LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

BID & CONSTRUCTION
OCTOBER 10, 2025

MANDITORY BID ALTERNATES:

A. Alternate 1: Foundations
   1. Base Bid: Provide CMU block footings per structural drawings.
   2. Alternate: Provide poured in place footings in lieu of block footings. Refer to alternate detail provided in structural drawings.
B. Alternate 2: Acoustic Glazing
   1. Base Bid: Provide standard specified glazing in all exterior storefront systems.
   2. Alternate: Provide enhanced acoustic glazing in exterior storefront systems in classroom 334, 336, 338 and the east wall of 337, per specification, in lieu of standard glazing.
C. Alternate 3: Bipolar Ionization
   1. Based Bid: No bipolar ionization provided
   2. Alternate: Provide Needle point or Tubular Bipolar Ionization for all RTU's as Basis of Design.
D. Alternate 4: Stained Concrete
   1. Based Bid: Include decorative stained concrete floor patterns as documented on the Color Floor Plans ONLY for the areas indicated at Unit 200 in Blue (A5.2/2 and A5.2/3). All other areas of decorative stained concrete are to be solid colored (no pattern) in base bid (Unit 100 - Teal, A5.1/2, Unit 200 - Orange, A5.2/4, and Unit 300 - Purple, A5.3/2).
   2. Alternate: Add the decorative pattern shown to the stained concrete at the following locations: Unit 100 - Teal, A5.1/2, Unit 200 - Orange, A5.2/4, and Unit 300 - Purple, A5.3/2).



DIRECTORY

CLIENT:
LANSING SCHOOL DISTRICT
519 WEST KALAMAZOO ST.
LANSING, MI 48933
P. (517) 755-1000

OWNER'S REP:
PLANTE MORAN REALPOINTE
1111 MICHIGAN AVE.
EAST LANSING, MI 48823
P. (800) 632-1815

CONSTRUCTION MANAGER:
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LANSING, MI 48933
P. (517) 482-1488

ARCHITECT:
KINGSCOTT ASSOCIATES INC.
950 TRADE CENTRE WAY SUITE 130
PORTAGE, MI 49002
P. (800) 632-1815

CIVIL ENGINEER:
SPALDING DEDECKER
905 SOUTH BLVD EAST
ROCHESTER HILLS, MI 48307
P. (248) 844-5400

STRUCTURAL ENGINEER:
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P. (734) 761-8713

MEP ENGINEER:
STRATEGIC ENERGY SOLUTIONS, INC.
4000 WEST 11 MILE ROAD
BERKLEY, MI 48072
P. (248) 399-1900

TECHNOLOGY:
BARTON MALOW
26500 AMERICAN DR.
SOUTHFIELD, MI 48034
P. (248) 436-5000

FOOD SERVICE:
BAKERGROUP
2220 EAST PARIS AVE. SE
GRAND RAPIDS, MI 49546
P. 1(800) 968-4011

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KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

LEWTON SCHOOL
Lansing School District
2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
TITLE SHEET

SHEET NO.
G0.1

KINGSCOTT ASSOCIATES INC. KALAMAZOO, MICHIGAN

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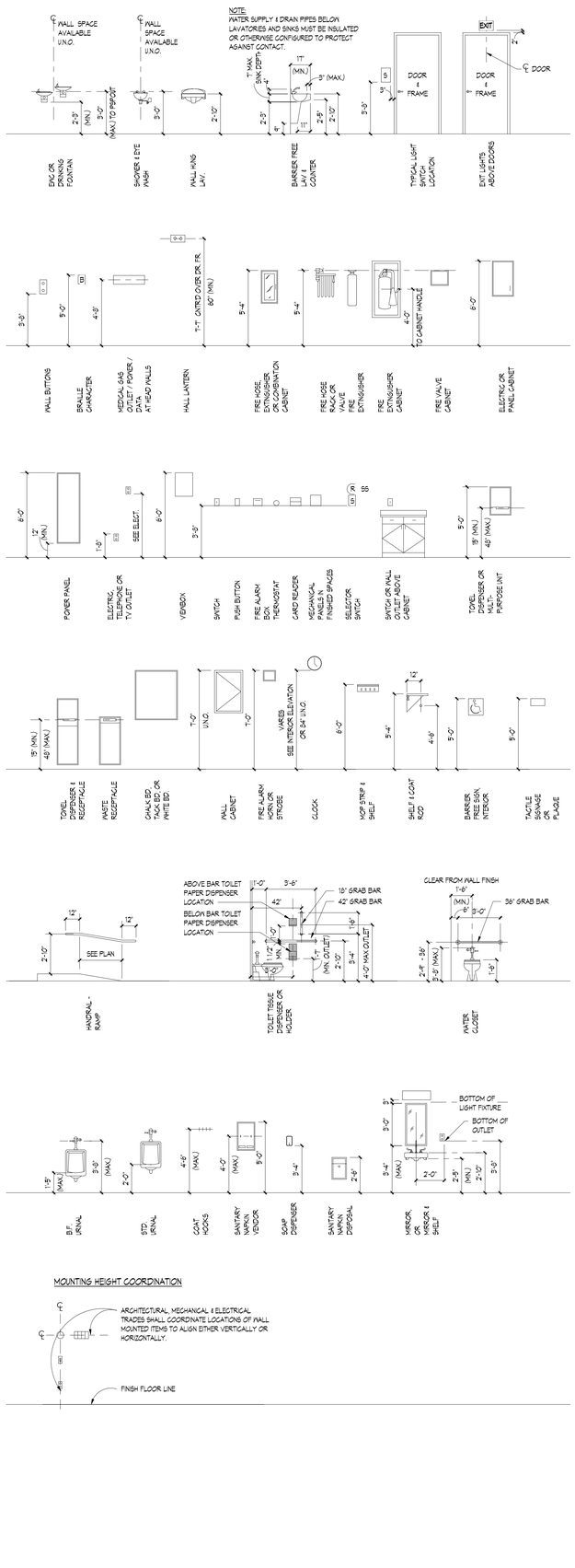

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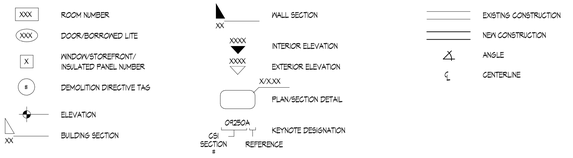
ABBREVIATIONS

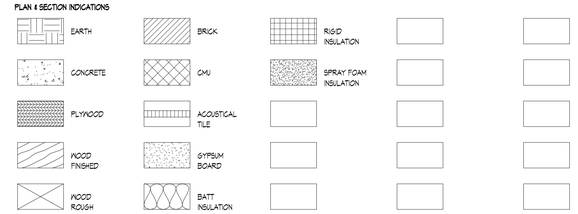
ADJ	ADJACENT
AFF	ABOVE FINISHED FLOOR
AL / ALUM	ALUMINUM
ALT	ALTERNATE
APC	ACOUSTICAL PANEL CEILING
APPROX	APPROXIMATE
ARCH	ARCHITECT / ARCHITECTURAL
AVG	AVERAGE
AWP	ACOUSTICAL WALL PANEL
BD	BOARD
BF	BARRIER FREE
BFF	BELOW FINISHED FLOOR
BFST	BARRIER FREE STONE THRESHOLD
BL	BORROWED LIGHT
BLDG	BUILDING
BLK	BLOCK
BM	BEAM
BN	BULLNOSE
B.O.	BY OWNER
BOD	BOTTOM OF DECK
BOX	BOTTOM OF STEEL
BOT	BOTTOM
BP	BEARING PLATE
BRG	BEARING
BSMT	BASEMENT
CAB	CABINET
CAP	CAPACITY
CB	CHALKBOARD
CJ	CONTROL JOINT
CL	CENTER LINE
CLG	CEILING
CLO	CLOSET
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CNTR	COUNTER
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRUCTOR CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
COR	CORRUGATED
CORR	CORRIDOR
CP	CENTER POINT
CPT	CARPET
CR / CLRM	CLASSROOM
CS	COUNTER SINK
CTF	CERAMIC TILE FLOOR
CTR	CENTER
CTW	CERAMIC TILE WALL
CUST	CUSTODIAN
CU YD	CUBIC YARDS
CYL	CYLINDER
DBL	DOUBLE
DEPT	DEPARTMENT
DET	DETAIL
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIR	DIRECTORY
DN	DOWN
DR	DOOR
DS	DOWNSPOUT
DWG	DRAWING
E	EAST
EA	EACH
EJ	EXPANSION JOINT
EL	ELEVATION
ELEV	ELEVATOR
EMER	EMERGENCY
ENCL	ENCLOSURE
ENT	ENTRANCE
EQ	EQUAL
EQUIP	EQUIPMENT
EST	ESTIMATE
EW	EACH WAY
EX / EXIST	EXISTING
EXP	EXPOSED
EXPN	EXPANSION
EXT	EXTERIOR
F	FAHRENHEIT
FB	FACEBRICK
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FH	FULL HEIGHT
FHC	FIRE HOSE CABINET
FIG	FIGURE
FIN	FINISH
FIX	FIXTURE
FL / FLR	FLOOR
FLEX	FLEXIBLE
FR	FRAME
FRPF	FIREPROOF
F.S.	FULL SIZE
FT	FEET
FTG	FOOTING
FURN	FURNITURE
FRP	FIBERGLASS REINFORCED PANEL
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GEN	GENERAL
GL	GLASS
GOVT	GOVERNMENT
GYP	GYPSUM
HD	HAND
HDWR	HARDWARE
HDWD	HARDWOOD
HM	HOLLOW METAL
HORZ	HORIZONTAL
HP	HIGH POINT
HPC	HIGH PERFORMANCE COATING SYSTEM
HR	HOUR
HT	HEIGHT
ID	INSIDE DIAMETER
IN	INCH
INCL	INCLUDE
INFO	INFORMATION
INSUL	INSULATION
INT	INTERIORS
JAN	JANITOR
JC	JANITOR CLOSET
JCT	JUNCTION
JT	JOINT
KIT	KITCHEN
KP	KICK PLATE
KS	KNEEE SPACE
L	LENGTH
LAB	LABORATORY
LB	POUND
LIN	LINEAR
LKR	LOCKER
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LONG	LONGITUDINAL
LP	LOW POINT
LVT	LUXURY VINYL TILE
MAT / MATL	MATERIAL
MAX	MAXIMUM
MB	MARKERBOARD
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MS	METAL SHELVING
MTD	MOUNTED
MTL	METAL
MT	METAL TRANSITION
MWL	METAL WARDROBE LOCKER
N	NORTH
NIC	NOT IN CONTRACT
NO	NUMBER
NTS	NOT TO SCALE
OD	OUTSIDE DIAMETER
OFD	OVERFLOW DRAIN
OFF	OFFICE
OH	OVERHAED
OP	OPERABLE PARTITION
OPNG	OPENING
OPP	OPPOSITE
P / PT	PAINT
PART	PARTITION
PC	POLISHED CONCRETE
PERF	PERFORATED
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAT	PLATFORM
PLWD	PLYWOOD
POL	POLISH
P.P.M.	PARTS PER MILLION
PR	PAIR
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PROJ	PROJECT
PSE	PROJECTION SCREEN - ELECTRIC
PSM	PROJECTION SCREEN - MANUAL
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT
PVC	POLYVINYL-CHLORIDE
1/4 RD	QUARTER ROUND
R / RAD	RADIUS
RAF	RESILIENT ATHLETIC FLOOR
RB	RESILIENT BASE / RUBBER BASE
RD	ROOF DRAIN
REC	RECESSED
RECT	RECTANGLE / RECTANGULAR
REF	REFERENCE
REINF	REINFORCED / REINFORCEMENT
REM	REMOVEABLE
RESIL	RESILIENT
REQD	REQUIRED
REV	REVISION
RFG	ROOFING
RFS	RUBBER FLOOR SHEET
RFT	RUBBER FLOOR TILE
RGH	ROUGH
RM	ROOM
RO	ROUGH OPENING
RSTA	RESILIENT STAIR TREAD ACCESSORY
RT	RESILIENT TRANSITION
S	SOUTH
SAF	SAFETY
SC	SEALED CONCRETE
SCH	SCHEDULE
SECT	SECTION
SECY	SECRETARY
SEQ	SEQUENCE
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATIONS
SPF	SOUNDPROOF
SPM	SINGLE PLY MEMBRANE
SQ	SQUARE
SS	STAINLESS STEEL
STA	STATION
STD	STANDARD
STL	STEEL
STOR	STORAGE
STR	STRUCTURAL
SUB	SUB FLOOR
SUSP	SUSPENDED
STM	SYMMETRICAL
ST / STOR	STORAGE
SV	SHEET VINYL FLOORING
T	TOILET
T&G	TONGUE & GROOVE
TA	TOILET ACCESSORY
TB	TACK BOARD
TC	TOP CHORD
TCX	TOP CHORD EXTENSION
TEL	TELEPHONE
TEMP	TEMPERATURE
THK	THICK
TOB	TOP OF BEAM
TOF	TOP OF FOOTING
TOJ	TOP OF JOIST
TOL	TOP OF LEDGE
TOM	TOP OF MASONRY
TOS	TOP OF STEEL
TOW	TOP OF WALL
TS	TUBE STEEL
TV	TELEVISION
TYP	TYPICAL
TZ	TERRAZZO
TZT	TERRAZZO TILE
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
VBS	VOLLEYBALL STANDARD
VCT	VINYL COMPOSITION TILE
VDB	VISUAL DISPLAY BOARD
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VIN	VINYL
VOL	VOLUME
VRB	VENTER RUBBER BASE
W	WEST
W/	WITH
WAF	WID ATHLETIC FLOOR
WB	WOOD BASE
WC	WALL COVERING
WD	WOOD
W/O	WITHOUT
W.P.	WORKING POINT
WPF	WATERPROOF
WT	WEIGHT
YD	YARD

ARCHITECTURAL & INTERIOR SYMBOLS



MATERIAL SYMBOLS

PLAN & SECTION INDICATIONS



KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
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LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
DATA SHEET

SHEET NO.
G0.2

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LANSING SCHOOL DISTRICT
LEWTON SCHOOL
2000 LEWTON PLACE
LANSING, MICHIGAN 48915

DEVELOPMENT TEAM

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SPALDING DeDECKER
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ROCHESTER HILLS, MICHIGAN 48307
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OWNER
LANSING SCHOOL DISTRICT
519 W. KALAMAZOO STREET
LANSING, MI 48933
517-755-1000



LOCATION MAP
NTS

GOVERNING AGENCIES

PLANNING
CITY OF LANSING
DEPARTMENT OF ECONOMIC DEVELOPMENT & PLANNING
316 N. CAPITOL AVE.
LANSING, MI 48933
CONTACT SUSAN STACHOWIAK
PHONE 517-483-4085

ENGINEERING
CITY OF LANSING
PUBLIC SERVICE DEPARTMENT - ENGINEERING
124 W. MICHIGAN AVE.
LANSING, MI 48933
CONTACT DANIEL DANKE
PHONE 517-483-4461

FIRE DEPT.
CITY OF LANSING FIRE DEPARTMENT
120 E. SHIAWASSEE ST
LANSING, MI 48933
CONTACT MARK BURGER
PHONE 517-483-4200

PROJECT NARRATIVE

THE NEW LEWTON SCHOOL WILL BE APPROXIMATELY 67,350 SQUARE FEET. SITE FEATURES INCLUDE PATHWAYS BETWEEN PLAYGROUND AREAS, A BASKETBALL COURT, PARKING AREA, AND A DROP OFF LANE.

WETLANDS

THERE ARE NO EXISTING WETLANDS ON-SITE.

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C5.3	PAVING DETAILS
C5.4	FIRE ACCESS PLAN
C6.1	GRADING PLAN - NORTH
C6.2	GRADING PLAN - SOUTH
C7.1	DRAINAGE AREA MAP - EXISTING CONDITIONS
C7.2	DRAINAGE AREA MAP - PROPOSED CONDITIONS
C7.3	DRAINAGE AREA MAP - PROPOSED CONDITIONS - CONVEYANCE
C8.1	STORMWATER MANAGEMENT PLAN
C8.2	STORMWATER MANAGEMENT PLAN
C8.3	STORMWATER MANAGEMENT PLAN
C8.4	STORMWATER MANAGEMENT PLAN
L1.0	LANDSCAPE PLAN
L1.1	LANDSCAPE PLAN
L1.2	LANDSCAPE DETAILS

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Lansing School District

REVISIONS/REVIEW DATE
BID & CONSTRUCTION 10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

NORTH

SHEET TITLE
COVER SHEET

SHEET NO.
C0.0

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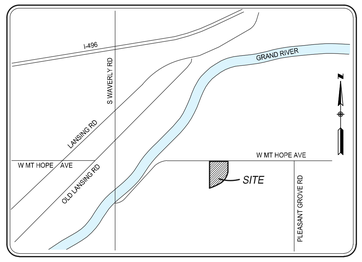
LEGEND

- MANHOLE
- CATCH BASIN
- SEWER CLEAN OUT
- GAS METER
- GAS SHUT OFF VALVE
- VALVE BOX
- GATE VALVE & WELL
- WATER SHUT OFF VALVE
- FIRE HYDRANT
- SPRINKLER VALVE BOX
- LAWN SPRINKLER HEAD
- UNVERIFIED MAPPED OBJECT
- ELECTRIC RISER OR METER
- TELEPHONE RISER
- CABLE TV RISER
- AIR CONDITION UNIT
- UTILITY POLE
- UTILITY POLE W/ LAMP EXTENSION (ARROW INDICATES DIRECTION OF ARM)
- LIGHT POLE
- LIGHT POLE WITH LAMP EXTENSION
- TRAFFIC SIGNAL
- POLE W/ TRAFFIC SIGNAL (OVER ROAD)
- GUY WIRE
- GROUND LEVEL / DECORATIVE LIGHTING
- FLAG POLE
- METAL OR CONC. POST
- MAILBOX
- SIGN
- WATER FOUNTAIN
- PARKING METER
- BILLBOARD OR LARGE SIGN
- BASKETBALL HOOP
- BOULDER
- STATUE OR SCULPTURE
- BENCH — BENCH
- BIKE RACK — BIKE RACK
- PICNIC TABLE
- SOCCER GOAL
- STUMP
- DS-S — DOWNSPOUT INTO STORM DRAIN
- DS-G — DOWNSPOUT TO GROUND
- CONIFEROUS TREE
- DECIDUOUS TREE
- DECIDUOUS SHRUB
- CONIFEROUS SHRUB
- SECTION CORNER
- SDA#10 — TRAVERSE POINT
- 1 — STRUCTURE NUMBER
- SB1 — SDA POINT No.
- 000.00 — SPOT ELEVATION

TC	TOP OF CURB ELEVATION
GU	GUTTER ELEVATION
TP	TOP OF PAVEMENT ELEVATION
EM	EDGE OF METAL ELEVATION
TW	TOP OF WALK ELEVATION
T/WALL	TOP OF WALL ELEVATION
B/WALL	BOTTOM OF WALL ELEVATION
GR	GROUND ELEVATION
UG	UNDERGROUND
FO	FIBER OPTIC
CONC	CONCRETE
ASPH	ASPHALT
FF	FINISH FLOOR ELEVATION
DL	DOOR LEDGE ELEVATION
● F.I.	FOUND IRON
● F.M.	FOUND MONUMENT
● F.P.K.	FOUND P.K. NAIL
● S.I.	SET IRON W/SDA CAP
● S.P.K.	SET P.K. NAIL
● S.P.K./TAG	SET P.K. NAIL W/SDA TAG
● MAG	SET MAGNETIC NAIL
● MAG/TAG	SET MAGNETIC NAIL W/SDA TAG
M	MEASURED
R	RECORD
C	CALCULATED
INV.	INVERT ELEVATION
CMP	CORRUGATED METAL PIPE

- G — GAS
- SN — SANITARY SEWER (SAN)
- ST — STORM SEWER (STM)
- WM — WATERMAIN (WM)
- OH — OVERHEAD WIRE
- COMBINED SEWER
- STE — STEAM LINE
- O — OIL LINE
- F — UG FIBER (COMM.)
- E — UG ELECTRIC (ELEC.)
- T — UG PHONE (PH)
- TV — UG CABLE (CBL)
- CHAIN LINK FENCE (CL)
- WOOD FENCE
- WOVEN WIRE FENCE (WW)
- GUARD RAIL
- EDGE OF BRUSH/WOODS
- CENTERLINE OF DITCH
- CULVERT
- 650 — MAJOR CONTOUR
- 651 — MINOR CONTOUR
- BOUNDARY LINES
- ROW LINES
- SECTION LINES
- PROPERTY LINES
- ASPHALT
- CONCRETE
- GRAVEL/ DIRT/ MULCH
- BRICK / PAVERS
- WATER
- WATER W/ VEGETATION



LOCATION MAP
NOT TO SCALE

BENCHMARK DESCRIPTIONS

DATUM: GPS-DERIVED NAVD'88

SITE BM#100	SET BENCH TIE IN SOUTH FACE OF UTILITY POLE LOCATED ON SOUTH SIDE OF MT. HOPE AVE., LOCATED ±100' EAST OF WEST DRIVE TO PARKING LOT.	ELEV.=870.60
SITE BM#101	ARROW ON HYDRANT LOCATED SOUTHEAST CORNER OF MT. HOPE AVE. AND LEWTON PLACE.	ELEV.=874.83
SITE BM#102	SCRIBED "+" ON NORTHWEST SIDE OF STORM MANHOLE (STR. #16) LOCATED ON NORTHWEST SIDE OF LEWTON PLACE AT CROSSWALK ADJACENT TO PAMELA PLACE.	ELEV.=872.62
SITE BM#103	SET BENCH TIE IN EAST FACE OF UTILITY POLE LOCATED ON THE NORTH SIDE OF LEWTON PLACE AT THE WEST END OF DEAD END NEAR THE SOUTHWEST PROPERTY CORNER OF THE SITE.	ELEV.=867.91

SURVEYOR'S COMMENTS

1. THIS TOPOGRAPHICAL MAP IS BASED UPON A FIELD SURVEY PERFORMED BY SPALDING DEDECKER INC. DURING JANUARY, FEBRUARY AND NOVEMBER OF 2024.
2. THE PROPERTY LINES/RIGHT-OF-WAY LINES SHOWN ON THIS TOPOGRAPHICAL SURVEY ARE INTENDED TO BE AN ACCURATE GRAPHICAL REPRESENTATION OF THE PROPERTY LINES. SPALDING DEDECKER HAS BASED THE PROPERTY LINES AND RIGHT OF WAY LINES UPON A COMBINATION OF A PROVIDED LEGAL DESCRIPTION, FOUND FIELD MONUMENTATION AND OCCUPATION. PROPERTY LINES AS SHOWN IN DRAWING ARE BASED UPON THIS WORK. A COMPLETE PROPERTY LINE ANALYSIS IS PART OF THE SCOPE OF SERVICES AND PROPERTY CORNERS HAVE BEEN SET IN THE FIELD PER THE AGREED TO SCOPE OF SERVICES.
3. THIS SURVEY HAS BEEN PREPARED WITH THE BENEFIT OF A CURRENT INFORMATIONAL TITLE SEARCH WHICH INCLUDES THE LAST DEED OF RECORD AND A 100 YEAR SEARCH FOR ENCUMBRANCES. THE INFORMATIONAL TITLE SEARCH WAS PREPARED BY ASK SERVICES HAVING AN ORDER NUMBER OF 19650294 AND AN EFFECTIVE DATE OF 1-22-2024. ALL PLOTTABLE ENCUMBRANCES LISTED ON SCHEDULE B-II EXCEPTIONS OF THIS TITLE SEARCH HAVE BEEN SHOWN ON THIS SURVEY IF THEY FALL WITHIN THE LIMITS OF DETAILED MAPPING.
4. BEARINGS AND DISTANCES AS LABELED ON THE PROPERTY LINES ARE BASED UPON THE RECORD LEGAL DESCRIPTION AS SHOWN ON THE DRAWING. THE PROPERTY LINES IN THE ELECTRONIC CAD FILE HAVE BEEN ROTATED TO STATE PLANE GRID BEARINGS; THEREFORE, THE BEARINGS OF THE PROPERTY LINES IN THE ELECTRONIC CAD FILE WILL NOT MATCH THOSE SHOWN IN THE LEGAL DESCRIPTION AND LABELED ON THE SURVEY DRAWING.
5. THE COORDINATE SYSTEM FOR THIS SURVEY IS THE STATE PLANE COORDINATE SYSTEM, MICHIGAN SOUTH ZONE (2113), BASED ON NAD83 (NSRS2011). UNITS ARE INTERNATIONAL FEET. COORDINATES WERE ESTABLISHED USING A DATA LINK TO THE MDOT CONTINUOUSLY OPERATING REFERENCE STATIONS (CORS).
6. THE VERTICAL DATUM OF THIS SURVEY IS BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD'88) AS ESTABLISHED WITH RTK GPS MEASUREMENTS USING A DATA LINK TO THE MDOT CONTINUOUSLY OPERATING REFERENCE STATIONS (CORS).
7. THE PARKING LOT STRIPING SHOWN ON THIS SURVEY IS APPROXIMATE. DIMENSIONAL AND/OR ORIENTATION VARIATIONS MAY EXIST. THIS DRAWING SHOULD NOT BE USED FOR A PARKING SPACE COUNT.
8. THE UTILITY INFORMATION SHOWN ON THIS SURVEY IS BASED UPON A COMBINATION OF RECORD INFORMATION AND FIELD MEASUREMENTS. A MISS DIG DESIGN TICKET NUMBER OF 20240111101181 HAS BEEN REFERENCED TO THIS PROJECT AND A UTILITY PROVIDER CHART IS SHOWN ON THIS DRAWING. THERE ARE NO ASSURANCES THAT ALL PROVIDERS HAVE RESPONDED AND THE SURVEYOR DOES NOT GUARANTEE THAT ALL UNDERGROUND UTILITIES ARE SHOWN AND/OR POSITIONED PROPERLY ON THIS DRAWING DUE TO AMBIGUOUS PLANS AND RECORDS PROVIDED TO US. THE INFORMATION SHOWN ON THIS DRAWING IS INTENDED TO BE USED AS A GUIDE FOR POSSIBLE UNDERGROUND UTILITY CONFLICTS. IT IS THE RESPONSIBILITY OF OTHERS TO RESOLVE THE ACTUAL LOCATION OF ANY UNDERGROUND UTILITY THROUGH THE MISS DIG FIELD VERIFICATION SYSTEM PRIOR TO ANY SITE EXCAVATION. CALL 811 OR 800-482-7171.

LEGAL DESCRIPTION

SOURCE: ASK TITLE COMMITMENT
COMMITMENT No.: 19650294
EFFECTIVE DATE: JANUARY 22, 2024

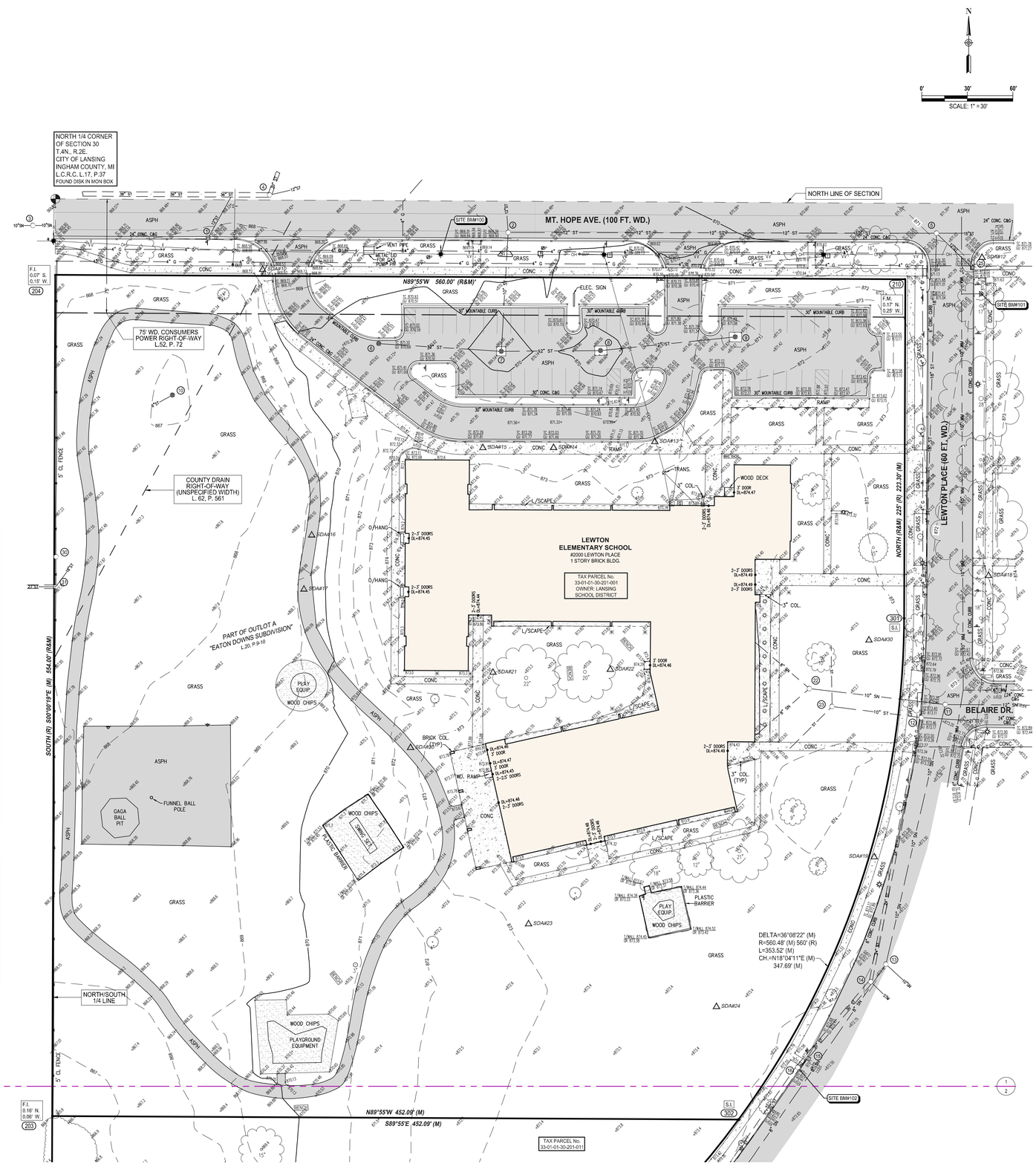
OWNER: LANSING SCHOOL DISTRICT
TAX PARCEL ID: 33-01-01-30-201-001
ADDRESS: 2000 LEWTON PLACE

OUTLOT A EXC COM 554 FT S OF NW COR OUTLOT A, TH E PAR L TO N LINE OUTLOT A TO WLY LINE LEWTON PLACE, SWLY ON WLY & NLY LINE LEWTON PLACE TO SW COR OUTLOT A, N TO BEG; ETON DOWNS SUB

OWNER: CITY OF LANSING
TAX PARCEL ID: 33-01-01-30-201-011
ADDRESS: 2122 LEWTON PLACE

COM 554 FT S OF NW COR OUTLOT A, TH E PAR L TO N LINE OUTLOT A TO WLY LINE LEWTON PLACE, SWLY ON WLY & NLY LINE LEWTON PLACE TO SW COR OUTLOT A, N TO BEG; ETON DOWNS SUB

811 Know what's below. Call before you dig.



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LSD NO. **SB-0064**
JOB NO. **2616.01G**

NORTH

SHEET TITLE
TOPOGRAPHIC SURVEY

SHEET NO.
0.1

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LEGEND

- MANHOLE
- CATCH BASIN
- +C.O. SEWER CLEAN OUT
- GAS METER
- GAS SHUT OFF VALVE
- VALVE BOX
- GATE VALVE & WELL
- WATER SHUT OFF VALVE
- FIRE HYDRANT
- SPRINKLER VALVE BOX
- LAWN SPRINKLER HEAD
- UNVERIFIED MAPPED OBJECT
- E ELECTRIC RISER OR METER
- T TELEPHONE RISER
- C CABLE TV RISER
- AC AIR CONDITION UNIT
- UTILITY POLE
- UTILITY POLE W/ LAMP EXTENSION (ARROW INDICATES DIRECTION OF ARM)
- LIGHT POLE
- LIGHT POLE WITH LAMP EXTENSION
- TRAFFIC SIGNAL
- POLE W/ TRAFFIC SIGNAL (OVER ROAD)
- GUY GUY WIRE
- GROUND LEVEL DECORATIVE LIGHTING
- FLAG POLE
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- BIKE RACK BIKE RACK
- PICNIC TABLE
- SOCCER GOAL SOCCER GOAL
- STUMP
- DS-S DOWNSPOUT INTO STORM DRAIN
- DS-G DOWNSPOUT TO GROUND
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- DECIDUOUS TREE
- DECIDUOUS SHRUB
- CONIFEROUS SHRUB
- SECTION CORNER
- SDA#10 TRAVERSE POINT
- 1 STRUCTURE NUMBER
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- 650.00 SPOT ELEVATION
- TC TOP OF CURB ELEVATION
- GU GUTTER ELEVATION
- TP TOP OF PAVEMENT ELEVATION
- EM EDGE OF METAL ELEVATION
- TW TOP OF WALK ELEVATION
- T/WALL TOP OF WALL ELEVATION
- B/WALL BOTTOM OF WALL ELEVATION
- GR GROUND ELEVATION
- UG UNDERGROUND
- FO FIBER OPTIC
- CONC CONCRETE
- ASPH ASPHALT
- FF FINISH FLOOR ELEVATION
- DL DOOR LEDGE ELEVATION
- F.I. FOUND IRON
- F.M. FOUND MONUMENT
- F.P.K. FOUND P.K. NAIL
- S.I. SET IRON W/SDA CAP
- S.P.K. SET P.K. NAIL
- S.P.K./TAG SET P.K. NAIL W/SDA TAG
- MAG SET MAGNETIC NAIL
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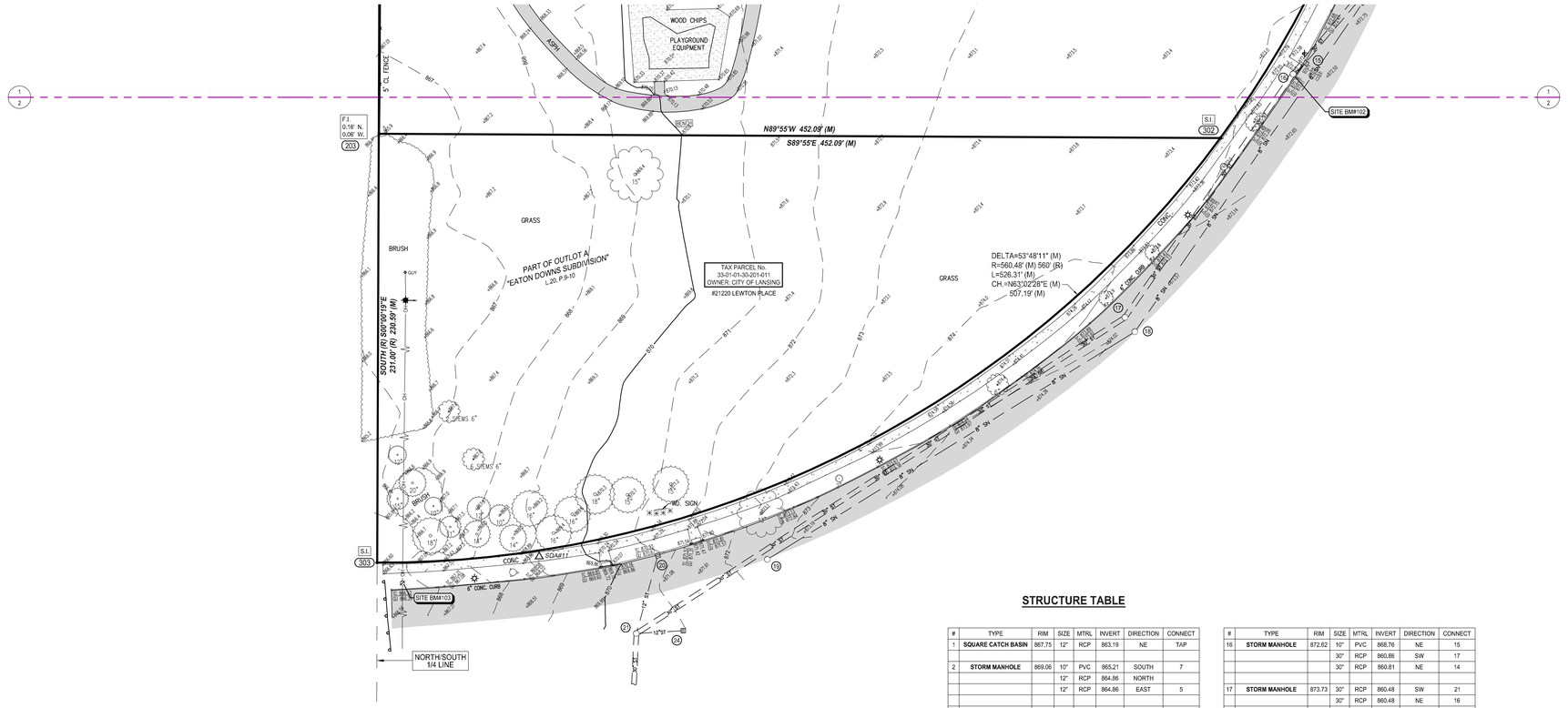
- WATER W/ VEGETATION



STRUCTURE TABLE

#	TYPE	RIM	SIZE	MTRL	INVERT	DIRECTION	CONNECT
1	**SQUARE CATCH BASIN**	867.75	12"	RCP	863.19	NE	TAP
2	**STORM MANHOLE**	869.06	10"	PVC	865.21	SOUTH	7
			12"	RCP	864.86	NORTH	
			12"	RCP	864.86	EAST	5
3	**SANITARY MANHOLE**	868.77	10"	CLAY	861.26	WEST	
			10"	CLAY	861.27	EAST	
4	**STORM MANHOLE**	868.45	12"	RCP	861.40	ENE	
			30"	RCP	859.95	NE	
			36"	RCP	859.95	WEST	
5	**STORM MANHOLE**	871.10	12"	RCP	863.95	WEST	2
			15"	RCP	863.90	EAST	
			12"	RCP	866.05	SE	25 (CAPPED)
			18"	RCP	863.70	SOUTH	12
6	**ROUND CATCH BASIN**	870.29	12"	RCP	865.14	EAST	7
7	**ROUND CATCH BASIN**	869.37	12"	RCP	864.97	EAST	8
			12"	RCP	864.97	WEST	6
			10"	PVC	864.87	NORTH	CAPPED
8	**ROUND CATCH BASIN**	869.24	12"	RCP	865.29	EAST	9
			12"	RCP	865.19	WEST	7
9	**ROUND CATCH BASIN**	870.63	12"	RCP	865.93	WEST	8
10	**BEE-HIVE CATCH BASIN**	866.76	6"	CLAY	863.66	WSW	
11	**SANITARY MANHOLE**	873.02	10"	METAL	N/A	WEST	22
	FIBERGLASS COVER		12"	N/A	N/A	EAST	26
	RECORD		10"	N/A	N/A	SOUTH	13
12	**STORM MANHOLE**	873.00	21"	RCP	864.35	EAST	
			10"	METAL	863.70	WEST	23
			18"	RCP	862.30	NORTH	5
			24"	RCP	862.00	SOUTH	14
13	**SANITARY MANHOLE**	873.08	10"	N/A	N/A	NORTH	11
	FIBERGLASS COVER		10"	N/A	N/A	SE	
	RECORD		8"	N/A	N/A	SW	18
14	**STORM MANHOLE**	873.11	24"	RCP	N/A	NORTH	12
	PAVED OVER		30"	RCP	N/A	SW	16
	RECORD		N/A	N/A	N/A	N/A	
15	**SQUARE CATCH BASIN**	872.10	10"	PVC	868.10	SW	16

#	TYPE	RIM	SIZE	MTRL	INVERT	DIRECTION	CONNECT
16	**STORM MANHOLE**	872.62	10"	PVC	868.76	NE	15
			30"	RCP	860.86	SW	17
			30"	RCP	860.81	NE	14
17	**STORM MANHOLE**	873.73	30"	RCP	860.48	SW	21
			30"	RCP	860.48	NE	16
18	**SANITARY MANHOLE**	873.82	8"	CLAY	N/A	SW	19
	FIBERGLASS COVER		8"	N/A	N/A	NE	13
	RECORD						
19	**SANITARY MANHOLE**	872.41	8"	CLAY	866.76	NE	18
20	**SQUARE CATCH BASIN**	870.55	N/A	N/A	N/A	SOUTH	21 (R)
	FULL OF SILT						
	TOP / WATER	867.05					
	TOP / DEBRIS	866.15					
	BOTTOM	866.15					
21	**STORM MANHOLE**	870.09	12"	RCP	865.03	EAST	24
			12"	RCP	864.59	NORTH	20
			30"	RCP	859.79	SOUTH	
			30"	RCP	859.89	NE	17
22	**SANITARY MANHOLE**	873.75	8"	METAL	866.20	NW	BLDG
			8"	METAL	866.15	SW	BLDG
			10"	METAL	866.15	EAST	11
23	**STORM MANHOLE**	873.82	8"	METAL	866.32	NNW	
			8"	METAL	866.42	SW	BLDG
			10"	METAL	866.32	EAST	12
24	SQUARE CATCH BASIN	870.95	12"	RCP	N/A	WEST	21
	PIPE FULL OF CONC.						
25	SQUARE CATCH BASIN	870.86	12"	RCP	867.06	NW	5 (CAPPED)
	TOP / DEBRIS	867.29					
26	**SANITARY MANHOLE**	872.09	12"	CLAY	862.37	WEST	11
	FLOW IS ENE 67		12"	CLAY	862.31	ENE	
	FLOW DIRECTION:	EAST					
	STRUCTURE IS OUTSIDE THE SURVEY LIMITS						
30	STORM MANHOLE	866.92					
	CONCRETE COVER						
	COULD NOT OPEN						
31	STORM MANHOLE	867.39	27"	RCP	858.29	WEST	
			18"	RCP	858.64	NNE	

THE STRUCTURE TABLE ON THIS DRAWING IDENTIFIES THE AS-SURVEYED UNDERGROUND UTILITY MANHOLES THAT WERE FIELD MEASURED USING REASONABLE AND TRADITIONAL SURVEYING PRACTICES. PIPE SIZES, DIRECTIONS AND ELEVATIONS ARE INDICATED BY A COMBINATION OF FIELD EVIDENCE AND AVAILABLE RECORD INFORMATION. UNDERGROUND UTILITY PIPE SIZES AND CONNECTIONS ARE MANY TIMES AMBIGUOUS. SOME STRUCTURES MAY HAVE PIPES WITH UNKNOWN CONNECTIONS, SUMPS AND / OR PIPES THAT ARE FILLED WITH DEBRIS. IT WILL BE UP TO THE DESIGN ENGINEER TO LOOK AT THE PRESENTED SURVEY RESULTS AND DECIDE IF FURTHER INVESTIGATION BY OTHER METHODS SUCH AS VACUUM CLEAN OUT, UNDERGROUND RADAR, SMOKE TESTING AND PHYSICAL EXCAVATION IS REQUIRED AS AN ADDITIONAL SERVICE.

UTILITY CHART

UTILITY PROVIDER	CONTACT #	MISS DIG RESULTS	DATE
AT&T TELEPHONE	6168812268	NOT RECEIVED	N/A
COMCAST CABLE TV	8559628525	RECEIVED	1/17/2024
CONSUMERS ENERGY	8007789140	NOT RECEIVED	N/A
CONSUMERS ENERGY GAS	8007789140	RECEIVED	1/11/2024
LANSING BOARD OF WATER & LIGHT ELECTRIC	5177027030	RECEIVED	1/11/2024
LANSING BOARD OF WATER & LIGHT POTABLE WATER	5177027030	NOT RECEIVED	N/A
LANSING CITY PUBLIC SERVICE SANITARY SEWER	5174834161	RECEIVED	1/17/2024
LANSING CITY PUBLIC SERVICE STORM SEWER	5174834161	NOT RECEIVED	N/A
METRO FIBERNET, LLC FIBER OPTICS	8007789140	RECEIVED	1/17/2024
ZAYO BANDWIDTH MIDWEST, LLC FIBER OPTICS	8009616500	NOT RECEIVED	N/A

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REVISIONS/REVIEW — DATE
BID & CONSTRUCTION — 10/10/2025

KEY PLAN

LSD NO. **SB-0064**
JOB NO. **2616.01G**
NORTH

SHEET TITLE
TOPOGRAPHIC SURVEY

SHEET NO.
0.2

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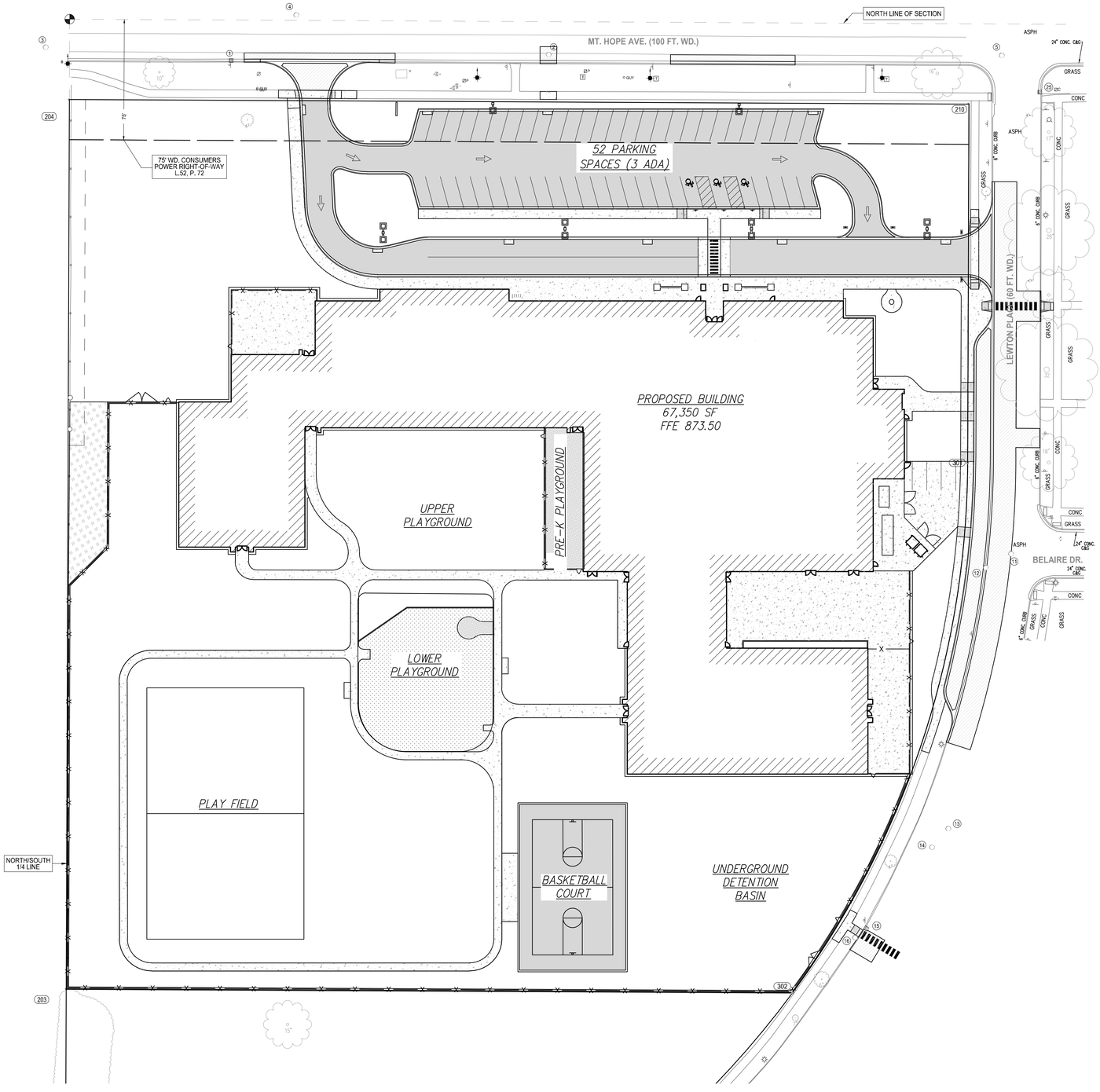

GRAPHIC SCALE

0 15 30 60

(IN FEET)
1 inch = 30 ft.

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PARKING SUMMARY

NUMBER OF PARKING SPACES REQUIRED = 1 PER EMPLOYEE + $\frac{1}{5}$ PER 1 CLASSROOM

NUMBER OF EMPLOYEES: 35
NUMBER OF CLASSROOMS: 25

NUMBER OF PARKING SPACES REQUIRED = 35 + $(\frac{1}{5})$*25 = 48

NUMBER OF PARKING SPACES PROVIDED = 52
NUMBER OF ACCESSIBLE PARKING SPACES PROVIDED = 3
NUMBER OF VAN ACCESSIBLE PARKING SPACES PROVIDED = 1

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 / XXX — STRUCT. NO. / STRUCT. TYPE

LSD NO. SB-0064
JOB NO. 2616.01G

NORTH

SHEET TITLE

GENERAL PLAN

SHEET NO.

C1.1

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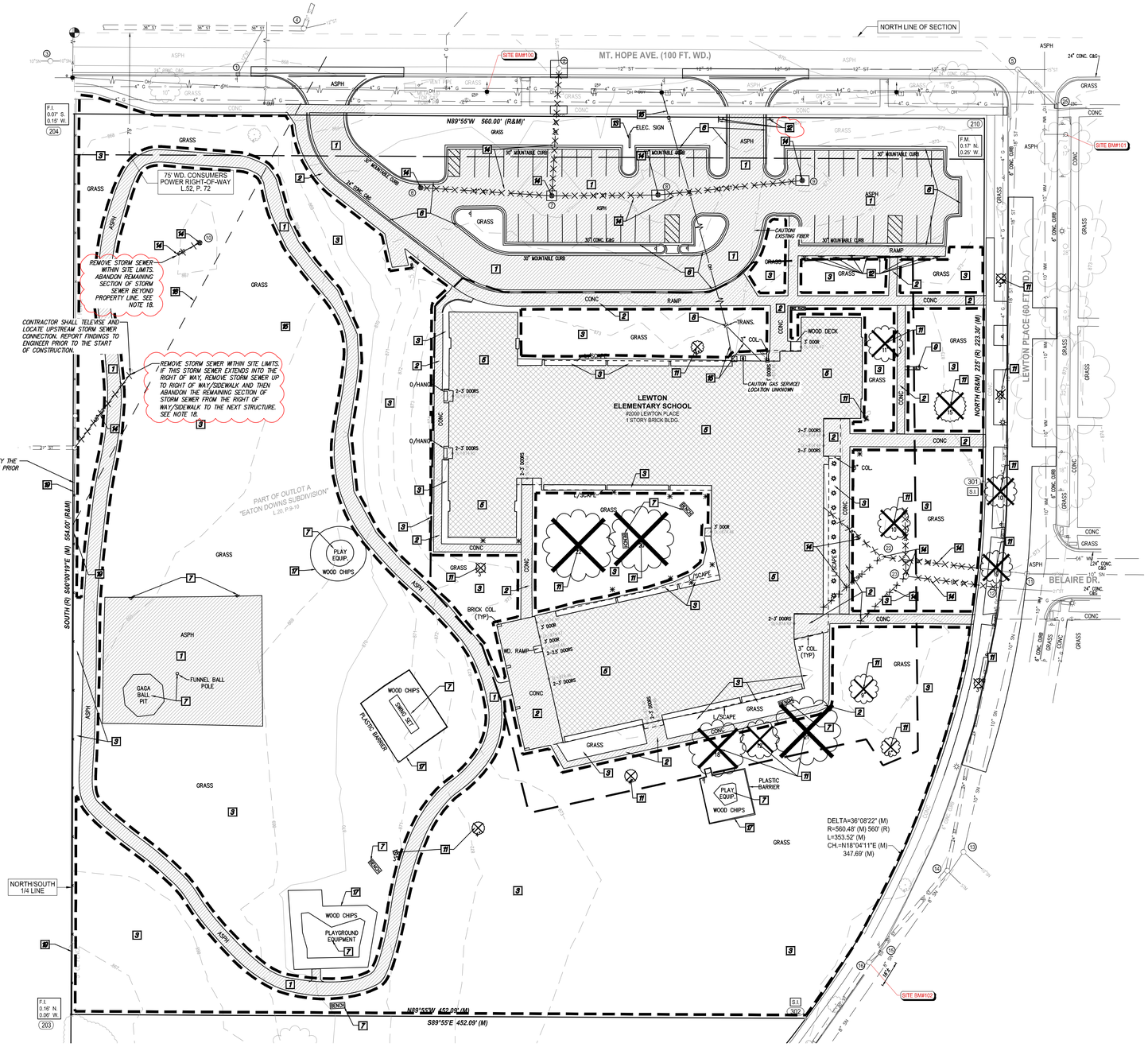

GRAPHIC SCALE

0 15 30 60

(IN FEET)

1 inch = 30 ft.

DEMOLITION PHASING NOTES

DEMOLITION TO BE DONE IN PHASES.

PHASE 1 DEMOLITION ITEMS FOR LSD NO. SB-0063:

ALL ITEMS SHOWN ON C2.1

PHASE 2 DEMOLITION ITEMS FOR LSD NO. SB-0064:

ALL OTHER ITEMS SHOWN ON C2.2.

DEMOLITION NOTES

1. REMOVE ASPHALT PAVEMENT TO FULL DEPTH. SAWCUT FULL DEPTH WHERE NEW PAVEMENT WILL BE PLACED ADJACENT TO EXISTING PAVEMENT. EXCAVATE EXISTING AGGREGATE BASE AND SUBGRADE AS NECESSARY TO INSTALL NEW PAVEMENT SECTION AS SHOWN ON THE PAVING PLANS, INCLUDING NEW AGGREGATE BASE.
2. REMOVE CONCRETE PAVEMENT TO FULL DEPTH. SAWCUT FULL DEPTH TO NEAREST JOINT WHERE NEW PAVEMENT WILL BE PLACED ADJACENT TO EXISTING PAVEMENT.
3. CLEAR AND GRUB TO THE LIMITS SHOWN. INCLUDE REMOVAL OF ALL SIGNS, POSTS, FOOTINGS, GRAVEL, BRUSH, SHRUBS, GRASS, AND TREES NOT INDICATED FOR PROTECTION, INCLUDING ROOTS. STRIP TOPSOIL AND STOCKPILE ON SITE IN DESIGNATED LOCATION.
4. REMOVE ASPHALT PAVEMENT TO FULL DEPTH (ASSUMED TO BE 4" OF PAVEMENT ON 6-7" OF SAND/AGG. BASE (ON SITE) BASED ON THE GEOTECH REPORT). EXISTING AGGREGATE BASE TO REMAIN, REGRADED, AND COMPACTED FOR PLACEMENT OF NEW ASPHALT PAVEMENT. SAWCUT FULL DEPTH WHERE NEW PAVEMENT WILL BE PLACED.
5. DEMOLITION OF EXISTING BUILDING. EARTHWORK CONTRACTOR SHALL ASSUME THAT THE EXISTING PAD WILL BE BACKFILLED AFTER DEMOLITION SO THAT THE GRADES GENERALLY MATCH THE SURROUNDING GROUND ELEVATIONS. AREAS WHERE FOOTINGS AND BASEMENTS EXIST WILL BE FILLED APPROPRIATELY WITH CLASS 2 ENGINEERED FILL AFTER DEMOLITION, AND COMPACTED TO 95% OF MAXIMUM DENSITY. REFER TO ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND ELECTRICAL DEMO PLANS FOR COMPLETE BUILDING DEMOLITION.
6. REMOVE EXISTING CONCRETE CURB AND GUTTER.
7. REMOVE AND SALVAGE RECREATIONAL AND ATHLETIC EQUIPMENT, BENCHES, BLEACHERS, ETC. THAT FALL WITHIN THE CONSTRUCTION AREA. STAGE IN ON SITE LOCATION AS SPECIFIED BY OWNER (UNLESS NOTED ON THE PLANS).
8. PROTECT EXISTING UTILITIES AND UTILITY STRUCTURES TO REMAIN.
9. REMOVE EXISTING FLAGPOLE INCLUDING ANY FOOTINGS OR FOUNDATIONS IF PRESENT.
10. PROTECT EXISTING TREES AND LANDSCAPING TO REMAIN DURING CONSTRUCTION. SEE TREE PROTECTION DETAIL THIS SHEET.
11. REMOVE EXISTING TREE (INCLUDING STUMPS AND ROOTS).
12. EXISTING SIGNAGE AND MAILBOXES WITHIN THE CLEARING LIMITS ARE TO BE REMOVED AND SALVAGED. STAGE IN ON SITE LOCATION AS SPECIFIED BY OWNER.
13. PROTECT EXISTING SIGNS TO REMAIN DURING CONSTRUCTION
14. REMOVE EXISTING UTILITY PIPE AND STRUCTURES. BACKFILL WITH CLASS II FILL AND COMPACT TO 95% OF MAXIMUM DENSITY. INSTALL WATERTIGHT BULKHEAD AT STRUCTURES TO REMAIN. GROUT PIPE ENDS THAT REMAIN.
15. REMOVE AND DISPOSE OF EXISTING OVERHEAD ELECTRICAL LINES. CONTRACTOR TO COORDINATE REMOVAL OF OVERHEAD ELECTRIC WITH DWL. CONTRACTOR TO KEEP ANY EXISTING BUILDING OVERHEAD ELECTRICAL LINES ACTIVE UNTIL BUILDING DEMOLITION PROCESS BEGINS.
16. ABANDON EXISTING COUNTY DRAIN EASEMENT PER INGHAM COUNTY DRAIN COMMISSION STANDARDS. COORDINATE WITH I.C.D.C. AND RECORD DRAIN EASEMENT ABANDONMENT.
17. REMOVE EXISTING PLASTIC BARRIERS AROUND PLAYGROUND EQUIPMENT.
18. ABANDON EXISTING STORM SEWER PIPE IN PLACE (CONTRACTOR TO CONFIRM NO BLIND TAPS). CUT AND INSTALL WATERTIGHT CAP AT EXISTING PIPES AND INSTALL WATERTIGHT BULKHEAD AT STRUCTURES WHERE PIPE IS TO BE ABANDONED IN PLACE. FILL WITH FLOWABLE GROUT.
19. REMOVE EXISTING FENCE AND FENCE POSTS. BACKFILL WITH CLASS II FILL COMPACTED TO 95% OF MAXIMUM DENSITY.

FIELD LOCATE EXISTING WATER LEAD ON NORTH SIDE OF BUILDING AND REMOVE WATER LEAD TO PROPERTY LINE. CAP EXISTING WATER LEAD AT PROPERTY LINE. BACKFILL WITH CLASS II FILL COMPACTED TO 95% OF MAX DRY DENSITY.

ALL DEPRESSIONS CREATED BY DEMOLITION PROCEDURES SHALL BE BACKFILLED WITH CLASS II FILL MATERIAL, IN 8" LIFTS COMPACTED TO 95% OF MAXIMUM UNIT WEIGHT, UP TO PROPOSED SUBGRADE.

CONTRACTOR IS RESPONSIBLE FOR DOING AN EARTHWORK CALCULATION FOR CUT AND FILL REQUIREMENTS, AND IS RESPONSIBLE FOR INCLUDING IMPORT AND EXPORT OF MATERIALS IN THEIR BID. ALL EXCESS MATERIAL (INCLUDING TOPSOIL, CLEAN FILL, AND WASTE MATERIAL) SHALL BE REMOVED FROM THE SITE.

CONTRACTOR TO PROTECT EXISTING WALKS, PAVEMENT, CURBS, GUTTERS, WALLS, FENCES, GATES, LANDSCAPING AND TREES TO REMAIN DURING CONSTRUCTION.

KINGSCOTT ASSOCIATES, INC. WILL PREPARE AND INCLUDE SPECIFICATION SECTION 012200 UNIT PRICES FOR UNDERCUT AND REPLACEMENT OF POOR SOILS. UNIT PRICE TO INCLUDE DISPOSAL OF POOR SOILS AND IMPORT AND PLACEMENT OF 1"X3" CRUSHED CONCRETE OR 21AA CRUSHED CONCRETE, WITH GEOTEXTILE FABRIC, UP TO PROPOSED SUBGRADE.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
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- SANITARY SEWER STRUCTURE: STRUCT. NO.
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Lewton School Demo

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	5/2/2025

KEY PLAN

LSD NO. SB-0063
JOB NO. 2616.01G

NORTH

SHEET TITLE

DEMOLITION PLAN - PHASE 1

SHEET NO.

C2.1

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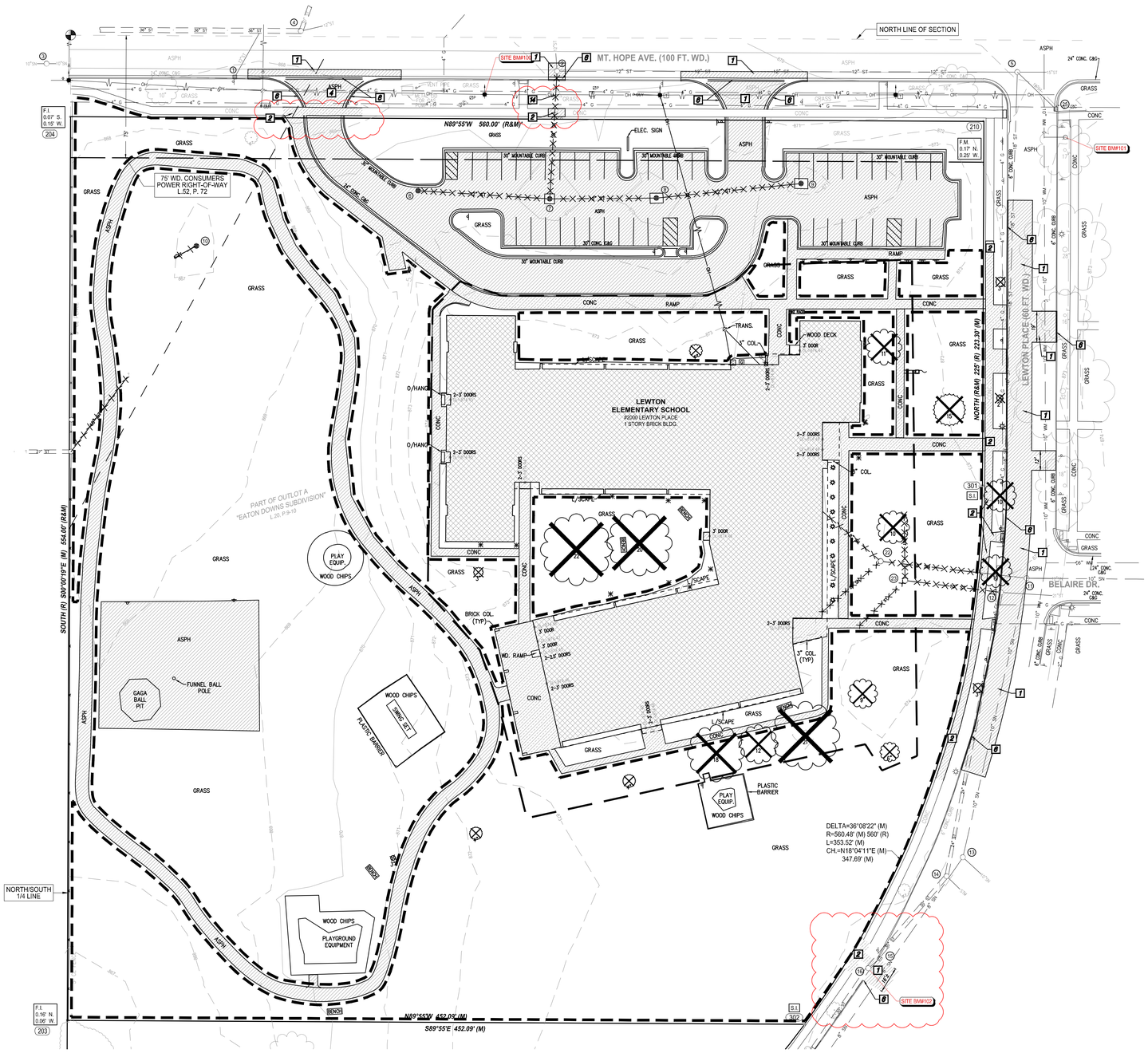

DEMOLITION PHASING NOTES

DEMOLITION TO BE DONE IN PHASES.

PHASE 1 DEMOLITION ITEMS FOR LSD NO. SB-0063:

ALL ITEMS SHOWN ON C2.1

PHASE 2 DEMOLITION ITEMS FOR LSD NO. SB-0064:

ALL OTHER ITEMS SHOWN ON C2.2.

DEMOLITION NOTES

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LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
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- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- STORM SEWER STRUCTURE
- SANITARY SEWER STRUCTURE
- WATERMAIN STRUCTURE
- UTILITY CROSSING (SEE DATA TABLE)
- STRUCT. TYPE
- STRUCT. NO.

GRAPHIC SCALE
0 15 30 60
(IN FEET)
1 inch = 30 ft.

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Lewton School Demo

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

REVISIONS/REVIEW — DATE
CONSTRUCTION DOCUMENTS — 5/2/2025

KEY PLAN

LSD NO. SB-0063
JOB NO. 2616.01G

NORTH

SHEET TITLE
DEMOLITION PLAN - PHASE 2

SHEET NO.
C2.2

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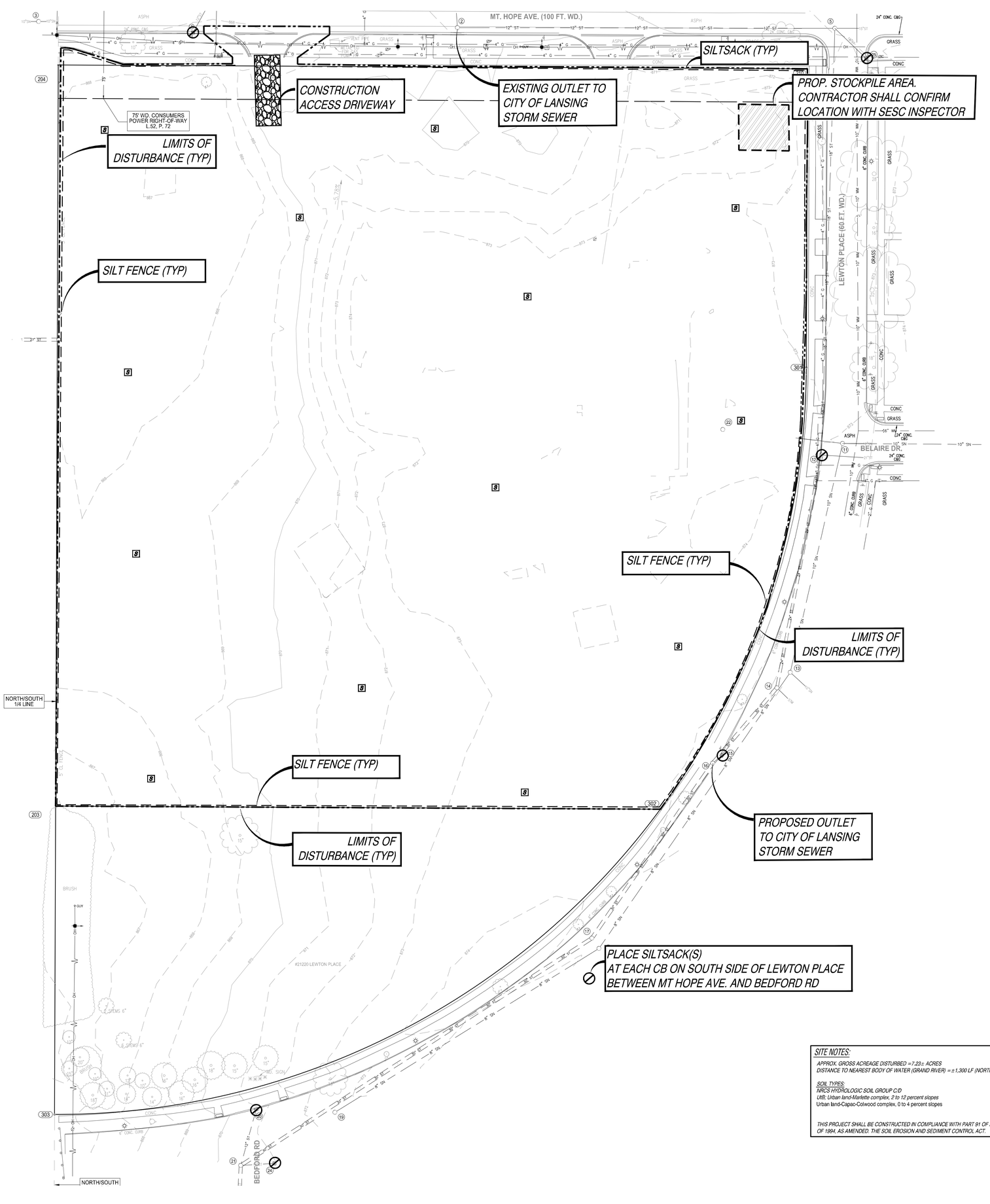

GRAPHIC SCALE

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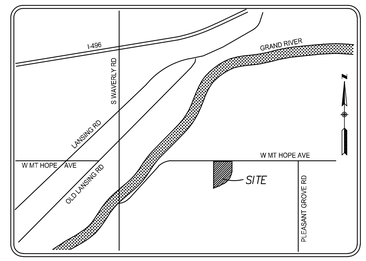

LOCATION MAP
NOT TO SCALE

LEGAL DESCRIPTION

OWNER: LANSING SCHOOL DISTRICT
TAX PARCEL ID: 33-01-01-30-201-001
ADDRESS: 2000 LEWTON PLACE

OUTLET A EXC COM 554 FT S OF NW COR OUTLOT A, TH E PAR L TO N LINE OUTLOT A TO WLY LINE LEWTON PLACE, SWLY ON WLY & NLY LINE LEWTON PLACE TO SW COR OUTLOT A, N TO BEG; ETON DOWNS SUB

OWNER: CITY OF LANSING
TAX PARCEL ID: 33-01-01-30-201-011
ADDRESS: 2121 LEWTON PLACE

COM 554 FT S OF NW COR OUTLOT A, TH E PAR L TO N LINE OUTLOT A TO WLY LINE LEWTON PLACE, SWLY ON WLY & NLY LINE LEWTON PLACE TO SW COR OUTLOT A, N TO BEG; ETON DOWNS SUB

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
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- CONCRETE SIDEWALK
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- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
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GRADING LEGEND

- EXISTING ELEVATION
- TC 000.00 / G 000.00 — PROPOSED TOP OF CURB ELEVATION / PROPOSED GUTTER ELEVATION
- OG 000.00 — OUTSIDE GRADE ELEVATION
- EXISTING CONTOURS
- PROPOSED CONTOURS
- TP 000.00 — TOP OF PAVEMENT ELEVATION
- TW 000.00 — TOP OF WALK ELEVATION
- FG 000.00 — FINISH GRADE ELEVATION
- T/WALL 000.00 — TOP OF WALL ELEVATION
- ME 000.00 — MATCH EXISTING ELEVATION
- FLOW ARROW

SOIL EROSION CONTROL DEVICES

- SILTSACK INLET FILTER
- SILT FENCE
- LIMITS OF DISTURBANCE
- CONSTRUCTION ACCESS DRIVEWAY
- 8 — SEEDING/MULCHING IN ALL DISTURBED AREAS UNLESS OTHERWISE NOTED

RESTORATION NOTE

RESTORE ALL NON-PAVED AREAS WITH 3" OF CLEAN TOPSOIL AND SEED MIX (30% KENTUCKY BLUEGRASS, 20% PERENNIAL RYEGRASS, 50% CREEPING RED FESCUE). PLACE MULCH IN ALL SEEDED AREAS. ON SLOPES IN EXCESS OF 10 HORIZONTAL TO 1 VERTICAL PLACE NORTH AMERICAN GREEN DS150 MULCH BLANKET IMMEDIATELY AFTER SEEDING. USE METAL STAPLES PER MANUFACTURERS RECOMMENDATIONS TO HOLD MATTING IN PLACE.

SOIL EROSION/SEDIMENTATION CONTROL CONSTRUCTION SEQUENCE (PHASE 1)

1. INSTALL SILT FENCE AROUND DEFINED PERIMETER AS SHOWN, INSTALL TREE PROTECTION AND CONSTRUCT TEMPORARY CONSTRUCTION ACCESS.
2. CLEAR, GRUB IN AREAS OF EARTH DISRUPTION.
3. DEMO EXISTING SITE AND REMOVE TREES.
4. EROSION CONTROL MEASURES ARE NOT TO BE REMOVED UNTIL THE **CITY OF LANSING** GRANTS ITS APPROVAL. INLET FILTERS SHALL BE PERIODICALLY INSPECTED AND CLEANED/REPLACED AS NECESSARY.

ALL EROSION CONTROL MEASURES SHALL BE INSTALLED APPROXIMATELY ACCORDING TO THE FOLLOWING SEQUENCE OF CONSTRUCTION.

PROJECT COMMENCEMENT ON OR ABOUT **9/30/2025**

SCHEDULE

A. INSTALL SILT FENCE AS SHOWN ON PLANS. **3 DAYS**
B. SITE DEMOLITION AND TREE REMOVALS. **3 MONTHS**

PROJECT COMPLETION ON OR ABOUT **12/30/2025**

SITE NOTES:

APPROX. GROSS ACREAGE DISTURBED = 7.23± ACRES
DISTANCE TO NEAREST BODY OF WATER (GRAND RIVER) = ± 1,300 LF (NORTHWEST)

SOIL TYPES:
NRCS HYDROLOGIC SOIL GROUP C/D
UrB; Urban land-Marlette complex, 2 to 12 percent slopes
Urban land-Capac-Colwood complex, 0 to 4 percent slopes

THIS PROJECT SHALL BE CONSTRUCTED IN COMPLIANCE WITH PART 91 OF ACT 451 OF 1994, AS AMENDED. THE SOIL EROSION AND SEDIMENT CONTROL ACT.

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Lewton School
Lansing School District

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Lansing, MI 48915

Lansing School District

REVISIONS/REVIEW	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

NORTH

SHEET TITLE
SESC PLAN- PHASE 1

SHEET NO.
C3.1

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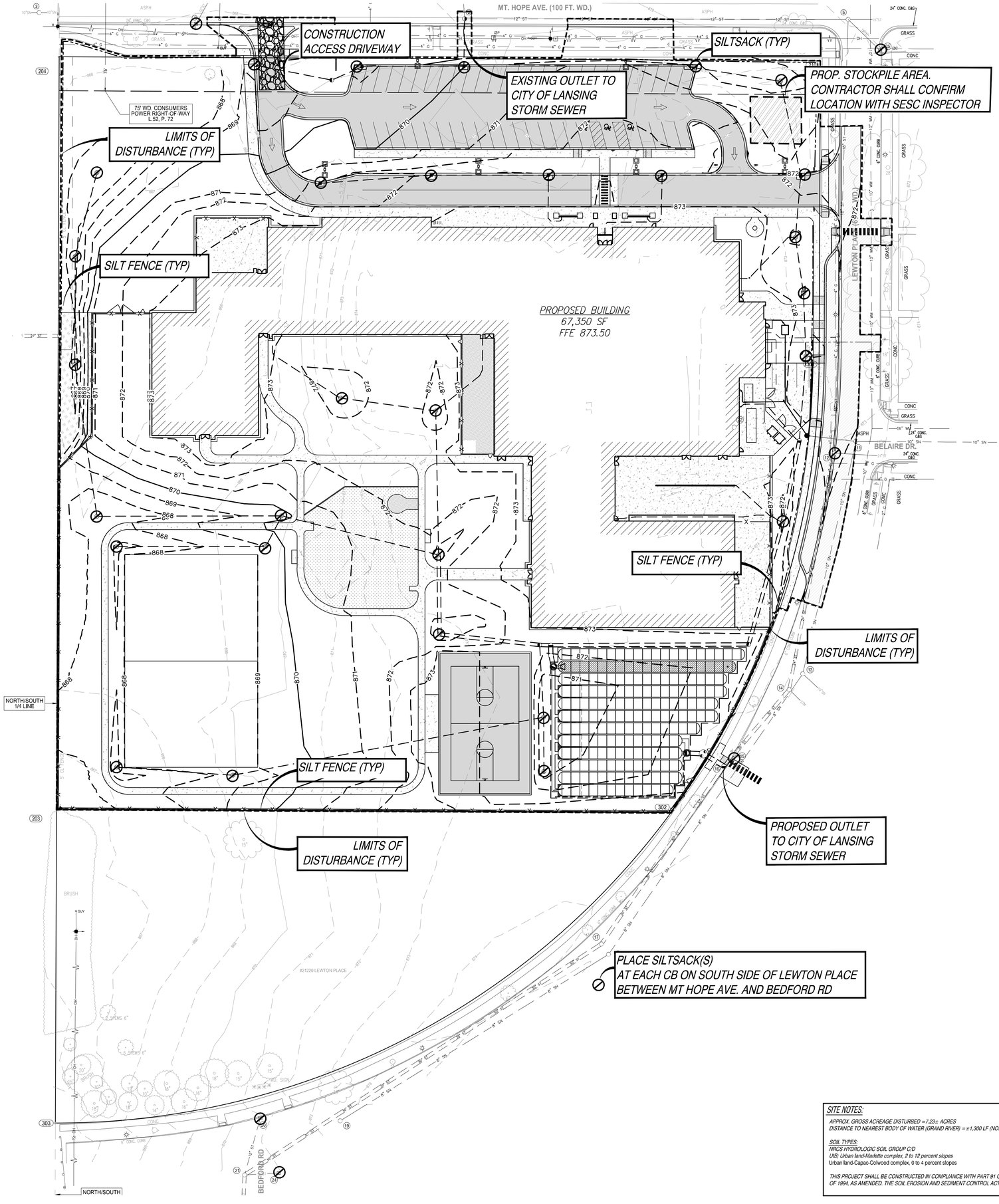

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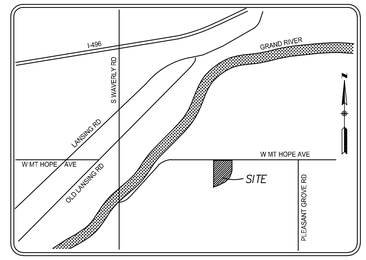

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- FG 000.00 — FINISH GRADE ELEVATION
- T/WALL 000.00 — TOP OF WALL ELEVATION
- ME 000.00 — MATCH EXISTING ELEVATION
- FLOW ARROW

SOIL EROSION CONTROL DEVICES

- SILTSACK INLET FILTER
- SILT FENCE
- LIMITS OF DISTURBANCE
- CONSTRUCTION ACCESS DRIVEWAY

RESTORATION NOTE

RESTORE ALL NON-PAVED AREAS WITH 3" OF CLEAN TOPSOIL AND SOD PER SPEC SECTION 2920. PEG SOD IN PLACE ON SLOPES IN EXCESS OF 10 HORIZONTAL TO 1 VERTICAL USING WOODEN PEGS A MINIMUM OF 12" LONG. WATER SOD ON A REGULAR BASIS AS INDICATED IN THE SPECIFICATIONS.

SOIL EROSION/SEDIMENTATION CONTROL CONSTRUCTION SEQUENCE (PHASE 2)

1. INSTALL SILT FENCE AROUND DEFINED PERIMETER AS SHOWN, INSTALL TREE PROTECTION AND CONSTRUCT TEMPORARY CONSTRUCTION ACCESS.
2. CLEAR, GRUB AND STRIP TOPSOIL IN AREAS OF EARTH DISRUPTION.
3. COMPLETE LAND BALANCING OPERATIONS.
4. INSTALL UNDERGROUND UTILITIES AND PLACE INLET FILTERS WHERE INDICATED.
5. PERFORM PAVING OPERATIONS, FINE GRADING, LANDSCAPING.
6. EROSION CONTROL MEASURES ARE NOT TO BE REMOVED UNTIL THE **CITY/TWP** AND/OR COUNTY GRANTS ITS APPROVAL. INLET FILTERS SHALL BE PERIODICALLY INSPECTED AND CLEANED/REPLACED AS NECESSARY.

ALL EROSION CONTROL MEASURES SHALL BE INSTALLED APPROXIMATELY ACCORDING TO THE FOLLOWING SEQUENCE OF CONSTRUCTION.

PROJECT COMMENCEMENT ON OR ABOUT **4/15/2026**

SCHEDULE

A.	INSTALL SILT FENCE AS SHOWN ON PLANS.	**3 DAYS**
B.	STRIP AND STOCKPILE TOPSOIL AND ROUGH GRADE SITE.	**4 WEEKS**
C.	INSTALL UNDERGROUND UTILITIES.	**5 WEEKS**
D.	BUILDING CONSTRUCTION	**18 MONTHS**
E.	FINE GRADE SITE, PAVE, INSTALL LANDSCAPING AND ESTABLISH VEGETATION.	**4 WEEKS**
F.	CLEAN PAVEMENTS, WALKS, CULVERTS, AND WATERCOURSES OF ALL ACCUMULATED SEDIMENT IN CONJUNCTION WITH REMOVING ALL TEMPORARY DEVICES.	**1 WEEK**

PROJECT COMPLETION ON OR ABOUT **12/15/2027**.

SITE NOTES:

APPROX. GROSS ACREAGE DISTURBED =7.23± ACRES
DISTANCE TO NEAREST BODY OF WATER (GRAND RIVER) =±1,300 LF (NORTHWEST)

SOIL TYPES:
NRCS HYDROLOGIC SOIL GROUP C/D
UtB; Urban land-Marlette complex, 2 to 12 percent slopes
Urban land-Capac-Colwood complex, 0 to 4 percent slopes

THIS PROJECT SHALL BE CONSTRUCTED IN COMPLIANCE WITH PART 91 OF ACT 451 OF 1994, AS AMENDED. THE SOIL EROSION AND SEDIMENT CONTROL ACT.

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Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

REVISIONS/REVIEW	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

NORTH

SHEET TITLE
SESC PLAN - PHASE 2

SHEET NO.
C3.2

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SOIL EROSION/SEDIMENTATION CONTROL NOTES

1. ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF CITY OF LANSING.
2. DAILY INSPECTIONS SHALL BE MADE BY THE CONTRACTOR TO DETERMINE EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL DEVICES, AND ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
3. EROSION AND ANY SEDIMENT FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATER WAYS. WATERWAYS INCLUDE BOTH NATURAL AND MANMADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES AND PONDS.
4. EROSION AND SEDIMENT CONTROL DEVICES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CONSTRUCTION. SEDIMENT CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENCE AGAINST ANY TRANSPORTING OF SILT OFF THE SITE.
5. CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL DEVICES AS REQUIRED AND AS DIRECTED ON THESE PLANS. HE SHALL REMOVE TEMPORARY DEVICES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES, AND OTHER EARTH CHANGES HAVE BEEN ACCOMPLISHED AND APPROVED BY THE CITY OF LANSING.
6. DEBRIS FROM PROJECT WILL BE LEFT ON THE SITE BY DELIVERY OR CONSTRUCTION VEHICLES THROUGH THE USE OF CLEAN STONE EXITS. SHOULD THE STONE BECOME LESS EFFECTIVE IT WILL BE REPLACED. ALL CONSTRUCTION TRAFFIC WILL USE THE CLEAN STONE EXIT.
7. DUST CONTROL WILL BE EXERCISED AT ALL TIMES WITHIN THE PROJECT BY THE CONTRACTORS. SPRINKLING TANK TRUCKS WILL BE AVAILABLE AT ALL TIMES TO BE USED ON HAUL ROUTES OR OTHER PLACES WHERE DUST BECOMES A PROBLEM.
8. IMMEDIATELY AFTER SEEDING, MULCH ALL SEEDED AREAS WITH UNHEATHRED SMALL GRAIN STRAW OR HAY. SPREAD UNIFORMLY AT A RATE OF 1 1/2 TO 2 TONS PER ACRE OR 0.10 POUNDS PER SQUARE FEET. ANCHOR MULCH WITH DISC TYPE MULCH ANCHORING TOOL.
9. ALL MUD, DIRT, AND DEBRIS TRACKED ONTO EXISTING ROADS FROM THIS SITE SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR OR BUILDER. ALL MUD, DIRT, AND DEBRIS TRACKED OR SPILLED ONTO PAVED SURFACES WITHIN THIS SITE SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.
10. PERMANENT SOIL EROSION CONTROL DEVICES FOR ALL SLOPES, CHANNELS, DITCHES OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 15 CALENDAR DAYS AFTER FINAL GRADING OR FINAL EARTH CHANGES HAVE BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH CHANGE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH CHANGE ACTIVITY CEASES TEMPORARY SOIL EROSION CONTROL DEVICES SHALL BE IMPLEMENTED WITHIN 30 CALENDAR DAYS. ALL TEMPORARY SOIL EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION DEVICES ARE IMPLEMENTED AND/OR ESTABLISHED. ALL PERMANENT SOIL EROSION CONTROL DEVICES WILL BE IMPLEMENTED AND ESTABLISHED BEFORE A CERTIFICATE OF INSURANCE IS ISSUED.
11. ALL CONTRACTORS ARE TO KEEP EXCAVATED MATERIAL ON SITE. PARTICULAR CARE SHOULD BE TAKEN WHEN WORKING ALONG THE PERIMETER OF THE SITE. IN NO EVENT SHALL THE WORK AREA EXTEND BEYOND THE LIMITS INDICATED ON THE PLANS.
12. THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT BY THE CONTRACTOR.

NDPES CONSTRUCTION SITE REQUIREMENTS:

AN NPDES NOTICE OF COVERAGE (NOC) IS REQUIRED FOR THE PROJECT. IMMEDIATELY UPON RECEIPT OF THE SESC PERMIT, THE CONTRACTOR SHALL PROVIDE A COPY TO THE ENGINEER SO THAT THE NOC APPLICATION CAN BE COMPLETED. CONTRACTOR IS RESPONSIBLE FOR HAVING A STORMWATER OPERATOR, CERTIFIED BY THE STATE OF MICHIGAN, INSPECT THE SESC CONTROLS FOR THE PROJECT. THIS MUST BE DONE AT LEAST WEEKLY AS WELL AS WITHIN 24 HOURS OF A RAIN EVENT. ANY DEFICIENCIES IN THE SESC MEASURES MUST BE ADDRESSED IMMEDIATELY. THE INSPECTIONS MUST BE KEPT IN A LOG AND MAY BE REVIEWED OR AUDITED BY THE STATE.

CONTACTOR IS RESPONSIBLE FOR TEMPORARY S.E.S.C. MEASURES

CHART A

MAINTENANCE TASKS AND SCHEDULE DURING CONSTRUCTION

TASKS	COMPONENTS: Storm Sewer System	Catch Basin Sumps	Catch Basin Inlet Casings	Ditches and Swales	Outflow Control Structure	Rip-Rap	Filtration Basins	Storm Detention Areas	Wetlands	Emergency Overflow	SCHEDULE
Inspect for sediment accumulation	X	X		X	X		X	X			Weekly
Removal of sediment accumulation	X	X		X	X		X	X			As needed* & prior to turnover
Inspect for floatables and debris			X	X	X		X	X			Quarterly
Cleaning of floatables and debris			X	X	X		X	X			Quarterly & at turnover
Inspection for erosion				X	X		X	X			Weekly
Re-establish permanent vegetation on eroded slopes				X			X	X			As needed & at turnover
Replacement of Stone					X						As needed* & prior to turnover
Mowing			X	X	X	X	X	X			0 to 2 times per year
Inspect Stormwater system components during wet weather and compare to as-built plans (by professional engineer reporting to XYZ Co.)				X	X		X	X			Annually and at turnover
Make adjustments or replacements as determined by annual wet weather inspection	X	X	X	X	X	X	X	X	X	X	As needed

*as needed means when sediment has accumulated to a maximum of one foot depth

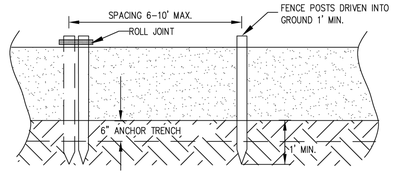
OWNER IS RESPONSIBLE FOR PERMANENT S.E.S.C. MEASURES

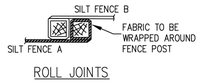
CHART B

PERMANENT MAINTENANCE TASKS AND SCHEDULE

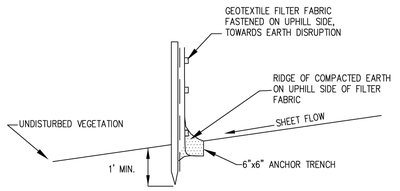
TASKS	COMPONENTS: Catch Basin Inlet Casings	Ditches and Swales	Outflow Control Structure	Rip-Rap	Filtration Basins	Storm Detention Areas	Wetlands	Emergency Overflow	SCHEDULE
Inspect for sediment accumulation		X	X		X	X			Annually
Removal of sediment accumulation		X	X		X	X			Every 2 years as needed
Inspect for floatables and debris	X	X	X		X	X			Annually
Cleaning of floatables and debris	X	X	X		X	X			Annually
Inspection for erosion		X	X		X	X			Annually
Re-establish permanent vegetation on eroded slopes		X			X	X			As Needed
Replacement of Stone			X						Every 3-5 years as needed
Clean Streets									Semi-Annually
Mowing		X			X	X			0-2 times per year
Inspect Stormwater system components during wet weather and compare to as-built plans (by professional engineer reporting to XYZ Co.)	X	X	X	X	X	X	X	X	Annually
Make adjustments or replacements as determined by annual wet weather inspection	X	X	X	X	X	X	X	X	As needed
Keep records of all inspections and maintenance activities and report to XYZ Co.									Annually
Keep records of all costs for inspections, maintenance and repairs. Report to XYZ Co.									Annually

S51 SILT FENCE





ROLL JOINTS



STANDARD SYMBOL

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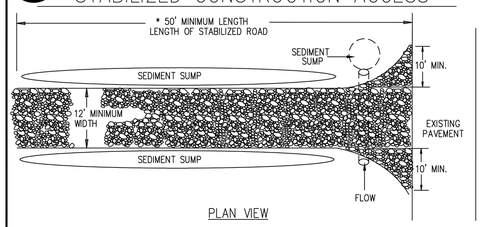
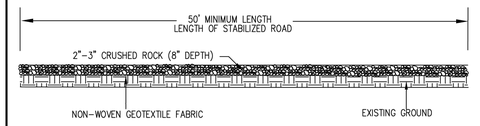
DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
STATE FACILITIES ADMINISTRATION

S53 STABILIZED CONSTRUCTION ACCESS



PLAN VIEW

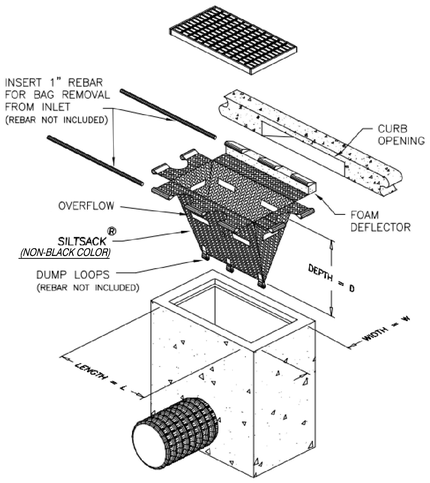


PROFILE

NOTES:
1. Establish stabilized construction entrance prior to the initiation of site construction activities.
2. Care should be taken to prevent material movement into adjacent wetlands/waterbodies.
3. Care should be taken to maintain existing roadside drainage via culvert installation, with sediment sump placed downflow of culvert.

STANDARD SYMBOL

STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
STATE FACILITIES ADMINISTRATION



SILT SACK

E8 PERMANENT SEEDING SPECIFICATIONS

When
- To finalize stabilization of temporary seeding areas or when an area needs permanent stabilization following completion of construction. Also used when vegetative establishment can correct existing soil erosion or sedimentation problem.
- Within 5 days of final grade.

Why
- To stabilize soil and prevent or reduce soil erosion/sedimentation problems from developing.

Where
- Used on construction and earth change sites which require permanent vegetative stabilization.

How
1. Review SESC plan and construction phasing to identify areas in need of permanent vegetative stabilization.
2. Select perennial grass and ground cover for permanent cover.
3. Seed mixes vary. However, they should contain native species.
4. Seed mixes should be selected through consultation with a certified seed provider and with consideration of soil type, light, moisture, use applications, and native species content.
5. Soil tests should be performed to determine the nutrient and pH levels in the soil. The pH may need to be adjusted to between 6.5 and 7.0.
6. Prepare a 3-5" deep seedbed, with the top 3-4" consisting of topsoil.
7. Slopes steeper than 1:3 should be roughened.
8. Apply seed as soon as possible after seedbed preparation. Seed may be broadcast by hand, hydroseeding, or by using mechanical drills.
9. Mulch immediately after seeding.
10. Dormant seed mixes are for use after the growing season, using seed which lies dormant in the winter and begins growing as soon as site conditions become favorable.

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E8 PERMANENT SEEDING SPECIFICATIONS

How (cont.)
11. Protect seeded areas from pedestrian or vehicular traffic.
12. Divert concentrated flows away from the seeded area until vegetation is established.

Maintenance
- Inspect weekly and within 24 hours following each rain event in the first few months following installation to be sure seed has germinated and permanent vegetative cover is being established.
- Add supplemental seed as necessary.

Limitations
- Seeds need adequate time to establish.
- May not be appropriate in areas with frequent traffic.
- Seeded areas may require irrigation during dry periods.
- Seeding success is site specific, consider mulching or sodding when necessary.

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E6 MULCHING SPECIFICATIONS

When
- When areas are subject to erosive surface sheet flows or severe wind.

Why
- Temporarily protects seeded areas and slopes against erosion from rain or wind. Holds soil moisture to allow for seed germination and reduces wind dessication of germinated seeds. Inhibits seed consumption by birds.

Where
- Use on exposed slopes, newly seeded areas, new ditch bottoms (without perennial flow), and other areas subject to erosion.

How
1. Other surface runoff control measures should be installed prior to mulching.
2. Prepare surface to proper grade and compaction requirements.
3. If treatment area is to be revegetated immediately, spread or drill seed, or install vegetative sprigs into planting surface.
4. Select mulch material appropriate for site characteristics, including grade, level of traffic, installation method, and accessibility.

   Straw – Most common and widely used material. Provides organic matter as it breaks down. Effectiveness of sediment reduction high for at least 3 months. Subject to windblow and washout. For straw, apply a minimum of 2 tons/acre or approx. 50 lbs./1000 sq.ft. to cover the surface. Increase application rates 50% for dormant seeding.

   Rock – Crushed stone and gravel maintain effectiveness indefinitely if maintained to repair compaction. Cover 2-3" in depth (approx. 2.27 tons/1000 sq. ft.).

   Wood chips/bark – Chips decompose slowly but may require nitrogen fertilizer application to avoid nutrient deficiency. Tend to wash down slopes over 6% and may clog inlet grates. Cover 2-3" in depth.
5. Mulches should not be applied if free surface water is present but may be applied to wet soil.

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REVISIONS/REVIEW — DATE
BID & CONSTRUCTION — 10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

NORTH

SHEET TITLE
SESC DETAILS

SHEET NO.
C3.3

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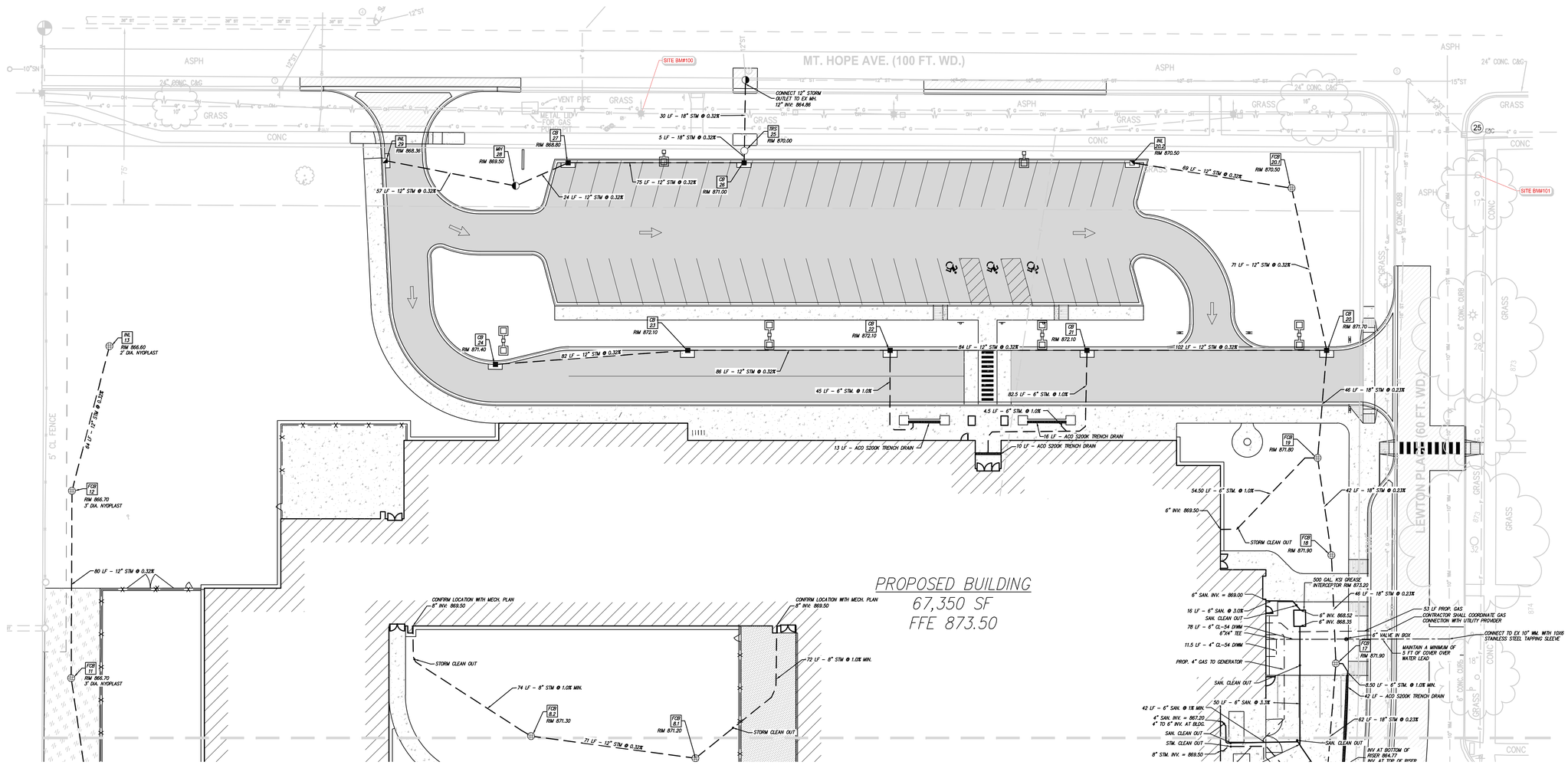

GRAPHIC SCALE

0 10 20 40

(IN FEET)
1 inch = 20 ft.

STORM STRUCTURE SCHEDULE						
STR. NO.	TYPE	RIM ELEV.	INV. SIZE	INV. DIR.	INVERT	IN/OUT
8.1	4' DIA FIELD CATCH BASIN	871.20	12" 18" 8"	W S NE	866.48' 865.48' 867.20'	In Out Out
8.2	4' DIA FIELD CATCH BASIN	871.30	12" 18"	E NW	866.71' 867.21'	Out In
11	3' DIA. NYOPLAST CATCH BASIN	866.70	12" 12"	N S	863.32' 863.32'	In Out
12	3' DIA. NYOPLAST CATCH BASIN	866.70	12" 12"	N S	863.57' 863.57'	In Out
13	2' DIA. NYOPLAST CATCH BASIN	866.60	12"	S	863.77'	Out
17	4' DIA FIELD CATCH BASIN	871.90	18" 18" 6"	N S E	866.34' 866.34' 867.70'	In Out In
18	4' DIA FIELD CATCH BASIN	871.90	18" 18"	S N	866.45' 866.45'	Out In
19	4' DIA FIELD CATCH BASIN	871.80	18" 18" 6"	N S W	866.55' 866.55' 867.80'	In Out Out
20.1	4' DIA FIELD CATCH BASIN	870.50	12" 12"	W S	866.89' 866.89'	Out Out
20.2	2' DIA INLET	870.50	12"	E	867.11'	In
21	4' DIA CATCH BASIN	872.10	12" 12" 6"	E W S	866.99' 866.99' 867.99'	Out In Out
22	4' DIA CATCH BASIN	872.10	12" 12" 6"	W E S	867.26' 867.26' 867.26'	In Out Out
23	4' DIA CATCH BASIN	872.10	12" 12"	E W	867.54' 867.54'	Out In
24	4' DIA CATCH BASIN	871.40	12"	E	867.80'	Out
25	4' DIA. TREATMENT STRUCTURE	870.00	18" 18"	N S	864.96' 864.96'	Out In
26	4' DIA CATCH BASIN	871.00	12" 18"	W N	864.98' 864.98'	In Out
27	4' DIA CATCH BASIN	868.80	12" 12"	SW E	865.22' 865.22'	In Out
28	4' DIA MANHOLE	869.50	12" 12"	W NE	865.30' 865.30'	In Out
29	2' DIA INLET	868.36	12"	E	865.48'	Out

UTILITY NOTES

1. STORM SEWER 6" AND SMALLER SHALL BE PVC SDR 23.5. STORM SEWER GREATER THAN 6" THROUGH 10" SHALL BE PVC SDR 26. WHERE STORM SEWER 12" AND LARGER IS NOTED, PIPE SHALL BE ADS HP IN PARKING, DRIVEWAY, AND RIGHT OF WAY AREAS AND N-12 IN GREEN SPACE AREAS.
2. WHERE NOTED AS HDPE, STORM SEWER SHALL BE HDPE SMOOTH INTERIOR CORRUGATED PIPE MEETING AASHTO STANDARD M294M-98, UNLESS OTHERWISE NOTED ON PLAN. INSTALLATION SHALL ADHERE TO ASTM D2321 SPECIFICATION. AFTER INSTALLATION, PIPE SHALL BE CHECKED FOR DEFLECTION BY A METHOD APPROVED BY THE PIPE MANUFACTURER. ANY PIPE DEFLECTION EXCEEDING THE ALLOWABLE MAXIMUM MUST BE REMOVED AND REPLACED.
3. SANITARY SEWER 8" AND LARGER SHALL BE PVC SDR 23.5 PIPE, LEADS 6" AND SMALLER SHALL BE SOLID WALL, PVC, SDR 23.5.
4. WATER MAIN SHALL BE CLASS 52 DUCTILE IRON. WATER MAINS SHALL BE LEAKAGE AND PRESSURE TESTED IN ACCORDANCE WITH AWWA STANDARD C600. WATER MAINS SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD C651 PRIOR TO BEING PUT INTO SERVICE.
5. ALL UTILITY TRENCHES THAT FALL WITHIN A 1-ON-1 INFLUENCE OF PAVEMENT AREAS SHALL BE BACKFILLED WITH CLASS 2 SAND AND COMPACTED TO 95% OF MAXIMUM DENSITY.
6. ALL WATER MAIN SHALL BE BURIED WITH 5' OF COVER FROM PROPOSED GRADES. USE 22.5° BENDS TO LOWER WATER MAIN AS NECESSARY AND/OR WHERE NOTED AT UTILITY CROSSING.
7. ALL PUBLIC UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY OF LANSING AND/OR INGHAM COUNTY.
8. ALL UTILITIES SHALL BE INSTALLED ON CLASS "B" BEDDING (CLASS 2 SAND) OR BETTER.
9. STORM SEWER STRUCTURE DIAMETERS SHALL BE AS NOTED ON THE PLANS. UNLESS OTHERWISE INDICATED, CASTINGS SHALL BE:
   PMH. CATCH BASINS – EJIW 5105 – "M1" (FRAMES WITH CURB BOXES WILL NOT BE ALLOWED)
   FIELD CATCH BASINS – EJIW 1040 – "CU"
   STORM MANHOLES – EJIW 1040 – "A"
13. PLACEMENT OF EDGE DRAINS AND FINGER DRAINS AT ALL PAVEMENT CATCH BASINS IS REQUIRED. SEE STRUCTURE UNDERDRAIN DETAIL **SHEET C4.4.**
16. ALL CATCH BASINS SHALL HAVE 3" SUMPS.
17. SANITARY MANHOLE COVERS SHALL BE LABELED "SANITARY SEWER" ONLY FOR PRIVATE STRUCTURES. REFER TO CITY STANDARDS FOR REQUIRED TEXT OF UTILITY CASTINGS AT PUBLIC STRUCTURES.
18. LOCATIONS OF LIGHT POLES, IF SHOWN ON THESE DRAWINGS, MAY BE APPROXIMATE. CONFIRM EXACT LOCATION (I.E. CURB OFFSETS, SIDEWALK OFFSETS, ETC.) PRIOR TO STAKING AND CONSTRUCTION. REFER TO SITE ELECTRICAL PLAN FOR DETAILS, AND COORDINATE WITH ELECTRICAL ENGINEER, ARCHITECT, AND CIVIL ENGINEER TO DETERMINE PROPER PLACEMENT.
19. WHERE PUBLIC UTILITY WORK SHOWN ON THESE PLANS DIFFERS FROM THE STANDARD DETAILS OR STANDARD SPECIFICATIONS OF THE CITY OF LANSING, THE CITY OF LANSING REQUIREMENTS SHALL GOVERN.

RIM ADJUSTMENT NOTE

REMOVE EXISTING CASTING, COVER AND ADJUSTMENT MATERIALS FROM STRUCTURE. SALVAGE CASTING AND COVER FOR REINSTALLATION AND PROVIDE NEW ADJUSTMENT BRICK/BLOCK/RINGS. REINSTALL ACCORDING TO STANDARD DETAILS (IF INCLUDED). PROTECT EXISTING UTILITY STRUCTURE TO REMAIN.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 / XXX — STRUCT. NO. / STRUCT. TYPE

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Lansing School District

REVISIONS/REVIEW	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

NORTH

SHEET TITLE
UTILITY PLAN - NORTH

SHEET NO.
C4.1

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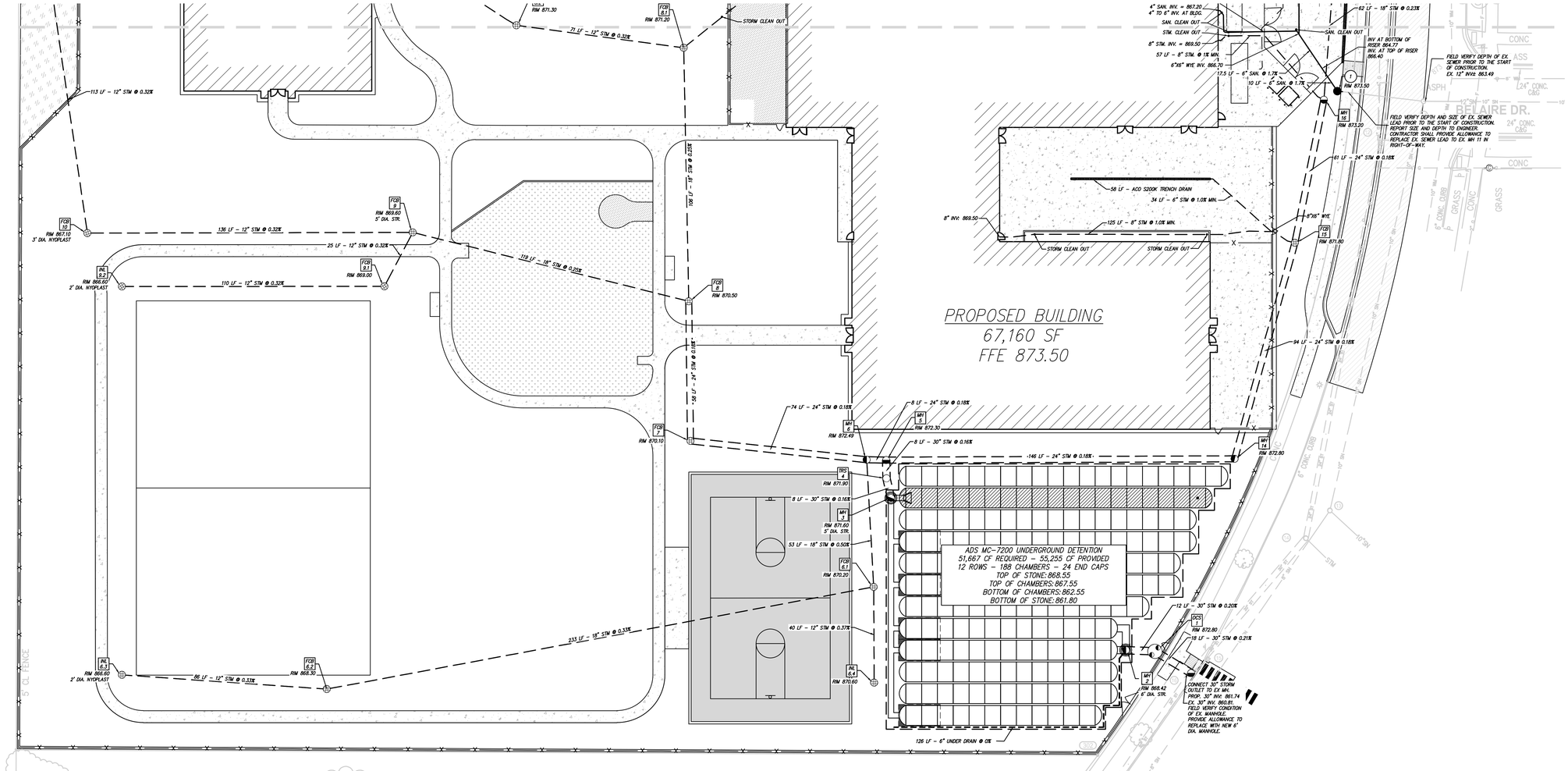

GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 inch = 20 ft.

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Lewton School
Lansing School District
2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

REVISIONS/REVIEW — DATE
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LSD NO. SB-0064
JOB NO. 2616.01G

NORTH

SHEET TITLE
UTILITY PLAN - SOUTH

SHEET NO.
C4.2

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STORM STRUCTURE SCHEDULE

STR. NO.	TYPE	RIM ELEV.	INV. SIZE	INV. DIR.	INVERT	IN/OUT
1	OUTLET CONTROL STRUCTURE	872.80	30"	SE	861.78'	Out
			30"	W	861.78'	In
2	6' DIA MANHOLE	868.42	30"	E	861.80'	Out
			30"	N	862.80'	In
			6"	SW	861.80'	Out
			30"	W	862.80'	In
3	5' DIA MANHOLE	871.60	24"	E	862.74'	Out
			30"	N	862.74'	In
			24"	S	864.47'	Out
4	6' DIA. TREATMENT STRUCTURE	871.90	30"	S	862.75'	Out
			30"	N	862.75'	In
5	4' DIA MANHOLE	872.30	24"	E	865.10'	In
			30"	S	862.76'	Out
			24"	W	862.97'	In
6	4' DIA MANHOLE	872.49	24"	W	862.98'	In
			18"	S	863.18'	Out
			24"	E	862.98'	Out
6.1	4' DIA FIELD CATCH BASIN	870.20	18"	W	863.45'	In
			18"	N	863.45'	In
			12"	S	866.45'	Out
6.2	4' DIA FIELD CATCH BASIN	868.30	12"	W	864.22'	In
			18"	E	864.22'	Out
6.3	2' DIA. NYOPLAST CATCH BASIN	866.60	12"	E	864.50'	Out
6.4	2' DIA INLET CB	870.60	12"	N	866.60'	In
7	4' DIA FIELD CATCH BASIN	870.10	24"	N	863.11'	In
			24"	E	863.11'	Out
8	4' DIA FIELD CATCH BASIN	870.50	18"	N	865.22'	In
			24"	S	863.22'	Out
			18"	W	863.22'	In
9	5' DIA FIELD CATCH BASIN	869.60	12"	W	862.52'	In
			18"	E	863.52'	Out
			12"	SW	863.72'	Out
9.1	4' DIA FIELD CATCH BASIN	869.00	12"	NE	863.80'	In
			12"	W	863.80'	In
9.2	2' DIA. NYOPLAST CATCH BASIN	866.60	12"	E	864.15'	Out
10	3' DIA. NYOPLAST CATCH BASIN	867.10	12"	N	862.96'	In
			12"	E	862.96'	Out
14	4' DIA MANHOLE	872.80	24"	N	865.36'	In
			24"	W	865.36'	Out
15	4' DIA FIELD CATCH BASIN	871.80	24"	N	865.53'	In
			24"	S	865.53'	Out
			8"	W	867.80'	Out
16	4' DIA MANHOLE	873.20	24"	S	865.64'	Out
			18"	N	866.20'	In
			8"	NW	868.64'	Out

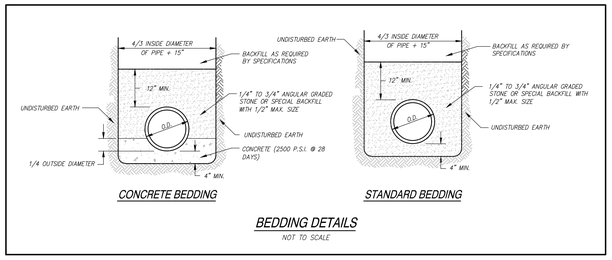
SANITARY STRUCTURE SCHEDULE

STR. NO.	TYPE	RIM ELEV.	INV. SIZE	INV. DIR.	INVERT	IN/OUT
1	4' DIA MANHOLE	873.50	6"	NW	864.60'	In
			6"	E	864.50' *	Out

(* FIELD VERIFY E. INV.)

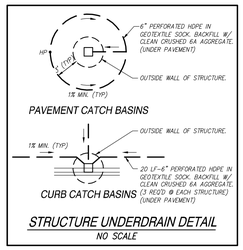
LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BKDHVE, COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- (2) UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: (20)
- WATERMAIN STRUCTURE: 10 / XXX — STRUCT. NO. / STRUCT. TYPE



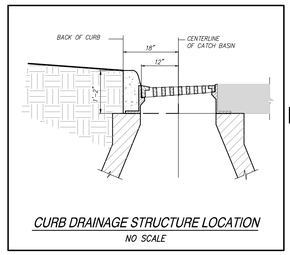
BEDDING DETAILS

NOT TO SCALE



STRUCTURE UNDERDRAIN DETAIL

NO SCALE



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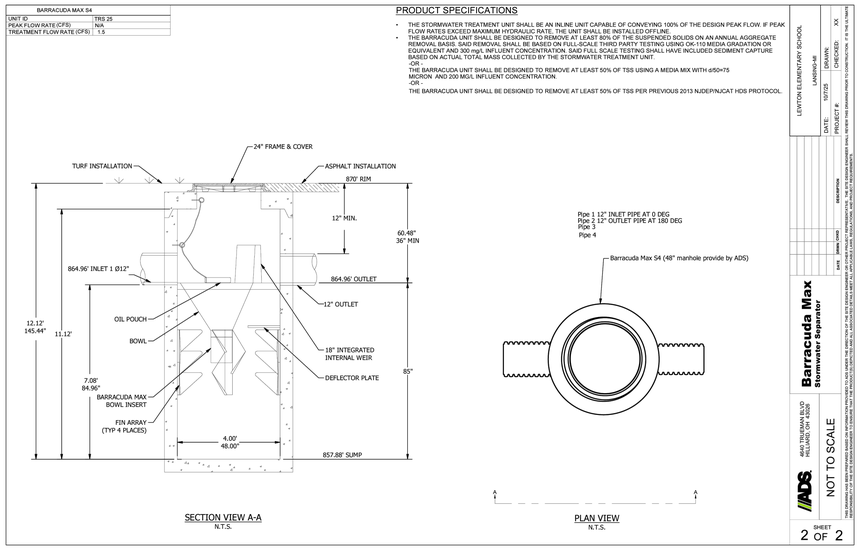
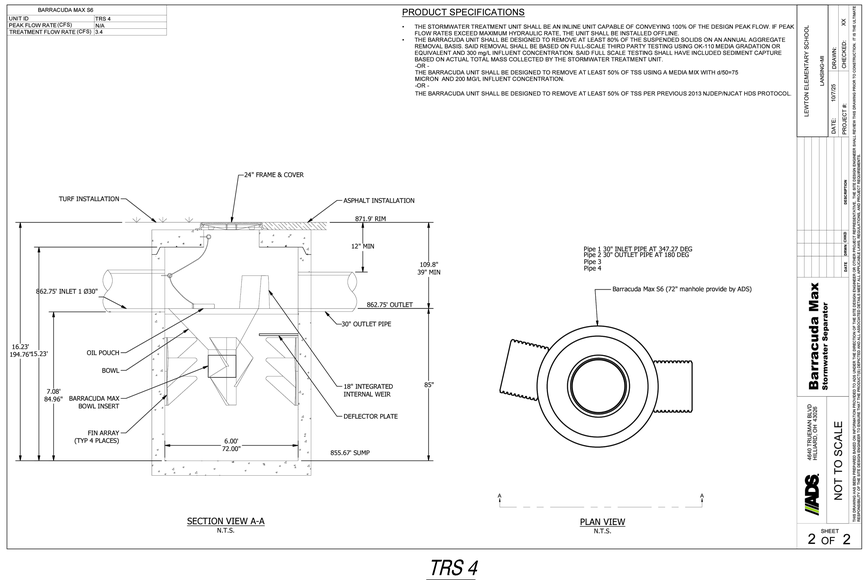
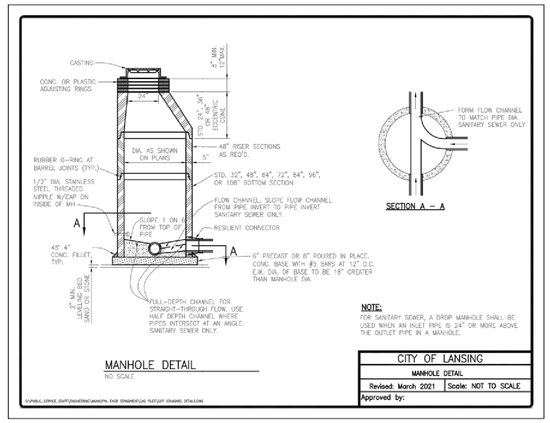


TRS 25

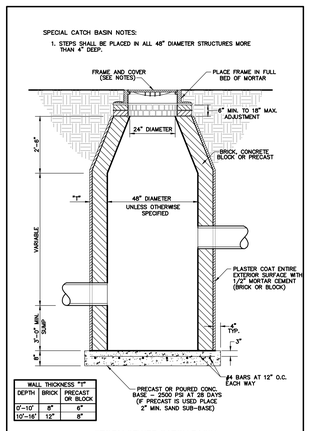


TRS 4



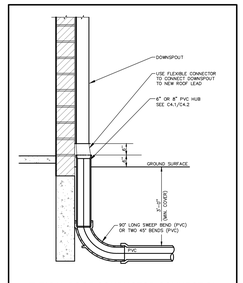
MANHOLE DETAIL

NO SCALE



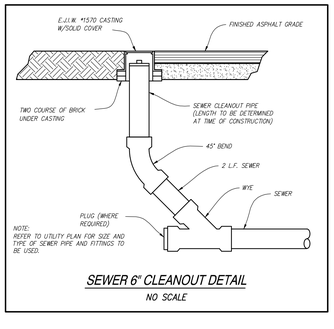
STORM SEWER CATCH BASIN

NO SCALE



TYPICAL ROOF CONDUCTOR CONNECTION

NO SCALE

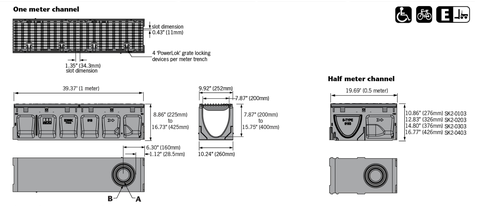


SEWER 6" CLEANOUT DETAIL

NO SCALE

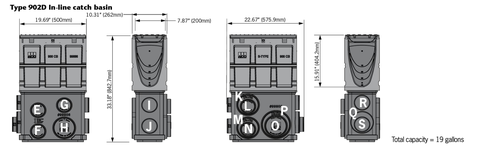
ACO DRAIN

PowerDrain - S200K iron edged channel system with longitudinal grate (ADA)



Knock-outs included on every 5th channel

Type 902D In-line catch basin

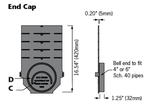


Outlet flow rates

Outlet	Product	Outlet size (Sch. 40)	Invert Depth	GPM	CFS
A	Bottom outlet - SK2-00	4" round	7.87"	153	0.34
A	Bottom outlet - SK2-040	6" round	15.75"	216	0.48
B	Bottom outlet -SK2-00	4" round	7.87"	344	0.77
B	Bottom outlet - SK2-040	6" round	15.75"	486	1.08
C	End outlet - SK2-00	4" round	7.87"	132	0.29
C	End outlet - SK2-40	4" round	15.75"	202	0.45
D	End outlet - SK2-10	6" round	9.84"	320	0.71
D	End outlet - SK2-40	6" round	15.75"	437	0.97
E	Type SK2-902D	4" round	25.33"	263	0.59
F	Type SK2-902D	4" round	31.83"	297	0.66
G	Type SK2-902D	4" round	23.76"	254	0.57
H	Type SK2-902D	6" round	31.83"	658	1.47
I	Type SK2-902D	4" round	23.91"	255	0.57
J	Type SK2-902D	4" round	30.40"	290	0.65
K	Type SK2-902D	6" round	24.68"	570	1.27
L	Type SK2-902D	4" round	24.13"	256	0.57
M	Type SK2-902D	4" round	31.82"	658	1.47
N	Type SK2-902D	4" round	31.26"	294	0.66
O	Type SK2-902D	4" round	31.26"	651	1.45
P	Type SK2-902D	8" round	31.82"	1149	2.56
Q	Type SK2-902D	4" round	30.32"	640	1.43
R	Type SK2-902D	4" round	23.19"	251	0.56
S	Type SK2-902D	4" round	29.90"	288	0.64

Note: These are the pipe flow rates at the specified outlet, **NOT** channel flow rates. *Catch basin flow rates are without trash bucket - using trash bucket reduces flow.

End Cap



April 2018

www.ACODrain.us

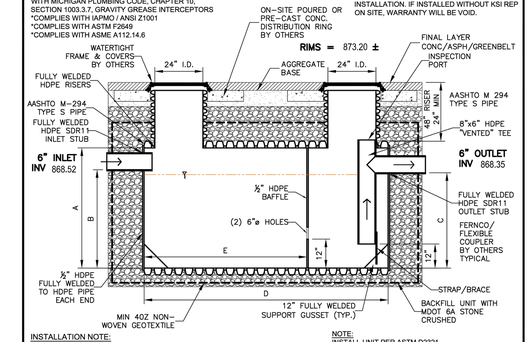
KSI HDPE GRAVITY GREASE/GRIT INTERCEPTOR TANK (500-2000 GALLON)

NOTE:
TANK MUST BE INSTALLED PER KSI TANK INSTALLATION INSTRUCTION MANUAL

2 COMPARTMENT SYSTEM WITH 2 RISERS

KSI GGGI UNITS ARE DESIGNED AND TESTED IN ACCORDANCE WITH MICHIGAN PLUMBING CODE, CHAPTER 10, SECTION 1003.3.7, GRAVITY GREASE INTERCEPTORS
*COMPLIES WITH IAPMO / ANSI Z1001
*COMPLIES WITH ASTM F2649
*COMPLIES WITH ASME A112.14.6

NOTE:
KSI REP MUST BE ON SITE DURING INSTALLATION. IF INSTALLED WITHOUT KSI REP ON SITE, WARRANTY WILL BE VOID.



INSTALLATION NOTE:
HDPE GRAVITY GREASE/GRIT INTERCEPTOR SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321. CARE SHOULD BE EXERCISED WITH CONSTRUCTION EQUIPMENT DURING INSTALLATION TO PROTECT THE UNIT FROM DAMAGE DUE TO POINT AND IMPACT LOADING. USE AN EXCAVATOR TO PLACE THE STONE AROUND AND ABOVE THE UNIT IS PREFERABLE. COMPACTION OF THE 6A STONE IN 8 INCH LIFTS TO 12 INCHES ABOVE THE UNIT. USE A VIBRATORY COMPACTOR, NOT A HOE PACK. PLACE THE REMAINING STONE USING A TRACKED PIECE OF EQUIPMENT (DOZER) OR CONTINUE USING THE EXCAVATOR. DO NOT USE RUBBER-TIRED EQUIP. ONCE THE UNIT IS INSTALLED, PLACE AN ORANGE SAFETY FENCE 4-5 FT HIGH W/ TEE POST, AROUND THE UNIT. PLACE FENCE 5 FT BEYOND THE FOOTPRINT OF THE UNIT. ANY DAMAGE TO THE UNIT AS A RESULT OF NOT FOLLOWING INSTRUCTIONS AND THE BLUEPRINT DETAILS, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR THE UNIT TO KSI'S SATISFACTION. IF GIVEN IN WRITING, A 3-4 DAY LEAD TIME, KSI WILL HAVE A REPRESENTATIVE ON SITE DURING INSTALLATION.

OPTIONAL
GEOGRID, 5 FT BEYOND EXCAVATED AREA IN ALL DIRECTIONS, WHERE THERE IS LESS THAN 2 FT OF COVER OVER TOP OF CHAMBER - CONTACT KSI FOR SHALLOW AND DEEP BURY DETAILS.

NOTE:
INSTALL UNIT PER ASTM D2321.
IF WATER TABLE IS AN ISSUE, PLEASE SEE KSI SPECIAL BURY DETAIL.
***H20/HS25 RATED AT >2 FT COVER

INTERCEPTOR TANK DIMENSIONS
** LARGER TANKS AVAILABLE

MODEL NO.	A	B	C	D	E
500 GALLON	48"	41"	39"	83"	54"
750 GALLON	48"	41"	39"	113"	81"
1000 GALLON	48"	41"	39"	147"	111"
1250 GALLON	60"	53"	51"	113"	81"
1500 GALLON	60"	53"	51"	136"	102"
1750 GALLON	60"	53"	51"	158"	119"
2000 GALLON	60"	53"	51"	181"	136"

*DIMENSION D MAY BE UP TO 4" LONGER DUE TO MANUFACTURING REQUIREMENTS

DESIGN BY: AG / RK
MANUF. APPROVAL BY: .
DRAWING NO. GREASE INTERCEPTOR v2025
REV: 4-18-25
DATE: 10-10-08
SCALE: NTS
1 OF 1
SHEET NO.

KSI — KENNEDY SOLUTIONS, INC.
10201 Bergin Road
Howell, MI 48843
Ph: 517-225-8338

ACO Specification Information

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C4.3

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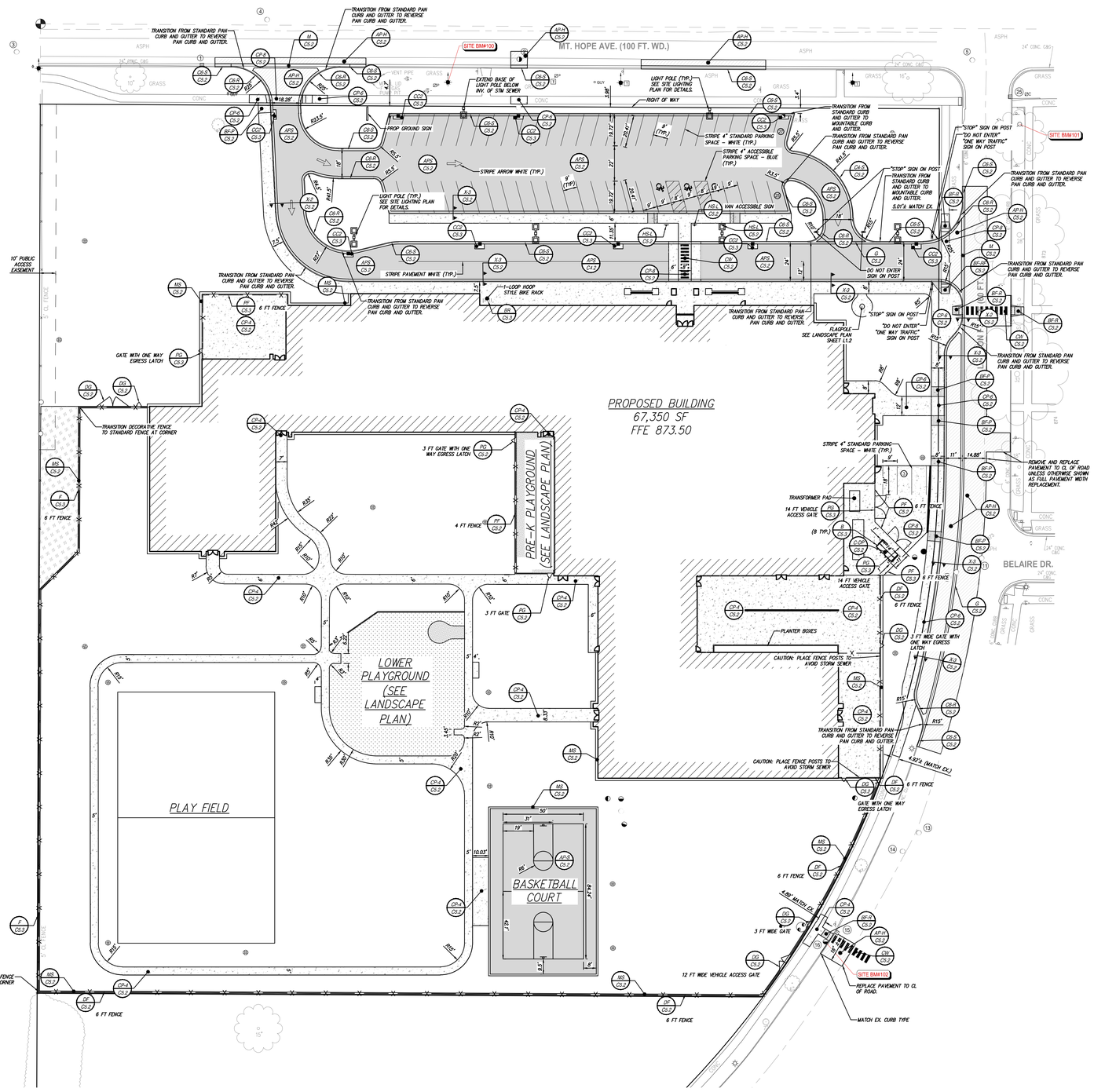

PAVING CONSTRUCTION NOTES

1. EARTHWORK AND PAVEMENT CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT CITY OF LANSING & MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION UNLESS OTHERWISE NOTED IN THE FOLLOWING ITEMS.
2. REMOVE ANY EXISTING TOPSOIL, VEGETATION, TREES AND OTHER DELETERIOUS MATERIALS TO EXPOSE THE SUBGRADE SOIL. TREE ROOTS SHALL BE COMPLETELY REMOVED.
3. EXCAVATE TO THE DEPTH OF THE FINAL SUBGRADE ELEVATION TO ALLOW FOR GRADE CHANGES AND THE PLACEMENT OF THE RECOMMENDED PAVEMENT SYSTEM.
4. THE TOP 12 INCHES OF THE EXPOSED SUBGRADE SHALL BE COMPACTED TO A DENSITY NO LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR (ASTM D 1557-91).
5. THE FINAL SUBGRADE SHALL BE THOROUGHLY PROOFROLLED UNDER THE OBSERVATION OF A GEOTECHNICAL/PAVEMENT ENGINEER. LOOSE OR YIELDING AREAS WHICH CANNOT BE MECHANICALLY STABILIZED SHALL BE REMOVED AND REPLACED WITH ENGINEERED FILL OR AS DICTATED BY FIELD CONDITIONS.
6. THE AGGREGATE BASE SHALL BE COMPACTED TO A DENSITY NO LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR (ASTM D 1557-91). THE BASE SHALL EXTEND A MINIMUM OF 1 FOOT BEYOND THE PAVED EDGE.
7. ALL BITUMINOUS MATERIAL SHALL BE COMPACTED TO A DENSITY NO LESS THAN 97 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MARSHALL METHOD.
8. A BOND COAT OF SS-1H EMULSION IS REQUIRED BETWEEN THE LEVELING COURSE AND THE WEARING COURSE WHEN EITHER 24 HOURS HAVE ELAPSED BETWEEN PLACEMENT OF THE BITUMINOUS COURSES OR THE SURFACE OF THE PAVEMENT HAS BEEN CONTAMINATED WITH DIRT, DUST, OR FOREIGN MATERIAL. THE BOND COAT SHALL BE APPLIED IN A UNIFORM MANNER OVER THE SURFACE AT A RATE OF .01 GALLONS/S.Y. IN THE EVENT A BOND COAT IS NOT REQUIRED, THE LEVELING COURSE MAY REQUIRE LOCALIZED BROOM CLEANING.
9. PERFORMANCE GRADE PG58-28 ASPHALT CEMENT SHALL BE USED IN THE PRODUCTION OF ALL STANDARD DUTY BITUMINOUS MIXTURES. PERFORMANCE GRADE PG64-28 ASPHALT CEMENT SHALL BE USED IN THE PRODUCTION OF ALL HEAVY DUTY BITUMINOUS MIXTURES. RECLAIMED ASPHALT PAVEMENT (RAP) SHALL BE ALLOWED ONLY AS SPECIFIED BY THE CURRENT MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND SHALL NOT EXCEED 12% BY WEIGHT FOR THE WEARING COURSE (MDOT TIER 1) AND 27% BY WEIGHT FOR THE LEVELING COURSE (MDOT TIER 2).
10. CONSTRUCTION TRAFFIC SHALL BE MINIMIZED ON THE NEW PAVEMENT. IF CONSTRUCTION TRAFFIC IS ANTICIPATED ON THE PAVEMENT STRUCTURE, THE PLACEMENT OF THE FINAL LIFT SHALL BE DELAYED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. THIS ACTION WILL ALLOW REPAIR OF LOCALIZED FAILURE, IF ANY DOES OCCUR, AS WELL AS REDUCE LOAD DAMAGE ON THE PAVEMENT SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR TO ANY DAMAGED SECTION RESULTING FROM CONSTRUCTION ACTIVITY.
11. TAPER CURB HEIGHT DOWN TO ZERO HEIGHT IN FIVE FEET AT ALL CURB ENDINGS UNLESS OTHERWISE NOTED ON THE PLAN.
12. WHERE CURB AND GUTTER SECTION IS ADJACENT TO A BARRIER FREE RAMP, DROP CURB HEIGHT TO MAXIMUM 1/4" ACROSS THE RAMP OPENING.
13. DIRECTIONAL ARROW PAVEMENT MARKINGS AND PAVEMENT MARKING LETTERING WHERE INDICATED SHALL BE WHITE PREFORMED THERMOPLASTIC UNLESS OTHERWISE NOTED. INSTALLATION OF THESE PERMANENT PAVEMENT MARKINGS SHALL BE PERFORMED PER THE MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTIONS 811 AND 920.
14. CONTRACTOR SHALL PROTECT EXISTING CURB, GUTTER, SIDEWALK, WALLS, FENCES AND ALL OTHER EXISTING SITE FEATURES NOT INDICATED FOR REMOVAL OR REHABILITATION.
15. PLACE EXPANSION JOINTS WHERE NEW CONCRETE PAVEMENT OR WALKS ABUT BUILDING WALLS (PROPOSED OR EXISTING), COLUMN WALLS OR BASES, CONCRETE FOUNDATIONS OR BASES, CURBS, OR EXISTING CONCRETE PAVEMENT. PLACE JOINT SEALANT ON ALL EXPANSION JOINTS.
16. CONTRACTOR TO CONSTRUCT CONTRACTION AND EXPANSION JOINTS IN ALL NEW CONCRETE PAVEMENT. CONTRACTION JOINTS SHALL BE TOOLED WHERE SIDEWALK WIDTH IS 8' OR LESS, AND SHALL BE SPACED EQUAL TO THE WIDTH OF THE PAVEMENT (I.E. 6' SPACING FOR 6' WIDE WALK), BUT NOT MORE THAN 10' APART. PLACE EXPANSION JOINTS WITH JOINT SEALANT AT MAXIMUM 50' SPACING. CONTRACTOR SHALL GENERALLY MATCH THE JOINT PATTERNS FOR CONCRETE PAVEMENT WHEN SHOWN ON THE PLANS.
17. CONCRETE PAVEMENT SHALL MEET THE REQUIREMENTS FOR MDOT GRADE 4000 CONCRETE PER THE CURRENT MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 XXX — STRUCT. NO. / STRUCT. TYPE

GRAPHIC SCALE
0 15 30 60
(IN FEET)
1 inch = 30 ft.

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PAVING & LAYOUT PLAN

SHEET NO.
C5.1

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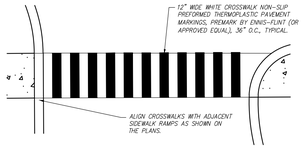
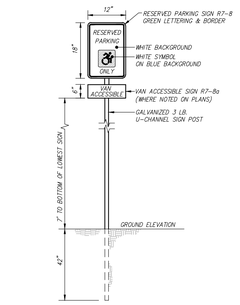
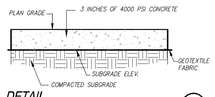


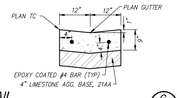
DETAIL
CROSSWALK
CW C5.2



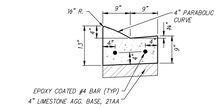
DETAIL
BARRIER FREE SIGN DETAIL
HSA C5.2



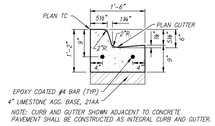
DETAIL
2 FT WIDE MAINTENANCE STRIP
MS C5.2



DETAIL
CONCRETE GUTTER PAN
G C5.2

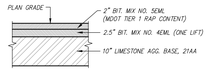


DETAIL
4" MOUNTABLE CURB & GUTTER STANDARD PAN
CS-5 C5.2

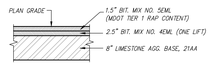


NOTE: CURB AND GUTTER SHOWN ADJACENT TO CONCRETE PAVEMENT SHALL BE CONSTRUCTED AS INTEGRAL CURB AND GUTTER.

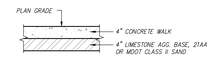
DETAIL
6" CURB & GUTTER STANDARD PAN (MDOT TYPE F1)
CS-5 C5.2



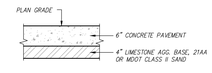
DETAIL
HEAVY DUTY BITUMINOUS PAVEMENT
AP-A C5.2



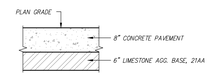
DETAIL
STANDARD BITUMINOUS PAVEMENT
AP-S C5.2



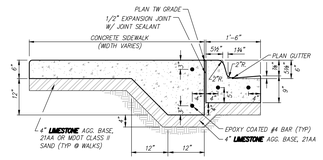
DETAIL
4" CONCRETE WALK
CP-1 C5.2



DETAIL
6" CONCRETE WALK
CP-6 C5.2

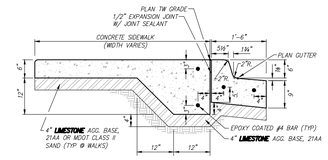


DETAIL
8" CONCRETE PAVEMENT
CP-8 C5.2

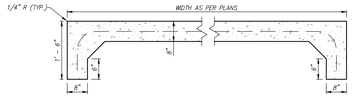


SECTION
WALK/CURB & GUTTER STANDARD PAN
X-2 C5.2

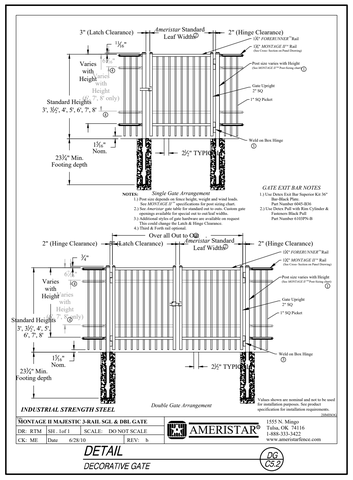
WITH EXPANSION JOINT

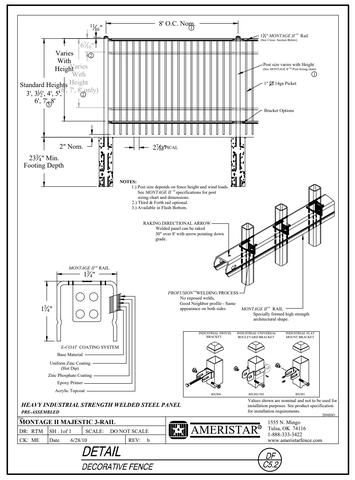


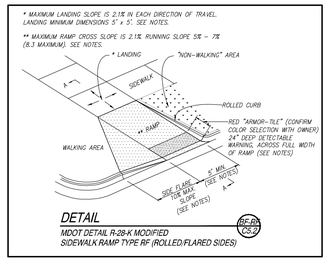
SECTION
WALK/CURB & GUTTER REVERSE PAN
X-3 C5.2



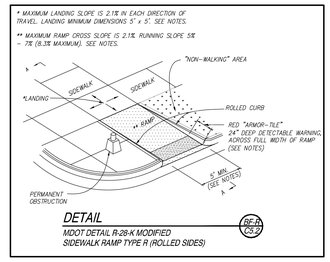
DETAIL
8" CONCRETE DUMPSTER PAD
C-DP C5.2



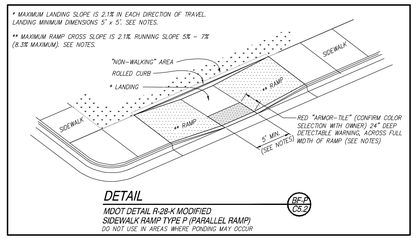




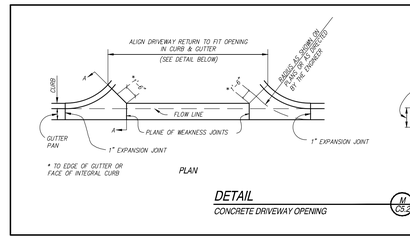
DETAIL
MDOT DETAIL R-28-K MODIFIED
SIDEWALK RAMP TYPE RF (ROLLED/FLARED SIDES)
RF-RS C5.2



DETAIL
MDOT DETAIL R-28-K MODIFIED
SIDEWALK RAMP TYPE R (ROLLED SIDES)
R-R C5.2



DETAIL
MDOT DETAIL R-28-K MODIFIED
SIDEWALK RAMP TYPE P (PARALLEL RAMP)
DO NOT USE IN AREAS WHERE PONDING MAY OCCUR
RF-P C5.2



DETAIL
CONCRETE DRIVEWAY OPENING
M C5.2

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Lewton School
Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

REVISIONS/REVIEW — DATE
BID & CONSTRUCTION — 10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

NORTH

SHEET TITLE
PAVING DETAILS

SHEET NO.
C5.2

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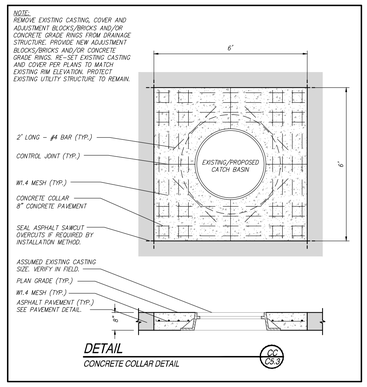

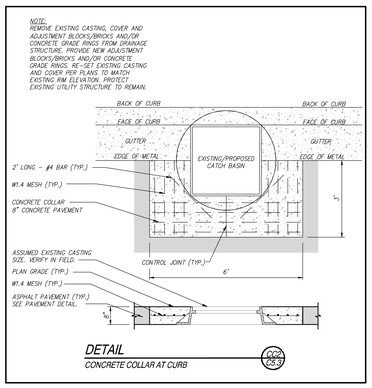

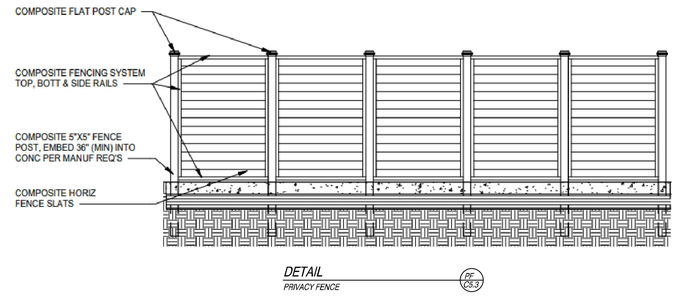

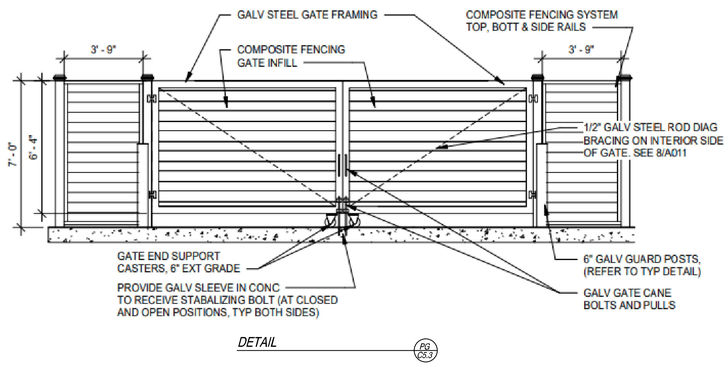

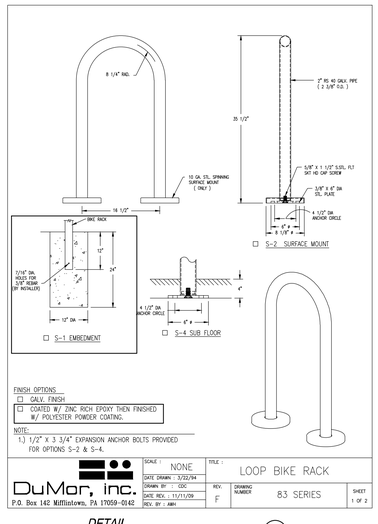

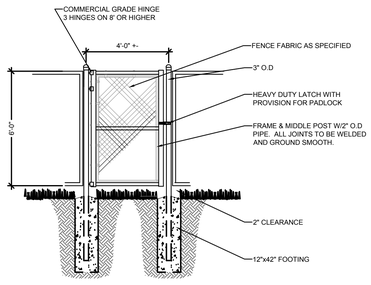

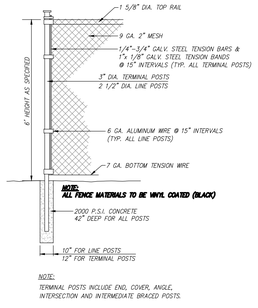

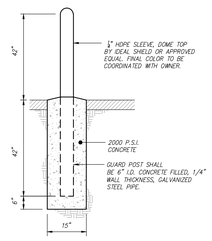

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Lansing School District

REVISIONS/REVIEW — DATE
BID & CONSTRUCTION — 10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

NORTH

SHEET TITLE
PAVING DETAILS

SHEET NO.
C5.3

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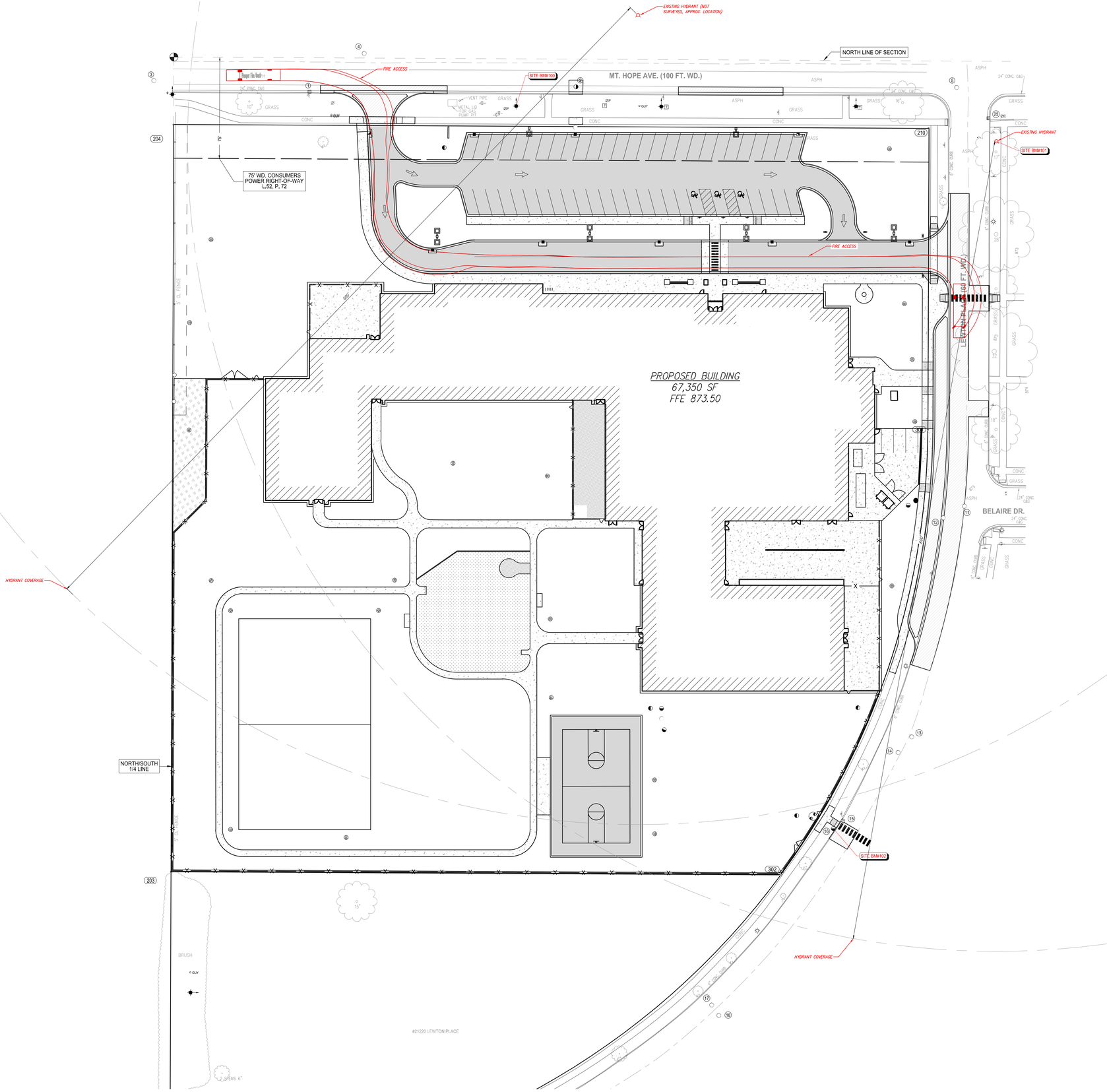

GRAPHIC SCALE

0 15 30 60

(IN FEET)
1 inch = 30 ft.

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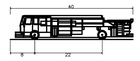

Pumper Fire Truck	
Overall Length	40.000ft
Overall Width	8.167ft
Overall Body Height	7.745ft
Min Body Ground Clearance	0.656ft
Track Width	8.167ft
Lock-to-lock time	5.00s
Max Wheel Angle	45.00°

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 XXX — STRUCT. NO. / STRUCT. TYPE

LSD NO. SB-0064
JOB NO. 2616.01G

NORTH

SHEET TITLE

FIRE ACCESS PLAN

SHEET NO.

C5.4

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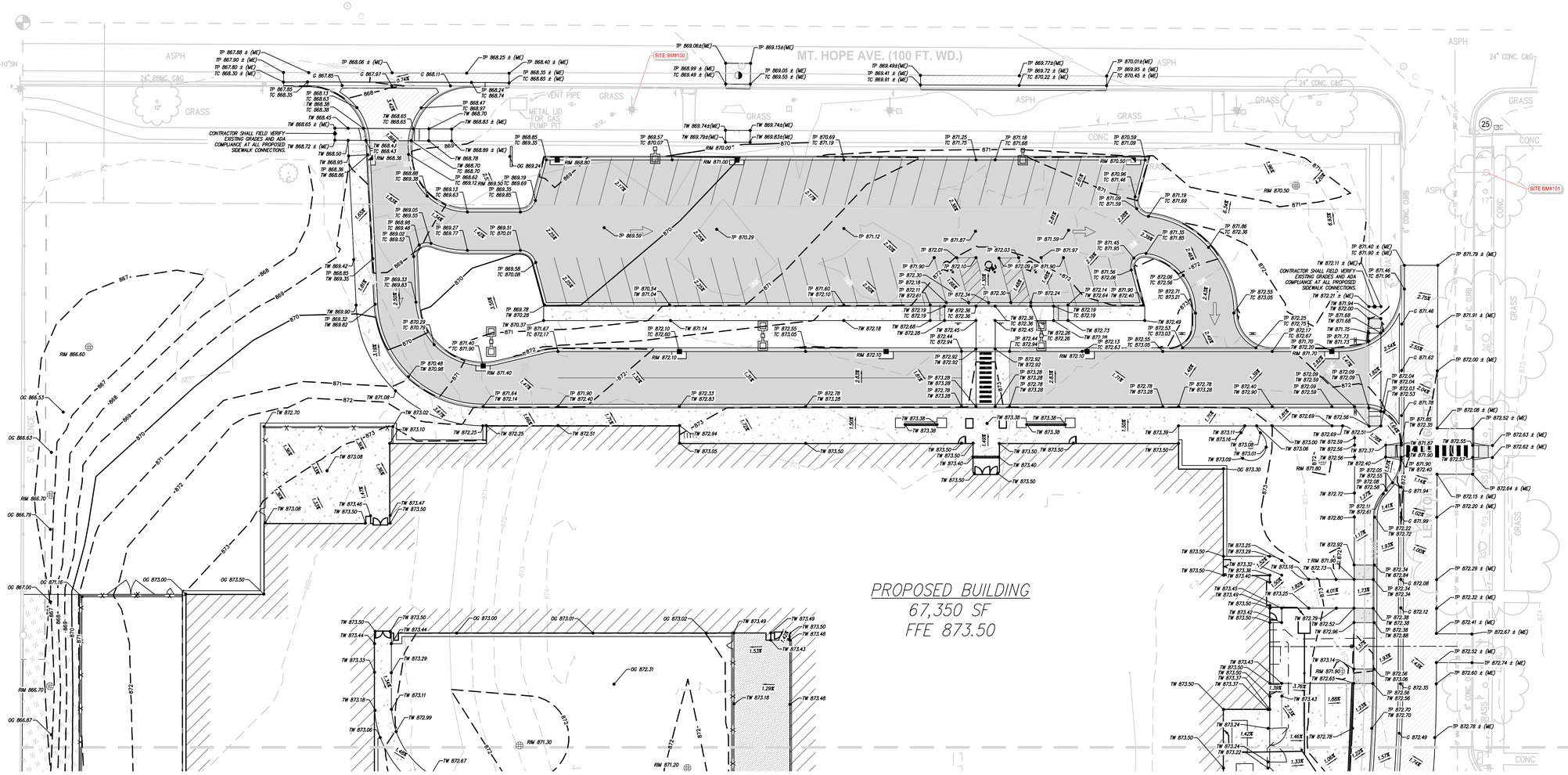

GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 inch = 20 ft.

GRADING LEGEND

- EXISTING ELEVATION
- TC 000.00 — PROPOSED TOP OF CURB ELEVATION
- G 000.00 — PROPOSED GUTTER ELEVATION
- EXISTING CONTOURS
- PROPOSED CONTOURS
- TP 000.00 — TOP OF PAVEMENT ELEVATION
- TW 000.00 — TOP OF WALK ELEVATION
- FG 000.00 — FINISH GRADE ELEVATION
- T/WALL 000.00 — TOP OF WALL ELEVATION
- ME 000.00 — MATCH EXISTING ELEVATION
- FLOW ARROW

GRADING NOTES

1. CONTRACTOR TO PLACE ALL NEW PAVEMENT TO THE GRADES INDICATED, OR MATCH ORIGINAL GRADES IF NEW GRADES ARE NOT SHOWN. CONTRACTOR SHALL CONFIRM MINIMUM 1% PAVEMENT SLOPES ARE ATTAINED IN ALL AREAS.
2. PROPOSED GRADES MAY BE BASED ON AN INTERPOLATION OF DATA SHOWN ON THE TOPOGRAPHIC SURVEY. THIS INTERPOLATED DATA IS APPROXIMATE AND COULD DIFFER SLIGHTLY BASED ON THE ACCURACY OF THE SURVEY. CONTRACTOR SHALL CONFIRM THAT THE PROPOSED GRADES SHOWN ON THIS PLAN WILL NOT CREATE A STANDING WATER CONDITION (I.E. A LOW SPOT OR PAVEMENT SLOPES LESS THAN 1%) OR AN UNSAFE CONDITION WITH SLOPES IN EXCESS OF 5%. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF THEY BELIEVE THAT ONE OF THESE SITUATIONS WILL OCCUR BASED ON THE PROPOSED GRADES.
3. ALL PAVEMENT PLACED WITHIN BARRIER FREE PARKING AREAS (STALLS AND ACCESS AISLES) SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION, INCLUDING MEASURED DIAGONALLY ACROSS THE AREAS. CONTRACTOR SHALL ADJUST SLOPES AS NECESSARY TO PROVIDE ADA COMPLIANT SLOPES AS WELL AS PROVIDING RE-GRADED TRANSITION SLOPES OUTSIDE OF THE BARRIER FREE PARKING AREAS. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF TRANSITION ZONES WILL EXCEED MAXIMUM 5% SLOPES. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE PATTERNS WITH ALL NECESSARY PAVEMENT RE-GRADING.
4. ALL BARRIER FREE RAMPS AND ADA ACCESSIBLE ROUTES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT VERSION OF MDOT DETAIL R-28 "SIDEWALK RAMP AND DETECTABLE WARNING DETAILS".
5. CONTRACTOR IS RESPONSIBLE FOR CONTROLLING STORM WATER RUNOFF DURING CONSTRUCTION OPERATIONS. OF PARTICULAR CONCERN WILL BE THE TIME PERIOD AFTER THE SITE HAS BEEN STRIPPED AND NOT YET RESTORED, BUILT UPON, OR PAVED. CONTRACTOR MUST INSTALL OR CONSTRUCT APPROPRIATE TEMPORARY MEASURES TO PROTECT ADJACENT PROPERTIES.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 / XXX — STRUCT. NO. / STRUCT. TYPE

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REVISIONS/REVIEW — DATE
BID & CONSTRUCTION — 10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

NORTH

SHEET TITLE
GRADING PLAN - NORTH

SHEET NO.
C6.1

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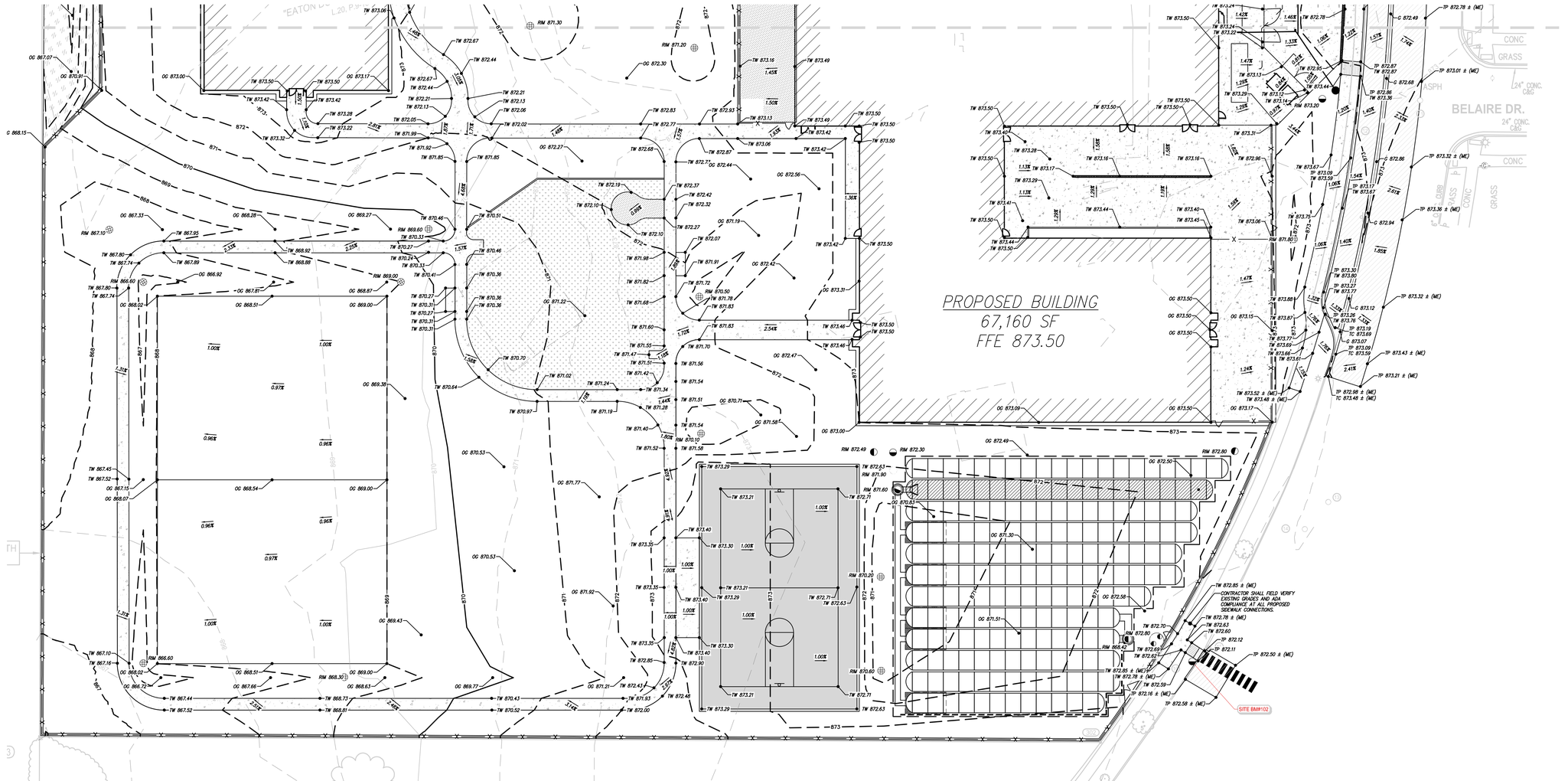

GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 inch = 20 ft.

GRADING LEGEND

- EXISTING ELEVATION
- TC 000.00 / G 000.00 — PROPOSED TOP OF CURB ELEVATION / PROPOSED GUTTER ELEVATION
- EXISTING CONTOURS
- PROPOSED CONTOURS
- TP 000.00 — TOP OF PAVEMENT ELEVATION
- TW 000.00 — TOP OF WALK ELEVATION
- FG 000.00 — FINISH GRADE ELEVATION
- T/WALL 000.00 — TOP OF WALL ELEVATION
- ME 000.00 — MATCH EXISTING ELEVATION
- FLOW ARROW

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1. CONTRACTOR TO PLACE ALL NEW PAVEMENT TO THE GRADES INDICATED, OR MATCH ORIGINAL GRADES IF NEW GRADES ARE NOT SHOWN. CONTRACTOR SHALL CONFIRM MINIMUM 1% PAVEMENT SLOPES ARE ATTAINED IN ALL AREAS.
2. PROPOSED GRADES MAY BE BASED ON AN INTERPOLATION OF DATA SHOWN ON THE TOPOGRAPHIC SURVEY. THIS INTERPOLATED DATA IS APPROXIMATE AND COULD DIFFER SLIGHTLY BASED ON THE ACCURACY OF THE SURVEY. CONTRACTOR SHALL CONFIRM THAT THE PROPOSED GRADES SHOWN ON THIS PLAN WILL NOT CREATE A STANDING WATER CONDITION (I.E. A LOW SPOT OR PAVEMENT SLOPES LESS THAN 1%) OR AN UNSAFE CONDITION WITH SLOPES IN EXCESS OF 5%. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF THEY BELIEVE THAT ONE OF THESE SITUATIONS WILL OCCUR BASED ON THE PROPOSED GRADES.
3. ALL PAVEMENT PLACED WITHIN BARRIER FREE PARKING AREAS (STALLS AND ACCESS AISLES) SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION, INCLUDING MEASURED DIAGONALLY ACROSS THE AREAS. CONTRACTOR SHALL ADJUST SLOPES AS NECESSARY TO PROVIDE ADA COMPLIANT SLOPES AS WELL AS PROVIDING RE-GRADED TRANSITION SLOPES OUTSIDE OF THE BARRIER FREE PARKING AREAS. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF TRANSITION ZONES WILL EXCEED MAXIMUM 5% SLOPES. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE PATTERNS WITH ALL NECESSARY PAVEMENT RE-GRADING.
4. ALL BARRIER FREE RAMPS AND ADA ACCESSIBLE ROUTES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT VERSION OF MDOT DETAIL R-28 "SIDEWALK RAMP AND DETECTABLE WARNING DETAILS".
5. CONTRACTOR IS RESPONSIBLE FOR CONTROLLING STORM WATER RUNOFF DURING CONSTRUCTION OPERATIONS. OF PARTICULAR CONCERN WILL BE THE TIME PERIOD AFTER THE SITE HAS BEEN STRIPPED AND NOT YET RESTORED, BUILT UPON, OR PAVED. CONTRACTOR MUST INSTALL OR CONSTRUCT APPROPRIATE TEMPORARY MEASURES TO PROTECT ADJACENT PROPERTIES.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 / XXX — STRUCT. NO. / STRUCT. TYPE
- 2 — UTILITY CROSSING (SEE DATA TABLE)

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Lewton School
Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

REVISIONS/REVIEW	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G
NORTH

SHEET TITLE
GRADING PLAN - SOUTH

SHEET NO.
C6.2

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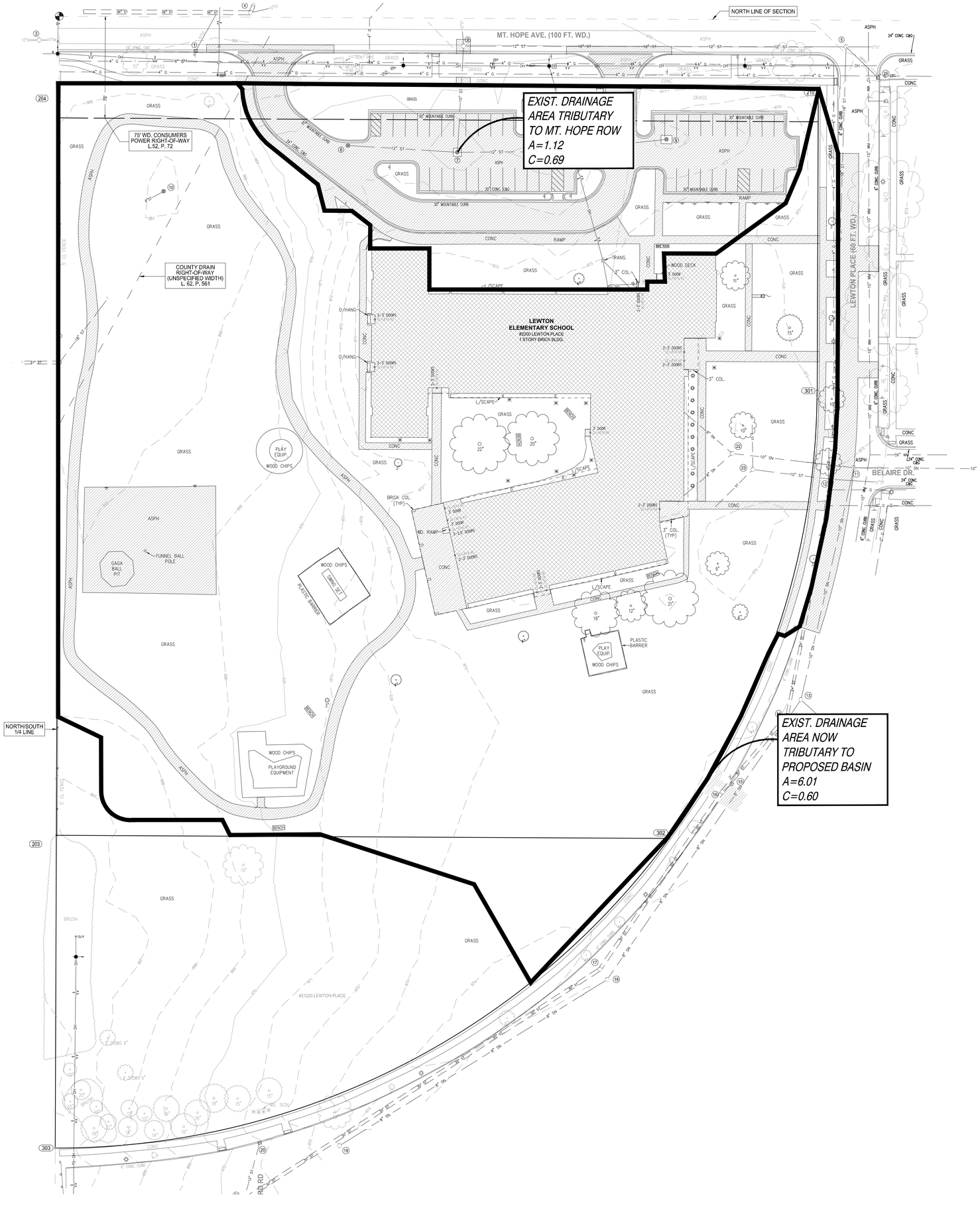

GRAPHIC SCALE

0 15 30 60

(IN FEET)
1 inch = 30 ft.

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NORTH

SHEET TITLE

DRAINAGE AREA MAP - EXISTING CONDITIONS

SHEET NO.

C7.1

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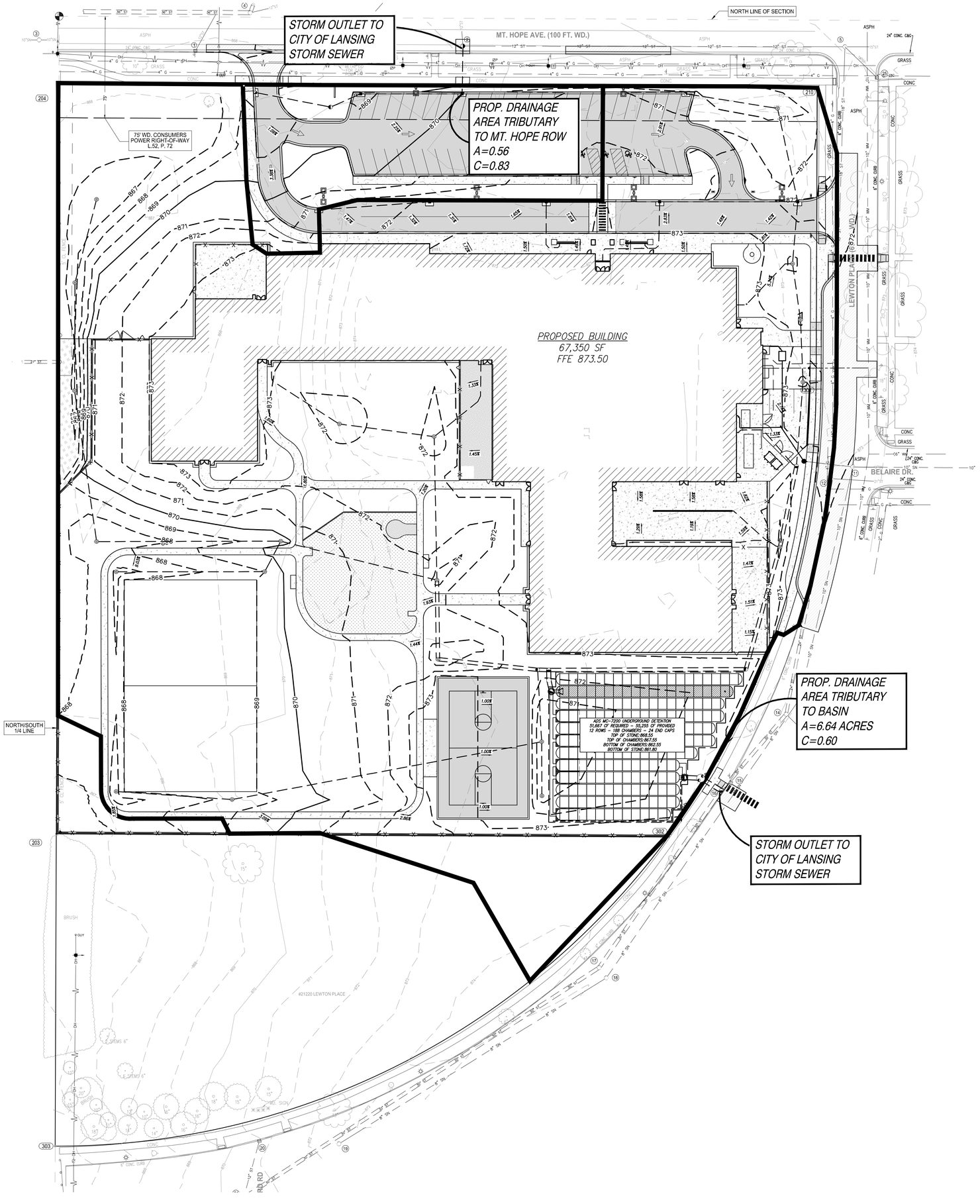

GRAPHIC SCALE

0 15 30 60

(IN FEET)
1 inch = 30 ft.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
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- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
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- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 / XXX — STRUCT. NO. / STRUCT. TYPE

GRADING LEGEND

- EXISTING ELEVATION
- TC 000.00 / G 000.00 — PROPOSED TOP OF CURB ELEVATION / PROPOSED GUTTER ELEVATION
- OG 000.00 — OUTSIDE GRADE ELEVATION
- EXISTING CONTOURS
- PROPOSED CONTOURS
- TP 000.00 — TOP OF PAVEMENT ELEVATION
- TW 000.00 — TOP OF WALK ELEVATION
- FG 000.00 — FINISH GRADE ELEVATION
- T/WALL 000.00 — TOP OF WALL ELEVATION
- ME 000.00 — MATCH EXISTING ELEVATION
- FLOW ARROW

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KEY PLAN

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NORTH

SHEET TITLE

DRAINAGE AREA MAP - PROPOSED CONDITIONS

SHEET NO.

C7.2

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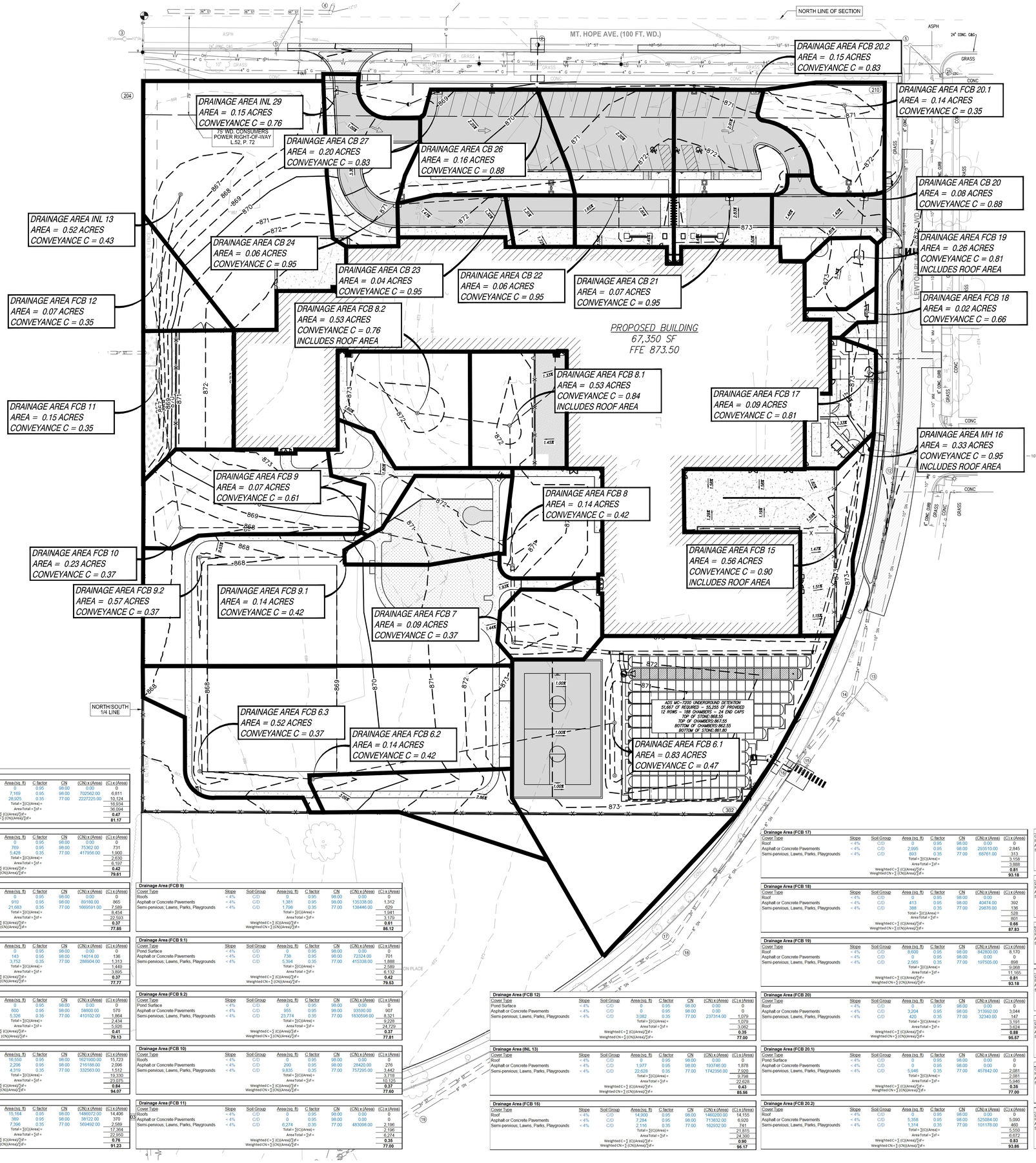

GRAPHIC SCALE
0 15 30 60
(IN FEET)
1 inch = 30 ft.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
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- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 XXX — STRUCT. NO. / STRUCT. TYPE

Drainage Area Summary

Drainage Area (FCB 6.1)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	7,169	0.95	98.00	702562.00	6,811
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	28,925	0.35	77.00	2227225.00	10,124
				Total= Σ(C)Area)=			16,934
				Area Total = Σsf =			36,094
				Weighted C = Σ (C)(Area)/Σsf =			**0.47**
				Weighted CN = Σ (CN)(Area)/Σsf =			**81.17**

Drainage Area (FCB 6.2)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	769	0.95	98.00	75362.00	731
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	5,428	0.35	77.00	417956.00	1,900
				Total= Σ(C)Area)=			2,630
				Area Total = Σsf =			6,197
				Weighted C = Σ (C)(Area)/Σsf =			**0.42**
				Weighted CN = Σ (CN)(Area)/Σsf =			**79.61**

Drainage Area (FCB 6.3)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	910	0.95	98.00	89180.00	865
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	21,683	0.35	77.00	1669591.00	7,589
				Total= Σ(C)Area)=			8,454
				Area Total = Σsf =			22,593
				Weighted C = Σ (C)(Area)/Σsf =			**0.37**
				Weighted CN = Σ (CN)(Area)/Σsf =			**77.85**

Drainage Area (FCB 7)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	143	0.95	98.00	14014.00	136
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	3,752	0.35	77.00	288904.00	1,313
				Total= Σ(C)Area)=			1,449
				Area Total = Σsf =			3,895
				Weighted C = Σ (C)(Area)/Σsf =			**0.37**
				Weighted CN = Σ (CN)(Area)/Σsf =			**77.77**

Drainage Area (FCB 8)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	600	0.95	98.00	58800.00	570
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	5,326	0.35	77.00	410102.00	1,864
				Total= Σ(C)Area)=			2,434
				Area Total = Σsf =			5,926
				Weighted C = Σ (C)(Area)/Σsf =			**0.41**
				Weighted CN = Σ (CN)(Area)/Σsf =			**79.13**

Drainage Area (FCB 8.1)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roofs	< 4%	C/D	16,550	0.95	98.00	1621900.00	15,723
Asphalt or Concrete Pavements	< 4%	C/D	2,206	0.95	98.00	216188.00	2,096
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	4,319	0.35	77.00	332563.00	1,512
				Total= Σ(C)Area)=			19,330
				Area Total = Σsf =			23,075
				Weighted C = Σ (C)(Area)/Σsf =			**0.84**
				Weighted CN = Σ (CN)(Area)/Σsf =			**94.07**

Drainage Area (FCB 8.2)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roofs	< 4%	C/D	15,104	0.95	98.00	1480672.00	14,406
Asphalt or Concrete Pavements	< 4%	C/D	389	0.95	98.00	38122.00	370
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	7,396	0.35	77.00	569492.00	2,589
				Total= Σ(C)Area)=			17,364
				Area Total = Σsf =			22,950
				Weighted C = Σ (C)(Area)/Σsf =			**0.76**
				Weighted CN = Σ (CN)(Area)/Σsf =			**91.23**

Drainage Area (FCB 9)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	1,381	0.95	98.00	135338.00	1,312
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	1,796	0.35	77.00	138446.00	629
				Total= Σ(C)Area)=			1,941
				Area Total = Σsf =			3,179
				Weighted C = Σ (C)(Area)/Σsf =			**0.61**
				Weighted CN = Σ (CN)(Area)/Σsf =			**86.12**

Drainage Area (FCB 9.1)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Pond Surface	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	738	0.95	98.00	72324.00	701
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	5,394	0.35	77.00	415338.00	1,888
				Total= Σ(C)Area)=			2,589
				Area Total = Σsf =			6,132
				Weighted C = Σ (C)(Area)/Σsf =			**0.42**
				Weighted CN = Σ (CN)(Area)/Σsf =			**79.53**

Drainage Area (FCB 9.2)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	955	0.95	98.00	93590.00	907
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	23,774	0.35	77.00	1630598.00	8,321
				Total= Σ(C)Area)=			9,228
				Area Total = Σsf =			24,729
				Weighted C = Σ (C)(Area)/Σsf =			**0.37**
				Weighted CN = Σ (CN)(Area)/Σsf =			**77.81**

Drainage Area (FCB 10)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	290	0.95	98.00	28420.00	276
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	9,835	0.35	77.00	757295.00	3,442
				Total= Σ(C)Area)=			3,718
				Area Total = Σsf =			10,125
				Weighted C = Σ (C)(Area)/Σsf =			**0.37**
				Weighted CN = Σ (CN)(Area)/Σsf =			**77.60**

Drainage Area (FCB 11)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	98.00	0.00	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	6,274	0.35	77.00	483098.00	2,196
				Total= Σ(C)Area)=			2,196
				Area Total = Σsf =			6,274
				Weighted C = Σ (C)(Area)/Σsf =			**0.35**
				Weighted CN = Σ (CN)(Area)/Σsf =			**77.00**

Drainage Area (FCB 12)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Pond Surface	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	98.00	0.00	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	3,082	0.35	77.00	237314.00	1,079
				Total= Σ(C)Area)=			1,079
				Area Total = Σsf =			3,082
				Weighted C = Σ (C)(Area)/Σsf =			**0.35**
				Weighted CN = Σ (CN)(Area)/Σsf =			**77.00**

Drainage Area (INL 13)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roof	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	1,977	0.95	98.00	193746.00	1,878
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	22,628	0.35	77.00	1742356.00	7,920
				Total= Σ(C)Area)=			9,798
				Area Total = Σsf =			22,628
				Weighted C = Σ (C)(Area)/Σsf =			**0.43**
				Weighted CN = Σ (CN)(Area)/Σsf =			**85.56**

Drainage Area (FCB 15)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roof	< 4%	C/D	14,900	0.95	98.00	1460200.00	14,155
Asphalt or Concrete Pavements	< 4%	C/D	7,264	0.95	98.00	713632.00	6,909
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	2,116	0.35	77.00	162932.00	741
				Total= Σ(C)Area)=			21,815
				Area Total = Σsf =			24,300
				Weighted C = Σ (C)(Area)/Σsf =			**0.90**
				Weighted CN = Σ (CN)(Area)/Σsf =			**96.17**

Drainage Area (FCB 17)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roof	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	2,995	0.95	98.00	293510.00	2,845
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	893	0.35	77.00	68761.00	313
				Total= Σ(C)Area)=			3,158
				Area Total = Σsf =			3,888
				Weighted C = Σ (C)(Area)/Σsf =			**0.81**
				Weighted CN = Σ (CN)(Area)/Σsf =			**93.18**

Drainage Area (FCB 18)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roof	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	413	0.95	98.00	40474.00	392
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	388	0.35	77.00	29876.00	136
				Total= Σ(C)Area)=			528
				Area Total = Σsf =			801
				Weighted C = Σ (C)(Area)/Σsf =			**0.66**
				Weighted CN = Σ (CN)(Area)/Σsf =			**87.83**

Drainage Area (FCB 19)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roof	< 4%	C/D	8,600	0.95	98.00	842800.00	8,170
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	98.00	0.00	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	2,565	0.35	77.00	197505.00	898
				Total= Σ(C)Area)=			9,068
				Area Total = Σsf =			11,165
				Weighted C = Σ (C)(Area)/Σsf =			**0.81**
				Weighted CN = Σ (CN)(Area)/Σsf =			**93.18**

Drainage Area (FCB 20)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roof	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	3,204	0.95	98.00	313992.00	3,044
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	420	0.35	77.00	32340.00	147
				Total= Σ(C)Area)=			3,191
				Area Total = Σsf =			3,624
				Weighted C = Σ (C)(Area)/Σsf =			**0.88**
				Weighted CN = Σ (CN)(Area)/Σsf =			**95.57**

Drainage Area (FCB 20.1)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Pond Surface	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	98.00	0.00	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	5,946	0.35	77.00	457842.00	2,081
				Total= Σ(C)Area)=			2,081
				Area Total = Σsf =			5,946
				Weighted C = Σ (C)(Area)/Σsf =			**0.35**
				Weighted CN = Σ (CN)(Area)/Σsf =			**77.00**

Drainage Area (FCB 20.2)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roof	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	5,358	0.95	98.00	525084.00	5,090
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	1,314	0.35	77.00	101178.00	460
				Total= Σ(C)Area)=			5,550
				Area Total = Σsf =			6,672
				Weighted C = Σ (C)(Area)/Σsf =			**0.83**
				Weighted CN = Σ (CN)(Area)/Σsf =			**93.86**

Drainage Area (CB 21)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roof	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	2,965	0.95	98.00	290570.00	2,817
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	0	0.35	77.00	0.00	0
				Total= Σ(C)Area)=			2,817
				Area Total = Σsf =			2,965
				Weighted C = Σ (C)(Area)/Σsf =			**0.95**
				Weighted CN = Σ (CN)(Area)/Σsf =			**98.00**

Drainage Area (CB 22)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roof Area	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	2,821	0.95	98.00	276458.00	2,680
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	0	0.35	77.00	0.00	0
				Total= Σ(C)Area)=			2,680
				Area Total = Σsf =			2,821
				Weighted C = Σ (C)(Area)/Σsf =			**0.95**
				Weighted CN = Σ (CN)(Area)/Σsf =			**98.00**

Drainage Area (CB 23)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roof Area	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt, Concrete Pavements, Stone	< 4%	C/D	1,834	0.95	98.00	179732.00	1,742
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	0	0.35	77.00	0.00	0
				Total= Σ(C)Area)=			1,742
				Area Total = Σsf =			1,834
				Weighted C = Σ (C)(Area)/Σsf =			**0.95**
				Weighted CN = Σ (CN)(Area)/Σsf =			**98.00**

Drainage Area (CB 24)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roof Area	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	98.00	0.00	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	2,745	0.35	77.00	210580.00	959
				Total= Σ(C)Area)=			959
				Area Total = Σsf =			2,745
				Weighted C = Σ (C)(Area)/Σsf =			**0.35**
				Weighted CN = Σ (CN)(Area)/Σsf =			**77.00**

Drainage Area (CB 26)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roof Area	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	5,954	0.95	98.00	585492.00	5,656
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	826	0.35	77.00	63602.00	289
				Total= Σ(C)Area)=			5,945
				Area Total = Σsf =			6,780
				Weighted C = Σ (C)(Area)/Σsf =			**0.88**
				Weighted CN = Σ (CN)(Area)/Σsf =			**96.44**

Drainage Area (CB 27)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roof Area	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	6,855	0.95	98.00	685930.00	6,493
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	1,771	0.35	77.00	136367.00	620
				Total= Σ(C)Area)=			7,113
				Area Total = Σsf =			8,626
				Weighted C = Σ (C)(Area)/Σsf =			**0.83**
				Weighted CN = Σ (CN)(Area)/Σsf =			**92.68**

Drainage Area (INL 29)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	CN	(CN) x (Area)	(C) x (Area)
Roof Area	< 4%	C/D	0	0.95	98.00	0.00	0
Asphalt or Concrete Pavements	< 4%	C/D	4,618	0.95	98.00	452564.00	4,387
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	1,965	0.35	77.00	192102.00	741
				Total= Σ(C)Area)=			5,128
				Area Total = Σsf =			6,583
				Weighted C = Σ (C)(Area)/Σsf =			**0.78**
				Weighted CN = Σ (CN)(Area)/Σsf =			**91.40**

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Lansing School District
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Lansing, MI 48915

Lansing School District

REVISIONS/REVIEW — DATE
BID & CONSTRUCTION — 10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

NORTH

SHEET TITLE
DRAINAGE AREA MAP - PROPOSED CONDITIONS - CONVEYANCE

SHEET NO.
C7.3

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PROPOSED LAYOUT

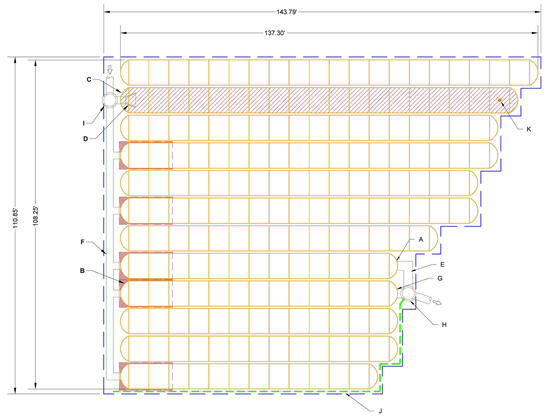
188	STORMTECH MC-7200 CHAMBERS
24	STORMTECH MC-7200 END CAPS
12	STONE ABOVE (in)
9	STONE BELOW (in)
40	% STONE VOID
55,255	**INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)**
12905	SYSTEM AREA (ft²)
509	SYSTEM PERIMETER (ft)

PROPOSED ELEVATIONS

874.55	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
870.05	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
869.55	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
869.55	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
869.55	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
868.55	TOP OF STONE
867.55	TOP OF MC-7200 CHAMBER
864.47	24" TOP MANIFOLD INVERT
862.80	30" BOTTOM MANIFOLD / CONNECTION INVERT
862.74	24" ISOLATOR ROW PLUS CONNECTION INVERT
862.55	BOTTOM OF MC-7200 CHAMBER
861.80	UNDERDRAIN INVERT
861.80	BOTTOM OF STONE

*INVERT ABOVE BASE OF CHAMBER

PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
PREFABRICATED END CAP	A	30" BOTTOM PARTIAL CUT END CAP, PART#: MC7200IEPP30B / TYP OF ALL 30" BOTTOM CONNECTIONS	2.95"	
PREFABRICATED END CAP	B	24" TOP PARTIAL CUT END CAP, PART#: MC7200IEPP24T / TYP OF ALL 24" TOP CONNECTIONS	23.05"	
PREFABRICATED END CAP	C	24" BOTTOM PARTIAL CUT END CAP, PART#: MC7200IEPP24B / TYP OF ALL 24" BOTTOM CONNECTIONS AND ISOLATOR PLUS ROWS	2.26"	
FLAMP	D	INSTALL FLAMP ON 24" ACCESS PIPE / PART#: MCFLAMP		
MANIFOLD	E	30" x 30" BOTTOM MANIFOLD, ADS N-12	2.95"	
MANIFOLD	F	24" x 24" TOP MANIFOLD, ADS N-12	23.05"	
PIPE CONNECTION	G	30" BOTTOM CONNECTION	2.95"	
CONCRETE STRUCTURE	H	DCS (DESIGN BY ENGINEER / PROVIDED BY OTHERS)		22.40 CFS OUT
CONCRETE STRUCTURE	I	(DESIGN BY ENGINEER / PROVIDED BY OTHERS)		33.2 CFS IN
UNDERDRAIN	J	6" ADS N-12 DUAL WALL PERFORATED HDPE UNDERDRAIN		
INSPECTION PORT	K	6" SEE DETAIL (TYP 7 PLACES)		



ISOLATOR ROW PLUS (SEE DETAIL)

PLACE MINIMUM 17.50' OF ADSPLUS125 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

BED LIMITS

NOTES

- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- **NOT FOR CONSTRUCTION**: THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

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LANSING, MI, USA
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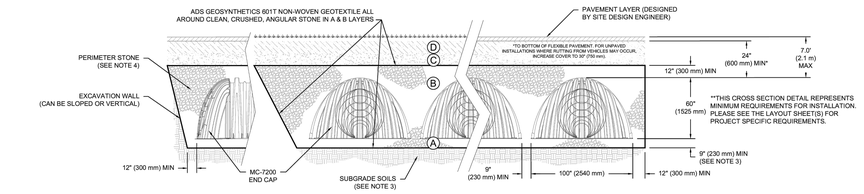
ACCEPTABLE FILL MATERIALS: STORMTECH MC-7200 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR **#4** STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



**"THIS CROSS SECTION DETAIL REPRESENTS MINIMUM REQUIREMENTS FOR INSTALLATION. PLEASE SEE THE LAYOUT SHEET(S) FOR PROJECT SPECIFIC REQUIREMENTS.

NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101
2. MC-7200 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS. REFERENCE STORMTECH DESIGN MANUAL FOR BEARING CAPACITY GUIDANCE.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 450 LBS/FT/% THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

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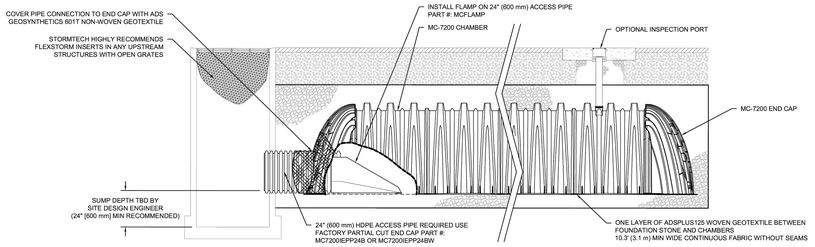

MC-7200 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

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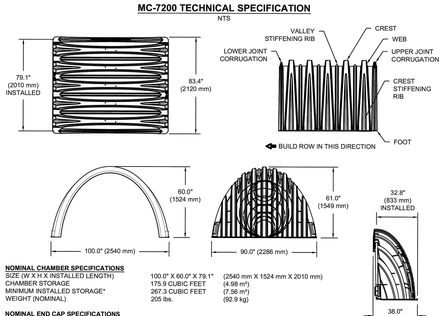
MC-7200 TECHNICAL SPECIFICATION

NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 79.1"	(2540 mm X 1524 mm X 2010 mm)
CHAMBER STORAGE	175.9 CUBIC FEET	(4.98 m³)
MINIMUM INSTALLED STORAGE*	267.3 CUBIC FEET	(7.56 m³)
WEIGHT (NOMINAL)	205 lbs.	(92.9 kg)

NOMINAL END CAP SPECIFICATIONS

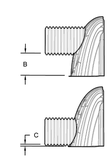
SIZE (W X H X INSTALLED LENGTH)	90.0" X 61.0" X 32.8"	(2286 mm X 1549 mm X 833 mm)
END CAP STORAGE	39.5 CUBIC FEET	(1.12 m³)
MINIMUM INSTALLED STORAGE*	115.3 CUBIC FEET	(3.26 m³)
WEIGHT (NOMINAL)	90 lbs.	(40.8 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "IW"

PART #	STUB	B	C
MC7200IEPP06T	6" (150 mm)	42.54" (1081 mm)	---
MC7200IEPP06B		---	0.66" (22 mm)
MC7200IEPP08T	8" (200 mm)	40.50" (1029 mm)	---
MC7200IEPP08B		---	1.01" (26 mm)
MC7200IEPP10T	10" (250 mm)	38.37" (975 mm)	---
MC7200IEPP10B		---	1.33" (34 mm)
MC7200IEPP12T	12" (300 mm)	35.69" (907 mm)	---
MC7200IEPP12B		---	1.55" (39 mm)
MC7200IEPP15T	15" (375 mm)	32.72" (831 mm)	---
MC7200IEPP15B		---	1.70" (43 mm)
MC7200IEPP18T	18" (450 mm)	29.36" (746 mm)	---
MC7200IEPP18TW			
MC7200IEPP18B		---	1.97" (50 mm)
MC7200IEPP18BW			
MC7200IEPP24T	24" (600 mm)	23.05" (585 mm)	---
MC7200IEPP24TW			
MC7200IEPP24B		---	2.26" (57 mm)
MC7200IEPP24BW			
MC7200IEPP30BW	30" (750 mm)	---	2.95" (75 mm)
MC7200IEPP36BW	36" (900 mm)	---	3.25" (83 mm)
MC7200IEPP42BW	42" (1050 mm)	---	3.55" (90 mm)

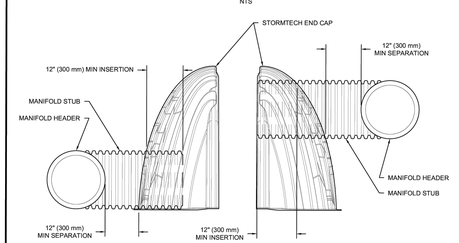
NOTE: ALL DIMENSIONS ARE NOMINAL



CUSTOM PREFABRICATED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-7200 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

MC-SERIES END CAP INSERTION DETAIL

NTS



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

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Fax: (248) 844-5404
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(800) 598-1600

Lewton School
Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

REVISIONS/REVIEW — DATE
BID & CONSTRUCTION — 10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

NORTH

SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET NO.
C8.1

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Hydrology Report

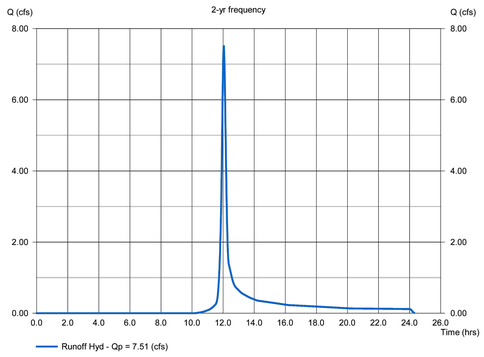
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Oct 7 2025

Existing Conditions Hydrograph

Hydrograph type	= SCS	Peak discharge (cfs)	= 7.506
Storm frequency (yrs)	= 2	Time interval (min)	= 1
Drainage area (ac)	= 6.010	Curve number (CN)	= 82
Basin Slope (%)	= n/a	Hydraulic length (ft)	= n/a
Tc method	= User	Time of conc. (min)	= 14
Total precip. (in)	= 2.42	Storm Distribution	= Type II
Storm duration (hrs)	= 24	Shape factor	= 484

Hydrograph Volume = 20,501 (cuft); 0.471 (acft)

Runoff Hydrograph



Hydrology Report

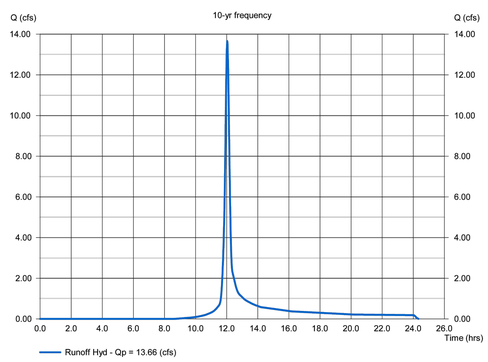
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Oct 7 2025

Existing Conditions Hydrograph

Hydrograph type	= SCS	Peak discharge (cfs)	= 13.66
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 6.010	Curve number (CN)	= 82
Basin Slope (%)	= n/a	Hydraulic length (ft)	= n/a
Tc method	= User	Time of conc. (min)	= 14
Total precip. (in)	= 3.38	Storm Distribution	= Type II
Storm duration (hrs)	= 24	Shape factor	= 484

Hydrograph Volume = 36,739 (cuft); 0.843 (acft)

Runoff Hydrograph



Hydrology Report

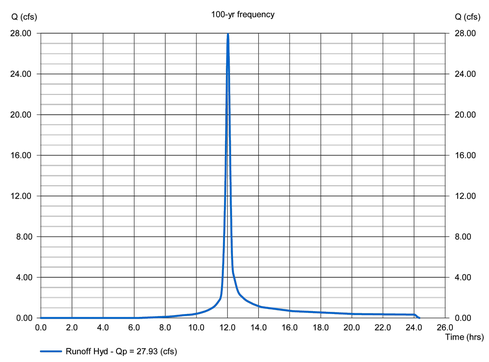
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Oct 7 2025

Existing Conditions Hydrograph

Hydrograph type	= SCS	Peak discharge (cfs)	= 27.93
Storm frequency (yrs)	= 100	Time interval (min)	= 1
Drainage area (ac)	= 6.010	Curve number (CN)	= 82
Basin Slope (%)	= n/a	Hydraulic length (ft)	= n/a
Tc method	= User	Time of conc. (min)	= 14
Total precip. (in)	= 5.44	Storm Distribution	= Type II
Storm duration (hrs)	= 24	Shape factor	= 484

Hydrograph Volume = 75,822 (cuft); 1.741 (acft)

Runoff Hydrograph



Hydrology Report

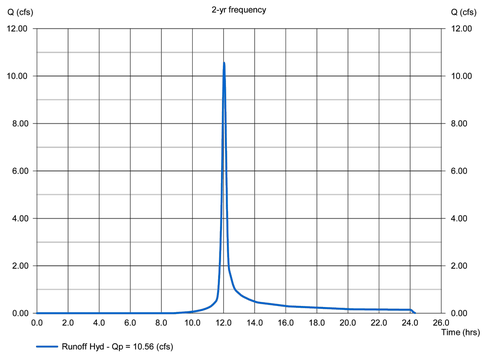
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Oct 7 2025

Proposed Conditions Hydrograph

Hydrograph type	= SCS	Peak discharge (cfs)	= 10.56
Storm frequency (yrs)	= 2	Time interval (min)	= 1
Drainage area (ac)	= 6.640	Curve number (CN)	= 86
Basin Slope (%)	= n/a	Hydraulic length (ft)	= n/a
Tc method	= User	Time of conc. (min)	= 14
Total precip. (in)	= 2.42	Storm Distribution	= Type II
Storm duration (hrs)	= 24	Shape factor	= 484

Hydrograph Volume = 28,404 (cuft); 0.652 (acft)

Runoff Hydrograph



Hydrology Report

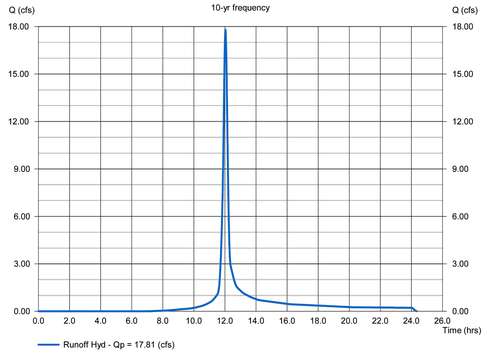
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Oct 7 2025

Proposed Conditions Hydrograph

Hydrograph type	= SCS	Peak discharge (cfs)	= 17.81
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 6.640	Curve number (CN)	= 86
Basin Slope (%)	= n/a	Hydraulic length (ft)	= n/a
Tc method	= User	Time of conc. (min)	= 14
Total precip. (in)	= 3.38	Storm Distribution	= Type II
Storm duration (hrs)	= 24	Shape factor	= 484

Hydrograph Volume = 48,025 (cuft); 1.103 (acft)

Runoff Hydrograph



Hydrology Report

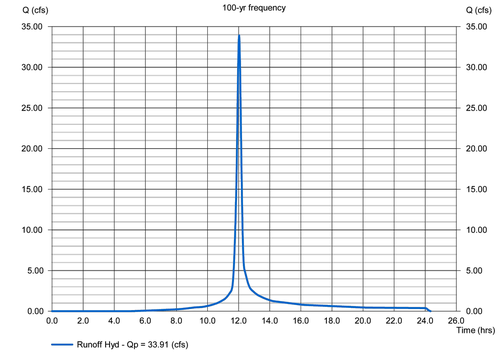
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Oct 7 2025

Proposed Conditions Hydrograph

Hydrograph type	= SCS	Peak discharge (cfs)	= 33.91
Storm frequency (yrs)	= 100	Time interval (min)	= 1
Drainage area (ac)	= 6.640	Curve number (CN)	= 86
Basin Slope (%)	= n/a	Hydraulic length (ft)	= n/a
Tc method	= User	Time of conc. (min)	= 14
Total precip. (in)	= 5.44	Storm Distribution	= Type II
Storm duration (hrs)	= 24	Shape factor	= 484

Hydrograph Volume = 93,510 (cuft); 2.147 (acft)

Runoff Hydrograph



Hydrology Report

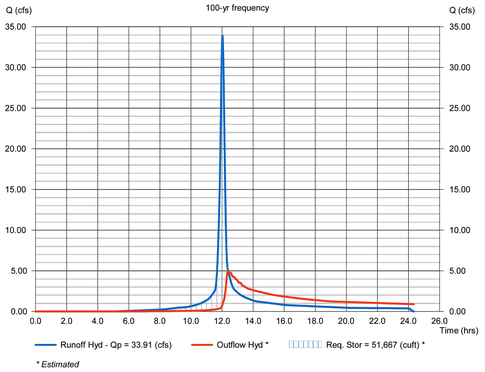
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Oct 7 2025

Proposed Conditions Detention Routing

Hydrograph type	= SCS	Peak discharge (cfs)	= 33.91
Storm frequency (yrs)	= 100	Time interval (min)	= 1
Drainage area (ac)	= 6.640	Curve number (CN)	= 86
Basin Slope (%)	= n/a	Hydraulic length (ft)	= n/a
Tc method	= User	Time of conc. (min)	= 14
Total precip. (in)	= 5.44	Storm Distribution	= Type II
Storm duration (hrs)	= 24	Shape factor	= 484

Hydrograph Volume = 93,510 (cuft); 2.147 (acft)

Runoff Hydrograph



** Estimated*

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Lewton School
Lansing School District
2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

REVISIONS/REVIEW DATE
BID & CONSTRUCTION 10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G
NORTH

SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET NO.
C8.2

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Project: Lewton Elementary School

Chamber Model -	MC-7200	
Units -	Imperial	
Number of Chambers -	188	
Number of End Caps -	24	
Voids in the stone (porosity) -	40	%
Base of Stone Elevation -	861.80	ft
Amount of Stone Above Chambers -	12	in
Amount of Stone Below Chambers -	9	in
Area of system -	12894	sf

Min. Area - 12070 sf min. area

StormTech MC-7200 Cumulative Storage Volumes

Height of System (inches)	Incremental Single Chamber (cubic feet)	Incremental Single End Cap (cubic feet)	Incremental Chambers (cubic feet)	Incremental End Cap (cubic feet)	Incremental Stone (cubic feet)	Incremental Ch, EC and Stone (feet)	Cumulative System (cubic feet)	Elevation (feet)
81	0.00	0.00	0.00	0.00	429.80	429.80	55224.98	868.55
80	0.00	0.00	0.00	0.00	429.80	429.80	54795.18	868.47
79	0.00	0.00	0.00	0.00	429.80	429.80	54365.38	868.38
78	0.00	0.00	0.00	0.00	429.80	429.80	53935.58	868.30
77	0.00	0.00	0.00	0.00	429.80	429.80	53505.78	868.22
76	0.00	0.00	0.00	0.00	429.80	429.80	53075.98	868.13
75	0.00	0.00	0.00	0.00	429.80	429.80	52646.18	868.05
74	0.00	0.00	0.00	0.00	429.80	429.80	52216.38	867.97
73	0.00	0.00	0.00	0.00	429.80	429.80	51786.58	867.88
72	0.00	0.00	0.00	0.00	429.80	429.80	51356.78	867.80
71	0.00	0.00	0.00	0.00	429.80	429.80	50926.98	867.72
70	0.00	0.00	0.00	0.00	429.80	429.80	50497.18	867.63
69	0.06	0.01	11.16	0.31	425.21	436.69	50067.38	867.55
68	0.19	0.03	35.75	0.81	415.17	451.74	49630.70	867.47
67	0.28	0.05	51.73	1.24	408.61	461.59	49178.96	867.38
66	0.36	0.07	67.16	1.58	402.30	471.05	48717.37	867.30
65	0.46	0.08	86.18	1.99	394.53	482.70	48246.32	867.22
64	0.74	0.11	139.43	2.53	373.02	514.97	47763.62	867.13
63	1.10	0.13	206.12	3.18	346.08	555.38	47248.64	867.05
62	1.32	0.16	247.87	3.86	329.10	580.84	46693.27	866.97
61	1.50	0.19	281.67	4.53	315.32	601.52	46112.42	866.88
60	1.65	0.22	311.04	5.24	303.28	619.57	45510.91	866.80
59	1.79	0.25	337.27	5.93	292.52	635.72	44891.33	866.72
58	1.92	0.28	360.89	6.61	282.80	650.30	44255.62	866.63
57	2.04	0.30	383.04	7.24	273.69	663.97	43605.32	866.55
56	2.15	0.33	403.32	7.86	265.33	676.51	42941.35	866.47
55	2.25	0.35	422.57	8.51	257.37	688.45	42264.84	866.38
54	2.34	0.38	440.51	9.21	249.91	699.63	41576.39	866.30
53	2.43	0.41	457.49	9.82	242.88	710.19	40876.76	866.22
52	2.52	0.44	473.58	10.58	236.13	720.30	40166.58	866.13
51	2.60	0.47	488.91	11.25	229.74	729.89	39446.28	866.05
50	2.68	0.50	503.54	11.89	223.63	739.06	38716.38	865.97
49	2.75	0.52	517.48	12.50	217.81	747.79	37977.33	865.88
48	2.82	0.54	530.81	13.07	212.25	756.12	37229.54	865.80
47	2.89	0.57	543.59	13.60	206.92	764.11	36473.41	865.72
46	2.96	0.59	555.80	14.12	201.83	771.75	35709.30	865.63
45	3.02	0.61	567.53	14.64	196.93	779.10	34937.55	865.55
44	3.08	0.63	578.78	15.17	192.22	786.17	34158.45	865.47
43	3.14	0.64	589.62	15.43	187.78	792.83	33372.27	865.38
42	3.19	0.68	600.05	16.26	183.28	799.58	32579.44	865.30
41	3.25	0.70	610.06	16.80	179.06	805.92	31779.86	865.22
40	3.30	0.72	619.71	17.34	174.98	812.03	30973.94	865.13
39	3.35	0.74	628.98	17.85	171.07	817.90	30161.91	865.05
38	3.39	0.76	637.90	18.35	167.30	823.55	29344.02	864.97
37	3.44	0.79	646.50	18.85	163.66	829.01	28520.47	864.88
36	3.48	0.80	654.78	19.26	160.18	834.23	27691.45	864.80
35	3.53	0.82	662.77	19.68	156.82	839.27	26857.23	864.72
34	3.57	0.84	670.44	20.12	153.57	844.14	26017.96	864.63
33	3.61	0.85	677.85	20.43	150.49	848.77	25173.82	864.55
32	3.64	0.86	684.97	20.63	147.56	853.16	24325.05	864.47
31	3.68	0.89	691.83	21.35	144.53	857.71	23471.89	864.38
30	3.71	0.90	698.42	21.70	141.75	861.87	22614.18	864.30
29	3.75	0.92	704.75	22.01	139.09	865.86	21752.31	864.22
28	3.78	0.92	710.83	22.08	136.64	869.54	20886.45	864.13
27	3.81	0.94	716.66	22.64	134.08	873.38	20016.91	864.05
26	3.84	0.96	722.24	22.95	131.72	876.91	19143.53	863.97
25	3.87	0.97	727.59	23.25	129.46	880.30	18266.61	863.88
24	3.90	0.98	732.71	23.55	127.29	883.56	17386.31	863.80
23	3.92	0.97	737.61	23.31	125.43	886.35	16502.75	863.72
22	3.95	1.00	742.28	24.08	123.26	889.61	15616.40	863.63
21	3.97	1.01	746.73	24.27	121.40	892.40	14726.79	863.55
20	3.99	1.02	750.97	24.49	119.62	895.08	13834.39	863.47
19	4.02	1.03	754.99	24.73	117.91	897.63	12939.32	863.38
18	4.04	1.04	758.81	24.93	116.31	900.04	12041.68	863.30
17	4.06	1.05	762.42	25.11	114.79	902.32	11141.64	863.22
16	4.07	1.05	765.83	25.30	113.35	904.47	10239.32	863.13
15	4.09	1.05	769.02	25.21	112.11	906.34	9334.85	863.05
14	4.11	1.06	772.06	25.36	110.83	908.25	8428.51	862.97
13	4.12	1.08	774.95	25.81	109.49	910.26	7520.26	862.88
12	4.14	1.08	777.67	25.99	108.34	911.99	6610.00	862.80
11	4.15	1.09	780.20	26.11	107.28	913.59	5698.01	862.72
10	4.17	1.11	784.15	26.55	105.52	916.22	4784.42	862.63
9	0.00	0.00	0.00	0.00	429.80	429.80	3868.20	862.55
8	0.00	0.00	0.00	0.00	429.80	429.80	3438.40	862.47
7	0.00	0.00	0.00	0.00	429.80	429.80	3008.60	862.38
6	0.00	0.00	0.00	0.00	429.80	429.80	2578.80	862.30
5	0.00	0.00	0.00	0.00	429.80	429.80	2149.00	862.22
4	0.00	0.00	0.00	0.00	429.80	429.80	1719.20	862.13
3	0.00	0.00	0.00	0.00	429.80	429.80	1289.40	862.05
2	0.00	0.00	0.00	0.00	429.80	429.80	859.60	861.97
1	0.00	0.00	0.00	0.00	429.80	429.80	429.80	861.88

STORM WATER MANAGEMENT CALCULATIONS

Design Basis: City of Lansing Stormwater Management Design Manual, 2020

1) Existing & Proposed Drainage Areas on North Parking Lot Area Tributary to Mt. Hope ROW (No Detention)

Existing area contributing runoff to Mt. Hope ROW = 1.12 acres

Surface	Area (sf)	C	CN	A x C	A x CN
Building	0	0.95	98.00	0	0
Pavement	27,355	0.95	98.00	25987.25	2680790
Gravel	0	0.95	90.00	0	0
Green Space (NRCS Soil Group C/D)	21,383	0.35	77.00	7484.05	1646491
	48,738			33471.3	4327281

Weighted Runoff Coefficient (C) = (∑A x C) / ∑A (Existing Conditions) = 0.69
Weighted Curve Number (CN) = (∑A x CN) / ∑A (Existing Conditions) = 88.79
Existing C*A = 0.77

Developed area contributing runoff to Mt. Hope ROW = 0.78 acres

Surface	Area (sf)	C	CN	A x C	A x CN
Building	0	0.95	98.00	0.00	0
Pavement	29,388	0.95	98.00	27,918.60	2880024
Gravel	0	0.95	90.00	0.00	0
Green Space (NRCS Soil Group C/D)	4,797	0.35	77.00	1,678.95	369369
	34,185			29,597.55	3249393

Weighted Runoff Coefficient (C) = (∑A x C) / ∑A (Proposed Conditions) = 0.87
Weighted Curve Number (CN) = (∑A x CN) / ∑A (Proposed Conditions) = 95.05
Proposed C*A = 0.68

Water Quality Volume
WQV Proposed Conditions = (0.9 in of rainfall) = (0.78 acres * 43560 sf/acre * C * 0.9in)/(12in/ft) = 2216.99 ft^3
WQV is treated by ADS Barracuda hydrodynamic separator

2) Existing & Proposed Drainage Areas (Detention Provided)

Existing drainage area now tributary to proposed basin = 6.01 acres

Surface	Area (sf)	C	CN	A x C	A x CN
Building	37,252	0.95	98.00	35389.4	3650696
Pavement	27,939	0.95	98.00	26542.05	2738022
Gravel	0	0.95	90.00	0	0
Green Space (NRCS Soil Group C/D)	196,740	0.35	77.00	68859	15148980
	261,931			130790.45	21537698

Weighted Runoff Coefficient (C) = (∑A x C) / ∑A (Existing Conditions) = 0.50
Weighted Curve Number (CN) = (∑A x CN) / ∑A (Existing Conditions) = 82.23
Existing C*A = 3.01

Developed area contributing to proposed basin = 6.64 acres

Surface	Area (sf)	C	CN	A x C	A x CN
Building	68,236	0.95	98.00	64,824.20	6687128
Pavement	53,239	0.95	98.00	50,577.05	5217422
Gravel	0	0.95	90.00	0.00	0
Green Space (NRCS Soil Group C/D)	167,649	0.35	77.00	58,677.15	12908973
	289,124			174,078.40	24813523

Weighted Runoff Coefficient (C) = (∑A x C) / ∑A (Proposed Conditions) = 0.60
Weighted Curve Number (CN) = (∑A x CN) / ∑A (Proposed Conditions) = 85.82
Proposed C*A = 3.98

3) Water Quality Volume
WQV Proposed Conditions = (0.9 in of rainfall) = (6.64 acres * 43560 sf/acre * C * 0.9in)/(12in/ft) = 13015.73 ft^3
WQV is treated by ADS Barracuda hydrodynamic separator

4) Required Detention Volume (See C8.2)

Existing conditions 2yr-24 hr hydrograph volume = 20,501.00 ft^3
Existing conditions 2yr-24hr hydrograph peak rate of runoff = 7.51 ft^3/s
Proposed conditions 2yr-24hr hydrograph volume = 28,404.00 ft^3

Proposed conditions 2yr-24hr hydrograph volume - Existing Conditions 2yr-24 hydrograph volume = 7,903.00 ft^3

Existing conditions 10yr-24hr hydrograph peak rate of runoff = 13.36 ft^3/s

Existing conditions 100yr-24 hr hydrograph volume = 75,822.00 ft^3
Existing conditions 100yr-24 hr hydrograph peak rate of runoff = 27.93 ft^3/s
Proposed conditions 100yr-24 hr hydrograph volume = 93,510.00 ft^3

Proposed conditions 100yr-24hr hydrograph volume - existing conditions 100yr-24 hydrograph volume = 17,688.00 ft^3
Proposed conditions design 100yr peak outlet rate = 5.00 ft^3/s

Required detention volume based on 100yr basin routing with 5 ft^3/s peak outlet rate (See C8.2) = 51,667 ft^3

The proposed 100 year detention outlet rate < existing conditions 2yr-24 hour peak rate of runoff

Flood Control: 51,667 ft^3 Z_{FC} = 867.86 ft
(see ADS stage storage on sheet C8.3)

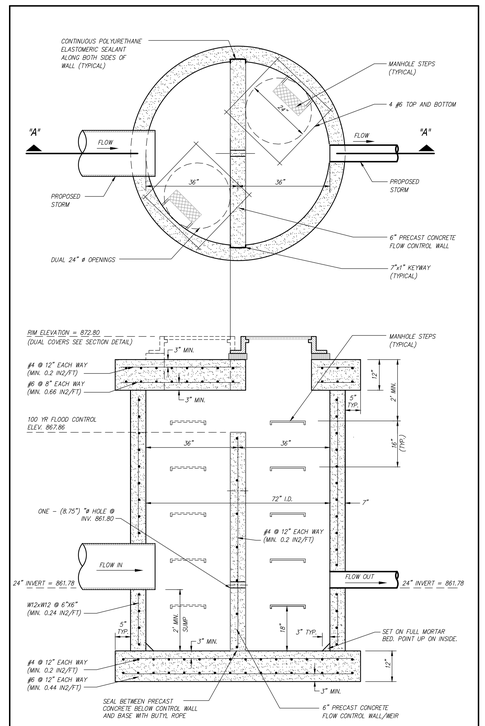
5) Outlet Control Design
$d_{orifice}$= assume one 8.75" orifice $d_{orifice}$= 8.750 in
$Z_{orifice}$ = $Z_{orifice}$ = 862.16 ft
$Z_{orifice}$ INV. = $Z_{orifice}$ INV. = 861.80 ft

havg = (Z_{FC} - $Z_{orifice}$)*(1/2) h_{avg} = 2.85 ft
Half of the total depth of flood control vol. $A_{orifice}$ = 0.417 ft^2

h_{max} = (Z_{FC} - $Z_{orifice}$) h_{max} = 5.70 ft
(100 year storm condition)

Average Release Rate of Flood Control Volume
$Q_{avg} = 0.62 \times A_{Orifice} \times (2 \times g \times h_{avg})^{1/2}$ Q_{avg} = 3.503 cfs

Maximum Release Rate (Flood Control Orifice(s) During 100 Yr Storm)
$Q_{max} = 0.62 \times A_{Orifice} \times (2 \times g \times h_{max})^{1/2}$ Q_{max} = 5.0 cfs



SECTION A-A

NOTE: THE PRECAST REINFORCED OUTLET CONTROL STRUCTURE SHALL BE MANUFACTURED TO ASTM C-478 SPECIFICATIONS.

OUTLET CONTROL STRUCTURE "OCS 1" DETAIL

N.T.S.

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Lewton School
Lansing School District
2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

REVISIONS/REVIEW DATE
BID & CONSTRUCTION 10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G
NORTH

SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET NO.
C8.3

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PIPE RUN		HYDROLOGY							HYDRAULICS											H.G. ELEVATION		F.G. ELEVATION		INVERT ELEV.	
FROM STR	TO STR	INCRE-MENT AREA ACRES (A)	RUNOFF COEFF. (C)	EQUIV. AREA 100% (CA)	TOTAL AREA 100% ACRES SUM (CA)	TIME (T) MIN.	10 YR INTEN-SITY (I) INCHES PER HOUR	10-YR FLOW (C.F.S.) Q=CIA	CAPACITY OF SEWER (C.F.S.)	DIAM. OF PIPE (IN)	LENGTH OF LINE (FEET)	PIPE MATERIAL	SLOPE OF PIPE (%)	ENERGY GRADE SLOPE	HG BASED ON "Q" (%)	HG FOR 3 FPS GIVEN "D" (%)	ACTUAL HG	VEL. FULL (FT./ SEC.)	TIME OF FLOW (MIN)	UPPER END	LOWER END	UPPER END	LOWER END	UPPER END	LOWER END
INL 29	CB 28	0.15	0.76	0.11	0.11	10.00	4.58	0.52	2.38	12	57.0	HDPP	0.32	0.076%	0.015	0.31	0.076%	3.0	0.3	865.81	865.76	868.36	869.50	865.47	865.29
CB 28	CB 27	0.00	0.00	0.00	0.11	10.10	4.56	0.52	2.38	12	24.0	HDPP	0.32	0.047%	0.015	0.31	0.047%	3.0	0.1	865.76	865.75	869.50	868.80	865.29	865.21
CB 27	CB 26	0.20	0.83	0.17	0.28	10.50	4.49	1.26	2.38	12	75.0	HDPP	0.32	0.143%	0.089	0.31	0.143%	3.0	0.4	865.75	865.65	868.80	871.00	865.21	864.97
CB 26	TRS 25	0.16	0.88	0.14	0.42	10.50	4.49	1.89	2.38	12	5.0	HDPP	0.32	0.323%	0.201	0.31	0.320%	3.0	0.0	865.65	865.63	871.00	870.00	864.97	864.96
TRS 25	EX 2	0.00	0.00	0.00	0.42	10.70	4.45	1.87	2.38	12	30.0	HDPP	0.32	0.332%	0.198	0.31	0.320%	3.0	0.2	865.62	865.53	870.00	869.06	864.96	864.86
CB 24	CB 23	0.06	0.95	0.06	0.06	10.00	4.58	0.26	2.38	12	82.0	HDPP	0.32	0.131%	0.004	0.31	0.131%	3.0	0.5	868.00	867.80	871.40	872.10	867.78	867.52
CB 23	CB 22	0.04	0.95	0.04	0.10	10.50	4.49	0.43	2.38	12	86.0	HDPP	0.32	0.133%	0.010	0.31	0.133%	3.0	0.5	867.80	867.61	872.10	872.10	867.52	867.25
CB 22	CB 21	0.06	0.95	0.06	0.15	11.00	4.40	0.67	2.38	12	84.0	HDPP	0.32	0.158%	0.025	0.31	0.158%	3.0	0.5	867.61	867.42	872.10	872.10	867.25	866.98
CB 21	CB 20	0.07	0.95	0.07	0.22	11.60	4.29	0.94	2.38	12	102.0	HDPP	0.32	0.074%	0.050	0.31	0.074%	3.0	0.6	867.42	867.35	872.10	871.70	866.98	866.65
FCB 20.2	FCB 20.1	0.15	0.83	0.12	0.12	10.00	4.58	0.57	2.38	12	69.0	HDPP	0.32	0.073%	0.018	0.31	0.073%	3.0	0.4	867.44	867.39	870.50	870.50	867.10	866.88
FCB 20.1	CB 20	0.14	0.35	0.05	0.17	10.40	4.51	0.78	2.38	12	71.0	HDPP	0.32	0.051%	0.034	0.31	0.051%	3.0	0.4	867.39	867.35	870.50	871.70	866.88	866.65
CB 20	FCB 19	0.08	0.88	0.07	0.46	11.60	4.29	1.99	5.95	18	46.0	HDPP	0.23	0.102%	0.026	0.18	0.102%	3.4	0.2	867.35	867.30	871.70	871.80	866.65	866.55
FCB 19	FCB 18	0.26	0.81	0.21	0.67	11.80	4.26	2.87	5.95	18	42.0	HDPP	0.23	0.214%	0.053	0.18	0.214%	3.4	0.2	867.30	867.21	871.80	871.90	866.55	866.45
FCB 18	FCB 17	0.02	0.68	0.01	0.69	12.00	4.23	2.90	5.95	18	46.0	HDPP	0.23	0.192%	0.055	0.18	0.192%	3.4	0.2	867.21	867.12	871.90	871.90	866.45	866.34
FCB 17	MH 16	0.09	0.81	0.07	0.76	12.30	4.18	3.18	5.95	18	62.0	HDPP	0.23	0.230%	0.065	0.18	0.230%	3.4	0.3	867.12	866.98	871.90	873.20	866.34	866.20
MH 16	FCB 15	0.33	0.95	0.31	1.07	12.60	4.13	4.44	11.34	24	61.0	HDPP	0.18	0.085%	0.028	0.12	0.085%	3.6	0.3	866.66	866.61	873.20	871.80	865.64	865.53
FCB 15	MH 14	0.56	0.90	0.50	1.58	13.00	4.07	6.42	11.34	24	94.0	HDPP	0.18	0.179%	0.058	0.12	0.179%	3.6	0.4	866.61	866.44	871.80	872.30	865.53	865.36
MH 14	MH 5	0.00	0.00	0.00	1.58	13.70	3.97	6.26	11.34	24	145.0	HDPP	0.18	0.181%	0.055	0.12	0.180%	3.6	0.7	866.43	866.17	872.30	871.90	865.36	865.10
INL 13	FCB 12	0.52	0.43	0.22	0.22	10.00	4.58	1.02	2.38	12	64.0	HDPP	0.32	0.091%	0.059	0.31	0.091%	3.0	0.4	865.06	865.00	866.60	866.70	864.51	864.31
FCB 12	FCB 11	0.07	0.35	0.02	0.25	10.40	4.51	1.12	2.38	12	80.0	HDPP	0.32	0.065%	0.071	0.31	0.065%	3.0	0.4	865.00	864.95	866.70	866.70	864.21	863.95
FCB 11	FCB 10	0.15	0.35	0.05	0.30	11.00	4.40	1.32	2.38	12	112.0	HDPP	0.32	0.088%	0.099	0.31	0.088%	3.0	0.6	864.95	864.85	866.70	867.10	864.31	863.95
FCB 10	FCB 9	0.23	0.37	0.09	0.39	11.70	4.28	1.65	2.38	12	136.0	HDPP	0.32	0.154%	0.154	0.31	0.154%	3.0	0.7	864.85	864.64	867.10	869.60	863.95	863.52
FCB 9.2	FCB 9.1	0.57	0.37	0.21	0.21	10.00	4.58	0.97	2.38	12	110.0	HDPP	0.32	0.049%	0.053	0.31	0.049%	3.0	0.6	864.71	864.66	866.60	869.00	864.15	863.80
FCB 9.1	FCB 9	0.14	0.42	0.06	0.27	10.10	4.56	1.23	2.38	12	25.0	HDPP	0.32	0.074%	0.085	0.31	0.074%	3.0	0.1	864.66	864.64	869.00	869.60	863.80	863.72
FCB 9	FCB 8	0.07	0.61	0.04	0.70	11.70	4.28	2.99	6.21	18	119.0	HDPP	0.25	0.051%	0.058	0.18	0.051%	3.5	0.6	864.64	864.58	869.60	870.50	863.52	863.22
FCB 8.2	FCB 8.1	0.53	0.76	0.40	0.40	10.00	4.58	1.85	2.42	12	71.0	HDPP	0.33	0.336%	0.192	0.31	0.330%	3.1	0.4	867.37	867.13	871.30	871.20	866.72	866.48
FCB 8.1	FCB 8	0.53	0.84	0.45	0.85	10.50	4.49	3.81	6.21	18	106.0	HDPP	0.25	0.244%	0.094	0.18	0.244%	3.5	0.5	866.34	866.08	871.20	870.50	865.48	865.22
FCB 8	FCB 7	0.14	0.42	0.06	1.60	11.70	4.28	6.87	11.34	24	58.0	HDPP	0.18	0.094%	0.066	0.12	0.094%	3.6	0.3	864.58	864.52	870.50	870.10	863.22	863.11
FCB 7	MH 6	0.09	0.37	0.03	1.64	12.00	4.23	6.93	11.34	24	74.0	HDPP	0.18	0.083%	0.067	0.12	0.083%	3.6	0.3	864.52	864.46	870.10	872.50	863.11	862.98
FCB 6.3	FCB 6.2	0.52	0.37	0.19	0.19	10.00	4.58	0.88	2.42	12	86.0	HDPP	0.33	0.084%	0.044	0.31	0.084%	3.1	0.5	864.92	864.85	866.60	868.30	864.50	864.21
FCB 6.2	FCB 6.1	0.14	0.42	0.06	0.25	11.30	4.35	1.09	2.42	12	233.0	HDPP	0.33	0.067%	0.067	0.31	0.067%	3.1	1.3	864.85	864.69	868.30	870.20	864.21	863.45
FCB 6.1	MH 6	0.83	0.47	0.39	0.64	11.50	4.31	2.76	2.98	12	53.0	HDPP	0.50	0.432%	0.431	0.31	0.432%	3.8	0.2	864.69	864.46	870.20	872.50	863.45	863.18
MH 6	MH 5	0.00	0.00	0.00	2.28	12.00	4.23	9.64	11.34	24	8.0	HDPP	0.18	0.162%	0.130	0.12	0.162%	3.6	0.0	864.46	864.45	872.50	871.90	862.98	862.97
MH 5	MH 4	0.00	0.00	0.00	3.86	13.70	3.97	15.32	19.39	30	8.0	HDPP	0.16	0.160%	0.100	0.09	0.160%	4.0	0.0	864.45	864.44	871.90	871.60	862.77	862.75
MH 4	MH 3	0.00	0.00	0.00	3.86	13.70	3.97	15.32	19.39	30	8.0	HDPP	0.16	0.160%	0.100	0.09	0.160%	4.0	0.0	864.44	864.42	871.60	0.00	862.75	862.74
MH 2	OCS 1	0.00	0.00	0.00	0.00	10.00	4.58	0.00	21.68	30	12.0	HDPP	0.20	#N/A	0.000	0.09	#N/A	4.4	0.0	#N/A	#N/A	872.50	872.80	861.80	861.78
OCS 1	EX 16	0.00	0.00	0.00	0.00	10.10	4.56	0.00	21.68	30	18.0	HDPP	0.20	#N/A	0.000	0.09	#N/A	4.4	0.1	#N/A	861.74	872.80	0.00	861.78	861.74

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NORTH

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C8.4

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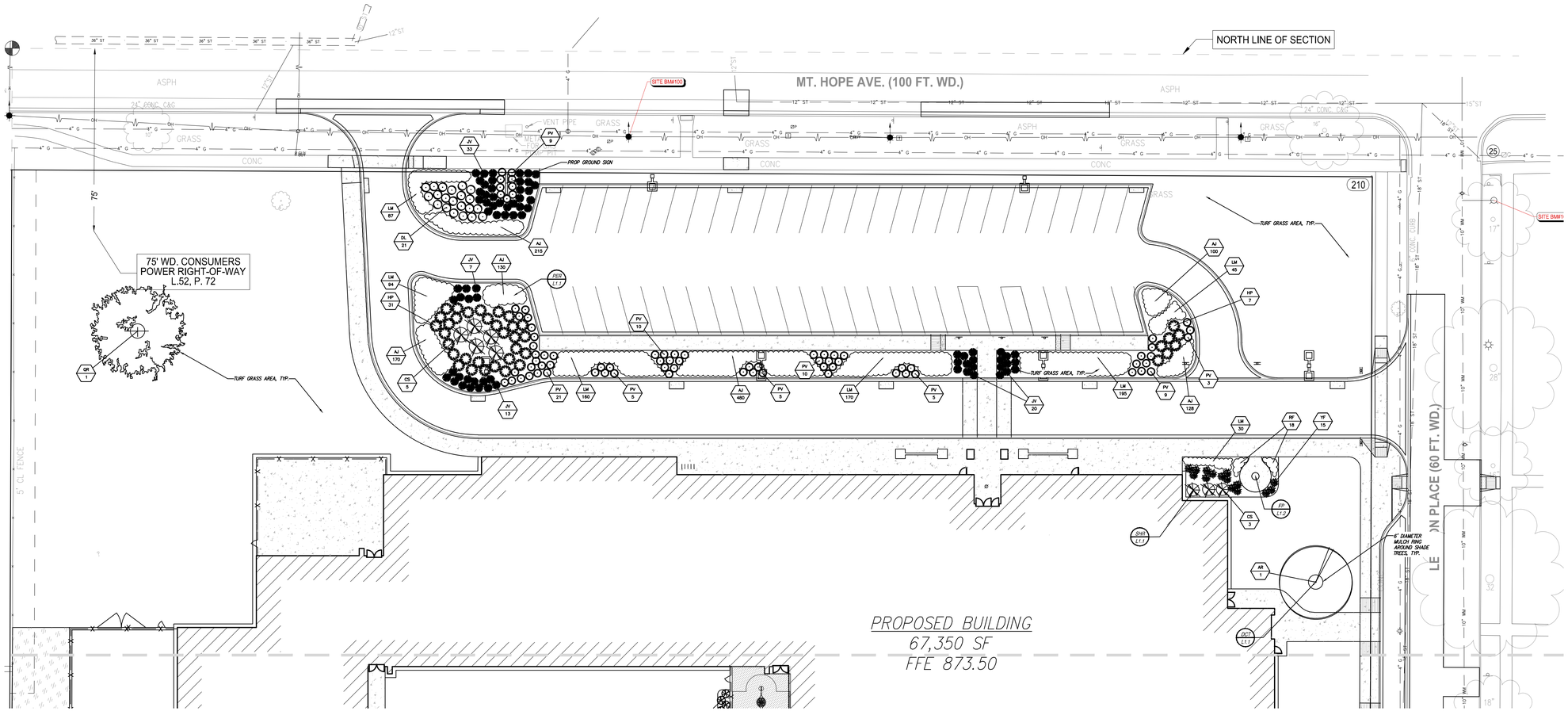

PLANT SCHEDULE

QTY	ID	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
7	AR	*Acer rubrum 'Frank Jr.' PP16769*	Redpointe Maple	2" CAL	AS SHOWN ON PLAN
5	AF	*Acer x freemanii 'Jeffersred'*	Autumn Blaze Red Maple	2" CAL	AS SHOWN ON PLAN
1223	AJ	*Ajuga reptans* 'Burgundy Glow'	Burgundy Glow Ajuga	1/4" POT	12" O.C.
80	CL	*Chasmanthium latifolium*	Northern Sea Oats	1 GAL	24" O.C.
15	CS	*Cornus sericea L. ssp.sericea*	Red Oiser Dogwood	3 GAL	AS SHOWN ON PLAN
21	DL	*Diervilla lonicera*	Bush Honeysuckle	3 GAL	AS SHOWN ON PLAN
4	FG	*Fagus grandiflora*	American Beech	2" CAL	AS SHOWN ON PLAN
38	HP	*Hydrangea paniculata*	Little Lime® Panicle Hydrangea	3 GAL	AS SHOWN ON PLAN
73	JV	*Juniperus virginiana 'Grey Ow'*	Grey Owl Juniper	1 GAL	AS SHOWN ON PLAN
200	LI	*Liatris ligulistylis*	Meadow Blazing Star	Plug	24" O.C.
781	LM	*Liriope muscari 'Silvery Sunproof'*	Silvery Sunproof Lillyturf	1 GAL	18" O.C.
17	MC	*Muhlenbergia capillaris*	Dwarf Pink Muhly Grass	1 GAL	AS SHOWN ON PLAN
77	PV	*Panicum virgatum 'Heavy Metal'*	Switchgrass	3 GAL	AS SHOWN ON PLAN
1	QR	*Quercus rubra*	Northern Red Oak	2" CAL	AS SHOWN ON PLAN
18	RF	*Rudbeckia fulgida 'Goldsturm'*	Goldstrum Black-Eyed Susan	1 GAL	18" O.C.
200	SC	*Schizachyrium scoparius*	Little Bluestem	Plug	24" O.C.
200	SS	*Solidago speciosa*	Showy Goldenrod	Plug	24" O.C.
15	YF	*Yucca filamentosa 'Adam's Needle'*	Adam's Needle Yucca	1 GAL	AS SHOWN ON PLAN

***Plant List Includes Totals for Entire Site**

SEEDING NOTES:

1. SEED ALL NON NATIVE DISTURBED AREAS UNLESS OTHERWISE NOTED WITH:
   a. 30 percent Kentucky Bluegrass, a minimum of (3) three cultivars
   b. 20 percent Perennial Ryegrass, a minimum of (2 or 3) ten or three cultivars.
   c. 50 percent Creeping Red Fescue, a minimum of (3) three cultivars

   APPLY AT THE RATE OF 5-8 POUNDS PER 1,000SF
2. MULCH BLANKETS SHALL BE USED IN ALL AREAS WITH 10% OR GREATER SLOPE.

LEGEND

- STANDARD BITUMINOUS PAVEMENT
- COMPACTED GRAVEL
- ENGINEERED WOOD FIBER
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- SOLID SURFACING
- PLANT LABELS — XX — PLANT TYPE, # — QTY
- PROPOSED CATCH BASIN (CB)
- PROPOSED FIELD CATCH BASIN (FCB) W/REDHVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- PROPOSED STORM MANHOLE (MH)
- PROPOSED STORM SEWER

LANDSCAPE NOTES:

1. INSTALL 3" DEEP SHREDDED BARK MULCH TO ALL PLANTING AREAS / BEDS . DO NOT LEAVE MULCH IN CONTACT WITH TRUNK OF TREES.
2. CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES, PIPES AND STRUCTURES, AS WELL AS THE LOCATION OF EXISTING TREES AND VEGETATION. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COST INCURRED DUE TO DAMAGE/REMOVAL OF SAID ELEMENTS.
3. ANY DISCREPANCIES BETWEEN PLANS, NOTES, DETAILS AND EXISTING CONDITIONS SHALL BE IMMEDIATELY REPORTED TO THE OWNER'S AUTHORIZED REPRESENTATIVE FOR REVIEW AND DECISION. CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ALL REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.
4. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING MATERIALS/IMPROVEMENTS, DAMAGED DURING CONSTRUCTION.
5. CONTRACTOR SHALL VERIFY QUANTITIES SHOWN ON PLANT SCHEDULES AND THOSE INDICATED ON PLANS. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF QUANTITIES DRAWN.
6. CONTRACTOR SHALL MAKE MINOR ADJUSTMENTS TO PLANT MATERIAL LOCATIONS IN FIELD, AS NECESSARY. THE LOCATION OF ALL PLANT MATERIAL SHALL BE SUBJECT TO APPROVAL BY THE OWNER'S AUTHORIZED REPRESENTATIVE.
7. ALL PLANT MATERIAL SHALL BE OF THE SIZES CALLED FOR IN THE PLANT SCHEDULES. ANY PLANT MATERIAL NOT MEETING THE SIZED AND/OR QUALITY AS CALLED FOR SHALL BE REMOVED FROM SITE. ALL TREES SHALL BE INSPECTED AND APPROVED BY THE OWNER'S AUTHORIZED REPRESENTATIVE. NO SUBSTITUTIONS OF PLANT MATERIAL SHALL BE MADE WITHOUT APPROVAL FROM THE OWNER'S AUTHORIZED REPRESENTATIVE.
8. CONTRACTOR SHALL DETERMINE APPROPRIATE PLANTING BACKFILL MIXES (BASED ON SOILS/SUBSURFACE CONDITIONS) AND REVIEW ALTERNATIVES WITH OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO INSTALLATION.
9. CONTRACTOR TO INCLUDE COST OF ALL MULCH IN THE COST OF THE PLANT MATERIAL.

GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 inch = 20 ft.

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LSD NO. SB-0064
JOB NO. 2616.01G

NORTH

SHEET TITLE
LANDSCAPE PLAN

SHEET NO.
L1.0

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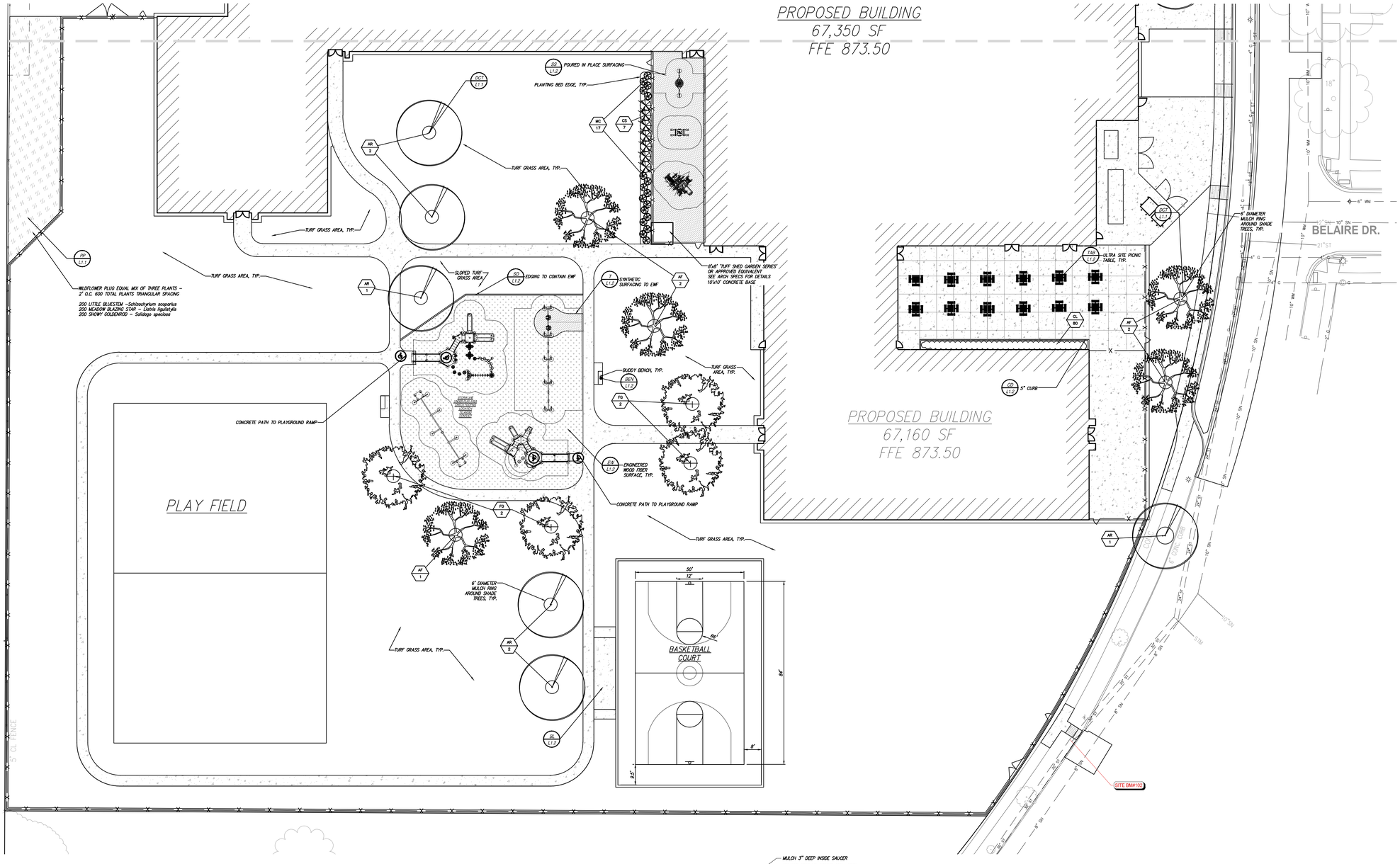
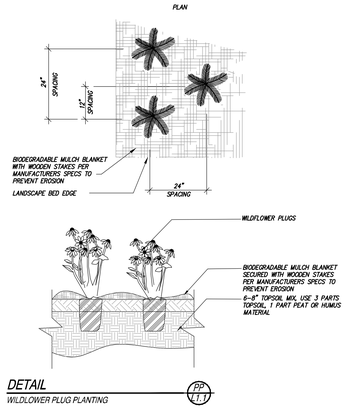
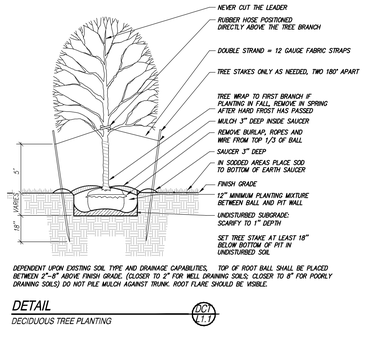


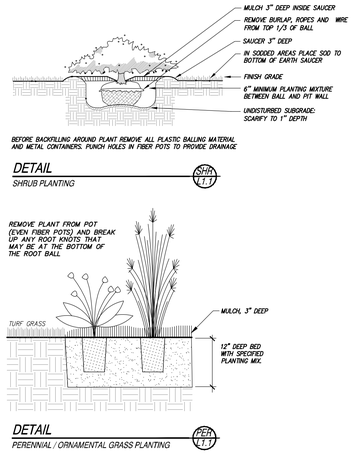


DETAIL
WILDLOWER PLUG PLANTING (DP L1.1)



DEPENDENT UPON EXISTING SOIL TYPE AND DRAINAGE CAPABILITIES. TOP OF ROOT BALL SHALL BE PLACED BETWEEN 2"-6" ABOVE FINISH GRADE. (CLOSER TO 2" FOR WELL DRAINING SOILS; CLOSER TO 6" FOR POORLY DRAINING SOILS) DO NOT PILE MULCH AGAINST TRUNK. ROOT FLARE SHOULD BE VISIBLE.

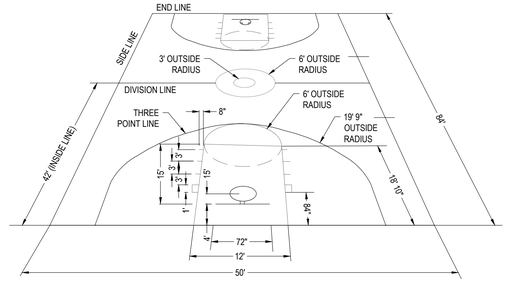
DETAIL
DECIDUOUS TREE PLANTING (DCI L1.1)



DETAIL
SHRUB PLANTING (SHR L1.1)

DETAIL
PERENNIAL / ORNAMENTAL GRASS PLANTING (PER L1.1)

GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 inch = 20 ft.



DETAIL
BASKETBALL STRIPING REFERENCE (PER L1.1)

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LANDSCAPE PLAN SOUTH

SHEET NO.
L1.1

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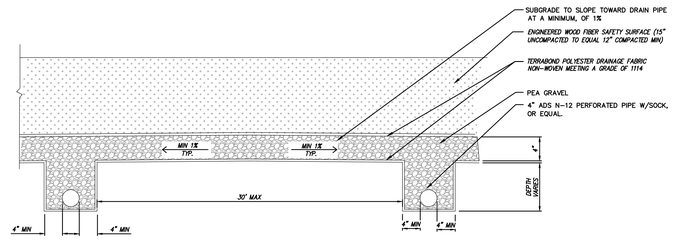

DETAIL
ENGINEERED WOODFIBER

EW L1.2

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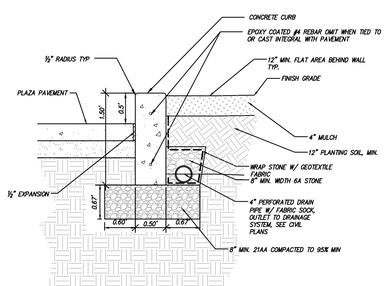
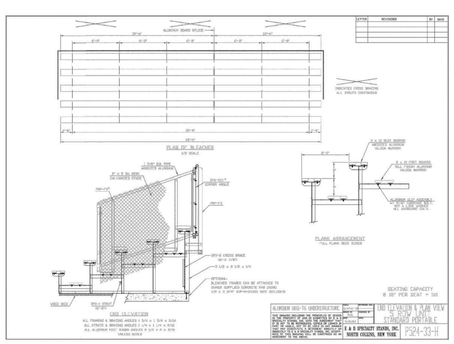
Lewton School
Lansing School District
2000 Lewton Pl.
Lansing, MI 48915



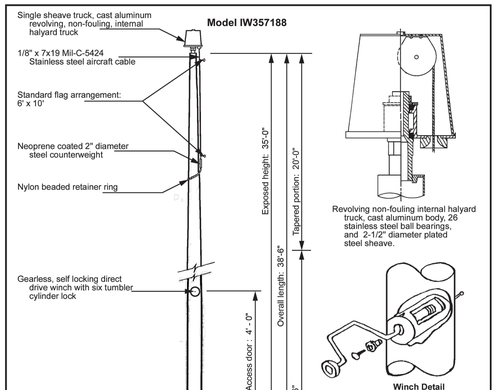
DETAIL
PLANTING BED CURB DETAIL

CB L1.2



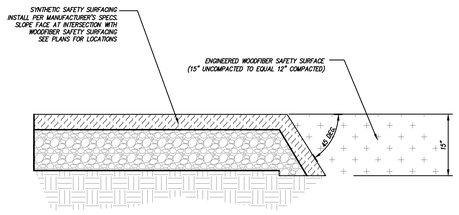
DETAIL
BLEACHERS

BL L1.2



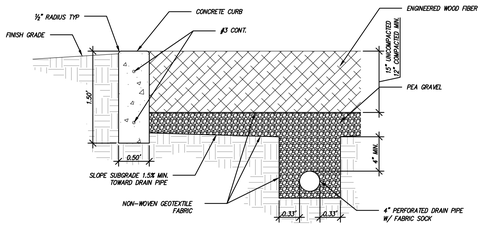
SECTION
FLAGPOLE

FP L1.2



DETAIL
SYNTHETIC SURFACE TO ENGINEERED WOODFIBER TRANSITION

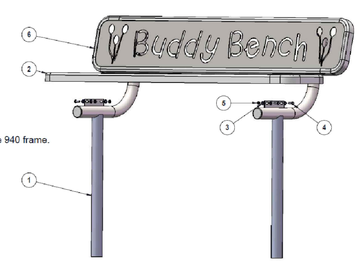
T L1.2



DETAIL
ENGINEERED WOOD SURFACE AND DRAIN SYSTEM AND CONCRETE EDGING

SD L1.2

COMPONENTS



Attach the 6' expanded Seat and Back to the 940 frame.

ITEM NO.	PartNo	DESCRIPTION	QTY.
1	P-V940S	940 In Ground Leg	2
2	T-V72-S	6' Expanded Seat	1
3	33-02-0007	5/16" SS Washer	16
4	33-05-0029	5/16" x 1" Machine Bolt (SS)	8
5	33-03-0012	5/16" Kep Nut (SS)	8
6	T-01-01-0451	6' Seat (Buddy Bench)	1

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BENCH COLOR: BLUE
POST COLOR: BLACK
PATTERN: PERFORATED

DETAIL
ULTRA SITE BUDDY BENCH

BEN L1.2

Lansing School District

REVISIONS/REVIEW	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G
NORTH

SHEET TITLE
LANDSCAPE DETAILS

SHEET NO.
L1.2

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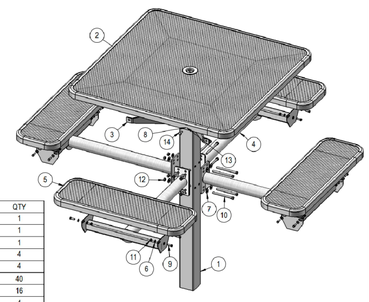
COMPONENTS



ITEM NO.	PartNo	DESCRIPTION	QTY
1	P-338S or G-338S	338 IG post asem	1
2	T-V46-T	46" Expanded Square Top	1
3	P-01-04-0150	H Bracket	1
4	P-V338-ARM	338 vinyl arm	4
5	T-V36-S	3' Expanded Seat	4
6	33-02-0007	5/16" Flat Washer (SS)	40
7	33-02-0004	7/16" SS Washer	16
8	33-02-0008	3/8" Flat Washer (SS)	4
9	33-05-0029	5/16" x 1" Machine Bolt (SS)	20
10	33-06-0049	7/16" x 5-1/2" Machine Bolt	8
11	33-03-0012	5/16" Kep Nut (SS)	20
12	33-01-0006	7/16" Hex Nut (SS)	8
13	33-01-0018	3/8" Hex Nut (SS)	4
14	33-06-0042	3/8" x 1" Carriage Bolt (SS)	4

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BENCH/TABLE COLOR: BLUE
POST COLOR: BLACK
PATTERN: PERFORATED
4 SEAT AND 3 SEAT OPTION AS SHOWN ON PLANS

DETAIL
ULTRA SITE BUDDY BENCH

TAB L1.2

STRUCTURAL NOTES

GENERAL

1. THESE NOTES ARE TO BE READ IN CONJUNCTION WITH THE DRAWINGS AND THE WRITTEN SPECIFICATIONS. IN THE EVENT OF CONFLICT BETWEEN THE INFORMATION ON THE WRITTEN SPECIFICATIONS, THE DRAWINGS, AND THESE NOTES, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN.

2. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE COMPLETED STRUCTURE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ADEQUATE SHORING AND BRACING DURING CONSTRUCTION TO ACCOUNT FOR ALL FORCES, INCLUDING BUT NOT LIMITED TO: GRAVITY, WIND, EARTH PRESSURE, AND UNBALANCED FORCES DUE TO CONSTRUCTION SEQUENCE. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, SEQUENCES, AND JOB SAFETY.

3. THE CONTRACTOR SHALL ENSURE THAT ALL CONSTRUCTION METHODS WILL NOT CAUSE DAMAGE TO ADJACENT BUILDINGS, UTILITIES, OR OTHER PROPERTIES.

4. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF THE STRUCTURAL WORK WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING WORK, AS WELL AS ANY OTHER APPLICABLE TRADES. NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES AND/OR INTERFERENCES IMMEDIATELY.

5. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS BEFORE BEGINNING WORK. CONTRACTOR SHALL TAKE FIELD MEASUREMENTS AND BE RESPONSIBLE FOR SAME.

6. IN CASES OF CONFLICT BETWEEN DRAWINGS AND/OR SPECIFICATIONS AND OTHER DISCIPLINES OR EXISTING CONDITIONS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER AND OBTAIN CLARIFICATION PRIOR TO BIDDING AND/OR PROCEEDING WITH THE WORK.

7. THE CONTRACTOR SHALL VERIFY ALL OPENING SIZES AND LOCATIONS WITH OTHER DISCIPLINES. THE DRAWINGS DO NOT SHOW ALL OPENINGS REQUIRED. ADDITIONAL OPENINGS, BLOCKOUTS, AND SLEEVES MAY BE REQUIRED BY OTHER DISCIPLINES. OPENINGS REQUIRED BUT NOT SHOWN ON STRUCTURAL DRAWINGS MUST BE APPROVED BY THE STRUCTURAL ENGINEER OF RECORD.

8. APPLY DETAILS, SECTIONS, AND NOTES ON THE DRAWINGS WHERE CONDITIONS ARE SIMILAR TO THOSE INDICATED BY DETAIL, DETAIL TITLE, OR NOTE.

9. DO NOT SCALE DRAWINGS. ONLY USE DIMENSIONS INDICATED ON THE DRAWINGS.

10. ISOMETRIC VIEWS, IF INCLUDED, ARE TO GIVE A GENERAL SENSE OF THE STRUCTURE AND MASSING. THEY DO NOT SUPERSEDE THE STRUCTURAL DRAWINGS AND ARE PROVIDED AS SUPPLEMENTAL INFORMATION ONLY. THE STRUCTURE SHALL BE PROVIDED PER THE STRUCTURAL DRAWINGS, DETAILS, NOTES, AND SPECIFICATIONS.

11. CENTERLINES OF FRAMING MEMBERS COINCIDE WITH COLUMN CENTERLINES, UNLESS NOTED OTHERWISE.

12. CENTERLINES OF FOUNDATIONS COINCIDE WITH COLUMN LOCATIONS, UNLESS NOTED OTHERWISE.

13. THE CONTRACTOR SHALL OBTAIN COPIES OF THE LATEST CONTRACT DOCUMENTS INCLUDING ALL BULLETINS AND ADDENDA, AND SHALL PROVIDE THE RELEVANT PORTIONS TO ALL SUBCONTRACTORS AND SUPPLIERS PRIOR TO SUBMITTAL OF SHOP DRAWINGS, FABRICATION, AND ERECTION OF STRUCTURAL MEMBERS.

14. STRUCTURAL ENGINEER OF RECORD'S ACCEPTANCE MUST BE SECURED FOR ALL STRUCTURAL SUBSTITUTIONS.

15. NO STRUCTURAL MEMBER SHALL BE CUT, NOTCHED, OR OTHERWISE REDUCED IN STRENGTH UNLESS SPECIFICALLY SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD.

16. THE GENERAL CONTRACTOR IS TO PROVIDE AN APPROPRIATE NUMBER OF COPIES OF ONE COMPLETE COORDINATED DRAWING SET SHOWING ALL SLEEVES, CONDUITS, BOXOUTS, DUCT OPENINGS, ETC. AS REQUIRED FOR ALL TRADES FOR THE STRUCTURAL ENGINEER OF RECORD'S APPROVAL. THIS SHALL BE DONE A MINIMUM OF TWO WEEKS PRIOR TO CONSTRUCTING AFFECTED SLABS, BEAMS, WALLS, COLUMNS, OR FOOTINGS.

17. SUPPORT DETAILS FOR ELEVATOR, ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING EQUIPMENT IS BASED UPON AVAILABLE INFORMATION OF MANUFACTURER. CONTRACTOR SHALL COORDINATE REQUIREMENTS OF ACTUAL EQUIPMENT SUPPLIED WITH DETAILS AND SHALL PROVIDE ANY ADDITIONAL FRAMING REQUIRED.

18. PERIODIC SITE OBSERVATION VISITS MAY BE PROVIDED BY THE ARCHITECT/ENGINEER. THE SOLE PURPOSE OF THESE OBSERVATIONS IS TO REVIEW THE GENERAL CONFORMANCE OF THE CONSTRUCTION WITH THE CONTRACT DOCUMENTS. THESE LIMITED OBSERVATIONS SHOULD NOT BE CONSIDERED AS CONTINUOUS OR EXHAUSTIVE INVESTIGATIONS TO VERIFY THAT ALL CONSTRUCTION IS IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.

REFERENCED CODES AND STANDARDS

1. PERFORM ALL CONSTRUCTION IN CONFORMANCE WITH THE LATEST EDITIONS OF THE BUILDING AND DESIGN CODES REFERENCED WITHIN THESE DOCUMENTS. THE CONTRACT DOCUMENTS REFER TO THE FOLLOWING CODES AND STANDARDS, LATEST EDITIONS AS REFERENCED IN THE CURRENT BUILDING CODE IN THE STATE OF THE PROJECT, UNLESS NOTED OTHERWISE:

   - 2021 MICHIGAN BUILDING CODE
   - ASCE 7, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
   - ACI 301, SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS
   - ACI 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   - TMS 402/602, BUILDING CODE REQUIREMENTS AND SPECIFICATION FOR MASONRY STRUCTURES
   - HOT AND COLD WEATHER MASONRY CONSTRUCTION BY THE MASONRY INDUSTRY COUNCIL
   - AISC 303, CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES
   - AISC 360, SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS
   - ANSI/SDI RD, STANDARD FOR STEEL ROOF DECK
   - SJI, STANDARD SPECIFICATION FOR OPEN WEB STEEL JOISTS AND JOIST GIRDERS
   - AISI S100, NORTH AMERICAN SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL MEMBERS

DESIGN CRITERIA

1. GENERAL
   - CONCRETE DESIGN — LRFD
   - STEEL DESIGN — LRFD
   - MASONRY DESIGN — ASD
   - RISK CATEGORY — III

2. DEAD LOADS (SUPERIMPOSED)
   - MEP, CEILING, LIGHTS — 15.0 PSF
   - SOLAR PANELS — 5.0 PSF

3. LIVE LOADS
   - ROOF — 20.0 PSF

4. SNOW LOADS
   - GROUND SNOW LOAD (P_G) — 30.0 PSF
   - SNOW EXPOSURE FACTOR (C_E) — 0.90
   - SNOW IMPORTANCE FACTOR (I_S) — 1.10
   - THERMAL FACTOR (C_T) — 1.00
   - FLAT ROOF SNOW LOAD (P_F) — 20.8 PSF
   - SLOPED ROOF SNOW LOAD (P_S) — 20.8 PSF
   - MINIMUM FLAT SNOW LOAD (P_{MIN}) — 22.0 PSF

5. WIND LOADS
   - BASIC WIND SPEED (V) — 114 MPH
   - EXPOSURE CATEGORY — B
   - (SEE WIND LOAD DIAGRAMS)

6. EARTHQUAKE LOADS
   - SEISMIC SITE CLASS — D
   - DESIGN SPECTRAL ACCELERATION (S_{DS}) — 0.100
   - DESIGN SPECTRAL ACCELERATION (S_{D1}) — 0.074
   - SEISMIC DESIGN CATEGORY — B
   - SEISMIC IMPORTANCE FACTOR (I_E) — 1.25
   - ORDINARY REINFORCED MASONRY BEARING WALLS (R) — 2.00
   - SEISMIC RESPONSE COEFFICIENT (C_S) — 0.063

SUBMITTALS

1. THE CONTRACTOR SHALL SUBMIT FOR ARCHITECT/ENGINEER REVIEW A SCHEDULE WHICH DETAILS THE ESTIMATED QUANTITY OF SUBMITTALS, AND THE DATE THEY WILL BE RECEIVED, AT LEAST TWENTY (20) WORKING DAYS PRIOR TO THE FIRST SUBMITTAL. THE SCHEDULE SHOULD ACCOUNT FOR AT LEAST TEN (10) WORKING DAYS OF REVIEW TIME BY THE ARCHITECT/ENGINEER FOR EACH SUBMITTAL.

2. SHOP DRAWINGS AND/OR DETAILS THAT ARE PREPARED FROM REPRODUCTIONS OF THE STRUCTURAL ENGINEER OF RECORD'S DESIGN DOCUMENTS, IN WHOLE OR IN PART, SHALL NOT BE USED AND WILL BE REJECTED.

3. THE ARCHITECT/ENGINEER MAY RETURN, WITHOUT COMMENT, SUBMITTALS WHICH THE CONTRACTOR HAS NOT STAMPED OR WHICH DO NOT MEET THE PROJECT REQUIREMENTS.

4. THE CONSTRUCTION, MANUFACTURE, AND/OR FABRICATION OF ANY ITEMS PRIOR TO THE ARCHITECT/ENGINEER REVIEW WILL BE ENTIRELY AT THE RISK OF THE CONTRACTOR.

5. ARCHITECT'S/ENGINEER'S REVIEW IS FOR GENERAL CONFORMANCE AND COMPLIANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. ANY ACTION NOTED DOES NOT WAIVE ANY REQUIREMENT OF CONTRACT DOCUMENTS, COORDINATION OF TRADES, AND SATISFACTORY PERFORMANCE OF THEIR WORK WHICH ARE THE CONTRACTOR'S COMPLETE RESPONSIBILITY.

6. FOR COMPONENTS THAT REQUIRE A SPECIALTY ENGINEER, THE SUBMITTAL SHALL BE SEALED BY THE ENGINEER RESPONSIBLE FOR THE DESIGN. 'SPECIALTY ENGINEER' IS DEFINED AS THE STRUCTURAL ENGINEER EMPLOYED BY THE SUPPLIER TO DESIGN PRODUCTS TO MEET THE SPECIFIC CRITERIA OUTLINED IN THE CONTRACT DOCUMENTS. SEALING OF THE SUBMITTAL IMPLIES THAT THE SPECIALTY ENGINEER HAS REVIEWED THE CONTRACT DOCUMENTS AND HAS, TO THE BEST OF THEIR KNOWLEDGE, INCORPORATED ALL OF THE SPECIAL DESIGN CRITERIA CONTAINED THEREIN.

7. ITEMS THAT REQUIRE SUBMITTAL FOR STRUCTURAL REVIEW ARE:
   - CONCRETE MIX DESIGNS
   - CONCRETE REINFORCING LAYOUT
   - MASONRY UNIT STRENGTHS
   - MORTAR/GROUT MIX DESIGNS
   - MASONRY REINFORCING LAYOUT
   - TECTUM DECK
   - STEEL DECK
   - STEEL JOISTS
   - ANCHOR RODS
   - STRUCTURAL STEEL
   - COLD-FORMED METAL FRAMING
   - CURTAIN WALL

SAW CUTTING EXISTING CONCRETE AND/OR MASONRY

1. SAW CUTTING OF NEW OPENINGS IN EXISTING CONCRETE AND/OR MASONRY WALLS SHALL BE DONE WITHOUT OVERCUTTING BEYOND THE BOUNDARIES OF THE INTENDED OPENING. ANY STRUCTURAL REPAIRS REQUIRED BY THE STRUCTURAL ENGINEER OF RECORD AS A RESULT OF OVERCUTTING BEYOND THE BOUNDARIES OF AN OPENING SHALL BE PAID FOR BY THE SAW CUTTING CONTRACTOR. SEE DRAWINGS FOR ADDITIONAL INFORMATION.

FOUNDATIONS

1. FOUNDATION CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL EVALUATION REPORT BY SOIL AND MATERIALS ENGINEERS, 2663 EATON RAPIDS ROAD, LANSING, MICHIGAN DATED FEBRUARY 13, 2025 (SME PRO) 098329.00). THE CONTRACTOR SHALL OBTAIN A COPY OF THE REPORT AND BECOME FAMILIAR WITH THE REQUIREMENTS AND RECOMMENDATIONS THEREIN.

2. A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHALL BE RETAINED BY THE CONTRACTOR TO VERIFY FOUNDATION INSTALLATION AND CONSTRUCTION IS IN CONFORMANCE WITH THE RECOMMENDATIONS OUTLINED IN THE GEOTECHNICAL EVALUATION REPORT.

3. ALL FOOTINGS SHALL BEAR ON UNDISTURBED SOIL, HAVING A MINIMUM SAFE BEARING CAPACITY OF 3,000 PSF.

4. CONTRACTOR SHALL NOTIFY THE GEOTECHNICAL ENGINEER WHEN EXCAVATIONS ARE COMPLETED SO THAT CONDITIONS MAY BE INSPECTED PRIOR TO PLACEMENT OF ANY FILL, REINFORCING, OR CONCRETE. NOTIFY ARCHITECT/ENGINEER OF ANY VARIATION FROM THE ANTICIPATED BEARING CAPACITY FOR APPROPRIATE REDESIGN OR LOWERING OF FOOTING.

5. THE BOTTOMS OF ALL EXTERIOR FOOTINGS SHALL BE MINIMUM 3'-6" BELOW FINISHED GRADE. IF THE BUILDING WILL BE UNDER CONSTRUCTION DURING FREEZING WEATHER, THE BOTTOMS OF ALL INTERIOR FOUNDATIONS SHALL BE DEPRESSED 3'-6" BELOW CONSTRUCTION GRADE FOR FROST PROTECTION. IF SUCH ADDITIONAL FOOTING DEPTH WILL CAUSE UNDERMINING OF ADJACENT EXISTING FOOTINGS OR STRUCTURES, PROVIDE SHORING, BRACING, OR UNDERPINNING AS REQUIRED, OR LEAVE FOOTING ELEVATION AS DESIGNED AND PROVIDE CONTINUED PROTECTION AND HEAT TO PREVENT FORMATION OF FROST BELOW FOOTING AND ADJACENT TO FOOTING.

6. EDGES OF FOOTINGS SHALL NOT BE PLACED AT A GREATER THAN 1 VERTICAL TO 2 HORIZONTAL SLOPE WITH RESPECT TO ANY ADJACENT FOOTING OR EXCAVATION, UNLESS UNDERPINNING OR SHORING AND BRACING OF EXISTING FOOTING OR EXCAVATION IS PROVIDED. UNDERPINNING SHALL BE DONE SO AS NOT TO CAUSE SETTLEMENTS OF EXISTING STRUCTURE AND SHALL BE SUCH THAT COMPLETE CONTACT IS ACHIEVED BETWEEN NEW UNDERPINNING AND EXISTING CONCRETE.

7. DO NOT BACKFILL AGAINST CANTILEVERED RETAINING WALLS UNTIL CONCRETE HAS ATTAINED 100 PERCENT OF ITS DESIGN STRENGTH.

8. BACKFILL FOUNDATION WALLS WITH EARTH ON BOTH SIDES OF THE WALL BY ALTERNATELY PLACING BACKFILL ON EACH SIDE SUCH THAT HEIGHT OF BACKFILL DOES NOT DIFFER BY MORE THAN 1'-0" FROM EITHER SIDE.

9. NO FOUNDATIONS OR SLABS SHALL BE PLACED ON OR AGAINST SUB-GRADE CONTAINING WATER, FROST, OR ICE. CONTRACTOR SHALL FURNISH ALL REQUIRED DE-WATERING EQUIPMENT TO MAINTAIN A DRY EXCAVATION UNTIL BACKFILL IS COMPLETE.

10. CONTRACTOR SHALL BE RESPONSIBLE TO ADEQUATELY PROTECT EXCAVATIONS AND SUB-GRADES OF COMPLETED NON-FROST PROTECTED FOUNDATIONS AND SLABS FROM DAMAGE DUE TO FREEZING CONDITIONS UNTIL THE FULL BUILDING ENCLOSURE IS COMPLETED AND HEATED.

11. SLABS ON GRADE SHALL REST ON GRANULAR FILL AS PRESCRIBED BY THE GEOTECHNICAL REPORT. ALL BACKFILL WITHIN BUILDING LINES SHALL BE ENGINEERED GRANULAR FILL PLACED UNDER THE FULL-TIME SUPERVISION OF A SOIL ENGINEER AND SHALL BE COMPACTED TO ACHIEVE 95% MODIFIED PROCTOR DENSITY (AS DEFINED BY ASTM D1557 MODIFIED PROCTOR TEST). FILL SHALL BE PLACED IN 9" MAXIMUM LIFTS.

12. THE CONTRACTOR SHALL SAFEGUARD AND PROTECT ALL EXCAVATIONS, ADJACENT STRUCTURES, PAVEMENTS, AND UTILITIES. DO NOT REMOVE SHORING, SUCH AS SHEET PILING, IF IT WILL CAUSE SETTLEMENT OR DAMAGE TO EXISTING OR NEW STRUCTURES, PAVEMENT, AND/OR UTILITIES.

13. MAXIMUM LENGTH OF FOUNDATION WALL PLACED IN ONE OPERATION SHALL NOT EXCEED 60 FEET.

14. THE FOUNDATION CONTRACTOR SHALL REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL LOCATIONS OF TRENCHES, PITS, CONDUITS, ETC. NOT SHOWN ON THE STRUCTURAL DRAWINGS.

CONCRETE

1. ALL CONCRETE SHALL BE MADE WITH PORTLAND CEMENT AND STONE AGGREGATE, WITH MIXES DESIGNED TO MEET 28-DAY MINIMUM COMPRESSIVE STRENGTHS IN VARIOUS ELEMENTS OF THE STRUCTURE AS FOLLOWS, UNLESS NOTED OTHERWISE:

ELEMENT	F'C	TYPE	MAX. AGG.	MAX. W/C	MAX. SLUMP
FOOTINGS	3,000	I/II	1 1/2"	0.49	4" (+/- 1")
WALLS AND PIERS	4,500	I/II	3/4"	0.46	4" (+/- 1")
INT. SLAB ON GRADE	4,000	I/II	3/4"	0.46	4" (+/- 1")

2. ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICAN CONCRETE INSTITUTE ACI 301, 318, AND SP-66 (315 INCLUDED AS A CHAPTER), LATEST EDITIONS.

3. PROVIDE NORMAL WEIGHT CONCRETE WITH CURED DENSITY OF 145 PCF AND AGGREGATE CONFORMING TO ASTM C33, UNLESS NOTED OTHERWISE.

4. CONCRETE EXPOSED TO MOISTURE AND FREEZING-AND-THAWING CYCLES (WITH OR WITHOUT EXPOSURE TO DE-ICING CHEMICALS) SHALL BE AIR-ENTRAINED.

5. THE USE OF CALCIUM CHLORIDE AND/OR OTHER CHLORIDE-CONTAINING AGENTS IS PROHIBITED. THE USE OF RECYCLED CONCRETE IS PROHIBITED. PLACEMENT WITHIN AND CONTACT BETWEEN ALUMINUM ITEMS AND CONCRETE IS PROHIBITED.

6. NO CONCRETE SHALL BE PLACED UNTIL CONCRETE DESIGN MIXES AND PREVIOUS TESTS HAVE BEEN SUBMITTED FOR EACH CLASS OF CONCRETE NOTED ABOVE AND HAVE BEEN APPROVED BY THE STRUCTURAL ENGINEER OF RECORD. CONCRETE PROPORTIONS SHALL BE BASED UPON FIELD EXPERIENCE AND/OR TRIAL BATCHES PER ACI 301 AND ACI 318. THE CONTROLLED CONCRETE TO BE USED SHALL CONFORM TO THE APPROVED DESIGN MIX. THE USE OF ANY ADDITIVES NOT PRESENT IN THE DESIGN MIX IS PROHIBITED. REPRESENTATIVE TEST CYLINDERS WILL BE TAKEN FROM THE CONCRETE PLACED EACH DAY IN ACCORDANCE WITH THE CONCRETE SPECIFICATIONS.

7. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING DRAWINGS FOR REVIEW OF ALL JOINTS IN THE CONCRETE WORK INCLUDING CONSTRUCTION, EXPANSION, CONTRACTION, AND MOVEMENT JOINTS. DRAWINGS SHALL BE SUBMITTED AT LEAST TWO WEEKS PRIOR TO EXPECTED START OF WORK. JOINT LOCATIONS SHALL COMPLY WITH RECOMMENDATIONS AND REQUIREMENTS DESCRIBED IN ACI 224, LATEST EDITION.

8. ALL CONCRETE STRUCTURAL MEMBERS SHALL BE PLACED FOR THEIR FULL DEPTHS IN ONE OPERATION. CONSTRUCTION JOINTS, SUCH AS DAY'S END PLACEMENT JOINTS, SHALL BE LOCATED IN THE MIDDLE THIRD OF THE SPAN AND BE ROUGHENED. REINFORCING TO RUN THROUGH THE JOINT, BULKHEAD, AND/OR KEY JOINTS. REMOVE LAITANCE PRIOR TO NEXT POUR.

9. ALL CONCRETE SHALL INCLUDE REINFORCEMENT. IF REINFORCEMENT IS NOT SPECIFICALLY INDICATED ON THE DRAWINGS, VERIFY WITH THE STRUCTURAL ENGINEER OF RECORD.

10. CONCRETE SHALL NOT BE PLACED UNTIL PREPARATIONS HAVE BEEN APPROVED BY THE TESTING AND INSPECTION AGENCY INCLUDING FORMWORK, REINFORCEMENT, EMBEDMENTS, AND ACCESSORIES.

CONCRETE REINFORCEMENT

1. REINFORCEMENT SHALL CONFORM TO THE FOLLOWING STANDARDS AND MATERIAL PROPERTIES.
   - DEFORMED BARS — ASTM A615, GRADE 60
   - WELDED WIRE REINFORCEMENT — ASTM A1064

2. UNLESS NOTED OTHERWISE, THE CONCRETE COVER FOR REINFORCEMENT IN CAST-IN-PLACE CONCRETE SHALL NOT BE LESS THAN THE FOLLOWING:
   - CAST AGAINST EARTH — 3"
   - EXPOSED TO EARTH/WEATHER — 2"
   - SLABS, WALLS, AND JOISTS — 3/4"
   - PIER TIES AND STIRRUPS — 1 1/2"

3. DETAIL REINFORCEMENT BASED ON THE PROJECT REQUIREMENTS, ACI 318, ACI 315R, AND THE ACI DETAILING MANUAL SP-066, LATEST EDITIONS.

4. WHERE A 90-DEGREE, 135-DEGREE, OR 180-DEGREE HOOK IS GRAPHICALLY INDICATED, PROVIDE CORRESPONDING ACI STANDARD HOOKS, UNLESS NOTED OTHERWISE.

5. DOWELS SHALL MATCH SIZE AND SPACING OF MAIN REINFORCEMENT, UNLESS NOTED OTHERWISE.

6. UNLESS NOTED OTHERWISE, ALL LAP SPLICES ARE TO BE CLASS B TENSION LAP SPLICES EXCEPT THE MINIMUM LAP LENGTH SHALL BE 24".

7. LAP WELDED WIRE REINFORCEMENT TWO PANEL SPACES. WIRE MESH SHALL BE SUPPORTED ON CHAIRS SO THAT PROPER COVER IS MAINTAINED. DO NOT USE THE METHOD OF PULLING UP WITH A HOOK DURING CONCRETE POURING TO POSITION THE REINFORCING.

8. UNLESS NOTED OTHERWISE, TERMINATE BARS AT DISCONTINUOUS ENDS WITH STANDARD HOOKS.

CONCRETE MASONRY

1. LOAD BEARING AND BACKUP WALL CONCRETE MASONRY CONSTRUCTION SHALL CONFORM TO THE FOLLOWING MATERIAL STANDARDS:
   - CONCRETE BLOCK — ASTM C90, NORMAL WEIGHT, TYPE 1
   - MORTAR — ASTM C270, TYPE M OR S PORTLAND/LIME
   - GROUT — ASTM C476 (3,000 PSI AT 28-DAYS)
   - REINFORCEMENT — ASTM A615, GRADE 60, (MIN. 24" LAP)
   - JOINT REINFORCEMENT — ASTM A951, LADDER TYPE, (MIN 9-GAGE), GALV.

2. UNLESS NOTED OTHERWISE, THE MASONRY COVER FOR REINFORCEMENT SHALL NOT BE LESS THAN THE FOLLOWING:
   - MASONRY FACE EXPOSED TO WEATHER
     - NO.6 BAR AND LARGER — 2"
     - NO.5 BAR AND SMALLER — 1 1/2"
   - MASONRY FACE NOT EXPOSED TO WEATHER — 1 1/2"
   - GALVANIZED WIRE JOINT REINFORCING — 3/4"

3. CONCRETE MASONRY ASSEMBLAGE SHALL DEVELOP 2,500 PSI COMPRESSIVE STRENGTH IN 28-DAYS, UNLESS NOTED OTHERWISE.

4. MORTAR FOR CONCRETE MASONRY SHALL BE TYPE M FOR ALL BELOW GRADE UNITS AND TYPE S AT ABOVE GRADE UNITS.

5. CALCIUM CHLORIDE SHALL NOT BE USED IN MORTAR OR GROUT.

6. LAY MASONRY IN RUNNING BOND, UNLESS NOTED OTHERWISE.

7. HOLLOW-UNIT MASONRY SHALL HAVE FACE SHELL BEDDING EXCEPT AT PIERS, COLUMNS, PILASTERS, THE COURSE IMMEDIATELY ABOVE FOUNDATIONS, AND WHERE CONTAINMENT OF GROUT OR LOOSE FILL INSULATION REQUIRES THAT WEB AND FACE SHELLS BE MORTARED. IN FULLY GROUTED OR UN-GROUTED MASONRY, ONLY THE FACE SHELLS NEED TO BE MORTARED.

8. PLACE LADDER TYPE HORIZONTAL JOINT REINFORCING WITH PREFORMED LAPPED CORNER REINFORCING AT 16" OC VERTICALLY IN ALL MASONRY WALLS U.O.N.

9. WALL SHALL BE REINFORCED VERTICALLY AS SHOWN ON STRUCTURAL DRAWINGS. REINFORCING SHALL BE FULLY GROUTED IN PLACE.

10. WALLS SHALL BE REINFORCED VERTICALLY AT WALL ENDS, CORNERS, AND ALL AROUND DOOR AND WINDOW OPENINGS WITH (2) #5 BARS, UNLESS NOTED OTHERWISE.

11. PROVIDE A CONTINUOUS BOND BEAM WITH (2) #5 BARS CONTINUOUS IN THE TOP COURSE OF ALL BLOCK WALLS, AT LOCATIONS WHERE FRAMING MEMBERS ARE BOLTED TO FACE OF CMU WALLS, BELOW BEAM BEARINGS, AND AT LOCATIONS INDICATED ON THE DRAWINGS. BOND BEAMS SHALL HAVE CORNER BARS AROUND CORNERS AND AT WALL INTERSECTIONS.

12. FILL ALL VOIDS AND BLOCK CELLS SOLIDLY WITH GROUT FOR A DISTANCE OF 24-INCHES BENEATH AND 16-INCHES EACH SIDE OF ALL BEAM REACTIONS OR OTHER CONCENTRATED LOADS, UNLESS NOTED OTHERWISE. GROUT SHALL BE VIBRATED AND RE-VIBRATED AFTER INITIAL WATER LOSS TO ENSURE COMPLETE FILLING OF CORES.

13. VERTICAL CONTROL JOINTS OF A KEY TYPE AS INDICATED ON THE PLANS ARE TO BE PLACED IN ALL MASONRY WALLS AT INTERVALS NOT TO EXCEED 24 FEET APART. THE CONTRACTOR SHALL FURNISH A CONTROL JOINT LOCATION PLAN FOR THE ARCHITECT'S APPROVAL IF THE PLANS DO NOT SUFFICIENTLY DESCRIBE THE LOCATION OF ALL REQUIRED CONTROL JOINTS.

BRICK MASONRY

1. BRICK MASONRY CONSTRUCTION SHALL CONFORM TO THE LATEST EDITIONS OF THE FOLLOWING STANDARDS:
   - BUILDING CODE REQUIREMENTS AND SPECIFICATION FOR MASONRY STRUCTURES, TMS 402/602.
   - TECHNICAL NOTES ON BRICK CONSTRUCTION, TECHNICAL NOTES 1-4B, BIA.
   - GUIDE SPECIFICATION FOR BRICK MASONRY, TECHNICAL NOTES 11A-E, BIA.
   - HOT AND COLD WEATHER MASONRY CONSTRUCTION BY THE MASONRY INDUSTRY COUNCIL.

2. BRICK UNITS FOR EXTERIOR USE AS A VENEER SHALL CONFORM TO ASTM C216 GRADE SW, WITH THE FOLLOWING EXCEPTIONS:
   - THE SATURATION COEFFICIENT (C/B) REQUIREMENT SHALL NOT BE WAIVED AS ALLOWED IN SECTIONS 5.1 AND 5.2 UNLESS ENGINEERING DATA AND FIELD RECORDS CAN BE PROVIDED WHICH DEMONSTRATES THE UNITS TO BE SUFFICIENTLY DURABLE AND RESISTANT TO FREEZE-THAW DETERIORATION.
   - INITIAL RATE OF ABSORPTION (IRA) SHALL NOT EXCEED 20 GRAMS PER MINUTE PER 30 SQUARE INCHES OF FACE AREA. FOR COLD WEATHER CONSTRUCTION, THE BRICKS SHALL HAVE A MINIMUM IRA OF 6 GRAMS PER MINUTE PER 30 SQUARE INCHES OF FACE AREA.

3. BRICK MANUFACTURER OR DISTRIBUTOR SHALL PROVIDE THE ARCHITECT WITH BRICK TEST DATA, CERTIFICATE OF COMPLIANCE WITH ASTM C216 GRADE SW, AND THE ABOVE NOTED EXCEPTIONS. BRICK UNITS SHALL NOT BE SHIPPED TO THE SITE UNTIL APPROVAL HAS BEEN RECEIVED FROM THE ARCHITECT.

4. MORTAR FOR BRICK MASONRY SHALL CONFORM TO ASTM C270. MORTAR SHALL BE TYPE M FOR ALL BELOW GRADE UNITS AND TYPE N ABOVE GRADE.

5. IN CMU AND BRICK CAVITY WALLS, PROVIDE CONTINUOUS LADDER TYPE HORIZONTAL JOINT REINFORCING AT 16" OC VERTICAL SPACING WITH ADJUSTABLE VENEER TIE SYSTEM AT 16" OC HORIZONTAL SPACING. THE SYSTEM SHALL PERMIT MOVEMENT OF THE TIE BOTH VERTICALLY AND HORIZONTALLY WITHIN THE PLANE OF THE WALL, BUT SHALL PREVENT MOVEMENT NORMAL TO THE PLANE OF THE WALL.

6. AT CONCRETE WALLS WITH BRICK VENEER, PROVIDE CONTINUOUS VERTICAL DOVETAIL SLOT ANCHORS AT 16" OC HORIZONTAL SPACING WITH TRIANGULAR WIRE TIES INTO THE VENEER AT 16" OC VERTICAL SPACING.

STRUCTURAL STEEL

1. STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS UNLESS NOTED OTHERWISE:

W-SHAPES, C-SHAPES, MC-SHAPES	ASTM A992, MIN 50 KSI
ANGLES, M-SHAPES, S-SHAPES, HP-SHAPES	ASTM A572, MIN 50 KSI
HSS-SHAPES	ASTM A500, GRADE C, MIN 50 KSI
PIPES	ASTM A53, GRADE B, MIN 35 KSI
ALL OTHER	ASTM A36, MIN 36 KSI

2. CONNECTION MATERIAL SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS OR AS NEEDED FOR CONNECTION DESIGN:

PLATES & BARS	ASTM A36, MIN 36 KSI
WT-SHAPES	ASTM A992, MIN 50 KSI
BOLTS	ASTM F3125
NUTS	ASTM A563
WASHERS	ASTM F436
THREADED RODS	ASTM A36, MIN 36 KSI
ANCHOR RODS	ASTM F1554 WELDABLE, GRADE 36
WELD ELECTRODES	E70XX

3. ALL BOLTED CONNECTIONS ARE BEARING TYPE CONNECTIONS MADE WITH 3/4" DIAMETER HIGH-STRENGTH BOLTS IN 13/16" DIAMETER OPEN HOLES INSTALLED TO THE SNUG TIGHT CONDITION, UNLESS NOTED OTHERWISE.

4. ALL CONNECTIONS NOT SPECIFICALLY DETAILED, SHALL BE BEARING TYPE CONNECTIONS DESIGNED AND DETAILED BY THE FABRICATOR TO SUPPORT THE END REACTIONS NOTED ON THE DRAWINGS.

5. SPLICES SHALL BE ALLOWED ONLY AT LOCATIONS SPECIFICALLY INDICATED ON THE STRUCTURAL DRAWINGS UNLESS APPROVED OTHERWISE BY THE STRUCTURAL ENGINEER OF RECORD.

6. DO NOT USE OVERSIZED OR SLOTTED HOLES FOR ANY CONNECTIONS UNLESS SPECIFICALLY INDICATED ON THE DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER OF RECORD.

7. STEEL THAT MAY ACCUMULATE WATER SHALL HAVE DRAIN HOLES. ALL DRAIN PENETRATIONS THROUGH MAIN MEMBERS SHALL NOT EXCEED 1-INCH IN DIAMETER AND SHALL BE GROUND SMOOTH. THESE DRAINS MUST BE KEPT CLEAN AND OPEN.

8. SHOW ALL COPES, HOLES, OPENINGS, AND MODIFICATIONS REQUIRED IN STRUCTURAL STEEL MEMBERS FOR ERECTION OR THE WORK OF OTHER TRADES ON THE SHOP DRAWINGS.

9. ALL WELDING SHALL BE DONE BY CERTIFIED, LICENSED WELDERS AND SHALL BE IN CONFORMANCE WITH THE STRUCTURAL WELDING CODE OF THE AMERICAN WELDING SOCIETY ANSI/AWS D1.1, LATEST EDITION.

10. HEADED STUD SHEAR CONNECTORS SHALL BE OF DIAMETER AND LENGTH CALLED OUT ON DRAWING, AND SHALL CONFORM TO ASTM A108, GRADE 1010 THROUGH 1020, AND TO THE REQUIREMENTS OF SECTION 7 OF AWS D1.1, TYPE B. WELD TO STEEL BY AUTOMATIC WELDING PROCESS (NOT STICK WELDED).

11. NO PENETRATIONS ARE PERMITTED THROUGH STRUCTURAL STEEL MEMBERS UNLESS INDICATED ON STRUCTURAL DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER OF RECORD.

12. APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD SHALL BE MANDATORY FOR THE USE OF CUTTING TORCH IN THE FIELD.

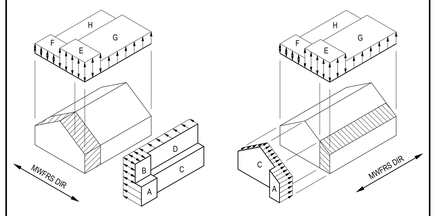
13. ALL GROUT UNDER STEEL PLATES SHALL BE NON-SHRINK "PRE-MIX" TYPE AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5,

MAIN WIND FORCE RESISTING SYSTEM (psf)
FLAT ROOFS

HORIZONTAL PRESSURES				VERTICAL PRESSURES				OVERHANG PRESSURES	
A	B	C	D	E	F	G	H	Eoh	Goh
± 21.0	± 10.9	± 13.9	± 6.5	± 25.2	± 14.3	± 17.5	± 11.1	± 35.3	± 27.6

MAIN WIND FORCE RESISTING SYSTEM (psf)
SLOPED ROOFS (2:12)

HORIZONTAL PRESSURES				VERTICAL PRESSURES				OVERHANG PRESSURES	
A	B	C	D	E	F	G	H	Eoh	Goh
± 23.7	± 9.8	± 15.7	± 5.7	± 25.2	± 15.4	± 17.5	± 11.8	± 35.3	± 27.6



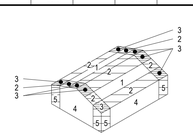
COMPONENTS AND CLADDING

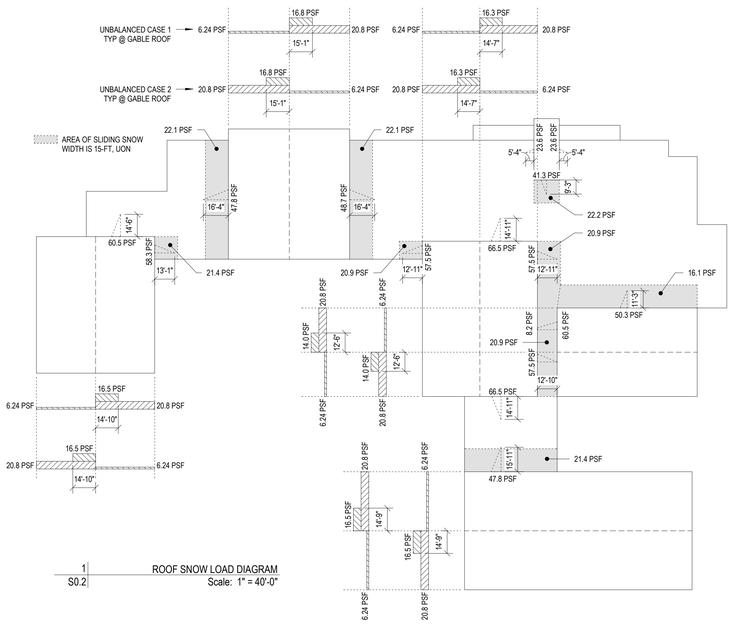
LOADS FOR FLAT ROOFS (psf)

ZONE	10 SF		20 SF		50 SF		100 SF	
1	16.0	-37.9	16.0	-35.4	16.0	-32.1	16.0	-29.6
2	16.0	-50.0	16.0	-46.8	16.0	-42.5	16.0	-39.3
3	16.0	-68.1	16.0	-61.7	16.0	-53.2	16.0	-46.8
4	23.8	-25.8	22.7	-24.7	21.3	-23.3	20.2	-22.2
5	23.8	-31.9	22.7	-29.7	21.3	-26.9	20.2	-24.7
2 ROH	-	-46.4	-	-42.1	-	-36.4	-	-32.1
3 ROH	-	-64.5	-	-57.0	-	-47.1	-	-39.6

LOADS FOR SLOPED ROOFS (2:12) (psf)

ZONE	10 SF		20 SF		50 SF		100 SF	
1	16.0	-44.0	16.0	-44.0	16.0	-26.7	16.0	-16.0
2	16.0	-64.1	16.0	-55.4	16.0	-44.0	16.0	-35.3
3	16.0	-76.2	16.0	-65.3	16.0	-50.8	16.0	-39.9
4	23.8	-25.8	22.7	-24.7	21.3	-23.3	20.2	-22.2
5	23.8	-31.9	22.7	-29.7	21.3	-26.9	20.2	-24.7
2 ROH	-	-70.6	-	-61.5	-	-49.4	-	-40.3
3 ROH	-	-96.8	-	-81.6	-	-61.5	-	-46.4





1 S0.2 ROOF SNOW LOAD DIAGRAM
Scale: 1" = 40'-0"

MASONRY CONSTRUCTION REQUIREMENTS PER TMS 602/ACI 530.1/ASCE 6

TMS 602 - TABLE 3 - MINIMUM VERIFICATION REQUIREMENTS

Minimum Verification	LVL 1	LVL 2	LVL 3
Prior to construction, verification of compliance of submittals	R	R	R
Prior to construction, verification of f'm and f'AAC, except where specifically exempted by the Code	NR	R	R
During construction, verification of Slump flow and Visual Stability Index (VSI) when self-consolidating grout is delivered to the project site	NR	R	R
During construction, verification of f'm and f'AAC for every 5,000 sq. ft.	NR	NR	R
During construction, verification of proportions of materials as delivered to the project site for premixed or preblended mortar, prestressing grout, and grout other than self-consolidating grout.	NR	NR	R

TMS 602 - TABLE 4 - MINIMUM SPECIAL INSPECTION REQUIREMENTS

Minimum Verification	LVL 1	LVL 2	LVL 3
As masonry construction begins, verify that the following are in compliance:			
Proportions of site-prepared mortar	NR	P	P
Grade, type, and size of reinforcement, connectors, anchor bolts	NR	P	P
Properties of thin-bed mortar for AAC masonry	NR	P	C
Prior to grouting, verify that the following are in compliance:			
Grout space	NR	P	C
Placement of reinforcement, connectors, and anchor bolts	NR	P	C
Proportions of site-prepared grout	NR	P	P
Verify compliance of the following during construction:			
Materials and procedures with the approved submittals	NR	P	P
Placement of masonry units and mortar joint construction	NR	P	P
Size and location of structural members	NR	P	P
Type, size, and location of anchors, including other details of anchorage of masonry to structural members, frames, or other construction	NR	P	C
Welding of reinforcement	NR	C	C
Preparation, construction, and protection of masonry during cold weather (temperature below 40F) or hot weather (temperature above 90F)	NR	P	P
Placement of AAC masonry units and construction of thin-bed mortar joints	NR	C/P	C
Observe preparation of grout specimens, mortar specimens, and/or prisms	NR	P	C

MICHIGAN BUILDING CODE 2015

TABLE 1705.2.3 - SPECIAL INSPECTIONS OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS

TYPE	CONTINUOUS	PERIODIC
Installation of open-web steel joists and joist girders		
a. End connections - welding or bolted	--	X
b. Bridging - horizontal or diagonal	--	
1. Standard bridging	--	X
2. Bridging that differs from the SJI specifications listed in Section 2207.1		X

TABLE 1705.3 - REQUIRED SPECIAL INSPECTION AND TESTS OF CONCRETE CONSTRUCTION

TYPE	CONTINUOUS	PERIODIC
Inspect reinforcement, including prestressing tendons, and verify placement.	--	X
Reinforcing bar welding:		
Verify weldability of reinforcing bars other than ASTM A706	--	X
Inspect single-pass fillet welds, maximum 5/16"		X
Inspect all other welds	X	
Inspect anchors cast in concrete	--	X
Inspect anchors post-installed in hardened concrete members		
Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	X	
Mechanical anchors and adhesive anchors not defined above		X
Verify use of required design mix	--	X
Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete	X	--
Inspect concrete and shotcrete placement for proper application techniques	X	--
Verify maintenance of specified curing temperature and techniques	--	X
Inspect prestressed concrete for:		
Application of prestressing forces	X	--
Grouting of bonded prestressing tendons	X	--
Inspect erection of precast concrete members	--	X
Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structure slabs	--	X
Inspect formwork for shape, location, and dimensions of the concrete member being formed	--	X

TABLE 1705.6 - REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS

TYPE	CONTINUOUS	PERIODIC
Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	--	X
Verify excavations are extended to proper depth and have reached proper material.	--	X
Perform classification and testing of compacted fill materials	--	X
Verify use of proper materials, densities, and lift thicknesses during placement and compaction of compacted fill.	X	--
Prior to placement of compacted fill, observe subgrade and verify that the site has been prepared properly.	--	X

STRUCTURAL STEEL REQUIREMENTS PER:
STEEL DECK INSTITUTE QUALITY CONTROL AND QUALITY ASSURANCE

TABLE 1.1 - INSPECTION OR EXECUTION TASKS PRIOR TO DECK PLACEMENT

TASK	QC	QA
Verify compliance of materials (deck and all accessories) with construction documents, including profiles, material properties, and base metal thickness	Perform	Perform
Document acceptance or rejection of deck and deck accessories	Perform	Perform

TABLE 1.2 - INSPECTION OR EXECUTION TASKS AFTER DECK PLACEMENT

TASK	QC	QA
Verify compliance of deck and all accessories installation with const. docs	Perform	Perform
Verify deck materials are represented by the mill certifications that comply with the construction documents	N/A	Perform
Document acceptance or rejection of installation of deck and accessories	Perform	Perform

TABLE 1.3 - INSPECTION OR EXECUTION TASKS PRIOR TO DECK WELDING

TASK	QC	QA
Welding procedure specifications (WSP) available	Observe	Observe
Manufacturer certifications for welding consumables available	Observe	Observe
Material identification (type/grade)	Observe	Observe
Check welding equipment	Observe	Observe

TABLE 1.4 - INSPECTION OR EXECUTION TASKS DURING DECK WELDING

TASK	QC	QA
Use of qualified welders	Observe	Observe
Control and handling of welding consumables	Observe	Observe
Environmental conditions (wind speed, moisture, temperature)	Observe	Observe
WSP followed	Observe	Observe

TABLE 1.5 - INSPECTION OR EXECUTION TASKS AFTER DECK WELDING

TASK	QC	QA
Verify size and location of welds, including support, sidelap, perimeter welds	Perform	Perform
Welds meet visual appearance criteria	Perform	Perform
Verify repair activities	Perform	Perform
Document acceptance or rejection of welds	Perform	Perform

TABLE 1.6 - INSPECTION OR EXECUTION TASKS PRIOR TO MECHANICAL FASTENING

TASK	QC	QA
Manufacturer installation instructions available for mechanical fasteners	Observe	Observe
Proper tools available for fastener installation	Observe	Observe
Proper storage for mechanical fasteners	Observe	Observe

TABLE 1.7 - INSPECTION OR EXECUTION TASKS DURING MECHANICAL FASTENING

TASK	QC	QA
Fasteners are positioned as required	Observe	Observe
Fasteners are installed in accordance with manufacturer's instructions	Observe	Observe

TABLE 1.8 - INSPECTION OR EXECUTION TASKS AFTER MECHANICAL FASTENING

TASK	QC	QA
Check spacing, type, and installation of support fasteners	Perform	Perform
Check spacing, type, and installation of sidelap fasteners	Perform	Perform
Check spacing, type, and installation of perimeter fasteners	Perform	Perform
Verify repair activities	Perform	Perform
Document acceptance or rejection of mechanical fasteners	Perform	Perform

STRUCTURAL STEEL REQUIREMENTS PER:
AISC 360 - CHAPTER N - QUALITY CONTROL AND QUALITY ASSURANCE

MINIMUM REQUIREMENTS

PER IBC 2015 1705.2.1 STRUCTURAL STEEL:
SPECIAL INSPECTIONS AND NONDESTRUCTIVE TESTING OF STEEL ELEMENTS IN BUILDINGS, STRUCTURES, AND PORTIONS THEREOF SHALL BE IN ACCORDANCE WITH THE QUALITY ASSURANCE INSPECTION REQUIREMENTS OF AISC 360

QC	QUALITY CONTROL	O	THE INSPECTOR SHALL OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.
QA	QUALITY ASSURANCE	P	THESE TASKS SHALL BE PERFORMED FOR EACH WELDED JOINT (OR BOLTED CONNECTION)

TABLE N5.4-1 - INSPECTION TASKS PRIOR TO WELDING

TASK	QC	QA
Welding qualification records and continuity records	P	O
Welding procedure specifications (WPS) available	P	P
Manufacturer certifications for welding consumables available	P	P
Material identification (type/grade)	O	O
Material identification system	O	O
Fit-up of groove welds (including joint geometry): • Joint penetrations • Dimensions (alignment, root opening, root face, bevel) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location) • Backing type and fit (if applicable)	O	O
Configuration and finish of access holes	O	O
Fit-up of fillet welds: • Dimensions (alignment, gaps at root) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location)	O	O
Check welding equipment	O	--

TABLE N5.4-2 - INSPECTION TASKS DURING WELDING

TASK	QC	QA
Control and handling of welding consumables: • Packaging • Exposure Control	O	O
No welding over cracked tack welds	O	O
Environmental conditions • Wind speed within limits • Precipitation and temperature	O	O
WPS followed: • Settings on welding equipment • Travel speed • Selected welding materials • Shielding gas type/flow rate • Preheat applied • Interpass temperature maintained (min/max) • Proper position (F, V, H, OH)	O	O
Welding techniques: • Interpass and final cleaning • Each pass within profile limitation • Each pass meets quality requirements	O	O
Placement and installation of steel headed stud anchors	P	P

TABLE N5.4-3 - INSPECTION TASKS AFTER WELDING

TASK	QC	QA
Welds cleaned	O	O
Size, length, and location of welds	P	P
Welds meet visual acceptance criteria: • Crack prohibition, weld/base-metal fusion, crater cross section • Weld profiles, weld size, undercut	P	P
Arc strikes	P	P
k-area	P	P
Weld access holes in rolled heavy shapes and built-up heavy shapes	P	P
Backing removed and weld tabs removed (if required)	P	P
Repair activities	P	P
Document acceptance or rejection of welded joint or member	P	P
No prohibited welds have been added without the approval of the EOR	O	O

TABLE N5.6-1 - INSPECTION TASKS PRIOR TO BOLTING

TASK	QC	QA
Manufacturer's certifications available for fastener materials	O	P
Fasteners marked in accordance with ASTM requirements	O	O
Correct fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane)	O	O
Correct bolting procedure selected for joint detail	O	O
Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements	O	O
Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used	P	O
Proper storage provided for bolts, nuts, washers, and other fastener components	O	O

TABLE N5.6-2 - INSPECTION TASKS DURING BOLTING

TASK	QC	QA
Fastener assemblies placed in all holes and washers and nuts are positioned as required	O	O
Joint brought to the snug-tight condition prior to pretensioning operation	O	O
Fastener component not turned by the wrench prevented from rotating	O	O
Fasteners are pretensioned in accordance with RSCS Specification, progressing systematically from the rigid point toward the free edges	O	O

TABLE N5.6-3 - INSPECTION TASKS AFTER BOLTING

TASK	QC	QA
Document acceptance or rejection of bolted connections	P	P

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

robert darvas associates
consulting structural engineers
440 south main street
ann arbor, mi 48104

Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

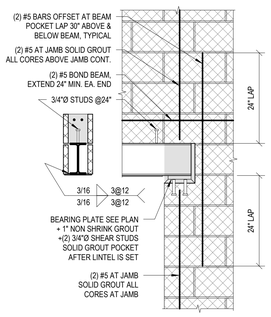
ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

RDA NO. 24064
JOB NO. 2616.01G

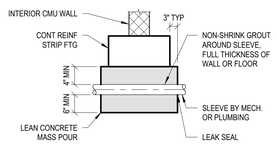
SHEET TITLE
SPECIAL INSPECTIONS

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
PROFESSIONAL ENGINEER

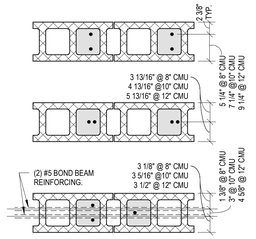
SHEET NO.
S0.2



24 S0.3 TYPICAL STEEL LINTEL BEARING
Not to Scale



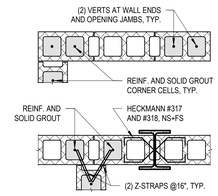
25 S0.3 PIPE THROUGH MASS POUR
Not to Scale



LAP SPLICES WILL BE REQUIRED FOR CONSTRUCTABILITY BUT ARE NOT SHOWN FOR CLARITY. LAPS IN VERTICAL BARS CENTERED IN WALL AT #5 BARS SHALL BE 30" IN LENGTH, LAPS IN VERTICAL BARS AT #4 BARS SHALL BE IN 24" IN LENGTH. LAP SPLICES IN VERTICAL BARS ARE TO BE MADE BY PLACING BARS SIDE BY SIDE WITHIN CORES SO DISTANCE FROM FACE OF CMU TO CENTER OF BAR IS MAINTAINED.

BOND BEAM BARS ARE TO BE CONTINUOUS WITH CORNER BARS LAPPED 24" MINIMUM.

18 S0.3 TYPICAL CMU WALL REINFORCING
Not to Scale



19 S0.3 TYPICAL CMU WALL AND CORNER REINFORCING
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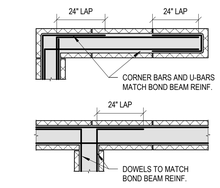
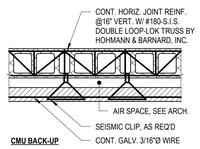
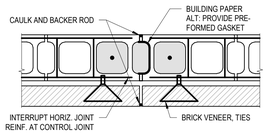


20 S0.3 TYPICAL BOND BEAM REINFORCING
Not to Scale

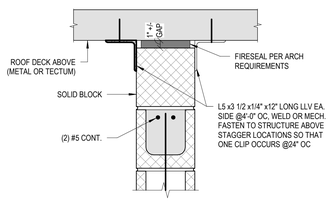


21 S0.3 TYPICAL MASONRY VENEER REINFORCING
Not to Scale

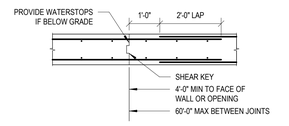


LOCATE JOINTS 24'-0" OC MAX SPACING UON. BRICK CONTROL JOINTS MAY BE OFFSET FROM CMU CONTROL JOINTS IF BRICK TIES PERMIT HORIZ. MOVEMENT PARALLEL TO THE PLANE OF THE WALL. LOCATE WHERE STRESS CONCENTRATIONS OCCUR, SUCH AS CHANGES IN WALL HEIGHT AND ADJACENT TO LARGE WALL OPENINGS, ETC.

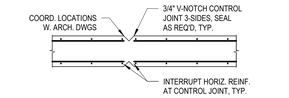
22 S0.3 MASONRY WALL CONTROL JOINT
Not to Scale



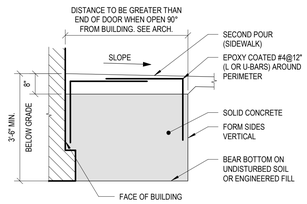
23 S0.3 INTERIOR CMU PARTITION
Not to Scale



13 S0.3 WALL CONSTRUCTION JOINT
Not to Scale



14 S0.3 WALL CONTROL JOINT
Not to Scale

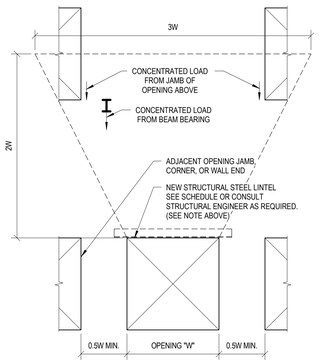


15 S0.3 FROST-PROOF ENTRY SLAB
Not to Scale

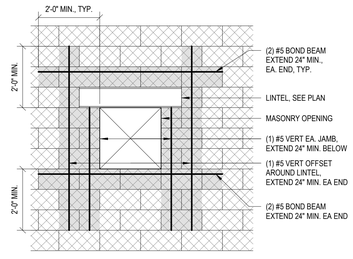
OPENING WIDTH "W"	SIZE OF LINTEL TO BE USED FOR EA. 4" OF WALL THICKNESS	MIN. BRG.
< 8"	NO LINTEL REQUIRED	--
8" TO 3'-0"	L3 1/2" x 3 1/2" x 1/4"	8"
3'-0" TO 3'-6"	L5" x 3 1/2" x 1/4" LLV	8"
3'-6" TO 5'-0"	L6" x 3 1/2" x 5/16" LLV	8"
5'-0" TO 6'-0"	L6" x 3 1/2" x 3/8" LLV	12"
> 6'-0"	CONSULT STRUCTURAL	

SELECT LINTEL FROM SCHEDULE ABOVE IF **BOTH** CONDITIONS BELOW ARE MET. IF EITHER CONDITION IS NOT MET, CONSULT THE PROJECT STRUCTURAL ENGINEER FOR LINTEL SIZE, BEARING, AND DETAIL UON

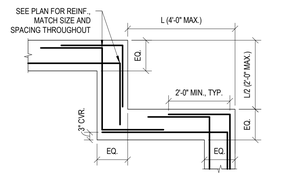
CONDITION A: NO CONCENTRATED LOADS FROM BEAM BEARING OR MASONRY JAMBS FALL WITHIN AN AREA 3W HORIZONTAL BY 2W VERTICAL
CONDITION B: THE DISTANCE TO THE CLOSEST ADJACENT OPENING, JAMB, CORNER, OR WALL END IS GREATER THAN 0.5W



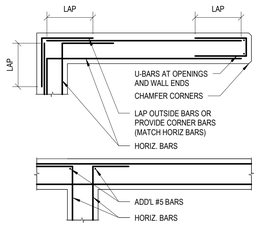
16 S0.3 TYPICAL STEEL LINTEL SCHEDULE
Not to Scale



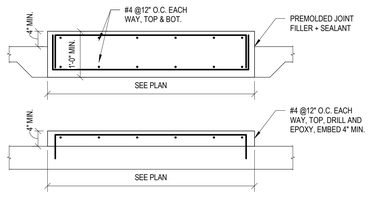
17 S0.3 REINFORCING AROUND CMU OPENING
Not to Scale



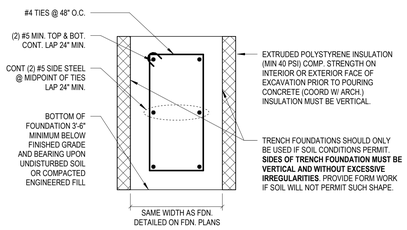
7 S0.3 STEPPED FOUNDATION DETAIL
Not to Scale



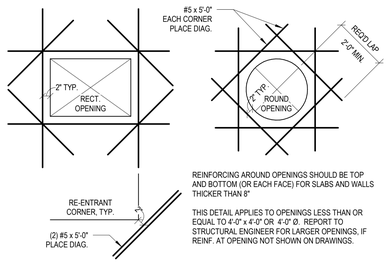
8 S0.3 TYPICAL WALL AND CORNER REINFORCING
Not to Scale



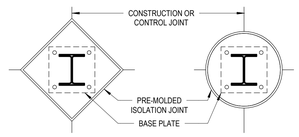
9 S0.3 INTERIOR CONCRETE MECHANICAL PAD
Not to Scale



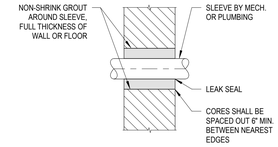
10 S0.3 TRENCH FOUNDATION
Not to Scale



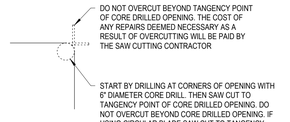
11 S0.3 REINFORCING AT CONCRETE OPENINGS
Not to Scale



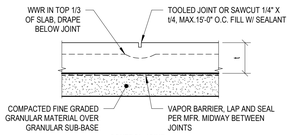
12 S0.3 COLUMN ISOLATION JOINTS
Not to Scale



1 S0.3 CORING AND SLEEVING IN EXISTING CONCRETE
Not to Scale

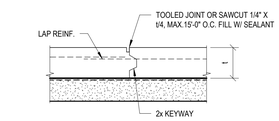


2 S0.3 NEW OPENINGS IN EXISTING CONCRETE
Not to Scale



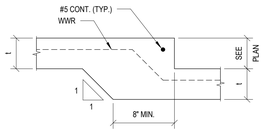
CONTROL JOINT

- PURPOSE OF SLAB ON GRADE JOINTING IS TO BREAK THE SLAB POURS INTO SIZES THAT ARE MANAGEABLE FOR FINISHING AND TO LIMIT TOTAL SHRINKAGE.
- PLACE CONSTRUCTION JOINTS SUCH THAT THE MAXIMUM SLAB POUR SIZE IS LIMITED TO 60'-0" x 60'-0". THIS POUR LIMITATION MAY BE EXPANDED BASED ON CONTRACTOR'S METHOD OF PLACEMENT, CURING TECHNIQUE, AND EXPERIENCE IN CONTROLLING CRACKING IN SIMILAR POUR SIZES. A POUR PLAN SHALL BE SUBMITTED AND REVIEWED BY RDA. ANY COMMENTS MADE BY RDA ARE ONLY RECOMMENDATIONS AS THE CONTRACTOR IS ULTIAMTELY RESPONSIBLE FOR CONCRETE PLACEMENT AND ASSOCIATED RESULTS.
- SLAB POURS SHALL BE SQUARE IF POSSIBLE, BUT IN NO CASE SHALL THEY BE GREATER THAN TWICE AS LONG AS THEY ARE WIDE.
- CONTROL JOINTS SHALL SUBDIVIDE A SLAB POUR INTO APPROX. 15'-0" x 15'-0" OR SMALLER AREAS.
- JOINTS SHALL BE PLACED WHERE POSSIBLE TO ALIGN WITH MAIN COLUMN LINES AND TO ELIMINATE RE-ENTRANT CORNERS IN THE SLAB.
- PROVIDE SLAB JOINT PATTERN AS SHOWN ON THE DRAWINGS, OR IF NOT SHOWN, CONTRACTOR SHALL SUPPLY A PROPOSED JOINT LAYOUT PATTER TO THE ARCHITECT FOR APPROVAL.

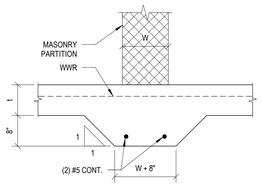


CONSTRUCTION JOINT

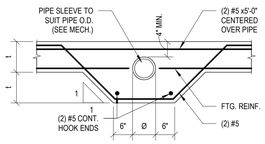
3 S0.3 TYPICAL SLAB ON GRADE JOINTS
Not to Scale



4 S0.3 DEPRESSION IN SLAB ON GRADE
Not to Scale



5 S0.3 THICKENED SLAB UNDER MASONRY PARTITION WALL
Not to Scale



6 S0.3 PIPE THROUGH FOUNDATION
Not to Scale

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

robert darvas associates
consulting structural engineers
440 south main street
ann arbor, mi 48104

Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

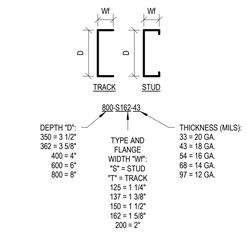
ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

RDA NO. 24064
JOB NO. 2616.01G

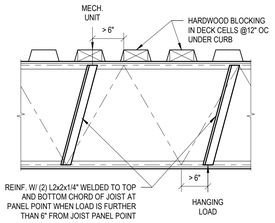
SHEET TITLE
TYPICAL DETAILS

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
PROFESSIONAL ENGINEER

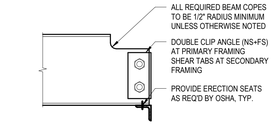
SHEET NO.
S0.3



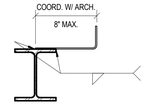
12 CFMF DESIGNATIONS
S0.4 Not to Scale



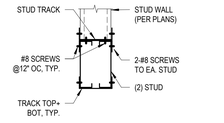
7 TYPICAL JOIST REINFORCING
S0.4 Not to Scale



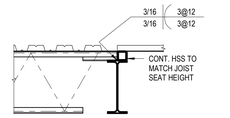
1 TYPICAL BEAM COPES
S0.4 Not to Scale



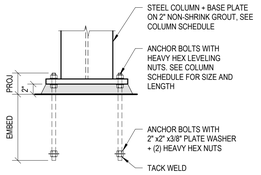
2 TYPICAL BENT PLATE EDGE
S0.4 Not to Scale



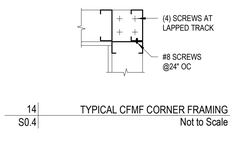
13 TYPICAL CFMF BOX HEADERS
S0.4 Not to Scale



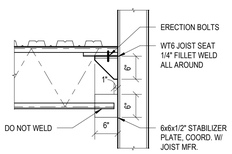
8 CHANGE IN DECK DIRECTION
S0.4 Not to Scale



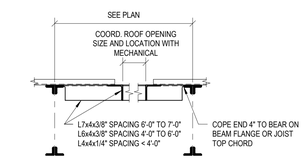
3 TYPICAL ANCHOR ROD DETAIL
S0.4 Not to Scale



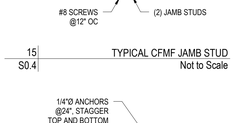
14 TYPICAL CFMF CORNER FRAMING
S0.4 Not to Scale



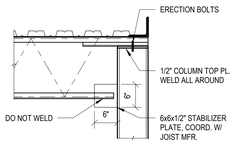
9 JOIST BEARING INTO COLUMN
S0.4 Not to Scale



4 ANGLE FRAME FOR MECHANICAL ROOF OPENINGS
S0.4 Not to Scale

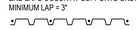


15 TYPICAL CFMF JAMB STUD
S0.4 Not to Scale



10 JOIST BEARING ONTO COLUMN
S0.4 Not to Scale

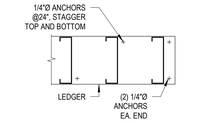
ROOF DECK ATTACHMENT PATTERN:
FASTEN USING 36/4 PATTERN AT END LAPS & INT. SUPPORTS @ 12" OC
FASTEN AT EDGES, PERIMETER, AND OPENINGS @ 6" OC
USE 3/4"Ø PUDDLE WELD, HILTI X-ENP 19, OR HILTI X-HSN 24
FASTEN SIDE LAPS AT 12" OC WITH #10 SELF-DRILLING SCREWS
END LAPS OCCUR AT SUPPORTS ONLY
MINIMUM LAP = 3"



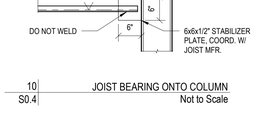
AT ALL SUPPORTS

NOTE:
HILTI X-ENP 19 FASTENERS FOR STEEL THICKNESSES 1/8" TO 3/8"
HILTI X-HSN 24 FASTENERS FOR STEEL THICKNESSES 1/4" & GREATER

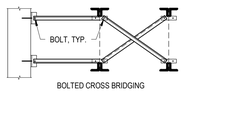
5 STEEL DECK FASTENING
S0.4 Not to Scale



16 TYPICAL CFMF LEDGER
S0.4 Not to Scale

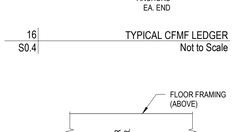


BOLTED CROSS BRIDGING

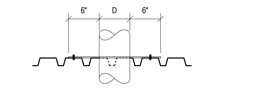


WELDED CONT. BRIDGING

11 JOIST BRIDING DETAILS
S0.4 Not to Scale



17 DEFLECTION TRACK DETAIL
S0.4 Not to Scale



D≤ 6"Ø (ONE RIB REMOVED) NO REINFORCING REQ'D
6"Ø< D≤ 8"Ø PROVIDE 0.045" MIN. PLATE, EXTEND 6" BEYOND OPENING ALL SIDES,SCREW @12" OC ALL AROUND
D> 8"Ø PROVIDE TYPICAL ANGLE FRAME

6 REINFORCING OR STEEL ROOF DECKING
S0.4 Not to Scale

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

robert darvas associates
consulting structural engineers
440 south main street
ann arbor, mi 48104

Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
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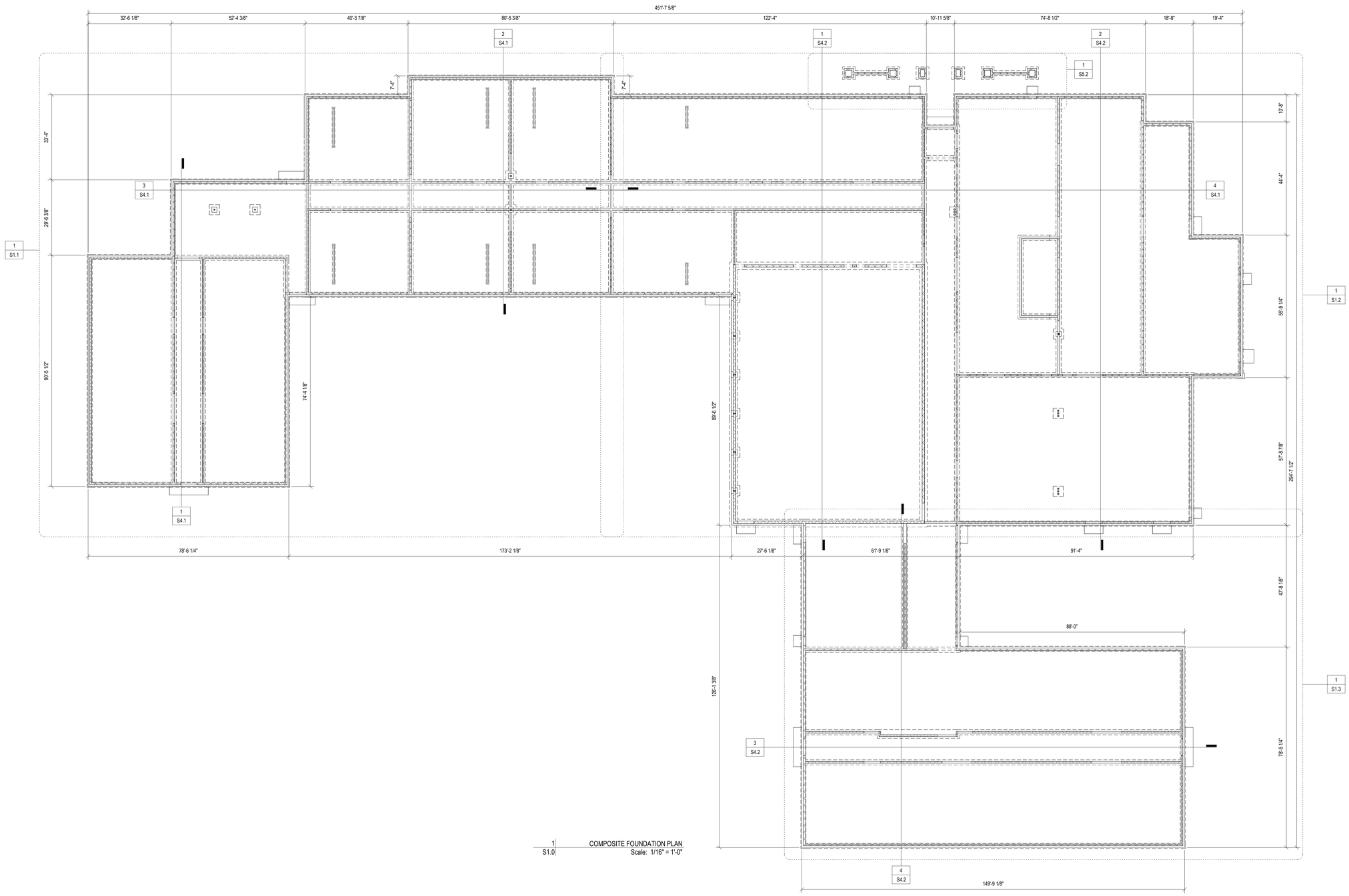
JOB NO. 2616.01G

SHEET TITLE
TYPICAL DETAILS

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
PROFESSIONAL ENGINEER

SHEET NO.
S0.4



1 S1.0 COMPOSITE FOUNDATION PLAN
Scale: 1/16" = 1'-0"

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

robert darvas associates
consulting structural engineers
440 south main street
ann arbor, mi 48104

Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

N

RDA NO. 24064
JOB NO. 2616.01G

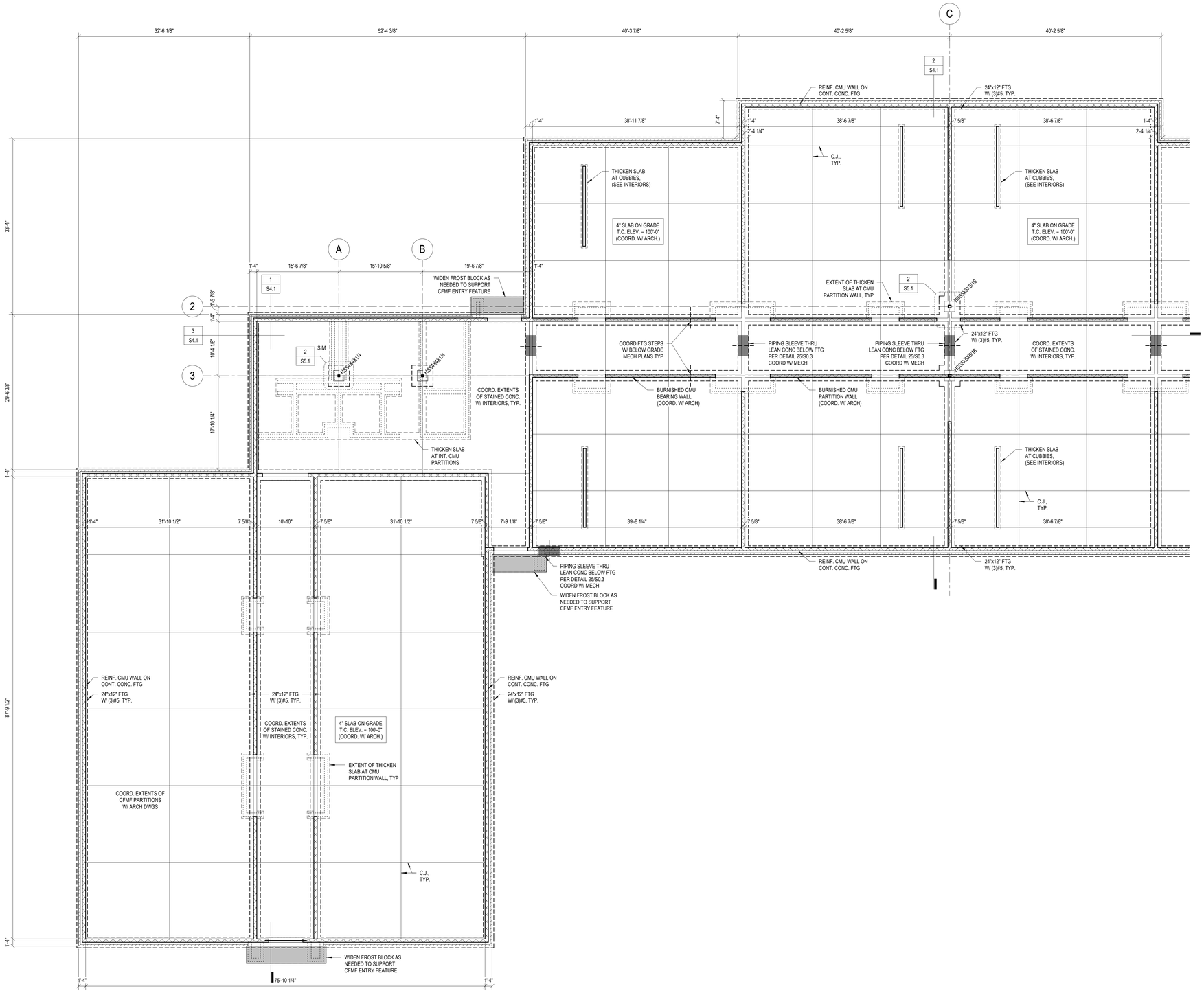
SHEET TITLE

COMPOSITE FOUNDATION PLAN

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER

SHEET NO.

S1.0



1 S1.1 FOUNDATION PLAN UNIT 100
Scale: 1/8" = 1'-0"

FOUNDATION PLAN NOTES:

1. SEE SHEETS S0.1, S0.2, S0.3, & S0.4 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
4. ALL FOUNDATION CONDITIONS ARE TO BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO REBAR AND CONCRETE PLACEMENT, MINIMUM ALLOWABLE BEARING PRESSURE = 3,000 PSF
5. SLAB ON GRADE TO BE 4" THICK (MINIMUM), REINFORCE WITH 6x6 W2.9xW2.9 WWR IN TOP 1/3 OF SLAB
6. PROVIDE BOND BREAKER BETWEEN SLAB & CONCRETE FOUNDATION ELEMENTS, BETWEEN SLAB & CONCRETE WALLS, AND BETWEEN SLAB & CMU FOUNDATION ELEMENTS
7. COORDINATE SLAB ON GRADE CONTROL JOINT LOCATIONS WITH ARCHITECTURAL DRAWINGS
8. COORDINATE EXTENTS OF MASONRY WITH ARCHITECTURAL DRAWINGS
9. COORDINATE CMU CONTROL JOINTS WITH ARCHITECTURAL DRAWINGS
10. ALL CORES IN MASONRY WALL BELOW GRADE TO BE SOLID GROUTED. ANCHOR TO CONCRETE FOUNDATION WITH #5 DOWEL @ 32" O.C.
11. CMU WALLS TO BE REINFORCED WITH #5 VERTICAL @ 32" O.C. IN SOLID GROUTED CORES + (2) #5 CONT BOND BEAM AT EACH FLOOR LEVEL AND AT TOP OF WALL, TYP U.O.N.
12. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
13. ALL MASONRY WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C. VERTICAL SPACINGALL INTERIOR MASONRY PARTITIONS SHALL BE FULL HEIGHT, BRACED BY THE FLOOR OR ROOF DECK ABOVE
14. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
15. ALL STEEL EXPOSED TO THE ELEMENTS OR LOCATED IN EXTERIOR WALLS TO BE HOT-DIP GALVANIZED

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Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

N

RDA NO. 24064
JOB NO. 2616.01G

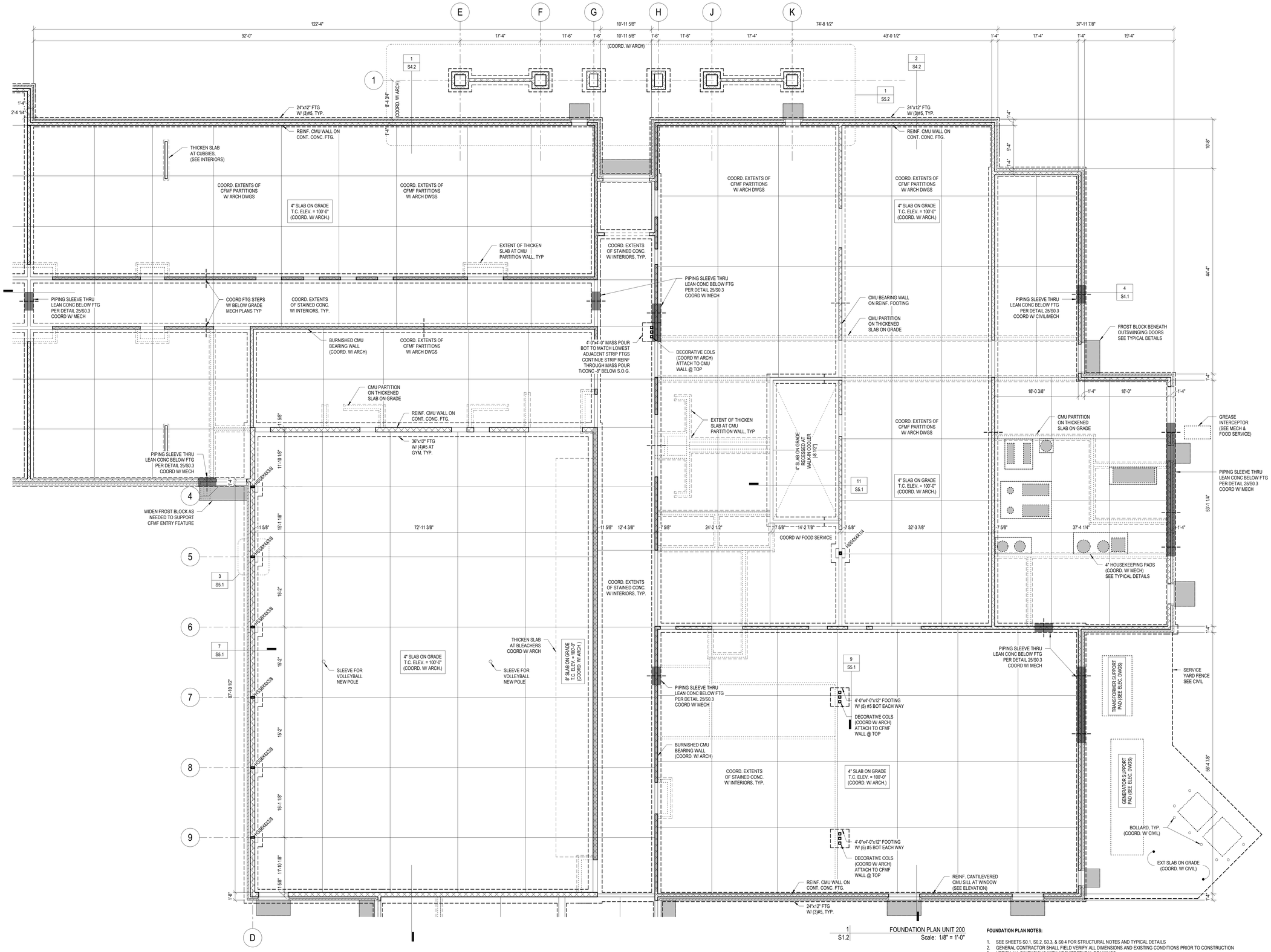
SHEET TITLE

FOUNDATION PLAN - UNIT 100

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
PROFESSIONAL ENGINEER

SHEET NO.

S1.1



1 S1.2 FOUNDATION PLAN UNIT 200
Scale: 1/8" = 1'-0"

FOUNDATION PLAN NOTES:

1. SEE SHEETS S0.1, S0.2, S0.3, & S0.4 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
4. ALL FOUNDATION CONDITIONS ARE TO BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO REBAR AND CONCRETE PLACEMENT. MINIMUM ALLOWABLE BEARING PRESSURE = 3,000 PSF
5. SLAB ON GRADE TO BE 4" THICK (MINIMUM). REINFORCE WITH 6x6 W2.9xW2.9 WWR IN TOP 1/3 OF SLAB
6. PROVIDE BOND BREAKER BETWEEN SLAB & CONCRETE FOUNDATION ELEMENTS, BETWEEN SLAB & CONCRETE WALLS, AND BETWEEN SLAB & CMU FOUNDATION ELEMENTS
7. COORDINATE SLAB ON GRADE CONTROL JOINT LOCATIONS WITH ARCHITECTURAL DRAWINGS
8. COORDINATE EXTENTS OF MASONRY WITH ARCHITECTURAL DRAWINGS
9. COORDINATE CMU CONTROL JOINTS WITH ARCHITECTURAL DRAWINGS
10. ALL CORES IN MASONRY WALL BELOW GRADE TO BE SOLID GROUTED. ANCHOR TO CONCRETE FOUNDATION WITH #5 DOWEL @ 32" O.C.
11. CMU WALLS TO BE REINFORCED WITH #5 VERTICAL @ 32" O.C. IN SOLID GROUTED CORES + (2) #5 CONT BOND BEAM AT EACH FLOOR LEVEL AND AT TOP OF WALL, TYP U.O.N.
12. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
13. ALL MASONRY WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C. VERTICAL SPACINGALL INTERIOR MASONRY PARTITIONS SHALL BE FULL HEIGHT, BRACED BY THE FLOOR OR ROOF DECK ABOVE
14. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
15. ALL STEEL EXPOSED TO THE ELEMENTS OR LOCATED IN EXTERIOR WALLS TO BE HOT-DIP GALVANIZED

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Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

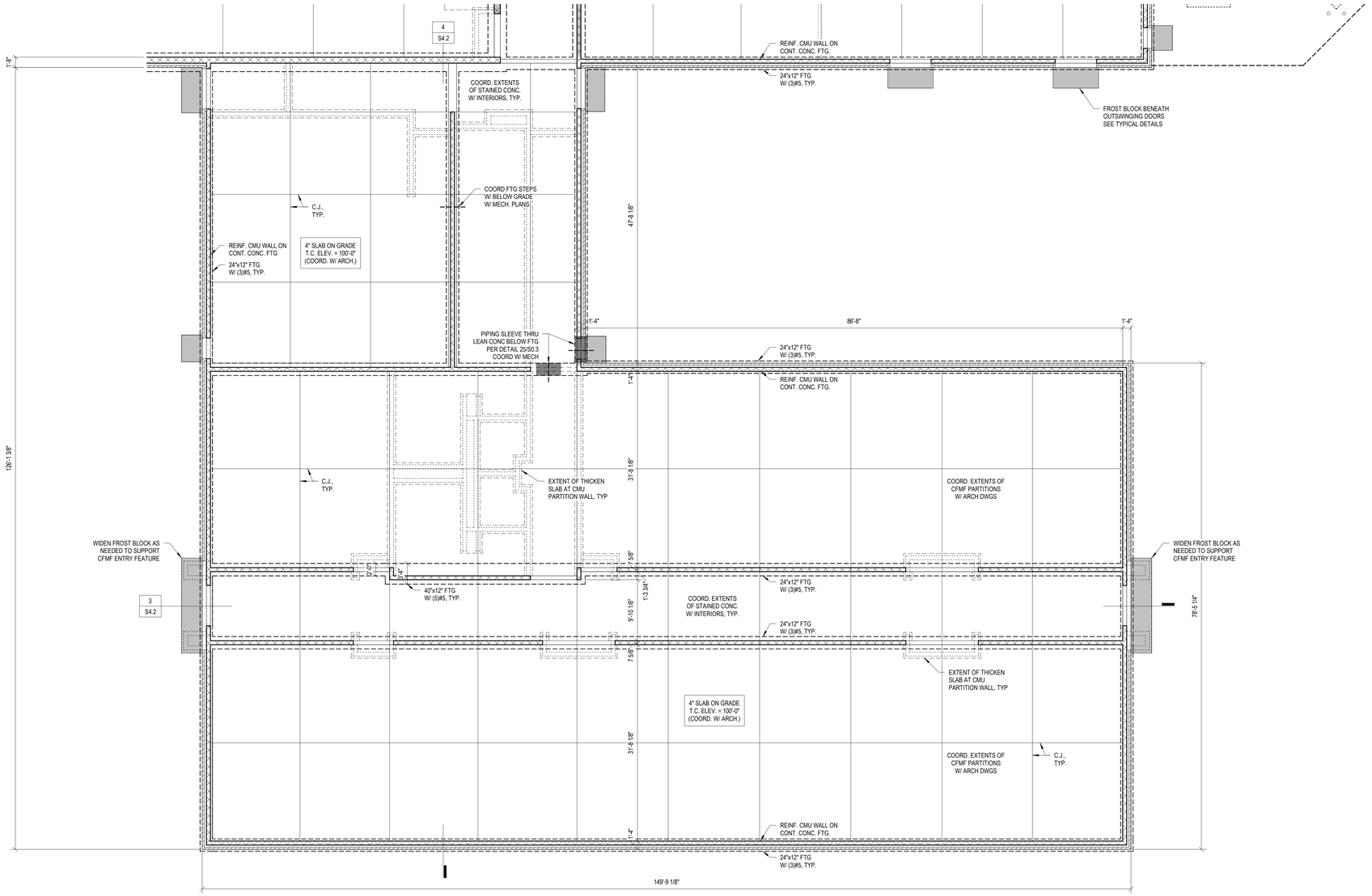
RDA NO. 24064
JOB NO. 2616.01G

N

SHEET TITLE
FOUNDATION PLAN - UNIT 200

SHEET NO.
S1.2

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER



1 S1.3 FOUNDATION PLAN UNIT 300
Scale: 1/8" = 1'-0"

FOUNDATION PLAN NOTES:

1. SEE SHEETS S0.1, S0.2, S0.3, & S0.4 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
4. ALL FOUNDATION CONDITIONS ARE TO BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO REBAR AND CONCRETE PLACEMENT. MINIMUM ALLOWABLE BEARING PRESSURE = 3,000 PSF
5. SLAB ON GRADE TO BE 4" THICK (MINIMUM). REINFORCE WITH 6x6 W2.9xW2.9 WWR IN TOP 1/3 OF SLAB
6. PROVIDE BOND BREAKER BETWEEN SLAB & CONCRETE FOUNDATION ELEMENTS, BETWEEN SLAB & CONCRETE WALLS, AND BETWEEN SLAB & CMU FOUNDATION ELEMENTS
7. COORDINATE SLAB ON GRADE CONTROL JOINT LOCATIONS WITH ARCHITECTURAL DRAWINGS
8. COORDINATE EXTENTS OF MASONRY WITH ARCHITECTURAL DRAWINGS
9. COORDINATE CMU CONTROL JOINTS WITH ARCHITECTURAL DRAWINGS
10. ALL CORES IN MASONRY WALL BELOW GRADE TO BE SOLID GROUTED. ANCHOR TO CONCRETE FOUNDATION WITH #5 DOWEL @ 32" O.C.
11. CMU WALLS TO BE REINFORCED WITH #5 VERTICAL @ 32" O.C. IN SOLID GROUTED CORES + (2) #5 CONT BOND BEAM AT EACH FLOOR LEVEL AND AT TOP OF WALL, TYP U.O.N.
12. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
13. ALL MASONRY WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C. VERTICAL SPACINGALL INTERIOR MASONRY PARTITIONS SHALL BE FULL HEIGHT, BRACED BY THE FLOOR OR ROOF DECK ABOVE
14. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
15. ALL STEEL EXPOSED TO THE ELEMENTS OR LOCATED IN EXTERIOR WALLS TO BE HOT-DIP GALVANIZED

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Lewton School

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Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

RDA NO. 24064
JOB NO. 2616.01G

N

SHEET TITLE

FOUNDATION PLAN - UNIT 300

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER

SHEET NO.

S1.3



1 S2.0 COMPOSITE ROOF FRAMING PLAN
Scale: 1/16" = 1'-0"

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KEY PLAN

N

RDA NO. 24064
JOB NO. 2616.01G

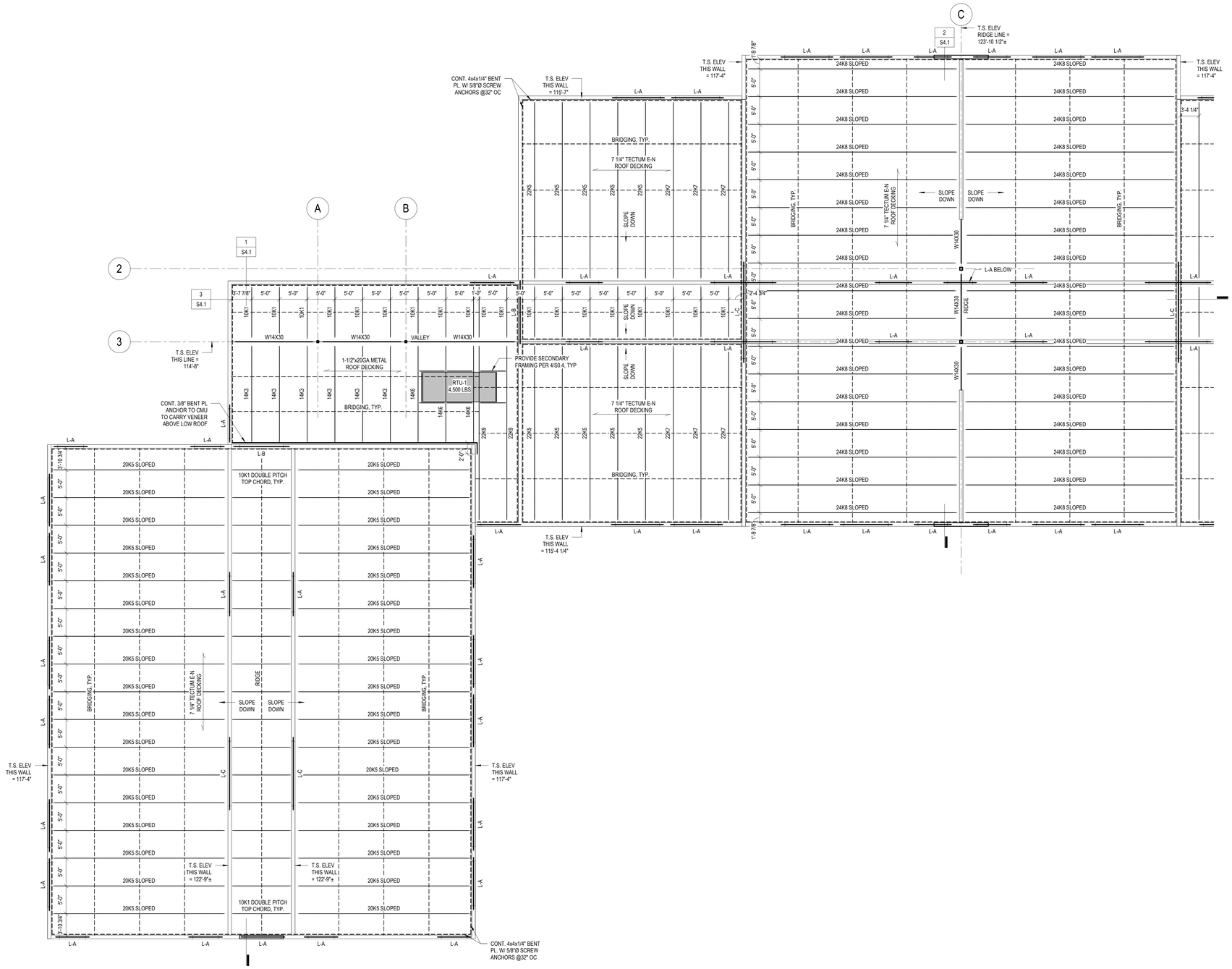
SHEET TITLE

COMPOSITE ROOF FRAMING PLAN

SHEET NO.

S2.0

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER



1 S2.1 ROOF FRAMING PLAN UNIT 100
Scale: 1/8" = 1'-0"

LINTEL SCHEDULE::

ALL LINTELS TO BEAR 8" MIN AT EACH END U.O.N. LENGTH OF BOTTOM PLATE TO BE 1" LESS THAN OPENING; WIDTH TO BE 1" LESS THAN NOMINAL WIDTH. STEEL TO BE CENTERED ON CMU WYTHE. BOTTOM PLATE TO BE OFFSET AS REQUIRED TO SUPPORT WALL EDGES & VENEERA ABOVE.

A. L-A: W8x18 + 3/8" CONT BOT PLATE; ENDS TO BEAR ON 7"x7"x1/2" BEARING PALTE W/ (2) 1/2" Ø HEADED STUDS
B. L-B: W8x24 + 3/8" CONT BOT PLATE; ENDS TO BEAR ON 7"x7"x1/2" BEARING PALTE W/ (2) 1/2" Ø HEADED STUDS
C. L-C: W16x26 + 3/8" CONT BOT PLATE; ENDS TO BEAR ON 7"x7"x1/2" BEARING PALTE W/ (2) 1/2" Ø HEADED STUDS

FRAMING PLAN NOTES:

1. SEE SHEETS S0.1, S0.2, S0.3, & S0.4 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
4. CMU WALLS TO BE REINFORCED WITH #5 VERTICAL @ 32" O.C. IN SOLID GROUTED CORES + (2) #5 CONT BOND BEAM AT EACH FLOOR LEVEL AND AT TOP OF WALL, TYP U.O.N.
5. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
6. ALL MASONRY WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C.
7. ALL INTERIOR MASONRY PARTITIONS SHALL BE FULL HEIGHT, BRACED BY THE FLOOR OR ROOF DECK ABOVE
8. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
9. T.S. ELEVATION GIVEN AT UNDERSIDE OF DECK
10. [± x'-xx"] DENOTES ELEVATON FROM GIVEN DATUM
11. (xx) INDICATES NUMBER OF 3/4" Ø HEADED SHEAR STUDS EQUALLY SPACED ALONG THE LENGTH OF THE BEAM
12. xxk AT BEAM ENDS DENOTES FACTORED BEAM REACTIONS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM REACTION = 25 KIPS)
13. xxk-ft AT BEAM ENDS DENOTES FACTORED BEAM MOMENTS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM END MOMENT = 50 K-FT)
14. ALL STEEL EXPOSED TO THE ELEMENTS OR LOCATED IN EXTERIOR WALLS TO BE HOT-DIP GALVANIZED

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
LIC. No. 6201063383
PROFESSIONAL ENGINEER

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Lansing School District

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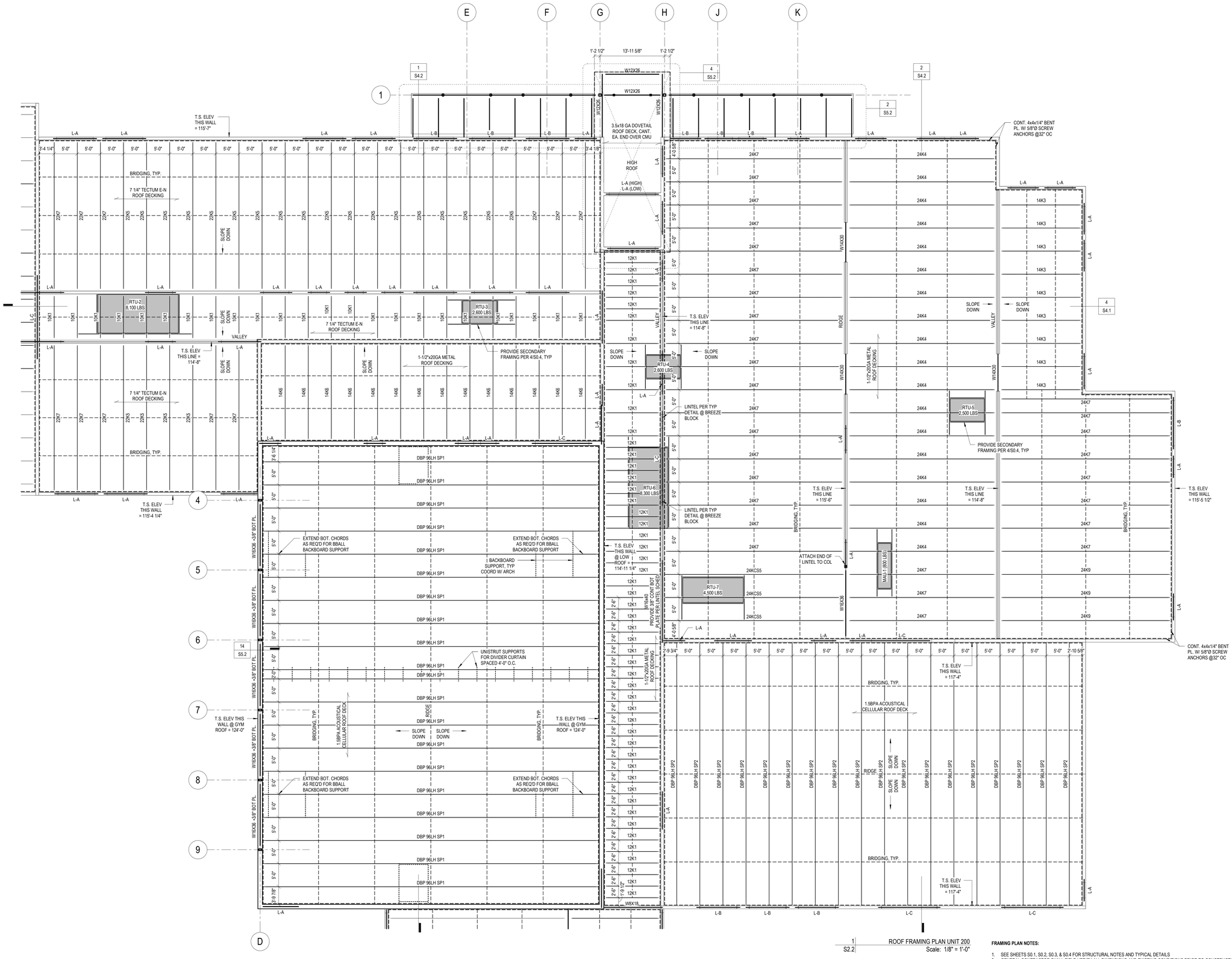
KEY PLAN

N

RDA NO. 24064
JOB NO. 2616.01G

SHEET TITLE
ROOF FRAMING PLAN - UNIT 100

SHEET NO.
S2.1



1 S2.2 ROOF FRAMING PLAN UNIT 200
Scale: 1/8" = 1'-0"

LINTEL SCHEDULE::

ALL LINTELS TO BEAR 8" MIN AT EACH END U.O.N. LENGTH OF BOTTOM PLATE TO BE 1" LESS THAN OPENING; WIDTH TO BE 1" LESS THAN NOMINAL WIDTH. STEEL TO BE CENTERED ON CMU WYTHE. BOTTOM PLATE TO BE OFFSET AS REQUIRED TO SUPPORT WALL EDGES & VENEERA ABOVE.

A. L-A: W8x18 + 3/8" CONT BOT PLATE; ENDS TO BEAR ON 7"x7"x1/2" BEARING PALTE W/ (2) 1/2" Ø HEADED STUDS
B. L-B: W8x24 + 3/8" CONT BOT PLATE; ENDS TO BEAR ON 7"x7"x1/2" BEARING PALTE W/ (2) 1/2" Ø HEADED STUDS
C. L-C: W16x26 + 3/8" CONT BOT PLATE; ENDS TO BEAR ON 7"x7"x1/2" BEARING PALTE W/ (2) 1/2" Ø HEADED STUDS

FRAMING PLAN NOTES:

1. SEE SHEETS S0.1, S0.2, S0.3, & S0.4 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
4. CMU WALLS TO BE REINFORCED WITH #5 VERTICAL @ 32" O.C. IN SOLID GROUTED CORES + (2) #5 CONT BOND BEAM AT EACH FLOOR LEVEL AND AT TOP OF WALL, TYP U.O.N.
5. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
6. ALL MASONRY WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C.
7. ALL INTERIOR MASONRY PARTITIONS SHALL BE FULL HEIGHT, BRACED BY THE FLOOR OR ROOF DECK ABOVE
8. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
9. T.S. ELEVATION GIVEN AT UNDERSIDE OF DECK
10. [±.x'-x"] DENOTES ELEVATON FROM GIVEN DATUM
11. (xx) INDICATES NUMBER OF 3/4" Ø HEADED SHEAR STUDS EQUALLY SPACED ALONG THE LENGTH OF THE BEAM
12. xxk AT BEAM ENDS DENOTES FACTORED BEAM REACTIONS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM REACTION = 25 KIPS)
13. xxk-ft AT BEAM ENDS DENOTES FACTORED BEAM MOMENTS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM END MOMENT = 50 K-FT)
14. ALL STEEL EXPOSED TO THE ELEMENTS OR LOCATED IN EXTERIOR WALLS TO BE HOT-DIP GALVANIZED

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Lansing School District

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BID & CONSTRUCTION	10/10/2025

KEY PLAN

RDA NO. 24064
JOB NO. 2616.01G

N

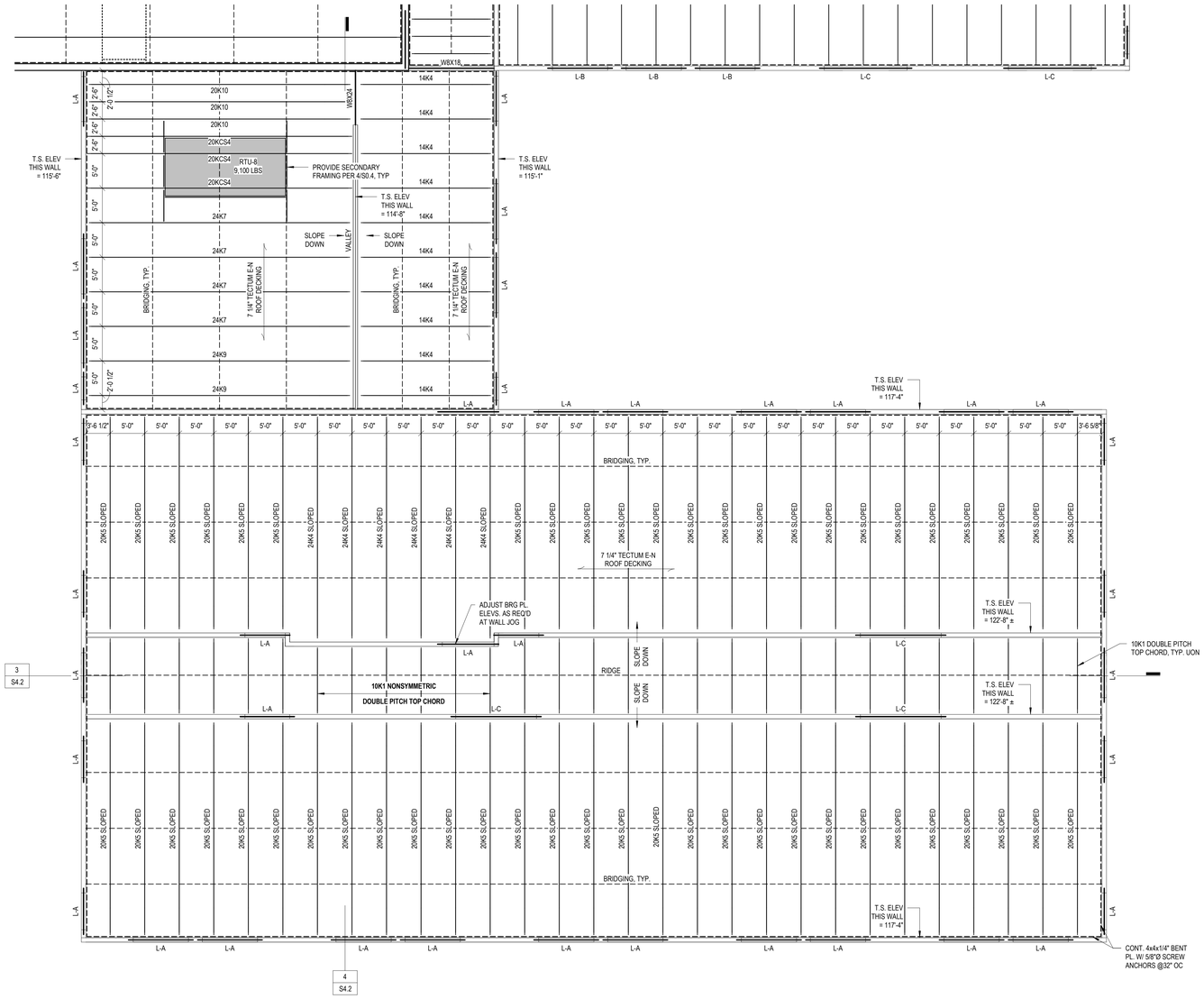
SHEET TITLE

ROOF FRAMING PLAN - UNIT 200

SHEET NO.

S2.2

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
PROFESSIONAL ENGINEER



1 S2.3 ROOF FRAMING PLAN UNIT 300
Scale: 1/8" = 1'-0"

LINTEL SCHEDULE::

ALL LINTELS TO BEAR 8" MIN AT EACH END U.O.N. LENGTH OF BOTTOM PLATE TO BE 1" LESS THAN OPENING; WIDTH TO BE 1" LESS THAN NOMINAL WIDTH. STEEL TO BE CENTERED ON CMU WYTHE. BOTTOM PLATE TO BE OFFSET AS REQUIRED TO SUPPORT WALL EDGES & VENEERA ABOVE.

A. L-A: W8x18 + 3/8" CONT BOT PLATE; ENDS TO BEAR ON 7"x7"x1/2" BEARING PALTE W/ (2) 1/2" Ø HEADED STUDS
B. L-B: W8x24 + 3/8" CONT BOT PLATE; ENDS TO BEAR ON 7"x7"x1/2" BEARING PALTE W/ (2) 1/2" Ø HEADED STUDS
C. L-C: W16x26 + 3/8" CONT BOT PLATE; ENDS TO BEAR ON 7"x7"x1/2" BEARING PALTE W/ (2) 1/2" Ø HEADED STUDS

FRAMING PLAN NOTES:

1. SEE SHEETS S0.1, S0.2, S0.3, & S0.4 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
4. CMU WALLS TO BE REINFORCED WITH #5 VERTICAL @ 32" O.C. IN SOLID GROUTED CORES + (2) #5 CONT BOND BEAM AT EACH FLOOR LEVEL AND AT TOP OF WALL, TYP U.O.N.
5. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
6. ALL MASONRY WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C.
7. ALL INTERIOR MASONRY PARTITIONS SHALL BE FULL HEIGHT, BRACED BY THE FLOOR OR ROOF DECK ABOVE
8. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
9. T.S. ELEVATION GIVEN AT UNDERSIDE OF DECK
10. [± x'-xx"] DENOTES ELEVATON FROM GIVEN DATUM
11. (xx) INDICATES NUMBER OF 3/4" Ø HEADED SHEAR STUDS EQUALLY SPACED ALONG THE LENGTH OF THE BEAM
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13. xxk-ft AT BEAM ENDS DENOTES FACTORED BEAM MOMENTS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM END MOMENT = 50 K-FT)
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Lansing School District

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KEY PLAN

N

RDA NO. 24064
JOB NO. 2616.01G

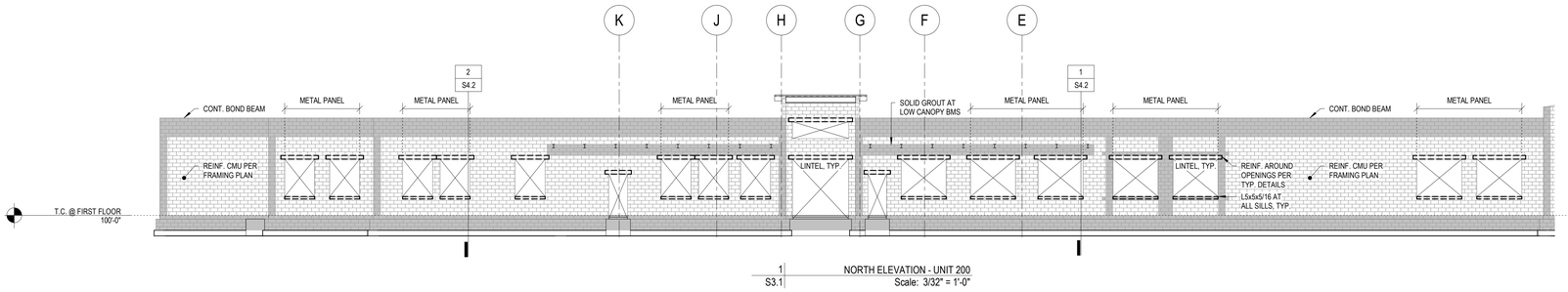
SHEET TITLE

ROOF FRAMING PLAN - UNIT 300

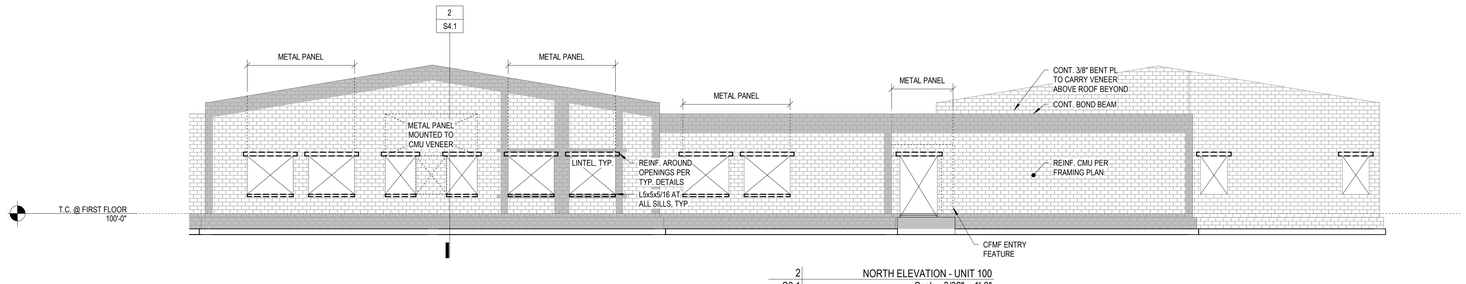
SHEET NO.

S2.3

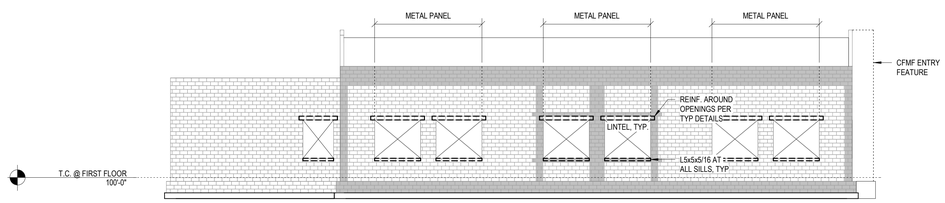
STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER



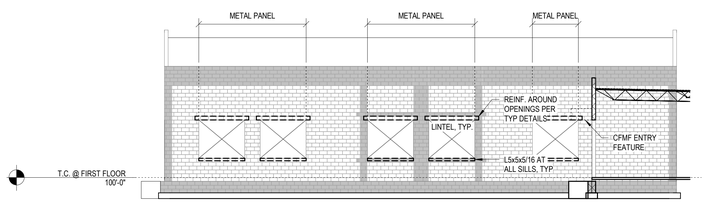
1 S3.1 NORTH ELEVATION - UNIT 200
Scale: 3/32" = 1'-0"



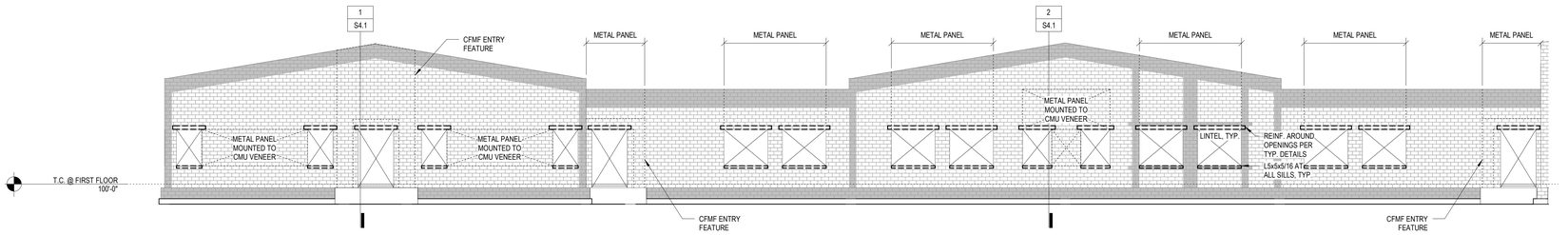
2 S3.1 NORTH ELEVATION - UNIT 100
Scale: 3/32" = 1'-0"



3 S3.1 WEST ELEVATION - UNIT 100
Scale: 3/32" = 1'-0"



4 S3.1 EAST ELEVATION - UNIT 100
Scale: 3/32" = 1'-0"



5 S3.1 SOUTH ELEVATION - UNIT 100
Scale: 3/32" = 1'-0"

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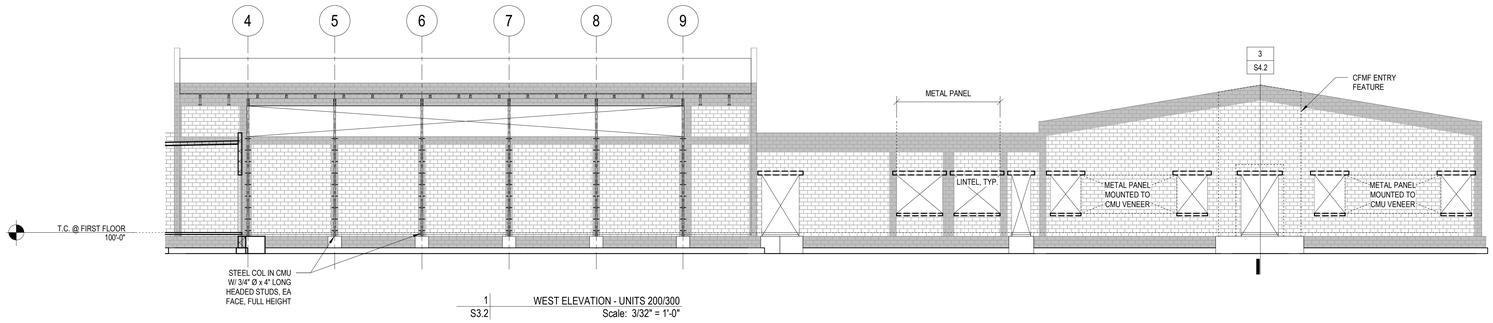
SHEET TITLE
EXTERIOR ELEVATIONS

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER

SHEET NO.
S3.1



1 S3.2 WEST ELEVATION - UNITS 200/300
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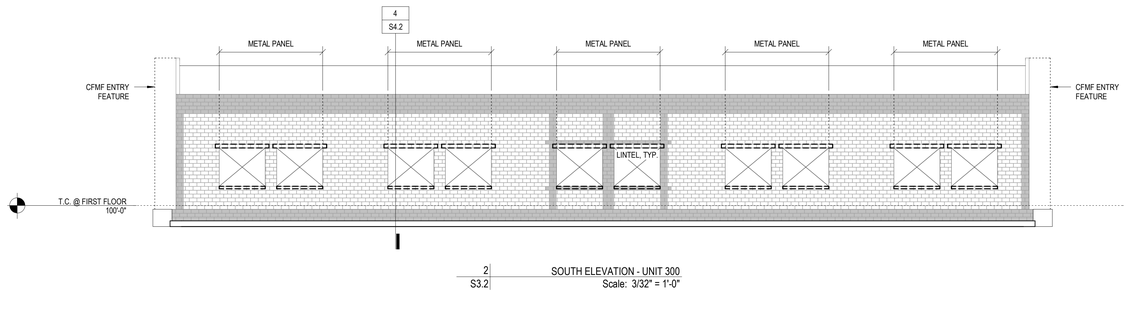

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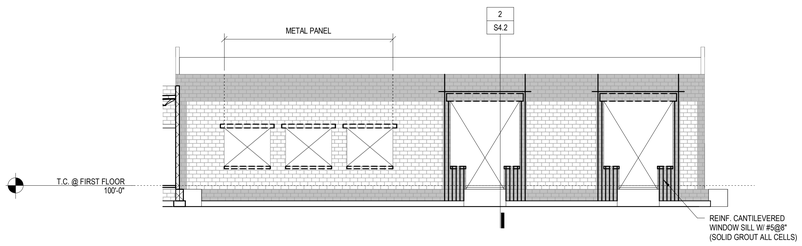
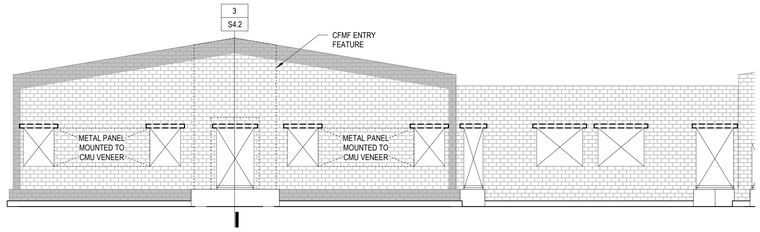
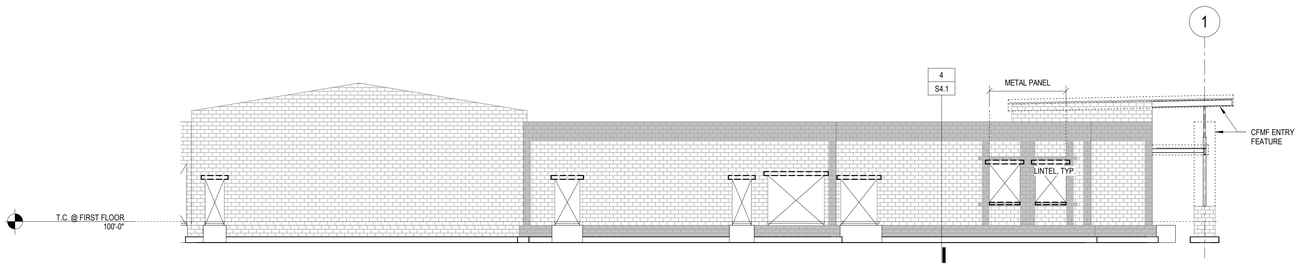


3 S3.2 SOUTH ELEVATION - UNIT 200
Scale: 3/32" = 1'-0"



4 S3.2 EAST ELEVATION - UNIT 300
Scale: 3/32" = 1'-0"



5 S3.2 EAST ELEVATION - UNIT 200
Scale: 3/32" = 1'-0"

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Lansing, MI 48915

Lansing School District

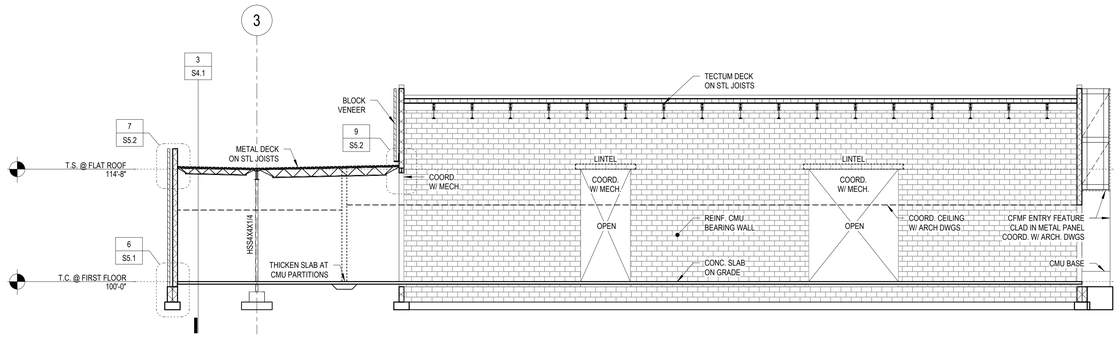
ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

RDA NO. 24064
JOB NO. 2616.01G

SHEET TITLE
EXTERIOR ELEVATIONS

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
REGISTERED PROFESSIONAL ENGINEER

SHEET NO.
S3.2



1 S4.1 SECTION THRU UNIT 100 LOOKING EAST
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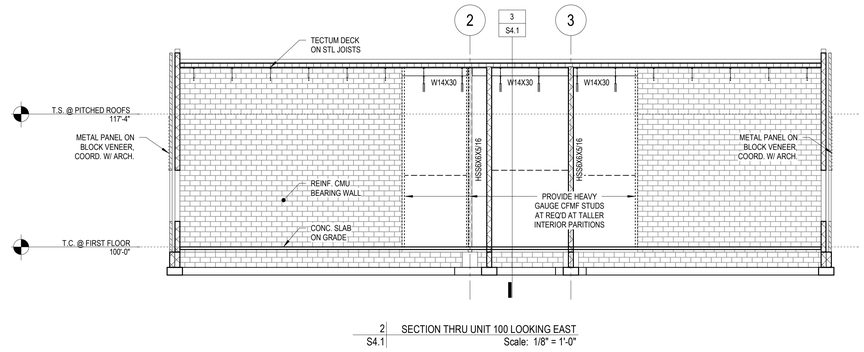

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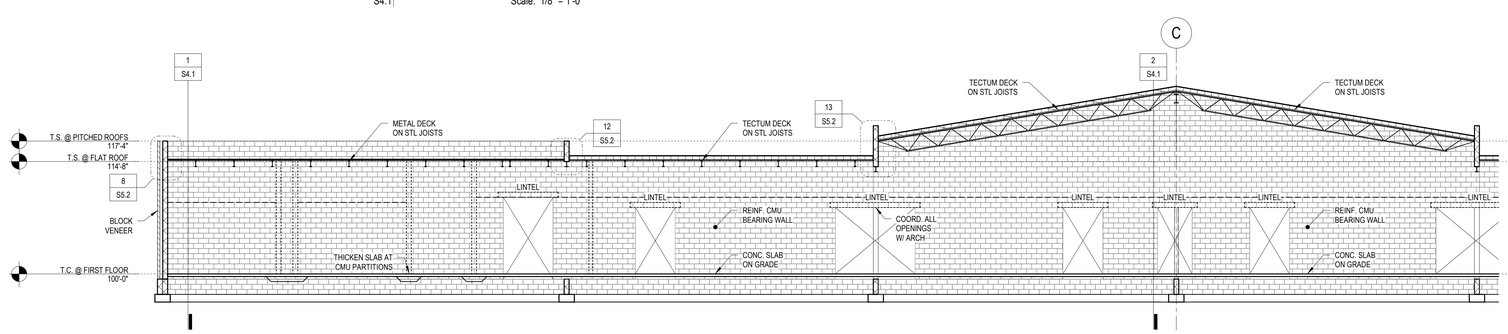
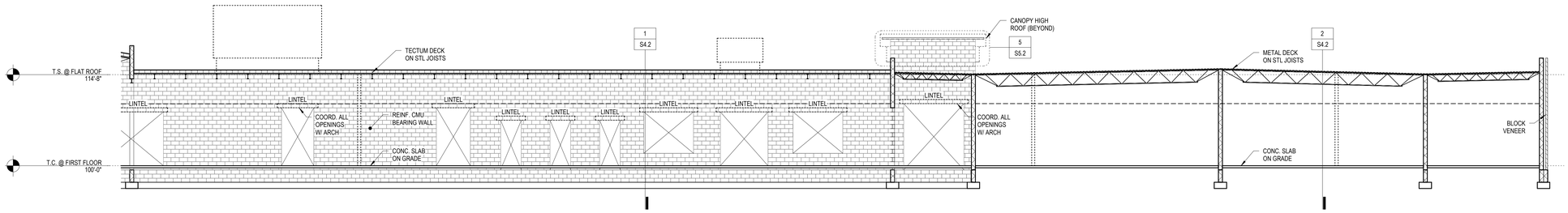


3 S4.1 SECTION THRU UNIT 100 LOOKING NORTH
Scale: 1/8" = 1'-0"



4 S4.1 SECTION THRU UNIT 200 LOOKING NORTH
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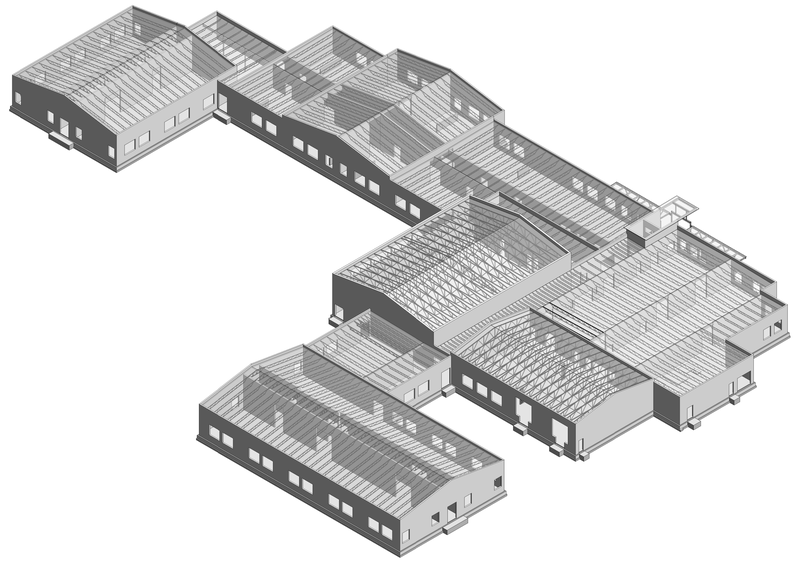

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Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

RDA NO. 24064
JOB NO. 2616.01G

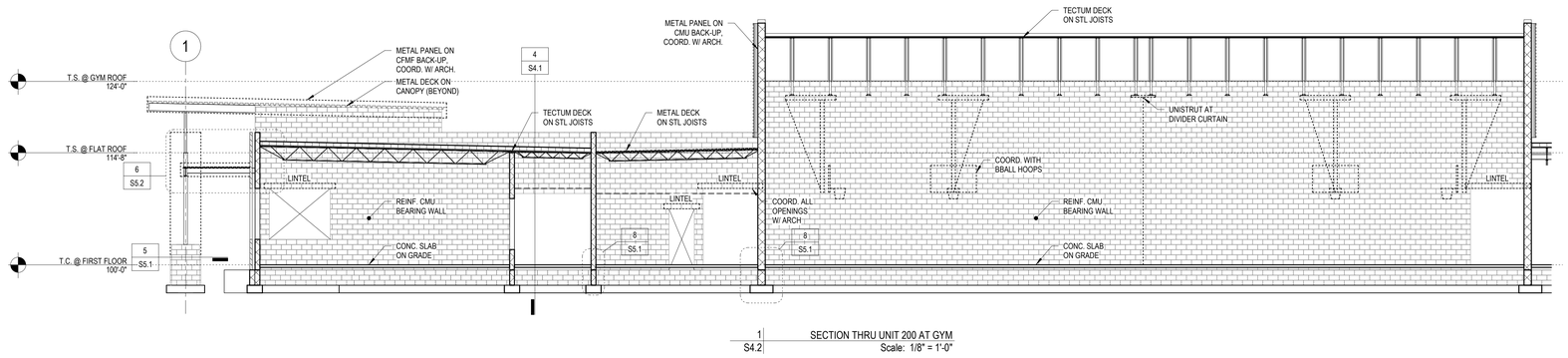
SHEET TITLE

BUILDING SECTIONS

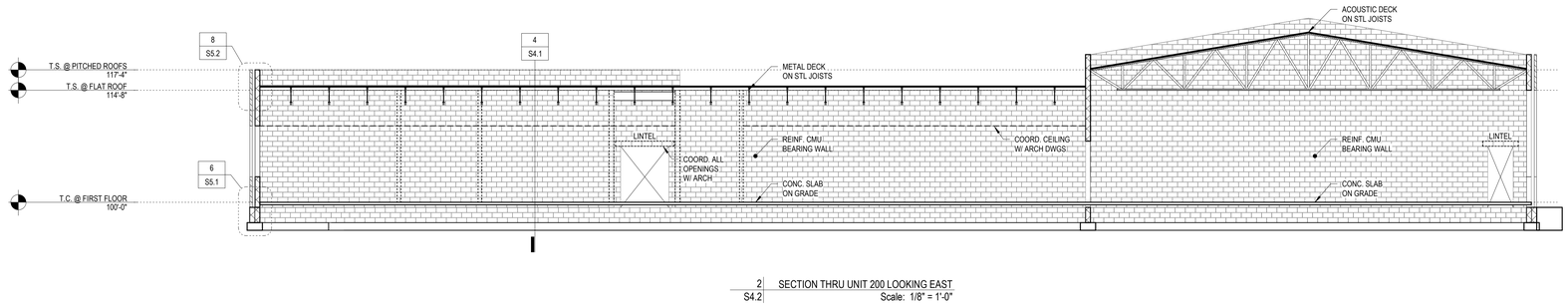
STATE OF MICHIGAN
BRAD
CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER

SHEET NO.

S4.1



1 S4.2 SECTION THRU UNIT 200 AT GYM
Scale: 1/8" = 1'-0"



2 S4.2 SECTION THRU UNIT 200 LOOKING EAST
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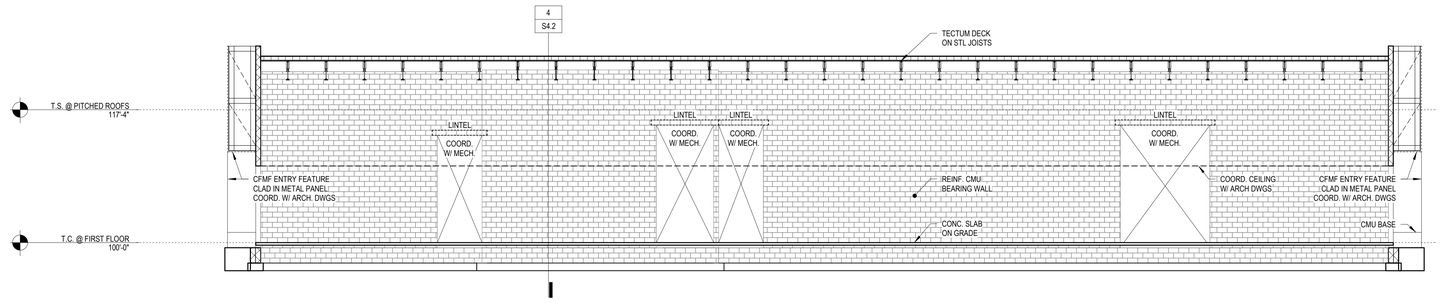

3 S4.2 SECTION THRU UNIT 300 LOOKING NORTH
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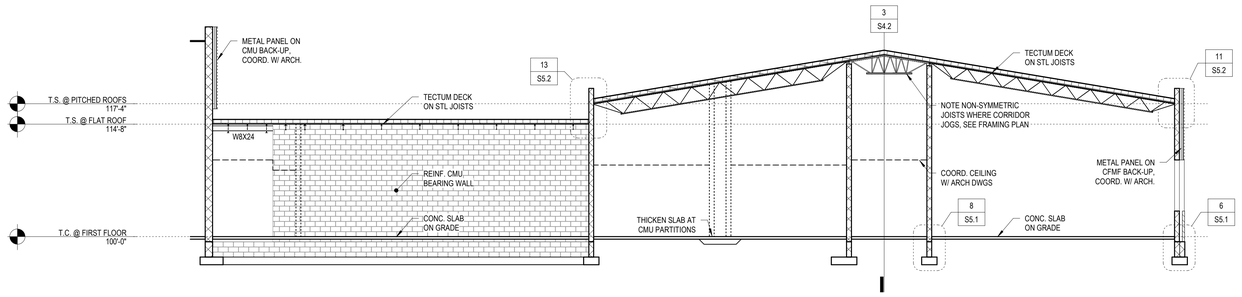

4 S4.2 SECTION THRU UNIT 300 LOOKING EAST
Scale: 1/8" = 1'-0"

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Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

RDA NO. 24064
JOB NO. 2616.01G

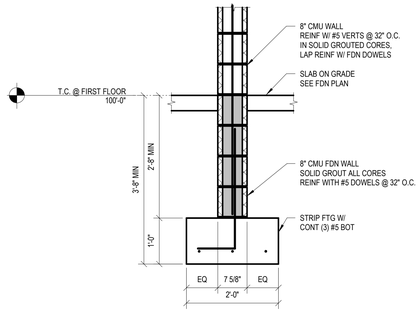
SHEET TITLE

BUILDING SECTIONS

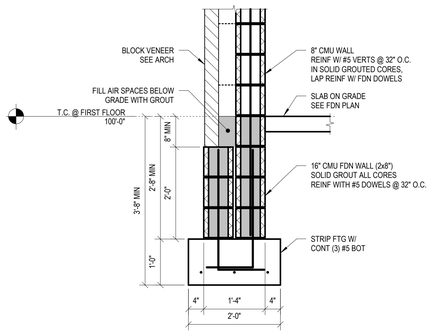
STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201065383
LICENSED PROFESSIONAL ENGINEER

SHEET NO.

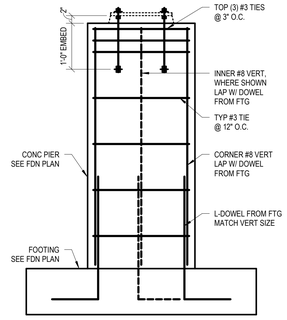
S4.2



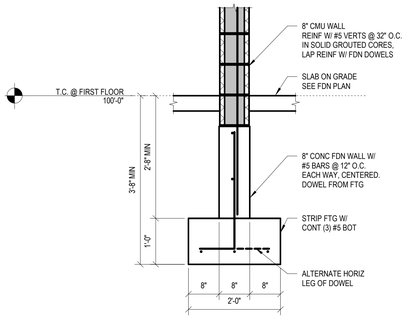
8 | S5.1 TYPCIAL FOUNDATION DETAIL AT INTERIOR BEARING WALL
Scale: 3/4" = 1'-0"



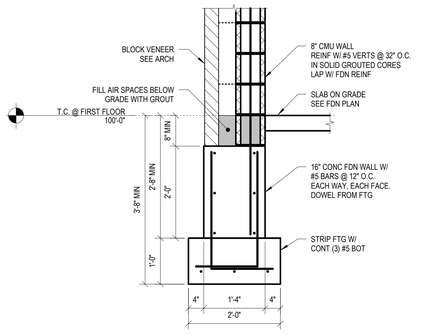
6 | S5.1 FOUNDATION DETAIL AT EXTERIOR WALL
Scale: 3/4" = 1'-0"



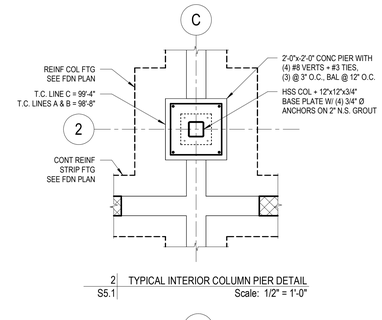
1 | S5.1 REINFORCED CONCRETE PIER DETAIL
Scale: 3/4" = 1'-0"



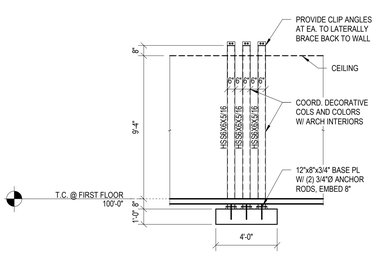
ALTERNATE 1
8A | S5.1 FOUNDATION DETAIL AT INTERIOR BEARING WALL
Scale: 3/4" = 1'-0"



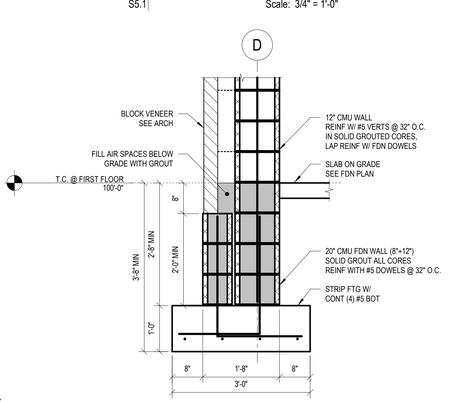
ALTERNATE 1
6A | S5.1 FOUNDATION DETAIL AT EXTERIOR WALL
Scale: 3/4" = 1'-0"



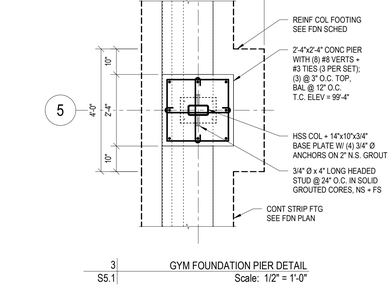
2 | S5.1 TYPICAL INTERIOR COLUMN PIER DETAIL
Scale: 1/2" = 1'-0"



9 | S5.1 DETAIL AT DECORATIVE COLUMN SET
Scale: 1/4" = 1'-0"



7 | S5.1 FOUNDATION AT GYM EXT WALL
Scale: 3/4" = 1'-0"



3 | S5.1 GYM FOUNDATION PIER DETAIL
Scale: 1/2" = 1'-0"

10 | S5.1 CMU WALL AT ENTRY CANOPY
Scale: 1/2" = 1'-0"

ALTERNATE 1
7A | S5.1 FOUNDATION AT GYM EXT WALL
Scale: 3/4" = 1'-0"

4 | S5.1 ENTRANCE CANOPY COLUMN FOUNDATION PIER DETAIL
Scale: 1/2" = 1'-0"

11 | S5.1 SECTION THROUGH WALK-IN COOLER
Scale: 1/2" = 1'-0"

5 | S5.1 V-COLUMN FOUNDATION PIER DETAIL
Scale: 1/2" = 1'-0"

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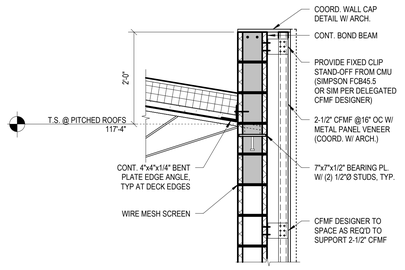
RDA NO. 24064
JOB NO. 2616.01G

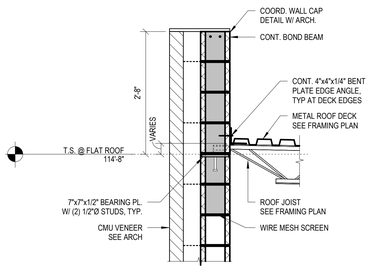
SHEET TITLE
FOUNDATION DETAILS

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
PROFESSIONAL ENGINEER

SHEET NO.
S5.1



11 S5.2 TYPICAL ROOF EDGE AT METAL PANEL
Scale: 3/4" = 1'-0"



7 S5.2 TYPICAL ROOF EDGE AT CMU VENEER
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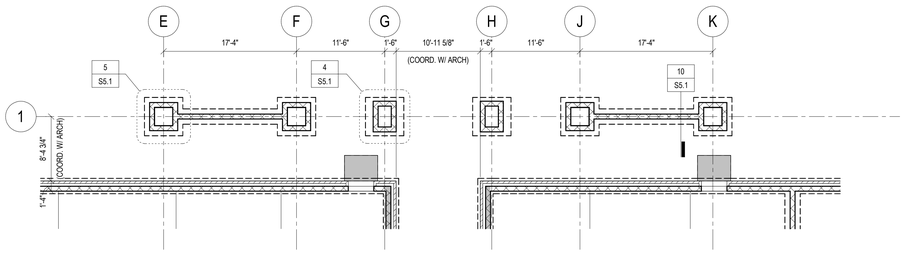
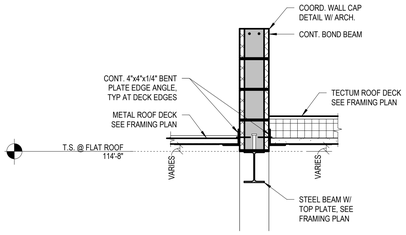
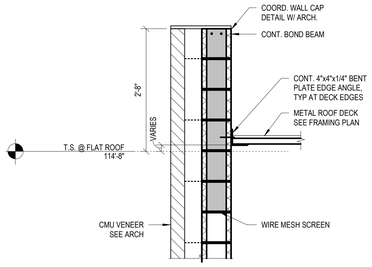


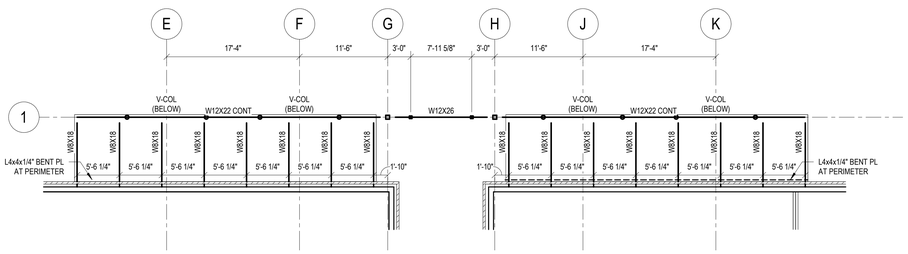
1 S5.2 CANOPY FOUNDATION PLAN
Scale: 1/8" = 1'-0"



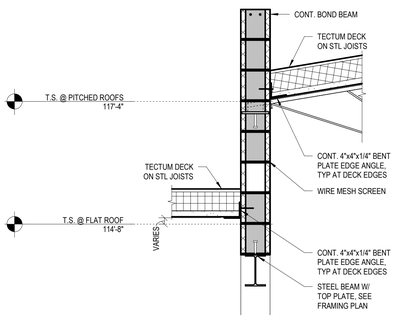
12 S5.2 TYPICAL DETAIL AT DECK TRANSITION
Scale: 3/4" = 1'-0"



8 S5.2 TYPICAL ROOF EDGE DETAIL JOIST PARALLEL TO WALL
Scale: 3/4" = 1'-0"



2 S5.2 CANOPY LOW ROOF FRAMING PLAN
Scale: 1/8" = 1'-0"



13 S5.2 ROOF DETAIL AT INTERCHANGE
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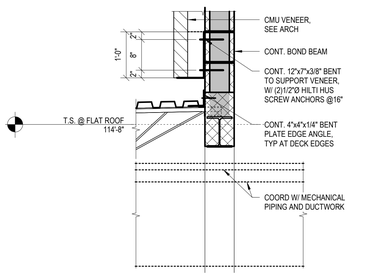
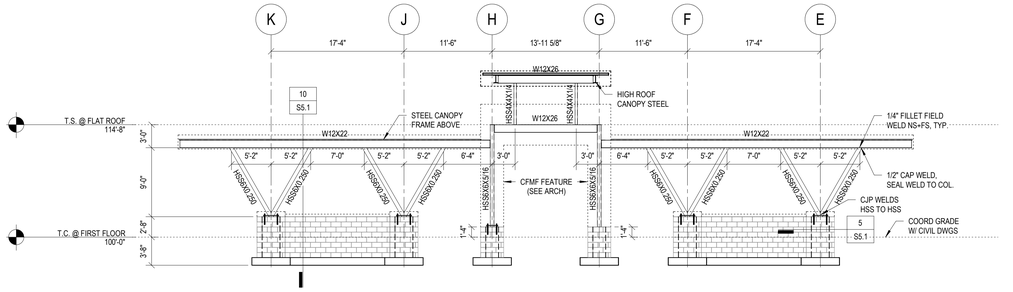
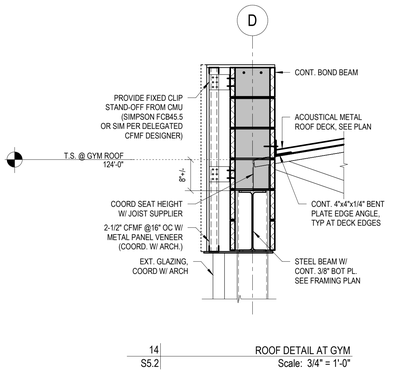


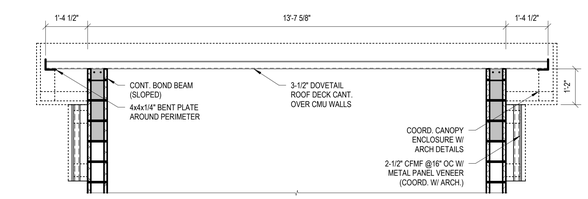
9 S5.2 SECTION AT UNIT 100 MECHANICAL RUN
Scale: 3/4" = 1'-0"



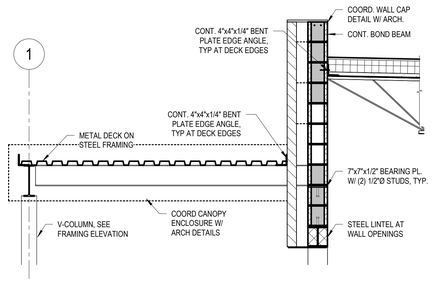
3 S5.2 CANOPY ELEVATION
Scale: 1/8" = 1'-0"



14 S5.2 ROOF DETAIL AT GYM
Scale: 3/4" = 1'-0"



5 S5.2 HIGH ROOF SECTION (LOOKING NORTH)
Scale: 1/2" = 1'-0"



6 S5.2 LOW CANOPY SECTION (LOOKING EAST)
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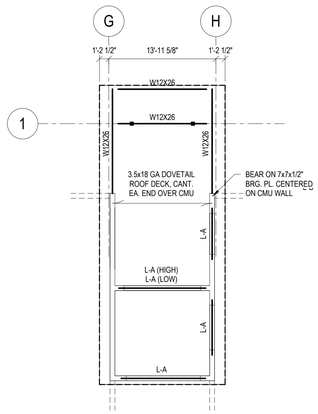

4 S5.2 CANOPY HIGH ROOF FRAMING PLAN
Scale: 1/8" = 1'-0"

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ann arbor, mi 48104

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Lansing, MI 48915

Lansing School District

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JOB NO. 2616.01G

SHEET TITLE
CANOPY AND STEEL DETAILS

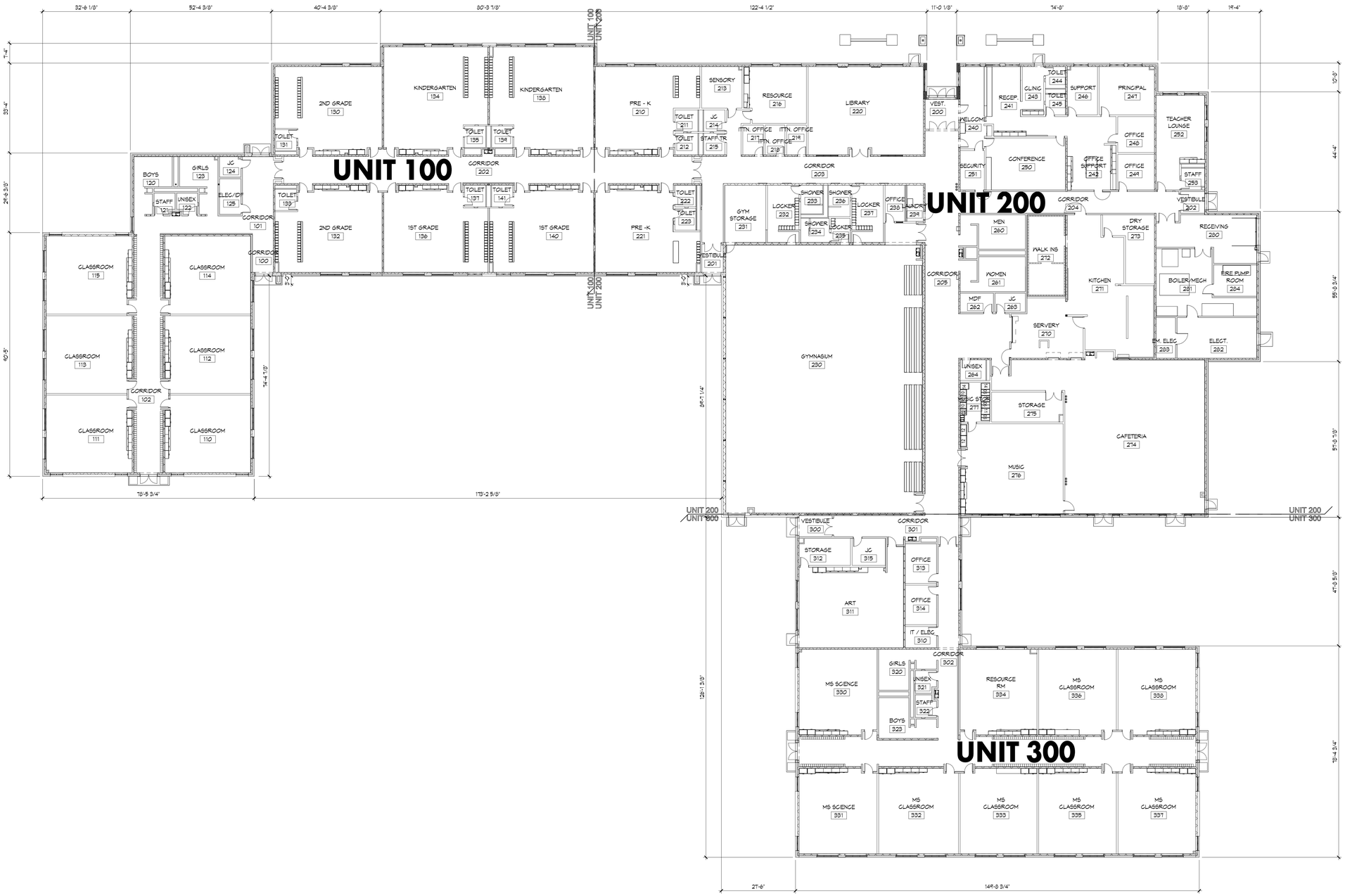
STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
PROFESSIONAL ENGINEER

SHEET NO.
S5.2

COMPOSITE PLAN GENERAL NOTES

NAME
101 INDICATES CONSTRUCTION DOCUMENT ROOM NUMBERS.

REFER TO CODE COMPLIANCE SHEETS FOR BUILDING CODE REQUIREMENTS.



1 COMPOSITE FLOOR PLAN
1/16" = 1'-0"

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LEWTON SCHOOL

Lansing School District
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Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025



KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

N

SHEET TITLE
COMPOSITE FLOOR PLAN

SHEET NO.
A0.1

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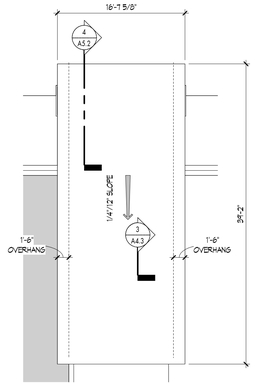


RAISED ENTRY PARTIAL ROOF PLAN

2

1/8" = 1'-0" REFER TO 1 / AO.2

ROOF PLAN LEGEND

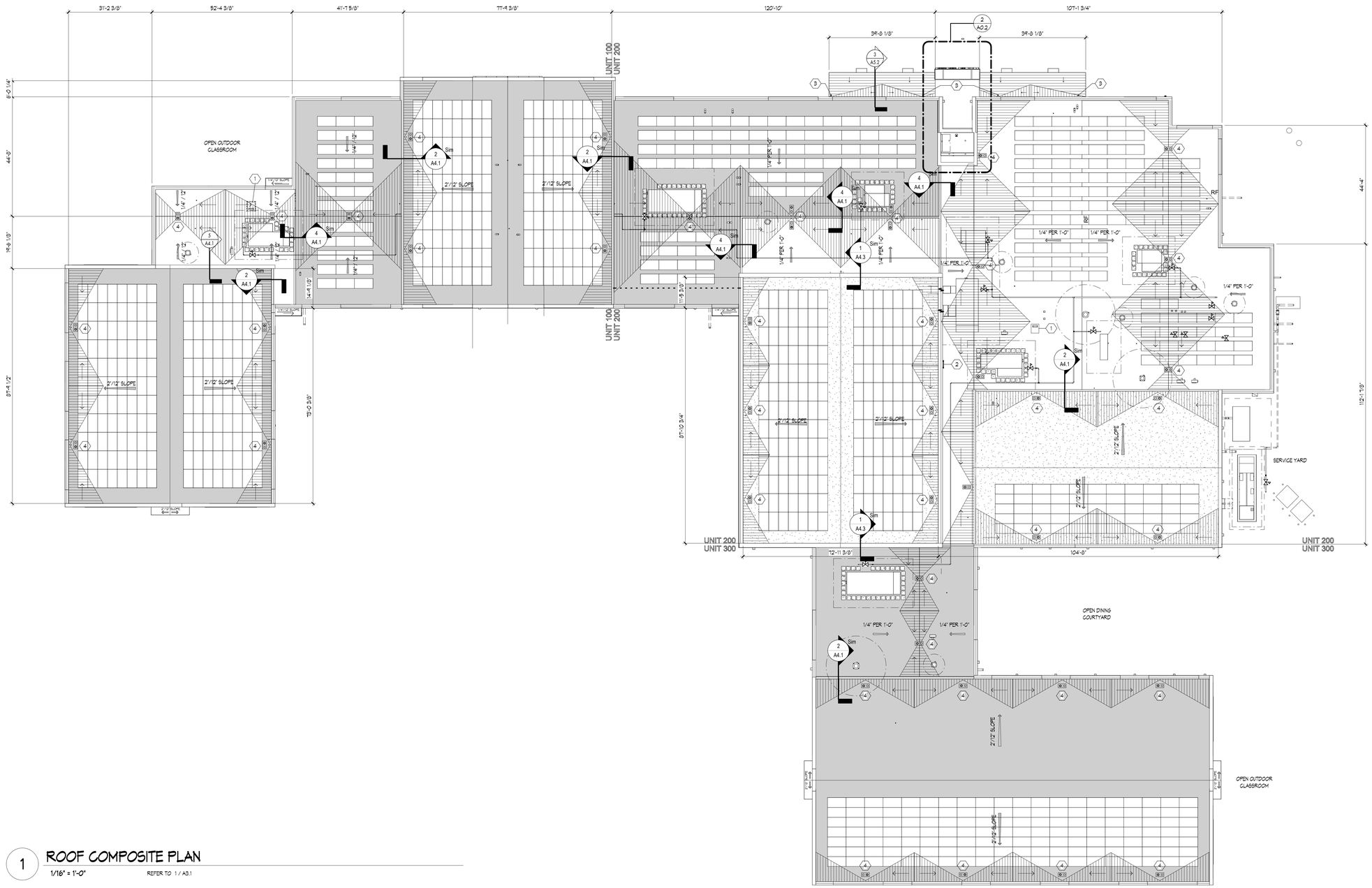
- WALKWAY PADS
- COMBINATION ROOF DRAIN AND OVERFLOW DRAIN
- ROOF STRUCTURE SLOPE DIRECTION
- TAPERED INSULATION SLOPE DIRECTION
- BUILT-UP TAPERED INSULATION
- TECTUM ROOF DECK IV/ EPDM ROOFING (REFER TO DETAIL 9/A5.1 FOR TYP ROOF CONSTRUCTION)
- ACOUSTIC METAL ROOF DECK IV/ EPDM ROOFING (REFER TO DETAIL 9/A5.1 FOR TYP ROOF CONSTRUCTION)
- METAL ROOF DECK IV/ EPDM ROOFING (REFER TO DETAIL 9/A5.1 FOR TYP ROOF CONSTRUCTION)

ROOF PLAN KEYNOTES

1. 36" x 30" ROOF ACCESS HATCH WITH LADDER, REFER TO DETAIL 10/A5.1.
2. ROOF ACCESS LADDER, REFER TO DETAIL 11/A5.1.
3. ROOF DRAIN WITH DOWNSPOUT.
4. REFER TO 1/A5.1 AND 2/A5.2 FOR DRAIN/OVERFLOW ROOFING DETAILS.

ROOF PLAN GENERAL NOTES

1. FOR MECHANICAL EQUIPMENT INSTALLED ON ROOF, CONTRACTOR SHALL INSTALL EQUIPMENT SUPPORTS, ROOF CURBS OR PADS AS REQUIRED TO POSITION EQUIPMENT THE REQUIRED DISTANCE ABOVE FINISHED ROOF SURFACE. SEE MECHANICAL PLANS FOR ROOF-MOUNTED EQUIPMENT.
2. PROVIDE TREATED WOOD CURB RAILS ON WALK PADS FOR SMALL CONDENSER UNIT ASSOCIATED W/ FAN COIL UNITS. SEE MECHANICAL FOR LOCATIONS. SEE STRUCTURAL STANDARD DETAILING FOR PLACEMENT AND JOIST REINFORCEMENT.
3. ROOF SLOPES TO BE A MINIMUM OF 1/4" PER FOOT. TAPERED INSULATION ROOF SADDLES TO SLOPE TO ROOF DRAINS AS REQUIRED TO MAKE A COMPLETE SYSTEM OF 1/4" PER FOOT SLOPE.
4. TAPERED INSULATION INDICATED IS FOR DESIGN INTENT ONLY. ROOFING CONTRACTOR IS RESPONSIBLE FOR ALL SITE VERIFICATION AND FINAL INSULATION LAYOUTS TO ENSURE POSITIVE DRAINAGE. SUBMIT SHOP DRAWINGS OF TAPER AND INSULATION PLAN AT ALL NEW ROOF AREAS.
5. PROVIDE SINGLE MEMBRANE ROOFING COMPLETE WITH FLASHING AT CORNERS, COPING AND JUNCTIONS, U.N.O.
6. OVERFLOW DRAINS (OD) SHALL BE INSTALLED WITH INLET 2" ABOVE ROOF DRAIN (RD) INLET. OVERFLOW DRAINS SHALL NOT ACCEPT WATER UNTIL ROOF DRAIN BECOMES PLUGGED AND 2" OF STORM WATER ACCUMULATES ON ROOF SURFACE.



ROOF COMPOSITE PLAN

1

1/16" = 1'-0" REFER TO 1 / A3.1

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LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

N

SHEET TITLE

ROOF COMPOSITE PLAN

SHEET NO.

A0.2

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BUILDING CODE INFORMATION

RULES AND CODED:	MICHIGAN BUILDING CODE 2015 2012 NFPA 101 LIFE SAFETY CODE.
BARRIER FREE DESIGN:	MICHIGAN BUILDING CODE 2015 CHAPTER 11
PLUMBING CODE:	MICHIGAN PLUMBING CODE 2021
MECHANICAL CODE:	MICHIGAN MECHANICAL CODE 2015
ELECTRICAL CODE:	MICHIGAN ELECTRICAL CODE 2011
OCCUPANCY:	E (EDUCATIONAL)
CONSTRUCTION TYPE:	II B
NEW CONSTRUCTION:	FULLY SPRINKLERED
MEANS OF EGRESS REQUIREMENTS:	ALLOWED
COMMON PATH (M.B.C. 1006.2.1): (NFPA 14.2.5.3)	75' - 0" MAX
EXIT TRAVEL DIST. (N.F.P.A. 14.2.6.2): (MBC 1011.1)	250'-0" (W/ FIRE SUPPRESSION) 200'-0" (W/O FIRE SUPPRESSION)
ALLOWABLE HEIGHT / AREA: (MBC TABLES 504.3, 504.4, 506.2)	3 STORIES / 59,000 S.F. PER FLOOR
ALLOWABLE AREA INCREASE: (MBC 506.2.3 AND 506.3)	1,812 LF FRONTAGE > 30' OPEN [1,812/1,812-.25] 30/30 = .75
TOTAL ALLOWABLE BUILDING AREA:	101,500 S.F.
SEPARATION OF BUILDING AREA: MAX ALLOWABLE DEAD END CORRIDOR:	2 HR. 20 LINEAR FEET
TOTAL NEW CONSTRUCTION AREA:	67,350 S.F. 2 HR FIRE SEPARATION NOT REQUIRED.

OCCUPANCY LOAD CALCULATION:

EDUCATION	1,224 OCC.
ASSEMBLY	875 OCC.
LOCKER RMS	35 OCC.
COMMERCIAL KITCHEN	11 OCC.
LIBRARY	21 OCC.
BUSINESS (OFFICES)	28 OCC.
STORAGE/MECH	4 OCC.
TOTAL OCCUPANCY	2,224 OCCUPANT LOAD

PLUMBING FIXTURE REQUIREMENTS

	TOTAL OCCUPANTS	WC/URINALS F	WC/URINALS M	WC/URINALS UNISEX	LAVS F	LAVS M	LAVS UNISEX	DRINKING FOUNTAIN	SERVICE SINK
EDUCATION	1,224	12.2	12.2	--	12.2	12.2	--	12.2	1
ASSEMBLY	988	7.4	3.8	--	2.4	2.4	--	1.9	1
BUSINESS	28	0.8	0.8	--	0.4	0.4	--	0.3	1
STORAGE	4	0.02	0.02	--	0.02	0.02	--	0	0
TOTAL REQUIRED:		**21**	**17**	**--**	**15**	**15**	**--**	**14**	**3**
TOTAL PROVIDED:		**11**	**11**	**12**	**9**	**9**	**12**	**14**	**4**

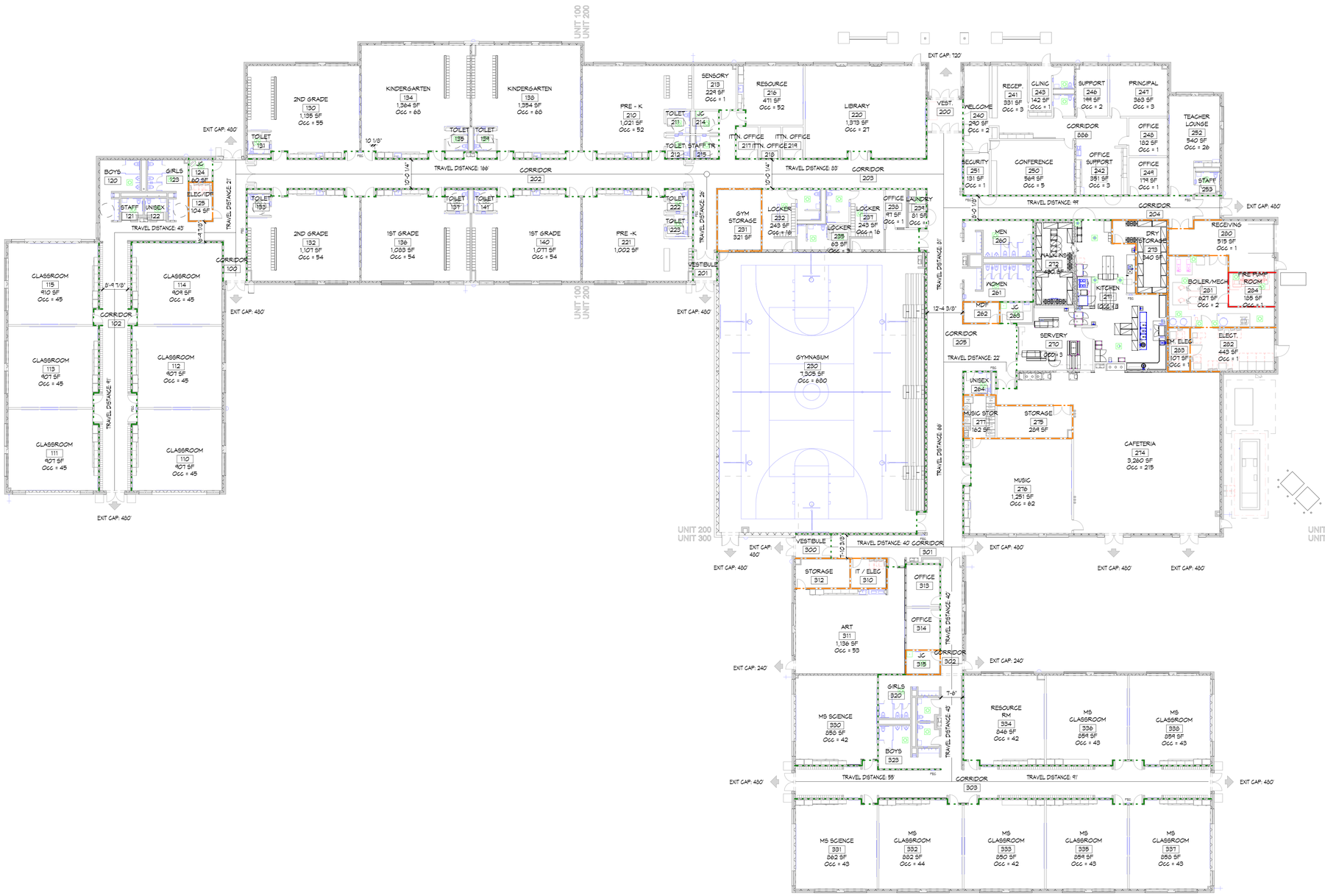
*NOTE: 10 ADDITIONAL UNISEX TOILET ROOMS NOT INCLUDED IN THE COUNT ARE PROVIDED IN PRE-K TO 2ND GRADE CLASSROOMS.

CODE COMPLIANCE LEGEND

- 2 HOUR FIRE RATED BARRIER. EXTEND TIGHT TO ROOF DECK. 90 MIN. OPENING ASSEMBLIES. SEALED PENETRATIONS.
- 1 HOUR FIRE RATED BARRIER. EXTEND TIGHT TO ROOF DECK. 45 MIN. OPENING ASSEMBLIES. SEALED PENETRATIONS.
- SMOKE PARTITION. EXTEND TIGHT TO ROOF DECK. OPENING PARTITIONS TO BE SMOKE TIGHT. SEALED PENETRATIONS.
- FEC — FIRE EXTINGUISHER / FIRE EXTINGUISHER CABINET. SEE SHEETS 1/A1.1 THRU A1.3 FOR LOCATIONS.
- EXIT
- NAME / XXX — ROOM NAME & ROOM NUMBER

GENERAL NOTES

1. CORRIDOR WALLS SHALL EXTEND TIGHT TO UNDERSIDE OF DECK TO RESIST THE PASSAGE OF SMOKE.
2. SEAL ALL PENETRATIONS AND OPENINGS IN FIRE RATED WALL CONSTRUCTION WITH FIRE RESISTANT RATED SEALANT AND / OR FIRE STOPPING TO MATCH WALL RATING AS INDICATED.



1 CODE COMPLIANCE PLAN
1/16" = 1'-0"

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LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
CODE COMPLIANCE PLAN

SHEET NO.
A0.3

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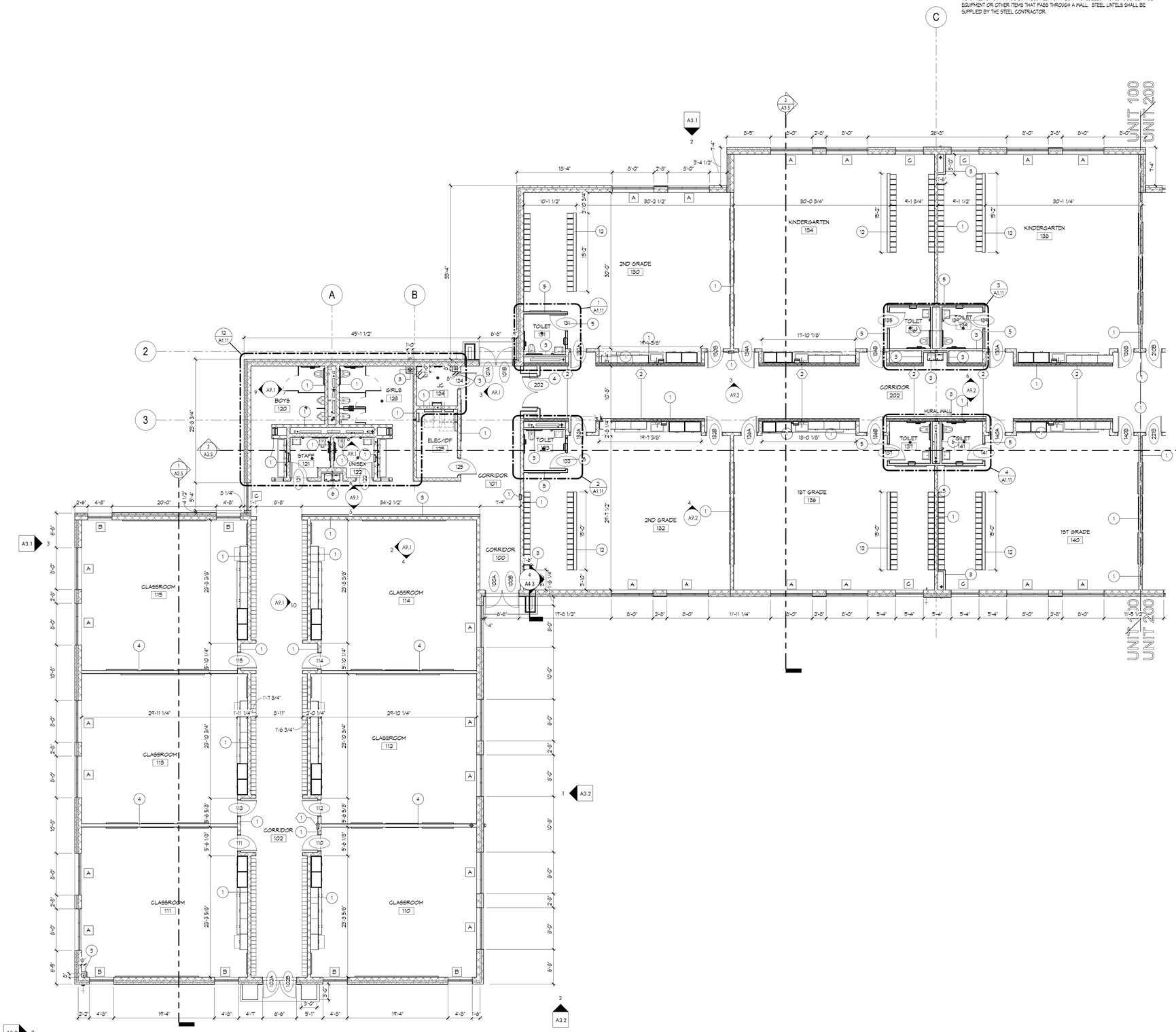
ARCHITECTURAL PLAN KEYNOTES

1. NEW SEMI-RECESSED FIRE EXTINGUISHER & EXTINGUISHER CABINET. REFER TO SPECIFICATION SECTION 104400. MAY NOT PROTRUDE MORE THAN 4" BEYOND FACE OF WALL.
2. MASONRY WALLS INDICATED WITH GRAY HATCH ARE TO BE BURNISHED BLOCK, CORRIDOR SIDE ONLY. REFER TO SPEC SECTION 042000
3. 4" CONCRETE EQUIPMENT HOUSEKEEPING PAD. REFER TO STRUCTURAL DRAWING S0.3 & COORDINATE W/ MECHANICAL AND ELECTRICAL EQUIPMENT.
4. SLIP-IN COILING COUNTER DOOR WITH INTEGRAL FRAME AND SILL. REFER TO SPEC SECTION 083323 AND DOOR SCHEDULE A6.1.

ARCHITECTURAL GENERAL NOTES

1. XX INDICATES CONSTRUCTION DOCUMENT ROOM NUMBERS.
2. REFER TO EQUIPMENT PLANS FOR CASEWORK, VISUAL DISPLAY BOARDS, LOCKERS, SHELVING, ETC.
3. REFER TO COLOR LAYOUT PLANS FOR FLOOR FINISH PATTERNS AND COLORS.
4. CONTRACTOR SHALL COORDINATE LOCATIONS OF FLOOR DRAINS, CLEAN OUTS, ETC, WITH APPROPRIATE TRADES.
5. REFER TO ENLARGED PLANS FOR ADDITIONAL NOTES AND DIMENSIONS.
6. MASONRY CONTRACTOR TO INSTALL LOOSE LINTELS FOR MISCELLANEOUS OPENINGS NOT INDICATED ON DRAWINGS BUT REQUIRED FOR MECHANICAL, ELECTRICAL, FOOD SERVICE EQUIPMENT OR OTHER ITEMS THAT PASS THROUGH A WALL. STEEL LINTELS SHALL BE SUPPLIED BY THE STEEL CONTRACTOR.
7. ALL PARTITION WALLS TO RUN TIGHT TO DECK, U.N.O.
8. REFER TO PARTITION TYPES SHOWN ON REFLECTED CEILING PLANS AND PARTITION TYPE SHEET A2.5 .
9. REFER TO DATA SHEET G0.2 FOR ARCHITECTURAL SYMBOL LEGEND.
10. DIMENSIONS SHOWN ARE TO FACE OF WALL.
11. FILL/SEAL ALL PENETRATIONS THROUGH WALLS & VOIDS AT STRUCTURAL MEMBERS.
12. ALL EXPOSED C.M.U. CORNERS SHALL BE BULLNOSE CORNERS. U.N.O.
13. CAULK & SEAL AROUND ALL NEW CABINET HEATER LOUVERS INSTALLED IN EXTERIOR WALLS.
14. 3M SECURITY FILM - AT ALL EXTERIOR WINDOWS, 7'-2" AND BELOW OR FROM THE NEXT MULLION AFTER 7'-2" AND BELOW. REFER TO SPECIFICATION SECTION 088716.



1 FLOOR PLAN - UNIT 100
1/8" = 1'-0"

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LEWTON SCHOOL

Lansing School District
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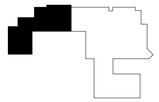

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

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SHEET TITLE
FLOOR PLAN - UNIT 100

SHEET NO.
A1.1

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ARCHITECTURAL PLAN KEYNOTES

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4. SLIP-IN CEILING COUNTER DOOR WITH INTEGRAL FRAME AND SILL. REFER TO SPEC SECTION 088323 AND DOOR SCHEDULE A8.1.

ARCHITECTURAL GENERAL NOTES

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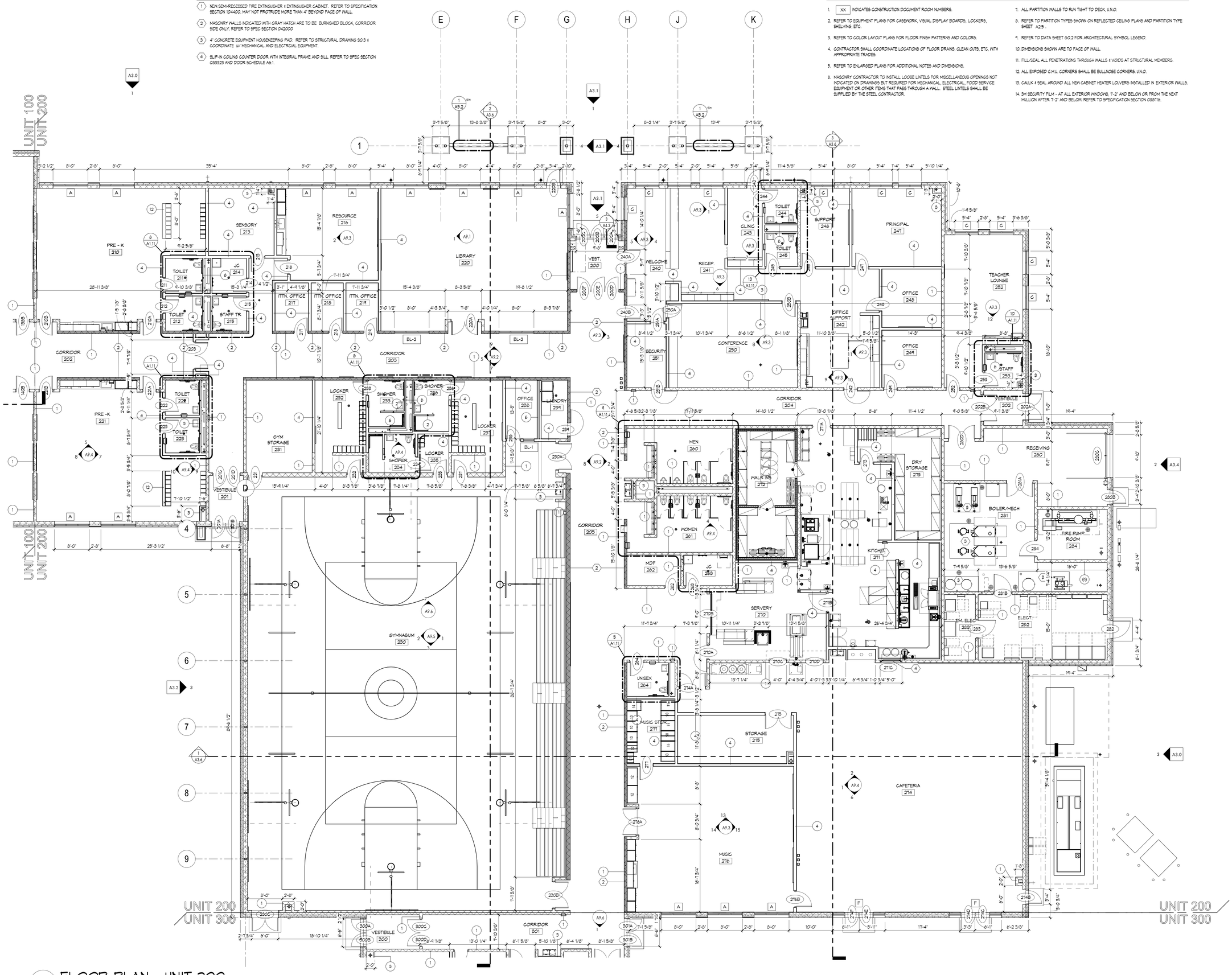

1 FLOOR PLAN - UNIT 200
1/8" = 1'-0"

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Lansing School District

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KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G
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SHEET TITLE
FLOOR PLAN - UNIT 200

SHEET NO.
A1.2

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ARCHITECTURAL PLAN KEYNOTES

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ARCHITECTURAL GENERAL NOTES

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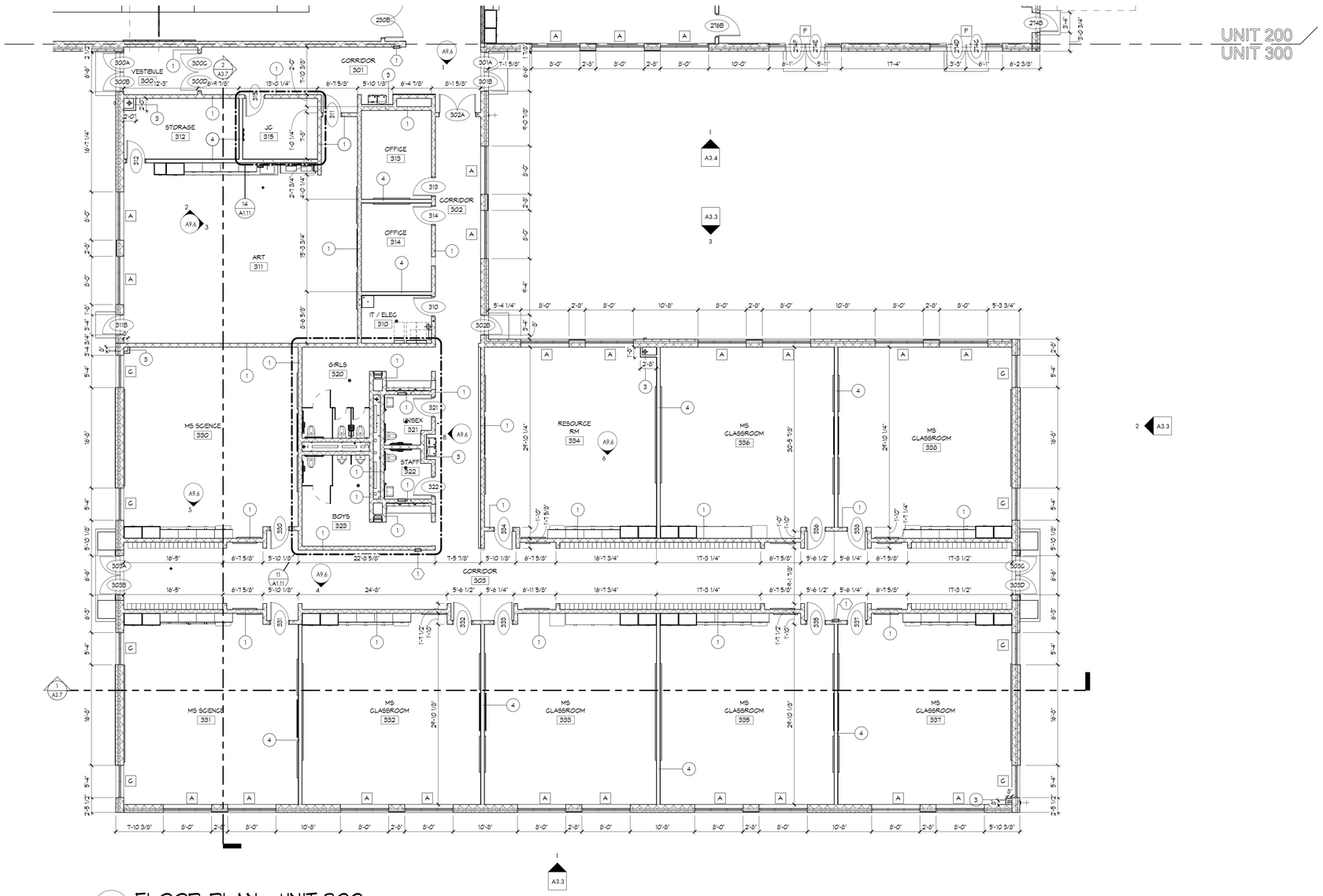

1 FLOOR PLAN - UNIT 300
1/8" = 1'-0"

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LEWTON SCHOOL

Lansing School District

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Lansing School District

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BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
FLOOR PLAN - UNIT 300

SHEET NO.
A1.3

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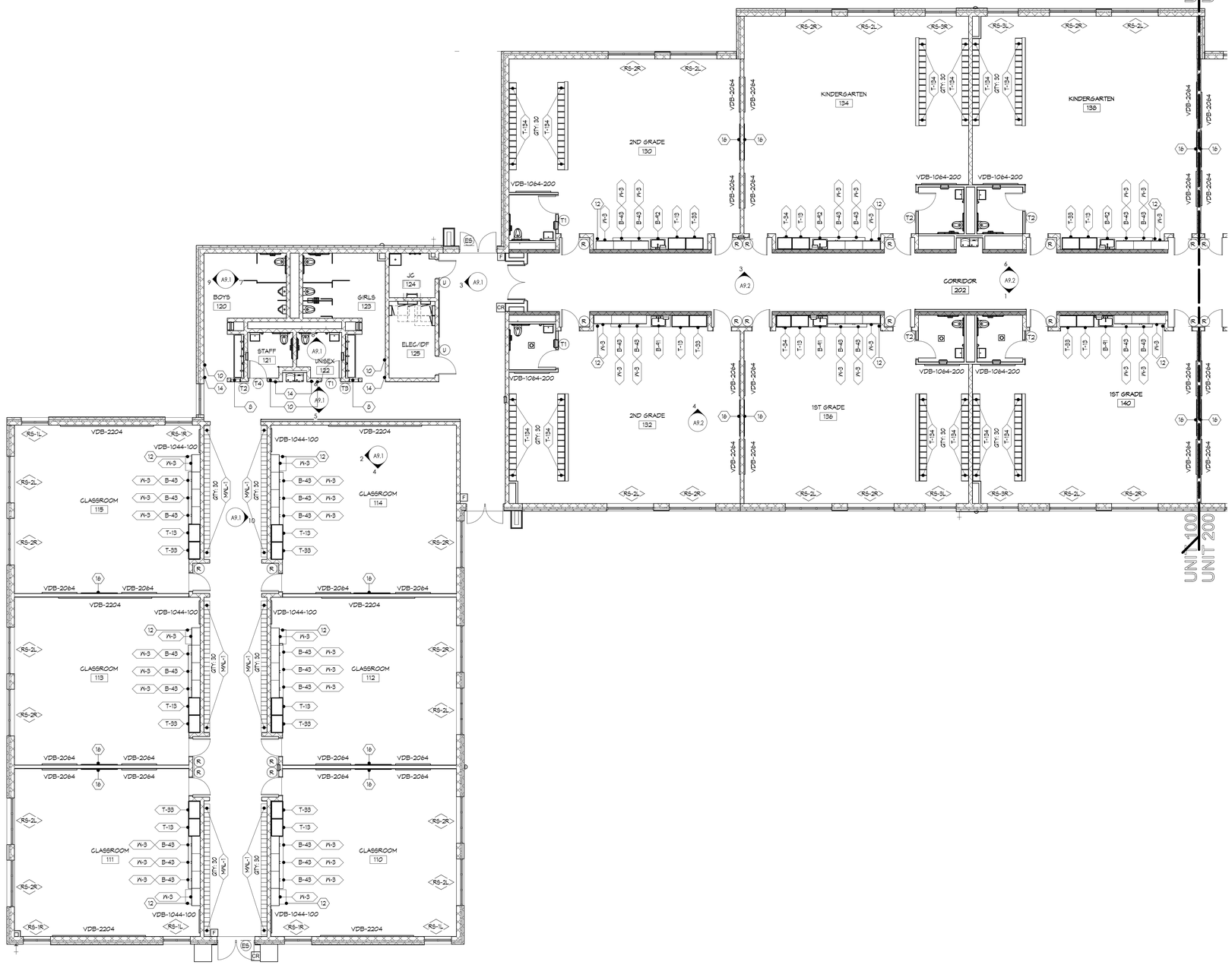

1 FIRST FLOOR EQUIPMENT PLAN - UNIT 100
1/8" = 1'-0"

EQUIPMENT PLAN NEYNOTES

1. CASEWORK FILLER TYP
2. GYM WALL PADS, 2' W X 6' H X 2" THICK, MOUNTED AT 4" AFF. REFER TO SPECIFICATION SECTION 116623
3. GYM SCOREBOARD, REFER TO SPECIFICATION SECTION 116623
4. FLAT SCREEN TV, SEE TECHNOLOGY DRAWINGS
5. SIDE FIXED BASKETBALL BACKSTOP (GLA66) SEE SPECIFICATION SECTION 116623
6. GYMNASIUM DIVIDER, SEE SPEC SECTION 083513
7. VOLLEYBALL SLEEVE, REFER TO SPECIFICATION SECTION 116623
8. FRAME OUT OPENING WITH WOOD TRIM AND STAINED TO MATCH PLAM-1
9. ARCHITECTURAL LETTERS, SEE INTERIOR ELEVATIONS AND SHEET A1.10
10. VINYL LETTERING, SEE SHEET A1.10
11. FORWARD RETRACTABLE BASKETBALL BACKSTOP (GLA66) SEE SPECIFICATION SECTION 116623
12. TECH CART BY OWNER
13. FELT WALL MOUNTED ART DISPLAY
14. RESTROOM SYMBOL CUT OUTS, SEE SHEET A1.10
15. PROJECTOR SCREEN, SEE TECHNOLOGY PLAN
16. WALL MOUNTED CLEVERTOUCH SMART BOARD, OWNER PROVIDED
17. BLEACHERS, SEE SPEC SECTION 116623
18. PRIVACY CURTAIN AND CEILING MOUNTED TRACK, SEE SPEC SECTION 102123

EQUIPMENT PLAN LEGEND

X-X = INDICATES CASEWORK. REFER TO SPECIFICATION SECTION 123216 FOR SCHEDULE AND PLASTIC LAMINATE SELECTIONS. ALL CABINETS SHALL SLOPED TOPS AND ALL DOORS SHALL HAVE LOCKS U.N.O.

B-# = BASE CABINET
W-# = WALL CABINET
T-# = TALL CABINET
FILLER = PROVIDE FACE, TOP, BOTTOM AND / OR COUNTERTOP FILLER AS REQUIRED BY TYPE OF CABINET

RS-# = ROLLER SHADE, SPECIFICATION SECTION 122413

= SIGNS (FOR TYPES AND MOUNTING, SEE SHEET A1.25 AND SPEC SECTION 101419, 101423 & 101424

VDB-_# = VISUAL DISPLAY BOARD, SPECIFICATION SECTION 101100

APPLIANCE PLAN LEGEND

SEE SPEC. SECTION 113013

RF-# = REFRIGERATOR
URF-# = UNDERCOUNTER REFRIGERATOR
WSHR = WASHER
MC-# = MICROWAVE
DRY = ELEC. DRYER

EQUIPMENT PLAN GENERAL NOTES

1. WALL CABINET TOPS TO BE SLOPED WITH TOP OF SPLICE AT 94" A.F.F. UNLESS NOTED OTHERWISE.
2. FILLER = PROVIDE FACE, TOP, BOTTOM AND/OR COUNTERTOP FILLER AS REQUIRED BY TYPE OF CABINET.
3. ALL VISUAL DISPLAY BOARD INSTALLATION LOCATIONS ARE TO BE FIELD VERIFIED PRIOR TO INSTALLATION
4. REFER TO SPECIFICATIONS FOR VISUAL DISPLAY BOARD FINISHES AND COLOR DESIGNATIONS.
5. HOLD ALL TALL CABINETS ADJACENT TO BASE CABINETS OUT 1" FROM WALL OR FLUSH WITH THE FRONT EDGE OF THE COUNTERTOP. PROVIDE FILLER AT BACK WALL AS REQUIRED.
6. ALL BASE CABINETS SHALL HAVE COUNTERTOPS WITH BACK AND SIDE SPLASH. REFER TO **DIVISION 12 SPECIFICATIONS**.
7. ALL COUNTERTOPS SHALL HAVE RADIUS CORNERS AT OUTSIDE CORNERS.
8. REFER TO SPECIFICATION **SECTION 122413** FOR DETAILED INFORMATION ON WINDOW ROLLER SHADES.
9. SEE SHEET A1.10 FOR SIGNAGE DETAILS. PROVIDE BACK PANELS AT ALL SIGNAGE MOUNTED ON GLASS.
10. TRIM FRP AND WALL PADS AROUND POWER/DATA OUTLETS (TYP.)
11. SEE SHEET A1.9 FOR VISUAL DISPLAY SCHEDULE.
12. REFER TO TECHNOLOGY DRAWINGS BY OTHERS TO COORDINATE VDB'S. INFORM ARCHITECT OF CONFLICTS.
13. GYM EQUIPMENT, REFER TO SPECIFICATION SECTION 116623

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LEWTON SCHOOL

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BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

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SHEET TITLE
EQUIPMENT PLAN - UNIT 100

SHEET NO.
A1.5

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EQUIPMENT PLAN NEYNOTES

1. CASEWORK FILLER TYP
2. GYM WALL PADS, 2' W X 6' H X 2" THICK, MOUNTED AT 4" AFF, REFER TO SPECIFICATION SECTION 116623
3. GYM SCOREBOARD, REFER TO SPECIFICATION SECTION 116623
4. FLAT SCREEN TV, SEE TECHNOLOGY DRAWINGS
5. SIDE FIXED BASKETBALL BACKSTOP (GLASS) SEE SPECIFICATION SECTION 116623
6. GYMNASIUM DIVIDER, SEE SPEC SECTION 083813
7. VOLLEYBALL SLEEVE, REFER TO SPECIFICATION SECTION 116623
8. FRAME OUT OPENING WITH WOOD TRIM AND STAINED TO MATCH PLAM-1
9. ARCHITECTURAL LETTERS, SEE INTERIOR ELEVATIONS AND SHEET A1.10
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12. TECH CART BY OWNER
13. FELT WALL MOUNTED ART DISPLAY
14. RESTROOM SYMBOL CUT OUTS, SEE SHEET A1.10
15. PROJECTOR SCREEN, SEE TECHNOLOGY PLAN
16. WALL MOUNTED CLEVERTOUCH SMART BOARD, OWNER PROVIDED
17. BLEACHERS, SEE SPEC SECTION 116623
18. PRIVACY CURTAIN AND CEILING MOUNTED TRACK, SEE SPEC SECTION 102123

EQUIPMENT PLAN LEGEND

X-X = INDICATES CASEWORK. REFER TO SPECIFICATION SECTION 123216 FOR SCHEDULE AND PLASTIC LAMINATE SELECTIONS. ALL CABINETS SHALL SLOPED TOPS AND ALL DOORS SHALL HAVE LOOKS U.N.O.

B_-# = BASE CABINET
W_-# = WALL CABINET
T_-# = TALL CABINET
FILLER = PROVIDE FACE, TOP, BOTTOM AND / OR COUNTERTOP FILLER AS REQUIRED BY TYPE OF CABINET

RS-# = ROLLER SHADE, SPECIFICATION SECTION 122413

= SIGNS (FOR TYPES AND MOUNTING, SEE SHEET A1.25 AND SPEC SECTION 101419, 101425 & 101424

VDB-_-# = VISUAL DISPLAY BOARD, SPECIFICATION SECTION 101100

APPLIANCE PLAN LEGEND

SEE SPEC. SECTION 113013.

RF-# = REFRIGERATOR
URF-# = UNDERCOUNTER REFRIGERATOR
WSHR = WASHER
MC-# = MICROWAVE
DRY = ELEC. DRYER

EQUIPMENT PLAN GENERAL NOTES

1. WALL CABINET TOPS TO BE SLOPED WITH TOP OF SPLOE AT 44" A.F.F. UNLESS NOTED OTHERWISE.
2. FILLER = PROVIDE FACE, TOP, BOTTOM AND/OR COUNTERTOP FILLER AS REQUIRED BY TYPE OF CABINET.
3. ALL VISUAL DISPLAY BOARD INSTALLATION LOCATIONS ARE TO BE FIELD VERIFIED PRIOR TO INSTALLATION
4. REFER TO SPECIFICATIONS FOR VISUAL DISPLAY BOARD FINISHES AND COLOR DESIGNATIONS.
5. HOLD ALL TALL CABINETS ADJACENT TO BASE CABINETS OUT 1" FROM WALL OR FLUSH WITH THE FRONT EDGE OF THE COUNTERTOP. PROVIDE FILLER AT BACK WALL AS REQUIRED.
6. ALL BASE CABINETS SHALL HAVE COUNTERTOPS WITH BACK AND SIDE SPLASH. REFER TO **DIVISION 12 SPECIFICATIONS.**
7. ALL COUNTERTOPS SHALL HAVE RADIUS CORNERS AT OUTSIDE CORNERS.
8. REFER TO SPECIFICATION **SECTION 122413** FOR DETAILED INFORMATION ON WINDOW ROLLER SHADES.
9. SEE SHEET A1.10 FOR SIGNAGE DETAILS. PROVIDE BACK PANELS AT ALL SIGNAGE MOUNTED ON GLASS.
10. TRIM FRP AND WALL PADS AROUND POWER/DATA OUTLETS (TYP.)
11. SEE SHEET A1.9 FOR VISUAL DISPLAY SCHEDULE.
12. REFER TO TECHNOLOGY DRAWINGS BY OTHERS TO COORDINATE VDB's. INFORM ARCHITECT OF CONFLICTS.
13. GYM EQUIPMENT, REFER TO SPECIFICATION SECTION 116623

1 EQUIPMENT PLAN - UNIT 200
1/8" = 1'-0"

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LEWTON SCHOOL

Lansing School District
2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

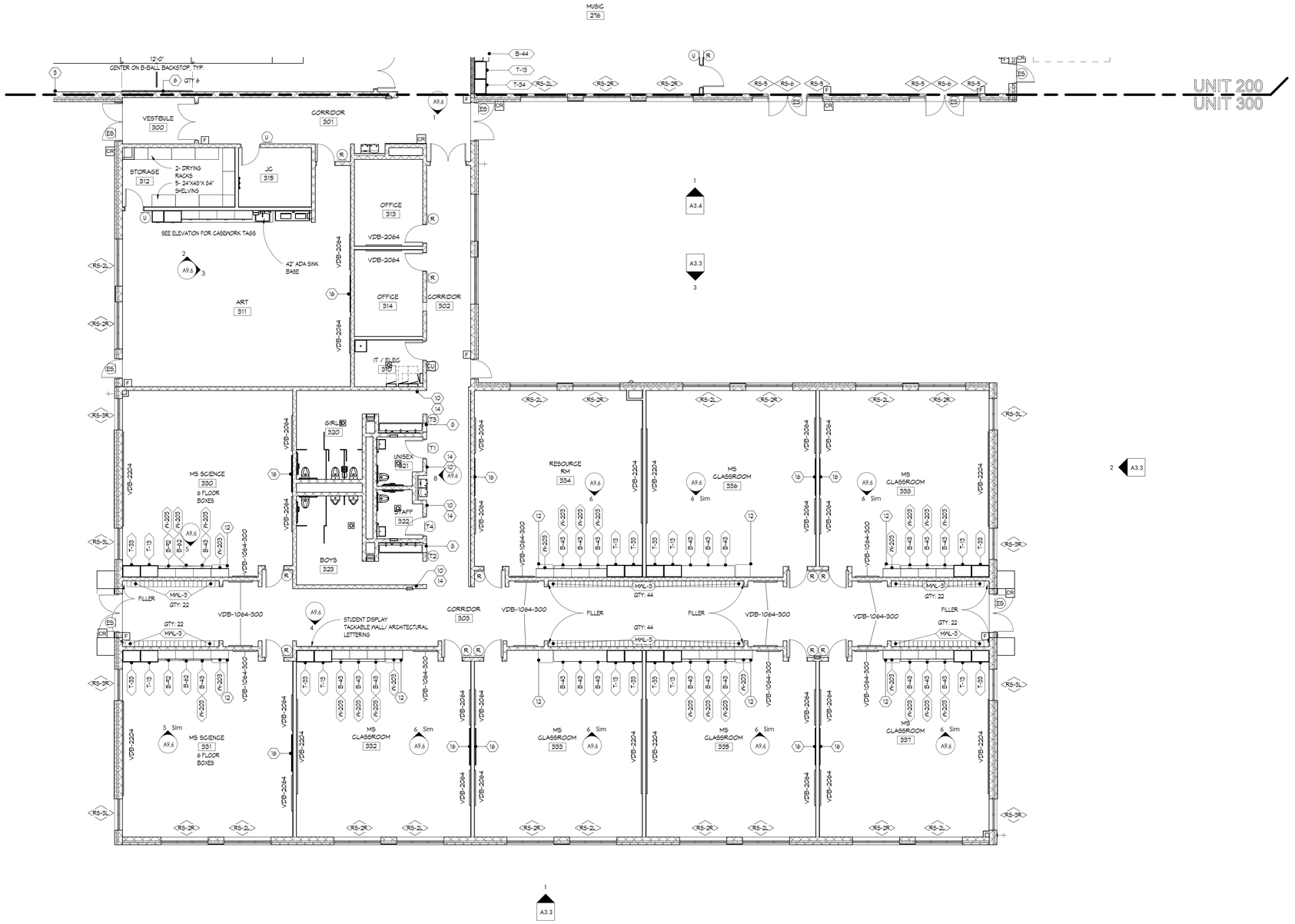
ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
EQUIPMENT PLAN - UNIT 200

SHEET NO.
A1.6



1 EQUIPMENT PLAN - UNIT 300

1/8" = 1'-0"

EQUIPMENT PLAN GENERAL NOTES

1. WALL CABINET TOPS TO BE SLOPED WITH TOP OF SPLOE AT 44" A.F.F. UNLESS NOTED OTHERWISE.
2. FILLER = PROVIDE FACE, TOP, BOTTOM AND/OR COUNTERTOP FILLER AS REQUIRED BY TYPE OF CABINET.
3. ALL VISUAL DISPLAY BOARD INSTALLATION LOCATIONS ARE TO BE FIELD VERIFIED PRIOR TO INSTALLATION
4. REFER TO SPECIFICATIONS FOR VISUAL DISPLAY BOARD FINISHES AND COLOR DESIGNATIONS.
5. HOLD ALL TALL CABINETS ADJACENT TO BASE CABINETS OUT 1" FROM WALL OR FLUSH WITH THE FRONT EDGE OF THE COUNTERTOP. PROVIDE FILLER AT BACK WALL AS REQUIRED.
6. ALL BASE CABINETS SHALL HAVE COUNTERTOPS WITH BACK AND SIDE SPLASH. REFER TO **DIVISION 12 SPECIFICATIONS.**
7. ALL COUNTERTOPS SHALL HAVE RADIUS CORNERS AT OUTSIDE CORNERS.
8. REFER TO SPECIFICATION **SECTION 122413** FOR DETAILED INFORMATION ON WINDOW ROLLER SHADES.
9. SEE SHEET A1.10 FOR SIGNAGE DETAILS. PROVIDE BACK PANELS AT ALL SIGNAGE MOUNTED ON GLASS.
10. TRIM FRP AND WALL PADS AROUND POWER/DATA OUTLETS (TYP.)
11. SEE SHEET A1.9 FOR VISUAL DISPLAY SCHEDULE.
12. REFER TO TECHNOLOGY DRAWINGS BY OTHERS TO COORDINATE VDB's. INFORM ARCHITECT OF CONFLICTS.
13. GYM EQUIPMENT, REFER TO SPECIFICATION SECTION 116623

EQUIPMENT PLAN LEGEND

X-X = INDICATES CASEWORK. REFER TO SPECIFICATION SECTION 123216 FOR SCHEDULE AND PLASTIC LAMINATE SELECTIONS. ALL CABINETS SHALL SLOPED TOPS AND ALL DOORS SHALL HAVE LOCKS U.N.O.

B-_ = BASE CABINET
W-_ = WALL CABINET
T-_ = TALL CABINET
FILLER = PROVIDE FACE, TOP, BOTTOM AND / OR COUNTERTOP FILLER AS REQUIRED BY TYPE OF CABINET

RS-# = ROLLER SHADE, SPECIFICATION SECTION 122413

= SIGNS (FOR TYPES AND MOUNTING, SEE SHEET A1.29 AND SPEC SECTION 101419, 101423 & 101424

VDB-_# = VISUAL DISPLAY BOARD, SPECIFICATION SECTION 101100

APPLIANCE PLAN LEGEND

SEE SPEC. SECTION 113013

RF-# = REFRIGERATOR
URF-# = UNDERCOUNTER REFRIGERATOR
WSHR = WASHER
MC-# = MICROWAVE
DRY = ELEC. DRYER

EQUIPMENT PLAN NEYNOTES

1. CASEWORK FILLER TYP
2. GYM WALL PADS, 2' W X 8' H X 2" THICK, MOUNTED AT 4" AFF. REFER TO SPECIFICATION SECTION 116623
3. GYM SCOREBOARD. REFER TO SPECIFICATION SECTION 116623
4. FLAT SCREEN TV, SEE TECHNOLOGY DRAWINGS
5. SIDE FIXED BASKETBALL BACKSTOP (GLASS) SEE SPECIFICATION SECTION 116623
6. GYMNASIUM DIVIDER, SEE SPEC SECTION 083513
7. VOLLEYBALL SLEEVE. REFER TO SPECIFICATION SECTION 116623
8. FRAME OUT OPENING WITH WOOD TRIM AND STAINED TO MATCH PLAM-1
9. ARCHITECTURAL LETTERS, SEE INTERIOR ELEVATIONS AND SHEET A1.10
10. VINYL LETTERING, SEE SHEET A1.10
11. FORWARD RETRACTABLE BASKETBALL BACKSTOP (GLASS) SEE SPECIFICATION SECTION 116623
12. TECH CART BY OWNER
13. FELT WALL MOUNTED ART DISPLAY
14. RESTROOM SYMBOL CUT OUTS, SEE SHEET A1.10
15. PROJECTOR SCREEN, SEE TECHNOLOGY PLAN
16. WALL MOUNTED CLEVERTOUCH SMART BOARD, OWNER PROVIDED
17. BLEACHERS, SEE SPEC SECTION 116623
18. PRIVACY CURTAIN AND CEILING MOUNTED TRACK, SEE SPEC SECTION 102123

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Lansing School District
2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

N

SHEET TITLE
EQUIPMENT PLAN - UNIT 300

SHEET NO.
A1.7

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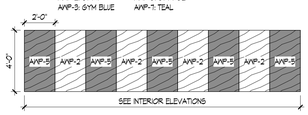
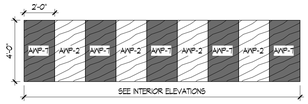
ACOUSTIC WALL PANEL SCHEDULE (AWP-#)

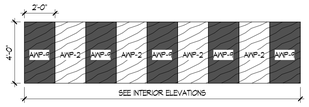
AWP-1: WHITE
AWP-2: GRAY
AWP-3: GYM BLUE
AWP-4: GYM GRAY
AWP-5: ORANGE
AWP-7: TEAL
AWP-8: PURPLE



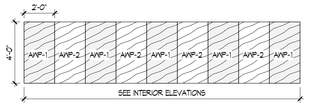
PRE-K- 2ND



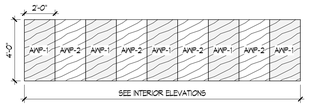
3RD-5TH



6TH-8TH AND MS SCIENCE



ART



CAFETERIA



MUSIC

AWP-10: WHITE

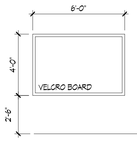
AWP-13: GYM BLUE

GYMNASIUM

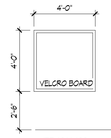
SEE ELEVATIONS FOR LAYOUT

VDB SCHEDULE (VDB-#)

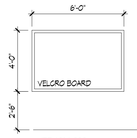
COORDINATE LOCATIONS WITH TECHNOLOGY DEVICES BEFORE INSTALLATION



VDB-1084-100



VDB-1044-100



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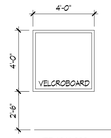
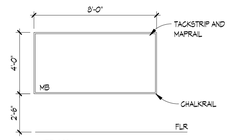
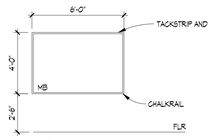


VDB-1044-300

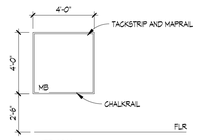


VDB-2084

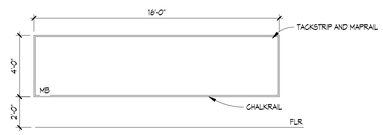
VDB IN GYMNASIUM TO NOT HAVE CHALKRAIL



VDB-2084



VDB-2044



VDB-2204

ROLLERSHADE SCHEDULE - (RS-#)

SECTION 122413
NOTE: VERIFY ALL DIMENSIONS IN FIELD. DIMENSIONS INDICATE MASONRY OPENINGS. SHADES TO BE MANUAL, SINGLE ROLLERS, 3% OPENNESS UNLESS NOTED OTHERWISE.

TAG	WIDTH	LENGTH	HAND	MOUNTING	ARCH REFERENCE	NOTES
RS-1R	4'-0"	6'-0"	RIGHT	INSIDE	B	
RS-1L	4'-0"	6'-0"	LEFT	INSIDE	B	
RS-2R	8'-0"	6'-0"	RIGHT	INSIDE	A	
RS-2L	8'-0"	6'-0"	LEFT	INSIDE	A	
RS-3R	5'-4"	6'-0"	RIGHT	INSIDE	C	
RS-3L	5'-4"	6'-0"	LEFT	INSIDE	C	
RS-4L	8'-0"	5'-4"	LEFT	OUTSIDE	BL-2	
RS-4R	8'-0"	5'-4"	RIGHT	OUTSIDE	BL-2	
RS-5	2'-8"	12'-8"		INSIDE	F	CAFETERIA DUAL ROLLER SHADE- 3% FILTERING/BLACK OUT - MOTORIZED
RS-6	6'-6"	9'-10"		INSIDE	F	CAFETERIA DUAL ROLLER SHADE- 3% FILTERING/BLACK OUT - MOTORIZED

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SHEET TITLE

EQUIPMENT SCHEDULES & DETAILS

SHEET NO.

A1.9

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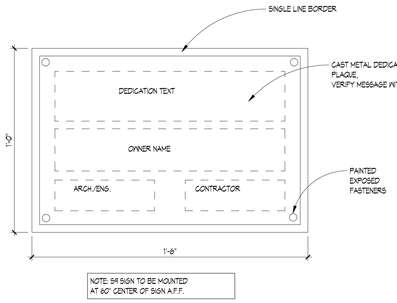
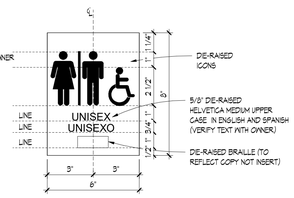
SIGNAGE TYPES

S9

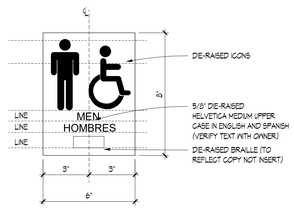


NOTE: S9 SIGN TO BE MOUNTED AT 60" CENTER OF SIGN A.F.F.

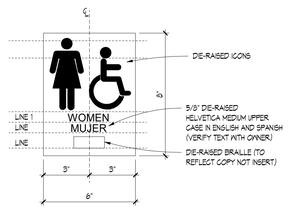
T1



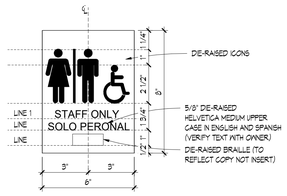
T2



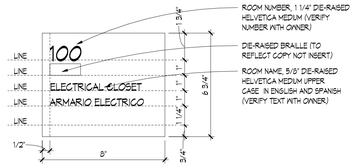
T3



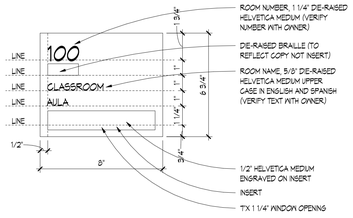
T4



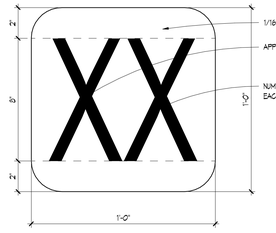
U



R

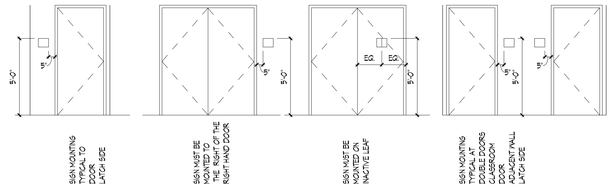


ES



NOTE: SIGN TO BE MOUNTED ON INSIDE AND OUTSIDE OF EACH EXTERIOR DOOR WHEN MOUNTING ON GLASS, ELIMINATE ALUMINUM PANELS ADHERE NUMBER DIRECTLY TO GLASS.

SIGNAGE MOUNTING HEIGHTS (U.N.O.)



EXTERIOR SIGNAGE SCHEDULE (ES)

DOOR TAG	LOCATION	DOOR NUMBER
200A	VESTIBULE	01
248	CLING	02
202A	VESTIBULE 202	03
260B	RECEIVING	04
282	ELECTRICAL	05
274B	CAFETERIA	06
274C	CAFETERIA	07
274E	CAFETERIA	08
301A	CORRIDOR 301	09
302B	CORRIDOR 302	10
303C	CORRIDOR 303	11
303A	CORRIDOR 303	12
311B	SCIENCE	13
302A	VESTIBULE	14
230C	GYM	15
201	VESTIBULE	16
100A	CORRIDOR 100	17
102A	CORRIDOR 102	18
101A	CORRIDOR 101	19
220B	LIBRARY	20

ARCHITECTURAL LETTERING

1" ACRYLIC 3D LETTER SIGNAGE - 8" WHITE FONT- ARIAL UPPER CASE

UNIT 200-MAIN OFFICE
UNIT-200-CAFETERIA



UNIT 200-ART DISPLAYS
UNIT 300-ART DISPLAYS



1" ACRYLIC 3D LETTER SIGNAGE - 24" WHITE FONT- ARIAL UPPER CASE

UNIT 200 - CROSS CORRIDOR DOORS

PK-2

UNIT 100 - CROSS CORRIDOR DOORS

3-5

UNIT 300 - CROSS CORRIDOR DOORS

6-8

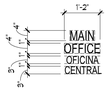
VINYL LETTERING ON GLASS - WHITE FROSTED FONT- ARIAL UPPER CASE

UNIT 200-LIBRARY
8" FONT
3" FONT



UNIT 200-WELCOME
4" FONT

3" FONT

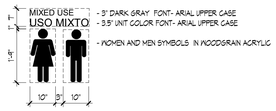


RESTROOM SIGNAGE
VINYL FONT- ARIAL UPPER CASE
ACRYLIC WOMEN AND MEN SYMBOLS

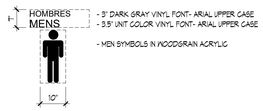
UNIT 100,200, 300- STAFF RESTROOMS



UNIT 100, 200, 300- MIXED USE RESTROOMS



UNIT 100,200, 300- RESTROOMS





VINYL LETTERING - ARIAL UPPER CASE

UNIT 200-LIBRARY
5" FONT- MATCH P-3

4" FONT-MATCH P-1

8" FONT- MATCH P-3

4" FONT- MATCH P-1



SIGNAGE

3" = 1'-0"

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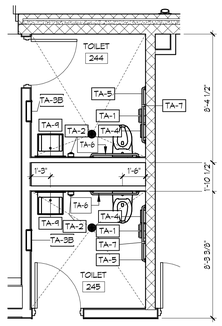
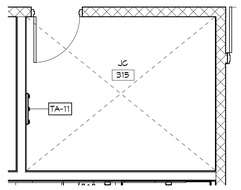
JOB NO. 2616.01G

SHEET TITLE
SIGNAGE

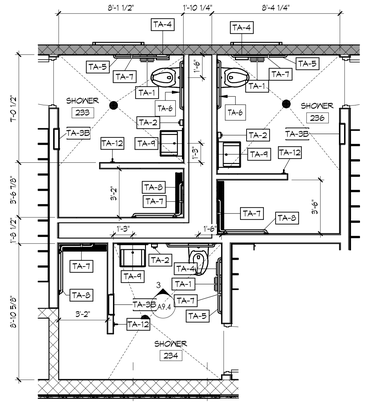
SHEET NO.
A1.10



13 TOILET 244/245
1/4" = 1'-0"



14 JC 315
1/4" = 1'-0"

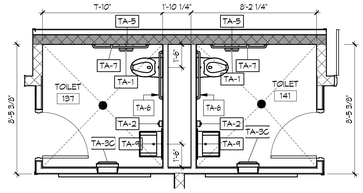


8 GYM SHOWERS
1/4" = 1'-0"

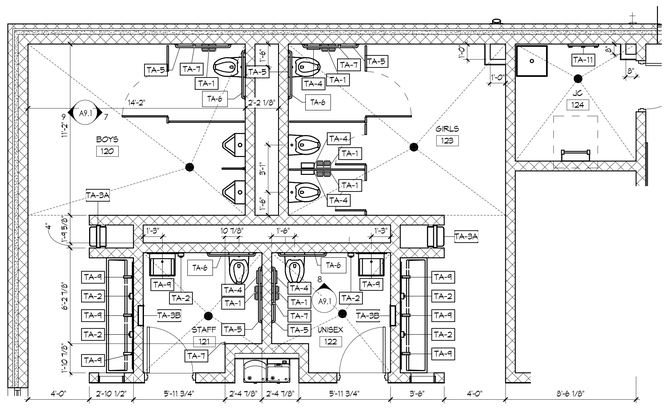
TOILET ACCESSORIES	
MARK	DESCRIPTION
TA-1	TOILET PAPER DISPENSER - OFCI
TA-2	LIQUID SOAP DISPENSER - OFCI
TA-3A	SEMI-RECESSED PAPER TOWEL DISPENSER/WASTE RECEPTABLE COMBO UNIT - 19 GAL.
TA-3B	RECESSED PAPER TOWEL DISPENSER/WASTE RECEPTABLE COMBO UNIT - 4.9 GAL.
TA-3C	SEMI-RECESSED PAPER TOWEL DISPENSER/WASTE RECEPTABLE COMBO UNIT - 12 GAL.
TA-4	SANITARY NAPKIN DISPOSAL UNIT
TA-5	GRAB BAR - 42"
TA-6	GRAB BAR - 36" (AMBULATORY)
TA-7	VERTICAL GRAB BAR - 18"
TA-8	GRAB BAR - 24" x 36" (SHOWER)
TA-9	MIRROR - 2'-0"W x 3'-0"H
TA-10	SHOWER ROD & CURTAIN
TA-11	MOP & BROOM RACK
TA-12	WARDROBE HOOK

NOTES:

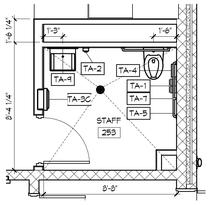
1. INSTALL UNDERLAVATORY GUARDS AT EACH LAVATORY PLUMBING CONNECTION PER SPECIFICATION SECTION 102800.
2. SEE EQUIPMENT PLANS FOR ADDITIONAL ACCESSORIES NOT LOCATED IN TOILET ROOMS.
3. TOILET ACCESSORIES NOTED "OFCI" SHALL BE OWNER FURNISHED & CONTRACTOR INSTALLED.
4. SLOPE FLOOR MIN. 1/8" PER FOOT TO DRAIN, U.N.O.
5. REFER TO SHEET G.0 FOR TYPICAL MOUNTING HEIGHTS.



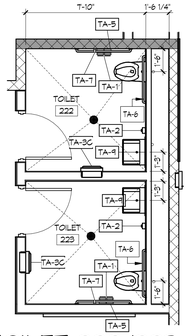
4 TOILET 137/141
1/4" = 1'-0"



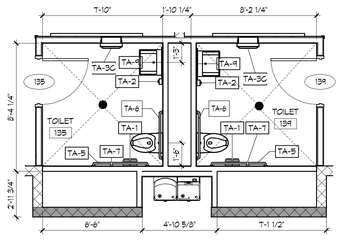
12 UNIT 100 GROUP TOILETS
1/4" = 1'-0"



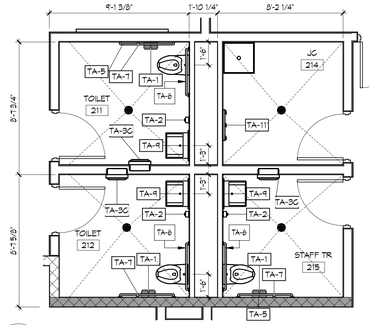
10 TOILET 253
1/4" = 1'-0"



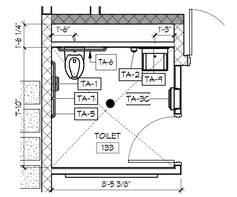
7 TOILET 222/223
1/4" = 1'-0"



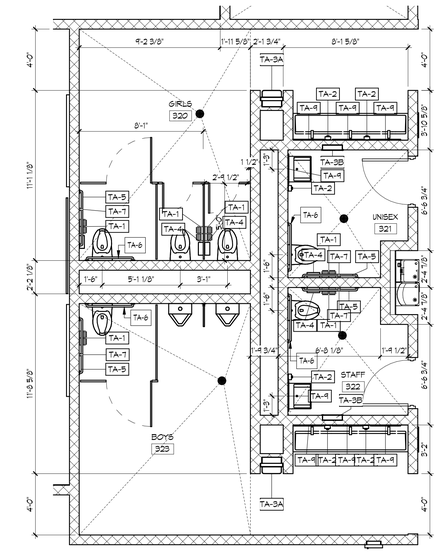
3 TOILET 135/139
1/4" = 1'-0"



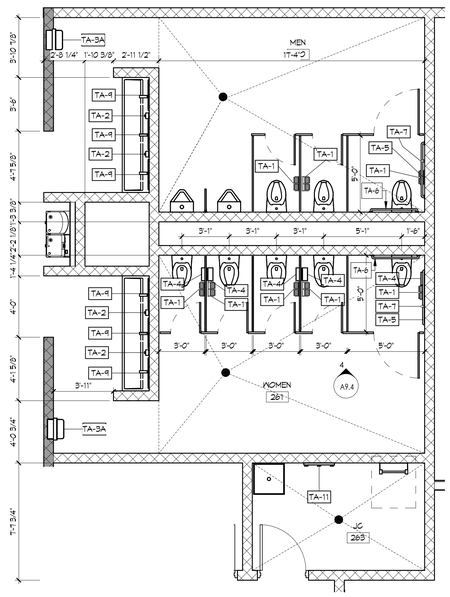
6 TOILET 211/212/214/215
1/4" = 1'-0"



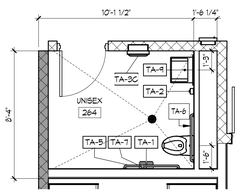
2 TOILET 133
1/4" = 1'-0"



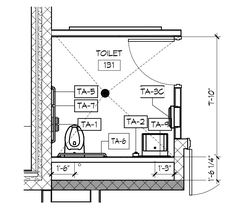
11 UNIT 300 GROUP TOILETS
1/4" = 1'-0"



9 UNIT 200 GROUP TOILETS
1/4" = 1'-0"



5 TOILET 264
1/4" = 1'-0"



1 TOILET 131
1/4" = 1'-0"

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LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
ENLARGED PLANS

SHEET NO.
A1.11

REFLECTED CEILING LEGEND

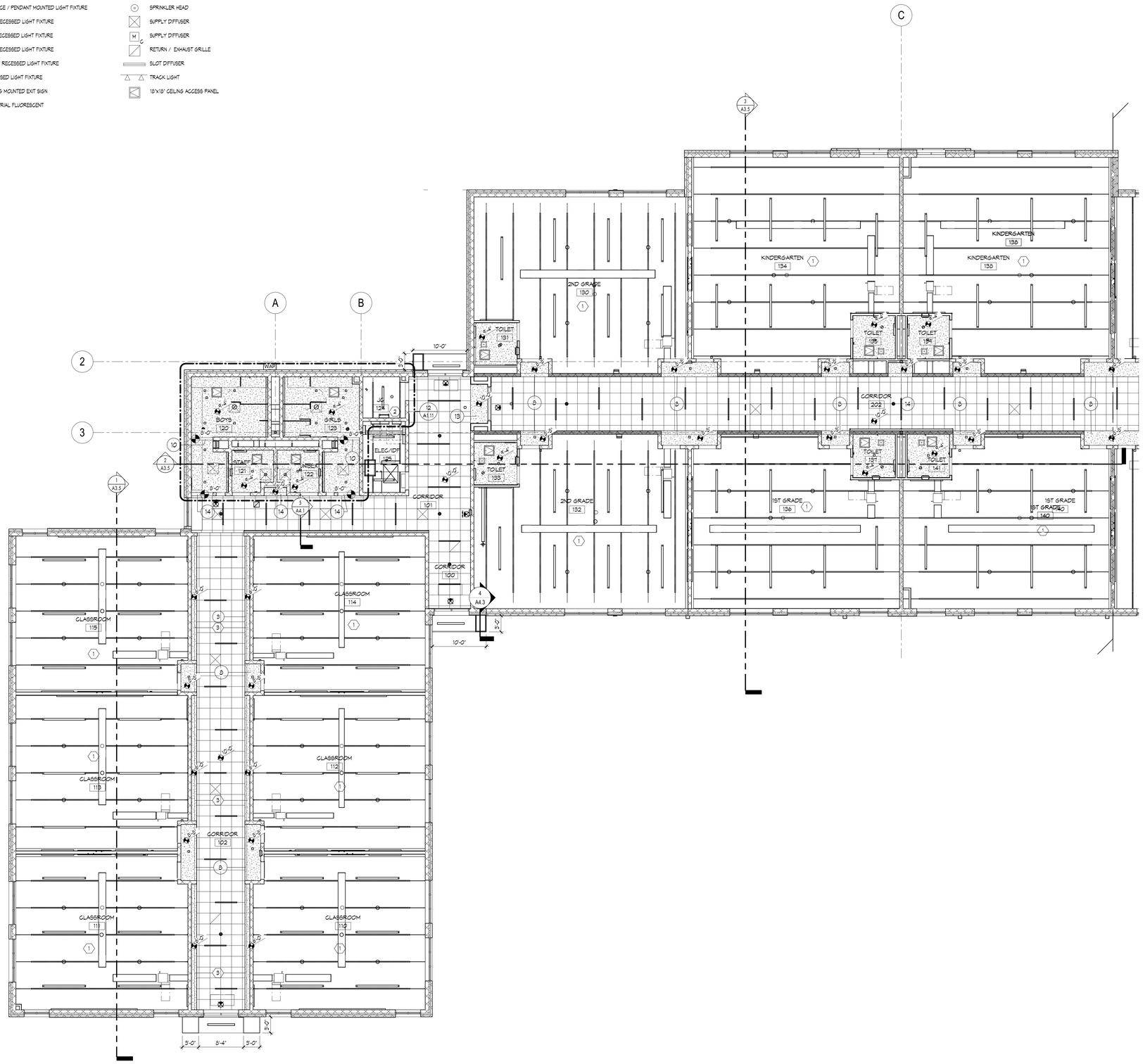
- PARTITION TYPE
- 2'x4' SURFACE MOUNTED LIGHT FIXTURE
- 1'x4' SURFACE MOUNTED LIGHT FIXTURE
- 2'x2' SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"x12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2'x4' RECESSED LIGHT FIXTURE
- 1'x4' RECESSED LIGHT FIXTURE
- 2'x2' RECESSED LIGHT FIXTURE
- 12"x12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- SMOKE DETECTOR
- PUBLIC ADDRESS SPEAKER
- SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT
- 18"x18" CEILING ACCESS PANEL

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE. REFER TO COLOR LAYOUT SHEETS FOR ADDITIONAL INFO.
2. NEW LADDER AND ROOF ACCESS HATCH. REFER TO DETAIL ON A5.1.
3. ALIGN GYP SOFFIT WITH TOP OF LOCKERS.

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR PARTITION TYPES AND BULKHEAD DETAILS REFER TO SHEET A2.5 .
2. PROVIDE 'BULLNOSE' CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR STOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR GYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APG SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.



1 REFLECTED CEILING PLAN - UNIT 100
1/8" = 1'-0"

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SHEET TITLE

REFLECTED CEILING PLAN - UNIT 100

SHEET NO.

A2.1

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REFLECTED CEILING PLAN GENERAL NOTES

1. FOR PARTITION TYPES AND BULKHEAD DETAILS REFER TO SHEET A2.5 .
2. PROVIDE "BULLNOSE" GWB UP TO FINISH CEILING, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR STOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR GYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.

REFLECTED CEILING LEGEND

- PARTITION TYPE
- 2x4' SURFACE MOUNTED LIGHT FIXTURE
- 1x4' SURFACE MOUNTED LIGHT FIXTURE
- 2x2' SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"x12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2x4' RECESSED LIGHT FIXTURE
- 1x4' RECESSED LIGHT FIXTURE
- 2x2' RECESSED LIGHT FIXTURE
- 12"x12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- GOVE LIGHT FIXTURE
- SD SMOKE DETECTOR
- S PUBLIC ADDRESS SPEAKER
- S SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- M SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT
- 15"x15" CEILING ACCESS PANEL

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE. REFER TO COLOR LAYOUT SHEETS FOR ADDITIONAL INFO.
2. NEW LADDER AND ROOF ACCESS HATCH. REFER TO DETAIL ON A5.1.
3. ALIGN GYP SOFFIT WITH TOP OF LOCKERS.

1 REFLECTED CEILING PLAN - UNIT 200
1/8" = 1'-0"

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BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
REFLECTED CEILING PLAN - UNIT 200

SHEET NO.
A2.2

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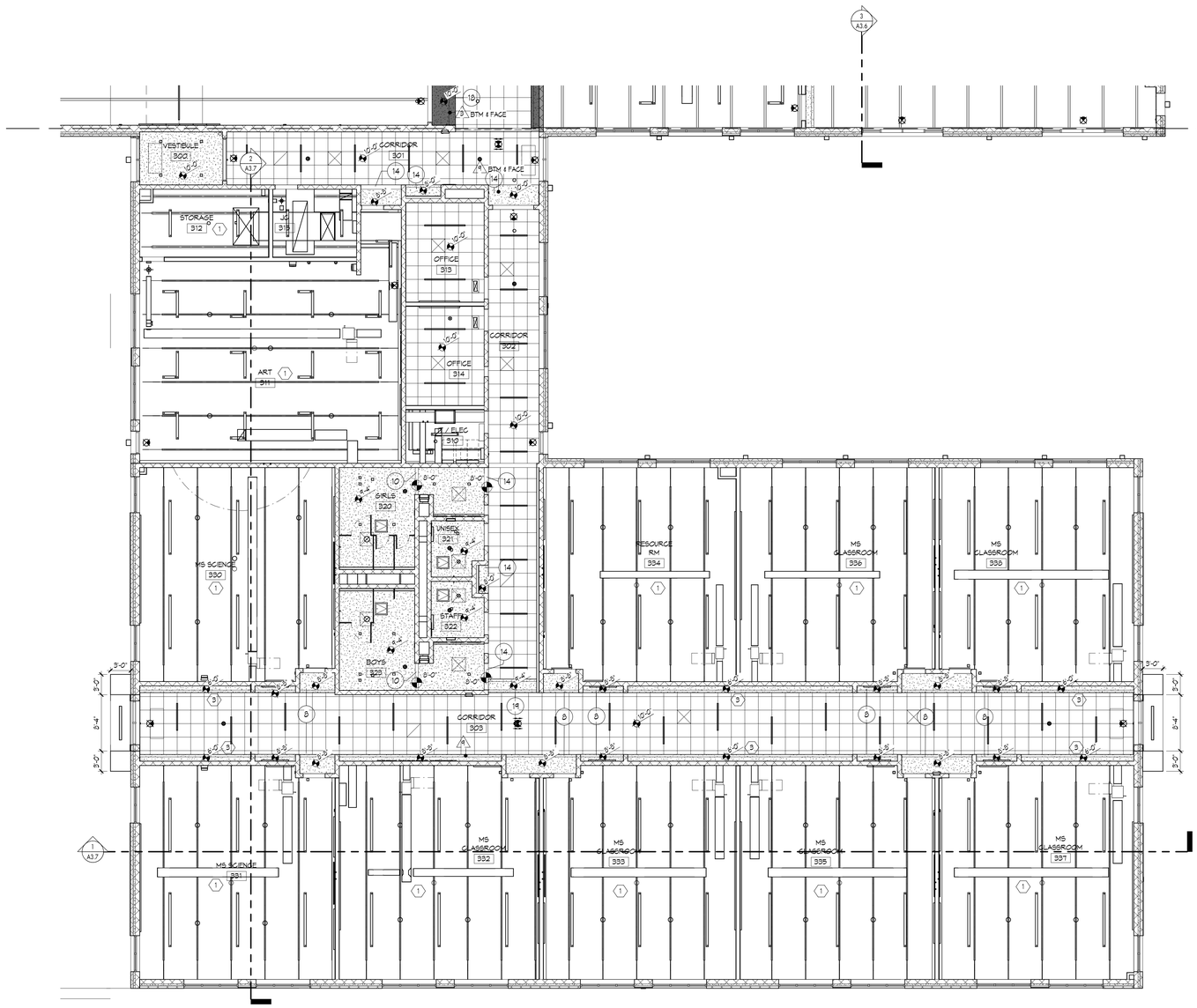

1 REFLECTED CEILING PLAN - UNIT 300
1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR PARTITION TYPES AND BULKHEAD DETAILS REFER TO SHEET A2.5 .
2. PROVIDE 'BULLNOSE' CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR STOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR SYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.

REFLECTED CEILING LEGEND

- (#) PARTITION TYPE
- 2'x4' SURFACE MOUNTED LIGHT FIXTURE
- 1'x4' SURFACE MOUNTED LIGHT FIXTURE
- 2'x2' SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"x12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2'x4' RECESSED LIGHT FIXTURE
- 1'x4' RECESSED LIGHT FIXTURE
- 2'x2' RECESSED LIGHT FIXTURE
- 12"x12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- (SD) SMOKE DETECTOR
- (S) PUBLIC ADDRESS SPEAKER
- (S) SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- (M) SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT
- 18"X18" CEILING ACCESS PANEL

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE. REFER TO COLOR LAYOUT SHEETS FOR ADDITIONAL INFO.
2. NEW LADDER AND ROOF ACCESS HATCH. REFER TO DETAIL ON A5.1.
3. ALIGN GYP SOFFIT WITH TOP OF LOCKERS.

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Lansing School District

ISSUANCES	DATE
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KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

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SHEET TITLE
REFLECTED CEILING PLAN - UNIT 300

SHEET NO.
A2.3

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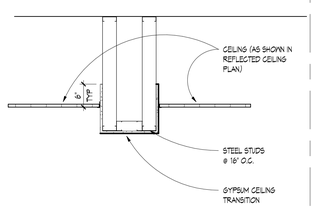
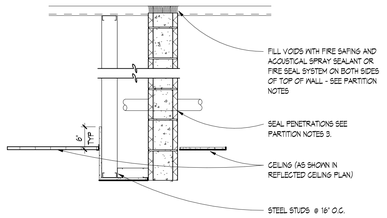
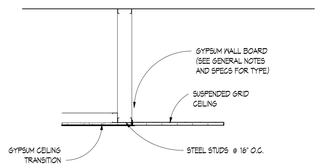


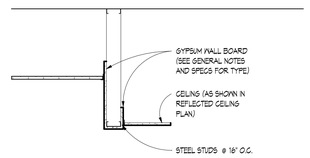
19 BULKHEAD DETAIL
3/4" = 1'-0"



18 BULKHEAD DETAIL
3/4" = 1'-0"



13 BULKHEAD DETAIL
3/4" = 1'-0"

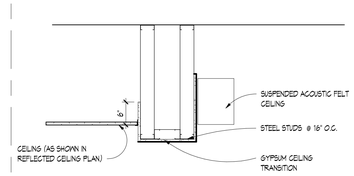


8 BULKHEAD DETAIL
3/4" = 1'-0"

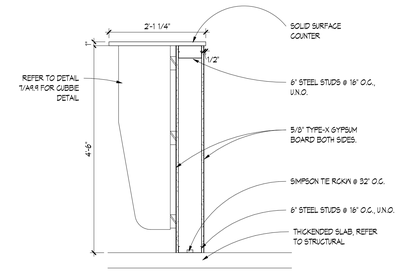
PARTITION NOTES:

PARTITION TAGS ON PLANS AND PARTITION TYPE DETAILS HAVE BEEN PROVIDED TO SHOW GENERAL INTENT OF THE CONSTRUCTION. CONTRACTORS MUST VERIFY EACH CONDITION FOR FIRE RATING, BEARING, STRUCTURAL REQUIREMENTS AND WALL FINISHES. PROVIDE APPROPRIATE CONSTRUCTION AS REQUIRED. SPECIFICALLY INDICATED IN REFERENCED DETAIL OR NOT. REFER TO THE FOLLOWING NOTES FOR ADDITIONAL REQUIREMENTS AND DIRECTIONS FOR APPLICATION OF SEALANT, MATERIALS AND GYPSUM BOARD TYPES.

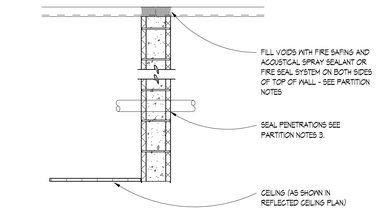
1. REFER TO CODE COMPLIANCE PLANS FOR REQUIRED RATINGS ON WALLS. PROVIDE FIRE RATED SEALANT, FIRESTOPPING AND TYPE 'X' GYPSUM BOARD AS REQUIRED. ALL RECESSES IN FIRE WALLS SHALL HAVE SOLID MASONRY OR MULTIPLE LAYERS OF GYPSUM BOARD AS REQUIRED TO MAINTAIN APPLICABLE FIRE RATING. PROVIDE ACOUSTICAL SEALANT AT ALL NON-RATED WALLS. PROVIDE FIRE RATED SEALANT AT ALL RATED WALLS.
2. PROVIDE FIRE RATED SEALANT AND/OR FIRESTOPPING AT ALL PENETRATIONS (CONDUIT, PIPING, DUCTWORK, ETC.) THROUGH FIRE RATED WALLS. REFER TO DETAILS ON THIS PAGE AND COORDINATE WITH MEP TRADES.
3. PROVIDE ACOUSTICAL SEALANT AT ALL PENETRATIONS (CONDUIT, PIPING, DUCTWORK, ETC.) THROUGH NON-FIRE RATED WALLS.
4. PROVIDE ABUSE RESISTANT GYPSUM BOARD FROM FLOOR 8'-0" A.F.F. FOR ALL WALLS NOT COVERED BY TILE OR WALL PROTECTION. PROVIDE TYPE 'X' GYPSUM BOARD FOR THE REMAINDER OF THE WALL AND/OR BULKHEAD. STANDARD TYPE 'X'. GYPSUM BOARD MAY BE USED BELOW 4'-0" A.F.F. WHEN BEHIND FIXED ITEMS SUCH AS CASEWORK, SHELVES, LOCKERS, WALL PROTECTION, ETC.
5. PROVIDE COMBINATION WATER AND ABUSE RESISTANT GYPSUM BOARD FROM FLOOR TO 48" A.F.F. FOR ALL WALLS IN JANITOR CLOSETS AND NON-TILED TOILET ROOMS. PROVIDE TYPE 'X' GYPSUM BOARD FOR THE REMAINDER OF THE WALL AND/OR BULKHEAD.
6. REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS, LOCATIONS AND MATERIALS.
7. REFER TO STRUCTURAL DRAWINGS AND WALL SECTIONS FOR FLOOR AND METAL DECK ELEVATIONS AND LOCATIONS.
8. REFER TO COLOR LAYOUT PLANS FOR WALL FINISH.
9. REFER TO BUILDING DETAILS, EQUIPMENT PLANS AND SPECIFICATIONS. PROVIDE BLOCKING IN ALL STEEL STUD PARTITIONS AS REQUIRED FOR CASEWORK SUPPORT, FLATSCREEN TV'S, PROJECTORS, CLASSROOM DISPLAYS, AND OTHER EQUIPMENT. PROVIDE SOLID WOOD BLOCKING FOR ALL DOOR STOP LOCATIONS.
10. REFER TO STRUCTURAL DRAWINGS FOR TOP OF WALL DEFLECTION DETAILS AT MASONRY AND STUD WALLS. PROVIDE SLIP TYPE DEFLECTION TRACK AND DETAILING AT HEAD OF NON-FIRE RATED, NON-BEARING STUD WALLS AS REQUIRED FOR FIRE RATINGS. CONSULT STUD AND GYPSUM BOARD MANUFACTURER STANDARD DETAILING FOR THESE CONDITIONS.
11. PROVIDE MINIMUM 20 GA. STUDS AT 16" O.C. FOR ALL WALLS, U.N.O. STUD SIZE AND GUAGE WILL VERY DEPENDING ON STUD WALL HEIGHT AND AS REQUIRED FOR MINIMUM GUAGE AND SIZE NOTES.
12. PARTITION TYPES ARE A REPRESENTATION OF PARTITION REQUIREMENTS, REFER TO WALL SECTIONS AND BUILDING DETAILS FOR SPECIFIC BLOCK COURSING PATTERN.
13. PROVIDE CONTROL JOINTS IN GYPSUM CEILINGS @ MINIMUM OF 20'-0" O.C. VERTICALLY & HORIZONTALLY.



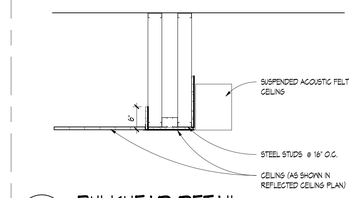
17 BULKHEAD DETAIL
3/4" = 1'-0"



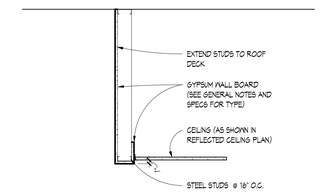
12 METAL STUD HALF WALL @ CUBBIES
3/4" = 1'-0"



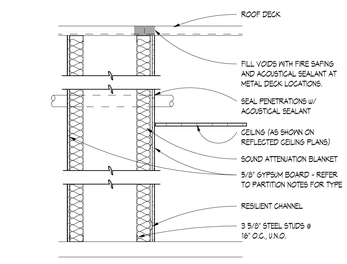
7 BULKHEAD DETAIL
3/4" = 1'-0"



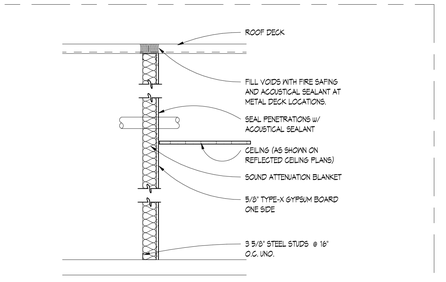
16 BULKHEAD DETAIL
3/4" = 1'-0"



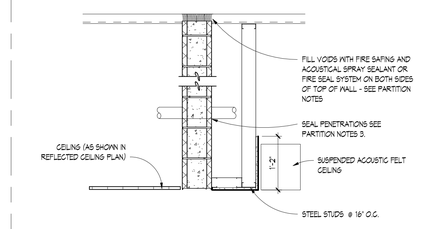
11 BULKHEAD DETAIL
3/4" = 1'-0"



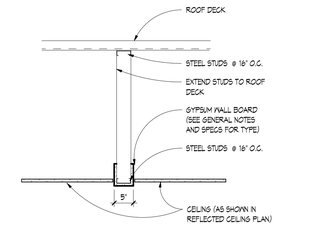
6 METAL STUD CHASE WALL
3/4" = 1'-0"
PROVIDE STUDS @ 24" & 24" AFF HORIZONTALLY FOR VDB & CASEWORK ATTACHMENT.



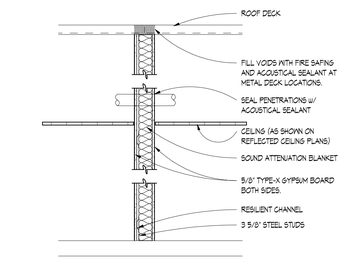
3 METAL STUD PARTITION WALL
3/4" = 1'-0"
PROVIDE STUDS @ 24" & 24" AFF HORIZONTALLY FOR VDB & CASEWORK ATTACHMENT.



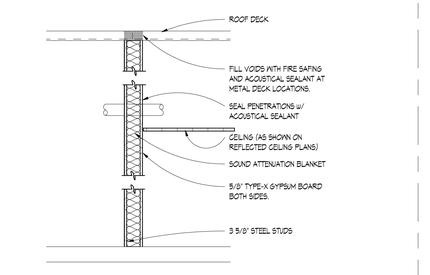
15 BULKHEAD DETAIL
3/4" = 1'-0"



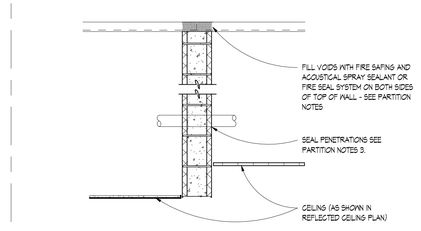
10 BULKHEAD DETAIL
3/4" = 1'-0"



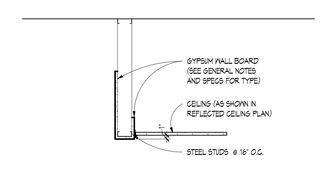
5 METAL STUD PARTITION WALL
3/4" = 1'-0"
PROVIDE STUDS @ 24" & 24" AFF HORIZONTALLY FOR VDB & CASEWORK ATTACHMENT.



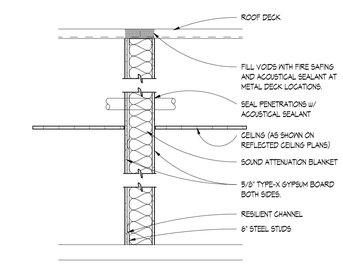
2 METAL STUD PARTITION WALL
3/4" = 1'-0"
PROVIDE STUDS @ 24" & 24" AFF HORIZONTALLY FOR VDB & CASEWORK ATTACHMENT.



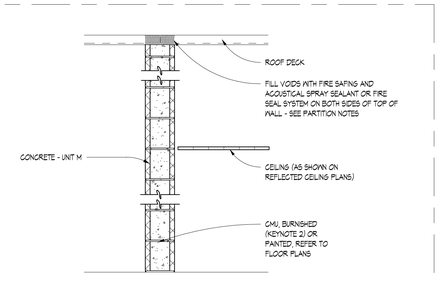
14 BULKHEAD DETAIL
3/4" = 1'-0"



9 BULKHEAD DETAIL
3/4" = 1'-0"



4 METAL STUD PARTITION WALL
3/4" = 1'-0"
PROVIDE STUDS @ 24" & 24" AFF HORIZONTALLY FOR VDB & CASEWORK ATTACHMENT.



1 CMU WALL
3/4" = 1'-0"

KINGSCOTT
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LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
INTERIOR PARTITION TYPES

SHEET NO.
A2.5

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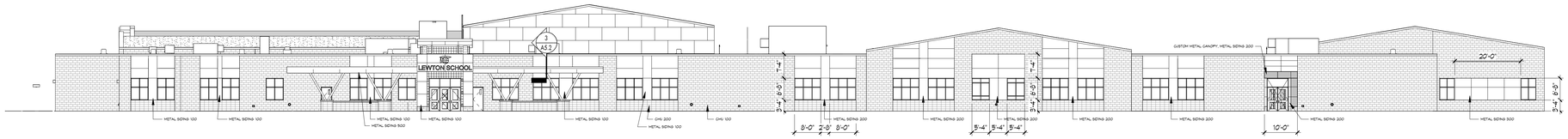


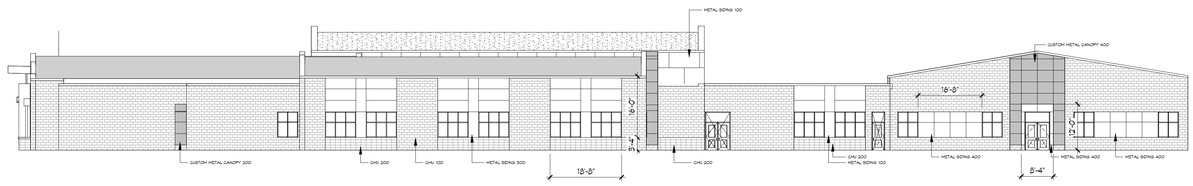
1 COMPOSITE ELEVATION - NORTH

1/16" = 1'-0" REFER TO 1 / A1.1



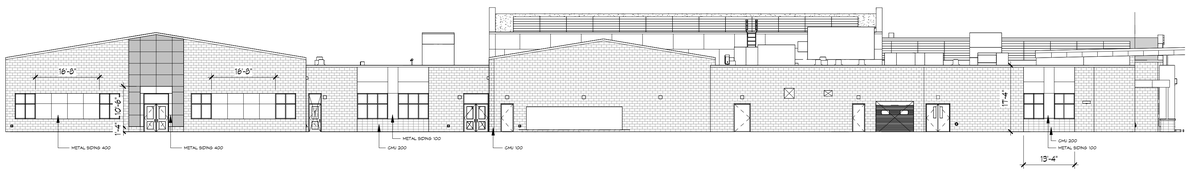
4 COMPOSITE ELEVATION -SOUTH

1/16" = 1'-0" REFER TO 1 / A1.3



2 COMPOSITE ELEVATION - WEST

1/16" = 1'-0" REFER TO 1 / A1.1



3 COMPOSITE ELEVATION - EAST

1/16" = 1'-0" REFER TO 1 / A1.2

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LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

EXTERIOR FINISH SCHEDULE
(BASIS-OF-DESIGN)

METAL SIDING 100: LAMINATORS OMEGA-LITE
COLOR: CUSTOM BLUE - COLOR TO MATCH EXTERIOR TILE 2

METAL SIDING 200: LAMINATORS OMEGA-LITE
COLOR: CUSTOM ORANGE RAL 2009

METAL SIDING 300: LAMINATORS OMEGA-LITE
COLOR: CUSTOM LIGHT BLUE RAL 5012

METAL SIDING 400: LAMINATORS OMEGA-LITE
COLOR: CUSTOM PURPLE RAL 4007

METAL SIDING 500: LAMINATORS OMEGA-LITE
COLOR: "GRAY" SELECTED FROM MANUFACTURERS STANDARD COLORS

BURNISHED CMU VENEER 100: GRAND BLANC CEMENT
COLOR: FRANKFURT
MORTAR: NATURAL GRAY

BURNISHED CMU VENEER 200: GRAND BLANC CEMENT (STACK BOND)
COLOR: BOARDMAN
MORTAR: NATURAL GRAY

EXTERIOR TILE 1: TILEBAR BELLA UFFIZI
MATTE PORCELAIN 9x9

EXTERIOR TILE 2: PANTHEON CROIX BLUE
GLOSSY 2.5x.10, INSTALLED VERTICALLY

TRANSLUCENT FIBERGLASS SANDWICH PANEL SYSTEM: KALWALL CORP.
COLOR: WHITE ON INTERIOR, CRYSTAL ON EXTERIOR
ALUMINUM FRAMING COLOR: CLEAR ANODIZED
GRID PATTERN: NOMINAL 12" X 24" SHOJI

CURTAINWALL FRAMING: TUBELIGHT 400TU, 2-1/2" X 6"
COLOR: CLEAR ANODIZED.
CURTAINWALL SEALANT: TBD

STOREFRONT FRAMING (TYPICAL): TUBELIGHT TU24000, 2" X 4-1/2"
COLOR: CLEAR ANODIZED.

INSULATED GLAZING: 1" INSULATED GLASS UNIT WITH LOW-E COATING-GUARDIAN CRYSTAL GRAY GLASS SN68 WITH LOW-E ON #2, CLEAR INTERIOR LITE

EXPOSED GALVANIZED LINTELS: COLOR: MATCH ADJACENT COLOR

EXTERIOR FINISH LEGEND

- METAL SIDING (CUSTOM COLOR)
- 4" NOMINAL CMU VENEER - RUNNING BOND
- 4" NOMICAL CMU VENEER - STACKED BOND
- TRANSLUCENT FIBERGLASS SANDWICH PANEL

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

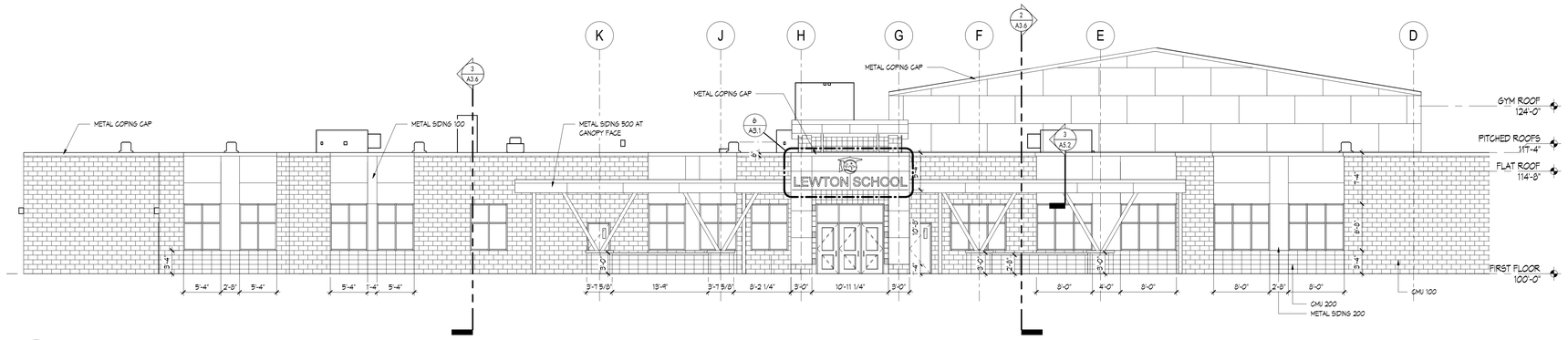
KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

N

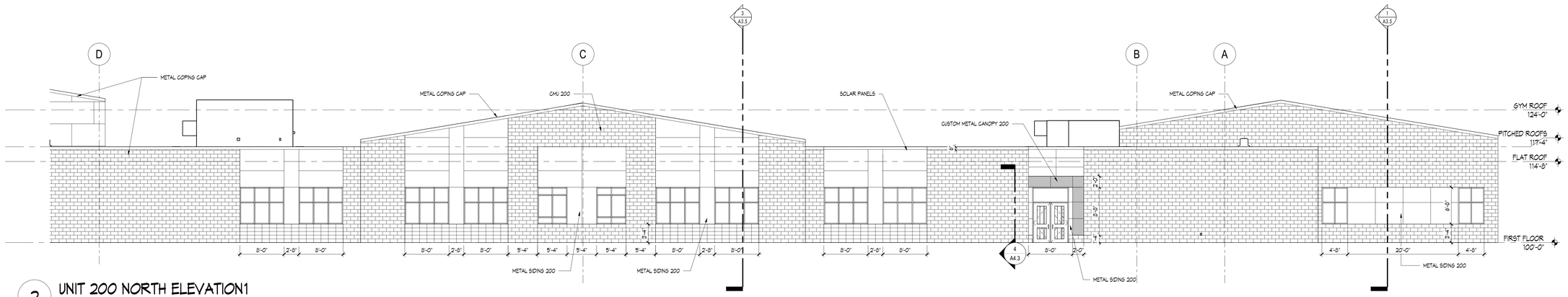
SHEET TITLE
EXTERIOR ELEVATIONS
COMPOSITE

SHEET NO.
A3.0



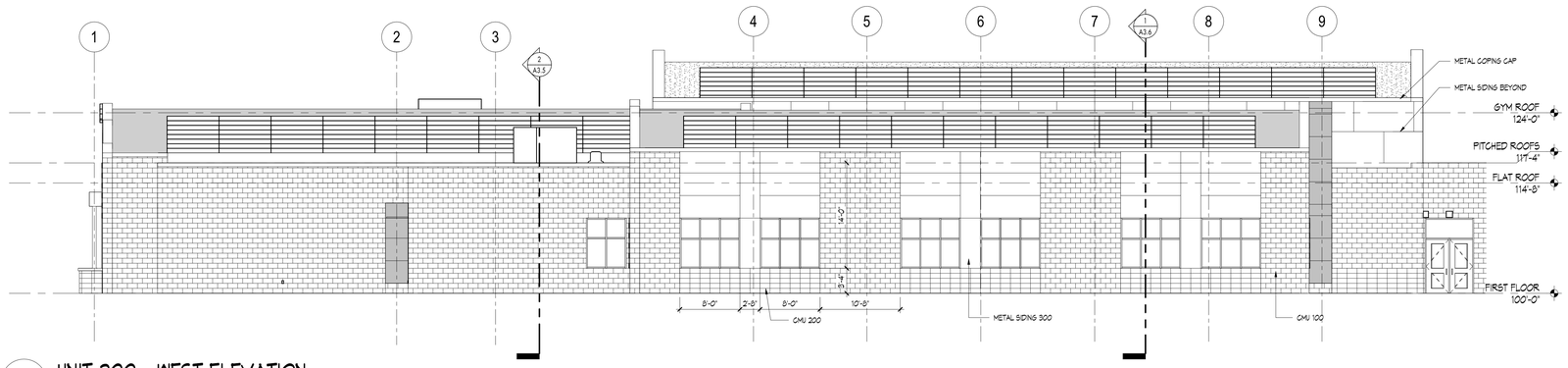
1 UNIT 100 - NORTH ELEVATION

1/8" = 1'-0" REFER TO 1 / A1.2



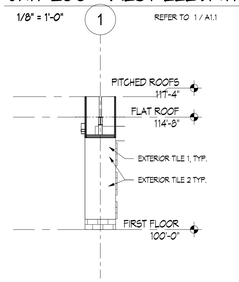
2 UNIT 200 NORTH ELEVATION1

1/8" = 1'-0" REFER TO 1 / A1.1



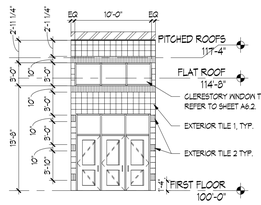
3 UNIT 200 - WEST ELEVATION

1/8" = 1'-0" REFER TO 1 / A1.1



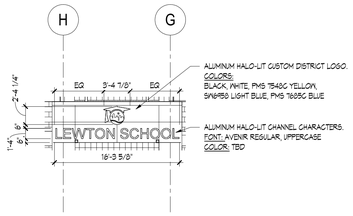
4 UNDERSIDE OF ARCH ELEV.

1/8" = 1'-0" REFER TO 1 / A1.1



5 FRONT ENTRANCE - DETAIL

1/8" = 1'-0" REFER TO 1 / A1.2



6 DIMENSIONAL SIGNAGE

1/8" = 1'-0" REFER TO 1 / A3.1

EXTERIOR FINISH SCHEDULE (BASIS-OF-DESIGN)

METAL SIDING 100: LAMINATORS OMEGA-LITE
COLOR: CUSTOM BLUE - COLOR TO MATCH EXTERIOR TILE 2

METAL SIDING 200: LAMINATORS OMEGA-LITE
COLOR: CUSTOM ORANGE RAL 2009

METAL SIDING 300: LAMINATORS OMEGA-LITE
COLOR: CUSTOM LIGHT BLUE RAL 5012

METAL SIDING 400: LAMINATORS OMEGA-LITE
COLOR: CUSTOM PURPLE RAL 4007

METAL SIDING 500: LAMINATORS OMEGA-LITE
COLOR: "GRAY" SELECTED FROM MANUFACTURERS STANDARD COLORS

BURNISHED CMU VENEER 100: GRAND BLANC CEMENT
COLOR: FRANKFURT
MORTAR: NATURAL GRAY

BURNISHED CMU VENEER 200: GRAND BLANC CEMENT (STACK BOND)
COLOR: BOARDMAN
MORTAR: NATURAL GRAY

EXTERIOR TILE 1: TILEBAR BELLA UFFIZI
MATTE PORCELAIN 9x9

EXTERIOR TILE 2: PANTHEON CROIX BLUE
GLOSSY 2.5x 10, INSTALLED VERTICALLY

TRANSLUCENT FIBERGLASS SANDWICH PANEL SYSTEM: KALWALL CORP.
COLOR: WHITE ON INTERIOR, CRYSTAL ON EXTERIOR
ALUMINUM FRAMING COLOR: CLEAR ANODIZED
GRID PATTERN: NOMINAL 12" X 24" SHOJI

CURTAINWALL FRAMING: TUBELIGHT 400TU, 2-1/2" X 6"
COLOR: CLEAR ANODIZED
CURTAINWALL SEALANT: TBD

STOREFRONT FRAMING (TYPICAL): TUBELIGHT TU24000, 2" X 4-1/2"
COLOR: CLEAR ANODIZED.

INSULATED GLAZING: 1" INSULATED GLASS UNIT WITH LOW-E COATING- GUARDIAN CRYSTAL GRAY GLASS SN68 WITH LOW-E ON #2, CLEAR INTERIOR LITE

EXPOSED GALVANIZED LINTELS: COLOR: MATCH ADJACENT COLOR

EXTERIOR FINISH LEGEND

- METAL SIDING (CUSTOM COLOR)
- 4" NOMINAL CMU VENEER - RUNNING BOND
- 4" NOMICAL CMU VENEER - STACKED BOND
- TRANSLUCENT FIBERGLASS SANDWICH PANEL

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LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

N

SHEET TITLE
EXTERIOR ELEVATIONS

SHEET NO.
A3.1

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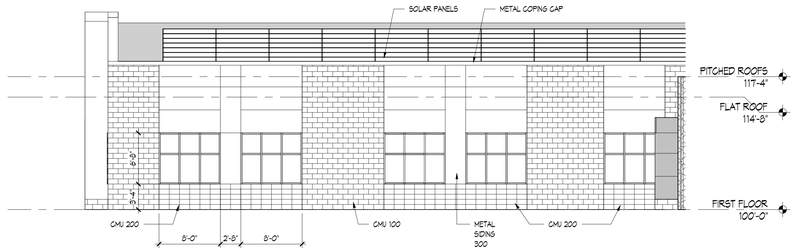
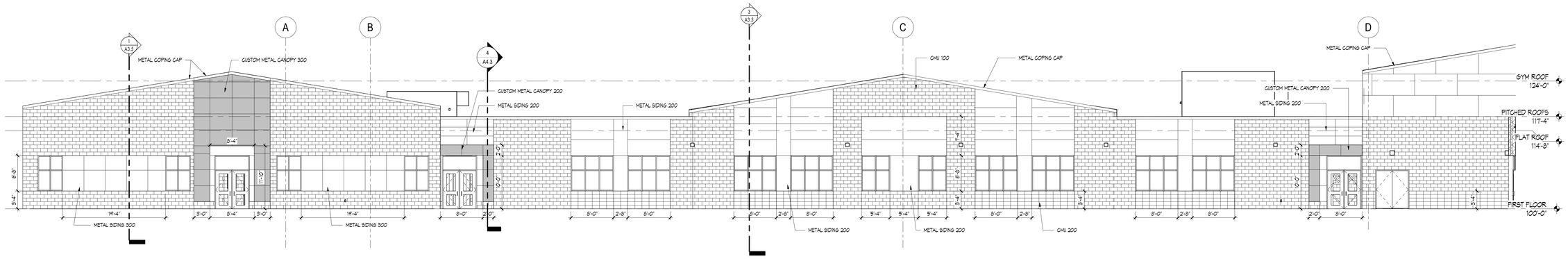


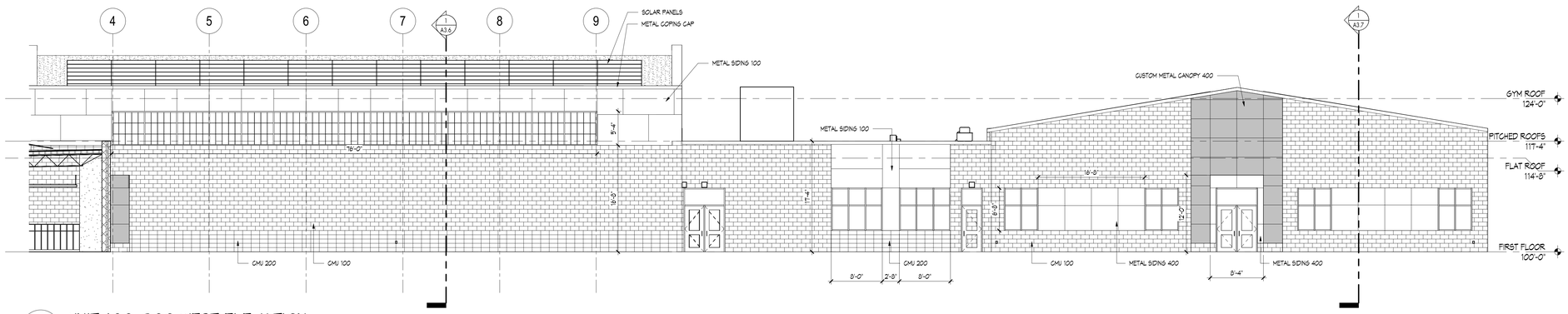
1 UNIT 200 - EAST ELEVATION1

1/8" = 1'-0" REFER TO 1 / A1.1



2 UNITS 100-200 - SOUTH ELEVATION

1/8" = 1'-0" REFER TO 1 / A1.1



3 UNIT 100, 300 WEST ELEVATION

1/8" = 1'-0" REFER TO 1 / A1.2

EXTERIOR FINISH SCHEDULE (BASIS-OF-DESIGN)

METAL SIDING 100: LAMINATORS OMEGA-LITE
COLOR: CUSTOM BLUE - COLOR TO MATCH EXTERIOR TILE 2

METAL SIDING 200: LAMINATORS OMEGA-LITE
COLOR: CUSTOM ORANGE RAL 2009

METAL SIDING 300: LAMINATORS OMEGA-LITE
COLOR: CUSTOM LIGHT BLUE RAL 5012

METAL SIDING 400: LAMINATORS OMEGA-LITE
COLOR: CUSTOM PURPLE RAL 4007

METAL SIDING 500: LAMINATORS OMEGA-LITE
COLOR: "GRAY" SELECTED FROM MANUFACTURERS STANDARD COLORS

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COLOR: FRANKFURT
MORTAR: NATURAL GRAY

BURNISHED CMU VENEER 200: GRAND BLANC CEMENT (STACK BOND)
COLOR: BOARDMAN
MORTAR: NATURAL GRAY

EXTERIOR TILE 1: TILEBAR BELLA UFFIZI
MATTE PORCELAIN 9x9

EXTERIOR TILE 2: PANTHEON CROIX BLUE
GLOSSY 2.5x 10, INSTALLED VERTICALLY

TRANSLUCENT FIBERGLASS SANDWICH PANEL SYSTEM: KALWALL CORP.
COLOR: WHITE ON INTERIOR, CRYSTAL ON EXTERIOR
ALUMINUM FRAMING COLOR: CLEAR ANODIZED
GRID PATTERN: NOMINAL 12" X 24" SHOJI

CURTAINWALL FRAMING: TUBELIGHT 400TU, 2-1/2" X 6"
COLOR: CLEAR ANODIZED.
CURTAINWALL SEALANT: TBD

STOREFRONT FRAMING (TYPICAL): TUBELIGHT TU24000, 2" X 4-1/2"
COLOR: CLEAR ANODIZED.

INSULATED GLAZING: 1" INSULATED GLASS UNIT WITH LOW-E COATING-GUARDIAN CRYSTAL GRAY GLASS SN68 WITH LOW-E ON #2, CLEAR INTERIOR LITE

EXPOSED GALVANIZED LINTELS: COLOR: MATCH ADJACENT COLOR

EXTERIOR FINISH LEGEND

- METAL SIDING (CUSTOM COLOR)
- 4" NOMINAL CMU VENEER - RUNNING BOND
- 4" NOMICAL CMU VENEER - STACKED BOND
- TRANSLUCENT FIBERGLASS SANDWICH PANEL

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

N

SHEET TITLE
EXTERIOR ELEVATIONS

SHEET NO.
A3.2

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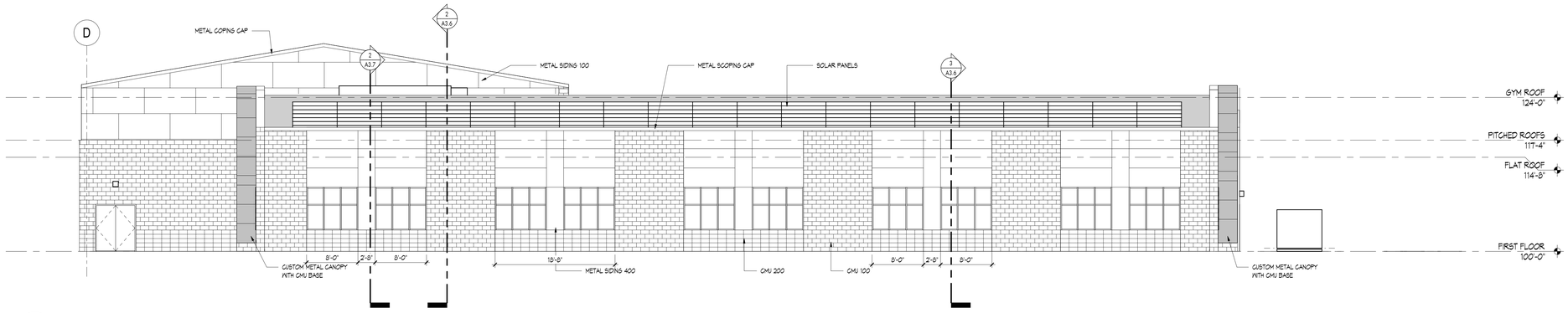
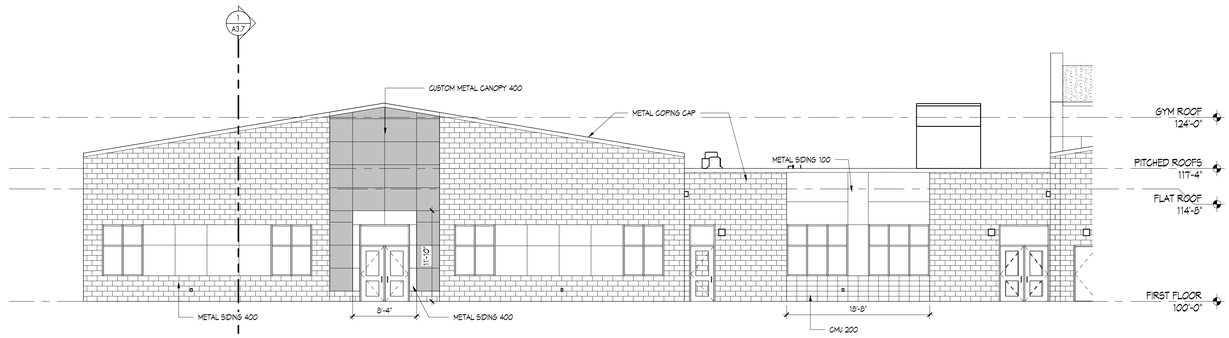


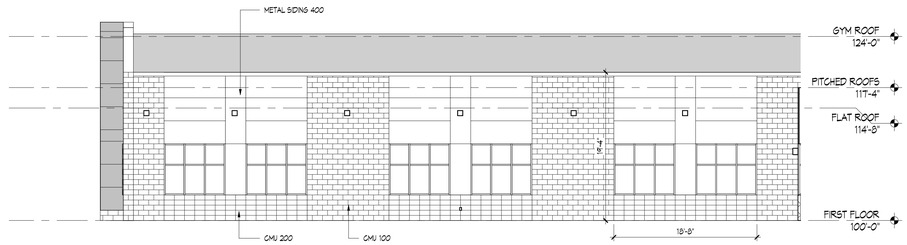
1 UNIT 300 - SOUTH ELEVATION

1/8" = 1'-0" REFER TO 1 / A1.3



2 UNIT 300 - EAST ELEVATION

1/8" = 1'-0" REFER TO 1 / A1.2



3 UNIT 300 - NORTH ELEVATION

1/8" = 1'-0" REFER TO 1 / A1.3

EXTERIOR FINISH SCHEDULE (BASIS-OF-DESIGN)

METAL SIDING 100: LAMINATORS OMEGA-LITE
COLOR: CUSTOM BLUE - COLOR TO MATCH EXTERIOR TILE 2

METAL SIDING 200: LAMINATORS OMEGA-LITE
COLOR: CUSTOM ORANGE RAL 2009

METAL SIDING 300: LAMINATORS OMEGA-LITE
COLOR: CUSTOM LIGHT BLUE RAL 5012

METAL SIDING 400: LAMINATORS OMEGA-LITE
COLOR: CUSTOM PURPLE RAL 4007

METAL SIDING 500: LAMINATORS OMEGA-LITE
COLOR: "GRAY" SELECTED FROM MANUFACTURERS STANDARD COLORS

BURNISHED CMU VENEER 100: GRAND BLANC CEMENT
COLOR: FRANKFURT
MORTAR: NATURAL GRAY

BURNISHED CMU VENEER 200: GRAND BLANC CEMENT (STACK BOND)
COLOR: BOARDMAN
MORTAR: NATURAL GRAY

EXTERIOR TILE 1: TILEBAR BELLA UFFIZI
MATTE PORCELAIN 9x9

EXTERIOR TILE 2: PANTHEON CROIX BLUE
GLOSSY 2.5x 10, INSTALLED VERTICALLY

TRANSLUCENT FIBERGLASS SANDWICH PANEL SYSTEM: KALWALL CORP.
COLOR: WHITE ON INTERIOR, CRYSTAL ON EXTERIOR
ALUMINUM FRAMING COLOR: CLEAR ANODIZED
GRID PATTERN: NOMINAL 12" X 24" SHOJI

CURTAINWALL FRAMING: TUBELIGHT 400TU, 2-1/2" X 6"
COLOR: CLEAR ANODIZED.
CURTAINWALL SEALANT: TBD

STOREFRONT FRAMING (TYPICAL): TUBELIGHT TU24000, 2" X 4-1/2"
COLOR: CLEAR ANODIZED.

INSULATED GLAZING: 1" INSULATED GLASS UNIT WITH LOW-E COATING-GUARDIAN CRYSTAL GRAY GLASS SN68 WITH LOW-E ON #2, CLEAR INTERIOR LITE

EXPOSED GALVANIZED LINTELS: COLOR: MATCH ADJACENT COLOR

EXTERIOR FINISH LEGEND

- METAL SIDING (CUSTOM COLOR)
- 4" NOMINAL CMU VENEER - RUNNING BOND
- 4" NOMICAL CMU VENEER - STACKED BOND
- TRANSLUCENT FIBERGLASS SANDWICH PANEL

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Lansing School District

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Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

N

SHEET TITLE

EXTERIOR ELEVATIONS

SHEET NO.

A3.3

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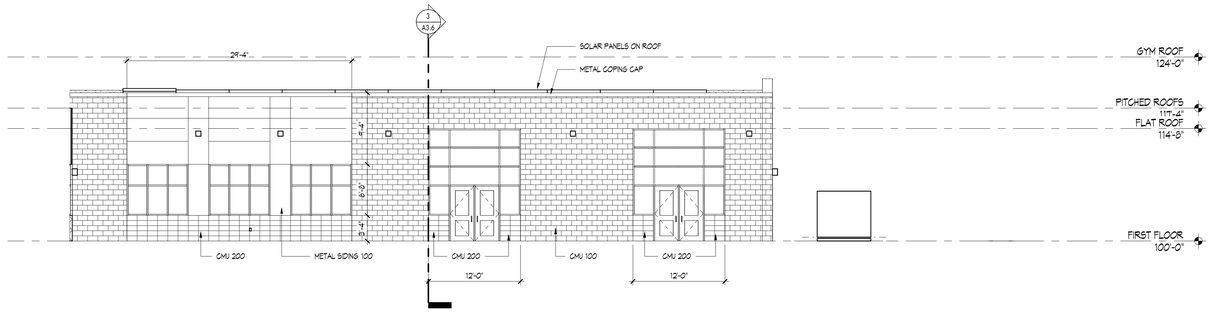
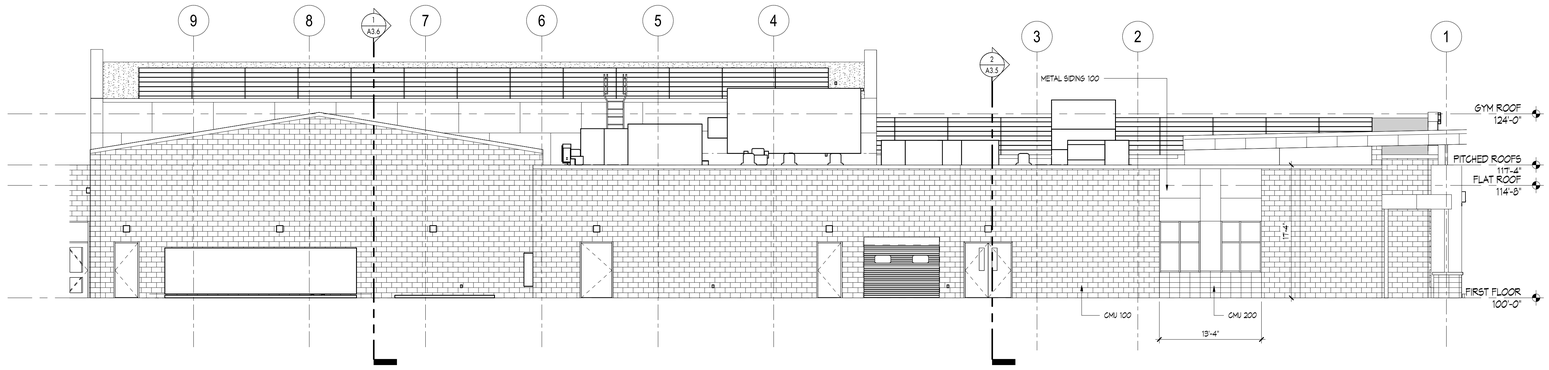


1 UNIT 100 - SOUTH ELEVATION

1/8" = 1'-0" REFER TO 1 / A1.3



2 UNIT 100 - EAST ELEVATION

1/8" = 1'-0" REFER TO 1 / A1.2

EXTERIOR FINISH SCHEDULE (BASIS-OF-DESIGN)

METAL SIDING 100: LAMINATORS OMEGA-LITE
COLOR: CUSTOM BLUE - COLOR TO MATCH EXTERIOR TILE 2

METAL SIDING 200: LAMINATORS OMEGA-LITE
COLOR: CUSTOM ORANGE RAL 2009

METAL SIDING 300: LAMINATORS OMEGA-LITE
COLOR: CUSTOM LIGHT BLUE RAL 5012

METAL SIDING 400: LAMINATORS OMEGA-LITE
COLOR: CUSTOM PURPLE RAL 4007

METAL SIDING 500: LAMINATORS OMEGA-LITE
COLOR: "GRAY" SELECTED FROM MANUFACTURERS STANDARD COLORS

BURNISHED CMU VENEER 100: GRAND BLANC CEMENT
COLOR: FRANKFURT
MORTAR: NATURAL GRAY

BURNISHED CMU VENEER 200: GRAND BLANC CEMENT (STACK BOND)
COLOR: BOARDMAN
MORTAR: NATURAL GRAY

EXTERIOR TILE 1: TILEBAR BELLA UFFIZI
MATTE PORCELAIN 9x9

EXTERIOR TILE 2: PANTHEON CROIX BLUE
GLOSSY 2.5x 10, INSTALLED VERTICALLY

TRANSLUCENT FIBERGLASS SANDWICH PANEL SYSTEM: KALWALL CORP.
COLOR: WHITE ON INTERIOR, CRYSTAL ON EXTERIOR
ALUMINUM FRAMING COLOR: CLEAR ANODIZED
GRID PATTERN: NOMINAL 12" X 24" SHOJI

CURTAINWALL FRAMING: TUBELIGHT 400TU, 2-1/2" X 6"
COLOR: CLEAR ANODIZED.
CURTAINWALL SEALANT: TBD

STOREFRONT FRAMING (TYPICAL): TUBELIGHT TU24000, 2" X 4-1/2"
COLOR: CLEAR ANODIZED.

INSULATED GLAZING: 1" INSULATED GLASS UNIT WITH LOW-E COATING-GUARDIAN CRYSTAL GRAY GLASS SN68 WITH LOW-E ON #2, CLEAR INTERIOR LITE

EXPOSED GALVANIZED LINTELS: COLOR: MATCH ADJACENT COLOR

EXTERIOR FINISH LEGEND

- METAL SIDING (CUSTOM COLOR)
- 4" NOMINAL CMU VENEER - RUNNING BOND
- 4" NOMICAL CMU VENEER - STACKED BOND
- TRANSLUCENT FIBERGLASS SANDWICH PANEL

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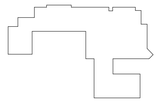

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

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SHEET TITLE
EXTERIOR ELEVATIONS

SHEET NO.
A3.4

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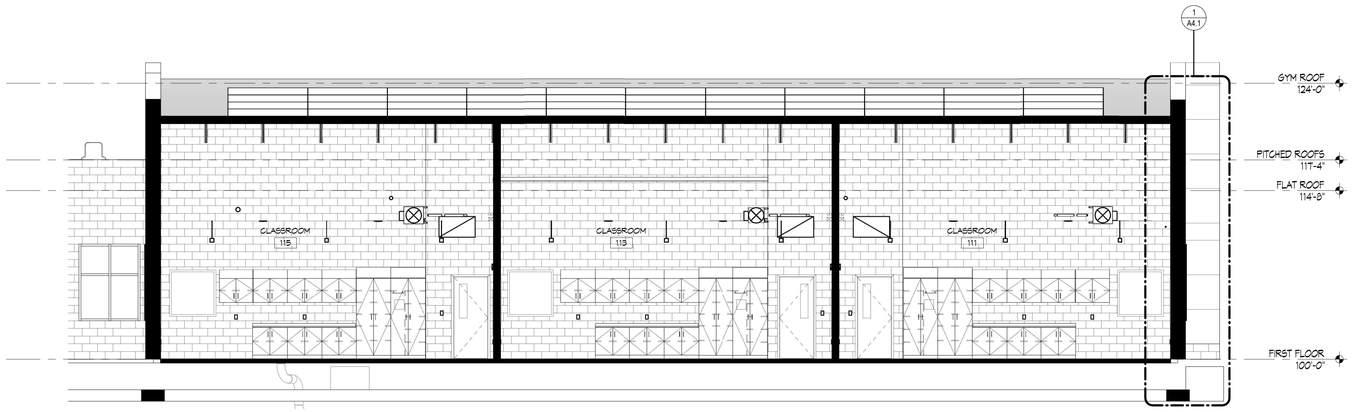
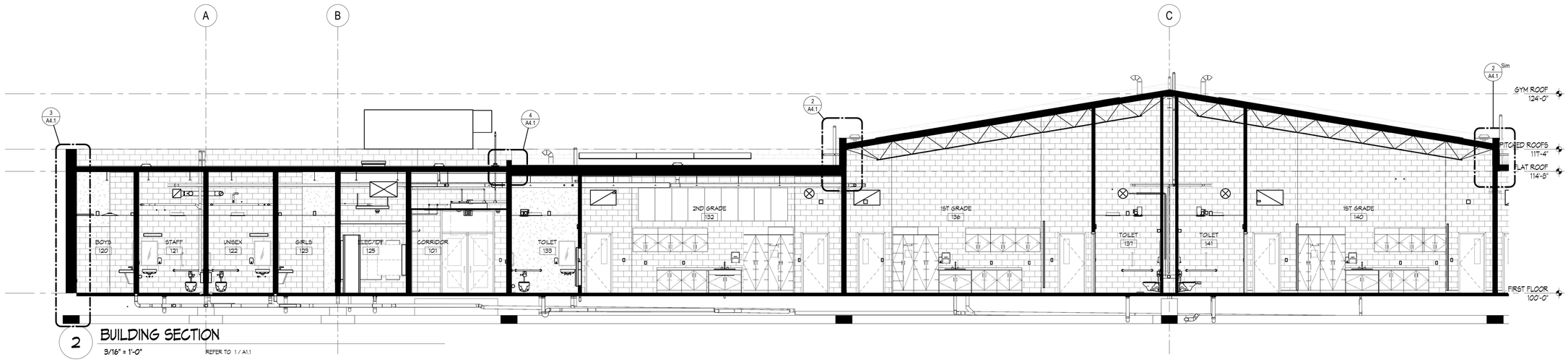


1 BUILDING SECTION
3/16" = 1'-0"
REFER TO 1 / A1.1



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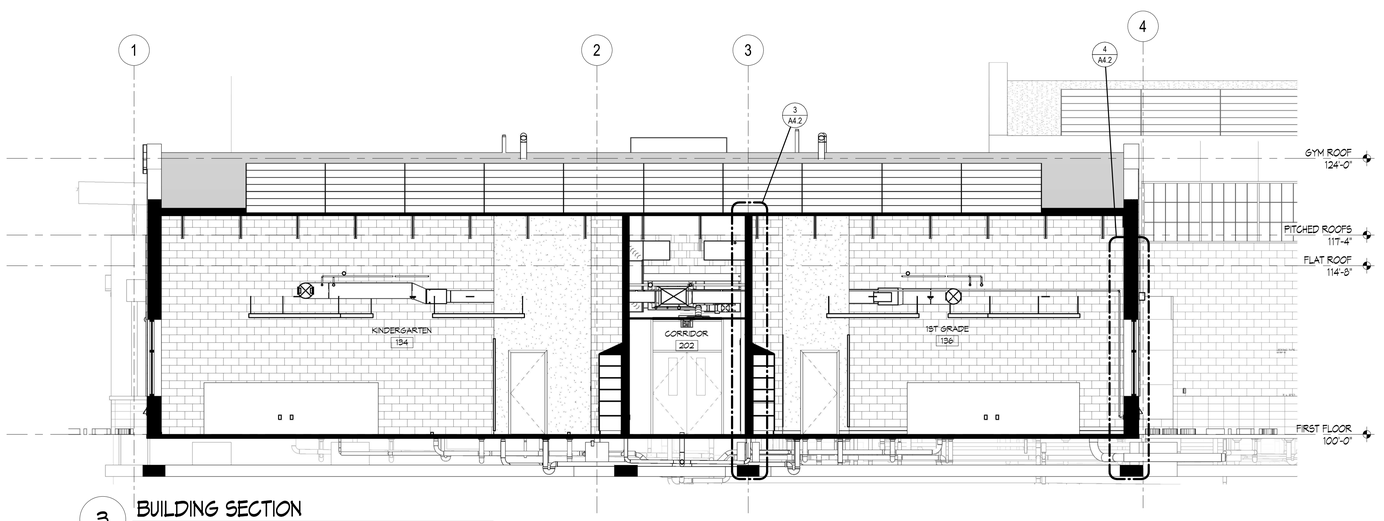
REFER TO 1 / A1.1



3 BUILDING SECTION
3/16" = 1'-0"
REFER TO 1 / A1.1

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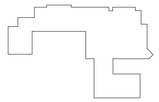

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

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SHEET TITLE
BUILDING SECTIONS - UNIT 100

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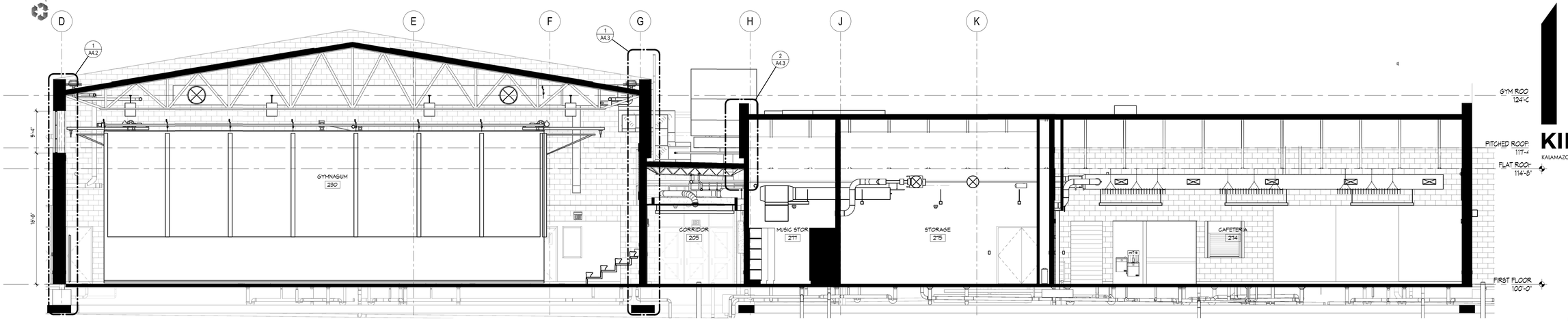

1 BUILDING SECTION
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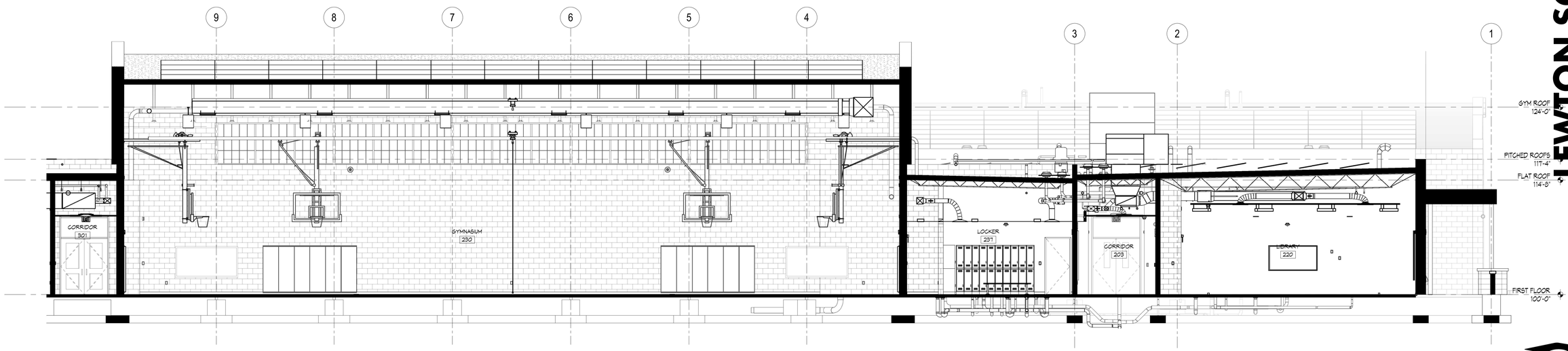
REFER TO 1 / A1.2



2 BUILDING SECTION
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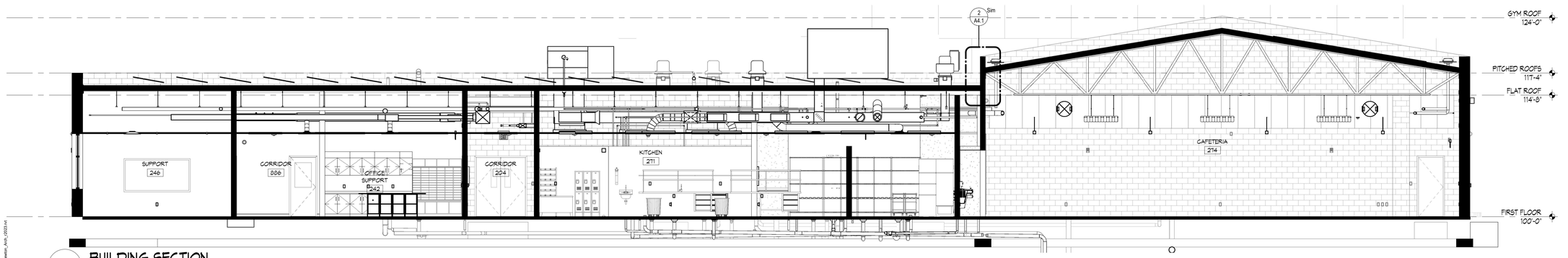
REFER TO 1 / A1.2



3 BUILDING SECTION
3/16" = 1'-0"
REFER TO 1 / A1.2

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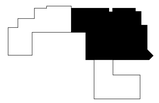

KEY PLAN

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JOB NO. 2616.01G

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SHEET TITLE
BUILDING SECTIONS - UNIT 200

SHEET NO.
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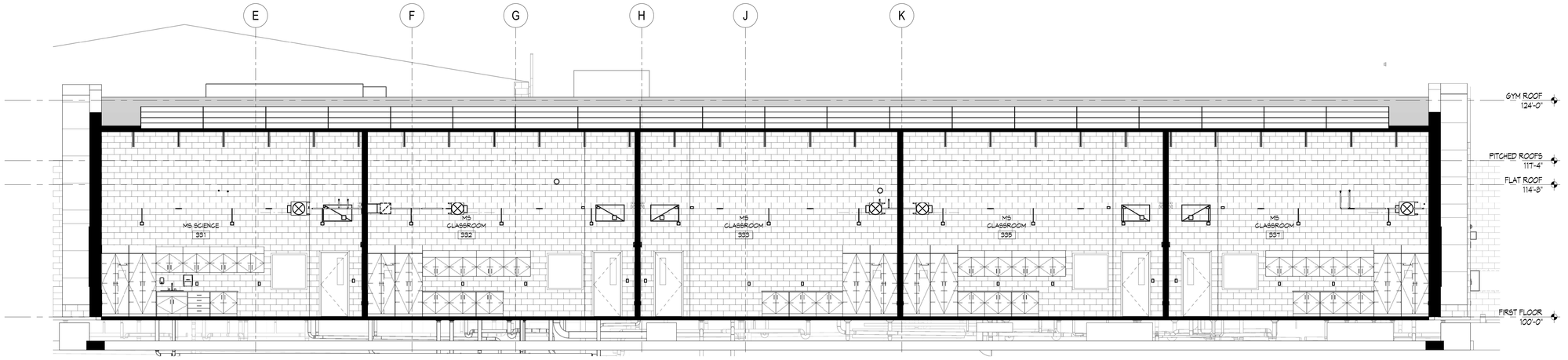
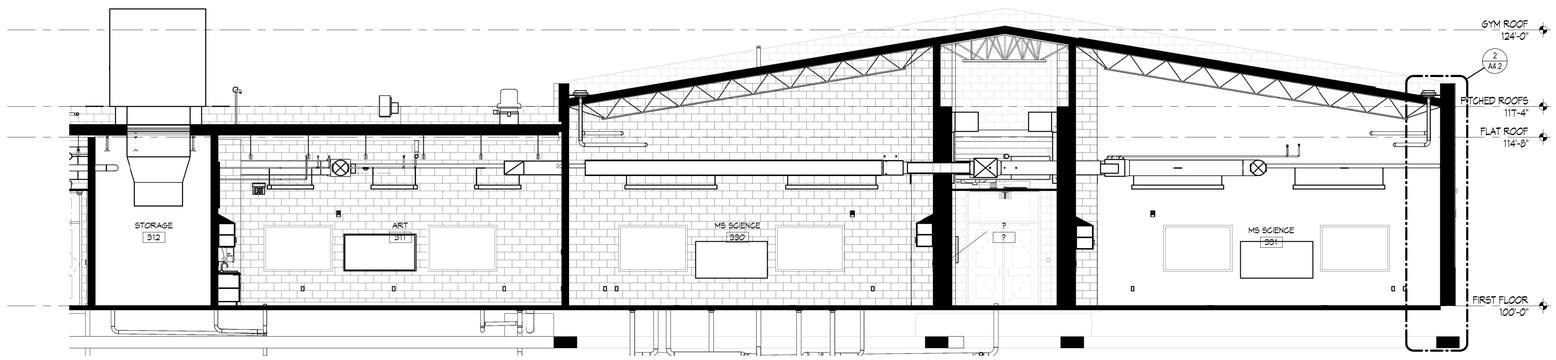


1 BUILDING SECTION

3/16" = 1'-0" REFER TO 1 / A1.3



2 BUILDING SECTION

3/16" = 1'-0" REFER TO 1 / A1.3

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ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

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SHEET TITLE

BUILDING SECTIONS - UNIT 300

SHEET NO.

A3.7

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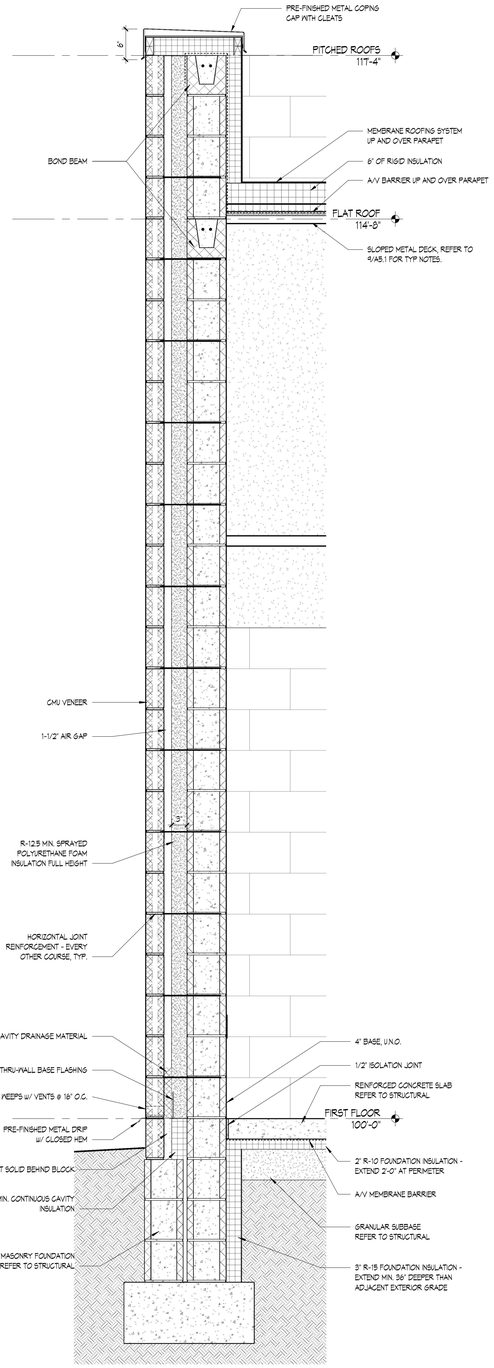
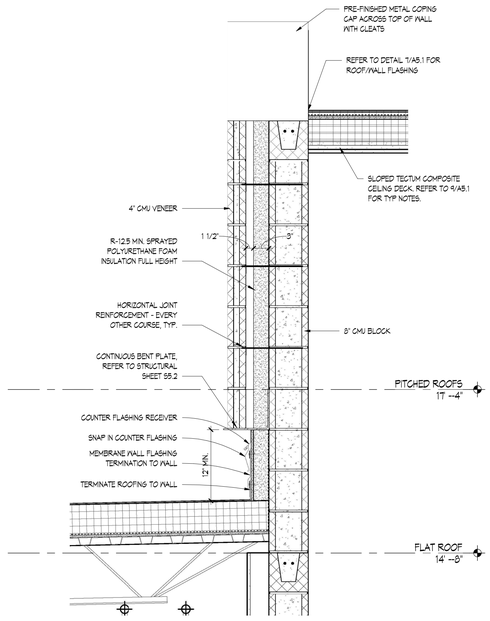


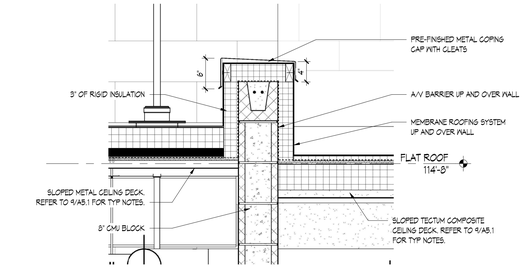
3 WALL SECTION

1" = 1'-0" REFER TO 2 / A3.5



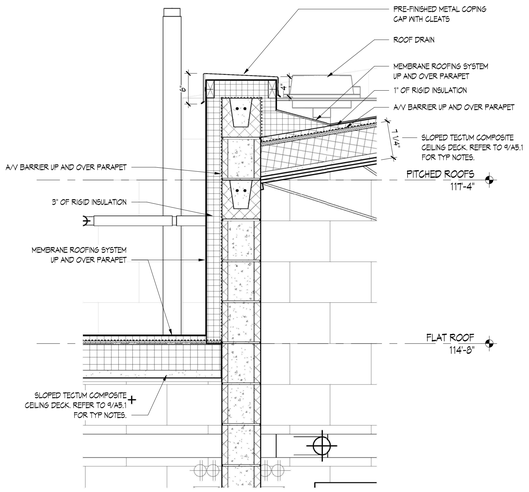
5 WALL SECTION

1" = 1'-0" REFER TO 1 / A0.2



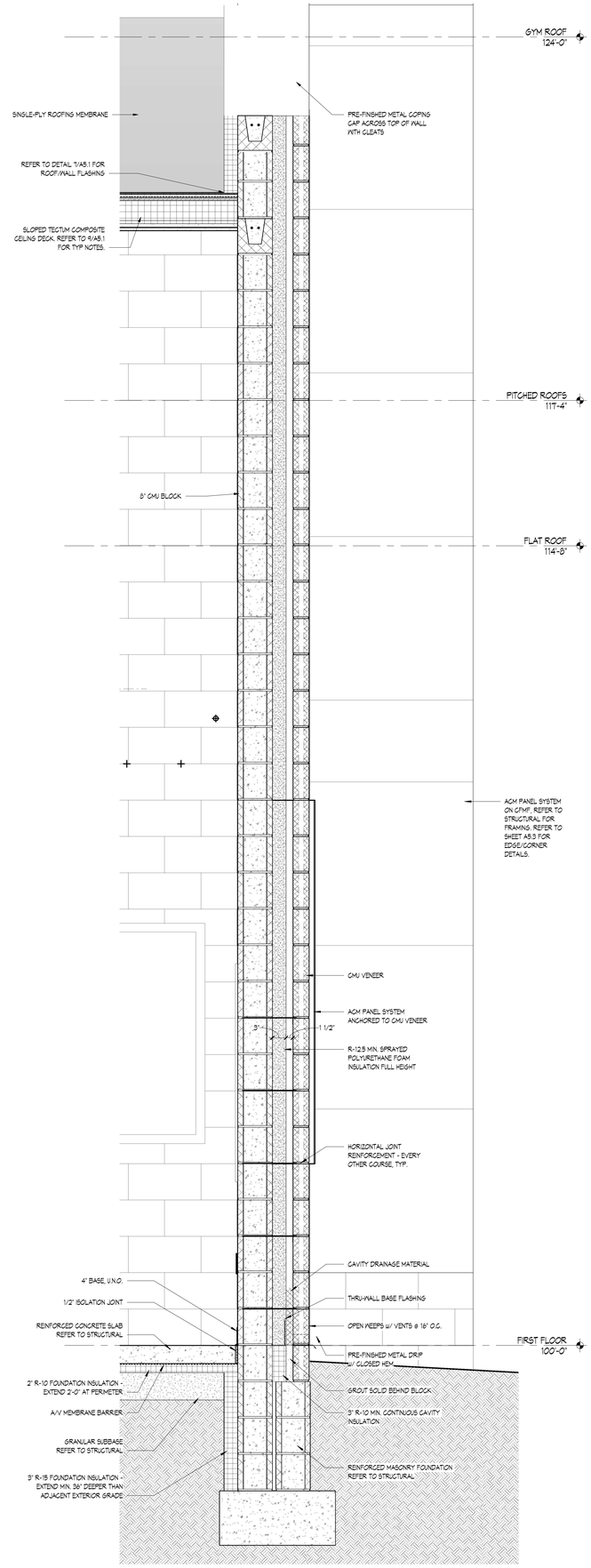
4 WALL SECTION

1" = 1'-0" REFER TO 1 / A0.2



2 WALL SECTION

1" = 1'-0" REFER TO 1 / A0.2



1 WALL SECTION

1" = 1'-0" REFER TO 1 / A3.5

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LSD NO. SB-0064
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SHEET TITLE
WALL SECTIONS

SHEET NO.
A4.1

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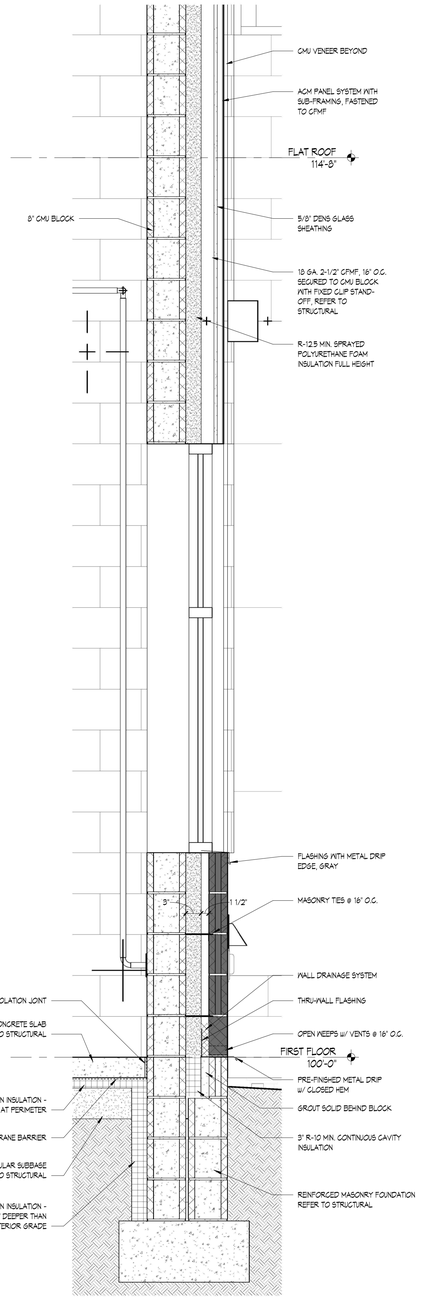
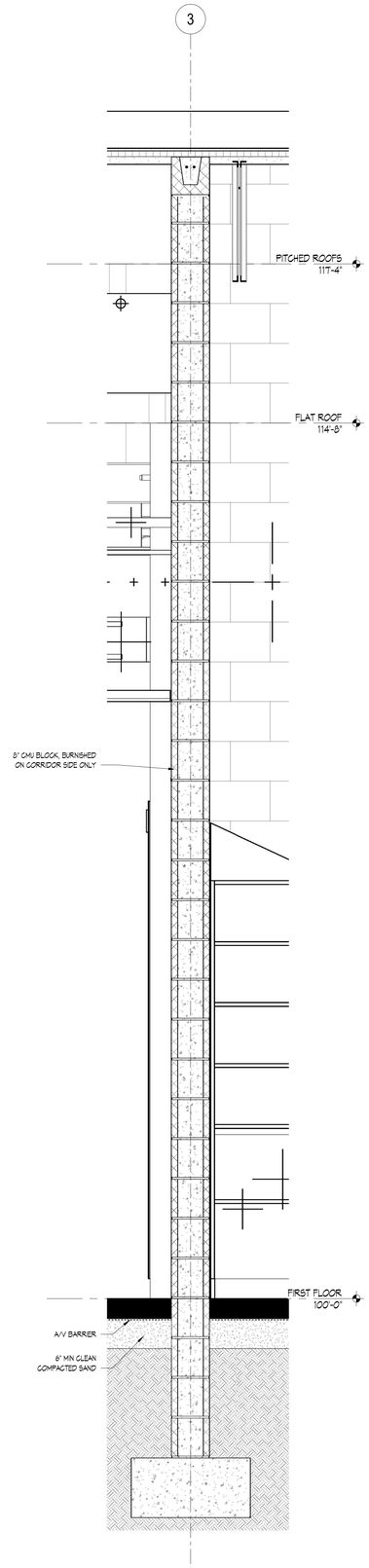


4 WALL SECTION

1" = 1'-0" REFER TO 3 / A3.5



3 WALL SECTION

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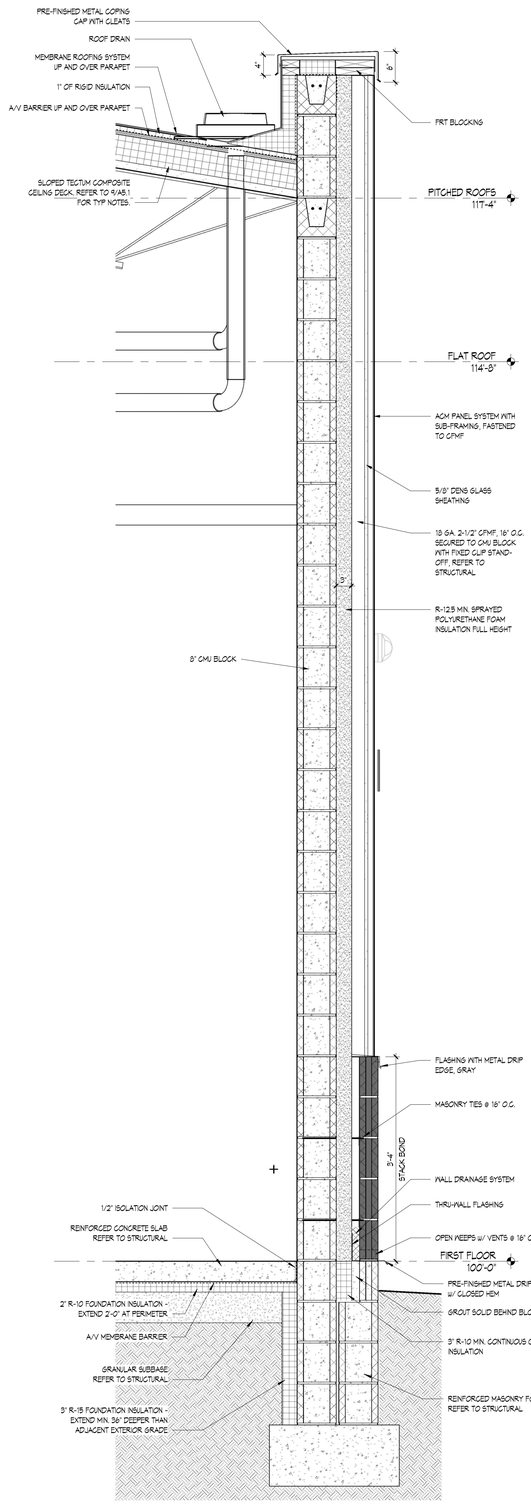
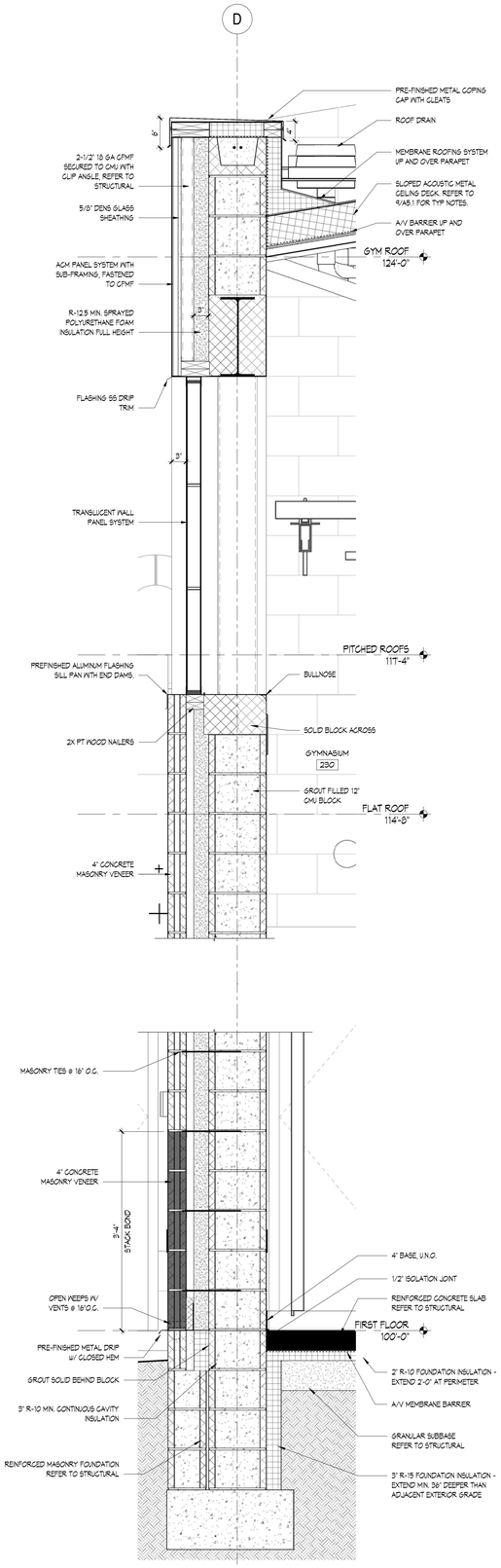


2 WALL SECTION

1" = 1'-0" REFER TO 2 / A3.7



1 WALL SECTION

1" = 1'-0" REFER TO 1 / A3.6

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Lansing School District

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Lansing School District

ISSUANCES	DATE
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JOB NO. 2616.01G

SHEET TITLE
WALL SECTIONS

SHEET NO.
A4.2

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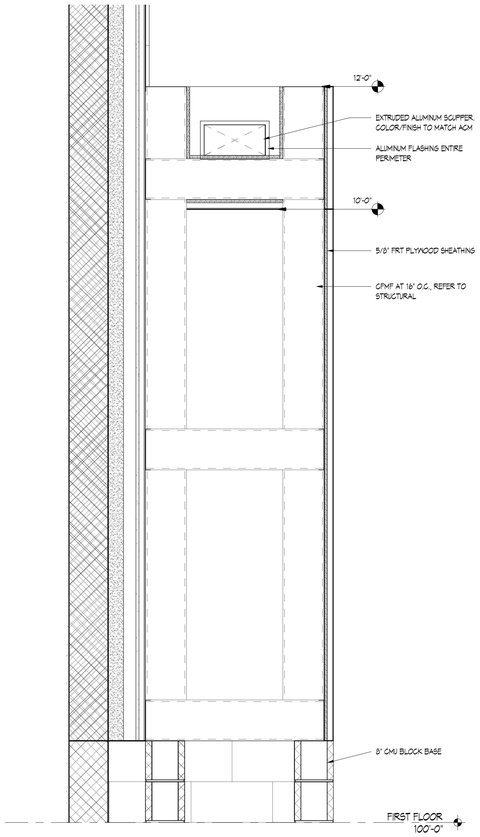
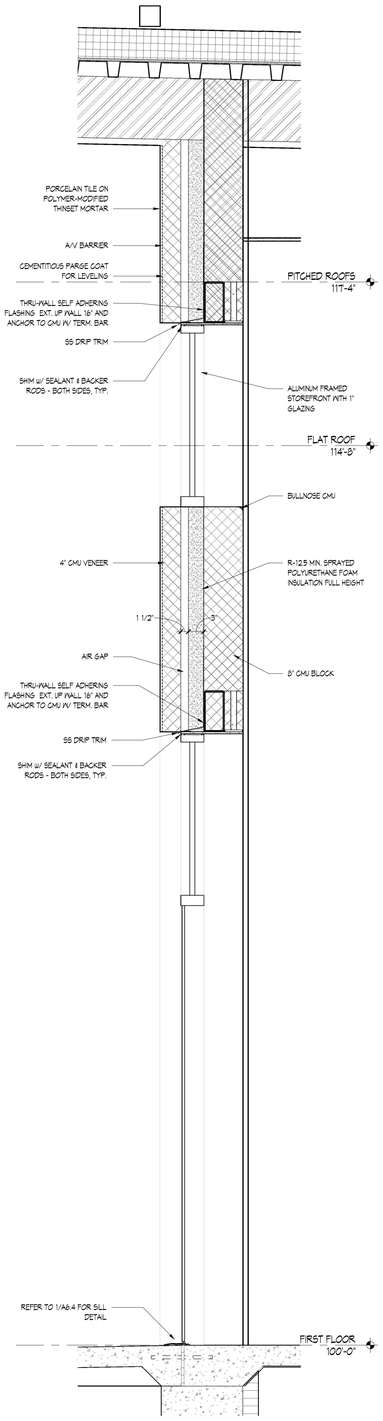


4 ENTRY CANOPY

1" = 1'-0" REFER TO 1 / A1.1



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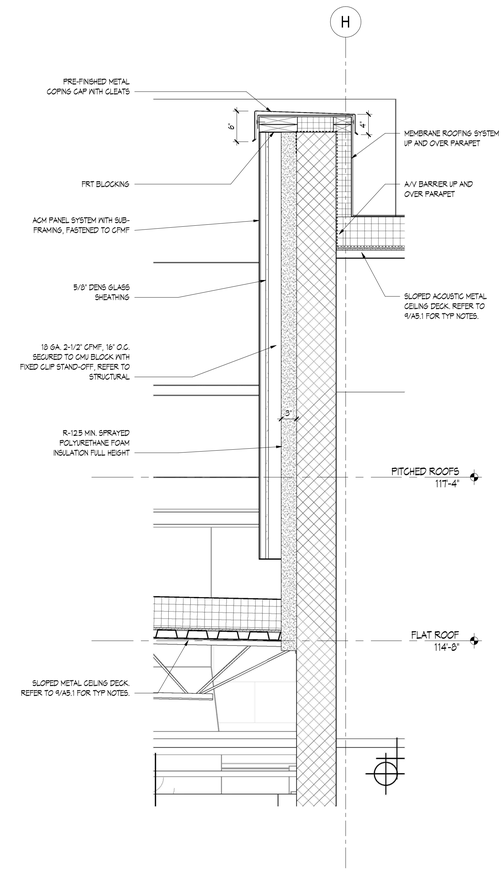
1" = 1'-0" REFER TO 2 / A0.2



2 WALL SECTION

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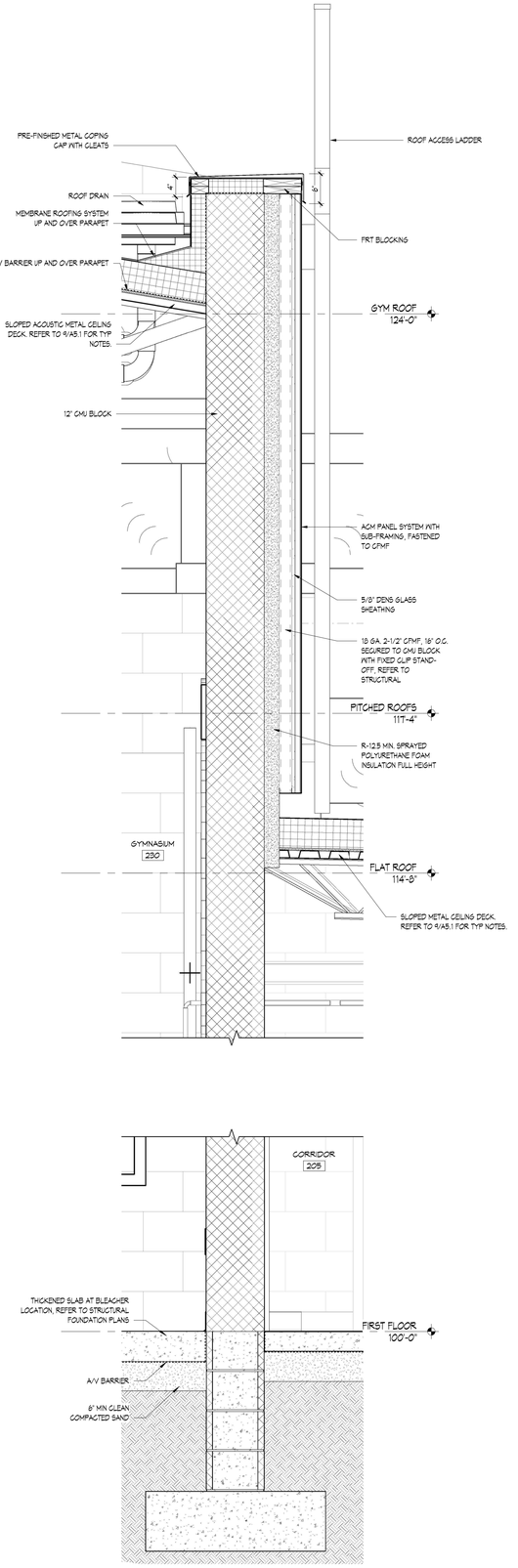

1 WALL SECTION

1" = 1'-0" REFER TO 1 / A0.2

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Lansing School District

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Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

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JOB NO. 2616.01G

SHEET TITLE
WALL SECTIONS

SHEET NO.
A4.3

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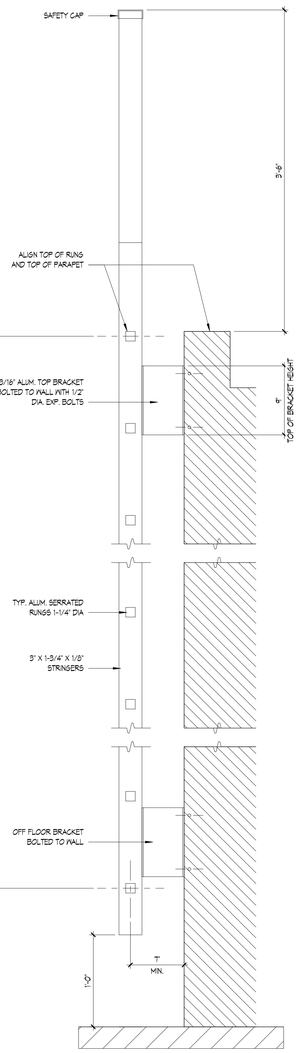
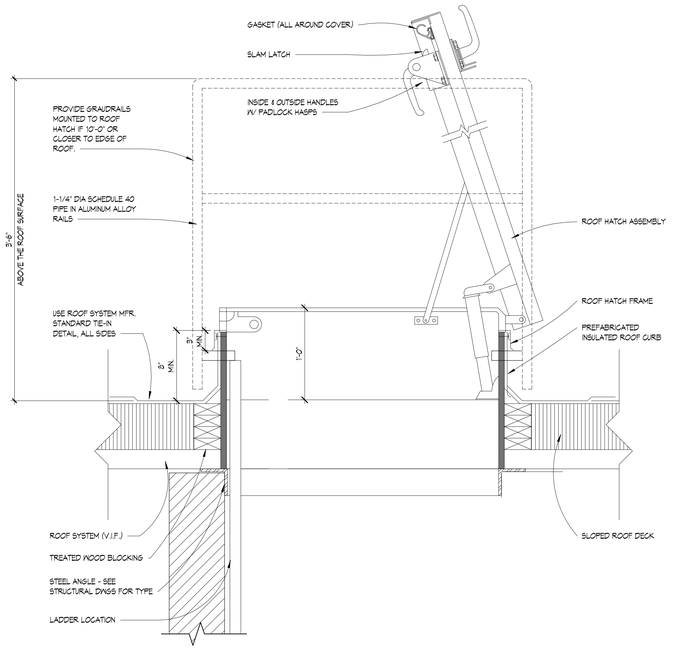
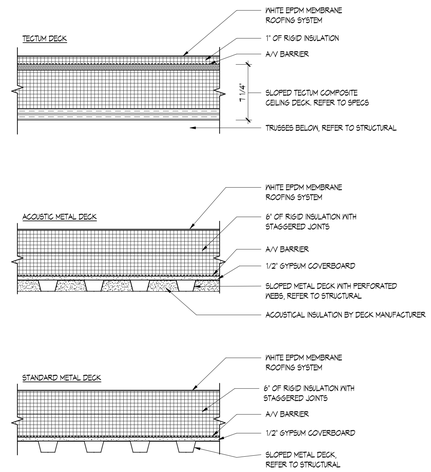


11 ROOF ACCESS LADDER
1 1/2" = 1'-0"

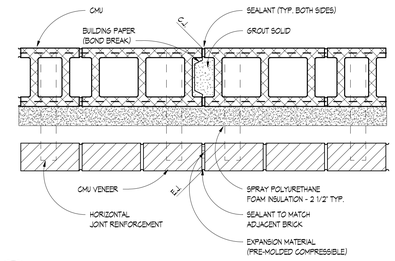


10 ROOF HATCH
1 1/2" = 1'-0"

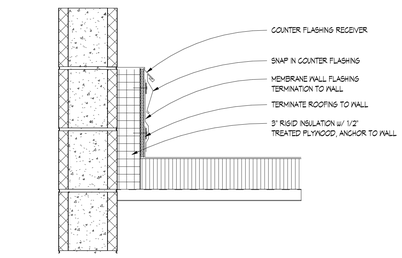
ROOF ASSEMBLY
R-VALUE: 33.91 MIN
U-VALUE: 0.029 MIN



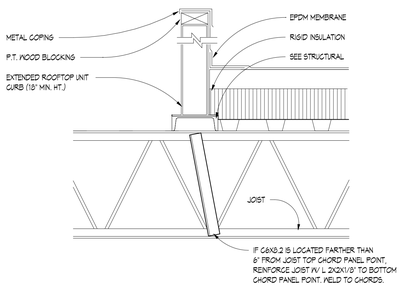
9 TYP ROOF CONSTRUCTION
1 1/2" = 1'-0"



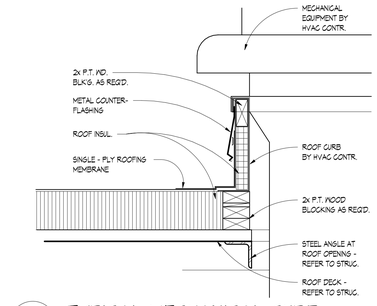
8 WALL MOVEMENT JOINT
1 1/2" = 1'-0"



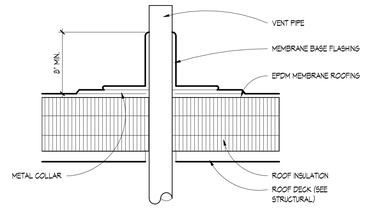
7 ROOF/WALL FLASHING
1 1/2" = 1'-0"



6 ROOF EQUIPMENT CURB
1 1/2" = 1'-0"

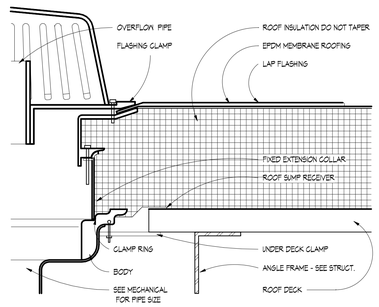


5 TYPICAL MECHANICAL CURB
1 1/2" = 1'-0"

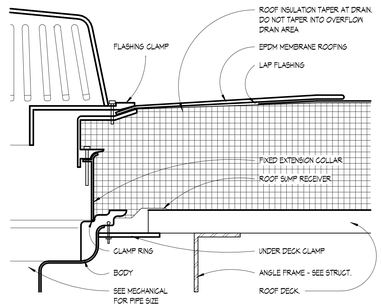


4 TYPICAL ROOF VENT DETAIL
1 1/2" = 1'-0"

3 SCUPPER DETAIL
1 1/2" = 1'-0"



2 OVERFLOW DRAIN DETAIL
3" = 1'-0"



1 ROOF DRAIN DETAIL
3" = 1'-0"

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

LEWTON SCHOOL
Lansing School District
2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
BUILDING DETAILS

SHEET NO.
A5.1

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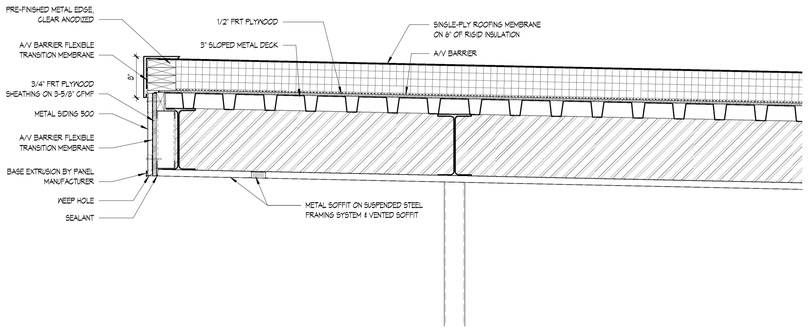
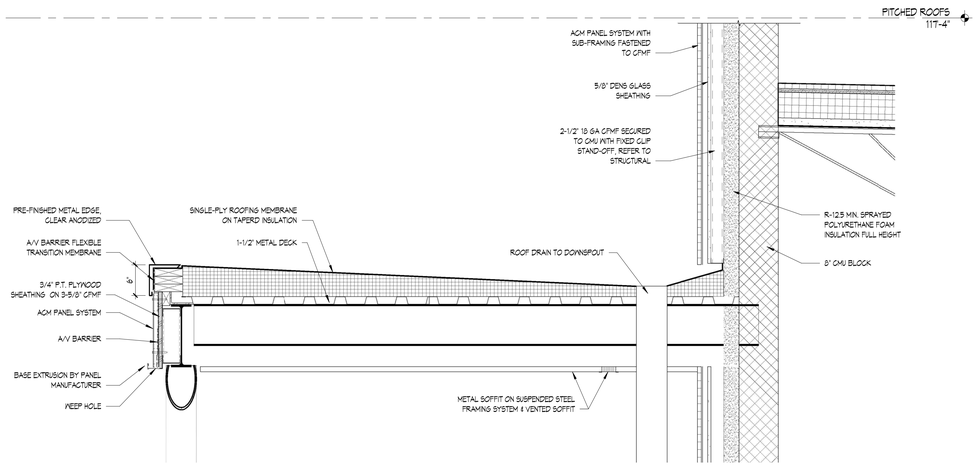
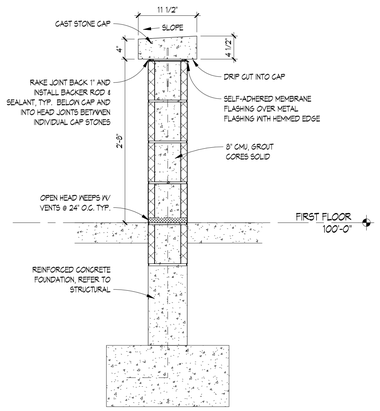


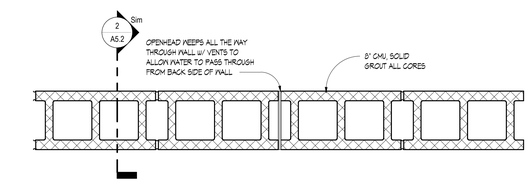
4 HIGH CANOPY SECTION
1" = 1'-0" REFER TO 2 / A0.2



3 CANOPY SECTION
1" = 1'-0" REFER TO 1 / A0.2



2 LOW WALL SECTION
1" = 1'-0" REFER TO 1 / A5.2



1 LOW WALL BASE PLAN DETAIL
1 1/2" = 1'-0" REFER TO 1 / A1.1

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
BUILDING DETAILS

SHEET NO.
A5.2

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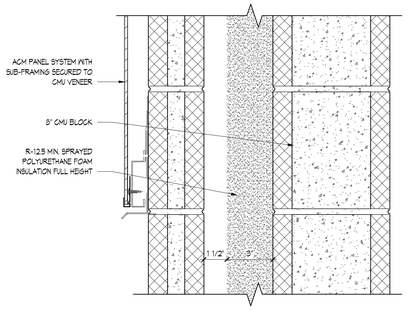
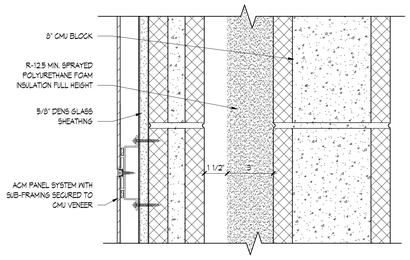
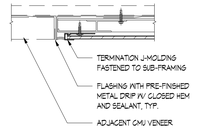


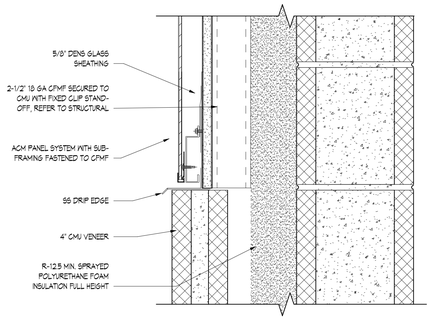
12 BASE OF ACM @ CMU VENEER
3" = 1'-0"



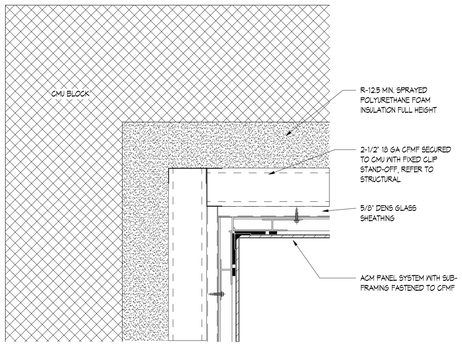
9 ACM @ CMU VENEER
3" = 1'-0"



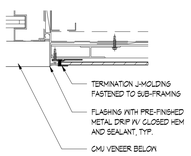
6 EDGE OF ACM WALL
3" = 1'-0"



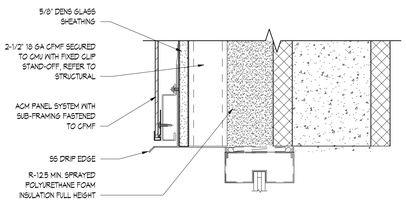
3 BASE OF ACM @ CMU BLOCK
3" = 1'-0"



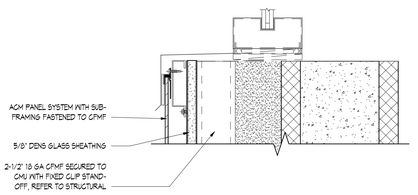
11 INSIDE ACM WALL CORNER
3" = 1'-0"



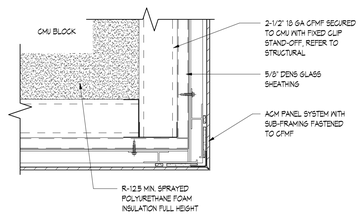
8 ACM WALL @ WINDOW JAMB
3" = 1'-0"



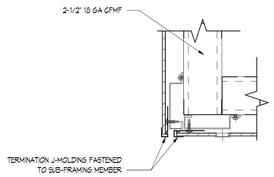
5 ACM WALL @ WINDOW HEAD
3" = 1'-0"



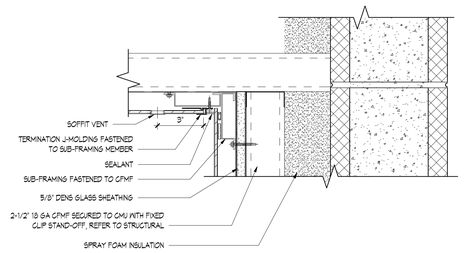
2 ACM WALL @ WINDOW SILL
3" = 1'-0"



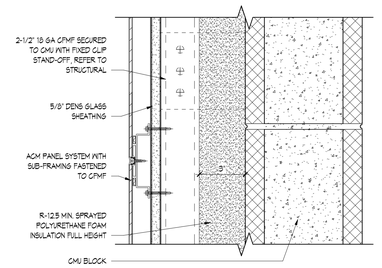
10 OUTSIDE ACM WALL CORNER
3" = 1'-0"



7 ACM SOFFIT @ OUTSIDE CORNER
3" = 1'-0"



4 ACM SOFFIT @ INSIDE CORNER
3" = 1'-0"



1 ACM @ CMU BLOCK
3" = 1'-0"

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LAWTON SCHOOL

Lansing School District

2000 Lawton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
BUILDING DETAILS

SHEET NO.
A5.3

DOOR SCHEDULE

DOOR NUMBER	DOOR WIDTH	DOOR HEIGHT	DOOR TYPE	DOOR MATERIAL	DOOR GLASS	FRAME TYPE	FRAME MATERIAL	FRAME GLASS	DETAILS HEAD	DETAILS JAMB	DETAILS JAMB	FIRE RATING	HARDWARE SET	REMARKS
100A	3'-0"	7'-2"	FG2	FRP	1" INSUL.	3	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	45	
100B	3'-0"	7'-2"	FG2	FRP	1" INSUL.	3	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	42	
101A	3'-0"	7'-2"	FG2	FRP	1" INSUL.	3	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	42	
101B	3'-0"	7'-2"	FG2	FRP	1" INSUL.	3	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	45	
102A	3'-0"	7'-2"	FG2	FRP	1" INSUL.	3	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	45	
102B	3'-0"	7'-2"	FG2	FRP	1" INSUL.	3	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	42	
110	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	18	
111	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	18	
112	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	18	
113	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	18	
114	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	18	
115	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	18	
121	3'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	04	
122	3'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	04	
124	3'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	17	
125	3'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	45 MIN.	23	
130A	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	29	
130B	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	31	
131	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	03	
132A	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	29	
132B	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	31	
133	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	03	
134A	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	31	
134B	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	29	
135	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	03	
136A	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	31	
136B	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	29	
137	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	03	
138A	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	29	
138B	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	31	
139	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	03	
140A	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	29	
140B	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	31	
141	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	03	
200A	3'-0"	7'-2"	FG2	FRP	1" INSUL.	5	AL	1" INSUL.				--	38	
200B	3'-0"	7'-2"	FG2	FRP	1" INSUL.	5	AL	1" INSUL.				--	41	
200C	3'-0"	7'-2"	FG2	FRP	1" INSUL.	5	AL	1" INSUL.				--	41	
200D	3'-0"	7'-2"	FG2	FRP	1/4" SAF	5	AL	1/4" SAF	14/A6.4	13/A6.4	13/A6.4	--	36	
200E	3'-0"	7'-2"	FG2	FRP	1/4" SAF	5	AL	1/4" SAF	13/A6.4	13/A6.4	13/A6.4	--	37	
200F	3'-0"	7'-2"	FG2	FRP	1/4" SAF	5	AL	1/4" SAF	14/A6.4	13/A6.4	13/A6.4	--	37	
201A	3'-0"	7'-2"	FG2	FRP	1" INSUL.	3	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	45	
201B	3'-0"	7'-2"	FG2	FRP	1" INSUL.	3	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	42	
201C	3'-0"	7'-2"	FG2	FRP	1/4" SAF	1	AL	1/4" SAF	10/A6.4	9/A6.4	9/A6.4	--	27	
201D	3'-0"	7'-2"	FG2	FRP	1/4" SAF	1	AL	1/4" SAF	10/A6.4	9/A6.4	9/A6.4	--	27	
202	6'-0"	7'-2"	NS	WD	1/4" SAF	4	HM	--	--	--		--	35	REMOVABLE MULLION
202A	6'-0"	7'-2"	NS	AL	1" INSUL.	1	AL	--	4/A6.4	3/A6.4	3/A6.4	--	39	
202B	6'-0"	7'-2"	NS	AL	1/4" SAF	1	AL	--	10/A6.4	9/A6.4	9/A6.4	--	28	
203	6'-0"	7'-2"	NS	WD	1/4" SAF	4	HM	--				--	35	REMOVABLE MULLION
210A	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM		4/A6.3	3/A6.3	3/A6.3	--	29	
210B	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	31	
211	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	03	
212	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	03	
213	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	17	
214	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	16	
215	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	04	
216	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	17	
217	3'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	16	
218	3'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	16	
219	3'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	16	
220A	6'-0"	7'-2"	FG2	WD	1/4" SAF	1	HM	1/4" SAF	4/A6.3	3/A6.3	3/A6.3	--	34	
220B	3'-0"	7'-2"	NS	FRP	1" INSUL.	1	AL	--	4/A6.4	3/A6.4	3/A6.4	--	47	
221A	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM		4/A6.3	3/A6.3	3/A6.3	--	29	
221B	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	31	
222	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	03	
223	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	03	
230A	6'-0"	7'-2"	FG2	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	34	
230B	6'-0"	7'-2"	FG2	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	34	
230C	6'-0"	7'-2"	F	AL	--	1	AL	--	4/A6.4	3/A6.4	3/A6.4	--	40	
231	3'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	45 MIN.	12	
232	3'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	08	
233	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	08	
234	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	05	
235	3'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	08	
236	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	05	
237	3'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	08	
238	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	06	
239	3'-0"	7'-2"	G	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	18	
240A	3'-0"	7'-2"	G	WD	1/4" SAF	6	AL	1/4" SAF	4/A6.3	3/A6.3	XX/A6.3	--	21	
240B	3'-0"	7'-2"	G	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	25	
242	3'-0"	7'-2"	G	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	26	
243	3'-0"	7'-2"	NS	FRP	1" INSUL.	1	AL		4/A6.4	3/A6.4	3/A6.4	--	02	
244	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	03	
245	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	04	
246	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	06	
247	3'-0"	7'-2"	G	WD	1/4" SAF	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	06	
248	3'-0"	7'-2"	G	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	07	
249	3'-0"	7'-2"	G	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	16	
250A	3'-0"	7'-2"	G	WD	1/4" SAF	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	01	
250B	3'-0"	7'-2"	G	WD	1/4" SAF	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	01	
251A	3'-0"	7'-2"	G	WD	1/4" SAF	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	20	
251B	3'-0"	7'-2"	G	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	18	
252	3'-0"	7'-2"	G	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	16	
253	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	04	
262	3'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	45 MIN.	22	
263	3'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	16	
264	3'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	04	

DOOR SCHEDULE

DOOR NUMBER	DOOR WIDTH	DOOR HEIGHT	DOOR TYPE	DOOR MATERIAL	DOOR GLASS	FRAME TYPE	FRAME MATERIAL	FRAME GLASS	DETAILS HEAD	DETAILS JAMB	DETAILS JAMB	FIRE RATING	HARDWARE SET	REMARKS
210A	3'-0"	7'-2"	NS	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	18	
210B	9'-0"	8'-0"	-	STL	--	--	STL		10/A6.3	9/A6.3	9/A6.3	--	48	OVERHEAD COILING DOOR
210C	4'-0"	8'-0"	-	STL	--	--	STL		10/A6.3	9/A6.3	9/A6.3	--	48	OVERHEAD COILING DOOR
210D	4'-0"	8'-0"	-	STL	--	--	STL		10/A6.3	9/A6.3	9/A6.3	--	48	OVERHEAD COILING DOOR
211A	4'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3		16	
211B	4'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	14/A6.3	13/A6.3	13/A6.3		09	
211C	5'-0"	4'-6"	-	STL	--	--	STL		10/A6.3	9/A6.3	9/A6.3	--	48	COUNTER COILING DOOR
213	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	45 MIN.	10	
214A	6'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	34	
214B	3'-0"	7'-2"	F	AL	--	1	AL	--	4/A6.4	3/A6.4	3/A6.4	--	43	
214C	3'-1"	7'-2"	FG2	FRP	1" INSUL.	D	AL	1" INSUL.	8/A6.4	2/A6.4	2/A6.4	--	46	
214D	3'-1"	7'-2"	FG2	FRP	1" INSUL.	D	AL	1" INSUL.	8/A6.4	2/A6.4	2/A6.4	--	46	
214E	3'-1"	7'-2"	FG2	FRP	1" INSUL.	D	AL	1" INSUL.	8/A6.4	2/A6.4	2/A6.4	--	43	
214F	3'-1"	7'-2"	FG2	FRP	1" INSUL.	D	AL	1" INSUL.	8/A6.4	2/A6.4	2/A6.4	--	46	
215	6'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	45 MIN.	11	
216A	6'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	33	
216B	3'-6"	7'-2"	NS	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	32	
217	3'-0"	7'-2"	NS	WD		1	HM	--	14/A6.3	13/A6.3	13/A6.3	45 MIN.	13	
280B	3'-0"	7'-2"	F	AL	--	1	AL	--	4/A6.4	3/A6.4	3/A6.4	--	44	
280C	10'-0"	8'-0"	-	STL	-		STL	-	12/A6.4	11/A6.4	11/A6.4	--	48	ELECTRIC SECTIONAL DOOR
280D	8'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	45 MIN.	24	
281A	4'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	45 MIN.	14	
281B	4'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	45 MIN.	30	
282	4'-0"	7'-2"	F	AL	--	1	AL	--	4/A6.4	3/A6.4	3/A6.4		43	
283	4'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	45 MIN.	30	
284	3'-6"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	90 MIN.	15	
300A	3'-0"	7'-2"	FG2	FRP	1" INSUL.	3	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	45	
300B	3'-0"	7'-2"	FG2	FRP	1" INSUL.	3	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	42	
300C	3'-0"	7'-2"	FG2	FRP	1/4" SAF	1	AL	1/4" SAF	10/A6.4	9/A6.4	9/A6.4	--	27	
300D	3'-0"	7'-2"	FG2	FRP	1/4" SAF	1	AL	1/4" SAF	10/A6.4	9/A6.4	9/A6.4	--	27	
301A	3'-0"	7'-2"	FG2	FRP	1" INSUL.	3	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	42	
301B	3'-0"	7'-2"	FG2	FRP	1" INSUL.	3	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	45	
302A	6'-0"	7'-2"	NS	WD	1/4" SAF	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	35	
302B	3'-0"	7'-2"	FG2	FRP	1" INSUL.	4	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	47	
303A	3'-0"	7'-2"	FG2	FRP	1" INSUL.	3	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	45	
303B	3'-0"	7'-2"	FG2	FRP	1" INSUL.	3	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	42	
303C	3'-0"	7'-2"	FG2	FRP	1" INSUL.	3	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	42	
303D	3'-0"	7'-2"	FG2	FRP	1" INSUL.	3	AL	1" INSUL.	5/A6.4	7/A6.4	7/A6.4	--	45	
310	3'-0"	7'-2"	F	WD	--	1	HM		4/A6.3	3/A6.3	3/A6.3	45 MIN.	22	
311	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM		4/A6.3	3/A6.3	3/A6.3	--	31	
311B	3'-0"	7'-2"	FG2	FRP	1" INSUL.	4	AL	--	4/A6.4	3/A6.4	3/A6.4	--	47	
312	3'-0"	7'-2"	NS	WD		1	HM	--	14/A6.3	13/A6.3	13/A6.3	45 MIN.	10	
313	3'-0"	7'-2"	G	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	16	
314	3'-0"	7'-2"	G	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	--	16	
315	3'-0"	7'-2"	F	WD	--	1	HM	--	4/A6.3	3/A6.3	3/A6.3	45 MIN.	22	
321	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	04	
322	3'-0"	7'-2"	F	WD	--	1	HM	--	14/A6.3	13/A6.3	13/A6.3	--	04	
330	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM		4/A6.3	3/A6.3	3/A6.3	--	18	
331	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM		4/A6.3	3/A6.3	3/A6.3	--	18	
332	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM		4/A6.3	3/A6.3	3/A6.3	--	18	
333	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM		4/A6.3	3/A6.3	3/A6.3	--	18	
334	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM		4/A6.3	3/A6.3	3/A6.3	--	18	
335	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM		4/A6.3	3/A6.3	3/A6.3	--	18	
336	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM		4/A6.3	3/A6.3	3/A6.3	--	18	
337	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM		4/A6.3	3/A6.3	3/A6.3	--	18	
338	3'-0"	7'-2"	NS	WD	1/4" SAF	1	HM		4/A6.3	3/A6.3	3/A6.3	--	18	

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KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

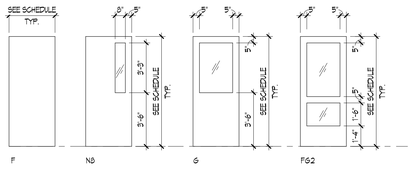
Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

LSD NO. SB-0064
JOB NO. 2616.01G

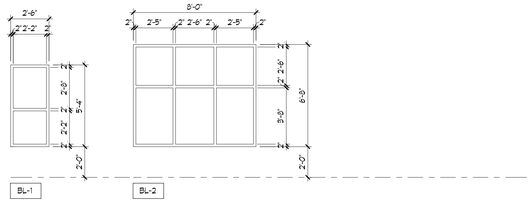
SHEET TITLE
DOOR SCHEDULE

SHEET NO.
A6.1



DOOR TYPES

FIELD VERIFY ROUGH OPENING SIZE PRIOR TO MANUFACTURING



BORROWED LITE FRAMES

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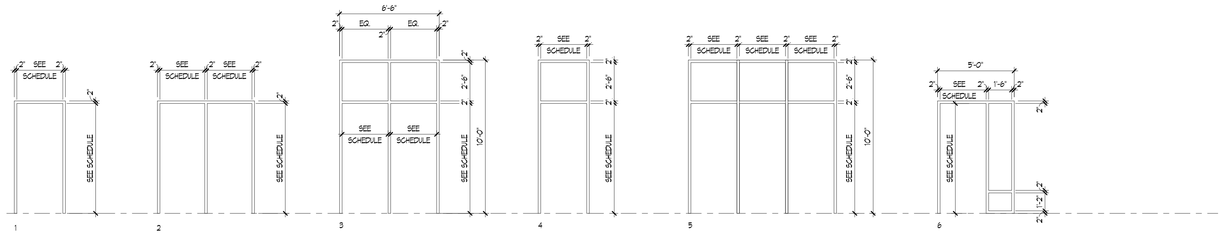

FRAME TYPES

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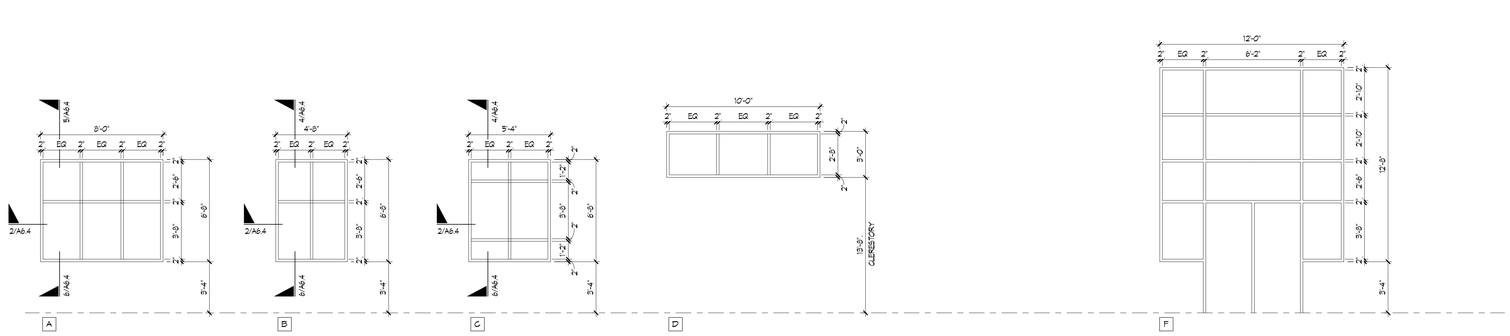
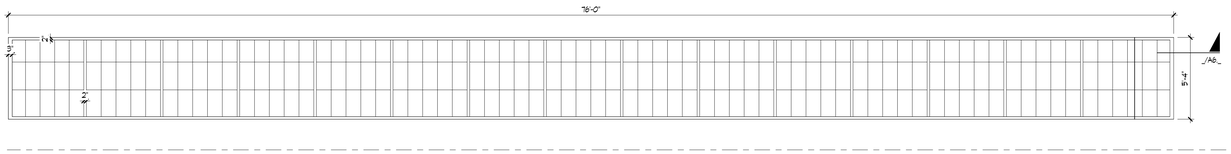


STOREFRONT

FIELD VERIFY ROUGH OPENING SIZE PRIOR TO MANUFACTURING

CURTAINWALL

FIELD VERIFY ROUGH OPENING SIZE PRIOR TO MANUFACTURING



TRANSLUCENT PANEL

FIELD VERIFY ROUGH OPENING SIZE PRIOR TO MANUFACTURING

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KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE

OPENING ELEVATIONS

SHEET NO.

A6.2

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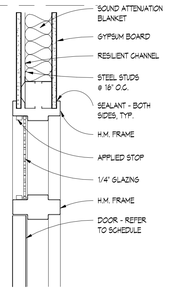
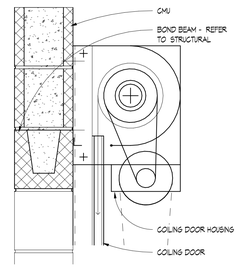
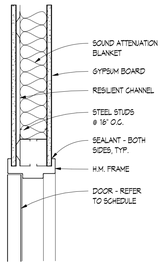


15 HEAD - HM FRAME
1 1/2" = 1'-0" — 6 1/4" HM FRAME REQUIRED

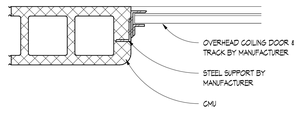


10 HEAD - COILING DOOR
1 1/2" = 1'-0"

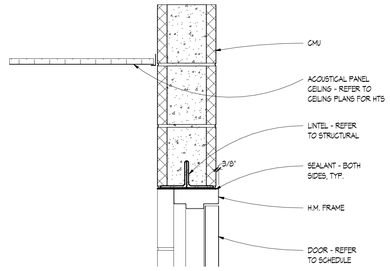
5 NOT USED



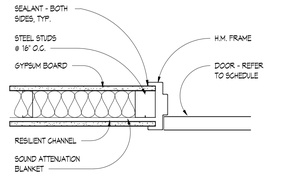
14 HEAD - HM FRAME
1 1/2" = 1'-0" — 6 1/4" HM FRAME REQUIRED



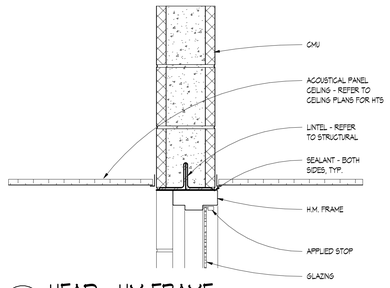
9 JAMB - COILING DOOR
1 1/2" = 1'-0"



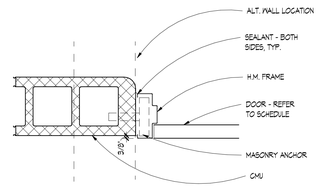
4 HEAD - HM FRAME
1 1/2" = 1'-0"



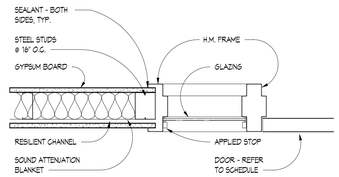
13 JAMB - HM FRAME
1 1/2" = 1'-0" — 6 1/4" HM FRAME REQUIRED



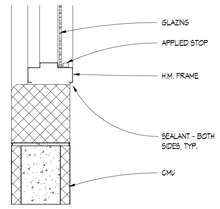
8 HEAD - HM FRAME
1 1/2" = 1'-0"



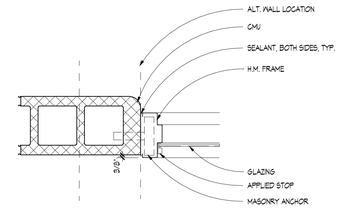
3 JAMB - HM FRAME
1 1/2" = 1'-0" — BULLNOSE CMU @ JAMBS, TYP.



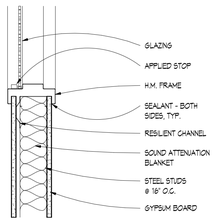
12 JAMB - HM FRAME
1 1/2" = 1'-0" — 6 1/4" HM FRAME REQUIRED



7 SILL - HM FRAME
1 1/2" = 1'-0" — BULLNOSE CMU @ SILLS, TYP., U.N.O.



2 JAMB - HM FRAME
1 1/2" = 1'-0" — BULLNOSE CMU @ JAMBS, TYP.



11 SILL - HM FRAME
1 1/2" = 1'-0" — 6 1/4" HM FRAME REQUIRED

6 NOT USED

1 NOT USED

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
DOOR & WINDOW DETAILS

SHEET NO.
A6.3

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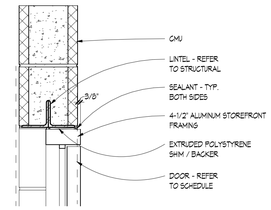
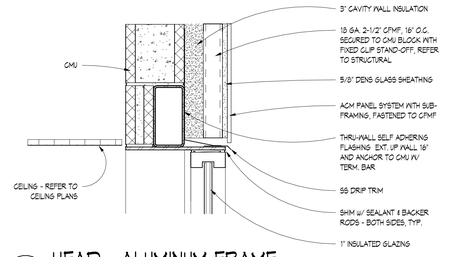
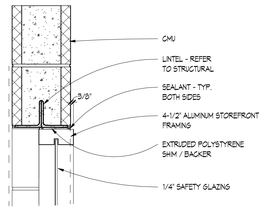
Address Docs:01-Lansing - Lewton School\Lansing_Lewton_Arch_r2023.rvt



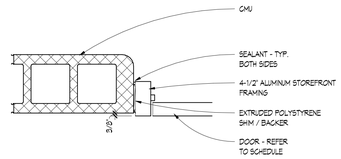
10 HEAD - ALUMINUM FRAME
1 1/2" = 1'-0"



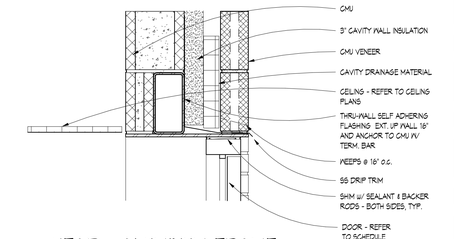
5 HEAD - ALUMINUM FRAME
1 1/2" = 1'-0"



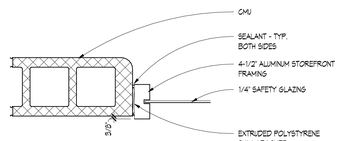
14 HEAD - ALUMINUM FRAME
1 1/2" = 1'-0"



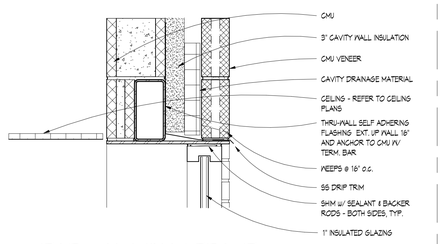
9 JAMB - ALUMINUM FRAME
1 1/2" = 1'-0" BULLNOSE CMU @ JAMBS, TYP.



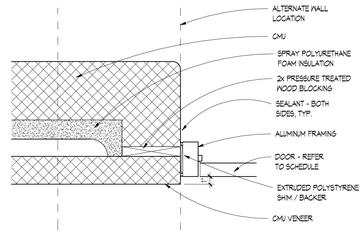
4 HEAD - ALUMINUM FRAME
1 1/2" = 1'-0"



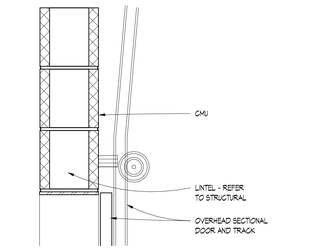
13 JAMB - ALUMINUM FRAME
1 1/2" = 1'-0" BULLNOSE CMU @ JAMBS, TYP.



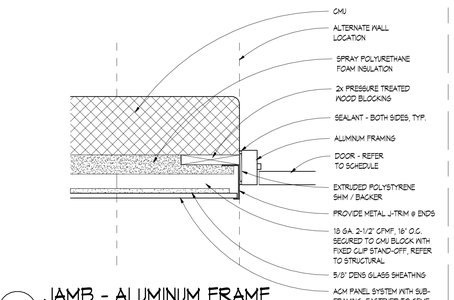
8 HEAD - ALUMINUM FRAME
1 1/2" = 1'-0"



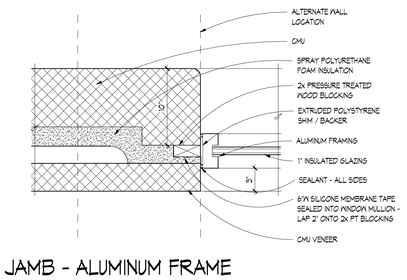
3 JAMB - ALUMINUM FRAME
1 1/2" = 1'-0" BULLNOSE CMU @ JAMBS, TYP.



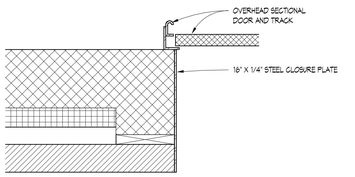
12 HEAD - SECTIONAL DOOR
1 1/2" = 1'-0"



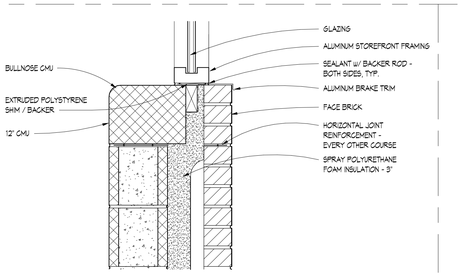
7 JAMB - ALUMINUM FRAME
1 1/2" = 1'-0" BULLNOSE CMU @ JAMBS, TYP.



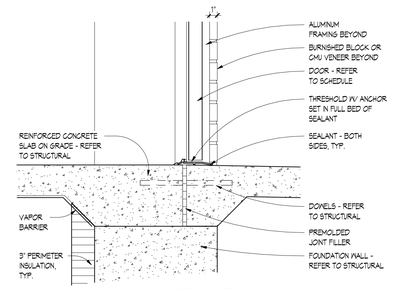
2 JAMB - ALUMINUM FRAME
1 1/2" = 1'-0" BULLNOSE CMU @ JAMBS, TYP.



11 JAMB - SECTIONAL DOOR
1 1/2" = 1'-0" BULLNOSE CMU @ JAMBS, TYP.



6 SILL - ALUMINUM FRAME
1 1/2" = 1'-0" SILL HEIGHT VARIES - REFER TO EXTERIOR ELEVATIONS



1 SILL - ALUMINUM FRAME
1 1/2" = 1'-0"

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KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
DOOR & WINDOW DETAILS

SHEET NO.
A6.4

COLOR LAYOUT PLAN KEYNOTES

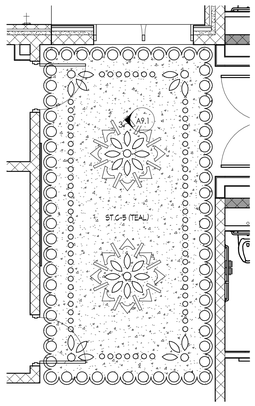
1. ALUMINUM CORNER GUARD, 4'-0" H -MOUNT 4'A.F.F.
2. ALUMINUM CORNER GUARD, 8'-0" H -MOUNT 4'A.F.F.
3. METAL TRIM AT EXPOSED CORNERS OF WALL TILE, MT-1.
4. FULL HEIGHT WALL TILE
5. PROVIDE CLEAN FLOORING TRANSITION BETWEEN EPOXY FLOOR AND POLISHED CONCRETE

MATERIAL AND FINISHES GENERAL NOTES

1. SEE REFLECTED CEILING PLANS FOR ACOUSTICAL CEILING TYPES.
2. UNLESS NOTED OTHERWISE, PAINT NEW BULKHEADS, SYP CEILINGS, AND EXPOSED CEILINGS IN COLORS INDICATED ON THE REFLECTED CEILING PLANS AND COLOR LAYOUT PLANS.
3. AT EXPOSED SEALED CONCRETE, PROVIDE HEAVY DUTY SEMI-RIGID EPOXY JOINT FILLER. CONTROL JOINTS AT POLISHED CONCRETE 10' X 10' OR AS NOTED ON COLOR PLANS.
4. FLOORING TRANSITIONS TO OCCUR IN LINE WITH THE CENTERLINE OF THE DOOR LEAF. PROVIDE A CLEAN TRANSITION BETWEEN POLISHED AND SEALED CONCRETE FLOORS.
5. PAINT EXPOSED DOMESTIC WATER PIPING P-3 (BLUE) U.N.O.
6. PAINT EXPOSED FIRE SUPPRESSION LINE PIPING P-5 (ORANGE) U.N.O.
7. PAINT EXPOSED ELECTRICAL CONDUIT P-9 (PURPLE) U.N.O.
8. AT EXPOSED CEILING, PAINT STRUCTRUAL ELEMENTS AND TECTUM DECK TO MATCH P-11. U.N.O. DO NOT PAINT MECHANICAL DUCT WORK U.N.O.
9. VERIFY LETTERING FONT AND SIZES WITH OWNER IN FIELD.
10. ALL WINDOW SILLS TO RECEIVE WHITE SOLID SURFACE U.N.O.
11. PAINT ALL HM FRAMES AND DOORS P-2 U.N.O.
12. ALL RESINOUS EPOXY FLOORS TO HAVE INTEGRAL RESINOUS EPOXY BASE U.N.O.
13. DONT PAINT BURNISHED BLOCK.
14. ALL PAINT IN RESTROOMS AND LOCKER ROOMS TO BE EPOXY PAINT, REFER TO SPECIFICATION SECTION 099600

COLOR LAYOUT PLAN LEGEND

- PAINT, SEE SPECIFICATION SECTIONS 099123 & 099600
- CERAMIC TILE WALL, SEE SPECIFICATION SECTION 093013
- RESILIENT ATHLETIC FLOORING, SEE SPECIFICATION SECTION 096566
- RESILIENT SHEET FLOORING, SEE SPECIFICATION SECTION 096516
- W.C.T. WALK-OFF CARPET TILE, SEE SPECIFICATION SECTION 096800
- MT BARRIER FREE METAL TRANSITION EQUAL TO SCHLUTER RENO-RAMP SEE SPECIFICATION SECTION 093013
- P.C. POLISHED CONCETE FLOOR, POLISH: LEVEL 2: LOW SHEEN, 400 GRIT, SEE SPECIFICATION SECTION 033543
- RB-# RUBBER BASE, SEE SPECIFICATION SECTION 096513
- REF-# RESINOUS EPOXY FLOORING, SEE SPECIFICATION SECTION 096723
- S.C. SEALED CONCRETE FLOOR
- ST.C. STAINED CONCRETE FLOOR, SEE SPECIFICATION SECTION 033543
- CONTROL JOINT
- PRODUCT EXTENTS WITH MATERIAL INDICATED
- WORK POINT
- FLOORING TRANSITION
- MATERIAL INSTALL DIRECTION
- CHANGE OF MATERIAL



2 DECORATIVE CONCRETE - UNIT 100
1/4" = 1'-0"

1 COLOR LAYOUT PLAN - UNIT 100
1/8" = 1'-0"

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

N

SHEET TITLE
COLOR LAYOUT PLAN - UNIT 100

SHEET NO.
A8.1

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COLOR LAYOUT PLAN KEYNOTES

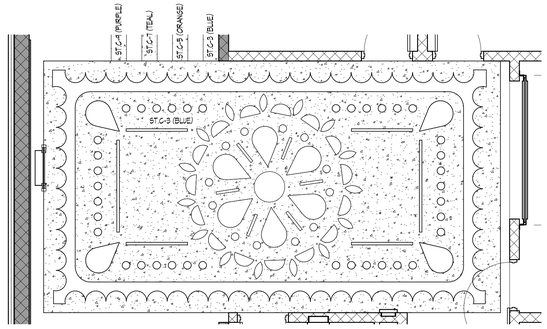
1. ALUMINUM CORNER GUARD, 4'-0" H -MOUNT 4"A.F.F.
2. ALUMINUM CORNER GUARD, 5'-0" H -MOUNT 4"A.F.F.
3. METAL TRIM AT EXPOSED CORNERS OF WALL TILE. MT-1.
4. FULL HEIGHT WALL TILE
5. PROVIDE CLEAN FLOORING TRANSITION BETWEEN EPOXY FLOOR AND POLISHED CONCRETE

MATERIAL AND FINISHES GENERAL NOTES

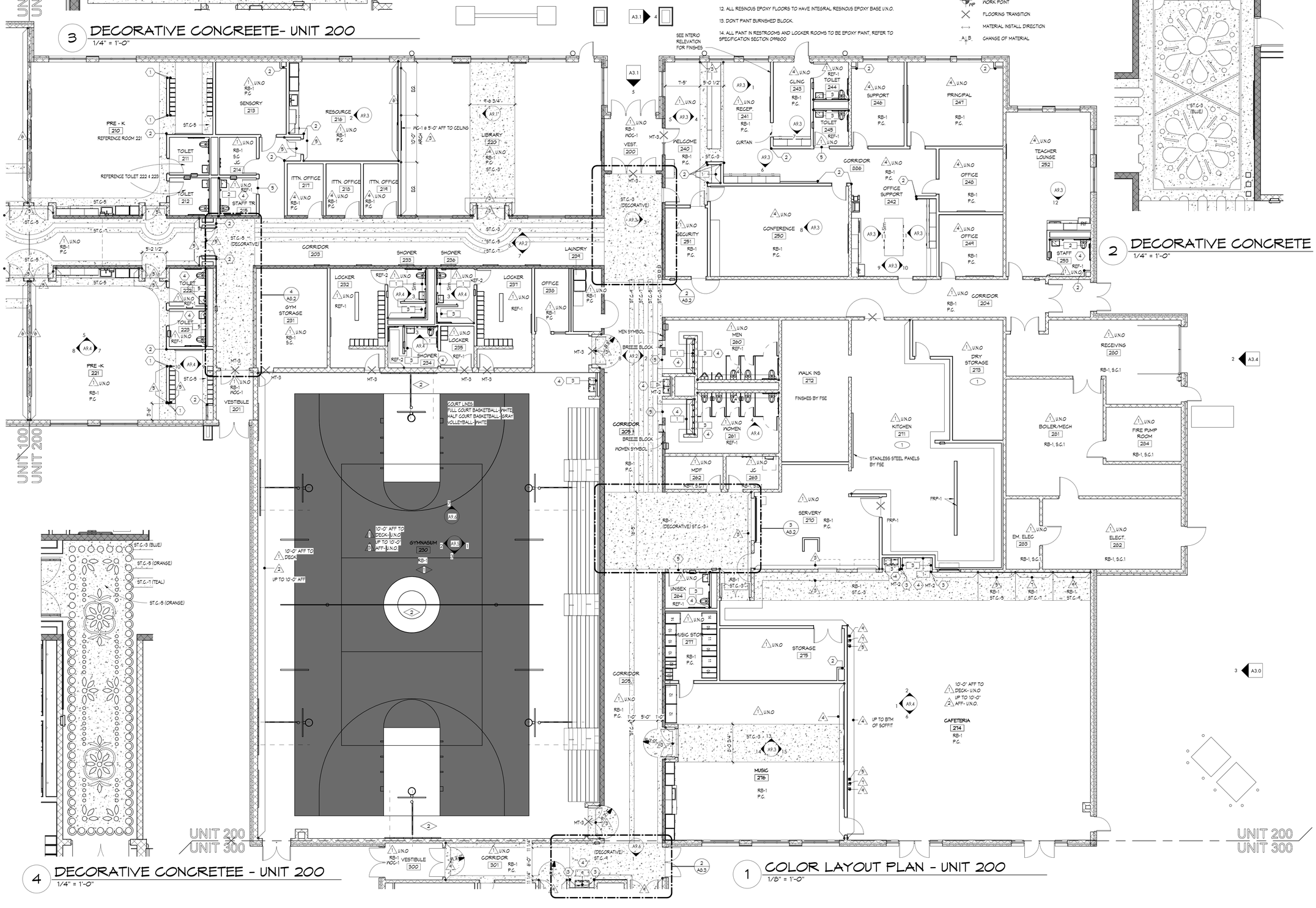
1. SEE REFLECTED CEILING PLANS FOR ACOUSTICAL CEILING TYPES.
2. UNLESS NOTED OTHERWISE, PAINT NEW BULKHEADS, GYP CEILINGS, AND EXPOSED CEILINGS IN COLORS INDICATED ON THE REFLECTED CEILING PLANS AND COLOR LAYOUT PLANS.
3. AT EXPOSED SEALED CONCRETE, PROVIDE HEAVY DUTY SEMI-RIGID EPOXY JOINT FILLER. CONTROL JOINTS AT POLISHED CONCRETE 10' X 10' OR AS NOTED ON COLOR PLANS.
4. FLOORING TRANSITIONS TO OCCUR IN LINE WITH THE CENTERLINE OF THE DOOR LEAF. PROVIDE A CLEAN TRANSITION BETWEEN POLISHED AND SEALED CONCRETE FLOORS.
5. PAINT EXPOSED DOMESTIC WATER PIPING P-3 (BLUE) U.N.O.
6. PAINT EXPOSED FIRE SUPPRESSION LINE PIPING P-5 (ORANGE) U.N.O.
7. PAINT EXPOSED ELECTRICAL CONDUIT P-4 (PURPLE) U.N.O.
8. AT EXPOSED CEILING, PAINT STRUCTRUAL ELEMENTS AND TECTUM DECK TO MATCH P-11. U.N.O. DO NOT PAINT MECHANICAL DUCT WORK U.N.O.
9. VERIFY LETTERING FONT AND SIZES WITH OWNER IN FIELD.
10. ALL WINDOW SILLS TO RECEIVE WHITE SOLID SURFACE U.N.O.
11. PAINT ALL HM FRAMES AND DOORS P-2 U.N.O.
12. ALL RESINOUS EPOXY FLOORS TO HAVE INTEGRAL RESINOUS EPOXY BASE U.N.O.
13. DONT PAINT BURNISHED BLOCK.
14. ALL PAINT IN RESTROOMS AND LOCKER ROOMS TO BE EPOXY PAINT, REFER TO SPECIFICATION SECTION 099600

COLOR LAYOUT PLAN LEGEND

A	PAINT, SEE SPECIFICATION SECTIONS 099123 & 099600
B	CERAMIC TILE WALL, SEE SPECIFICATION SECTION 093013
C	RESILIENT ATHLETIC FLOORING, SEE SPECIFICATION SECTION 096566
D	RESILIENT SHEET FLOORING, SEE SPECIFICATION SECTION 096816
W.C.T.	WALK-OFF CARPET TILE, SEE SPECIFICATION SECTION 096800
MT	BARRIER FREE METAL TRANSITION EQUAL TO SCHLUTER RENO-RAMP SEE SPECIFICATION SECTION 093013
P.C.	POLISHED CONCETE FLOOR, POLISH: LEVEL 2: LOW SHEEN, 400 GRIT, SEE SPECIFICATION SECTION 033543
RB-#	RUBBER BASE, SEE SPECIFICATION SECTION 096513
REF-#	RESINOUS EPOXY FLOORING, SEE SPECIFICATION SECTION 096723
S.C.	SEALED CONCRETE FLOOR
ST.C.	STAINED CONCRETE FLOOR, SEE SPECIFICATION SECTION 033543
℄	CONTROL JOINT
	PRODUCT EXTENTS WITH MATERIAL INDICATED
WP	WORK POINT
	FLOORING TRANSITION
	MATERIAL INSTALL DIRECTION
A \ B	CHANGE OF MATERIAL



3 DECORATIVE CONCREETE- UNIT 200
1/4" = 1'-0"



2 DECORATIVE CONCRETE
1/4" = 1'-0"

4 DECORATIVE CONCRETEE - UNIT 200
1/4" = 1'-0"

1 COLOR LAYOUT PLAN - UNIT 200
1/8" = 1'-0"

LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
COLOR LAYOUT PLAN - UNIT 200

SHEET NO.
A8.2

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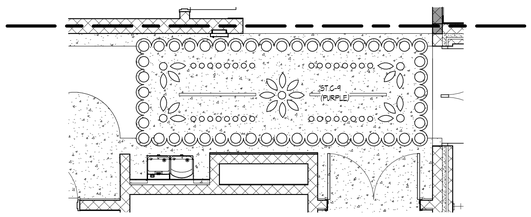


2 DECORATIVE CONCRETE - UNIT 300
1/4" = 1'-0"

COLOR LAYOUT PLAN KEYNOTES

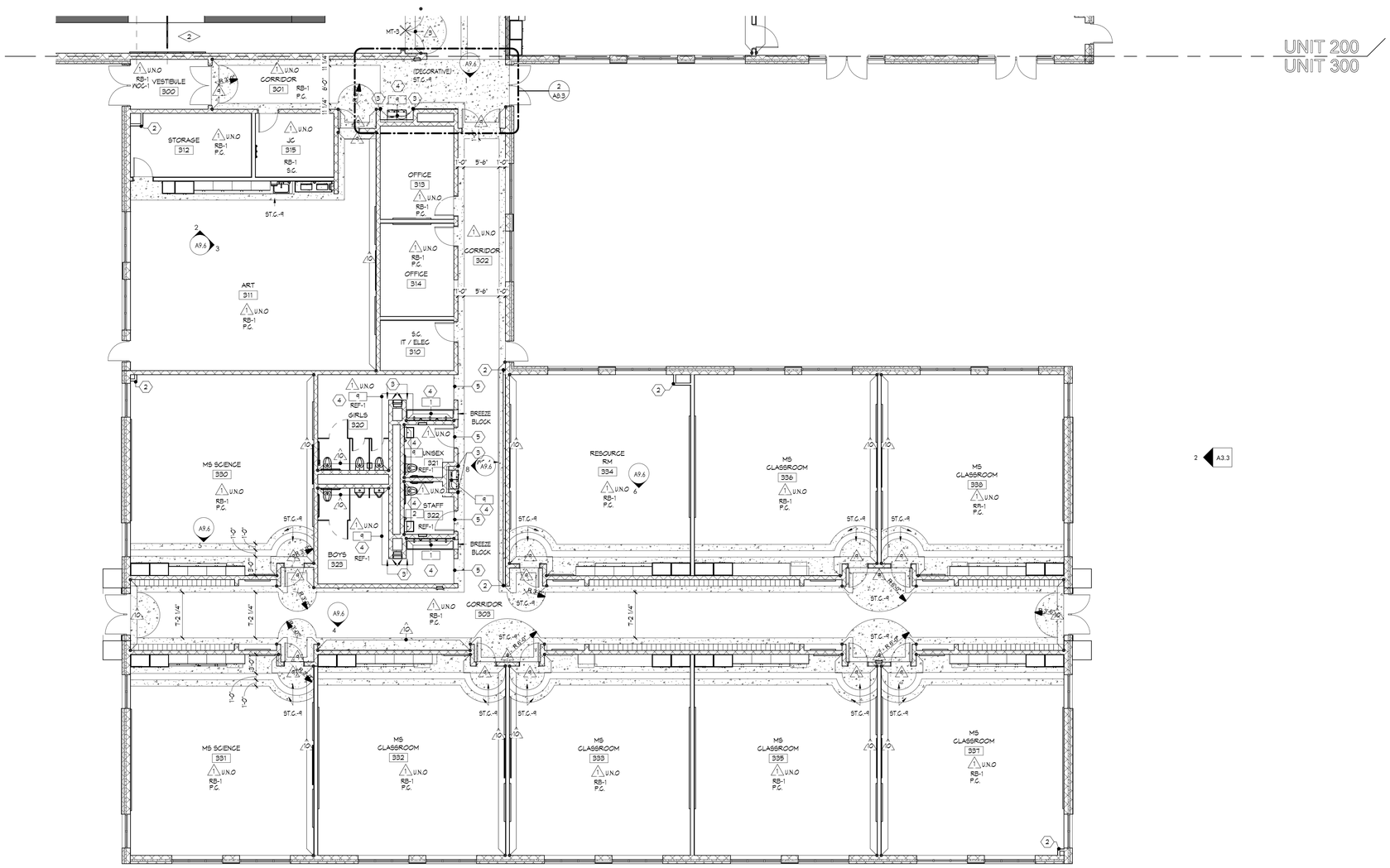
1. ALUMINUM CORNER GUARD, 4'-0" H -MOUNT 4"A.F.F.
2. ALUMINUM CORNER GUARD, 8'-0" H -MOUNT 4"A.F.F.
3. METAL TRIM AT EXPOSED CORNERS OF WALL TILE. MT-1.
4. FULL HEIGHT WALL TILE
5. PROVIDE CLEAN FLOORING TRANSITION BETWEEN EPOXY FLOOR AND POLISHED CONCRETE

MATERIAL AND FINISHES GENERAL NOTES

1. SEE REFLECTED CEILING PLANS FOR ACOUSTICAL CEILING TYPES.
2. UNLESS NOTED OTHERWISE, PAINT NEW BULKHEADS, GYP CEILINGS, AND EXPOSED CEILINGS IN COLORS INDICATED ON THE REFLECTED CEILING PLANS AND COLOR LAYOUT PLANS.
3. AT EXPOSED SEALED CONCRETE, PROVIDE HEAVY DUTY SEMI-RIGID EPOXY JOINT FILLER. CONTROL JOINTS AT POLISHED CONCRETE 10' X 10' OR AS NOTED ON COLOR PLANS.
4. FLOORING TRANSITIONS TO OCCUR IN LINE WITH THE CENTERLINE OF THE DOOR LEAF. PROVIDE A CLEAN TRANSITION BETWEEN POLISHED AND SEALED CONCRETE FLOORS.
5. PAINT EXPOSED DOMESTIC WATER PIPING P-3 (BLUE) U.N.O.
6. PAINT EXPOSED FIRE SUPPRESSION LINE PIPING P-5 (ORANGE) U.N.O.
7. PAINT EXPOSED ELECTRICAL CONDUIT P-9 (PURPLE) U.N.O.
8. AT EXPOSED CEILING, PAINT STRUCTRIAL ELEMENTS AND TECTUM DECK TO MATCH P-11. U.N.O. DO NOT PAINT MECHANICAL DUCT WORK U.N.O.
9. VERIFY LETTERING FONT AND SIZES WITH OWNER IN FIELD.
10. ALL WINDOW SILLS TO RECEIVE WHITE SOLID SURFACE U.N.O.
11. PAINT ALL HM FRAMES AND DOORS P-2 U.N.O.
12. ALL RESINOUS EPOXY FLOORS TO HAVE INTEGRAL RESINOUS EPOXY BASE U.N.O.
13. DON'T PAINT BURNISHED BLOCK.
14. ALL PAINT IN RESTROOMS AND LOCKER ROOMS TO BE EPOXY PAINT. REFER TO SPECIFICATION SECTION 099600

COLOR LAYOUT PLAN LEGEND

A	PAINT, SEE SPECIFICATION SECTIONS 099123 & 099600
#	CERAMIC TILE WALL, SEE SPECIFICATION SECTION 093013
#	RESILIENT ATHLETIC FLOORING, SEE SPECIFICATION SECTION 096566
#	RESILIENT SHEET FLOORING, SEE SPECIFICATION SECTION 096516
W.C.T.	WALK-OFF CARPET TILE, SEE SPECIFICATION SECTION 096800
MT	BARRIER FREE METAL TRANSITION EQUAL TO SCHLUTER RENO-RAMP SEE SPECIFICATION SECTION 093013
P.C.	POLISHED CONCETE FLOOR, POLISH: LEVEL 2: LOW SHEEN, 400 GRIT, SEE SPECIFICATION SECTION 033543
RB-#	RUBBER BASE, SEE SPECIFICATION SECTION 096513
REF-#	RESINOUS EPOXY FLOORING, SEE SPECIFICATION SECTION 096723
S.C.	SEALED CONCRETE FLOOR
ST.C.	STAINED CONCRETE FLOOR, SEE SPECIFICATION SECTION 033543
	CONTROL JOINT
	PRODUCT EXTENTS WITH MATERIAL INDICATED
WP	WORK POINT
	FLOORING TRANSITION
	MATERIAL INSTALL DIRECTION
A \ B	CHANGE OF MATERIAL



1 A3.3

2 A3.3

LEWTON SCHOOL

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KEY PLAN

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N

SHEET TITLE
COLOR LAYOUT PLAN - UNIT 300

SHEET NO.
A8.3

KINGSCOTT ASSOCIATES INC. KALAMAZOO, MICHIGAN

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LEWTON LANSING						
A/E # 2616.01G						
INTERIOR FINISHES						
TAG	**MATERIAL**	**MANUFACTURER**	**PATTERN**	**COLOR**	**SIZE**	**COMMENT**
095113 - ACOUTICAL PANEL CEILINGS						
APC-1	ACOUSTICAL PANEL CEILING			WHITE	2' X 2'	TYPICAL
APC-2	ACOUSTICAL PANEL CEILING			WHITE	2' X 2'	KITCHEN
093013 - CERAMIC TILING						
CTW-1	CERAMIC WALL TILE	TILE BAR	CASCAIS SILVER SKY	WHITE AND GRAY	9"X9"	
CTW-2	CERAMIC WALL TILE	PLATFORM SURFACES	TELLURIDE	WHITE	3"X5" SHEET	STAFF - DIFFERENT COLOR GROUTS TO MATCH GRADE LEVEL COLORS
CTW-3	CERAMIC WALL TILE	DALTILE	CLASSIC COLOR WHEEL- LINEAR	SEA BREEZE	4"X12" - MATTE	MAIN
CTW-5	CERAMIC WALL TILE	DALTILE	CLASSIC COLOR WHEEL- LINEAR	ORANGE BURST	4"X12" - MATTE	PK-2
CTW-7	CERAMIC WALL TILE	DALTILE	CLASSIC COLOR WHEEL- LINEAR	OCEAN BLUE	4"X12" - MATTE	GRADES 3-5
CTW-9	CERAMIC WALL TILE	DALTILE	CLASSIC COLOR WHEEL- LINEAR	PLUM CRAZY	4"X12" - MATTE	GRADES 6-8
BB-3	BREEZE BLOCK	PLATFORM SURFACES	SEABREEZE	OBLIQUE BLUE VELVET	9" x 4" x 4- MATTE	MAIN
BB-7	BREEZE BLOCK	PLATFORM SURFACES	SEABREEZE	OBLIQUE PEACOCK	9" x 4" x 4- MATTE	GRADES 3-5
BB-9	BREEZE BLOCK	PLATFORM SURFACES	SEABREEZE	OBLIQUE LAVA SMOKE	9" x 4" x 4- MATTE	GRADES 6-8
GROUT						
GR-1	EPOXY GROUT	TEC		GRAY		WITH CTW-1
GR-3	EPOXY GROUT	TEC		CUSTOM BLUE		WITH CTW-3,CTW-2 @ 253 STAFF RESTROOM
GR-5	EPOXY GROUT	TEC		CUSTOM ORANGE		WITH CTW-5,CTW-2 @215 STAFF RESTROOM
GR-7	EPOXY GROUT	TEC		CUSTOM TEAL		WITH CTW-7,CTW-2 @MAIN STAFF RESTROOM
GR-9	EPOXY GROUT	TEC		CUSTOM PURPLE		WITH CTW-9,CTW-2 @MAIN STAFF RESTROOM
METAL TRANSITIONS						
MT-1	METAL TRANSITIONS	SCHLUTER	RONDEC	ANNODIZED ALUMINUM		TILE OUTSIDE EDGES
MT-2	METAL TRANSITIONS	SCHLUTER	DILEX-AHKA	ANNODIZED ALUMINUM		COVE AT BTM OF TILE
MT-3	METAL TRANSITIONS	SCHLUTER	RENO-RAMP	ANNODIZED ALUMINUM		FLOOR TRANSITIONS
096723-RESINOUS EPOXY FLOORING						
REF-1	RESINOUS EPOXY FLOORING	SHERWIN WILLIAMS	DECOFLAKE	CHINCHILLA		RESTROOMS/LOCKER ROOMS, INTEGRAL BASE
REF-2	RESINOUS EPOXY FLOORING	SHERWIN WILLIAMS	DECOFLAKE	CHINCHILLA	EXTRA GRIT FOR SHOWER	SHOWERS, INTEGRAL BASE
SECTION 096813-TILE CARPETING						
WOC-1	WALK-OFF CARPET TILE	INTERFACE	STEP REPEAT	104940 IRON		
096516-RESILIENT SHEET FLOORING						
RSF-1	RESILIENT SHEET FLOORING	PROTECT-ALL FLOORING		DARK GRAY		KITCHEN AREAS, INTEGRAL BASE
096513 - RESILIENT BASE AND ACCESSORIES						
RB-1	RUBBER WALL BASE	TARKETT	JOHNSONITE BASEWORKS (TYPE TS)	20 CHARCOAL WG	4" TOELESS	WALLBASE
	RUBBER QUARTER ROUND	TARKETT	JOHNSONITE MILLWORK WALL BASE SYSTEM	20 CHARCOAL WG	QUARTER ROUND 3/4"	USE QUARTER ROUND AT WALL PERIMETERS WITH POLISHED CONCRETE FLOORS
033543- STAINED CONCRETE						
STC-3	STAINED CONCRETE			BLUE		MAIN AREAS
STC-5	STAINED CONCRETE			ORANGE		GRADES PK-2
STC-7	STAINED CONCRETE			TEAL		GRADES 3-5
STC-9	STAINED CONCRETE			PURPLE		GRADES 6-8
96566 - RESILIENT ATHLETIC FLOORING						
RAF-1	RESILIENT ATHLETIC FLOORING	GERFLOR	TARAFLEX MULTI USE 6.2	#6381 MAPLE		
RAF-2	RESILIENT ATHLETIC FLOORING	GERFLOR	TARAFLEX MULTI USE 6.2	#6430 BLUE		
097513 - WALL COVERINGS						
WC-1	WALLCOVERING	DESIGN TEX OR EQUAL	CUSTOM PRINTED VINYL	CUSTOM		LIBRARY
WC-2	WALLCOVERING	DESIGN TEX OR EQUAL	CUSTOM PRINTED VINYL	CUSTOM		GRADES PK-2
WC-3	WALLCOVERING	DESIGN TEX OR EQUAL	CUSTOM PRINTED VINYL	CUSTOM		GRADES 3-5
WC-4	WALLCOVERING	DESIGN TEX OR EQUAL	CUSTOM PRINTED VINYL	CUSTOM		GRADES 6-8
102600- WALL PROTECTION						
FRP-1	FIBER REINFORCED PANELS	MARLITE		WHITE		KITCHEN

098433 - SOUND ABSORBING WALL PANELS						
AWP-1	ACOUSTIC WALL PANELS	ARMSTRONG	TECTUM DIRECT ATTACH	MATCH P-1	2'X4'	CAFETERIA WHITE
AWP-2	ACOUSTIC WALL PANELS	ARMSTRONG	TECTUM DIRECT ATTACH	MATCH P-2	2'X4'	CR GRAY
AWP-3	ACOUSTIC WALL PANELS	UNIKAE VAEV	ECOUSTIC FOLIAR	BALTIC 68136		GYM BLUE
AWP-4	ACOUSTIC WALL PANELS	UNIKAE VAEV	ECOUSTIC FOLIAR	OPAL-68193		GYMP GRAY
AWP-5	ACOUSTIC WALL PANELS	ARMSTRONG	TECTUM DIRECT ATTACH	MATCH P-5	2'X4'	CR ORANGE
AWP-7	ACOUSTIC WALL PANELS	ARMSTRONG	TECTUM DIRECT ATTACH	MATCH P-7	2'X4'	CR TEAL
AWP-9	ACOUSTIC WALL PANELS	ARMSTRONG	TECTUM DIRECT ATTACH	MATCH P-9	2'X4'	CR PURPLE
AWP-10	ACOUSTIC WALL PANELS	FACT	FLAT-CAMIRA BLAZER	CUSTOM PATTERN	3'-4" X6'-0" CUSTOM ARCH.	STUDENT WORK WALL
098436 - SOUND ABSORBING CEILING PANEL						
ACP-1	ACOUSTICAL CEILING CLOUD	ACOUFELT	CREST-CEILING CLOUD	WHITE OAK WQ13	2'X2'X1'	CORRIDORS
ACP-2	ACOUSTICAL CEILING CLOUD	MDC INTERIOR SOLUTIONS	ZINTRA- MESH	4 COLORS TBD	48" W x 48" L x 9" H	CAFETERIA
099124 - INTERIOR PAINTING						
P-1	PAINT	SHERWIN WILLIAMS		SNOWBOUND 7004		FIELD PAINT
P-2	PAINT	SHERWIN WILLIAMS		SOFTWARE 7074		DOOR FRAME
P-3	PAINT	SHERWIN WILLIAMS		FRANK BLUE 6967		ACCENT
P-4	PAINT	SHERWIN WILLIAMS		MOONMIST 9144		ACCENT
P-5	PAINT	SHERWIN WILLIAMS		KNOCKOUT ORANGE 6885		ACCENT-PK-2 WING
P-6	PAINT	SHERWIN WILLIAMS		EMBERGLOW 6627		ACCENT-PK-2 WING
P-7	PAINT	SHERWIN WILLIAMS		AQUARIUM 6767		ACCENT-3-5 WING
P-8	PAINT	SHERWIN WILLIAMS		MARINER 6766		ACCENT-3-5 WING
P-9	PAINT	SHERWIN WILLIAMS		PASSIONATE PURPLE 6981		ACCENT-6-8 WING
P-10	PAINT	SHERWIN WILLIAMS		VERI BERRI 9069		ACCENT-6-8 WING
P-11	PAINT	SHERWIN WILLIAMS		GRAY SCREEN 7071		STRUCTURE /TECTUM DECK
105113 - METAL LOCKERS						
MWL-1	METAL WARDROBE LOCKER			TEAL		3-5 WING
MWL-2	METAL WARDROBE LOCKER			PURPLE		6-8 WING
MAL-1	METAL ATHLETIC LOCKERS			BLUE		GYM LOCKERS
123216 - MANUFACTURED PLASTIC LAMINATE CLAD CASEWORK						
PLAM-1	PLASTIC LAMINATE	WILSONART	7850	BEIGWOOD		VERTICAL
PLAM-3	PLASTIC LAMINATE	WILSONART	Y0732	BLUE YONDER		ACCENT
PLAM-5	PLASTIC LAMINATE	WILSONART	Y0723	HOT SUN		ACCENT
PLAM-7	PLASTIC LAMINATE	WILSONART	Y0736	GREEN TOURMALINE		ACCENT
PLAM-9	PLASTIC LAMINATE	WILSONART	Y0737	LOLITE		ACCENT
123661.16 - SOLID SURFACING COUNTERTOP						
SS-1	SOLID SURFACE	DURANT		MEDIUM GRAY WITH CLEAR		COUNTER TOPS
SS-2	SOLID SURFACE	WILSONART	D354SL	DESIGNER WHITE		WINDOW SILLS

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES DATE
BID & CONSTRUCTION 10/10/2025

KEY PLAN

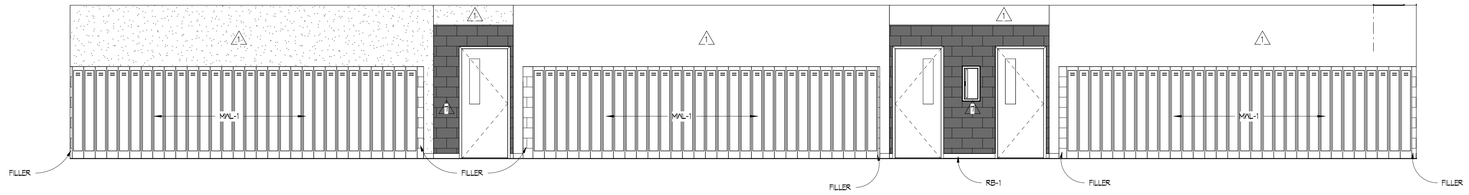
LSD NO. SB-0064
JOB NO. 2616.01G

N

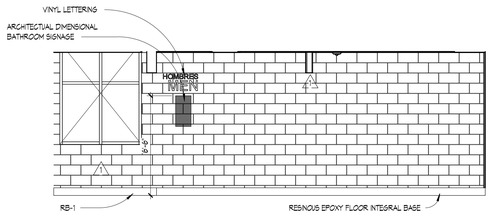
SHEET TITLE
FINISH SCHEDULE

SHEET NO.
A8.4

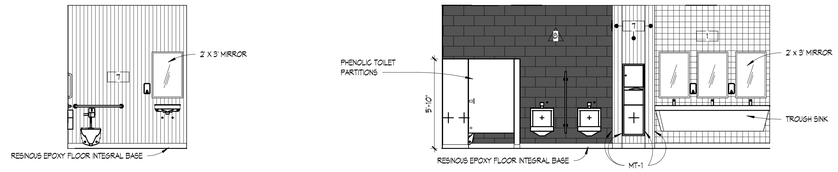
KINGSCOTT ASSOCIATES INC. KALAMAZOO, MICHIGAN

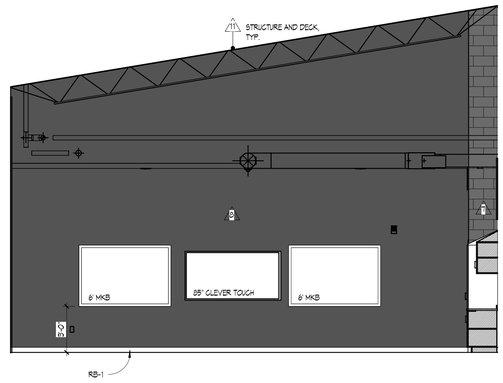


10 3-5 CORRIDOR
1/4" = 1'-0"



9 3-5 TYPICAL GROUP RESTROOM SIGNAGE
1/4" = 1'-0"

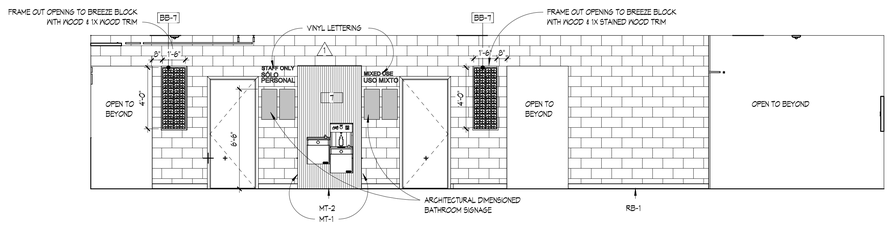


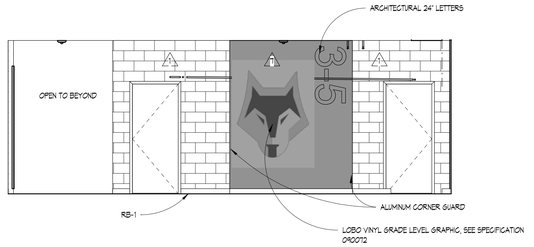


8 3-5 UNISEX RESTROOM
1/4" = 1'-0"

7 3-5 TYPICAL GROUP RESTROOM
1/4" = 1'-0"

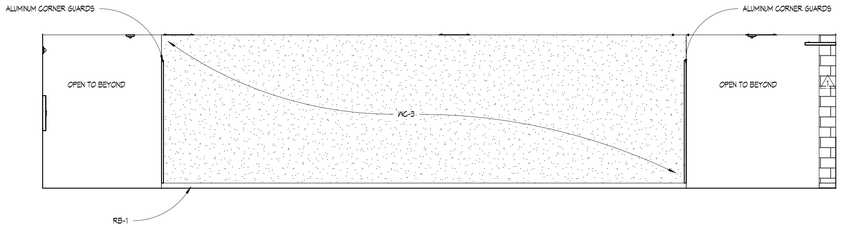
4 3-5 TYPICAL TEACHING WALL
1/4" = 1'-0"

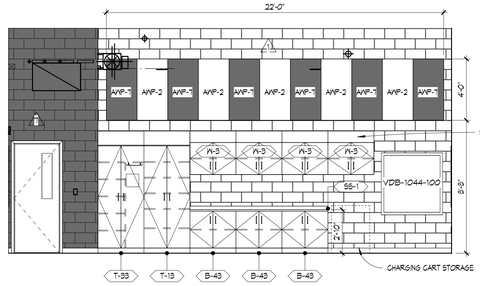


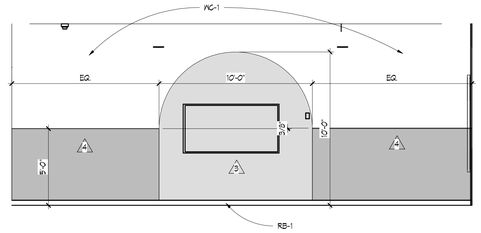


6 3-5 RESTROOM CORRIDOR
1/4" = 1'-0"

3 3-5 ENTRY
1/4" = 1'-0"







5 3-5 MURAL WALL
1/4" = 1'-0"

2 3-5 TYPICAL CLASSROOM CASEWORK
1/4" = 1'-0"

1 LIBRARY
1/4" = 1'-0"

MATERIAL AND FINISHES GENERAL NOTES

1. SEE REFLECTED CEILING PLANS FOR ACOUSTICAL CEILING TYPES.
2. UNLESS NOTED OTHERWISE, PAINT NEW BULKHEADS, SYP CEILINGS, AND EXPOSED CEILINGS IN COLORS INDICATED ON THE REFLECTED CEILING PLANS AND COLOR LAYOUT PLANS.
3. AT EXPOSED SEALED CONCRETE, PROVIDE HEAVY DUTY SEMI-RIGID EPOXY JOINT FILLER. CONTROL JOINTS AT POLISHED CONCRETE 10' X 10' OR AS NOTED ON COLOR PLANS.
4. FLOORING TRANSITIONS TO OCCUR IN LINE WITH THE CENTERLINE OF THE DOOR LEAF. PROVIDE A CLEAN TRANSITION BETWEEN POLISHED AND SEALED CONCRETE FLOORS.
5. PAINT EXPOSED DOMESTIC WATER PIPING P-3 (BLUE) U.N.O.
6. PAINT EXPOSED FIRE SUPPRESSION LINE PIPING P-5 (ORANGE) U.N.O.
7. PAINT EXPOSED ELECTRICAL CONDUIT P-9 (PURPLE) U.N.O.
8. AT EXPOSED CEILING, PAINT STRUCTRUAL ELEMENTS AND TECTUM DECK TO MATCH P-11, U.N.O. DO NOT PAINT MECHANICAL DUCT WORK U.N.O.
9. VERIFY LETTERING FONT AND SIZES WITH OWNER IN FIELD.
10. ALL WINDOW SILLS TO RECEIVE WHITE SOLID SURFACE U.N.O.
11. PAINT ALL HM FRAMES AND DOORS P-2 U.N.O.
12. ALL RESINOUS EPOXY FLOORS TO HAVE INTEGRAL RESINOUS EPOXY BASE U.N.O.
13. DON'T PAINT BURNISHED BLOCK.
14. ALL PAINT IN RESTROOMS AND LOCKER ROOMS TO BE EPOXY PAINT, REFER TO SPECIFICATION SECTION 099600

COLOR LAYOUT PLAN LEGEND

A	PAINT, SEE SPECIFICATION SECTIONS 099123 & 099600
#	CERAMIC TILE WALL, SEE SPECIFICATION SECTION 093013
#	RESILIENT ATHLETIC FLOORING, SEE SPECIFICATION SECTION 096566
#	RESILIENT SHEET FLOORING, SEE SPECIFICATION SECTION 096516
W.C.T.	WALK-OFF CARPET TILE, SEE SPECIFICATION SECTION 096800
MT	BARRIER FREE METAL TRANSITION EQUAL TO SCHLUTER RENO-RAMP SEE SPECIFICATION SECTION 093013
P.C.	POLISHED CONCETE FLOOR, POLISH: LEVEL 2: LOW SHEEN, 400 GRIT, SEE SPECIFICATION SECTION 033543
RB-#	RUBBER BASE, SEE SPECIFICATION SECTION 096513
REF-#	RESINOUS EPOXY FLOORING, SEE SPECIFICATION SECTION 096723
S.C.	SEALED CONCRETE FLOOR
ST.C.	STAINED CONCRETE FLOOR, SEE SPECIFICATION SECTION 033543
	CONTROL JOINT
	PRODUCT EXTENTS WITH MATERIAL INDICATED
WP	WORK POINT
	FLOORING TRANSITION
	MATERIAL INSTALL DIRECTION
A | B	CHANGE OF MATERIAL

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

LEWTON SCHOOL
Lansing School District
2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
INTERIOR ELEVATIONS- UNIT 100 & 200

SHEET NO.
A9.1

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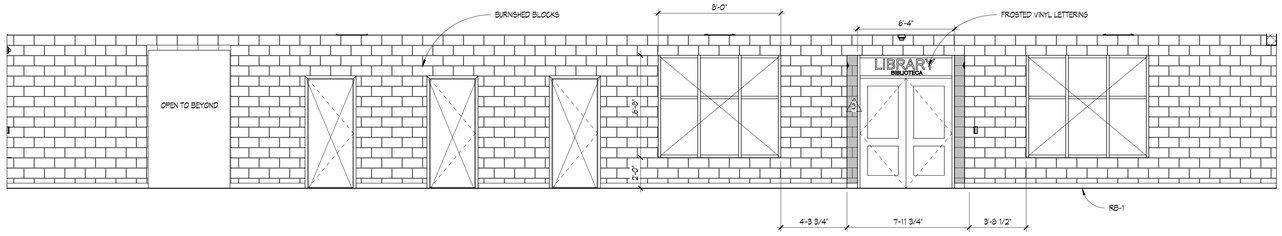
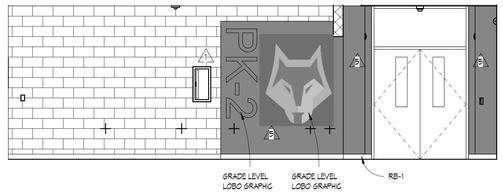
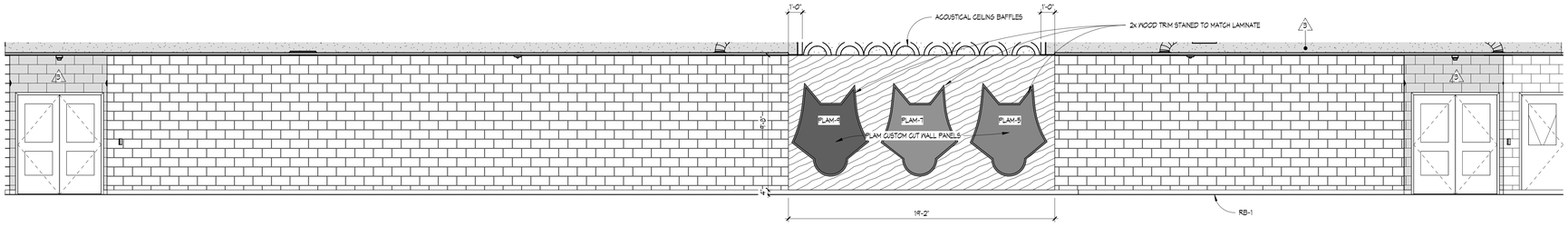


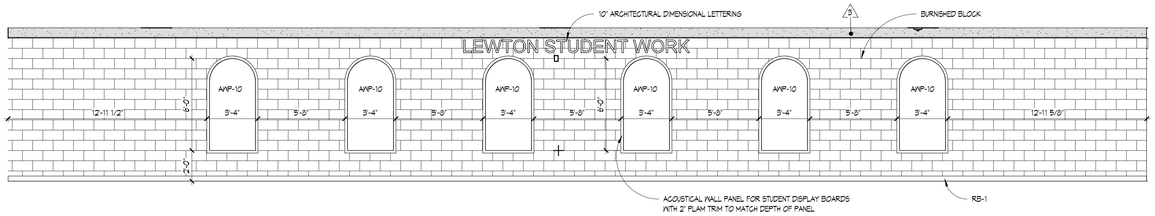
9 CORRIDOR 203- LIBRARY ENTRY
1/4" = 1'-0"



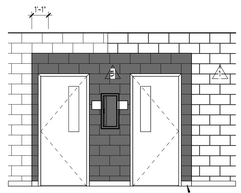
5 PK-2 ENTRY
1/4" = 1'-0"



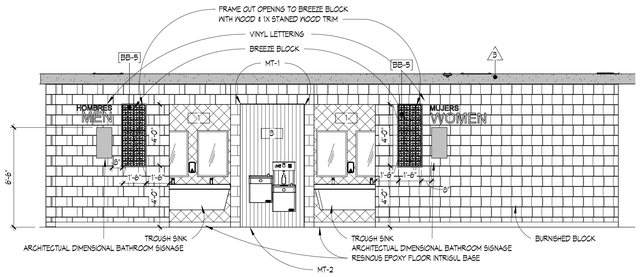
8 CORRIDOR 205-GYM ENTRY
1/4" = 1'-0"



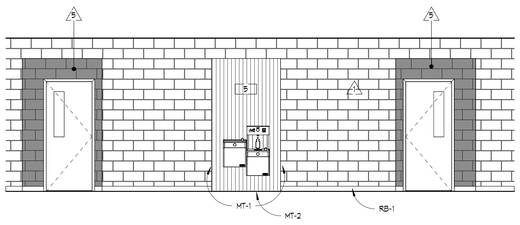
7 CORRIDOR 203- STUDENT WORK DISPLAY
1/4" = 1'-0"



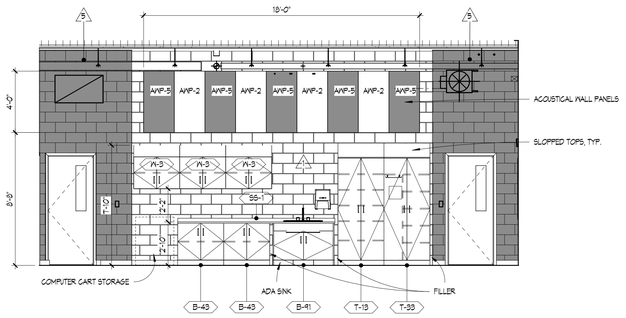
3 PK-2 TYPICAL CR ENTRY
1/4" = 1'-0"



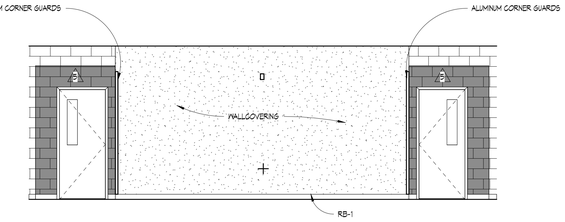
2 CORRIDOR 205- RESTROOMS
1/4" = 1'-0"



6 PK-2 DRINKING FOUNTAIN
1/4" = 1'-0"



4 PK - 2 TYPICAL CLASSROOM CASEWORK
1/4" = 1'-0"



1 PK-2 MURAL WALL
1/4" = 1'-0"

MATERIAL AND FINISHES GENERAL NOTES

1. SEE REFLECTED CEILING PLANS FOR ACOUSTICAL CEILING TYPES.
2. UNLESS NOTED OTHERWISE, PAINT NEW BULKHEADS, GYP CEILINGS, AND EXPOSED CEILINGS IN COLORS INDICATED ON THE REFLECTED CEILING PLANS AND COLOR LAYOUT PLANS.
3. AT EXPOSED SEALED CONCRETE, PROVIDE HEAVY DUTY SEMI-RIGID EPOXY JOINT FILLER. CONTROL JOINTS AT POLISHED CONCRETE 10' X 10' OR AS NOTED ON COLOR PLANS.
4. FLOORING TRANSITIONS TO OCCUR IN LINE WITH THE CENTERLINE OF THE DOOR LEAF. PROVIDE A CLEAN TRANSITION BETWEEN POLISHED AND SEALED CONCRETE FLOORS.
5. PAINT EXPOSED DOMESTIC WATER PIPING P-3 (BLUE) U.N.O.
6. PAINT EXPOSED FIRE SUPPRESSION LINE PIPING P-5 (ORANGE) U.N.O.
7. PAINT EXPOSED ELECTRICAL CONDUIT P-9 (PURPLE) U.N.O.
8. AT EXPOSED CEILING, PAINT STRUCTRUAL ELEMENTS AND TECTUM DECK TO MATCH P-11. U.N.O. DO NOT PAINT MECHANICAL DUCT WORK U.N.O.
9. VERIFY LETTERING FONT AND SIZES WITH OWNER IN FIELD.
10. ALL WINDOW SILLS TO RECEIVE WHITE SOLID SURFACE U.N.O.
11. PAINT ALL HM FRAMES AND DOORS P-2 U.N.O.
12. ALL RESINOUS EPOXY FLOORS TO HAVE INTEGRAL RESINOUS EPOXY BASE U.N.O.
13. DONT PAINT BURNISHED BLOCK.
14. ALL PAINT IN RESTROOMS AND LOCKER ROOMS TO BE EPOXY PAINT. REFER TO SPECIFICATION SECTION 099600

COLOR LAYOUT PLAN LEGEND

A	PAINT, SEE SPECIFICATION SECTIONS 099123 & 099600
B	CERAMIC TILE WALL, SEE SPECIFICATION SECTION 093013
C	RESILIENT ATHLETIC FLOORING, SEE SPECIFICATION SECTION 096586
D	RESILIENT SHEET FLOORING, SEE SPECIFICATION SECTION 096516
WLG.T.	WALK-OFF CARPET TILE, SEE SPECIFICATION SECTION 096800
MT	BARRIER FREE METAL TRANSITION EQUAL TO SCHLUTER RENO-RAMP SEE SPECIFICATION SECTION 093013
P.C.	POLISHED CONCETE FLOOR, POLISH: LEVEL 2: LOW SHEEN, 400 GRIT, SEE SPECIFICATION SECTION 033543
RB-#	RUBBER BASE, SEE SPECIFICATION SECTION 096513
REF-#	RESINOUS EPOXY FLOORING, SEE SPECIFICATION SECTION 096723
S.C.	SEALED CONCRETE FLOOR
ST.C.	STAINED CONCRETE FLOOR, SEE SPECIFICATION SECTION 033543
	CONTROL JOINT
WP	PRODUCT EXTENTS WITH MATERIAL INDICATED
	WORK POINT
	FLOORING TRANSITION
	MATERIAL INSTALL DIRECTION
A | B	CHANGE OF MATERIAL

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

LEWTON SCHOOL
Lansing School District
2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN
LSD NO. SB-0064
JOB NO. 2616.01G
N

SHEET TITLE
INTERIOR ELEVATIONS-UNIT 100 & 200

SHEET NO.
A9.2

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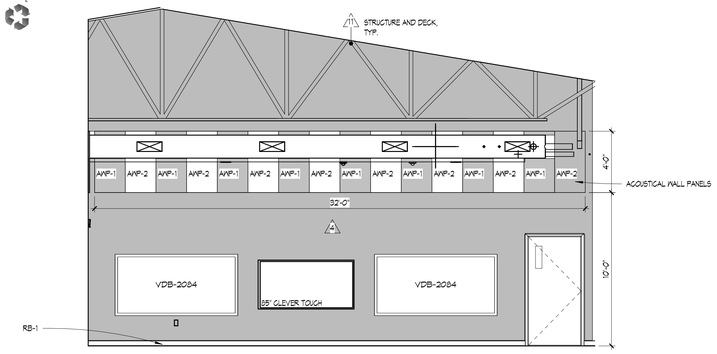
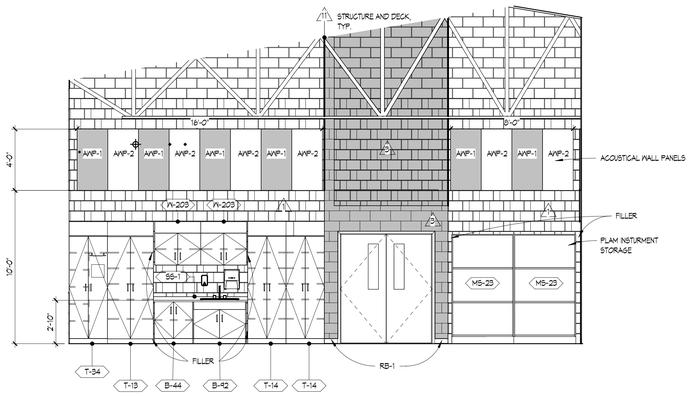
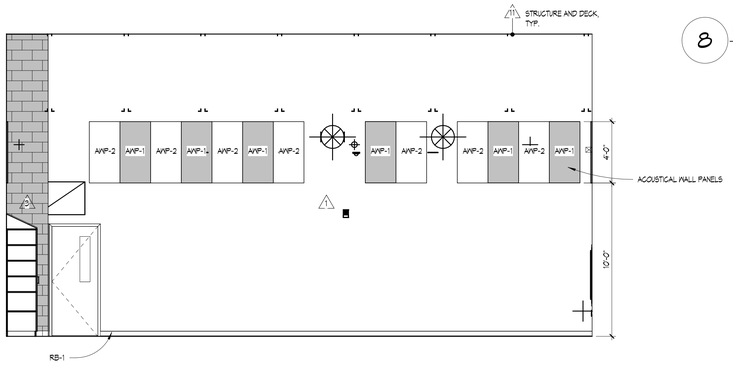


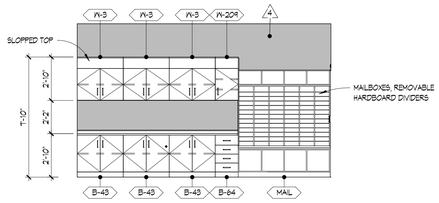
15 MUSIC/ ART RM 276- TEACHING WALL
1/4" = 1'-0"



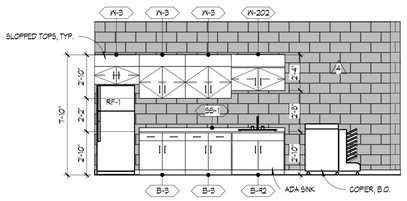
14 MUSIC/ ART RM 276- CASEWORK
1/4" = 1'-0"



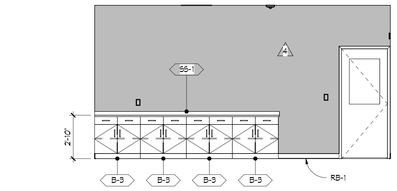
13 MUSIC RM 276
1/4" = 1'-0"



10 OFFICE SUPPORT RM 241- MAILBOXES
1/4" = 1'-0"

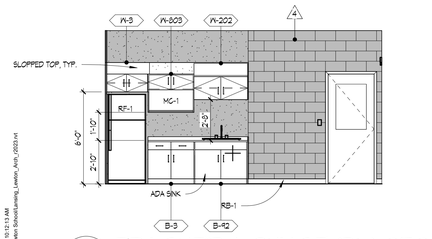


9 OFFICE SUPPORT RM 242- CASEWORK
1/4" = 1'-0"

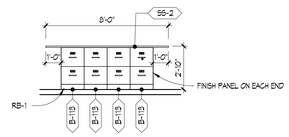


8 CONFERENCE RM 250- CASEWORK
1/4" = 1'-0"

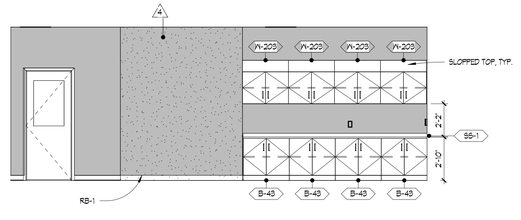
13 MUSIC RM 276
1/4" = 1'-0"



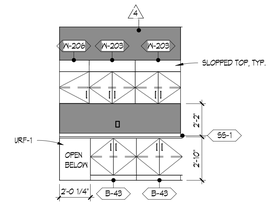
12 TEACHER LOUNGE RM 252
1/4" = 1'-0"



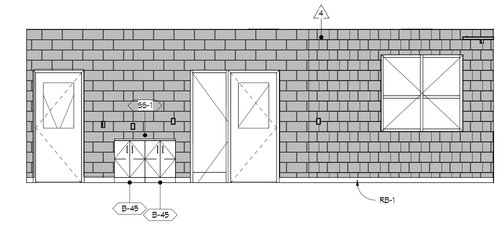
11 OFFICE SUPPORT RM 241- ISLAND
1/4" = 1'-0"



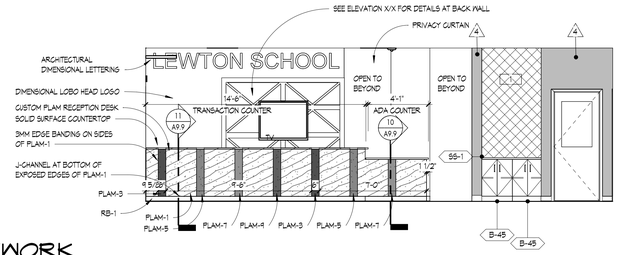
6 RECEPTION RM 241- CASEWORK
1/4" = 1'-0"



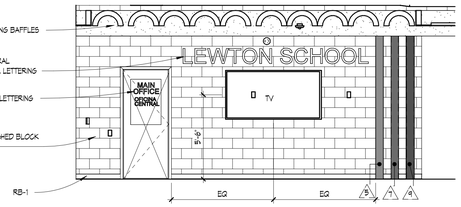
7 CLINIC RM 243- CASEWORK
1/4" = 1'-0"



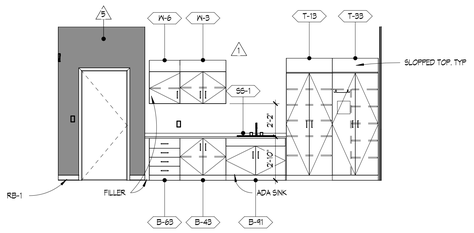
5 WELCOME RM 240
1/4" = 1'-0"



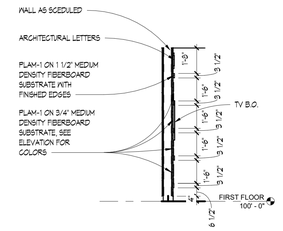
4 WELCOME RM 240- RECEPTION
1/4" = 1'-0"



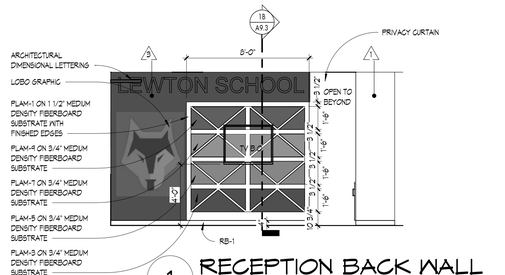
3 CORRIDOR 205- WELCOME ENTRY
1/4" = 1'-0"



2 RESOURCE RM. 216- CASEWORK
1/4" = 1'-0"



1B BACK WALL SECTION
1/4" = 1'-0"



1 RECEPTION BACK WALL
1/4" = 1'-0"

MATERIAL AND FINISHES GENERAL NOTES

1. SEE REFLECTED CEILING PLANS FOR ACOUSTICAL CEILING TYPES.
2. UNLESS NOTED OTHERWISE, PAINT NEW BULKHEADS, GYP CEILINGS, AND EXPOSED CEILINGS IN COLORS INDICATED ON THE REFLECTED CEILING PLANS AND COLOR LAYOUT PLANS.
3. AT EXPOSED SEALED CONCRETE, PROVIDE HEAVY DUTY SEMI-RIGID EPOXY JOINT FILLER. CONTROL JOINTS AT POLISHED CONCRETE 10' X 10' OR AS NOTED ON COLOR PLANS.
4. FLOORING TRANSITIONS TO OCCUR IN LINE WITH THE CENTERLINE OF THE DOOR LEAF. PROVIDE A CLEAN TRANSITION BETWEEN POLISHED AND SEALED CONCRETE FLOORS.
5. PAINT EXPOSED DOMESTIC WATER PIPING P-3 (BLUE) U.N.O.
6. PAINT EXPOSED FIRE SUPPRESSION LINE PIPING P-5 (ORANGE) U.N.O.
7. PAINT EXPOSED ELECTRICAL CONDUIT P-9 (PURPLE) U.N.O.
8. AT EXPOSED CEILING, PAINT STRUCTRUAL ELEMENTS AND TECTUM DECK TO MATCH P-11, U.N.O. DO NOT PAINT MECHANICAL DUCT WORK U.N.O.
9. VERIFY LETTERING FONT AND SIZES WITH OWNER IN FIELD.
10. ALL WINDOW SILLS TO RECEIVE WHITE SOLID SURFACE U.N.O.
11. PAINT ALL HM FRAMES AND DOORS P-2 U.N.O.
12. ALL RESINOUS EPOXY FLOORS TO HAVE INTEGRAL RESINOUS EPOXY BASE U.N.O.
13. DON'T PAINT BURNISHED BLOCK.
14. ALL PAINT IN RESTROOMS AND LOCKER ROOMS TO BE EPOXY PAINT, REFER TO SPECIFICATION SECTION 099600

COLOR LAYOUT PLAN LEGEND

- A — PAINT, SEE SPECIFICATION SECTIONS 099123 & 099600
- B — CERAMIC TILE WALL, SEE SPECIFICATION SECTION 093013
- C — RESILIENT ATHLETIC FLOORING, SEE SPECIFICATION SECTION 096566
- D — RESILIENT SHEET FLOORING, SEE SPECIFICATION SECTION 096516
- W.C.T. — WALK-OFF CARPET TILE, SEE SPECIFICATION SECTION 096800
- MT — BARRIER FREE METAL TRANSITION EQUAL TO SCHLUTER RENO-RAMP SEE SPECIFICATION SECTION 093013
- P.C. — POLISHED CONCETE FLOOR, POLISH: LEVEL 2: LOW SHEEN, 400 GRIT, SEE SPECIFICATION SECTION 033543
- RB-# — RUBBER BASE, SEE SPECIFICATION SECTION 096513
- REF-# — RESINOUS EPOXY FLOORING, SEE SPECIFICATION SECTION 096723
- S.C. — SEALED CONCRETE FLOOR
- ST.C. — STAINED CONCRETE FLOOR, SEE SPECIFICATION SECTION 033543
- CONTROL JOINT
- PRODUCT EXTENTS WITH MATERIAL INDICATED
- WP — WORK POINT
- FLOORING TRANSITION
- MATERIAL INSTALL DIRECTION
- A | B — CHANGE OF MATERIAL

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

LEWTON SCHOOL
Lansing School District
2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN
LSD NO. SB-0064
JOB NO. 2616.01G
N

SHEET TITLE
INTERIOR ELEVATIONS- UNIT 200

SHEET NO.
A9.3

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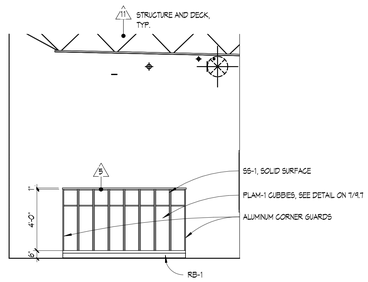
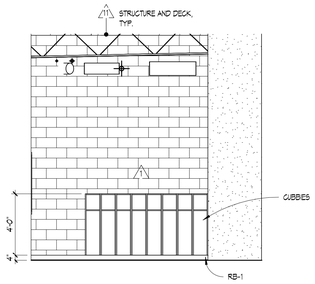
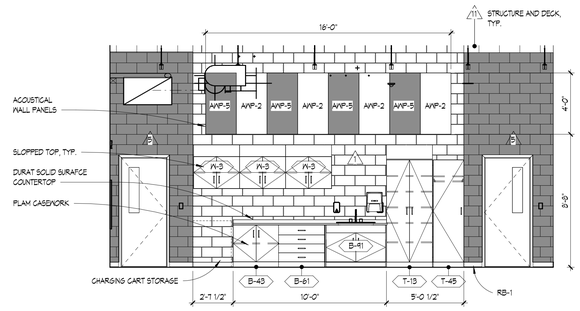


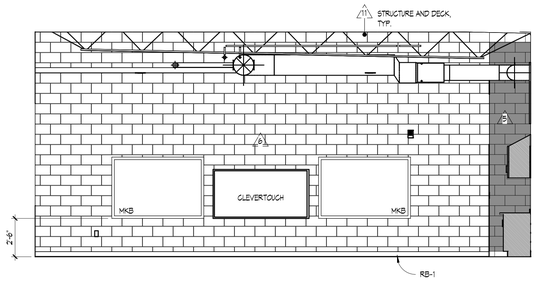
10 PK RM 221- CUBBIES WEST
1/4" = 1'-0"



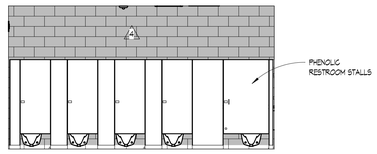
9 PK RM 221- CUBBIES EAST
1/4" = 1'-0"



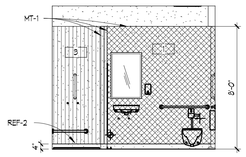
5 PK RM 221- CASEWORK
1/4" = 1'-0"



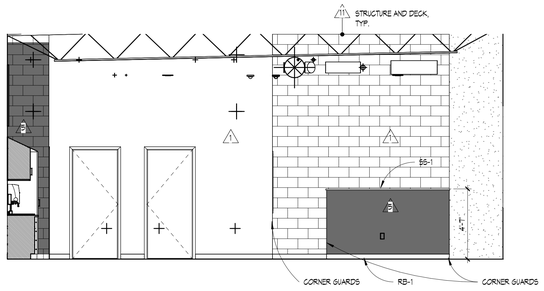
8 PK RM 221-TEACHING WALL
1/4" = 1'-0"



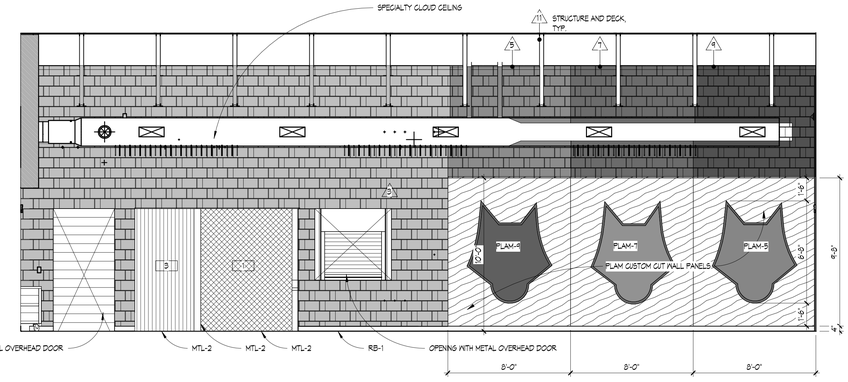
4 MAIN RESTROOM TYP.
1/4" = 1'-0"



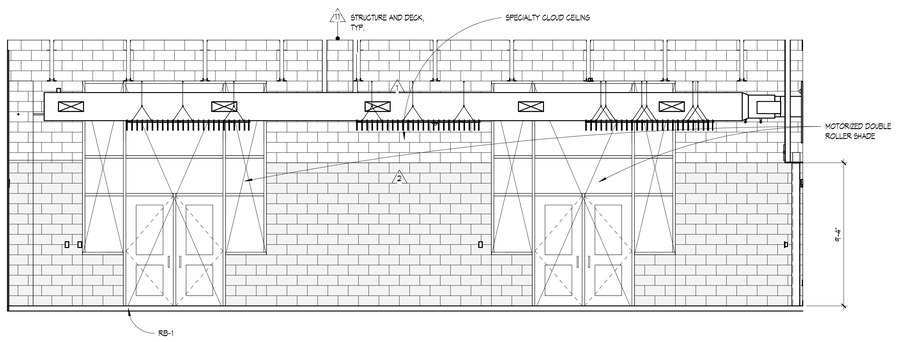
3 SHOWER TYP.
1/4" = 1'-0"



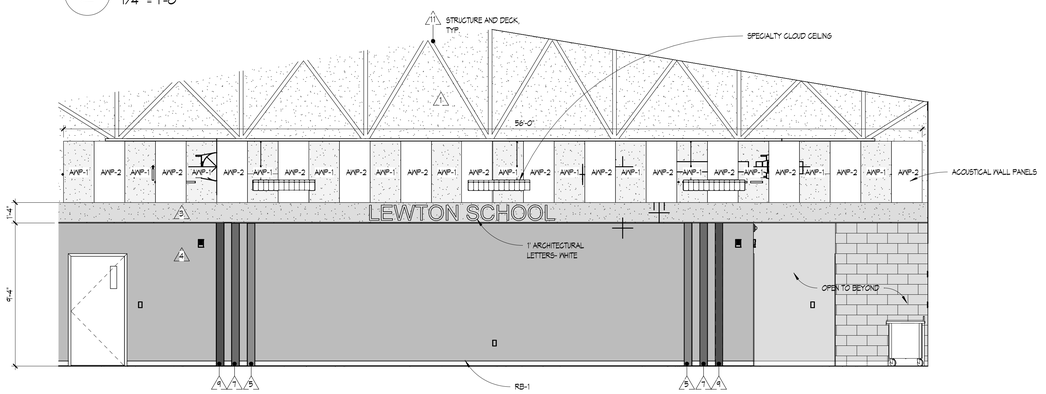
7 PK RM 221-EAST
1/4" = 1'-0"



2 CAFETERIA RM 274- NORTH
1/4" = 1'-0"



6 CAFETERIA RM 274- SOUTH
1/4" = 1'-0"



1 CAFETERIA RM 274- WEST
1/4" = 1'-0"

MATERIAL AND FINISHES GENERAL NOTES

1. SEE REFLECTED CEILING PLANS FOR ACOUSTICAL CEILING TYPES.
2. UNLESS NOTED OTHERWISE, PAINT MEP BULKHEADS, GYP CEILINGS, AND EXPOSED CEILINGS IN COLORS INDICATED ON THE REFLECTED CEILING PLANS AND COLOR LAYOUT PLANS.
3. AT EXPOSED SEALED CONCRETE, PROVIDE HEAVY DUTY SEMI-RIGID EPOXY JOINT FILLER. CONTROL JOINTS AT POLISHED CONCRETE 10' X 10' OR AS NOTED ON COLOR PLANS.
4. FLOORING TRANSITIONS TO OCCUR IN LINE WITH THE CENTERLINE OF THE DOOR LEAF. PROVIDE A CLEAN TRANSITION BETWEEN POLISHED AND SEALED CONCRETE FLOORS.
5. PAINT EXPOSED DOMESTIC WATER PIPING P-3 (BLUE) U.N.O.
6. PAINT EXPOSED FIRE SUPPRESSION LINE PIPING P-5 (ORANGE) U.N.O.
7. PAINT EXPOSED ELECTRICAL CONDUIT P-9 (PURPLE) U.N.O.
8. AT EXPOSED CEILING, PAINT STRUCTRUAL ELEMENTS AND TECTUM DECK TO MATCH P-11. U.N.O. DO NOT PAINT MECHANICAL DUCT WORK U.N.O.
9. VERIFY LETTERING FONT AND SIZES WITH OWNER IN FIELD.
10. ALL WINDOW SILLS TO RECEIVE WHITE SOLID SURFACE U.N.O.
11. PAINT ALL HM FRAMES AND DOORS P-2 U.N.O.
12. ALL RESINOUS EPOXY FLOORS TO HAVE INTEGRAL RESINOUS EPOXY BASE U.N.O.
13. DONT PAINT BURNISHED BLOCK.
14. ALL PAINT IN RESTROOMS AND LOCKER ROOMS TO BE EPOXY PAINT. REFER TO SPECIFICATION SECTION 099600

COLOR LAYOUT PLAN LEGEND

- PAINT, SEE SPECIFICATION SECTIONS 099123 & 099600
- CERAMIC TILE WALL, SEE SPECIFICATION SECTION 093013
- RESILIENT ATHLETIC FLOORING, SEE SPECIFICATION SECTION 096566
- RESILIENT SHEET FLOORING, SEE SPECIFICATION SECTION 096516
- W.C.T. WALK-OFF CARPET TILE, SEE SPECIFICATION SECTION 096800
- MT BARRIER FREE METAL TRANSITION EQUAL TO SCHLUTER RENO-RAMP SEE SPECIFICATION SECTION 093013
- P.C. POLISHED CONCETE FLOOR, POLISH: LEVEL 2: LOW SHEEN, 400 GRIT, SEE SPECIFICATION SECTION 033543
- RB-# RUBBER BASE, SEE SPECIFICATION SECTION 096513
- REF-# RESINOUS EPOXY FLOORING, SEE SPECIFICATION SECTION 096723
- S.C. SEALED CONCRETE FLOOR
- ST.C. STAINED CONCRETE FLOOR, SEE SPECIFICATION SECTION 033543
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KINGSCOTT
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LEWTON SCHOOL
Lansing School District
2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN
N

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
INTERIOR ELEVATIONS-UNIT 200

SHEET NO.
A9.4

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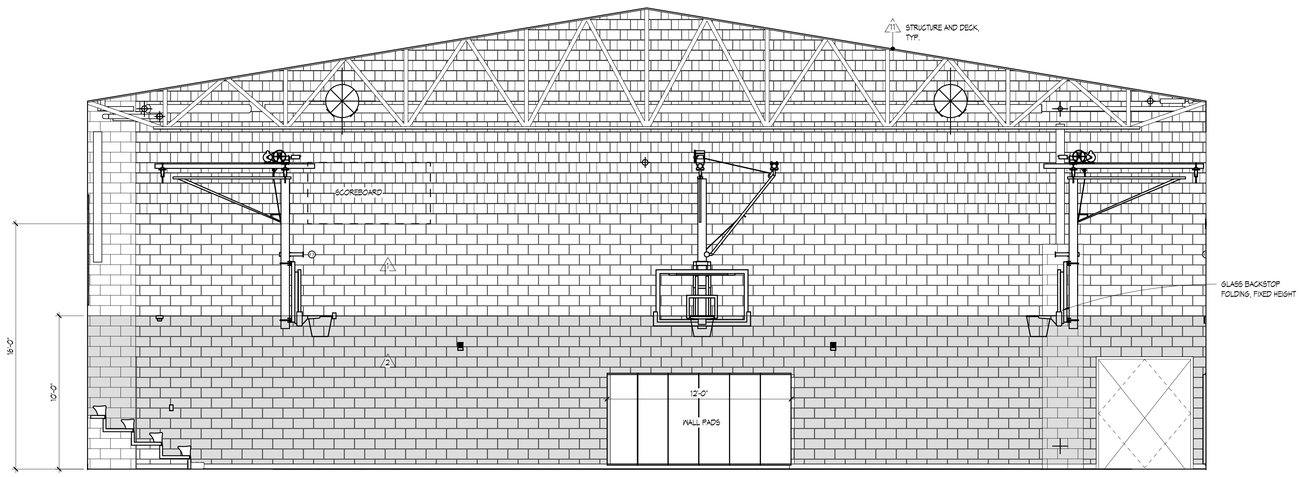
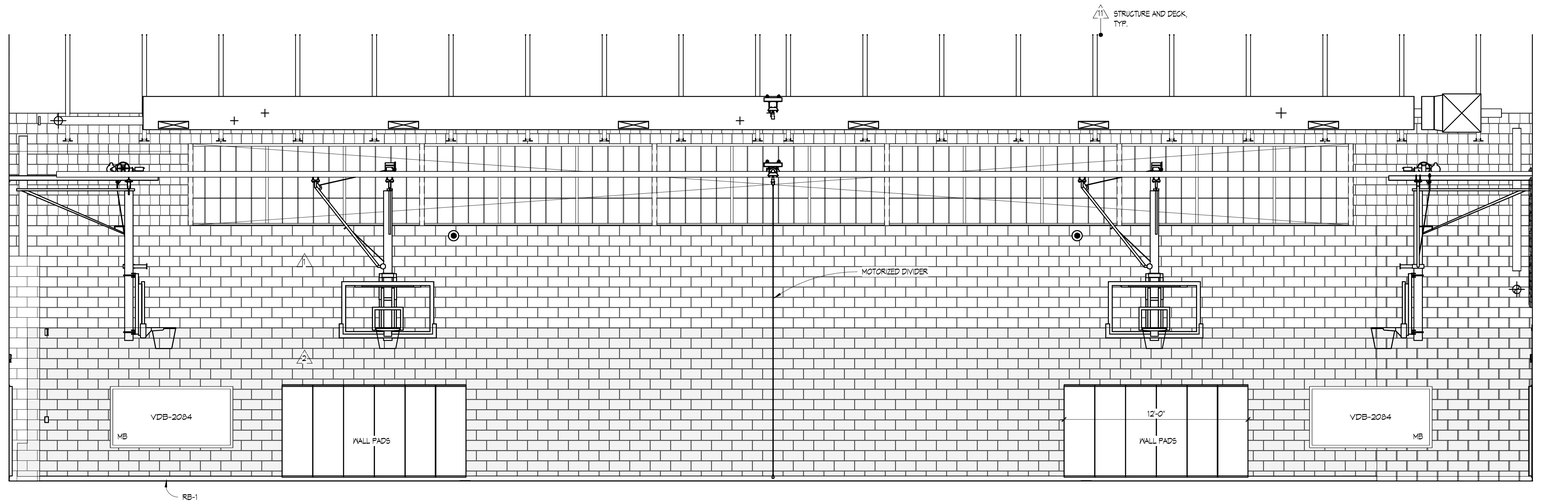
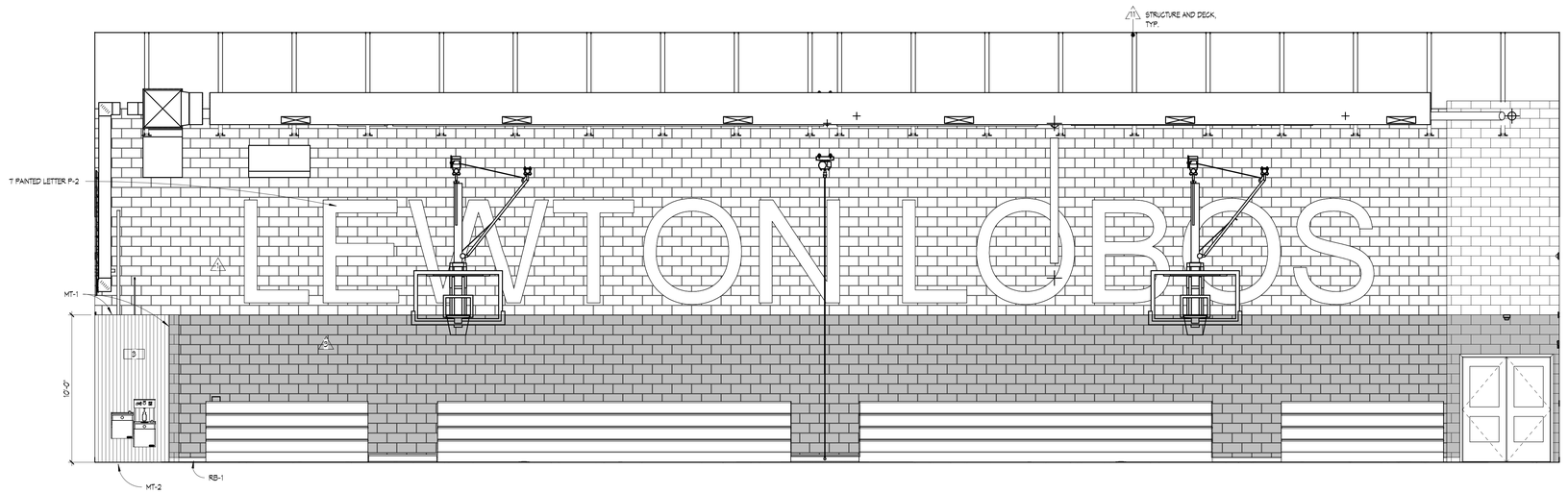


3 GYMNASIUM RM 230-SOUTH
1/4" = 1'-0"



2 GYMNASIUM RM 230- WEST
1/4" = 1'-0"



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KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

LEWTON SCHOOL

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

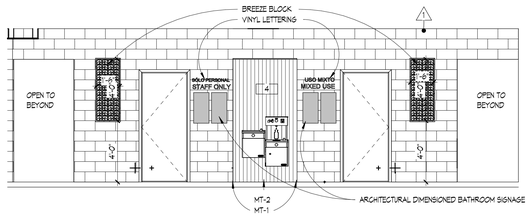
KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

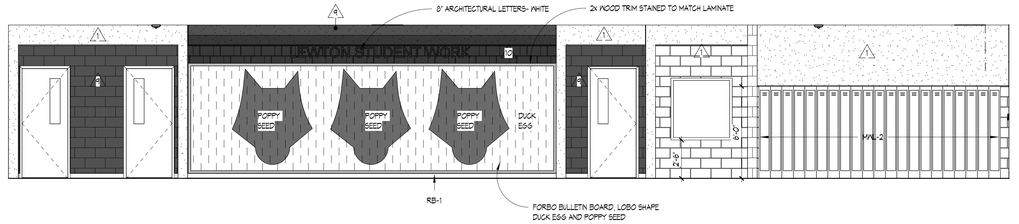
N

SHEET TITLE
INTERIOR ELEVATIONS-200

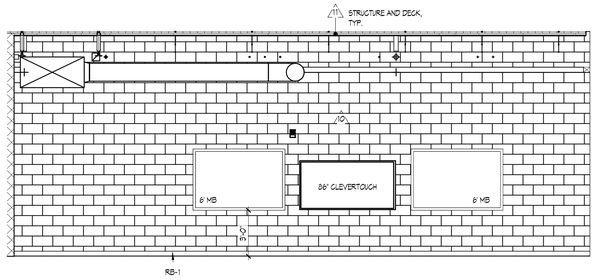
SHEET NO.
A9.5



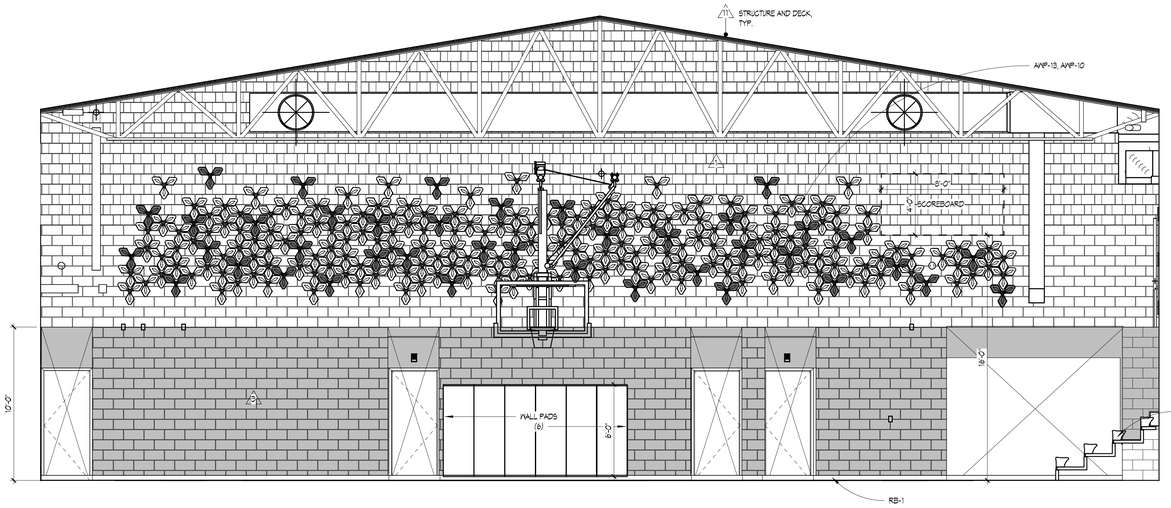
8 CORRIDOR 302- WEST
1/4" = 1'-0"



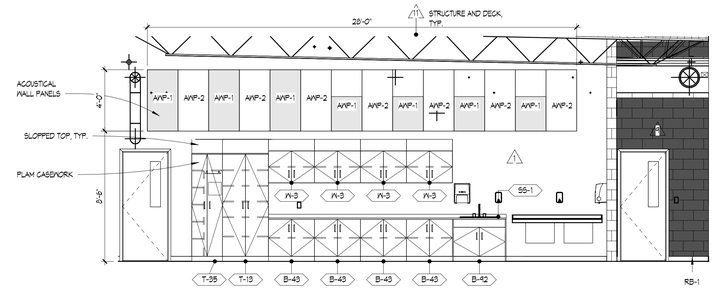
4 CORRIDOR 203- SOUTH
1/4" = 1'-0"



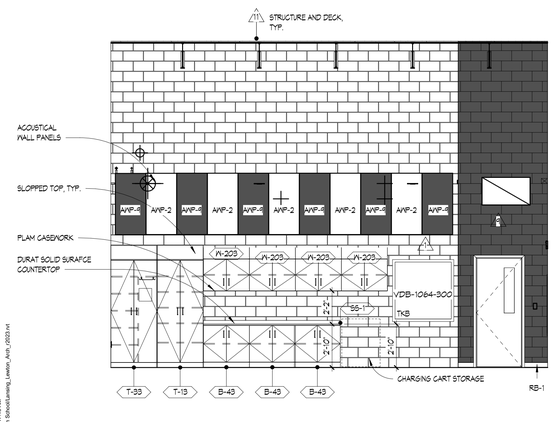
3 SCIENCE RM 311- TEACHING WALL
1/4" = 1'-0"



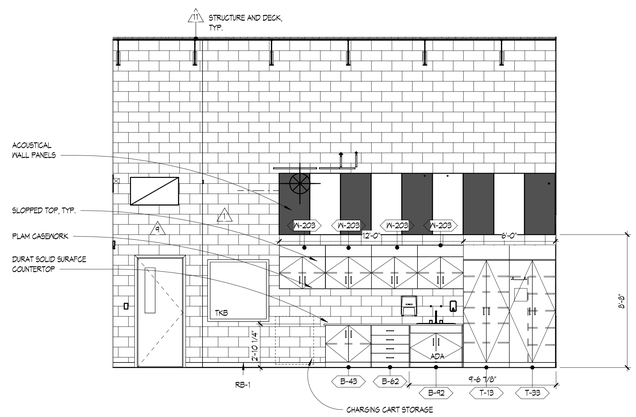
7 GYMNASIUM RM 230- NORTH
1/4" = 1'-0"



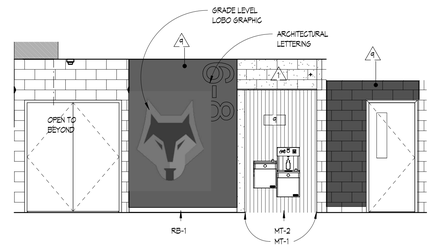
2 ART RM 311- CASEWORK
1/4" = 1'-0"



6 MS CR- CASEWORK TYP
1/4" = 1'-0"



5 MS SCIENCE- CASEWORK TYP.
1/4" = 1'-0"



1 CORRIDOR 301
1/4" = 1'-0"

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Lansing School District

ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025

KEY PLAN
LSD NO. SB-0064
JOB NO. 2616.01G
N

SHEET TITLE
INTERIOR ELEVATIONS-200 & 300

SHEET NO.
A9.6

RENDERINGS FOR REFERENCE ONLY



WELCOME RM 240



WELCOME RM 240



WELCOME RM 240



PK CLASSROOM



PK RESTROOM



CORRIDOR 205



PK CLASSROOM



CORRIDOR 205- WELCOM ENTRY



CORRIDOR 205- CAFETERIA ENTRY



MUSIC/ART



MUSIC/ART



CORRIDOR 203- LIBRARY ENTRY

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BID & CONSTRUCTION	10/10/2025



KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

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SHEET TITLE
INTERIOR RENDERINGS

SHEET NO.
A9.7

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LIBRARY RM 220



LIBRARY RM 220



CAFETERIA RM 274



CAFETERIA RM 274



CAFETERIA RM 274



GYMNASIUM RM 230



GYMNASIUM RM 230



3-5 GRADES CLASSROOM



3-5 GRADES CLASSROOM



CORRIDOR 101



CORRIDOR 102



CORRIDOR 102

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SHEET TITLE
INTERIOR RENDERINGS

SHEET NO.
A9.8

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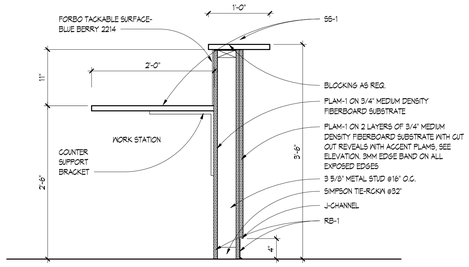
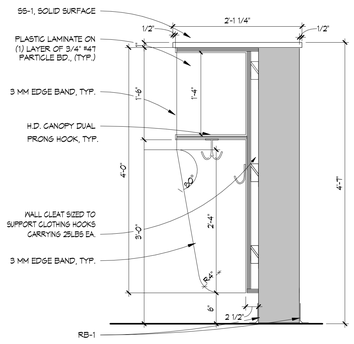
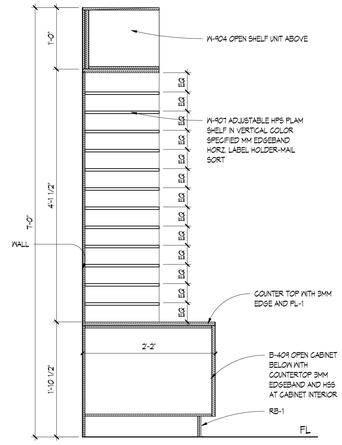


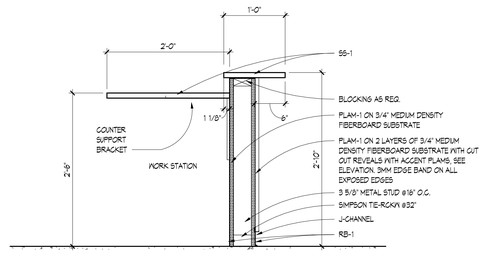
11 TRANSACTION COUNTER DETAIL
1" = 1'-0"



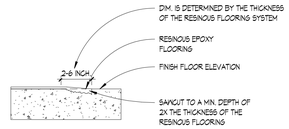
7 CUBBY LOCKERS
1" = 1'-0"



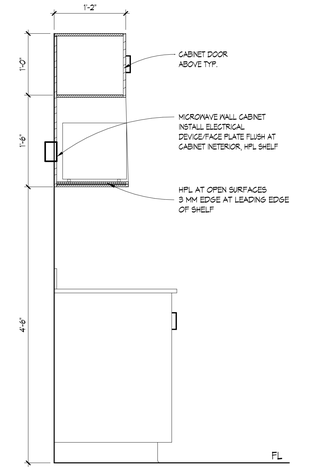
3 MAILBOX DETAIL
1" = 1'-0"



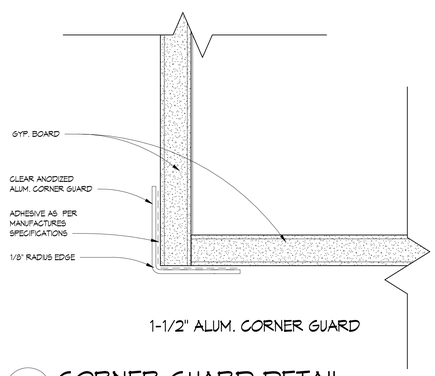
10 ADA COUNTER DETAIL
1" = 1'-0"



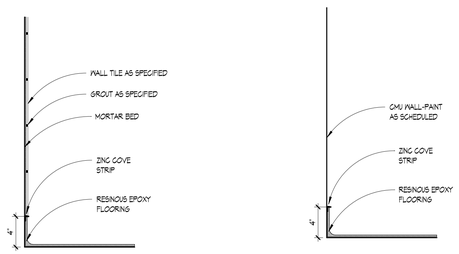
6 EPOXY TO CONC. TRANS.
1 1/2" = 1'-0"



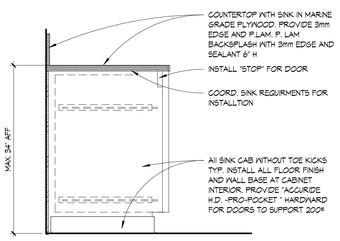
2 MICROWAVE WALL CABINET
1" = 1'-0"



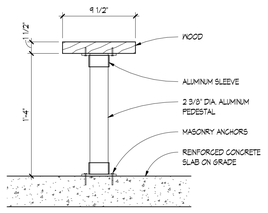
9 CORNER GUARD DETAIL
12" = 1'-0"



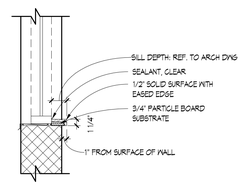
5 EPOXY COVE BASE
1 1/2" = 1'-0"



1 ADA SINK WITH POCKETING DOORS
1" = 1'-0"



8 FIXED BENCH DETAIL
1 1/2" = 1'-0"



4 WINDOW SILL
1" = 1'-0"

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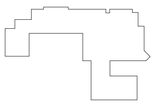
Lansing School District

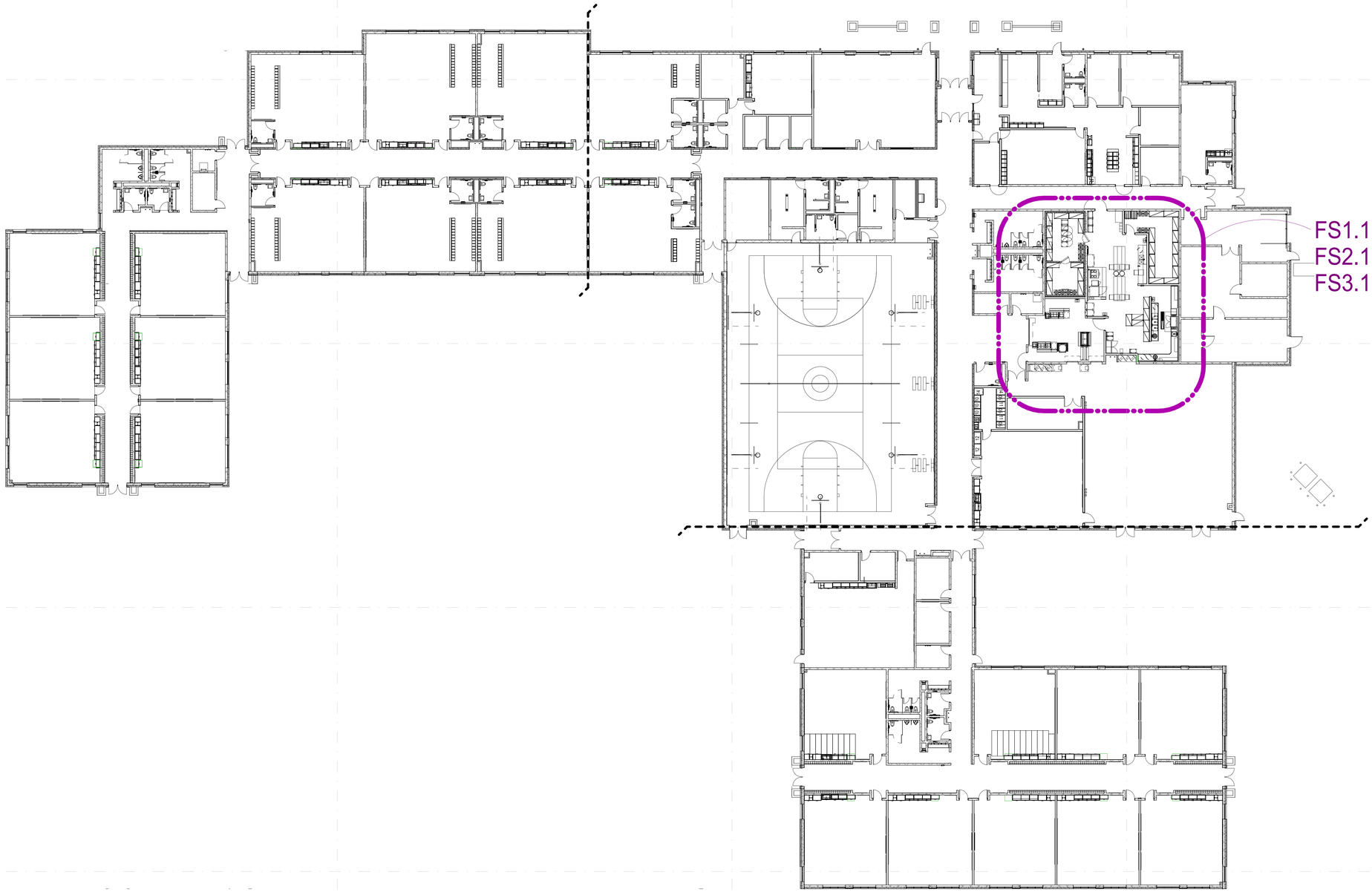
ISSUANCES	DATE
BID & CONSTRUCTION	10/10/2025



KEY PLAN
LSD NO. SB-0064
JOB NO. 2616.01G
N

SHEET TITLE
INTERIOR DETAILS

SHEET NO.
A9.9



1 FS EQUIPMENT OVERALL
1/16" = 1'-0"

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ISSUANCES	DATE
Design Development	5/1/2025
CD Readi-Check	9/18/2025
Construction Documents	10/10/225

KEY PLAN

LSD
JOB 2616.01G

N

SHEET TITLE
OVERALL PLAN

SHEET NO.
FS1.0

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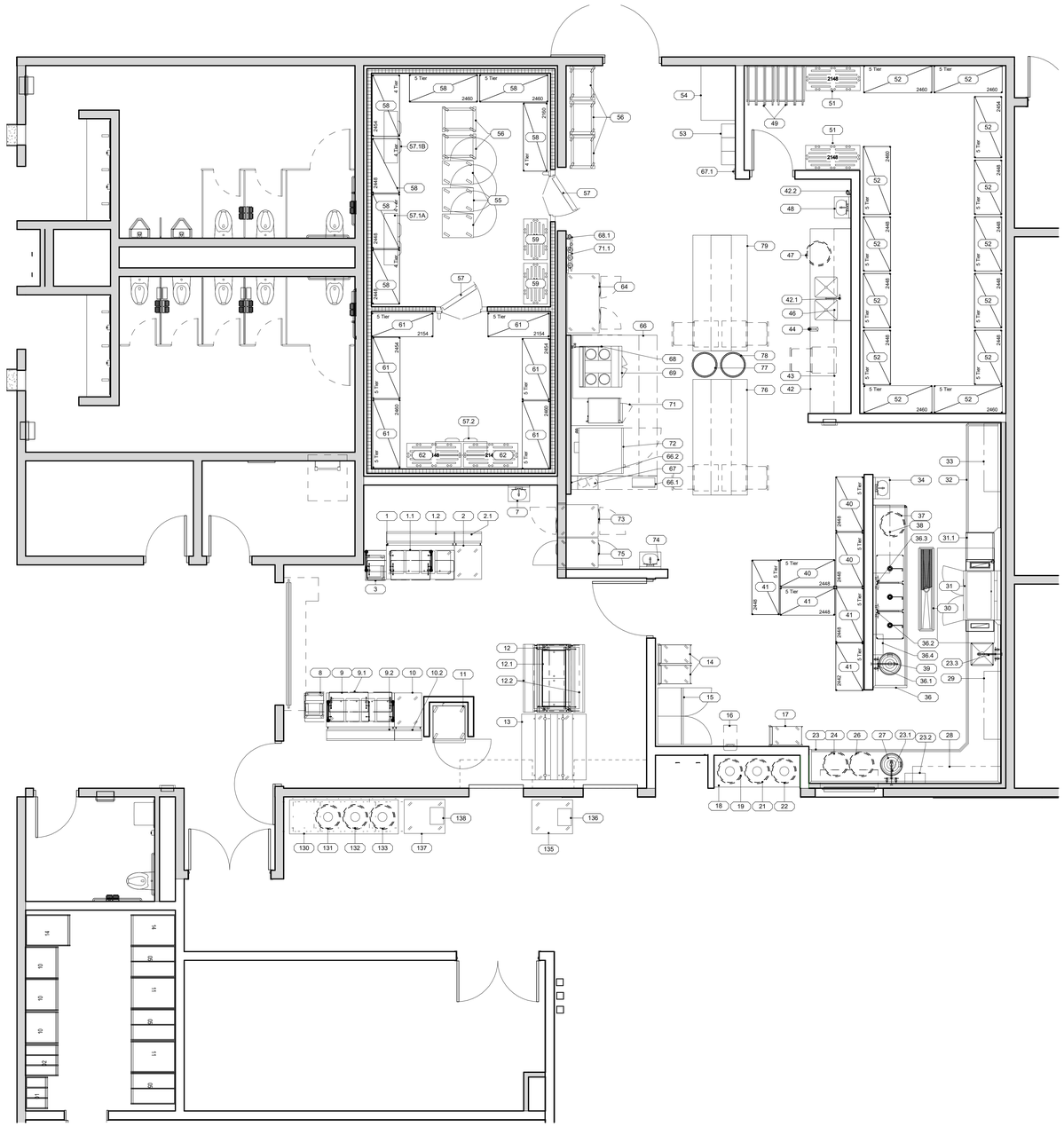
5 Tier
4 Tier
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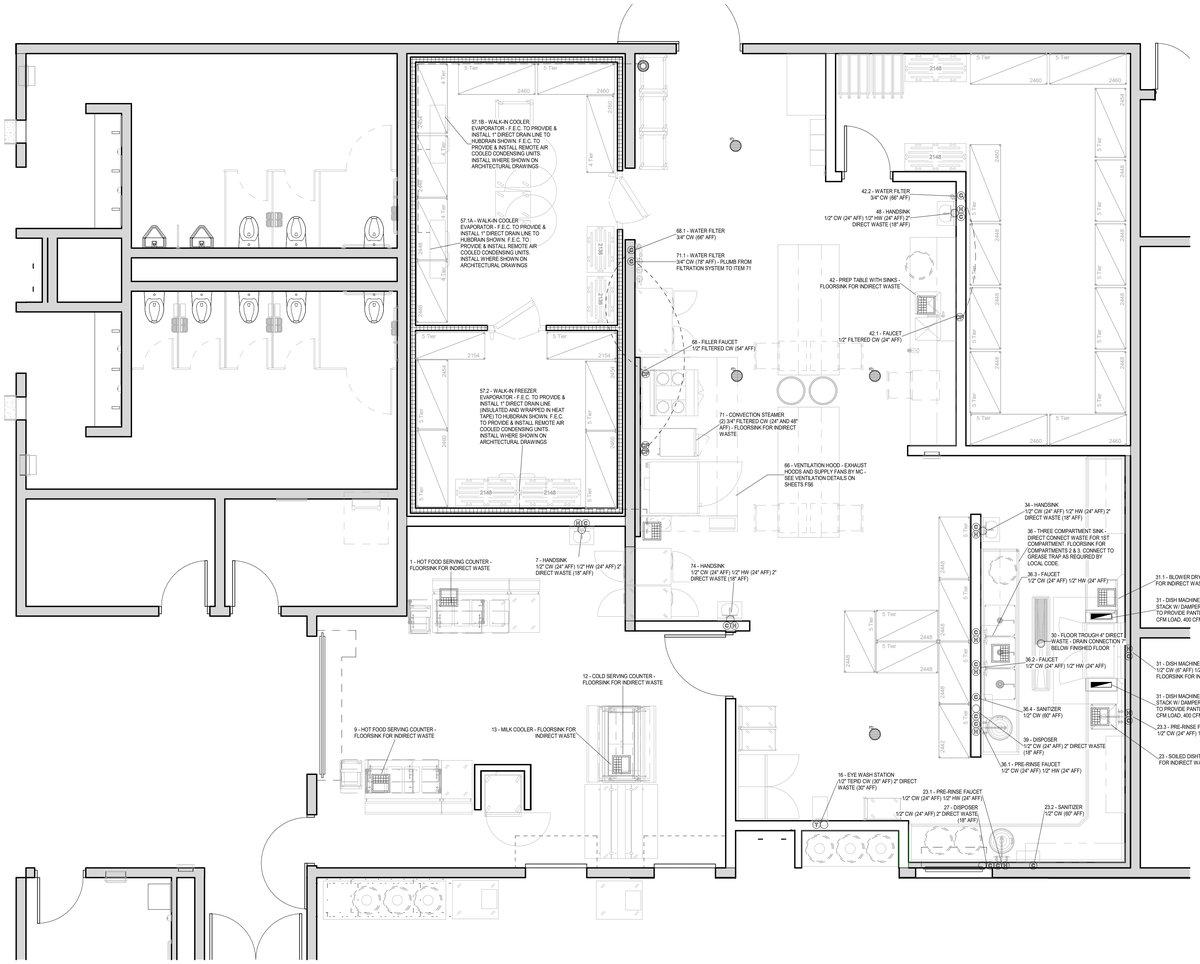

1 FS EQUIPMENT PLUMBING AND MECHANICAL PLAN
1/4" = 1'-0"

MECHANICAL AND PLUMBING - FEC NOTES

1.	THIS DRAWING AND THE DATA CONTAINED HEREIN ARE PROVIDED FOR BIDDING PURPOSES ONLY AND ARE NOT INTENDED AS ROUGH-IN DRAWINGS TO BE USED ON THE PROJECT SITE. THE FOODSERVICE EQUIPMENT CONTRACTOR SHALL PROVIDE FINAL DIMENSIONED ROUGH-IN DRAWINGS AND EQUIPMENT DATA FOR CONSTRUCTION PURPOSES.
2.	REFER TO THE DIVISION 11 40 00 GENERAL AND ITEM SPECIFICATIONS FOR ADDITIONAL INSTALLATION REQUIREMENTS.
3.	THE FEC SHALL VERIFY UTILITY REQUIREMENTS OF VENDOR PROVIDED EQUIPMENT, OWNER'S EXISTING EQUIPMENT SCHEDULED FOR RE-USE, AND EQUIPMENT INTENDED FOR FUTURE PURCHASE.
4.	OPEN NOTE
5.	THE FEC SHALL LOCATE AND INSTALL THE FOODSERVICE VENTILATION CANOPIES ONLY.
6.	ALL REFRIGERATION AND PLUMBING WORK RELATED TO THE WALK-IN REFRIGERATOR AND/OR FREEZER SHALL BE BY THE FEC ALL PENETRATIONS FOR REFRIGERATION LINES SHALL BE THROUGH THE WALLS OF THE WALK-IN. THERE WILL BE NO PENETRATIONS THROUGH THE CEILING PANELS OF THE WALK-IN REFRIGERATOR/FREEZER FOR REFRIGERATION LINES. ALL PENETRATIONS FOR CONDUIT AND REFRIGERATION LINES SHALL BE SEALED WITH FOAM TO INSURE THAT THERE IS NO AIR INFILTRATION.
7.	THE FEC SHALL LOCATE AND INSTALL AIR-COOLED WALK-IN COMPRESSORS WHERE SHOWN ON DRAWINGS.
8.	THE FEC SHALL LOCATE AND INSTALL THE REFRIGERATION SYSTEM COMPRESSOR RACK WHERE SHOWN ON DRAWINGS.
9.	ALL REQUIRED ROOF OPENINGS, STRUCTURAL SUPPORT, FLASHING, ETC., TO BE PERFORMED BY TRADES OTHER THAN THE FOODSERVICE EQUIPMENT CONTRACTOR.

MECHANICAL AND PLUMBING - TRADES NOTES

A.	ROUGH IN UTILITY LINES THROUGH WALLS, FLOORS AND CEILINGS. MAKE ALL FINAL UTILITY CONNECTIONS BETWEEN THE ROUGH-IN POINT AND THE FOODSERVICE EQUIPMENT.
B.	ALL WORK MUST MEET ALL APPLICABLE STATE AND LOCAL CODES AND SITE CONDITIONS.
C.	ALL EXPOSED PLUMBING FOR DRAINS SHALL BE RUN CLOSE TO THE COUNTERTOP SURFACE, GRADUALLY SLOPING TOWARDS DRAIN LOCATION. PLUMBING SHALL NOT GO BELOW 6" A.F.F. UNLESS OVER DRAIN.
D.	TO MINIMIZE CLEANING AND CORROSION PROBLEMS, ALL EXPOSED PIPING (ABOVE COUNTER HEIGHT OR IN A DIRECT LINE OF SIGHT) SHALL BE STAINLESS STEEL OR CHROME PLATED. INSTALL STAINLESS STEEL OR CHROME PLATED BRASS ESCUTCHEONS OR FLANGES FOR UTILITY LINES WHICH EXTEND THROUGH WALLS AND EQUIPMENT. ALL EXPOSED STEAM SUPPLY AND RETURN LINES SHALL BE INSULATED WITH A SEAMLESS, WHITE, HEAT TOLERANT VINYL COVERS WITH ACCESS TO VALVES.
E.	PROVIDE TRAPS, CONNECTING PIPE, SHUT-OFF VALVES, STOPS, FLOOR DRAINS, FLOOR SINKS, DRAIN MANIFOLDS, VACUUM BREAKERS THAT ARE NOT SPECIFIC TO EQUIPMENT, GREASE TRAPS AND ALL OTHER HARDWARE, PARTS AND SUPPLIES NECESSARY FOR THE PERFORMANCE OF WORK UNDER THIS CONTRACT, UNLESS SUPPLIED BY THE F.E.C. OR SPECIFIED OTHERWISE IN THESE DOCUMENTS.
F.	PROPERLY INSTALL ALL DRAIN ASSEMBLIES, SHUT-OFF VALVES, AND INTERCONNECTING PIPING FOR THE FOODSERVICE EQUIPMENT INCLUDING, BUT NOT LIMITED TO: FAUCETS, SINK DRAINS, SINK WASTE VALVES, OVERFLOW CONNECTIONS, DISPOSER PIPING, TROUGHVEYORS, HOT FOOD WELLS, FLOOR TROUGHS AND OTHER EQUIPMENT ASSOCIATED WITH THIS PROJECT. ALL DRAIN ASSEMBLIES MUST BE INSTALLED PER ALL LOCAL HEALTH DEPARTMENT PREVAILING CODES AND BE COMMERCIAL GRADE.
G.	PROVIDE ANY REQUIRED VACUUM BREAKERS NOT ALREADY SUPPLIED BY THE FEC. INSTALL ALL VACUUM BREAKERS. VACUUM BREAKERS, APPROVED BY THE LOCAL HEALTH DEPARTMENT, MUST BE PROVIDED ON ALL DISPOSERS, HOSE REELS, MOPSINKS, PRESSURE WASHERS, STEAMERS AND ON ALL BEVERAGE EQUIPMENT REQUIRING A WATER CONNECTION. ALL ATMOSPHERIC VACUUM BREAKERS MUST BE LOCATED DOWNSTREAM OF SHUT-OFF VALVES IN ACCORDANCE WITH HEALTH DEPARTMENT CODES.
H.	FEC TO PROVIDE UTILITY AND PREPARATION SINKS WITH TWIST HANDLE 2" WASTE OUTLETS WITH OVERFLOW ASSEMBLIES. FEC TO PROVIDE LOOSE FOR INSTALLATION.
I.	OPEN NOTE
J.	OPEN NOTE
K.	OPEN NOTE
L.	ROUGH-IN LINES FOR WATER TREATMENT SYSTEMS TO BE IN WALL. RUN TREATED WATER PIPE TO COOKING AND BEVERAGE EQUIPMENT IN WALL. DO NOT RUN PIPE EXPOSED ON WALL.

MECHANICAL AND PLUMBING SCHEDULE

ITEM #	EQUIPMENT DESCRIPTION	CW SIZE	CW AFF	HW SIZE	HW AFF	DIRECT DRAIN SIZE	DIRECT DRAIN AFF	PLUMBING NOTES	MECHANICAL NOTES
1	HOT FOOD SERVING COUNTER							FLOORSINK FOR INDIRECT WASTE	
7	HANDSINK	1/2"	24"	1/2"	24"	2" DIRECT	18"		
9	HOT FOOD SERVING COUNTER							FLOORSINK FOR INDIRECT WASTE	
12	COLD SERVING COUNTER							FLOORSINK FOR INDIRECT WASTE	
13	MILK COOLER							FLOORSINK FOR INDIRECT WASTE	
16	EYE WASH STATION	1/2" TEPID	30"			2" DIRECT	30"		
23	SOILED DISHTABLE							FLOORSINK FOR INDIRECT WASTE	
23.1	PRE-RINSE FAUCET	1/2"	24"	1/2"	24"				
23.2	SANITIZER	1/2"	60"						
23.3	PRE-RINSE FAUCET	1/2"	24"	1/2"	24"				
27	DISPOSER	1/2"	24"			2" DIRECT	18"		
30	FLOOR TROUGH					4" DIRECT		DRAIN CONNECTION 7" BELOW FINISHED FLOOR	
31	DISH MACHINE	1/2"	6"	1/2"	6"			FLOORSINK FOR INDIRECT WASTE	4" X 16" VENT STACK W/ DAMPER. MECHANICAL TO PROVIDE PANTLEG HOOD. 200 CFM LOAD, 400 CFM UNLOAD
31.1	BLOWER DRYER							FLOORSINK FOR INDIRECT WASTE	
34	HANDSINK	1/2"	24"	1/2"	24"	2" DIRECT	18"		
36	THREE COMPARTMENT SINK							DIRECT CONNECT WASTE FOR 1ST COMPARTMENT. FLOORSINK FOR COMPARTMENTS 2 & 3. CONNECT TO GREASE TRAP AS REQUIRED BY LOCAL CODE.	
36.1	PRE-RINSE FAUCET	1/2"	24"	1/2"	24"				
36.2	FAUCET	1/2"	24"	1/2"	24"				
36.3	FAUCET	1/2"	24"	1/2"	24"				
36.4	SANITIZER	1/2"	60"						
39	DISPOSER	1/2"	24"			2" DIRECT	18"		
42	PREP TABLE WITH SINKS							FLOORSINK FOR INDIRECT WASTE	
42.1	FAUCET	1/2" FILTERED	24"						
42.2	WATER FILTER	3/4"	66"						
48	HANDSINK	1/2"	24"	1/2"	24"	2" DIRECT	18"		
57.1A	WALK-IN COOLER EVAPORATOR							F.E.C. TO PROVIDE & INSTALL 1" DIRECT DRAIN LINE TO HUBDRAIN SHOWN. F.E.C. TO PROVIDE & INSTALL REMOTE AIR COOLED CONDENSING UNITS. INSTALL WHERE SHOWN ON ARCHITECTURAL DRAWINGS	
57.1B	WALK-IN COOLER EVAPORATOR							F.E.C. TO PROVIDE & INSTALL 1" DIRECT DRAIN LINE TO HUBDRAIN SHOWN. F.E.C. TO PROVIDE & INSTALL REMOTE AIR COOLED CONDENSING UNITS. INSTALL WHERE SHOWN ON ARCHITECTURAL DRAWINGS	
57.2	WALK-IN FREEZER EVAPORATOR							F.E.C. TO PROVIDE & INSTALL 1" DIRECT DRAIN LINE (INSULATED AND WRAPPED IN HEAT TAPE) TO HUBDRAIN SHOWN. F.E.C. TO PROVIDE & INSTALL REMOTE AIR COOLED CONDENSING UNITS. INSTALL WHERE SHOWN ON ARCHITECTURAL DRAWINGS	
66	VENTILATION HOOD								EXHAUST HOODS AND SUPPLY FANS BY MC - SEE VENTILATION DETAILS ON SHEETS FS6
68	FILLER FAUCET	1/2" FILTERED	54"						
68.1	WATER FILTER	3/4"	66"						
71	CONVECTION STEAMER	(2) 3/4" FILTERED	24" AND 48"					FLOORSINK FOR INDIRECT WASTE	
71.1	WATER FILTER	3/4"	78"					PLUMB FROM FILTRATION SYSTEM TO ITEM 71	
74	HANDSINK	1/2"	24"	1/2"	24"	2" DIRECT	18"		

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
A.F.F.	ABOVE FINISHED FLOOR		FULL-GRATE FLOORSINK (12" SQUARE)
D.F.A.	DOWN FROM ABOVE		1/2 GRATE FLOORSINK (12" SQUARE)
F.E.C.	FOODSERVICE EQUIPMENT CONTRACTOR	(H)	HOT WATER
G.C.	GENERAL CONTRACTOR	(C)	COLD WATER
M.C.	MECHANICAL CONTRACTOR	(HF)	FILTERED HOT WATER
Q.D.G.H.	QUICK DISCONNECT GAS HOSE	(CF)	FILTERED COLD WATER
	FUNNEL-TYPE FLOOR DRAIN (SANITARY)	(S)	STEAM SUPPLY
	DIRECT CONNECT DRAIN	(R)	CONDENSATE RETURN
	FLOORDRAIN (MINIMAL FLOOR SLOPE TO DRAIN)	(T)	TEPID WATER
	ROUND FLOORSINK (12" DIAMETER MIN.)	(CI)	CHILLED WATER INLET
	PVC CONDUIT (VERIFY DIAMETER)	(CO)	CHILLED WATER OUTLET
	PVC CONDUIT (VERIFY DIAMETER)		AIR VENTILATION DUCT
GAS	FLEXIBLE QUICK RELEASE GAS SUPPLY		

PLUMBING / MECHANICAL SYMBOL LEGEND
1/4" = 1'-0"

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2000 Lewton Pl.
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Lansing School District

ISSUANCES	DATE
Design Development	5/1/2025
CD Readi-Check	9/18/2025
Construction Documents	10/10/225

KEY PLAN

LSD
JOB 2616.01G

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SHEET TITLE
FOODSERVICE PLUMBING / MECHANICAL PLAN

SHEET NO.
FS2.1

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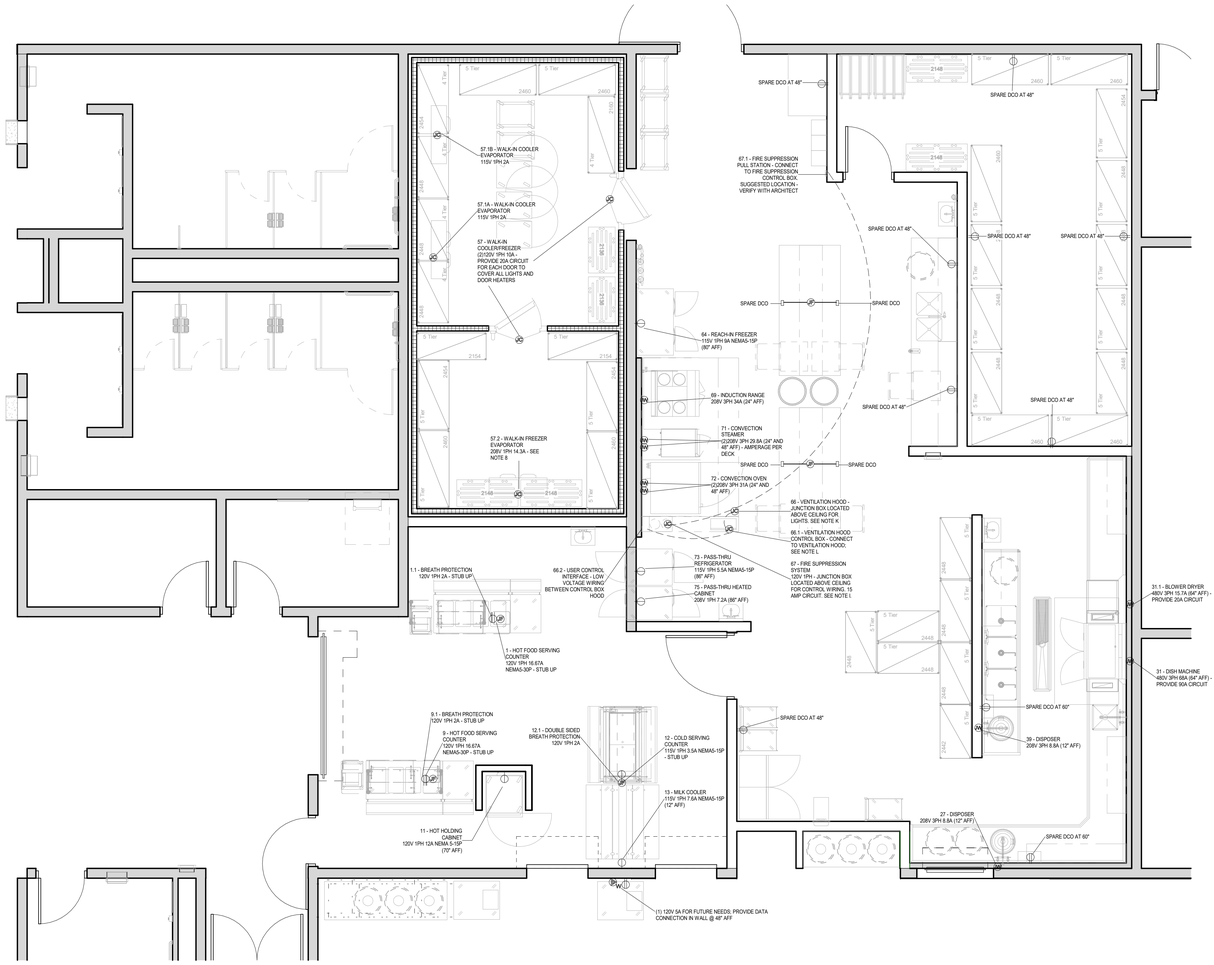
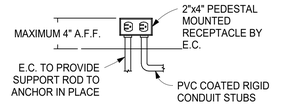


1 FS EQUIPMENT ELECTRICAL PLAN
1/4" = 1'-0"

ELECTRICAL SCHEDULE - AREA A

ITEM #	EQUIPMENT DESCRIPTION	VOLTS	PHASE	AMPS	NEMA PLUG TYPE	HEIGHT AFF	ELECTRICAL NOTES
1	HOT FOOD SERVING COUNTER	120	1	16.67	5-30P		STUB UP
1.1	BREATH PROTECTION	120	1	2			STUB UP
9	HOT FOOD SERVING COUNTER	120	1	16.67	5-30P		STUB UP
9.1	BREATH PROTECTION	120	1	2			STUB UP
11	HOT HOLDING CABINET	120	1	12	5-15P	70"	
12	COLD SERVING COUNTER	115	1	3.5	5-15P		STUB UP
12.1	DOUBLE SIDED BREATH PROTECTION	120	1	2			
13	MILK COOLER	115	1	7.6	5-15P	12"	
27	DISPOSER	208	3	8.8		12"	
31	DISH MACHINE	480	3	68		64"	PROVIDE 90A CIRCUIT
31.1	BLOWER DRYER	480	3	15.7		64"	PROVIDE 20A CIRCUIT
39	DISPOSER	208	3	8.8		12"	
57	WALK-IN COOLER/FREEZER	(2)120	1	10			PROVIDE 20A CIRCUIT FOR EACH DOOR TO COVER ALL LIGHTS AND DOOR HEATERS
57.1A	WALK-IN COOLER EVAPORATOR	115	1	2			
57.1B	WALK-IN COOLER EVAPORATOR	115	1	2			
57.2	WALK-IN FREEZER EVAPORATOR	208	1	14.3			SEE NOTE 8
57.3	WALK-IN COOLER CONDENSER	208	1	15			PROVIDE 20A CIRCUIT - VERIFY LOCATION
57.4	WALK-IN FREEZER CONDENSER	208	3	21.1			PROVIDE 30A CIRCUIT - VERIFY LOCATION
64	REACH-IN FREEZER	115	1	9	5-15P	80"	
66	VENTILATION HOOD						JUNCTION BOX LOCATED ABOVE CEILING FOR LIGHTS. SEE NOTE K
66.1	VENTILATION HOOD CONTROL BOX						CONNECT TO VENTILATION HOOD; SEE NOTE L
66.2	USER CONTROL INTERFACE						LOW VOLTAGE WIRING BETWEEN CONTROL BOX HOOD
67	FIRE SUPPRESSION SYSTEM	120	1				JUNCTION BOX LOCATED ABOVE CEILING FOR CONTROL WIRING. 15 AMP CIRCUIT. SEE NOTE I.
67.1	FIRE SUPPRESSION PULL STATION						CONNECT TO FIRE SUPPRESSION CONTROL BOX. SUGGESTED LOCATION - VERIFY WITH ARCHITECT
69	INDUCTION RANGE	208	3	34		24"	
71	CONVECTION STEAMER	(2)208	3	29.8		24" AND 48"	AMPERAGE PER DECK
72	CONVECTION OVEN	(2)208	3	31		24" AND 48"	
73	PASS-THRU REFRIGERATOR	115	1	5.5	5-15P	86"	
75	PASS-THRU HEATED CABINET	208	1	7.2		86"	

NOTE:
SPARE DCO'S ARE NOT LISTED IN THE FOODSERVICE ELECTRICAL SCHEDULE. THE ELECTRICAL CONTRACTOR IS TO REFERENCE ALL ELECTRICAL FLOOR PLANS FOR SPARE DCO QUANTITIES AND GENERAL LOCATIONS



2 TYP. FLOOR RECEPTACLE
NOT TO SCALE

ELECTRICAL - FEC NOTES

1	THIS DRAWING AND THE DATA CONTAINED HEREIN ARE PROVIDED FOR BIDDING PURPOSES ONLY AND ARE NOT INTENDED AS ROUGH-IN DRAWINGS TO BE USED ON THE PROJECT SITE. THE F.E.C. SHALL PROVIDE FINAL DIMENSIONED ROUGH-IN DRAWINGS AND EQUIPMENT DATA FOR CONSTRUCTION PURPOSES.
2	REFER TO THE DIVISION 11 40 00 GENERAL AND ITEM SPECIFICATIONS FOR ADDITIONAL INSTALLATION REQUIREMENTS.
3	THE FEC SHALL VERIFY UTILITY REQUIREMENTS OF VENDOR PROVIDED EQUIPMENT, OWNER'S EXISTING EQUIPMENT SCHEDULED FOR RE-USE, AND EQUIPMENT INTENDED FOR FUTURE PURCHASE.
4	THE FEC SHALL LOCATE AND INSTALL THE FOODSERVICE VENTILATION CANOPIES ONLY.
5	THE FEC SHALL LOCATE AND INSTALL FOODSERVICE VENTILATION CANOPIES. THE FEC SHALL PROVIDE SIMPLE ON/OFF SWITCH LOOSE TO EC TO INSTALL.
6	THE FEC SHALL LOCATE AND INSTALL AIR-COOLED WALK-IN COMPRESSORS WHERE SHOWN ON DRAWINGS.
7	THE FEC SHALL LOCATE AND INSTALL THE REFRIGERATION SYSTEM COMPRESSOR RACK WHERE SHOWN ON DRAWINGS.
8	DRAIN LINES LOCATED IN FREEZER COMPARTMENTS SHALL BE FULLY INSULATED AND WRAPPED WITH HEAT TAPE TO PREVENT CONDENSATION FROM FREEZING.
9	ALL REQUIRED ROOF OPENINGS, STRUCTURAL SUPPORT, FLASHING, ETC., TO BE PERFORMED BY TRADES OTHER THAN THE FOODSERVICE EQUIPMENT CONTRACTOR.

ELECTRICAL - TRADE NOTES

A.	ROUGH IN ELECTRICAL SERVICE THROUGH WALLS, FLOORS AND CEILINGS. MAKE ALL FINAL UTILITY CONNECTIONS BETWEEN THE ROUGH-IN POINT AND THE FOODSERVICE EQUIPMENT.
B.	ALL WORK MUST MEET ALL APPLICABLE STATE AND LOCAL CODES AND SITE CONDITIONS.
C.	FURNISH AND INSTALL ALL ELECTRICAL OUTLETS IN WALLS, FLOOR AND CEILING, AND IN OR ON FOODSERVICE EQUIPMENT WHERE NOTED ON DRAWINGS. ALL 120V DUPLEX RECEPTACLES SHALL BE MINIMUM 20 AMP CIRCUIT UNLESS NOTED OTHERWISE.
D.	FURNISH AND INSTALL ALL SAFETY CUT-OUTS, LINE DISCONNECT DEVICES, SHUNT-TRIP BREAKERS, POWER PANELS, POWER CORDS, GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLES, OUTLETS, CONDUIT, WIRE AND OTHER ELECTRICAL CONTROLS, AND ALL OTHER HARDWARE, PARTS AND SUPPLIES NECESSARY FOR THE PERFORMANCE OF WORK UNDER THIS CONTRACT, UNLESS SUPPLIED BY THE FEC OR SPECIFIED OTHERWISE IN THESE DOCUMENTS.
E.	FURNISH AND INSTALL ALL CONDUIT AND WIRING BETWEEN REMOTE CONTROL PANELS AND THE FOODSERVICE EQUIPMENT.
F.	ALL CONDUIT SHALL BE RUN IN WALL AT 6" A.F.F. MINIMUM OR AS INDICATED. ALL EXPOSED CONDUIT SHALL BE RUN TIGHT TO THE WALL. DO NOT ATTACH CONDUIT TO ANY LEGS OR SHELVING BRACING. ALL EXPOSED CONDUIT SHALL BE RIGID. FLEXIBLE METAL CONDUIT MAY ONLY BE SECURED TO THE BOTTOM OF THE TABLES OR OTHER STEEL SURFACES. ALL FLEXIBLE CONDUIT SHALL BE "SEALTITE" OR EQUAL. ALL COVER PLATES SHALL BE STAINLESS STEEL.
G.	PROVIDE FINAL CONNECTIONS TO PRE-WIRED COUNTERS. ALL WIRING, CONDUIT, RECEPTACLES, JUNCTION BOXES AND G.F.C.I.s PROVIDED AS PART OF COUNTER BY FEC
H.	120V 20A DEDICATED CIRCUIT PER P.O.S. SYSTEM. PROVIDE SPARE J-BOX AND CONDUIT FROM P.O.S. SYSTEM TO FOODSERVICE OFFICE, FOR COMPUTER TERMINAL. OTHER TRADES TO PROVIDE PHONE JACK FOR DATA LINK
I.	PROVIDE AND INTERWIRE SHUNT-TRIP BREAKER TO AUTOMATICALLY SHUT DOWN ELECTRIC EQUIPMENT AND RECEPTACLES UNDER HOODS WHEN FIRE PROTECTION SYSTEM IS ACTIVATED. INTERCONNECT FIRE PROTECTION SYSTEM WITH BUILDING ALARM SYSTEM.
J.	ROUGH IN, CONNECT AND INTERCONNECT ROOFTOP EQUIPMENT FOR FOODSERVICE VENTILATION SYSTEMS. INTERCONNECT LOW VOLTAGE CONTROL WIRING FROM ROOFTOP VENTILATION PACKAGE TO CONTROL PANEL. SEE MANUFACTURERS SHOP DRAWINGS FOR JUNCTION BOX AND CONTROL PANEL LOCATIONS. SEE HVAC PLANS FOR ROOFTOP EQUIPMENT UTILITY REQUIREMENTS.
K.	120V 1PH .5KW FOR HOOD LIGHTS. CONNECT TO JUNCTION BOX ON TOP OF EXHAUST HOOD. SEE MANUFACTURERS SHOP DRAWINGS FOR JUNCTION BOX LOCATIONS.
L.	PROVIDE CONTROL WIRING BETWEEN HOOD, MASTER CONTROL PANEL AND INTERMEDIATE/LOCAL HOOD CONTROLS. MASTER CONTROL PANEL AND INTERMEDIATE/LOCAL HOOD CONTROLS SHOWN ON HVAC DRAWINGS.
M.	PROVIDE CONTROL WIRING BETWEEN HOOD AND SIMPLE ON/OFF SWITCH AND VENTILATION HOODS. SIMPLE ON/OFF SWITCH PROVIDED BY FEC. LOOSE TO INSTALL FLUSH IN WALL. PROVIDE TO BE SIZED IN A DOUBLE GANG BOX
N.	FURNISH AND INSTALL ALL INTERCONNECTING WIRING FOR WALK-IN REFRIGERATOR AND/OR FREEZER LIGHTS, DOOR HEATERS, COMPRESSORS, EVAPORATORS, ALARM SYSTEMS, HEATED PRESSURE RELIEF VENTS, WINDOW HEATERS, TIME CLOCKS, INTERLOCKS, ETC. UNITS ARE NOT PRE-WIRED. WIRE PER MANUFACTURER'S DRAWINGS. CONDUIT FOR WALK-IN LIGHTING SHALL BE RUN OVER TOP OF BOXES. INTERIOR CONDUIT RUNS ARE NOT ACCEPTABLE. ALL PENETRATIONS FOR CONDUIT AND REFRIGERATION LINES SHALL BE SEALED WITH FOAM TO INSURE THAT THERE IS NO AIR INFILTRATION.

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AFF	ABOVE FINISHED FLOOR		SINGLE POWER RECESSED RECEPTACLE TO MATCH EQUIPMENT
DCO	DUPLEX CONVENIENCE OUTLET		GROUND FAULT DUPLEX RECEPTACLE
DFA	DOWN FROM ABOVE		120V SINGLE RECEPTACLE
EC	ELECTRICAL CONTRACTOR	EC	FLUSH MOUNTED JUNCTION BOX IN CEILING
FEC	FOODSERVICE EQUIPMENT CONTRACTOR	FEC	FLUSH MOUNTED JUNCTION BOX IN FLOOR
GC	GENERAL CONTRACTOR	GC	FLUSH MOUNTED JUNCTION BOX IN WALL
▭	ELECTRICAL CONNECTION BUILT IN EQUIPMENT		FLUSH FLOOR RECEPTACLE WITH HINGED BRASS COVER
	48" FLUORESCENT LIGHTS		ROUTED CONNECTION
D, D, D	DATA (FROM CEILING / FLOOR / WALL)		

ELECTRICAL SYMBOL LEGEND
1/4" = 1'-0"

REMOTE CONDENSERS AND EXHAUST/SUPPLY FANS

THESE NOTES APPLY TO MULTI-SYSTEM CONDENSER RACKS AS WELL AS INDIVIDUAL COMPRESSORS AND CONDENSORS.

EXACT LOCATION OF CONDENSERS AND FANS ARE TO BE DETERMINED BY ARCHITECT/MECHANICAL ENGINEER. FREE & EASY ACCESS INTO AREA INSTALLATION AND MAINTENENCE MUST BE PROVIDED BY OTHERS. MINIMUM CLEARANCE REQUIREMENTS MUST BE MAINTAINED. SUFFICIENT AIR CHANGES MUST BE PROVIDED IN THIS AREA TO ALLOW ADEQUATE AIR CIRCULATION FOR WATER COOLED OR AIR COOLED CONDENSERS. STRUCTURAL SUPPORT FOR CONDENSERS AND OR FANS, ON ROOF OR INSIDE STRUCTURE, TO BE PROVIDED BY OTHERS.

SEE MANUFACTURER'S SHOP DRAWINGS FOR DETAILED REQUIREMENTS FOR CLEARANCE, MECHANICAL, PLUMBING & ELECTRICAL REQUIREMENTS. FOR WATER COOLED CONDENSERS, STRICT ADHERENCE TO MANUFACTURERS REQUIREMENTS FOR MIN./MAX. WATER TEMP AND PRESSURE MUST BE MAINTAINED.

ASHRAE CALCULATIONS AND ANY RESULTING REQUIREMENTS FOR CONDENSER AREA, PIPING CHASES AND FREON DETECTION SYSTEMS SHALL BE THE RESPONSIBILITY OF OTHERS.

ALL REFRIGERANT PIPING CHASES AND BUILDING PENETRATIONS SHALL BE THE RESPONSIBILITY OF THE BUILDING TRADES AND TO COMPLY WITH ALL LOCAL CODES. EXACT LINE RUNS OF REFRIGERATION PIPING SHALL BE DETERMINED IN COORDINATION WITH THE REFRIGERATION INSTALLER.



3 REMOTE CONDENSER AND FANS - ELECTRICAL
1/4" = 1'-0"

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Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Design Development	5/1/2025
CD Readi-Check	9/18/2025
Construction Documents	10/10/225

KEY PLAN

LSD
JOB 2616.01G

N

SHEET TITLE
FOODSERVICE EQUIPMENT ELECTRICAL PLAN

SHEET NO.
FS3.1

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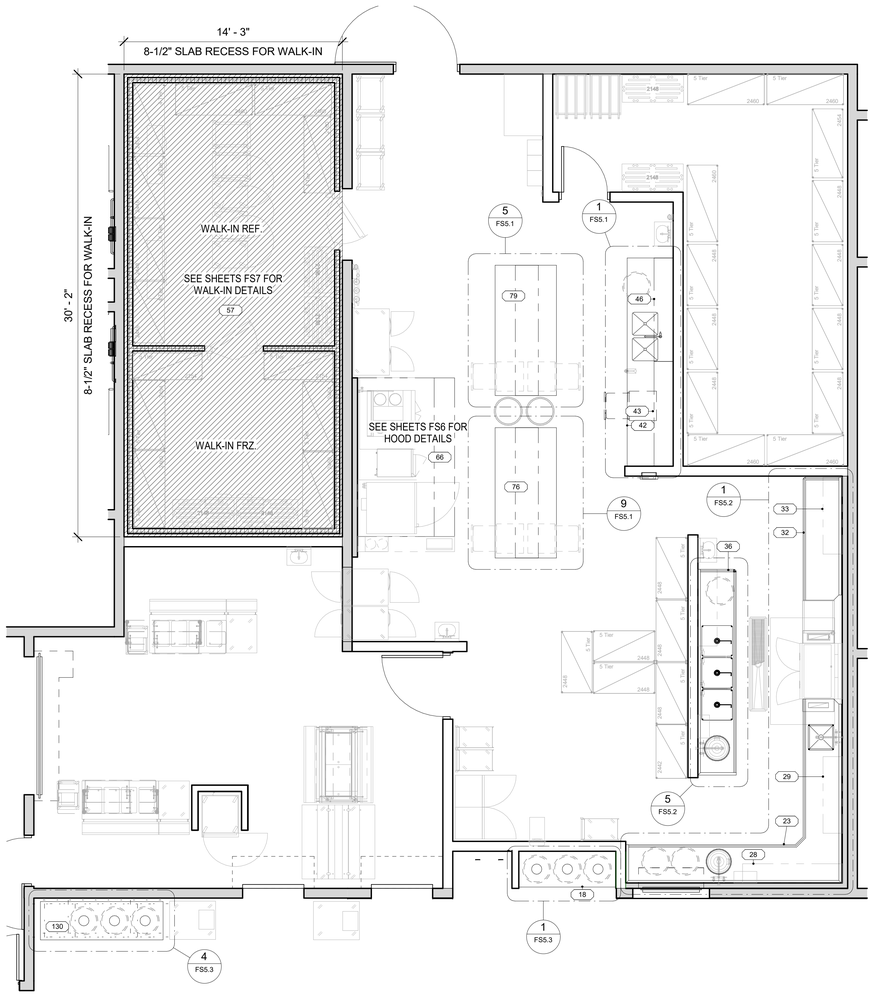
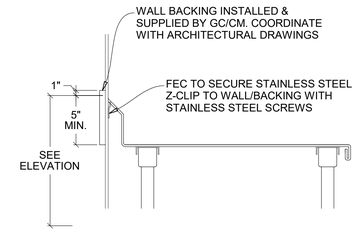
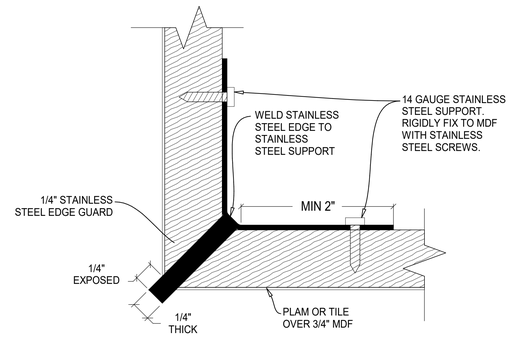


1 FOODSERVICE CALL-OUT PLAN
1/4" = 1'-0"



2 BACKSPLASH BACKING DEAIL - TYP.
NTS



3 CORNER DETAIL - TYP.
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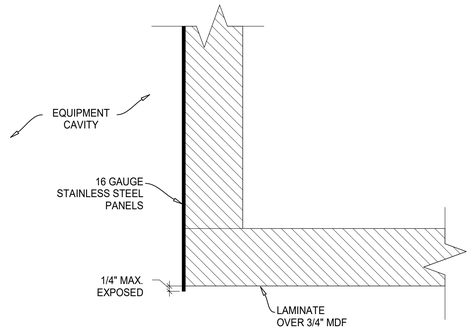

4 EQIUPMENT CAVITY CORNER DETAIL - TYP.
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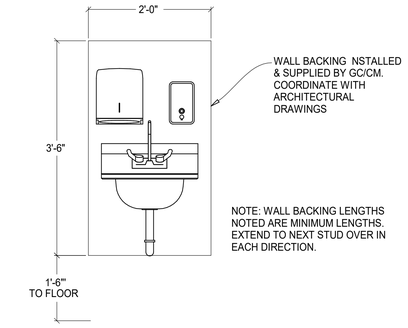

5 HANDSINK BACKING DETAIL - TYP.
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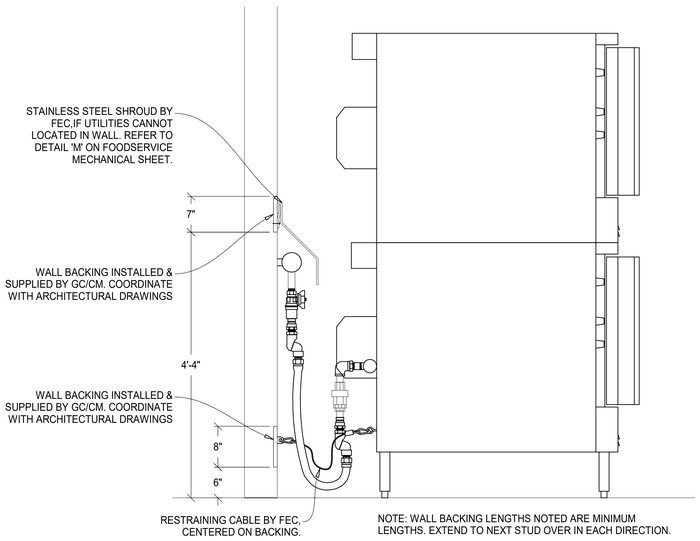

6 RESTRAINING CABLE AND UTILITY SHROUD BACKING DETAIL
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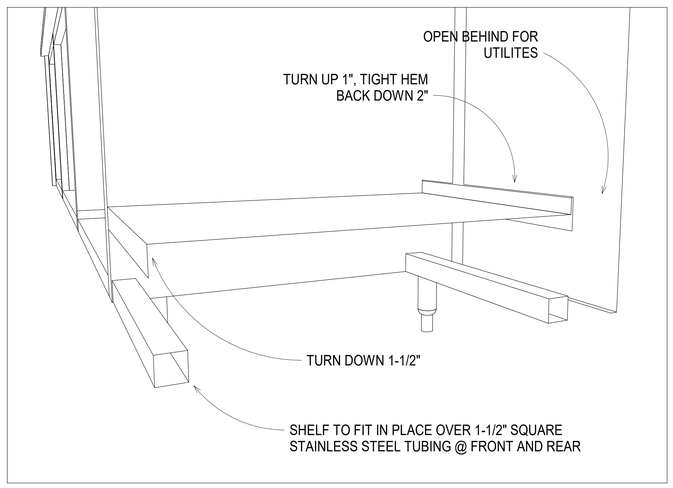

7 TYPICAL REMOVABLE BASE SHELF DETAIL
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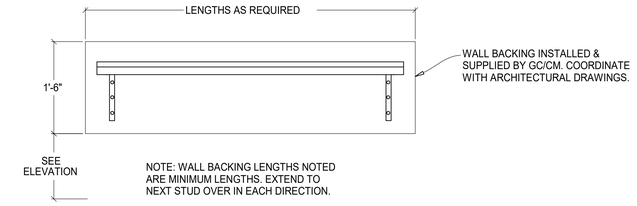

8 WALL SHELF BACKING DETAIL - TYP.
NTS

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Lansing School District

ISSUANCES	DATE
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CD Readi-Check	9/18/2025
Construction Documents	10/10/225

KEY PLAN

LSD
JOB 2616.01G

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SHEET TITLE
SPECIAL CONDITIONS AND DETAIL CALL-OUT PLAN

SHEET NO.
FS4.1

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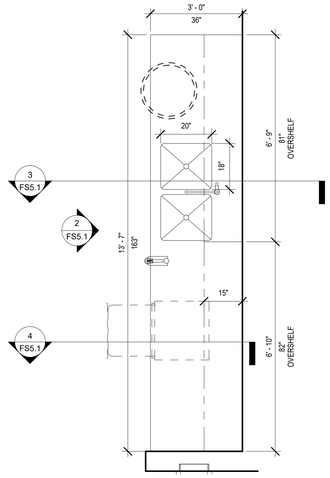

1 ITEM 42 CALL-OUT
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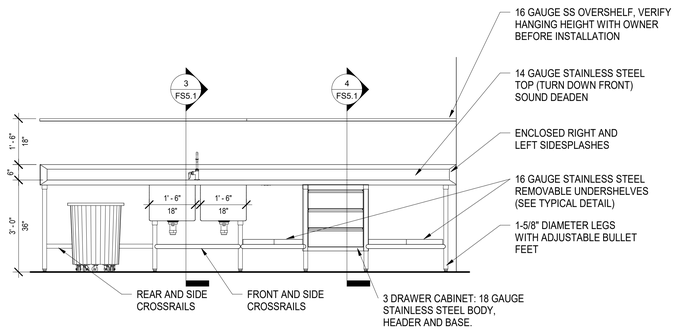

2 ITEM 42 ELEVATION
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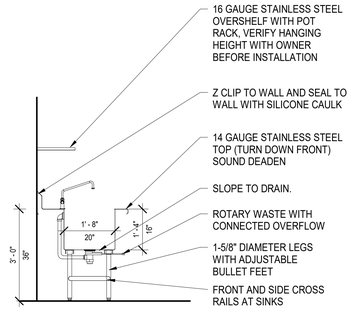

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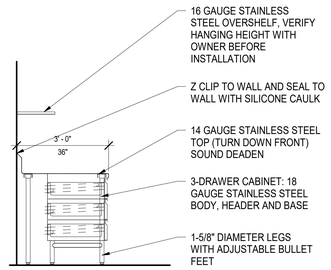

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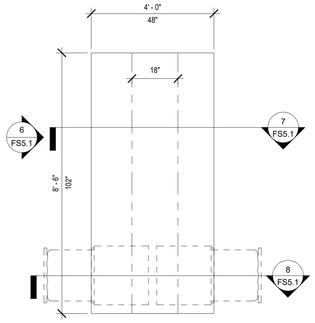

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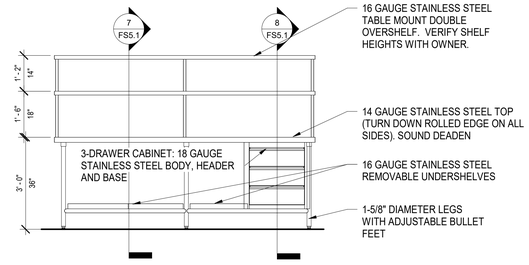

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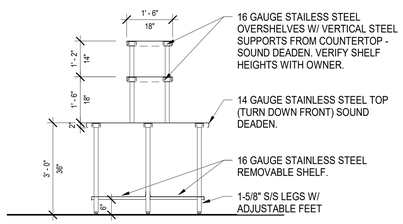

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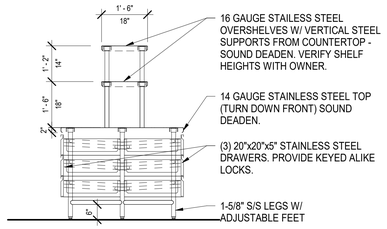

8 ITEM 79 SECTION 2
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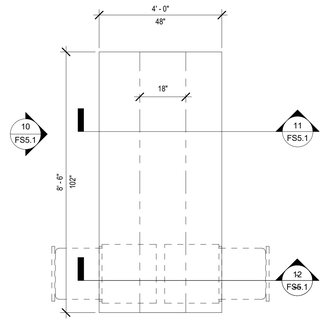

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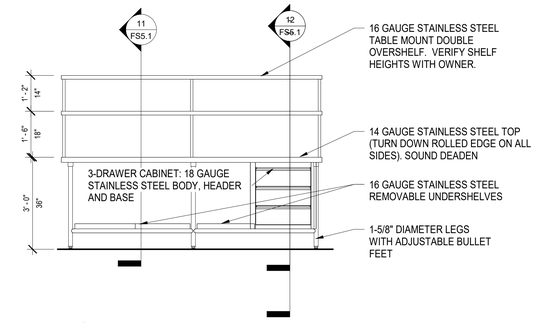

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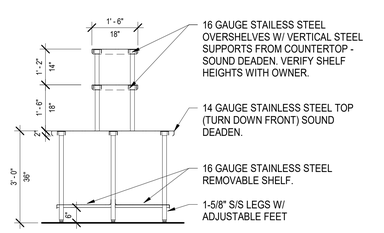

11 ITEM 76 SECTION 1
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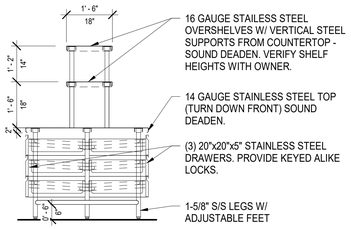

12 ITEM 76 SECTION 2
1/2" = 1'-0"

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CD Readi-Check	9/18/2025
Construction Documents	10/10/225

KEY PLAN

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LSD
JOB 2616.01G

SHEET TITLE
FOODSERVICE EQUIPMENT DETAILS

SHEET NO.
FS5.1

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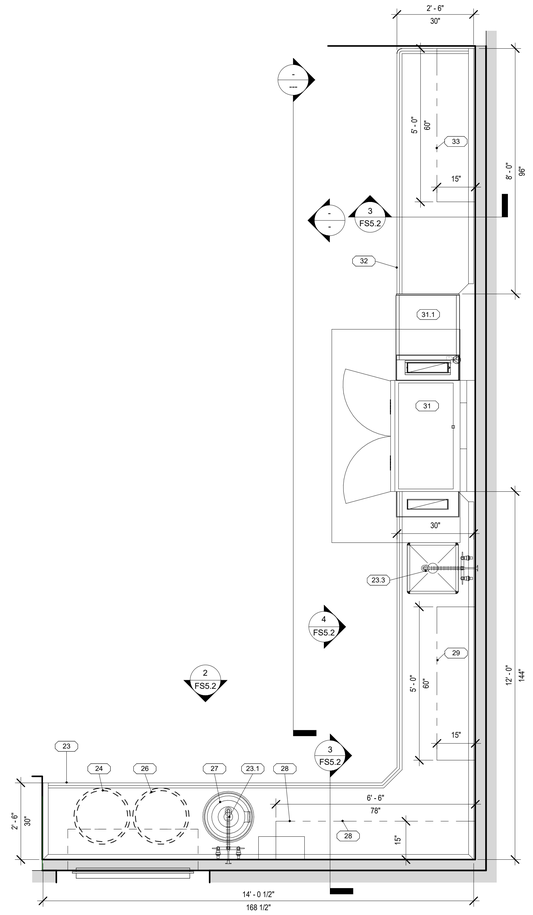
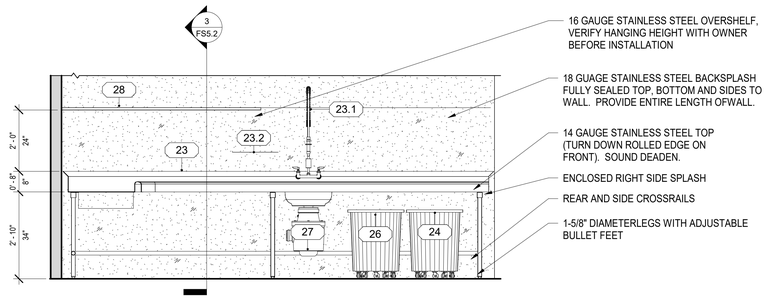
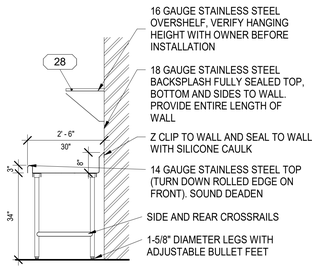


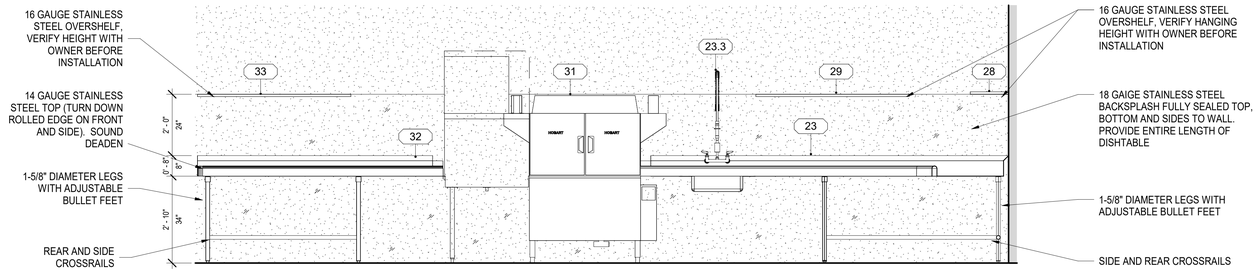
1 ITEM 23 & 32 CALL-OUT
1/2" = 1'-0"



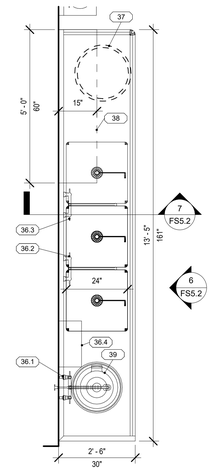
2 ITEM 23 ELEVATION 1
1/2" = 1'-0"



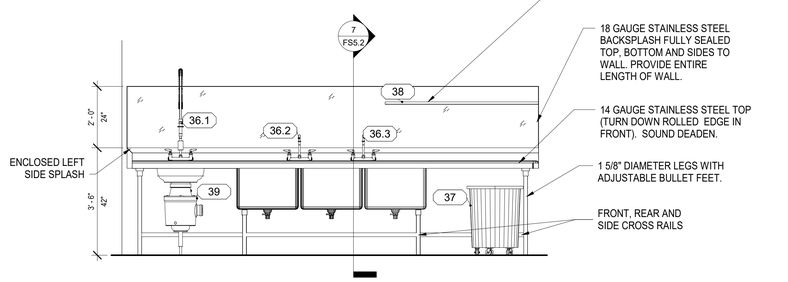
3 ITEM 23 SECTION 1
1/2" = 1'-0"



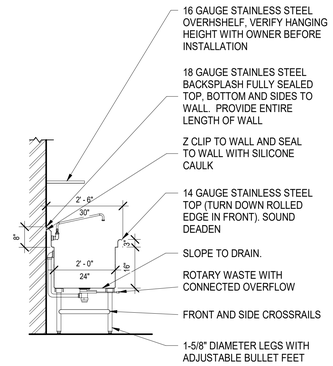
4 ITEM 23 ELEVATION 2
1/2" = 1'-0"



5 ITEM 36 CALL-OUT
1/2" = 1'-0"



6 ITEM 36 ELEVATION
1/2" = 1'-0"



7 ITEM 36 SECTION 1
1/2" = 1'-0"

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Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
CD Readi-Check	9/18/2025
Construction Documents	10/10/225

KEY PLAN

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SHEET TITLE
FOODSERVICE EQUIPMENT DETAILS

SHEET NO.
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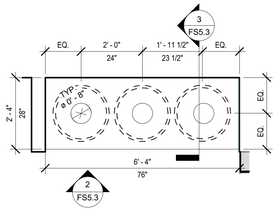
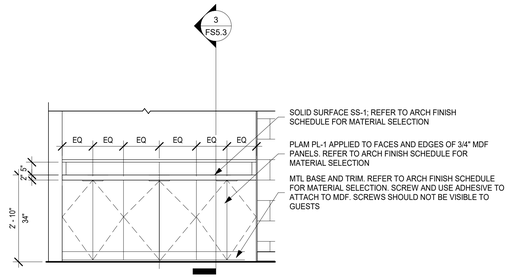
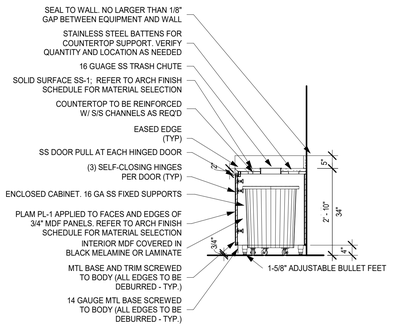


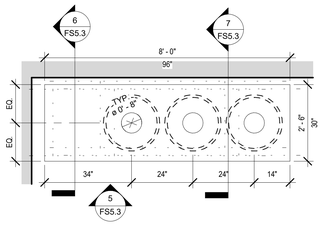
1 ITEM 18 CALL-OUT
1/2" = 1'-0"



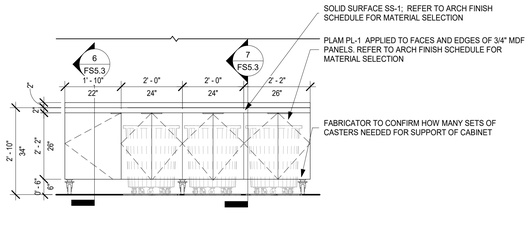
2 ITEM 18 ELEVATION 1
1/2" = 1'-0"



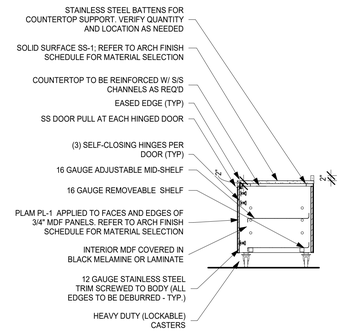
3 ITEM 18 SECTION 1
1/2" = 1'-0"



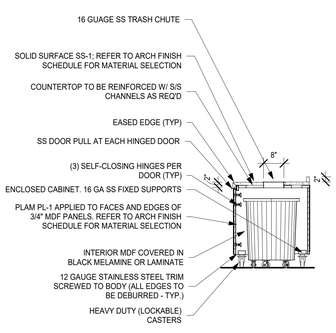
4 ITEM 130 CALL-OUT
1/2" = 1'-0"



5 ITEM 130 ELEVATION 1
1/2" = 1'-0"



6 ITEM 130 SECTION 1
1/2" = 1'-0"



7 ITEM 130 SECTION 2
1/2" = 1'-0"

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Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

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KEY PLAN

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SHEET TITLE
FOODSERVICE EQUIPMENT DETAILS

SHEET NO.
FS5.3

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PATENT NUMBERS

AC-PSP (UNITED STATES) - US PATENT 7963830 B2.
AC-PSP WALL (CANADA) - CA PATENT 2820509.
AC-PSP ISLAND (CANADA) - CA PATENT 2520330.

HOOD INFORMATION - JOB#7425447

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S) WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP	TOTAL SUPPLY CFM	HOOD CONSTRUCTION	HOOD CONFIG END TO END	ROW
1	66	6024 ND-2-PSP-F	CAPTIVEAIRE	10' 4"	600 DEG	I	HEAVY	203	2100			4"	16"	2100	1504	-0.642"	1620	304 SS 100%	ALONE	ALONE

HOOD INFORMATION

HOOD NO	TAG	FILTER(S) TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	LIGHT(S) QTY	TYPE	WIRE GUARD	UTILITY CABINET(S) LOCATION	SIZE	FIRE SYSTEM TYPE	FIRE SYSTEM SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY	FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
1	66	CAPTRATE SOLO FILTER	7	20"	16"	85% SEE FILTER SPEC	4	RECESSED ROUND	NO	LEFT	12"x60"x24"	TANK FS	4.0/4.0	DCV-1111	1 LIGHT 1 FAN	YES	1164 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1	66	FIELD WRAPPER 18.00" HIGH FRONT, LEFT, RIGHT.
		BACKSPLASH 80.00" HIGH X 137.00" LONG 304 SS VERTICAL.
		RIGHT END STANDOFF (FINISHED) 1" WIDE 60" LONG INSULATED.
		INSULATION FOR TOP OF HOOD.
		INSULATION FOR BACK OF HOOD.
		RIGHT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 304 SS.
		LEFT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 304 SS.

PERFORATED SUPPLY PLENUM(S)

HOOD NO	TAG	POS	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S) WIDTH	LENG	DIA	CFM	SP
1	66	Front	137"	14"	6"	MUA	10"	24"		540	0.159"
						MUA	10"	24"		540	0.159"
						MUA	10"	24"		540	0.159"

CLEARANCE TO COMBUSTIBLES

HOODS #	SURFACE	*CLEARANCE
1	TOP	0"
	FRONT	0"
	BACK	0"
	LEFT	0"
	RIGHT	0"

- *0" CLEARANCE TO COMBUSTIBLES CONFORMS TO UL710 STANDARD.
- HOOD MOUNTED UTILITY CABINETS REQUIRE 36" SERVICE CLEARANCE.

SPECIFICATION: CAPTRATE® GREASE-STOP® SOLO FILTER

THE CAPTRATE GREASE-STOP SOLO FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-BAFFLE DESIGN IN CONJUNCTION WITH A SLOTTED REAR BAFFLE DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.

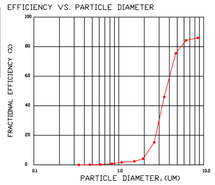
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

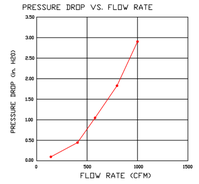
GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

THE CAPTRATE GREASE-STOP SOLO WAS TESTED TO ASTM STANDARD ASTM F2519-05. MANUFACTURER APPROVED FOR USE IN SOLID FUEL APPLICATIONS AS A SPARK ARRESTER.

EFFICIENCY VS. PARTICLE DIAMETER

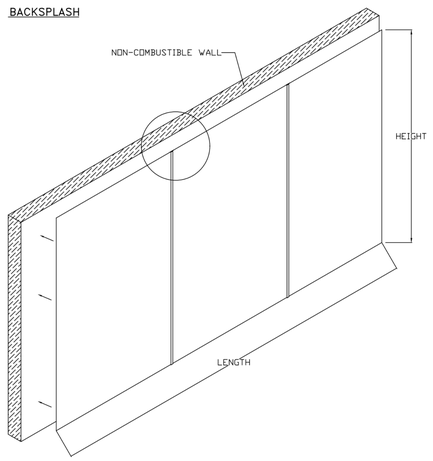


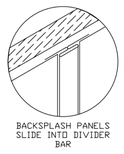
PRESSURE DROP VS. FLOW RATE



CAPTRATE FILTERS ARE BUILT IN COMPLIANCE WITH:
NFPA #96.
NSF STANDARD #2.
UL STANDARD #1046.
INT. MECH. CODE (IMC).
ULC-S649.

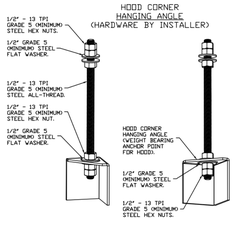
BACKSPLASH





- BACKSPLASH IS NOT INSULATED AND IS UNSUITABLE FOR INSTALL AGAINST COMBUSTIBLE WALLS

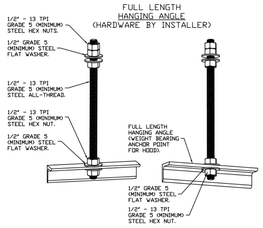
HOOD CORNER HANGING ANGLE (HARDWARE BY INSTALLER)



ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

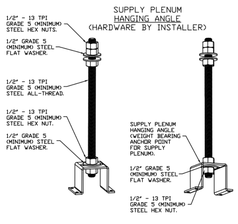
FULL LENGTH HANGING ANGLE (HARDWARE BY INSTALLER)



ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE HEX NUT BENEATH HANGING ANGLE IS ACCEPTABLE FOR FULL LENGTH HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

SUPPLY PLENUM HANGING ANGLE (HARDWARE BY INSTALLER)



ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE HEX NUT BENEATH HANGING ANGLE IS ACCEPTABLE FOR PSP HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

REVISIONS

	DESCRIPTION	DATE
△		
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Lansing Lewton Elementary School
2000 Lewton Place,
Lansing, MI, 48911

DATE: 3/25/2025

DWG.#: 7425447

DRAWN BY: RJF

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 1

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Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
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KEY PLAN

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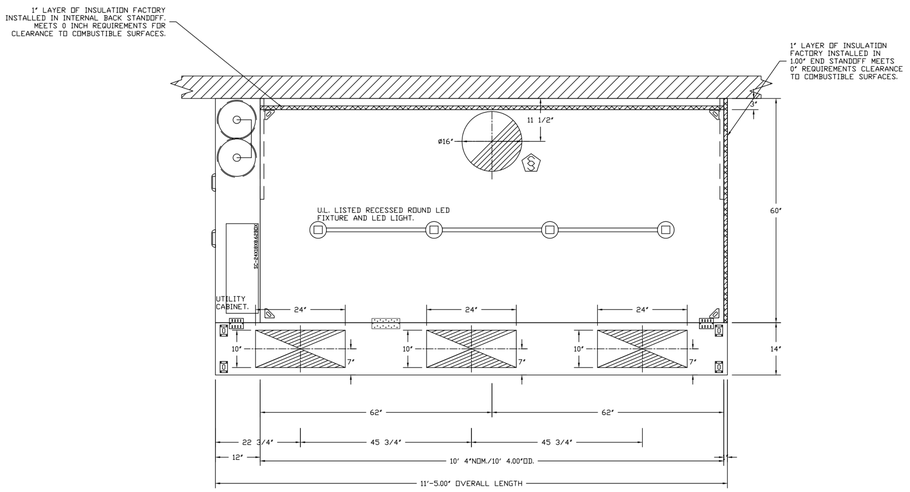
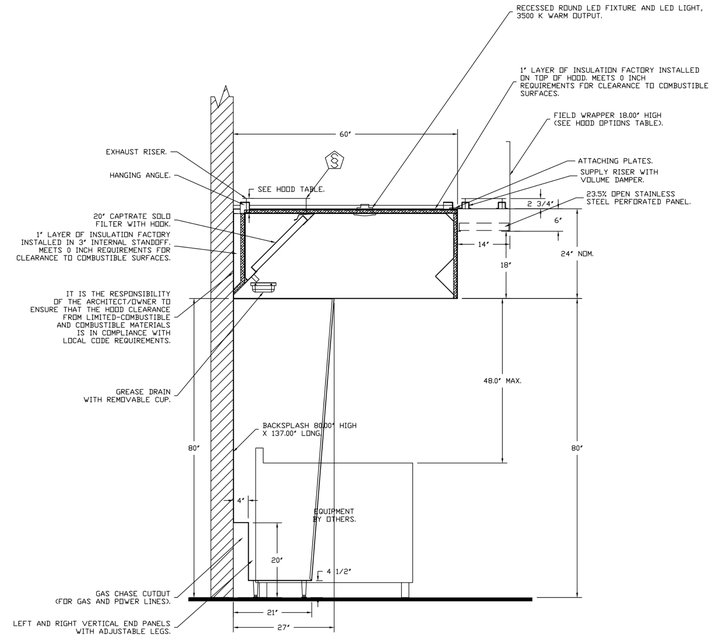


PLAN VIEW – HOOD #1 (66)
10' 4.00" LONG 6024ND-2-PSP-F



SECTION VIEW – MODEL 6024ND-2-PSP-F
HOOD – #1 (66)

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DATE: 3/25/2025
DWG.#: 7425447
DRAWN BY: RJF
SCALE: 3/4" = 1'-0"
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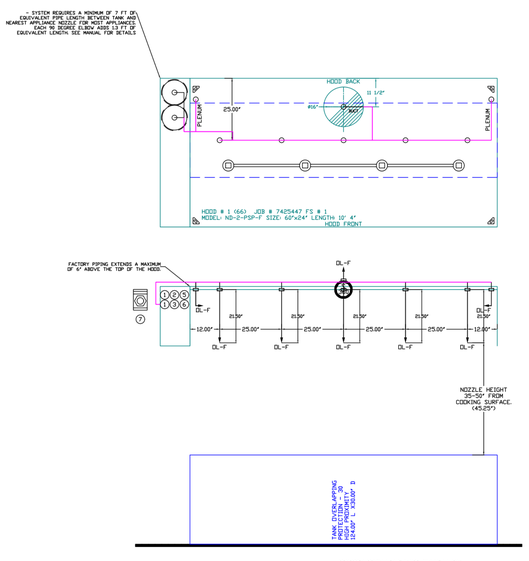

SECTION VIEW – MODEL 6024ND-2-PSP-F
HOOD – #1

NOTES
- FIELD PIPE DROPS AS SHOWN
- PIPING, ELBOWS, TEES, AND NOZZLES SUPPLIED BY CAS.
- FIELD INSTALLED DROP: FACTORY WILL PROVIDE QTY 2 60IN LONG PIECES OF CHROME PLATED PIPING SHIPPED LOOSE TO BE FIELD-INSTALLED.
- SHIP LOOSE DROP: FACTORY WILL PROVIDE THE EXACT CHROME PIPE LENGTH NEEDED SHIPPED LOOSE TO BE FIELD-INSTALLED.
- RELOCATE NOZZLES IF FLOW PATTERN IS BLOCKED BY SHELVING, SALAMANDERS, ETC.
- OVERLAPPING COVERAGE SHALL NOT BE USED ON ANY APPLIANCE WITH AN OBSTRUCTION.
- IF APPLICABLE, EXTENDED PRE-PIPED DROPS ARE SHIPPED LOOSE.
- FACTORY PIPING EXTENDS A MAXIMUM OF 6" ABOVE THE TOP OF THE HOOD.

- APPLIANCE DIMENSIONS LISTED REPRESENT THE COOKING SURFACE SIZE, NOT THE OVERALL APPLIANCE SIZE.

- THIS PRE-ENGINEERED FIRE SYSTEM COMPLIES WITH UL. 300 REQUIREMENTS.

- DL-F NOZZLE PART NUMBER REPLACES 3070-3/8H-10-SS

JOB #: 7425447.
JOB NAME: LANSING LEWTON ELEMENTARY SCHOOL.

SYSTEM SIZE: TANK-SP-2 DESIGN FP: 37, MAXIMUM FP: 40.
HOOD # 1 10' 4.00" LONG x 60" WIDE x 24" HIGH.
RISER # 1 SIZE: 16" DIA.
HOOD # 1 METAL BLOW-OFF CAPS INCLUDED.

- HEAVY-DUTY APPLIANCES (RATED 600°F) WILL REQUIRE AN ADDITIONAL DOWNSTREAM FIRESTAT IN THE EVENT THAT THE DUCTWORK CONTAINS ANY HORIZONTAL RUNS OVER 25 FT IN LENGTH.
- MEDIUM TO LIGHT-DUTY APPLIANCES (RATED 450°F) WILL NOT REQUIRE ANY ADDITIONAL DOWNSTREAM DETECTION.

AGENT DISTRIBUTION PIPING LIMITATIONS	
PIPE SECTION	MAX PIPE LENGTH (FT)
MAX SUPPLY LINE TO FIRST OVERLAPPING NOZZLE	42
OVERLAPPING NOZZLE APPLIANCE BRANCH	10
DEDICATED NOZZLE APPLIANCE BRANCH	10

LEGEND – FIRE CABINET TANK SYSTEM

1 4 GALLON TANK.
2 PRIMARY ACTUATOR RELEASE.
3 SECONDARY ACTUATOR RELEASE.
4 PRESSURE SUPERVISION SWITCH.
5 PRIMARY HOSE ASSEMBLY.
6 SECONDARY HOSE ASSEMBLY.
7 REMOTE MANUAL ACTUATION DEVICE.

FIRE SYSTEM INFORMATION – JOB#7425447

FIRE SYSTEM NO	TAG	TYPE	SIZE	MAX FP	DESIGN FP	INSTALLATION	
						SYSTEM	LOCATION ON HOOD
1	67	TANK FS	4.0/4.0	40	37	FIRE CABINET LEFT	LEFT, HOOD 1

FIRE SYSTEM PARTS LIST KEY

FIRE SYSTEM NO	TAG	KEY NUMBER – PART DESCRIPTION	QTY BY FACTORY	QTY BY DIST
1	67	0 – 0 – TANK FIRE SUPPRESSION POST-DISCHARGE PROCEDURE UTILITY CABINET LABEL SHEET.	1	0
		0 – 0 – TANK FIRE SUPPRESSION MAINTENANCE GUIDE UTILITY CABINET LABEL SHEET.	1	0
		0 – 0 – 12-F28021-30144-CT-360 DUCT FIRE THERMOSTAT WITH 12 FOOT WIRE LEADS. NO, CLOSE ON TEMP RISE AT 360°F. (A6034310).	1	0
		0 – 0 – 30-00002 QUIK SEAL – 1/2" (UL).	1	0
		0 – 0 – 4429K153 1/2" MALE NPT TO 1/2" FEMALE NPT ELBOW, BRASS.	2	0
		0 – 0 – 4429K432 1/2" X 1/4" BRASS REDUCING BUSHING.	1	0
		0 – 0 – 79525 1/2" 90 PRO-PRESS ELBOW WITH 1/2" NPT FEMALE CONNECTION, VIEGA.	1	0
		0 – 0 – 79580 1/2" X 1/2" PRO-PRESS TEE X 1/2" NPT FEMALE CONNECTION, VIEGA.	2	0
		0 – 0 – 87-1200A2-000 SECONDARY ACTUATOR VALVE (SVA) – SINGLE ACTUATOR, REQUIRES PRIMARY RELEASE ACTUATOR, TANK FIRE SUPPRESSION.	1	0
		0 – 0 – 87-1200A5-001 HOSE, SECONDARY ACTUATOR HOSE, 7.5" BRAIDED STAINLESS STEEL, TANK FIRE SUPPRESSION.	1	0
		0 – 0 – 87-300001-001 TANK – PRESSURIZED TANK USED FOR TANK FIRE SUPPRESSION.	2	0
		0 – 0 – 87-300030-001 PRIMARY ACTUATOR KIT (PAK) – ACTUATOR AND RELEASE SOLENOID ASSEMBLY, ONE NEEDED PER FIRE SYSTEM, SUPERVISED, TANK FIRE SUPPRESSION.	1	0
		0 – 0 – 87-300031-001 DIN CONNECTOR, CANFIELD PART #5.0569-201-EUDA, TANK FIRE SUPPRESSION, SUBMINIATURE SOLENOID CONNECTION (CED VENDOR 303773).	1	0
		0 – 0 – 87-300258-001 HARDWARE, SVA BOLTS, TANK FIRE SUPPRESSION.	8	0
		0 – 0 – 9005459PC PRO PRESS 1/2 PRESS X PRESS 90 ELBOW LB.	7	0
		0 – 0 – 9097209PC PRO PRESS PC611 1/2 PRESS TEE LB.	7	0
		0 – 0 – 9869A41/5 HARDWARE, DATANKLOCK LOCKING BRACKET SQUARE NUTS 5/16" ZINC, TANK FIRE SUPPRESSION.	4	0
		0 – 0 – A6034332 JUNCTION BOX FOR MANUAL PULL STATION, 15" DEEP BACK BOX, RED COLOR.	1	0
		0 – 0 – A31484 1/4" NPT SCHRADER VALVE AND CAP, JB INDUSTRIES. 1/4" FLARE X 1/4" MPT HALF UNION. USED ON TANK SERVICE PORT.	1	0
		0 – 0 – B1145 3/8" BLACK IRON 90 ELL.	3	0
		0 – 0 – DATANKLOCK DISCHARGE ADAPTER TANK LOCKING PLATE FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	2	0
		0 – 0 – TANK STRAP TANK STRAP – USED FOR TANK FIRE SUPPRESSION.	6	0
		0 – 0 – TFS-UCTANKBRACKET TANK BRACKET FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	2	0
		0 – 0 – VK-283952-000 DISCHARGE ADAPTER, TANK FIRE SUPPRESSION.	2	0
		16 – 16 – 79010 1/2" X 3/8" NPT MALE ADAPTER, VIEGA.	8	0
		16 – 16 – DL-F NOZZLE – TANK PROTECTION APPLIANCE COVERAGE NOZZLE (INCLUDES METAL BLOW OFF CAP, LANYARD, USED WITH CHROME-PLATED PIPE).	8	0
		26 – 26 – QSA-3/8 QUIK SEAL – 3/8" (UL).	8	0
		34 – 34 – A6034331 24VDC SINGLE ACTION MANUAL ACTUATION DEVICE (PUSH/PULL STATION) WITH PROTECTIVE COVER, ONE (1) NORMALLY OPEN CONTACT. RED COLOR.	1	0

REVISIONS

	DESCRIPTION	DATE:
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Lansing Lewton Elementary School
2000 Lewton Place,
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DATE: 3/25/2025
DWG.#: 7425447
DRAWN BY: RJF
SCALE: 1/2" = 1'-0"
MASTER DRAWING
SHEET NO. 3

Lewton School
Lansing School District
2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

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KEY PLAN
LSD
JOB 2616.01G
N

SHEET TITLE
FOODSERVICE VENTILATION DETAILS

SHEET NO.
FS6.3

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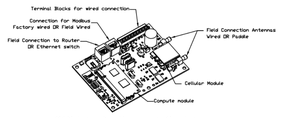
ELECTRICAL PACKAGE – JOB#7425447

NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED				
				LOCATION	QUANTITY		TYPE	Φ	HP	VOLT	FLA
1	66.1/66.2	DCV-1111	UTILITY CABINET LEFT	SHIP LOOSE W/ PREWIRE	1 LIGHT 1 FAN	SMART CONTROLS DCV	EXHAUST	3	5.000	208	15.0
							SUPPLY	3	5.000	208	15.0



CASLink Monitor and Control

- Hood control panel to support communications to cloud-based Building Management System.
- Hood Control Panel to allow cloud-based Building Management System to monitor real time parameters outlined as MONITOR in the points list.
- Hood Control Panel to allow cloud-based Building Management System to control outputs outlined as CONTROL in the points list.
- Hood Control Panel to allow cloud-based Building Management System to implement SYSTEM ECONOMIZER control strategies for fully integrated Building Management.

MONITORING AND CONTROL POINTS LIST

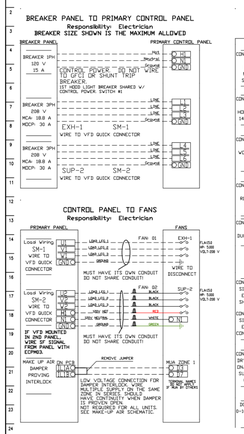
DCV Packages	Function
Room Temperature	#MONITOR
Duct Temperature(s)	#MONITOR
MUA Discharge Temperature	#MONITOR
Kitchen RTU Discharge Temperature	#MONITOR
Fan Speed	#MONITOR
Fan Amperage	#MONITOR
Fan Power	#MONITOR
VFD Faults	#MONITOR
Controller Faults	#MONITOR
Fan Faults	#MONITOR
Fan Status	#MONITOR
PCV Faults	#MONITOR
PCV Filter Clog Percentages	#MONITOR
Fire Condition	#MONITOR
CORE Fire System	#MONITOR
Building Pressures	#MONITOR
Fans Button(s)	#MONITOR & CONTROL
Lights Button(s)	#MONITOR & CONTROL
Wash Button	#MONITOR & CONTROL

DC Packages	Function
Room Temperature(s)	#MONITOR
Duct Temperature(s)	#MONITOR
MUA Discharge Temperature	#MONITOR
Kitchen RTU Discharge Temperature	#MONITOR
Controller Faults	#MONITOR
Fan Faults	#MONITOR
Fan Status	#MONITOR
PCV Faults	#MONITOR
PCV Filter Clog Percentages	#MONITOR
Fire Condition	#MONITOR
Building Pressures	#MONITOR
Fans Button(s)	#MONITOR & CONTROL
Lights Button(s)	#MONITOR & CONTROL
Wash Button	#MONITOR & CONTROL

JOB NO 7425447 | MODEL NUMBER DCV-1111 | JOB NAME Lansing Lewton Elementary Sch.. | DRAWN BY | DATE 3/25/2025 | SCHEMATIC TYPE INSTALL | DWG NO EOP #1-1

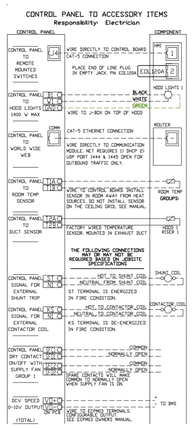
DESCRIPTION OF OPERATION:
Exhaust System #1 TAKE FS = 42/42 SCFM

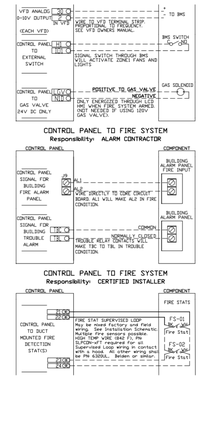
BREAKER PANEL TO PRIMARY CONTROL PANEL
Responsibility: Electrician
BREAKER SIZE SHOWN IS THE MAXIMUM ALLOWED



CONTROL PANEL TO FANS
Responsibility: Electrician

CONTROL PANEL TO ACCESSORY ITEMS
Responsibility: Electrician



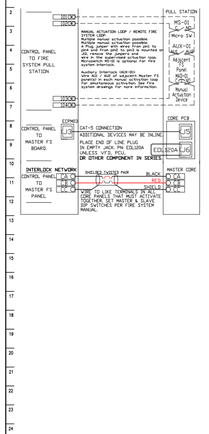


CONTROL PANEL TO FIRE SYSTEM
Responsibility: ALARM CONTRACTOR

CONTROL PANEL TO FIRE SYSTEM
Responsibility: CERTIFIED INSTALLER

JOB NO 7425447 | MODEL NUMBER DCV-1111 | JOB NAME Lansing Lewton Elementary Sch.. | DRAWN BY | DATE 3/25/2025 | SCHEMATIC TYPE INSTALL | DWG NO EOP #1-2

DESCRIPTION OF OPERATION:
Exhaust System #1 TAKE FS = 42/42 SCFM



JOB NO 7425447 | MODEL NUMBER DCV-1111 | JOB NAME Lansing Lewton Elementary Sch.. | DRAWN BY | DATE 3/25/2025 | SCHEMATIC TYPE INSTALL | DWG NO EOP #3-3

DESCRIPTION OF OPERATION:
Fire System #1 TAKE FS = 42/42 SCFM

TANK PROTECTION ELECTRICAL DETAIL

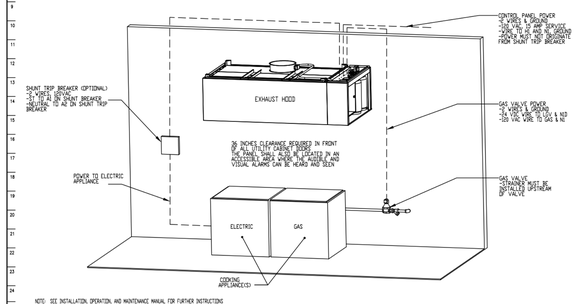
02/10/2021 Rev. 2

FS-1: MASTER

ELECTRICIAN
1. WIRE MAIN CONTROL PANEL PER INCLUDED SCHEMATIC
2. WIRE SHUNT TRIP BREAKER PER SCHEMATIC
3. WIRE SHUNT TRIP BREAKER (OPTIONAL)
4. WIRE GAS APPLIANCE KILL SWITCH, IF EQUIPPED (OPTIONAL)
5. WIRE GAS VALVE

ELECTRICAL CONTRACTOR REQUIREMENT

ITEM	CONNECTION IN PANEL	CONNECTION IN DEVICE	VOLTAGE	AMPERAGE	COMMENTS
SHUNT TRIP BREAKER (OPTIONAL)	ST & N1	BREAKER COIL (N1 & N2)	120 VAC	< 4 AMPS	ST TO A2 ON SHUNT BREAKER COIL, AND NEUTRAL TO A2 ON SHUNT TRIP BREAKER COIL
CONTROL PANEL POWER	H1 & N1 + GROUND	CIRCUIT BREAKER	120 VAC	15 AMPS	CONTROL PANEL POWER MUST NOT BE RUN THROUGH SHUNT TRIP BREAKER
LOS APPLIANCE KILL SWITCH (OPTIONAL)	KTS & N1	KTS & N1	120 VAC	< 4 AMPS	KILL SWITCH TERMINALS MUST BE IN SERIES WITH OTHER KILL SWITCHES
REMOTE UDV-AC ANGUL AUTOMAN (OPTIONAL)	AUL AUZ	SOLENOID	120 VAC	< 6 AMPS	120V TO AUL AUZ TO ANGUL ELECTRIC AUTOMAN, ANGUL SOLENOID TO NEUTRAL
GAS VALVE	12V & N28 OF 24 VDC/ GAS & N1 OF 120 VAC/	RED/RED/GREEN	24 VDC OR 120 VAC	< 10 AMPS	IF 24 VDC – 2 WIRES & GROUND 24V TO RED, 12V TO RED AND GREEN TO GROUND IF 120 VAC – 2 WIRES & GROUND (A2 IS RED & N1 TO RED AND GREEN TO GROUND



NOTE: SEE INSTALLATION, OPERATION, AND MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS

TANK PROTECTION LOW-VOLTAGE DETAIL

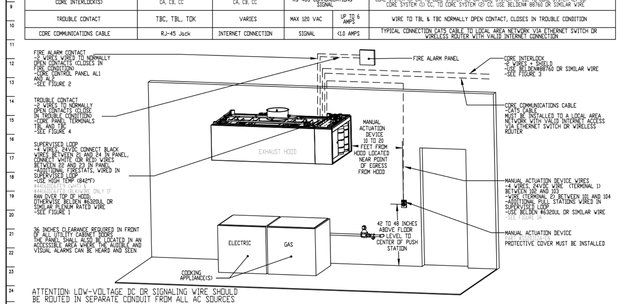
10/10/2023 Rev. 3

FS-1: MASTER

ALARM CONTRACTOR
1. WIRE MANUAL ACTUATION DEVICE(S), REMOTE FIRESTAT(S), CORE INTERLOCK(S), FIRE SENSOR(S) AND FIRE ALARM CONTACTS
2. CONNECT TO CORE SENSOR SYSTEM
3. VERIFY FINAL FIRE SYSTEM TEST

ALARM CONTRACTOR REQUIREMENT

ITEM	CONNECTION IN PANEL	CONNECTION IN DEVICE	VOLTAGE	AMPERAGE	COMMENTS
MANUAL ACTUATION DEVICE(S)	103 AND 104 203 AND 204	1 & 2	24 VDC	< 10 AMPS	WIRE MANUAL ACTUATION DEVICE TERMINAL 1 BETWEEN CORE PANEL TERMINALS 103 AND 203 WIRE MANUAL ACTUATION DEVICE TERMINAL 2 BETWEEN CORE PANEL TERMINALS 104 AND 204 JUMPER 103 TO 104 AND 203 TO 204 WHEN MANUAL ACTUATION DEVICE IS INSTALLED
MANUAL ACTUATION DEVICE COVER	N/A	N/A	N/A	N/A	MANUAL ACTUATION DEVICE COVER SWITCH CONTACTS MUST BE NORMALLY CLOSED
REMOTE FIRESTAT SENSOR(S)	53 AND 54 63 AND 63	BLACK AND WHITE	24 VDC	< 10 AMPS	WIRE FIRE SENSOR BLACK WIRE BETWEEN HOOD CORE PANEL TERMINALS 53 AND 54 WIRE FIRE SENSOR BLACK WIRE BETWEEN HOOD CORE PANEL TERMINALS 63 AND 64 HIGH TEMP WIRE (Red F), Pin EOL120SA in last stat in loop. No other wiring splices in loop. Loop resistance must be 20 ohms or less.
FIRE ALARM CONTACT	AL1, AL2	VARIES	50V MAX (AC/DC)	UP TO 1 AMP	FIRE ALARM RELAY CONTACTS FOR BUILDING FIRE ALARM LOCATED IN THE CORE ELECTRICAL CONTROL PANEL
CORE INTERLOCK(S)	CA, CB, CC	CA, CB, CC	RS-485 COMMUNICATIONS SIGNAL		CORE SYSTEM x2 CA, TO CORE SYSTEM x2 CA CORE SYSTEM 1% CB TO CORE SYSTEM x2 CB CORE SYSTEM x2 CC TO CORE SYSTEM x2 CC USE BELDEN 8092 OR SIMILAR WIRE
TROUBLE CONTACT	TBC, TBL, TDK	VARIES	MAX 120 VAC	UP TO 6 AMPS	WIRE TO TBL & TBC NORMALLY OPEN CONTACT, CLOSES IN TROUBLE CONDITION
CORE COMMUNICATIONS CABLE	RJ-45 Jack	INTERNET CONNECTION	SIGNAL	<10 AMPS	TYPICAL CONNECTION CAT5 CABLE TO LOCAL AREA NETWORK VIA ETHERNET SWITCH OR WIRELESS ROUTER WITH VALID INTERNET CONNECTION



ATTENTION LOW-VOLTAGE DC OR SIGNALING WIRE SHOULD BE ROUTED IN SEPARATE CONDUIT FROM ALL AC SOURCES

NOTE: SEE INSTALLATION, OPERATION, AND MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS

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Lansing Lewton Elementary School
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DATE: 3/25/2025

DWG.#: 7425447

DRAWN BY: RJF

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 4

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Lewton School

Lansing School District

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Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
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CD Readi-Check	9/18/2025
Construction Documents	10/10/225

KEY PLAN

LSD
JOB 2616.01G

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SHEET TITLE
HOODSERVICE VENTILATION DETAILS

SHEET NO.
FS6.4

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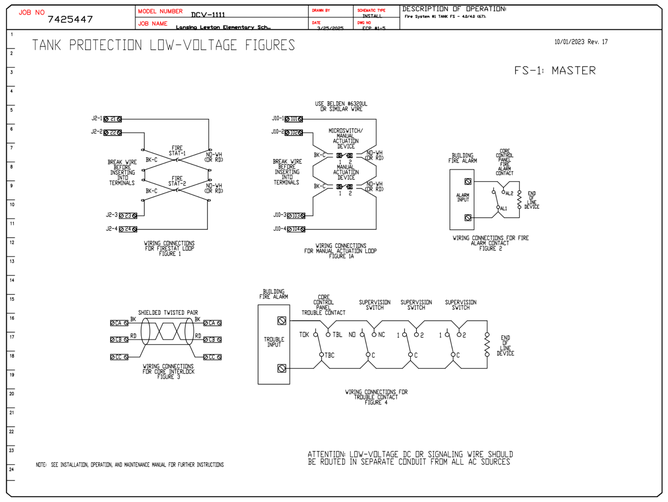
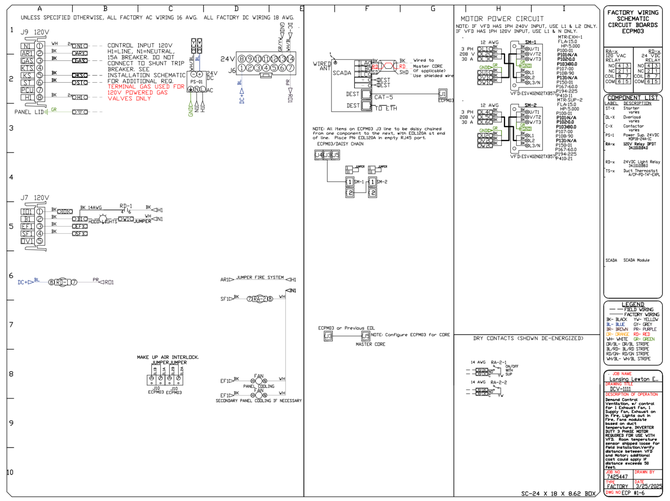
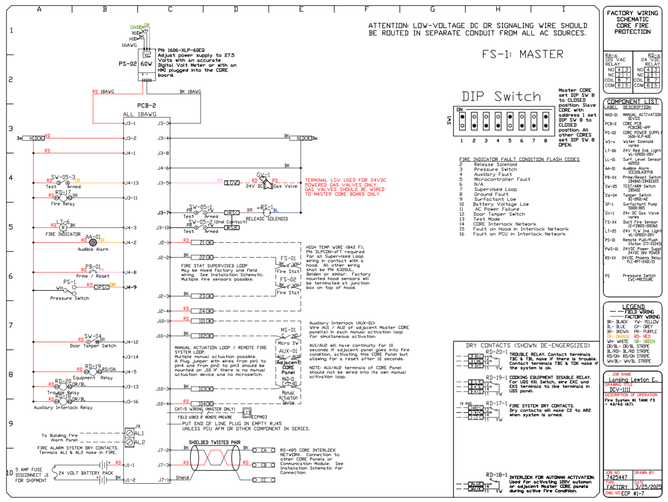
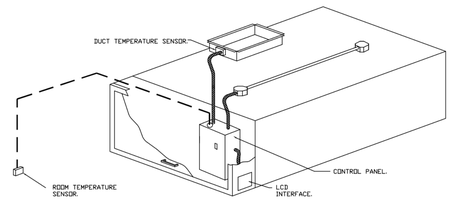






DEMAND CONTROL VENTILATION HOOD CONTROL PANEL SPECIFICATIONS:

- CONTROLS SHALL BE LISTED BY ETL (UL 508A) AND SHALL COMPLY WITH DEMAND VENTILATION SYSTEM TURNDOWN REQUIREMENTS OUTLINED IN IECC 403.7.5 (2021).
- THE CONTROL ENCLOSURE SHALL BE NEMA 1 RATED AND LISTED FOR INSTALLATION INSIDE OF THE EXHAUST HOOD UTILITY CABINET. THE CONTROL ENCLOSURE MAY BE CONSTRUCTED OF STAINLESS STEEL OR PAINTED STEEL.
- TEMPERATURE PROBE(S) LOCATED IN THE EXHAUST DUCT RISER(S) SHALL BE CONSTRUCTED OF STAINLESS STEEL.
- A DIGITAL CONTROLLER SHALL BE PROVIDED TO ACTIVATE THE HOOD EXHAUST FANS DYNAMICALLY BASED ON A FIXED DIFFERENTIAL BETWEEN THE AMBIENT AND DUCT TEMPERATURES SENSORS. THIS FUNCTION SHALL MEET THE REQUIREMENTS OF IMC 507.1.1.
- A DIGITAL CONTROLLER SHALL PROVIDE ADJUSTABLE HYSTERESIS SETTINGS TO PREVENT CYCLING OF THE FANS AFTER THE COOKING APPLIANCES HAVE BEEN TURNED OFF AND/OR THE HEAT IN THE EXHAUST SYSTEM IS REDUCED.
- A DIGITAL CONTROLLER SHALL PROVIDE AN ADJUSTABLE MINIMUM FAN RUN-TIME SETTING TO PREVENT FAN CYCLING.
- VARIABLE FREQUENCY DRIVES (VFDS) SHALL BE PROVIDED FOR FANS AS REQUIRED. THE DIGITAL CONTROLLER SHALL MODULATE THE VFDS BETWEEN A MINIMUM SETPOINT AND A MAXIMUM SETPOINT ON DEMAND. THE DUCT TEMPERATURE SENSOR INPUT(S) TO THE DIGITAL CONTROLLER SHALL BE USED TO CALCULATE THE SPEED REFERENCE SIGNAL.
- THE VFD SPEED RANGE OF OPERATION SHALL BE FROM 0% TO 100% FOR THE SYSTEM, WITH THE ACTUAL MINIMUM SPEED SET AS REQUIRED TO MEET MINIMUM VENTILATION REQUIREMENTS.
- AN INTERNAL ALGORITHM TO THE DIGITAL CONTROLLER SHALL MODULATE SUPPLY FAN VFD SPEED PROPORTIONAL TO ALL EXHAUST FANS THAT ARE LOCATED IN THE SAME FAN GROUP AS THE SUPPLY FAN.
- THE SYSTEM SHALL OPERATE IN PREP MODE DURING LIGHT COOKING LOAD OR COOL DOWN MODE WHEN SUFFICIENT HEAT REMAINS UNDERNEATH THE HOOD SYSTEM AFTER COOKING OPERATIONS HAVE COMPLETED. OPERATION DURING EITHER OF THESE PERIODS WILL DISABLE THE SUPPLY FANS AND PROVIDE AN EXHAUST FAN SPEED THAT IS EQUAL TO THE MINIMUM VENTILATION REQUIREMENT.
- A DIGITAL CONTROLLER SHALL DISABLE THE SUPPLY FAN(S), ACTIVATE THE EXHAUST FANS(S), ACTIVATE THE APPLIANCE SHUNT TRIP, AND DISABLE AN ELECTRIC GAS VALVE AUTOMATICALLY WHEN FIRE CONDITION IS DETECTED ON A COVERED HOOD.
- A DIGITAL CONTROLLER SHALL ALLOW FOR EXTERNAL BMS FAN CONTROL VIA DRY CONTACT (EXTERNAL CONTROL SHALL NOT OVERRIDE FAN OPERATION LOGIC AS REQUIRED BY CODE).
- AN LCD INTERFACE SHALL BE PROVIDED WITH THE FOLLOWING FEATURES:
  - A. ON/OFF PUSH BUTTON FAN & LIGHT SWITCH ACTIVATION.
  - B. INTEGRATED GAS VALVE RESET FOR ELECTRONIC GAS VALVES (NO RESET RELAY REQUIRED).
  - C. VFD FAULT DISPLAY WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
  - D. DUCT TEMPERATURE SENSOR FAILURE DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
  - E. MIS-WIRED DUCT TEMPERATURE SENSOR DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
  - F. A SINGLE LOW VOLTAGE CAT-5 RJ45 WIRING CONNECTION.
  - G. AN ENERGY SAVINGS INDICATOR THAT UTILIZES MEASURED KWH FROM THE VFDS.



TYPICAL HOOD CONTROL PANEL INSTALLATION

SEQUENCE OF OPERATIONS:

THE HOOD CONTROL PANEL IS CAPABLE OF OPERATING IN ONE OR MORE OF THE FOLLOWING STATES AT ANY GIVEN TIME:

- AUTOMATIC: THE SYSTEM OPERATES BASED ON THE DIFFERENTIAL BETWEEN ROOM TEMPERATURE AND THE TEMPERATURE AT THE HOOD CAVITY OR EXHAUST DUCT COLLAR. FANS ACTIVATE AT A CONFIGURABLE TEMPERATURE DIFFERENTIAL THRESHOLD. DEPENDING ON THE JOB CONFIGURATION EACH FAN ZONE CAN BE CONFIGURED AS STATIC OR DYNAMIC. THESE TERMS REFER TO WHETHER A VARIABLE MOTOR (SUCH AS EC MOTORS OR VFD DRIVEN MOTORS) MODULATE WITH TEMPERATURE. IF THE PANEL IS EQUIPPED WITH VARIABLE SPEED FANS AND THE ZONE IS DEFINED AS 'DYNAMIC', THESE WILL MODULATE WITHIN A USER-DEFINED RANGE BASED ON THE TEMPERATURE DIFFERENTIAL. PANELS EQUIPPED WITH VARIABLE SPEED FANS AND A FAN ZONE DEFINED AS 'STATIC', FANS WILL RUN AT A SET SPEED CALCULATED FOR THE DRIVE. DEMAND CONTROL VENTILATION SYSTEMS ARE CAPABLE OF MODULATING EXHAUST AND MAKE UP AIR FAN SPEEDS PER THE REQUIREMENTS OUTLINED IN IECC 403.7.5 (2021).
- MANUAL: THE SYSTEM OPERATES BASED ON HUMAN INPUT FROM AN HMI.
- SCHEDULE: A WEEKLY SCHEDULE CAN BE SET TO RUN FANS FOR A SPECIFIED PERIOD THROUGHOUT THE DAY. THERE ARE THREE OCCUPIED TIMES PER DAY TO ALLOW FOR THE USER TO SET UP A TIME THAT IS SUITABLE TO THEIR NEEDS. ANY TIME THAT IS WITHIN THE DEFINED OCCUPIED TIME, THE SYSTEM WILL RUN AT MODULATION MODE AND FOLLOW THE FAN PROCEDURE ALGORITHM BASED ON TEMPERATURE DURING THIS TIME. DURING UNOCCUPIED TIME, THE SYSTEM WILL HAVE AN EXTRA OFFSET TO PREVENT UNINTENDED ACTIVATION OF THE SYSTEM DURING A TIME WHERE THE SYSTEM IS NOT BEING OCCUPIED.
- OTHER: THE SYSTEM OPERATES BASED ON THE INPUT FROM AN EXTERNAL SOURCE (DDC, BMS OR HARD-WIRED INTERLOCK).
- FIRE: UPON ACTIVATION OF THE HOOD FIRE SUPPRESSION SYSTEM, THE EXHAUST FAN WILL COME ON OR CONTINUE TO TO RUN. THE HOOD MAKEUP AIR WILL SHUTDOWN, AND A SIGNAL WILL BE SENT FOR ACTIVATING THE SHUNT TRIP BREAKER PROVIDED BY THE ELECTRICIAN. FUEL GAS WILL SHUT OFF VIA A MECHANICAL/ELECTRICAL GAS VALVE ACTUATED BY THE HOOD FIRE SUPPRESSION SYSTEM.

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MASTER DRAWING

SHEET NO. 5

KEY PLAN

LSD

JOB 2616.01G

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SHEET TITLE: FOODSERVICE VENTILATION DETAILS

SHEET NO.: FS6.5

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IMPORTANT!

THERMO-KOOL WALK-IN FLOOR PANELS ARE DESIGNED TO WITHSTAND UNIFORMLY DISTRIBUTED STATIONARY LOADS OF 600 LBS. PER SQUARE FOOT. THERMO-KOOL'S WARRANTY DOES NOT COVER DAMAGE DUE TO PALLET JACKS, MOBILE CARTS, MOBILE SHELVING, FORK LIFTS, OR ANY OTHER FORM OF ROLLING TRAFFIC. A CONCRETE WEARING FLOOR MUST BE INSTALLED ON TOP OF THE WALK-IN FLOOR PANELS FOR THIS APPLICATION.

These drawings represent our understanding of the requirements of your order. We submit them to you for the purpose of securing complete approval of sizes, quantities, construction, arrangements, locations, and interpretations. The return of these drawings to us with instructions to proceed, or subsequent instructions to that effect, shall constitute complete approval.

Approved by _____ Date _____

WARNING

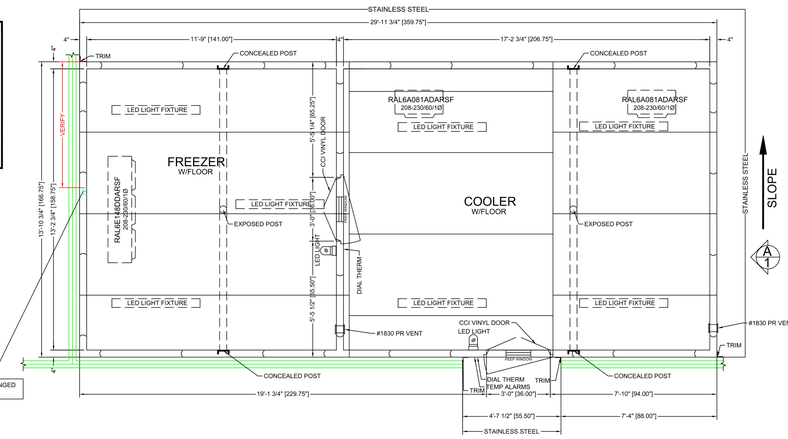
DO NOT EXPOSE CARTONED OR STACKED PANELS TO MOISTURE OR HIGH HUMIDITY CONDITIONS DURING STORAGE. STAINING OR OXIDIZING OF METAL SKINS MAY OCCUR.

NOTICE

THIS ORDER CANNOT BE PLACED INTO PRODUCTION UNTIL WE RECEIVE FINAL APPROVED DRAWING AND SPECIFICATIONS. THE DATE OF RECEIPT CAN AFFECT YOUR PROMISED DELIVERY DATE.

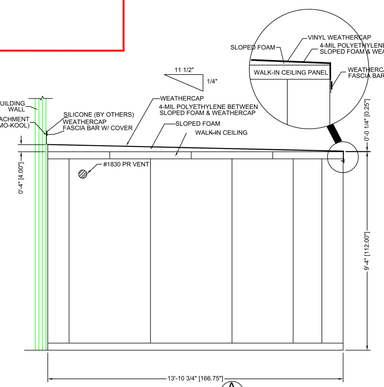
THIS THERMO-KOOL WALK-IN WILL BE MANUFACTURED TO UL & NSF REQUIREMENTS. THERMO-KOOL ACCEPTS NO LIABILITY FOR LOCAL CODE REQUIREMENTS OF WHICH THERMO-KOOL HAS NOT BEEN MADE AWARE IN WRITING PRIOR TO FABRICATION.

115V, 15 AMP DEDICATED CIRCUIT WITH 5-15R WITH CLOSED CELL HINGED COVER BY OTHERS



VERIFY !!!

* VERIFY HEIGHT OF TRIM & ENCLOSURE PANELS.
* VERIFY HEIGHT OF BUMPER RAILS A.F.F.



ELEVATION A 1

(CONSULTANT: BAKER GROUP)

OVERALL DIMENSIONS WIDTH 29'-11' 3/4" DEPTH 13'-10 3/4" HEIGHT 9'-4"

57

FINISH-Exterior

UNEXPOSED
- ☐ 26 Ga. Stucco Embossed Galv. Steel
- ◉ .040 Stucco Aluminum

EXPOSED
- ◉ 20 Ga. Type 304 #3 Finish Stainless Steel
- ☐ White Stucco Aluminum
- ☐ White Smooth Aluminum
- ☐ White Stucco Galv.
- ☐ White Smooth Galv.

Interior (walls and ceiling)
- ☐ 26 Ga. Stucco Embossed Galv. Steel
- ☐ .040 Stucco Aluminum
- ◉ 20 Ga. Type 304 #3 Finish Stainless Steel
- ☐ White Stucco Aluminum
- ☐ White Smooth Aluminum
- ☐ White Stucco Galv.
- ☐ White Smooth Galv.

FINISH-Interior Floor
- ☐ Built-in by others. (Breaker strip must be under all wall panels including partitions)
- ☐ 4" x 2" Vinyl U-Channel Screeds ☐ Wall Anchors ☐ 4 1/4" Foam Screeds
- ◉ 14 Ga. Bright Galvanized Steel
- ☐ 16 Ga. Stainless Steel. SEE DETAIL BELOW
- ☐ Smooth Aluminum
- ☐ Treadbrite Aluminum Foamed-In-Place

THERMO-KOOL WALK-IN FLOOR PANELS ARE DESIGNED TO WITHSTAND UNIFORMLY DISTRIBUTED STATIONARY LOADS OF 600 LBS. PER SQUARE FOOT. THERMO-KOOL'S WARRANTY DOES NOT COVER DAMAGE DUE TO PALLET JACKS, MOBILE CARTS, MOBILE SHELVING, FORK LIFTS, OR ANY OTHER FORM OF ROLLING TRAFFIC. A CONC. WEARING FLOOR MUST BE INSTALLED ON TOP OF THE WALK-IN FLOOR PANELS FOR THIS APPLICATION.

SECTION FASTENERS-Thermo-Kool cam type Insta-Lok
INSULATION-4" thickness "Foamed-in-place" urethane-DURATHANE CONSTRUCTION CLASS I

◉ OUTDOOR INSTALLATION
- ◉ Vinyl weather roof W/ Facia Bar & Cover
- ◉ Sloped Foam ◉ 520 SQ. FT. OF 4-MIL POLYETHYLENE (BETWEEN SLOPED FOAM & VINYL WEATHERCAP)

~ 19' 3/4" X 30" 3 3/4"

☐ INDOOR INSTALLATION

ELECTRICAL-All wiring contained within the door sections is 115/60/1Ø. Connections to this and all other lights and refrigeration supplied by others.
- ☐ UNEXPOSED CONDUIT - Wiring stubs out top of panels 8"
- ☐ EXPOSED CONDUIT - Wiring terminates in a field service box at top of panels

ENTRANCE DOOR-Flush infitting type with poly vinyl magnetic gasket and vinyl sweep gasket on bottom edge. Heater cables are built in around door opening to prevent frost accumulation and sweating. Ext. has a thermometer, indicating light and toggle switch. Interior has vapor proof light. Hinges are cam action type.
* Door finishes will be the same as adjacent panels unless specified otherwise under Door Accessories.

DOOR SIZE & QTY	HARDWARE	SWING
☐ ( ) 34" x 76"	☐ 1238-C LATCH, (2) 1346 PERFORMER ADJUSTABLE HINGES, DOOR CLOSER	(2 ◉ RH
☐ ( ) 30" x 76"		
◉ (2) 36" x 78"	◉ K-27C DEADBOLT LOCKING HANDLE	☐ LH
	(3) 1346 PERFORMER ADJUSTABLE HINGES, DOOR CLOSER	

◉ DOOR ACCESSORIES
- ◉ (2) 14" x 14" Peep Window(s)W/ HEATED FRAME & GLASS
- ☐ ( ) 14" x 24" Peep Window(s)W/ HEATED FRAME & GLASS

(2) STAINLESS STEEL TO INTERIOR & EXTERIOR OF DOOR, STAINLESS STEEL TO INTERIOR & EXTERIOR OF FRAME
(2) KASON # 1806 LED LIGHT FIXTURE(S) W/ BULBS DOOR FRAME(S)
(2) THERMO-KOOL TK4700 WALK-IN MONITOR SYSTEM W/ TK4-MSS PANIC SWITCH, MOTION DETECTOR, BATTERY BACKUPS, DRY CONTACTS & THERMOSTATICALLY CONTROLLED HEATER WIRES
(2) 1/8" ALUMINUM TREADPLATE INT/EXT KICKPLATES & JAMBGUARDS 36" HIGH
(2) SET(S) OF CCI VINYL DOORS TO FIT THE ABOVE DOOR SIZE
(2) 12 GA. S/S THRESHOLDS
(2) LONG LEADS FOR ALARMS
(1) FREEZER ALARM TO BE MOUNTED AT COOLER DOOR

NOTE: CONDUIT TO TURN AND RUN UP OUTER EDGE OF DOOR FRAME TO AVOID THE SCREWS COMING IN CONTACT W/ CONDUIT DURING INSTALLATION OF CCI DOOR(S)

NOTE: SJ CABLES TO BE MOUNTED ON EXTERIOR SIDE OF DOORS & FRAMES.

NOTE : NO THERMO-KOOL NAME PLATE ON EXTERIOR OF WALK-IN

◉ MISCELLANEOUS EQUIPMENT
- ☐ ( ) Lights (NOT MOUNTED) 1 AMP EACH
- ☐ Interior Floor Ramp
- ☐ Exterior Floor Ramp
- ☐ # 1825 LE Heated Pressure Relief Vent .5 AMPS EACH
- (2 ◉ # 1830 Heated Pressure Relief Vent .5 AMPS EACH
- ☐ # 1832-4 Heated Pressure Relief Vent .5 AMPS EACH
- ☐ Trim & Enclosures (see detail)

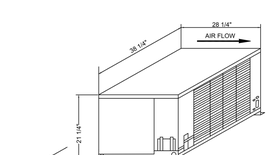
(7) 48" LED LIGHT FIXTURE(S) W/ BULBS (.4 AMPS)
CEILING & FLOOR SPLICE
INTERIOR BEAM W/ CONCEALED POST & (2) EXPOSED POST (SEE DETAIL)
STAINLESS STEEL COVED BASE ON EXPOSED EXTERIOR

(2) ROWS OF VINYL BUMPER RAILS ON EXPOSED EXTERIOR (SHIPPED LOOSE)
(1) FOAMED-IN PLACE 2" X 4" J-BOXES, 115V, 15 AMP DEDICATED CIRCUIT WITH 5-15R WITH CLOSED CELL HINGED COVER BY OTHERS
(4) 3" X 3" STAINLESS STEEL VERTICAL PIECES OF TRIM

REFRIGERATION- ◉ Aircooled ☐ Watercooled ☐ By Others

2 HP MED TEMP RFO200E4AEANT 208-230/60/3Ø W/ (2) RALA6A081ADARSF 208-230/60/1Ø
CONDENSING UNIT AMPS: MCA 15 MOPD 20 (COMPRESSOR RLA: 9.6)
COIL AMPS: 8 EACH
R-404A REFRIGERANT, SCROLL
BTU CAPACITY @ 30°F ROOM TEMP @ 95°F AMBIENT= 16,890
LIQUID LINE SIZE = 1/2"
SUCTION LINE SIZE = 1 1/8"
BASE SIZE = 28 1/2" X 38 1/4" X 21 1/4"H
CONDENSING UNIT WEIGHT: 215 #
HEAT OF REJECTION: 21,957 BTU'S
ECONET 2.0 CONTROL PACKAGE W/ SPORLAN SER

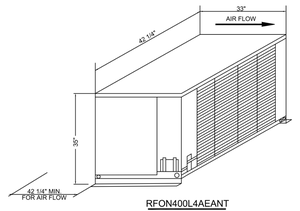
ACCESSORIES: 2 EACH A2L SSOV & CSOV MITIGATION VALVES (SHIPPED LOOSE FOR FIELD INSTALLATION)



RFON200E4AEANT
208-230/60/3Ø

4 HP LOW TEMP RFON400L4AEANT 208-230/60/3Ø W/ RALE6A148DARSF 208-230/60/1Ø
CONDENSING UNIT AMPS: MCA 21.1 MOPD 30 (COMPRESSOR RLA: 11.9)
COIL AMPS: 14.3 EACH
R-454A REFRIGERANT, SCROLL
BTU CAPACITY @ -10°F ROOM TEMP @ 95°F AMBIENT= 14,500
LIQUID LINE SIZE = 1/2"
SUCTION LINE SIZE = 1 1/8"
BASE SIZE = 33" X 42 1/4" X 45"H
CONDENSING UNIT WEIGHT: 305 FULL: 27.4 #
HEAT OF REJECTION: 22,475 BTU'S
ECONET 2.0 CONTROL PACKAGE W/ SPORLAN SER

ACCESSORIES: 1 EACH A2L SSOV & CSOV MITIGATION VALVES (SHIPPED LOOSE FOR FIELD INSTALLATION)



RFON400L4AEANT
208-230/60/3Ø

- ☐ Condensing unit indoor
- ◉ Condensing unit outdoor
- ☐ Side Mounted Self Contained
- ☐ Top Mounted Self Contained
- ☐ Quick Connect ☐ Remote ☐ Top Mounted
- ◉ Prewired, Preassembled Remote

CONTROL KIT-The following controls indicated with a mark are included.
- ◉ Expansion valve
- ◉ Dryer
- ◉ Sight glass
- ◉ Temperature control
- ◉ Pump down solenoid valve
- ☐ Freezer Time Clock
- ◉ Pressure control
- ◉ Suction line vibration eliminator
- ◉ Winter control
- ◉ Crankcase heater
- ◉ Condensing unit cover
- ◉ Coil Mounting Kit

NOTES: Aircooled condensing units should be placed in a well ventilated area with a minimum of 1000 CFM's per/H.P.
Evaporator drain connections by others.
NOTE: THERMO-KOOL recommends a 1" min. clearance between walk-in & building walls.

BC

ITEM # 57, 57.1, 57.2, 57.3, 57.4, 57.5

REVISIONS DESCRIPTION		
DATE	REV. BY	
4-24-2025	DPR	ADDED 8 1/2" DEEP PIT; ADDED SPECIFICATIONS TO J-BOX
8-7-2025	DPR	ADDED A2L REFRIGERATION

NOTE: THIS DRAWING, AND ALL DRAWINGS OR SPECIFICATIONS SUBMITTED BY THERMO-KOOL, AND REPRODUCTIONS THEREOF IN WHOLE OR IN PART SHALL REMAIN THE LEGAL PROPERTY OF MID-SOUTH INDUSTRIES, INC., SUBJECT TO RECALL AT ANY TIME AND SHALL NOT BE USED FOR INSTALLATIONS OR PRODUCTION BY OTHERS EXCEPT BY OUR SPECIAL PERMISSION IN WRITING.

Walk-in panels manufactured under Patent # 6,424,118.

Thermo-Kool®
Mid-South Industries, Inc. P.O. Box 969
Laurel Mississippi 39441 Phone 601-649-4600
FAX 601/649-0558

SUBJECT	
WALK-IN REFRIGERATION	
FOR	
LANSING LEWTON ELEMENTARY SCHOOL	
LANSING, MI.	
DR. BY: DPR	CH. BY:
DWG. NO.: Q45583-43	
DATE: 4-1-2025	SCALE: 3/8"=1'-0"
SHEET NO.: 1 OF 1	

Thermo-Kool®

WALK-IN PANEL

Thermo-Kool/Mid-South Industries, Inc.

R-14781

BUILDING UNITS
1F68

USA
SURFACE BURNING CHARACTERISTICS

MATERIAL DETAILS	FLAME SPREAD	SMOKE DEVELOPED
ALUMINUM PANELS, PAINTED OR UNPAINTED, 5" OR LESS	15	300-400
GALVANIZED OR STAINLESS STEEL PANELS, PAINTED OR UNPAINTED, 5" OR LESS	20	450-OVER 500
CORE MATERIAL, 6" THICK	20	250

CANADA
SURFACE BURNING CHARACTERISTICS / CARACTERISTIQUES DE COMBUSTION SUPERFICIELLE IN ACCORDANCE WITH THE STANDARD / SELON LA NORME CAN/ULC-S102

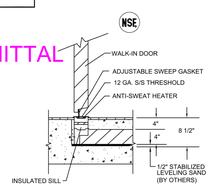
MATERIAL DETAILS / DETAILS DU MATERIAL	FLAME SPREAD / INDICE DE PROPAGATION FLAMME	SMOKE DEVELOPED / INDICE DE DÉVELOPPEMENT DES FUMÉES
ALUMINUM PANELS, PAINTED OR UNPAINTED, 127 MM (5 IN.) THICK OR LESS, PANNEAUX EN ALUMINIUM, PEINTS OU NON PEINTS, 127 MM (5 PO) D'ÉPAISSEUR OU MOINS	10	105
GALVANIZED OR STAINLESS STEEL PANELS, PAINTED OR UNPAINTED, 127 MM (5 IN.) THICK OR LESS, PANNEAUX EN TÔLE GALVANISÉE OU EN ACIER INOXYDABLE, PEINTS OU NON, (5 PO) D'ÉPAISSEUR OU MOINS	5	175
CORE MATERIAL, 150 MM (6 IN.) / MATÉRIAU DE BASE, 150 MM (6 PO)	295	100

COOLER DOOR ELEVATION
DOOR SECTION 4.5 AMPS

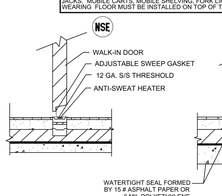
FREEZER DOOR ELEVATION
DOOR SECTION 3.5 AMPS

INTERIOR BEAM WITH CONCEALED POST

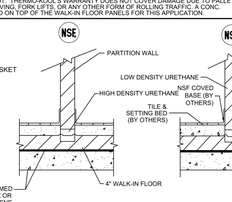
THERMO-KOOL WALK-IN FLOOR PANELS ARE DESIGNED TO WITHSTAND UNIFORM LY DISTRIBUTED STATIONARY LOADS OF 600 LBS. PER SQUARE FOOT. THERMO-KOOL'S WARRANTY DOES NOT COVER DAMAGE DUE TO PALLET JACKS, MOBILE CARTS, MOBILE SHELVING, FORK LIFTS, OR ANY OTHER FORM OF ROLLING TRAFFIC. A CONC. WEARING FLOOR MUST BE INSTALLED ON TOP OF THE WALK-IN FLOOR PANELS FOR THIS APPLICATION.



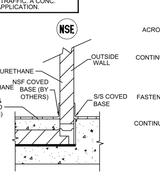
SECTION THRU COOLER DOOR



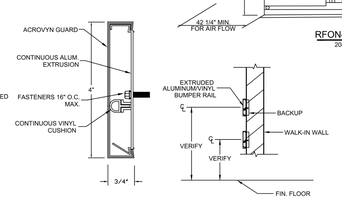
SECTION THRU FREEZER DOOR



SECTION THRU PARTITION WALL



SECTION THRU OUTSIDE WALL



VINYL BUMPER RAILS

*VERIFY LOCATION OF BUMPER RAILS

PULL DOWN RATE TO 45° F IS UNRESTRICTED. AFTER 45 ° F, PULL DOWN RATE SHOULD BE RESTRICTED TO 10° F PER/ 24 HOUR PERIOD.

"THERMO-KOOL WALK-IN COOLERS AND FREEZERS COMPLY WITH 2021 INTERNATIONAL ENERGY CONSERVATION CODE (IECC), SECTION C403.11"

NOT APPROVED
QUOTATION SUBMITTAL
REVISED

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL

Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Design Development	5/1/2025
CD Readi-Check	9/18/2025
Construction Documents	10/10/225

KEY PLAN

N

LSD
JOB 2616.01G

SHEET TITLE
FOODSERVICE WALK-IN DETAILS

SHEET NO.
FS7.1

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MECHANICAL ABBREVIATIONS

ABBREV.	DESCRIPTION
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE
AD	ACCESS DOOR
AE	AIR EXTRACTOR
AFF	ABOVE FINISHED FLOOR
APD	AIR PRESSURE DROP
ASR	AUTOMATIC SPRINKLER RISER
BAS	BUILDING AUTOMATION SYSTEM
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
BWV	BACKWATER VALVE
CA	COMBUSTION AIR
CAP	CAPACITY
CAV	CONSTANT AIR VOLUME
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CIRC	CIRCULATING
CLG	COOLING
CO	CLEAN OUT
CONT	CONTINUATION OR CONTINUED
CONV	CONVECTOR
CUH	CABINET UNIT HEATER
CV	CONTROL VALVE
DB	DRY BULB TEMPERATURE
DEG	DEGREES
DDC	DIRECT DIGITAL CONTROL
DN	DOWN
DTC	DRAIN TILE CONNECTION
DWH	DOMESTIC WATER HEATER
(E)	EXISTING
EA/EXH	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB TEMPERATURE
EF	EXHAUST FAN
EJ	EXPANSION JOINT
EL	ELEVATION
ELECT	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
ESP	EXTERNAL STATIC PRESSURE
EWB	ENTERING WET BULB TEMPERATURE
EWC	ELECTRIC WATER COOLER
°F	DEGREES FAHRENHEIT
FA	FACE AREA (COIL) / FREE AREA (LOUVER)
FC	FLEXIBLE CONNECTION
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHV	FIRE HOSE VALVE
FL	FLUE
FLA	FULL LOAD AMPS
FLR	FLOOR
FPM	FEET PER MINUTE
FFD	FUNNEL FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FS	FLOOR SINK
FT	FEET
FURN	FURNISHED
FV	FACE VELOCITY
FVC	FIRE VALVE CABINET
GAL	GALLON
GCO	GRADE CLEAN OUT
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HB	HOSE BIBB

MECHANICAL ABBREVIATIONS

ABBREV.	DESCRIPTION
HO	HUB OUTLET
HP	HORSEPOWER
HR	HOUR
HTG	HEATING
HYD	HYDRANT
HZ	HERTZ
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCHES
INST	INSTALLED
INV	INVERT
ISP	INTERNAL STATIC PRESSURE
IW	INDIRECT WASTE
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LBS/HR	POUNDS PER HOUR
LDB	LEAVING DRY BULB TEMPERATURE
LRA	LOCKED ROTOR AMPS
LWB	LEAVING WET BULB TEMPERATURE
MAV	MANUAL AIR VENT
MAX	MAXIMUM
MBH	1000 BRITISH THERMAL UNITS PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)
MOP/MOCP	MAXIMUM OVER-CURRENT PROTECTION
N.C.	NOISE CRITERIA
NIC	NOT IN CONTRACT
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NOM	NOMINAL
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER / CENTER TO CENTER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
ORS	OVERFLOW ROOF SUMP
OS&Y	OUTSIDE SCREW AND YOKE
PD	PRESSURE DROP (FEET OF WATER)
PRV	PRESSURE REDUCING VALVE
PSIA	POUNDS PER SQUARE INCH - ABSOLUTE
PSIG	POUNDS PER SQUARE INCH - GAUGE
PT	PRESSURE / TEMPERATURE PORT
RA	RETURN AIR
RH	RELATIVE HUMIDITY
REQD	REQUIRED
REL A	RELIEF AIR
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
RS	ROOF SUMP
SA	SUPPLY AIR
SH	SHOWER
SP	STAIR PRESSURE
SP	STATIC PRESSURE
SqFt / SF	SQUARE FOOT/SQUARE FEET
SS	SERVICE SINK
TC	TEMPERATURE CONTROL
TCC	TEMPERATURE CONTROLS CONTRACTOR
T & P	TEMPERATURE AND PRESSURE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORY

MECHANICAL ABBREVIATIONS

ABBREV.	DESCRIPTION
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
VD	VOLUME DAMPER (MANUALLY ADJUSTABLE)
VTR	VENT THRU ROOF
W	WASTE
W&V	WASTE AND VENT
WB	WET BULB TEMPERATURE
WC	WATER CLOSET
WG	WATER GAUGE
WH	WALL HYDRANT
YCO	YARD CLEAN OUT

MECHANICAL PIPING SYMBOLS

ABBREV.	DESCRIPTION
	PIPE ELBOW UP
	PIPE ELBOW DOWN
	PIPE TEE DOWN
	DIRECTION OF FLOW
	UNION
	STRAINER
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	EXPANSION JOINT
	FLEXIBLE CONNECTION
	PIPE ANCHOR
	PIPE GUIDE
	PIPE CAP OR PLUG
	ISOLATION VALVE
	CIRCULATING PUMP
	GLOBE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	BACKWATER VALVE
	ANGLE VALVE
	CHECK VALVE (SWING)
	CHECK VALVE (SPRING)
	PLUG VALVE
	NEEDLE VALVE
	OUTSIDE SCREW AND YOKE VALVE (OS&Y)
	PRESSURE REGULATING VALVE
	SOLENOID VALVE
	CONTROL VALVE (2-WAY / 3-WAY)
	FAN
	AUTOMATIC GAS SHUT-OFF VALVE
	TRAP (PLAN VIEW)
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW)
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (ELEVATION)
	ROOF SUMP
CO	CLEAN OUT (IN FLOOR)
CO	CLEAN OUT (IN LINE)
WCO	CLEAN OUT (WALL)
BFP	BACKFLOW PREVENTER
M	WATER METER ASSEMBLY
	HOSE BIBB, WALL HYDRANT
	DIRECTION OF PIPE PITCH
	SPRINKLER HEAD (UPRIGHT)
	SPRINKLER HEAD (SIDEWALL)
FS	FLOW SWITCH
	SIAMESE CONNECTION (YARD)
	SIAMESE CONNECTION (WALL MOUNTED)
	FIRE HYDRANT
	FLOW MEASURING DEVICE
	BALANCING VALVE
	COMBINATION FLOW MEASURING AND BALANCING DEVICE
AAV	AUTOMATIC AIR VALVE
MAV	MANUAL AIR VALVE

MECHANICAL SYMBOLS

ABBREV.	DESCRIPTION
	RECTANGULAR TAKE-OFF (SINGLE LINE)
	RECTANGULAR TAKE-OFF (DOUBLE LINE)
	ROUND TAKE-OFF (SINGLE LINE)
	ROUND TAKE-OFF (DOUBLE LINE)
	SPIN-IN FITTING (WITH VOLUME DAMPER)
	ELBOW (WITH TURNING VANES)
	RADIUS RECTANGULAR ELBOW
	RADIUS ROUND ELBOW
	RECTANGULAR ELBOW UP
	ROUND ELBOW UP
	RECTANGULAR ELBOW DOWN
	ROUND ELBOW DOWN
	CONCENTRIC TRANSITION (DOUBLE LINE)
	CONCENTRIC TRANSITION (SINGLE LINE)
	ECCENTRIC TRANSITION (DOUBLE LINE)
	ECCENTRIC TRANSITION (SINGLE LINE)
R	INCLINED RISE IN DIRECTION OF AIR FLOW (DOUBLE LINE)
R	INCLINED RISE IN DIRECTION OF AIR FLOW (SINGLE LINE)
D	INCLINED DROP IN DIRECTION OF AIR FLOW (DOUBLE LINE)
D	INCLINED DROP IN DIRECTION OF AIR FLOW (SINGLE LINE)
	FLEXIBLE CONNECTION
	FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER
	SUPPLY DIFFUSER
	LINEAR SLOT DIFFUSER
	RETURN OR EXHAUST GRILLE
	TRANSFER GRILLE
	CROSS SECTION OF SUPPLY AIR DUCT
	CROSS SECTION OF EXHAUST OR RETURN AIR DUCT
EXISTING / NEW	FIRE DAMPER (HORIZONTAL)
EXISTING / NEW	FIRE DAMPER (VERTICAL)
EXISTING / NEW	SMOKE DAMPER
EXISTING / NEW	COMBINATION FIRE/SMOKE DAMPER (VERTICAL)
EXISTING / NEW	COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)
	VOLUME DAMPER (MANUALLY ADJUSTABLE)
M	MOTORIZED DAMPER
SD	SMOKE DETECTOR
CO2	CO2 SENSOR
T	THERMOSTAT OR TEMPERATURE SENSOR
H	HUMIDISTAT OR HUMIDITY SENSOR
	RETURN OR EXHAUST AIR FLOW / SUPPLY AIR FLOW

PIPING LEGEND

ABBREV.	DESCRIPTION
BCW	BOOSTED DOMESTIC COLD WATER PIPING
DI	DEIONIZED WATER PIPING
CW	DOMESTIC COLD WATER PIPING
NPCW	NON POTABLE COLD WATER PIPING
RO	REVERSE OSMOSIS WATER PIPING
SCW	SOFTENED COLD WATER
HW	DOMESTIC HOT WATER PIPING
HWR	DOMESTIC HOT WATER RECIRCULATION PIPING
NPHW	NON POTABLE HOT WATER PIPING
TW	TEMPERED WATER PIPING
F (DRY)	FIRE PROTECTION DRY PIPING
F	FIRE PROTECTION WET PIPING
F (PRE)	FIRE PROTECTION PRE-ACTION PIPING
CHWR	CHILLED WATER RETURN PIPING
CWR	CONDENSER WATER RETURN PIPING
GXHR	GEO HEAT EXCHANGE RETURN PIPING
HPLR	HEAT PUMP LOOP RETURN PIPING
HHWR	HEATING HOT WATER RETURN PIPING
HPC	HIGH PRESSURE CONDENSATE RETURN PIPING
LPC	LOW PRESSURE CONDENSATE RETURN PIPING
RHWR	RADIANT HEATING WATER RETURN PIPING
PCR	STEAM CONDENSATE PUMPED RETURN PIPING
CR	STEAM CONDENSATE RETURN PIPING
CHWS	CHILLED WATER SUPPLY PIPING
CA	COMPRESSED AIR PIPING
CWS	CONDENSER WATER SUPPLY PIPING
GXHS	GEO HEAT EXCHANGE SUPPLY PIPING
HPLS	HEAT PUMP LOOP SUPPLY PIPING
HHWS	HEATING HOT WATER SUPPLY PIPING
HPS	HIGH PRESSURE STEAM PIPING
LPS	LOW PRESSURE STEAM PIPING
G	NATURAL GAS PIPING
RHWS	RADIANT HEATING WATER SUPPLY PIPING
STM	STEAM PIPING
R	REFRIGERANT PIPING
RL	REFRIGERANT LIQUID PIPING
RS	REFRIGERANT SUCTION PIPING
AW	ACID WASTE PIPING
CD	CONDENSATE DRAIN PIPING
PCD	CONDENSATE DRAIN PUMPED PIPING
DT	DRAIN TILE
GW	GREASE WASTE PIPING
IW	INDUSTRIAL WASTE PIPING
RC	RAIN CONDUCTOR PIPING
ORC	RAIN CONDUCTOR OVERFLOW PIPING
SAN	SANITARY PIPING
PSAN	SANITARY PUMPED PIPING
ST	STORM PIPING
PST	STORM PUMPED PIPING
AV	ACID VENT PIPING
V	VENT PIPING
MV	MEDICAL VACUUM PIPING
VAC	VACUUM PIPING
WAGD	WASTE ANESTHESIA GAS DISPOSAL PIPING
CO2	CARBON DIOXIDE PIPING
H	HELIUM PIPING
IA	INSTRUMENT AIR PIPING
MA	MEDICAL AIR PIPING
N	NITROGEN PIPING
NO	NITROUS OXIDE PIPING
O2	OXYGEN PIPING
OTHER	OTHER PIPING

APPLICABLE CODES AND REGULATIONS

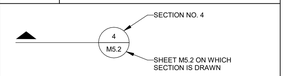
YEAR	CODE
2021	MICHIGAN BUILDING CODE
2021	MICHIGAN REHABILITATION CODE
2021	MICHIGAN PLUMBING CODE
2021	MICHIGAN MECHANICAL CODE
2021	MICHIGAN ENERGY CODE
2015	INTERNATIONAL FIRE CODE
2021	INTERNATIONAL FUEL GAS CODE
2021	NFPA 96
2019	NFPA 13, NFPA 14, NFPA 20
2012	NFPA 101 WITH BFS AMENDMENTS
2017	MICHIGAN ACCESSIBILITY CODE
-	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA-AG)

DRAWING INDEX

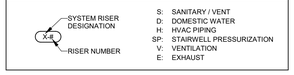
SHEET NO.	DESCRIPTION
M0.0	MECHANICAL GENERAL INFORMATION
FP1.1	FIRE PROTECTION PLAN - UNIT 100
FP1.2	FIRE PROTECTION PLAN - UNIT 200
FP1.3	FIRE PROTECTION PLAN - UNIT 300
FP5.0	FIRE PROTECTION DETAILS & SCHEDULES
P1.UG1	UNDERGROUND PLUMBING PLAN - UNIT 100
P1.UG2	UNDERGROUND PLUMBING PLAN - UNIT 200
P1.UG3	UNDERGROUND PLUMBING PLAN - UNIT 300
P1.1	PLUMBING PLAN - UNIT 100
P1.2	PLUMBING PLAN - UNIT 200
P1.3	PLUMBING PLAN - UNIT 300
P4.0	ENLARGED PLUMBING PLANS
P4.1	ENLARGED KITCHEN PLUMBING PLANS
P5.0	PLUMBING DETAILS
P6.0	PLUMBING SCHEDULES
MH1.1	MECHANICAL HVAC PLAN - UNIT 100
MH1.2	MECHANICAL HVAC PLAN - UNIT 200
MH1.3	MECHANICAL HVAC PLAN - UNIT 300
MP1.1	MECHANICAL PIPING PLAN - UNIT 100
MP1.2	MECHANICAL PIPING PLAN - UNIT 200
MP1.3	MECHANICAL PIPING PLAN - UNIT 300
M1.11	ROOF COMB. MECHANICAL & PLUMBING PLAN - UNIT 100
M1.12	ROOF COMB. MECHANICAL & PLUMBING PLAN - UNIT 200
M1.13	ROOF COMB. MECHANICAL & PLUMBING PLAN - UNIT 300
M4.0	ENLARGED MECHANICAL PLANS
M5.0	MECHANICAL DETAILS
M5.1	MECHANICAL DETAILS
M6.0	MECHANICAL SCHEDULES
M6.1	MECHANICAL SCHEDULES
M7.0	MECHANICAL RISER DIAGRAMS
M8.0	CONTROL DIAGRAMS
M8.1	CONTROL DIAGRAMS
M8.2	CONTROL DIAGRAMS
M8.3	CONTROL DIAGRAMS
M8.4	CONTROL DIAGRAMS
M8.5	CONTROL DIAGRAMS

DRAWING NOTATION

SYMBOL	DESCRIPTION
1	NEW WORK KEY NOTE NO. 1
1	DEMOLITION KEY NOTE NO. 1
EF-1	EQUIPMENT DESIGNATION, (IE: EXHAUST FAN NO. 1)
S-1 8ø 100-2	AIR TERMINAL TAG: IE: DIFFUSER TYPE = S-1 NECK SIZE = 8ø CFM = 100-(TYPICAL FOR 2) S = SUPPLY R = RETURN E = EXHAUST T = TRANSFER
	EXISTING DEVICES OR EQUIPMENT
	NEW OR MODIFIED DEVICES OR EQUIPMENT
	EXISTING SYSTEM COMPONENT TO BE REMOVED
	EXISTING PIPING UNDERGROUND
	NEW PIPING UNDERGROUND
	POINT OF NEW CONNECTION







WATER FLOW TEST DATA

DATE PERFORMED	REPORTED PRESSURES	
	STATIC	RESIDUAL
01-13-2025	53.4 PSI @ 6,399 GPM	20.8 PSI @ 6,399 GPM

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STATE OF MICHIGAN
STEVEN R. DIBERARDINE
ENGINEER
No. 6201041574
LICENSED PROFESSIONAL ENGINEER
10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
MECHANICAL GENERAL INFORMATION

SHEET NO.
M0.0

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FIRE PROTECTION GENERAL NOTES

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2. CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF ALL OTHER TRADES. SPRINKLER PIPING SHALL NOT BE LOCATED BELOW MECHANICAL EQUIPMENT.
3. MINIMUM RUN-OUT PIPE SIZE TO SPRINKLER HEADS SHALL BE 1".
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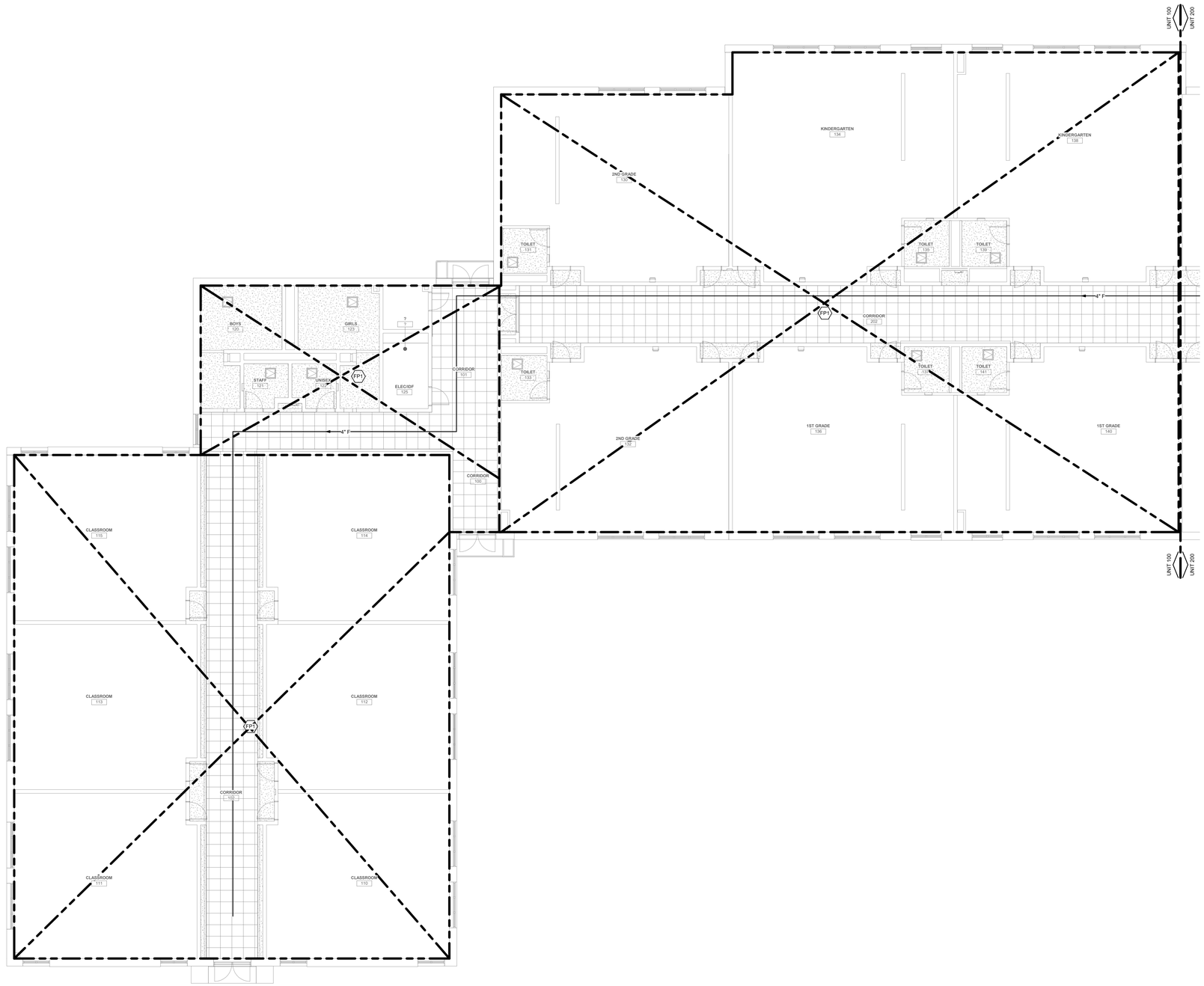

FIRE PROTECTION PLAN - UNIT 100
SCALE: 1/8" = 1'-0"

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STATE OF MICHIGAN
STEVEN R. DIBERARDINE
ENGINEER
No. 6201041574
LICENSED PROFESSIONAL ENGINEER
10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

KEY PLAN
LSD NO. SB-0064
JOB NO. 2616.01G
N

SHEET TITLE
FIRE PROTECTION PLAN - UNIT 100

SHEET NO.
FP1.1

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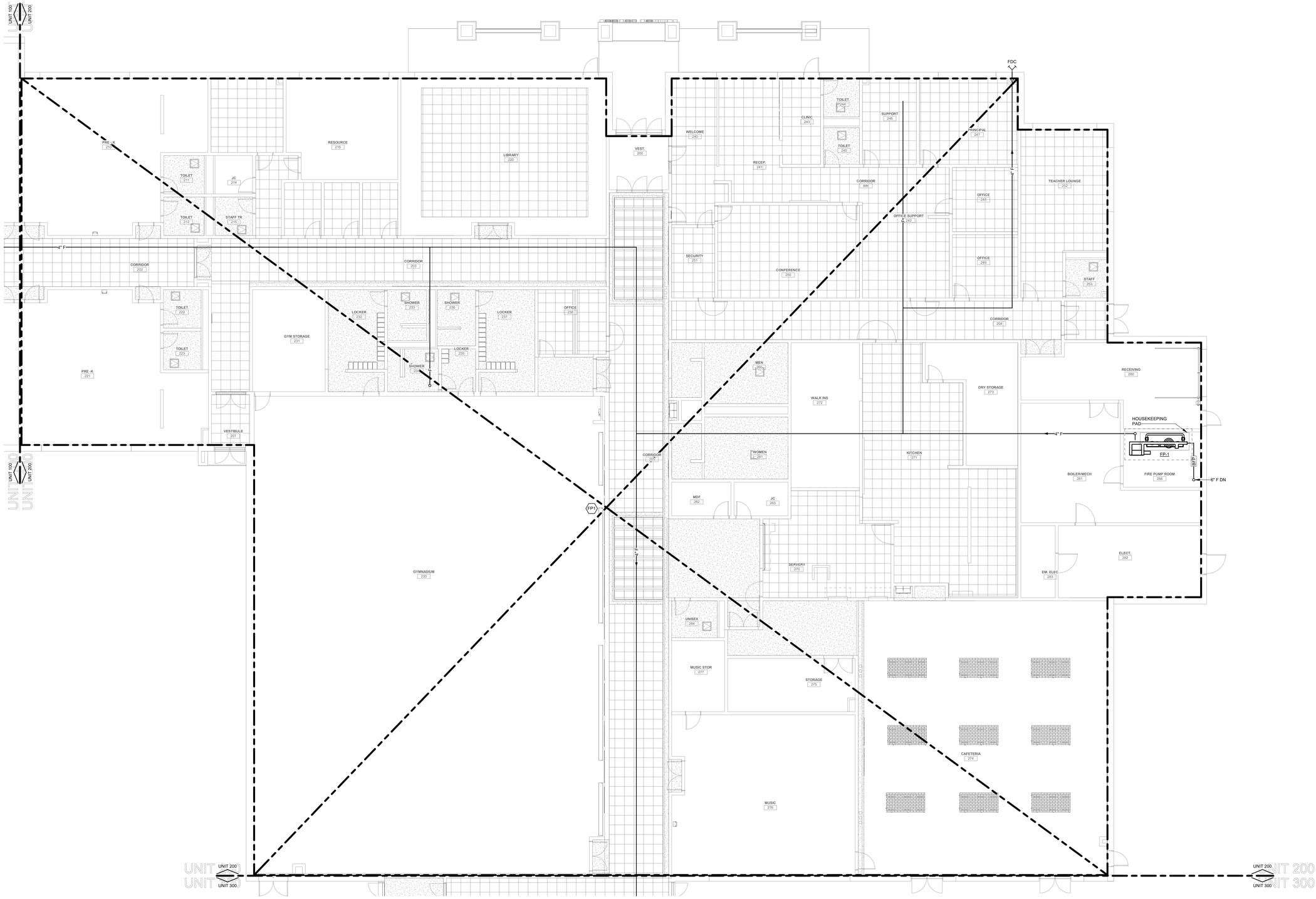

FIRE PROTECTION PLAN - UNIT 200
SCALE: 1/8" = 1'-0"

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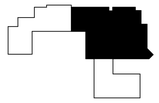
STEVEN R. DIBERARDINE
ENGINEER
No. 6201041574
LICENSED PROFESSIONAL ENGINEER
10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025



KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

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SHEET TITLE
FIRE PROTECTION PLAN - UNIT 200

SHEET NO.
FP1.2

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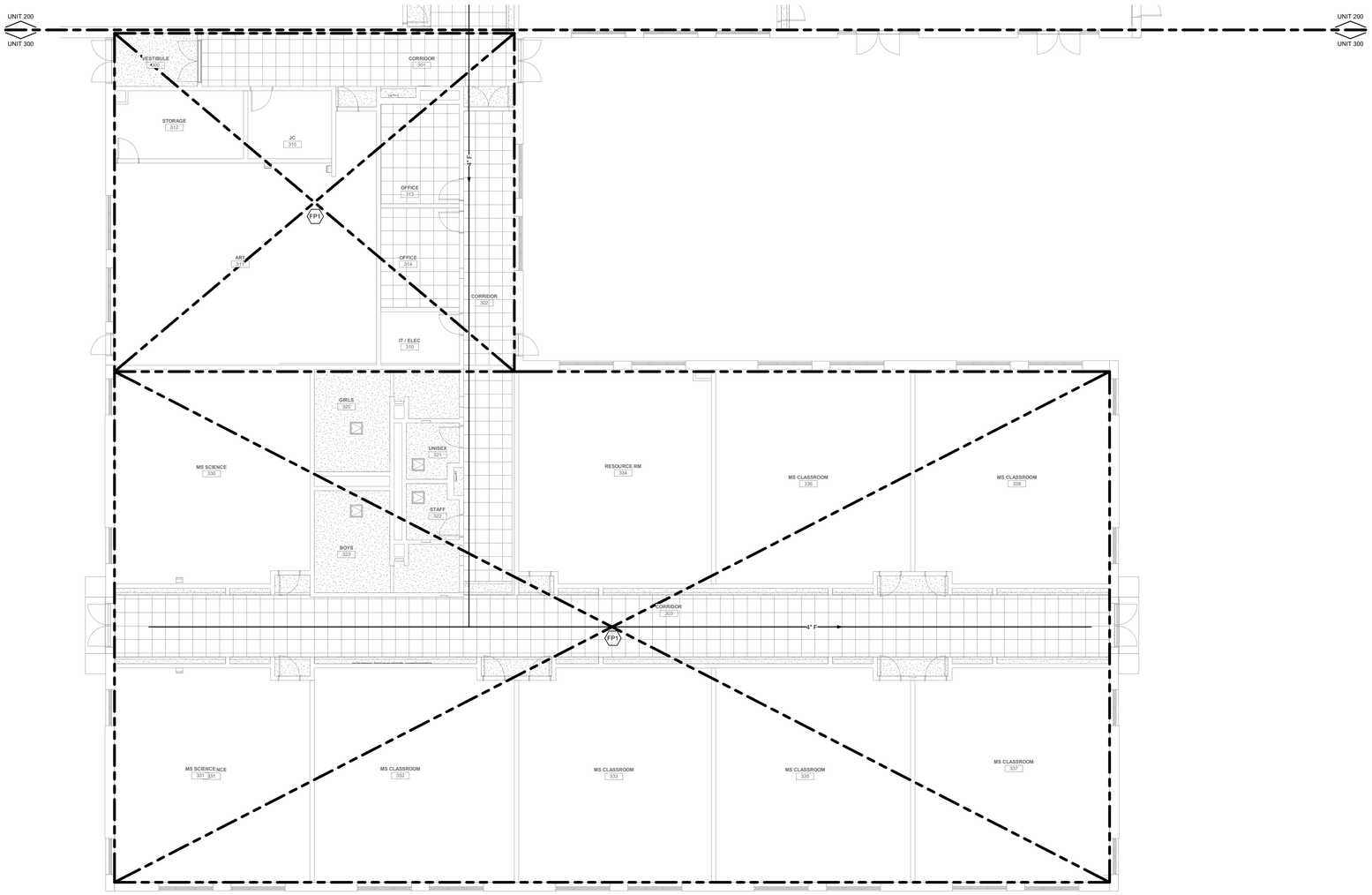

FIRE PROTECTION PLAN - UNIT 300
SCALE: 1/8" = 1'-0"

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LICENSED PROFESSIONAL ENGINEER
10/10/2025

Lansing School District

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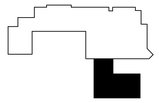

KEY PLAN
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JOB NO. 2616.01G
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SHEET TITLE
FIRE PROTECTION PLAN - UNIT 300

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FP1.3

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FIRE PROTECTION HYDRAULIC DESIGN CRITERIA

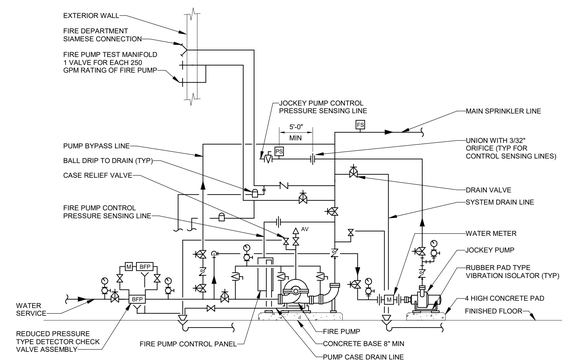
OCCUPANCY	HAZARD CLASSIFICATION	REMOTE AREA (SQUARE FEET)	DENSITY (GPM PER SQ. FT.)	REMARKS
CLASSROOMS, PUBLIC SPACES, LOBBIES, CORRIDORS, OFFICES, LOUNGES, MEETING ROOMS, GUEST ROOMS, RESTAURANTS, ETC..., CEILING SPACES WITH COMBUSTIBLE MATERIALS.	LIGHT HAZARD	1500 (OR 5 HEADS MINIMUM)	0.10	USE QUICK RESPONSE SPRINKLERS
MECHANICAL ROOMS, ELECTRICAL ROOMS, EQUIPMENT ROOMS, KITCHENS, FOOD SERVICE AREAS, LAUNDRY, ELEVATOR PITS, MAINTENANCE ROOMS, STORAGE ROOMS	ORDINARY HAZARD GROUP 1	1500 (OR 5 HEADS MINIMUM)	0.15	USE QUICK RESPONSE SPRINKLERS
FIRE PUMP ROOM	ORDINARY HAZARD GROUP 1	1500 (OR 5 HEADS MINIMUM)	0.15	USE QUICK RESPONSE SPRINKLERS

NOTES:
1. DESIGN AND DESIGN CRITERIA SHALL BE PER NFPA.
2. MAXIMUM AREA PER HEAD CAN BE 400 SF, WHERE EXTENDED COVERAGE HEADS ARE ALLOWED AND UTILIZED.

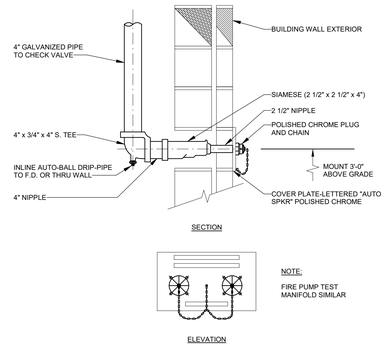
FIRE PUMP SCHEDULE

UNIT ID	FLOW (GPM)	ESTIMATED HEAD (PSI)	ELECTRICAL			DISCONNECT/STARTER/CONTROL PANEL				MANUFACTURER / MODEL NO.	REMARKS
			HP	VOLTS	PHASE	TYPE	FURN. BY	INST. BY	CONNECT BY		
FP-1	500	40.00	20	480	3	CONTROL PANEL	MFR	DIV 26	DIV 21	AC FIRE PUMP / 4x4x7F	INLINE FIRE PUMP

NOTES:
1. FIRE PUMP PACKAGE SHALL INCLUDE 1.5 HP JOCKEY PUMP, JP-1, 480/V, 3PH SIMILAR TO GOULDS 1SV14.
2. THIS IS AN ESTIMATED HEAD PRESSURE. CONTRACTOR TO PROVIDE HYDRAULIC CALCULATIONS TO CONFIRM, BASED ON AN AUTOMATIC SPRINKLER SYSTEM.
3. MOUNT BOTH PUMPS ON 4" HOUSEKEEPING PAD.
4. FIRE PROTECTION CONTRACTOR TO PROVIDE FIRE PUMP AND JOCKEY PUMP CONTROLLERS AND DISCONNECTS. COORDINATE WITH ELECTRICAL AND FIRE ALARM CONTRACTOR. CONTROL PANELS SHALL COME WITH AUTOMATIC TRANSFER SWITCHES. STARTERS SHALL BE SOFT START AND FULL SERVICE TYPE.
5. MFR TO PROVIDE STAINLESS STEEL SUCTION AND DISCHARGE GAUGES, AIR RELEASE VALVE, UL LISTED CASING RELIEF VALVE, HOSE VALVE AND HEADER WITH HOSE VALVES, CAPS AND CHAINS (LOCAL THREADS) AND CLAVAL PUMP SUCTION CONTROL VALVE WITH 150# FLANGES.



FIRE AND JOCKEY PUMP PIPING DIAGRAM
NO SCALE



FIRE DEPARTMENT CONNECTION DETAIL
NO SCALE

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SHEET TITLE
FIRE PROTECTION DETAILS & SCHEDULES

SHEET NO.
FP5.0

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PLUMBING KEYNOTES

P1 PROVIDE ZURN Z9A-PHIX CARTRIDGE ACID NEUTRALIZATION KIT OR EQUAL EQUIVALENT FOR SINK. INSTALL NEUTRALIZATION KIT ON SINK SANITARY OUTLET IN LIEU OF P-TRAP.
P2 PROVIDE WATTS PWDWHCL1 LEAD FILTRATION SYSTEM AND MOUNT UNDER SINK. COORDINATE LOCATION WITH ARCH AND OTHER TRADES PRIOR TO INSTALLING. COLD WATER PIPING TO BE ROUTED THROUGH FILTER BEFORE CONNECTING TO FAUCET.
P3 ROUTE 1/2" H&CW, 1-1/2" V, AND 1-1/2" SAN AND CONNECT TO LAVATORY. PROVIDE POINT-OF-USE THERMOSTATIC MIXING VALVE.
P4 ROUTE 1" CW, 2" V, AND 4" SAN AND CONNECT TO WATER CLOSET.
P5 ROUTE 1/2" H&CW, 2" V, AND 2" SAN AND CONNECT TO SINK. PROVIDE POINT-OF-USE THERMOSTATIC MIXING VALVE.
P6 ROUTE 3/4" H&CW, 2" V, AND 3" SAN AND CONNECT TO FLOOR MOUNTED SERVICE SINK.
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P8 ROUTE 3/4" CW, 3/4" HW, 2" V, AND 2" SAN AND CONNECT TO LAVATORY. CONNECT 1/2" H&CW TO EACH FAUCET. PROVIDE POINT-OF-USE THERMOSTATIC MIXING VALVE TO EACH FAUCET.
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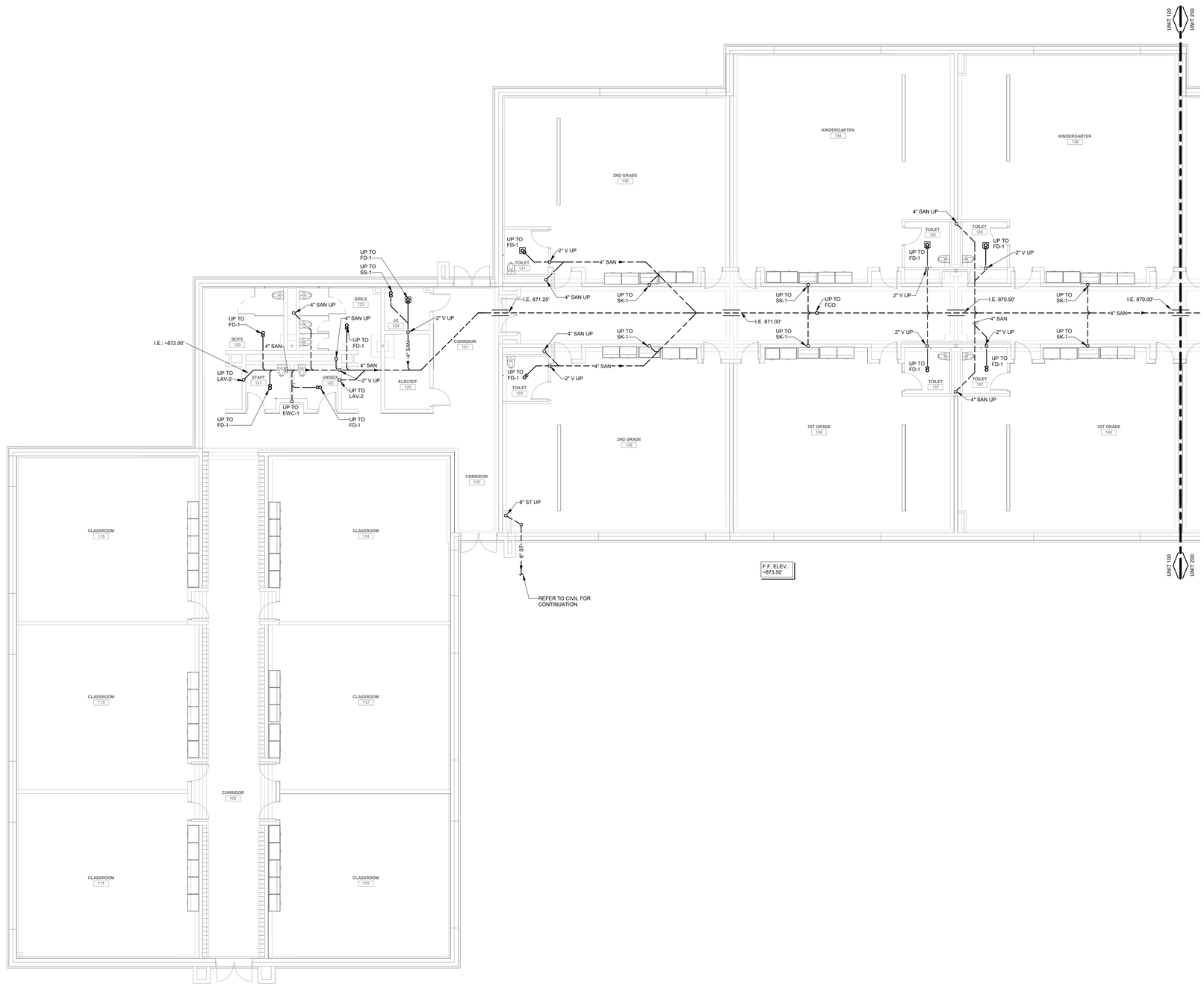

UNDERGROUND PLUMBING PLAN - UNIT 100
SCALE: 1/8" = 1'-0"

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SES Project # 23 0588 03

Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

STATE OF MICHIGAN
STEVEN R. DIBERARDINE
ENGINEER
No. 6201041574
LICENSED PROFESSIONAL ENGINEER

10/10/2025

Lansing® School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

N

SHEET TITLE

UNDERGROUND PLUMBING PLAN - UNIT 100

SHEET NO.

P1.UG1

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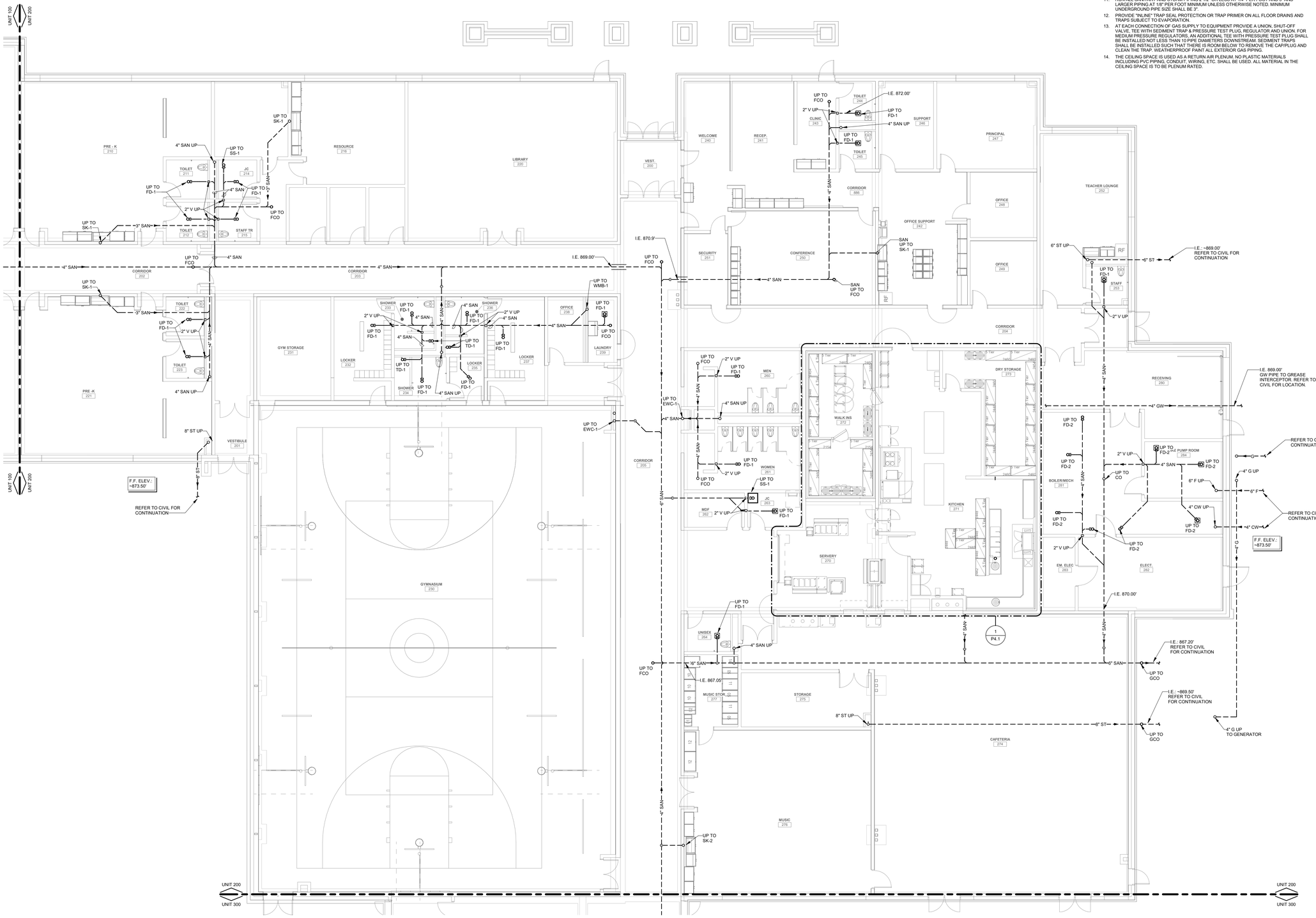

UNDERGROUND PLUMBING PLAN - UNIT 200
SCALE: 1/8" = 1'-0"

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4000 W. Eleven Mile Road Berkley, MI 48072
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SES Project # 23 0588 03

Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

STATE OF MICHIGAN
STEVEN R. DIBERARDINE
ENGINEER
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LICENSED PROFESSIONAL ENGINEER
10/10/2025

Lansing School District

ISSUANCES	DATE
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KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
UNDERGROUND PLUMBING PLAN - UNIT 200

SHEET NO.
P1.UG2

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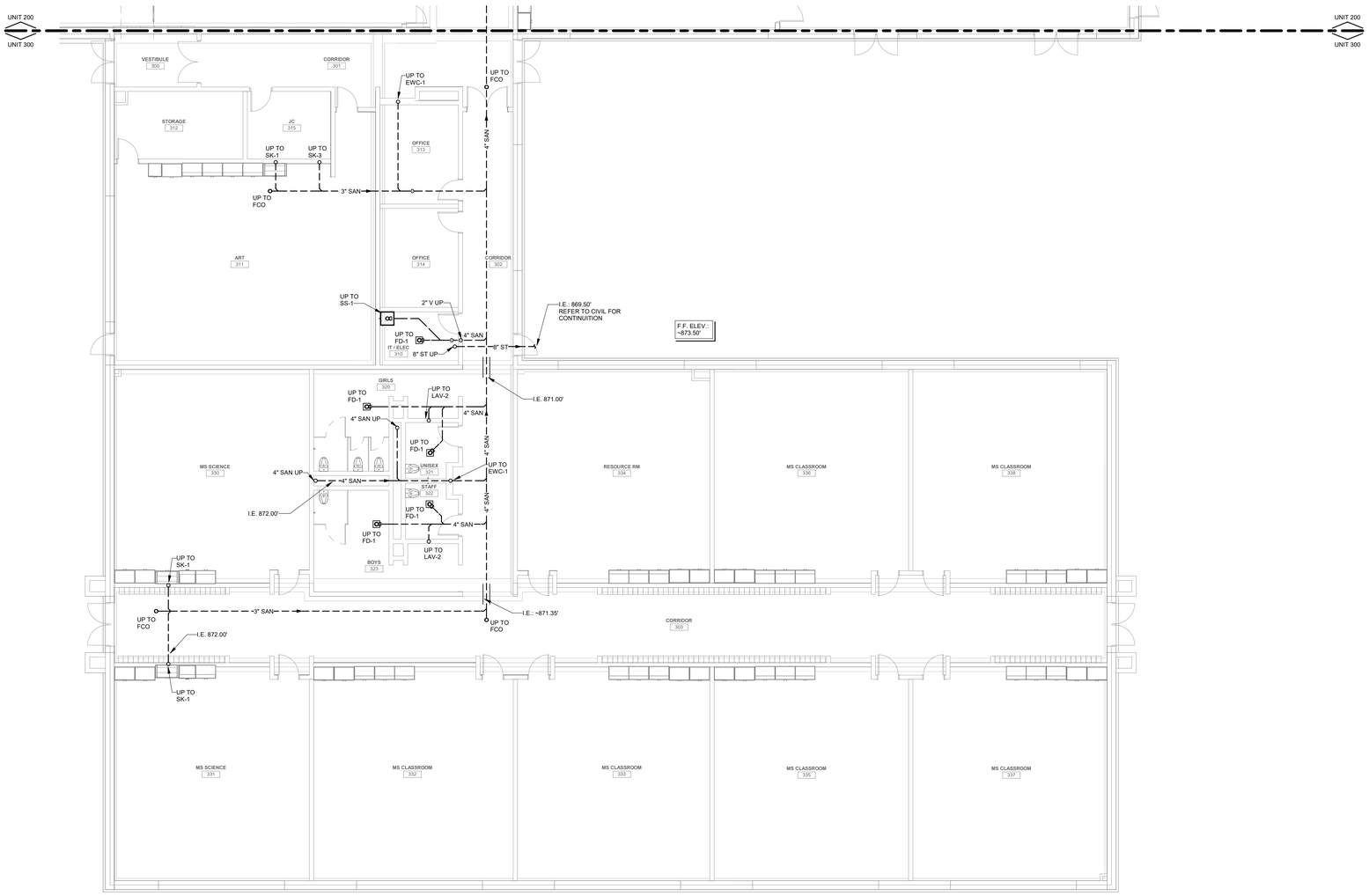

UNDERGROUND PLUMBING PLAN - UNIT 300
SCALE: 1/8" = 1'-0"

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SES Project # 23 0588 03

Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

STATE OF MICHIGAN
STEVEN R. DIBERARDINE
ENGINEER
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10/10/2025

Lansing School District

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KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

N

SHEET TITLE

UNDERGROUND PLUMBING PLAN - UNIT 300

SHEET NO.

P1.UG3

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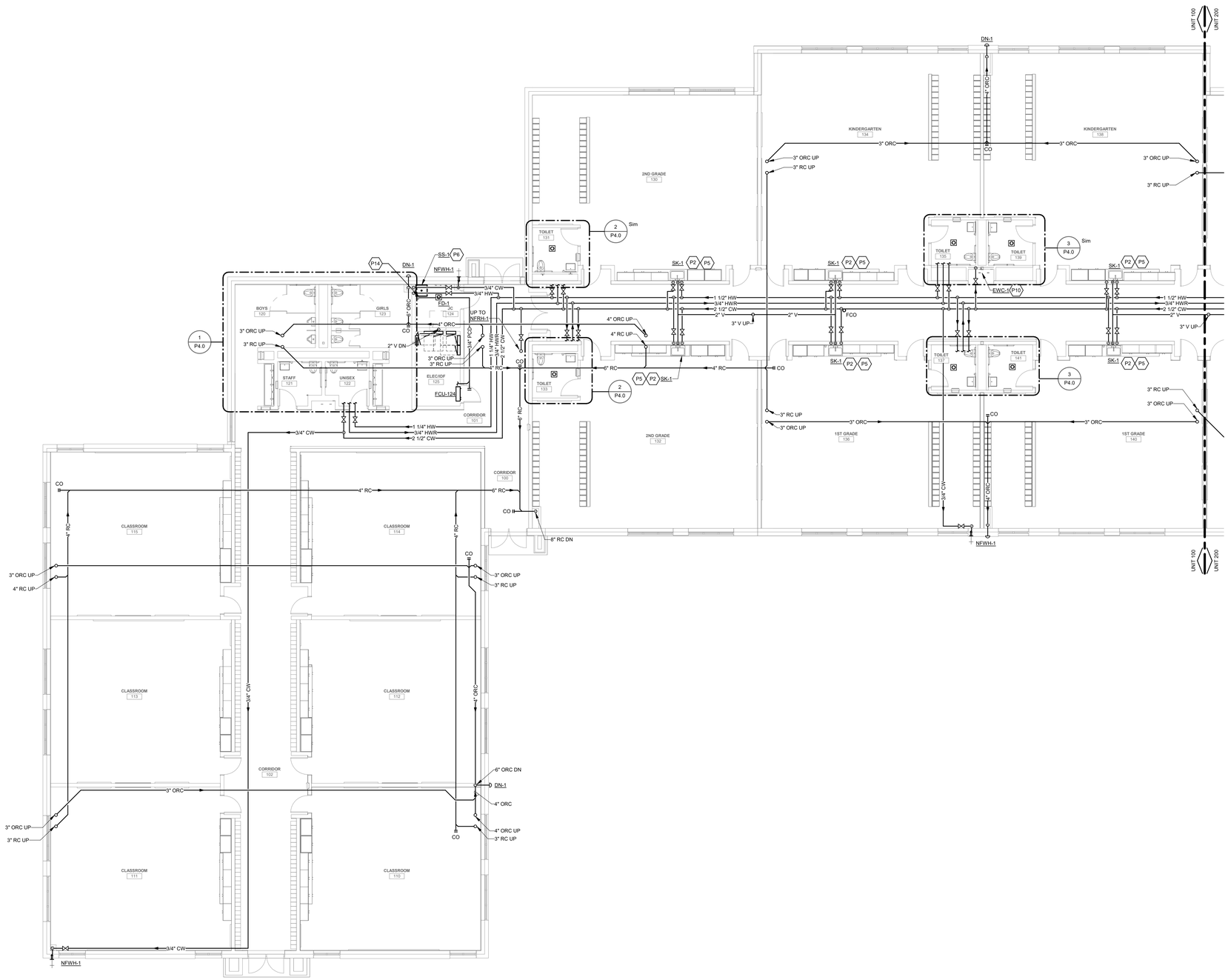

PLUMBING PLAN - UNIT 100
SCALE: 1/8" = 1'-0"

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STATE OF MICHIGAN
STEVEN R. DIBIAGGIO
ENGINEER
No. 6201041574
LICENSED PROFESSIONAL ENGINEER
10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

KEY PLAN
LSD NO. SB-0064
JOB NO. 2616.01G
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SHEET TITLE
PLUMBING PLAN - UNIT 100

SHEET NO.
P1.1

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PLUMBING KEYNOTES

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P14 ROUTE CONDENSATE DOWN WALL AND TERMINATE OVER MOP BASIN OR FLOOR DRAIN WITH CODE REQUIRED AIR GAP.
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PLUMBING PLAN - UNIT 200
SCALE: 1/8" = 1'-0"

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10/10/2025

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SHEET TITLE
PLUMBING PLAN - UNIT 200

SHEET NO.
P1.2

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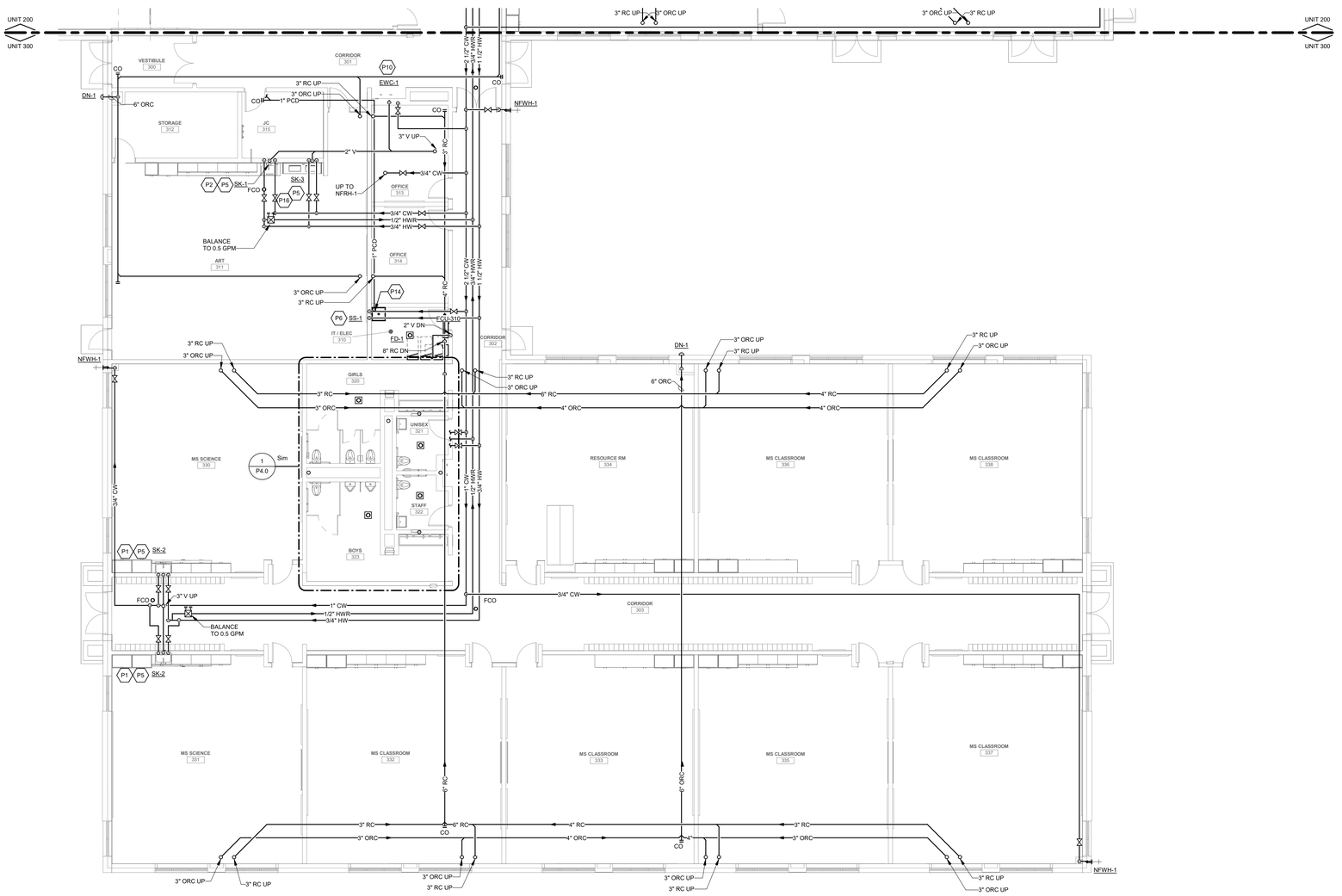

PLUMBING PLAN - UNIT 300
SCALE: 1/8" = 1'-0"

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Lewton School

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2000 Lewton Pl.
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KEY PLAN

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SHEET TITLE
PLUMBING PLAN - UNIT 300

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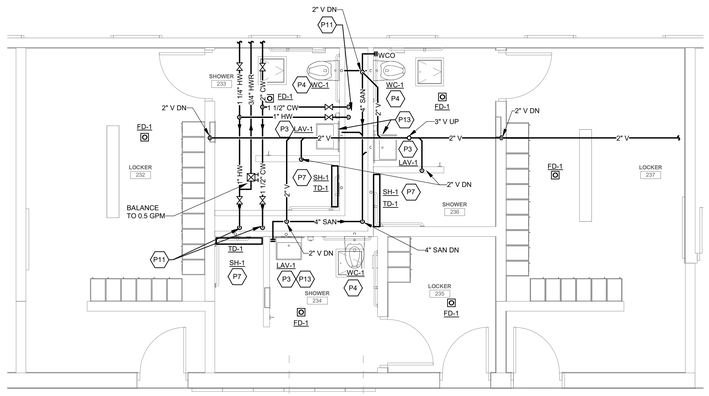
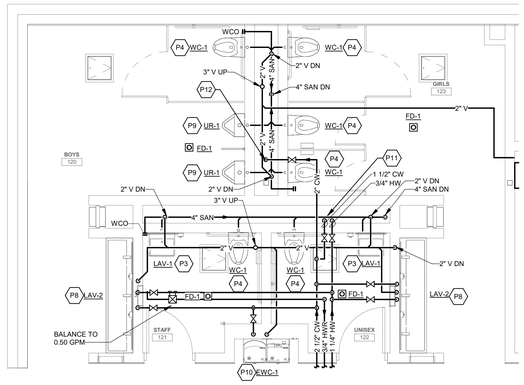
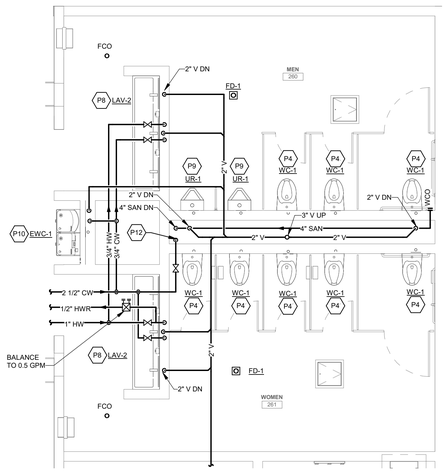


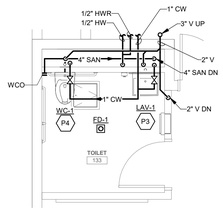
5 P1.2 ENLARGED LOCKER ROOMS
SCALE: 1/4" = 1'-0"



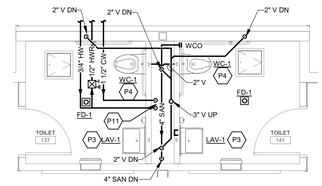
1 P1.1 ENLARGED TYPICAL TOILET ROOMS - UNIT 100 & UNIT 300
SCALE: 1/4" = 1'-0"



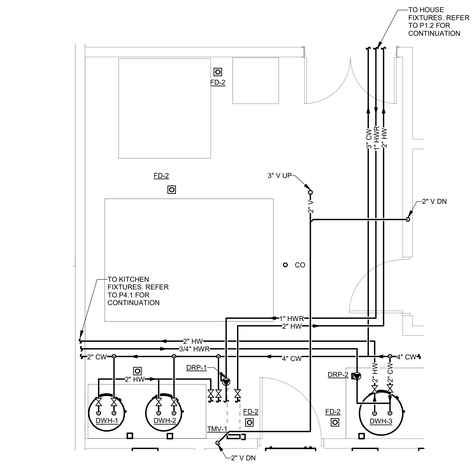
7 P1.2 ENLARGED TOILET ROOMS - UNIT 200
SCALE: 1/4" = 1'-0"



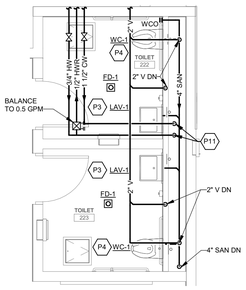
2 P1.1 ENLARGED TYPICAL SINGLE TOILET ROOM
SCALE: 1/4" = 1'-0"



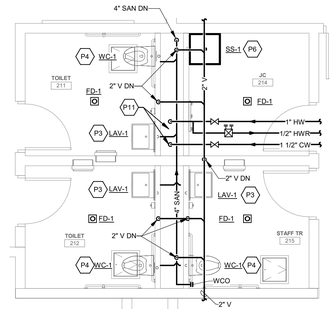
3 P1.1 ENLARGED TYPICAL DOUBLE TOILET ROOMS
SCALE: 1/4" = 1'-0"



8 P1.2 ENLARGED BOILER ROOM PLUMBING PLAN
SCALE: 1/4" = 1'-0"



6 P1.2 ENLARGED TOILET ROOMS 222 & 223
SCALE: 1/4" = 1'-0"



4 P1.2 ENLARGED TOILET ROOMS AND JC
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P3 ROUTE 1/2" H&CW, 1-1/2" V, AND 1-1/2" SAN AND CONNECT TO LAVATORY. PROVIDE POINT-OF-USE THERMOSTATIC MIXING VALVE.
P4 ROUTE 1" CW, 2" V, AND 4" SAN AND CONNECT TO WATER CLOSET.
P5 ROUTE 1/2" H&CW, 2" V, AND 2" SAN AND CONNECT TO SINK. PROVIDE POINT-OF-USE THERMOSTATIC MIXING VALVE.
P6 ROUTE 3/4" H&CW, 2" V, AND 3" SAN AND CONNECT TO FLOOR MOUNTED SERVICE SINK.
P7 ROUTE 1/2" H&CW AND CONNECT TO SHOWER HEAD.
P8 ROUTE 3/4" CW, 3/4" HW, 2" V, AND 2" SAN AND CONNECT TO LAVATORY. CONNECT 1/2" H&CW TO EACH FAUCET. PROVIDE POINT-OF-USE THERMOSTATIC MIXING VALVE TO EACH FAUCET.
P9 ROUTE 3/4" CW, 1-1/2" V, AND 2" SAN AND CONNECT TO URINAL.
P10 ROUTE 1/2" CW, 1-1/2" V, AND 1-1/2" SAN AND CONNECT TO ELECTRIC WATER COOLER.
P11 ROUTE X" CW & HW DOWN BEHIND CHASE WALL AND CONNECT TO PLUMBING FIXTURES.
P12 ROUTE X" CW DOWN BEHIND CHASE WALL AND CONNECT TO PLUMBING FIXTURES.
P13 PROVIDE WATER SAVER TRAP PRIMER FROM LAVATORY SINK TO SHOWER TRENCH DRAIN.
P14 ROUTE CONDENSATE DOWN WALL AND TERMINATE OVER MOP BASIN OR FLOOR DRAIN WITH CODE REQUIRED AIR GAP.
P15 ROUTE 1/2" CW, 1/2" HW, 1 1/2" V, AND 2" SAN AND CONNECT TO WASHING MACHINE BOX.
P16 PROVIDE STREM USI-1180 CLAY TRAP WITH REMOVABLE BUCKET AND FILTER IN PLACE OF A P-TRAP.

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STATE OF MICHIGAN
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ENGINEER
No. 6201041574
LICENSED PROFESSIONAL ENGINEER
10/10/2025

Lansing School District

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SHEET TITLE
ENLARGED PLUMBING PLANS

SHEET NO.
P4.0

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PLUMBING KEYNOTES

P1 PROVIDE ZURN Z9A-PHIX CARTRIDGE ACID NEUTRALIZATION KIT OR EQUAL EQUIVALENT FOR SINK. INSTALL NEUTRALIZATION KIT ON SINK SANITARY OUTLET IN LIEU OF P-TRAP.
P2 PROVIDE WATTS PWOWHO-L1 LEAD FILTRATION SYSTEM AND MOUNT UNDER SINK. COORDINATE LOCATION WITH ARCH AND OTHER TRADES PRIOR TO INSTALLING. COLD WATER PIPING TO BE ROUTED THROUGH FILTER BEFORE CONNECTING TO FAUCET.
P3 ROUTE 1/2" H&CW, 1-1/2" V, AND 1-1/2" SAN AND CONNECT TO LAVATORY. PROVIDE POINT-OF-USE THERMOSTATIC MIXING VALVE.
P4 ROUTE 1" CW, 2" V, AND 4" SAN AND CONNECT TO WATER CLOSET.
P5 ROUTE 1/2" H&CW, 2" V, AND 2" SAN AND CONNECT TO SINK. PROVIDE POINT-OF-USE THERMOSTATIC MIXING VALVE.
P6 ROUTE 3/4" H&CW, 2" V, AND 3" SAN AND CONNECT TO FLOOR MOUNTED SERVICE SINK.
P7 ROUTE 1/2" H&CW AND CONNECT TO SHOWER HEAD.
P8 ROUTE 3/4" CW, 3/4" HW, 2" V, AND 2" SAN AND CONNECT TO LAVATORY. CONNECT 1/2" H&CW TO EACH FAUCET. PROVIDE POINT-OF-USE THERMOSTATIC MIXING VALVE TO EACH FAUCET.
P9 ROUTE 3/4" CW, 1-1/2" V, AND 2" SAN AND CONNECT TO URINAL.
P10 ROUTE 1/2" CW, 1-1/2" V, AND 1-1/2" SAN AND CONNECT TO ELECTRIC WATER COOLER.
P11 ROUTE X" CW & HW DOWN BEHIND CHASE WALL AND CONNECT TO PLUMBING FIXTURES.
P12 ROUTE X" CW DOWN BEHIND CHASE WALL AND CONNECT TO PLUMBING FIXTURES.
P13 PROVIDE WATER SAVER TRAP PRIMER FROM LAVATORY SINK TO SHOWER TRENCH DRAIN.
P14 ROUTE CONDENSATE DOWN WALL AND TERMINATE OVER MOP BASIN OR FLOOR DRAIN WITH CODE REQUIRED AIR GAP.
P15 ROUTE 1/2" CW, 1/2" HW, 1 1/2" V, AND 2" SAN AND CONNECT TO WASHING MACHINE BOX.
P16 PROVIDE STRIEM USI-1180 CLAY TRAP WITH REMOVABLE BUCKET AND FILTER IN PLACE OF A P-TRAP.

FOOD SERVICE KEYNOTES

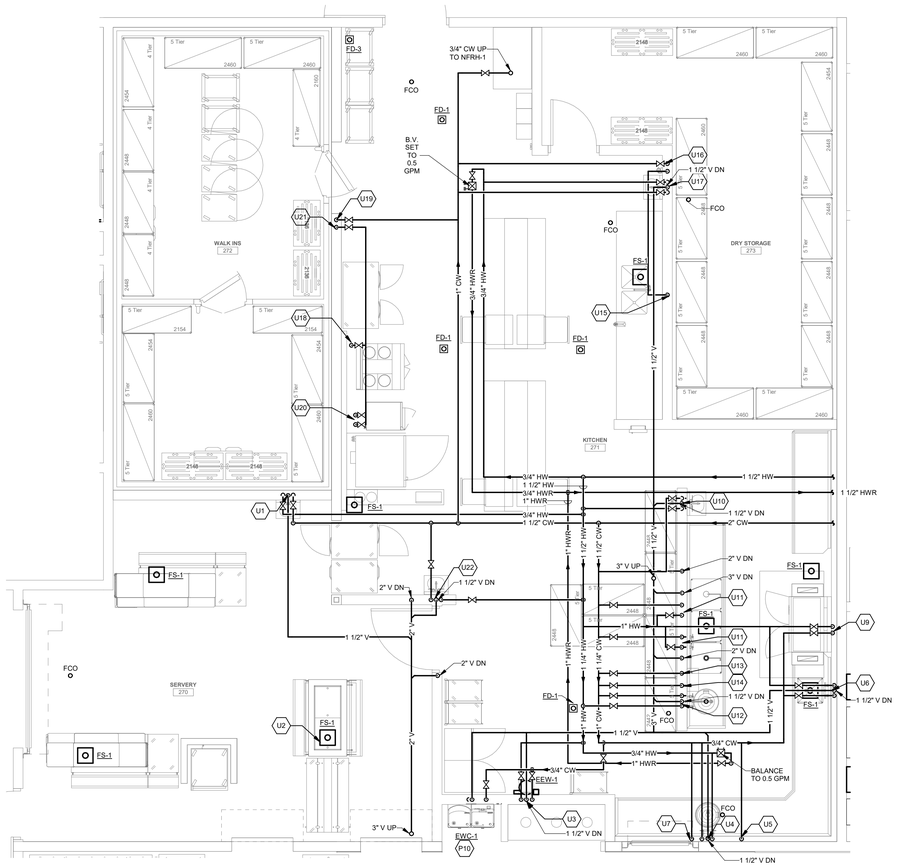
U1 FSE-7: ROUTE 1/2" CW & HW DOWN IN WALL, AND 1-1/2" SAN UP TO HAND SINK. PROVIDE POINT-OF-USE THERMOSTATIC MIXING VALVE.
U2 FSE-13: ROUTE INDIRECT WASTE FROM MILK COOLER TO FLOOR SINK.
U3 FSE-16: ROUTE 1/2" CW & HW DOWN IN WALL TO TMV-2. 1/2" TW TO EYEWASH STATION. 2" SAN UP TO EYEWASH STATION.
U4 FSE-23.1: ROUTE 1/2" CW & HW DOWN IN WALL TO PRE-RINSE FAUCET.
U5 FSE-23.2: ROUTE 1/2" CW TO SANITIZER.
U6 FSE-23.3: ROUTE 1/2" CW & HW DOWN IN WALL TO PRE-RINSE FAUCET. 2" INDIRECT WASTE TO FLOOR SINK.
U7 FSE-27: ROUTE 1/2" CW DOWN IN WALL TO DISPOSER, AND 2" SAN UP TO DISPOSER.
U8 FSE-30: ROUTE 4" SAN TO FLOOR TROUGH OUTLET.
U9 FSE-31: ROUTE 1/2" CW & HW DOWN IN WALL TO DISHWASHER. ROUTE 2" INDIRECT WASTE TO NEAREST FLOOR SINK.
U10 FSE-34: ROUTE 1/2" CW & HW DOWN IN WALL, AND 1-1/2" SAN UP TO HAND SINK. PROVIDE POINT-OF-USE THERMOSTATIC MIXING VALVE.
U11 FSE-36: ROUTE 1/2" CW & HW DOWN IN WALL TO 3-COMPARTMENT SINK FAUCETS. 2" SAN UP TO 1ST COMPORTMENT OF SINK. 2ND AND 3RD COMPARTMENTS OF SINK: 2" INDIRECT WASTE TO FLOOR SINK.
U12 FSE-36.1: ROUTE 1/2" CW & HW DOWN IN WALL TO PRE-RINSE FAUCET. 2" INDIRECT WASTE TO FLOOR SINK.
U13 FSE-36.4: ROUTE 1/2" CW TO SANITIZER.
U14 FSE-39: ROUTE 1/2" CW DOWN IN WALL TO DISPOSER, AND 2" SAN UP TO DISPOSER.
U15 FSE-42.1: ROUTE 1/2" FILTERED CW DOWN IN WALL TO FAUCET. 2" INDIRECT WASTE TO FLOOR SINK.
U16 FSE-42.2: ROUTE 3/4" CW TO FILTRATION SYSTEM. PLUMB FROM FILTRATION SYSTEM TO ALL LOCATIONS. SEE FSE DRAWINGS FOR FIXTURE LOCATIONS.
U17 FSE-48: ROUTE 1/2" CW & HW DOWN IN WALL, AND 1-1/2" SAN UP TO HAND SINK. PROVIDE POINT-OF-USE THERMOSTATIC MIXING VALVE.
U18 FSE-48: ROUTE 1/2" FILTERED CW TO FILLER FAUCET.
U19 FSE-68.1: ROUTE 3/4" CW TO FILTRATION SYSTEM. PLUMB FROM FILTRATION SYSTEM TO ALL LOCATIONS. SEE FSE DRAWINGS.
U20 FSE-71: ROUTE (2) 3/4" FILTERED WATER TO CONVECTION STEAMER. 2" INDIRECT WASTE TO FLOOR SINK.
U21 FSE-71.1: ROUTE 3/4" CW TO FILTRATION SYSTEM. PLUMB FROM FILTRATION SYSTEM TO ALL LOCATIONS. SEE FSE DRAWINGS.
U22 FSE-74: 1/2" CW & HW DOWN IN WALL, AND 1-1/2" SAN UP TO HAND SINK. PROVIDE

FOOD SERVICE GENERAL NOTES

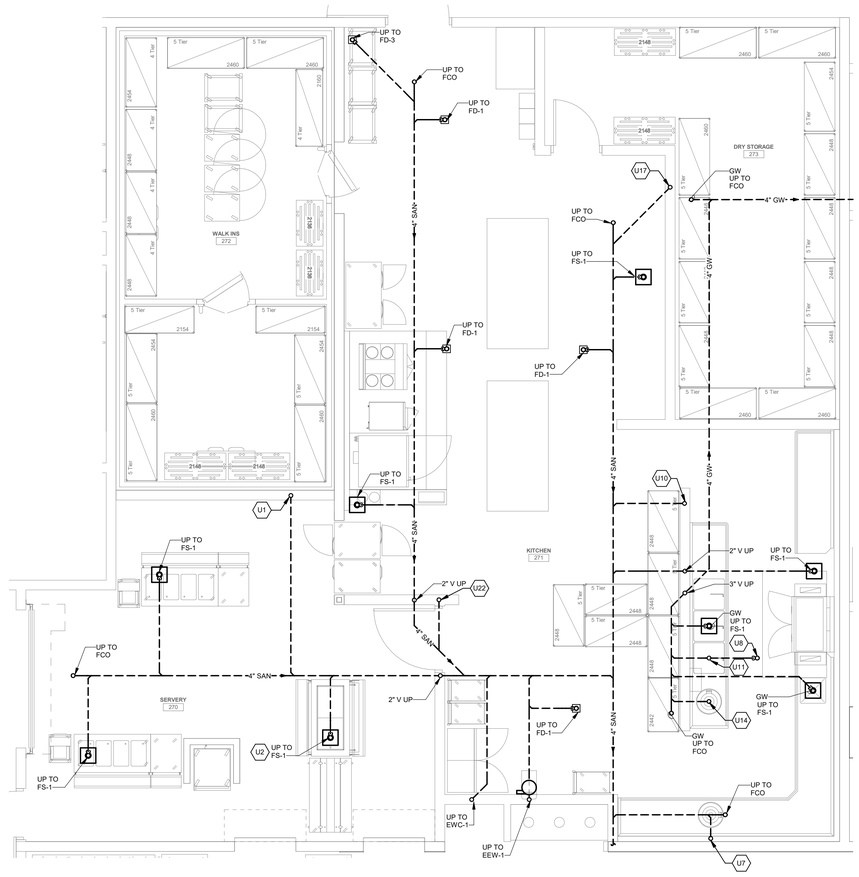
1. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH STATE OF MICHIGAN AND INGHAM COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS. PROVIDE AND INSTALL APPROVED BACKFLOW PREVENTERS ON ALL WATER LINES TO FOOD SERVICE EQUIPMENT. CONTRACTOR SHALL PROVIDE ALL REQUIRED VACUUM BREAKERS NOT ALREADY SUPPLIED BY THE F.S.E.C.
2. FOR FOOD SERVICE EQUIPMENT SCHEDULE, CONNECTION SIZES, LOCATIONS AND FURTHER EQUIPMENT INFORMATION, REFER TO FOOD SERVICE EQUIPMENT CONSULTANTS (F.S.E.C) EQUIPMENT LAYOUT DRAWINGS, PLUMBING PLANS, AND OWNER EQUIPMENT SPECIFICATIONS. VERIFY AND COORDINATE UTILITY CONNECTION LOCATIONS, SIZES, LOADS, ETC. WITH THE FOOD SERVICE EQUIPMENT SUPPLIER. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHTS OF ALL PLUMBING FIXTURES. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, CONNECTIONS, ACCESSORIES AND ADDITIONAL REQUIREMENTS.
3. PROVIDE ADEQUATE ACCESS TO ALL FLOOR SINKS FOR CLEANING. ALL FLOOR SINKS AND FLOOR DRAINS IN TRAFFIC AREAS SHALL BE INSTALLED FLUSH TO FLOOR SURFACE. IF THE CABINET HAS A BOTTOM SHELF WITH AN OPENING TO A FLOOR SINK, THE OPENING SHALL BE BOXED IN FROM THE SHELF TO THE FLOOR AND SEALED.
4. PROVIDE INLINE TRAP SEAL PROTECTION OR TRAP PRIMER FOR ALL FLOOR DRAINS. FLOOR SINKS AND TRAPS SUBJECT TO EVAPORATION LOSS.
5. PROVIDE RIGID DRAIN LINES FROM FOOD SERVICE EQUIPMENT (INCLUDING WALK-IN REFRIGERATORS AND FREEZERS) SLOPED TO AN INDIRECT WASTE WITH AN AIR GAP. EACH INDIRECT WASTE PIPE FROM FOOD HANDLING FIXTURES OR EQUIPMENT, INCLUDING ICE STORAGE BINS AND ICE MACHINES, SHALL NOT BE DIRECTLY CONNECTED WITH ANOTHER WASTE LINE.
6. ABOVE GRADE WASTE LINES FROM ICE BINS, ICE MAKERS, REFRIGERATORS AND FREEZERS TO FLOOR SINKS, OPEN SITE DRAINS AND TROUGH DRAINS SHALL BE INSULATED TO PREVENT CONDENSATION. INSULATION MUST BE SMOOTH, NON-ABSORBENT AND EASY TO CLEAN.
7. ATMOSPHERIC VACUUM BREAKERS (ASSE 1001) MUST BE PROVIDED ON ALL DISPOSERS, DISHWASHERS, AND ON ALL WATER LINES THAT SUPPLY FOOD SERVICE EQUIPMENT THROUGH SUBMERGED INLETS. ATMOSPHERIC VACUUM BREAKERS MUST BE INSTALLED A MINIMUM OF 6" ABOVE THE HIGHEST INLET OR FIXTURE ON ITS DOWNSTREAM SIDE. DO NOT LOCATE ANY SOLENOID OR MANUAL SHUT-OFF VALVES DOWNSTREAM OF AN ATMOSPHERIC VACUUM BREAKER. PROVIDE AN ASSE 1055 BACKFLOW PREVENTER ON WATER LINES TO A SOAP OR CHEMICAL DISPENSER. PROVIDE A PRESSURE TYPE BACKFLOW PREVENTER (ASSE 1020) ON THE WATER LINE TO AN OVERHEAD SPRAY WASHER. PRESSURE VACUUM BREAKERS MUST BE INSTALLED A MINIMUM OF 12" ABOVE THE HIGHEST INLET OR FIXTURE ON IT'S DOWNSTREAM SIDE. PROVIDE A VENTED DOUBLE CHECK ASSEMBLY (ASSE 1022) ON ALL ICE AND BEVERAGE EQUIPMENT REQUIRING A WATER CONNECTION. PLUMBING VENTS THROUGH THE ROOF SHALL BE A MINIMUM OF 12" ABOVE THE ROOF.
9. PRIOR TO START OF WORK, REFER TO KITCHEN CONSULTANT'S APPROVED SHOP DRAWINGS FOR COMPLETE INFORMATION ON KITCHEN EQUIPMENT PLUMBING REQUIREMENTS. P.C. SHALL VERIFY ALL MOUNTING HEIGHTS, SIZES AND CONNECTION REQUIREMENTS WITH EQUIPMENT SUPPLIER AND ALL MILLWORK DRAWINGS PRIOR TO ROUGH-IN. P.C. SHALL ROUGH-IN UTILITY LINES THROUGH WALLS AND FLOORS, CONNECT WASTE LINES FROM ROUGH-INS, MAKE ALL CONNECTIONS TO THE FOOD SERVICE EQUIPMENT AND PROVIDE ALL TRAPS, VALVES, PIPING, ETC., NEEDED FOR PROPER INSTALLATION OF ALL FOOD SERVICE EQUIPMENT.

PLUMBING GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC & INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING REQUIRED COMPONENTS. OFFSETS REQUIRED TO AVOID THE STRUCTURE, ETC.
2. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
4. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
5. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH THE WORK OF ALL OTHER TRADES, EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK.
6. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL MAINTAIN REQUIRED CLEARANCES OVER, AROUND AND IN FRONT OF ALL ELECTRICAL EQUIPMENT, PANELS, TRANSFORMERS, ETC. PIPING SHALL NOT INTERFERE WITH, OR BE INSTALLED IN A LOCATION THAT RESTRICTS ACCESS OR CLEARANCE TO ELECTRICAL OR MECHANICAL DEVICES. PROVIDE REQUIRED ACCESS AND CLEARANCE AROUND ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
7. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL PLUMBING SYSTEMS.
8. PROVIDE BRANCH LINE ISOLATION VALVES ON DOMESTIC PIPING TO EACH GROUP OF FIXTURES AND TOILET ROOMS.
9. PLUMBING VENT PIPING THRU THE ROOF SHALL BE LOCATED 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.
10. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES/CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. PROVIDE CLEANOUTS AT THE BASE OF ALL STACKS.
11. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
12. PROVIDE "INLINE" TRAP SEAL PROTECTION OR TRAP PRIMER ON ALL FLOOR DRAINS AND TRAPS SUBJECT TO EVAPORATION.
13. AT EACH CONNECTION OF GAS SUPPLY TO EQUIPMENT PROVIDE A UNION, SHUT-OFF VALVE, TEE WITH SEDIMENT TRAP & PRESSURE TEST PLUG, REGULATOR AND UNION. FOR MEDIUM PRESSURE REGULATORS, AN ADDITIONAL TEE WITH PRESSURE TEST PLUG SHALL BE INSTALLED NOT LESS THAN 10 PIPE DIAMETERS DOWNSTREAM. SEDIMENT TRAPS SHALL BE INSTALLED SUCH THAT THERE IS ROOM BELOW TO REMOVE THE CAP/PLUG AND CLEAN THE TRAP. WEATHERPROOF PAINT ALL EXTERIOR GAS PIPING.
14. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.



2 P1.2 ENLARGED KITCHEN PLUMBING PLAN
SCALE: 1/4" = 1'-0"



1 P1.UG2 ENLARGED UNDERGROUND KITCHEN PLUMBING PLAN
SCALE: 1/4" = 1'-0"

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ENLARGED KITCHEN PLUMBING PLANS

SHEET NO.
P4.1

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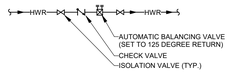
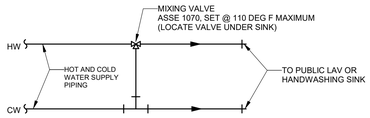
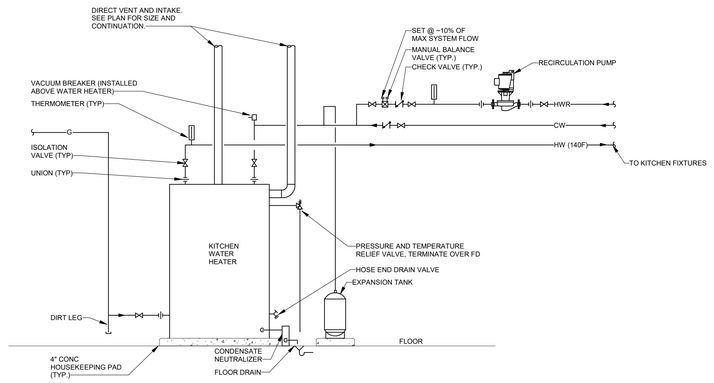


NOTE:
1. PROVIDE AT ALL HWR CONNECTION TO HW MAIN/BRANCH.

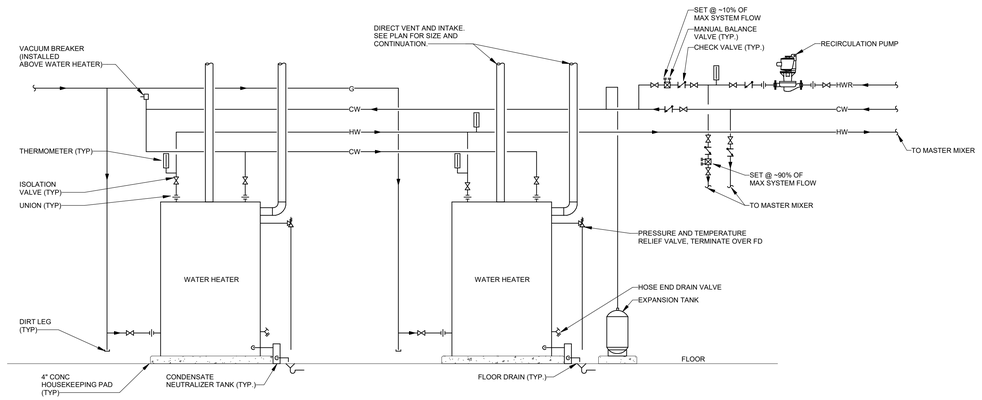
BALANCING VALVE ASSEMBLY DETAIL
NO SCALE



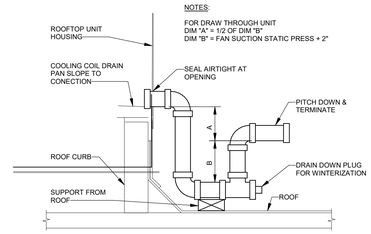
POINT OF USE THERMOSTATIC MIXING VALVE DETAIL
NO SCALE



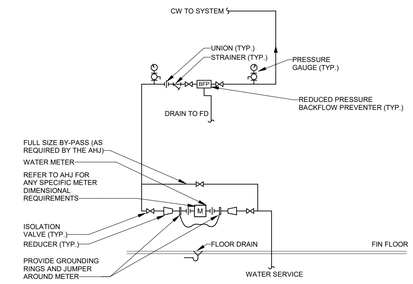
WATER HEATER - GAS FIRED PIPING DIAGRAM W/ EXP TANK AND RECIRC PUMP
NO SCALE



WATER HEATER - MULTIPLE GAS FIRED PIPING DIAGRAM W/ EXP TANK AND RECIRC PUMP
NO SCALE

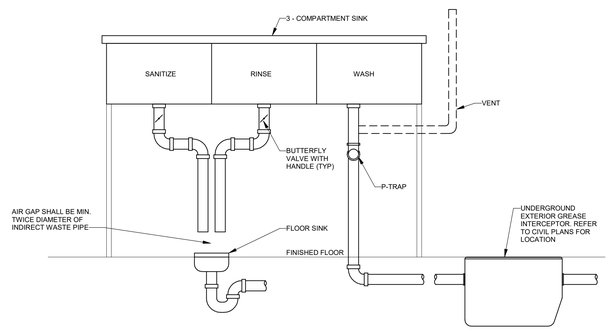


RTU COOLING COIL DRAIN PAN TRAP DETAIL
NO SCALE

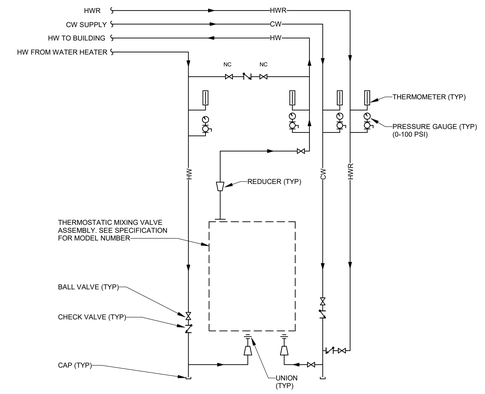


NOTES:
1. WATER METER AND BACK FLOW PREVENTER SHALL BE SUPPORTED FROM THE FLOOR AND/OR WALL.

WATER METER WITH STACKED RPZ DETAIL
NO SCALE



THREE COMPARTMENT SINK DRAIN DETAIL
NO SCALE



NOTES:
1. PIPING ARRANGEMENT SHOWN FOR REFERENCE ONLY. FINAL PIPING ARRANGEMENT MUST BE COORDINATED WITH SPECIFIC VALVE MANUFACTURER INSTALLATION RECOMMENDATIONS.

MASTER MIXING VALVE - ASSE 1017
NO SCALE

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10/10/2025

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SHEET TITLE
PLUMBING DETAILS

SHEET NO.
P5.0

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BOOSTER PUMP SCHEDULE

UNIT ID	SERVICE	TYPE	NUMBER OF PUMPS	FLOW PER PUMP (GPM)	SUCTION PRESSURE (PSI)	DISCHARGE PRESSURE (PSI)	HEAD (FT)	SUCTION & DISCHARGE SIZE	MIN. % EFF.	ELECTRICAL					DISCONNECT			CONTROLLER			MANUFACTURER / MODEL NO.	REMARKS
										BHP	HP	RPM	VOLTS	PHASE	FURN. BY	INST. BY	TYPE	TYPE	FURN. BY	INST. BY		
BP-1	DOMESTIC WATER	DUPLEX	2	113	30.00	77.00	51.00	3	58.3	(2) 5.3	(2) 7.5	3600	460	3	MFR	MFR	SWITCH	CONTROL PANEL	MFR	MFR	B&G / HVX2DR-15SVX3GHAXX0-BG	(2) PUMPS SIZED AT 2/3RDS

NOTES:
1. PROVIDE/ COORDINATE MOUNTING ON 4" CONCRETE HOUSEKEEPING PAD.
2. HYDROPNUEMATIC TANK WITH AIR PRESSURE GAUGE AND BLADDER MONITORING DEVICE, ON 4" HOUSEKEEPING PAD - MFG: B&G WTA49ASME HYDRO-PNEUMATIC TANK, 106 GAL.
3. COMMUNICATING BACNET MSTP.
4. SINGLE POINT ELECTRICAL CONNECTION.
5. PLUMBING CONTRACTOR SHALL COORDINATE SUCTION AND DISCHARGE HEADER DIRECTION OF FLOW WITH PLUMBING PLANS AND MFR. PRIOR TO PURCHASE. MODEL NUMBER WILL CHANGE

PLUMBING FIXTURES/SPECIALTIES SCHEDULE

TAG	BARRIER FREE	ITEM	PIPE CONNECTION SIZES				MANUFACTURER & MODEL NO.	ACCESSORIES
			WASTE	VENT	CW	HW		
DN-1		DOWNSPOUT NOZZLE					MIFAB R1940	PROVIDE WITH HINGED STAINLESS STEEL PERFORATED COVER
EEW-1	-	EMERGENCY EYE/FACE WASH - PEDESTAL			1/2"	1/2"	HAWS 7777	CORROSION RESISTANT; STAINLESS STEEL DUST COVER, UNIVERSAL EMERGENCY SIGN AND STAY OPEN BALL VALVE ASSEMBLY, PROVIDE WITH TEST TAG AND ASSE 1071 MIXING VALVE.
EWC-1	Y	ELECTRIC WATER COOLER - BI-LEVEL WITH BOTTLE FILLER	1 1/2"	1 1/2"	1/2"		ELKAY LZSTLBWSSP-PF	120V/1PH, 5 FLA, 370 WATTS, SHUT OFF VALVE AND P-TRAP, VISUAL FILTER MONITOR, STAINLESS STEEL HINGED DROP DOWN FRONT SHROUD FOR EASY FILTER ACCESS, PROVIDE WITH PFOA/PFOS FILTER AND REPLACEMENT FILTER 3 PACK.
FD-1	-	FLOOR DRAIN - GENERAL	4"				ZURN Z415S-Y	TYPE "S" STRAINER AND SEDIMENT BUCKET. CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE COLLAR.
FD-2	-	FLOOR DRAIN - MECHANICAL ROOM	4"				JR SMITH 2330Y	12" ROUND TOP WITH SEDIMENT BUCKET AND VANDAL PROOF CAST IRON ADA GRATE.
FD-3	-	FLOOR DRAIN - INDIRECT WASTE	4"				JR SMITH 2005Y	6" ROUND TOP WITH ADJUSTABLE NICKEL BRONZE STRAINER. PROVIDE WITH OVAL FUNNEL FOR INDIRECT WASTE.
FS-1	-	FLOOR SINK	2"				JR SMITH 300 SERIES	12" SQUARE BODY WITH PORCELAIN ENAMEL, ACID RESISTANT COATED CAST IRON BODY AND GRATE WITH ANTI-SPLASH DOME STRAINER AND 1/2 GRATE. IN FOOD SERVICE APPLICATIONS - COORDINATE RIM ELEVATION AFF WITH AHJ.
LAV-1	Y	LAVATORY - WALL MOUNTED	1 1/2"	1 1/2"	1/2"	1/2"	KOHLER K-2005 WITH DELTA 21C454-TI FAUCET	VITREOUS CHINA WALL HUNG WITH FRONT OVERFLOW; FAUCET SHALL HAVE ADA LEVER HANDLES AND VANDAL RESISTANT OUTLET WITH 0.5 GPM MAX FLOW RATE. PROVIDE WITH ASSE 1070 MIXING VALVE.
LAV-2	Y	LAVATORY - 3-STATION WASH BASIN	1 1/2"	1 1/2"	3/4"	3/4"	BRADLEY VERGE LVAD3 WITH VERGE S53-3500 FAUCET	VITREOUS CHINA 3-STATION WASH BASIN WITH QUARTZ EVERO CLASSIC - GEO SERIES ANTARCTICA FINISH ; VERGE LINE A SERIES FAUCET SHALL BE TOUCH FREE VANDAL RESISTANT OUTLET WITH 0.5 GPM MAX FLOW RATE. SILICONE TIP WITH BRUSHED STAINLESS FINISH. PROVIDE WITH AC ADAPTOR (COORDINATE WITH ELECTRICAL) PROVIDE WITH ASSE 1070 MIXING VALVE. PROVIDE DR1 SS TRENCH DRAIN CAP.
NFRH-1	-	NON-FREEZE ROOF HYDRANT			3/4"		JR SMITH 5906	3/4" HOSE CONNECTION; PROVIDE WITH VACUUM BREAKER; PROVIDE ALL MOUNTING HARDWARE AND PIPE, FULL SIZE DRAIN TO APPROPRIATE RECEPTOR. COORDINATE INSTALLATION WITH ROOFING CONTRACTOR PRIOR TO COMPLETION OF ROOF WORK.
NFWH-1	-	NON-FREEZE WALL HYDRANT			3/4"		JR SMITH 5509QT	BRONZE NICKEL PLATED, QUARTER TURN SELF DRAINING NON-FREEZE HYDRANT WITH INTEGRAL VACUUM BREAKER, "T" HANDLE KEY AND STAINLESS STEEL LOCKING BOX WITH "H" ON COVER.
RS&ORS-1	-	ROOF SUMP & OVERFLOW					MIFAB 1015Y-C-CID-U-R	ADJUSTABLE WATER DAM (OVERFLOW ONLY), UNDERDECK CLAMP, VANDEL PROOF, AND CAST IRON DOME
RS&ORS-1	-	ROOF SUMP & OVERFLOW					MIFAB R1150-SPEC	ADJUSTABLE WATER DAM, UNDERDECK CLAMP AND LOW PROFILE DOME
SH-1	Y	SHOWER	2"	1 1/2"	1/2"	1/2"	SYMMONS ORIGINS 9605-PLR-TRM	SHOWER/HAND SHOWER TRIM WITH 1 MODE. WALL MOUNTED METAL LEVER HANDLE WITH 1.5 GPM SHOWER HEAD, ARM AND FLANGE. SYMMONS TUB/SHOWER VALVE 262XBODY, AND HANDHELD WAND WITH HOSE AND 36" SLIDE/GRAB BAR. ALL COMPONENTS SHALL BE POLISHED CHROME FINISH. PRESSURE BALANCED MIXING VALVE SHALL MEET ASSE 1016 AND HAVE UNIVERSAL INLETS/OUTLETS AND SUPPLY STOPS.
SK-1	Y	SINK - STAINLESS STEEL DROP IN	1 1/2"	1 1/2"	1/2"	1/2"	KOHLER UNDERTONE K-3332-NA WITH CHICAGO 50-E35-317XKABCP FAUCET	25"x17.5"x7.5"SINGLE BOWL UNDERMOUNT STAINLESS STEEL SINK WITH PERFECT DRAIN. MANUAL FAUCET SHALL BE 6" GOOSENECK WITH WRIST BLADE HANDLES. 1.5 GPM VANDAL RESISTANT LAMINAR FLOW OUTLET. PROVIDE WITH ASSE 1070 MIXING VALVE.
SK-2	Y	SINK - STAINLESS STEEL DROP IN	1 1/2"	1 1/2"	1/2"	1/2"	KOHLER UNDERTONE K-3325-NA WITH KOHLER SIMPLICE K-596 FAUCET	23"x17.5"x9.5"SINGLE BOWL UNDERMOUNT STAINLESS STEEL SINK WITH PERFECT DRAIN. 9" GOOSENECK WITH PULL DOWN 1.5 GPM SWING FAUCET WITH VIBRANT STAINLESS FINISH, 1.5 GPM VANDAL RESISTANT LAMINAR FLOW OUTLET. PROVIDE SOLIDS INTERCEPTOR EQUAL TO STRIEM SIDEKICK WITH FRONT ACCESS. PROVIDE P-TRAP AND PROVIDE WITH ASSE 1070 MIXING VALVE. PROVIDE CONNECTIONS FROM DISHWASHER TO SINK DRAIN AND HW SUPPLY PER DISHWASHER MFR INSTRUCTIONS. PROVIDE CW CONNECTION TO REFRIGERATOR ICE MAKER
SK-3	Y	SINK - 2 STATION WASH BASIN	1 1/2"	1 1/2"	1/2"	1/2"	BRADLEY VERGE LVAD2 WITH VERGE FAUCET - LINEAR SERIES	QUARTZ 2-STATION WASH BASIN WITH QUARTZ EVERO CLASSIC - GEO SERIES ANTARCTICA FINISH ; VERGE LINEA SERIES FAUCET SHALL BE TOUCH FREE VANDAL RESISTANT OUTLET WITH 0.5 GPM MAX FLOW RATE. SILICONE TIP WITH BRUSHED STAINLESS FINISH. PROVIDE WITH AC ADAPTOR (COORDINATE WITH ELECTRICAL) PROVIDE WITH ASSE 1070 MIXING VALVE. PROVIDE DR1 SS TRENCH DRAIN CAP.
SS-1	-	SERVICE SINK	3"	1 1/2"	3/4"	3/4"	FIAT STOCKTON TSBC-1611 WITH CHICAGO 540-LD897SWXF317CP FAUCET	32"x32"x12" CORNER MOP SERVICE BASIN WITH STAINLESS STEEL CAPS ON CORNER THRESHOLD. PROVIDE FIAT 832AA HOSE & HOSE BRACKET. MSG WALL GUARDS, AND MOP HANGER. FAUCET SHALL BE WALL MOUNTED 8" FIXED CENTER WITH VACUUM BREAKER, WRISTBLADE HANDLES, INTEGRAL STOPS, PAIL HOOK.
TD-1	-	TRENCH DRAIN	2"				LUXE LINEAR - SQUARE PATTERN	PROVIDE SLOPED INNER CHANNEL FOR CENTER DRAINAGE. PROVIDE WITH LUXE 2" PVC DRAIN BASE.
UR-1	Y	URINAL - WALL MOUNTED	2"	1 1/2"	3/4"		KOHLER DEXTER K-5016-ET WITH SLOAN ROYAL 186-1 FLUSH VALVE	ADA, VITREOUS CHINA, WALL MOUNTED, TOP SPUD, DIAPHRAGM-TYPE, POLISHED CHROME MANUAL FLUSH VALVE, 1.0 GPF
WC-1	Y	WATER CLOSET - FLUSH VALVE, WALL MOUNTED	4"	2"	1"		KOHLER KINGSTON ULTRA K-84325 WITH SLOAN ROYAL 111-1.6 FLUSH VALVE	ADA, VITREOUS CHINA, WALL MOUNTED, ELONGATED BOWL, TOP SPUD, ANTIMICROBIAL FINISH; PROVIDE OLSONITE 95CT ELONGATED TOILET SEAT. HEAVY DUTY, OPEN FRONT SEAT; DIAPHRAGM-TYPE, POLISHED CHROME MANUAL FLUSH VALVE, 1.6 GPF
WMB-1	-	WASHING MACHINE BOX	2"	1 1/2"	1/2"	1/2"	SIOUX CHIEF OX BOX SERIES 696	WITH WATER HAMMER ARRESTORS

NOTES:
1. PROVIDE ALL SLEEVES, TEMPLATES, HARDWARE, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE AND OPERABLE INSTALLATION. VERIFY ALL COLORS AND FINISHES WITH ARCHITECT AND REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL FIXTURES.
2. PROVIDE CARRIERS FOR ALL APPLICABLE FIXTURES PER MANUFACTURER'S RECOMMENDATIONS. CONCEALED ARM CARRIERS REQUIRED FOR SINGLE STATION LAVATORIES. PROVIDE ALL CARRIERS WITH FOOT SUPPORTS.
3. WHERE REQUIRED AND/OR DESIGNATED, FIXTURES SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE'S BARRIER FREE DESIGN REQUIREMENTS & ICC/ANSI A117.1. ALL EXPOSED LAVATORY AND SINK TRIM ON WHEELCHAIR ACCESSIBLE FIXTURES SHALL BE COVERED WITH A SEAMLESS ANTIMICROBIAL VINYL INSULATING OUTER SHELL.
4. PROVIDE ASSE 1072 BARRIER-TYPE INLINE TRAP SEAL DEVICES FOR EACH FLOOR DRAIN AND FLOOR SINK AND TRAP SUBJECT TO EVAPORATION LOSS.
5. PROVIDE COMMERCIAL GRADE SUPPLIES TO SINKS AND LAVATORIES WITH CHROME PLATED BRASS LOOSE KEY ANGLE STOPS WITH BRASS STEMS (NO PLASTIC STEMS), WHERE APPLICABLE PROVIDE ESCUTCHEON PLATE.
6. PROVIDE POINT OF USE THERMOSTATIC MIXING VALVES, ASSE 1070, FOR ALL ADA SINKS AND HANDWASHING SINKS.

DOMESTIC WATER HEATER SCHEDULE (GAS TANK TYPE)

UNIT ID	LOCATION / AREA SERVED	STORAGE CAPACITY (GAL)	FUEL TYPE	GAS PRESS. MIN.-MAX. (IN WG)	INPUT (MBH)	RECOVERY AT 100°F (GPH)	THERMAL EFFICIENCY	MODULATION TURNDOWN RATIO	ELECTRICAL			DISCONNECT			MANUFACTURER / MODEL NO.	REMARKS
									MOCP	VOLTS	PHASE	FURN. BY	INST. BY	TYPE		
DWH-1	HOUSE	90	NG	4-14	199	233	96%	5:1	15	120	1	EC	EC	SWITCH	LOCHINVAR / SWR200N	
DWH-2	HOUSE	90	NG	4-14	199	233	96%	5:1	15	120	1	EC	EC	SWITCH	LOCHINVAR / SWR200N	
DWH-3	KITCHEN	110	NG	4-14	285	328	95%	5:1	15	120	1	EC	EC	SWITCH	LOCHINVAR / SWA285N	

NOTES:
1. SET ALL DOMESTIC HOT WATER STORAGE TEMPERATURES TO 140°F.
2. FLA SHALL BE PROVIDED FROM MANUFACTURER'S LITERATURE AND SHALL BE INCLUDED IN PRODUCT DATA SUBMITTAL TO ENGINEER.
3. PROVIDE/ COORDINATE MOUNTING ON 4" CONCRETE HOUSEKEEPING PAD.
4. PROVIDE CONDENSATE NEAUTRALIZER AND CONCENTRIC VENT KIT.
5. **DWH-1 & 2 EXPANSION TANK: ASME, MFR: B&G, MODEL: PTA-100V, QTY: 1, REQ. TANK VOL.: 45 GAL, REQ. ACCEPTANCE VOL.: 30 GAL, VERTICAL, DIAPHRAGM, WITH AIR PRESSURE GAUGE AND BLADDER MONITOR DEVICE. PROVIDE 4" CONCRETE HOUSEKEEPING CURB.**
6. COMPLETED WITH MIXING VALVE.
7. PROVIDE BMS GATEWAY MODULE.
8. PROVIDE WITH NONFUSED DISCONNECT SWITCH.

DOMESTIC HOT WATER RECIRULATION PUMP SCHEDULE

UNIT ID	SYSTEM SERVED	TYPE	FLOW (GPM)	HEAD (FT)	ELECTRICAL					DISCONNECT			MANUFACTURER / MODEL NO.	REMARKS
					kW (INPUT)	BHP	HP	VOLTS	PHASE	FURN. BY	INST. BY	TYPE		
DRP-1	HOUSE RETURN	INLINE	10	25	0.2	-	1/6	115	1	EC	EC	SWITCH	B&G ECOCIRC XL N 36-45	SET ON CONSTANT TEMPERATURE CONTROL MODE SET TO 120F
DRP-2	KITCHEN RETURN	INLINE	5	10	0.1	-	1/12	115	1	EC	EC	SWITCH	B&G ECOCIRC XL N 20-35	SET ON CONSTANT TEMPERATURE CONTROL MODE SET TO 130F

NOTES:
1. PERFORMANCE BASED ON WATER.
2. PUMPS SHALL BE NON-OVERLOADING.
3. DISCONNECT SWITCH PROVIDED BY E.C.
4. PUMPS SHALL COME WITH COMMUNICATION WITH BACNET.
5. PUMP SHALL HAVE EC MOTOR AND SHALL HAVE BUILT IN OVERLOAD AND THERMAL PROTECTION, NO ADDITIONAL OVERLOAD PROTECTION IS REQUIRED.

THERMOSTATIC MIXING VALVE SCHEDULE

UNIT ID	SYSTEM SERVED	MIN. FLOW (GPM)	MAX. FLOW (GPM)	PRESS. DROP AT MAX. FLOW (PSIG)	REQ. FLOW (GPM)	MANUFACTURER / MODEL NO.	REMARKS
TMV-1	MASTER	4.0	71.0	15.00	50.0	BRADLEY S59-3130	PROVIDE SURFACE MOUNTED STAINLESS STEEL ENCLOSURE.
TMV-2	SINGLE SINK/LAVATORY	0.5	1.5	5.00	0.0	BRADLEY NAVIGATOR S59-4007	ASSE 1070
TMV-3	EMERGENCY EYE WASH	3.0	5.0	5.00	0.0	BRADLEY S19-2150 (EFX20)	ASSE 1071

NOTES:
1. PIPE PER MFR INSTRUCTIONS.
2. LEAD FREE DESIGN WITH CHECK VALVES ON SUPPLY INLETS.
3. SET MASTER MIXING VALVES TO SETPOINT INDICATED ON CONTROLS DRAWINGS.
4. ALL MIXING VALVE SETPOINTS TO BE ADJUSTABLE BY OWNER.

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Lewton School

Lansing School District

2000 Lewton Pl.
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STATE OF MICHIGAN
STEVEN R. DIBERARDINE
ENGINEER
No. 620104157
LICENSED PROFESSIONAL ENGINEER

10/10/2025

Lansing® School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
PLUMBING SCHEDULES

SHEET NO.
P6.0

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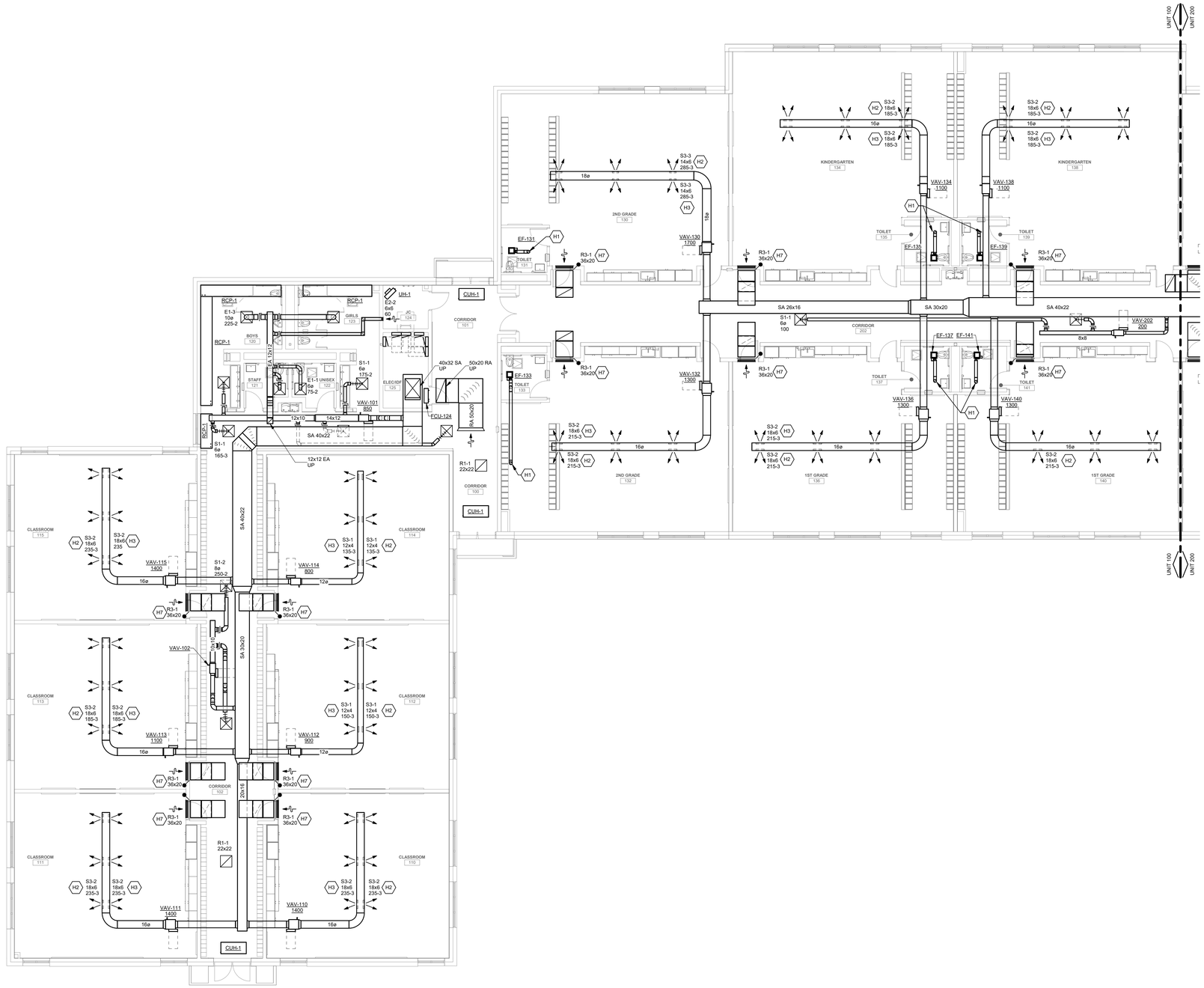

MECHANICAL HVAC PLAN - UNIT 100
SCALE: 1/8" = 1'-0"

HVAC GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE HVAC SYSTEMS COMPLETE PER SPECIFICATION, SMACNA STANDARDS, AND PER APPLICABLE CODES INCLUDING ALL NECESSARY OFFSETS, FITTINGS, SPECIAL RADIUS OR MITERED ELBOWS WHICH ARE REQUIRED DUE TO SPACE CONSTRAINTS OR STRUCTURAL CONDITIONS OR OTHER CONDITIONS.
2. CONTRACTOR SHALL COORDINATE THEIR WORK WITH THE WORK OF ALL OTHER TRADES. ALL DUCTWORK IS TO BE ROUTED AS HIGH AS POSSIBLE. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK.
3. DUCTWORK/PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. DUCTWORK/PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
4. DUCTWORK/PIPING SHALL NOT BE INSTALLED IN A LOCATION THAT RESTRICTS THE ACCESS TO MECHANICAL DEVICES REQUIRING ACCESS.
5. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
6. COORDINATE FLOOR, WALL, ROOF PENETRATIONS, LOUVER SIZES, PAD LOCATIONS ETC. WITH ARCHITECTURAL TRADES. SEAL ALL PIPING AND DUCT PENETRATIONS.
7. THE CONTRACTOR SHALL REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF GRILLES, REGISTERS, AND DIFFUSERS.
8. COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILING AREAS FOR ACCESS TO BALANCING DAMPERS, ETC. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
9. BRANCH DUCTWORK TO GRILLES, REGISTERS AND DIFFUSERS SHALL BE THE SAME SIZE AS THE GRILLE, REGISTER OR DIFFUSER NECK SIZE WHERE NO DUCT SIZE IS INDICATED ON PLAN.
10. MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 5'-0".
11. FOR EQUIPMENT VALVING, COMPONENT, AND PIPING ARRANGEMENT, REFER TO PIPING DIAGRAMS AND DETAILS.
12. PAINT ALL VISIBLE INTERIOR SURFACES OF EXHAUST/RETURN GRILLES, REGISTERS AND VISIBLE ASSOCIATED DUCTWORK FLAT BLACK.
13. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.
14. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR DAMPERS, VALVES, AND CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
15. DUCTWORK TO AND FROM VAV BOXES/TERMINAL UNITS SHALL BE EQUAL TO THE BOX CONNECTIONS SIZES UNLESS INDICATED OTHERWISE.
16. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
17. ALL BRANCH PIPING TO TERMINAL UNITS TO BE 3/4" UNLESS OTHERWISE NOTED.
18. ROOF MOUNTED EQUIPMENT REQUIRING SERVICE SHALL BE LOCATED A MINIMUM OF 10 FEET FROM ROOF EDGES. WHERE EQUIPMENT CAN'T BE LOCATED AWAY FROM ROOF EDGE AND GUARD RAILS ARE NOT PROVIDED, PROVIDE PERMANENT FALL ARREST ANCHORAGE CONNECTION DEVICE THAT COMPLIES WITH ANSI/ASSE Z 359.1.

19 IN AREAS WHERE PIPING IS EXPOSED AND VISIBLE TO OCCUPANTS, PLACE PIPING LABEL AND FLOW ARROWS AT BOTTOM OF PIPING. ALL PIPING SHALL BE PAINTED TO MATCH ARCHITECTURAL IN ALL AREAS WITH EXPOSED CEILING

20 CONTRACTOR TO RUN THERMOSTAT CONTROL WIRING ALONG PERIMETER OF CLASSROOM WALLS TO RESPECTIVE TERMINAL UNIT.

HVAC KEYNOTES

H1 ROUTE 6"Ø E/A DUCT UP THROUGH ROOF IN WEATHER TIGHT ENCLOSURE. TERMINATE WITH GOOSE NECK MINIMUM 18" ABOVE ROOF. PROVIDE WITH BIRD SCREEN.

H2 MOUNT GRILLE AT 22". REFER TO DETAIL.

H3 MOUNT GRILLE AT 45°. REFER TO DETAIL.

H4 ROUTE 4"Ø DRYER E/A DUCT UP THROUGH ROOF. TERMINATE IN ROOF CURB SIMILAR TO PIPE CURB DETAIL ON SHEET M5.1. PROVIDE DRYER TERMINATION CAP INSIDE WALL OF ROOF CURB. FOLLOW ALL MFR GUIDELINES FOR EXHAUST ROUTING AND TERMINATION.

H5 CONNECT E/A DUCTWORK TO DISHWASHER. COORDINATE WITH FINAL EQUIPMENT SUBMITTAL FOR FINAL DUCTWORK CONNECTION SIZE.

H6 COORDINATE FINAL E/A DUCTWORK & S/A DUCTWORK SIZES & LOCATIONS WITH FINAL FSE EQUIPMENT SUBMITTAL.

H7 MOUNT RA GRILLE ABOVE DOOR. FINISH WITH BELL MOUTH OPENING ABOVE CORRIDOR CEILING AS HIGH AS POSSIBLE. PROVIDE WITH 1" ACOUSTICAL LINER.

H8 RA DUCT FROM ROOF THROUGH SIDE WALL. ELBOW DOWN ALONG WALL AND TERMINATE WITH BELL MOUTH OPENING AND BIRD SCREEN AT APPROX. 20'-0" A.F.F. COORDINATE LOCATION WITH WALL LETTER AND/OR LOGO.

H9 ROUTE 8"Ø BOILER FLUE/INTAKE UP THROUGH ROOF AND TERMINATE A MINIMUM OF 3 FT ABOVE ROOD AND 10 FT MIN FROM ANY INTAKE. TRANSITION AS REQUIRED TO AVOID STRUCTURES. CONDUIT, PIPING, ETC. TERMINATE INTAKE WITH A GOOSENECK. BOILER VENTS TO BE CONSTRUCTED OF SATINLESS STEEL ONLY (PVC WILL NOT BE ACCEPTED) AND COMPLIANT WITH MFR RECOMMENDATIONS AND MMC 2021.

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Lewton School
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STEVEN R. DIBERARDINE
ENGINEER
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10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

KEY PLAN
LSD NO. SB-0064
JOB NO. 2616.01G
N

SHEET TITLE
MECHANICAL HVAC PLAN - UNIT 100

SHEET NO.
MH1.1

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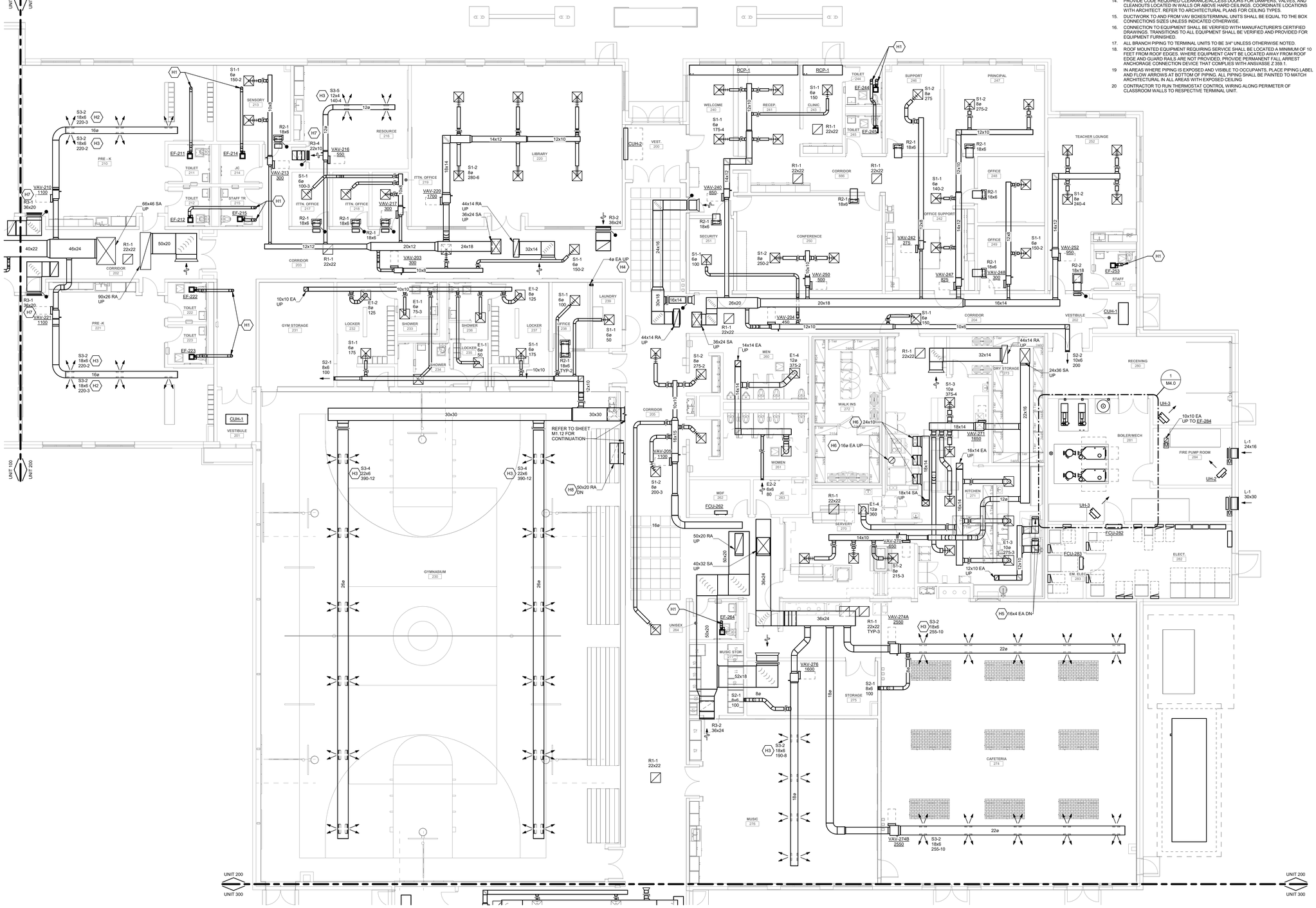

MECHANICAL HVAC PLAN - UNIT 200
SCALE: 1/8" = 1'-0"

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Lansing School District

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LSD NO. SB-0064
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SHEET TITLE
MECHANICAL HVAC PLAN - UNIT 200

SHEET NO.
MH1.2

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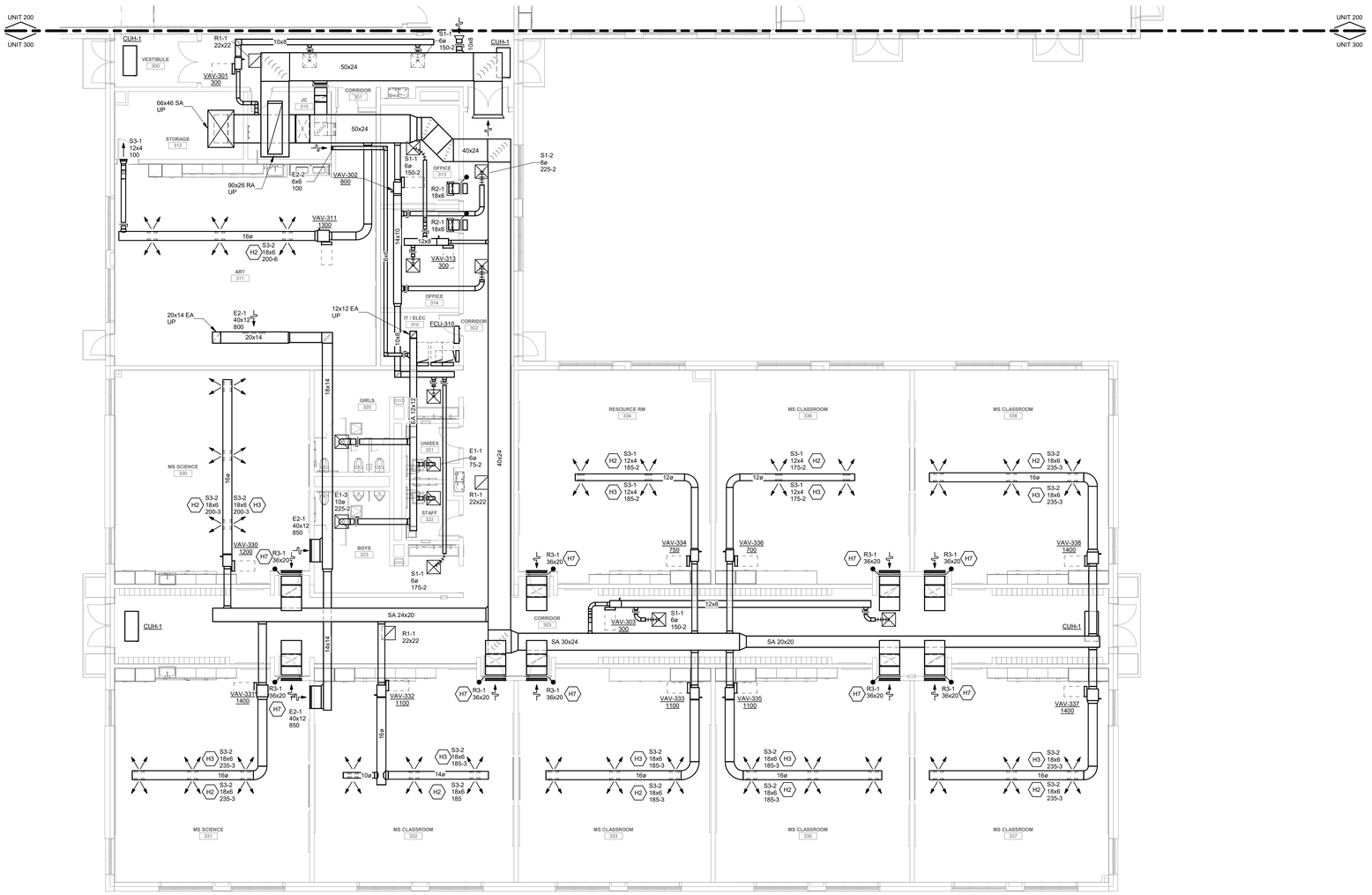

MECHANICAL HVAC PLAN - UNIT 300
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HVAC KEYNOTES

H1 ROUTE 6'Ø E/A DUCT UP THROUGH ROOF IN WEATHER TIGHT ENCLOSURE. TERMINATE WITH GOOSE NECK MINIMUM 18" ABOVE ROOF. PROVIDE WITH BIRD SCREEN.

H2 MOUNT GRILLE AT 22". REFER TO DETAIL.

H3 MOUNT GRILLE AT 45°. REFER TO DETAIL.

H4 ROUTE 4'Ø DRYER E/A DUCT UP THROUGH ROOF. TERMINATE IN ROOF CURB SIMILAR TO PIPE CURB DETAIL ON SHEET M5.1. PROVIDE DRYER TERMINATION CAP INSIDE WALL OF ROOF CURB. FOLLOW ALL MFR GUIDELINES FOR EXHAUST ROUTING AND TERMINATION.

H5 CONNECT E/A DUCTWORK TO DISHWASHER. COORDINATE WITH FINAL EQUIPMENT SUBMITTAL FOR FINAL DUCTWORK CONNECTION SIZE.

H6 COORDINATE FINAL E/A DUCTWORK & S/A DUCTWORK SIZES & LOCATIONS WITH FINAL FSE EQUIPMENT SUBMITTAL.

H7 MOUNT RA GRILLE ABOVE DOOR. FINISH WITH BELL MOUTH OPENING ABOVE CORRIDOR CEILING AS HIGH AS POSSIBLE. PROVIDE WITH 1" ACOUSTICAL LINER.

H8 RA DUCT FROM ROOF THROUGH SIDE WALL. ELBOW DOWN ALONG WALL AND TERMINATE WITH BELL MOUTH OPENING AND BIRD SCREEN AT APPROX. 20'-0" A.F.F. COORDINATE LOCATION WITH WALL LETTER AND/OR LOGO.

H9 ROUTE 8'Ø BOILER FLUE/INTAKE UP THROUGH ROOF AND TERMINATE A MINIMUM OF 3 FT ABOVE ROOD AND 10 FT MIN FROM ANY INTAKE. TRANSITION AS REQUIRED TO AVOID STRUCTURES, CONDUIT, PIPING, ETC. TERMINATE INTAKE WITH A GOOSENECK. BOILER VENTS TO BE CONSTRUCTED OF SATINLESS STEEL ONLY (PVC WILL NOT BE ACCEPTED) AND COMPLIANT WITH MFR RECOMMENDATIONS AND MMC 2021.

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KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G
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SHEET TITLE
MECHANICAL HVAC PLAN - UNIT 300

SHEET NO.
MH1.3

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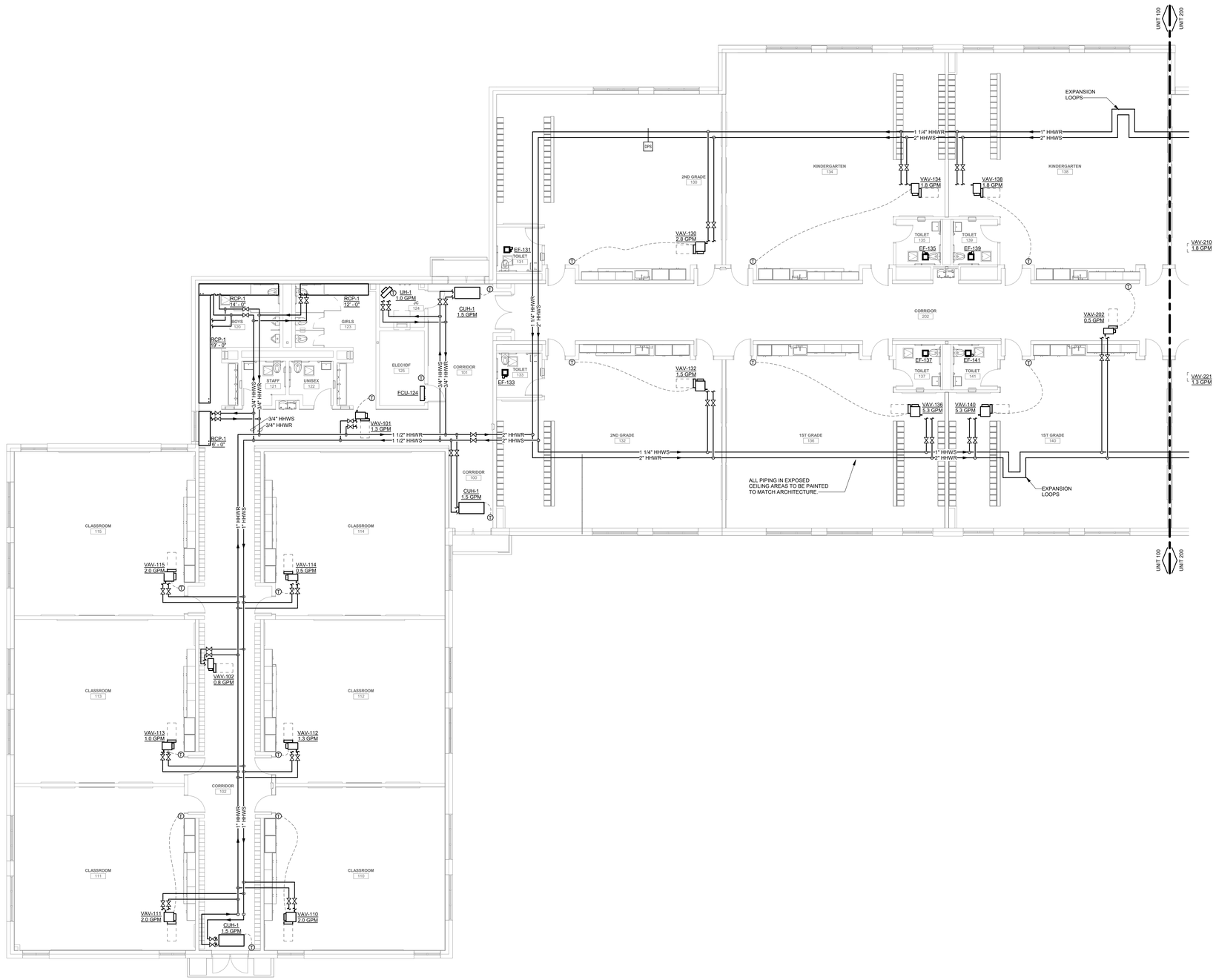

MECHANICAL PIPING PLAN - UNIT 100
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Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

STATE OF MICHIGAN
STEVEN R. DIBERARDINE
ENGINEER
No. 6201041574
LICENSED PROFESSIONAL ENGINEER

10/10/2025

Lansing School District

ISSUANCES	DATE
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CONSTRUCTION DOCUMENTS	10.10.2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

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SHEET TITLE
MECHANICAL PIPING PLAN - UNIT 100

SHEET NO.
MP1.1

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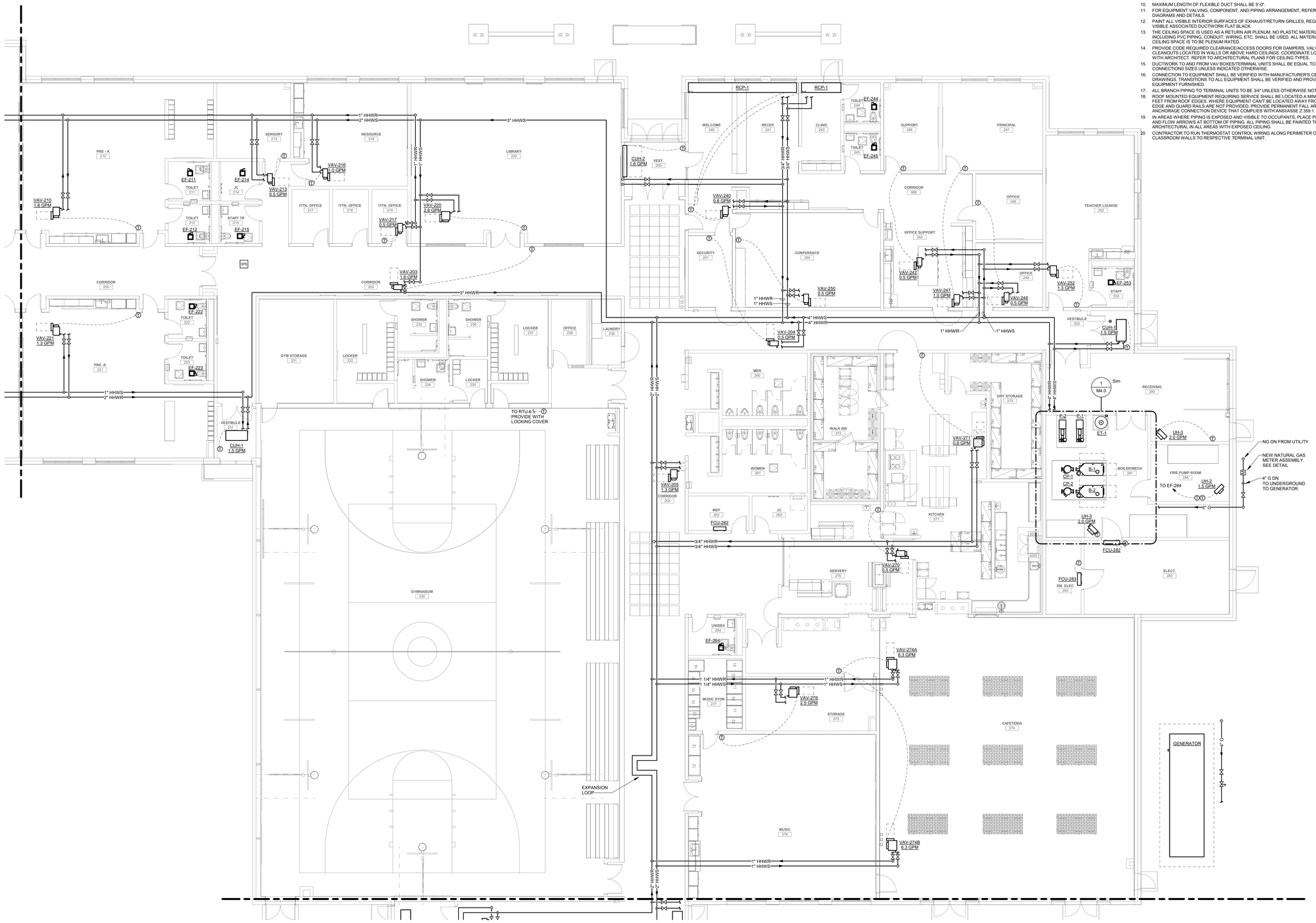

MECHANICAL PIPING PLAN - UNIT 200
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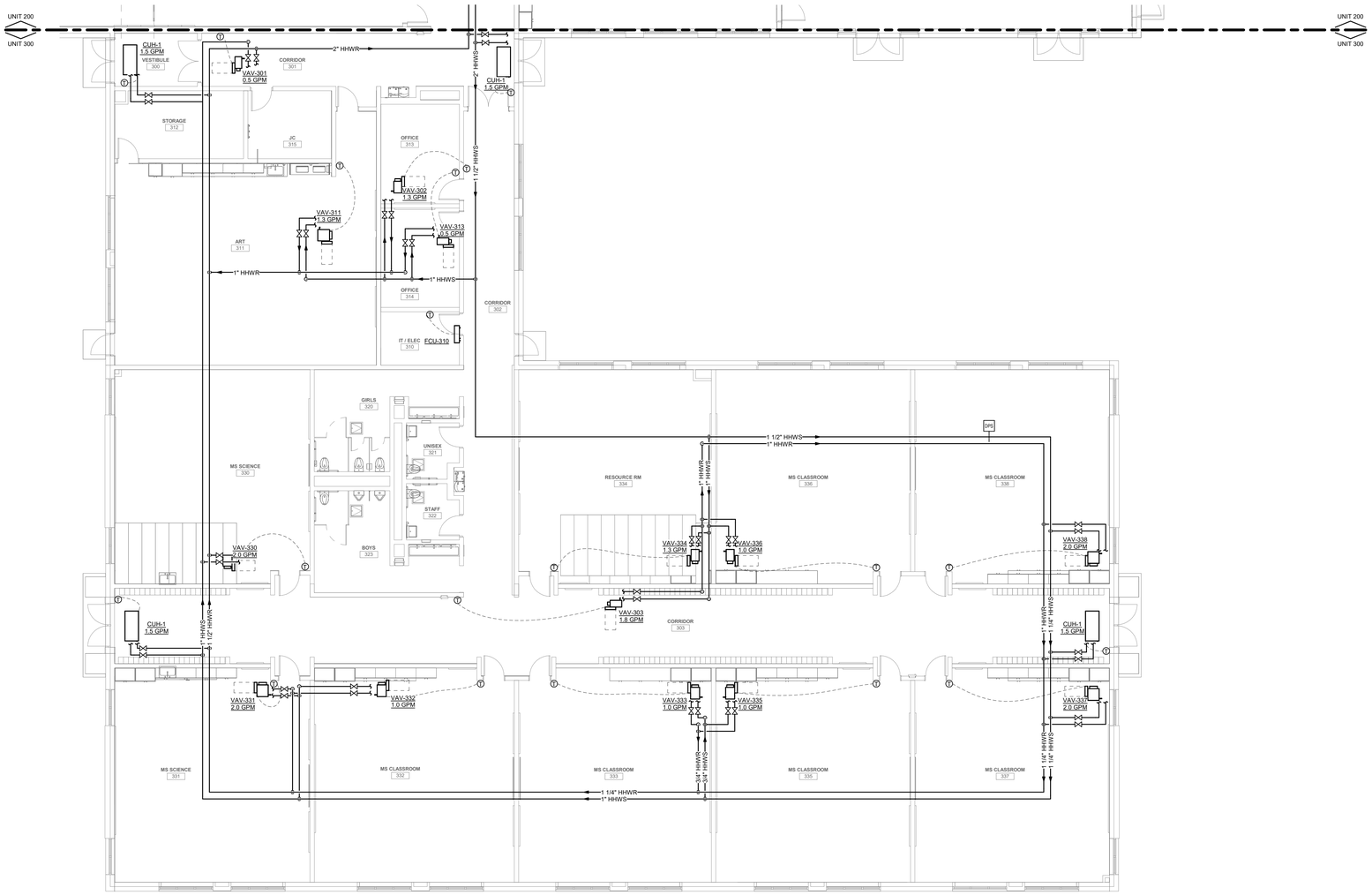

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15. DUCTWORK TO AND FROM VAV BOXES/TERMINAL UNITS SHALL BE EQUAL TO THE BOX CONNECTIONS SIZES UNLESS INDICATED OTHERWISE.
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20 CONTRACTOR TO RUN THERMOSTAT CONTROL WIRING ALONG PERIMETER OF CLASSROOM WALLS TO RESPECTIVE TERMINAL UNIT.

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Lewton School
Lansing School District
2000 Lewton Pl.
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STATE OF MICHIGAN
STEVEN R. DIBERARDINE
ENGINEER
No. 6201041574
LICENSED PROFESSIONAL ENGINEER
10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

KEY PLAN
LSD NO. SB-0064
JOB NO. 2616.01G
N

SHEET TITLE
MECHANICAL PIPING PLAN - UNIT 300

SHEET NO.
MP1.3

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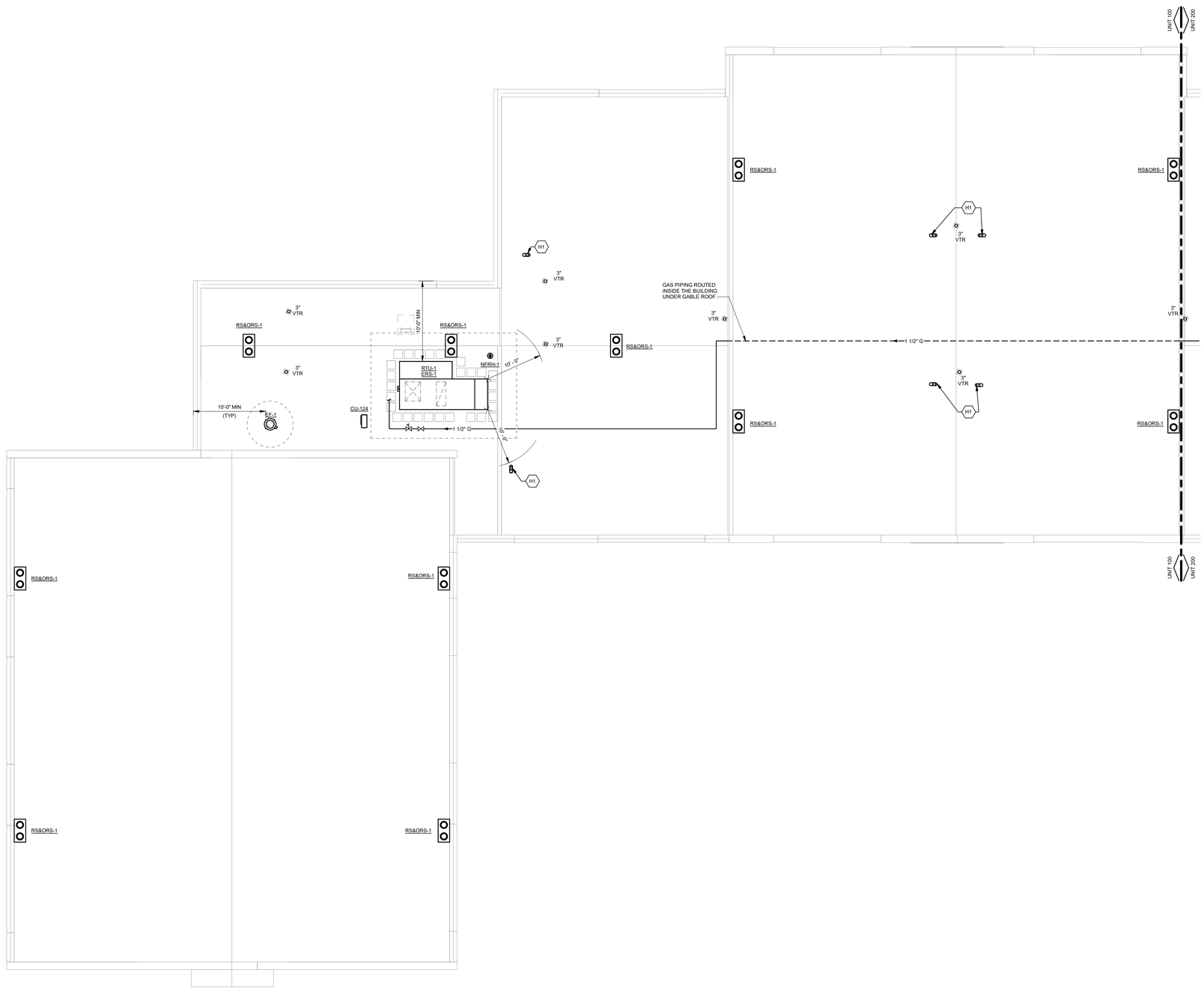

ROOF COMB. MECHANICAL & PLUMBING PLAN - UNIT 100
SCALE: 1/8" = 1'-0"

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5. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
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10. MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 5'-0".
11. FOR EQUIPMENT VALVING, COMPONENT, AND PIPING ARRANGEMENT, REFER TO PIPING DIAGRAMS AND DETAILS.
12. PAINT ALL VISIBLE INTERIOR SURFACES OF EXHAUST/RETURN GRILLES, REGISTERS AND VISIBLE ASSOCIATED DUCTWORK FLAT BLACK.
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H2 MOUNT GRILLE AT 22°. REFER TO DETAIL.
H3 MOUNT GRILLE AT 45°. REFER TO DETAIL.
H4 ROUTE 4"Ø DRYER E/A DUCT UP THROUGH ROOF. TERMINATE IN ROOF CURB SIMILAR TO PIPE CURB DETAIL ON SHEET M5.1. PROVIDE DRYER TERMINATION CAP INSIDE WALL OF ROOF CURB. FOLLOW ALL MFR GUIDELINES FOR EXHAUST ROUTING AND TERMINATION.
H5 CONNECT E/A DUCTWORK TO DISHWASHER. COORDINATE WITH FINAL EQUIPMENT SUBMITTAL FOR FINAL DUCTWORK CONNECTION SIZE.
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H7 MOUNT RA GRILLE ABOVE DOOR. FINISH WITH BELL MOUTH OPENING ABOVE CORRIDOR CEILING AS HIGH AS POSSIBLE. PROVIDE WITH 1" ACOUSTICAL LINER.
H8 RA DUCT FROM ROOF THROUGH SIDE WALL. ELBOW DOWN ALONG WALL AND TERMINATE WITH BELL MOUTH OPENING AND BIRD SCREEN AT APPROX. 20'-0" A.F.F. COORDINATE LOCATION WITH WALL LETTER AND/OR LOGO.
H9 ROUTE 8"Ø BOILER FLUE/INTAKE UP THROUGH ROOF AND TERMINATE A MINIMUM OF 3 FT ABOVE ROOD AND 10 FT MIN FROM ANY INTAKE. TRANSITION AS REQUIRED TO AVOID STRUCTURES, CONDUIT, PIPING, ETC. TERMINATE INTAKE WITH A GOOSENECK, BOILER VENTS TO BE CONSTRUCTED OF SATINLESS STEEL ONLY (PVC WILL NOT BE ACCEPTED) AND COMPLIANT WITH MFR RECOMMENDATIONS AND MMC 2021.

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KEY PLAN
LSD NO. SB-0064
JOB NO. 2616.01G
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SHEET TITLE
ROOF COMB. MECHANICAL & PLUMBING PLAN - UNIT 100

SHEET NO.
M1.11

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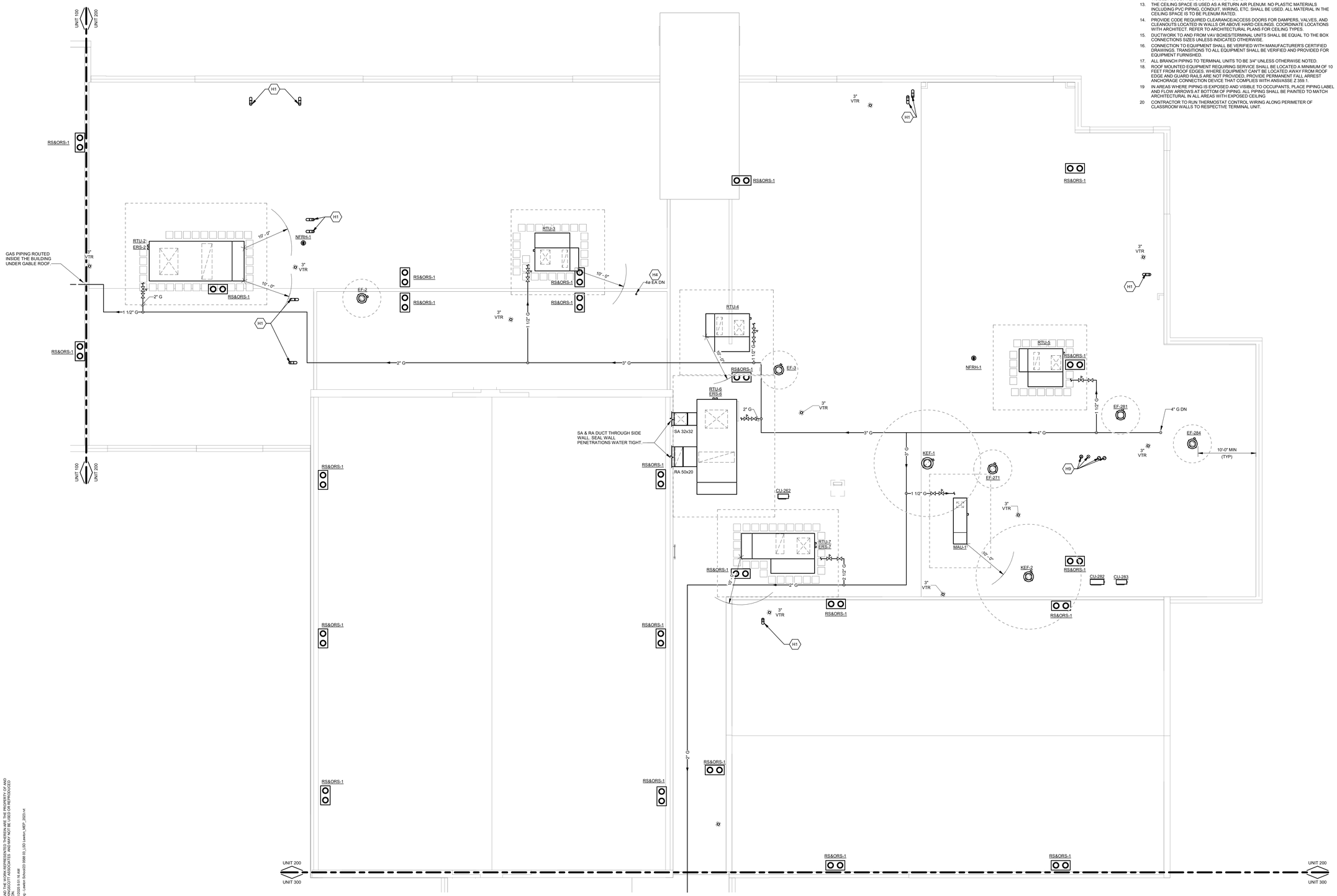

ROOF COMB. MECHANICAL & PLUMBING PLAN - UNIT 200
SCALE: 1/8" = 1'-0"

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KEY PLAN
LSD NO. SB-0064
JOB NO. 2616.01G
N

SHEET TITLE
ROOF COMB. MECHANICAL & PLUMBING PLAN - UNIT 200

SHEET NO.
M1.12

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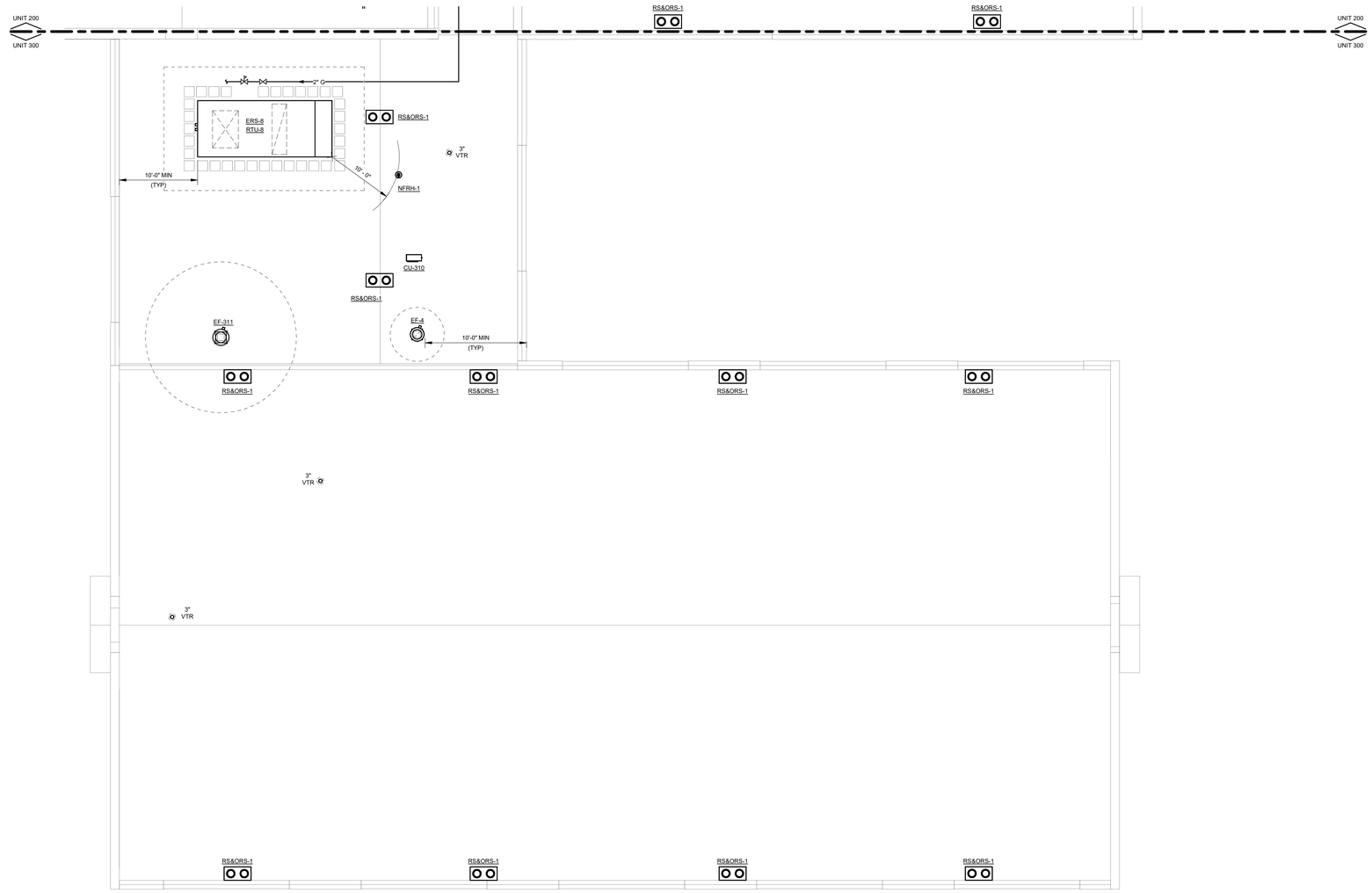

ROOF COMB. MECHANICAL & PLUMBING PLAN - UNIT 300
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KEY PLAN

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SHEET TITLE
ROOF COMB. MECHANICAL & PLUMBING PLAN - UNIT 300

SHEET NO.
M1.13

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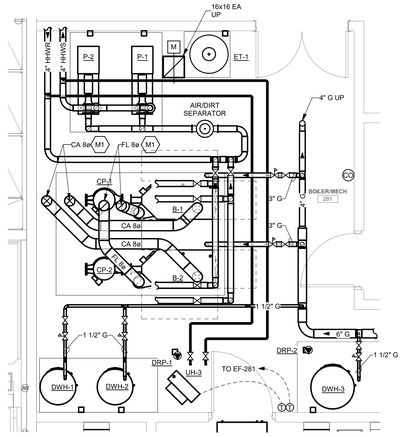
1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE HVAC SYSTEMS COMPLETE PER SPECIFICATION, SMACNA STANDARDS, AND PER APPLICABLE CODES INCLUDING ALL NECESSARY OFFSETS, FITTINGS, SPECIAL RADIUS OR MITERED ELBOWS WHICH ARE REQUIRED DUE TO SPACE CONSTRAINTS OR STRUCTURAL CONDITIONS OR OTHER CONDITIONS.
2. CONTRACTOR SHALL COORDINATE THEIR WORK WITH THE WORK OF ALL OTHER TRADES. ALL DUCTWORK IS TO BE ROUTED AS HIGH AS POSSIBLE. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK.
3. DUCTWORK/PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. DUCTWORK/PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
4. DUCTWORK/PIPING SHALL NOT BE INSTALLED IN A LOCATION THAT RESTRICTS THE ACCESS TO MECHANICAL DEVICES REQUIRING ACCESS.
5. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
6. COORDINATE FLOOR, WALL, ROOF PENETRATIONS, LOUVER SIZES, PAD LOCATIONS ETC. WITH ARCHITECTURAL TRADES. SEAL ALL PIPING AND DUCT PENETRATIONS.
7. THE CONTRACTOR SHALL REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF GRILLES, REGISTERS, AND DIFFUSERS.
8. COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILING AREAS FOR ACCESS TO BALANCING DAMPERS, ETC. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
9. BRANCH DUCTWORK TO GRILLES, REGISTERS AND DIFFUSERS SHALL BE THE SAME SIZE AS THE GRILLE, REGISTER OR DIFFUSER NECK SIZE WHERE NO DUCT SIZE IS INDICATED ON PLAN.
10. MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 5'-0".
11. FOR EQUIPMENT VALVING, COMPONENT, AND PIPING ARRANGEMENT, REFER TO PIPING DIAGRAMS AND DETAILS.
12. PAINT ALL VISIBLE INTERIOR SURFACES OF EXHAUST/RETURN GRILLES, REGISTERS AND VISIBLE ASSOCIATED DUCTWORK FLAT BLACK.
13. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.
14. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR DAMPERS, VALVES, AND CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
15. DUCTWORK TO AND FROM VAV BOXES/TERMINAL UNITS SHALL BE EQUAL TO THE BOX CONNECTIONS SIZES UNLESS INDICATED OTHERWISE.
16. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
17. ALL BRANCH PIPING TO TERMINAL UNITS TO BE 3/4" UNLESS OTHERWISE NOTED.
18. ROOF MOUNTED EQUIPMENT REQUIRING SERVICE SHALL BE LOCATED A MINIMUM OF 10 FEET FROM ROOF EDGES. WHERE EQUIPMENT CAN'T BE LOCATED AWAY FROM ROOF EDGE AND GUARD RAILS ARE NOT PROVIDED, PROVIDE PERMANENT FALL ARREST ANCHORAGE CONNECTION DEVICE THAT COMPLIES WITH ANSI/ASSE Z 359.1.

19 IN AREAS WHERE PIPING IS EXPOSED AND VISIBLE TO OCCUPANTS, PLACE PIPING LABEL AND FLOW ARROWS AT BOTTOM OF PIPING. ALL PIPING SHALL BE PAINTED TO MATCH ARCHITECTURAL IN ALL AREAS WITH EXPOSED CEILING

20 CONTRACTOR TO RUN THERMOSTAT CONTROL WIRING ALONG PERIMETER OF CLASSROOM WALLS TO RESPECTIVE TERMINAL UNIT.

MECHANICAL ENLARGED KEYNOTES

M1 ROUTE 8"Ø BOILER FLUE/INTAKE UP THROUGH ROOF AND TERMINATE A MINIMUM OF 3 FT ABOVE ROOD AND 10 FT MIN FROM ANY INTAKE. TRANSITION AS REQUIRED TO AVOID STRUCTURES. CONDUIT, PIPING, ETC. TERMINATE INTAKE WITH A GOOSENECK. BOILER VENTS TO BE CONSTRUCTED OF SATINLESS STEEL ONLY (PVC WILL NOT BE ACCEPTED) AND COMPLIANT WITH MFR RECOMMENDATIONS AND MMC 2021.



1 / MH1.2 ENLARGED BOILER ROOM MECHANICAL PLAN
SCALE: 1/4" = 1'-0"

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Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

STATE OF MICHIGAN
STEVEN R. DIBERARDINE
ENGINEER
No. 6201041574
LICENSED PROFESSIONAL ENGINEER

10/10/2025

Lansing® School District

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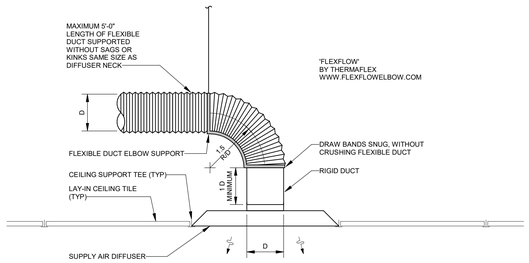
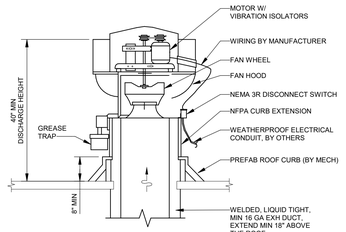
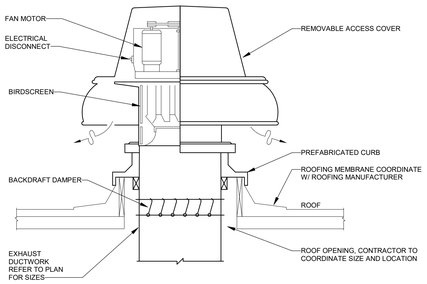


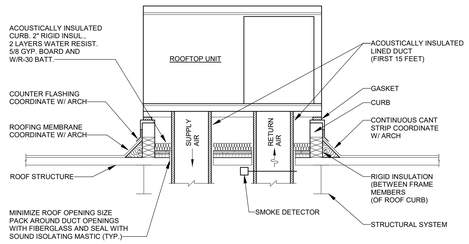
DIFFUSER- SUPPLY AIR DETAIL
NO SCALE



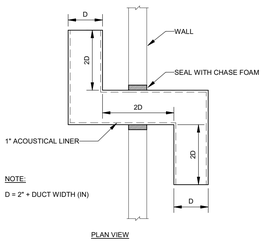
EXHAUST FAN- KITCHEN DETAIL
NO SCALE



EXHAUST FAN- ROOF MOUNTING DETAIL
NO SCALE

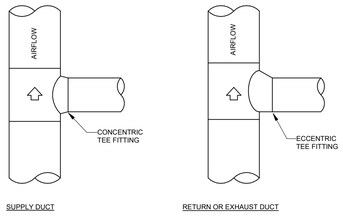


RTU - CURB MOUNTING DETAIL
NO SCALE



PLAN VIEW

TRANSFER DUCT DETAIL (Z-DUCT)
NO SCALE

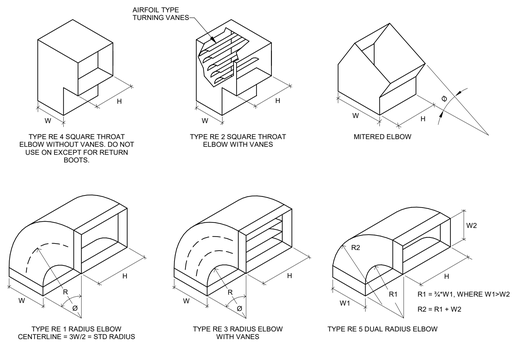


SUPPLY DUCT

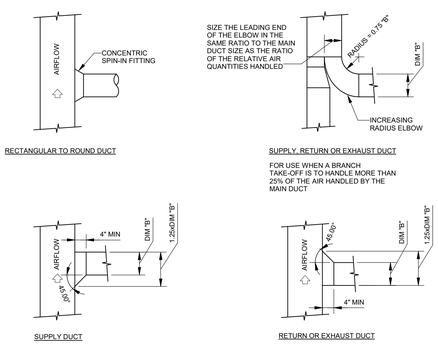
RETURN OR EXHAUST DUCT

FLAT OVAL DUCT BRANCH TAKE-OFF SIMILAR

DUCT ROUND BRANCH TAKE-OFF DETAILS
NO SCALE



DUCT RECTANGULAR SHEETMETAL ELBOWS
NO SCALE



DUCT RECTANGULAR BRANCH TAKE-OFF DETAILS
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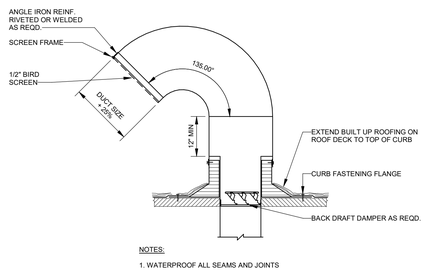
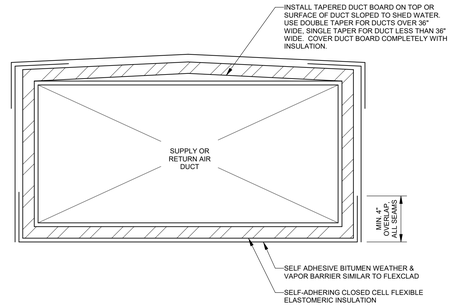
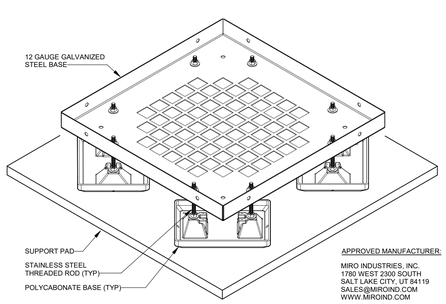


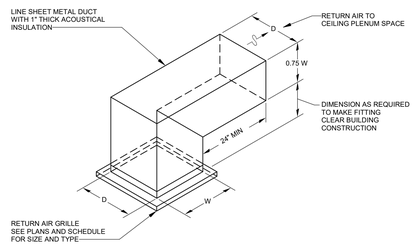
DUCT GOOSENECK DETAIL
NO SCALE



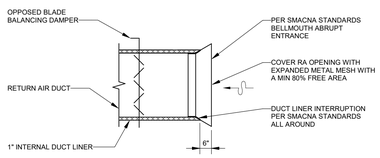
ROOF MOUNTED OR EXTERIOR DUCT INSULATION DETAIL
NO SCALE



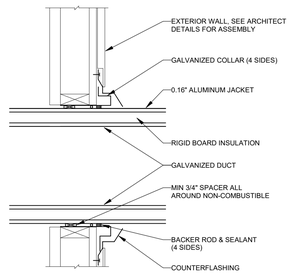
ROOF MOUNTED EQUIPMENT SUPPORT DETAIL #2
NO SCALE



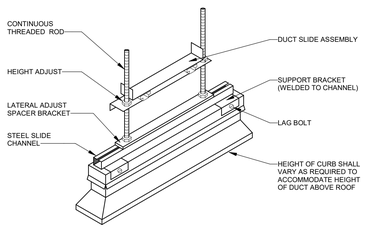
PLENUM RETURN GRILLE-BOOT DETAIL
NO SCALE



PLENUM RETURN BELLMOUTH W DAMPER
NO SCALE



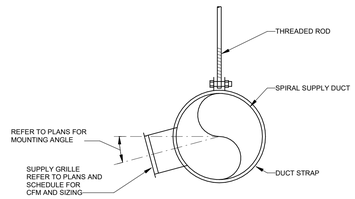
DUCT PENETRATION EXTERIOR WALL
NO SCALE



NOTE:

DUCT MOUNTING PEDESTAL SHALL BE AS MANUFACTURED BY RPS CORPORATION

DUCT SUPPORT- MOUNTING PEDESTAL (ROOF MOUNTED DUCTWORK)
NO SCALE



DIFFUSER- SPIRAL DUCT MOUNTED
NO SCALE

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STATE OF MICHIGAN
STEVEN R. DIBERARDINE
ENGINEER
No. 6201041574
10/10/2025

Lansing School District

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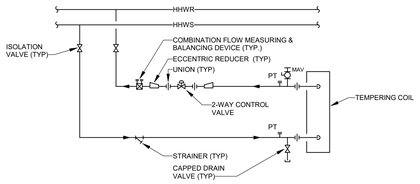
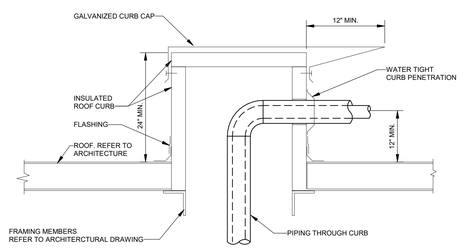
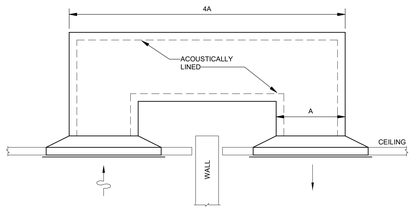


NOTES:
1. CONNECT BRANCH PIPING AT BOTTOM OF MAIN.
2. PROVIDE 90° "SWING ARM" CONNECTION FROM MAIN TO ALLOW FOR PIPING EXPANSION AND CONTRACTION

TEMPERING COIL PIPING DIAGRAM (2-WAY VALVE)
NO SCALE



PIPE CURB HORIZONTAL PENETRATION DETAIL
NO SCALE



TRANSFER GRILLE DETAIL
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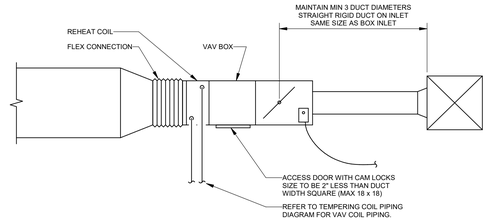
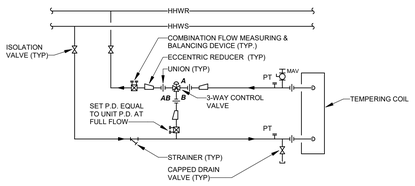
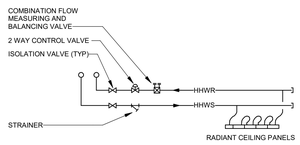


VAV BOX INSTALLATION
NO SCALE

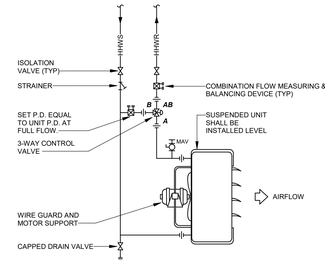


NOTES:
1. CONNECT BRANCH PIPING AT BOTTOM OF MAIN.
2. PROVIDE 90° "SWING ARM" CONNECTION FROM MAIN TO ALLOW FOR PIPING EXPANSION AND CONTRACTION

TEMPERING COIL PIPING DIAGRAM (3-WAY VALVE)
NO SCALE

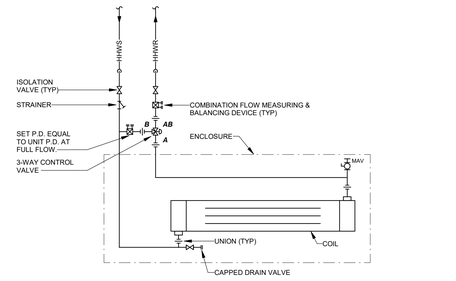


RADIANT CEILING PANEL PIPING DETAIL
NO SCALE



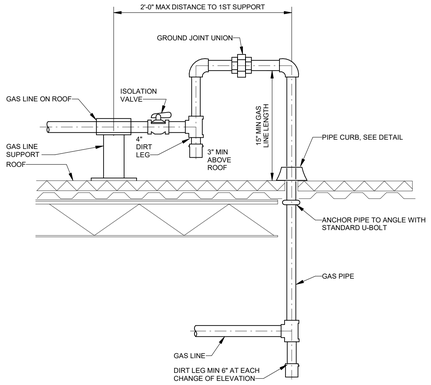
NOTES:
1. IF COIL HAS VENT AND/OR DRAIN CONNECTIONS THEY ARE TO BE USED IN LIEU OF INSTALLING IN PIPING AS INDICATED.
2. CONTRACTOR SHALL VERIFY AND COORDINATE PIPING CONNECTION LOCATIONS WITH FINAL APPROVED MANUFACTURER SUBMITTAL.
3. CONNECT BRANCH PIPING AT BOTTOM OF MAINS.
4. PROVIDE 90° "SWING ARM" CONNECTION TO MAIN TO ALLOW FOR PIPING EXPANSION AND CONTRACTION.

UNIT HEATER - HOT WATER PIPING DIAGRAM (3 WAY VALVE)
NO SCALE



NOTES:
1. CONTROL VALVE, ISOLATION VALVE(S) AND COMBINATION FLOW MEASURING & BALANCING DEVICE(S) MAY BE LOCATED IN UNIT.
2. CONTRACTOR SHALL VERIFY AND COORDINATE PIPING CONNECTION LOCATIONS WITH FINAL APPROVED MANUFACTURER SUBMITTAL.
3. BRANCH PIPING SHALL BE LOCATED IN THE WALL, WHEN CUH IS INSTALLED IN WALL.
4. CONNECT BRANCH PIPING AT BOTTOM OF MAINS.

CUH - HOT WATER PIPING DIAGRAM (3-WAY VALVE)
NO SCALE



GAS PIPING THRU ROOF DETAIL
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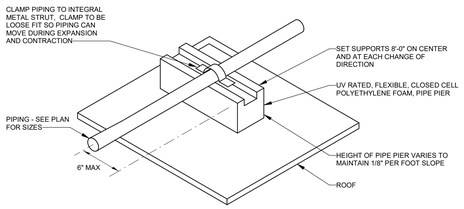

GAS PIPING ON ROOF SUPPORT DETAIL
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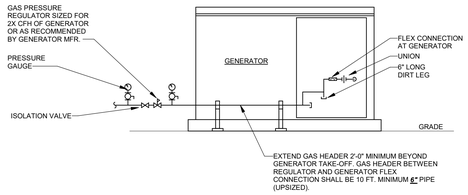

GAS GENERATOR PIPING DETAIL
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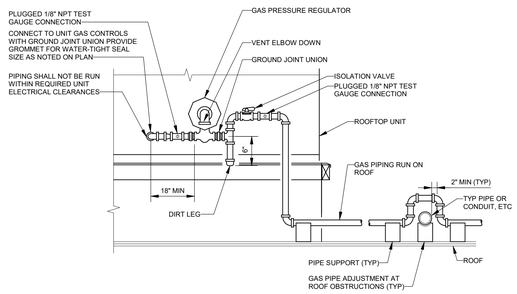

GAS CONNECTION DETAIL - ROOFTOP UNIT
NO SCALE

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ROOFTOP UNIT SCHEDULE - (DX - GAS - HGR)

UNIT ID	TOTAL SUPPLY (CFM)	MINIMUM OA (CFM)	SUPPLY FAN					RETURN FAN					DX COOLING COIL								NATURAL GAS HEATING SECTION					HOT GAS RE-HEAT COIL				ELECTRICAL					DISCONNECT					
			ESP (IN WG)	FAN TYPE	DRIVE TYPE	BHP	HP	ESP (IN WG)	FAN TYPE	DRIVE TYPE	BHP	HP	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	AIR EDB (°F)	AIR EWB (°F)	AIR LDB (°F)	AIR LWB (°F)	AIR APD (IN WG)	MIN. EFFICIENCY (EER/IEER)	REFRIGERANT TYPE	INPUT (MBH)	OUTPUT (MBH)	GAS PRESS. MIN.-MAX. (IN WG)	STAGES OR MODULATION TURNDOWN	BURNER TYPE	EAT (°F)	LAT (°F)	RE-HEAT (MBH)	AIR EDB (°F)	AIR LDB (°F)	FILTER TYPE	MOCP	MCA	FLA	VOLTS	PHASE	FURN. BY	INST. BY	CURB HEIGHT (IN)	UNIT WEIGHT (LBS)	MANUFACTURER / MODEL NO.	REMARKS
RTU-1	8300	3230	1.00	BACKWARD CURVED	DIRECT	6.7	10	0.50	BACKWARD CURVED	DIRECT	5.8	7.5	292	191	77	66	55	54	0.44	11 / 13	R-454B	405	328	4-14	13:1	INDIRECT	37	76	131	55	70	MERV 13	100	81	76	460	3	MFR	MFR	24"	3907	AAON / RNA-025	
RTU-2	10200	4530	1.00	BACKWARD CURVED	DIRECT	6.4	7.5	0.50	BACKWARD CURVED	DIRECT	(2) 1.7	(2) 2	348	239	77	66	55	55	0.28	10.5 / 13.5	R-454B	600	486	4-14	10:1	INDIRECT	35	78	160	55	70	MERV 13	100	80	75	460	3	MFR	MFR	24"	7101	AAON / RNA-031	
RTU-3	3150	1070	1.00	BACKWARD CURVED	DIRECT	1.25	3	0.50	BACKWARD CURVED	DIRECT	0.74	1	130	88	82	69	55	55	0.16	14 / 18.7	R-454B	195	158	4-14	10:1	INDIRECT	41.5	90	48.7	55	70	MERV 13	30	27	25	460	3	MFR	MFR	24"	2010	AAON / RNA-011	
RTU-4	4150	805	1.00	BACKWARD CURVED	DIRECT	2.1	3	0.50	BACKWARD CURVED	DIRECT	1.3	2	162	106	79	67	54	53	0.22	12 / 15	R-454B	195	158	4-14	10:1	INDIRECT	53	91	67.5	54	70	MERV 13	45	39	36	460	3	MFR	MFR	24"	2083	AAON / RNA-013	
RTU-5	2300	1240	0.75	BACKWARD CURVED	DIRECT	0.9	1	0.50	BACKWARD CURVED	DIRECT	0.45	2	93	60	79	67	55	54	0.05	13 / 16.5	R-454B	195	158	4-14	10:1	INDIRECT	53	116	36.8	55	70	MERV 13	30	26	24	460	3	MFR	MFR	24"	1912	AAON / RNA-009	
RTU-6	9800	5430	1.00	BACKWARD CURVED	DIRECT	6.1	7.5	0.50	BACKWARD CURVED	DIRECT	4.4	5	348	237	78	67	55	55	0.26	10.5 / 13.5	R-454B	900	729	4-14	15:1	INDIRECT	25.7	94	154	55	70	MERV 13	100	81	75	460	3	MFR	MFR	40"	7227	AAON / RNA-031	
RTU-7	7800	3410	1.50	BACKWARD CURVED	DIRECT	6.2	10	0.50	BACKWARD CURVED	DIRECT	5.8	7.5	292	191	77	67	55	54	0.43	11 / 13	R-454B	540	437	4-14	18:1	INDIRECT	35	86	130	55	70	MERV 13	100	81	76	460	3	MFR	MFR	24"	3940	AAON / RNA-025	
RTU-8	13150	5000	1.50	BACKWARD CURVED	DIRECT	10.5	15	0.75	BACKWARD CURVED	DIRECT	(2)2.8	(2) 5	526	336	77	66	52	52	0.25	10 / 13	R-454B	900	729	4-14	15:1	INDIRECT	38.7	91	195	56	70	MERV 13	150	126	121	460	3	MFR	MFR	24"	8026	AAON / RNA-040	

NOTES:
1. DUCT SMOKE DETECTORS ON UNIT SUPPLY AND RETURN FOR AIRFLOW OVER 1900 CFM. DETECTORS SHALL BE BY DIVISION 28. TCC SHALL WIRE FROM DETECTOR TO UNIT SHUTOFF.
2. TEMPERATURE CONTROLS BY RTU MFR. REFER TO CONTROLS DIAGRAM AND SOO.
3. ALL FANS SELECTED FOR RTUS MUST MEET REQUIREMENTS OF ASHRAE STANDARD 90.1-2013, SECTION 6.5.3.1.2. WHEN INDUCTION MOTORS ARE USED THEN THE REQUIREMENT IS TO USE THE NEXT AVAILABLE NEMA NAMEPLATE HORSEPOWER MOTOR, AND WHEN ECM'S ARE USED THE REQUIREMENT IS TO USE THE NEXT AVAILABLE ECM NAMEPLATE HORSEPOWER MOTOR. REFER TO INTERPRETATION IC90.1-2013-11 ADDITIONAL INFORMATION.
4. PROIVDE UNIT WITH FIELD POWERED 115V GFCI CONVENIENCE OUTLET.
5. PROVIDE SINGLE POINT POWER, FACTORY WIRED. MANUFACTURER TO PROVIDE DISCONNECT.
6. MAINTAIN UNIT SERVICE CLEARANCES ON FRONT, BACK, SIDE, AND TOP OF UNIT. ENSURE OUTDOOR AIR INTAKE IS GREATER THAN 10'-0" FROM ANY BUILDING EXHAUST.
7. COORDINATE FIELD INSTALLATION OF ALL EQUIPMENT SHIPPED LOOSE FROM MANUFACTURER.
8. ANY ITEM IN CONTRACT DOCUMENTS NOT INCLUDED BY MANUFACTURER SHALL BE PROVIDED BY DIVISION 23. VERIFY WITH FINAL APPROVED EQUIPMENT SUBMITTAL.
9. COORDIANTE UNITS AIC RATINGS WITH ELECTRICAL CONTRACTOR.
10. PROVIDE UNITS WITH PLENUM STYLE CURBS. RTU-6 TO BE PROVIDED WITH PLENUM CURB WITH DUCT CONNECTIONS.

ENERGY RECOVERY SECTION SCHEDULE

UNIT ID	RTU OR AHU UNIT ID	ENTHALPY WHEEL - SUMMER						ENTHALPY WHEEL - WINTER						FILTER TYPE	REMARKS
		OUTSIDE AIR				EXHAUST AIR		OUTSIDE AIR				EXHAUST AIR			
		EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	EDB (°F)	EWB (°F)	EDB (°F)	LDB (°F)	EDB (°F)	EWB (°F)				
ERS-1	RTU-1	95	75	80	68	75	65.2	-10	47.8	70	50	2" MERV 8	-		
ERS-2	RTU-2	95	75	80	67.7	75	65.2	-10	48.8	70	50	2" MERV 8	-		
ERS-6	RTU-6	95	75	80	68	75	65.2	-10	48.3	70	50	2" MERV 8	-		
ERS-7	RTU-7	95	75	80	68	75	65.2	-10	47.6	70	50	2" MERV 8	-		
ERS-8	RTU-8	95	75	80	67.8	75	65.2	-10	48.5	70	50	2" MERV 8	-		

NOTES:
1. UNITS ARE INTEGRAL TO ASSOCIATED RTU.
2. PLATE AND FRAME/ENERGY CORE TYPE IS PREFERRED BY THE OWNER BUT A WHEEL TYPE ENERGY RECOVERY IS ACCEPTABLE. FINAL ENERGY RECOVERY TYPE AND CONTROLS SHALL BE COORDINATED.
3. WHEEL MOTORS SHALL BE EC OR PROVIDED WITH VFD. MFR RECOMMENDED DEFROST GUIDELINES.

MAKE UP AIR UNIT SCHEDULE - (GAS HEATING ONLY)

UNIT ID	SERVICE	AIRFLOW (CFM)	SUPPLY FAN					NATURAL GAS HEATING SECTION						FILTER TYPE	ELECTRICAL				DISCONNECT		CURB HEIGHT (IN)	UNIT WEIGHT (LBS)	MANUFACTURER / MODEL NO.	REMARKS
			ESP (IN WG)	FAN TYPE	DRIVE TYPE	BHP	HP	INPUT (MBH)	OUTPUT (MBH)	GAS PRESS. MIN.-MAX. (IN WG)	STAGES OR MODULATION TURNDOWN	BURNER TYPE	EAT (°F)	LAT (°F)		MOCP	MCA	VOLTS	PHASE	FURN. BY	INST. BY				
MAU-1	KITCHEN HOOD	2200	1.00	MIXED FLOW	DIRECT	1.1	1.5	194	178	7-14	30:1	DIRECT	-5	70	MERV 8	15	4	460	3	MFR	MFR	18	593	GREENHECK / DGX-P112-H12-MF	

NOTES:
1. DUCT SMOKE DETECTORS ON UNIT SUPPLY FOR AIRFLOW OVER 1900 CFM. DETECTORS SHALL BE BY DIVISION 28. TCC SHALL WIRE FROM DETECTOR TO UNIT SHUTOFF.
2. TEMPERATURE CONTROLS BY TCC AND COORDINATED WITH KITCHEN HOOD CONTROLLER. REFER TO CONTROLS DIAGRAM AND SOO.
3. ALL FANS SELECTED FOR RTUS MUST MEET REQUIREMENTS OF ASHRAE STANDARD 90.1-2013, SECTION 6.5.3.1.2. WHEN INDUCTION MOTORS ARE USED THEN THE REQUIREMENT IS TO USE THE NEXT AVAILABLE NEMA NAMEPLATE HORSEPOWER MOTOR, AND WHEN ECM'S ARE USED THE REQUIREMENT IS TO USE THE NEXT AVAILABLE ECM NAMEPLATE HORSEPOWER MOTOR. REFER TO INTERPRETATION IC90.1-2013-11 ADDITIONAL INFORMATION.
4. PROVIDE UNIT WITH FIELD POWERED 115V GFCI CONVENIENCE OUTLET.
5. PROVIDE SINGLE POINT POWER, FACTORY WIRED. MANUFACTURER TO PROVIDE DISCONNECT.
6. MAINTAIN UNIT SERVICE CLEARANCES ON FRONT, BACK, SIDE, AND TOP OF UNIT. ENSURE OUTDOOR AIR INTAKE IS GREATER THAN 10'-0" FROM ANY BUILDING EXHAUST.
7. COORDINATE FIELD INSTALLATION OF ALL EQUIPMENT SHIPPED LOOSE FROM MANUFACTURER.
8. ANY ITEM IN CONTRACT DOCUMENTS NOT INCLUDED BY MANUFACTURER SHALL BE PROVIDED BY DIVISION 23. VERIFY WITH FINAL APPROVED EQUIPMENT SUBMITTAL.

GRILLE, REGISTER AND DIFFUSER SCHEDULE

UNIT ID	TYPE	AIRFLOW (CFM)		FACE SIZE (IN)	NECK SIZE (IN)	MAX AIR PD (IN-WG)	MAX NC	THROW PATTERN	THROW (FT) [50 FPM - 100 FPM - 150 FPM]	MOUNTING	BORDER	MATERIAL	FINISH	ACCESSORY	MANUFACTURER / MODEL NO.	REMARKS
		MIN FLOW	MAX FLOW													
E1-1	PERFORATED FACE	0	100	24x24	6ø	0.05	20	-	-	LAY IN CEILING	TYPE 3	STEEL	WHITE	-	PRICE / PDDR	-
E1-2	PERFORATED FACE	101	175	24x24	8ø	0.05	20	-	-	LAY IN CEILING	TYPE 3	STEEL	WHITE	-	PRICE / PDDR	-
E1-3	PERFORATED FACE	275	176	24x24	10ø	0.05	20	-	-	LAY IN CEILING	TYPE 3	STEEL	WHITE	-	PRICE / PDDR	-
E1-4	PERFORATED FACE	400	0	24x24	12ø	0.05	20	-	-	LAY IN CEILING	TYPE 3	STEEL	WHITE	-	PRICE / PDDR	-
E2-1	LOUVERED GRILLE	0	950	NECK+1 3/4	40x12	0.10	20	45° DEFLECTION	-	SIDEWALL	F	STEEL	WHITE	OPPOSED BLADE DAMPER	PRICE / 530/L	-
E2-2	LOUVERED GRILLE	0	90	NECK+1 3/4	6x6	0.10	20	45° DEFLECTION	-	SIDEWALL	F	STEEL	WHITE	OPPOSED BLADE DAMPER	PRICE / 530/L	-
R1-1	PERFORATED FACE	0	1685	24x24	22x22	0.05	20	-	-	T-BAR CEILING	TYPE 3	STEEL	WHITE	-	PRICE / PDDR	-
R2-1	PERFORATED FACE	0	375	24x12	18x6	0.05	20	-	-	T-BAR CEILING	TYPE 3	STEEL	WHITE	-	PRICE / PDDR	-
R2-2	PERFORATED FACE	0	1125	24x24	18x18	0.05	25	-	-	T-BAR CEILING	TYPE 3	STEEL	WHITE	-	PRICE / PDDR	-
R3-1	LOUVERED GRILLE	0	1400	NECK+1 3/4	36x20	0.10	20	45° DEFLECTION	-	SIDEWALL	F	STEEL	WHITE	-	PRICE / 530/L	-
R3-2	LOUVERED GRILLE	0	1700	NECK+1 3/4	36x24	0.10	20	45° DEFLECTION	-	SIDEWALL	F	STEEL	WHITE	-	PRICE / 530/L	-
R3-4	LOUVERED GRILLE	0	550	NECK+1 3/4	22x10	0.10	20	45° DEFLECTION	-	SIDEWALL	F	STEEL	WHITE	-	PRICE / 530/L	-
S1-1	SQUARE PLAQUE	0	175	24x24	6ø	0.10	20	4-WAY	3-4-7	LAY IN CEILING	TYPE 31	STEEL	WHITE	-	PRICE / SPD	-
S1-2	SQUARE PLAQUE	160	280	24x24	8ø	0.10	20	4-WAY	3-5-9	LAY IN CEILING	TYPE 31	STEEL	WHITE	-	PRICE / SPD	-
S1-3	SQUARE PLAQUE	285	435	24x24	10ø	0.10	20	4-WAY	4-6-11	LAY IN CEILING	TYPE 31	STEEL	WHITE	-	PRICE / SPD	-
S2-1	LOUVERED GRILLE	0	180	NECK+1 3/4	8x6	0.10	20	45° DOUBLE DEFLECTION	13-18-26	SIDEWALL	F	STEEL	WHITE	-	PRICE / 520/L	-
S2-2	LOUVERED GRILLE	180	210	NECK+1 3/4	10x6	0.10	20	45° DOUBLE DEFLECTION	7-9-13	SIDEWALL	F	STEEL	WHITE	-	PRICE / 520/L	-
S3-1	LOUVERED GRILLE	0	185	NECK+1 3/4	12x4	0.10	20	22° DOUBLE DEFLECTION	10-14-20	DUCT		GALV. STEEL	UNPAINTED	AIR SCOOP	PRICE / SDG	-
S3-2	LOUVERED GRILLE	0	350	NECK+1 3/4	18x6	0.10	20	22° DOUBLE DEFLECTION	12-19-29	DUCT		GALV. STEEL	UNPAINTED	AIR SCOOP	PRICE / SDG	-
S3-3	LOUVERED GRILLE	0	280	NECK+1 3/4	14x6	0.10	20	22° DOUBLE DEFLECTION	13-19-27	DUCT		GALV. STEEL	UNPAINTED	AIR SCOOP	PRICE / SDG	-
S3-4	LOUVERED GRILLE	0	500	NECK+1 3/4	22x6	0.10	20	22° DOUBLE DEFLECTION	15-22-33	DUCT		GALV. STEEL	UNPAINTED	AIR SCOOP	PRICE / SDG	-
S3-5	LOUVERED GRILLE	0	175	NECK+1 3/4	12x4	0.10	20	22° DOUBLE DEFLECTION	10-14-20	DUCT		GALV. STEEL	UNPAINTED	AIR SCOOP	PRICE / SDG	-

NOTES:
1. REFER TO ARCHITECTURAL CEILING PLAN AND COORDINATE FRAME TYPE ACCORDINGLY.

LOUVER SCHEDULE

UNIT ID	SERVICE	FACE SIZE (IN)	ACTIVE SECTION (IN)	AIRFLOW (CFM)	FREE AREA (SQFT)	FREE AREA VELOCITY (FPM)	MAX PRESSURE DROP (IN WG)	MATERIAL	MANUFACTURER / MODEL NO.	REMARKS
L-1	BOILER ROOM	30x30	29.75x29.75	1500	2.8	526	0.05	ALUMINUM	GREENHECK / ESD-403	
L-2	FIRE PUMP ROOM	24x16	23.75x15.75	450	1	454	0.03	ALUMINUM	GREENHECK ESD-435	

NOTES:

1. BEGINNING POINT OF WATER PENETRATION SHALL BE 1,000 FPM.
2. PROVIDE L-1 WITH SCREENS WITH OPENINGS NO SMALLER THAN 1"x1".
3. PROVIDE L-2 WITH BIRD SCREEN.

VAV TERMINAL UNIT SCHEDULE WITH TEMPERING COIL - (HHW)

UNIT ID	AIRFLOW RANGE		DUCT CONNECTIONS		MAX. NC LEVEL	HEATING HOT WATER COIL					CONTROL VALVE TYPE	HEATING HOT WATER COIL			MANUFACTURER / MODEL NO.	REMARKS
	MIN. (CFM)	MAX. (CFM)	INLET SP (IN WG)	INLET SIZE (IN)	OUTLET SIZE (IN)		HTG (CFM)	APD (IN WG)	EAT (°F)	LAT (°F)	TOTAL CAPACITY (MBH)		FLOW (GPM)	ROWS	WPD (FT WG)	
												EWT (°F)	LWT (°F)			
VAV-101	660	850	1.00	10	14x12 1/2	20	800	0.33	60	90	26.1	160	119	2-WAY	1.25	2	0.50	PRICE - SDV	
VAV-102	250	500	1.00	8	12x10	20	500	0.25	60	90	16.4	160	118	2-WAY	0.75	2	0.16	PRICE - SDV	
VAV-110	700	1400	1.00	14	20x17 1/2	20	1400	0.25	60	90	45.6	160	114	3-WAY	2.00	2	0.60	PRICE - SDV	
VAV-111	700	1400	1.00	14	20x17 1/2	20	1400	0.25	60	90	45.6	160	114	2-WAY	2.00	2	0.60	PRICE - SDV	
VAV-112	515	900	1.00	10	14x12 1/2	20	750	0.37	60	90	24.5	160	118	2-WAY	1.25	2	0.42	PRICE - SDV	
VAV-113	550	1100	1.00	12	16x15	20	1000	0.30	60	85	27.2	160	107	2-WAY	1.00	2	0.43	PRICE - SDV	
VAV-114	515	800	1.00	10	14x12 1/2	20	800	0.29	60	80	17.6	160	101	2-WAY	0.50	2	0.13	PRICE - SDV	
VAV-115	700	1400	1.00	14	20x17 1/2	20	1400	0.25	60	90	45.6	160	114	2-WAY	2.00	2	0.60	PRICE - SDV	
VAV-130	850	1700	1.00	14	20x17 1/2	20	1700	0.35	60	90	55.3	160	118	2-WAY	2.75	2	1.00	PRICE - SDV	
VAV-132	650	1300	1.00	14	20x17 1/2	20	1200	0.22	60	90	39.0	160	110	3-WAY	1.50	2	0.41	PRICE - SDV	
VAV-134	580	1100	1.00	12	16x15	20	1100	0.31	60	90	35.9	160	119	2-WAY	1.75	2	1.06	PRICE - SDV	
VAV-136	650	1300	1.00	14	20x17 1/2	20	1250	0.10	60	85	33.9	160	147	2-WAY	5.25	1	4.90	PRICE - SDV	
VAV-138	580	1100	1.00	12	16x15	20	1100	0.31	60	90	35.9	160	119	2-WAY	1.75	2	1.00	PRICE - SDV	
VAV-140	650	1300	1.00	14	20x17 1/2	20	1250	0.10	60	85	33.9	160	147	2-WAY	5.25	1	4.90	PRICE - SDV	
VAV-202	135	200	1.00	6	12x8	20	200	0.03	60	80	4.50	160	131	2-WAY	0.50	1	0.10	PRICE - SDV	
VAV-203	150	300	1.00	6	12x8	20	300	0.07	60	85	8.20	160	150	2-WAY	1.75	1	1.64	PRICE - SDV	
VAV-204	225	450	1.00	8	12x10	20	350	0.21	60	85	9.70	160	103	2-WAY	0.50	2	0.03	PRICE - SDV	
VAV-205	750	1100	1.00	12	16x15	20	750	0.14	60	80	16.30	160	134	2-WAY	1.25	1	0.30	PRICE - SDV	
VAV-210	550	1100	1.00	12	16x15	20	1100	0.31	60	90	35.90	160	119	2-WAY	1.75	2	1.00	PRICE - SDV	
VAV-213	220	300	1.00	6	12x8	20	300	0.14	60	90	9.90	160	114	2-WAY	0.50	2	0.04	PRICE - SDV	
VAV-216	275	550	1.00	8	12x10	20	550	0.30	60	90	18.0	160	120	2-WAY	1.00	2	0.21	PRICE - SDV	
VAV-217	150	300	1.00	6	12x8	20	150	0.06	60	75	2.60	160	120	2-WAY	0.50	1	0.01	PRICE - SDV	
VAV-220	850	1700	1.00	14	20x17 1/2	20	1700	0.35	60	90	55.30	160	118	2-WAY	2.75	2	1.00	PRICE - SDV	
VAV-221	550	1100	1.00	12	16x15	20	850	0.31	60	90	27.70	160	123	2-WAY	1.25	2	0.53	PRICE - SDV	
VAV-240	425	850	1.00	10	14x12 1/2	20	600	0.33	60	90	19.60	160	123	2-WAY	0.75	2	0.23	PRICE - SDV	
VAV-242	140	275	1.00	6	12x8	20	275	0.12	60	90	9.0	160	112	2-WAY	0.50	2	0.04	PRICE - SDV	
VAV-247	415	825	1.00	10	14x12 1/2	20	825	0.31	60	85	22.50	160	110	2-WAY	1.00	2	0.27	PRICE - SDV	
VAV-248	150	300	1.00	6	12x8	20	150	0.06	60	75	2.60	160	120	2-WAY	0.50	1	0.01	PRICE - SDV	
VAV-250	250	500	1.00	8	12x10	20	250	0.11	60	75	4.10	160	120	2-WAY	0.50	1	0.06	PRICE - SDV	
VAV-252	475	950	1.00	12	16x15	20	900	0.24	60	90	29.30	160	114	2-WAY	1.25	2	0.60	PRICE - SDV	
VAV-270	360	650	1.00	10	14x12 1/2	20	360	0.09	60	75	5.80	160	119	2-WAY	0.50	1	0.01	PRICE - SDV	
VAV-271	900	1650	1.00	14	20x17 1/2	20	900	0.15	60	75	14.70	160	120	2-WAY	0.75	1	0.15	PRICE - SDV	
VAV-274A	1350	2550	1.00	16	24x18	20	2000	0.48	60	90	65.0	160	117	3-WAY	6.25	2	1.36	PRICE - SDV	
VAV-274B	1350	2550	1.00	16	24x18	20	2000	0.48	60	90	65.0	160	117	3-WAY	6.25	2	1.36	PRICE - SDV	
VAV-276	800	1600	1.00	14	20x17 1/2	20	1600	0.31	60	90	52.0	160	117	2-WAY	2.50	2	0.85	PRICE - SDV	
VAV-301	150	300	1.00	6	12x8	20	300	0.14	60	90	9.90	160	114	2-WAY	0.50	2	0.04	PRICE - SDV	
VAV-302	400	800	1.00	10	14x12 1/2	20	800	0.30	60	90	26.10	160	119	2-WAY	1.25	2	0.50	PRICE - SDV	
VAV-303	150	300	1.00	6	12x8	20	300	0.07	60	85	8.20	160	150	2-WAY	1.75	1	1.64	PRICE - SDV	
VAV-311	800	1300	1.00	14	20x17 1/2	20	1000	0.22	60	90	32.60	160	107	2-WAY	1.25	2	0.27	PRICE - SDV	
VAV-313	150	300	1.00	6	12x8	20	300	0.06	60	75	4.90	160	126	2-WAY	0.50	1	0.08	PRICE - SDV	
VAV-330	600	1200	1.00	12	16x15	20	1150	0.35	60	90	37.40	160	120	2-WAY	2.00	2	1.20	PRICE - SDV	
VAV-331	700	1400	1.00	14	20x17 1/2	20	1400	0.25	60	90	45.60	160	114	2-WAY	2.00	2	0.60	PRICE - SDV	
VAV-332	550	1100	1.00	12	16x15	20	950	0.30	60	85	25.70	160	106	2-WAY	1.00	2	0.38	PRICE - SDV	
VAV-333	550	1100	1.00	12	16x15	20	950	0.30	60	85	25.70	160	106	3-WAY	1.00	2	0.38	PRICE - SDV	
VAV-334	505	750	1.00	10	14x12 1/2	20	750	0.27	60	90	24.50	160	118	2-WAY	1.25	2	0.42	PRICE - SDV	
VAV-335	550	1100	1.00	12	16x15	20	950	0.30	60	85	25.70	160	106	2-WAY	1.00	2	0.38	PRICE - SDV	
VAV-336	505	700	1.00	10	14x12 1/2	20	700	0.24	60	90	22.80	160	116	2-WAY	1.00	2	0.34	PRICE - SDV	
VAV-337	700	1400	1.00	14	20x17 1/2	20	1400	0.25	60	90	45.60	160	114	2-WAY	2.00	2	0.60	PRICE - SDV	
VAV-338	700	1400	1.00	14	20x17 1/2	20	1400	0.25	60	90	45.60	160	114	2-WAY	2.00	2	0.60	PRICE - SDV	

NOTES:
1. AIRFLOW SHALL BE SET TO THE CFM INDICATED ON FLOOR PLANS.
2. MAXIMUM NC LEVEL BASED ON 3" PRESSURE DROP WITH NO ALLOWANCE FOR EXTERNAL ATTENUATION. MAXIMUM NC LEVEL SHALL NOT EXCEED 20.
3. CONTRACTOR TO COORDINATE HANDING OF UNITS WITH SHOP DRAWINGS PRIOR TO ORDERING.

EXHAUST FAN SCHEDULE

UNIT ID	SERVING	TYPE	AIRFLOW (CFM)	ESP (IN WG)	FAN (RPM)	MOTOR			ELECTRICAL		DISCONNECT			STARTER		CURB HEIGHT (IN)	MANUFACTURER / MODEL NO.	REMARKS
						BHP	HP	RPM	DRIVE TYPE	VOLTS	PHASE	FURN. BY	INST. BY	TYPE	FURN. BY	INST. BY			
EF-1	RESTROOMS	DOWNBLAST	660	0.75	1427	0.15	1/4	1427	DIRECT	208	1	MFR	MFR	TOGGLE	MFR	MFR	18"	GREENHECK G-100-VG	-
EF-2	LOCKER ROOMS	DOWNBLAST	425	0.50	1515	0.07	1/6	1515	DIRECT	208	1	MFR	MFR	TOGGLE	MFR	MFR	18"	GREENHECK G-90-VG	-
EF-3	RESTROOMS	DOWNBLAST	850	0.75	1517	0.19	1/4	1517	DIRECT	208	1	MFR	MFR	TOGGLE	MFR	MFR	18"	GREENHECK G-100-VG	-
EF-4	RESTROOMS	DOWNBLAST	700	0.75	1436	0.15	1/4	1436	DIRECT	208	1	MFR	MFR	TOGGLE	MFR	MFR	18"	GREENHECK G-100-VG	-
EF-131	TOILET ROOM	CEILING	75	0.25	900	0.01	15 W	900	DIRECT	115	1	MFR	MFR	TOGGLE	-	-	0"	GREENHECK / SP-A90	-
EF-133	TOILET ROOM	CEILING	75	0.25	900	0.01	15 W	900	DIRECT	115	1	MFR	MFR	TOGGLE	-	-	0"	GREENHECK / SP-A90	-
EF-135	TOILET ROOM	CEILING	75	0.25	900	0.01	15 W	900	DIRECT	115	1	MFR	MFR	TOGGLE	-	-	0"	GREENHECK / SP-A90	-
EF-137	TOILET ROOM	CEILING	75	0.25	900	0.01	15 W	900	DIRECT	115	1	MFR	MFR	TOGGLE	-	-	0"	GREENHECK / SP-A90	-
EF-139	TOILET ROOM	CEILING	75	0.25	900	0.01	15 W	900	DIRECT	115	1	MFR	MFR	TOGGLE	-	-	0"	GREENHECK / SP-A90	-
EF-141	TOILET ROOM	CEILING	75	0.25	900	0.01	15 W	900	DIRECT	115	1	MFR	MFR	TOGGLE	-	-	0"	GREENHECK / SP-A90	-
EF-211	TOILET ROOM	CEILING	75	0.25	900	0.01	15 W	900	DIRECT	115	1	MFR	MFR	TOGGLE	-	-	0"	GREENHECK / SP-A90	-
EF-212	TOILET RO

OUTSIDE AIR VENTILATION SCHEDULE

UNIT ID	AREA SERVED	ASSOCIATED EQUIPMENT	CEILING HEIGHT (FT)	FLOOR AREA (FT^2)	OCCUPANCY CLASSIFICATION	2021 MMC			VENTILATION						
						PEOPLE RATE (CFM/PP)	AREA RATE (CFM/FT^2)	DENSITY #/ 1000 SF	DEFAULT PEOPLE	ACTUAL PEOPLE	PEOPLE OA (CFM)	AREA OA (CFM)	AIR DISTR. EFFECTIVENESS	MINIMUM EA REQUIRED (CFM)	MINIMUM OA REQUIRED (CFM)
101	CORRIDOR	RTU-1	10	650	CORRIDORS	0	0.06	0	0	0	0	39	0.80	0	50
102	CORRIDOR	RTU-1	10	1016	CORRIDORS	0	0.06	0	0	0	0	61	0.80	0	80
110	CLASSROOM	RTU-1	12	906	CLASSROOMS (AGES 5-8)	10	0.12	25	23	30	300	109	0.80	0	515
111	CLASSROOM	RTU-1	12	906	CLASSROOMS (AGES 5-8)	10	0.12	25	23	30	300	109	0.80	0	515
112	CLASSROOM	RTU-1	12	905	CLASSROOMS (AGES 5-8)	10	0.12	25	23	30	300	109	0.80	0	515
113	CLASSROOM	RTU-1	12	907	CLASSROOMS (AGES 5-8)	10	0.12	25	23	30	300	109	0.80	0	515
114	CLASSROOM	RTU-1	12	907	CLASSROOMS (AGES 5-8)	10	0.12	25	23	30	300	109	0.80	0	515
115	CLASSROOM	RTU-1	12	910	CLASSROOMS (AGES 5-8)	10	0.12	25	23	30	300	109	0.80	0	515
130	2ND GRADE	RTU-2	12	1116	CLASSROOMS (AGES 5-8)	10	0.12	25	28	30	300	134	0.80	0	545
132	2ND GRADE	RTU-2	12	1101	CLASSROOMS (AGES 5-8)	10	0.12	25	28	30	300	132	0.80	0	545
134	KINDERGARTEN	RTU-2	12	1366	CLASSROOMS (AGES 5-8)	10	0.12	25	34	30	300	164	0.80	0	580
136	1ST GRADE	RTU-2	12	1081	CLASSROOMS (AGES 5-8)	10	0.12	25	27	30	300	130	0.80	0	540
138	KINDERGARTEN	RTU-2	12	1366	CLASSROOMS (AGES 5-8)	10	0.12	25	34	30	300	164	0.80	0	580
140	1ST GRADE	RTU-2	12	1080	CLASSROOMS (AGES 5-8)	10	0.12	25	27	30	300	130	0.80	0	540
202	CORRIDOR	RTU-2	10	1748	CORRIDORS	0	0.06	0	0	0	0	105	0.80	0	135
203	CORRIDOR	RTU-3	10	1400	CORRIDORS	0	0.06	0	0	0	0	84	0.80	0	105
204	CORRIDOR	RTU-4	10	630	CORRIDORS	0	0.06	0	0	0	0	38	0.80	0	50
205	CORRIDOR	RTU-7	10	2038	CORRIDORS	0	0.06	0	0	0	0	122	0.80	0	155
210	PRE-K	RTU-2	12	1041	CLASSROOMS (AGES 5-8)	10	0.12	25	26	30	300	125	0.80	0	535
213	SENSORY	RTU-3	10.00	469	CLASSROOMS (AGES 5-8)	10	0.12	25	12	12	117	56	0.80	0	220
216	RESOURCE	RTU-3	10	469	OFFICE SPACE	5	0.06	5	2	2	12	28	0.80	0	50
217	ITTN. OFFICE	RTU-3	10	81	OFFICE SPACE	5	0.06	5	0	1	5	5	0.80	0	15
218	ITTN. OFFICE	RTU-3	10	81	OFFICE SPACE	5	0.06	5	0	1	5	5	0.80	0	15
219	ITTN. OFFICE	RTU-3	10	81	OFFICE SPACE	5	0.06	5	0	1	5	5	0.80	0	15
220	LIBRARY	RTU-3	14.67	1374	MEDIA CENTER	10	0.12	25	34	34	344	165	0.80	0	640
221	PRE-K	RTU-2	12	1027	CLASSROOMS (AGES 5-8)	10	0.12	25	26	30	300	123	0.80	0	530
230	GYMNASIUM - PLAY AREA	RTU-6	24	4500	GYM, SPORTS ARENA (PLAY AREA)	10	0.18	7	32	30	300	810	0.80	0	1,390
230	GYMNASIUM -BLEACHERS	RTU-6	24	2810	SPECTATOR AREAS	7.5	0.06	150	422	400	3,000	169	0.80	0	3,965
231	GYM STORAGE	RTU-6	14.67	321	UNOCCUPIABLE STORAGE ROOMS	0	0.12	0	0	0	0	39	0.80	0	50
232	LOCKER	RTU-6	9	243	LOCKER ROOM	0	0	0	0	0	0	0	0.80	125	0
235	LOCKER	RTU-6	9	72	LOCKER ROOM	0	0	0	0	0	0	0	0.80	40	0
237	LOCKER	RTU-6	9	243	LOCKER ROOM	0	0	0	0	0	0	0	0.80	125	0
238	OFFICE	RTU-6	10	190	OFFICE SPACE	5	0.06	5	1	1	5	11	0.80	0	25
240	WELCOME	RTU-4	10	292	OFFICE SPACE	5	0.06	5	1	1	5	18	0.80	0	30
241	RECEPTION	RTU-4	10	331	RECEPTION AREAS	5	0.06	30	10	4	20	20	0.80	0	50
242	OFFICE SUPPORT	RTU-4	10	351	OFFICE SPACE	5	0.06	5	2	2	10	21	0.80	0	40
243	CLINIC	RTU-4	10	142	OFFICE SPACE	5	0.06	5	1	1	5	9	0.80	0	20
246	SUPPORT	RTU-4	10	201	OFFICE SPACE	5	0.06	5	1	1	5	12	0.80	0	25
247	PRINCIPAL	RTU-4	10	366	OFFICE SPACE	5	0.06	5	2	2	10	22	0.80	0	40
248	OFFICE	RTU-4	10	182	OFFICE SPACE	5	0.06	5	1	1	5	11	0.80	0	20
249	OFFICE	RTU-4	10	179	OFFICE SPACE	5	0.06	5	1	1	5	11	0.80	0	20
250	CONFERENCE	RTU-4	10	569	CONFERENCE/MEETING	5	0.06	50	28	14	70	34	0.80	0	135
251	SECURITY	RTU-4	10	132	OFFICE SPACE	5	0.06	5	1	1	5	8	0.80	0	20
252	TEACHER LOUNGE	RTU-4	10	528	BREAKROOMS	5	0.12	50	26	26	130	63	0.80	0	245
270	SERVERY	RTU-5	10	514	KITCHEN (COOKING)	7.5	0.12	20	10	2	15	62	0.80	360	360
271	KITCHEN	RTU-5	10	1173	KITCHEN (COOKING)	7.5	0.12	20	23	5	38	141	0.80	825	825
273	DRY STORAGE	RTU-5	14.67	337	UNOCCUPIABLE STORAGE ROOMS	0	0.12	0	0	0	0	40	0.80	0	55
274	CAFETERIA	RTU-7	17.33	3262	CAFETERIA/FAST-FOOD DINING	7.5	0.18	100	326	200	1,500	587	0.80	0	2,610
275	STORAGE	RTU-7	17.33	294	UNOCCUPIABLE STORAGE ROOMS	0	0.12	0	0	0	0	35	0.80	0	45
276	MUSIC / ART	RTU-7	17.33	1230	CLASSROOMS (AGES 9 PLUS)	10	0.12	35	43	30	300	148	0.80	0	560
277	ART STOR.	RTU-7	17.33	158	UNOCCUPIABLE STORAGE ROOMS	0	0.12	0	0	0	0	19	0.80	0	25
280	RECEIVING	RTU-4	14.67	486	SHIPPING/RECEIVING	10	0.12	2	1	1	10	58	0.80	0	90
301	CORRIDOR	RTU-8	10	415	CORRIDORS	0	0.06	0	0	0	0	25	0.80	0	35
302	CORRIDOR	RTU-8	10	546	CORRIDORS	0	0.06	0	0	0	0	33	0.80	0	45
303	CORRIDOR	RTU-8	10	1686	CORRIDORS	0	0.06	0	0	0	0	101	0.80	0	130
311	SCIENCE	RTU-8	12	1136	CLASSROOMS (AGES 9 PLUS)	10	0.12	35	40	30	300	136	0.80	1,140	550
312	STORAGE	RTU-8	13.83	192	UNOCCUPIABLE STORAGE ROOMS	0	0.12	0	0	0	0	23	0.80	0	30
313	OFFICE	RTU-8	10	171	OFFICE SPACE	5	0.06	5	1	1	5	10	0.80	0	20
314	OFFICE	RTU-8	10	170	OFFICE SPACE	5	0.06	5	1	1	5	10	0.80	0	20
330	RESOURCE	RTU-8	13.83	859	OFFICE SPACE	5	0.06	5	4	4	20	52	0.80	0	90
331	MS CLASSROOM	RTU-8	12	862	CLASSROOMS (AGES 9 PLUS)	10	0.12	35	30	30	300	103	0.80	0	505
332	MS CLASSROOM	RTU-8	12	882	CLASSROOMS (AGES 9 PLUS)	10	0.12	35	31	30	300	106	0.80	0	510
333	MS CLASSROOM	RTU-8	12	850	CLASSROOMS (AGES 9 PLUS)	10	0.12	35	30	30	300	102	0.80	0	505
334	MS CLASSROOM	RTU-8	12	849	CLASSROOMS (AGES 9 PLUS)	10	0.12	35	30	30	300	102	0.80	0	505
335	MS CLASSROOM	RTU-8	12	859	CLASSROOMS (AGES 9 PLUS)	10	0.12	35	30	30	300	103	0.80	0	505
336	MS CLASSROOM	RTU-8	12	858	CLASSROOMS (AGES 9 PLUS)	10	0.12	35	30	30	300	103	0.80	0	505
337	MS CLASSROOM	RTU-8	12	959	CLASSROOMS (AGES 9 PLUS)	10	0.12	35	34	30	300	115	0.80	0	520
338	MS CLASSROOM	RTU-8	12	858	CLASSROOMS (AGES 9 PLUS)	10	0.12	35	30	30	300	103	0.80	0	505
886	CORRIDOR	RTU-4	10	247	CORRIDORS	0	0.06	0	0	0	0	15	0.80	0	20

BOILER SCHEDULE

UNIT ID	FUEL TYPE	GAS PRESS. MIN - MAX (IN WG)	INPUT (MBH)	OUTPUT (MBH)	TURNDOWN RATIO	PRESSURE RELIEF VALVE RATING (PSIG)	FLUID (WATER OR GLYCOL)				ELECTRICAL					DISCONNECT			MANUFACTURER / MODEL NO.	REMARKS
							FLOW (GPM)	EWT (°F)	LWT (°F)	MAX WPD (FT HD)	MOCP	MCA	FLA	VOLTS	PHASE	FURN. BY	INST. BY	TYPE		
B-1	NATURAL GAS	4 - 14	1750	1464	25:1	125	100	120	160	8.0	20	13	10	120	1	ELEC	ELEC	FUSED	LOCHINVAR / FB-1751	-
B-2	NATURAL GAS	4 - 14	1750	1464	25:1	125	100	120	160	8.0	20	13	10	120	1	ELEC	ELEC	FUSED	LOCHINVAR / FB-1751	-

NOTES:
1. PERFORMANCE IS BASED ON WATER UNLESS NOTED OTHERWISE.
2. PROVIDE CONDENSATE NEUTRALIZATION KIT WITH EACH BOILER.
3. PROVIDE FLOW SWITCH.
4. MANUFACTURER TO PROVIDE CSD-1 GAS TRAIN.
5. PROVIDE WITH 125 PSI ASME RELIEF VALVE.

PUMP SCHEDULE

UNIT ID	SYSTEM SERVED	TYPE	FLOW (GPM)	HEAD (FT)	MIN % EFF	ELECTRICAL				DISCONNECT			STARTER			MANUFACTURER / MODEL NO.	REMARKS
						BHP	HP	VOLTS	PHASE	FURN. BY	INST. BY	TYPE	TYPE	FURN BY	INST. BY		
CP-1	B-1	IN LINE	100	30	61.1	1.04	2	460	3	MFR	MC	VFD	VFD	MFR	MC	B&G / E-80	
CP-2	B-2	IN LINE	100	30	61.1	1.04	2	460	3	MFR	MC	VFD	VFD	MFR	MC	B&G / E-80	
P-1	HHW SYSTEM	BASE MOUNTED	100	70	61.3	2.37	5	460	3	MFR	MC	VFD	VFD	MFR	MC	B&G / 1510	
P-2	HHW SYSTEM	BASE MOUNTED	100	70	61.3	2.37	5	460	3	MFR	MC	VFD	VFD	MFR	MC	B&G / 1510	

NOTES:
1. PERFORMANCE IS BASED ON WATER UNLESS NOTED OTHERWISE.
2. PUMPS SHALL BE NON-OVERLOADING.
3. WHEN VFD CONTROL IS SPECIFIED, PROVIDE WITH NEMA PREMIUM EFFICIENT MOTOR WITH AEGIS SHAFT GROUNDING RINGS.

EXPANSION TANK SCHEDULE

UNIT ID	SYSTEM SERVED	TYPE	MIN PSIG	MAX PSIG	MIN (°F)	MAX (°F)	SYSTEM VOLUME (GAL)	TANK VOLUME (GAL)	DIA (IN)	HEIGHT (IN)	MANUFACTURER / MODEL NO.	REMARKS
ET-1	HHW SYSTEM	DIAPHRAGM	20.00	50.00	40	160	1000	60	20"	49"	BELL & GOSSETT / D100	

NOTES:
1. PERFORMANCE IS BASED ON WATER UNLESS NOTED OTHERWISE.

HOT WATER CABINET UNIT HEATER SCHEDULE

UNIT ID	CAPACITY (MBH)	AIRFLOW (CFM)	LAT @ 60° EAT (°F)	FLUID (WATER OR GLYCOL)				CABINET SIZE			MOUNTING	ELECTRICAL			MANUFACTURER / MODEL NO.	REMARKS
				FLOW (GPM)	EWT (°F)	LWT (°F)	MAX WPD (FT HD)	LENGTH (IN)	HEIGHT (IN)	DEPTH (IN)		HP	VOLTS	PHASE		
CUH-1	22.8	620	93.4	1.5	160	120	0.30	53"	24"	10"	RECESSED CEILING	1/15	120	1	ZEHNDER RITTLING / RFRC-420-06	-
CUH-2	32.1	875	93.3	1.6	160	120	0.10	77"	24"	10"	WALL PARTIALLY RECESSED	1/15	120	1	ZEHNDER RITTLING / RFRW-340-12	-

NOTES:
1. MANUFACTURER TO PROVIDE WITH FACTORY MOUNTED STARTER AND DISCONNECT.
2. PROVIDE WITH REMOTE THERMOSTAT.

HOT WATER UNIT HEATER SCHEDULE

UNIT ID	CAPACITY (MBH)	AIRFLOW (CFM)	LAT @ 60° EAT (°F)	WATER				ELECTRICAL			MANUFACTURER / MODEL NO.	REMARKS
				FLOW (GPM)	EWT (°F)	LWT (°F)	WPD (FT HD)	HP	VOLTS	PHASE		
UH-1	22.3	870	83	1	160	120	0.10	1/10	115	1	ZEHNDER RITTLING / RH-63	
UH-2	29.7	1040	86	2	160	120	0.10	1/10	115	1	ZEHNDER RITTLING / RH-86	
UH-3	38.9	1240	88	2	160	120	0.10	1/8	115	1	ZEHNDER RITTLING / RH-108	

NOTES:
1. MANUFACTURER TO PROVIDE WITH FACTORY MOUNTED STARTER AND DISCONNECT.
2. PROVIDE WITH REMOTE THERMSOTAT

RADIANT CEILING PANEL (HOT WATER) SCHEDULE

UNIT ID	PANEL WIDTH (IN)	PIPE DIA. (IN)	BTU/FT	ROOM TEMP. (°F)	WATER				MANUFACTURER / MODEL NO.	REMARKS
					AWT (°F)	EWT (°F)	LWT (°F)	WPD (FT HD)		
RCP-1	24"	3/4"	164	60	140	160	120	0.50	ZEHNDER RITTLING / LRCP	

NOTES:
1. COORDINATE CEILING HEIGHT AND STYLE WITH ARCHITECTURAL CEILING PLANS.
2. WHEN SPANING WALL TO WALL, COORDINATE LENGTH OF ROOM WITH FIELD CONDITIONS PRIOR TO ORDERING.

MINI-SPLIT INDOOR UNIT SCHEDULE

UNIT ID	UNIT TYPE	ASSOCIATED OUTDOOR UNIT ID	AREA SERVED	SUPPLY (WET COIL) (CFM)	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	ELECTRICAL		DISCONNECT			MANUFACTURER / MODEL NO.	REMARKS
							VOLTS	PHASE	FURN. BY	INST. BY	TYPE		
FCU-124	WALL MTD.	CU-124	ELEC / IDF 124	400	12	12	208	1	EC	EC	SWITCH	SAMSUNG / RNS12ABC	-
FCU-262	WALL MTD.	CU-262	MDF 262	400	12	12	208	1	EC	EC	SWITCH	SAMSUNG / RNS12ABC	-
FCU-282	WALL MTD.	CU-282	ELECT. 282	715	24	24	208	1	EC	EC	SWITCH	SAMSUNG / RNS24ABC	-
FCU-283	WALL MTD.	CU-283	EM. ELEC. 283	400	12	12	208	1	EC	EC	SWITCH	SAMSUNG / RNS12ABC	-
FCU-310	WALL MTD.	CU-310	IT / ELEC 310	400	12	12	208	1	EC	EC	SWITCH	SAMSUNG / RNS12ABC	-

NOTES:
1. R-454B REFRIGERANT
2. MECHANICAL CONTRACTOR TO PROVIDE WITH UNIT POWERED CONDENSATE PUMP. COORDINATE WITH ELECTRICAL CONTRACTOR.
3. PROVIDE WITH WIRED WALL MOUNT THERMOSTAT.
4. INDOOR UNITS RECIEVE POWER FROM OUTDOOR UNITS THROUGH FIELD SUPPLIED INTERCONNECTED WIRING BY ELECTRICAL CONTRACTOR.
5. PROVIDE INTERCONNECTING CONTROL WIRING AND RUN IN CONDUIT.
6. PROVIDE WITH CONTROL INTERFACE MODULE TO ENSURE UNIT IS INTEGRATED INTO BUILDING BMS.

MINI-SPLIT OUTDOOR UNIT SCHEDULE

UNIT ID	ASSOCIATED INDOOR UNIT ID	COOLING				HEATING		COMPRESSOR		ELECTRICAL				DISCONNECT			MANUFACTURER / MODEL NO.	REMARKS
		NOMINAL TONNAGE	MINIMUM SEER	DESIGN AMBIENT (°F)	NO. OF FANS	CAPACITY (MBH)	DESIGN AMBIENT (°F)	NO.	TYPE	MOCP	MCA	FLA	VOLTS	PHASE	FURN. BY	INST. BY	TYPE		
CU-124	FCU-124	1	24.5	95	1	21	5	1	BLDC ROTARY	20	12	9	208	1	EC	EC	SWITCH	SAMSUNG / RXS12ACC	-
CU-262	FCU-262	1	24.5	95	1	21	5	1	BLDC ROTARY	20	12	9	208	1	EC	EC	SWITCH	SAMSUNG / RXS12ACC	-
CU-282	FCU-282	2	20	95	1	42	5	1	BLDC ROTARY	30	21	18	208	1	EC	EC	SWITCH	SAMSUNG / RXS24ACC	-
CU-283	FCU-283	1	24.5	95	1	21	5	1	BLDC ROTARY	20	12	9	208	1	EC	EC	SWITCH	SAMSUNG / RXS12ACC	-
CU-310	FCU-310	1	24.5	95	1	21	5	1	BLDC ROTARY	20	12	9	208	1	EC	EC	SWITCH	SAMSUNG / RXS12ACC	-

NOTES:
1. UNIT TO PROVIDE FULL HEATING CAPACITY DOWN TO -4°F. PROVIDE WIND BAFFLES AND GUARDS ARE REQUIRED FOR LOW AMBIENT OPERATION.
2. UNIT TO PROVIDE HIGH HEATING CAPACITY AT -22°F.
3. PROVIDE WITH CONTROL INTERFACE MODULE TO ENSURE UNIT IS INTEGRATED INTO BUILDING BMS.
4. SINGLE POINT POWER THROUGH OUTDOOR UNIT
5. INSTALL ON 18" ROOFTOP EQUIPMENT SUPPORTS.
6. PROVIDE WEATHER TIGHT CURB WITH CAP FOR PIPE PENETRATION. REFER TO DETAILS.
7. INSTALL REFRIGERANT PER MFR REQUIREMENTS. CONTRACTOR/MFR TO VERIFY REFRIGERANT RUN LENGTHS PRIOR TO ORDERING.
8. INSULATE ALL REFRIGERANT PIPING. PIPING ISULATION ON ROOF SHALL BE UV RESISTANT. PRE-INSULATED LINESETS ARE NOT ALLOWED.

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

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SES Project # 23 0588 03

Lewton School
Lansing School District
2000 Lewton Pl.
Lansing, MI 48915

STATE OF MICHIGAN
STEVEN R. DIBERARDINE
ENGINEER
No. 6201041574
LICENSED PROFESSIONAL ENGINEER

10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
MECHANICAL SCHEDULES

SHEET NO.
M6.1

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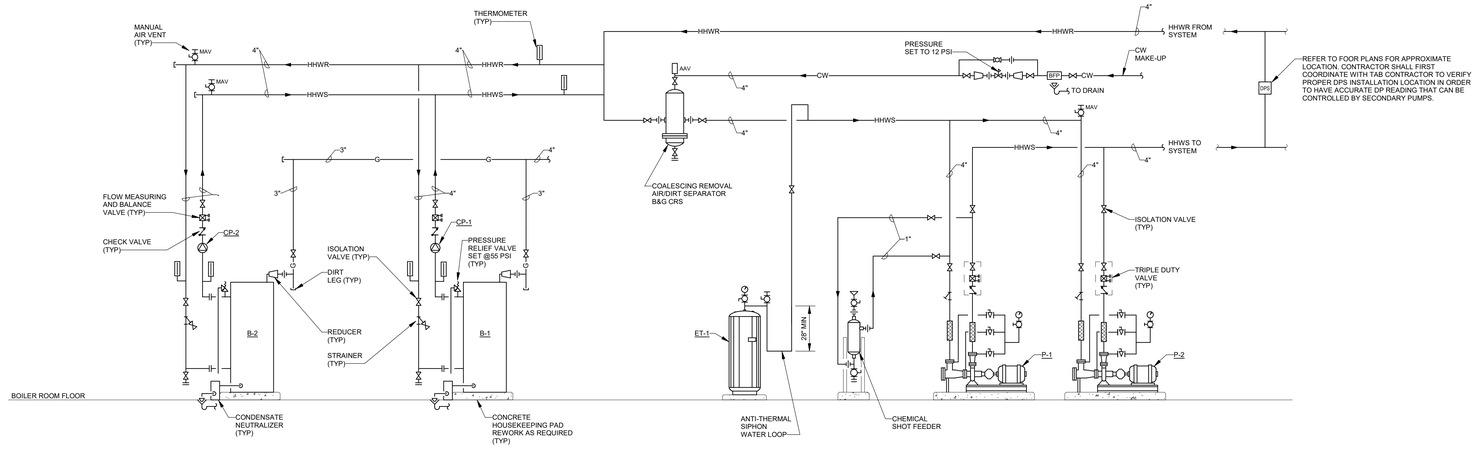
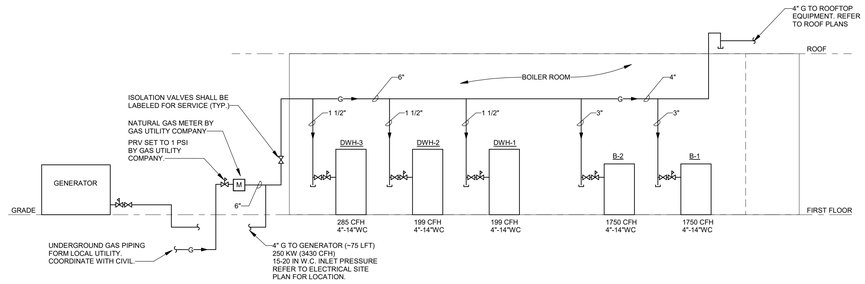


HEATING HOT WATER SYSTEM PIPING DIAGRAM
NO SCALE

GAS LOAD SUMMARY	
EQUIPMENT ID	CFH
B-1	1750
B-2	1750
DWH-1	199
DWH-2	199
DWH-3	285
GENERATOR	3430
MAU-1	194
RTU-1	405
RTU-2	600
RTU-3	195
RTU-4	195
RTU-5	195
RTU-6	900
RTU-7	540
RTU-8	900
TOTAL	11737

NOTES:

1. CONTRACTOR TO COORDINATE GAS LOAD PRESSURE REQUIREMENTS WITH LOCAL UTILITY COMPANY.
2. CONTRACTOR SHALL VERIFY ALL EQUIPMENT CONNECTION REQUIREMENTS (SIZES, LOCATION, TYPES, ETC.) PRIOR TO COMMENCEMENT OF WORK.
3. 1 PSI DELIVERY PRESSURE, DISTRIBUTION OF GAS PIPING SIZED FOR A 10% MAX PRESSURE DROP, BASED ON A TOTAL DEVELOPED LENGTH OF 650 LINEAR FEET OF SCHEDULE 40 METALIC PIPE.
4. CONTRACTOR TO COORDINATE GAS LOAD AND ELEVATED PRESSURE REQUEST WITH LOCAL UTILITY COMPANY.



NATURAL GAS RISER DIAGRAM
NO SCALE

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MECHANICAL RISER DIAGRAMS

SHEET NO.
M7.0

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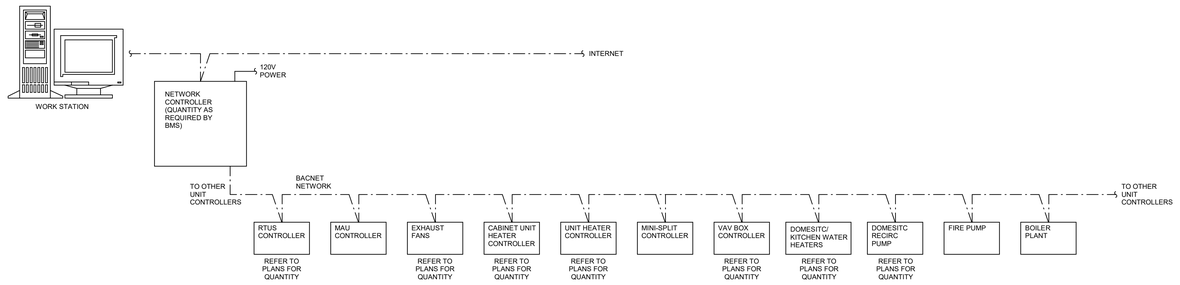
	SENSOR PROBE
	DISCONNECT SWITCH
	AVERAGING SENSOR
	DISPERSION TUBE
	PARALLEL BLADE DAMPER
	OPPOSED BLADE DAMPER
	BACKFLOW DAMPER
FMS	FLOW MEASURING STATION
DPS	BUILDING PRESSURE SENSOR
C / C	CHILLED WATER COIL
D / X	DX COIL
	ELECTRIC HEATING ELEMENT
H / X	GAS HEATING COIL
H / C	HEATING HOT WATER COIL
	ENERGY RECOVERY WHEEL
	FAN
	PLENUM FAN
	PROP FAN
	PUMP
	FILTER
DPT	SINGLE FILTER WITH DIFFERENTIAL PRESSURE TRANSMITTER
DPT	DOUBLE FILTER WITH DIFFERENTIAL PRESSURE TRANSMITTER

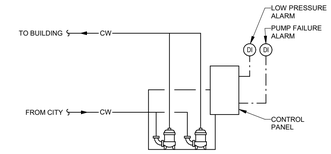
AI	ANALOG INPUT
AO	ANALOG OUTPUT
BI	DIGITAL INPUT
BO	DIGITAL OUTPUT
VP	VIRTUAL POINT
CO2	CARBON DIOXIDE STAT
H	HUMIDISTAT
T	THERMOSTAT
CO_2	CARBON DIOXIDE SENSOR
CO	CARBON MONOXIDE SENSOR
H	HUMIDTY SENSOR
NOX	NOX SENSOR
OS	OCCUPANCY SENSOR
T	TEMPERATURE SENSOR
ECM	ELECTRONIC COMMUTATED MOTOR
	MOTOR STARTER
	START STOP
VFD	VARIABLE VREQUENCY DRIVE
BI	BIPOLAR IONIZATION
C	CURRENT SENSOR
CFM	CFM SENSOR
CM	CONTROL MODULE
CS	CURRENT SWITCH
CT	CURRENT TRANSDUCER
DPS	DIFFERENTIAL PRESSURE SENSOR
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
DS	DOOR SWITCH
ES	END SWTICH
F	FLOW SWITCH
FM	FLOW METER
LL	LOW LIMIT / FREEZE STAT
LS	LIMIT SWITCH
M	DAMPER MOTOR
PS	PRESSURE SWITCH
R	CONTROL RELAY
SD	SMOKE DETECTOR
SP	STATIC PRESSURE
TD	TIME DELAY RELAY



BUILDING MANAGEMENT SYSTEM (BMS) NOTES:

1. THE INTENT IS TO PROVIDE A FULLY FUNCTIONING AND COMPLETE BUILDING MANAGEMENT SYSTEMS (BAS OR BMS) WITH REMOTE/INTERNET ACCESS, GRAPHICAL READOUTS, TREAD DATA, SAFETIES, ALARMS, AND THE LIKE.
2. CONFIGURATION AND ORDER OF CONTROLLER CONNECTION IS FOR REPRESENTATION PURPOSES ONLY. CONTROL SYSTEM DRAWINGS SHALL REFLECT ACTUAL AS-BUILT CONDITIONS, INCLUDING ORDER IN WHICH CONTROLLERS ARE CONNECTED WITHIN THE NETWORK. DDC PANELS ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL/ELECTRICAL ROOM, STORAGE ROOMS, CUSTODIAL CLOSETS, ETC.) THROUGHOUT THE BUILDING SHALL HAVE 120V CONTROL POWER AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TCCS RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR. IT SHOULD BE NOTED THAT ADDITIONAL ELEMENTS SUCH AS GENERAL VALVES, OTHER NON-ACTIVELY CONTROLLED DEVICES, AND/OR OTHER NETWORK COMMUNICATION DEVICES (SUCH AS CONTACTORS, RELAYS, SWITCHES, HUBS, ROUTERS, ETC.) MAY NOT BE SHOWN ON CONTROLS DRAWINGS. REFER TO THE DETAILS, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL DEVICES AND INSTRUCTIONS THAT ARE REQUIRED IN THE CONSTRUCTION OF THESE SYSTEMS.
3. ALL CONTROL POINTS SHALL BE TRENDABLE. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL. TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKSTATION (OWS).
4. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER AND/OR ENGINEER.
5. SEE FLOOR PLANS, SPECIFICATIONS, AND SHOP DRAWINGS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT AND CONTROL DEVICES. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
6. ALL POINTS INDICATED ON CONTROLS DRAWINGS SHALL BE, AT A MINIMUM, INCLUDED ON GRAPHICS THROUGH BAS.
7. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS CONTROLLERS/COMMUNICATION INTERFACES, PROVIDE SUB-GRAPHICS THROUGH THE BAS. THE GRAPHIC SHALL DISPLAY ALL POINTS LISTED IN INDIVIDUAL CONTROL DIAGRAMS. PROVIDE ADDITIONAL READ/WRITE POINTS UPON REQUEST BY THE OWNER FOR SUCH EQUIPMENT.
8. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAMS NOT PROVIDED BY THE UNIT MANUFACTURER AS REQUIRED TO PROVIDE THE DESIRED SEQUENCE OF OPERATION. REFER TO INDIVIDUAL CONTROL DIAGRAM.
9. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS AND/OR HUMIDISTATS SHALL HAVE SET-POINT ADJUSTMENT CAPABILITY AND TEMPERATURE/HUMIDITY DISPLAY.

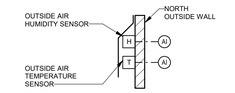
DDC SYSTEM ARCHITECTURE
NO SCALE



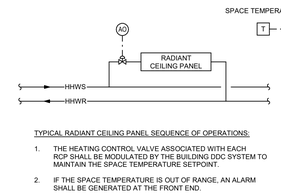
DOMESTIC WATER BOOSTER PUMP MONITORING:

1. THE DDC SYSTEM SHALL MONITOR THE FOLLOWING POINTS FROM THE SUMP PUMP CONTROL PANEL: LOW PRESSURE ALARM & PUMP FAILURE.

DOMESTIC WATER BOOSTER PUMP MONITORING
NO SCALE



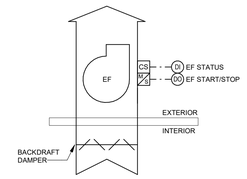
GLOBAL AMBIENT TEMP AND HUMIDITY
NO SCALE



TYPICAL RADIANT CEILING PANEL SEQUENCE OF OPERATIONS:

1. THE HEATING CONTROL VALVE ASSOCIATED WITH EACH RCP SHALL BE MODULATED BY THE BUILDING DDC SYSTEM TO MAINTAIN THE SPACE TEMPERATURE SETPOINT.
2. IF THE SPACE TEMPERATURE IS OUT OF RANGE, AN ALARM SHALL BE GENERATED AT THE FRONT END.

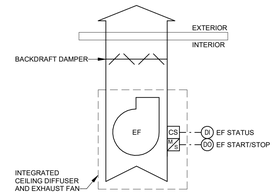
TYPICAL RADIANT CEILING PANEL CONTROL DIAGRAM
NO SCALE



SEQUENCE OF OPERATION:
NOTE: ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

THE FAN SHALL BE STARTED THROUGH THE BMS AND IS INTENDED TO RUN CONTINUOUSLY AT A CONSTANT VOLUME ON A TIME OF DAY SCHEDULE. IF THE FAN IS COMMANDED ON, BUT NO CURRENT IS SENSED, THE FAN SHALL BE SHUT DOWN AND AN ALARM SHALL BE GENERATED AT THE BMS.

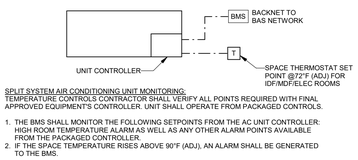
ROOF MOUNTED EXHAUST FAN
NO SCALE



SEQUENCE OF OPERATION:
NOTE: ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

THE FAN SHALL BE STARTED THROUGH THE BMS AND IS INTENDED TO RUN CONTINUOUSLY AT A CONSTANT VOLUME ON A TIME OF DAY SCHEDULE. IF THE FAN IS COMMANDED ON, BUT NO CURRENT IS SENSED, THE FAN SHALL BE SHUT DOWN AND AN ALARM SHALL BE GENERATED AT THE BMS.

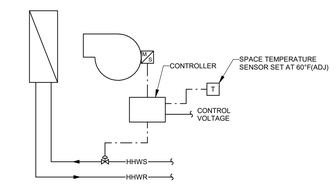
CEILING MOUNTED EXHAUST FAN CONTROLS DIAGRAM
NO SCALE



SPLIT SYSTEM AIR CONDITIONING UNIT MONITORING:
TEMPERATURE CONTROLS CONTRACTOR SHALL VERIFY ALL POINTS REQUIRED WITH FINAL APPROVED EQUIPMENT'S CONTROLLER. UNIT SHALL OPERATE FROM PACKAGED CONTROLS.

1. THE BMS SHALL MONITOR THE FOLLOWING SETPOINTS FROM THE AC UNIT CONTROLLER: HIGH ROOM TEMPERATURE ALARM AS WELL AS ANY OTHER ALARM POINTS AVAILABLE FROM THE PACKAGED CONTROLLER.
2. IF THE SPACE TEMPERATURE RISES ABOVE 90°F (ADJ), AN ALARM SHALL BE GENERATED TO THE BMS.

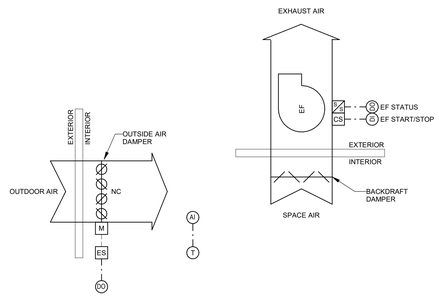
SPIT SYSTEM HEAT PUMP MONITORING
NO SCALE



CONTROL:

1. UPON A CALL FOR HEATING BY THE SPACE TEMPERATURE SENSONR THE CONTROL VALVE SHALL OPEN AND THE FAN SHALL START TO MAINTAIN SPACE TEMPERATURE SETPOINT.

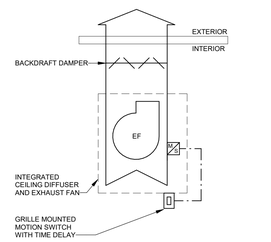
TYPICAL CABINET UNIT HEATER CONTROL DIAGRAM
NO SCALE



SEQUENCE OF OPERATION:
NOTE: ALL SET POINTS AND TIME INTERVALLS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR

1. WHEN THE GLOBAL OUTSIDE AIR TEMPERATURE IS ABOVE 55°F (ADJ) AND THE TEMPERATURE SENSOR IS ABOVE COOLING SET-POINT OF 80°F (ADJ.) THE OUTSIDE AIR DAMPER SHALL OPEN FULLY. ONCE THE DAMPER IS PROVEN FULLY OPEN BY THE END SWITCH THEN THE EXHAUST FAN SHALL BE ENERGIZED.
2. WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 55°F (ADJ), AND/OR THERE IS NO CALL FOR COOLING, THE OUTSIDE AIR DAMPER SHALL CLOSE FULLY AND EXHAUST FAN SHALL BE DE-ENERGIZED.
3. FAN STATUS SHALL BE CONFIRMED BY A CURRENT SWITCH. UPON A FAN FAILURE THE DDC SYSTEM SHALL ISSUE AN ALARM.
4. THE OUTDOOR AIR DAMPER AND EXHAUST AIR DAMPER SHALL BE CONFIRMED BY AN END SWITCH. UPON FAILURE THE DDC SYSTEM SHALL ISSUE AN ALARM TO THE BMS.

BOILER ROOM AND FIRE PUMP ROOM VENTILATION CONTROL DIAGRAM
NO SCALE



SEQUENCE OF OPERATION:
NOTE: ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

CONTROLS TO BE PROVIDED BY UNIT MANUFACTURER.

THE EXHAUST FAN SHALL RUN CONTINUOUSLY AT CONSTANT VOLUME WHEN SWITCH IS FLIPPED ON. EXHAUST FAN WILL RUN FOR AN ADDITIONAL 15 MINS (ADJ.) AFTER SWITCH IS FLIPPED OFF.

CEILING MOUNTED EXHAUST FAN CONTROLS DIAGRAM
NO SCALE

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CONTROL DIAGRAMS

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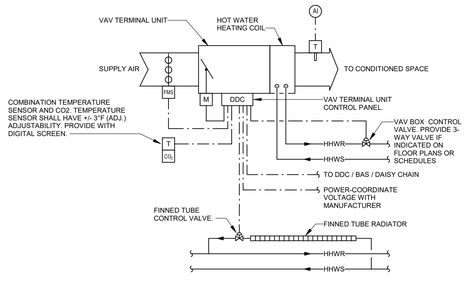


NOTE:
1. CONTROLS TO BE PROVIDED BY THE TEMPERATURE CONTROLS CONTRACTOR.
2. ALL SET-POINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.
3. CO2 SETPOINTS SHALL VERY DEPENDING ON USE TYPE. REFER TO ASHRAE G36 TABLE 3.1.1.3. DEFAULT CO2 SETPOINT SHALL BE 1000 PPM.

SEQUENCE OF OPERATION:

DDC PANEL:

ALL TERMINAL UNITS SHALL BE MONITORED/SHOWN BY THE BUILDING AUTOMATION SYSTEM (BAS). THE BAS SHALL BE ABLE TO MONITOR AND GRAPHICALLY SHOW THE FOLLOWING POINTS: ACTIVE AIRFLOW, AIRFLOW MAX/MIN SETPOINT(S), ACTIVE SPACE TEMPERATURE, OCCUPIED/UNOCCUPIED SPACE TEMPERATURE SETPOINT(S), DISCHARGE AIR TEMPERATURE, MAX/MIN DISCHARGE AIR TEMPERATURE SETPOINT(S), SPACE CO2 LEVEL, ZONE STATE (HTG,CLC,DEAD), OCCUPIED/UNOCCUPIED MODE, ASSOCIATED ZONE GROUP (IF APPLICABLE), VAV BOX CONTROL VALVE POSITIONS, VAV BOX DAMPER POSITION, FINNED TUBE VALVE POTION, HHWS LOOP TEMPERATURE, SUPPLY AIR TEMPERATURE AND STATIC PRESSURE RESET REQUEST(S), IMPORTANCE MULTIPLIER(S), AND CUMULATIVE REQUEST HOURS.

PROVIDE TREND DATA FOR THE FOLLOWING: ACTIVE AIRFLOW, SPACE TEMPERATURE, CO2 LEVEL, DISCHARGE AIR TEMPERATURE, OCCUPANCY MODE, CONTROL VALVE POSITION(S), DAMPER POSITION, HHWS LOOP TEMPERATURE, AND CUMULATIVE REQUEST HOURS.

TEMPERATURE SETPOINT:

TYPICAL OCCUPIED SPACE SETPOINT SHALL BE 75°F (ADJ.) IN COOLING MODE AND 70°F (ADJ.) IN HEATING MODE.

TYPICAL UNOCCUPIED SPACE SETPOINTS SHALL BE 85°F (ADJ.) IN COOLING MODE AND 60°F (ADJ.) IN HEATING MODE.

LOCAL SETPOINT SHALL BE ADJUSTABLE UP TO +/- 3°F AND SHALL BE PERSISTENT. SETPOINT ADJUSTMENT SHALL ONLY AFFECT OCCUPIED SETPOINTS.

VERIFY SETPOINTS WITH OWNER.

OCCUPANCY SETPOINT:

VAV BOX OCCUPANCY SHALL BE DETERMINED BY THE OPERATING MODE OF ITS ZONE GROUP. EACH VAV BOX SHALL BE ASSIGNED TO A ZONE GROUP AT THE BMS (DETERMINED BY THE TCC.) EACH INDIVIDUAL ZONE GROUP SHALL HAVE A DEFAULT TIME-OF-DAY SCHEDULE. OCCUPIED SETPOINT SHALL OCCUR DURING OCCUPIED MODE, COOLDOWN MODE, OR WARMUP MODE. UNOCCUPIED SETPOINT SHALL OCCUR DURING UNOCCUPIED MODE, UNOCCUPIED COOLING MODE, AND UNOCCUPIED HEATING MODE.

AIRFLOW AND TEMPERATURE CONTROL:

WHILE IN UNOCCUPIED MODE, THE VAV BOX DAMPER AND CONTROL VALVE SHALL BE CLOSED.

AS SPACE TEMPERATURE RISES ABOVE UNOCCUPIED SPACE SETPOINT, THE VAV BOX CONTROLLER SHALL MAKE A REQUEST TO THE ASSOCIATED AHU. THE VAV BOX AIRFLOW SETPOINT SHALL BE HELD AT THE MAXIMUM COOLING AIRFLOW UNTIL SPACE TEMPERATURE IS 2°F (ADJ.) BELOW UNOCCUPIED SPACE SETPOINT. THE HEATING COIL CONTROL VALVE SHALL BE CLOSED.

AS SPACE TEMPERATURE FALLS BELOW UNOCCUPIED SPACE SETPOINT, THE VAV BOX CONTROLLER SHALL MAKE A REQUEST TO THE AHU. THE VAV BOX AIRFLOW SETPOINT SHALL BE HELD AT THE MAXIMUM HEATING AIRFLOW WITH THE CONTROL VALVE AT 100% OPEN UNTIL SPACE TEMPERATURE IS 2°F (ADJ.) ABOVE UNOCCUPIED SPACE SETPOINT. THE FINNED TUBE CONTROL VALVE SHALL OPEN TO 100%.

WHILE IN OCCUPIED MODE, WHEN THERE IS NO CALL FOR HEATING OR COOLING (DEADBAND), THE AIRFLOW SETPOINT SHALL BE SET TO THE MINIMUM AIRFLOW.

AS SPACE TEMPERATURE RISES ABOVE OCCUPIED SPACE SETPOINT, THE COOLING LOOP OUTPUT SHALL RESET THE ACTIVE AIRFLOW SETPOINT BETWEEN THE MINIMUM AIRFLOW AND THE COOLING MAXIMUM AIRFLOW (REFER TO SCHEDULE). UNLESS THE SUPPLY AIR TEMPERATURE FROM THE AHU IS GREATER THAN THE SPACE TEMPERATURE, THEN THE ACTIVE AIRFLOW SETPOINT SHALL BE SET TO THE MINIMUM AIRFLOW. THE HEATING COIL CONTROL VALVE SHALL BE CLOSED. THE FINNED TUBE CONTROL VALVE SHALL BE CLOSED.

AS SPACE TEMPERATURE FALLS BELOW OCCUPIED SPACE SETPOINT, THE HEATING LOOP OUTPUT (0%-50%) SHALL RESET THE DAT SETPOINT BETWEEN THE AHU SAT AND THE MAXIMUM VAV BOX DAT (REFER TO SCHEDULE) AT MINIMUM AIRFLOW. AT WHICH POINT, IF SPACE TEMPERATURE CONTINUES TO FALL, THE HEATING LOOP (51%-100%) OUTPUT SHALL RESET THE ACTIVE AIRFLOW SETPOINT BETWEEN THE MINIMUM AIRFLOW AND THE MAXIMUM HEATING AIRFLOW (REFER TO SCHEDULE). THE DAT SETPOINT SHALL BE HELD AT THE MAXIMUM VAV BOX DAT.

IN HEATING, THE FINNED TUBE CONTROL VALVE SHALL FULLY MODULATE IN UNISON VAV BOX HEATING CONTROL LOOP (0%-50%) UNLESS THE OUTDOOR AIR TEMPERATURE IS ABOVE 55°F (ADJ.)

THE VAV BOX CONTROL VALVE SHALL BE MODULATED BY THE CONTROL LOOP TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AT SETPOINT.

THE VAV BOX DAMPER SHALL BE MODULATED BY THE CONTROL LOOP TO MAINTAIN AIRFLOW AT SETPOINT.

SUPPLY AIR TEMPERATURE RESET:

THE FOLLOWING REQUEST SEQUENCE SHALL ONLY APPLY WHEN OUTDOOR AIR TEMPERATURE IS LESS THAN 65°F.

A REQUEST IS A CALL TO RESET UPSTREAM TEMPERATURE SETPOINT GENERATED BY THE TERMINAL UNIT CONTROLLER. EACH TERMINAL UNIT WILL BE EQUALLY WEIGHTED IN IMPORTANCE (INITIAL IMPORTANCE MULTIPLIER VALUE OF 1). REFER TO ASHRAE GUIDELINE 36-2021 FOR ADDITIONAL INFORMATION. PROVIDE THE FOLLOWING TEMPERATURE REQUESTS COMMANDS:

1. IF THE ZONE TEMPERATURE EXCEEDS THE ZONES COOLING SETPOINT BY 5°F (ADJ.) FOR 2 MINUTES (ADJ.), SEND 3 REQUESTS (ADJ.)
2. ELSE, IF THE ZONE TEMPERATURE EXCEEDS THE ZONES COOLING SETPOINT BY 3°F (ADJ.) FOR 2 MINUTES (ADJ.), SEND 2 REQUESTS (ADJ.).
3. ELSE, IF THE ZONE COOLING LOOP IS GREATER THAN 95% SEND 1 REQUEST UNTIL THE COOLING LOOP IS LESS THAN 85%.
4. ELSE, IF THE COOLING LOOP IS LESS THAN 95%, SEND 0 REQUESTS.

CONTROLS SEQUENCE TO ACCOUNT FOR A SUPPRESSION PERIOD DUE TO LOCAL SETPOINT CHANGE; PROVIDE 5 MINUTE (ADJ.) PER 1°F.

VAV SETPOINT RESET:

A REQUEST IS A CALL TO RESET STATIC PRESSURE SETPOINT GENERATED BY THE TERMINAL UNIT CONTROLLER. EACH TERMINAL UNIT WILL BE EQUALLY WEIGHTED IN IMPORTANCE (INITIAL IMPORTANCE MULTIPLIER VALUE OF 1). REFER TO ASHRAE GUIDELINE 36-2021 FOR ADDITIONAL INFORMATION. PROVIDE THE FOLLOWING STATIC PRESSURE REQUESTS COMMANDS:

1. IF THE MEASURED AIRFLOW IS LESS THAN 50% (ADJ.) OF SETPOINT WHILE SETPOINT IS GREATER THAN ZERO AND THE DAMPER POSITION IS GREATER THAN 95% (ADJ.) FOR 1 MINUTE (ADJ.), SEND 3 REQUESTS (ADJ.).
2. ELSE IF THE MEASURED AIRFLOW IS LESS THAN 70% (ADJ.) OF SETPOINT WHILE SETPOINT IS GREATER THAN ZERO AND THE DAMPER POSITION IS GREATER THAN 95% (ADJ.) FOR 1 MINUTE (ADJ.), SEND 2 REQUESTS (ADJ.).
3. ELSE IF THE DAMPER POSITION IS GREATER THAN 95% (ADJ.), SEND 1 REQUEST (ADJ.) UNTIL THE DAMPER POSITION IS LESS THAN 85% (ADJ.).
4. ELSE IF THE DAMPER POSITION IS LESS THAN 95% (ADJ.), SEND 0 REQUESTS.

ZONE MINIMUM OUTDOOR AIR AND MINIMUM AIRFLOW SETPOINTS (DCV):

WHEN IN OCCUPIED MODE, THE VAV TERMINAL UNIT CONTROLLER OR BAS SHALL INCLUDE MEANS TO AUTOMATICALLY CALCULATE THE REQUIRED OUTDOOR AIR AND MINIMUM AIRFLOW SETPOINTS PER GOVERNING STANDARDS OR CODES.

MINIMUM OUTDOOR AIR CONTROLS SHALL COMPLY ASHRAE G36 SECTION 5.2.1 AND GENERALLY FOLLOW THE LOGIC BELOW:

1. ESTABLISH VBZ-A AND VBZ-P VALUES FOR TERMINAL UNIT (REFER TO VENTILATION SCHEDULES)
2. DETERMINE ZONE AIR DISTRIBUTION EFFECTIVENESS (EZ)
3. DETERMINE VBZ-A* AND VBZ-P*
4. DETERMINE VMIN. VMIN SHALL BE SET TO "AUTO" TO ALLOW VMIN TO BE CALCULATED AUTOMATICALLY AND DYNAMICALLY TO MEET VENTILATION NEEDS. VMIN IS THE ZONE MINIMUM AIRFLOW SETPOINT.
5. DETERMINE VMIN*. VMIN* WILL EQUAL VMIN EXCEPT AS NOTED IN STEP 6. (REF G36 5.2.1.3F)
6. DETERMINE VOZ. MODIFY VBZ-A*, VBZ-P, AND VMIN* IF ANY OF THE FOLLOWING CONDITIONS ARE MET:
   A. IF UNIT IS IN ANY OTHER MODE THAN OCCUPIED, SET ALL VALUES TO 0 (I.E. OCCUPANCY SENSORS).
   B. IF THE ZONE HAS A CO2 SENSOR, CO2 CONTROL LOOP OUTPUT SHALL RESET BOTH THE OCCUPIED MINIMUM AIRFLOW SETPOINT (VMIN*) AND THE POPULATION COMPONENT (VBZ-P*) IN PARALLEL. VMIN* SHALL BE RESET FROM THE ZONE MINIMUM AIRFLOW SETPOINT VMIN AT 0% LOOP OUTPUT UP TO MAXIMUM COOLING AIRFLOW SETPOINT AT 100% LOOP. VBZ-P* SHALL RESET FROM 0 CFM AT 0% LOOP OUTPUT UP TO THE VBZ-P AT 100% LOOP OUTPUT.

ALARMS AND SAFETIES:

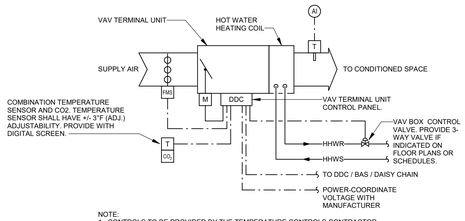
LOW AIRFLOW: IF THE MEASURED AIRFLOW IS LESS THAN 50% OF SETPOINT FOR MORE THAN 10 MINS, GENERATE AN ALARM AT THE BAS.

LOW TEMPERATURE: IF THE MEASURED DAT IS LESS THAN 15°F FOR MORE THAN 10 MINS, GENERATE AN ALARM AT THE BAS.

HIGH/LOW CO2 LEVEL: IF THE MEASURED CO2 IS OUTSIDE OF 25% SETPOINT FOR MORE THAN 30 MINS, GENERATE AN ALARM AT THE BAS.

VAV TERMINAL UNIT WITH REHEAT AND CO2 AND PERIMETER HEAT CONTROLS DIAGRAM

NO SCALE



NOTE:
1. CONTROLS TO BE PROVIDED BY THE TEMPERATURE CONTROLS CONTRACTOR.
2. ALL SET-POINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.
3. CO2 SETPOINTS SHALL VARY DEPENDING ON USE TYPE. REFER TO ASHRAE G36 TABLE 3.1.1.3. DEFAULT CO2 SETPOINT SHALL BE 1000 PPM.

SEQUENCE OF OPERATION:

DDC PANEL:

ALL TERMINAL UNITS SHALL BE MONITORED/SHOWN BY THE BUILDING AUTOMATION SYSTEM (BAS). THE BAS SHALL BE ABLE TO MONITOR AND GRAPHICALLY SHOW THE FOLLOWING POINTS: ACTIVE AIRFLOW, AIRFLOW MAX/MIN SETPOINT(S), ACTIVE SPACE TEMPERATURE, OCCUPIED/UNOCCUPIED SPACE TEMPERATURE SETPOINT(S), DISCHARGE AIR TEMPERATURE, MAX/MIN DISCHARGE AIR TEMPERATURE SETPOINT(S), SPACE CO2 LEVEL, ZONE STATE (HTG,CLC,DEAD), OCCUPIED/UNOCCUPIED MODE, ASSOCIATED ZONE GROUP (IF APPLICABLE), VAV BOX CONTROL VALVE POSITIONS, VAV BOX DAMPER POSITION, HHWS LOOP TEMPERATURE, SUPPLY AIR TEMPERATURE AND STATIC PRESSURE RESET REQUEST(S), IMPORTANCE MULTIPLIER(S), AND CUMULATIVE REQUEST HOURS.

PROVIDE TREND DATA FOR THE FOLLOWING: ACTIVE AIRFLOW, SPACE TEMPERATURE, CO2 LEVEL, DISCHARGE AIR TEMPERATURE, OCCUPANCY MODE, CONTROL VALVE POSITION(S), DAMPER POSITION, HHWS LOOP TEMPERATURE, AND CUMULATIVE REQUEST HOURS.

TEMPERATURE SETPOINT:

TYPICAL OCCUPIED SPACE SETPOINT SHALL BE 75°F (ADJ.) IN COOLING MODE AND 70°F (ADJ.) IN HEATING MODE.

TYPICAL UNOCCUPIED SPACE SETPOINTS SHALL BE 85°F (ADJ.) IN COOLING MODE AND 60°F (ADJ.) IN HEATING MODE.

LOCAL SETPOINT SHALL BE ADJUSTABLE UP TO +/- 3°F AND SHALL BE PERSISTENT. SETPOINT ADJUSTMENT SHALL ONLY AFFECT OCCUPIED SETPOINTS.

VERIFY SETPOINTS WITH OWNER.

OCCUPANCY SETPOINT:

VAV BOX OCCUPANCY SHALL BE DETERMINED BY THE OPERATING MODE OF ITS ZONE GROUP. EACH VAV BOX SHALL BE ASSIGNED TO A ZONE GROUP AT THE BMS (DETERMINED BY THE TCC.) EACH INDIVIDUAL ZONE GROUP SHALL HAVE A DEFAULT TIME-OF-DAY SCHEDULE. OCCUPIED SETPOINT SHALL OCCUR DURING OCCUPIED MODE, COOLDOWN MODE, OR WARMUP MODE. UNOCCUPIED SETPOINT SHALL OCCUR DURING UNOCCUPIED MODE, UNOCCUPIED COOLING MODE, AND UNOCCUPIED HEATING MODE.

AIRFLOW AND TEMPERATURE CONTROL:

WHILE IN UNOCCUPIED MODE, THE VAV BOX DAMPER AND CONTROL VALVE SHALL BE CLOSED.

AS SPACE TEMPERATURE RISES ABOVE UNOCCUPIED SPACE SETPOINT, THE VAV BOX CONTROLLER SHALL MAKE A REQUEST TO THE ASSOCIATED AHU. THE VAV BOX AIRFLOW SETPOINT SHALL BE HELD AT THE MAXIMUM COOLING AIRFLOW UNTIL SPACE TEMPERATURE IS 2°F (ADJ.) BELOW UNOCCUPIED SPACE SETPOINT. THE HEATING COIL CONTROL VALVE SHALL BE CLOSED.

AS SPACE TEMPERATURE FALLS BELOW UNOCCUPIED SPACE SETPOINT, THE VAV BOX CONTROLLER SHALL MAKE A REQUEST TO THE AHU. THE VAV BOX AIRFLOW SETPOINT SHALL BE HELD AT THE MAXIMUM HEATING AIRFLOW WITH THE CONTROL VALVE AT 100% OPEN UNTIL SPACE TEMPERATURE IS 2°F (ADJ.) ABOVE UNOCCUPIED SPACE SETPOINT. THE FINNED TUBE CONTROL VALVE SHALL OPEN TO 100%.

WHILE IN OCCUPIED MODE, WHEN THERE IS NO CALL FOR HEATING OR COOLING (DEADBAND), THE AIRFLOW SETPOINT SHALL BE SET TO THE MINIMUM AIRFLOW.

AS SPACE TEMPERATURE RISES ABOVE OCCUPIED SPACE SETPOINT, THE COOLING LOOP OUTPUT SHALL RESET THE ACTIVE AIRFLOW SETPOINT BETWEEN THE MINIMUM AIRFLOW AND THE COOLING MAXIMUM AIRFLOW (REFER TO SCHEDULE). UNLESS THE SUPPLY AIR TEMPERATURE FROM THE AHU IS GREATER THAN THE SPACE TEMPERATURE, THEN THE ACTIVE AIRFLOW SETPOINT SHALL BE SET TO THE MINIMUM AIRFLOW. THE HEATING COIL CONTROL VALVE SHALL BE CLOSED.

AS SPACE TEMPERATURE FALLS BELOW OCCUPIED SPACE SETPOINT, THE HEATING LOOP OUTPUT (0%-50%) SHALL RESET THE DAT SETPOINT BETWEEN THE AHU SAT AND THE MAXIMUM VAV BOX DAT (REFER TO SCHEDULE) AT MINIMUM AIRFLOW. AT WHICH POINT, IF SPACE TEMPERATURE CONTINUES TO FALL, THE HEATING LOOP (51%-100%) OUTPUT SHALL RESET THE ACTIVE AIRFLOW SETPOINT BETWEEN THE MINIMUM AIRFLOW AND THE MAXIMUM HEATING AIRFLOW (REFER TO SCHEDULE). THE DAT SETPOINT SHALL BE HELD AT THE MAXIMUM VAV BOX DAT.

THE VAV BOX CONTROL VALVE SHALL BE MODULATED BY THE CONTROL LOOP TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AT SETPOINT.

THE VAV BOX DAMPER SHALL BE MODULATED BY THE CONTROL LOOP TO MAINTAIN AIRFLOW AT SETPOINT.

SUPPLY AIR TEMPERATURE RESET:

THE FOLLOWING REQUEST SEQUENCE SHALL ONLY APPLY WHEN OUTDOOR AIR TEMPERATURE IS LESS THAN 65°F.

A REQUEST IS A CALL TO RESET UPSTREAM TEMPERATURE SETPOINT GENERATED BY THE TERMINAL UNIT CONTROLLER. EACH TERMINAL UNIT WILL BE EQUALLY WEIGHTED IN IMPORTANCE (INITIAL IMPORTANCE MULTIPLIER VALUE OF 1). REFER TO ASHRAE GUIDELINE 36-2021 FOR ADDITIONAL INFORMATION. PROVIDE THE FOLLOWING TEMPERATURE REQUESTS COMMANDS:

1. IF THE ZONE TEMPERATURE EXCEEDS THE ZONES COOLING SETPOINT BY 5°F (ADJ.) FOR 2 MINUTES (ADJ.), SEND 3 REQUESTS (ADJ.)
2. ELSE, IF THE ZONE TEMPERATURE EXCEEDS THE ZONES COOLING SETPOINT BY 3°F (ADJ.) FOR 2 MINUTES (ADJ.), SEND 2 REQUESTS (ADJ.).
3. ELSE, IF THE ZONE COOLING LOOP IS GREATER THAN 95% SEND 1 REQUEST UNTIL THE COOLING LOOP IS LESS THAN 85%.
4. ELSE, IF THE COOLING LOOP IS LESS THAN 95%, SEND 0 REQUESTS.

CONTROLS SEQUENCE TO ACCOUNT FOR A SUPPRESSION PERIOD DUE TO LOCAL SETPOINT CHANGE; PROVIDE 5 MINUTE (ADJ.) PER 1°F.

VAV SETPOINT RESET:

A REQUEST IS A CALL TO RESET STATIC PRESSURE SETPOINT GENERATED BY THE TERMINAL UNIT CONTROLLER. EACH TERMINAL UNIT WILL BE EQUALLY WEIGHTED IN IMPORTANCE (INITIAL IMPORTANCE MULTIPLIER VALUE OF 1). REFER TO ASHRAE GUIDELINE 36-2021 FOR ADDITIONAL INFORMATION. PROVIDE THE FOLLOWING STATIC PRESSURE REQUESTS COMMANDS:

1. IF THE MEASURED AIRFLOW IS LESS THAN 50% (ADJ.) OF SETPOINT WHILE SETPOINT IS GREATER THAN ZERO AND THE DAMPER POSITION IS GREATER THAN 95% (ADJ.) FOR 1 MINUTE (ADJ.), SEND 3 REQUESTS (ADJ.).
2. ELSE IF THE MEASURED AIRFLOW IS LESS THAN 70% (ADJ.) OF SETPOINT WHILE SETPOINT IS GREATER THAN ZERO AND THE DAMPER POSITION IS GREATER THAN 95% (ADJ.) FOR 1 MINUTE (ADJ.), SEND 2 REQUESTS (ADJ.).
3. ELSE IF THE DAMPER POSITION IS GREATER THAN 95% (ADJ.), SEND 1 REQUEST (ADJ.) UNTIL THE DAMPER POSITION IS LESS THAN 85% (ADJ.).
4. ELSE IF THE DAMPER POSITION IS LESS THAN 95% (ADJ.), SEND 0 REQUESTS.

ZONE MINIMUM OUTDOOR AIR AND MINIMUM AIRFLOW SETPOINTS (DCV):

WHEN IN OCCUPIED MODE, THE VAV TERMINAL UNIT CONTROLLER OR BAS SHALL INCLUDE MEANS TO AUTOMATICALLY CALCULATE THE REQUIRED OUTDOOR AIR AND MINIMUM AIRFLOW SETPOINTS PER GOVERNING STANDARDS OR CODES.

MINIMUM OUTDOOR AIR CONTROLS SHALL COMPLY ASHRAE G36 SECTION 5.2.1 AND GENERALLY FOLLOW THE LOGIC BELOW:

1. ESTABLISH VBZ-A AND VBZ-P VALUES FOR TERMINAL UNIT (REFER TO VENTILATION SCHEDULES)
2. DETERMINE ZONE AIR DISTRIBUTION EFFECTIVENESS (EZ)
3. DETERMINE VBZ-A* AND VBZ-P*
4. DETERMINE VMIN. VMIN SHALL BE SET TO "AUTO" TO ALLOW VMIN TO BE CALCULATED AUTOMATICALLY AND DYNAMICALLY TO MEET VENTILATION NEEDS. VMIN IS THE ZONE MINIMUM AIRFLOW SETPOINT.
5. DETERMINE VMIN*. VMIN* WILL EQUAL VMIN EXCEPT AS NOTED IN STEP 6. (REF G36 5.2.1.3F)
6. DETERMINE VOZ. MODIFY VBZ-A*, VBZ-P, AND VMIN* IF ANY OF THE FOLLOWING CONDITIONS ARE MET:
   A. IF UNIT IS IN ANY OTHER MODE THAN OCCUPIED, SET ALL VALUES TO 0 (I.E. OCCUPANCY SENSORS).
   B. IF THE ZONE HAS A CO2 SENSOR, CO2 CONTROL LOOP OUTPUT SHALL RESET BOTH THE OCCUPIED MINIMUM AIRFLOW SETPOINT (VMIN*) AND THE POPULATION COMPONENT (VBZ-P*) IN PARALLEL. VMIN* SHALL BE RESET FROM THE ZONE MINIMUM AIRFLOW SETPOINT VMIN AT 0% LOOP OUTPUT UP TO MAXIMUM COOLING AIRFLOW SETPOINT AT 100% LOOP. VBZ-P* SHALL RESET FROM 0 CFM AT 0% LOOP OUTPUT UP TO THE VBZ-P AT 100% LOOP OUTPUT.

ALARMS AND SAFETIES:

LOW AIRFLOW: IF THE MEASURED AIRFLOW IS LESS THAN 50% OF SETPOINT FOR MORE THAN 10 MINS, GENERATE AN ALARM AT THE BAS.

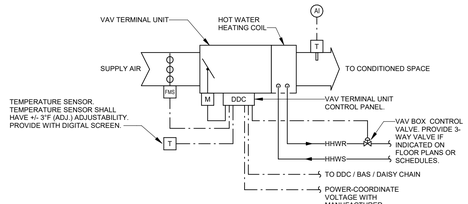
LOW TEMPERATURE: IF THE MEASURED DAT IS LESS THAN 15°F FOR MORE THAN 10 MINS, GENERATE AN ALARM AT THE BAS.

HIGH/LOW CO2 LEVEL: IF THE MEASURED CO2 IS OUTSIDE OF 25% SETPOINT FOR MORE THAN 30 MINS, GENERATE AN ALARM AT THE BAS.

VAV TERMINAL UNIT WITH REHEAT AND CO2 CONTROLS DIAGRAM

NO SCALE

TYPICAL FOR ALL CLASSROOM UNLESS OTHERWISE NOTED



NOTE:
1. CONTROLS TO BE PROVIDED BY THE TEMPERATURE CONTROLS CONTRACTOR.
2. ALL SET-POINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

SEQUENCE OF OPERATION:

DDC PANEL:

ALL TERMINAL UNITS SHALL BE MONITORED/SHOWN BY THE BUILDING AUTOMATION SYSTEM (BAS). THE BAS SHALL BE ABLE TO MONITOR AND GRAPHICALLY SHOW THE FOLLOWING POINTS: ACTIVE AIRFLOW, AIRFLOW MAX/MIN SETPOINT(S), ACTIVE SPACE TEMPERATURE, OCCUPIED/UNOCCUPIED SPACE TEMPERATURE SETPOINT(S), DISCHARGE AIR TEMPERATURE, MAX/MIN DISCHARGE AIR TEMPERATURE SETPOINT(S), ZONE STATE (HTG,CLC,DEAD), OCCUPIED/UNOCCUPIED MODE, ASSOCIATED ZONE GROUP (IF APPLICABLE), VAV BOX CONTROL VALVE POSITIONS, VAV BOX DAMPER POSITION, HHWS LOOP TEMPERATURE, SUPPLY AIR TEMPERATURE AND STATIC PRESSURE RESET REQUEST(S), IMPORTANCE MULTIPLIER(S), AND CUMULATIVE REQUEST HOURS.

PROVIDE TREND DATA FOR THE FOLLOWING: ACTIVE AIRFLOW, SPACE TEMPERATURE, DISCHARGE AIR TEMPERATURE, OCCUPANCY MODE, CONTROL VALVE POSITION(S), DAMPER POSITION, HHWS LOOP TEMPERATURE, AND CUMULATIVE REQUEST HOURS.

TEMPERATURE SETPOINT:

TYPICAL OCCUPIED SPACE SETPOINT SHALL BE 75°F (ADJ.) IN COOLING MODE AND 70°F (ADJ.) IN HEATING MODE.

TYPICAL UNOCCUPIED SPACE SETPOINTS SHALL BE 85°F (ADJ.) IN COOLING MODE AND 60°F (ADJ.) IN HEATING MODE.

LOCAL SETPOINT SHALL BE ADJUSTABLE UP TO +/- 3°F AND SHALL BE PERSISTENT. SETPOINT ADJUSTMENT SHALL ONLY AFFECT OCCUPIED SETPOINTS.

VERIFY SETPOINTS WITH OWNER.

OCCUPANCY SETPOINT:

VAV BOX OCCUPANCY SHALL BE DETERMINED BY THE OPERATING MODE OF ITS ZONE GROUP. EACH VAV BOX SHALL BE ASSIGNED TO A ZONE GROUP AT THE BMS (DETERMINED BY THE TCC.) EACH INDIVIDUAL ZONE GROUP SHALL HAVE A DEFAULT TIME-OF-DAY SCHEDULE. OCCUPIED SETPOINT SHALL OCCUR DURING OCCUPIED MODE, COOLDOWN MODE, OR WARMUP MODE. UNOCCUPIED SETPOINT SHALL OCCUR DURING UNOCCUPIED MODE, UNOCCUPIED COOLING MODE, AND UNOCCUPIED HEATING MODE.

AIRFLOW AND TEMPERATURE CONTROL:

WHILE IN UNOCCUPIED MODE, THE VAV BOX DAMPER AND CONTROL VALVE SHALL BE CLOSED.

AS SPACE TEMPERATURE RISES ABOVE UNOCCUPIED SPACE SETPOINT, THE VAV BOX CONTROLLER SHALL MAKE A REQUEST TO THE ASSOCIATED AHU. THE VAV BOX AIRFLOW SETPOINT SHALL BE HELD AT THE MAXIMUM COOLING AIRFLOW UNTIL SPACE TEMPERATURE IS 2°F (ADJ.) BELOW UNOCCUPIED SPACE SETPOINT. THE HEATING COIL CONTROL VALVE SHALL BE CLOSED.

AS SPACE TEMPERATURE FALLS BELOW UNOCCUPIED SPACE SETPOINT, THE VAV BOX CONTROLLER SHALL MAKE A REQUEST TO THE AHU. THE VAV BOX AIRFLOW SETPOINT SHALL BE HELD AT THE MAXIMUM HEATING AIRFLOW WITH THE CONTROL VALVE AT 100% OPEN UNTIL SPACE TEMPERATURE IS 2°F (ADJ.) ABOVE UNOCCUPIED SPACE SETPOINT.

WHILE IN OCCUPIED MODE, WHEN THERE IS NO CALL FOR HEATING OR COOLING (DEADBAND), THE AIRFLOW SETPOINT SHALL BE SET TO THE MINIMUM AIRFLOW.

AS SPACE TEMPERATURE RISES ABOVE OCCUPIED SPACE SETPOINT, THE COOLING LOOP OUTPUT SHALL RESET THE ACTIVE AIRFLOW SETPOINT BETWEEN THE MINIMUM AIRFLOW AND THE COOLING MAXIMUM AIRFLOW (REFER TO SCHEDULE). UNLESS THE SUPPLY AIR TEMPERATURE FROM THE AHU IS GREATER THAN THE SPACE TEMPERATURE, THEN THE ACTIVE AIRFLOW SETPOINT SHALL BE SET TO THE MINIMUM AIRFLOW. THE HEATING COIL CONTROL VALVE SHALL BE CLOSED.

AS SPACE TEMPERATURE FALLS BELOW OCCUPIED SPACE SETPOINT, THE HEATING LOOP OUTPUT (0%-50%) SHALL RESET THE DAT SETPOINT BETWEEN THE AHU SAT AND THE MAXIMUM VAV BOX DAT (REFER TO SCHEDULE) AT MINIMUM AIRFLOW. AT WHICH POINT, IF SPACE TEMPERATURE CONTINUES TO FALL, THE HEATING LOOP (51%-100%) OUTPUT SHALL RESET THE ACTIVE AIRFLOW SETPOINT BETWEEN THE MINIMUM AIRFLOW AND THE MAXIMUM HEATING AIRFLOW (REFER TO SCHEDULE). THE DAT SETPOINT SHALL BE HELD AT THE MAXIMUM VAV BOX DAT.

THE VAV BOX CONTROL VALVE SHALL BE MODULATED BY THE CONTROL LOOP TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AT SETPOINT.

THE VAV BOX DAMPER SHALL BE MODULATED BY THE CONTROL LOOP TO MAINTAIN AIRFLOW AT SETPOINT.

SUPPLY AIR TEMPERATURE RESET:

THE FOLLOWING REQUEST SEQUENCE SHALL ONLY APPLY WHEN OUTDOOR AIR TEMPERATURE IS LESS THAN 65°F.

A REQUEST IS A CALL TO RESET UPSTREAM TEMPERATURE SETPOINT GENERATED BY THE TERMINAL UNIT CONTROLLER. EACH TERMINAL UNIT WILL BE EQUALLY WEIGHTED IN IMPORTANCE (INITIAL IMPORTANCE MULTIPLIER VALUE OF 1). REFER TO ASHRAE GUIDELINE 36-2021 FOR ADDITIONAL INFORMATION. PROVIDE THE FOLLOWING TEMPERATURE REQUESTS COMMANDS:

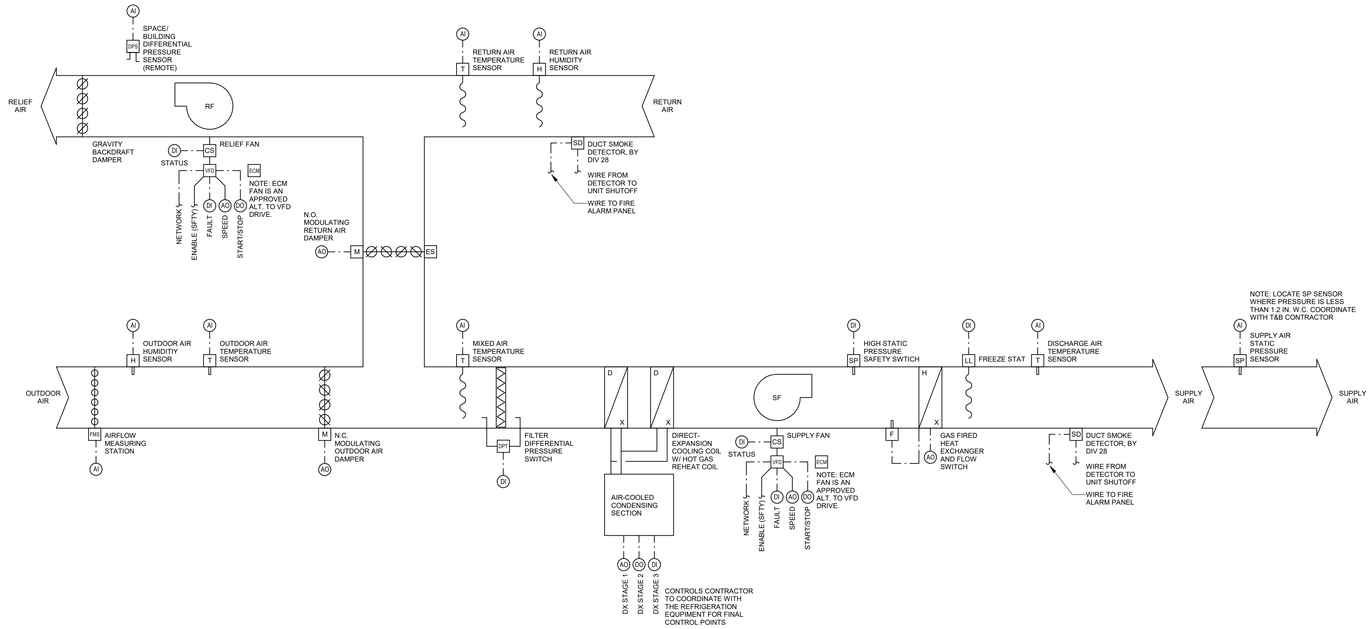
1. IF THE ZONE TEMPERATURE EXCEEDS THE ZONES COOLING SETPOINT BY 5°F (ADJ.) FOR 2 MINUTES (ADJ.), SEND 3 REQUESTS (ADJ.)
2. ELSE, IF THE ZONE TEMPERATURE EXCEEDS THE ZONES COOLING SETPOINT BY 3°F (ADJ.) FOR 2 MINUTES (ADJ.), SEND 2 REQUESTS (ADJ.).
3. ELSE, IF THE ZONE COOLING LOOP IS GREATER THAN 95% SEND 1 REQUEST UNTIL THE COOLING LOOP IS LESS THAN 85%.
4. ELSE, IF THE COOLING LOOP IS LESS THAN 95%, SEND 0 REQUESTS.

CONTROLS SEQUENCE TO ACCOUNT FOR A SUPPRESSION PERIOD DUE TO LOCAL SETPOINT CHANGE; PROVIDE 5 MINUTE (ADJ.) PER 1°F.

VAV SETPOINT RESET:

A REQUEST IS A CALL TO RESET STATIC PRESSURE SETPOINT GENERATED BY THE TERMINAL UNIT CONTROLLER. EACH TERMINAL UNIT WILL BE EQUALLY WEIGHTED IN IMPORTANCE (INITIAL IMPORTANCE MULTIPLIER VALUE OF 1). REFER TO ASHRAE GUIDELINE 36-2021 FOR ADDITIONAL INFORMATION. PROVIDE THE FOLLOWING STATIC PRESSURE REQUESTS COMMANDS:

1. IF THE MEASURED AIRFLOW IS LESS THAN 50% (ADJ.) OF SETPOIN



SEQUENCE OF OPERATIONS:

GENERAL

THE MULTIPLE-ZONE VAV AIR-HANDLING UNIT SEQUENCES HEREIN DEPICT GENERAL INTENT OF OPERATION AND ARE TO BE PERFORMANCE BASED. FOR COMPLETE PROCEDURAL FUNCTIONALITY, THE UNITS SHALL FOLLOW THE GUIDELINES IN ASHRAE 90.1-2013 CHAPTER 6, ASHRAE 62.1-2016, AND ASHRAE GUIDELINE 36 CHAPTERS 5.1-5.4, 5.15, AND 5.16 WITHOUT EXPLICIT STATEMENT. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONAL RESULTS USING DIFFERENT UNDERLYING DETAILED LOGIC WILL BE ACCEPTABLE.

CONTROLS TO BE MANUFACTURER PACKAGED CONTROLS AND FACTORY INSTALLED.

AT MINIMUM, PROVIDE A GRAPHICAL REPRESENTATION OF THE DIAGRAM AND ASSOCIATED POINTS INDICATED ABOVE. ALL ADDITIONAL POINTS NOT STRICTLY REQUIRING GRAPHICAL REPRESENTATION, SHALL STILL BE READ/WRITE ACCESSIBLE AT THE OWS/BAS. ALL SETPOINTS, TIMERS, DEADBANDS, SCHEDULES, ETC. LISTED HEREIN THE SEQUENCE SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR. VALUES FOR ALL POINTS, INCLUDING HARDWARE POINTS, SHALL BE OVERRIDABLE. EXCEPTIONS CAN BE MADE REGARDING MACHINE OR LIFE SAFETY.

EQUIPMENT MOTORS INTENDED TO BE MODULATED CAN BE PROVIDED WITH EITHER VARIABLE FREQUENCY DRIVES OR ELECTRONIC COMMUTATED MOTOR; SEQUENCE MAY USED INTERCHANGEABLE.

THE ROOFTOP UNIT SHALL BE CAPABLE OF OPERATING IN THE FOLLOWING MODES AS DETERMINED BY THE ZONE GROUPS ASSOCIATED WITH THE UNIT: (1) OCCUPIED, (2) COOLDOWN, (3) UNOCCUPIED COOLING, (4) WARMUP, (5) UNOCCUPIED HEATING, AND (6) UNOCCUPIED MODE. WHEN ASSOCIATED ZONE GROUPS, AS DEFINED BY ASHRAE, ARE IN DIFFERENT OPERATING MODES, THE HIERARCHY ABOVE SHALL APPLY. EACH SYSTEM SHALL BE BROKEN INTO ZONE GROUPS. ZONE GROUPS SHALL BE DETERMINED BY THE TCC AND IMPLEMENTED IN THE NETWORK ARCHITECTURE

MINIMUM DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE 55ºF. **MAXIMUM DISCHARGE AIR TEMPERATURE** SHALL BE 65ºF IN OCCUPIED MODE. IN UNOCCUPIED MODE OR FACILITY WARMUP, **MAXIMUM DISCHARGE AIR TEMPERATURE** SHALL BE 95ºF.

UNOCCUPIED CONTROL:

DURING UNOCCUPIED MODE, THE OUTDOOR AIR DAMPER SHALL BE FULLY CLOSED. THE RETURN AIR DAMPER SHALL BE FULLY OPEN. THE FANS SHALL BE OFF. THE TEMPERATURE CONTROL LOOP SHALL BE SET TO DEADBAND.

DURING UNOCCUPIED MODE, THE AHU CONTROLLER OR BAS SHALL CONTINUOUSLY POLL THE ZONE TEMPERATURE SENSORS OF ALL ASSOCIATED ZONES IN A ZONE GROUP. IF MORE THAN THREE ZONE TEMPERATURES SENSORS IN A ZONE GROUP OR THE AVERAGE TEMPERATURE OF A ZONE GROUP FALL OUTSIDE OF THEIR RESPECTIVE UNOCCUPIED SETPOINT RANGES, THE UNIT SHALL BE ENABLED AND RUN IN UNOCCUPIED HEATING OR UNOCCUPIED COOLING MODES UNTIL THE UNOCCUPIED SETPOINTS ARE 2ºF ABOVE OR BELOW UNOCCUPIED SETPOINT RESPECTIVELY. IF ANY SINGLE ZONE FALLS BELOW 5ºF OF UNOCCUPIED SETPOINT, UNOCCUPIED HEATING SHALL RUN UNTIL ALL ZONES IN THAT ZONE GROUP ARE 2ºF ABOVE UNOCCUPIED SETPOINT AND AN ALARM SHALL BE GENERATED AT THE BAS.

WHEN UNOCCUPIED COOLING MODE IS INITIATED BY THE AHU CONTROLLER OR BAS, THE SUPPLY AIR TEMPERATURE CONTROL LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN **MINIMUM DISCHARGE AIR TEMPERATURE** AS MEASURED AT THE DISCHARGE AIR TEMPERATURE SENSOR.

WHEN UNOCCUPIED HEATING MODE IS INITIATED BY THE AHU CONTROLLER OR BAS, THE SUPPLY AIR TEMPERATURE CONTROL LOOP SHALL BE ENABLED AND OPERATE UP TO A **MAXIMUM DISCHARGE AIR TEMPERATURE** AS MEASURED AT THE DISCHARGE AIR TEMPERATURE SENSOR. THE OUTDOOR AIR DAMPER SHALL BE FULLY CLOSED. THE RETURN AIR DAMPER SHALL BE FULLY OPEN.

FACILITY COOLDOWN / WARMUP CONTROL:

THE FACILITY COOLDOWN / WARMUP SEQUENCES SHALL USE A CALCULATED OPTIMIZED START ROUTINE PRIOR TO SCHEDULED OCCUPIED MODE. THE MORNING WARM-UP / COOL-DOWN ROUTINE SHALL BE INITIATED BY THE BAS. DEFAULT FACILITY COOLDOWN / WARMUP START TIME SHALL BE SIXTY MINUTES.

DURING FACILITY COOLDOWN / WARMUP MODE, THE OUTDOOR AIR DAMPER SHALL BE FULLY CLOSED. THE RETURN AIR DAMPER SHALL BE FULLY OPEN. EXCEPTION: IF ECONOMIZER MODE WOULD RESULT IN AN OVERALL MECHANICAL ENERGY SAVINGS, THEN OUTDOOR AIR DAMPER SHALL BE OPENED.

WHEN FACILITY COOLDOWN MODE IS INITIATED BY THE AHU CONTROLLER OR BAS, THE SUPPLY AIR TEMPERATURE CONTROL LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN **MINIMUM DISCHARGE AIR TEMPERATURE** AS MEASURED AT THE DISCHARGE AIR TEMPERATURE SENSOR.

WHEN FACILITY WARMUP MODE IS INITIATED BY THE AHU CONTROLLER OR BAS, THE SUPPLY AIR TEMPERATURE CONTROL LOOP SHALL BE ENABLED AND OPERATE UP TO A **MAXIMUM DISCHARGE AIR TEMPERATURE** AS MEASURED AT THE DISCHARGE AIR TEMPERATURE SENSOR. NOTE: ZONE REHEAT SHALL BE THE SECOND STAGE OF HEATING (AS REQUIRED).

FACILITY COOLDOWN/ WARMUP MODES SHALL SWITCH TO OCCUPIED MODE OPPERATION ONCE THE SPACE TEMPERATURE REACHES THE OCCUPIED SETPOINT OR OCCUPIED TIME.

OUTDOOR AIR CONTROL:

WHEN IN OCCUPIED MODE, THE AHU CONTROLLER OR BAS SHALL INCLUDE MEANS TO AUTOMATICALLY REDUCE OUTDOOR AIR INTAKE AIRFLOW BELOW DESIGN RATES IN RESPONSE TO CHANGES IN SYSTEM VENTILATION EFFICIENCY.

MINIMUM OUTDOOR AIR CONTROLS SHALL COMPLY WITH ASHRAE GUIDELINE 36-2021 SECTION 5.16.6 MINIMUM OUTDOOR AIR CONTROL WITH A SINGLE COMMON DAMPER FOR MINIMUM OUTDOOR AIR AND ECONOMIZER FUNCTIONS AND AIRFLOW MEASUREMENT AND SECTION 5.16.6.3 MINIMUM OUTDOOR AIR CONTROL LOOP (W/ RELIEF FAN). CONTROLS SHALL COMPLY WITH ASHRAE STANDARD 62.1 VENTILATION REQUIREMENTS.

DEMAND CONTROL VENTILATION VIA CO2 OR OCCUPANCY SENSORS MAY BE PROVIDED FOR INDIVIDUAL ZONES. REFER TO VAV TERMINAL UNIT CONTROLS DIAGRAMS FOR ADDITIONAL ZONE INFORMATION.

THE AHU SYSTEM CONTROLLER SHALL MODULATE THE OUTDOOR AIR DAMPER AND RETURN AIR DAMPER ACTUATORS AS REQUIRED TO MEET THE CALCULATED OUTDOOR AIRFLOW RATE ($MINOA_{SP}$) BASED ON AN AIRFLOW MEASURING DEVICE. THE AHU OUTDOOR RATE SHALL NOT EXCEED ITS SCHEDULED MAXIMUM VENTILATION SETPOINT UNLESS IN ECONOMIZER MODE OR IN INFECTION RISK MITIGATION MODE (IRMM).

SUPPLY FAN CONTROL:

SUPPLY FAN CONTROLS SEQUENCES SHALL IMPLEMENT ASHRAE G36 SECTION 5.16.1 AND GENERALLY FOLLOW THE LOGIC BELOW:

THE SUPPLY FAN SHALL RUN WHEN THE SYSTEM IS OPERATING IN ALL MODES EXCEPT UNOCCUPIED MODE.

THE SUPPLY FAN SHALL BE AUTOMATICALLY STARTED AND STOPPED BY THE AHU CONTROLLER OR BAS.

TOTALIZE CURRENT AIRFLOW RATE FROM VAV BOXES.

UPON PROOF OF SUCCESSFUL START AND OPERATION OF THE SUPPLY FAN, THE OUTDOOR AIR DAMPER SHALL OPEN.

THE SUPPLY FAN SHALL BE OPERATED TO MAINTAIN STATIC PRESSURE SETPOINT AS MEASURED BY THE STATIC PRESSURE SENSOR LOCATED IN THE SUPPLY AIR DUCTWORK. STATIC PRESSURE SHALL INITIALLY BE SET AT 1.2 IN. W.C. AND SHALL BE VERIFIED BY THE BALANCING CONTRACTOR.

IF STATIC PRESSURE FALLS BELOW THE STATIC PRESSURE SETPOINT, THE SUPPLY FANS SPEED SHALL BE INCREASED. IF THE STATIC PRESSURE RISES ABOVE STATIC PRESSURE SET POINT, THE SUPPLY FANS SPEED SHALL BE DECREASED.

VAV SETPOINT RESET:

THE VAV SYSTEM SHALL RESET STATIC PRESSURE SETPOINT USING A TRIM & RESPOND (T&R) LOGIC (REF. ASHRAE G36 SECTION 5.16.1). SYSTEM OPERATOR AND SYSTEM BALANCER SHALL ADJUST VALUES AS REQUIRED FOR FINAL SYSTEM OPERATION.

INITIAL SP SETPOINT: 1.0 IN.WC.
MINIMUM SP SETPOINT: 0.1 IN.WC.
MAXIMUM SP SETPOINT: 1.5 IN.WC.
STATIC PRESSURE TRIM: -0.04 IN.WC.
STATIC PRESSURE RESPONSE: +0.06 IN.WC.
MAX STATIC PRESSURE RESPONSE: +0.15 IN.WC.

WHILE IN UNOCCUPIED MODE, THE SYSTEM STATIC PRESSURE SETPOINT SHALL BE SET TO THE INITIAL SP SETPOINT. WHEN PLACED INTO OCCUPIED MODE, THE T&R RESET LOGIC SHALL BE ACTIVATED AFTER 10 MINUTES AND START AT INITIAL SP SETPOINT. THE T&R RESET SEQUENCE SHALL GRADUALLY REDUCE THE AHU STATIC PRESSURE SETPOINT BY THE STATIC PRESSURE TRIM VALUE EVERY 2 MINUTES IF 2 OR LESS REQUESTS ARE MADE FROM DOWNSTREAM TERMINAL UNITS. A REQUEST IS A CALL TO RESET STATIC PRESSURE GENERATED BY A TERMINAL UNIT CONTROLLER ANYTIME THE UNIT'S DAMPER REACHES 95% OPENNESS. REFER TO VAV TERMINAL UNIT CONTROLS SOO.

AS SYSTEM STATIC PRESSURE DROPS, VAV TERMINAL UNIT DAMPERS WILL OPEN FURTHER FOR A GIVEN LOAD. WHEN THE COMBINATION OF REDUCED STATIC PRESSURE OR CHANGES IN LOAD PRODUCE MORE THAN 2 GENERATED REQUESTS BY THE TERMINAL UNITS, THE SYSTEM SHALL RESPOND BY INCREASING STATIC PRESSURE SETPOINT BY THE STATIC PRESSURE RESPONSE VALUE FOR EVERY REQUEST, BUT NO MORE THAN THE MAX STATIC PRESSURE RESPONSE VALUE REGARDLESS OF THE NUMBER OF REQUESTS. THE SETPOINT SHALL CONTINUE TO INCREASE EVERY 2 MINUTES UNTIL ALL BUT 2 REQUESTS AT THE TERMINAL UNITS ARE SATISFIED. 5 MINS LATER THE TRIM SEQUENCE SHALL RESUME.

THE BAS SHALL GENERATE A RUNNING TOTAL OF THE REQUESTS GENERATED BY EACH ZONE TO IDENTIFY ZONES THAT ARE EXCESSIVELY DRIVING THE RESET LOGIC. IF A ZONE IS CAUSING ERRONEOUS RESULTS, THE WEIGHTED IMPORTANCE MULTIPLIER VALUE MAY BE SET TO 0.

RELIEF FAN CONTROL:

PROVIDE OFFSET TO MAINTAIN BUILDING POSITIVE BUILDING PRESSURE (0.03 - 0.05 IN W.C.).

ENABLE, DISABLE, AND MODULATE EXHAUST FAN BASED ON BUILDING PRESSURE CONTROL. REFER TO ASHRAE G36 5.16.9.

ECONOMIZER (DRY-BULB):

WHILE IN OCCUPIED MODE, IF THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE, THE UNIT SHALL MODULATE THE OUTDOOR AIR AND RETURN AIR DAMPERS TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AND MINIMIZE THE TOTAL MECHANICAL COOLING. THE ECONOMIZER IS THE FIRST STAGE OF COOLING.

IF THE OUTDOOR AIR TEMPERATURE EXCEEDS RETURN AIR TEMPERATURE OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE OUTDOOR AIR AND RETURN AIR DAMPERS SHALL RETURN TO MINIMUM OUTDOOR AIRFLOW SETPOINTS OPERATION.

IF THE OUTDOOR AIR TEMPERATURE IS LOWER THAN 45°F, THE OUTDOOR AIR AND RETURN AIR DAMPERS SHALL RETURN TO MINIMUM OUTDOOR AIRFLOW SETPOINTS OPERATION.

SUPPLY AIR TEMPERATURE CONTROL:

SUPPLY AIR TEMPERATURE CONTROLS SEQUENCES SHALL IMPLEMENT ASHRAE GUIDELINE 36 SECTION 5.16.2 AND GENERALLY FOLLOW THE LOGIC BELOW:

TEMPERATURE CONTROL LOOPS SHALL BE ENABLED WHENEVER THE SUPPLY FAN IS PROVEN ON.

SUPPLY AIR TEMPERATURE SHALL BE CONTROLLED TO DISCHARGE AIR TEMPERATURE SETPOINT. DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE SET TO **MINIMUM DISCHARGE AIR TEMPERATURE** FOR TIMES WHEN THE OUTDOOR AIR TEMPERATURE IS ABOVE 65°F OR SHALL BE DETERMINED BY THE SUPPLY AIR TEMPERATURE RESET SEQUENCE FOR PERIODS WHEN THE OUTDOOR AIR TEMPERATURE IS BELOW 65°F.

IN COOLING, THE UNIT SHALL MODULATE ECONOMIZER DAMPERS (WHEN ECONOMIZER MODE IS ENABLED) AND/OR SHALL MODULATE THE DX COOLING SYSTEM TO MAINTAIN DISCHARGE AIR SETPOINT.

IN HEATING, THE INDIRECT GAS BURNER SHALL MODULATE TO MAINTAIN SETPOINT DISCHARGE AIR TEMPERATURE.

SUPPLY AIR TEMPERATURE RESET:

THE VAV SYSTEM SHALL RESET SUPPLY AIR TEMPERATURE SETPOINT USING A TRIM & RESPOND (T&R) LOGIC (REF. ASHRAE G36 5.1.14). SYSTEM OPERATOR AND SYSTEM BALANCER SHALL ADJUST VALUES AS REQUIRED FOR FINAL SYSTEM OPERATION.

INITIAL TEMP SETPOINT: 58°F
MINIMUM TEMP SETPOINT: **MINIMUM DISCHARGE AIR TEMPERATURE**
MAXIMUM TEMP SETPOINT: **MAXIMUM DISCHARGE AIR TEMPERATURE**
TEMP TRIM: +0.1°F
TEMP RESPONSE: -0.2°F
MAX TEMP RESPONSE: -0.6°F

THE FOLLOWING RESET SEQUENCE SHALL ONLY APPLY WHEN OUTDOOR AIR IS LESS THAN 65°F.

WHILE IN UNOCCUPIED MODE, THE SYSTEM DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE SET TO THE INITIAL TEMP SETPOINT. WHEN PLACED INTO OCCUPIED MODE, THE T&R RESET LOGIC SHALL BE ACTIVATED AFTER 10 MINUTES AND START AT INITIAL TEMP SETPOINT.

THE T&R RESET SEQUENCE SHALL GRADUALLY RAISE THE AHU TEMPERATURE SETPOINT BY THE TEMP TRIM VALUE EVERY 2 MINUTES IF 2 OR LESS REQUESTS ARE MADE FROM DOWNSTREAM TERMINAL UNITS. A REQUEST IS A CALL TO RESET TEMPERATURE GENERATED BY A TERMINAL UNIT CONTROLLER BASED ON ZONE TEMPERATURE AND ZONE AIRFLOW. REFER TO VAV TERMINAL UNIT CONTROLS DIAGRAMS.

AS SYSTEM DISCHARGE AIR TEMPERATURE RISES, VAV TERMINAL UNIT AIRFLOW [WHILST IN COOLING MODE] WILL INCREASE FOR A GIVEN LOAD. WHEN THE COMBINATION OF HIGHER DISCHARGE AIR TEMPERATURE AND/OR CHANGES IN LOAD PRODUCE MORE THAN 2 GENERATED REQUESTS BY THE TERMINAL UNITS, THE SYSTEM SHALL RESPOND BY DECREASING DISCHARGE AIR TEMPERATURE SETPOINT BY THE TEMP RESPONSE VALUE FOR EVERY REQUEST, BUT NO MORE THAN THE MAX TEMP RESPONSE VALUE REGARDLESS OF THE NUMBER OF REQUESTS. THE SETPOINT SHALL CONTINUE TO DECREASE EVERY 2 MINUTES UNTIL ALL BUT 2 REQUESTS AT THE TERMINAL UNITS ARE SATISFIED. 5 MINUTES LATER THE TRIM SEQUENCE SHALL RESUME.

THE BAS SHALL GENERATE A RUNNING TOTAL OF THE REQUESTS GENERATED BY EACH ZONE TO IDENTIFY ZONES EXCESSIVELY DRIVING THE RESET LOGIC. IF A ZONE IS CAUSING ERRONEOUS RESULTS, THE WEIGHTED IMPORTANCE MULTIPLIER VALUE MAY BE SET TO 0.

DEHUMIDIFICATION CONTROL:

DEHUMIDICATION MODE SHALL BE ENABLED DURING NORMAL AHU OPPERATION WHEN THE SUPPLY FAN IS PROVEN ON, THE RETURN AIR HUMIDITY RAISES ABOVE 60% RH, AND THE OUTDOOR TEMPERATURE IS ABOVE 55°F.

WHEN ENABLED, THE AHU CONTROLLER SHALL DISABLE THE ECONOMIZER. NEXT, THE DX COOLING SYSTEM SHALL MODULATE THE MECHANICAL COOLING SYSTEM TO OVERCOOL THE AIR, LOWERING THE MOISTURE CONTENT. THE MODULATING HOT GAS REHEAT SYSTEM SHALL BE USED TO MAINTAIN THE DISCHRAGE AIR TEMPERATURE SETPOINT. ONCE THE RETURN AIR HUMIDITY LOWERS TO 55% RH DEHUMIDIFICATION MODE SHALL BE DISABLED.

FIRE ALARM MODE CONTROL:

THE SUPPLY FAN SHALL SHUT DOWN WHEN ANY AUTOMATIC OR MANUAL FIRE ALARM DEVICE IS PLACED INTO ALARM BY THE BUILDING FIRE ALARM CONTROL PANEL VIA THE FIRE ALARM CONTROL MODULE. NEXT, THE OUTDOOR AIR DAMPER SHALL CLOSE AND THE UNIT SHALL BE DISABLED.

SYSTEM SHALL AUTOMATICALLY RESET FOLLOWING AN ALARM EVENT.

ALARMS AND SAFETIES

PROVIDE ALL RELEVANT ALARMS TO NOTIFY SYSTEM OPERATORS OF MAINTENANCE, PERFORMANCE, EQUIPMENT, OR LIFE-SAFETY ERRORS AND FAULTS. REFER TO MANUFACTURER INFORMATION, CODE REQUIREMENTS, AND ASHRAE 36 RECOMMENDATIONS FOR ADDITIONAL SAFETIES AND ALARMS.

HIGH STATIC PRESSURE SAFETY SWITCH: WHEN THE SAFETY SWITCH IS TRIPPED, DISABLE SUPPLY FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. HIGH PRESSURE SHALL BE SET TO TRIP AT 4" W.G. AND SHALL BE RESET MANUALLY AT THE UNIT.

FREEZE STAT: WHEN A FREEZE CONDITION OCCURS, DISABLE SUPPLY FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. FREEZE STAT SHALL BE SET TO TRIP AT 40°F AND SHALL BE RESET MANUALLY AT THE UNIT.

DUCT SMOKE DETECTOR: WHEN SMOKE IS DETECTED, DISABLE SUPPLY FAN AND RELIEF FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

FILTER DIFFERENTIAL SWITCH: WHEN DIFFERENTIAL PRESSURE ACROSS THE FILTERS EXCEEDS ALLOWABLE LIMIT, GENERATE AN ALARM AT THE BAS.

FAN STATUS: THE BAS SHALL MONITOR FAN CURRENT SWITCHES. IF STATUS DOES NOT MATCH COMMAND OUTPUT, DISABLE FAN AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

DAMPER POSITION: KNOWLEDGE OF DAMPER POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING ACTUATOR CAN BE USED. IF DAMPER POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

OUTDOOR AIR DAMPER POSITION: THE OUTDOOR AIR DAMPER SHALL FAIL CLOSED. IF THE OUTDOOR AIR DAMPER FAILS TO OPEN/MODULATE, AS INDICATED BY THE END SWITCH, GENERATE AN ALARM AT THE BAS.

RETURN AIR DAMPER POSITION: THE RETURN AIR DAMPER SHALL FAIL OPEN. IF THE RETURN AIR DAMPER FAILS TO CLOSE/MODULATE, AS INDICATED BY THE END SWITCH, GENERATE AN ALARM AT THE BAS.

DISCHARGE AIR TEMPERATURE: IF DISCHARGE AIR TEMPERATURE FALLS OUT OF THE ALLOWABLE RANGE OF 5°F FOR A TIME PERIOD 10 MINUTES, GENERATE AN ALARM AT THE BAS.

MULTIPLE-ZONE VAV AHU W/ DX W/ HGR, GAS CONTROLS DIAGRAM

NO SCALE

TYPICAL FOR: RTU-3, RTU-4, & RTU-5

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Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

STATE OF MICHIGAN
STEVEN R. DIBERARDINE
ENGINEER
No. 6201041574
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10/10/2025

Lansing® School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
CONTROL DIAGRAMS

SHEET NO.
M8.2

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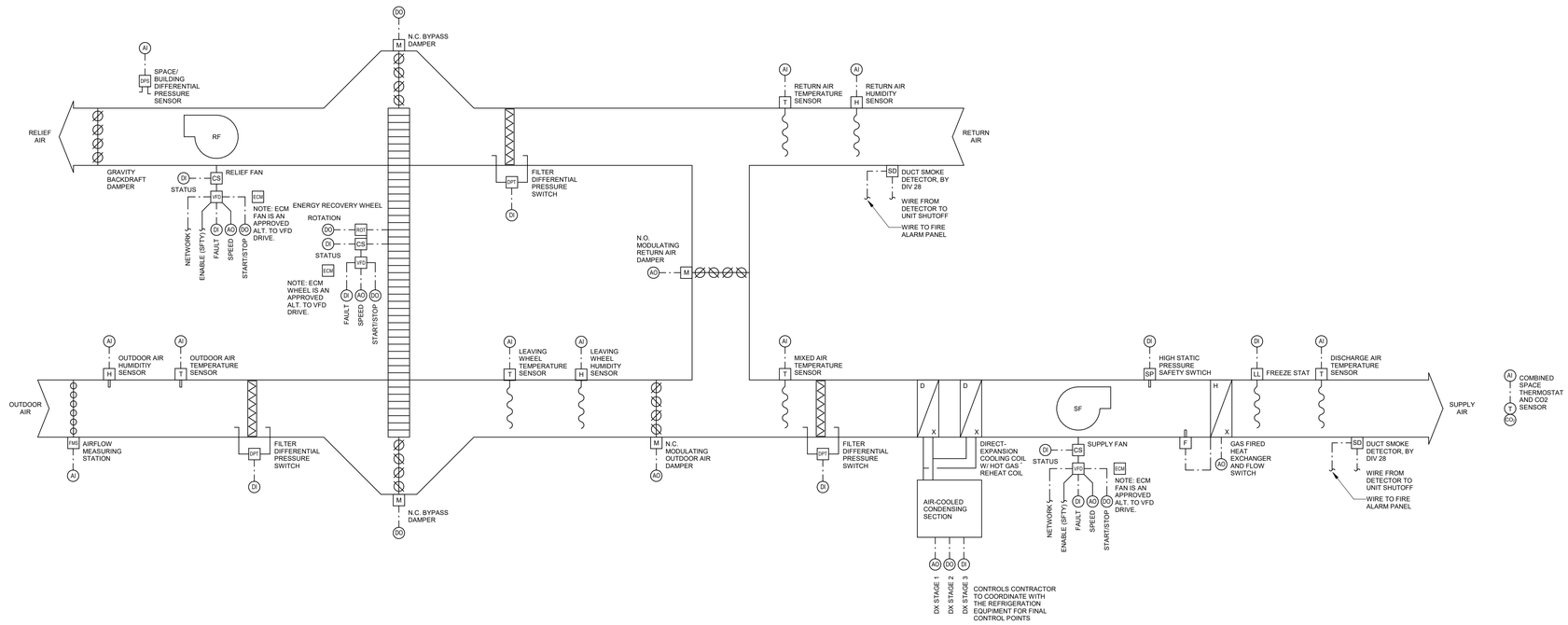

SEQUENCE OF OPERATIONS:

GENERAL

THE SINGLE-ZONE VAV AIR-HANDLING UNIT SEQUENCES HEREIN DEPICT GENERAL INTENT OF OPERATION AND ARE TO BE PERFORMANCE BASED. FOR COMPLETE PROCEDURAL FUNCTIONALITY, THE UNITS SHALL FOLLOW THE GUIDELINES IN ASHRAE 90.1-2013 CHAPTER 6, AHRAE 62.1-2016, AND ASHRAE GUIDELINE 36 CHAPTERS 5.1-5.4, 5.15, AND 5.18 WITHOUT EXPLICIT STATEMENT. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONAL RESULTS USING DIFFERENT UNDERLYING DETAILED LOGIC WILL BE ACCEPTABLE.

CONTROLS TO BE MANUFACTURER PACKAGED CONTROLS AND FACTORY INSTALLED.

AT MINIMUM, PROVIDE A GRAPHICAL REPRESENTATION OF THE DIAGRAM AND ASSOCIATED POINTS INDICATED ABOVE. ALL ADDITIONAL POINTS NOT STRICTLY REQUIRING GRAPHICAL REPRESENTATION, SHALL STILL BE READ/WRITE ACCESSIBLE AT THE OWS/BAS. ALL SETPOINTS, TIMERS, DEADBANDS, SCHEDULES, ETC. LISTED HEREIN THE SEQUENCE SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR. VALUES FOR ALL POINTS, INCLUDING HARDWARE POINTS, SHALL BE OVERRIDABLE. EXCEPTIONS CAN BE MADE REGARDING MACHINE OR LIFE SAFETY.

EQUIPMENT MOTORS INTENDED TO BE MODULATED CAN BE PROVIDED WITH EITHER VARIABLE FREQUENCY DRIVES OR ELECTRONIC COMMUTATED MOTOR; SEQUENCE MAY USED INTERCHANGEABLE.

THE ROOFTOP UNIT SHALL BE CAPABLE OF OPERATING IN THE FOLLOWING MODES AS DETERMINED BY THE ZONE GROUPS ASSOCIATED WITH THE UNIT: (1) OCCUPIED, (2) COOLDOWN, (3) UNOCCUPIED COOLING, (4) WARMUP, (5) UNOCCUPIED HEATING, AND (6) UNOCCUPIED MODE.

MINIMUM DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE 55ºF. **MAXIMUM DISCHARGE AIR TEMPERATURE** SHALL BE 95ºF.

UNOCCUPIED CONTROL:

DURING UNOCCUPIED MODE, THE OUTDOOR AIR DAMPER SHALL BE FULLY CLOSED. THE RETURN AIR DAMPER SHALL BE FULLY OPEN. THE SUPPLY FAN SHALL BE OFF. THE TEMPERATURE CONTROL LOOP SHALL BE SET TO DEADBAND.

DURING UNOCCUPIED MODE, THE AHU CONTROLLER OR BAS SHALL CONTINUOUSLY POLL THE ZONE TEMPERATURE SENSOR. IF THE ZONE TEMPERATURE SENSOR FALLS OUTSIDE OF THE UNOCCUPIED SETPOINT RANGES, THE UNIT SHALL BE ENABLED AND RUN IN UNOCCUPIED HEATING OR UNOCCUPIED COOLING MODES UNTILL THE UNOCCUPIED SETPOINTS ARE 1ºF ABOVE OR BELOW UNOCCUPIED SETPOINT RESPECTIVELY.

WHEN UNOCCUPIED COOLING MODE IS INITIATED BY THE AHU CONTROLLER OR BAS, THE SUPPLY AIR TEMPERATURE CONTROL LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN **MINIMUM DISCHARGE AIR TEMPERATURE** AS MEASURED AT THE DISCHARGE AIR TEMPERATURE SENSOR.

WHEN UNOCCUPIED HEATING MODE IS INITIATED BY THE AHU CONTROLLER OR BAS, THE SUPPLY AIR TEMPERATURE CONTROL LOOP SHALL BE ENABLED AND OPERATE UP TO A **MAXIMUM DISCHARGE AIR TEMPERATURE** AS MEASURED AT THE DISCHARGE AIR TEMPERATURE SENSOR. THE OUTDOOR AIR DAMPER SHALL BE FULLY CLOSED. THE RETURN AIR DAMPER SHALL BE FULLY OPEN.

FACILITY COOLDOWN / WARMUP CONTROL:

THE FACILITY COOLDOWN / WARMUP SEQUENCES SHALL USE A CALCULATED OPTIMIZED START ROUTINE PRIOR TO SCHEDULED OCCUPIED MODE. THE MORNING WARM-UP / COOL-DOWN ROUTINE SHALL BE INITIATED BY THE BAS. DEFAULT FACILITY COOLDOWN / WARMUP START TIME SHALL BE SIXTY MINUTES.

DURING FACILITY COOLDOWN / WARMUP MODE, THE OUTDOOR AIR DAMPER SHALL BE FULLY CLOSED. THE RETURN AIR DAMPER SHALL BE FULLY OPEN. EXCEPTION: IF ECONOMIZER MODE WOULD RESULT IN AN OVERALL MECHANICAL ENERGY SAVINGS, THEN OUTDOOR AIR DAMPER SHALL BE OPENED.

WHEN FACILITY COOLDOWN MODE IS INITIATED BY THE AHU CONTROLLER OR BAS, THE SUPPLY AIR TEMPERATURE CONTROL LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN **MINIMUM DISCHARGE AIR TEMPERATURE** AS MEASURED AT THE DISCHARGE AIR TEMPERATURE SENSOR.

WHEN FACILITY WARMUP MODE IS INITIATED BY THE AHU CONTROLLER OR BAS, THE SUPPLY AIR TEMPERATURE CONTROL LOOP SHALL BE ENABLED AND OPERATE UP TO THE **MAXIMUM DISCHARGE AIR TEMPERATURE** AS MEASURED AT THE DISCHARGE AIR TEMPERATURE SENSOR. NOTE: ZONE REHEAT SHALL BE THE SECOND STAGE OF HEATING (AS REQUIRED).

FACILITY COOLDOWN/ WARMUP MODES SHALL SWTICH TO OCCUPIED MODE OPPERATION ONCE THE SPACE TEMPERATURE REACHES THE OCCUPIED SETPOINT OR OCCUPIED TIME.

OUTDOOR AIR CONTROL:

WHEN IN OCCUPIED MODE, THE AHU CONTROLLER OR BAS SHALL INCLUDE MEANS TO AUTOMATICALLY REDUCE OUTDOOR AIR INTAKE AIRFLOW BELOW DESIGN RATES IN RESPONSE TO CHANGES IN SPACE CO2 CONCENTRATION LEVELS.

UPON RISING CO2 CONCENTRATION LEVELS, THE OUTDOOR AIR DAMPER ACTUATOR SHALL MODULATE OPEN. THE AHU OUTDOOR DAMPER ACTUATOR SHALL NOT MODULATE BEYOND ITS SCHEDULED MAXIMUM VENTILATION SETPOINT (SEE VENTILATION SCHEDULE) UNLESS IN ECONOMIZER MODE.

INVERSELY, UPON FALLING CO2 CONCENTRATION LEVELS, THE OUTDOOR AIR DAMPER ACTUATOR SHALL MODULATE CLOSED. DAMPER POSITION LIMITED TO NO LESS THAN THE BUILDING COMPONENT OUTDOOR AIRFLOW.

OUTDOOR AIRFLOW RATE SHALL BE MEASURED AN AIRFLOW MEASURING DEVICE.

ECONOMIZER (DRY-BULB):

DURING UNOCCUPIED MODE, THE BYPASS DAMPER(S) SHALL BE CLOSED.

WHILE IN OCCUPIED MODE, IF THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE, THE UNIT SHALL MODULATE THE BYPASS DAMPER TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AND MINIMIZE THE TOTAL MECHANICAL COOLING. THE ECONOMIZER IS THE FIRST STAGE OF COOLING. THE WHEEL SHALL STOP.

IF THE OUTDOOR AIR TEMPERATURE EXCEEDS RETURN AIR TEMPERATURE OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE BYPASS DAMPER SHALL CLOSE.

IF THE OUTDOOR AIR TEMPERATURE IS LOWER THAN 45°F, THE BYPASS DAMPER(S) SHALL CLOSE.

ENTHALPY WHEEL CONTROL:

DURING UNOCCUPIED MODE, THE ENTHALPY WHEEL SHALL BE STOPPED.

IN OCCUPIED MODE, IF THE OUTDOOR AIR ENTHALPY (CALCULATED) IS GREATER THAN THE RETURN AIR ENTHALPY (CALCULATED) OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE UNIT SHALL MODULATE THE ENTHALPY WHEEL TO MAX SPEED. AT CONDITION, THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF COOLING.

IN OCCUPIED MODE, WHENEVER THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE DISCHARGE AIR TEMPERATURE, THE ENTHALPY WHEEL SHALL MODULATE SPEED TO MAINTAIN REQUIRED DISCHARGE TEMPERATURE. THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF HEATING.

IF UNIT HAS PACKAGED CONTROLS, MANUFACTURER SEQUENCES SHALL GOVERN.

ENTHALPY WHEEL DEFROST CONTROL:

THE UNITS CONTROLLER SHALL PROVIDE MEANS TO PROTECT WHEEL FROM FROSTING. CONSULT MANUFACTURER LITERATURE. A FROST/CONDENSATE PREVENTION CRAWL MODEL SHALL BE USED TO PREVENT BUILD UP OF ICE. WHEN THE CRAWL MODEL IS ENABLED THE BYASS DAMPERS WILL RAMP TO 100% BYPASS, AND THE NEERGY WHEEL'S VARIABLE FREQUENCY DRIVE WILL BE COMMANDED TO MINIMUM.

FIRE ALARM MODE CONTROL:

THE SUPPLY FAN SHALL SHUT DOWN WHEN ANY AUTOMATIC OR MANUAL FIRE ALARM DEVICE IS PLACED INTO ALARM BY THE BUILDING FIRE ALARM CONTROL PANEL VIA THE FIRE ALARM CONTROL MODULE. NEXT, THE OUTDOOR AIR DAMPER SHALL CLOSE AND THE UNIT SHALL BE DISABLED.

SYSTEM SHALL MANUALLY RESET FOLLOWING AN ALARM EVENT.

RELIEF FAN CONTROL:

PROVIDE OFFSET TO MAINTAIN BUILDING POSITIVE BUILDING PRESSURE (0.03 - 0.05 IN W.C.).

ENABLE, DISABLE, AND MODULATE EXHAUST FAN BASED ON BUILDING PRESSURE CONTROL. REFER TO ASHRAE G36 5.16.9.

SETPOINTS:

UNOCCUPIED SPACE COOLING SETPOINT SHALL BE 80ºF (ADJ.)
UNOCCUPIED SPACE HEATING SETPOINT SHALL BE 65ºF (ADJ.)
OCCUPIED SPACE COOLING SETPOINT SHALL BE 75ºF (ADJ.) 60% RH* (ADJ.)
OCCUPIED SPACE HEATING SETPOINT SHALL BE 70ºF (ADJ.)

*RELATIVE HUMIDITY WILL NOT BE DIRECTLY CONTROLLED. THIS IS A CONDITION THAT CAN BE EXPECTED UNDER NORMAL OPERATING CONDITIONS.

SUPPLY FAN AND SUPPLY AIR TEMPERATURE CONTROL:

SUPPLY FAN SPEED AND TEMPERATURE SEQUENCE SHALL IMPLEMENT ASHRAE G36 SECTION 5.18.4 AND GENERALLY FOLLOW THE LOGIC BELOW:

THE SUPPLY FAN SHALL RUN WHEN THE SYSTEM IS OPERATING IN ALL MODES EXCEPT UNOCCUPIED MODE.

THE SUPPLY FAN SHALL BE AUTOMATICALLY STARTED AND STOPPED BY THE AHU CONTROLLER OR BAS.

UPON PROOF OF SUCCESSFUL START AND OPERATION OF THE SUPPLY FAN, THE OUTDOOR AIR DAMPER SHALL OPEN TO ITS MINIMUM POSITION INITIALLY.

PROVIDE A RAMP FUNCTION TO PREVENT CHANGES IN FAN SPEED OF MORE THAN 10% PER MIN.

AS SPACE TEMPERATURE INCREASES, THE UNIT SHALL MODULATE ECONOMIZER DAMPERS (WHEN ECONOMIZER MODE IS ENABLED) AND/OR SHALL MODULATE THE DX COOLING SYSTEM TO MAINTAIN SPACE TEMPERATURE SETPOINT. THE COOLING SYSTEM WILL CONTINUE TO MODULATE UP UNTIL THE DISCHARGE AIR TEMPERATURE REACHES THE **MINIMUM DISCHARGE AIR TEMPERATURE**. AT WHICH POINT, BOTH THE MECHANICAL COOLING SYSTEM AND THE SUPPLY FAN WILL MODULATE UP TOGETHER TO MAINTAIN SPACE AIR TEMPERATURE SETPOINT AND **MINIMUM DISCHARGE AIR TEMPERATURE**.

AS SPACE TEMPERATURE BEGINS TO DECREASES, THE PROCESS SHALL WORK IN REVERSE ORDER.

AS SPACE TEMPERATURE DECREASES, THE UNIT SHALL MODULATE THE INDIRECT GAS BURNER TO MAINTAIN SPACE TEMPERATURE SETPOINT. THE HEATING SYSTEM WILL CONTINUE TO MODULATE UP UNTIL THE DISCHARGE AIR TEMPERATURE REACHES THE **MAXIMUM DISCHARGE AIR TEMPERATURE**. AT WHICH POINT, BOTH THE MECHANICAL HEATING SYSTEM AND THE SUPPLY FAN WILL MODULATE UP TOGETHER TO MAINTAIN SPACE AIR TEMPERATURE SETPOINT AND **MAXIMUM DISCHARGE AIR TEMPERATURE**.

AS SPACE TEMPERATURE BEGINS TO INCREASE, THE PROCESS SHALL WORK IN REVERSE ORDER.

DEHUMIDIFICATION CONTROL:

DEHUMIDICATION MODE SHALL BE ENABLED DURING NORMAL AHU OPERATION WHEN THE SUPPLY FAN IS PROVEN ON, THE RETURN AIR HUMIDITIY RAISES ABOVE 60% RH, AND THE OUTDOOR TEMPERATURE IS ABOVE 55°F.

WHEN ENABLED, THE AHU CONTROLLER SHALL DISABLE THE ECONOMIZER. NEXT, THE DX COOLING SYSTEM SHALL MODULATE THE MECHANICAL COOLING SYSTEM TO OVERCOOL THE AIR, LOWERING THE MOISTURE CONTENT. THE MODULATING HOT GAS REHEAT SYSTEM SHALL BE USED TO MAINTIAN THE DISCHRAGE AIR TEMPERATURE SETPOINT. ONCE THE RETURN AIR HUMIDITY LOWERS TO 55% RH DEHUMIDIFICATION MODE SHALL BE DISABLED.

ALARMS AND SAFETIES

PROVIDE ALL RELEVANT ALARMS TO NOTIFY SYSTEM OPERATORS OF MAINTENANCE, PERFORMANCE, EQUIPMENT, OR LIFE-SAFETY ERRORS AND FAULTS. REFER TO MANUFACTURER INFORMATION, CODE REQUIREMENTS, AND ASHRAE 36 RECOMMENDATIONS FOR ADDITIONAL SAFETIES AND ALARMS.

HIGH STATIC PRESSURE SAFETY SWITCH: WHEN THE SAFETY SWITCH IS TRIPPED, DISABLE SUPPLY FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. HIGH PRESSURE SHALL BE SET TO TRIP AT 4" W.G. AND SHALL BE RESET MANUALLY AT THE UNIT.

FREEZE STAT: WHEN A FREEZE CONDITION OCCURS, DISABLE SUPPLY FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. FREEZE STAT SHALL BE SET TO TRIP AT 40°F AND SHALL BE RESET MANUALLY AT THE UNIT.

DUCT SMOKE DETECTOR: WHEN SMOKE IS DETECTED, DISABLE SUPPLY FAN AND RELIEF FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

FILTER DIFFERENTIAL SWTICH: WHEN DIFFERENTIAL PRESSURE ACCROSS THE FILTERS EXCEEDS ALLOWABLE LIMIT, GENERATE AN ALARM AT THE BAS.

FAN STATUS: THE BAS SHALL MONITOR FAN CURRENT SWITCHES. IF STATUS DOES NOT MATCH COMMAND OUTPUT, DISABLE FAN AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

DAMPER POSITION: KNOWLEDGE OF DAMPER POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING ACTUATOR CAN BE USED. IF DAMPER POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

OUTDOOR AIR DAMPER POSITION: THE OUTDOOR AIR DAMPER SHALL FAIL CLOSED. IF THE OUTDOOR AIR DAMPER FAILS TO OPEN/MODULATE, AS INDICATED BY THE END SWITCH, GENERATE AN ALARM AT THE BAS.

RETURN AIR DAMPER POSITION: THE RETURN AIR DAMPER SHALL FAIL OPEN. IF THE RETURN AIR DAMPER FAILS TO CLOSE/MODULATE, AS INDICATED BY THE END SWITCH, GENERATE AN ALARM AT THE BAS.

DISCHARGE AIR TEMPERATURE: IF DISCHARGE AIR TEMPERATURE FALLS OUT OF THE ALLOWABLE RANGE OF 5°F FOR A TIME PERIOD 10 MINUTES, GENERATE AN ALARM AT THE BAS.

SINGLE-ZONE VAV AHU W/ DX W/ HGR, GAS, ERW CONTROLS DIAGRAM

NO SCALE

TYPICAL FOR: RTU-6

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10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

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SHEET TITLE
CONTROL DIAGRAMS

SHEET NO.
M8.3

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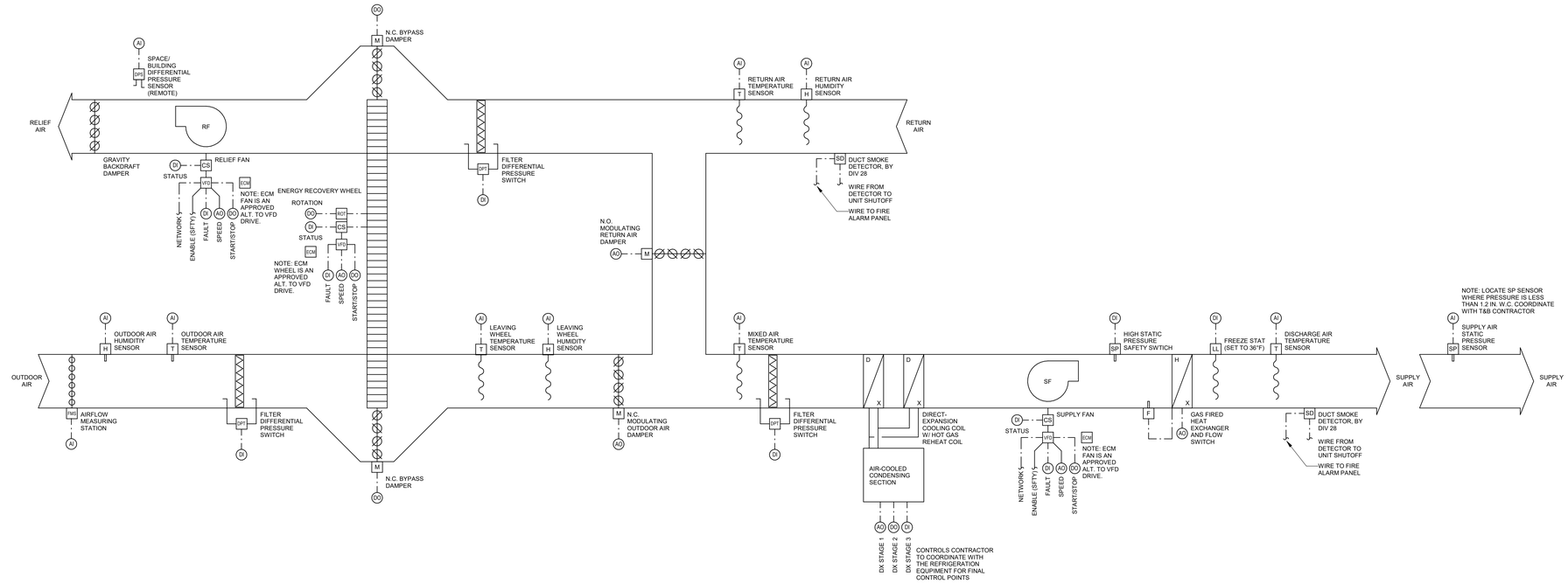

SEQUENCE OF OPERATIONS:

GENERAL

THE MULTIPLE-ZONE VAV AIR-HANDLING UNIT SEQUENCES HEREIN DEPICT GENERAL INTENT OF OPERATION AND ARE TO BE PERFORMANCE BASED. FOR COMPLETE PROCEDURAL FUNCTIONALITY, THE UNITS SHALL FOLLOW THE GUIDELINES IN ASHRAE 90.1-2013 CHAPTER 6, ASHRAE 62.1-2016, AND ASHRAE GUIDELINE 36 CHAPTERS 5.1-5.4, 5.15, AND 5.16 WITHOUT EXPLICIT STATEMENT. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONAL RESULTS USING DIFFERENT UNDERLYING DETAILED LOGIC WILL BE ACCEPTABLE.

CONTROLS TO BE MANUFACTURER PACKAGED CONTROLS AND FACTORY INSTALLED.

AT MINIMUM, PROVIDE A GRAPHICAL REPRESENTATION OF THE DIAGRAM AND ASSOCIATED POINTS INDICATED ABOVE. ALL ADDITIONAL POINTS NOT STRICTLY REQUIRING GRAPHICAL REPRESENTATION, SHALL STILL BE READ/WRITE ACCESSIBLE AT THE OWS/BAS. ALL SETPOINTS, TIMERS, DEADBANDS, SCHEDULES, ETC. LISTED HEREIN THE SEQUENCE SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR. VALUES FOR ALL POINTS, INCLUDING HARDWARE POINTS, SHALL BE OVERRIDABLE. EXCEPTIONS CAN BE MADE REGARDING MACHINE OR LIFE SAFETY.

THE ROOFTOP UNIT SHALL BE CAPABLE OF OPERATING IN THE FOLLOWING MODES AS DETERMINED BY THE ZONE GROUPS ASSOCIATED WITH THE UNIT: (1) OCCUPIED, (2) COOLDOWN, (3) UNOCCUPIED COOLING, (4) WARMUP, (5) UNOCCUPIED HEATING, AND (6) UNOCCUPIED MODE. WHEN ASSOCIATED ZONE GROUPS, AS DEFINED BY ASHRAE, ARE IN DIFFERENT OPERATING MODES, THE HIERARCHY ABOVE SHALL APPLY. EACH SYSTEM SHALL BE BROKEN INTO ZONE GROUPS. ZONE GROUPS SHALL BE DETERMINED BY THE TCC AND IMPLEMENTED IN THE NETWORK ARCHITECTURE

MINIMUM DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE 55°F. **MAXIMUM DISCHARGE AIR TEMPERATURE** SHALL BE 65°F IN OCCUPIED MODE. IN UNOCCUPIED MODE OR FACILITY WARMUP, **MAXIMUM DISCHARGE AIR TEMPERATURE** SHALL BE 95°F.

UNOCCUPIED CONTROL:

DURING UNOCCUPIED MODE, THE OUTDOOR AIR DAMPER SHALL BE FULLY CLOSED. THE RETURN AIR DAMPER SHALL BE FULLY OPEN. THE FANS SHALL BE OFF. THE TEMPERATURE CONTROL LOOP SHALL BE SET TO DEADBAND.

DURING UNOCCUPIED MODE, THE AHU CONTROLLER OR BAS SHALL CONTINUOSLY POLL THE ZONE TEMPERATURE SENSORS OF ALL ASSOCIATED ZONES IN A ZONE GROUP. IF MORE THAN THREE ZONE TEMPERATURES SENSORS IN A ZONE GROUP OR THE AVERAGE TEMPERATURE OF A ZONE GROUP FALL OUTSIDE OF THEIR RESPECTIVE UNOCCUPIED SETPOINT RANGES, THE UNIT SHALL BE ENABLED AND RUN IN UNOCCUPIED HEATING OR UNOCCUPIED COOLING MODES UNTIL THE UNOCCUPIED SETPOINTS ARE 2°F ABOVE OR BELOW UNOCCUPIED SETPOINT RESPECTIVELY. IF ANY SINGLE ZONE FALLS BELOW 5°F OF UNOCCUPIED SETPOINT, UNOCCUPIED HEATING SHALL RUN UNTIL ALL ZONES IN THAT ZONE GROUP ARE 2°F ABOVE UNOCCUPIED SETPOINT AND AN ALARM SHALL BE GENERATED AT THE BAS.

WHEN UNOCCUPIED COOLING MODE IS INITIATED BY THE AHU CONTROLLER OR BAS, THE SUPPLY AIR TEMPERATURE CONTROL LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN **MINIMUM DISCHARGE AIR TEMPERATURE** AS MEASURED AT THE DISCHARGE AIR TEMPERATURE SENSOR.

WHEN UNOCCUPIED HEATING MODE IS INITIATED BY THE AHU CONTROLLER OR BAS, THE SUPPLY AIR TEMPERATURE CONTROL LOOP SHALL BE ENABLED AND OPERATE UP TO A **MAXIMUM DISCHARGE AIR TEMPERATURE** AS MEASURED AT THE DISCHARGE AIR TEMPERATURE SENSOR. THE OUTDOOR AIR DAMPER SHALL BE FULLY CLOSED. THE RETURN AIR DAMPER SHALL BE FULLY OPEN.

FACILITY COOLDOWN / WARMUP CONTROL:

THE FACILITY COOLDOWN / WARMUP SEQUENCES SHALL USE A CALCULATED OPTIMIZED START ROUTINE PRIOR TO SCHEDULED OCCUPIED MODE. THE MORNING WARM-UP / COOL-DOWN ROUTINE SHALL BE INITIATED BY THE BAS. DEFAULT FACILITY COOLDOWN / WARMUP START TIME SHALL BE SIXTY MINUTES.

DURING FACILITY COOLDOWN / WARMUP MODE. THE OUTDOOR AIR DAMPER SHALL BE FULLY CLOSED. THE RETURN AIR DAMPER SHALL BE FULLY OPEN. EXCEPTION: IF ECONOMIZER MODE WOULD RESULT IN AN OVERALL MECHANICAL ENERGY SAVINGS, THEN OUTDOOR AIR DAMPER SHALL BE OPENED.

WHEN FACILITY COOLDOWN MODE IS INITIATED BY THE AHU CONTROLLER OR BAS, THE SUPPLY AIR TEMPERATURE CONTROL LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN **MINIMUM DISCHARGE AIR TEMPERATURE** AS MEASURED AT THE DISCHARGE AIR TEMPERATURE SENSOR.

WHEN FACILITY WARMUP MODE IS INITIATED BY THE AHU CONTROLLER OR BAS, THE SUPPLY AIR TEMPERATURE CONTROL LOOP SHALL BE ENABLED AND OPERATE UP TO A **MAXIMUM DISCHARGE AIR TEMPERATURE** AS MEASURED AT THE DISCHARGE AIR TEMPERATURE SENSOR. NOTE: ZONE REHEAT SHALL BE THE SECOND STAGE OF HEATING (AS REQUIRED).

FACILITY COOLDOWN/ WARMUP MODES SHALL SWTICH TO OCCUPIED MODE OPPERATION ONCE THE SPACE TEMPERATURE REACHES THE OCCUPIED SETPOINT OR OCCUPIED TIME.

OUTDOOR AIR CONTROL:

WHEN IN OCCUPIED MODE, THE AHU SYSTEM CONTROLLER SHALL MODULATE THE OUTDOOR AIR DAMPER ACTUATOR AS REQUIRED TO MEET THE MINIMUM OUTDOOR AIRFLOW RATE BASED ON AN OUTDOOR AIRFLOW MEASURING DEVICE. THE AHU OUTDOOR DAMPER ACTUATOR SHALL NOT OPEN BEYOND ITS SCHEDULED MAXIMUM VENTILATION SETPOINT (SEE VENTILATION SCHEDULE) UNLESS IN ECONOMIZER MODE OR IN INFECTION RISK MITIGATION MODE (IRMM).

SUPPLY FAN CONTROL:

SUPPLY FAN CONTROLS SEQUENCES SHALL IMPLEMENT ASHRAE G36 SECTION 5.16.1 AND GENERALLY FOLLOW THE LOGIC BELOW:

THE SUPPLY FAN SHALL RUN WHEN THE SYSTEM IS OPERATING IN ALL MODES EXCEPT UNOCCUPIED MODE.

THE SUPPLY FAN SHALL BE AUTOMATICALLY STARTED AND STOPPED BY THE AHU CONTROLLER OR BAS.

TOTALIZE CURRENT AIRFLOW RATE FROM VAV BOXES.

UPON PROOF OF SUCCESSFUL START AND OPERATION OF THE SUPPLY FAN, THE OUTDOOR AIR DAMPER SHALL OPEN.

THE SUPPLY FAN SHALL BE OPERATED TO MAINTAIN STATIC PRESSURE SETPOINT AS MEASURED BY THE STATIC PRESSURE SENSOR LOCATED IN THE SUPPLY AIR DUCTWORK. STATIC PRESSURE SHALL INITIALLY BE SET AT 1.2 IN. W.C. AND SHALL BE VERIFIED BY THE BALANCING CONTRACTOR.

IF STATIC PRESSURE FALLS BELOW THE STATIC PRESSURE SETPOINT, THE SUPPLY FANS SPEED SHALL BE INCREASED. IF THE STATIC PRESSURE RISES ABOVE STATIC PRESSURE SET POINT, THE SUPPLY FANS SPEED SHALL BE DECREASED.

VAV SETPOINT RESET:

THE VAV SYSTEM SHALL RESET STATIC PRESSURE SETPOINT USING A TRIM & RESPOND (T&R) LOGIC (REF. ASHRAE G36 SECTION 5.16.1). SYSTEM OPERATOR AND SYSTEM BALANCER SHALL ADJUST VALUES AS REQUIRED FOR FINAL SYSTEM OPERATION.

INITIAL SP SETPOINT: 1.0 IN.WC.
MINIMUM SP SETPOINT: 0.1 IN.WC.
MAXIMUM SP SETPOINT: 1.5 IN.WC.
STATIC PRESSURE TRIM: -0.04 IN.WC.
STATIC PRESSURE RESPONSE: +0.06 IN.WC.
MAX STATIC PRESSURE RESPONSE: +0.15 IN.WC.

WHILE IN UNOCCUPIED MODE, THE SYSTEM STATIC PRESSURE SETPOINT SHALL BE SET TO THE INITIAL SP SETPOINT. WHEN PLACED INTO OCCUPIED MODE, THE T&R RESET LOGIC SHALL BE ACTIVATED AFTER 10 MINUTES AND START AT INITIAL SP SETPOINT. THE T&R RESET SEQUENCE SHALL GRADUALLY REDUCE THE AHU STATIC PRESSURE SETPOINT BY THE STATIC PRESSURE TRIM VALUE EVERY 2 MINUTES IF 2 OR LESS REQUESTS ARE MADE FROM DOWNSTREAM TERMINAL UNITS. A REQUEST IS A CALL TO RESET STATIC PRESSURE GENERATED BY A TERMINAL UNIT CONTROLLER ANYTIME THE UNIT'S DAMPER REACHES 95% OPENNESS. REFER TO VAV TERMINAL UNIT CONTROLS SOO.

AS SYSTEM STATIC PRESSURE DROPS, VAV TERMINAL UNIT DAMPERS WILL OPEN FURTHER FOR A GIVEN LOAD. WHEN THE COMBINATION OF REDUCED STATIC PRESSURE OR CHANGES IN LOAD PRODUCE MORE THAN 2 GENERATED REQUESTS BY THE TERMINAL UNITS, THE SYSTEM SHALL RESPOND BY INCREASING STATIC PRESSURE SETPOINT BY THE STATIC PRESSURE RESPONSE VALUE FOR EVERY REQUEST, BUT NO MORE THAN THE MAX STATIC PRESSURE RESPONSE VALUE REGARDLESS OF THE NUMBER OF REQUESTS. THE SETPOINT SHALL CONTINUE TO INCREASE EVERY 2 MINUTES UNTIL ALL BUT 2 REQUESTS AT THE TERMINAL UNITS ARE SATISFIED. 5 MINS LATER THE TRIM SEQUENCE SHALL RESUME.

THE BAS SHALL GENERATE A RUNNING TOTAL OF THE REQUESTS GENERATED BY EACH ZONE TO IDENTIFY ZONES THAT ARE EXCESSIVELY DRIVING THE RESET LOGIC. IF A ZONE IS CAUSING ERRONEOUS RESULTS, THE WEIGHTED IMPORTANCE MULTIPLIER VALUE MAY BE SET TO 0.

RELIEF FAN CONTROL:

PROVIDE OFFSET TO MAINTAIN BUILDING POSITIVE BUILDING PRESSURE (0.03 - 0.05 IN W.C.).

ENABLE, DISABLE, AND MODULATE EXHAUST FAN BASED ON BUILDING PRESSURE CONTROL. REFER TO ASHRAE G36 5.16.9.

WHENEVER THE WHEEL IS RUNNING, THE EXHAUST FAN SHALL BE OPPERATING.

ECONOMIZER (DRY-BULB):

DURING UNOCCUPIED MODE, THE BYPASS DAMPER(S) SHALL BE CLOSED.

WHILE IN OCCUPIED MODE. IF THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE, THE UNIT SHALL MODULATE THE BYPASS DAMPER TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AND MINIMIZE THE TOTAL MECHANICAL COOLING. THE ECONOMIZER IS THE FIRST STAGE OF COOLING. THE WHEEL SHALL STOP.

IF THE OUTDOOR AIR TEMPERATURE EXCEEDS RETURN AIR TEMPERATURE OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE BYPASS DAMPER SHALL CLOSE.

IF THE OUTDOOR AIR TEMPERATURE IS LOWER THAN 45°F, THE BYPASS DAMPER(S) SHALL CLOSE.

ENTHALPY WHEEL CONTROL:

DURING UNOCCUPIED MODE, THE ENTHALPY WHEEL SHALL BE STOPPED.

IN OCCUPIED MODE, IF THE OUTDOOR AIR ENTHALPY (CALCULATED) IS GREATER THAN THE RETURN AIR ENTHALPY (CALCULATED) OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE UNIT SHALL MODULATE THE ENTHALPY WHEEL TO MAX SPEED. AT CONDITION, THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF COOLING.

IN OCCUPIED MODE, WHENEVER THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE DISCHARGE AIR TEMPERATURE, THE ENTHALPY WHEEL SHALL MODULATE SPEED TO MAINTAIN REQUIRED DISCHARGE TEMPERATURE. THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF HEATING.

IF UNIT HAS PACKAGED CONTROLS, MANUFACTURER SEQUENCES SHALL GOVERN.

ENTHALPY WHEEL DEFROST CONTROL:

THE UNITS CONTROLLER SHALL PROVIDE MEANS TO PROTECT WHEEL FROM FROSTING. CONSULT MANUFACTURER LITERATURE. A FROST/CONDENSATE PREVENTION CRAWL MODEL SHALL BE USED TO PREVENT BUILD UP OF ICE. WHEN THE CRAWL MODEL IS ENABLED THE BYASS DAMPERS WILL RAMP TO 100% BYPASS, AND THE NEERGY WHEEL'S VARIABLE FREQUENCY DRIVE WILL BE COMMANDED TO MINIMUM.

SUPPLY AIR TEMPERATURE CONTROL:

SUPPLY AIR TEMPERATURE CONTROLS SEQUENCES SHALL IMPLEMENT ASHRAE GUIDELINE 36 SECTION 5.16.2 AND GENERALLY FOLLOW THE LOGIC BELOW:

TEMPERATURE CONTROL LOOPS SHALL BE ENABLED WHENEVER THE SUPPLY FAN IS PROVEN ON.

SUPPLY AIR TEMPERATURE SHALL BE CONTROLLED TO DISCHRAGE AIR TEMPERATURE SETPOINT. DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE SET TO **MINIMUM DISCHARGE AIR TEMPERAUTRE** FOR TIMES WHEN THE OUTDOOR AIR TEMPERATURE IS ABOVE 65°F OR SHALL BE DETERMINED BY THE SUPPLY AIR TEMPERATURE RESET SEQUENCE FOR PERIODS WHEN THE OUTDOOR AIR TEMPERATURE IS BELOW 65°F.

IN COOLING, THE UNIT SHALL MODULATE ECONOMIZER DAMPERS (WHEN ECONOMIZER MODE IS ENABLED), THE ERW, AND/OR SHALL MODULATE THE DX COOLING SYSTEM TO MAINTAIN DISCHARGE AIR SETPOINT.

IN HEATING, THE INDIRECT GAS BURNER AND ERW SHALL MODULATE TO MAINTAIN SETPOINT DISCHARGE AIR TEMPERATURE.

SUPPLY AIR TEMPERATURE RESET:

THE VAV SYSTEM SHALL RESET SUPPLY AIR TEMPERATURE SETPOINT USING A TRIM & RESPOND (T&R) LOGIC (REF. ASHRAE G36 5.1.14). SYSTEM OPERATOR AND SYSTEM BALANCER SHALL ADJUST VALUES AS REQUIRED FOR FINAL SYSTEM OPERATION.

INITIAL TEMP SETPOINT: 58°F
MINIMUM TEMP SETPOINT: **MINIMUM DISCHARGE AIR TEMPERATURE**
MAXIMUM TEMP SETPOINT: **MAXIMUM DISCHARGE AIR TEMPERATURE**
TEMP TRIM: +0.1°F
TEMP RESPONSE: -0.2°F
MAX TEMP RESPONSE: -0.6°F

THE FOLLOWING RESET SEQUENCE SHALL ONLY APPLY WHEN OUTDOOR AIR IS LESS THAN 65°F.

WHILE IN UNOCCUPIED MODE, THE SYSTEM DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE SET TO THE INITIAL TEMP SETPOINT. WHEN PLACED INTO OCCUPIED MODE, THE T&R RESET LOGIC SHALL BE ACTIVATED AFTER 10 MINUTES AND START AT INITIAL TEMP SETPOINT.

THE T&R RESET SEQUENCE SHALL GRADUALLY RAISE THE AHU TEMPERATURE SETPOINT BY THE TEMP TRIM VALUE EVERY 2 MINUTES IF 2 OR LESS REQUESTS ARE MADE FROM DOWNSTREAM TERMINAL UNITS. A REQUEST IS A CALL TO RESET TEMPERATURE GENERATED BY A TERMINAL UNIT CONTROLLER BASED ON ZONE TEMPERATURE AND ZONE AIRFLOW. REFER TO VAV TERMINAL UNIT CONTROLS DIAGRAMS.

AS SYSTEM DISCHARGE AIR TEMPERATURE RISES, VAV TERMINAL UNIT AIRFLOW [WHILST IN COOLING MODE] WILL INCREASE FOR A GIVEN LOAD. WHEN THE COMBINATION OF HIGHER DISCHARGE AIR TEMPERATURE AND/OR CHANGES IN LOAD PRODUCE MORE THAN 2 GENERATED REQUESTS BY THE TERMINAL UNITS, THE SYSTEM SHALL RESPOND BY DECREASING DISCHARGE AIR TEMPERATURE SETPOINT BY THE TEMP RESPONSE VALUE FOR EVERY REQUEST, BUT NO MORE THAN THE MAX TEMP RESPONSE VALUE REGARDLESS OF THE NUMBER OF REQUESTS. THE SETPOINT SHALL CONTINUE TO DECREASE EVERY 2 MINUTES UNTIL ALL BUT 2 REQUESTS AT THE TERMINAL UNITS ARE SATISFIED. 5 MINUTES LATER THE TRIM SEQUENCE SHALL RESUME.

THE BAS SHALL GENERATE A RUNNING TOTAL OF THE REQUESTS GENERATED BY EACH ZONE TO IDENTIFY ZONES EXCESSIVELY DRIVING THE RESET LOGIC. IF A ZONE IS CAUSING ERRONEOUS RESULTS, THE WEIGHTED IMPORTANCE MULTIPLIER VALUE MAY BE SET TO 0.

DEHUMIDIFICATION CONTROL:

DEHUMIDICATION MODE SHALL BE ENABLED DURING NORMAL AHU OPPERATION WHEN THE SUPPLY FAN IS PROVEN ON, THE RETURN AIR HUMIDITY RAISES ABOVE 60% RH, AND THE OUTDOOR TEMPERATURE IS ABOVE 55°F.

WHEN ENABLED, THE AHU CONTROLLER SHALL DISABLE THE ECONOMIZER. NEXT, THE DX COOLING SYSTEM SHALL MODULATE THE MECHANICAL COOLING SYSTEM TO OVERCOOL THE AIR, LOWERING THE MOISTURE CONTENT. THE MODULATING HOT GAS REHEAT SYSTEM SHALL BE USED TO MAINTIAN THE DISCHRAGE AIR TEMPERATURE SETPOINT. ONCE THE RETURN AIR HUMDITY LOWERS TO 55% RH DEHUMIDIFICATION MODE SHALL BE DISABLED.

FIRE ALARM MODE CONTROL:

THE SUPPLY FAN SHALL SHUT DOWN WHEN ANY AUTOMATIC OR MANUAL FIRE ALARM DEVICE IS PLACED INTO ALARM BY THE BUILDING FIRE ALARM CONTROL PANEL VIA THE FIRE ALARM CONTROL MODULE. NEXT, THE OUTDOOR AIR DAMPER SHALL CLOSE AND THE UNIT SHALL BE DISABLED.

SYSTEM SHALL AUTOMATICALLY RESET FOLLOWING AN ALARM EVENT.

ALARMS AND SAFETIES

PROVIDE ALL RELEVANT ALARMS TO NOTIFY SYSTEM OPERATORS OF MAINTENANCE, PERFORMANCE, EQUIPMENT, OR LIFE-SAFETY ERRORS AND FAULTS. REFER TO MANUFACTURER INFORMATION, CODE REQUIREMENTS, AND ASHRAE 36 RECOMMENDATIONS FOR ADDITIONAL SAFETIES AND ALARMS.

HIGH STATIC PRESSURE SAFETY SWITCH: WHEN THE SAFETY SWITCH IS TRIPPED, DISABLE SUPPLY FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. HIGH PRESSURE SHALL BE SET TO TRIP AT 4" W.G. AND SHALL BE RESET MANUALLY AT THE UNIT.

FREEZE STAT: WHEN A FREEZE CONDITION OCCURS, DISABLE SUPPLY FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. FREEZE STAT SHALL BE SET TO TRIP AT 40°F AND SHALL BE RESET MANUALLY AT THE UNIT.

DUCT SMOKE DETECTOR: WHEN SMOKE IS DETECTED, DISABLE SUPPLY FAN AND RELIEF FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

FILTER DIFFERENTIAL SWTICH: WHEN DIFFERENTIAL PRESSURE ACCROSS THE FILTERS EXCEEDS ALLOWABLE LIMIT, GENERATE AN ALARM AT THE BAS.

FAN STATUS: THE BAS SHALL MONITOR FAN CURRENT SWITCHES. IF STATUS DOES NOT MATCH COMMAND OUTPUT, DISABLE FAN AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

DAMPER POSITION: KNOWLEDGE OF DAMPER POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING ACTUATOR CAN BE USED. IF DAMPER POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

OUTDOOR AIR DAMPER POSITION: THE OUTDOOR AIR DAMPER SHALL FAIL CLOSED. IF THE OUTDOOR AIR DAMPER FAILS TO OPEN/MODULATE, AS INDICATED BY THE END SWITCH, GENERATE AN ALARM AT THE BAS.

RETURN AIR DAMPER POSITION: THE RETURN AIR DAMPER SHALL FAIL OPEN. IF THE RETURN AIR DAMPER FAILS TO CLOSE/MODULATE, AS INDICATED BY THE END SWITCH, GENERATE AN ALARM AT THE BAS.

DISCHARGE AIR TEMPERATURE: IF DISCHARGE AIR TEMPERATURE FALLS OUT OF THE ALLOWABLE RANGE OF 5°F FOR A TIME PERIOD 10 MINUTES, GENERATE AN ALARM AT THE BAS.

ENERGY RECOVERY WHEEL: CURRENT RELAYS AND ROTATION MONITORING DEVICES SHALL BE USED TO MONITOR THE ENERGY RECOVERY WHEEL. IF ANY STATUS DOES NOT MATCH THE COMMAND, GENERATE AN ALARM AT THE BAS.

MULTIPLE-ZONE VAV AHU W/ DX W/ HGR, GAS, & ERW CONTROLS DIAGRAM

NO SCALE

TYPICAL FOR: RTU-1, RTU-2, RTU-7, & RTU-8

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10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

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SHEET TITLE
CONTROL DIAGRAMS

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M8.4

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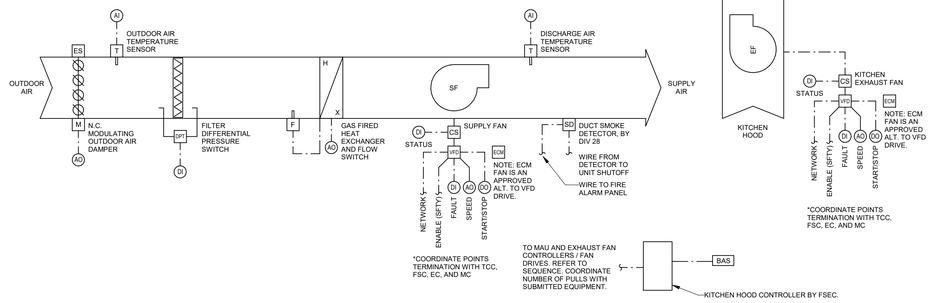


SEQUENCE OF OPERATIONS:

GENERAL

THE KITCHEN HOOD MAKEUP AIR UNIT SEQUENCES HEREIN DEPICT GENERAL INTENT OF OPERATION AND ARE TO BE PERFORMANCE BASED. FOR COMPLETE PROCEDURAL FUNCTIONALITY, THE UNITS SHALL FOLLOW THE GUIDELINES IN ASHRAE 90.1-2013, AHRAE 62.1-2016, MMC-2015, UL 508A, AND IECC 403.2.8-2015 WITHOUT EXPLICIT STATEMENT. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONAL RESULTS USING DIFFERENT UNDERLYING DETAILED LOGIC WILL BE ACCEPTABLE.

CONTROLS TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR AND COORDINATED WITH THE FOOD SERVICE CONTRACTOR.

AT MINIMUM, PROVIDE A GRAPHICAL REPRESENTATION OF THE DIAGRAM AND ASSOCIATED POINTS INDICATED ABOVE AT THE BAS. ALL ADDITIONAL POINTS NOT STRICTLY REQUIRING GRAPHICAL REPRESENTATION, SHALL STILL BE READ/WRITE ACCESSIBLE AT THE OWS/BAS. ALL SETPOINTS, TIMERS, DEADBANDS, SCHEDULES, ETC. LISTED HEREIN THE SEQUENCE SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR. VALUES FOR ALL POINTS, INCLUDING HARDWARE POINTS, SHALL BE OVERRIDABLE. EXCEPTIONS CAN BE MADE REGARDING MACHINE OR LIFE SAFETY.

EQUIPMENT MOTORS INTENDED TO BE MODULATED CAN BE PROVIDED WITH EITHER VARIABLE FREQUENCY DRIVES OR ELECTRONIC COMMUTATED MOTOR; SEQUENCE MAY USED INTERCHANGEABLE.

THE HOOD CONTROL PANEL SOO

THE HOOD CONTROL SEQUENCE HEREIN ARE FOR REFERENCE AND ARE TO BE PROVIDED AND FINALLIZED BY FOOD SERVICE CONTRACTOR, S.O.O. IS BASED ON B.O.D. HOOD MANUFACTURER: CAPTIVEAIRE. REFER TO FOOD SERVICE DRAWINGS AND SPECIFICATIONS.

THE HOOD CONTROL PANEL IS CAPABLE OF OPERATING IN ONE OR MORE OF THE FOLLOWING STATES AT ANY GIVEN TIME:

1. AUTOMATIC: THE SYSTEM OPERATES BASED ON A DIFFERENTIAL BETWEEN ROOM TEMPERATURE AND THE AIR TEMPERATURE AT THE HOOD CAVITY OR EXHAUST DUCT COLLAR. THE FANS SHALL ACTIVATE AT A CONFIGURABLE TEMPERATURE DIFFERENTIAL THRESHOLD. THE FANS SHALL BE VARIABLE SPEED AND THE FAN ZONE DEFINED AS STATIC. FANS WILL RUN AT A SET SPEED CALCULATED FOR THE DRIVE.
2. MANUAL: THE SYSTEM OPERATES BASED ON HUMAN INPUT FORM AN HMI
3. SCHEDULE: A WEEKLY SCHEDULE CAN BE SET TO RUN FANS FOR A SPECIFIED PERIOD THROUGHOUT THE DAY.
4. OTHER: THE SYSTEM OPERATES BASED ON THE INPUT FROM AN EXTERNAL SOURCE (DDC, BMS, OR HARD-WIRED INTERLOCK)
5. FIRE: UPON ACTIVATION OF THE HOOD FIRE SUPPRESSION SYSTEM, THE EXHAUST FAN WILL COME ON OR CONTINUE TO RUN. THE HOOD MAKEUP AIR WILL SHUTDOWN, AND A SIGNAL WILL BE SENT FOR ACTIVATION THE SHUNT TRIP BREAKER. FUEL GAS WILL SHUT OFF VIA A MECHANICAL/ELECTRICAL GAS VALVE ACTUATED BY THE HOOD FIRE SUPPRESSION SYSTEM.

NOTE - KITCHEN HOOD CONTROLLER, ROOM SENSOR, HOOD TEMPERATURE SENSOR, DUCT COLLAR SENSOR, KITCHEN HOOD CHEMICAL FIRE PROTECTION SYSTEM, SHUNT TRIPS, AND GAS SOLENIOD VALVES TO BE BY FSC.

SUPPLY FAN, DAMPER, AND SUPPLY AIR TEMPERATURE CONTROL:

THE SUPPLY FAN SHALL RUN AT DESIGN AIRFLOWS WHEN THE SYSTEM IS CALLED TO OPERATE BY THE KITCHEN HOOD CONTROLLER IN ONE OF ITS PROGRAMED OPERATING MODES. WHEN THERE IS NO CALL TO OPERATE, THE OUTDOOR AIR DAMPERS SHALL BE FULLY CLOSED. THE SUPPLY FAN SHALL BE OFF.

THE SUPPLY FAN SHALL ONLY OPERATE WHILE THE EXHAUST FAN IS RUNNING.

PRIOR TO START AND OPERATION OF THE SUPPLY FAN, THE OUTDOOR AIR DAMPER SHALL OPEN.

AS DISCHARGE AIR TEMPERATURE DECREASES BELOW 62ºF, THE UNIT SHALL ENABLE AND MODULATE THE GAS BURNER TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT OF 65ºF MINIMUM.

HARD INTERLOCK VFD AND DAMPER TO KITCHEN HOOD CONTROLLER.

KITCHEN EXHAUST FAN CONTROL:

THE KITCHEN EXHAUST FAN SHALL RUN WHEN THE SYSTEM IS CALLED TO OPERATE BY THE KITCHEN HOOD CONTROLLER IN ONE OF ITS PROGRAMED OPERATING MODES. WHEN THERE IS NO CALL TO OPERATE, THE EXHAUST FAN SHALL BE SHUT OFF.

PREP MODE: THE SYSTEM SHALL OPERATE IN PREP MODE DURING OCCUPIED HOURS, LIGHT COOKING APPLICATIONS, OR COOL DOWN MODE WHEN SUFFICIENT HEAT REMAINS UNDERNEATH THE HOOD SYSTEM AFTER COOKING OPERATIONS HAVE COMPLETED. OPERATION DURING THESE PERIODS WILL DISABLE THE SUPPLY FANS AND PROVIDE AN EXHAUST FAN SPEED EQUAL TO THE MINIMUM VENTILATION REQUIREMENTS.

HARD INTERLOCK VFD TO KITCHEN HOOD CONTROLLER.

FIRE ALARM MODE CONTROL:

THE SUPPLY FAN SHALL SHUT DOWN WHEN ANY AUTOMATIC OR MANUAL FIRE ALARM DEVICE IS PLACED INTO ALARM BY THE BUILDING FIRE ALARM CONTROL PANEL VIA THE FIRE ALARM CONTROL MODULE. NEXT, THE OUTDOOR AIR DAMPER SHALL CLOSE AND THE UNIT SHALL BE DISABLED.

SYSTEM SHALL MANUALLY RESET FOLLOWING AN ALARM EVENT.

ALARMS AND SAFETIES

PROVIDE ALL RELEVANT ALARMS TO NOTIFY SYSTEM OPERATORS OF MAINTENANCE, PERFORMANCE, EQUIPMENT, OR LIFE-SAFETY ERRORS AND FAULTS. REFER TO MANUFACTURER INFORMATION AND CODE REQUIREMENTS FOR ADDITIONAL SAFETIES AND ALARMS.

DUCT SMOKE DETECTOR: WHEN SMOKE IS DETECTOR, DISABLE SUPPLY FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

FILTER DIFFERENTIAL SWITCH: WHEN DIFFERENTIAL PRESSURE ACROSS THE FILTERS EXCEEDS ALLOWABLE LIMIT, GENERATE AN ALARM AT THE BAS.

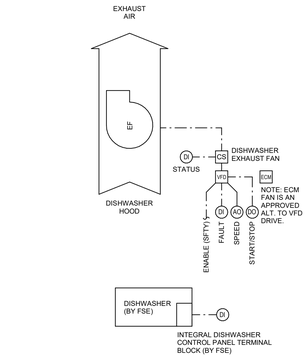
FAN STATUS: THE BAS SHALL MONITOR FAN CURRENT SWITCHES. IF STATUS DOES NOT MATCH COMMAND OUTPUT, DISABLE FAN AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

DAMPER POSITION: KNOWLEDGE OF DAMPER POSITION SHALL BE REQUIRED, A MODULATING (ANALOG) ACTUATOR OR FLOATING ACTUATOR CAN BE USED. IF DAMPER POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

OUTDOOR AIR DAMPER POSITION: THE OUTDOOR AIR DAMPER SHALL FAIL CLOSED. IF THE OUTDOOR AIR DAMPER FAILS TO OPEN/MODULATE, AS INDICATED BY THE END SWITCH, GENERATE AN ALARM AT THE BAS.

DISCHARGE AIR TEMPERATURE: IF DISCHARGE AIR TEMPERATURE FALLS OUT OF THE ALLOWABLE RANGE OF 5°F FOR A TIME PERIOD 10 MINUTES, GENERATE AN ALARM AT THE BAS.

KITCHEN MAKEUP AIR UNIT AND EXHAUST FAN
NO SCALE



SEQUENCE OF OPERATION:
NOTE: ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

THE DISHWASHER STATUS SHALL BE MONITORED BY THE BMS.

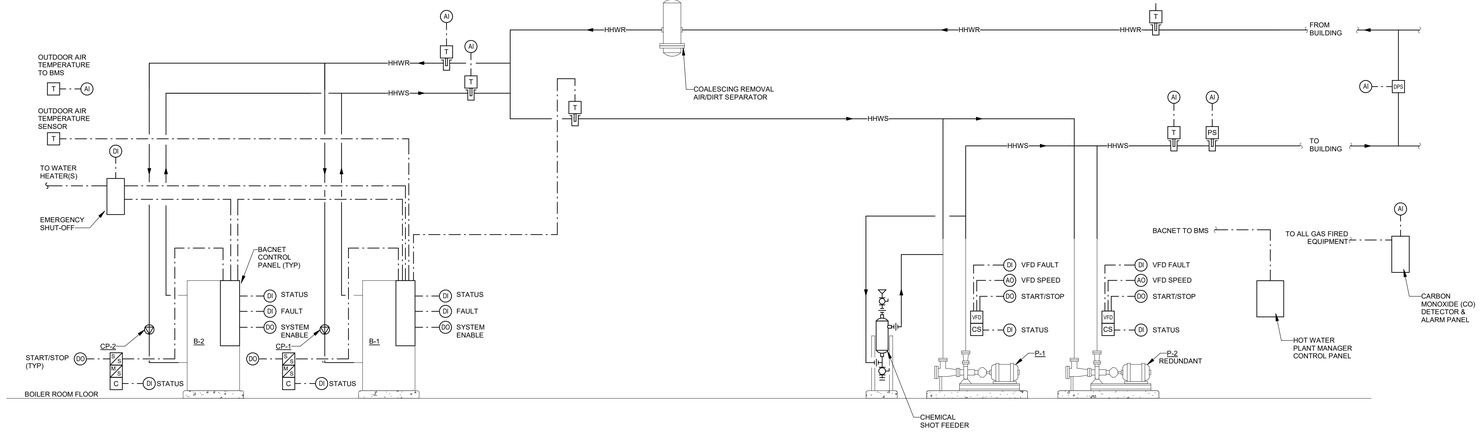
THE FAN SHALL BE STARTED THROUGH THE BMS AND IS INTENDED TO RUN CONTINUOUSLY AT A CONSTANT VOLUME WHENEVER THE DISHWASHER IS IN OPPERATION.

IF THE FAN IS COMMANDED ON, BUT NO CURRENT IS SENSED, THE FAN SHALL BE SHUT DOWN AND AN ALARM SHALL BE GENERATED AT THE BMS.

FAN SHALL BE COMMANDED OFF IF THE FIRE SUPPRESSION SYSTEM IS ACTIVATED WITHIN THE KITCHEN.

DISHWASHER EXHAUST FAN CONTROLS DIAGRAM
NO SCALE

HEATING HOT WATER SUPPLY (HHWS) RESET SCHEDULE	
OUTSIDE AIR TEMPERATURE	HHWS TEMPERATURE
< 60°F	120°F
45°F - 60°F	130°F
30°F - 45°F	140°F
15°F - 30°F	150°F
< 15°F	160°F



HEATING HOT WATER SYSTEM - PRIMARY/SECONDARY SEQUENCE OF OPERATIONS:
NOTE: ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

HEATING HOT WATER PLANT MANAGER.
1. THE BUILDING MANAGEMENT SYSTEM (BMS) SHALL INCLUDE A HEATING HOT WATER PLANT MANAGER TO CONTROL THE SECONDARY HEATING HOT WATER PUMPS AND TO MONITOR HEATING HOT WATER SYSTEM SENSONRS AND ACCESSORIES.
2. TO PREVENT SHORT CYCLING, THE HEATING HOT WATER SYSTEM SHALL RUN FOR AND BE OFF FOR A MINIMUM ADJUSTABLE TIME (BOTH TIMES USER ADJUSTABLE).
3. HEATING HOT WATER PLANT SHALL BE ENABLED BY THE BMS WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 60°(ADJ) AND ANY DOWNSTREAM EQUIPMENT SERVED CALS FOR HEATING.

SECONDARY PUMP CONTROL
1. WHEN THE HEATING HOT WATER SYSTEM IS ENABLED, THE LEAD HEATING HOT WATER SECONDARY PUMP SHALL BE ENABLED. EACH PUMP WILL PROVE OPERATION TO THE BMS WITH ITS CURRENT SWITCH.
2. IF A PUMP FAILS, AN ALARM WILL BE SENT TO THE BMS AND THE STANDBY PUMP WILL BE ACTIVATED.
3. THE PLANT MANAGER SHALL ALTERNATE LEAD PUMP OPERATION BASED ON RUN TIME HOURS OR AT THE BEGINNING OF EACH WEEK.
4. THE CONTROLLER SHALL MODULATE PUMP SPEED TO MAINTAIN HEATING HOT WATER DIFFERENTIAL PRESSURE AS SET BY THE TEST & BALANCE CONTRACTOR. THE VFDS MINIMUM SPEED SHALL NOT DROP BELOW 20% (ADJ).
5. THE SYSTEM SHALL RESET THE DIFFERENTIAL PRESSURE SETPOINT BASED ON VALVE POSITIONS IN THE SYSTEM UTILIZING CRITICAL ZONE RESET STRATEGY. THE CRITICAL ZONE SHALL BE THE VALVE IN THE SYSTEM THAT NEEDS TO BE 100% OPEN TO SATISFY THE CURRENT LOAD. CRITICAL ZONE RESET SHALL BE DISABLED WHEN SYSTEM IS NOT IN OCCUPIED MODE.

BOILER CONTROL
1. CONTROL TYPE: TEMPERATURE CONTROLS BY THE MANUFACTURER. AND INTEGRATED INTO THE BMS VIA MANUFACTURE INSTALLED BACNET CARD. MECHANICAL CONTRACTOR SHALL PROVIDE A FACTORY STARTUP FOR UNIT CHECKOUT AND INTEGRATION HAND OFF TO TEMPERATURE CONTROLS CONTRACTOR.
2. WHEN THE BOILER IS ENABLED BY THE BMS, THE BOILER CONTROL PANEL (INTERNAL TO THE LEAD BOILER) SHALL CONTROL THE FIRING OF THE BOILERS BASED ON THE SYSTEM TEMPERATURE. UPON A CALL FOR HEATING, THE BOILER PRIMARY PUMP SHALL BE ENERGIZED AND RUN WHENEVER THE BOILER IS FIRING. AFTER FLOW IS PROVEN BY THE PUMPS CURRENT SWITCH, THE BOILER SHALL MODULATE FIRING RATE TO MAINTAIN THE SYSTEM SUPPLY WATER TEMPERATURE. THE BOILER SHALL CONTROL ITS ASSOCIATED PRIMARY PUMP SPEED BASED ON THE RETURN WATER TEMPERATURE. IF A BOILER OR A PRIMARY PUMP FAILS, AN ALARM WILL BE SENT TO THE BMS AND A LAG BOILER/PUMP WILL BE ACTIVATED. IF THE PRIMARY BOILER CANNOT MAINTAIN THE SUPPLY WATER SETPOINT, A LAG BOILER(S) SHALL BE ENERGIZED. AS SUPPLY WATER TEMPERATURE IS MET, THE LAG BOILER(S) SHALL BE DE-ENERGIZED.
3. A TCC FIELD PROVIDED AND INSTALLED RELAY SHALL BE INSTALLED BETWEEN THE BOILER AND ITS PRIMARY PUMP. THE RELAY SHALL ALLOW FOR PRE AND POST PURGING OF THE BOILER.

MONITOR AND ALARM
1. THE BMS SHALL MONITOR AND GRAPHICALLY SHOW, AT A MINIMUM, THE FOLLOWING POINTS. ALL POINTS SHALL BE ALARMED WHEN OUT OF RANGE:
   1. BOILER STATUS AND STAGING
   2. PRIMARY PUMP SPEED, STATUS AND ALARMS
   3. BOILER RUN TIMES AND START/STOPS
   4. BOILER ALARM
   5. BOILER ENTERING AND LEAVING WATER TEMPERATURES (HIGH AND LOW ALARMS)
   6. SYSTEM SUPPLY AND RETURN WATER TEMPERATURES
   7. DIFFERENTIAL PRESSURE
   8. ALL TEMPERATURE POINTS INDICATED
   9. SECONDARY PUMPS SPEED, STATUS AND ALARMS
   10. THE BAS SHALL MONITOR THE BOILER MAKE-UP WATER FLOW METER.
   11. STANDALONE GAS DETECTION SYSTEM (CO SENSOR, STROBE, AND HORN) SHALL MONITOR CO LEVELS IN THE BOILER ROOM. UPON TRIGGER, THE GAS DECTION SYSTEM SHALL ALERT THE BAS IF SYSTEM IS IN ALARM.
2. DATA TRENDS SHALL BE ESTABLISHED TO RECORD AND TREND ALL POINTS INDICATED ABOVE AT INTERVALS DETERMINED BY THE OWNER.
3. ADDITIONAL BOILER INFORMATION AVAILABLE THROUGH THE BMS INTEGRATION SHALL BE ACCESSIBLE THROUGH THE BMS FRONT END SYSTEM, BUT DOES NOT NEED TO BE CONTINUOUSLY PRESENTED ON THE GRAPHIC DISPLAY.
4. AN EMERGENCY STOP BUTTON LOCATED IN THE BOILER ROOM DISABLES THE BOILERS CONTROLS. A SIGNAL IS ALSO SENT TO THE BMS, WHICH DISABLES THE PRIMARY PUMP OPERATION THROUGH AN INTERLOCK.

HEATING HOT WATER SYSTEM CONTROL DIAGRAM
NO SCALE

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STATE OF MICHIGAN
STEVEN R. DIBERARDINE
ENGINEER
No. 6201041574
LICENSED PROFESSIONAL ENGINEER
10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
CONTROL DIAGRAMS

SHEET NO.
M8.5

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COPPER FEEDER SCHEDULE

FEEDER (AMPS)	COND. SIZE	2 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	3 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	4 WIRE WITH GROUND
15S	12	2#12, 1#12 GND IN 3/4"C	15	12	3#12, 1#12 GND IN 3/4"C	15N	12	4#12, 1#12 GND IN 3/4"C
20S	12	2#12, 1#12 GND IN 3/4"C	20	12	3#12, 1#12 GND IN 3/4"C	20N	12	4#12, 1#12 GND IN 3/4"C
25S	10	2#10, 1#10 GND IN 3/4"C	25	10	3#10, 1#10 GND IN 3/4"C	25N	10	4#10, 1#10 GND IN 3/4"C
30S	10	2#10, 1#10 GND IN 3/4"C	30	10	3#10, 1#10 GND IN 3/4"C	30N	10	4#10, 1#10 GND IN 3/4"C
35S	8	2#8, 1#10 GND IN 3/4"C	35	8	3#8, 1#10 GND IN 3/4"C	35N	8	4#8, 1#10 GND IN 3/4"C
40S	8	2#8, 1#10 GND IN 3/4"C	40	8	3#8, 1#10 GND IN 3/4"C	40N	8	4#8, 1#10 GND IN 3/4"C
45S	6	2#6, 1#10 GND IN 3/4"C	45	6	3#6, 1#10 GND IN 3/4"C	45N	6	4#6, 1#10 GND IN 1"C
50S	6	2#6, 1#10 GND IN 3/4"C	50	6	3#6, 1#10 GND IN 3/4"C	50N	6	4#6, 1#10 GND IN 1"C
60S	4	2#4, 1#10 GND IN 1"C	60	4	3#4, 1#10 GND IN 1"C	60N	4	4#4, 1#10 GND IN 1 1/4"C
70S	4	2#4, 1#8 GND IN 1"C	70	4	3#4, 1#8 GND IN 1"C	70N	4	4#4, 1#8 GND IN 1 1/4"C
80S	3	2#3, 1#8 GND IN 1"C	80	3	3#3, 1#8 GND IN 1"C	80N	3	4#3, 1#8 GND IN 1 1/4"C
90S	2	2#2, 1#8 GND IN 1"C	90	2	3#2, 1#8 GND IN 1 1/4"C	90N	2	4#2, 1#8 GND IN 1 1/2"C
100S	1	2#1, 1#8 GND IN 1 1/4"C	100	1	3#1, 1#8 GND IN 1 1/4"C	100N	1	4#1, 1#8 GND IN 1 1/2"C
			110	2	3#2, 1#6 GND IN 1 1/4"C	110N	2	4#2, 1#6 GND IN 1 1/4"C
			125	1	3#1, 1#6 GND IN 1 1/4"C	125N	1	4#1, 1#6 GND IN 1 1/2"C
			150	1/0	3#1/0, 1#6 GND IN 1 1/2"C	150N	1/0	4#1/0, 1#6 GND IN 2"C
			175	2/0	3#2/0, 1#6 GND IN 1 1/2"C	175N	2/0	4#2/0, 1#6 GND IN 2"C
			200	3/0	3#3/0, 1#6 GND IN 2"C	200N	3/0	4#3/0, 1#6 GND IN 2"C
			225	4/0	3#4/0, 1#4 GND IN 2"C	225N	4/0	4#4/0, 1#4 GND IN 2 1/2"C
			250	250	3-250 KCMIL, 1#4 GND IN 2"C	250N	250	4-250 KCMIL, 1#4 GND IN 2 1/2"C
			300	350	3-350 KCMIL, 1#4 GND IN 2 1/2"C	300N	350	4-350 KCMIL, 1#4 GND IN 3"C
			350	500	3-500 KCMIL, 1#3 GND IN 3"C	350N	500	4-500 KCMIL, 1#3 GND IN 3 1/2"C
			400	600	3-600 KCMIL, 1#3 GND IN 3 1/2"C	400N	600	4-600 KCMIL, 1#3 GND IN 4"C
			450	2-4/0	(2) 3#4/0, 1#2 GND IN 2"C	450N	2-4/0	(2) 4#4/0, 1#2 GND IN 2 1/2"C
			500	2-250	(2) 3-250 KCMIL, 1#2 GND IN 2 1/2"C	500N	2-250	(2) 4-250 KCMIL, 1#2 GND IN 2 1/2"C
			600	2-350	(2) 3-350 KCMIL, 1#1 GND IN 2 1/2"C	600N	2-350	(2) 4-350 KCMIL, 1#1 GND IN 3"C
			700	2-500	(2) 3-500 KCMIL, 1#1/0 GND IN 3"C	700N	2-500	(2) 4-500 KCMIL, 1#1/0 GND IN 3 1/2"C
			800	2-600	(2) 3-600 KCMIL, 1#1/0 GND IN 3 1/2"C	800N	2-600	(2) 4-600 KCMIL, 1#1/0 GND IN 4"C
			1000	3-500	(3) 3-500 KCMIL, 1#2/0 GND IN 3"C	1000N	3-500	(3) 4-500 KCMIL, 1#2/0 GND IN 3 1/2"C
			1200	3-600	(3) 3-600 KCMIL, 1#3/0 GND IN 4"C	1200N	3-600	(3) 4-600 KCMIL, 1#3/0 GND IN 4"C
			1600	4-600	(4) 3-600 KCMIL, 1#4/0 GND IN 4"C	1600N	4-600	(4) 4-600 KCMIL, 1#4/0 GND IN 4"C
			2000	5-600	(5) 3-600 KCMIL, 1-250 KCMIL GND IN 4"C	2000N	5-600	(5) 4-600 KCMIL, 1-250 KCMIL GND IN 4"C
			2500	7-500	(7) 3-500 KCMIL, 1-350 KCMIL GND IN 3 1/2"C	2500N	7-500	(7) 4-500 KCMIL, 1-350 KCMIL GND IN 3 1/2"C
			3000	8-500	(8) 3-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C	3000N	8-500	(8) 4-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C
			4000	10-600	(10) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	4000N	10-600	(10) 4-600 KCMIL, 1-500 KCMIL GND IN 4"C
			5000	12-600	(12) 3-600 KCMIL, 1-700 KCMIL GND IN 4"C	5000N	12-600	(12) 4-600 KCMIL, 1-700 KCMIL GND IN 4"C
			6000	15-600	(15) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	6000N	15-600	(15) 4-600 KCMIL, 1-800 KCMIL GND IN 4"C

NOTES:

1. AMPACITIES FOR FEEDER SIZES ARE BASED ON N.E.C. CODE 110-14. (TERMINATION PROVISIONS FOR EQUIPMENT RATED 100A OR LESS ARE RATED FOR USE WITH CONDUCTORS RATED 60°C. TERMINATION PROVISIONS FOR EQUIPMENT RATED GREATER THAN 100A ARE RATED FOR USE WITH CONDUCTORS RATED 75°C.).
2. CONDUIT FILL IS BASED ON 40% FILL USING SINGLE CONDUCTOR BUILDING WIRE OF INSULATION TYPES THHN, THWN, THWN-2, XHH, XHHW, AND XHHW-2 IN RMC. FOR OTHER RACEWAY TYPES REFER TO APPROPRIATE N.E.C. APPENDIX C TABLES.
3. EQUIPMENT GROUND SIZING BASED ON N.E.C. TABLE 250.122.

POWER SYMBOL LIST

SYMBOL	DESCRIPTION
•	CONDUIT DOWN
○	CONDUIT UP
(RC)	CORD REEL
	DISCONNECT SWITCH - NON-FUSED
	DISCONNECT SWITCH - FUSED
	DISCONNECT SWITCH - COMBINATION MOTOR STARTER
FB	FLOOR BOX
	ELECTRICAL PANEL
	EMERGENCY POWER OFF (EPO) - MOUNT AT 48" AFF UON
	GROUNDING ROD
	GROUND
	GROUNDING BAR
J	JUNCTION BOX
M	METER
	MOTOR - SINGLE PHASE
	MOTOR - THREE PHASE
$ M	MOTOR RATED SWITCH
PT	POKE-THRU
	RECEPTACLE - DUPLEX TYPE
	RECEPTACLE - DUPLEX TYPE 6" ABOVE COUNTER
USB	RECEPTACLE - DUPLEX/USB COMBINATION TYPE
	RECEPTACLE - QUADRUPLEX TYPE
	RECEPTACLE - SIMPLEX TYPE
	RECEPTACLE - SPECIALTY TYPE
T	TRANSFORMER
VFD	VARIABLE FREQUENCY DRIVE

NOTES:

1. ALL DEVICE RATINGS/SIZES SHALL BE COORDINATED WITH PLANS AND SCHEDULES.

TECHNOLOGY SYMBOL LIST

SYMBOL	DESCRIPTION
	BELL OUTLET - WALL MOUNTED
	CAMERA - WALL MOUNTED
CR	CARD READER - MOUNT AT 48" AFF
I	INTERCOM - MOUNT AT 48" AFF
GB	GLASS BREAK SECURITY DEVICE - CEILING MOUNTED UON
KP	KEYPAD - MOUNT AT 48" AFF
	LOW VOLTAGE PANEL
MS	MOTION SENSOR - WALL - MOUNT AT 10'-0" AFF OR 6" BELOW CEILING
	PUSH BUTTON - MOUNT AT 48" AFF
S S	SPEAKER - WALL MOUNTED - 96" AFF UON, CEILING MOUNTED
	TECHNOLOGY OUTLET - WALL MOUNT AT 6" ABOVE COUNTER
	TECHNOLOGY OUTLET - WALL MOUNTED 18" AFF UON
XXX	MULTIPLE BOX TECHNOLOGY INSTALLATION - REFER TO SHEET E5.0 FOR DETAIL
TV	TELEVISION OUTLET - WALL MOUNTED
	WALL CLOCK - SINGLE FACE - 96" AFF UON
	WALL CLOCK - DOUBLE FACE - 96" AFF UON
S	WALL CLOCK AND SPEAKER UNIT - 96" AFF UON
WAP	WIRELESS ACCESS POINT - CEILING MOUNTED UON

NOTES:

1. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR BOX AND CONDUIT FOR ALL DEVICES INDICATED.
2. LOW VOLTAGE CONTRACTOR SHALL PROVIDE EXACT SPECIFICATIONS AND LOCATIONS OF ALL DEVICES.

FIRE ALARM SYMBOL LIST

SYMBOL	DESCRIPTION
F	AUDIBLE DEVICE - CEILING MOUNTED
F	AUDIBLE DEVICE - WALL MOUNTED
C	CARBON DIOXIDE ALARM
CO	CARBON MONOXIDE ALARM
F S	COMBINATION AUDIBLE/VISUAL DEVICE - CEILING MOUNTED
F	COMBINATION AUDIBLE/VISUAL DEVICE - WALL MOUNTED
CS	COMBINATION CARBON MONOXIDE ALARM/SMOKE DETECTOR
EXISTING / NEW	COMBINATION FIRE/SMOKE DAMPER (VERTICAL)
EXISTING / NEW	COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)
S	DUCT MOUNTED SMOKE DETECTOR
FAA	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FD	FIRE DEPARTMENT COMMUNICATION OUTLET
FS	FLOW SWITCH
H	HEAT DETECTOR
I/O	INPUT/OUTPUT CONTROL MODULE
DH	MAGNETIC DOOR HOLDER
F	MANUAL PULL STATION
S S	SMOKE DETECTOR - WALL MOUNTED, CEILING MOUNTED
S	SMOKE DETECTOR WITH AUDIO
TS	TAMPER SWITCH
	VISUAL DEVICE - CEILING MOUNTED
F	VISUAL DEVICE - WALL MOUNTED

NOTES:

1. DRAWINGS INDICATE DESIGN INTENT ONLY. FINAL LOCATIONS AND DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR APPROVED MANUFACTURERS.
2. FIRE DETECTION AND SIGNALING DEVICES ARE SHOWN FOR COORDINATION PURPOSES. FINAL SYSTEM DESIGN TO BE PERFORMED BY CONTRACTOR AND SUPPLIER FOR OFFICIAL SUBMISSION. COORDINATE ALL DEVICE QUANTITIES AND LOCATIONS WITH SUPPLIER PRIOR TO INSTALLATION. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PATHWAYS, POWER SUPPLIES AND DEVICES PER SUPPLIER CONTRACT DOCUMENTS.

ELECTRICAL ABBREVIATIONS

ABBREV.	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
AWG	AMERICAN WIRE GAUGE
A	AMPERE
AF	AMPERE FUSE/AMPERE FRAME
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AIC	AVAILABLE INTERRUPTING CURRENT (AMPS)
CB	CIRCUIT BREAKER
C	CONDUIT OR CEILING MOUNTED
CL	CONTROLLED RECEPTACLE: - OUTLET AT TOP OF REC. SHALL BE CONTROLLED - OUTLET AT BOTTOM OF REC. SHALL BE UNCONTROLLED
CT	CURRENT TRANSFORMER
CU	COPPER
DIA	DIAMETER
DISC	DISCONNECT
EWC	ELECTRIC WATER COOLER
EC	ELECTRICAL CONTRACTOR
EMT	ELECTRICAL METALLIC TUBING
EPO	EMERGENCY POWER OFF
(E)	EXISTING ELECTRICAL EQUIPMENT/WORK TO REMAIN
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FDC	FIRE DEPARTMENT CONNECTION
FLA	FULL LOAD AMPS
F	FUSE
G/GND	GROUND
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
IG	ISOLATED GROUND
INV	INVERTER
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR
LP	LIGHTING PANEL
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUG ONLY
MAX	MAXIMUM
MIN	MINIMUM
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
N/NEU	NEUTRAL
NF	NON-FUSIBLE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NIC	NOT IN CONTRACT
PH/Ø	PHASE
P	POLE
PV	PHOTOVOLTAIC (SOLAR PHOTOVOLTAIC SYSTEM)
PVC	POLYVINYL CHLORIDE (PLASTIC)
PF	POWER FACTOR
(R)	RELOCATED EXISTING ELECTRICAL EQUIPMENT
REC, RECPT	RECEPTACLE
RP	RECEPTACLE PANEL
(RR)	REMOVE AND REINSTALL
RMC	RIGID METALLIC CONDUIT
TBB	TELEPHONE BACKBOARD
XFMR	TRANSFORMER
TYP	TYPICAL
UC	UNDERCOUNTER
UL	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTIBLE POWER SUPPLY
USB	UNIVERSAL SERIAL BUS
UON	UNLESS OTHERWISE NOTED
V	VOLT
VA	VOLT AMPERE
W	WATT
WP	WEATHERPROOF
WG	WIRE GUARD

DRAWING NOTATION

SYMBOL	DESCRIPTION
1	CONSTRUCTION KEYNOTE NUMBER 1
1	DEMOLITION KEYNOTE NUMBER 1
20	COPPER FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)
20	ALUMINUM FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)
EQUIPMENT	EQUIPMENT TAG
	EXISTING DEVICES OR EQUIPMENT
	NEW OR MODIFIED DEVICES OR EQUIPMENT
	NEW OR MODIFIED UNDERGROUND WIRING
	EXISTING SYSTEM COMPONENT TO BE REMOVED
	POINT OF NEW CONNECTION.

LIGHTING FIXTURE TAG

LIGHTING FIXTURE TYPE — L1 / INV1 / 13'-0"

- NORMAL CIRCUIT, EMERGENCY LIGHTING INVERTER, OR GENERATOR CIRCUIT (MAY NOT APPEAR ON EVERY TAG)
- FIXTURE MOUNTING HEIGHT (MAY NOT APPEAR ON EVERY TAG)

LIGHTING CONTROL TAG

LIGHTING CONTROL SPACE TYPE 'I' — 1A / Z1

- SCENE SCHEDULE ID 'A' (MAY NOT APPEAR ON EVERY TAG)
- DAYLIGHTING CONTROL ZONE '1' (MAY NOT APPEAR ON EVERY TAG)

NOTE: THE TAG DOES NOT REFLECT THE QUANTITY OF CONTROL DEVICES REQUIRED IN AREA.

SECTION NUMBER 4 — 4 / E300 — SHEET E300 ON WHICH SECTION VIEW IS PLACED

SECTION NUMBER 4 — 4 / E100 — SECTION — SCALE: 1/4" = 1' - 0" — SHEET E100 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)

APPLICABLE CODES AND REGULATIONS

YEAR	CODE
2021	MICHIGAN BUILDING CODE
2021	MICHIGAN ENERGY CODE
2023	MICHIGAN ELECTRICAL CODE RULES, PART 8
2023	NATIONAL ELECTRICAL CODE (NFPA 70)
2013	NFPA 20
2019	NFPA 72
2012	NFPA 101
2019	NFPA 110
2017	MICHIGAN ACCESSIBILITY CODE

LIGHTING CONTROLS LEGEND

SYMBOL	DESCRIPTION
$L	LIGHT CONTROL LOCATION
$	SWITCH - SINGLE POLE
$3	SWITCH - THREE WAY
$4	SWITCH - FOUR WAY

DRAWING INDEX

SHEET NO	DESCRIPTION
E0.0	ELECTRICAL GENERAL INFORMATION
E0.1	LIGHTING SCHEDULES
ES1.0	ELECTRICAL SITE PLAN
EP1.1	POWER PLAN - UNIT 100
EP1.2	POWER PLAN - UNIT 200
EP1.3	POWER PLAN - UNIT 300
EP1.11	ROOF POWER PLAN - UNIT 100
EP1.12	ROOF POWER PLAN - UNIT 200
EP1.13	ROOF POWER PLAN - UNIT 300
EL1.1	LIGHTING PLAN - UNIT 100
EL1.2	LIGHTING PLAN - UNIT 200
EL1.3	LIGHTING PLAN - UNIT 300
E4.0	ENLARGED ELECTRICAL PLANS
E5.0	ELECTRICAL DETAILS
E5.1	ELECTRICAL DETAILS
E5.2	ELECTRICAL PHOTOVOLTAIC DETAILS
E6.0	PANEL SCHEDULES - SERVICE AND EM PANELS
E6.1	PANEL SCHEDULES - 480V
E6.2	PANEL SCHEDULES - 208V
E7.0	ELECTRICAL ONE-LINE/RISER DIAGRAM
E7.1	PHOTOVOLTAIC ONE-LINE DIAGRAM

FLOOR BOX SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	MODEL NO.	REQUIRED CONNECTIONS	CONDUIT	FINISH	LOCATION	REMARKS
A	SIX GANG, MULTI-SERVICE STAMPED STEEL FOR FLOOR SLAB APPLICATION, RECESSED FLOOR BOX	WIREMOLD	EFB6 CAST-N	1 A/V PLATE 2 DATA PLATES 2 DUPLEX POWER REC 1 BLANK	(1) 1-1/4" C - A/V (1) 1" C - DATA (1) 3/4" C - POWER	BRUSHED ALUMINUM	CONFERENCE 250	UNDER CONFERENCE ROOM TABLE
B	SIX GANG, MULTI-SERVICE STAMPED STEEL FOR FLOOR SLAB APPLICATION, RECESSED FLOOR BOX	WIREMOLD	EFB6 CAST-N	1 A/V PLATE 2 SCORE BOARD CONN. PLATES 2 DATA PLATES 1 DUPLEX POWER REC	(1) 1-1/4" C - A/V (2) 1" C - SCOREBOARDS (1) 1" C - DATA (1) 3/4" C - POWER	MATCH GYM FLOOR	GYMNASIUM 156	SCORER'S TABLE
C	DOUBLE GANG, SINGLE-SERVICE STAMPED STEEL FOR FLOOR SLAB APPLICATION, RECESSED FLOOR BOX WITH FLUSH MOUNT RECEPTACLES	WIREMOLD	FBDR2	2 DUPLEX POWER REC	(1) 3/4" C FOR POWER	BY ARCHIECT	SCIENCE 330, 331	

NOTES:

1. PROVIDE 1 1/4"C FROM EACH DATA FLOOR BOX (GANG) TO ACCESSIBLE LOCATION IN CEILING.
2. COORDINATE ALL DATA, A/V AND TECHNOLOGY OUTLETS WITH LOW VOLTAGE INSTALLER.
3. PROVIDE PULLSTRINGS FOR ALL INSTALLED EMPTY CONDUITS.

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SES Project # 23 0588 03

Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

STATE OF MICHIGAN
SCOTT E TOWNSEND
ENGINEER
No. 6201050450
PROFESSIONAL
10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
ELECTRICAL GENERAL INFORMATION

SHEET NO.
E0.0

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LIGHTING CONTROLS MATRIX

TAG NUMBER	SPACE TYPE	PARAMETERS														SEQUENCE OF OPERATIONS
		MANUAL ON/OFF SWITCH	DIMMING SWITCH	OVERRIDE SWITCH	MULTI ZONE CONTROL	KEY SWITCH	TIMECLOCK	OCCUPANCY SENSOR	PHOTOCONTROL DIMMING	EXTERIOR PHOTOCELL	COLOR TUNING	RGB/RGBW	BACNET INTEGRATION	CONTROLLED RECEPTACLES		
1	PRIVATE OFFICE, CLINIC, SUPPORT, WORK, KITCHEN, SERVERY	X	X					X							X	MANUAL ON/AUTOMATIC OFF WITHIN 20 MIN OF OCCUPANTS LEAVING SPACE (VACANCY MODE). CONTINUOUS DIMMING.
2	CONFERENCE, CLASSROOM, CAFETERIA	X	X		X			X							X	MANUAL ON/AUTOMATIC OFF WITHIN 20 MIN OF OCCUPANTS LEAVING SPACE (VACANCY MODE). CONTINUOUS DIMMING. AUTOMATIC DAYLIGHT RESPONSIVE CONTROLS FOR DAYLIGHT ZONE 1 AND DAYLIGHT ZONE 2, IF ZONE 2 IS PRESENT.
3	VESTIBULE						X	X								AUTOMATIC ON TO FULL VIA OCCUPANCY SENSOR OR SCHEDULED TIME FUNCTION. AUTOMATIC PARTIAL OFF TO 50% VIA OCCUPANCY SENSOR (VACANCY MODE) WITHIN 20 MIN OF OCCUPANTS LEAVING SPACE. SCHEDULED SHUTOFF VIA SCHEDULED TIME FUNCTION.
4	WELCOME	X	X		X			X								MANUAL ON/AUTOMATIC OFF WITHIN 20 MIN OF OCCUPANTS LEAVING SPACE (VACANCY MODE). CONTINUOUS DIMMING.
5	CORRIDOR			X	X		X	X								AUTOMATIC ON TO FULL VIA OCCUPANCY SENSOR OR SCHEDULED TIME FUNCTION. AUTOMATIC PARTIAL OFF TO 50% VIA OCCUPANCY SENSOR (VACANCY MODE) WITHIN 20 MIN OF OCCUPANTS LEAVING SPACE. SCHEDULED SHUTOFF VIA SCHEDULED TIME FUNCTION.
6	RESTROOM - MULTI PERSON							X								AUTOMATIC ON TO FULL VIA OCCUPANCY SENSOR. AUTOMATIC FULL OFF VIA OCCUPANCY SENSOR (VACANCY MODE) WITHIN 20 MIN OF OCCUPANTS LEAVING SPACE.
7	RESTROOM - SINGLE, CHANGING, SHOWER	X						X								LOCAL CONTROL SWITCH WITH ON/OFF FUNCTION. AUTOMATIC ON TO FULL VIA OCCUPANCY SENSOR. AUTOMATIC FULL OFF VIA OCCUPANCY SENSOR (VACANCY MODE) WITHIN 20 MIN OF OCCUPANTS LEAVING SPACE.
8	GYM		X			X		X								LOCAL CONTROL SWITCH WITH ON/OFF AND DIM FUNCTION. AUTOMATIC ON TO FULL VIA OCCUPANCY SENSOR OR SCHEDULED TIME FUNCTION. AUTOMATIC PARTIAL OFF TO 50% VIA OCCUPANCY SENSOR (VACANCY MODE) WITHIN 20 MIN OF OCCUPANTS LEAVING SPACE. SCHEDULED SHUTOFF VIA SCHEDULED TIME FUNCTION.
9	STORAGE ROOM	X						X								LOCAL CONTROL SWITCH WITH ON/OFF FUNCTION. AUTOMATIC ON TO FULL VIA OCCUPANCY SENSOR. AUTOMATIC FULL OFF VIA OCCUPANCY SENSOR (VACANCY MODE) WITHIN 20 MIN OF OCCUPANTS LEAVING SPACE.
10	MECH/ELECTRICAL	X														LOCAL CONTROL SWITCH WITH ON/OFF FUNCTION.
11	RESOURCE ROOM, LIBRARY	X	X					X							X	MANUAL ON/AUTOMATIC OFF WITHIN 20 MIN OF OCCUPANTS LEAVING SPACE (VACANCY MODE). CONTINUOUS DIMMING.
12	SENSORY ROOM	X	X					X			X	X		X		WALL MOUNTED TOUCH PAD. ON/OFF, DIMMING, COLOR TUNING PRESETS, RGBW SELECTACLE. AUTOMATIC FULL OFF VIA OCCUPANCY SENSOR (VACANCY MODE) WITHIN 20 MIN OF OCCUPANTS LEAVING SPACE.
13	EXTERIOR EGRESS/SECURITY LIGHTING			X			X			X						MANUAL OVERRIDE SWITCH WITH ON/OFF AND DIM FUNCTION. AUTOMATIC ON TO FULL VIA SCHEDULED TIME FUNCTION OR PHOTOCELL. AUTOMATIC LIGHT LEVEL REDUCTION TO 70% AFTER HOURS VIA SCHEDULED TIME FUNCTION. FULL SHUTOFF VIA SCHEDULED TIME FUNCTION OR PHOTOSENSOR.
14	EXTERIOR FLAG POLE LIGHTING			X			X			X						MANUAL OVERRIDE SWITCH WITH ON/OFF AND DIM FUNCTION. AUTOMATIC ON TO FULL VIA SCHEDULED TIME FUNCTION OR PHOTOCELL. AUTOMATIC LIGHT LEVEL REDUCTION TO 70% AFTER HOURS VIA SCHEDULED TIME FUNCTION. FULL SHUTOFF VIA SCHEDULED TIME FUNCTION OR PHOTOSENSOR.
15	EXTERIOR FAÇADE LIGHTING			X	X		X			X						MANUAL OVERRIDE SWITCH WITH ON/OFF AND DIM FUNCTION. AUTOMATIC ON TO FULL VIA SCHEDULED TIME FUNCTION OR PHOTOCELL. LIGHTING SHALL BE TURNED OFF FROM 12AM TO 6AM. FULL SHUTOFF VIA SCHEDULED TIME FUNCTION OR PHOTOSENSOR.

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	MODEL	WATTAGE	LUMENS	VOLTAGE	CCT	CRI	REMARKS	ALTERNATE MANUFACTURER | MODEL #1	ALTERNATE MANUFACTURER | MODEL #2
L1	2' X 4' BACKLIT RECESSED FLAT PANEL.	COLUMBIA LIGHTING	NBT 24 40 L048 G SF ED1 U	35 W	4,800	277	4000K	80		ORACLE LIGHTING 24 FPL BL LED SERIES	LITHONIA CPX SERIES
L2	2' WIDE RECESSED LINEAR PERIMETER LUMINAIRE.TELESCOPING EDGE. REFER TO ARCHITECTURAL PLANS AND DETAILS FOR RUN LENTHS. LENGTHS VARY.	GAMMALUX LIGHTING	GPD2 SL48EZT UNV ZTV10 x RECW/A/GMR2 ASLMD W SG	6 W	400 LM/FT	277	4000K	80	WATTAGE SHOWN IS PER LINEAR FOOT. REFER TO LIGHTING PLANS FOR RUN LENGTHS.	PINNACLE EDVE EV2 SERIES	FOCAL POINT SEEM 2 SERIES
L3	4" SQUARE RECESSED DOWNLIGHT.	LIGHTHEADED	TSSSF T WS 00 OPEN B60 40 9010 P 277 RP3 F T	14 W	1,300	277	4000K	90		WILLIAMS 4DS SERIES	LITHONIA LDN4 SQUARE SERIES
L4	4' WIDE BY 8' LONG DIRECT/INDIRECT DECORATIVE LINEAR PENDANT.	LITECONTROL	AIRA P SD LPA 8' 8' SOF WHS RWHS 40K9 SO085 D01 1'C UNV FA1	30 W	850 LM/FT	277	4000K	80		ENGINEER APPROVED EQUAL	FOCAL POINT NERA SERIES
L5	4' WIDE BY 4' LONG DIRECT LINEAR PENDANT WITH WIRE GUARD	COLUMBIA LIGHTING	MPS 4 40 HL C W ED U	38 W	5,800	277	4000K	80	MOUNT BOTTOM 10'-0" AFF UNLESS NOTED OTHERWISE.	WILLIAMS 7S SERIES	LITHONIA CLX SERIES
L6	4" SQUARE RECESSED DOWNLIGHT. MEDIUM DISTRIBUTION.	LIGHTHEADED	TSSSF T WS 00 OPEN B40 40 9510 P 277 RP3 F T	10 W	900	277	4000K	90		WILLIAMS 4DS SERIES	LITHONIA LDN4 SQUARE SERIES
L7	16" DIAMETER HIGH BAY PENDANT.	CURRENT	LPS 0 22 10 8 40 Y RI WHITE 93099795 93118016	160 W	22,000	277	4000K	90	MOUNT BOTTOM 22'-0" AFF UNLESS NOTED OTHERWISE	LSI LIGHTING AUREUS LIGHTING	SPECTRUM LIGHTING DMD SERIES
L8	2' X 4' BACKLIT RECESSED FLAT PANEL.	COLUMBIA LIGHTING	NBT 24 40 L042 G SF ED1 U	30 W	4,200	277	4000K	80		ORACLE LIGHTING 24 FPL BL LED SERIES	LITHONIA CPX SERIES
L9	2' WIDE BY 8' LONG DIRECT DECORATIVE LINEAR PENDANT.	LITECONTROL	75L IP ID STD 8' 08 C1 40K I030 D125 D01 1C UNV ECO FA2 W1	88 W	1,250 LM/FT	277	4000K	90	MOUNT BOTTOM 10'-0" AFF UNLESS NOTED OTHERWISE.	PINNACLE CHUTE SERIES	FLUXWERX PROFILE SERIES
L10	2' WIDE BY 10' LONG DIRECT LINEAR PENDANT.	GAMMALUX LIGHTING	GB22D2 SL408 UNV ZTV10 10' C36* ASLHD WSG	60 W	400 LM/FT	277	4000K	90	MOUNT BOTTOM INLINE WITH BOTTOM OF SPECIALTY ACOUTICAL CEILING..	WILLIAMS MX2 SERIES	LUMENWERX VIA 2 SERIES
L11A	4' LONG T-BAR MOUNT LINEAR LUMINAIRE.	GOLDENEYE	AL 1.0 SC 48 40K 80+ X	6 W	700 LM/FT	277	4000K	80		ARON EZT SERIES	JLC-TECH LLC T-BAR ECHO HIGH OUTPUT SERIES
L11B	6' LONG T-BAR MOUNT LINEAR LUMINAIRE.	GOLDENEYE	AL 1.0 SC 72 40K 80+ X	6 W	700 LM/FT	277	4000K	80		ARON EZT SERIES	JLC-TECH LLC T-BAR ECHO HIGH OUTPUT SERIES
L12D	DIRECT LIGHT ONLY DECORATIVE ACOUSTICAL LINEAR PENDANT, 'L' SHAPE, 2'-0" X 3'-0", COLOR DANDELION YELLOW.	EDISON LIGHTING GROUP	FR 12 2'X3' 800LUMENS/FTLED DD 277 DL S6 OP WH 40K/90CRI 11	30 W	800 LM/FT	277	4000K	80		LUXBOXX LN SERIES	FOCAL POINT SEEM 2 ACOUSTIC SERIES
L12P	DIRECT LIGHT ONLY DECORATIVE ACOUSTICAL LINEAR PENDANT, 'L' SHAPE, 2'-0" X 3'-0", COLOR PURPLE.	EDISON LIGHTING GROUP	FR 12 2'X3' 800 LUMENS/FTLED DD 277 DL S6 OP WH 40K/90CRI 26	30 W	800 LM/FT	277	4000K	80		LUXBOXX LN SERIES	FOCAL POINT SEEM 2 ACOUSTIC SERIES
L12T	DIRECT LIGHT ONLY DECORATIVE ACOUSTICAL LINEAR PENDANT, 'L' SHAPE, 2'-0" X 3'-0", COLOR TEAL.	EDISON LIGHTING GROUP	FR 12 2'X3' 800 LUMENS/FTLED DD 277 DL S6 OP WH 40K/90CRI 32	30 W	800 LM/FT	277	4000K	80		LUXBOXX LN SERIES	FOCAL POINT SEEM 2 ACOUSTIC SERIES
L13	26" WIDE BY 4" TALL WALL MOUNTED VANITY.	AFX LIGHTING	APV270520LAJD2ES-LW	26 W	2,000	277	4000K	80		ASL RFTB-WG SERIES	KUZCO MELVILLE SERIES
L14	10" DIAMETER DECORATIVE PENDANT.	LOUIS POULSEN	CIRQUE PENDANT 9" DIAMETER	22 W	832	277	4000K	80	OWNER SELECTED, ARCHITECT TO CONFIRM FINISHES	NONE	NONE
L15	12" WIDE BY 4' LONG RECESSED LINEAR, VANDAL RESISTANT. HIGH ABUSE	L.C. DOANE	VRR 14 1W40 40 80 N S W VAR DM 122 00 AP D	41 W	4,400	277	4000K	80		NEW STAR CPP SERIES	KENALL CSED14 SERIES
L16	2' WIDE BY 44' LONG RECESSEC LINEAR WALL GRAZER.	GAMMALUX LIGHTING	GDP2 SL408EZT UNIV ZTV10 44' REC/A/GFR2 ASLMD W SG	6 W	400 LM/FT	277	4000K	80		PINNACLE EDVE EV2 SERIES	LUMENWERX VIA 2 SERIES
L17D	DIRECT LIGHT ONLY DECORATIVE ACOUSTICAL LINEAR PENDANT, 'L' SHAPE, 2'-0" X 3'-0", COLOR DANDELION YELLOW.	EDISON LIGHTING GROUP	FR 12 2'X3' 1000LUMENS/FTLED DD 277 DL S6 OP WH 40K/90CRI 11	40 W	1,000 LM/FT	277	4000K	80		LUXBOXX LN SERIES	FOCAL POINT SEEM 2 ACOUSTIC SERIES
L17P	DIRECT LIGHT ONLY DECORATIVE ACOUSTICAL LINEAR PENDANT, 'L' SHAPE, 2'-0" X 3'-0", COLOR PURPLE.	EDISON LIGHTING GROUP	FR 12 2'X3' 1000 LUMENS/FTLED DD 277 DL S6 OP WH 40K/90CRI 26	40 W	1,000 LM/FT	277	4000K	80		LUXBOXX LN SERIES	FOCAL POINT SEEM 2 ACOUSTIC SERIES
L17T	DIRECT LIGHT ONLY DECORATIVE ACOUSTICAL LINEAR PENDANT, 'L' SHAPE, 2'-0" X 3'-0", COLOR TURQUISE.	EDISON LIGHTING GROUP	FR 12 2'X3' 1000 LUMENS/FTLED DD 277 DL S6 OP WH 40K/90CRI 32	40 W	1,000 LM/FT	277	4000K	80		LUXBOXX LN SERIES	FOCAL POINT SEEM 2 ACOUSTIC SERIES
L18	2' X 2' RECESSED ARCHITECTURAL TROFFER, RGBW COLOR	LSI LIGHTING	TR22 RGBW UNV	41 W	4,800	277	RGBW	80		ENERGY SOLUTIONS INTL INC. LX SERIES	MARK ARCHITECTURAL WHISPER RGBW
L19	6" ROUND RECESSED DOWNLIGHT WITH COLORED TRIM.	JOKER LIGHT	STRAM MINI U236 01 12 X	14 W	1,400	277	4000K	80	ARCHITECT TO CONFIRM FINISHES.	ENGINEER APPROVED EQUAL	LUMENWERX LVV SERIES
L20A	4" WIDE BY 4' LONG RECESSED LINEAR.	LITECONTROL	75L DW D 4 04 C1 40K D080 D01 1C UNV W1	28 W	800 LM/FT	277	4000K	80		PINNACLE CHUTE SERIES	FLUXWERX PROFILE SERIES
L20B	4" WIDE BY 8' LONG RECESSED LINEAR.	LITECONTROL	75L DW D 8 04 C1 40K D080 D01 1C UNV W1	56 W	800 LM/FT	277	4000K	80		PINNACLE CHUTE SERIES	FLUXWERX PROFILE SERIES
O1	BWL PROVIDED AND INSTALLED, SHOWN FOR REFERENCE ONLY.			142 W							
O2	BWL PROVIDED AND INSTALLED, SHOWN FOR REFERENCE ONLY.			214 W							
S1	EXTERIOR WALL MOUNT FIXTURE. TYPE 4W DISTRIBUTION.	BEACON	RWL1 48L-15 4K8 4W UNV DBT	15 W	1,900	277	4000K	80	MOUNT BOTTOM 9'-0" AFG UNLESS NOTED OTHERWISE.	ZANEEN EXTERIOR SPECIAL SURFACE	LUMENPULSE LUMENBLADE NANO SERIES
S2	2" WIDE BY 12'-0" LONG RECESSED MOUNTED LINEAR LUMINAIRE. IP66 RATED.	METALUMEN	S2WD 40K 12 MB NSA 27 1 UNV	6 W	275 LM/FT	277	4000K	80	WATTAGE SHOWN IS PER LINEAR FOOT. REFER TO LIGHTING PLANS FOR RUN LENGTHS.	STARTEK AQUA SLIM SERIES	LUMENWERX VIA2 WET SERIES
S3	EXTERIOR WALL MOUNT FIXTURE. TYPE 2M DISTRIBUTION.	BEACON	RWL1 48L-15 4K8 2 UNV DBT	15 W	1,900	277	4000K	80	MOUNT BOTTOM 9'-0" AFG UNLESS NOTED OTHERWISE.	ZANEEN EXTERIOR SPECIAL SURFACE	LUMENPULSE LUMENBLADE NANO SERIES
S4A	2" WIDE BY 4' LONG RECESSED LINEAR WALL GRAZER.	BL LIGHTING	LN8260 L 4FT 4000K 15X40 BK UNI IP66	48 W	500 LM/FT	277	4000K	80		INSIGHT LIGHTING	ECOSENSE
S4B	2" WIDE BY 1' LONG4' RECESSED LINEAR WALL GRAZER.	BL LIGHTING	LN8260 L 1FT 4000K 15X40 BK UNI IP66	1200 W	500 LM/FT	277	4000K	80		INSIGHT LIGHTING	ECOSENSE
S5	2" WIDE BY 4' LENGTH RECESSED LINEAR. WET RATED.	METALUMEN	SWZD 40K 4 MB NSA 45 1 D UNV	24 W	450 LM/FT	120	4000K	80		STARTEK AQUA SLIM SERIES	LUMENWERX VIA2 WET SERIES
S6	EXTERIOR WALL MOUNT FIXTURE. TYPE 4W DISTRIBUTION.	BEACON	RWL1 48L-20 4K8 4W UNV DBT	20 W	2,600	277	4000K	80	MOUNT BOTTOM 12' AFG UNLESS NOTED OTHERWISE.	ZANEEN EXTERIOR SPECIAL SURFACE	LUMENPULSE LUMENBLADE NANO SERIES
S7A	LED TAPE LIGHT,11'-0" LENGTH, IP65 RATED, IN EXTRUDED ALUMINUM HOUSING	DIODE LED	D1 120V INFBSC3 42 H 11'-0" MTCH	36 W	350 LM/FT	120	4000K	80		JESCO LIGHTING GROUP	Q-TRAN
S7B	LED TAPE LIGHT, 4'-0" LENGTH, IP65 RATED, IN EXTRUDED ALUMINUM HOUSING	DIODE LED	D1 120V INFBSC3 42 H 4'-0" MTCH	12 W	350 LM/FT	120	4000K	80		JESCO LIGHTING GROUP	Q-TRAN
S8	EXTERIOR FLOOD LIGHT FOR THE FLAGPOLE.	LUMENCON	LDS SFL 60 D8 ST 1 40 SF	60 W	5,700 LM	277	4000K	80		ENGINEER APPROVED EQUAL	ENGINEER APPROVED EQUAL
X1	EDGE LIT LED EXIT SIGN.	DUAL-LITE	LE C/W/E S/D R N A	3 W		277	GREEN LETTERS		REFER TO PLANS FOR MOUNTING STYLE, DIRECTIONAL ARROWS, AND NUMBER OF FACES.	BEGHELLI BRUNO SERIES	LITHONIA EDG-EDGR SERIES
X2	DIE-CAST ALUMINUM LED EXIT SIGN. PROVIDE WITH WIRE CAGE.	DUAL-LITE	SE S/D R BN WGL	3 W		277	GREEN LETTERS		REFER TO PLANS FOR MOUNTING STYLE, DIRECTIONAL ARROWS, AND NUMBER OF FACES.	BEGHELLI FORMA SERIES	LITHONIA LQC SERIES
X3	DIE-CAST ALUMINUM LED EXIT SIGN.	DUAL-LITE	SW S/D R BN	3 W		277	GREEN LETTERS		REFER TO PLANS FOR MOUNTING STYLE, DIRECTIONAL ARROWS, AND NUMBER OF FACES.	BEGHELLI BRUNO SERIES	LITHONIA EDG-EDGR SERIES

EQUALS TO BE APPROVED BY ENGINEER AND ARCHITECT. ANY ALTERNATES PROVIDED TO CONTRACTOR WITHOUT PRIOR WRITTEN CONSENT OF ENGINEER, ARCHITECT AND OWNER WILL BE REJECTED.

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SCOTT E TOWNSEND
ENGINEER
No. 6201050409
PROFESSIONAL ENGINEER
10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
LIGHTING SCHEDULES

SHEET NO.
E0.1

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SITE PLAN GENERAL NOTES

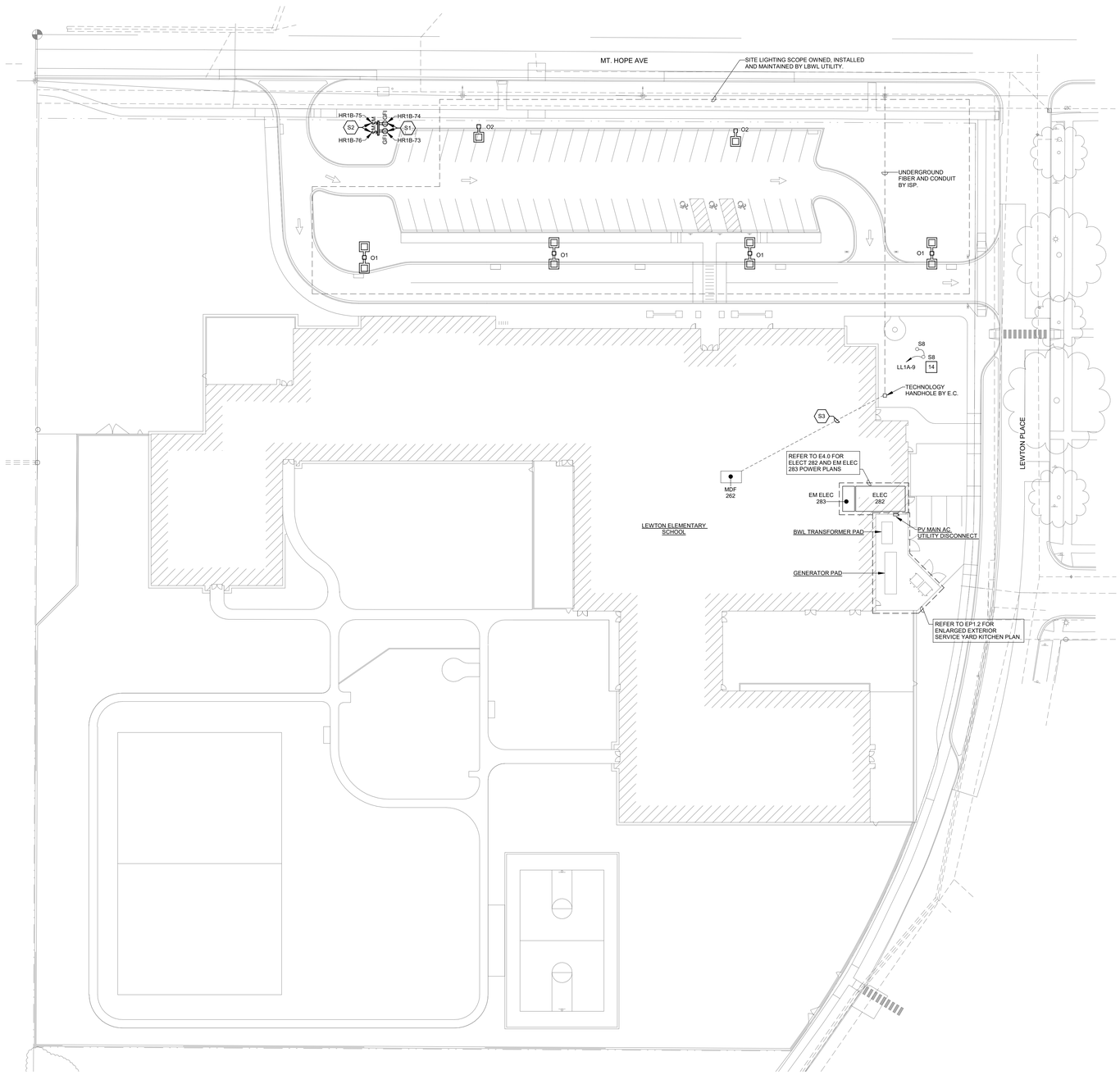
1. FIELD VERIFY LOCATIONS OF EXISTING UNDERGROUND SERVICES TO COORDINATE ALL POLE BASE LOCATIONS AND UNDERGROUND SERVICES BEING INSTALLED UNDER THIS CONTRACT WITH CIVIL DRAWINGS PRIOR TO INSTALLATION OF POLE BASES AND CONDUIT.

ELECTRICAL SITE PLAN KEYNOTES

S1 PROVIDE GFCI RATED DUPLEX RECEPTACLE IN HOT BOX STRUCTURE TO POWER ELECTRIC HEATER. REFER TO HOT BOX MANUFACTURER DETAILS FOR INSTALLATION GUIDELINES. COORDINATE FINAL LOCATION WITH ARCHITECTURAL TRADES AND OWNER PRIOR TO ROUGH-IN.

S2 PROVIDE WEATHERPROOF DISCONNECTS FOR ILLUMINATED SIGNAGE POWER. INSTALL PER MANUFACTURER RECOMMENDATIONS AND REQUIREMENTS.

S3 PROVIDE (2) 4" CONDUIT UNDERGROUND FROM MDF ROOM TO HANDHOLE AT 5' OUTSIDE BUILDING FOR INCOMING ISP. COORDINATE WITH CIVIL AND TECHNOLOGY DRAWINGS FOR CONTINUATION OF ISP TRENCHING/CONNECTIONS.



ELECTRICAL SITE PLAN
SCALE: 1" = 30'-0"

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Strategic Energy Solutions®
4000 W. Eleven Mile Road Berkley, MI 48072
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SES Project # 23 0588 03

Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

STATE OF MICHIGAN
SCOTT E. TOWNSEND
ENGINEER
No. 6201050400
PROFESSIONAL ENGINEER
10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
ELECTRICAL SITE PLAN

SHEET NO.
ES1.0

811
Know what's below.
Call before you dig.

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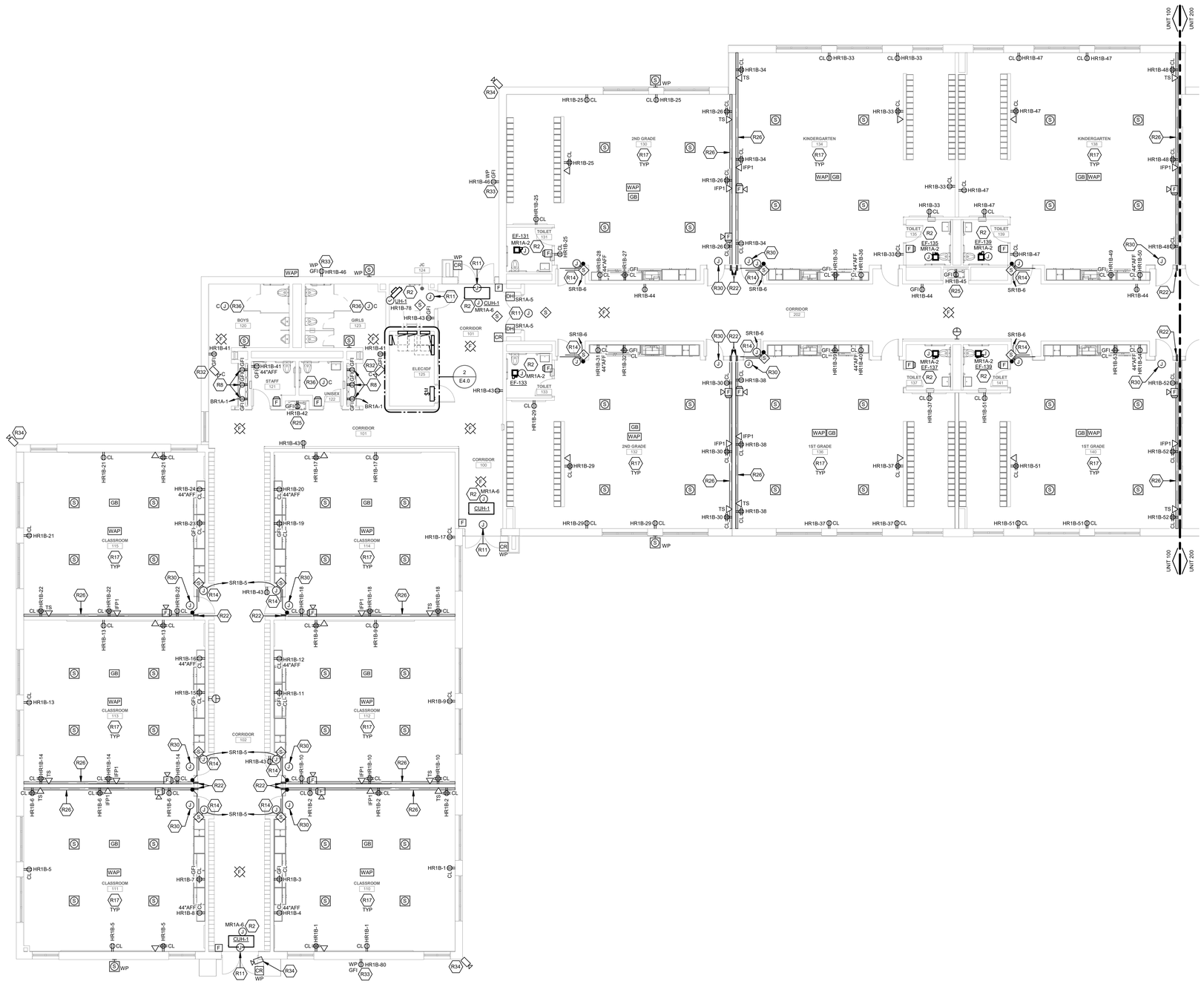

POWER GENERAL NOTES

1. ALL RECEPTACLES ON EXTERIOR, IN KITCHEN, IN CONCESSION, IN LABORATORY, AND WITHIN 6'-0" OF SINK OR OTHER WATER SUPPLY SHALL BE READILY ACCESSIBLE GFCI TYPE RECEPTACLE.
2. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
3. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
4. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
5. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
6. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.
7. MOUNT ALL CONDUIT ON UNDERSIDE OF STRUCUTRE TO MAKE THE PAINTED COLORS MORE VISIBLE.

POWER KEYNOTES

R2 EQUIPMENT DISCONNECT PROVIDED BY MANUFACTURER. EC TO PROVIDE POWER CONNECTION FOR EQUIPMENT AS INDICATED. COORDINATE INSTALLATION WITH MECHANICAL TRADES AND FINAL EQUIPMENT SUBMITTAL POWER REQUIREMENTS.

R3 PROVIDE A RECEPTACLE AT 15'-0" AFF FOR SCOREBOARD POWER. BASIS OF DESIGN DAKTRONICS BB-2155. PROVIDE A 1" CONDUIT ROUTED FROM SCOREBOARD TO FLOOR BOXES AT EACH SCORER'S TABLE FOR SCOREBOARD CONTROLS. COORDINATE FINAL LOCATION WITH G.C. PRIOR TO ROUGH-IN.

R4 PROVIDE A 30A, 208V, 3 PHASE DISCONNECT MOUNTED AT 18" AFF TO CENTER OF DISCONNECT. PROVIDE A RECESSED JUNCTION BOX AT EACH BLEACHER MOTOR LOCATION AT 18" AFF. ROUTE 3/4" CONDUIT BETWEEN EACH MOTOR AND THE MAIN CONTROL BOX. PROVIDE 3/4" CONDUIT WITH PULLSTRING FOR REMOTE CONTROLLER IN SWITCH CABINET IN GYMNASIUM. COORDINATE WITH FINAL EQUIPMENT SUBMITTAL AND INSTALLATION INSTRUCTION PRIOR TO ROUGH-IN.

R5 COORDINATE FINAL LOCATION WITH EQUIPMENT INSTALLER PRIOR TO ROUGH-IN.

R6 PV SYSTEM MONITORING DISPLAY. SYSTEM TO DISPLAY REAL TIME AND HISTORICAL PV PRODUCTION FROM SOLAREDGE SYSTEM MONITORING.

R7 SWITCH CABINET FOR CONTROL OF BLEACHERS, GOAL HOISTS, SCOREBOARD AND PARTITION. COORDINATE WITH SCOREBOARD, BLEACHER AND SWITCH CABINET EQUIPMENT PROVIDERS AND INSTALLATION INSTRUCTIONS PRIOR TO ROUGH-IN. COORDINATE FINAL LOCATION WITH G.C. AND OWNER'S REP PRIOR TO ROUGH-IN.

R8 PROVIDE A JUNCTION BOX AT 24" AFF FOR LAV-2. E.C. TO CONFIRM MOUNTING HEIGHT WITH FINAL EQUIPMENT SUBMITTAL'S INSTALLATION INSTRUCTIONS PRIOR TO ROUGH-IN.

R9 E.C. TO PROVIDE INTERCONNECTION BETWEEN DOOR POWER SUPPLY AS REQUIRED PER MANUFACTURER. COORDINATE WITH SECURITY AND TECHNOLOGY PROVIDER.

R10 PROVIDE POWER TO DOOR OPENER ACTUATOR FOR AUTOMATIC DOORS. COORDINATE EXACT LOCATION PRIOR TO ROUGH-IN.

R11 COORDINATE AND PROVIDE A SINGLE GANG JUNCTION BOXES AND CONDUIT TO SINGLE AND DOUBLE DOOR FRAME, LOCATED ABOVE THE ACCESSIBLE CEILING OR WHERE NO CEILING IN SPACE, 11'-0" AFF FOR LOW VOLTAGE DOOR CONTROLS WHERE INDICATED. COORDINATE WITH ARCHITECTURAL DOOR HARDWARE SCHEDULE, SECURITY, AND LOW VOLTAGE DRAWINGS.

R12 PROVIDE EXTRA DEEP JUNCTION BOX FOR LOW VOLTAGE. COORDINATE LOCATION WITH LOW VOLTAGE DRAWINGS AND INSTALLER PRIOR TO ROUGH-IN.

R13 ELECTRICAL CONTRACTOR SHALL COORDINATE IN THE FIELD WITH THE ILLUMINATED BUILDING SIGNAGE EQUIPMENT PROVIDER AND INSTALLER FOR THE LOCATION OF THE SIGNAGE POWER CONNECTION PRIOR TO ROUGH-IN. PROVIDE ADDITIONAL JUNCTION BOXES AS REQUIRED BY SIGNAGE PROVIDER.

R14 PROVIDE DUCT MOUNTED SMOKE DETECTOR AND POWER CONNECTION FOR FIRE/SMOKE DAMPER, CIRCUIT AS INDICATED. COORDINATE FINAL INSTALLATION WITH FIRE ALARM CONTRACTOR AND MECHANICAL TRADES.

R15 PROVIDE DISCONNECT FOR POWERED DOOR OVERHEAD ADJACENT TO DOOR MOTOR. COORDINATE FINAL POWER REQUIREMENTS WITH DOOR SUBMITTAL.

R16 PROVIDE BACKBOX FOR OVERHEAD DOOR CONTROLLER MOUNTED AT 4'-0" AFF TO TOP OF BOX.

R17 MOUNT BACKBOX FOR SECURITY DEVICES, SPEAKERS AND WIRELESS ACCESS POINTS (WAP) TO UNDERSIDE OF TRUSSES. COORDINATE WITH TECHNOLOGY INSTALLER PRIOR TO ROUGH-IN.

R18 PROVIDE POWER FOR OPERABLE PARTITION. COORDINATION LOCATION OF CONNECTION PER FINAL EQUIPMENT SPECIFICATION. PROVIDE CONDUIT AND WIRE PER MANUFACTURER RECOMMENDATIONS TO LOW VOLTAGE CONTROL PANEL IN GYMNASIUM FROM PARTITION.

R19 PROVIDE RECEPTACLE FOR MICROWAVE IN CABINET ABOVE EQUIPMENT. COORDINATE FINAL LOCATION AND MOUNTING HEIGHT WITH MANUFACTURER INSTALLATION INSTRUCTIONS AND FINAL MILLWORK DESIGN. PROVIDE GFI BREAKER IN PANEL.

R20 PROVIDE (3) 2" CONDUIT SLEEVES FROM CORRIDOR, STORAGE ROOMS, AND, STUBBED INTO TRUSS LEVEL OF GYM OR CAFETERIA. ELECTRICAL CONTRACTOR TO MAINTAIN FIRE RATING AT WALL PENETRATIONS.

R21 INDOOR UNIT (FCU) IS FED FROM OUTDOOR UNIT (CU). E.C. TO MAKE ALL 120/208V CONNECTIONS. COORDINATE EXACT REQUIREMENTS WITH MECHANICAL CONTRACTOR

R22 PROVIDE CONDUIT SLEEVES THROUGH FIRE RATED WALL, STUBBED INTO CORRIDOR ABOVE CEILING. ELECTRICAL CONTRACTOR TO MAINTAIN FIRE RATING AT WALL PENETRATIONS. LOCATE AT 12'-0" AFF UNLESS NOTED OTHERWISE. PROVIDE, (2) 2" CONDUIT SLEEVES AT EACH CLASSROOM CABLE TRAY. (3) 3" CONDUIT SLEEVES AT CABLE TRAY IN ELEC/IDF 125 AND IT/ELEC 310. (3) 4" CONDUIT SLEEVES AT CABLE TRAY IN MDF 262.

R23 PROVIDE JUNCTION BOX ON WALL ABOVE WINDOWS MOTORIZED SHADES FOR POWER CONNECTION. COORDINATE FINAL LOCATION AND BOX QUANTITY WITH ARCHITECTURAL TRADES PRIOR TO ROUGH-IN.

R24 PROVIDE FINAL QUANTITIES OF FLOW AND TAMPER SWITCHES PER FIRE PROTECTION CONTRACTOR. COORDINATE FINAL LOCATION IN FIELD WITH ARCHITECTURAL AND FIRE PROTECTION TRADES.

R25 PROVIDE GFCI BREAKER FOR INACCESSIBLE RECEPTACLE.

R26 PROVIDE 6-INCH SOLID BOTTOM CABLE TRAY FOR DATA / AV CABLING. MOUNT TO WALL WITH BOTTOM ELEVATION AT 11'-0" AFF. MODIFY RACEWAY IN FIELD TO FIT WALL LENGTH. PROVIDE ALL REQUIRED CONNECTORS, ELBOWS, ETC..

R27 MONOFACIAL PV ARRAY MOUNTED FIXED TO ROOF WITH UNIRAC RAIL RACKING SYSTEM NXT UMOUNT. PROVIDE SUPPLEMENTAL RACKING CONNECTION COMPONENTS RECOMMENDED BY RACKING MANUFACTURER DUE TO THICKNESS OF TECTUM ROOF DECK. REFER TO DETAIL ON SHEET ES.2

R28 MONOFACIAL PV ARRAY ON FLAT ROOF TO UTILIZE BALLASTED RACKING SYSTEM UNIRAC EVO2 AT 10 DEGREE TILT. COORDINATE COMPONENTS AND INSTALL WITH RACKING MANUFACTURER.

R29 REFER TO TECHNOLOGY DRAWINGS FOR FINAL LOCATION OF SECURITY DEVICES, TECHNOLOGY DEVICES, DATA DEVICES, SPEAKERS AND WIRELESS ACCESS POINTS (WAP) IN GYM 230 AND CAFETERIA 274. COORDINATE WITH TECHNOLOGY INSTALLER PRIOR TO ROUGH-IN FOR ALL DEVICE LOCATIONS.

R30 COORDINATE AND PROVIDE A SINGLE GANG JUNCTION BOXES AND CONDUIT TO CLASSROOM DOOR INDICATED, LOCATED AT 11'-0" AFF FOR LOW VOLTAGE DOOR CONTROLS. PROVIDE JUNCTION BOX AND CONDUIT FOR FUTURE CARD READER IN DOOR PER DETAIL ON ES.1. COORDINATE WITH ARCHITECTURAL DOOR HARDWARE SCHEDULE, SECURITY AND LOW VOLTAGE DRAWINGS.

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R32 PROVIDE A RECESSED SINGLE GANG JUNCTION BOX IN CEILING FOR SECURITY CAMERA INSTALLATION WITH 3/4" CONDUIT TO ACCESSIBLE CEILING WITH PULL STRINGS.

R33 PROVIDE LOCKABLE WHILE-IN USE OUTDOOR RECEPTACLE COVER.

R34 PROVIDE WEATHER TIGHT JUNCTION BOX IN WALL WITH 3/4" CONDUIT STUBBED INTO ACCESSIBLE CEILING WITH PULL STRINGS. MOUNT BETWEEN 10'-0" AND 12'-0" AFG TO ALIGN WITH OTHER FACADE MOUNTED EQUIPMENT AND TO AVOID CONFLICT WITH ARCHITECTURAL FINISH DETAILING. COORDINATE MOUNTING HEIGHT WITH ARCHITECTURAL ELEVATIONS PRIOR TO ROUGH-IN.

R35 RECEPTACLE PROVIDED WITH RTU, BUT WIRED AS INDICATED.

R36 VAPE DETECTOR BY TECHNOLOGY. PROVIDE BACKBOX AND 3/4" CONDUIT WITH PULL STRING FROM DEVICE TO ACCESSIBLE CEILING SPACE.

POWER PLAN - UNIT 100
SCALE: 1/8" = 1'-0"

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Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

STATE OF MICHIGAN
SCOTT E. TOWNSEND
ENGINEER
No. 6201050400
PROFESSIONAL ENGINEER

10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

N

SHEET TITLE
POWER PLAN - UNIT 100

SHEET NO.
EP1.1

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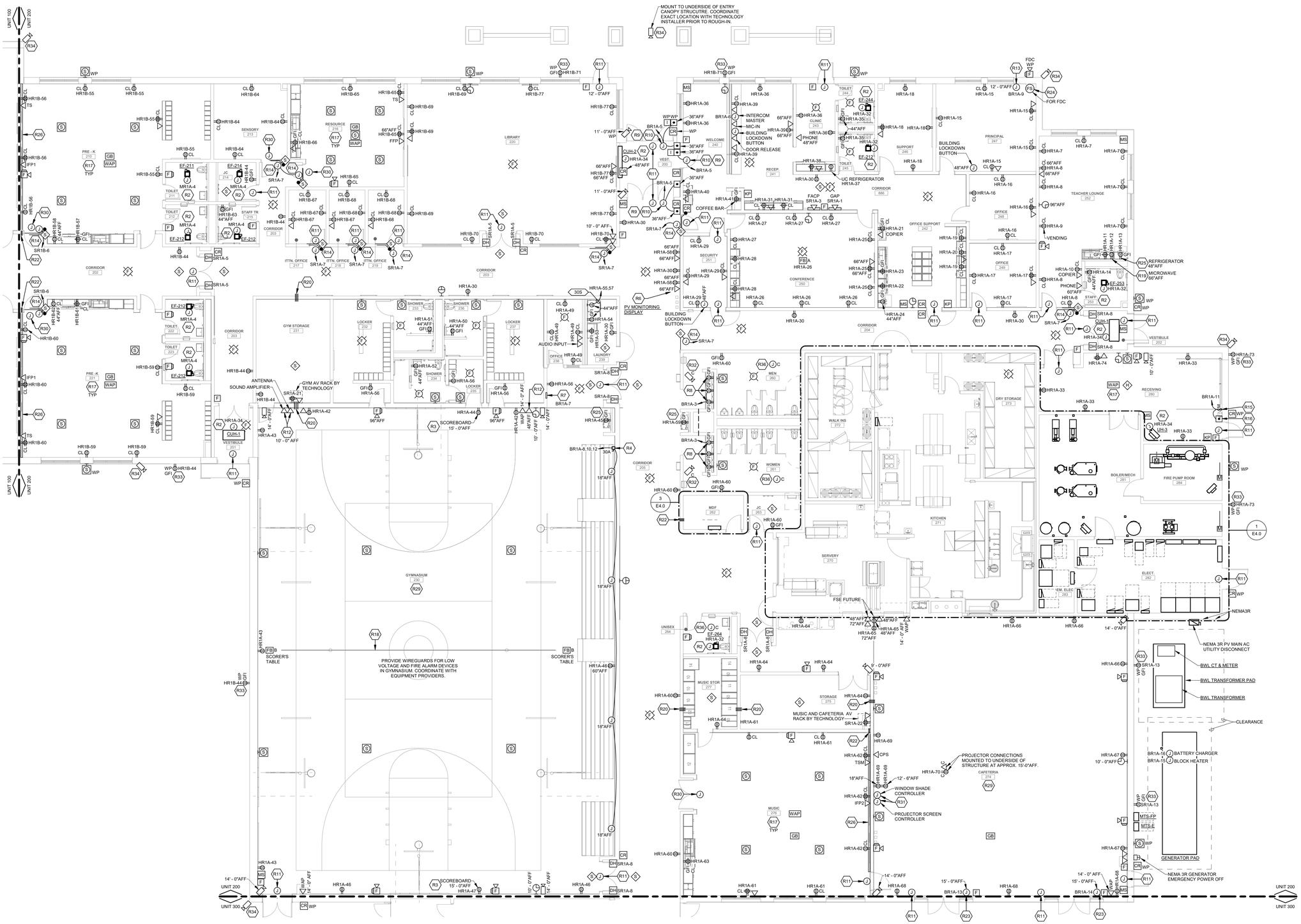

POWER PLAN - UNIT 200
SCALE: 1/8" = 1'-0"

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STATE OF MICHIGAN
SCOTT E. TOWNSEND
ENGINEER
No. 6201090400
PROFESSIONAL
10/10/2025

Lansing School District

ISSUANCES	DATE
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KEY PLAN
LSD NO. SB-0064
JOB NO. 2616.01G
N

SHEET TITLE
POWER PLAN - UNIT 200

SHEET NO.
EP1.2

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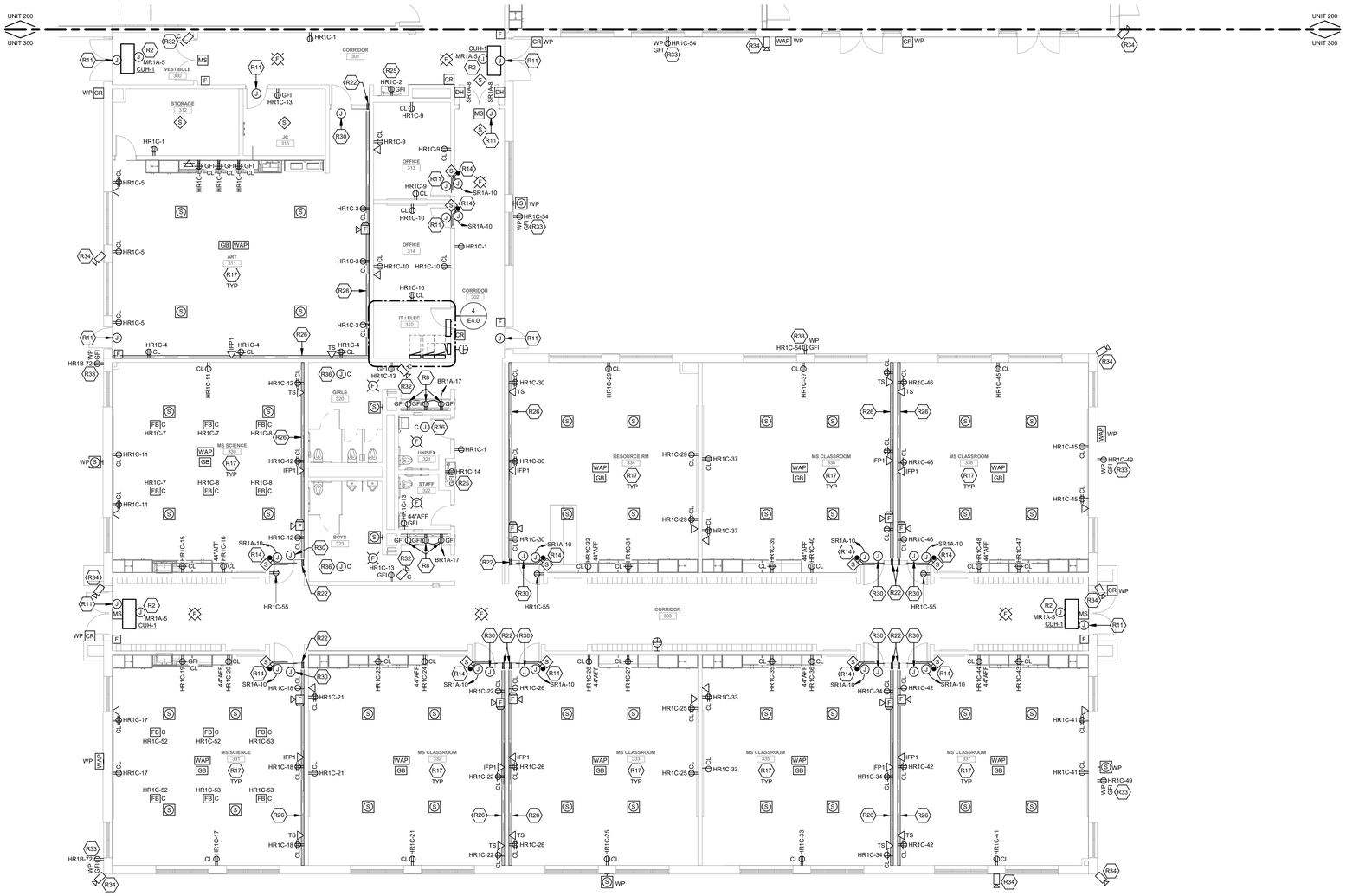

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POWER PLAN - UNIT 300

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

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Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

STATE OF MICHIGAN
SCOTT E. TOWNSEND
ENGINEER
No. 6201059400
PROFESSIONAL
10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

N

SHEET TITLE
POWER PLAN - UNIT 300

SHEET NO.
EP1.3

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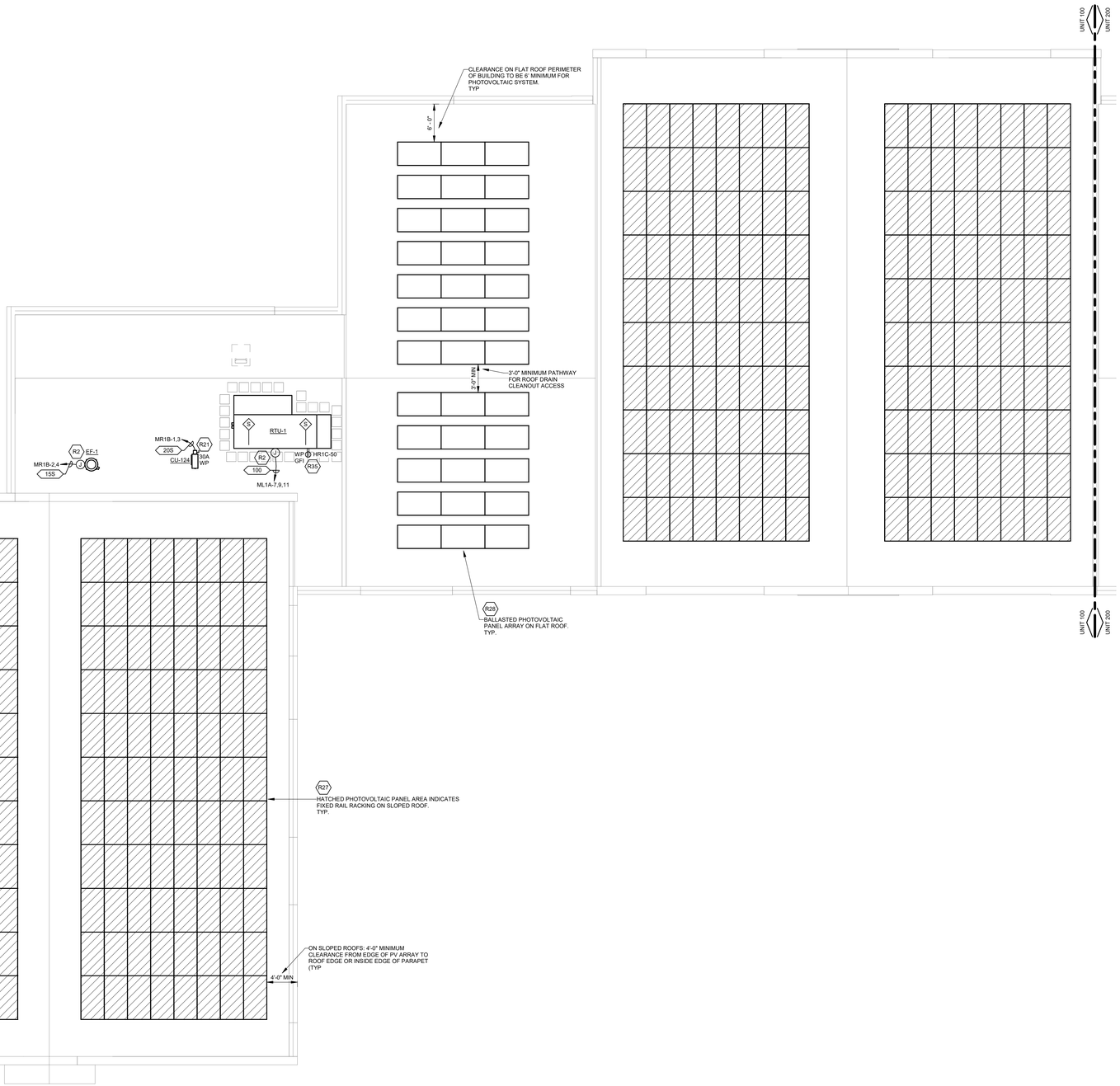

ROOF POWER PLAN - UNIT 100
SCALE: 1/8" = 1'-0"

POWER GENERAL NOTES

1. ALL RECEPTACLES ON EXTERIOR, IN KITCHEN, IN CONCESSION, IN LABORATORY, AND WITHIN 6'-0" OF SINK OR OTHER WATER SUPPLY SHALL BE READILY ACCESSIBLE GFCI TYPE RECEPTACLE.
2. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
3. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
4. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
5. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
6. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.
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Lewton School

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STATE OF MICHIGAN
SCOTT E. TOWNSEND
ENGINEER
No. 6201050400
PROFESSIONAL
10/10/2025

Lansing School District

ISSUANCES	DATE
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CONSTRUCTION DOCUMENTS	10.10.2025

KEY PLAN
LSD NO. SB-0064
JOB NO. 2616.01G
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SHEET TITLE
ROOF POWER PLAN - UNIT 100

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POWER KEYNOTES

R27 MONOFACIAL PV ARRAY MOUNTED FIXED TO ROOF WITH UNIRAC RAIL RACKING SYSTEM NXT UMOUNT. PROVIDE SUPPLEMENTAL RACKING CONNECTION COMPONENTS RECOMMENDED BY RACKING MANUFACTURER DUE TO THICKNESS OF TECTUM ROOF DECK. REFER TO DETAIL ON SHEET E5.2.

R28 MONOFACIAL PV ARRAY ON FLAT ROOF TO UTILIZE BALLASTED RACKING SYSTEM UNIRAC EVO2 AT 10 DEGREE TILT. COORDINATE COMPONENTS AND INSTALL WITH RACKING MANUFACTURER.

R29 REFER TO TECHNOLOGY DRAWINGS FOR FINAL LOCATION OF SECURITY DEVICES, TECHNOLOGY DEVICES, DATA DEVICES, SPEAKERS AND WIRELESS ACCESS POINTS (WAP) IN GYM 230 AND CAFETERIA 274. COORDINATE WITH TECHNOLOGY INSTALLER PRIOR TO ROUGH-IN FOR ALL DEVICE LOCATIONS.

R30 COORDINATE AND PROVIDE A SINGLE GANG JUNCTION BOXES AND CONDUIT TO CLASSROOM DOOR INDICATED, LOCATED AT 11'-0" AFF FOR LOW VOLTAGE DOOR CONTROLS. PROVIDE JUNCTION BOX AND CONDUIT FOR FUTURE CARD READER IN DOOR PER DETAIL ON E5.1. COORDINATE WITH ARCHITECTURAL DOOR HARDWARE SCHEDULE, SECURITY AND LOW VOLTAGE DRAWINGS.

R31 COORDINATE FINAL LOCATION OF PROJECTOR SCREEN AND SHADE CONTROLLERS WITH ARCHITECTURAL TRADES. TECHNOLOGY INSTALLER AND OWNER PRIOR TO ROUGH-IN.

R32 PROVIDE A RECESSED SINGLE GANG JUNCTION BOX IN CEILING FOR SECURITY CAMERA INSTALLATION WITH 3/4" CONDUIT TO ACCESSIBLE CEILING WITH PULL STRINGS.

R33 PROVIDE LOCKABLE WHILE-IN USE OUTDOOR RECEPTACLE COVER.

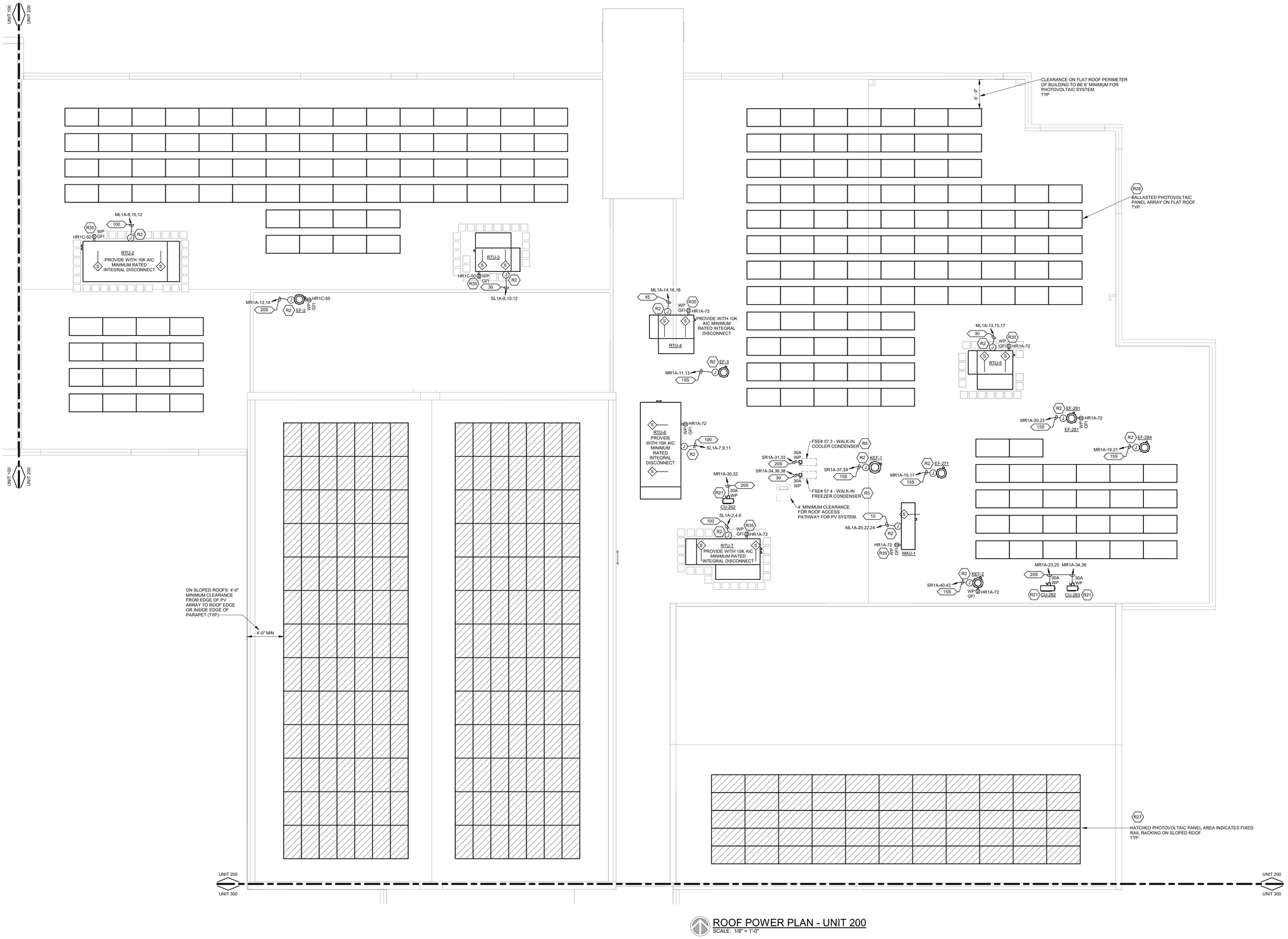
R34 PROVIDE WEATHER TIGHT JUNCTION BOX IN WALL WITH 3/4" CONDUIT STUBBED INTO ACCESSIBLE CEILING WITH PULL STRINGS. MOUNT BETWEEN 10'-0" AND 12'-0" AFG TO ALIGN WITH OTHER FACADE MOUNTED EQUIPMENT AND TO AVOID CONFLICT WITH ARCHITECTURAL FINISH DETAILING. COORDINATE MOUNTING HEIGHT WITH ARCHITECTURAL ELEVATIONS PRIOR TO ROUGH-IN.

R35 RECEPTACLE PROVIDED WITH RTU, BUT WIRED AS INDICATED.

R36 VAPE DETECTOR BY TECHNOLOGY. PROVIDE BACKBOX AND 3/4" CONDUIT WITH PULL STRING FROM DEVICE TO ACCESSIBLE CEILING SPACE.

POWER GENERAL NOTES

1. ALL RECEPTACLES ON EXTERIOR, IN KITCHEN, IN CONCESSION, IN LABORATORY, AND WITHIN 6'-0" OF SINK OR OTHER WATER SUPPLY SHALL BE READILY ACCESSIBLE GFCI TYPE RECEPTACLE.
2. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
3. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
4. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
5. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
6. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.
7. MOUNT ALL CONDUIT ON UNDERSIDE OF STRUCUTRE TO MAKE THE PAINTED COLORS MORE VISIBLE.



ROOF POWER PLAN - UNIT 200
SCALE: 1/8" = 1'-0"

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STATE OF MICHIGAN
SCOTT E. TOWNSEND
ENGINEER
No. 6201050400
PROFESSIONAL
10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

KEY PLAN
LSD NO. SB-0064
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SHEET TITLE
ROOF POWER PLAN - UNIT 200

SHEET NO.
EP1.12

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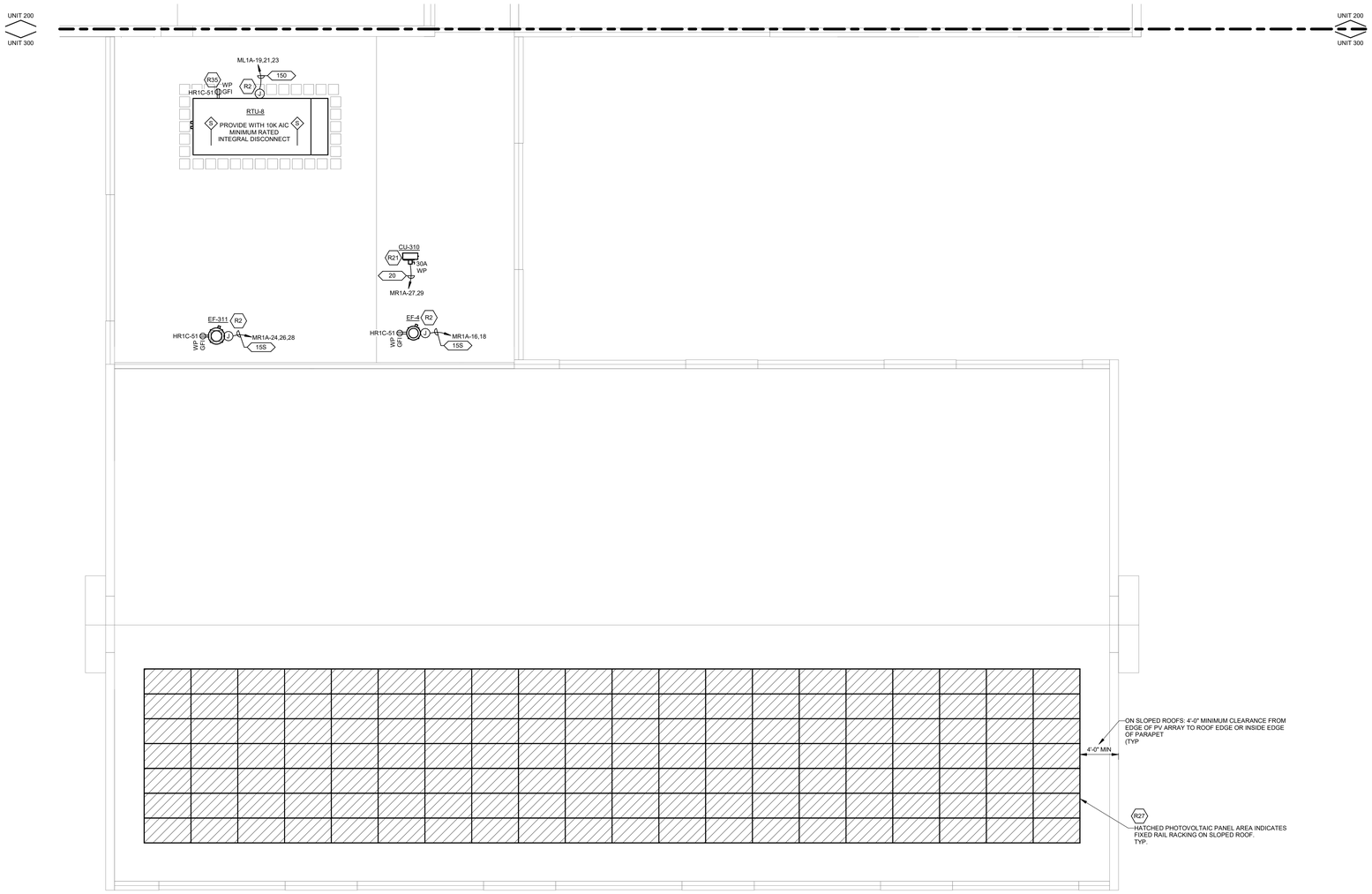

ROOF POWER PLAN - UNIT 300
SCALE: 1/8" = 1'-0"

POWER GENERAL NOTES

1. ALL RECEPTACLES ON EXTERIOR, IN KITCHEN, IN CONCESSION, IN LABORATORY, AND WITHIN 6'-0" OF SINK OR OTHER WATER SUPPLY SHALL BE READILY ACCESSIBLE GFCI TYPE RECEPTACLE.
2. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
3. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
4. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
5. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
6. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.
7. MOUNT ALL CONDUIT ON UNDERSIDE OF STRUCUTRE TO MAKE THE PAINTED COLORS MORE VISIBLE.

POWER KEYNOTES

R2 EQUIPMENT DISCONNECT PROVIDED BY MANUFACTURER. EC TO PROVIDE POWER CONNECTION FOR EQUIPMENT AS INDICATED. COORDINATE INSTALLATION WITH MECHANICAL TRADES AND FINAL EQUIPMENT SUBMITTAL POWER REQUIREMENTS.

R3 PROVIDE A RECEPTACLE AT 15'-0" AFF FOR SCOREBOARD POWER. BASIS OF DESIGN DAKTRONICS BB-2155. PROVIDE A 1" CONDUIT ROUTED FROM SCOREBOARD TO FLOOR BOXES AT EACH SCORER'S TABLE FOR SCOREBOARD CONTROLS. COORDINATE FINAL LOCATION WITH G.C. PRIOR TO ROUGH-IN.

R4 PROVIDE A 30A, 208V, 3 PHASE DISCONNECT MOUNTED AT 18" AFF TO CENTER OF DISCONNECT. PROVIDE A RECESSED JUNCTION BOX AT EACH BLEACHER MOTOR LOCATION AT 18" AFF. ROUTE 3/4" CONDUIT BETWEEN EACH MOTOR AND THE MAIN CONTROL BOX. PROVIDE 3/4" CONDUIT WITH PULLSTRING FOR REMOTE CONTROLLER IN SWITCH CABINET IN GYMNASIUM. COORDINATE WITH FINAL EQUIPMENT SUBMITTAL AND INSTALLATION INSTRUCTION PRIOR TO ROUGH-IN.

R5 COORDINATE FINAL LOCATION WITH EQUIPMENT INSTALLER PRIOR TO ROUGH-IN.

R6 PV SYSTEM MONITORING DISPLAY. SYSTEM TO DISPLAY REAL TIME AND HISTORICAL PV PRODUCTION FROM SOLAREDGE SYSTEM MONITORING.

R7 SWITCH CABINET FOR CONTROL OF BLEACHERS, GOAL HOISTS, SCOREBOARD AND PARTITION. COORDINATE WITH SCOREBOARD, BLEACHER AND SWITCH CABINET EQUIPMENT PROVIDERS AND INSTALLATION INSTRUCTIONS PRIOR TO ROUGH-IN. COORDINATE FINAL LOCATION WITH G.C. AND OWNER'S REP PRIOR TO ROUGH-IN.

R8 PROVIDE A JUNCTION BOX AT 24" AFF FOR LAV-2. E.C. TO CONFIRM MOUNTING HEIGHT WITH FINAL EQUIPMENT SUBMITTAL'S INSTALLATION INSTRUCTIONS PRIOR TO ROUGH-IN.

R9 E.C. TO PROVIDE INTERCONNECTION BETWEEN DOOR POWER SUPPLY AS REQUIRED PER MANUFACTURER. COORDINATE WITH SECURITY AND TECHNOLOGY PROVIDER.

R10 PROVIDE POWER TO DOOR OPENER ACTUATOR FOR AUTOMATIC DOORS. COORDINATE EXACT LOCATION PRIOR TO ROUGH-IN.

R11 COORDINATE AND PROVIDE A SINGLE GANG JUNCTION BOXES AND CONDUIT TO SINGLE AND DOUBLE DOOR FRAME, LOCATED ABOVE THE ACCESSIBLE CEILING OR WHERE NO CEILING IN SPACE, 11'-0" AFF FOR LOW VOLTAGE DOOR CONTROLS WHERE INDICATED. COORDINATE WITH ARCHITECTURAL DOOR HARDWARE SCHEDULE, SECURITY, AND LOW VOLTAGE DRAWINGS.

R12 PROVIDE EXTRA DEEP JUNCTION BOX FOR LOW VOLTAGE. COORDINATE LOCATION WITH LOW VOLTAGE DRAWINGS AND INSTALLER PRIOR TO ROUGH-IN.

R13 ELECTRICAL CONTRACTOR SHALL COORDINATE IN THE FIELD WITH THE ILLUMINATED BUILDING SIGNAGE EQUIPMENT PROVIDER AND INSTALLER FOR THE LOCATION OF THE SIGNAGE POWER CONNECTION PRIOR TO ROUGH-IN. PROVIDE ADDITIONAL JUNCTION BOXES AS REQUIRED BY SIGNAGE PROVIDER.

R14 PROVIDE DUCT MOUNTED SMOKE DETECTOR AND POWER CONNECTION FOR FIRE/SMOKE DAMPER, CIRCUIT AS INDICATED. COORDINATE FINAL INSTALLATION WITH FIRE ALARM CONTRACTOR AND MECHANICAL TRADES.

R15 PROVIDE DISCONNECT FOR POWERED DOOR OVERHEAD ADJACENT TO DOOR MOTOR. COORDINATE FINAL POWER REQUIREMENTS WITH DOOR SUBMITTAL.

R16 PROVIDE BACKBOX FOR OVERHEAD DOOR CONTROLLER MOUNTED AT 4'-0" AFF TO TOP OF BOX.

R17 MOUNT BACKBOX FOR SECURITY DEVICES, SPEAKERS AND WIRELESS ACCESS POINTS (WAP) TO UNDERSIDE OF TRUSSES. COORDINATE WITH TECHNOLOGY INSTALLER PRIOR TO ROUGH-IN.

R18 PROVIDE POWER FOR OPERABLE PARTITION. COORDINATION LOCATION OF CONNECTION PER FINAL EQUIPMENT SPECIFICATION. PROVIDE CONDUIT AND WIRE PER MANUFACTURER RECOMMENDATIONS TO LOW VOLTAGE CONTROL PANEL IN GYMNASIUM FROM PARTITION.

R19 PROVIDE RECEPTACLE FOR MICROWAVE IN CABINET ABOVE EQUIPMENT. COORDINATE FINAL LOCATION AND MOUNTING HEIGHT WITH MANUFACTURER INSTALLATION INSTRUCTIONS AND FINAL MILLWORK DESIGN. PROVIDE GFI BREAKER IN PANEL.

R20 PROVIDE (3) 2" CONDUIT SLEEVES FROM CORRIDOR, STORAGE ROOMS, AND, STUBBED INTO TRUSS LEVEL OF GYM OR CAFETERIA. ELECTRICAL CONTRACTOR TO MAINTAIN FIRE RATING AT WALL PENETRATIONS.

R21 INDOOR UNIT (FCU) IS FED FROM OUTDOOR UNIT (CU). E.C. TO MAKE ALL 120/208V CONNECTIONS. COORDINATE EXACT REQUIREMENTS WITH MECHANICAL CONTRACTOR

R22 PROVIDE CONDUIT SLEEVES THROUGH FIRE RATED WALL, STUBBED INTO CORRIDOR ABOVE CEILING. ELECTRICAL CONTRACTOR TO MAINTAIN FIRE RATING AT WALL PENETRATIONS. LOCATE AT 12'-0" AFF UNLESS NOTED OTHERWISE. PROVIDE (2) 2" CONDUIT SLEEVES AT EACH CLASSROOM CABLE TRAY. (3) 2" CONDUIT SLEEVES AT CABLE TRAY IN ELEC/DF 125 AND IT/ELEC 310. (3) 4" CONDUIT SLEEVES AT CABLE TRAY IN MDF 262.

R23 PROVIDE JUNCTION BOX ON WALL ABOVE WINDOWS MOTORIZED SHADES FOR POWER CONNECTION. COORDINATE FINAL LOCATION AND BOX QUANTITY WITH ARCHITECTURAL TRADES PRIOR TO ROUGH-IN.

R24 PROVIDE FINAL QUANTITIES OF FLOW AND TAMPER SWITCHES PER FIRE PROTECTION CONTRACTOR. COORDINATE FINAL LOCATION IN FIELD WITH ARCHITECTURAL AND FIRE PROTECTION TRADES.

R25 PROVIDE GFCI BREAKER FOR INACCESSIBLE RECEPTACLE.

R26 PROVIDE 6-INCH SOLID BOTTOM CABLE TRAY FOR DATA / AV CABLING. MOUNT TO WALL WITH BOTTOM ELEVATION AT 11'-0" AFF. MODIFY RACEWAY IN FIELD TO FIT WALL LENGTH. PROVIDE ALL REQUIRED CONNECTORS, ELBOWS, ETC..

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R28 MONOFACIAL PV ARRAY ON FLAT ROOF TO UTILIZE BALLASTED RACKING SYSTEM UNIRAC EVO2 AT 10 DEGREE TILT. COORDINATE COMPONENTS AND INSTALL WITH RACKING MANUFACTURER.

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Lewton School

Lansing School District

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SCOTT E. TOWNSEND
ENGINEER
No. 6201050450
LICENSED

10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

KEY PLAN

LSD NO. SB-0064
JOB NO. 2616.01G

N

SHEET TITLE
ROOF POWER PLAN - UNIT 300

SHEET NO.
EP1.13

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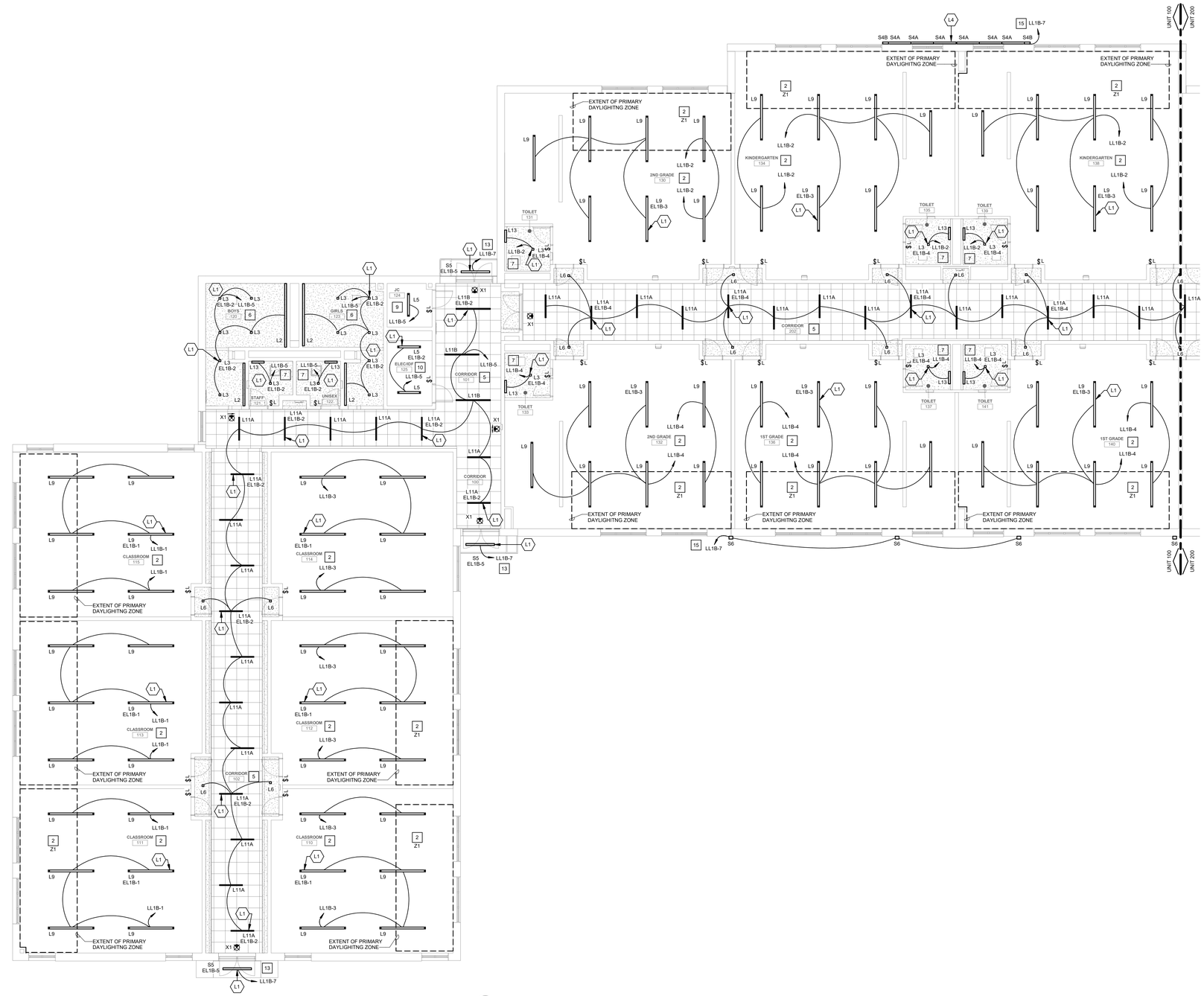
LIGHTING GENERAL NOTES

1. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL LIGHTING FIXTURES UNLESS OTHERWISE NOTED.
2. EXIT LIGHTS AND EMERGENCY BATTERY UNITS SHALL BE UNCONTROLLED AND TIED AHEAD OF LOCAL AREA LIGHTING SWITCH, UNLESS CIRCUITED OTHERWISE.
3. WHERE MORE THAN ONE LIGHT SWITCH IS INDICATED TO BE INSTALLED AT THE SAME LOCATION, THEY SHALL BE GROUPED UNDER ONE COMMON FACEPLATE.
4. ALL POWER PACKS TO BE LOCATED DIRECTLY ABOVE SWITCH.
5. LIGHT FIXTURES ARE LOOPED TOGETHER TO INDICATE CONTROL ZONE GROUPS. CONNECTED FIXTURES ARE TO BE CONTROLLED TOGETHER. CIRCUITS MAY BE SHARED AMONG SEPARATE CONTROL ZONE GROUPS. MULTIPLE ZONES ZONES MAY BE COMBINED IN SOFTWARE TO FORM SCENES. SEE LIGHTING CONTROL MATRIX SCENE SCHEDULE (IF PROVIDED), AND PANEL SCHEDULES FOR ADDITIONAL INFORMATION.
6. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.

LIGHTING KEYNOTES

L1 PROVIDE UL924 LISTED GENERATOR/EMERGENCY TRANSFER DEVICE FOR LUMINAIRE CIRCUIT AS INDICATED.
L3 OVERRIDE SWITCH FOR CORRIDOR LIGHTING.
L4 Mount just under roof. Follow angled line of roof.



LIGHTING PLAN - UNIT 100
SCALE: 1/8" = 1'-0"

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PROFESSIONAL ENGINEER
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Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

KEY PLAN
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SHEET TITLE
LIGHTING PLAN - UNIT 100

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LIGHTING KEYNOTES

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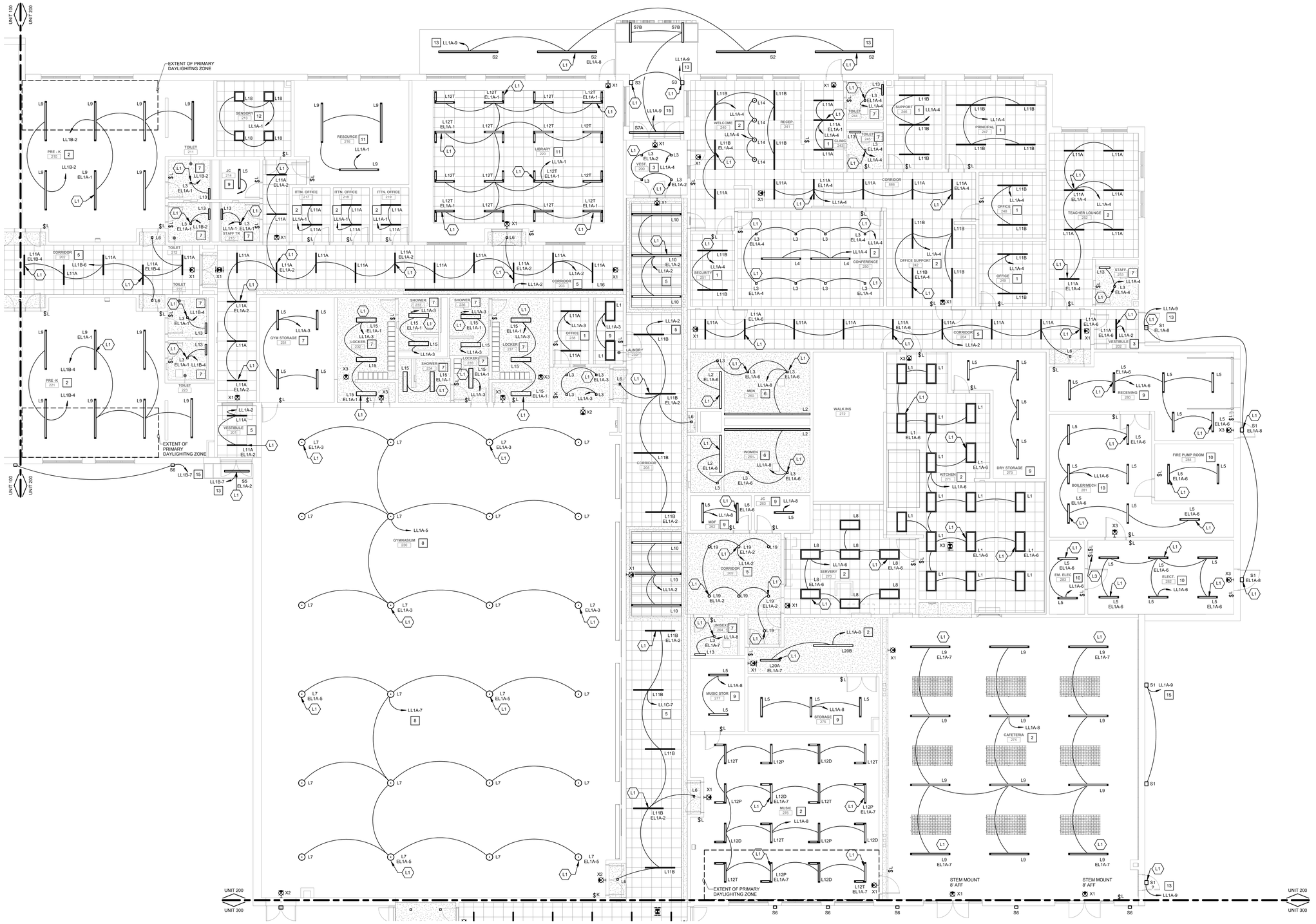

LIGHTING PLAN - UNIT 200
SCALE: 1/8" = 1'-0"

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Lansing School District

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LIGHTING PLAN - UNIT 200

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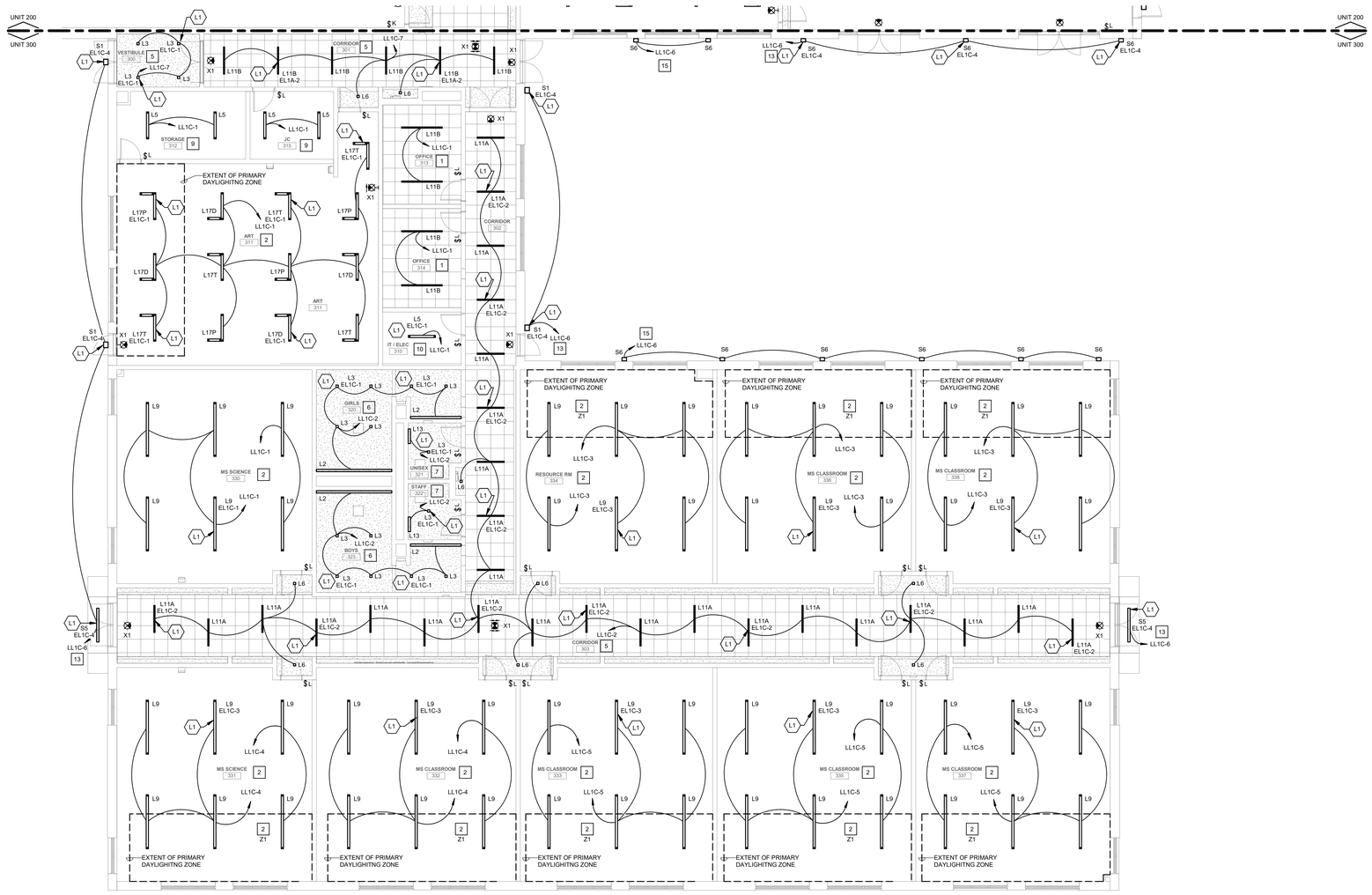

LIGHTING PLAN - UNIT 300
SCALE: 1/8" = 1'-0"

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10/10/2025

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SHEET TITLE
LIGHTING PLAN - UNIT 300

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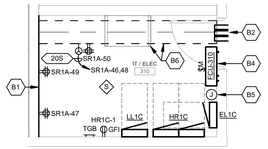
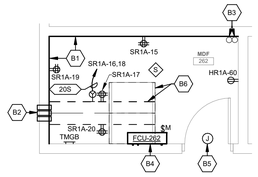
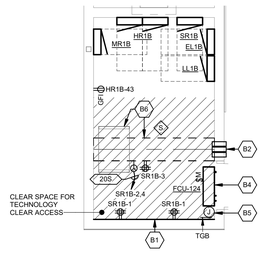


4 EP1.3 ENLARGED IDF/ELEC 310 POWER PLAN
SCALE: 1/4" = 1'-0"



3 EP1.2 ENLARGED MDF 262 POWER PLAN
SCALE: 1/4" = 1'-0"



2 EP1.1 ENLARGED ELEC/IDF 125 POWER PLAN
SCALE: 1/4" = 1'-0"

POWER GENERAL NOTES

1. ALL RECEPTACLES ON EXTERIOR, IN KITCHEN, IN CONCESSION, IN LABORATORY, AND WITHIN 6'-0" OF SINK OR OTHER WATER SUPPLY SHALL BE READILY ACCESSIBLE GFCI TYPE RECEPTACLE.
2. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
3. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
4. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
5. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
6. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.
7. MOUNT ALL CONDUIT ON UNDERSIDE OF STRUCUTRE TO MAKE THE PAINTED COLORS MORE VISIBLE.

ELECTRICAL FSE KEYNOTES

E1 ELECTRICAL CONTRACTOR SHALL PROVIDE A DISCONNECT FOR COIL DOOR AND BACK-BOX AND CONDUIT FOR CONTROLS. COORDINATE CONNECTION POINT AND CONTROLS LOCATION WITH INSTALLATION INSTRUCTIONS. ELECTRICAL CONTRACTOR TO MAKE ALL FINAL 120/208V CONNECTIONS.

E2 PROVIDE SINGLE GANG PEDESTAL HOUSING FLOOR BOX MOUNTED ON FLOOR FOR FOOD SERVICE EQUIPMENT ELECTRICAL CONNECTIONS. MAXIMUM HEIGHT OF PEDESTAL MOUNT SHALL BE LESS THAN 4" AFF. COORDINATE EXACT LOCATION WITH FOOD SERVICE CONTRACTOR AND ARCHITECTURAL TRADES PRIOR TO ROUGH-IN.

E3 PROVIDE SPARE J-BOX AND CONDUIT FROM P.O.S. SYSTEM TO LOCATION INDICATED, FOR COMPUTER TERMINAL. COORDINATE FINAL LOCATION WITH OWNER'S REPRESENTATIVE PRIOR TO ROUGH-IN.

E4 PROVIDE AND INTERWIRE SHUNT-TRIP BREAKERS TO AUTOMATICALLY SHUT DOWN ELECTRIC EQUIPMENT AND RECEPTACLES UNDER KITCHEN HOOD WHEN KITCHEN FIRE PROTECTION SYSTEM IS ACTIVATED. REFER PANEL SCHEDULES SR1A ON SHEET E6.0 AND KR1 ON SHEET E6.2. COORDINATE INTERCONNECTION OF FIRE PROTECTION WITH BUILDING FIRE ALARM SYSTEM. REFER TO FIRE ALARM DETAIL E5.1.

E5 PROVIDE FINAL CONNECTIONS TO PRE-WIRED COUNTERS. ALL WIRING, CONDUIT, RECEPTACLES, JUNCTION BOXES AND RECEPTACLES PROVIDED AS PART OF COUNTER. PROVIDE GFI BREAKER IF RECEPTACLES ARE NOT GFI TYPE.

E6 COORDINATE WITH FSE INSTALLER AND MECHANICAL CONTRACTOR. INTERLOCK WITH HOOD EXHAUST FAN.

ELECTRICAL ENLARGED KEYNOTES

B1 PROVIDE TWO LAYERS OF 4' X 8' X 3/4" FIRE RETARDANT PLYWOOD BACKBOARD ON INDICATED WALLS. REFER TO LOW VOLTAGE DRAWINGS FOR ADDITIONAL INFORMATION.

B2 PROVIDE CONDUIT SLEEVES THROUGH FIRE RATED WALL, STUBBED INTO CORRIDOR ABOVE CEILING. ELECTRICAL CONTRACTOR TO MAINTAIN FIRE RATINGS AT WALL PENETRATIONS. LOCATE AT 12'AFF UNLESS NOTED OTHERWISE. PROVIDE: A. (3) 3" CONDUIT SLEEVES AT ELEC/IDF 124. B. (3) 3" CONDUIT SLEEVES AT IT/ELEC 310. C. (3) 4" CONDUIT SLEEVES AT MDF 262.

B3 (2) 4" CONDUITS FROM INCOMING ISP. COORDINATE WITH TECHNOLOGY INSTALLER, CIVIL CONTRACTOR AND ISP PRIOR TO ROUGH-IN.

B4 FCU UNIT IS FED FROM CU ON ROOF. COORDINATE ROUTING OF CONTROL WIRE AND POWER FEED WITH MECHANICAL CONTRACTOR.

B5 COORDINATE AND PROVIDE A SINGLE GANG JUNCTION BOXES AND CONDUIT TO SINGLE AND DOUBLE DOOR FRAME, LOCATED ABOVE THE ACCESSIBLE CEILING OR AT 11'-0" AFF FOR LOW VOLTAGE DOOR CONTROLS WHERE INDICATED. COORDINATE WITH ARCHITECTURAL DOOR HARDWARE SCHEDULE, SECURITY AND LOW VOLTAGE DRAWINGS.

B6 CABLE TRAY AND LOW RACK IN MDF/IDF AREAS SHALL BE PROVIDED BY AND INSTALLED BY LOW VOLTAGE. COORDINATE CABLE TRAY MOUNTED RECEPTACLE'S FINAL LOCATION AND MOUNTING TYPE WITH TECHNOLOGY INSTALLER. CABLE TRAY AND TECHNOLOGY RACK SHOWN FOR REFERENCE ONLY.

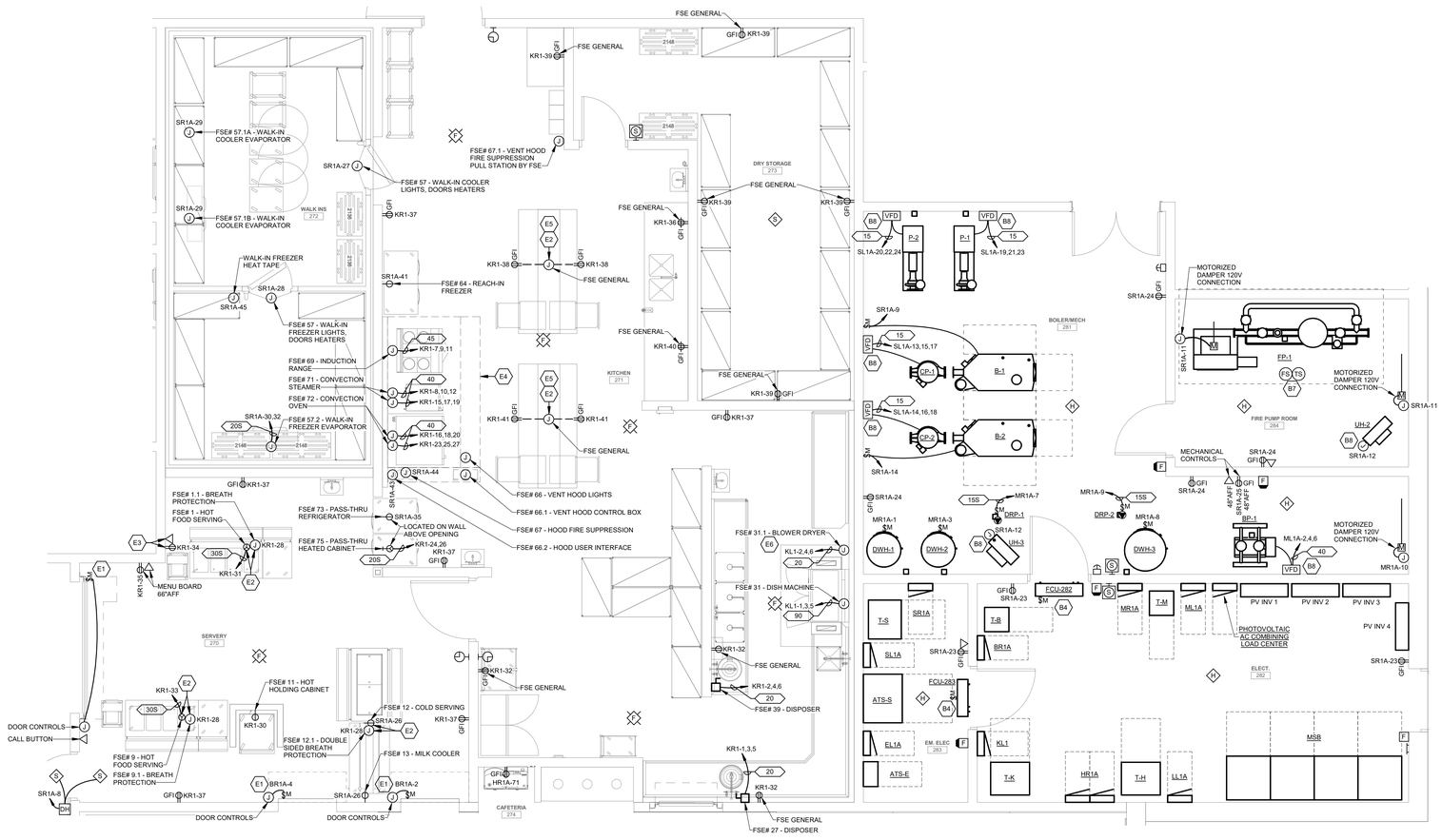
B7 PROVIDE FINAL QUANTITIES OF FLOW AND TAMPER SWITCHES PER FIRE PROTECTION CONTRACTOR. COORDINATE FINAL LOCATION IN FIELD WITH ARCHITECTURAL AND FIRE PROTECTION TRADES.

B8 EQUIPMENT DISCONNECT PROVIDED BY MANUFACTURER. EC TO PROVIDE POWER CONNECTION FOR EQUIPMENT AS INDICATED. COORDINATE INSTALLATION WITH MECHANICAL TRADES AND FINAL EQUIPMENT SUBMITTAL POWER REQUIREMENTS.

ELECTRICAL CONTRACTOR TO COORDINATE FINAL POWER DEVICE QUANTITIES, RATINGS, HEIGHTS, AND LOCATIONS WITH FINAL FOOD SERVICE EQUIPMENT DRAWINGS ON FS-SERIES SHEETS PRIOR TO INSTALLATION.

ALL GFI RECEPTACLES IN INACCESSIBLE LOCATIONS SHALL BE FED WITH GFI TYPE BREAKERS. THIS INCLUDES ANY RECEPTACLE OVER 60"AFF.

FIRE ALARM VENDOR TO REVIEW FS-SERIES SHEETS PRIOR TO AND AS PART OF FINAL SUBMITTAL.



1 EP1.2 ENLARGED KITCHEN AND MEP ROOM POWER PLAN
SCALE: 1/4" = 1'-0"

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Lewton School

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STATE OF MICHIGAN
SCOTT E. TOWNSEND
ENGINEER
No. 6201060400
PROFESSIONAL ENGINEER
10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
ENLARGED ELECTRICAL PLANS

SHEET NO.
E4.0

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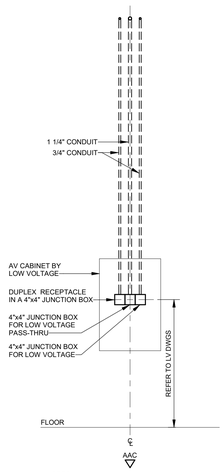
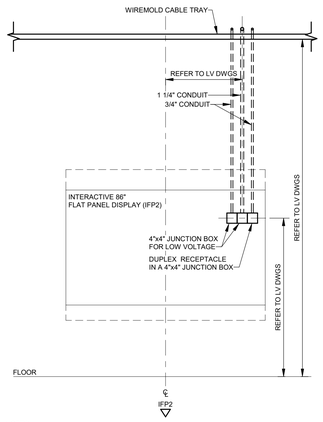


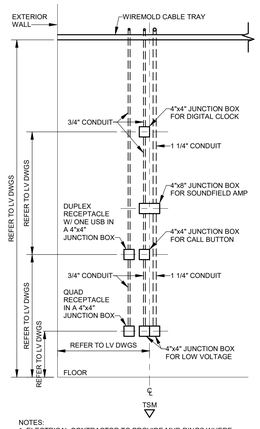
NOTES:
1. ELECTRICAL CONTRACTOR TO PROVIDE MUD RINGS WHERE REQUIRED BY LV. REFER TO SPECIFICATION FOR POWER DEVICES COVERS.
2. REFER TO LOW VOLTAGE DETAILS SHEETS T9.1 THRU T9.3 FOR MORE INFORMATION.

AUDIO & VIDEO CABINET (AAC) DETAIL
NO SCALE



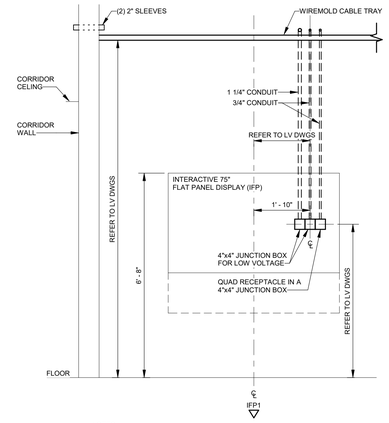
NOTES:
1. ELECTRICAL CONTRACTOR TO PROVIDE MUD RINGS WHERE REQUIRED BY LV. REFER TO SPECIFICATION FOR POWER DEVICES COVERS.
2. REFER TO LOW VOLTAGE DETAILS SHEETS T9.1 THRU T9.3 FOR MORE INFORMATION.

MUSIC ROOM INTERACTIVE FLAT PANEL (IFP2) DETAIL
NO SCALE



NOTES:
1. ELECTRICAL CONTRACTOR TO PROVIDE MUD RINGS WHERE REQUIRED BY LV. REFER TO SPECIFICATION FOR POWER DEVICES COVERS.
2. REFER TO LOW VOLTAGE DETAILS SHEETS T9.1 THRU T9.3 FOR MORE INFORMATION.

TYPICAL MUSIC TEACHER STATION (TSM) DETAIL
SCALE: 1/2" = 1'-0"

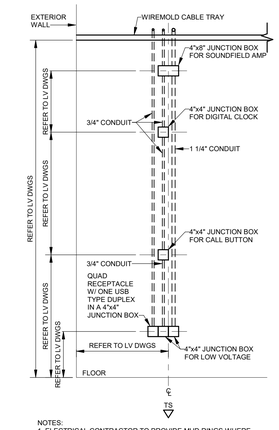


NOTES:
1. ELECTRICAL CONTRACTOR TO PROVIDE MUD RINGS WHERE REQUIRED BY LV. REFER TO SPECIFICATION FOR POWER DEVICES COVERS.
2. REFER TO LOW VOLTAGE DETAILS SHEETS T9.1 THRU T9.3 FOR MORE INFORMATION.

TYPICAL CLASSROOM INTERACTIVE FLAT PANEL (IFP1) DETAIL
NO SCALE

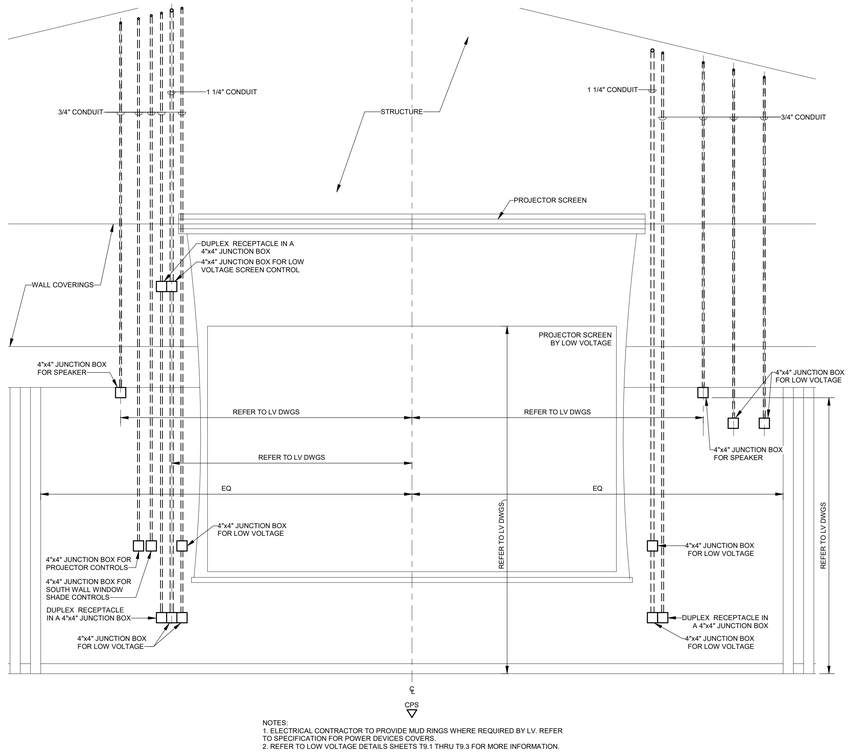
ELECTRICAL CONTRACTOR TO COORDINATE FINAL SIZES, QUANTITIES, HEIGHTS, AND LOCATIONS FOR LOW VOLTAGE BACKBOX AND CONDUIT WITH LOW VOLTAGE DOCUMENTS ON T-SERIES SHEETS PRIOR TO INSTALLATION.

ELECTRICAL CONTRACTOR TO PROVIDE WALL SLEEVES AS SHOWN ON POWER DOCUMENTS AS WELL AS ANY ADDITIONAL SLEEVES NEEDED DURING CONSTRUCTION FOR LOW VOLTAGE INSTALLER CABLE PATHWAYS.



NOTES:
1. ELECTRICAL CONTRACTOR TO PROVIDE MUD RINGS WHERE REQUIRED BY LV. REFER TO SPECIFICATION FOR POWER DEVICES COVERS.
2. REFER TO LOW VOLTAGE DETAILS SHEETS T9.1 THRU T9.3 FOR MORE INFORMATION.

TYPICAL CLASSROOM TEACHER STATION (TS) DETAIL
NO SCALE



NOTES:
1. ELECTRICAL CONTRACTOR TO PROVIDE MUD RINGS WHERE REQUIRED BY LV. REFER TO SPECIFICATION FOR POWER DEVICES COVERS.
2. REFER TO LOW VOLTAGE DETAILS SHEETS T9.1 THRU T9.3 FOR MORE INFORMATION.

CAFETERIA PROJECTOR SCREEN WALL (CPS) DETAIL
NO SCALE

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SCOTT E TOWNSEND
ENGINEER
No. 6201050409
PROFESSIONAL
10/10/2025

Lansing School District

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JOB NO. 2616.01G

SHEET TITLE
ELECTRICAL DETAILS

SHEET NO.
E5.0

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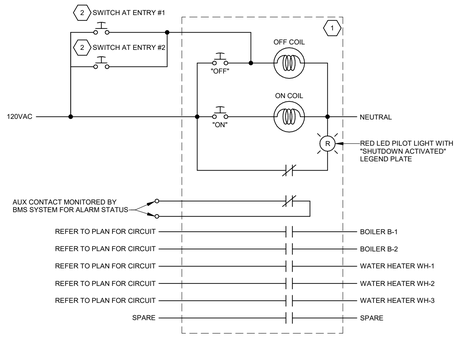
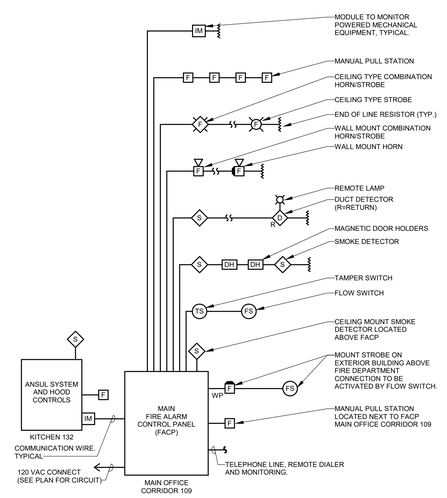


KEYED NOTES:

1. 30A, 6-POLE MECHANICALLY-HELD CONTACTOR WITH 120VAC CONTROL COILS, MOMENTARY ON/OFF PUSH BUTTONS, ONE N.C. AND ONE N.O. AUX CONTACTS. RED LED PILOT LIGHTS WIRED TO N.C. AUX CONTACT FOR "OFF" INDICATION. CUSTOM ENGRAVED DEVICE LABELS, NEMA1 ENCLOSURE. PROVIDE ENGRAVED NAMEPLATE INDICATING "EMERGENCY BOILER SHUTDOWN".
2. RED MOMENTARY PUSHBUTTON SWITCH MOUNTED ON YELLOW POLYCARBONATE BODY, CLEAR POLYCARBONATE HINGED COVER, CUSTOM LABEL "BOILER SHUTDOWN".

BOILER EMERGENCY SHUTDOWN CONTROL DETAIL

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



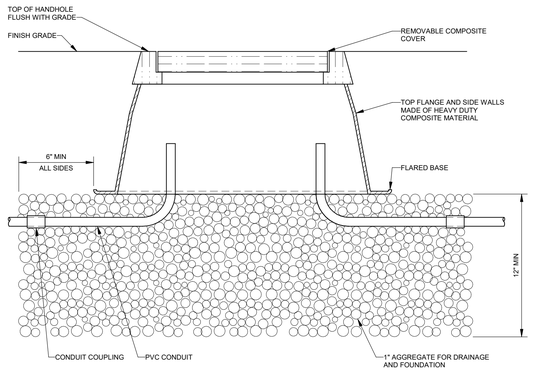
FIRE ALARM RISER DIAGRAM NOTES

1. FOR FIRE ALARM EQUIPMENT SPECIFICATION AND ADDITIONAL REQUIREMENTS, SEE SPECIFICATIONS.
2. ALL DUCT DETECTORS SHALL BE WIRED TO ACTIVATE THE ALARM SYSTEM AND SHUT DOWN FAN. PROVIDE INDICATOR LIGHT WHERE SMOKE DETECTORS ARE INSTALLED IN CONCEALED LOCATIONS OR ARE MORE THAN 10FT. ABOVE THE FINISHED FLOOR.
3. ALL AUDIO AND VISUAL RATINGS SHALL MEET OR EXCEED NFPA REQUIREMENTS. MINOR DEVIATIONS SUCH AS STROBE RATING, MISSING OF AUDIO/VISUAL UNITS, SMOKE DETECTORS UNITS, ETC. (MAX OF 10) SHALL BE INCLUDED.
4. PROVIDE REMOTE POWER SUPPLIES AS REQUIRED FOR NOTIFICATION APPLIANCE CIRCUITS, NOT TO EXCEED 80% OF CAPACITY.
5. PROVIDE SMOKE DETECTOR ABOVE EACH REMOTE POWER SUPPLY PANEL.
6. PROVIDE BATTERY, CURRENT LOAD AND VOLTAGE DROP CALCULATIONS PER SPECIFICATIONS.
7. SEAL AROUND ALL PIPES & CONDUITS IN MASONRY AND DRYWALL WALLS.
8. ALL FIRE ALARM WIRING SHALL BE MINIMUM #4 AWG AND IN CONDUIT MIN 3/4 " IN EXPOSED CEILING AREAS. CABLE IS ACCEPTABLE ABOVE LAY-IN CEILING IN J-HOOKS.
9. FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CHARGES INVOLVED IN OBTAINING APPROVAL AND CERTIFICATION FROM STATE ELECTRICAL INSPECTOR FOR A COMPLETE SYSTEM. CERTIFIED CONTRACTOR TO PAY ALL FEES REQUIRED.
10. THE ELEVATION DIAGRAM IS FOR REFERENCE PURPOSES. EXACT QUANTITIES OF DEVICES AND LOCATIONS SHALL COMPLY WITH NFPA GUIDELINES AND MEET APPROVAL OF THE STATE ELECTRICAL INSPECTOR. FIRE ALARM CONTRACTOR SHALL HAVE SHOP DRAWINGS APPROVED BY THE STATE ELECTRICAL INSPECTOR PRIOR TO COMMENCEMENT OF WORK.
11. FOR FIRE ALARM SYMBOL LEGEND SEE DRAWING E0.00.
12. ALL PULL STATIONS ARE TO BE LOCATED IN THE SECURE SIDE OF THE VESTIBULE WITHIN 5' OF ALL EXTERIOR DOORS.
13. PROVIDE REQUIRED RELAYS FOR AUDIO SILENCING UPON FIRE ALARM ACTIVATION TIE-INS FOR GYM AND CAFETERIA SOUND SYSTEMS.

NOTE:
REFER TO PLANS FOR LOCATION OF SIGNAL DEVICES.

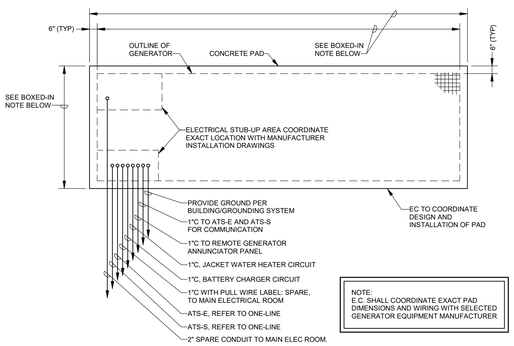
NEW PARTIAL FIRE ALARM RISER

NO SCALE



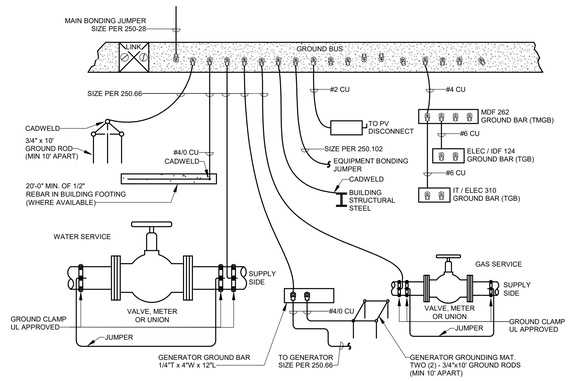
HANDHOLE DETAIL

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



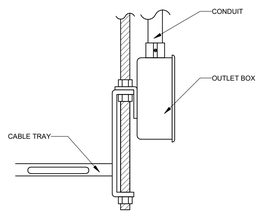
TYPICAL GENERATOR CONDUIT AND WIRING PLAN

NO SCALE



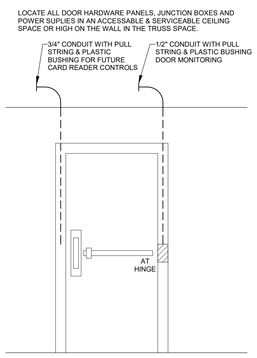
BUILDING/GROUNDING SYSTEM

NO SCALE



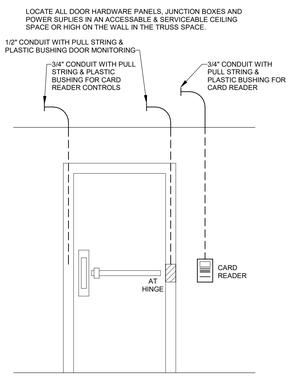
OUTLET BOX MOUNTED TO CABLETRAY

NO SCALE



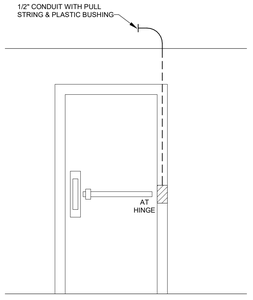
TYPICAL CLASSROOM DOOR DETAIL

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



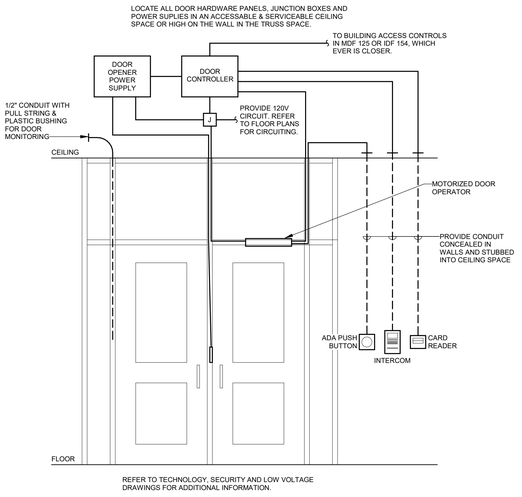
TYPICAL DOOR CARD READER DETAIL

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



TYPICAL DOOR MONITORING DETAIL

NO SCALE



TYPICALL DOOR ACCESS CONTROL DETAIL

NO SCALE

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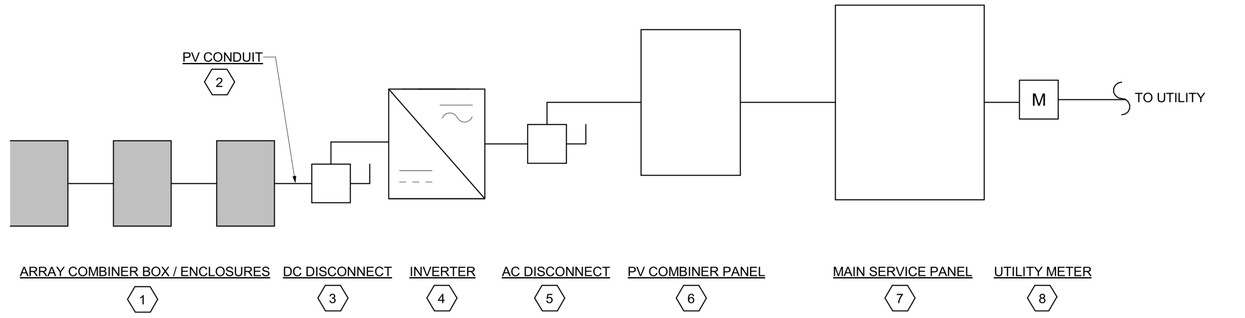


ONELINE SHOWN FOR REFERENCE OF TYPICAL INSTALLATION SYSTEM COMPONENTS AND IS NOT REPRESENTATIVE OF PROJECT. REFER TO ONELINE ON SHEET E700 FOR PROJECT. ALL LABELS AND PLACARDS TO COMPLY WITH NEC SECTIONS INDICATED.

1 6

⚠ WARNING
ELECTRICAL SHOCK HAZARD
TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

TENEC 706.15(C)(4) and NEC 690.13(B)

⚠ WARNING
TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL

NEC 110.27(C) & OSHA 1910.145(f)(7)

2

SOLAR PV DC CIRCUIT

NEC 690.31(D)(2)

PHOTOVOLTAIC POWER SOURCE

NEC 690.31(D)(2)

3

⚠ WARNING
ELECTRICAL SHOCK HAZARD
TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT

NEC 690.13(B)

PHOTOVOLTAIC DC DISCONNECT

NEC 690.13(B)

RATED AC OPERATING CURRENT
MAX RATED AC OPERATING CURRENT
RATED AC OPERATING VOLTAGE
MAX RATED AC OPERATING VOLTAGE
RATED SHORT CIRCUIT CURRECNT
MAXIMUM SYSTEM VOLTAGE

FOR MARKING DC BACKUP SYSTEMS

MAXIMUM DC VOLTAGE
OF PV SYSTEM

NEC 690.53

4

⚠ WARNING
THE DISCONNECTION OF THE GROUNDED CONDUCTOR(S) MAY RESULT IN OVERVOLTAGE ON THE EQUIPMENT

NEC 690.31(E)

PHOTOVOLTAIC AC DISCONNECT
RATED AC OUTPUT CURRENT:
NOMINAL OPERATING AC VOLTAGE

NEC 690.54

5

PHOTOVOLTAIC AC DISCONNECT

NEC 690.13(B)

⚠ WARNING
THIS EQUIPMENT FED BY MULTIPLE SOURCES: TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING MAIN POWER SUPPLY SHALL NOT EXCEED AMPACITY OF BUSBAR

NEC 705.12(B)(3)(3)

7

⚠ WARNING
ELECTRICAL SHOCK HAZARD
TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

TENEC 706.15(C)(4) and NEC 690.13(B)

⚠ WARNING
TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL

NEC 110.27(C) & OSHA 1910.145(f)(7)

⚠ CAUTION
PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

NEC 705.12(D) & NEC 690.59

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

NEC 705.12(C) & NEC 690.59

⚠ WARNING
POWER SOURCE OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE.

NEC 705.12 (B)(3)(2)

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

NEC 690.13(B)

8

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

NEC 705.12(D)(3) & NEC 690.59

PROVIDE IF NEEDED FOR RAPID SHUTDOWN

RAPID SHUTDOWN FOR SOLAR PV SYSTEM

NEC 690.56(C)(2)

SOLAR PV SYSTEM EQUIPED WITH RAPID SHUTDOWN
TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY

IFC 605.11.3.1(1) & 690.56(C)

PERMANENT PLAQUE FOR IDENTIFICATION OF POWER SOURCE DISCONNECTING MEANS.

CAUTION
POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN

NEC 705.10 & 690.56(A)(B)

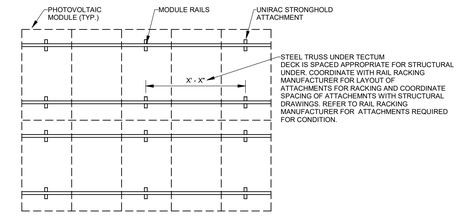
INSTALL AT SERVICE EQUIPMENT LOCATION. DIRECTORY TO DENOTE LOCATION OF PV DISCONNECTING MEANS FOR THE PREMISES WITH LAYOUT OF SYSTEM AND PV ARRAY.

LAYOUT SHOWN IN DIRECTORY ABOVE IS FOR REFERENCE ONLY, PROVIDE DIRECTORY LAYOUT FOR PROJECT AS REQUIRED FOR FINAL DESIGN LAYOUT.

APPROVE PLAQUE DESIGN AND LOCATION WITH AHJ PRIOR TO INSTALL.

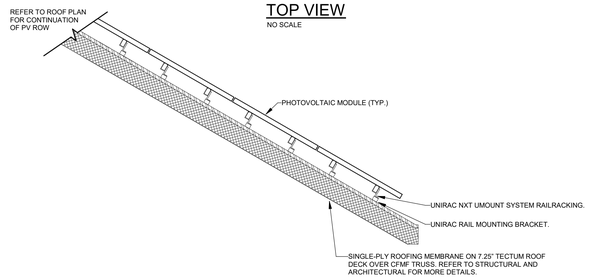
DETAIL - PV LABELS AND PLACARDS

NO SCALE



TOP VIEW

NO SCALE



NOTES

INSTALL WIRE MANAGEMENT AND GROUNDING PER MANUFACTURERS DETAILS AND RECOMMENDATIONS.

COORDINATE WITH MANUFACTURER OF BOTH TECTUM ROOF DECK AND PV RACKING FOR RECOMMENDATIONS OF ADDITIONAL RAILS AND CONNECTIONS REQUIRED DUE TO THICKNESS OF TECTUM ROOF DECK. TYPICAL LAG BOLT SUPPLIED BY UNIRAC FOR THE NXT UMOUNT SYSTEM IS 3 3/8", TO PENETRATE PAST THE 7 1/4" TECTUM ROOF DECK THE TYPICAL LAG BOLT WILL NOT BE USED AND A LAG BOLT OF AT LEAST 9" MINIMUM IS TO BE USED TO PENETRATE INTO THE STEEL TRUSS UNDER THE TECTUM DECK. UNIRAC TECHNICAL SUPPORT: 319-855-1480. TECTUM TECHNICAL SUPPORT: 740-364-8196.

SLOPED ROOF PV RAIL RACKING

NO SCALE

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

SES
Strategic Energy Solutions®
4000 W. Eleven Mile Road Berkley, MI 48072
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SES Project # 23 0588 03

Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

STATE OF MICHIGAN
SCOTT E. TOWNSEND
ENGINEER
No. 6201050400
PROFESSIONAL

10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
ELECTRICAL PHOTOVOLTAIC DETAILS

SHEET NO.
E5.2

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PANEL NAME: MSB

PANEL LOCATION: ELECT. 282
ENCLOSURE: TYPE 1
MOUNTING: FLOOR

MAIN: 2500 A
BUSSING: 2500 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 277/480 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 65,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1				43420	12167								2
3	T-H (HR1A, HR1B, HR1C)	175 A	3			36056	12085			3	100 A	LL1A	4
5								39764	11484				6
7				106096	6173								8
9	ML1A	600 A	3			106217	5823			3	70 A	T-B	10
11								106614	3903				12
13				46453	85360								14
15	KL1	200 A	3			45704	87096			3	400 A	ATS-S (SL1A)	16
17								44632	83539				18
19				0	--								20
21	ATS-E (EL1A)	100 A	3			0	--			3	--	SPACE	22
23								0	--				24
25				--	--								26
27	SPACE	--	3			--	--			3	--	SPACE	28
29								--	--				30
31				--	--								32
33	SPACE	--	3			--	--			3	--	SURGE SUPPRESSION	34
35								--	--				36
		TOTAL LOAD:		299668 VA		292980 VA		289937 VA					
		TOTAL AMP:		1084 A		1059 A		1047 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
HVAC	480858 VA	100.00%	480858 VA		
KITCHEN EQUIPMENT - NON-DWELLING UNIT	157478 VA	65.00%	102360 VA	**CONNECTED LOAD:**	883 kVA
Lighting - Exterior	3695 VA	125.00%	4619 VA	**DEMAND LOAD:**	778 kVA
Motor	50140 VA	108.71%	54505 VA	**TOTAL CONNECTED:**	1062 A
RECEPTACLE	136108 VA	53.67%	73054 VA	**TOTAL DEMAND:**	936 A
POWER	21765 VA	100.00%	21765 VA		
LIGHTING	32541 VA	125.00%	40676 VA		

NOTES:

LOAD SUMMARY: BUILDING LOAD

DESCRIPTION	LOAD
FIRE PUMP TAP	0
MSB	882585
	882585 VA
	1062 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC	480858 VA	100.00%	480858 VA		
KITCHEN EQUIPMENT - NON-DWELLING UNIT	157478 VA	65.00%	102360 VA	**CONNECTED LOAD:**	883 kVA
Lighting - Exterior	3695 VA	125.00%	4619 VA	**DEMAND LOAD:**	778 kVA
Motor	50140 VA	108.71%	54505 VA	**TOTAL CONNECTED:**	1062 A
RECEPTACLE	136108 VA	53.67%	73054 VA	**TOTAL DEMAND:**	936 A
POWER	21765 VA	100.00%	21765 VA		
LIGHTING	32541 VA	125.00%	40676 VA		

NOTES:

PANEL NAME: EL1C

PANEL LOCATION: JC 315
ENCLOSURE: TYPE 1
MOUNTING: RECESSED

MAIN: MLO
BUSSING: 125 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 277/480 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 10,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1	EM LTG – RMS 300, 310,311,330,320,321-3	20 A	1	0	0					1	20 A	EM LTG – CORR 302, 303	2
3	EM LTG – CLASSRMS 300-338	20 A	1			0	0			1	20 A	SPARE	4
5	SPARE	20 A	1					0	0	1	20 A	SPARE	6
7	SPARE	20 A	1	0	0					1	20 A	SPARE	8
9	SPARE	20 A	1			0	0			1	20 A	SPARE	10
11	SPARE	20 A	1					0	0	1	20 A	SPARE	12
13	SPACE	--	1	--	--					1	--	SPACE	14
15	SPACE	--	1			--	--			1	--	SPACE	16
17	SPACE	--	1					--	--	1	--	SPACE	18
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
		TOTAL LOAD:		0 VA		0 VA		0 VA					
		TOTAL AMP:		0 A		0 A		0 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
				CONNECTED LOAD:	0 kVA
				DEMAND LOAD:	0 kVA
				TOTAL CONNECTED:	0 A
				TOTAL DEMAND:	0 A

NOTES:
1. LIGHTING LOAD FOR "EM LTG" AND "LTG GTD" IS SHOWN ON NORMAL POWER CIRCUITS SO THE LOAD IS NOT COUNTED TWICE ON THE BUILDING SERVICE.
2. PROVIDE WITH SURGE PROTECTION.

PANEL NAME: EL1B

PANEL LOCATION: JC 125
ENCLOSURE: TYPE 1
MOUNTING: SURFACE

MAIN: MLO
BUSSING: 125 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 277/480 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 10,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1	EM LTG – CLASSRMS 110-115	20 A	1	0	0					1	20 A	EM LTG – CORR. 100-102, TS 120-123, 125	2
3	EM LTG – CLASSRMS 130-140	20 A	1			0	0			1	20 A	EM LTG – CORR. 202, TS 131-141	4
5	SPARE	20 A	1					0	0	1	20 A	SPARE	6
7	SPARE	20 A	1	0	0					1	20 A	SPARE	8
9	SPARE	20 A	1			0	0			1	20 A	SPARE	10
11	SPACE	--	1					--	--	1	--	SPACE	12
13	SPACE	--	1	--	--					1	--	SPACE	14
15	SPACE	--	1			--	--			1	--	SPACE	16
17	SPACE	--	1					--	--	1	--	SPACE	18
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
		TOTAL LOAD:		0 VA		0 VA		0 VA					
		TOTAL AMP:		0 A		0 A		0 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
				CONNECTED LOAD:	0 kVA
				DEMAND LOAD:	0 kVA
				TOTAL CONNECTED:	0 A
				TOTAL DEMAND:	0 A

NOTES:
1. LIGHTING LOAD FOR "EM LTG" AND "LTG GTD" IS SHOWN ON NORMAL POWER CIRCUITS SO THE LOAD IS NOT COUNTED TWICE ON THE BUILDING SERVICE.
2. PROVIDE WITH SURGE PROTECTION.

PANEL NAME: EL1A

PANEL LOCATION: EM. ELEC 283
ENCLOSURE: TYPE 1
MOUNTING: SURFACE

MAIN: MLO
BUSSING: 100A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 277/480 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 35,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1	EM LTG – CRMS 210, 221, TS 211-2,215,22-3,I 232-237	20 A	1	0	0					1	20 A	EM LTG – CORR. 201, 202, 205	2
3	EM LTG – GYM 230	20 A	1			0	0			1	20 A	EM LTG - RMS 240, 242, 886, 244-5,252-3,250-1	4
5	EM LTG – GYM 230	20 A	1					0	0	1	20 A	SPAREEM LTG – CORR. 204, 202,TS 160-1, 270-1,...	6
7				0	0								8
9	EL1B	50 A	3			0	0			3	50 A	EL1C	10
11								0	0				12
13	SPARE	20 A	1	0	0					1	20 A	SPARE	14
15	SPARE	20 A	1			0	0			1	20 A	SPARE	16
17	SPARE	20 A	1					0	0	1	20 A	SPARE	18
19	SPARE	20 A	1	0	0					1	20 A	SPARE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
		TOTAL LOAD:		0 VA		0 VA		0 VA					
		TOTAL AMP:		0 A		0 A		0 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
				CONNECTED LOAD:	0 kVA
				DEMAND LOAD:	0 kVA
				TOTAL CONNECTED:	0 A
				TOTAL DEMAND:	0 A

NOTES:
1. LIGHTING LOAD FOR "EM LTG" AND "LTG GTD" IS SHOWN ON NORMAL POWER CIRCUITS SO THE LOAD IS NOT COUNTED TWICE ON THE BUILDING SERVICE.
2. PROVIDE WITH SURGE PROTECTION.

PANEL NAME: SR1B

PANEL LOCATION: JC 125
ENCLOSURE: TYPE 1
MOUNTING: SURFACE

MAIN: MLO
BUSSING: 125 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 120/208 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 10,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1	REC - DATA RACK - ELEC/IDF 124	20 A	1	720	750					2	20 A	REC - DATA RACK - ELEC/IDF 124	2
3	REC - DATA RACK - ELEC/IDF 124	20 A	1			1000	750						4
5	DUCT SMOKES - CORRIDORS 101, 102	20 A	1					300	400	1	20 A	DUCT SMOKES - CORRIDORS 202	6
7	SPARE	20 A	1	0	0					1	20 A	SPARE	8
9	SPARE	20 A	1			0	0			1	20 A	SPARE	10
11	SPACE	--	1					--	--	1	--	SPACE	12
13	SPACE	--	1	--	--					1	--	SPACE	14
15	SPACE	--	1			--	--			1	--	SPACE	16
17	SPACE	--	1					--	--	1	--	SPACE	18
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
		TOTAL LOAD:		1470 VA		1750 VA		700 VA					
		TOTAL AMP:		13 A		16 A		6 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
RECEPTACLE	3220 VA	100.00%	3220 VA		
POWER	700 VA	100.00%	700 VA	**CONNECTED LOAD:**	4 kVA
				DEMAND LOAD:	4 kVA
				TOTAL CONNECTED:	11 A
				TOTAL DEMAND:	11 A

NOTES:
1. PROVIDE WITH SURGE PROTECTION.
2. PANELBOARD TO BE PROVIDED WITH INTEGRAL BRANCH CIRCUIT METERING FUNCTIONALITY FOR ALL CIRCUITS EQUAL TO SCHNEIDER BCPM SERIES PANELBOARD MONITORING SYSTEMS.

PANEL NAME: SR1A

PANEL LOCATION: EM. ELEC 283
ENCLOSURE: TYPE 1
MOUNTING: SURFACE

MAIN: 400 A
BUSSING: 400 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 120/208 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 10,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1	GAP - RECP 241	20 A	1	800	1470								2
3	FACP - CORR 886	20 A	1			800	1750			3	125 A	SR1B	4
5	MAGNETIC DOOR HOLDERS - CORRIDORS 101, 202	20 A	1					300	700				6
7	DUCT SMOKES - CORRIDORS 203, 204	20 A	1	450	550					1	20 A	MAGNETIC DOOR HOLDERS - CORRIDORS 204, 205,...	8
9	B-1 - BOILER/MECH 281	20 A	1			1200	550			1	20 A	DUCT SMOKES - CORRIDORS 302, 303	10
11	MOTORIZED DAMPERS - FIRE PUMP ROOM 284	20 A	1					1000	528	1	20 A	UH-1 - FIRE PUMP RM 284, UH-2 - BOILER 281	12
13	REC - EXTERIOR - GENERATOR AREA	20 A	1	360	1200					1	20 A	B-2 - BOILER/MECH 281	14
15	REC - MDF 262	20 A	1			500	1872			2	20 A	REC - MDF 262	16
17	REC - DATA RACK - MDF 262	20 A	1					1000	1872				18
19	REC - MDF 262	20 A	1	500	1000					1	20 A	REC - MDF 262	20
21	REC - GYM TECH RACK - GYM STORAGE 231	20 A	1			360	360			1	20 A	REC - CAFETERIA TECH RACK - STORAGE 275	22
23	REC - GEN USE - ELECT 282, EM ELEC 283	20 A	1					540	720	1	20 A	REC - GEN USE - BOILER/MECH 281	24
25	MECHANICAL CONTROLS - BOILER/MECH 281	20 A	1	180	1332					1	15 A	REC - FSE#12 - COLD SERVING, #13 - MILK COOLER	26
27	FSE#57 - WALK-IN LIGHTS, DOORS, HEATERS	20 A	1			1200	1200			1	20 A	FSE#57 - WALK-IN LIGHTS, DOORS, HEATERS	28
29	FSE#57.1A & B - WALK-IN COOLER EVAPORATOR	20 A	1					480	1487	2	20 A	FSE#57.2 - WALK-IN FREEZER EVAPORATOR	30
31	FSE#57.3 - WALK-IN FREEZER EVAPORATOR	20 A	2	1560	1487								32
33						1560	2534						34
35	REC - FSE#73 - PASS-THRU REFRIGERATOR	20 A	1					660	2534	3	30 A	FSE#57.4 - WALK-IN FREEZER CONDENSER	36
37				832	2534								38
39	KEF-1 - ROOF	15 A	2			832	302						40
41	REC - FSE#64 - REACH-IN FREEZER	20 A	1					180	302	2	15 A	KEF-2 - ROOF	42
43	FSE#66.2 - HOOD USER INTERFACE	20 A	1	240	500					1	20 A	HOOD FIRE SUPPRESSON SYSTEM	44
45	FSE#57.2 NOTE #9 - WALK-IN FREEZER HEAT TAPE	20 A	1			1200	1872			2	20 A	REC - DATA RACK - IT / ELEC 310	46
47	REC - IT / ELEC 310	20 A	1					360	1872				48
49	REC - IT / ELEC 310	20 A	1	360	1000					1	20 A	REC - DATA RACK - IT / ELEC 310	50
51	SPARE	20 A	1			0	0			1	20 A	SPARE	52
53	SPARE	20 A	1					0	0	1	20 A	SPARE	54
55	SPARE	20 A	1	0	0					1	20 A	SPARE	56
57	SPACE	--	1			--	--			1	--	SPACE	58
59	SPACE	--	1					--	--	1	--	SPACE	60
		TOTAL LOAD:		16355 VA		18092 VA		14535 VA					
		TOTAL AMP:		139 A		153 A		121 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
KITCHEN EQUIPMENT - NON-DWELLING UNIT	20688 VA	65.00%	13447 VA		
Motor	2267 VA	118.35%	2683 VA	**CONNECTED LOAD:**	49 kVA
RECEPTACLE	17948 VA	77.86%	13974 VA	**DEMAND LOAD:**	38 kVA
POWER	8078 VA	100.00%	8078 VA	**TOTAL CONNECTED:**	136 A
				TOTAL DEMAND:	106 A

NOTES:
1. PROVIDE WITH SURGE PROTECTION.
2. PANELBOARD TO BE PROVIDED WITH INTEGRAL BRANCH CIRCUIT METERING FUNCTIONALITY FOR ALL CIRCUITS EQUAL TO SCHNEIDER BCPM SERIES PANELBOARD MONITORING SYSTEMS.

PANEL NAME: SL1A

PANEL LOCATION: EM. ELEC 283
ENCLOSURE: TYPE 1
MOUNTING: SURFACE

MAIN: MLO
BUSSING: 400 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 277/480 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 42,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1				16355	21062								2
3	T-S (SR1A)	175 A	3			18092	21062			3	100 A	RTU-7 - ROOF	4
5								14535	21062				6
7				21062	20785								8
9	RTU-6 - ROOF	100 A	3			21062	20785			3	30 A	RTU-3 - ROOF	10
11								21062	20765				12
13				942	942								14
15	CP-1 - BOILER/MECH 281	15 A	3			942	942			3	15 A	CP-2 - BOILER/MECH 281	16
17								942	942				18
19				2106	2106								20
21	P-1 - BOILER/MECH 281	15 A	3			2106	2106			3	15 A	P-2 - BOILER/MECH 281	22
23								2106	2106				24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
		TOTAL LOAD:		85360 VA		87096 VA		83539 VA					
		TOTAL AMP:		309 A		315 A		302 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
HVAC	188723 VA	100.00%	188723 VA		
KITCHEN EQUIPMENT - NON-DWELLING UNIT	20688 VA	65.00%	13447 VA	**CONNECTED LOAD:**	256 kVA
Motor	20558 VA	107.68%	22137 VA	**DEMAND LOAD:**	246 kVA
RECEPTACLE	17948 VA	77.86%	13974 VA	**TOTAL CONNECTED:**	308 A
POWER	8078 VA	100.00%	8078 VA	**TOTAL DEMAND:**	296 A

NOTES:
1. PROVIDE WITH SURGE PROTECTION.
2. PANELBOARD TO BE PROVIDED WITH INTEGRAL BRANCH CIRCUIT METERING FUNCTIONALITY FOR ALL CIRCUITS EQUAL TO SCHNEIDER BCPM SERIES PANELBOARD MONITORING SYSTEMS.

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SES Project # 23 0588 03

Lewton School
Lansing School District
2000 Lewton Pl.
Lansing, MI 48915

STATE OF MICHIGAN
SCOTT E. TOWNSEND
ENGINEER
No. 6201050400
LICENSED PROFESSIONAL ENGINEER
10/10/2025

Lansing School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
PANEL SCHEDULES - SERVICE AND EM PANELS

SHEET NO.
E6.0

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PANEL NAME: LL1B

PANEL LOCATION: JC 125
ENCLOSURE: TYPE 1
MOUNTING: SURFACE

MAIN: MLO
BUSSING: 125 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 277/480 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 10,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1	LTG - RMS 115, 113, 111	20 A	1	1584	2664					1	20 A	LTG - RMS 131, 135, 139, 134, 138, 130	2
3	LTG - RMS 114, 112, 110	20 A	1			1584	2664			1	20 A	LTG - RMS 132, 133, 137, 141, 136, 140	4
5	LTG - RMS 101, 102, 100	20 A	1					1079	586	1	20 A	LTG - RMS 202	6
7	LTG - EXTERIOR LIGHTING UNIT 100	20 A	1	2884	0					1	20 A	SPARE	8
9	SPARE	20 A	1			0	0			1	20 A	SPARE	10
11	SPARE	20 A	1					0	--	1	--	SPACE	12
13	SPACE	--	1	--	--					1	--	SPACE	14
15	SPACE	--	1			--	--			1	--	SPACE	16
17	SPACE	--	1					--	--	1	--	SPACE	18
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
		TOTAL LOAD:		7132 VA		4248 VA		1665 VA					
		TOTAL AMP:		27 A		17 A		6 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
Lighting - Exterior	2884 VA	125.00%	3605 VA		
LIGHTING	10161 VA	125.00%	12701 VA	CONNECTED LOAD:	13 kVA
				DEMAND LOAD:	16 kVA
				TOTAL CONNECTED:	16 A
				TOTAL DEMAND:	20 A

NOTES:

PANEL NAME: LL1A

PANEL LOCATION: ELECT. 282
ENCLOSURE: TYPE 1
MOUNTING: SURFACE

MAIN: MLO
BUSSING: 125 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 277/480 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 42,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1	LIGHTING JC 214	20 A	1	1610	1506					1	20 A	LIGHTING VESTIBULE 201	2
3	LIGHTING GYM STORAGE 231	20 A	1			859	1579			1	20 A	LIGHTING SECURITY 251	4
5	LTG - GYMNASIUM 230	20 A	1					1920	1831	1	20 A	LIGHTING MEN 260	6
7	LTG - GYMNASIUM 230	20 A	1	1920	2826					1	20 A	LIGHTING ART STOR 277	8
9	LTG - EXTERIOR LIGHTING UNIT 200	20 A	1			603	7132						10
11								3485	4248	3	50 A	LL1B	12
13	LL1C	50 A	3	2640	1665								14
15						1912	0			1	20 A	SPARE	16
17	SPARE	20 A	1					0	0	1	20 A	SPARE	18
19	SPARE	20 A	1	0	0					1	20 A	SPARE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
		TOTAL LOAD:		12167 VA		12085 VA		11484 VA					
		TOTAL AMP:		44 A		44 A		41 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
Lighting - Exterior	3695 VA	125.00%	4619 VA		
LIGHTING	32041 VA	125.00%	40051 VA	CONNECTED LOAD:	36 kVA
				DEMAND LOAD:	45 kVA
				TOTAL CONNECTED:	43 A
				TOTAL DEMAND:	54 A

NOTES:

PANEL NAME: KL1

PANEL LOCATION: ELECT. 282
ENCLOSURE: TYPE 1
MOUNTING: SURFACE

MAIN: MLO
BUSSING: 250 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 277/480 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 42,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1				19039	1885								2
3	FSE#31 - DISH MACHINE	90 A	3			19039	1885			3	20 A	FSE#31.1 - BLOWER DRYER	4
5								19039	1885				6
7				25529	0					1	20 A	SPARE	8
9	T-K (KR1)	175 A	3			24780	0			1	20 A	SPARE	10
11								23708	0	1	20 A	SPARE	12
13	SPARE	20 A	1	0	--					1	--	SPACE	14
15	SPARE	20 A	1			0	--			1	--	SPACE	16
17	SPARE	20 A	1					0	--	1	--	SPACE	18
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
		TOTAL LOAD:		46453 VA		45704 VA		44632 VA					
		TOTAL AMP:		168 A		166 A		161 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
KITCHEN EQUIPMENT - NON-DWELLING UNIT	136789 VA	65.00%	88913 VA		
				CONNECTED LOAD:	137 kVA
				DEMAND LOAD:	89 kVA
				TOTAL CONNECTED:	165 A
				TOTAL DEMAND:	107 A

NOTES:

PANEL NAME: ML1A

PANEL LOCATION: ELECT. 282
ENCLOSURE: TYPE 1
MOUNTING: SURFACE

MAIN: MLO
BUSSING: 600 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 277/480 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 65,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1				7106	5820								2
3	T-M	125 A	3			7227	5820			3	40 A	BP-1 - BOILER/MECH 281	4
5								7625	5820				6
7				21062	21062								8
9	RTU-1 - ROOF	100 A	3			21062	21062			3	100 A	RTU-2 - ROOF	10
11								21062	21062				12
13				6651	9977								14
15	RTU-5 - ROOF	30 A	3			6651	9977			3	45 A	RTU-4 - ROOF	16
17								6651	9977				18
19				33532	887								20
21	RTU-8 - ROOF	150 A	3			33532	887			3	15 A	MAU-1 - ROOF	22
23								33532	887				24
25	SPARE	20 A	1	0	0					1	20 A	SPARE	26
27	SPARE	20 A	1			0	0			1	20 A	SPARE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
		TOTAL LOAD:		106096 VA		106217 VA		106614 VA					
		TOTAL AMP:		383 A		384 A		385 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
HVAC	291343 VA	100.00%	291343 VA		
Motor	23554 VA	118.53%	27919 VA	CONNECTED LOAD:	319 kVA
POWER	4029 VA	100.00%	4029 VA	DEMAND LOAD:	323 kVA
				TOTAL CONNECTED:	384 A
				TOTAL DEMAND:	389 A

NOTES:

PANEL NAME: LL1C

PANEL LOCATION: JC 315
ENCLOSURE: TYPE 1
MOUNTING: SURFACE

MAIN: MLO
BUSSING: 125 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 277/480 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 10,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1	LTG RMS 313, 314, 315, 312, 310, 311	20 A	1	1902	1160					1	20 A	LTG CORRIDOR 302	2
3	LTG CLASSROOMS 334	20 A	1			1584	1056			1	20 A	LTG CLASSROOMS 331	4
5	LTG CLASSROOMS 333	20 A	1					1584	328	1	20 A	LTG - EXTERIOR LIGHTING UNIT 300	6
7	LIGHTING CORRIDOR 301	20 A	1	423	0					1	20 A	SPARE	8
9	SPARE	20 A	1			0	--			1	--	SPACE	10
11	SPARE	20 A	1					0	--	1	--	SPACE	12
13	SPACE	--	1	--	--					1	--	SPACE	14
15	SPACE	--	1			--	--			1	--	SPACE	16
17	SPACE	--	1					--	--	1	--	SPACE	18
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
		TOTAL LOAD:		3485 VA		2640 VA		1912 VA					
		TOTAL AMP:		13 A		10 A		7 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
Lighting - Exterior	328 VA	125.00%	410 VA		
LIGHTING	7709 VA	125.00%	9636 VA	CONNECTED LOAD:	8 kVA
				DEMAND LOAD:	10 kVA
				TOTAL CONNECTED:	10 A
				TOTAL DEMAND:	12 A

NOTES:

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SES Project # 23 0588 03

Lewton School

Lansing School District

2000 Lewton Pl.
Lansing, MI 48915

STATE OF MICHIGAN
SCOTT E. TOWNSEND
ENGINEER
No. 6201050450
LICENSED PROFESSIONAL ENGINEER

10/10/2025

Lansing® School District

ISSUANCES	DATE
DESIGN DEVELOPMENT	05.02.2025
CONSTRUCTION DOCUMENTS	10.10.2025

LSD NO. SB-0064
JOB NO. 2616.01G

SHEET TITLE
PANEL SCHEDULES - 480V

SHEET NO.
E6.1

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PANEL NAME: HR1C

PANEL LOCATION: JC 315
ENCLOSURE: TYPE 1
MOUNTING: RECESSED

MAIN: MLO
BUSSING: 125 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 120/208 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 10,000

CKT	DESCRIPTION	BKR SIZE	P	A	B	C	P	BKR SIZE	DESCRIPTION	CKT
1	REC - JC 315, CORR 301, 302	20 A	1	900 180			1	20 A	REC - DRINKING FOUNTAIN - CORR 301	2
3	REC - SCIENCE 311	20 A	1		540 900		1	20 A	REC - SCIENCE 311	4
5	REC - SCIENCE 311	20 A	1			720 540	1	20 A	REC - ABOVE COUNTER - SCIENCE 311	6
7	FB REC - SCIENCE 330	20 A	1	1080 1080			1	20 A	FB REC - SCIENCE 330	8
9	REC - OFFICE 313	20 A	1		720 720		1	20 A	REC - OFFICE 314	10
11	REC - RESOURCE 330	20 A	1			720 900	1	20 A	REC - RESOURCE 330	12
13	REC - GIRLS 320, BOYS 322, STAFF 323	20 A	1	720 180			1	20 A	REC - DRINKING FOUNTAIN - CORR 302	14
15	REC - ABOVE COUNTER - RESOURCE 330	20 A	1		180 180		1	20 A	REC - LAPTOP CHARGING - RESOURCE 330	16
17	REC - MS CLASSROOM 331	20 A	1			720 900	1	20 A	REC - MS CLASSROOM 331	18
19	REC - ABOVE COUNTER - MS CLASSROOM 331	20 A	1	180 180			1	20 A	REC - LAPTOP CHARGING - MS CLASSROOM 331	20
21	REC - MS CLASSROOM 332	20 A	1		720 900		1	20 A	REC - MS CLASSROOM 332	22
23	REC - ABOVE COUNTER - MS CLASSROOM 332	20 A	1			180 180	1	20 A	REC - LAPTOP CHARGING - MS CLASSROOM 332	24
25	REC - MS CLASSROOM 333	20 A	1	720 900			1	20 A	REC - MS CLASSROOM 333	26
27	REC - ABOVE COUNTER - MS CLASSROOM 333	20 A	1		180 180		1	20 A	REC - LAPTOP CHARGING - MS CLASSROOM 333	28
29	REC - MS CLASSROOM 334	20 A	1			720 900	1	20 A	REC - MS CLASSROOM 334	30
31	REC - ABOVE COUNTER - MS CLASSROOM 334	20 A	1	180 180			1	20 A	REC - LAPTOP CHARGING - MS CLASSROOM 334	32
33	REC - MS CLASSROOM 335	20 A	1		720 900		1	20 A	REC - MS CLASSROOM 335	34
35	REC - ABOVE COUNTER - MS CLASSROOM 335	20 A	1			180 180	1	20 A	REC - LAPTOP CHARGING - MS CLASSROOM 335	36
37	REC - MS CLASSROOM 336	20 A	1	720 900			1	20 A	REC - MS CLASSROOM 336	38
39	REC - ABOVE COUNTER - MS CLASSROOM 336	20 A	1		180 180		1	20 A	REC - LAPTOP CHARGING - MS CLASSROOM 336	40
41	REC - MS CLASSROOM 337	20 A	1			720 900	1	20 A	REC - MS CLASSROOM 337	42
43	REC - ABOVE COUNTER - MS CLASSROOM 337	20 A	1	180 180			1	20 A	REC - LAPTOP CHARGING - MS CLASSROOM 337	44
45	REC - MS CLASSROOM 338	20 A	1		720 900		1	20 A	REC - MS CLASSROOM 338	46
47	REC - ABOVE COUNTER - MS CLASSROOM 338	20 A	1			180 180	1	20 A	REC - LAPTOP CHARGING - MS CLASSROOM 338	48
49	REC - EXTERIOR	20 A	1	360 720			1	20 A	REC - MAINTENANCE - ROOF	50
51	REC - MAINTENANCE - ROOF	20 A	1		540 1080		1	20 A	FB REC - SCIENCE 331	52
53	FB REC - SCIENCE 331	20 A	1			1080 540	1	20 A	REC - EXTERIOR LUNCH COURTYARD	54
55	REC - CORRIDORS 303	20 A	1	540 0			1	20 A	SPARE	56
57	SPARE	20 A	1		0 0		1	20 A	SPARE	58
59	SPARE	20 A	1			0 --	1	--	SPACE	60
61	SPACE	--	1	-- --			1	--	SPACE	62
63	SPACE	--	1		-- --		1	--	SPACE	64
65	SPACE	--	1			-- --	1	--	SPACE	66
67	SPACE	--	1	-- --			1	--	SPACE	68
69	SPACE	--	1		-- --		1	--	SPACE	70
71	SPACE	--	1			-- --	1	--	SPACE	72
73	SPACE	--	1	-- --			1	--	SPACE	74
75	SPACE	--	1		-- --		1	--	SPACE	76
77	SPACE	--	1			-- --	1	--	SPACE	78
79	SPACE	--	1	-- --			1	--	SPACE	80
81	SPACE	--	1		-- --		1	--	SPACE	82
83	SPACE	--	1			-- --	1	--	SPACE	84
	TOTAL LOAD:			10080 VA	10440 VA	10440 VA				
	TOTAL AMP:			84 A	87 A	87 A				

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS
RECEPTACLE	30960 VA	66.15%	20480 VA	**CONNECTED LOAD:** 31 kVA
				DEMAND LOAD: 20 kVA
				TOTAL CONNECTED: 86 A
				TOTAL DEMAND: 57 A

NOTES:

PANEL NAME: HR1B

PANEL LOCATION: JC 125
ENCLOSURE: TYPE 1
MOUNTING: SURFACE

MAIN: MLO
BUSSING: 125 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 120/208 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 10,000

CKT	DESCRIPTION	BKR SIZE	P	A	B	C	P	BKR SIZE	DESCRIPTION	CKT
1	REC - CLASSROOM 110	20 A	1	720 900			1	20 A	REC - CLASSROOM 110	2
3	REC - ABOVE COUNTER - CLASSROOM 110	20 A	1		180 180		1	20 A	REC - LAPTOP CHARGING - CLASSROOM 110	4
5	REC - CLASSROOM 111	20 A	1			720 900	1	20 A	REC - CLASSROOM 111	6
7	REC - ABOVE COUNTER - CLASSROOM 111	20 A	1	180 180			1	20 A	REC - LAPTOP CHARGING - CLASSROOM 111	8
9	REC - CLASSROOM 112	20 A	1		720 900		1	20 A	REC - CLASSROOM 112	10
11	REC - ABOVE COUNTER - CLASSROOM 112	20 A	1			180 180	1	20 A	REC - LAPTOP CHARGING - CLASSROOM 112	12
13	REC - CLASSROOM 113	20 A	1	720 900			1	20 A	REC - CLASSROOM 113	14
15	REC - ABOVE COUNTER - CLASSROOM 113	20 A	1		180 180		1	20 A	REC - LAPTOP CHARGING - CLASSROOM 113	16
17	REC - CLASSROOM 114	20 A	1			720 900	1	20 A	REC - CLASSROOM 114	18
19	REC - ABOVE COUNTER - CLASSROOM 114	20 A	1	180 180			1	20 A	REC - LAPTOP CHARGING - CLASSROOM 114	20
21	REC - CLASSROOM 115	20 A	1		720 900		1	20 A	REC - CLASSROOM 115	22
23	REC - ABOVE COUNTER - CLASSROOM 115	20 A	1			180 180	1	20 A	REC - LAPTOP CHARGING - CLASSROOM 115	24
25	REC - 2ND GRADE 130	20 A	1	1080 900			1	20 A	REC - 2ND GRADE 130	26
27	REC - ABOVE COUNTER - 2ND GRADE 130	20 A	1		180 180		1	20 A	REC - ABOVE COUNTER - 2ND GRADE 130	28
29	REC - 2ND GRADE 132	20 A	1			900 900	1	20 A	REC - 2ND GRADE 132	30
31	REC - ABOVE COUNTER - 2ND GRADE 132	20 A	1	180 180			1	20 A	REC - LAPTOP CHARGING - 2ND GRADE 132	32
33	REC - KINDERGARTEN 134	20 A	1		1260 900		1	20 A	REC - KINDERGARTEN 134	34
35	REC - ABOVE COUNTER - KINDERGARTEN 134	20 A	1			180 180	1	20 A	REC - LAPTOP CHARGING - KINDERGARTEN 134	36
37	REC - 1ST GRADE 136	20 A	1	900 900			1	20 A	REC - 1ST GRADE 136	38
39	REC - ABOVE COUNTER - 1ST GRADE 136	20 A	1		180 180		1	20 A	REC - LAPTOP CHARGING - 1ST GRADE 136	40
41	REC - BOYS 120, STAFF 121, GIRLS 123	20 A	1			540 600	1	20 A	REC - DRINKING FOUNTAIN - CORRIDOR 101	42
43	REC - CORR 101, 102, ELEC/IDF 124, JC 125,...	20 A	1	1080 1800			1	20 A	REC - GEN USE - CORR 202, 203	44
45	REC - DRINKING FOUNTAIN - CORR 202	20 A	1		600 360		1	20 A	REC - EXTERIOR	46
47	REC - KINDERGARTEN 138	20 A	1			1260 900	1	20 A	REC - KINDERGARTEN 138	48
49	REC - ABOVE COUNTER - KINDERGARTEN 138	20 A	1	180 180			1	20 A	REC - LAPTOP CHARGING - KINDERGARTEN 138	50
51	REC - 1ST GRADE 140	20 A	1		900 900		1	20 A	REC - 1ST GRADE 140	52
53	REC - ABOVE COUNTER - 1ST GRADE 140	20 A	1			180 180	1	20 A	REC - LAPTOP CHARGING - 1ST GRADE 140	54
55	REC - PRE - K 210	20 A	1	1080 900			1	20 A	REC - PRE - K 210	56
57	REC - ABOVE COUNTER - PRE - K 210	20 A	1		180 180		1	20 A	REC - LAPTOP CHARGING - PRE - K 210	58
59	REC - PRE -K 221	20 A	1			1080 900	1	20 A	REC - PRE -K 221	60
61	REC - ABOVE COUNTER - PRE -K 221	20 A	1	180 180			1	20 A	REC - LAPTOP CHARGING - PRE -K 221	62
63	REC - STAFF TR 215	20 A	1		180 720		1	20 A	REC - SENSORY 213	64
65	REC - RESOURCE 216	20 A	1			1080 180	1	20 A	REC - ABOVE COUNTER - RESOURCE 216	66
67	REC - ITTN OFFICE 217 & 218	20 A	1	720 900			1	20 A	REC - ITTN OFFICE 218 & 219	68
69	REC - LIBRARY 220	20 A	1		900 720		1	20 A	REC - LIBRARY 220	70
71	REC - EXTERIOR FRONT ENTRY	20 A	1			360 360	1	20 A	REC - EXTERIOR SOUTH WING	72
73	REC - SITE HOT-BOX STRUCTURE	20 A	1	1000 1000			1	20 A	REC - SITE HOT-BOX STRUCTURE	74
75	REC - MONUMENT SIGN WIRELESS RECEIVER- SITE	20 A	1		500 500		1	20 A	REC - MONUMENT SIGN - ILLUMINATION - SITE	76
77	REC - LIBRARY 220	20 A	1			900 264	1	20 A	UH - JC 124	78
79	SPARE	20 A	1	0 180			1	20 A	REC - EXTERIOR	80
81	SPARE	20 A	1		0 0		1	20 A	SPARE	82
83	SPARE	20 A	1			0 0	1	20 A	SPARE	84
	TOTAL LOAD:			17480 VA	13480 VA	14904 VA				
	TOTAL AMP:			147 A	112 A	126 A				

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS
HVAC	264 VA	100.00%	264 VA	
RECEPTACLE	44600 VA	61.21%	27300 VA	**CONNECTED LOAD:** 46 kVA
POWER	1000 VA	100.00%	1000 VA	**DEMAND LOAD:** 29 kVA
				TOTAL CONNECTED: 127 A
				TOTAL DEMAND: 79 A

NOTES:

PANEL NAME: BR1A

PANEL LOCATION: ELECT. 282
ENCLOSURE: TYPE 1
MOUNTING: SURFACE

MAIN: 175 A
BUSSING: 225 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 120/208 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 10,000

CKT	DESCRIPTION	BKR SIZE	P	A	B	C	P	BKR SIZE	DESCRIPTION	CKT
1	AUTOMATIC FAUCET - BOYS 120, GIRLS 123	20 A	1	1080 1176			1	20 A	COIL DOOR - SERVERY270	2
3	AUTOMATIC FAUCET - MEN 260, WOMEN 261	20 A	1		1080 1176		1	20 A	COIL DOOR - SERVERY 270	4
5	AUTOMATIC DOOR OPENER - VEST 200, WELCOME...	20 A	1			230 500	1	20 A	MASTER INTERCOM - RECEP 241	6
7	GYM EQUIPMENT CONTROL PANEL	20 A	1	1000 667						8
9	BUILDING SIGNAGE	20 A	1		500 667		3	20 A	BLEACHERS - GYMNASIUM 424	10
11	OVERHEAD DOOR - RECEIVING	20 A	1			1176 667				12
13	MOTORIZED SHADES - CAFETERIA	20 A	1	1000 1000			1	20 A	MOTORIZED SHADES - CAFETERIA	14
15	BLOCK HEATER - GENERATOR	20 A	1		1200 1200		1	20 A	BATTERY CHARGER - GENERATOR	16
17	AUTOMATIC FAUCET - GIRLS 320, BOYS 323	20 A	1			1080 250	2	20 A	COIL DOOR - SERVERY 270	18
19	SPARE	20 A	1	0 250						20
21	SPARE	20 A	1		0 0		1	20 A	SPARE	22
23	SPARE	20 A	1			0 0	1	20 A	SPARE	24
25	SPACE	--	1	-- 0			1	20 A	SPARE	26
27	SPACE	--	1		-- --		1	--	SPACE	28
29	SPACE	--	1			-- --	1	--	SPACE	30
31	SPACE	--	1	-- --			1	--	SPACE	32
33	SPACE	--	1		-- --		1	--	SPACE	34
35	SPACE	--	1			-- --	1	--	SPACE	36
37	SPACE	--	1	-- --			1	--	SPACE	38
39	SPACE	--	1		-- --		1	--	SPACE	40
41	SPACE	--	1			-- --	1	--	SPACE	42
	TOTAL LOAD:			6173 VA	5823 VA	3903 VA				
	TOTAL AMP:			54 A	51 A	33 A				

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS
Motor	4028 VA	107.30%	4322 VA	
RECEPTACLE	3240 VA	100.00%	3240 VA	**CONNECTED LOAD:** 16 kVA
POWER	8130 VA	100.00%	8130 VA	**DEMAND LOAD:** 16 kVA
LIGHTING	500 VA	125.00%	625 VA	**TOTAL CONNECTED:** 44 A
				TOTAL DEMAND: 45 A

NOTES:

PANEL NAME: HR1A

PANEL LOCATION: ELECT. 282
ENCLOSURE: TYPE 1
MOUNTING: SURFACE

MAIN: 400 A
BUSSING: 400 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 120/208 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 10,000

CKT	DESCRIPTION	BKR SIZE	P	A	B	C	P	BKR SIZE	DESCRIPTION	CKT
1				10080 17480						2
3	HR1B	125 A	3		10440 13480		3	125 A	HR1C	4
5						10440 14904				6
7	REC - TEACHER LOUNGE 252	20 A	1	900 720			1	20 A	REC - TEACHER LOUNGE 252	8
9	REC - VENDING - TEACHER LOUNGE 252	20 A	1		180 180		1	20 A	REC - COPIER - TEACHER LOUNGE 252	10
11	REC - ABOVE COUNTER - TEACHER LOUNGE 252	20 A	1			1500 1100	1	20 A	REC - MICROWAVE - TEACHER LOUNGE 252	12
13	REC - REFRIGERATOR - TEACHER LOUNGE 252	20 A	1	800 180			1	20 A	REC & EF-253 - STAFF 253	14
15	REC - PRINCIPAL 247	20 A	1		1080 900		1	20 A	REC - OFFICE 248	16
17	REC - OFFICE 249	20 A	1			900 900	1	20 A	REC - OFFICE 248	18
19	REC - ABOVE COUNTER - OFFICE SUPPORT 242	20 A	1	360 180			1	20 A	REC - ABOVE COUNTER - OFFICE SUPPORT 242	20
21	REC - PRINTER - OFFICE SUPPORT 242	20 A	1		180 180		1	20 A	REC - ABOVE COUNTER - OFFICE SUPPORT 242	22
23	REC - ABOVE COUNTER - OFFICE SUPPORT 242	20 A	1			180 180	1	20 A	REC - REFRIGERATOR - OFFICE SUPPORT 242	24
25	REC - GEN USE & MONITOR - CONFERENCE 250	20 A	1	720 900			1	20 A	REC/FB - GEN USE - CONFERENCE 250	26
27	REC - CONFERENCE 250	20 A	1		720 360		1	20 A	REC - ABOVE COUNTER - CONFERENCE 250	28
29	REC - SECURITY 251	20 A	1			720 1260	1	20 A	REC - CORR 204, 205, 203	30
31	REC - RECEP 241	20 A	1	360 2000			1	20 A	EF-253, 244, 245	32
33	REC - GEN USE - RECEIVING 280	20 A	1		720 1056		1	20 A	CUH-2- VEST 200, CUH-1- VEST 202, UH-2- RECE 280	34
35	REC - TOILET 244, 245	20 A	1			360 900	1	20 A	REC - WELCOME 240, RECEP 241, CLINIC 243	36
37	REC - CLINIC 243	20 A	1	180 180			1	20 A	REC - ABOVE COUNTER - CLINIC 243	38
39	REC - RECEP 241	20 A	1		540 180		1	20 A	REC - COMPUTER STATION - WELCOME 240	40
41	REC - COFFEE MAKER - WELCOME 240	20 A	1			180 360	1	20 A	REC - GEN USE - GYMNASIUM 230	42
43	REC - GEN USE - GYM 230	20 A	1	540 600			1	20 A	REC - SCOREBOARD - GYMNASIUM 230	44
45	REC - DRINKING FOUNTAIN - GYMNASIUM 230	20 A	1		600 540		1	20 A	REC - GEN USE - GYMNASIUM 230	46
47	REC - SCOREBOARD - GYMNASIUM 230	20 A	1			600 720	1	20 A	FB - GYMNASIUM 230	48
49	REC - OFFICE 238	20 A	1	720 180			1	20 A	REC - SHOWER 236	50
51	REC - SHOWER 233	20 A	1		180 180		1	20 A	REC - SHOWER 234	52
53	REC - ABOVE COUNTER - LAUNDRY 239	20 A	1			180 180	1	20 A	REC - CLOTHES WASHER - LAUNDRY 239	54
55	REC - CLOTHES DRYER - LAUNDRY 239	30 A	2	2200 720			1	20 A	REC - GYM 230, LOCKER 232, 235, 237	56
57					2200 360		1	20 A	REC - MONITOR - CORRIDOR 205	58
59	REC - DRINKING FOUNTAIN - CORR 205	20 A	1			600 1260	1	20 A	REC - MEN 260, WOMEN 261, JC 263, COR 205	60
61	REC - MUSIC / ART 276	20 A	1	900 900			1	20 A	REC - MUSIC / ART 276	62
63	REC - ABOVE COUNTER - MUSIC / ART 276	20 A	1		180 900		1	20 A	REC - STOR 275, ART STOR 277, CAFETERIA 274	64
65	REC - CAFETERIA 274	20 A	1			360 540	1	20 A	REC - CAFETERIA 274	66
67	REC - CAFETERIA 274	20 A	1	360 540			1	20 A	REC - CAFETERIA 274	68
69	REC - CAFETERIA 274	20 A	1		540 180		1	20 A	REC - CAFETERIA 274	70
71	REC - DRINKING FOUNTAIN - CAFETERIA 274	20 A	1			180 1260	1	20 A	REC - MAINTENANCE - ROOF	72
73	REC - EXTERIOR - RECEIVING	20 A	1	360 360			1	20 A	REC - RECEIVING 280	74
75	SPARE	20 A	1		0 0		1	20 A	SPARE	76
77	SPARE	20 A	1			0 0	1	20 A	SPARE	78
79	SPARE	20 A	1	0 0			1	20 A	SPARE	80
81	SPARE	20 A	1		0 0		1	20 A	SPARE	82
83	SPARE	20 A	1			0 0	1	20 A	SPARE	84
	TOTAL LOAD:			43420 VA	36056 VA	39764 VA				
	TOTAL AMP:			367 A	300 A	336 A				

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS
HVAC	792 VA	100.00%	792 VA	
Motor	2000 VA	106.25%	2125 VA	**CONNECTED LOAD:** 119 kVA
RECEPTACLE	114920 VA	54.35%	62460 VA	**DEMAND LOAD:** 67 kVA
POWER	1528 VA	100.00%	1528 VA	**TOTAL CONNECTED:** 331 A
				TOTAL DEMAND: 186 A

NOTES:

PANEL NAME: KR1

PANEL LOCATION: KITCHEN 271
ENCLOSURE: TYPE 1
MOUNTING: SURFACE

MAIN: 400 A
BUSSING: 400 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 120/208 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 10,000

CKT	DESCRIPTION	BKR SIZE	P	A	B	C	P	BKR SIZE	DESCRIPTION	CKT
1				1057 1057						2
3	FSE#27 - DISPOSER	20 A	3		1057 1057		3	20 A	FSE#39 - DISPOSER	4
5						1057 1057				6
7				4083 3579						8
9	(LOCKABLE) FSE#69 - INDUCTION RANGE	45 A	3		4083 3579		3	40 A	(LOCKABLE) FSE#71-1 - CONVECTION STEAMER	10
11						4083 3579				12
13	SHUNT TRIP BREAKER - FSE#69 - INDUCTION RANGE	--	1	-- --			1	--	SHUNT TRIP BREAKER - FSE#71 - CONVECTION...	14
15					3579 3723					16
17	(LOCKABLE) FSE#71-2 - CONVECTION STEAMER	40 A	3			3579 3723	3	40 A	(LOCKABLE) FSE#72-1 - CONVECTION OVEN	18
19				3579 3723						20
21	SHUNT TRIP BREAKER - FSE#71 - CONVECTION...	--	1		-- --		1	--	SHUNT TRIP BREAKER - FSE#72 - CONVECTION...	22
23						3723 749				24
25	(LOCKABLE) FSE#72-2 - CONVECTION OVEN	40 A	3	3723 749			2	20 A	REC - FSE#75 - PASS THRU HEATED CABINET	26
27					3723 720					28
29	SHUNT TRIP BREAKER - FSE#72 - CONVECTION...	--	1			-- 1440	1	15 A	FSE#1.1, 9.1, 12.1 - BREATH PROTECTION	30
31	REC - FSE#1 - HOT FOOD SERVING COUNTER	30 A	1	2000 540			1	20 A	REC - FSE GENERAL	32
33	REC - FSE#9 - HOT FOOD SERVING COUNTER	30 A	1		2000 180		1	20 A	REC - POS	34
35	REC - MENU BOARD	20 A	1			180 180	1	20 A	REC - FSE GENERAL	36
37	REC - MAINTENANCE	20 A	1	1080 360			1	20 A	REC - FSE GENERAL AT TABLE	38
39	REC - FSE GENERAL	20 A	1		900 180		1	20 A	REC - FSE GENERAL	40
41	REC - FSE GENERAL AT TABLE	20 A	1			360 0	1	20 A	SPARE	42
43	SPARE	20 A	1	0 0			1	20 A	SPARE	44
45	SPARE	20 A	1		0 0		1	20 A	SPARE	46
47	SPARE	20 A	1			0 0	1	20 A	SPARE	48
49	SPACE	--	1	-- --			1	--	SPACE	50
51	SPACE	--	1		-- --		1	--	SPACE	52
53	SPACE	--	1			-- --	1	--	SPACE	54
55	SPACE	--	1	-- --			1	--	SPACE	56
57	SPACE	--	1		-- --		1	--	SPACE	58
59	SPACE	--	1			-- --	1	--	SPACE	60
	TOTAL LOAD:			25529 VA	24780 VA	23708 VA				
	TOTAL AMP:			214 A	208 A	198 A				

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS
KITCHEN EQUIPMENT - NON-DWELLING UNIT	74017 VA	65.00%	48111 VA	
				CONNECTED LOAD: 74 kVA
				DEMAND LOAD: 48 kVA
				TOTAL CONNECTED: 205 A
				TOTAL DEMAND: 134 A

NOTES:

PANEL NAME: MR1A

PANEL LOCATION: ELECT. 282
ENCLOSURE: TYPE 1
MOUNTING: SURFACE

MAIN: 300 A
BUSSING: 400 A
GROUND BUS: STANDARD
NEUTRAL: 100.00%

VOLTAGE: 120/208 Wye
PHASE: 3
WIRE: 4
MIN A.I.C. RATING: 10,000

CKT	DESCRIPTION	BKR SIZE	P	A	B	C	P	BKR SIZE	DESCRIPTION	CKT
1	DWH-1 - BOILER/MECH 281	20 A	1	600 90			1	20 A	TOILET ROOM EF-131, 133, 135, 137, 139, 141	2
3	DWH-2 - BOILER/MECH 281	20 A	1		600 575		1	20 A	TOILET ROOM EF-211, 212, 214, 215, 221, 222	4
5	CUH - 300 WING	20 A	1			1056 792	1	20 A	CUH-1 - 100 WING	6
7	DRP-1 - BOILER/MECH 281	15 A	1	528 600			1	20 A	DWH-3 - BOILER/MECH 281	8
9	DRP-2 - BOILER/MECH 281	15 A	1		264 500		1	20 A	MOTORIZED DAMPERS- BOILER/MECH 281	10
11	EF-3 - ROOF	15 A	2			302 302	2	15 A	EF-2 - ROOF	12
13				302 302						14
15	EF-271 - ROOF	15 A	2		302 302		2	15 A	EF-4 - ROOF	16
17						302 302				18
19	EF-284 - ROOF	15 A	2	302 510			2	15 A	EF-281 - ROOF	20
21					302 510					22
23	CU-282 - ROOF	20 A	2			999 576	3	15 A	EF-311 - ROOF	24
25				999 576						26
27	CU-310 - ROOF	20 A	2		999 576					28
29						999 999	2	20 A	CU-262 - ROOF	30
31				1300 999						32
33	MR1B	100 A	3		1300 999		2	20 A	CU-283 - ROOF	34
35						0 999				36
37	SPARE	20 A	1	0 0			1	20 A	SPARE	38
39	SPARE	20 A	1		0 0		1	20 A	SPARE	40
41	SPACE	--	1	-- --			1	--	SPACE	42
43	SPACE	--	1		-- --		1	--	SPACE	44
45	SPACE	--	1			-- --	1	--	SPACE	46
47	SPACE	--	1	-- --			1	--	SPACE	48
49	SPACE	--	1		-- --		1	--	SPACE	50
51	SPACE	--	1			-- --	1	--	SPACE	52
53	SPACE	--	1	-- --			1	--	SPACE	54
55	SPACE	--	1		-- --		1	--	SPACE	56
57	SPACE	--	1			-- --	1	--	SPACE	58

PHOTOVOLTAIC KEYNOTES

N1 FOR SOLAREDGE INVERTERS AUTOMATIC RAPID SHUTDOWN IS INTEGRATED INTO THE SOLAR EDGE SYSTEM WITH POWER OPTIMIZERS. RAPID SHUTDOWN IS INITIATED UPON AC GRID DISCONNECTION. THIS METHOD COMPLIES WITH NEC 2017 ARTICLE 690.12. IF ANOTHER INVERTER MANUFACTURER IS SELECTED AS AN EQUAL VERIFY COMPLIANCE WITH THE STATED CODE SECTION AND IF ADDITIONAL RAPID SHUTDOWN DEVICES ARE REQUIRED PER MANUFACTURER RECOMMENDATIONS. THE PV SYSTEM SHALL BE LABELED TO INDICATE RAPID SHUTDOWN AS FOLLOWS: "SOLAR PV SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN" IN ACCORDANCE WITH NEC ARTICLE 690.

N2 AT EACH PV SYSTEM SOURCE DISCONNECTING MEANS PROVIDE A PERMANENT PLAQUE WITH A MAP OF THE ENTIRE PV SYSTEM WITH SYSTEM SIZE, LABELED ARRAYS, LABELED INVERTERS, AND DISCONNECT LOCATIONS. REFER TO NEC 705.10 AND DETAIL.

N3 COORDINATE WITH UTILITY FOR INSTALLATION OF BI-DIRECTIONAL UTILITY METER FOR SOLAR PHOTOVOLTAIC SYSTEM.

N4 COORDINATE WITH PHOTOVOLTAIC RACKING MANUFACTURER FOR GROUNDING CONNECTION TO ARRAY. GROUND SYSTEM IN ACCORDANCE WITH NEC ARTICLES 690 AND 250.

N5 PROVIDE PERMANENT LABEL PER INVERTER INDICATING ARRAY NUMBER AND INVERTER NUMBER AS FOLLOWS: ARRAY #X SYSTEM INVERTER #X

N6 LABEL FOR PV SYSTEM MAIN DISCONNECTING MEANS SHALL READ: PV SYSTEM DISCONNECT WARNING POWER SOURCE OUTPUT CIRCUIT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE. ELECTRIC SHOCK HAZARD. TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

PHOTOVOLTAIC KEYNOTES

N7 PROVIDE THE FOLLOWING PERMANENT LABEL. ADDITIONAL LOCATIONS FOR PLACEMENT OF THIS LABEL MAY BE STIPULATED BY THE AHJ UPON SITE REVIEW. LABEL SHALL READ: WARNING: THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE SHALL NOT EXCEED AMPACITY OF BUSBAR

N8 VERIFY PV CONDUCTOR SIZING REQUIREMENTS WITH INVERTER MANUFACTURER AND PV STRING SIZE. REFER TO INVERTER INSTALLATION MANUAL FOR RECOMMENDED PV CONDUCTOR SIZING AND COORDINATE WITH ENGINEER FOR VOLTAGE DROP OVER INDUSTRY STANDARD RUN LENGTHS FOR SYSTEM DC VOLTAGE SIZE. VERIFY ANTICIPATED PATH OF CONDUCTORS ON ROOF WITH ENGINEER BEFORE PROCEEDING WITH INSTALLATION PROVIDE DOCUMENTATION OF SYSTEM LAYOUT FOR ALTERNATE MODULES TO ENGINEER FOR APPROVAL.

N9 GENERAL ELECTRICAL CONTRACTOR TO PERFORM SCOPE OF WORK FOR PV SYSTEM ON AC SIDE OF DISTRIBUTION AND TO PROVIDE EMPTY CONDUIT STUBBED TO ROOF IN LOCATIONS SELECTED BY PV SYSTEM SUBCONTRACTOR. COORDINATE WITH LICENSED PV SYSTEM INSTALLATION PROFESSIONAL BEFORE PROCEEDING.

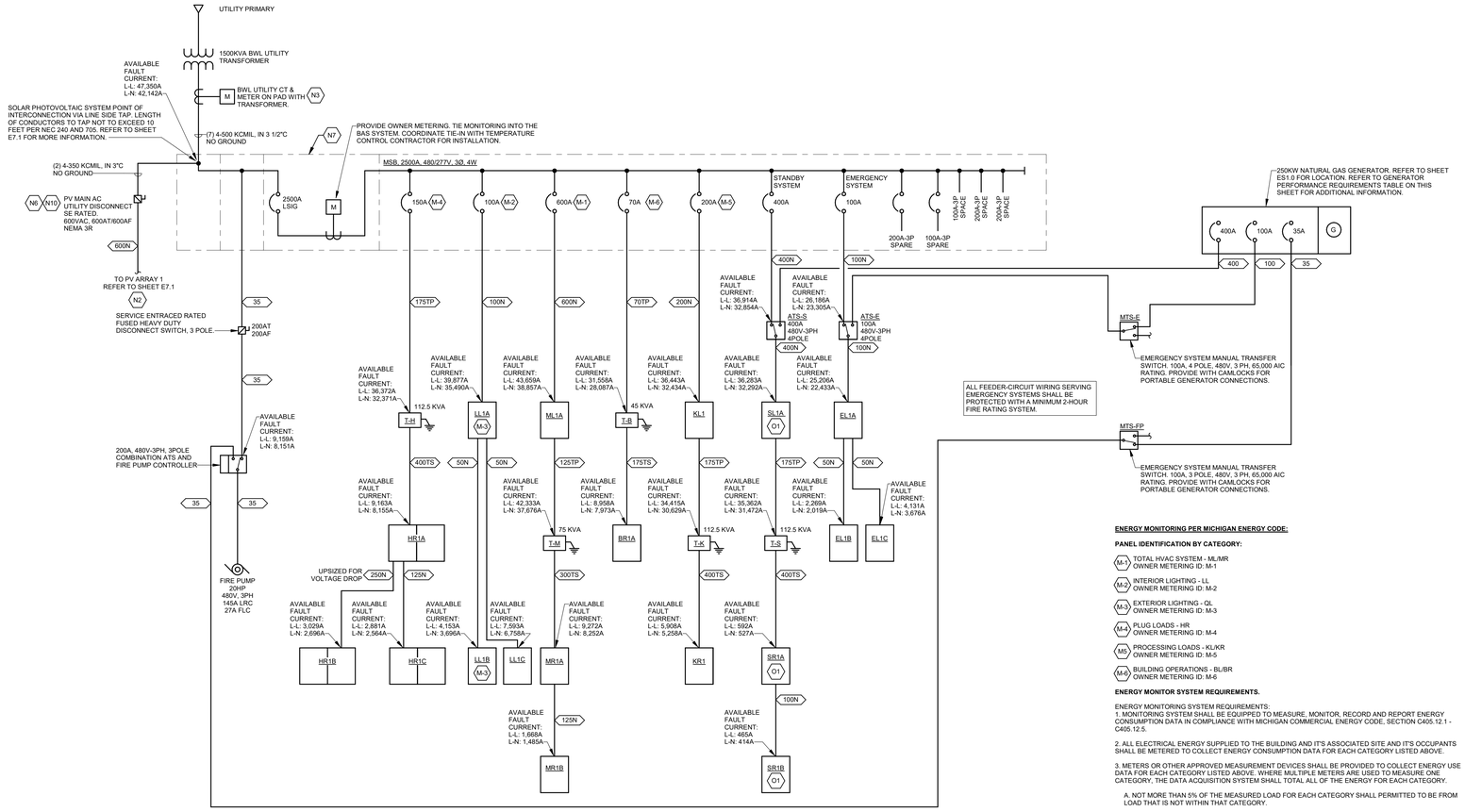
N10 PROVIDE A NEUTRAL CONDUCTOR FROM THE MAIN SERVICE INTO THE PV SYSTEM DISCONNECT AND BOND THE NEUTRAL, EQUIPMENT GROUNDING CONDUCTOR (EGC) FROM PV COMBINER PANEL, AND GROUNDING ELECTRODE CONDUCTOR (GEC) TO THE SERVICE DISCONNECT ENCLOSURE PER NEC 250.24(B), (C), AND (D).

PHOTOVOLTAIC GENERAL NOTES

1. PROVIDE ALL LABELING FOR SYSTEM COMPONENTS AS REQUIRED BY NEC ARTICLE 690 AND 705. WARNING SIGNS OR LABELS SHALL COMPLY WITH NEC ARTICLE 110.
2. PV WIRING ENCLOSURES THAT CONTAIN DC CONDUCTORS SUCH AS EXPOSED RACEWAYS, COVERS, PULL BOXES, AND JUNCTION BOXES, SHALL BE MARKED WITH THE WORDING WARNING: PHOTOVOLTAIC POWER SOURCE BY MEANS OF PERMANENTLY AFFIXED LABELS OR OTHER APPROVED MARKING

ELECTRICAL ONE-LINE KEYNOTES

O1 PANELBOARD TO BE PROVIDED WITH INTEGRAL BRANCH CIRCUIT METERING FUNCTIONALITY FOR ALL CIRCUITS EQUAL TO SCHNEIDER BCPM SERIES PANELBOARD MONITORING SYSTEMS.



ELECTRICAL ONE-LINE/RISER DIAGRAM

NO SCALE

ENERGY MONITORING PER MICHIGAN ENERGY CODE:

PANEL IDENTIFICATION BY CATEGORY:

- M-1 TOTAL HVAC SYSTEM - ML/MR OWNER METERING ID: M-1
- M-2 INTERIOR LIGHTING - LL OWNER METERING ID: M-2
- M-3 EXTERIOR LIGHTING - QL OWNER METERING ID: M-3
- M-4 PLUG LOADS - HR OWNER METERING ID: M-4
- M5 PROCESSING LOADS - KL/KR OWNER METERING ID: M-5
- M-6 BUILDING OPERATIONS - BL/BR OWNER METERING ID: M-6

ENERGY MONITOR SYSTEM REQUIREMENTS.

ENERGY MONITORING SYSTEM REQUIREMENTS:
1. MONITORING SYSTEM SHALL BE EQUIPPED TO MEASURE, MONITOR, RECORD AND REPORT ENERGY CONSUMPTION DATA IN COMPLIANCE WITH MICHIGAN COMMERCIAL ENERGY CODE, SECTION C405.12.1 - C405.12.5.

2. ALL ELECTRICAL ENERGY SUPPLIED TO THE BUILDING AND IT'S ASSOCIATED SITE AND IT'S OCCUPANTS SHALL BE METERED TO COLLECT ENERGY CONSUMPTION DATA FOR EACH CATEGORY LISTED ABOVE.

3. METERS OR OTHER APPROVED MEASUREMENT DEVICES SHALL BE PROVIDED TO COLLECT ENERGY USE DATA FOR EACH CATEGORY LISTED ABOVE. WHERE MULTIPLE METERS ARE USED TO MEASURE ONE CATEGORY, THE DATA ACQUISITION SYSTEM SHALL TOTAL ALL OF THE ENERGY FOR EACH CATEGORY.

A. NOT MORE THAN 5% OF THE MEASURED LOAD FOR EACH CATEGORY SHALL PERMITTED TO BE FROM LOAD THAT IS NOT WITHIN THAT CATEGORY.

B. MONITORING IS NOT REQUIRED FOR SYSTEMS THAT OPERATE ONLY DURING TESTING AND EMERGENCY.

4. METERS: METERS SHALL BE CONFIGURED TO AUTOMATICALLY COMMUNICATE ENERGY CONSUMPTION DATA TO THE REQUIRED DATA ACQUISITION SYSTEM.

5. DATA ACQUISITION SYSTEM: A DATA ACQUISITION SYSTEM SHALL HAVE THE CAPABILITY TO STORE THE LOGGED ENERGY CONSUMPTION DATA FOR EACH SYSTEM LISTED ABOVE FOR EVERY HOUR, DAY, MONTH AND YEAR FOR 36 MONTHS.

6. A GRAPHICAL ENERGY REPORTING: A PERMANENT AND READILY ACCESSIBLE REPORTING MECHANISM SHALL BE PROVIDED IN THE BUILDING BEING MONITORED, AND ACCESSIBLE BY BUILDING OPERATIONS. REPORTING MECHANISM SHALL HAVE THE CAPABILITY TO GRAPHICALLY PROVIDE THE ENERGY CONSUMPTION FOR EACH SYSTEM LISTED ABOVE, AT LEAST EVERY HOUR, DAY, MONTH AND YEAR FOR 36 MONTHS.

DRY TYPE TRANSFORMER SCHEDULE - 480VD TO 208Y/120V

KVA	PRIMARY BREAKER OR FUSE	FEEDER (AMPS)	PRIMARY WIRE SIZE	SECONDARY BREAKER OR FUSE	FEEDER (AMPS)	SECONDARY WIRE SIZE
45	70A	70TP	3#4 & 1#8 GND IN 1"C	175A	175TS	4#2/0 & 1#6 GND IN 2"C
75	125A	125TP	3#1 & 1#6 GND IN 1 1/4"C	300A	300TS	4-350 KCMIL & 1#4 GND IN 3"C
112.5	175A	175TP	3#2/0 & 1#6 GND IN 1 1/2"C	400A	400TS	4-500 KCMIL & 1#3 GND IN 3"C

NOTES:

1. THE PRIMARY AND SECONDARY BREAKERS OR FUSES ARE LOCATED IN SWITCHBOARD OR PANELBOARD UNLESS SHOWN OTHERWISE.
2. THE SECONDARY NEUTRAL OF DRY-TYPE TRANSFORMERS SHALL BE GROUNDED PER NATIONAL ELECTRICAL CODE AND LOCAL CODE.
3. THIS TRANSFORMER SCHEDULE IS A MASTER LIST. EVERY TRANSFORMER SIZE LISTED MAY NOT BE USED IN EVERY PACKAGE. SEE PLANS FOR ACTUAL SIZES USED.

GENERATOR PERFORMANCE REQUIREMENTS

BASIS OF DESIGN: 250W CUMMINS NATURAL GAS GENERATOR

MODEL / ALTERNATOR:	C240N6 / S4L1D-C41
RUNNING KW:	192
RUNNING KVA:	228.9
RUNNING PF:	0.84
MAX START KW:	116.2 in Step 3
MAX START KVA:	145.3 in Step 3
VOLTAGE DIP:	8.00%
FREQUENCY DIP:	6.00%
VOLTAGE HARMONIC DISTORTION:	2.10%
GEN SET LOAD:	76.80%
MAX LOAD:	85.00%
MIN LOAD:	10.00%

POWER OUTAGE LOAD PROFILE

STEP 1:	PANEL EL1A	FIRE PUMP WITH SOFTSTART (OPTIONAL)	
STEP 2:	PANEL SL1A	BOILERS & PUMPS	
STEP 3:	RTU-7	RTU-6	RTU-3

EMERGENCY LOAD PROFILE

STEP1:	PANEL EL1A	FIRE PUMP WITH SOFTSTART	
STEP2:	PANEL SL1A		

ADDITIONAL FEATURES

BATTERY CHARGER	ALL WEATHER LEVEL 2 ALUMINUM SOUND ATTENUATING ENCLOSURE WITH INTERNAL HEATING
WIRED REMOTE MONITORING SYSTEM.	

NOTE: ALTERNATIVE LISTED ACCEPTABLE MANUFACTURER'S GENERATOR SETS MUST MEET OR EXCEED THE PERFORMANCE REQUIREMENTS AS SHOWN ABOVE. GENERATORS WITH RATED OUTPUTS HIGHER OR LOWER THAN THE BASIS OF DESIGN WILL BE ACCEPTABLE PROVIDED THEY MEET THE METRICS LISTED.

GENERATOR SEQUENCE OF OPERATIONS

1. IMMEDIATELY UPON LOSS OF UTILITY POWER, GENERATOR WILL START.
2. WITHIN 10 SECONDS OF LOSS OF UTILITY POWER, LIFE SAFETY TRANSFER SWITCH WILL TRANSFER TO GENERATOR POWER IN COMPLIANCE WITH NFPA 101.
3. 60 SECONDS LATER, LEGALLY REQUIRED STAND-BY TRANSFER SWITCH WILL TRANSFER TO GENERATOR POWER.
4. 60 SECONDS LATER, OPTIONAL STAND-BY TRANSFER SWITCH WILL TRANSFER TO GENERATOR POWER.
5. THE PRIORITIZATION OF GENERATOR SYSTEMS WILL BE AS FOLLOWS:
   A. LIFE SAFETY AND FIRE PUMP
   B. STAND-BY
   C. OPTIONAL
   D. ANY EVENT THAT CAUSES THE GENERATOR TO NOT RUN STABLE, THE OPTIONAL SYSTEM WILL BE DISCONNECTED FIRST, THEN THE STAND-BY SYSTEM IF REQUIRED.
6. PROVIDE DRY-CONTACT CONNECTION BETWEEN THE LIFE SAFETY TRANSFER SWITCH AND THE LIGHTING CONTROL SYSTEM TO BYPASS ALL LIGHTING CONTROLS AND PROVIDE FULL ILLUMINATION ALONG THE PATH OF EGRESS FOR A MINIMUM OF 90 MINUTES UPON LOSS OF UTILITY POWER (IF REQUIRED).
7. UPON RETURN OF UTILITY POWER, THE TRANSITION BACK TO UTILITY POWER WILL BE AS FOLLOWS:
   8.1. TRANSFER THE OPTIONAL TRANSFER SWITCH BACK TO UTILITY POWER.
   8.2. TRANSFER THE STAND-BY TRANSFER SWITCH BACK TO UTILITY POWER 60 SECONDS AFTER THE OPTIONAL STAND-BY TRANSFER SWITCH.
   8.3. TRANSFER THE LIFE SAFETY TRANSFER SWITCH BACK TO UTILITY POWER 120 SECONDS AFTER THE OPTIONAL STAND-BY TRANSFER SWITCH.
8. PROVIDE GENERATOR COOL DOWN SEQUENCE PER MANUFACTURER'S RECOMMENDATIONS PRIOR TO SHUTDOWN OF GENERATOR.

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10/10/2025

Lansing School District

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SHEET TITLE
ELECTRICAL ONE-LINE/RISER DIAGRAM

SHEET NO.
E7.0

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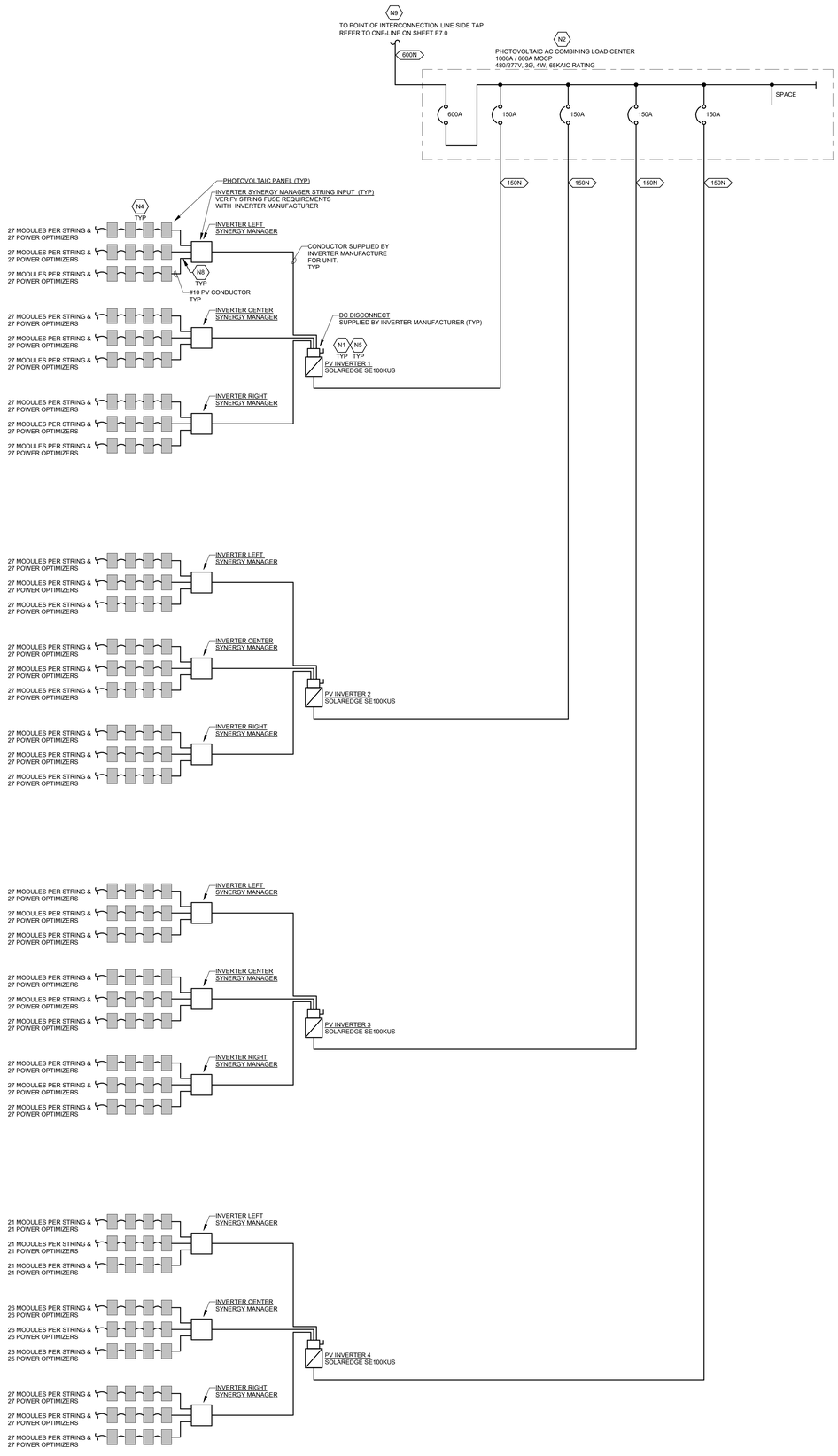


PV SYSTEM COMPOSITE
SCALE: 1/32" = 1'-0"

PHOTOVOLTAIC ONE-LINE DIAGRAM
NO SCALE

PHOTOVOLTAIC KEYNOTES

- N1 FOR SOLAREDGE INVERTERS AUTOMATIC RAPID SHUTDOWN IS INTEGRATED INTO THE SOLAR EDGE SYSTEM WITH POWER OPTIMIZERS. RAPID SHUTDOWN IS INITIATED UPON AC GRID DISCONNECTION. THIS METHOD COMPLIES WITH NEC 2017 ARTICLE 690.12. IF ANOTHER INVERTER MANUFACTURER IS SELECTED AS AN EQUAL VERIFY COMPLIANCE WITH THE STATED CODE SECTION AND IF ADDITIONAL RAPID SHUTDOWN DEVICES ARE REQUIRED PER MANUFACTURER RECOMMENDATIONS. THE PV SYSTEM SHALL BE LABELED TO INDICATE RAPID SHUTDOWN AS FOLLOWS: "SOLAR PV SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN" IN ACCORDANCE WITH NEC ARTICLE 690.
- N2 AT EACH PV SYSTEM SOURCE DISCONNECTING MEANS PROVIDE A PERMANENT PLAQUE WITH A MAP OF THE ENTIRE PV SYSTEM WITH SYSTEM SIZE, LABELED ARRAYS, LABELED INVERTERS, AND DISCONNECT LOCATIONS. REFER TO NEC 705.10 AND DETAIL.
- N3 COORDINATE WITH UTILITY FOR INSTALLATION OF BI-DIRECTIONAL UTILITY METER FOR SOLAR PHOTOVOLTAIC SYSTEM.
- N4 COORDINATE WITH PHOTOVOLTAIC RACKING MANUFACTURER FOR GROUNDING CONNECTION TO ARRAY. GROUND SYSTEM IN ACCORDANCE WITH NEC ARTICLES 690 AND 250.
- N5 PROVIDE PERMANENT LABEL PER INVERTER INDICATING ARRAY NUMBER AND INVERTER NUMBER AS FOLLOWS: ARRAY #X SYSTEM INVERTER #X
- N6 LABEL FOR PV SYSTEM MAIN DISCONNECTING MEANS SHALL READ: PV SYSTEM DISCONNECT WARNING POWER SOURCE OUTPUT CIRCUIT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE. ELECTRIC SHOCK HAZARD. TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
- N7 PROVIDE THE FOLLOWING PERMANENT LABEL. ADDITIONAL LOCATIONS FOR PLACEMENT OF THIS LABEL MAY BE STIPULATED BY THE AHJ UPON SITE REVIEW. LABEL SHALL READ: WARNING: THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE SHALL NOT EXCEED AMPACITY OF BUSBAR
- N8 VERIFY PV CONDUCTOR SIZING REQUIREMENTS WITH INVERTER MANUFACTURER AND PV STRING SIZE. REFER TO INVERTER INSTALLATION MANUAL FOR RECOMMENDED PV CONDUCTOR SIZING AND COORDINATE WITH ENGINEER FOR VOLTAGE DROP OVER INDUSTRY STANDARD RUN LENGTHS FOR SYSTEM DC VOLTAGE SIZE. VERIFY ANTICIPATED PATH OF CONDUCTORS ON ROOF WITH ENGINEER BEFORE PROCEEDING WITH INSTALLATION PROVIDE DOCUMENTATION OF SYSTEM LAYOUT FOR ALTERNATE MODULES TO ENGINEER FOR APPROVAL.
- N9 GENERAL ELECTRICAL CONTRACTOR TO PERFORM SCOPE OF WORK FOR PV SYSTEM ON AC SIDE OF DISTRIBUTION AND TO PROVIDE EMPTY CONDUIT STUBBED TO ROOF IN LOCATIONS SELECTED BY PV SYSTEM SUBCONTRACTOR. COORDINATE WITH LICENSED PV SYSTEM INSTALLATION PROFESSIONAL BEFORE PROCEEDING.
- N10 PROVIDE A NEUTRAL CONDUCTOR FROM THE MAIN SERVICE INTO THE PV SYSTEM DISCONNECT AND BOND THE NEUTRAL. EQUIPMENT GROUNDING CONDUCTOR (EGC) FROM PV COMBINER PANEL, AND GROUNDING ELECTRODE CONDUCTOR (GEC) TO THE SERVICE DISCONNECT ENCLOSURE PER NEC 250.24(B), (C), AND (D).

PHOTOVOLTAIC GENERAL NOTES

1. PROVIDE ALL LABELING FOR SYSTEM COMPONENTS AS REQUIRED BY NEC ARTICLE 690 AND 705. WARNING SIGNS OR LABELS SHALL COMPLY WITH NEC ARTICLE 110.
2. PV WIRING ENCLOSURES THAT CONTAIN DC CONDUCTORS SUCH AS EXPOSED RACEWAYS, COVERS, PULL BOXES, AND JUNCTION BOXES, SHALL BE MARKED WITH THE WORDING WARNING: PHOTOVOLTAIC POWER SOURCE BY MEANS OF PERMANENTLY AFFIXED LABELS OR OTHER APPROVED MARKING

IF THE PROJECT IS SEEKING INFLATION REDUCTION ACT (IRA) CREDITS, CONTRACTOR TO ENSURE THAT ALL THE MATERIALS, LABOR, INSTALLED SYSTEM AND ACCESSORIES RELATED TO THE CREDIT ARE MEETING OR EXCEEDING CREDIT REQUIREMENTS, INCLUDING DOMESTIC CONTENT AND/OR PREVAILING WAGES.

PV SYSTEM SUMMARY	
NUMBER OF INVERTERS	4
NUMBER OF OPTIMIZERS	950
TOTAL NUMBER OF PV MODULES	950
NAMEPLATE DC CAPACITY	508 KW
OUTPUT AC CAPACITY	400 KW
DC/AC RATIO	1.27

MONOFACIAL PV MODULE SPECIFICATIONS BASIS OF DESIGN: HELIENE 132HC M10 NTYP SL		
STC NOMINAL POWER	535	W
STC VOC - OPEN CIRCUIT VOLTAGE	46.80	V DC
STC VMP - MAXIMUM POWER POINT VOLTAGE	39.87	V DC
STC IMP - MAXIMUM POWER POINT CURRENT	13.44	A
STC ISC - SHORT CIRCUIT CURRENT	14.35	A
MAXIMUM SYSTEM VOLTAGE	1500	V DC
MAXIMUM SERIES FUSE RATING	30	A
COLDEST DAY (-30°C) VOC	53.2	V DC
WARMEST DAY (40°C) VOC	38.0	V DC
PANEL EFFICIENCY	22.53	%
ANNUAL DEGREDATION	0.4	%
DIMENSIONS	1134 X 2094	MM
WEIGHT	27	KG

100 KW INVERTER SPECIFICATIONS

INPUT POWER	175,000	W
MAXIMUM INPUT CURRENT	40	A DC
MAXIMUM INPUT VOLTAGE	1,000	V DC
MAXIMUM OUTPUT POWER	100,000	W
MAXIMUM OUTPUT CURRENT	120	A AC
AC OUTPUT VOLTAGE (L-L)	480	V AC
WARRENTY	12	YEARS

INVERTER BASIS OF DESIGN: SOLAREDGE SE100KUS

INVERTER REMOTE MONITORING TO BE INSTALLED BY ELECTRICAL CONTRACTOR, REAL TIME MONITORING SYSTEM TO BE SHOWN ON FLAT PANEL DISPLAY, REFER TO POWER PLANS FOR LOCATION.

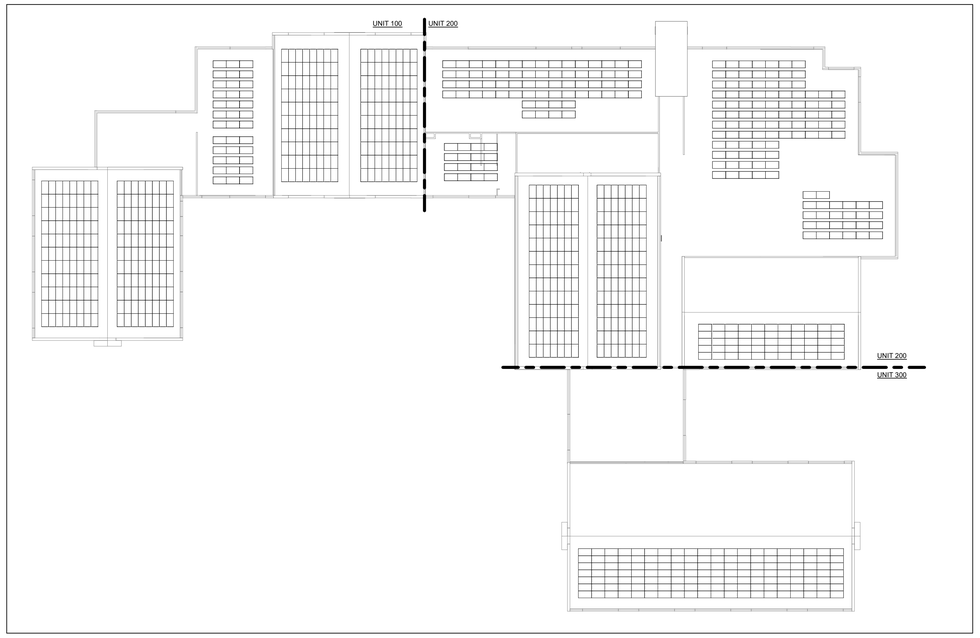
REFER TO INVERTER MANUFACTURER INSTRUCTIONS FOR INSTALLATION CLEARANCES AND MOUNTING SYSTEMS REQUIRED.

PROVIDE S1200 SOLAREDGE POWER OPTIMIZERS PER PANEL FOR RAPID SHUTDOWN REQUIREMENTS. REFER TO STRINGING DIAGRAM FOR OPTIMIZER QUANTITY. S1200 OPTIMIZERS ARE APPROVED FOR USE WITH MODULES UP TO 635W, WITH AN ISC OF 16.3A AND IMP OF 15.5A. FOR ANY ALTERNATE PANELS SES SHALL REVIEW WITH EC FOR USE WITH OPTIMIZER.

PHOTOVOLTAIC AC COMBINING LOAD CENTER CONNECTION CALCULATIONS

PANEL BUS RATING	1,000
1.20 x PANELBOARD BUS RATING	1,200
PANEL MAIN OCPD	600.00
TOTAL INVERTER OUTPUT IN SYSTEM (A)	480.00
1.25% x INVERTER OUTPUT	600.00
SUM OF MAIN CIRCUIT BREAKER RATING AND 125% OF INVERTER OUTPUT. REQUIRED TO BE ≤ 120% OF PANELBOARD BUS RATING.	1,200.00
REFER TO NEC 705.12(D)(2)(3)(C) FOR MORE INFORMATION.	

DC PV-WIRE CONDUCTOR						STRING AMPACITY REQUIRED									VOLTAGE DROP		
TAG	COND QTY	MATERIAL	TRADE SIZE	GND (+NRL) SIZE	CONDUIT	125% PER 690.8(A)(1)	X	MODULE ISC AMPS PER STRING	X	# OF PARALLEL STRINGS	=	CURRENT (AMPS) 690.8(A)(1)	X	125% PER 690.8(B)(2)(a)	=	MAX CURRENT (AMPS) 690.8(B)(2)(a)	EST. MAX INSTALLED DISTANCE (FT)	VOLTAGE DROP %	LOWEST VOLTAGE (VOC TMAX)
DC1	2/STRING	COPPER	AWG #10	AWG #10	N/A	1.25		14.35		1		17.94		1.25		22.42	460	1.97	797



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GENERAL TECHNOLOGY NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. CONTRACTORS SHALL PROVIDE ALL INCIDENTAL MATERIALS AND LABOR FOR A COMPLETE AND FULLY FUNCTIONAL SYSTEM.
2. PRIOR TO BEGINNING WORK, CONTRACTORS ARE TO REVIEW BUILDING PLANS, INSTALLATION LOCATIONS, AND SITE CONDITIONS. NOTIFY THE TECHNOLOGY DESIGNER OF ANY CONDITIONS THAT MAY: PREVENT PROPER INSTALLATION AND OPTIMAL PERFORMANCE OF THE SYSTEMS; VOID THE MANUFACTURER'S WARRANTY; OR THAT CONFLICT WITH THE INTENT OF THE PROJECT. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN RESOLVED. THE CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL WORK RELATED TO CORRECTING UNREPORTED CONFLICTS AND ISSUES, AT NO ADDITIONAL COST TO THE OWNER.
3. FIELD VERIFY LOCATIONS, CONDITIONS AND LENGTHS PRIOR TO INSTALLATION.
4. CONTRACTOR IS REQUIRED TO PROVIDE THEIR OWN PENETRATIONS, SLEEVES, AND CORES THROUGH ALL WALLS AND FLOORS. ALL SLEEVES SHALL HAVE NYLON BUSHINGS.
5. CONTRACTOR SHALL PROVIDE FIRESTOPPING ON PENETRATIONS PASSING THROUGH WALLS AND FLOORS IN WHICH THEY WORK.
6. CONTRACTOR SHALL COORDINATE TELECOMMUNICATION ROOM LAYOUTS WITH ALL IMPACTED CONTRACTORS PRIOR TO INSTALLATION.
7. CONTRACTOR SHALL COORDINATE ALL EQUIPMENT LOCATIONS AND ROUGH-IN REQUIREMENTS WITH ALL IMPACTED CONTRACTORS PRIOR TO INSTALLATIONS.
8. CONTRACTOR SHALL PROVIDE FACEPLATES AND INSERTS FOR THEIR DEVICES.
9. CONTRACTOR SHALL PROVIDE PROTECTIVE GUARDS ON THEIR DEVICES (CLOCKS, PHONES, ACCESS POINTS, MOTION DETECTORS, ETC.) SUBJECT TO ABUSE IN THE GYMNASIUM.
10. WHEN COLOR / FINISH OPTIONS ARE AVAILABLE, CONTRACTOR SHALL CONFIRM COLOR / FINISH WITH ARCHITECT PRIOR TO ORDERING.

FIBER INFRASTRUCTURE NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. CONTRACTORS SHALL PROVIDE ALL INCIDENTAL MATERIALS AND LABOR FOR A COMPLETE AND FULLY FUNCTIONAL SYSTEM.
2. PRIOR TO BEGINNING WORK, CONTRACTORS ARE TO REVIEW BUILDING PLANS, INSTALLATION LOCATIONS, AND SITE CONDITIONS. NOTIFY THE TECHNOLOGY DESIGNER OF ANY CONDITIONS THAT MAY: PREVENT PROPER INSTALLATION AND OPTIMAL PERFORMANCE OF THE SYSTEMS; VOID THE MANUFACTURER'S WARRANTY; OR THAT CONFLICT WITH THE INTENT OF THE PROJECT. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN RESOLVED. THE CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL WORK RELATED TO CORRECTING UNREPORTED CONFLICTS AND ISSUES, AT NO ADDITIONAL COST TO THE OWNER.
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4. CONTRACTOR IS REQUIRED TO PROVIDE THEIR OWN PENETRATIONS, SLEEVES, AND CORES THROUGH ALL WALLS AND FLOORS. ALL SLEEVES SHALL HAVE NYLON BUSHINGS.
5. CONTRACTOR SHALL PROVIDE FIRESTOPPING ON PENETRATIONS PASSING THROUGH WALLS AND FLOORS IN WHICH THEY WORK.
6. CONTRACTOR SHALL COORDINATE TELECOMMUNICATION ROOM LAYOUTS WITH BARTON MALOW AND ALL IMPACTED CONTRACTORS PRIOR TO INSTALLATION.
7. CONTRACTOR SHALL COORDINATE ALL EQUIPMENT LOCATIONS AND ROUGH-IN REQUIREMENTS WITH BARTON MALOW AND ALL IMPACTED CONTRACTORS PRIOR TO INSTALLATIONS.
8. ARMORED SINGLEMODE FIBER SHALL BE USED THROUGHOUT. PROVIDE AND TERMINATE 12 STRANDS FROM MDF TO EACH IDF.

T3 SHEETS - STRUCTURED CABLING

STRUCTURED CABLING COLOR CODE:

- BLUE - GENERAL DATA
- ORANGE - WIRELESS ACCESS
- GREEN - SECURITY

SYMBOL STYLES & ABBREVIATIONS:

CABLING OUTLET / WALL PLATE

- XX — LOCATED IN FLOOR BOX
- XX — LOCATED ON WALL, LOW HEIGHT (18" AFF)
- XX — LOCATED ON WALL, MID HEIGHT (36"-84" AFF)
- XX — LOCATED ON WALL, HIGH HEIGHT (84"+ AFF)
- XX — LOCATED AT CEILING

OUTLET / PLATE ABBREVIATIONS

#	NUMBER OF DATA DROPS
WP	WALL PHONE LOCATION, INCLUDE 1 DATA DROP & WALL PHONE PLATE
AP	WIRELESS ACCESS POINT, INCLUDE 1 CAT6A DATA DROP
VS	VIDEO SURVEILLANCE CAMERA LOCATION, INCLUDE 1 DATA DROP
DC	DIGITAL CLOCK LOCATION, INCLUDE 1 DATA DROP
DC2	DIGITAL CLOCK LOCATION, INCLUDE 2 DATA DROP
VI	VIDEO INTERCOM LOCATION, INCLUDE 1 DATA DROP
VD	VAPE DETECTOR, VERIFY LOCATION WITH OWNER, INCLUDE 1 DATA DROP
SFA	SOUNDFIELD DEVICE LOCATION, INCLUDE 1 DATA DROP

DEVICES:

- AP AP — WIRELESS ACCESS POINT, CEILING | WALL MOUNTED

STRUCTURED CABLING PROJECT NOTES:

1. COORDINATE DEVICE DROP LOCATIONS WITH DEVICE INSTALLATION CONTRACTOR. DEVICE INSTALLATION CONTRACTORS SHALL SUPPLY PATCH CABLE FROM THE DEVICE TO THE DATA DROP.
2. SIZE UPS's TO ACCOMMODATE PUBLIC ADDRESS SYSTEM COMPONENTS AND AMPLIFIERS CO-LOCATED IN MDF & IDF CABINETS.

T4 SHEETS - CLOCK SYSTEM & PUBLIC ADDRESS SYSTEM

CLOCK SYSTEM DEVICES:

- DC — DIGITAL CLOCK, SINGLE-FACE, WALL MOUNTED
- DC — DIGITAL CLOCK, DOUBLE-FACE, WALL MOUNTED

CLOCK SYSTEM PROJECT NOTES:

1. HEAD END LOCATED IN MDF.
2. ALL CLOCK DEVICES ARE IP / PoE.
3. ALL REQUIRED DATA DROPS PROVIDED BY STRUCTURED CABLING CONTRACTOR.

PUBLIC ADDRESS SYSTEM DEVICES:

- MC — MASTER CONSOLE
- PA — PUBLIC ADDRESS SPEAKER, CEILING MOUNTED, CUT-IN
- PA — PUBLIC ADDRESS SPEAKER, CEILING MOUNTED, PROVIDE ENCLOSURE FOR EXPOSED CEILING
- PA — PUBLIC ADDRESS SPEAKER, WALL MOUNTED
- HN — PUBLIC ADDRESS HORN, WALL MOUNTED
- CB — CALL BUTTON

PUBLIC ADDRESS SYSTEM PROJECT NOTES:

1. HEAD END LOCATED IN MDF.
2. CLASSROOM PA WILL UTILIZE CLASSROOM SOUNDFIELD AUDIO SYSTEM. GYMNASIUM & CAFETERIA SFA WILL FEED MICROPHONE AUDIO TO THE INTEGRATED AUDIO SYSTEM.
3. TAP EACH SPEAKER AT THE FOLLOWING WATTAGE BASED ON SPACE / USE:
   - 3.1. 2 WATTS - SMALL ROOMS AND OFFICES, LESS THAN 200 SQFT.
   - 3.2. 5 WATTS - MEDIUM ROOMS, 200 - 500 SQFT., CORRIDORS
   - 3.3. 15 WATTS - BOILER ROOM HORN
   - 3.4. 30 WATTS - EXTERIOR HORNS & SPEAKERS, GYMNASIUM & CAFETERIA HORNS
4. SIZE AMPLIFIERS WITH 40% ADDITIONAL POWER PER ZONE, ALLOWING FOR 20% ADDITIONAL POWER TAPS AND 20% OVERALL HEADROOM.
5. EQUIPMENT IN UNITS 200, 300, AND 400 MUST USE AN IP CONNECTION TO UNIT 100 HEAD END EQUIPMENT.

T5 SHEETS - AUDIOVISUAL SYSTEMS

OUTLET STYLES & ABBREVIATIONS:

CABLING OUTLET / WALL PLATE

- XX — LOCATED IN FLOOR BOX
- XX — LOCATED ON WALL, LOW HEIGHT (0"-36" AFF)
- XX — LOCATED ON WALL, MID HEIGHT (36"-84" AFF)
- XX — LOCATED ON WALL, HIGH HEIGHT (84"+ AFF)
- XX — LOCATED AT CEILING

OUTLET / PLATE ABBREVIATIONS

T	TEACHER STATION LOCATION: HDMI & USB TO IFP
A	AUDIO INPUT LOCATION - SEE SCHEMATIC OR CALLOUT
V	AUDIO AND/OR VIDEO INPUT LOCATION - SEE SCHEMATIC OR CALLOUT

DEVICES:

- IFP — INTERACTIVE FLAT PANEL, 75" DIAGONAL, WALL MOUNTED
- FP — FLAT PANEL DISPLAY, SIZE AS NOTED, WALL MOUNTED
- DS — DIGITAL SIGNAGE DISPLAY & SIGNAGE PLAYER, SIZE AS NOTED. WALL MOUNTED
- PJ — PROJECTOR, WALL MOUNTED
- SF — SOUNDFIELD SPEAKER, SURFACE-MOUNT STYLE, MOUNTED TO STEEL TRUSS
- SFA — SOUNDFIELD AMPLIFIER LOCATION
- BT — BLUETOOTH RECEIVER LOCATION

AUDIOVISUAL SYSTEMS PROJECT NOTES:

1. ALL IFP'S ARE 75" (CLEVERTOUCH IMPACT PLUS) UNLESS SIZE NOTED OTHERWISE.
2. PROVIDE HEIGHT-ADJUSTABLE WALL MOUNTS FOR IFP'S.
3. INSTALL OWNER-FURNISHED DIGITAL SIGNAGE EQUIPMENT BEHIND ALL DS DISPLAYS.
4. EQUIPMENT IN UNITS 200, 300, AND 400 MUST USE AN IP CONNECTION TO UNIT 100 HEAD END EQUIPMENT.

T6 SHEETS - ACCESS CONTROL & INTRUSION DETECTION SYSTEM

ACCESS CONTROL SYSTEM DEVICES:

- VI — VIDEO INTERCOM
- VIM — VIDEO INTERCOM MASTER STATION
- CR — CARD READER, WALL MOUNTED

INTRUSION DETECTION SYSTEM DEVICES:

- KP — KEYPAD
- MS — MOTION SENSOR; SHADING INDICATES DIRECTION OF VIEW, NOT COVERAGE
- GS — GLASS BREAK SENSOR

ACCESS CONTROL & INTRUSION DETECTION SYSTEM PROJECT NOTES:

1. CR SYMBOLS SHOWN FOR GENERAL SCOPE AND LOCATIONS ONLY. ALL LOCATIONS MAY NOT BE SHOWN. REFER TO DOOR HARDWARE SCHEDULE FOR ALL LOCATIONS, DETAILS, AND REQUIREMENTS, INCLUDING BUT NOT LIMITED TO, WHAT CABLE TO PULL FOR EACH DOOR, AND WHAT HARDWARE TO INSTALL AT EACH DOOR. OTHER EQUIPMENT (EXAMPLE: INTERCOMS, GLASS BREAK SENSORS), TO BE PROVIDED BY THIS CONTRACTOR.
2. CONTRACTOR TO INSTALL, INTERCONNECT, AND CONFIGURE ADA BUTTONS ON DOORS HAVING ACCESS CONTROL.
3. CONTRACTOR TO PROVIDE AND INSTALL ALL ACCESS CONTROL POWER SUPPLIES.
4. WHEN BUILDING LOCKDOWN IS ENGAGED, ALL DOORS WITH ACCESS CONTROL SHALL LOCK, OVERRIDING ANY SCHEDULE AND PROHIBITING ACCESS FROM MOST CARDS. ONLY STAFF IN AN EMERGENCY ACCESS USER GROUP WILL HAVE ACCESS WITH THEIR CARDS. INTERIOR DOORS ARE TO BE PROGRAMMED WITH A PIN CODE THAT WOULD ONLY BECOME ACTIVE WHEN LOCKDOWN IS ENGAGED. LOCKDOWN MUST ALSO SEND AN EMAIL OR TEXT ALERT TO IDENTIFIED STAFF.
5. CONFIGURE SYSTEM TO SEND ALERTS WHEN EXTERIOR DOORS ARE PROPPED OPEN.
6. CONFIGURE INTRUSION DETECTION SYSTEM TO CALL EPS SECURITY, THE CURRENT MONITORING COMPANY.
7. EQUIPMENT IN UNITS 200, 300, AND 400 MUST USE AN IP CONNECTION TO UNIT 100 HEAD END EQUIPMENT.

T7 SHEETS - VIDEO SURVEILLANCE SYSTEM

SYMBOL STYLES & ABBREVIATIONS:

- VP — VIDEO SURVEILLANCE CAMERA; SHADING INDICATES DIRECTION OF VIEW, NOT COVERAGE

A	ONE LENS / SENSOR
B	TWO LENS / SENSOR
C	THREE LENS / SENSOR
D	FOUR LENS / SENSOR
F	FISHEYE LENS / SENSOR
#	TOTAL MEGAPIXELS FOR CAMERA; DIVIDE BY NUMBER OF SENSORS FOR MINIMUM PER SENSOR
VI	VIDEO INTERCOM STATION (BY ACCESS CONTROL CONTRACTOR); INCLUDE FOR VIDEO RECORDING

- T — PROVIDE VISIBLE MASKING TO ENSURE CAMERA CANNOT VIEW INTO RESTROOM, AND SO THAT USERS ARE ASSURED CAMERA IS NOT VIEWING RESTROOM.

PROJECT NOTES:

1. CONFIRM ALL MOUNTING LOCATIONS WITH TECHNOLOGY DESIGNER PRIOR TO INSTALLATION.
2. REVIEW AND CONFIRM ALL CAMERA VIEWS AND SETTINGS WITH TECHNOLOGY DESIGNER AND OWNER PRIOR TO ACCEPTANCE; ADJUST AS NECESSARY.
3. ALL EXTERIOR CAMERAS SHALL BE RATED FOR SUCH USE AND BE PROVIDED WITH HOUSING, HEATER, AND BLOWER AS NECESSARY TO OPERATE IN THE INTENDED CLIMATE.
4. ALL EXTERIOR SINGLE-LENS CAMERAS SHALL DOME-STYLE WITH A SUN SHADE.
5. INCLUDE PENDANT ARM MOUNTS FOR EXTERIOR MULTI-LENS CAMERAS DUE TO FIELD CONDITIONS OR TO OBTAIN THE DESIRED VIEW.
6. VIDEO SURVEILLANCE CONTRACTOR TO PROVIDE PATCH CABLES BETWEEN CAMERA AND DATA JACK SUPPLIED BY OTHERS. COORDINATE JACK LOCATIONS WITH STRUCTURED CABLING CONTRACTOR.
7. THE OWNER'S EXISTING SERVERS WILL BE USED FOR THE ADDITIONAL CAMERAS.
8. EQUIPMENT IN UNITS 200, 300, AND 400 MUST USE AN IP CONNECTION TO UNIT 100 HEAD END EQUIPMENT.

SHEET INDEX:

T0	COVER SHEET
T1	SITE PLAN
T2	COMPOSITE, FIBER INFRASTRUCTURE
T3.100	COMPOSITE UNIT 100, STRUCTURED CABLING
T3.200	COMPOSITE UNIT 200, STRUCTURED CABLING
T3.300	COMPOSITE UNIT 300, STRUCTURED CABLING
T4.100	COMPOSITE UNIT 100, CLOCK SYSTEM & PUBLIC ADDRESS SYSTEM
T4.200	COMPOSITE UNIT 200, CLOCK SYSTEM & PUBLIC ADDRESS SYSTEM
T4.300	COMPOSITE UNIT 300, CLOCK SYSTEM & PUBLIC ADDRESS SYSTEM
T5.100	COMPOSITE UNIT 100, AUDIOVISUAL SYSTEMS
T5.200	COMPOSITE UNIT 200, AUDIOVISUAL SYSTEMS
T5.300	COMPOSITE UNIT 300, AUDIOVISUAL SYSTEMS
T6.100	COMPOSITE UNIT 100, ACCESS CONTROL SYSTEM
T6.200	COMPOSITE UNIT 200, ACCESS CONTROL SYSTEM
T6.300	COMPOSITE UNIT 300, ACCESS CONTROL SYSTEM
T7	SITE PLAN, VIDEO SURVEILLANCE SYSTEM
T7.100	COMPOSITE UNIT 100, VIDEO SURVEILLANCE SYSTEM
T7.200	COMPOSITE UNIT 200, VIDEO SURVEILLANCE SYSTEM
T7.300	COMPOSITE UNIT 300, VIDEO SURVEILLANCE SYSTEM
T9.1	DETAILS
T9.2	DETAILS
T9.3	DETAILS

Barton Malow

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Key Plan:

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Scale: None

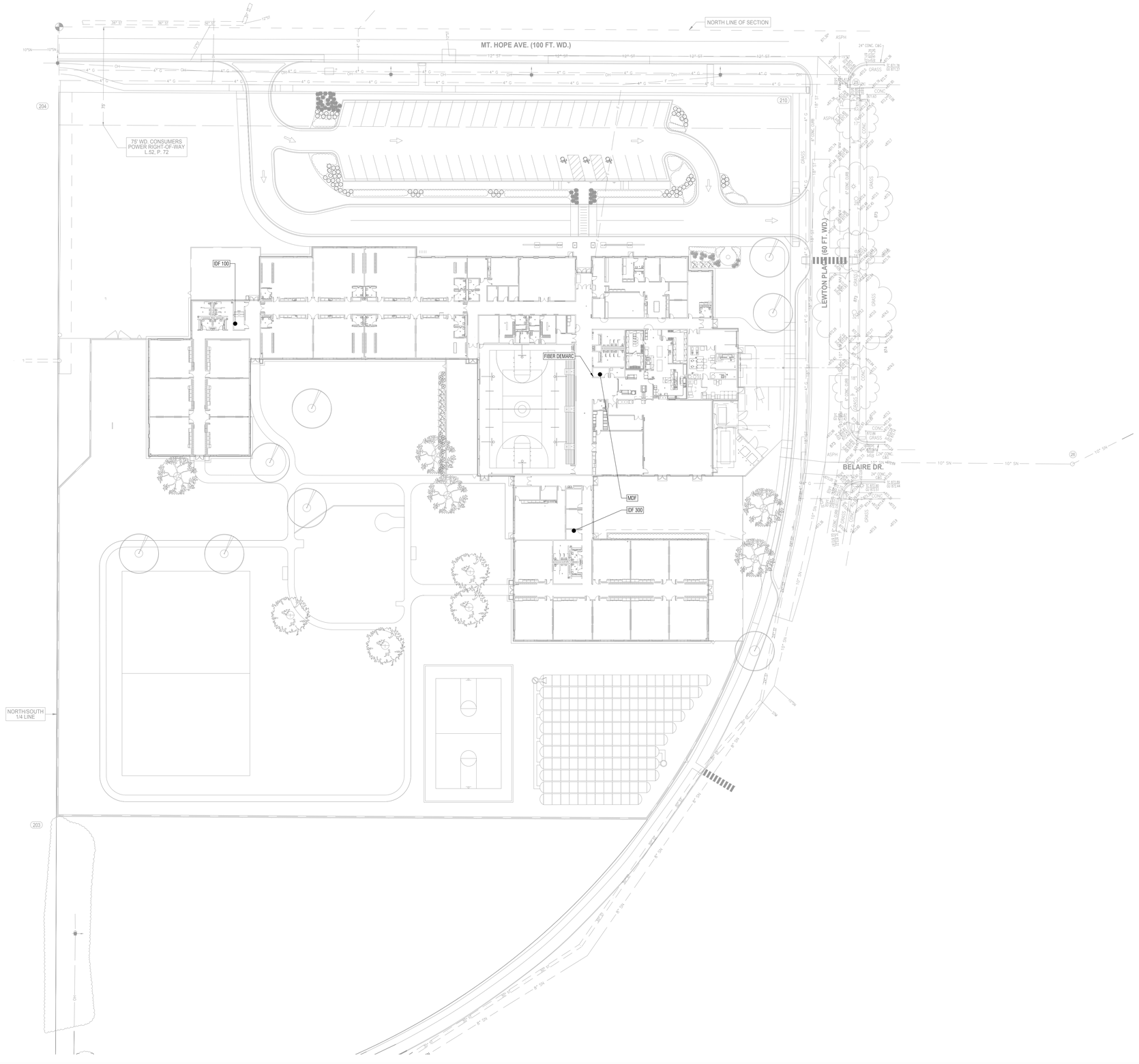
Bid Package SB-0064

Lewton School

Technology Systems

T0

N



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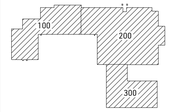

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Lewton School

Site Plan

T1

FIBER INFRASTRUCTURE NOTES:

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6. CONTRACTOR SHALL COORDINATE TELECOMMUNICATION ROOM LAYOUTS WITH BARTON MALOW AND ALL IMPACTED CONTRACTORS PRIOR TO INSTALLATION.
7. CONTRACTOR SHALL COORDINATE ALL EQUIPMENT LOCATIONS AND ROUGH-IN REQUIREMENTS WITH BARTON MALOW AND ALL IMPACTED CONTRACTORS PRIOR TO INSTALLATIONS.
8. ARMORED SINGLEMODE FIBER SHALL BE USED THROUGHOUT. PROVIDE AND TERMINATE 12 STRANDS FROM MDF TO EACH IDF.

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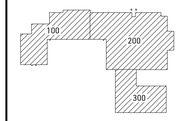

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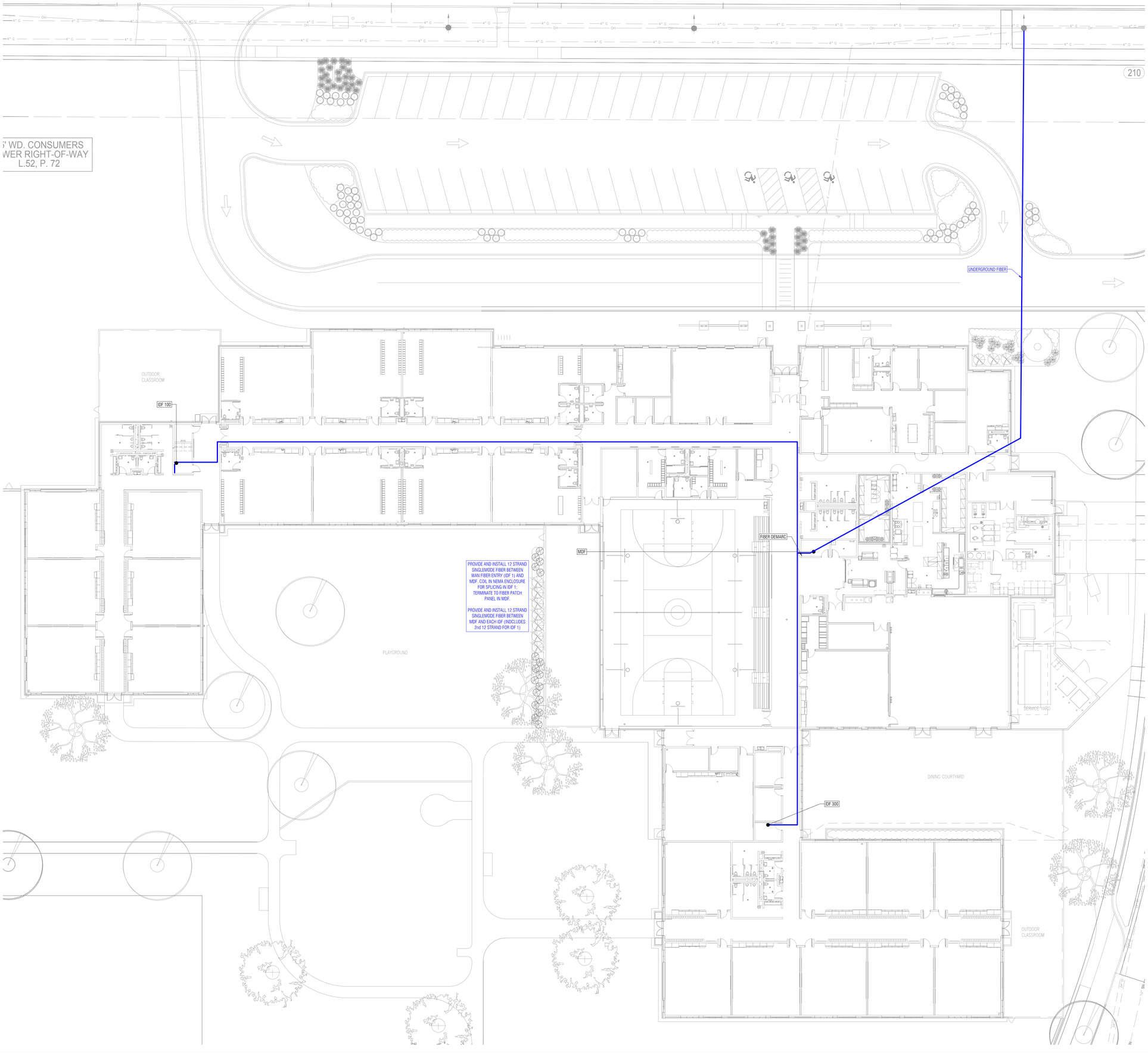
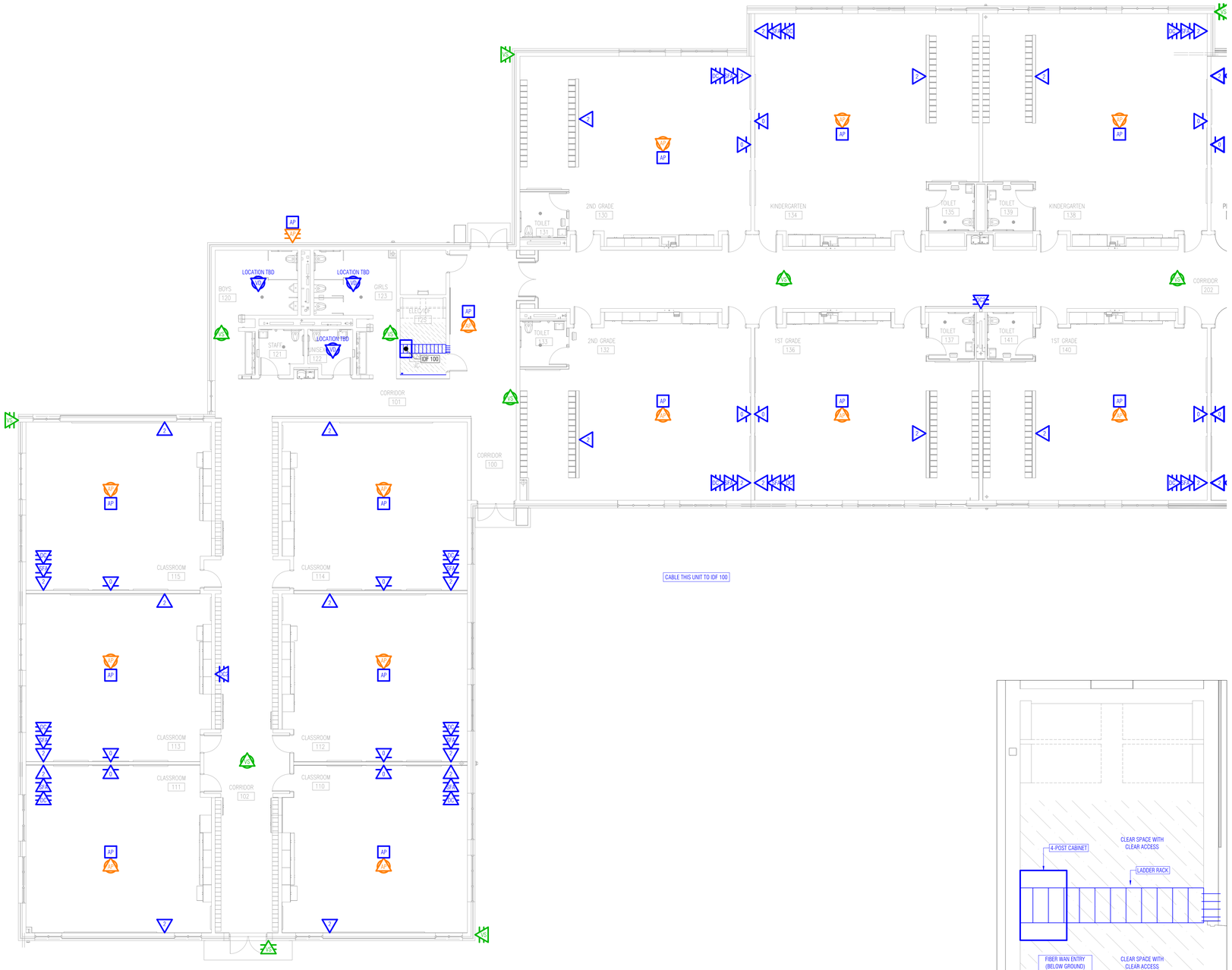
Lewton School

1st Floor Composite
Fiber Infrastructure

T2





IDF 100 Layout
SCALE: 1/2" = 1'

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10. WHEN COLOR / FINISH OPTIONS ARE AVAILABLE, CONTRACTOR SHALL CONFIRM COLOR / FINISH WITH ARCHITECT PRIOR TO ORDERING.

T3 SHEETS - STRUCTURED CABLING

STRUCTURED CABLING COLOR CODE:

- BLUE - GENERAL DATA
- ORANGE - WIRELESS ACCESS
- GREEN - SECURITY

SYMBOL STYLES & ABBREVIATIONS:

CABLING OUTLET / WALL PLATE

- XX — LOCATED IN FLOOR BOX
- XX — LOCATED ON WALL, LOW HEIGHT (18" AFF)
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VD	VAPE DETECTOR, VERIFY LOCATION WITH OWNER, INCLUDE 1 DATA DROP
SFA	SOUNDFIELD DEVICE LOCATION, INCLUDE 1 DATA DROP

DEVICES:

AP | AP — WIRELESS ACCESS POINT, CEILING | WALL MOUNTED

STRUCTURED CABLING PROJECT NOTES:

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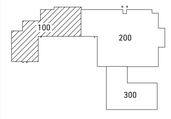

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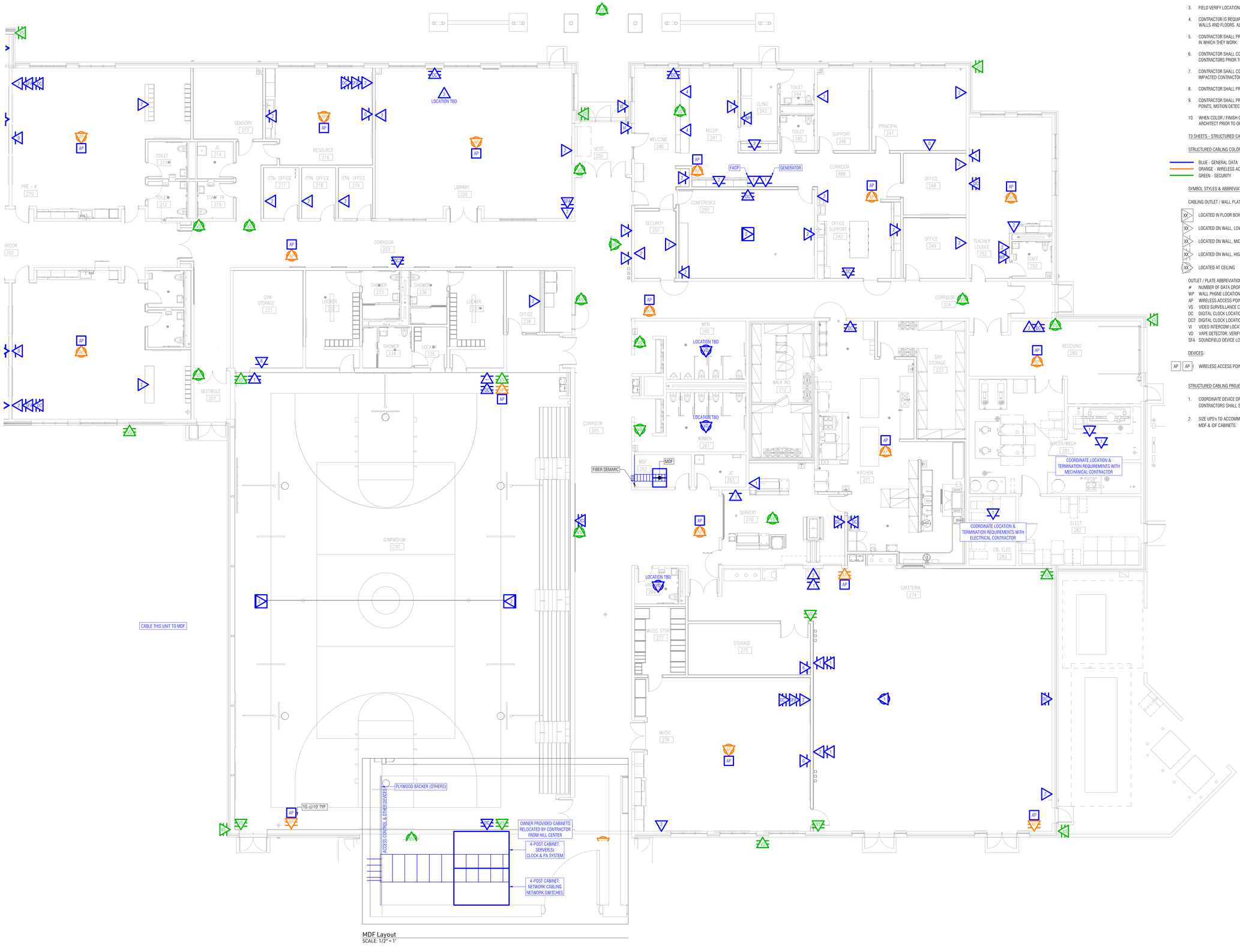
Lewton School

Unit 100
Structured Cabling

T3.100



MDF Layout
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SFA	SOUNDFIELD DEVICE LOCATION, INCLUDE 1 DATA DROP

DEVICES:

AP AP — WIRELESS ACCESS POINT, CEILING | WALL MOUNTED

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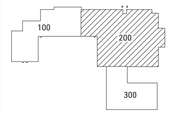

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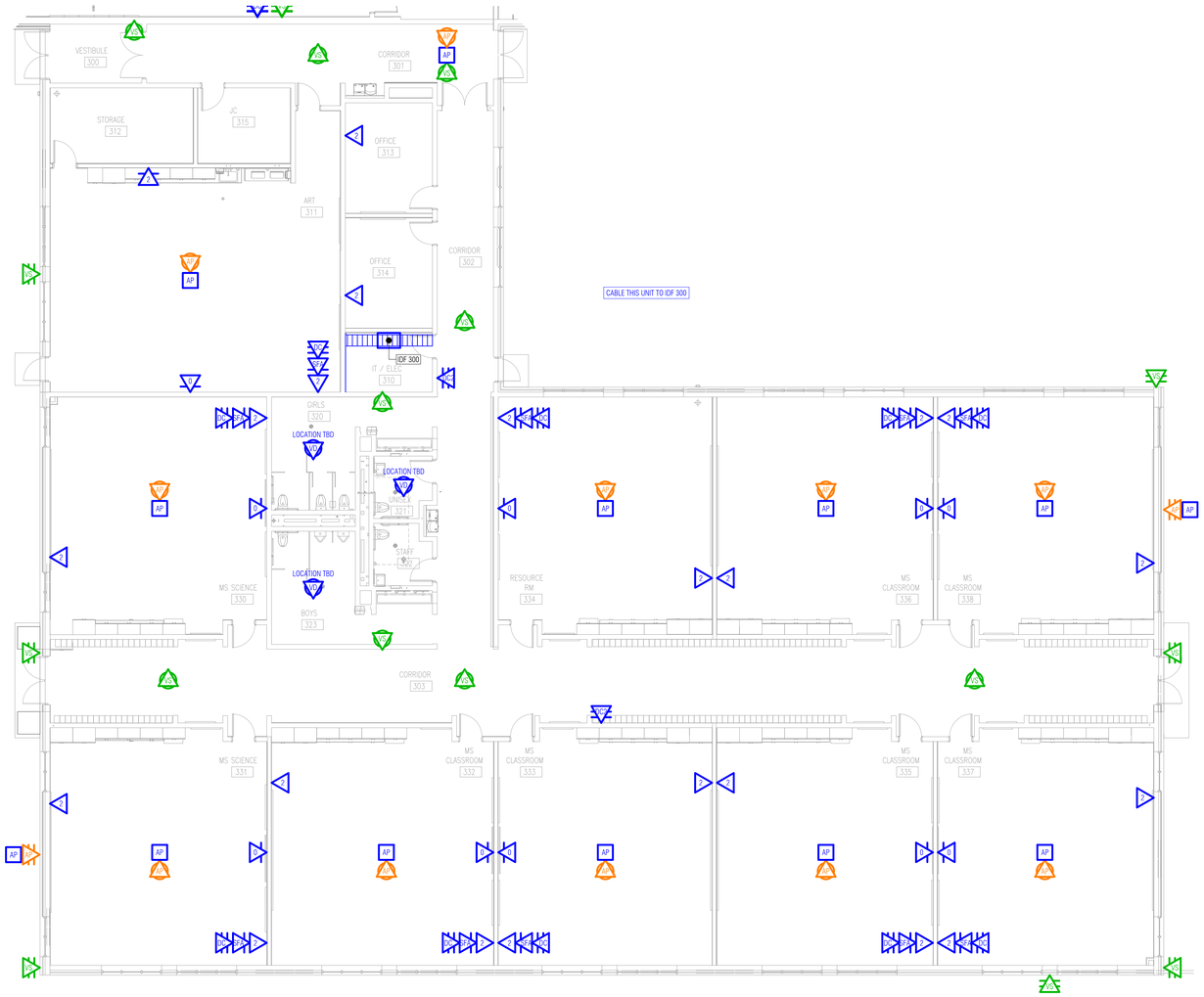
Lewton School

Unit 200
Structured Cabling

T3.200



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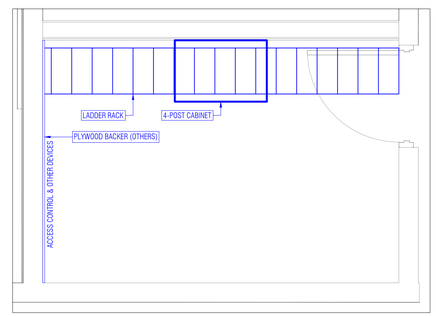

IDF 300 Layout
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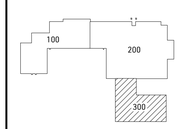

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Lewton School

Unit 300
Structured Cabling

T3.300



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10. WHEN COLOR / FINISH OPTIONS ARE AVAILABLE, CONTRACTOR SHALL CONFIRM COLOR / FINISH WITH ARCHITECT PRIOR TO ORDERING.

T4 SHEETS - CLOCK SYSTEM & PUBLIC ADDRESS SYSTEM

CLOCK SYSTEM DEVICES:

- DC — DIGITAL CLOCK, SINGLE-FACE, WALL MOUNTED
- DC — DIGITAL CLOCK, DOUBLE-FACE, WALL MOUNTED

CLOCK SYSTEM PROJECT NOTES:

1. HEAD END LOCATED IN MDF.
2. ALL CLOCK DEVICES ARE IP / PoE.
3. ALL REQUIRED DATA DROPS PROVIDED BY STRUCTURED CABLING CONTRACTOR.

PUBLIC ADDRESS SYSTEM DEVICES:

- MC — MASTER CONSOLE
- PA — PUBLIC ADDRESS SPEAKER, CEILING MOUNTED, CUT-IN
- PA — PUBLIC ADDRESS SPEAKER, CEILING MOUNTED, PROVIDE ENCLOSURE FOR EXPOSED CEILING
- PA — PUBLIC ADDRESS SPEAKER, WALL MOUNTED
- HN — PUBLIC ADDRESS HORN, WALL MOUNTED
- CB — CALL BUTTON

PUBLIC ADDRESS SYSTEM PROJECT NOTES:

1. HEAD END LOCATED IN MDF.
2. CLASSROOM PA WILL UTILIZE CLASSROOM SOUNDFIELD AUDIO SYSTEM. GYMNASIUM & CAFETERIA SFA WILL FEED MICROPHONE AUDIO TO THE INTEGRATED AUDIO SYSTEM.
3. TAP EACH SPEAKER AT THE FOLLOWING WATTAGE BASED ON SPACE / USE:
   - 3.1. 2 WATTS - SMALL ROOMS AND OFFICES, LESS THAN 200 SQFT.
   - 3.2. 5 WATTS - MEDIUM ROOMS, 200 - 500 SQFT., CORRIDORS
   - 3.3. 15 WATTS - BOILER ROOM HORN
   - 3.4. 30 WATTS - EXTERIOR HORNS & SPEAKERS, GYMNASIUM & CAFETERIA HORNS
4. SIZE AMPLIFIERS WITH 40% ADDITIONAL POWER PER ZONE, ALLOWING FOR 20% ADDITIONAL POWER TAPS AND 20% OVERALL HEADROOM.
5. EQUIPMENT IN UNITS 200, 300, AND 400 MUST USE AN IP CONNECTION TO UNIT 100 HEAD END EQUIPMENT.

Barton Malow

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248.436.5000
www.bartonmalow.com

Owner:

Lansing School District
Lansing, Michigan

Project Number: 220161
Project Manager: Paul Twigg
Drawn By: Bill Dawson
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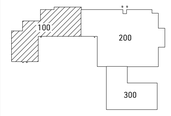

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Bid Package SB-0064

Lewton School

Unit 100
Clock System
Public Address System

N

T4.100



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T4 SHEETS - CLOCK SYSTEM & PUBLIC ADDRESS SYSTEM

CLOCK SYSTEM DEVICES:

- CK DIGITAL CLOCK, SINGLE-FACE, WALL MOUNTED
- DK DIGITAL CLOCK, DOUBLE-FACE, WALL MOUNTED

CLOCK SYSTEM PROJECT NOTES:

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PUBLIC ADDRESS SYSTEM DEVICES:

- MC MASTER CONSOLE
- PA PUBLIC ADDRESS SPEAKER, CEILING MOUNTED, CUT-IN
- PA PUBLIC ADDRESS SPEAKER, CEILING MOUNTED, PROVIDE ENCLOSURE FOR EXPOSED CEILING
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- CB CALL BUTTON

PUBLIC ADDRESS SYSTEM PROJECT NOTES:

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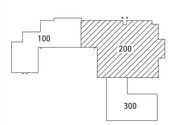

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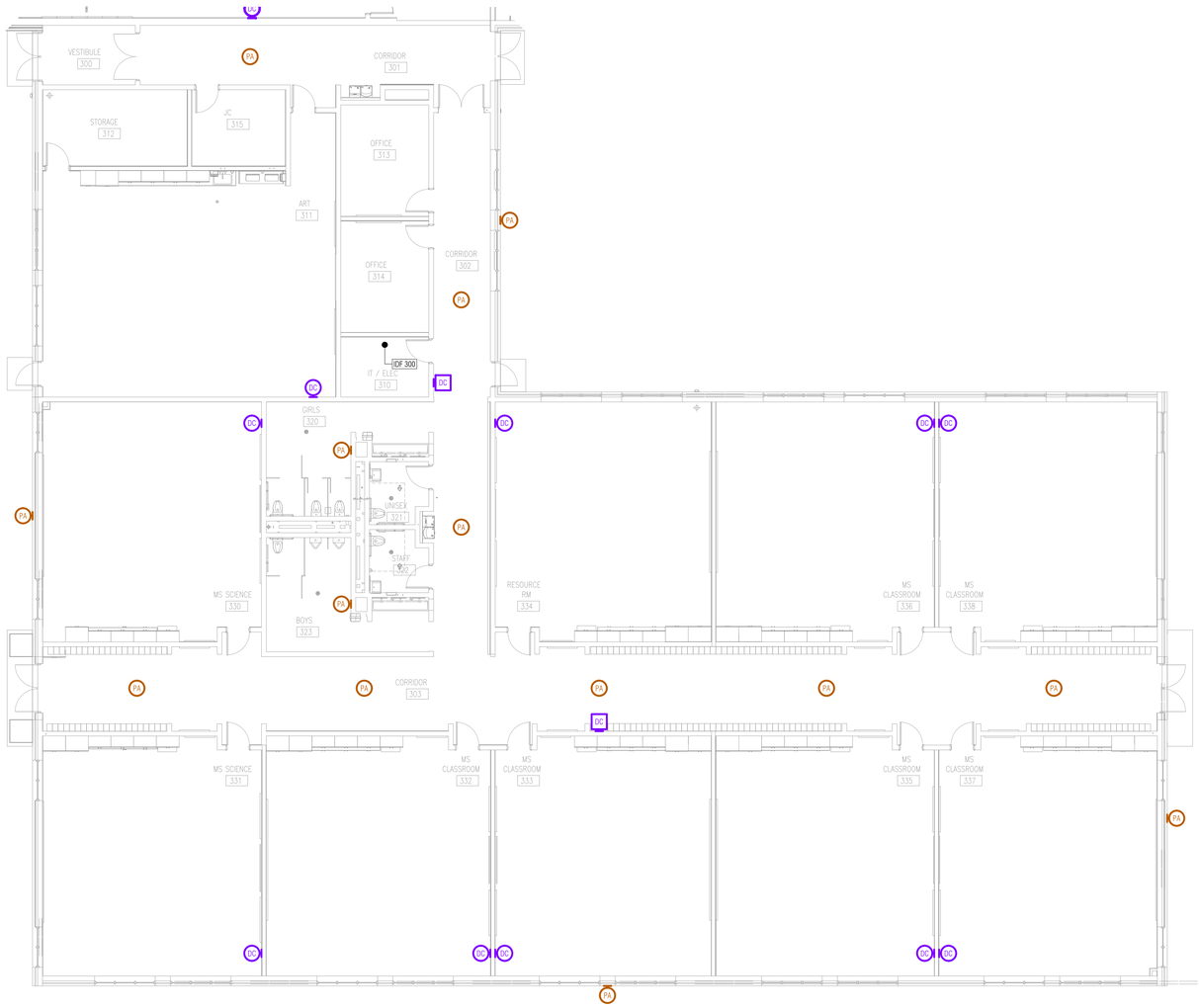
Bid Package SB-0064

Lewton School

Unit 200
Clock System
Public Address System

N

T4.200



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T4 SHEETS - CLOCK SYSTEM & PUBLIC ADDRESS SYSTEM

CLOCK SYSTEM DEVICES:

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- DC — DIGITAL CLOCK, DOUBLE-FACE, WALL MOUNTED

CLOCK SYSTEM PROJECT NOTES:

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PUBLIC ADDRESS SYSTEM PROJECT NOTES:

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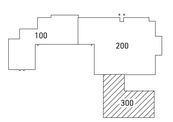

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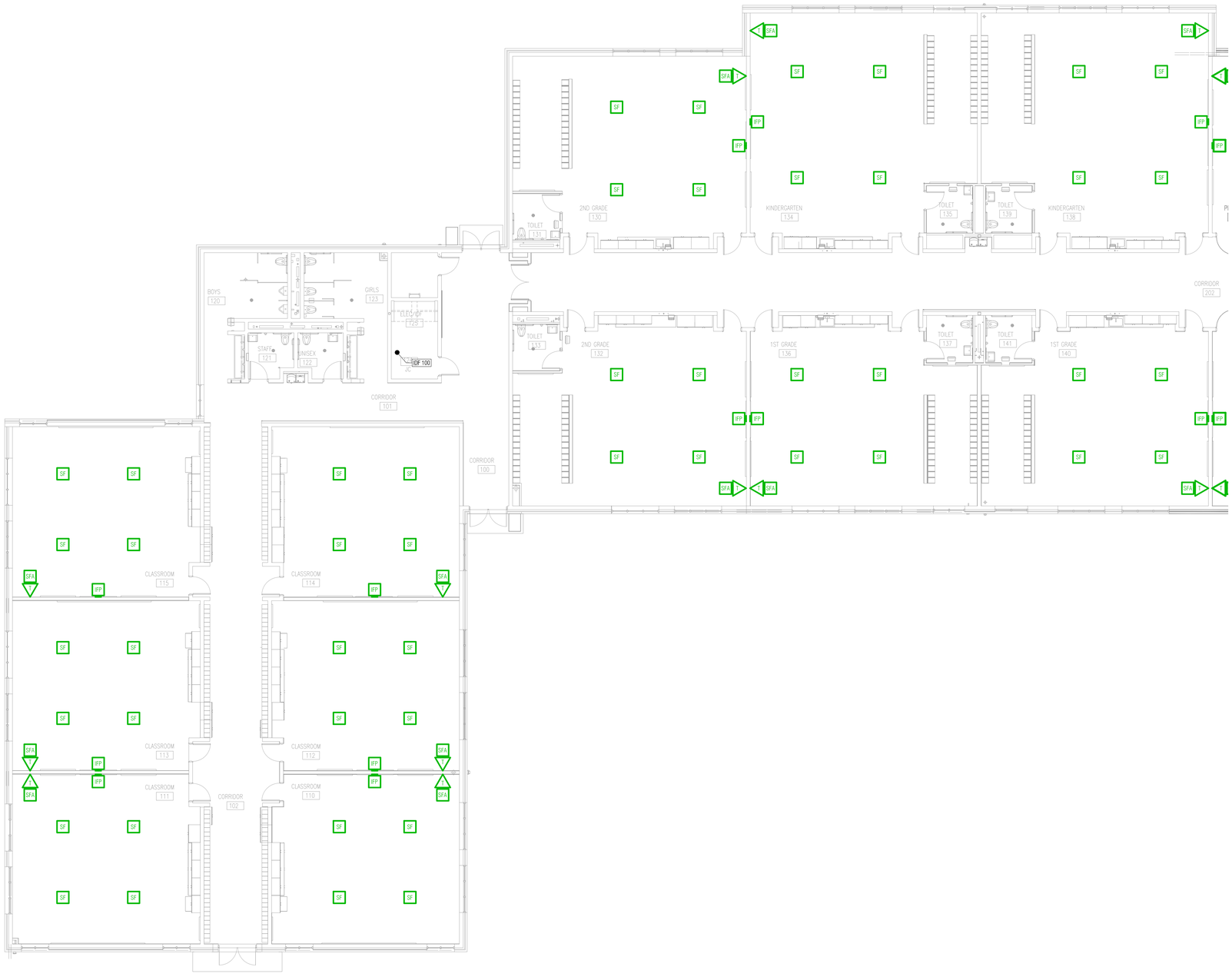
Bid Package SB-0064

Lewton School

Unit 300
Clock System
Public Address System

N

T4.300



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T5 SHEETS - AUDIOVISUAL SYSTEMS

OUTLET STYLES & ABBREVIATIONS:

CABLING OUTLET / WALL PLATE

- LOCATED IN FLOOR BOX
- LOCATED ON WALL, LOW HEIGHT (0"-36" AFF)
- LOCATED ON WALL, MID HEIGHT (36"-84" AFF)
- LOCATED ON WALL, HIGH HEIGHT (84"+ AFF)
- LOCATED AT CEILING

OUTLET / PLATE ABBREVIATIONS

T TEACHER STATION LOCATION: HDMI & USB TO IFP
A AUDIO INPUT LOCATION - SEE SCHEMATIC OR CALLOUT
V AUDIO AND/OR VIDEO INPUT LOCATION - SEE SCHEMATIC OR CALLOUT

DEVICES:

- IFP INTERACTIVE FLAT PANEL, 75" DIAGONAL, WALL MOUNTED
- FP FLAT PANEL DISPLAY, SIZE AS NOTED, WALL MOUNTED
- DS DIGITAL SIGNAGE DISPLAY & SIGNAGE PLAYER, SIZE AS NOTED, WALL MOUNTED
- PJ PROJECTOR, WALL MOUNTED
- SF SOUNDFIELD SPEAKER, SURFACE-MOUNT STYLE, MOUNTED TO STEEL TRUSS
- SFA SOUNDFIELD AMPLIFIER LOCATION
- BT BLUETOOTH RECEIVER LOCATION

AUDIOVISUAL SYSTEMS PROJECT NOTES:

1. ALL IFP'S ARE 75" (CLEVERTOUCH IMPACT PLUS) UNLESS SIZE NOTED OTHERWISE.
2. PROVIDE HEIGHT-ADJUSTABLE WALL MOUNTS FOR IFP'S.
3. INSTALL OWNER-FURNISHED DIGITAL SIGNAGE EQUIPMENT BEHIND ALL DS DISPLAYS.
4. EQUIPMENT IN UNITS 200, 300, AND 400 MUST USE AN IP CONNECTION TO UNIT 100 HEAD END EQUIPMENT.

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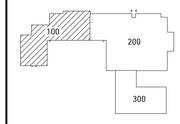

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Bid Package SB-0064

Lewton School

Unit 100
Audiovisual Systems

T5.100



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OUTLET / PLATE ABBREVIATIONS

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DEVICES:

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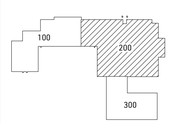

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Lewton School

Unit 200
Audiovisual Systems

T5.200



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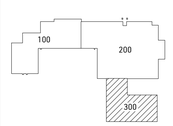

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Bid Package SB-0064

Lewton School

Unit 300
Audiovisual Systems

T5.300

N



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T6 SHEETS - ACCESS CONTROL & INTRUSION DETECTION SYSTEM

ACCESS CONTROL SYSTEM DEVICES:

- VI — VIDEO INTERCOM
- VIM — VIDEO INTERCOM MASTER STATION
- CR — CARD READER, WALL MOUNTED

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- KP — KEYPAD
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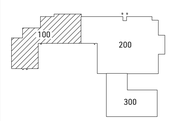

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Bid Package SB-0064

Lewton School

Unit 100
Access Control System

T6.100



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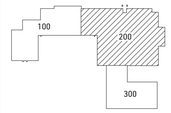

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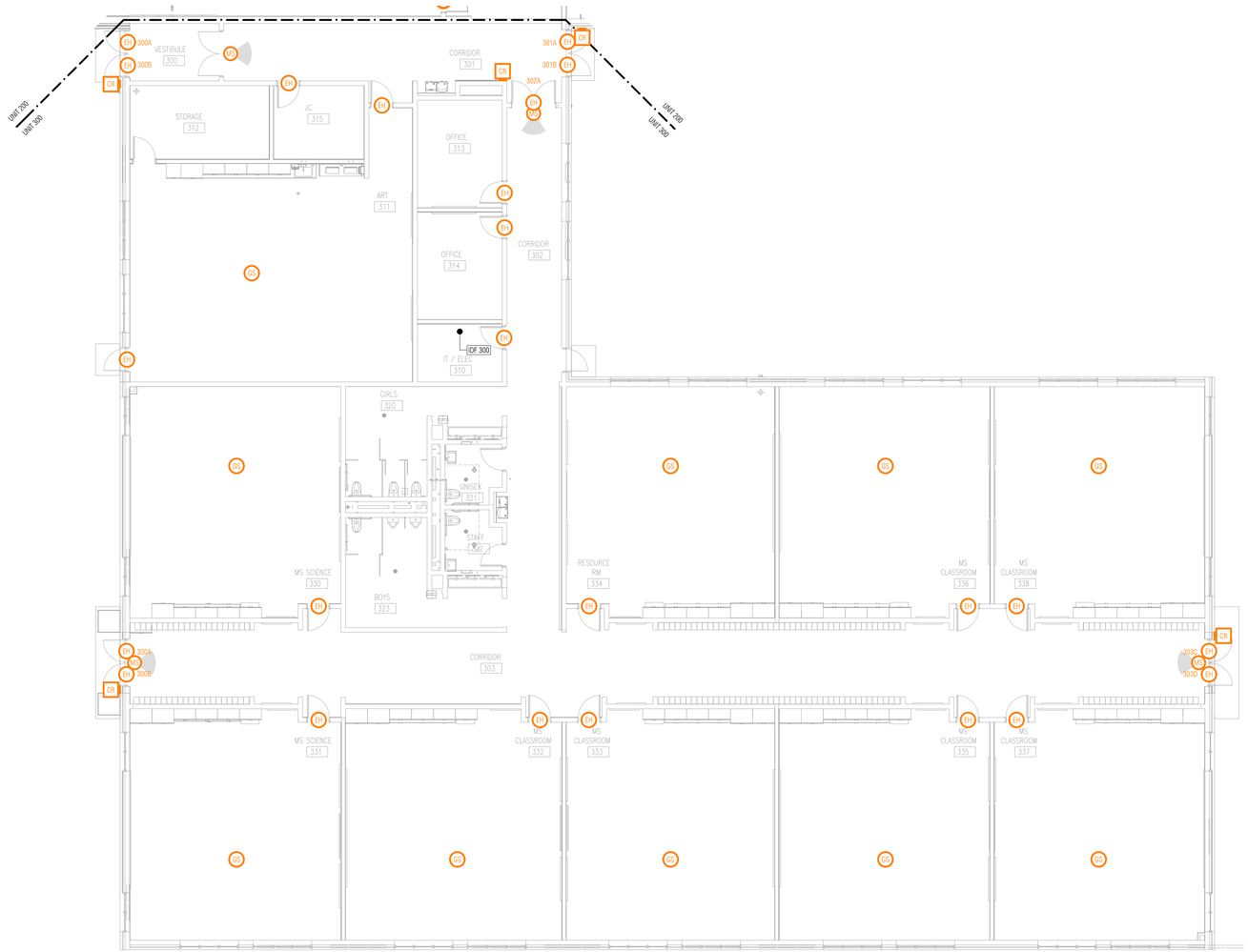
Lewton School

Unit 200
Access Control System

T6.200



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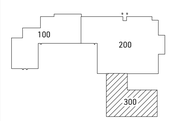

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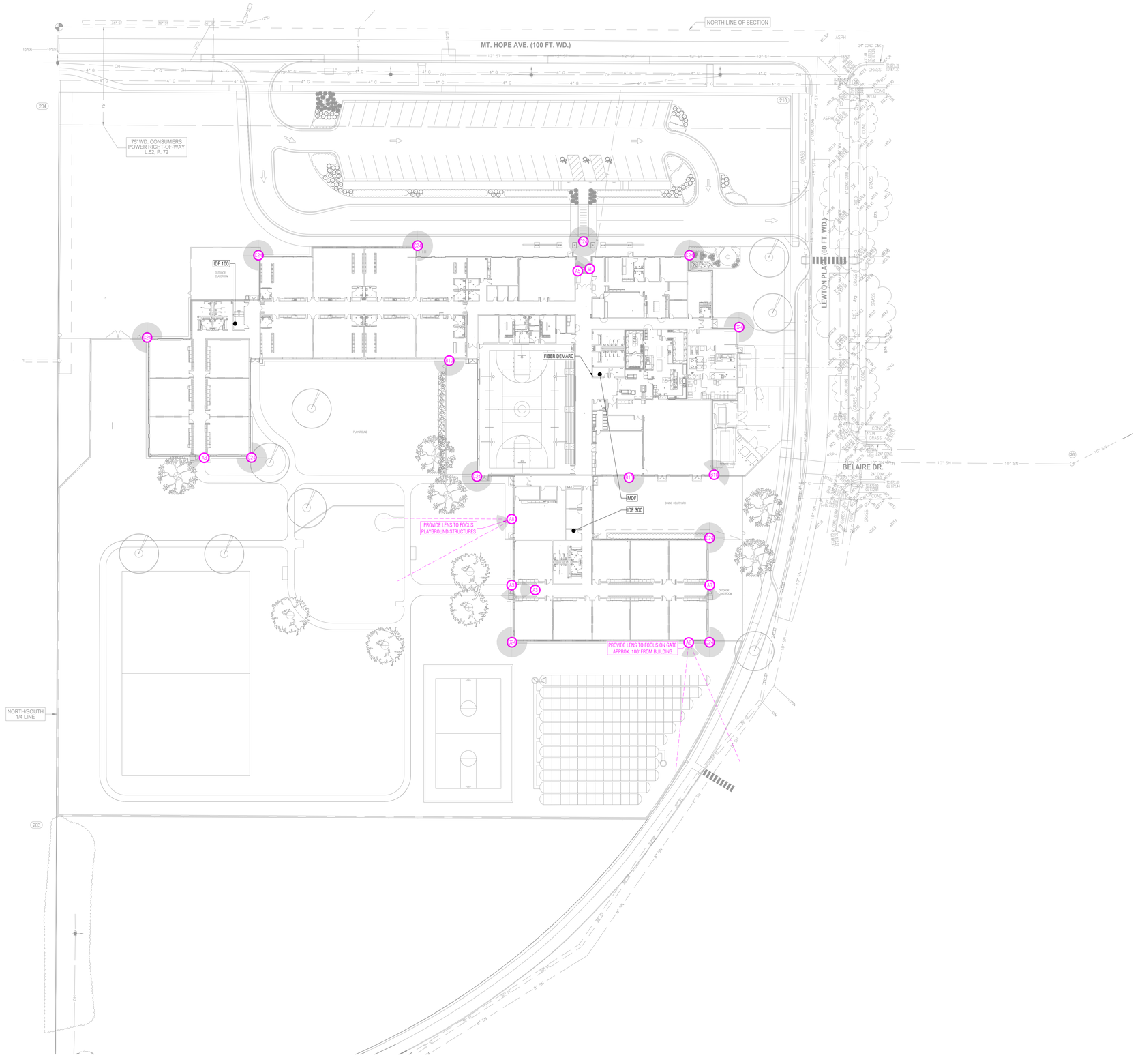
Lewton School

Unit 300
Access Control System

T6.300



NOTE: EXTERIOR CAMERAS ARE ALSO SHOWN ON UNIT FLOOR PLANS.

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T7 SHEETS - VIDEO SURVEILLANCE SYSTEM

SYMBOL STYLES & ABBREVIATIONS:

- (A.F) VIDEO SURVEILLANCE CAMERA; SHADING INDICATES DIRECTION OF VIEW, NOT COVERAGE
- A ONE LENS / SENSOR
- B TWO LENS / SENSOR
- C THREE LENS / SENSOR
- D FOUR LENS / SENSOR
- F FISHEYE LENS / SENSOR
- # TOTAL MEGAPIXELS FOR CAMERA; DIVIDE BY NUMBER OF SENSORS FOR MINIMUM PER SENSOR
- VI VIDEO INTERCOM STATION (BY ACCESS CONTROL CONTRACTOR); INCLUDE FOR VIDEO RECORDING

PROVIDE VISIBLE MASKING TO ENSURE CAMERA CANNOT VIEW INTO RESTROOM, AND SO THAT USERS ARE ASSURED CAMERA IS NOT VIEWING RESTROOM.

PROJECT NOTES:

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2. REVIEW AND CONFIRM ALL CAMERA VIEWS AND SETTINGS WITH TECHNOLOGY DESIGNER AND OWNER PRIOR TO ACCEPTANCE; ADJUST AS NECESSARY.
3. ALL EXTERIOR CAMERAS SHALL BE RATED FOR SUCH USE AND BE PROVIDED WITH HOUSING, HEATER, AND BLOWER AS NECESSARY TO OPERATE IN THE INTENDED CLIMATE.
4. ALL EXTERIOR SINGLE-LENS CAMERAS SHALL DOME-STYLE WITH A SUN SHADE.
5. INCLUDE PENDANT ARM MOUNTS FOR EXTERIOR MULTI-LENS CAMERAS DUE TO FIELD CONDITIONS OR TO OBTAIN THE DESIRED VIEW.
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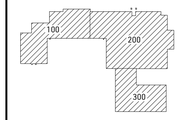

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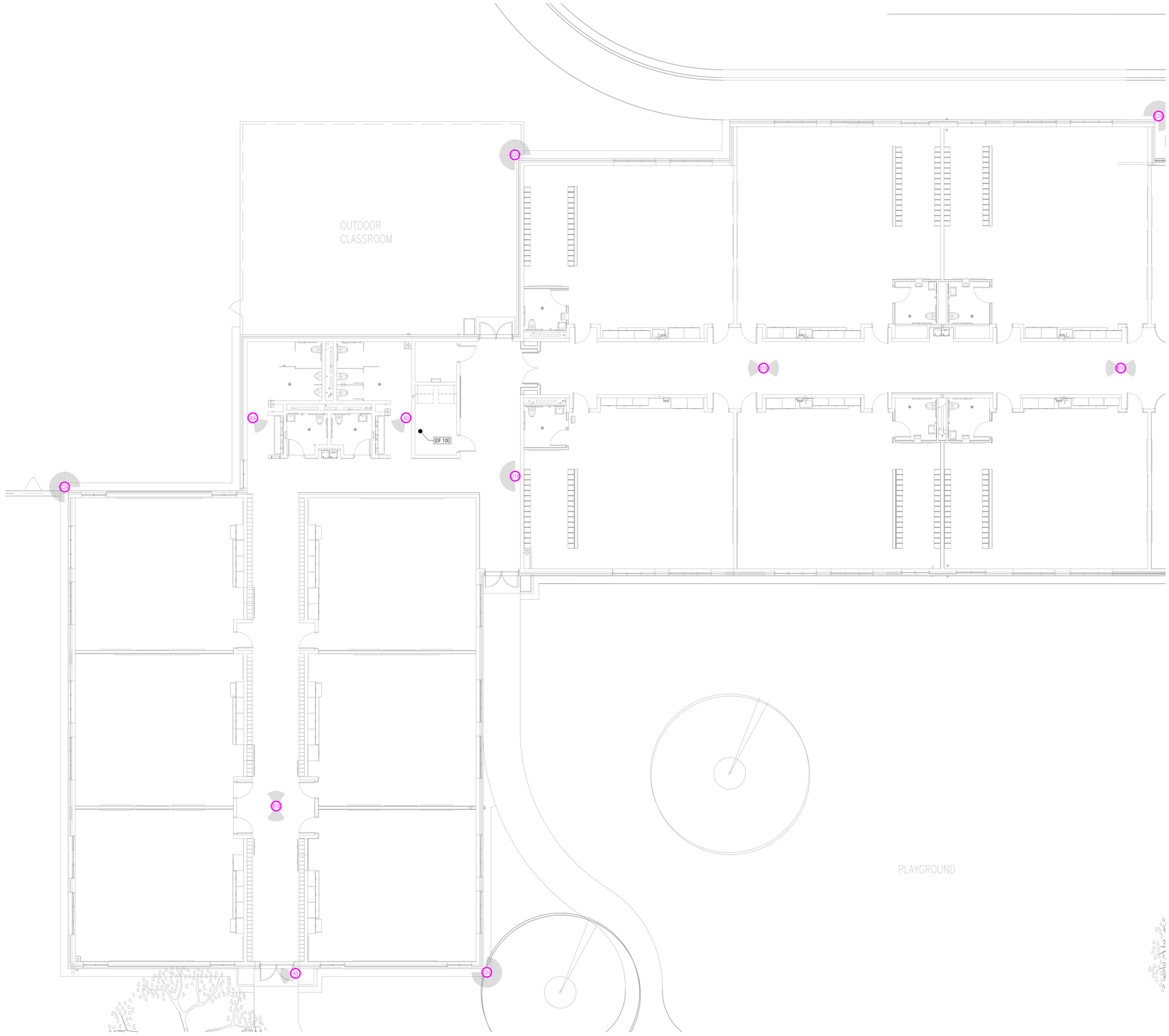
Bid Package SB-0064

Lewton School

Site Plan
Video Surveillance System

T7



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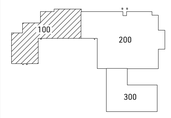

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Bid Package SB-0064

Lewton School

Unit 100
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5. CONTRACTOR SHALL PROVIDE FIRESTOPPING ON PENETRATIONS PASSING THROUGH WALLS AND FLOORS IN WHICH THEY WORK.
6. CONTRACTOR SHALL COORDINATE TELECOMMUNICATION ROOM LAYOUTS WITH ALL IMPACTED CONTRACTORS PRIOR TO INSTALLATION.
7. CONTRACTOR SHALL COORDINATE ALL EQUIPMENT LOCATIONS AND ROUGH-IN REQUIREMENTS WITH ALL IMPACTED CONTRACTORS PRIOR TO INSTALLATIONS.
8. CONTRACTOR SHALL PROVIDE FACEPLATES AND INSERTS FOR THEIR DEVICES.
9. CONTRACTOR SHALL PROVIDE PROTECTIVE GUARDS ON THEIR DEVICES (CLOCKS, PHONES, ACCESS POINTS, MOTION DETECTORS, ETC.) SUBJECT TO ABUSE IN THE GYMNASIUM.
10. WHEN COLOR / FINISH OPTIONS ARE AVAILABLE, CONTRACTOR SHALL CONFIRM COLOR / FINISH WITH ARCHITECT PRIOR TO ORDERING.

T7 SHEETS - VIDEO SURVEILLANCE SYSTEM

SYMBOL STYLES & ABBREVIATIONS:

- VIDEO SURVEILLANCE CAMERA; SHADING INDICATES DIRECTION OF VIEW, NOT COVERAGE
- A ONE LENS / SENSOR
- B TWO LENS / SENSOR
- C THREE LENS / SENSOR
- D FOUR LENS / SENSOR
- F FISHEYE LENS / SENSOR
- # TOTAL MEGAPIXELS FOR CAMERA; DIVIDE BY NUMBER OF SENSORS FOR MINIMUM PER SENSOR
- VI VIDEO INTERCOM STATION (BY ACCESS CONTROL CONTRACTOR); INCLUDE FOR VIDEO RECORDING

PROVIDE VISIBLE MASKING TO ENSURE CAMERA CANNOT VIEW INTO RESTROOM, AND SO THAT USERS ARE ASSURED CAMERA IS NOT VIEWING RESTROOM.

PROJECT NOTES:

1. CONFIRM ALL MOUNTING LOCATIONS WITH TECHNOLOGY DESIGNER PRIOR TO INSTALLATION.
2. REVIEW AND CONFIRM ALL CAMERA VIEWS AND SETTINGS WITH TECHNOLOGY DESIGNER AND OWNER PRIOR TO ACCEPTANCE; ADJUST AS NECESSARY.
3. ALL EXTERIOR CAMERAS SHALL BE RATED FOR SUCH USE AND BE PROVIDED WITH HOUSING, HEATER, AND BLOWER AS NECESSARY TO OPERATE IN THE INTENDED CLIMATE.
4. ALL EXTERIOR SINGLE-LENS CAMERAS SHALL DOME-STYLE WITH A SUN SHADE.
5. INCLUDE PENDANT ARM MOUNTS FOR EXTERIOR MULTI-LENS CAMERAS DUE TO FIELD CONDITIONS OR TO OBTAIN THE DESIRED VIEW.
6. VIDEO SURVEILLANCE CONTRACTOR TO PROVIDE PATCH CABLES BETWEEN CAMERA AND DATA JACK SUPPLIED BY OTHERS. COORDINATE JACK LOCATIONS WITH STRUCTURED CABLING CONTRACTOR.
7. THE OWNER'S EXISTING SERVERS WILL BE USED FOR THE ADDITIONAL CAMERAS.
8. EQUIPMENT IN UNITS 200, 300, AND 400 MUST USE AN IP CONNECTION TO UNIT 100 HEAD END EQUIPMENT.

Barton Malow

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Lansing, Michigan

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Project Manager: Paul Twigg
Drawn By: Bill Dawson
Checked By: Paul Twigg

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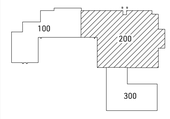
Key Plan:



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0' 2' 4' 8' 16'

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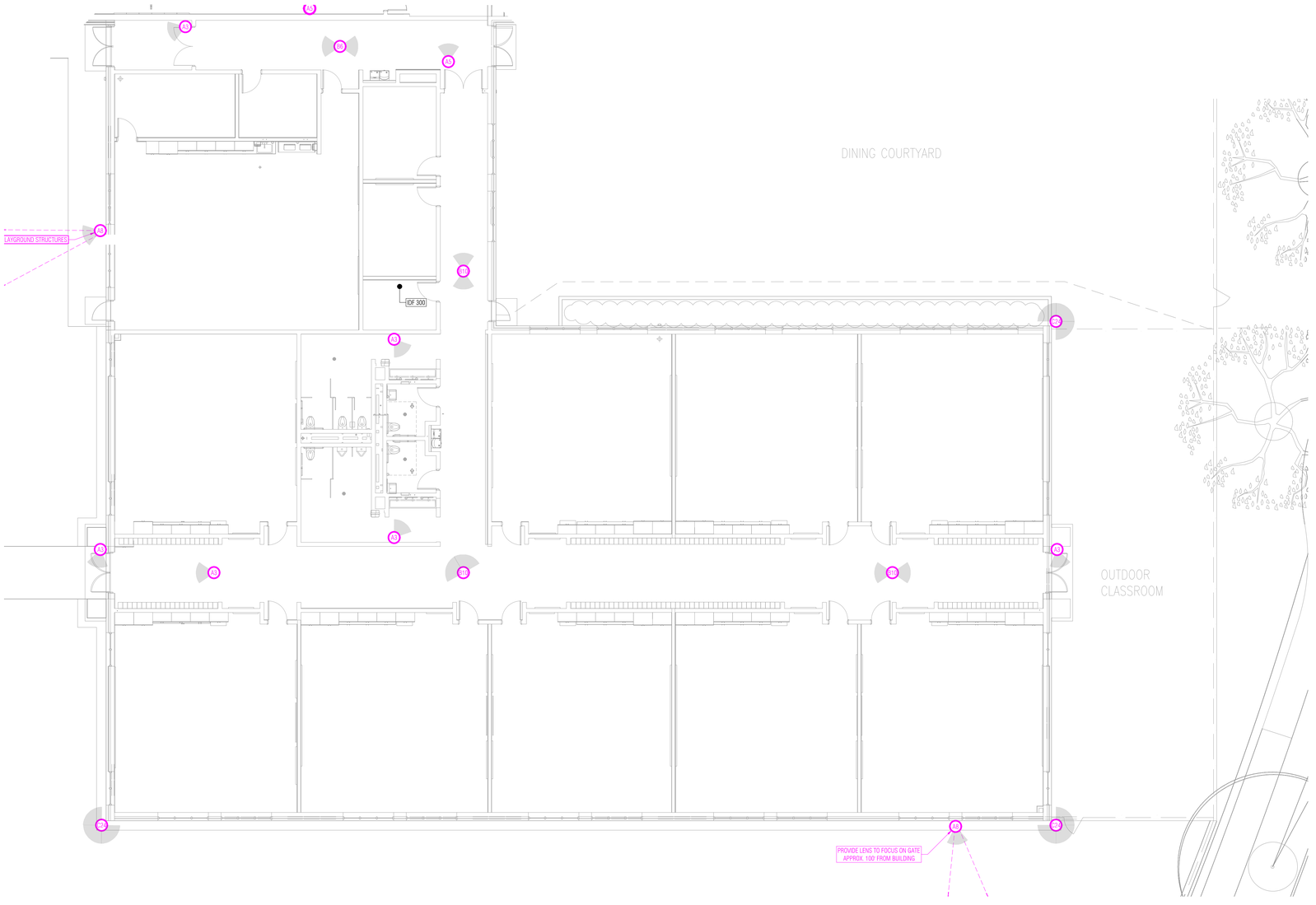
Lewton School

Unit 200
Video Surveillance System

T7.200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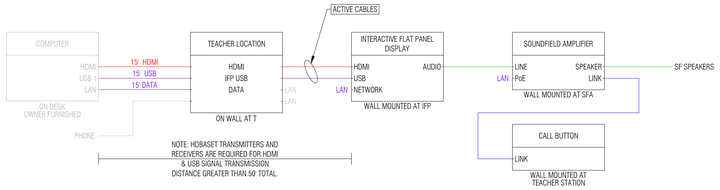
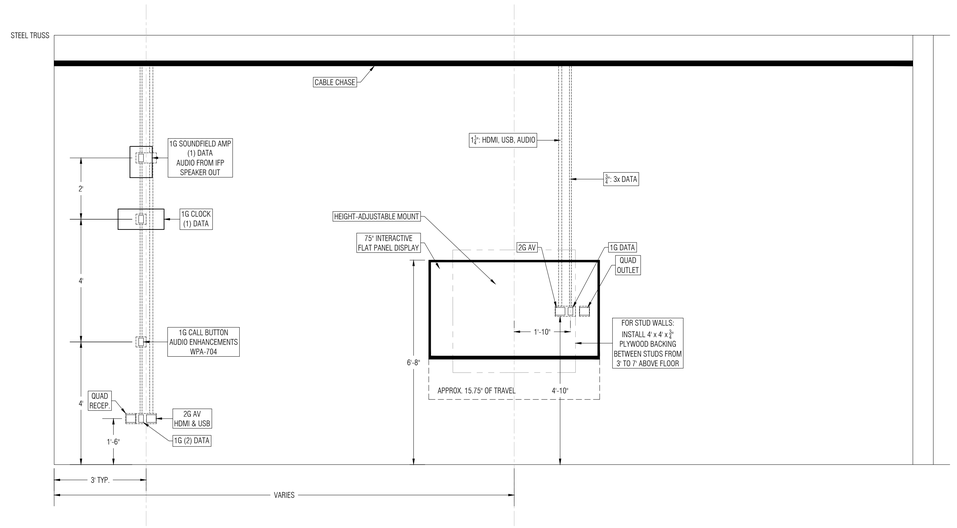
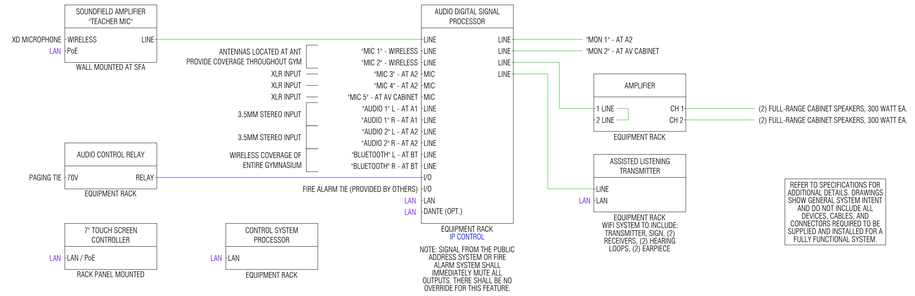


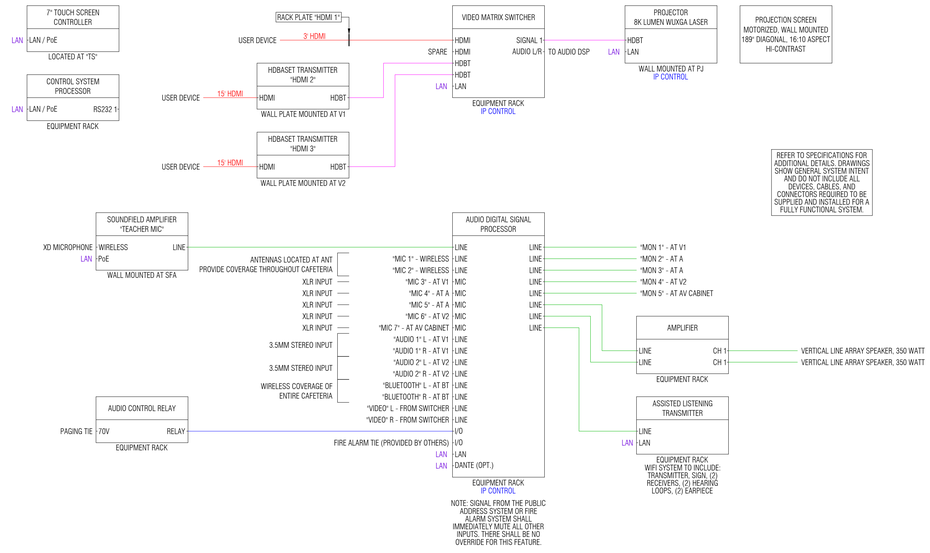
Typical Classroom Audiovisual System Schematic
SCALE: NONE



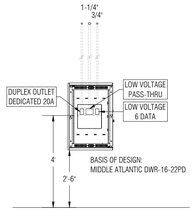
Typical Classroom Interactive Flat Panel & Teacher Station Elevation
SCALE: 1/2" = 1'



Gymnasium Audio System Schematic
SCALE: NONE



Cafeteria Audiovisual System Schematic
SCALE: NONE



Audio & AV Cabinet Elevation - Typical
SCALE: 3/8" = 1'

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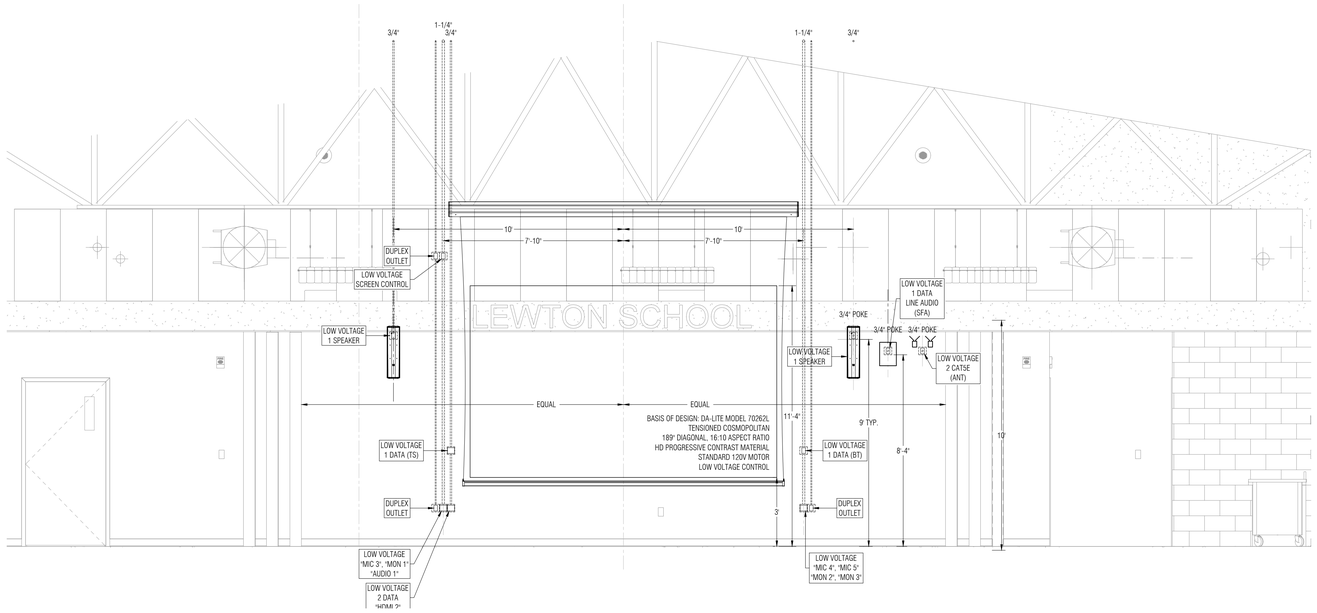
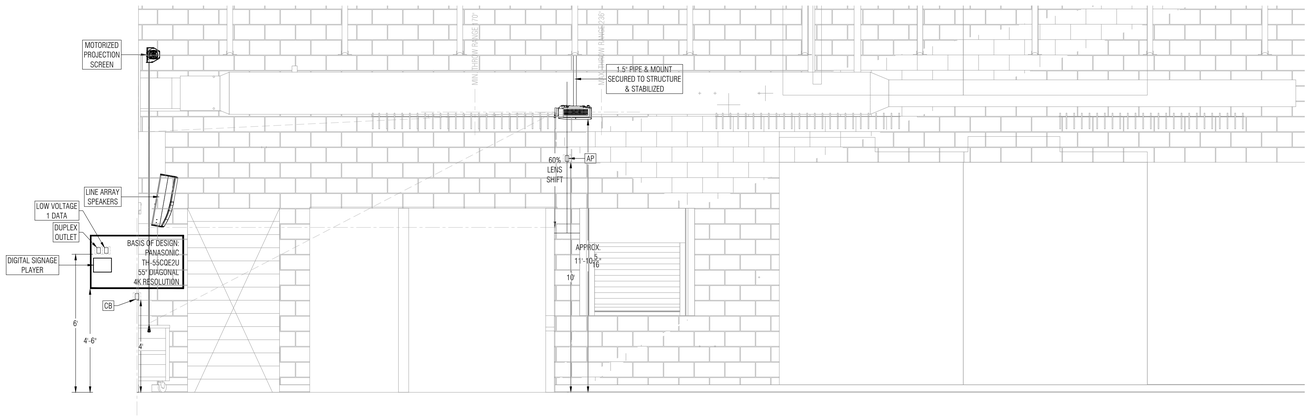
T9.1



Cafeteria West Wall Elevation
SCALE: 3/8" = 1'



Cafeteria North Wall Elevation & Projection Section
SCALE: 3/8" = 1'

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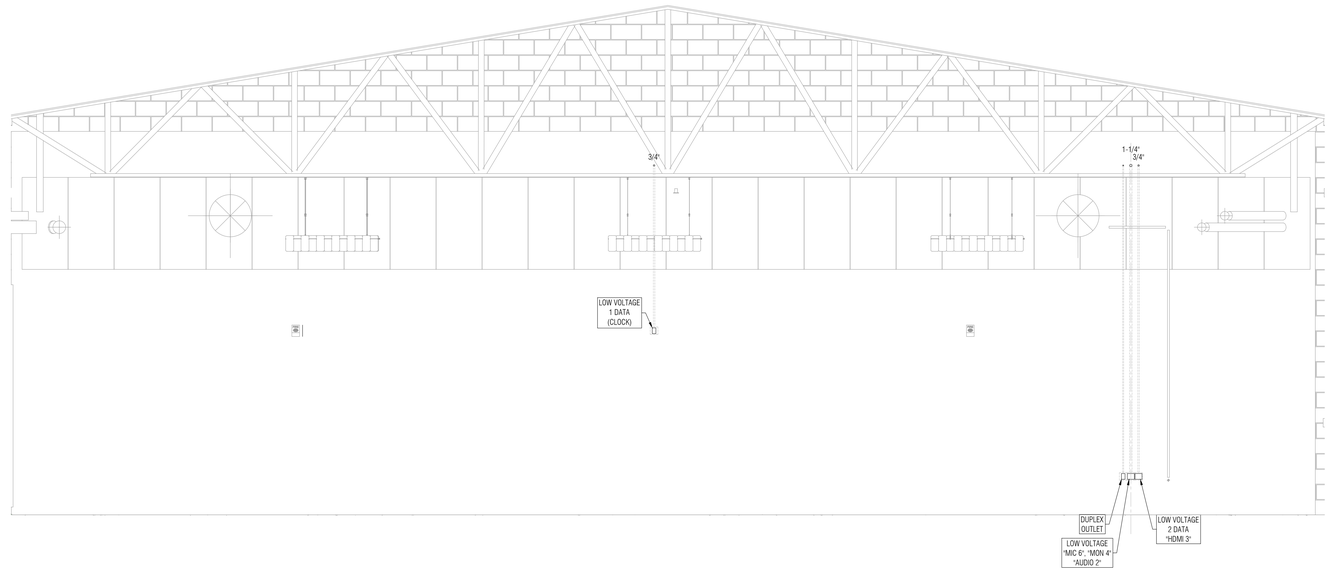
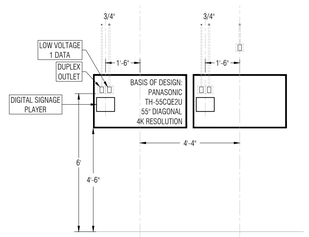


Cafeteria East Wall Elevation
SCALE: 3/8" = 1'



Corridor 205 Digital Signage
SCALE: 3/8" = 1'

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