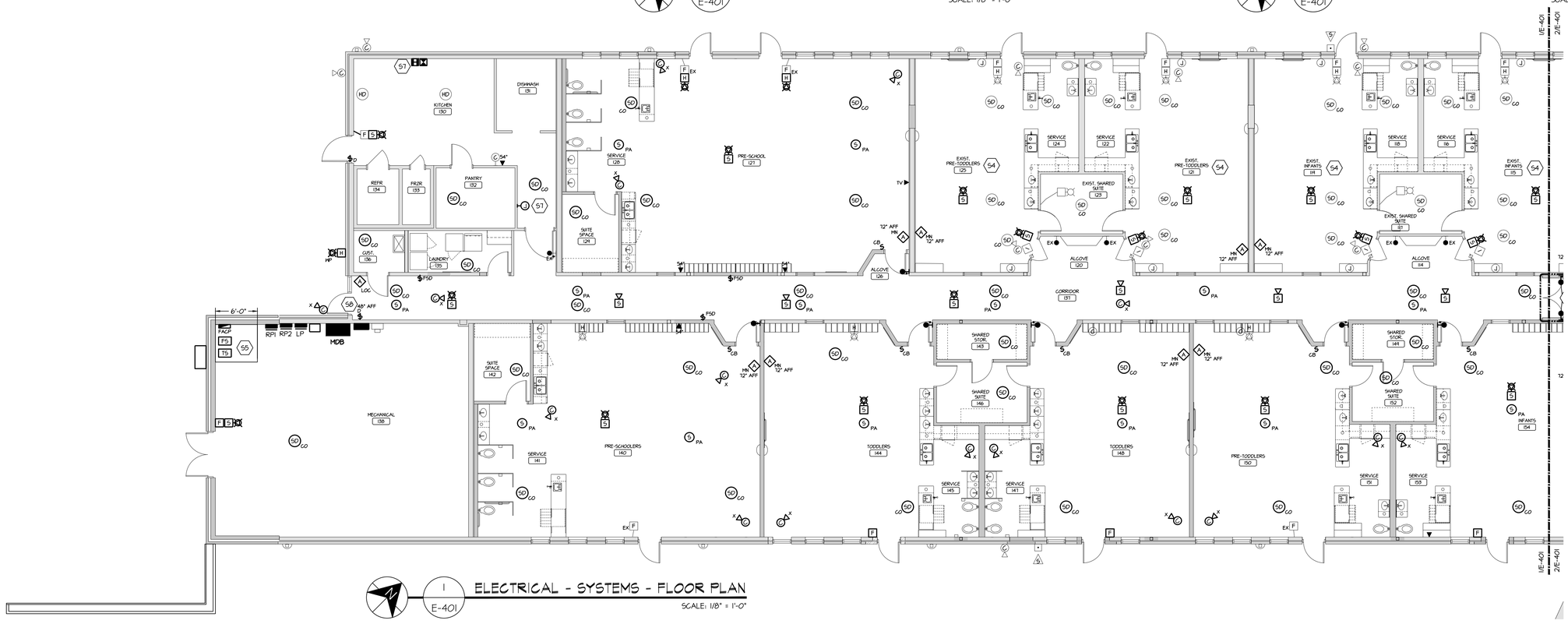
3 E-401 ELECTRICAL - SYSTEMS - FLOOR PLAN

SCALE: 1/8" = 1'-0"



2 E-401 ELECTRICAL - SYSTEMS - FLOOR PLAN

SCALE: 1/8" = 1'-0"



1 E-401 ELECTRICAL - SYSTEMS - FLOOR PLAN

SCALE: 1/8" = 1'-0"

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REGISTERED PROFESSIONAL ENGINEER
ANDREW A. BARTSCH
PE - 6525
DATE 04-22-2022
NORTH DAKOTA

U.S. AIR FORCE

Symbol	Description	Date	Approved

DESIGNED BY: AAB
DWN BY: KDB
CHK BY: AAB
SUBMITTED BY: AAB
DATE: 22 APRIL 2022
PLOT DATE: AS SHOWN
PLOT SCALE: AS SHOWN
DRAWING NUMBER: AS SHOWN

DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND

GRAND FORKS, ND
AIR FORCE BASE

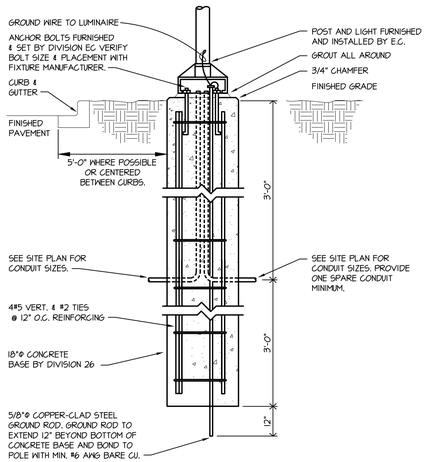
PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

ELECTRICAL - SYSTEMS

SHEET REFERENCE NUMBER
E-401

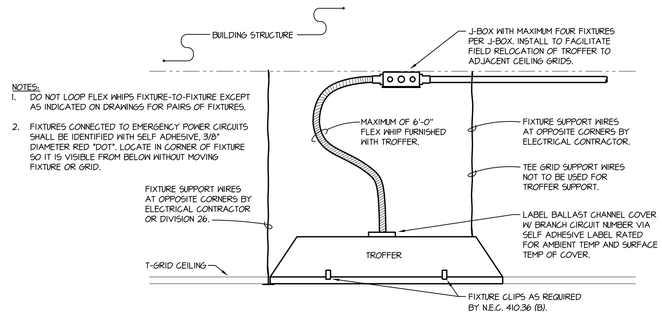
LIGHT POLE BASE DETAIL NOTES:

1. SEE SITE PLAN FOR LOCATIONS AND QUANTITY.
2. CUT CONDUIT FLUSH WITH TOP SURFACE OF CONCRETE BASE.
3. PROVIDE 6'-0" OF COILED WIRE AT TOP OF EACH BASE.
4. PROVIDE SPARE 1-1/2" PVC FROM EACH LIGHT BASE.
5. CONCRETE BASE PROVIDED BY E.C.
6. SEE LUMINAIRES, GROUNDING AND BONDING SPECIFICATION SECTIONS.
7. PROVIDE VIBRATION DAMPENERS FOR ALL POLES/POSTS.
8. ALL POLE/POSTS SHALL HAVE HANDHOLES NEAR BASE.



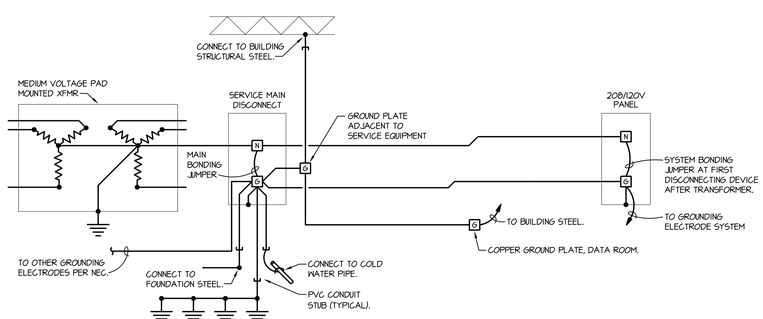
5 E-500 LIGHT POST BASE DETAIL

SCALE: NTS



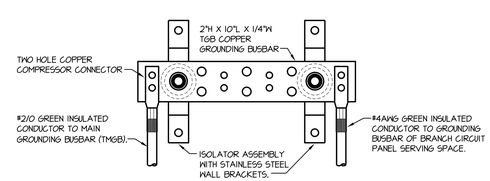
3 E500 TYPICAL GRID TROFFER INSTALLATION DETAIL

SCALE: NTS



4 E-500 SYSTEM GROUNDING & BONDING DETAIL

SCALE: NTS

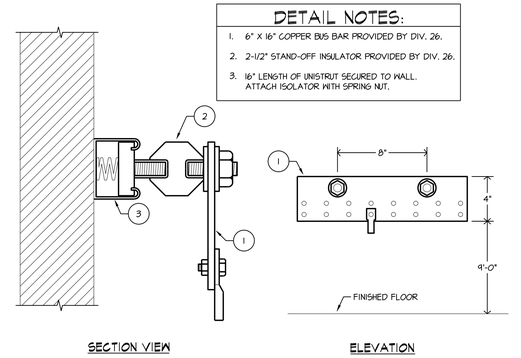


2 E-500 GROUND PLATE DETAIL (TGB)

SCALE: NTS

DETAIL NOTES:

1. 6" X 16" COPPER BUS BAR PROVIDED BY DIV. 26.
2. 2-1/2" STAND-OFF INSULATOR PROVIDED BY DIV. 26.
3. 16" LENGTH OF UNISTRUT SECURED TO WALL. ATTACH ISOLATOR WITH SPRING NUT.



1 E-500 COPPER GROUND BAR INSTALLATION DETAIL

SCALE: NTS

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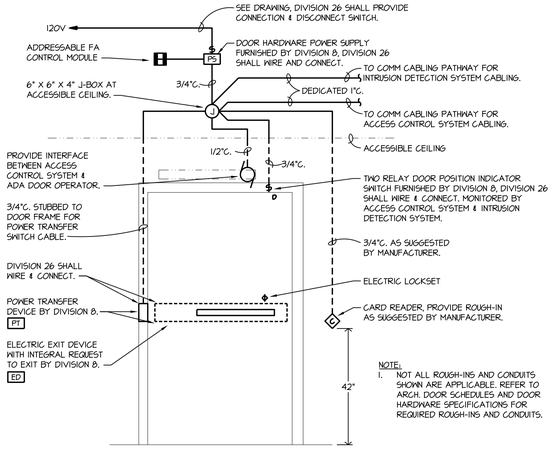
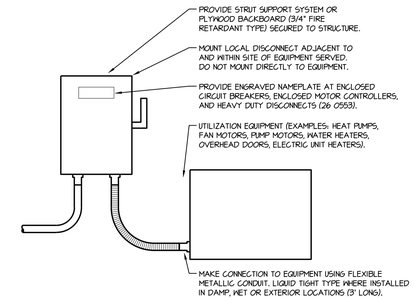
ELECTRICAL DETAILS

SHEET REFERENCE NUMBER
E-500



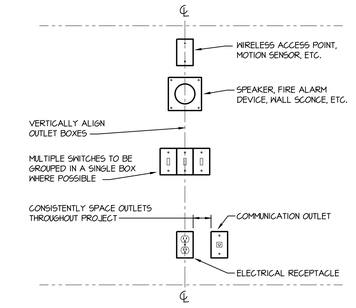
5 E-501 DOOR ACCESS CONTROL DETAIL (SINGLE)

SCALE: NTS



3 E-501 EQUIPMENT CONNECTION DETAIL

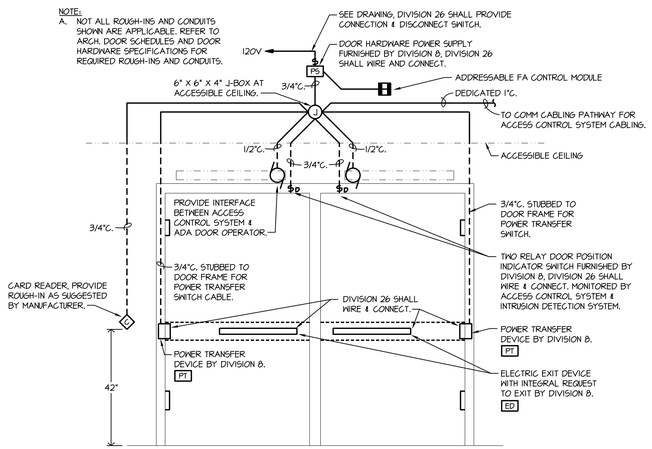
SCALE: NTS



2 E-501 OUTLET ALIGNMENT DETAIL

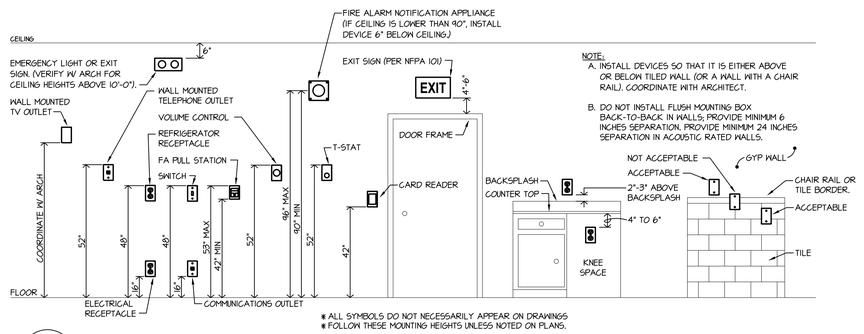
SCALE: NTS

NOTE:
A. NOT ALL ROUGH-INS AND CONDUITS SHOWN ARE APPLICABLE. REFER TO ARCH. DOOR SCHEDULES AND DOOR HARDWARE SPECIFICATIONS FOR REQUIRED ROUGH-INS AND CONDUITS.



4 E-501 DOOR ACCESS CONTROL DETAIL (DOUBLE)

SCALE: NTS



1 E-501 DEVICE MOUNTING ELEVATIONS

SCALE: NTS

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ADD/REPAIR CDC FOR COMPLIANCE &
RECAPITALIZATION B168

ELECTRICAL DETAILS

SHEET REFERENCE NUMBER
E-501

MOTOR & EQUIPMENT SCHEDULE

ID	QTY	DESCRIPTION	PHYSICAL LOCATION	LOAD INFORMATION HP	kW	(MCA) FLA	(MFS) MOCP	VOLTAGE/ PHASE	FED FROM	CONDUIT & WIRE CONDUIT #	CONDUIT SIZE	WIRE/ CONDUIT	GROUND/ CONDUIT	LOCAL DISCONNECT FURNISH BY	SIZE	FUSE	REMARKS	CONTROLLER FURNISH BY	TYPE	SIZE	REMARKS	AUX. CONTROL (SEE NOTE BELOW) INTERLOCK	FIRE ALARM	ATC	OTHER	NOTES
AHU-1		AIR HANDLING UNIT	MECH. RM.	20	--	(66.4)	90	208/3	SMDP	1	1-1/4"	3#3/0	#8	MC	--	--	3	MC	VFD	--	--	--	6	--	--	--
DOAS-1		OUTSIDE AIR (SUPPLY)	MECH. RM.	--	--	(38.1)	50	208/3	RP1/31,39,41	1	1"	3#6	#10	MC	--	--	3	MC	VFD	--	--	--	6	--	--	1
DOAS-1		OUTSIDE AIR (EXHAUST)	MECH. RM.	15	--	(22.5)	40	208/3	RP1/41,44,51	1	3/4"	3#8	#10	MC	--	--	3	MC	VFD	--	--	--	6	--	--	1
BP-1		BOILER PUMP	MECH. RM.	3/4	--	3.5	15	208/3	RP1/28,30,32	1	3/4"	3#12	#12	MC	--	--	3	MC	VFD	--	--	--	--	--	--	--
BP-2		BOILER PUMP	MECH. RM.	3/4	--	3.5	15	208/3	RP1/34,36,38	1	3/4"	3#12	#12	MC	--	--	3	MC	VFD	--	--	--	--	--	--	--
CH-1		CHILLER	EXT. ON GRADE	--	--	(354)	400	208/3	SMDP	2	2-1/2"	(2) 3#3/0	#6	EC	400	--	1	MC	VFD	--	--	--	--	--	--	--
CHWP-1		PUMP	MECH. RM.	7.5	--	24.2	40	208/3	SMDP	1	3/4"	3#8	#10	MC	--	--	3	MC	VFD	--	--	--	--	--	--	--
CUH-1		CABINET UNIT HEATER	VEST. 155	FHP	--	--	20	120	RP1/T1	1	3/4"	2#12	#12	MC	--	--	3	MC	ECM	--	--	--	--	--	--	--
CUH-2		CABINET UNIT HEATER	VEST. 103	FHP	--	--	20	120	RP1/T1	1	3/4"	2#12	#12	MC	--	--	3	MC	ECM	--	--	--	--	--	--	--
CUH-3		CABINET UNIT HEATER	CORR. 137	FHP	--	--	20	120	RP1/T1	1	3/4"	2#12	#12	MC	--	--	3	MC	ECM	--	--	--	--	--	--	--
GEF-1		EXHAUST FAN	KITCHEN 130	2	--	7.5	15	208/3	RP1/11,13,15	1	3/4"	3#12	#12	EG	30	--	1	MC	ECM	--	--	--	--	--	--	--
EF-2		EXHAUST FAN	KITCHEN 130	1/2	--	2.4	15	208/3	RP1/65,61,64	1	3/4"	3#12	#12	EG	30	--	1	MC	ECM	--	--	--	--	--	--	--
MAU-1		MAKE-UP AIR UNIT	MECH. RM.	5	--	16.1	30	208/3	RP1/53,55,57	1	3/4"	3#10	#12	MC	--	--	3	MC	VFD	--	--	--	6	--	--	--
HWP-1		PUMP	MECH. RM.	5	--	16.1	25	208/3	RP1/80,82,84	1	3/4"	3#10	#12	MC	60	--	3	MC	VFD	--	--	--	--	--	--	--
HWP-2		PUMP	MECH. RM.	5	--	16.1	25	208/3	RP1/14,16,18	1	3/4"	3#10	#12	MC	60	--	3	MC	VFD	--	--	--	--	--	--	--
HWP-3		PUMP	MECH. RM.	3	--	10.6	20	208/3	RP1/68,70,72	1	3/4"	3#12	#12	MC	30	--	3	MC	VFD	--	--	--	--	--	--	--
P-1		CIRCULATION PUMP	MECH. RM.	FHP	--	--	15	120	RP1/40	1	3/4"	2#12	#12	EG	SPST	--	1	MC	VFD	--	--	--	--	--	--	--
P-2		CIRCULATION PUMP	MECH. RM.	FHP	--	--	15	120	RP1/42	1	3/4"	2#12	#12	EG	SPST	--	1	MC	VFD	--	--	--	--	--	--	--
SUH-1		SUSPENDED UNIT HEATER	MECH. RM.	FHP	--	--	--	120	RP1/T1	1	3/4"	2#12	#12	MC	--	--	3	MC	--	--	--	--	--	--	--	--

GENERAL NOTES:

A. ALL CONDUIT AND WIRE SIZES NOTED ARE BASED OFF OF COPPER CONDUCTORS.
B. REFER TO SPEC SECTION 26 0519 2.02(B)(1) FOR WIRING BETWEEN VFDS AND MOTORS.

NOTES:

1. ELECTRICAL CONTRACTOR SHALL FURNISH, SET, AND WIRE & CONNECT.
2. ELECTRICAL CONTRACTOR SHALL SET, AND WIRE & CONNECT.
3. ELECTRICAL CONTRACTOR SHALL WIRE & CONNECT.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE SINGLE POINT CONNECTION.
5. CONTROL WIRING BY MECHANICAL CONTRACTOR.
6. ELECTRICAL CONTRACTOR SHALL PROVIDE DSD IN SUPPLY AND RETURN AIR DUCT WORK AND PROVIDE ADDRESSABLE CONTROL MODULE. FIRE ALARM SYSTEM SHALL SHUT UNIT DOWN UPON AN ALARM.
7. PROVIDE DISCONNECT FOR SUPPLY AND RETURN FANS, COORDINATE WITH MECHANICAL CONTRACTOR.

ELECTRICAL CONTRACTOR SHALL FURNISH SHUNT TRIP SWITCH PER SPEC SECTION LOW VOLTAGE ELECTRICAL DISTRIBUTION EQUIPMENT.
ELECTRICAL CONTRACTOR SHALL INTERLOCK MAKE-UP AIR UNIT WITH GREASE HOOD EXHAUST FAN.
ELECTRICAL CONTRACTOR SHALL INTERLOCK EXHAUST FAN WITH DISHWASHER.

ABBREVIATIONS:

AQS – AQUA STAT
ATC – AUTOMATIC TEMP CONTROLS
CB – COMBINATION
CP – CONTROL PANEL
DSD – DUCT SMOKE DETECTOR
EC – ELECTRICAL CONTRACTOR
ES – EQUIPMENT SUPPLIER
ESD – EMERGENCY SHUT DOWN
FAR – FIRE ALARM RELAY
ETM – ELAPSED TIME METER
FHP – FRACTION HORSEPOWER
FLA – FULL LOAD AMPS
FS – FLOAT SWITCH
FSEC – FOOD SERVICE EQUIPMENT SUPPLIER
HW – HARDWIRED
IL – INTERLOCK
M – MAGNETIC
MC – MECHANICAL CONTRACTOR
MCA – MINIMUM CIRCUIT AMPACITY
MOCP – MAX OVERCURRENT PROTECTION
MM – MANUAL MOTOR STARTER
MP – METERING PUMP
MRS – MANUAL REVERSE SWITCH
N/A – NOT APPLICABLE
NF – NONFUSED
OS – OCCUPANCY SENSOR
PL – PILOT LIGHT
PLS – PILOT LIGHT SWITCH
PLSPST – SPST WITH RED PILOT LIGHT
R – RELAY
REC – RECEPTACLE / CORD & PLUG
SC – SELF CONTAINED
SPST – SINGLE POLE SINGLE THROW
SS – SOLID STATE
ST – SHUNT TRIP
TS – TIME SWITCH
T-STAT – THERMOSTAT
VFD – VARIABLE FREQUENCY DRIVE

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER	SERIES	VOLT	LIGHT SOURCE WATTS/ TYPE	CCT KELVIN	CRI	NOTES/ LUMENS	RATED LIFE HRS	POWER SUPPLY / TRANSFORMER SYSTEM WATTS	DIMMING	DIMENSIONS	FINISH	MOUNTING	DESCRIPTION
	EQUAL TO:													
	VERBATIM	PN14												
	LITHONIA	EPANL												
	EATON	14FP		46.44									RECESSED	SLEEK EDGE LIT LED FLAT PANEL. RIGID HOUSING DIE-FORMED STEEL
	LSI INDUSTRIES	SFP14		WATT		MIN		(MIN)		DIM	2' X 4'		OR SURFACE	CONSTRUCTION:SMOOTH WHITE FROST LENS, SUITABLE FOR DAMP
A	CREE LIGHTING	FP14	120	LED	3500	80	4800	50,000	46.44	0-10V	7/8" DEPTH	WHITE	T-GRID	LOCATIONS. INCLUDE ACCESSORIES FOR SURFACE MOUNT AS REQUIRED.
	EQUAL TO: SAME AS 'A' EXCEPT													
AE	INTEGRAL BATTERY		--											SAME AS 'A' EXCEPT 90 MIN. BATTERY.
	EQUAL TO: SAME AS 'A' EXCEPT													
AI	LUMEN OUTPUT		--				3000		26					SAME AS 'A' EXCEPT 3000 LUMEN, 26 WATTS.
	EQUAL TO: SAME AS 'AI' EXCEPT													
AIE	INTEGRAL BATTERY		--											SAME AS 'AI' EXCEPT EM BATTERY.
	EQUAL TO: SAME AS 'AI' EXCEPT													
AIG	GYP CEILING		--											SAME AS 'AI' EXCEPT GYP CEILING.
	EQUAL TO:													
	VERBATIM	PN22												
	GE LIGHTING	LPL22												
	LITHONIA	EPANL												
	LSI INDUSTRIES	SFP22		30.2T									RECESSED	SLEEK EDGE LIT LED FLAT PANEL. RIGID HOUSING DIE-FORMED STEEL
	CREE LIGHTING	FP22		WATT		MIN		(MIN)		DIM	2' X 2"		OR SURFACE	CONSTRUCTION:SMOOTH WHITE FROST LENS, NO VISIBLE LED DIODES.
B	EATON	22FP	120	LED	3500	80	3300	50,000	30.2T	0-10V	7/8" DEPTH	WHITE	T-GRID	SUITABLE FOR DAMP LOCATIONS.
	EQUAL TO: SAME AS 'B' EXCEPT													
BE	INTEGRAL BATTERY		--											SAME AS 'B' EXCEPT 90 MIN. BATTERY.
	EQUAL TO: SAME AS 'B' EXCEPT													
BG	GYP CEILING		--											SAME AS 'B' EXCEPT GYP CEILING.
D	EQUAL TO: LITHONIA	LDN6	120	11 WATT LED	3500	80 CRI MIN	1000	(MIN) 50,000	11	--	6" APERATURE, NOM 11"xH"x6"D	WHITE	RECESSED	6" OPENING, SUITABLE FOR INTERIOR AND EXTEROPR DAMP APPLICATION.
DE	SAME AS 'D' EXCEPT INTEGRAL BATTERY		--							--				SAME AS 'D' EXCEPT 90 MIN. BATTERY.
EI	EQUAL TO: LITHONIA	EXRG EL M6	120	1 WATT LED	NA	NA	NA	NA	1	--	NOM 12"x"1"H	WHITE RED LETTERS	CEILING OR WALL	WHITE THERMOPLASTIC HOUSING RED LETTERS, CEILING OR WALL MOUNT, 90 MIN. BATTERY.
E2	SAME AS 'EI' EXCEPT DOUBLE FACE		--											
EBU	EQUAL TO: LITHONIA	ELM6L	120	10.6 WATT LED	NA	NA	1100	NA	1	--	NOM 13.5"x6"1/4x4"D	WHITE HOUSING	CEILING OR WALL	WHITE THERMOPLASTIC HOUSING (2) ADJUSTABLE LAMP HEADS LETTERS, CEILING OR WALL MOUNT, 90 MIN. BATTERY.
H	EQUAL TO: LITHONIA	CSS	120	36 W LED	4000	80 CRI MIN	NOM. 4300	(MIN) 50,000	35.3	--	NOM 2.6"Wx2.3"H x4'L	WHITE	SURFACE, CHAIN, PENDANT	4' LONG LED STRIP WITH DIFFUSE LENS, CHAIN OR SURFACE MOUNT.
P	EQUAL TO: EUREKA	4212D1-9	120	28.6 WATTS LED	3500	80 CRI	1750 DIRECT 500 INDIRECT 78.8 / W		28.6	DIM 0-10V	NOM 11.73" H 9.21" D	BLACK FINE TEXTURE	PWR CORD, STEM	STELLA 9" (DIRECT+INDIRECT) CANOPY FINISH - (BLKE) BLACK FINE TEXTURE PWR CORD OR STEM FINISH - (BLK) BLACK SHADE FINISH - (BLKE) BLACK FINE TEXTURE COORDINATE CABLE LENGTH WITH ARCH PRIOR TO ORDERING.
W4	EQUAL TO: LITHONIA	FMVCSL5	120	36W LED	3500	90 CRI MIN	NOM. 3240	(MIN) 50,000	36	--	NOM. 2"Dx4"HX2'L	WHITE ACRYLIC DIFFUSER LENS	WALL	2' LONG LED WALL MOUNT OVER MIRROR LIGHT, WHITE ACRYLIC DIFFUSE LENS, BRUSHED NICKEL FINISH.
AA	EQUAL TO: LITHONIA LIGHTING	WDGE2 LED	120	18W LED	4000	MIN 80	2018		19		11.5"H X 9"H 7"DEPTH	DK BRNZ	WALL SURFACE	TRAPAZOID SHAPED EXTERIOR WALL MOUNT LIGHT.
GG	EQUAL TO: LITHONIA	RSXI LED P1	208	51W	4000	80 MIN	6900	(MIN) 50,000	51	--	NOM 21.8"Lx13.3"Wx3"H	DK BRNZ	10' POLE	WALK WAY LIGHT AND POLE. PROVIDE CONGRETE BASE. SQUARE POLE. INCLUDE ALL ACCESSORIES FOR A COMPLETE INSTALLATION. CONNECT TO EXISTING AREA LIGHTING CIRCUIT AND CONTROLS.

GENERAL NOTES:

A. SEE SPEC SECTION 26 0000 AND 26 5600 FOR ADDITIONAL REQUIREMENTS.
B. EQUAL TO AND OR EQUAL: WHERE MATERIALS ARE SPECIFICALLY IDENTIFIED WITH EQUAL TO / OR EQUAL SUBSTITUTE MANUFACTURERS COMPLYING WITH THE REQUIREMENTS OF THESE SPECIFICATIONS BUT NOT LISTED MAY BE INCORPORATED IN THE WORK. SUCH MATERIALS MUST BE EQUAL TO OR SUPERIOR, IN ENGINEER'S OPINION, TO THAT SPECIFIED IN CONSTRUCTION, EFFICIENCY, APPEARANCE, AND UTILITY.
C. ALL DIMENSIONS ARE NOMINAL UNLESS NOTED OTHERWISE.
D. RATED LIFE OF LED LUMINAIRES IS TO L70 UNLESS NOTED OTHERWISE.
E. COLOR TEMPERATURE OF LED LUMINAIRES IS NOMINAL UNLESS NOTED OTHERWISE.
F. SYSTEM WATTAGE SCHEDULED IS NOMINAL UNLESS NOTED OTHERWISE.
G. 0-10V LED DRIVERS TO BE FURNISHED WITH ISOLATED GROUNDS. THE 0-10V COMMON WIRE NEEDS TO BE ISOLATED FROM THE POWER SYSTEM GROUND WIRE OF THE POWER SUPPLY.*

NOTES:

1. ENSURE THAT DIMMING COMPONENTS ARE COMPATIBLE WITH DIMMING SYSTEM PROVIDED UNDER 26 0920.
2. PROVIDE 20' ROUND, TAPERED, STEEL POLE, WITH HANDHOLE, ANCHOR BOLTS, BOLT TEMPLATE, VIBRATION DAMPER, AND BASE COVER. POLE AND BASE COVER SHALL BE FACTORY FINISHED TO MATCH LUMINAIRE.
3. PROVIDE 10' ROUND, TAPERED, STEEL POLE, WITH HANDHOLE, ANCHOR BOLTS, BOLT TEMPLATE, VIBRATION DAMPER, AND BASE COVER. POLE AND BASE COVER SHALL BE FACTORY FINISHED TO MATCH LUMINAIRE.
4. PER 4'-0" CROSS SECTION. FIXTURE LENS & REFLECTOR SHALL BE CONTINUOUS FROM END TO END (WITHOUT VISIBLE SECTION JOINTS) FOR THE TOTAL RUN LENGTH SPECIFIED.
5. PROVIDE FIXTURE MOUNTED BI-LEVEL MOTION SENSOR. POWER SUPPLY TO BE 0-10V DIMMING TO DIM WATTAGE DOWN IN 5% INCREMENTS TO REDUCE LIGHT LEVEL WHEN AREA IS UNOCCUPIED.
6. PROVIDE T-GRID MOUNTING HARDWARE WHERE REQUIRED. REFER ARCHITECTURAL RCP PLANS FOR MORE INFORMATION.

ABBREVIATIONS:

BF BALLAST FACTOR
CCT CORRELATED COLOR TEMPERATURE
CD CANDELA
CRI COLOR RENDERING INDEX
HAL HALOGEN
IS INSTANT START
INC INCANDESCENT
LED LIGHT EMITTING DIODE
MH METAL HALIDE
MS MANUFACTURER'S STANDARD
NA NOT APPLICABLE
OAH OVERALL HEIGHT
PS PROGRAMMED START
RS RAPID START

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REGISTERED PROFESSIONAL ENGINEER
ANDREW A. BARTSCH
PE - 6525
DATE 04-22-2022
NORTH DAKOTA

Symbol	Description	Date	Approved

DESIGNED BY: AAB
DWN BY: KOB
CHK BY: AAB
DATE: 22 APRIL 2022
SUBMITTED BY: AAB
PLOT DATE: AS SHOWN
PLOT SCALE: AS SHOWN
DRAWING NUMBER: AS SHOWN

DEPARTMENT OF THE AIR FORCE
AIR COMBAT COMMAND

GRAND FORKS, ND
AIR FORCE BASE

PROJECT #JFSD201808 - 100% SUBMITTAL
ADD/REPAIR CDC FOR COMPLIANCE & RECAPITALIZATION B168

ELECTRICAL SCHEDULES

SHEET REFERENCE NUMBER
E-600

SWITCHBOARD SCHEDULE: MDB

SWITCHBOARD CHARACTERISTICS:

800 : BUS RATING (AMPERES) — 3 : PHASE — 42K : AIC RATING

208/120 : VOLTAGE — 4 : WIRE — NEMA 1 : ENCLOSURE

MAIN DEVICE:	REMARKS FOR MAIN DEVICE
CKT BKR – THERMAL MAG, TYPE OF MAIN	SUSE
800 FRAME SIZE	--
700 TRIP SETTING / FUSE SIZE	--
	--

BRANCH DEVICE	DEVICE DESCRIPTION	BREAKER OR FUSIBLE SWITCH	FRAME SIZE	TRIP SETTING OR FUSE SIZE	POLES	REMARKS
1	CH-1			400	3	
2	AHU-1			100	3	
3	CHWP-1			60	3	
4	PNL 'LP'			200	3	
5	PNL 'RP1'			200	3	
6	PNL 'RP2'			200	3	
7	PNL 'X'			100	3	
8	SPARE			200	3	
9	SPARE			200	3	
10						

NOTES:
1.

FEEDER / SERVICE CALCULATION

LOAD CATEGORY	DEMAND FACTOR	LOAD CATEGORY TOTALS
LIGHTING	125%	0.0 KVA
RECEPTACLES	10KVA@100%-REST@50%	0.0 KVA
ELECTRIC HEAT	125%	0.0 KVA
MOTORS & COMPRESSORS	100%+25%LARGEST	0.0 KVA
KITCHEN EQUIPMENT	65%	0.0 KVA
OTHER	100%	0.0 KVA

TOTAL (KVA): 0 KVA TOTAL (AMPS): 0 A

PANELBOARD DESIGNATION: LP

AMPERES: 200 — AIC RATING: 42K — OPTIONS:
VOLTAGE: 208/120 — PHASE: 3 — --
TYPE OF MAIN: LUGS — WIRE: 4 — --
MOUNTING: SURFACE — --
TYPE: BRANCH CIRCUIT — --

CKT NO.	CIRCUIT DESCRIPTION	CKT BKR AMP	CKT BKR PLS	LOAD KVA	PHASE	LOAD KVA	CKT BKR AMP	CKT BKR PLS	CIRCUIT DESCRIPTION	CKT NO.
1	EXTERIOR LIGHTING (EXISTING)	20	2		A	1.022	20	1	LIGHTING, 149-154	2
3	--	--	--		B	1.197	20	1	LIGHTING, OFFICES 104-108,112,100,101	4
5	EXT BUILDING MOUNT LIGHITNG (EXISTING)	20	1	0.077	C	0.903	20	1	LIGHTING, KITCH SUITE, MECH 138	6
7	INTERIOR CORRIDOR, LOBBY 102,VEST 103	20	1	1.456	A		20	1	SPARE	8
9	LIGHTING, PRESCHOOL 127, 140	20	1	1.58	B		20	1	SPARE	10
11	LIGHTING, TODDLERS 143-148	20	1	0.99	C		20	1	SPARE	12
13	SPARE	20	1		A		20	1	SPARE	14
15	SPARE	20	1		B		20	1	SPARE	16
17	SPARE	20	1		C		20	1	SPARE	18
19	SPARE	20	1		A		20	1	SPARE	20
21	SPARE	20	1		B		20	1	SPARE	22
23	SPARE	20	1		C		20	1	SPARE	24
25	SPARE	20	1		A		20	1	SPARE	26
27	SPARE	20	1		B		20	1	SPARE	28
29	SPARE	20	1		C		20	1	SPARE	30
31	SPARE	20	1		A		20	1	SPARE	32
33	SPARE	20	1		B		20	1	SPARE	34
35	SPARE	20	1		C		20	1	SPARE	36
37	SPARE	20	1		A		20	1	SPARE	38
39	SPARE	20	1		B		20	1	SPARE	40
41	SPARE	20	1		C		20	1	SPARE	42
43	SPARE	20	1		A		20	1	SPARE	44
45	SPARE	20	1		B		20	1	SPARE	46
47	SPARE	20	1		C		20	1	SPARE	48
49	SPARE	20	1		A		20	1	SPARE	50
51	SPARE	20	1		B		20	1	SPARE	52
53	SPARE	20	1		C		20	1	SPARE	54
55	SPARE	20	1		A		20	1	SPARE	56
57	SPARE	20	1		B		20	1	SPARE	58
59	SPARE	20	1		C		20	1	SPARE	60
61	SPARE	20	1		A		20	1	SPARE	62
63	SPARE	20	1		B		20	1	SPARE	64
65	SPARE	20	1		C		20	1	SPARE	66
67	SPARE	20	1		A		20	1	SPARE	68
69	SPARE	20	1		B		20	1	SPARE	70
71	SPARE	20	1		C		20	1	SPARE	72
73	SPARE	20	1		A		20	1	SPARE	74
75	SPARE	20	1		B		20	1	SPARE	76
77	SPARE	20	1		C		20	1	SPARE	78
79	SPARE	20	1		A		20	1	SPARE	80
81	SPARE	20	1		B		20	1	SPARE	82
83	SPARE	20	1		C		20	1	SPARE	84

NOTES:
1. PROVIDE NEW CIRCUIT BREAKERS FOR CIRCUITS BEING REFED, FIELD VERIFY EXISTING CIRCUIT BREAKERS SIZES FOR CIRCUITS BEING REFED.
2. PROVIDE 20 AMP SINGLE POLE CIRCUIT BREAKERS FOR ALL SPACES.

PANELBOARD DESIGNATION: RP1

AMPERES: 400 — AIC RATING: 42K — OPTIONS:
VOLTAGE: 208/120 — PHASE: 3 — --
TYPE OF MAIN: LUGS — WIRE: 4 — --
MOUNTING: SURFACE — --
TYPE: BRANCH CIRCUIT — --

CKT NO.	CIRCUIT DESCRIPTION	CKT BKR AMP	CKT BKR PLS	LOAD KVA	PHASE	LOAD KVA	CKT BKR AMP	CKT BKR PLS	CIRCUIT DESCRIPTION	CKT NO.
1	SENSOR VALVE, RECEPTACLE, PRE-SCHOOL 140	20	1	1	A	1.26	20	1	RECEPTACLE, PRE-SCHOOL 140	2
3	SENSOR VALVE, PRE-SCHOOL 144, 148	20	1	1	B	0.72	20	1	RECEPTACLE, TODDLERS 144	4
5	SENSOR VALVE, PRE-SCHOOL 150, 154	20	1	1	C	1.26	20	1	RECEPTACLE, 145/146, 147	6
7	RECEPTACLE, TODDLERS 148	20	1	0.72	A	0.9	20	1	RECEPTACLE, INFANTS 154	8
9	RECEPTACLE, PRE-TODDLER 150	20	1	0.72	B	0.4	20	1	SENSOR VALVE, TOILET 100, 101	10
11	RECEPTACLE, 151, 152, 153	20	1	1.26	C	0.9	20	1	RECEPTACLE, 100, 101, 102	12
13	WATER COOLER, LOBBY 102	20	1	1	A	1.08	20	1	MONITOR RECEPTACLE, LOBBY 102	14
15	RECEPTACLE, 104, EXTERIOR	20	1	1.41	B	0.72	20	1	RECEPTACLE, RECEPTION III	16
17	RECEPTACLE, 105, 106	20	1	1.26	C	0.72	20	1	RECEPTACLE, RECEPTION III, 108	18
19	RECEPTACLE, RECEPTION III	20	1	0.36	A	0.36	20	1	RECEPTACLE, SECURITY 108	20
21	RECEPTACLE, SENSOR VALVES, 107	20	1	1.04	B	0.36	20	1	RECEPTACLE, SECURITY 108	22
23	RECEPTACLE, OFFICE 112	20	1	0.54	C	0.36	20	1	RECEPTACLE, SECURITY 108	24
25	RECEPTACLE, SECURITY 108	20	1	0.36	A	1.25	20	1	RECEPTACLE, SENSOR VALVE, 127, 128, 129	26
27	RECEPTACLE, SECURITY 108	20	1	0.36	B	0.4	15	3	BP-1 MECHANICAL ROOM	28
29	RECEPTACLE, SECURITY 108	20	1	0.36	C	0.4	--	--	--	30
31	EXTERIOR RECPT.	20	1	0.9	A	0.4	--	--	--	32
33	RM. 106	20	1	0.72	B	0.4	15	3	BP-2 MECAHANICAL ROOM	34
35	EXTERIOR & MECH RM. RECPT.	20	1	1.1	C	0.4	--	--	--	36
37	DOAS-1, MECHANICAL 138 (SUPPLY)	50	3	4.6	A	0.4	--	--	--	38
39	--	--	--	--	B	0.5	20	1	P-1 MECHANICAL ROOM	40
41	--	--	--	--	C	0.5	20	1	P-2 MECHANICAL ROOM	42
43	SPARE	20	1		A		20	1	SPARE	44
45	SPARE	20	1		B		20	1	SPARE	46
47	DOAS-1, MECHANICAL 138 (EXHAUST)	30	3	2.1	C		20	1	SPARE	48
49	--	--	--	2.1	A		20	1	SPARE	50
51	--	--	--	2.1	B		20	1	SPARE	52
53	MAU-1, MECHANICAL 138	20	3	0.9	C		20	1	SPARE	54
55	--	--	--	0.9	A		20	1	SPARE	56
57	--	--	--	0.9	B		20	1	SPARE	58
59	HRU, MECHANICAL 138	30	3	2	C		20	1	SPARE	60
61	--	--	--	2	A		20	1	SPARE	62
63	--	--	--	2	B		20	1	SPARE	64
65	EF-2, KITCHEN 130	15	3	0.3	C		20	1	SPARE	66
67	--	--	--	0.3	A	1.3	20	3	HWP-3, MECHANICAL 138	68
69	--	--	--	0.3	B	1.3	--	--	--	70
71	GEF-1, KITCHEN 130	15	3	0.3	C	1.3	--	--	--	72
73	--	--	--	0.3	A	2.9	40	3	HWP-2, MECHANICAL 138	74
75	--	--	--	0.3	B	2.9	--	--	--	76
77	CU-1, CUH-2, CUH-3 & SUH-1	20	1	0.9	C	2.9	--	--	--	78
79	DOOR 103A SLIDER	20	1	0.5	A	2.9	40	3	HWP-1, MECHANICAL 138	80
81	DOOR 103 OPERATOR	20	1	0.5	B	2.9	--	--	--	82
83	SPARE	20	1		C	2.9	--	--	--	84

NOTES:
1. PROVIDE NEW CIRCUIT BREAKERS FOR CIRCUITS BEING REFED, FIELD VERIFY EXISTING CIRCUIT BREAKERS SIZES FOR CIRCUITS BEING REFED.
2. PROVIDE 20 AMP SINGLE POLE CIRCUIT BREAKERS FOR ALL SPACES.

PANELBOARD DESIGNATION: RP2

AMPERES: 400 — AIC RATING: 42K — OPTIONS:
VOLTAGE: 208/120 — PHASE: 3 — --
TYPE OF MAIN: LUGS — WIRE: 4 — --
MOUNTING: SURFACE — --
TYPE: BRANCH CIRCUIT — --

CKT NO.	CIRCUIT DESCRIPTION	CKT BKR AMP	CKT BKR PLS	LOAD KVA	PHASE	LOAD KVA	CKT BKR AMP	CKT BKR PLS	CIRCUIT DESCRIPTION	CKT NO.
1	SPARE	20	1		A	2.9	40	3	EXTG SINK HTR, RM 133	2
3	SPARE	20	1		B	2.9	--	--	--	4
5	SPARE	20	1		C	2.9	--	--	--	6
7	SPARE	20	1		A	0.5	20	1	DOOR ALARM	8
9	SPARE	20	1		B		20	1	SPARE	10
11	SPARE	20	1		C		20	1	SPARE	12
13	SPARE	20	1		A		20	1	SPARE	14
15	SPARE	20	1		B		20	1	SPARE	16
17	SPARE	20	1		C		20	1	SPARE	18
19	SPARE	20	1		A		20	1	SPARE	20
21	SPARE	20	1		B		20	1	SPARE	22
23	SPARE	20	1		C		20	1	SPARE	24
25	SPARE	20	1		A		20	1	SPARE	26
27	SPARE	20	1		B		20	1	SPARE	28
29	SPARE	20	1		C		20	1	SPARE	30
31	SPARE	20	1		A		20	1	SPARE	32
33	SPARE	20	1		B		20	1	SPARE	34
35	SPARE	20	1		C		20	1	SPARE	36
37	SPARE	20	1		A		20	1	SPARE	38
39	CLOTHES DRYER, LAUNDRY 135	35	2	2	B		20	1	SPARE	40
41	--	--	--	2	C		20	1	SPARE	42
43	CLOTHES DRYER, LAUNDRY 135	35	2	2	A		20	1	SPARE	44
45	--	--	--	2	B		20	1	SPARE	46
47	CLOTHES WASHER, LAUNDRY 135	20	1	0.5	C		20	1	SPARE	48
49	CLOTHES WASHER, LAUNDRY 135	20	1	0.5	A		20	1	SPARE	50
51	CORRIDOR RECEPTACLE	20	1	0.9	B		20	1	SPARE	52
53	SPARE	20	1		C		20	1	SPARE	54
55	SPARE	20	1		A		20	1	SPARE	56
57	SPARE	20	1		B		20	1	SPARE	58
59	SPARE	20	1		C		20	1	SPARE	60
61	SPARE	20	1		A		20	1	SPARE	62
63	SPARE	20	1		B		20	1	SPARE	64
65	SPARE	20	1		C		20	1	SPARE	66
67	SPARE	20	1		A		20	1	SPARE	68
69	SPARE	20	1		B		20	1	SPARE	70
71	SPARE	20	1		C		20	1	SPARE	72
73	SPARE	20	1		A		20	1	SPARE	74
75	SPARE	20	1		B		20	1	SPARE	76
77	SPARE	20	1		C		20	1	SPARE	78
79	SPARE	20	1		A		20	1	SPARE	80
81	SPARE	20	1		B		20	1	SPARE	82
83	SPARE	20	1		C		20	1	SPARE	84

NOTES:
1. PROVIDE NEW CIRCUIT BREAKERS FOR CIRCUITS BEING REFED, FIELD VERIFY EXISTING CIRCUIT BREAKERS SIZES FOR CIRCUITS BEING REFED.
2. PROVIDE 20 AMP SINGLE POLE CIRCUIT BREAKERS FOR ALL SPACES.

1 E-601 ONE-LINE POWER DIAGRAM

SCALE: NTS

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PROFESSIONAL ENGINEER
REGISTERED
ANDREW A. BARTSCH
PE - 6525
DATE 04-22-2022
NORTH DAKOTA

U.S. AIR FORCE

Symbol	Description	Date	Approved

DESIGNED BY: AAB
DWN BY: KOB
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ELECTRICAL PANEL SCHEDULES

SHEET REFERENCE NUMBER
E-601