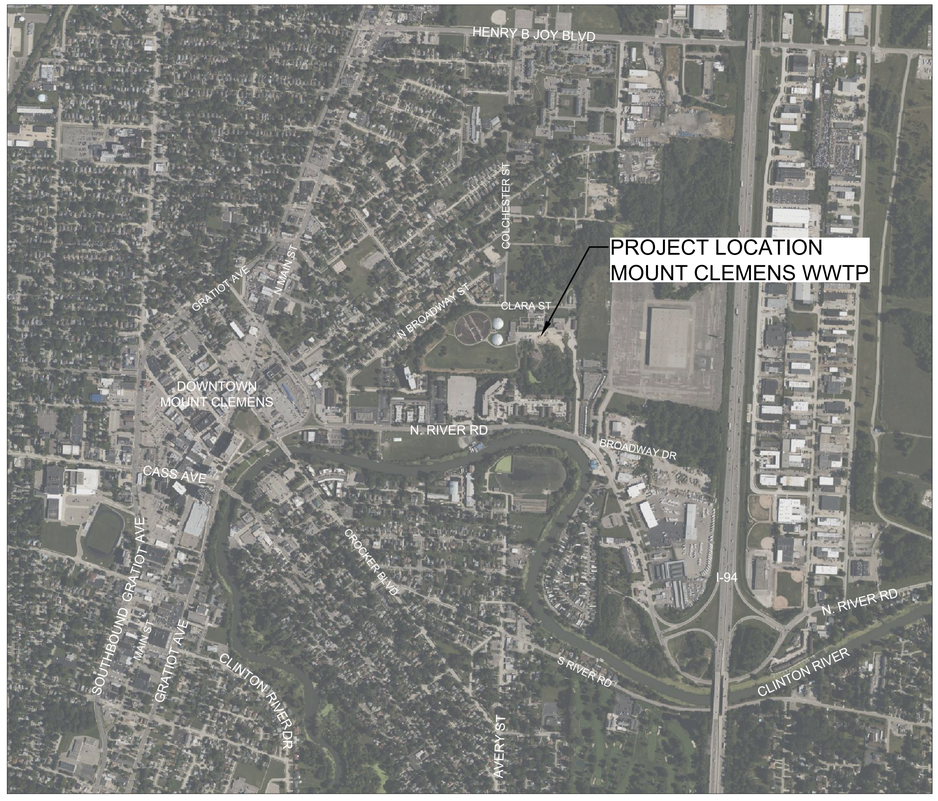
CITY OF MOUNT CLEMENS, MICHIGAN
MOUNT CLEMENS WWTP
BIOSOLIDS HANDLING IMPROVEMENTS

SRF NO. 5969-01
BID NO. 022405



LOCATION MAP

3497 COOLIDGE RD
EAST LANSING, MI 48823
PH: 517.316.3930, FAX: 517.484.8140
www.tetratech.com

TETRA TECH

PROJECT LOCATION:
MOUNT CLEMENS WWTP
1750 CLARA ST. , MOUNT CLEMENS, MI 48043

CLIENT INFORMATION:
CITY OF MOUNT CLEMENS, MICHIGAN

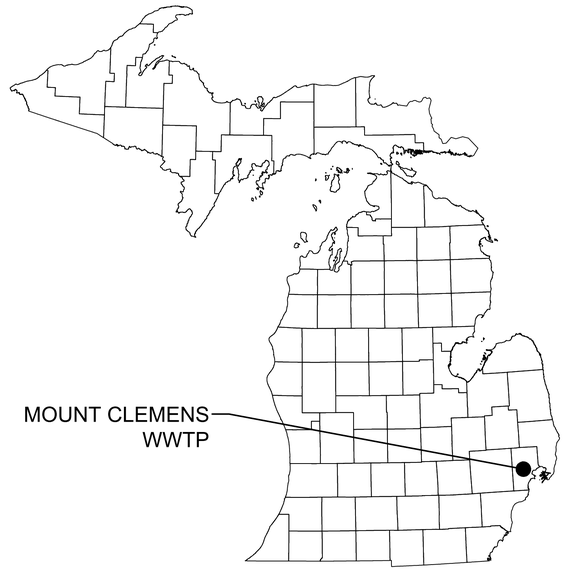
Tt PROJECT No.:
200-12747-23001

CLIENT PROJECT No.:
BID NO. 022405

PROJECT DESCRIPTION / NOTES:
BIOSOLIDS HANDLING IMPROVEMENTS
SRF NO. 5969-01

ISSUED:
ISSUED FOR BIDS - 02/05/24

VICINITY MAP:



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GENERAL NOTES (ALL DRAWINGS)

1. CONTRACTOR SHALL COORDINATE ALL DISCIPLINE WORK, EQUIPMENT LAYOUT, AND LAYOUT OF ALL CONDUIT, PIPE, DUCT, ETC SO THAT THERE ARE NO CONFLICTS. SHALL THOROUGHLY COORDINATE WORK SHOWN ON ALL DISCIPLINE SHEETS AND SPECIFICATIONS.
2. FIELD VERIFY ALL DIMENSIONS PRIOR TO SHOP DRAWING SUBMITTAL.
3. CONSTRUCTION SEQUENCING SHALL BE PER SPECIFICATION SECTION 01110. WWTP FLOW SHALL BE MAINTAINED AT ALL TIME. CONTRACTOR SHALL INSTALL TEMPORARY BULKHEADS OR TEMPORARY PUMPING AS NECESSARY TO PERFORM WORK WHILE MAINTAINING FLOW. AVERAGE WWTP FLOW IS 1.5 MGD WITH PEAK INSTANTANEOUS FLOW OF 12.5 MGD.
4. ALL DRAWINGS INDICATE MINIMUM REQUIREMENTS AND SHOW SUGGESTED LAYOUTS OF MAJOR SYSTEMS AND EQUIPMENT. FINAL LAYOUT IS DEPENDENT ON CONTRACTOR SELECTED EQUIPMENT AND SYSTEMS.
5. CONTRACTOR SHALL BE RESPONSIBLE TO MAKE PROVISIONS IN BID FOR MODIFICATIONS THAT RESULT FROM CHANGES IN COMPONENT LOCATIONS, ELECTRICAL POWER AND CONTROL WIRING, GRATING, STAIRS, HANDRAIL, EQUIPMENT BASES, SUPPORTS, ETC. THAT RESULT FROM CONTRACTOR COORDINATION BETWEEN DISCIPLINES AND EQUIPMENT SELECTIONS.
6. PIPE SUPPORTS ARE GRAPHICAL, IN NATURE AND INTENDED TO INDICATE THE GENERAL TYPE REQUIRED. THE PROPER SUPPORT OF THE PIPING SYSTEMS IS THE CONTRACTOR'S RESPONSIBILITY INCLUDING THE EXACT QUANTITY AND SPACING OF SUPPORTS, ADEQUATE BRACING, THRUST RESTRAINTS, AND OTHER REQUIREMENTS.
7. COORDINATE DEMOLITION WORK WITH THE REQUIREMENTS LISTED IN SECTION 01110 OF PROJECT MANUAL.
8. SITE INVESTIGATION PRIOR TO BIDS IS STRONGLY RECOMMENDED TO DETERMINE THE COMPLETE EXTENTS OF DEMOLITION REQUIRED. THESE DRAWINGS DO NOT INDICATE ALL MATERIALS THAT ARE TO BE REMOVED OR REROUTED IN AREA OF PROPOSED WORK.
9. THESE GENERAL NOTES PRESENT AND/OR SUMMARIZE KEY PROJECT INFORMATION FOR THE DRAWINGS. FOR ADDITIONAL INFORMATION REFER TO DRAWING NOTES AND PROJECT SPECIFICATIONS FOR FURTHER DETAILS AND REQUIREMENTS.
10. ALL GENERAL NOTES APPLY TO THE SCOPE OF THIS TOTAL PROJECT, REGARDLESS OF WHETHER OR NOT THEY ARE KEYED ON EVERY SHEET TO A SPECIFIC DETAIL.
11. ALL PIPING SHOWN AS BEING DEMOLISHED SHALL BE COMPLETELY REMOVED INCLUDING INSULATION, HANGERS, EXPANSION AND ANCHOR BOLTS AND PIPE SUPPORTS. PIPES TO BE DEMOLISHED THAT GO OUT OF THE WORK AREA ARE TO BE CAPPED AT THE WALL, FLOOR, OR CEILING. CAP ALL PIPES LEFT IN PLACE WITHIN 24 HOURS OF PIPE REMOVAL UNLESS DIRECTED OTHERWISE BY ENGINEER.
12. ALL EQUIPMENT SHOWN AS BEING DEMOLISHED SHALL BE COMPLETELY REMOVED INCLUDING EQUIPMENT PADS, ANCHORS, SUPPORTS, ELECTRICAL CONDUIT AND WIRE.
13. EXPANSION AND ANCHOR BOLTS REMAINING IN WALL, CEILINGS OR FLOORS SHALL BE POUNDED OR CUT FLUSH WITH SURFACE. IN FINISHED AREAS THEY SHALL BE RECESSED AND PATCHED TO MATCH EXISTING FINISH.
14. ALL OPENINGS REMAINING IN FLOORS, WALLS, OR CEILINGS, INCLUDING SLEEVES, AFTER PIPING AND DUCT DEMOLITION SHALL BE PATCHED TO MATCHING EXISTING FINISH AND AS DETAILED ON DRAWINGS. PENETRATION IN CHANNELS AND TANK WALLS ARE TO BE PATCHED AND SEALED WATER TIGHT. PENETRATIONS BETWEEN AREAS LABELED NEMA 4 AND NEMA 7 SHALL BE SEALED AIR TIGHT.
15. CAP AND BLIND FLANGE MATERIAL TO BE SAME AS PIPE BEING CAPPED.
16. FIELD REVIEW WITH ENGINEER AND OWNER PRIOR TO WORK WHICH PIPING AND CONDUIT ARE TO BE REMOVED.
17. ALL EXISTING DIMENSIONS SHOWN WITH THE (+/-) SYMBOL ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR BEFORE FABRICATION AND CONSTRUCTION.
18. THE INTENT OF THE DRAWINGS IS THAT THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND TRANSPORTATION NECESSARY FOR THE PROPER EXECUTION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ALL INCIDENTAL WORK NECESSARY TO COMPLETE THE PROJECT IN AN ACCEPTABLE MANNER, READY FOR USE BY THE OWNER.
19. CONTRACTOR SHALL REVIEW AND COORDINATE THE SCHEDULING OF ALL CONSTRUCTION WITH THE OWNER AND SUBMIT DETAILED CONSTRUCTION SCHEDULE PRIOR TO BEGINNING WORK.
20. CONTRACTOR SHALL ENSURE THAT ALL CONSTRUCTION MEETS OR EXCEEDS APPLICABLE CODES AND STANDARD PRACTICES, INCLUDING ALL FEDERAL, STATE AND LOCAL BUILDING AND ACCESSIBILITY REQUIREMENTS AND REGULATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY VIOLATION OF THE SAME AND SHALL MAKE ALL WORK ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION INVOLVED WITHOUT EXTRA CHARGE.

GENERAL NOTES, CONT.

21. EACH TRADE SHALL VERIFY ALL REQUIREMENTS PERTAINING TO WORK PERFORMED IN THE PROJECT AND ANY REQUIRED PERMITS. ALL SUBCONTRACTORS SHALL DIRECT QUESTIONS, CHANGES OR REQUESTS THROUGH THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT ALL REQUESTS, CHANGES OR QUESTIONS TO THE OWNER'S REPRESENTATIVE IN WRITING.
22. CONTRACTOR IS RESPONSIBLE FOR APPLYING FOR ALL FEDERAL, STATE, AND LOCAL PERMITS AND CODE REVIEW. OWNER WILL PAY FOR COST OF CITY BUILDING, ELECTRICAL AND MECHANICAL PERMITS.
23. CONTRACTOR SHALL MEET ALL OCCUPATIONAL SAFETY AND HEALTH STANDARDS (OSHA), PART 1910 AND EQUIVALENT MIOSHA STANDARDS.
24. CONTRACTOR SHALL FOLLOW SOIL EROSION AND SEDIMENT CONTROL PLAN (SESC).
25. PRIOR TO STARTING WORK THE DEMOLITION CONTRACTOR IS TO FIELD VERIFY NOTED AREAS OF DEMOLITION TO DETERMINE ACTUAL SCOPE OF DEMOLITION, AND TO REVIEW SCOPE WITH THE OWNER'S REPRESENTATIVE TO CONFIRM SPECIFIC ITEMS TO BE SALVAGED AND STORED FOR REUSE.
26. OWNER RESERVES RIGHT TO RETAIN ANY EQUIPMENT OR MATERIALS REMOVED UNDER THIS CONTRACT. CONTRACTOR IS RESPONSIBLE TO HAUL AND DISPOSE OF OFFSITE ALL REMAINING REMOVED EQUIPMENT, MATERIAL, PIPING, CONDUIT, SOILS AND DEBRIS, NOT RETAINED BY OWNER, IN ACCORDANCE WITH ALL APPLICABLE CODES, LAWS, AND ORDINANCES.
27. PRIOR TO THE START OF ANY DEMOLITION WORK, COORDINATE WITH OWNER THE LOCATION OF ALL UTILITIES. PLANT LOCK OUT/TAG OUT PROCEDURES SHALL BE STRICTLY FOLLOWED.
28. CONTRACTOR TO PROVIDE ANY AND ALL NECESSARY FENCES, BARRICADES, OR TRAFFIC CONTROLS TO ENSURE VEHICLE AND PERSONNEL SAFETY AND ADEQUATELY PROTECT THE SITE AT ALL TIMES.
29. PROVIDE ADEQUATE PROTECTION TO PREVENT DAMAGE TO ADJACENT STRUCTURES, TUNNELS, AND TANKS.
30. CONTRACTOR SHALL COORDINATE WITH OWNER AND ENGINEER ALL RELOCATION AND REROUTING OF EQUIPMENT, PIPING, CONDUIT, ETC.
31. PROMPTLY PATCH AND REPAIR DAMAGE CAUSED TO ADJACENT BUILDING ELEMENTS BY DEMOLITION WORK. RESTORE EXPOSED FINISHES OF PATCHED AREAS IN A MANNER THAT ELIMINATES EVIDENCE OF PATCHING AND REFINISHING.
32. MEASURES SHALL BE TAKEN TO PREVENT DEMOLISHED MATERIAL, TOOLS, FROM FALLING INTO THE TANKS, WETWELLS, AND CHANNELS.
33. CONTRACTOR IS RESPONSIBLE TO PROVIDE AND MAINTAIN SHORING, BRACING, OR STRUCTURAL SUPPORT TO PRESERVE STABILITY AND PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF ITEMS TO BE SELECTIVELY DEMOLISHED OR STABILIZED AND ITEMS WHICH ARE IMMEDIATELY ADJACENT TO THOSE BEING REMOVED. CONTRACTOR SHALL HIRE A LICENSED STRUCTURAL ENGINEER TO PROPERLY DESIGN ANY SHORING OR TEMPORARY SUPPORTS THAT MAY BE REQUIRED DURING THE DEMOLITION PHASE.
34. NO BURNING SHALL BE PERMITTED ON THIS PROJECT.
35. BLASTING IS PROHIBITED ON THIS PROJECT.
36. CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC CONTROL AND WORK SITE SAFETY ON THIS PROJECT, INCLUDING SHEETING, BRACING, SIGNAGE, AND MEETING ALL STATE, FEDERAL AND LOCAL SAFETY CODES.
37. ALL ANCHORS, FASTENERS, UNISTRUT AND PIPE HANGERS SHALL BE 304 OR 316 STAINLESS STEEL. PIPE SUPPORT STANDS AND I BEAM SUPPORTS SHALL BE HOT DIPPED GALVANIZED OF STAINLESS STEEL. ALL DUCTILE IRON AND STEEL PIPE FLANGE HARDWARE NUTS AND BOLTS SHALL BE GALVANIZED. OTHER PIPING CONNECTION HARDWARE SHALL BE AS SPECIFIED.

TETRA TECH
www.tetratech.com
3497 COOLIDGE ROAD
EAST LANSING, MI 48823
PHONE: 517.316.3963 FAX: 517.484.8140

MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

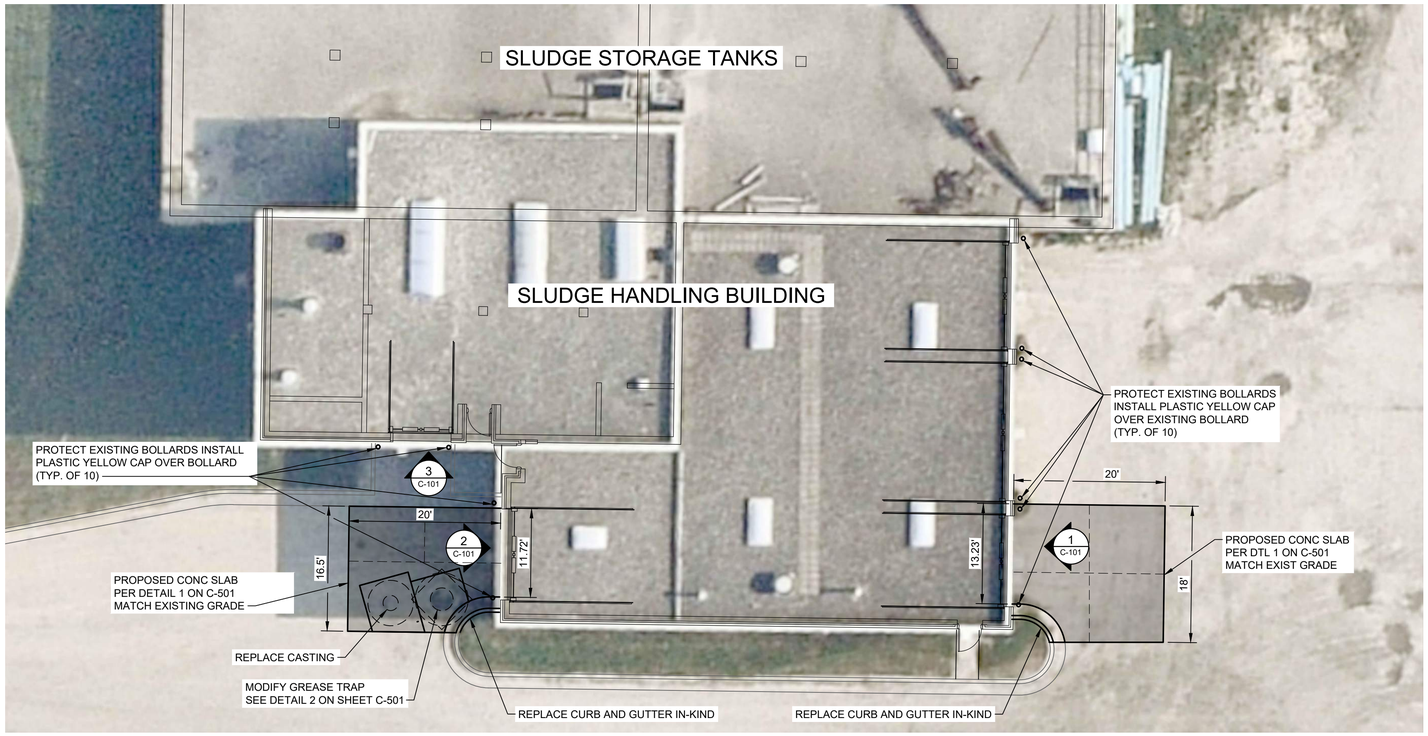
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

SHEET INDEX AND GENERAL NOTES

PROJ:	200-12747-23001
DESN:	BGB
DRWN:	NTK
CHKD:	

G-002

Bar Measures 1 inch, otherwise drawing not to scale



PAVING PLAN

SCALE: 1" = 10'

0 5' 10' 20'

SCALE: 1" = 10'

1 EAST GARAGE DOOR ELEVATION

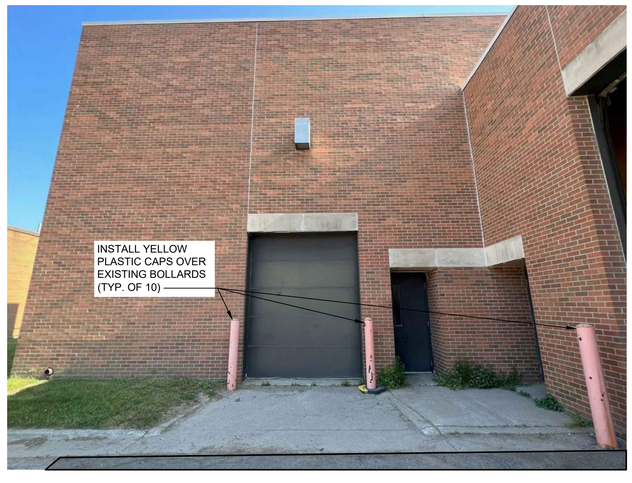
SCALE: NTS

2 WEST GARAGE DOOR ELEVATION

SCALE: NTS

3 POLYMER GARAGE DOOR AND ELECTRICAL ROOM DOOR ELEVATION

SCALE: NTS



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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

CONCRETE DRIVEWAY INSTALLATION

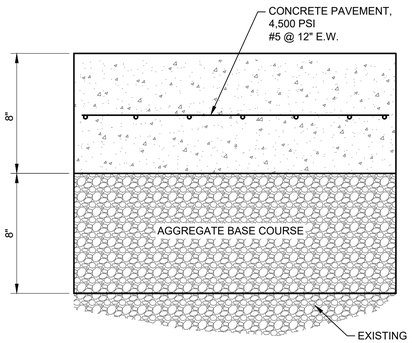
PROJ:	200-12747-23001
DESN:	D. WARREN
DRWN:	W. JOHNSON
CHKD:	A. FLAK

C-101

Bar Measures 1 inch, otherwise drawing not to scale

1 CONCRETE PAVEMENT SECTION

SCALE: NTS

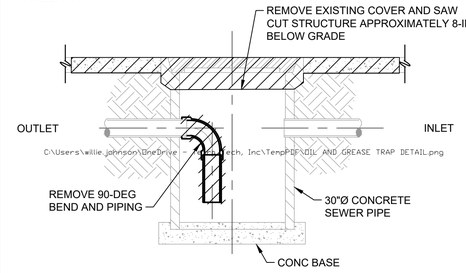


NOTES:

1. ALL MATERIALS SHALL MEET MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) MATERIAL SPECIFICATIONS.

2 OIL AND GREASE TRAP STRUCTURE REMOVAL DETAIL

SCALE: NTS



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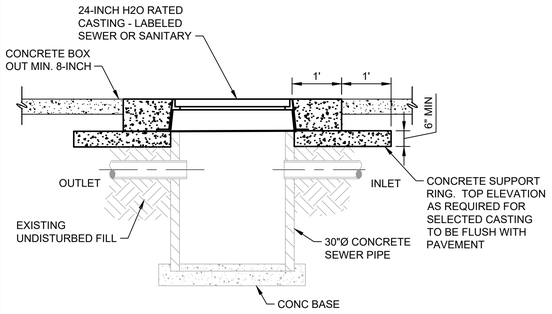

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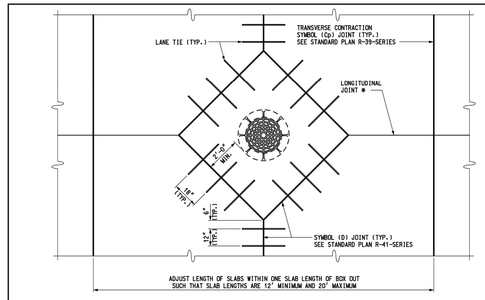
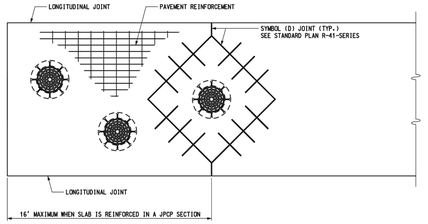


DIAGONAL BOX OUT OPTION

FOR USE WHEN STRUCTURE IS ON OR NEAR THE JOINT

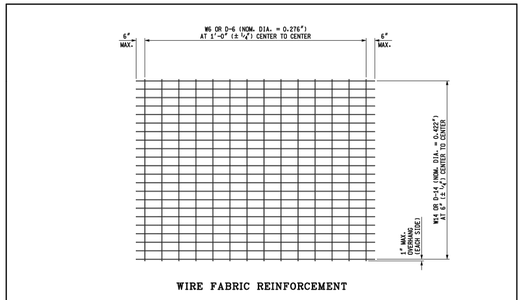
* IF NECESSARY, ADJUST LONGITUDINAL JOINT LOCATION TO INTERSECT BOX OUT AS APPROVED BY THE ENGINEER.



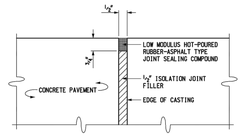
MULTIPLE STRUCTURES WITHIN SLAB

FOR SLABS WITH MULTIPLE STRUCTURES INCLUSIVE, REINFORCE THE SLAB JOINT TO JOINT. IF A BOX OUT OPTION IS USED WITHIN THE SLAB (FOR CONSTRUCTION PURPOSES), FOLLOW BOX OUT DETAIL WITH REINFORCEMENT.

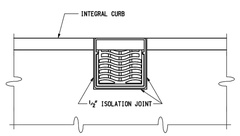
MDOT	DEPARTMENT DIRECTOR Kirk T. Steudle	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR		
PREPARED BY DESIGN DIVISION	APPROVED BY: John C. Friend ENGINEER OF DELIVERY	ISOLATION JOINT DETAILS		
DRAWN BY: B.L.T.	APPROVED BY: Mark A. VanPortfleet ENGINEER OF DEVELOPMENT	9-10-2010 T.R.N.A. APPROVAL	5-28-2010 PLAN DATE	R-37-B SHEET 1 OF 2
CHECKED BY: W.K.P.				



WIRE FABRIC REINFORCEMENT



ISOLATION JOINT



DRAINAGE INLET
(FOR USE WITH INTEGRAL CURB)
NOT ALIGNED WITH TRANSVERSE JOINT

NOTES:

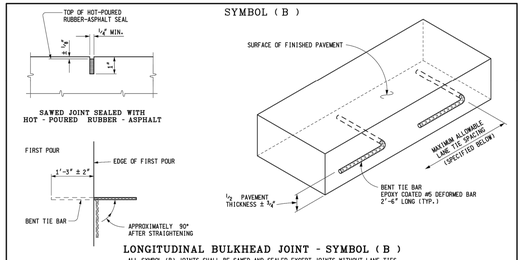
NO PLUG OR SLIVER OF CONCRETE SHOULD EXTEND OVER, UNDER, THROUGH, AROUND, OR BETWEEN SECTIONS OF THE JOINT FILLER.

JOINT FILLER MAY BE HELD IN PLACE BY STAKES IN THE SUBGRADE.

AFTER THE CONCRETE HARDENS, THE TOP OF THE JOINT FILLER MAY BE RECESSED APPROXIMATELY ¼" TO ALLOW SPACE FOR LOW MODULUS HOT-POURED RUBBER-ASPHALT TYPE JOINT SEALING COMPOUND.

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR				
ISOLATION JOINT DETAILS				
9-10-2010 T.R.N.A. APPROVAL	5-28-2010 PLAN DATE	R-37-B	SHEET 2 OF 2	

SYMBOL (B)

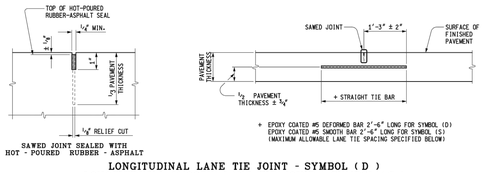


SAWED JOINT SEALED WITH HOT - POURED RUBBER - ASPHALT

LONGITUDINAL BULKHEAD JOINT - SYMBOL (B)

ALL SYMBOL (B) JOINTS SHALL BE SAWED AND SEALED EXCEPT JOINTS WITHOUT LANE TIES AND JOINTS ADJACENT TO VERTICAL FACES WHICH WOULD PROHIBIT SAWING.

SYMBOL (D) AND (S)



SAWED JOINT SEALED WITH HOT - POURED RUBBER - ASPHALT

+ EPOXY COATED #5 DEFORMED BAR 2'-6" LONG FOR SYMBOL (D)
EPOXY COATED #5 SMOOTH BAR 2'-6" LONG FOR SYMBOL (S)
(MAXIMUM ALLOWABLE LANE TIE SPACING SPECIFIED BELOW)

LONGITUDINAL LANE TIE JOINT - SYMBOL (D)
LONGITUDINAL SMOOTH LANE TIE JOINT - SYMBOL (S)

SYMBOL (D) AND SYMBOL (S) TIE BARS SHALL BE PLACED AT THE PROPER SPACING LONGITUDINALLY, AND TRANSVERSELY AT 90° WITH THE JOINT.

MAXIMUM ALLOWABLE LANE TIE SPACING SYMBOLS (B)*, (D)*, (L2)*, AND (S)		* TOTAL DISTANCE OF TIED JOINT FROM NEAREST FREE EDGE
(B) GRADE 40	(D)*, (L2)*, AND (S)* GRADE 60	
2'-10"	3'-1"	12' OR LESS
1'-11"	2'-7"	OVER 12' THROUGH 17'
1'-5"	1'-11"	OVER 17' THROUGH 24'
1'-2"	1'-5"	OVER 24' THROUGH 28'
1'-2"	1'-4"	OVER 28' THROUGH 36'
1'-1"	1'-1"	36' OR GREATER **

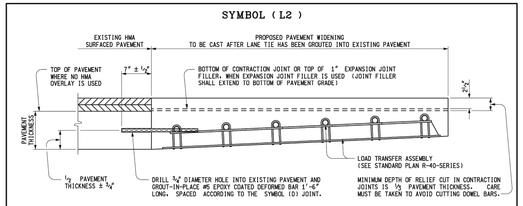
* INCLUDES ANY TIED COMBINATION OF LANE WIDTH, VALLEY GUTTER, CURB & GUTTER, OR SHOULDER

** FOR WIDTHS GREATER THAN 48' USE #6 DEFORMED BARS AT 1'-2" SPACING.

MAXIMUM ALLOWABLE LANE TIE SPACING

MDOT	DEPARTMENT DIRECTOR Kirk T. Steudle	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR		
PREPARED BY DESIGN DIVISION	APPROVED BY: Randy V. Wright DIRECTOR, BUREAU OF FIELD SERVICES	LONGITUDINAL PAVEMENT JOINTS		
DRAWN BY: B.L.T.	APPROVED BY: Mark A. VanPortfleet DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT	9-30-2014 T.R.N.A. APPROVAL	4-22-2013 PLAN DATE	R-41-H SHEET 1 OF 2
CHECKED BY: W.K.P.				

SYMBOL (L2)



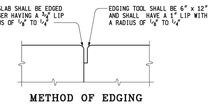
NOTE:
SYMBOL (L2) JOINT USED FOR WIDENING CONCRETE PAVEMENTS WITHOUT HMA OVERLAYS SHALL BE SAWED AND SEALED ACCORDING TO THE SYMBOL (B) JOINT.

THE LONGITUDINAL JOINT USED FOR WIDENING EXISTING CONCRETE BASE COURSE OR CONCRETE PAVEMENT HAVING A HMA SURFACE SHALL HAVE EPOXY ANCHORED LANE TIES PLACED AS SPECIFIED.

TAPERED PAVEMENT THICKNESS OVER THE DISTANCE OF PAVEMENT WIDENING OR IN ONE LANE WIDTH WHEN WIDENING IS FOR TWO OR MORE LANES.

LONGITUDINAL BULKHEAD JOINT

FOR WIDENING EXISTING CONCRETE PAVEMENT OR CONCRETE BASE COURSE (USING EPOXY ANCHORED LANE TIES)



METHOD OF EDGING

NOTES:

ALL LANE TIE BARS SHALL BE DEFORMED EXCEPT SYMBOL (S) WHICH WILL BE SMOOTH.

THE EPOXY COATED S BARS ARE TO BE FACTORY COATED WITH AN APPROVED BOND RELEASE AGENT, UNIFORMLY APPLIED BY DIPPING AND WITHOUT EXCESSIVE DRIPS OR THICKNESS.

THE INSTALLATION OF LANE TIE BARS AND THE SAWING OF LONGITUDINAL JOINTS WILL NOT BE REQUIRED FOR TEMPORARY CONCRETE PAVEMENT UNLESS SPECIFIED ON PLANS OR IN THE PROPOSAL. THE EDGING OF TEMPORARY CONCRETE PAVEMENT WILL NOT BE REQUIRED.

FOR JOINT LAYOUT DETAILS, SEE STANDARD PLAN R-42-SERIES.

SAWING PROCEDURES AND RELATED OPERATIONS ARE DESCRIBED IN THE CURRENT STANDARD SPECIFICATIONS.

NO SAWED OR SEALED JOINT SHALL BE CONSTRUCTED BETWEEN THE PAVEMENT AND CURB OR PAVEMENT AND CURB AND GUTTER, WHERE THESE ITEMS ARE CAST INTEGRALLY.

WHEN JOINTED PLAIN CONCRETE IS SPECIFIED AT INTERSECTIONS SYMBOL (S) JOINTS ARE TO BE USED FOR THE LONGITUDINAL JOINT BETWEEN THE TIE E2 JOINT AT THE SPRINGPOINT OF THE SIDE STREET AND THE THROUGH LANE GUTTER PAN LINE. WHEN THE E2 JOINT IS MOVED TO THE THROUGH LANE GUTTER PAN LINE USE SYMBOL (D) JOINT AS NORMALLLY REQUIRED.

ALL STRAIGHT TIE BARS SHALL BE EPOXY COATED ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS FOR EPOXY COATED STEEL REINFORCEMENT FOR STRUCTURES.

WHEN LANE TIES ARE GROUTED INTO AN EXISTING PAVEMENT, THE GROUT SHALL BE SELECTED FROM THE PREQUALIFIED MATERIALS LISTED IN THE DEPARTMENT'S "MATERIALS SAMPLING GUIDE" FOR LANE TIES.

IN ORDER TO AVOID CONFLICT WITH THE LOAD TRANSFER ASSEMBLY, THE PLACEMENT OF THE END LANE TIE ADJACENT TO ANY TRANSVERSE JOINT SHALL BE AS FOLLOWS:

1. WHEN MAXIMUM ALLOWABLE LANE TIE SPACING EXCEEDS 3'-4", PLACE FIRST AND LAST LANE TIE HALF THE MAXIMUM ALLOWABLE LANE TIE SPACING FROM JOINT.
2. WHEN MAXIMUM ALLOWABLE LANE TIE SPACING IS LESS THAN 3'-4", PLACE FIRST AND LAST LANE TIE A MINIMUM OF 1'-4" FROM JOINT.

IT MAY BE NECESSARY TO ADJUST THE LAST THREE LANE TIE SPACINGS TO ENSURE UNIFORM LOADING RESISTANCE ALONG THE LONGITUDINAL JOINT.

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR				
LONGITUDINAL PAVEMENT JOINTS				
9-30-2014 T.R.N.A. APPROVAL	4-22-2013 PLAN DATE	R-41-H	SHEET 2 OF 2	

TETRA TECH
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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
DETAILS

PROJ:	200-12747-23001
DESN:	D. WARREN
DRWN:	W. JOHNSON
CHKD:	A. FLAK

C-501

2/1/2024 3:48:42 PM - P:\IER\12747\200-12747-23001\CAD\SHEETFILES\C-501-MISCDETAILS.DWG - BODE, BRENT

Bar Measures 1 inch, otherwise drawing not to scale

STRUCTURAL GENERAL NOTES

1. THESE GENERAL NOTES PRESENT AND/OR SUMMARIZE KEY PROJECT INFORMATION FOR THE DRAWING READER'S CONVENIENCE. SEE ALSO INDIVIDUAL DRAWING NOTES AND PROJECT SPECIFICATIONS FOR FURTHER DETAILS AND REQUIREMENTS.

2. ALL REFERENCED STANDARDS HEREIN ARE TO MOST RECENT ISSUE IN EFFECT AS OF THE DATE OF THESE DOCUMENTS, UNLESS NOTED OTHERWISE IN PROJECT SPECIFICATIONS OR ON THE DRAWING.

3. ALL EXISTING ELEMENTS SHOWN ON THE PLANS ARE BASED ON RECORD DRAWINGS. IF THERE ARE ANY VARIATIONS IN THE FIELD CONDITIONS THAT AFFECT THE DESIGN, CONTRACTOR TO NOTIFY THE ENGINEER .

4. ALL EXISTING DIMENSIONS SHOWN WITH THE ± SYMBOL ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR BEFORE FABRICATION AND CONSTRUCTION.

5. DIMENSIONS MARKED WITH A "X" SHALL BE DETERMINED BY EQUIPMENT MANUFACTURER AND COORDINATED BY CONTRACTOR

6. SUBMIT SHOP DRAWINGS, PROJECT DATA AND SAMPLES AS SPECIFIED IN PROJECT SPECIFICATIONS.

7. ABBREVIATIONS

ADD'L	ADDITIONAL
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALUM.	ALUMINUM
APPROX.	APPROXIMATE
ARCH.	ARCHITECT(URAL)
B.M.	BEAM
B.O.F	BOTTOM OF FOOTING
B.O.S.	BOTTOM OF STEEL
BLDG.	BUILDING
BOT.	BOTTOM
BRG.	BEARING
BTWN	BETWEEN
CCJ	CRACK CONTROL JOINT
CFS	COLD FORMED STEEL
CJ	CONSTRUCTION JOINT
CL	CENTER LINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
COORD	COORDINATE
CTR	CENTER
DBA	DEFORMED BAR ANCHOR
DEMO	DEMOLISH
DIA	DIAMETER
DIM	DIMENSION
DIST	DISTANCE
DN	DOWN
DTL.	DETAIL
DWG(S)	DRAWING(S)
DWL	DOWEL
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
EL / ELEV.	ELEVATION
ELEC	ELECTRIC(AL)
ENGR	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
ESES	ANCHOR BOLT
EW	EACH WAY
EX/EXIST.	EXISTING
EXP	EXPANSION
F.S.	FAR SIDE
F.V.	FIELD VERIFY
FD	FLOOR DRAIN
FFE	FINISH FLOOR ELEVATION
FIN	FINISH (ED)
FLG.	FLANGE
FLR	FLOOR
FND.	FOUNDATION
FRMG	FRAMING
FT	FOOT
FTG	FOOTING
GA	GAGE, GAUGE
GALV	GALVANIZED
GR.	GRADE
GRTG	GRATING
H.P.	HIGH POINT
H.R.	HAND RAIL
HK	HOOK
HORIZ	HORIZONTAL
HT	HEIGHT
HVAC	HEATING VENTILATION AND AIR CONDITIONING
I.D.	INSIDE DIAMETER
I.F.	INSIDE FACE
I.J.	ISOLATION JOINT
IN.	INCH
INSUL	INSULATION
L	ANGLE
L.P.	LOW POINT
LBS	POUNDS
LF	LINEAR FOOT (FEET)
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATION
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MFR	MANUFACTURER
MID	MIDDLE / MIDPOINT
MIN	MINIMUM, MINUTE
MISC.	MISCELLANEOUS
MTL	METAL
N	NEW
N.S.	NEAR SIDE
N.T.S.	NOT TO SCALE
NA	NOT APPLICABLE
NO	NUMBER
NOM	NOMINAL
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
OPH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
ORIG	ORIGINAL
PEMB	PRE-ENGINEERED METAL BUILDING
PERF	PERFORATED
PERP	PERPENDICULAR
PL	PLATE
PLF	POUNDS PER LINEAR FOOT
PRCST	PRECAST
PREFAB	PREFABRICATED
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
QTY	QUANTITY
R	RISER
RAD.	RADIUS
RD	ROOF DRAIN
REF	REFERENCE
REINF.	REINFORCEMENT
REQ/REQ'D	REQUIRED
REV	REVISION
RO	ROUGH OPENING
SCHED	SCHEDULE
SF	SQUARE FOOT
SHT.	SHEET
SIM.	SIMILAR
SPA.	SPACE
SPEC	SPECIFICATIONS
SQ	SQUARE
SS	STAINLESS STEEL
STAG.	STAGGER
STD	STANDARD
STL	STEEL
STL JST	STEEL JOIST
STRUCT	STRUCTURE(AL)
SYM	SYMMETRICAL
T	TREAD
T/	TOP OF
TEMP	TEMPORARY
THK	THICKNESS
TOF	TOP OF FOOTING
TOS	TOP OF SLAB
TRANSV.	TRANSVERE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
V.I.F.	VERIFY IN FIELD
VERT	VERTICAL
W.P.	WORK POINT
W/	WITH
W/O	WITHOUT
WS	WATER STOP.
WWF	WELDED WIRE FABRIC

DESIGN CRITERIA

1. REFERENCES:

   A. ICC INTERNATIONAL BUILDING CODE, 2012 EDITION
   B. ICC INTERNATIONAL EXISTING BUILDING CODE, 2012 EDITION
   C. STATE BUILDING CODE: 2015 MICHIGAN BUILDING CODE
   D. ASCE/SEI 7-10 - MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES

2. DEAD LOADS:

ROOF DEAD LOAD	= (SELF WEIGHT)
FLOOR DEAD LOAD	= (SELF WEIGHT)
FLOOR COLLATERAL* LOAD	= 10 PSF

   A. *COLLATERAL LOAD INCLUDES PROVISION FOR HANGING LOADS INCLUDING SPRINKLERS, DUCTWORK, PLUMBING, CEILING AND OTHER COMPONENTS. REFER TO DRAWINGS FOR CONCENTRATED LOADING.

1. LIVE LOADS (U.N.O.):

TYPICAL GROUND FLOORS	= 100 PSF
STAIRS, WALKWAYS, OR PLATFORMS	= 100 PSF
PROCESS FLOORS	= 200 PSF

2. SEISMIC DESIGN DATA:

RISK CATEGORY	= III
SEISMIC IMPORTANCE FACTOR, Ie	= 1.25
SDS	= 0.095
SD1	= 0.072
SS	= 0.089
S1	= 0.045
SITE CLASS	= D
SEISMIC DESIGN CATEGORY	= B
RESPONSE MODIFICATION FACTOR, R	= 3
BASIC SEISMIC FORCE RESISTING SYSTEM	= STRUCUTRAL STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC
SEISMIC RESPONSE COEFFICIENT, Cs	= 0.010
ANALYSIS PROCEDURE:	= EQUIVALENT LATERAL FORCE

CONCRETE

1. REFERENCES

   A. ACI 318-14 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   B. ACI 350-06 CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES
   C. ACI SP-66 ACI DETAILING MANUAL
   D. ACI 301-16 SPECIFICATION FOR STRUCTURAL CONCRETE
   E. ACI 117-10 SPECIFICATION FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS
   F. CRSI MSP-2-01 MANUAL OF STANDARD PRACTICE
   G. CRSI REINFORCING BAR DETAILING
   H. CRSI PLACING REINFORCING BARS

2. MATERIALS

   A. STRUCTURAL CONCRETE

      a. MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS (f'c): 4000 PSI
      b. ALL CONCRETE EXPOSED TO THE ELEMENTS SHALL BE AIR-ENTRAINED IN ACCORDANCE WITH ASTM C260. SEE SPECIFICATIONS.

   B. REINFORCEMENT

      a. REINFORCING BARS: ASTM A615, GRADE 60
      b. WELDED SMOOTH WIRE FABRIC - ASTM A185 (SHEETS ONLY, ROLL FABRIC NOT ALLOWED)

   C. ACCESSORIES

      a. BAR SUPPORTS CLASS 1, MAXIMUM PROTECTION (CRSI MANUAL OF STANDARD PRACTICE) FOR ALL SLABS AND BEAMS WITH SOFFITS EXPOSED TO VIEW

   D. CAST-IN-PLACE ANCHOR RODS

      a. SHALL BE GALVANIZED, FURNISHED WITH CHAMFERED ENDS, AND SHALL MEET STRENGTH AND DUCTILITY REQUIREMENTS EQUIVALENT ASTM F1554, GR 55 WELDABLE MATERIAL.

   E. GROUT: HIGH STRENGTH, NON-SHRINK STRUCTURAL GROUT. SEE SPECIFICATIONS.

3. REINFORCEMENT DETAILING

   A. ALL REINFORCING STEEL DETAILS SHALL BE IN ACCORDANCE WITH THE ACI CODE REQUIREMENTS (ACI 318 - CURRENT EDITION).
   B. REINFORCING STEEL PLACING DRAWINGS AND BAR LISTS SHALL CONFORM TO THE ACI OR CRSI DETAILING MANUALS. ALL BAR AND MESH SUPPORTS MUST BE CLEARLY DETAILED
   C. CONCRETE COVER FOR REINFORCING SHALL BE INDICATED ON THE APPLICABLE REINFORCING STEEL SHOP DRAWINGS. HOWEVER, NO REINFORCING IN AREAS EXPOSED TO EARTH, WEATHER ,SEWAGE OR WATER SHALL HAVE COVER LESS THAN TWO INCHES.

   D. SPECIFIED COVER FOR REINFORCING PER ACI 318 (BUILDING STRUCTURES):

WALLS (EXTERIOR)	1.5"
WALLS (INTERIOR)	3/4"
SUSPENDED SLABS (BOTTOM)	3/4"
SUSPENDED SLABS (TOP)	1.5"
SLAB-ON-GRADE (WWF)	1/3 x DEPTH FROM TOP OF SLAB
SLAB-ON-GRADE (REBAR)	2" FROM TOP OF SLAB (U.N.O.)

   E. HOOKS AND BENDS SHALL MEET ACI STANDARD UNLESS OTHERWISE INDICATED.
   F. SPLICES: CONTINUOUS REINFORCING BARS SHALL BE FURNISHED WITH CLASS 'B' TENSION LAPS SPLICES INCLUDING CORNER BARS, UNLESS NOTED OTHERWISE
   G. MECHANICAL SPLICES SHALL NOT BE PERMITTED UNLESS SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER
   H. REINFORCING STEEL FABRICATION AND PLACEMENT SHALL BE IN ACCORDANCE WITH CRSI MANUAL OF STANDARD PRACTICE AND CRSI PLACING REINFORCING BARS (LATEST EDITIONS).
   I. REINFORCING STEEL IN FOOTINGS SHALL BE ASSEMBLED IN MAT GRILLES EQUALLY SPACED AND SECURELY WIRED TOGETHER BEFORE THE CONCRETE IS POURED.
   J. ALL REINFORCING SHALL BE HELD SECURELY IN POSITION WITH STANDARD ACCESSORIES IN CONCRETE
   K. NO REINFORCING STEEL SHALL BE FIELD BENT WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER. FIELD BENDING OF PLAIN REINFORCEMENT, IF PERMITTED, SHALL BE PERFORMED USING AN APPROVED AND APPROPRIATE SIZED PORTABLE HYDRAULIC DEVICE THAT MAKES ACI STANDARD RADIUS BENDS. NO OTHER FIELD BENDING METHOD SHALL BE PERMITTED.
   L. WELDING, INCLUDING TACK WELDING, FOR REINFORCING STEEL IS PROHIBITED. WELDING OF REINFORCING STEEL AND HIGH STRENGTH BOLTS, IE. A36, F1554, WILL BE PERMITTED ONLY BY WRITTEN APPROVAL OF THE ENGINEER.
   M. ALL OPENINGS THROUGH WALLS, SLABS OR OTHER STRUCTURAL ELEMENTS NOT DETAILED ON THE STRUCTURAL DRAWINGS MUST BE LOCATED BY THE CONTRACTOR AND SHOWN ON THE APPLICABLE REINFORCING STEEL SHOP DRAWINGS. THE FINAL LOCATION OF ALL OPENINGS MUST BE REVIEWED BY THE ENGINEER BEFORE THE CONCRETE IS POURED.

4. FORMWORK

   A. SEE SPECIFICATIONS
   B. PROVIDE 3/4" CHAMFER AT ALL EXPOSED CORNERS OF BEAMS, WALLS ETC. UNLESS OTHERWISE NOTED.

5. CONCRETE FINISHES: SEE SPECIFICATIONS

6. CURING AND PROTECTION: SEE SPECIFICATIONS.

7. SEE THE MECHANICAL, ELECTRICAL AND SUPPLIERS DRAWINGS AND THE SPECIFICATIONS FOR THE LOCATIONS OF SPECIAL ANCHORS, CHAMFERS, SLEEVES, PIPES, CONDUITS AND OTHER DETAILS NOT SHOWN ON THE STRUCTURAL DRAWINGS.

8. EMBEDDED PIPES OR CONDUIT. MAXIMUM DIAMETER ONE THIRD x SLAB OR WALL THICKNESS, SPACED MINIMUM OF 3 TIMES DIAMETER ON CENTER. ALL EMBEDDED PIPES OR CONDUITS SHALL BE APPROVED BY ENGINEER OF RECORD PRIOR TO INSTALLING

9. SIZE AND LOCATION OF EQUIPMENT PADS AND ANCHOR BOLTS SHALL BE AS REQUIRED BY THE EQUIPMENT MANUFACTURER. ALL CONDUIT PLACED IN SLAB SHALL BE APPROVED BY STRUCTURAL ENGINEER OF RECORD PRIOR TO INSTALLING CONDUIT AND POURING SLAB.

10. SUBMITTALS

   A. CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING THE FOLLOWING DOCUMENTS TO THE ENGINEER OF RECORD:

      a. CONCRETE MIX DESIGN
      b. CONCRETE REINFORCING DRAWINGS

CONCRETE POST-INSTALLED ANCHORS

1. MECHANICAL (TORQUE-CONTROLLED) ANCHORS

   A. APPROVED SYSTEMS INCLUDE HILTI KWIK BOLT TZ (ICC ESR 1917) OR HILTI KWIK HUS-EZ (ICC ESR 3027) OR EQUAL CONSIDERING LOAD RESISTANCE. MECHANICAL ANCHORS SHALL BE APPROVED FOR USE WITH CRACKED CONCRETE PER AC 193. CURRENT ICC-ESR SHALL BE SUBMITTED. ALL PERSONNEL INSTALLING ANCHORS SHALL BE TRAINED BY THE MANUFACTURER ON PROPER INSTALLATION TECHNIQUE. TRAINING DOCUMENTATION FROM THE MANUFACTURER SHALL BE AVAILABLE ON REQUEST

2. ADHESIVE ANCHORS

   A. APPROVED SYSTEMS INCLUDE HILTI HIT-RE 500 V3 (ICC ESR 3814) OR HILTI HIT-HY 200 ADHESIVE WITH HAS/HIT-V THREADED ROD WITH SAFESET TECHNOLOGY (ICC ESR 3187) OR EQUAL CONSIDERING LOAD RESISTANCE, IN-SERVICE AND INSTALLATION TEMPERATURE, AVAILABILITY OR COMPREHENSIVE INSTALLATION INSTRUCTIONS, AND CREEP. ADHESIVE ANCHORS SHALL BE APPROVED FOR USE WITH CRACKED CONCRETE PER AC 308. CURRENT ICC-ESR SHALL BE SUBMITTED.
   B. ALL PERSONNEL INSTALLING ANCHORS SHALL BE TRAINED BY THE MANUFACTURER ON PROPER INSTALLATION TECHNIQUE. TRAINING DOCUMENTATION FROM THE MANUFACTURER SHALL BE AVAILABLE ON REQUEST.
   C. HOLE SIZES AND INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII)
   D. ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH SHALL BE BASED ON ACI 355.4 TEMPERATURE CATEGORY A WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE DRILL BIT INTO CONCRETE THAT HAS BEEN CURED FOR AT LEAST 21 DAYS.
   E. ANY ADHESIVE ANCHOR INSTALLED HORIZONTALLY OR IN A VERTICALLY INCLINED PLANE SHALL BE INSTALLED BY CERTIFIED ADHESIVE ANCHOR INSTALLER, PER ACI 318-14 17.8.2.2, AND SHALL BE INSPECTED PER ACI 318-14 17.8.2.4.
   F. FILL IN ALL ABANDONED HOLES WITHIN 2" OF NEW ANCHOR LOCATIONS.

   G. WHERE REQUIRED, A PROGRAM FOR ON-SITE PROOF LOADING, THAT IS, PROOF LOADING PROGRAM, TO BE CONDUCTED AS PART OF THE SPECIAL INSPECTION AND SHALL BE ESTABLISHED BY THE ENGINEER OR DESIGN PROFESSIONAL OF RECORD AND SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS:

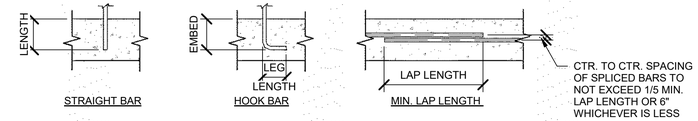
      a. FREQUENCY OF PROOF LOADING BASED ON ANCHOR TYPE, DIAMETER, AND EMBEDMENT.
      b. PROOF LOADS BY ANCHOR TYPE, DIAMETER, EMBEDMENT, AND LOCATION.
      c. ACCEPTABLE DISPLACEMENTS AT PROOF LOAD.
      d. REMEDIAL ACTION IN THE EVENT OF FAILURE TO ACHIEVE PROOF LOAD OR EXCESSIVE DISPLACEMENT.

      UNLESS OTHERWISE DIRECTED BY THE ENGINEER OR DESIGN PROFESSIONAL OF RECORD, PROOF LOADS SHALL BE APPLIED AS CONFINED TENSION TESTS (4.7.2.3). PROOF LOADS LEVELS SHALL NOT EXCEED THE LESSER OF 50 PERCENT OF THE EXPECTED PEAK LOAD BASED ON ADHESIVE BOND STRENGTH, OR 80 PERCENT OF THE ANCHOR YIELD STRENGTH. MAINTAIN THE PROOF LOAD AT THE REQUIRED LOAD LEVEL FOR A MINIMUM OF 10 SECONDS.

3. EQUIPMENT ANCHORS:
   A. SIZE, LENGTH, AND LOCATION OF EQUIPMENT ANCHORS SHALL BE PROVIDED BY EQUIPMENT MANUFACTURER.

TENSION DEVELOPMENT / LAP SPLICE SCHEDULE (UNCOATED BARS)

BAR SIZE	DEVELOPMENT LENGTH IN CONCRETE (f'c = 4000 PSI)						
	DEVELOPMENT LENGTH (IN)		CLASS 'B' LAP SPLICE LENGTH (IN)		STD 90 DEG. HOOK (IN)		
	BAR TYPE 1	BAR TYPE 2	BAR TYPE 1	BAR TYPE 2	EMBED	LEG LENGTH	BEND DIA.
3	15	22	19	28	6	6	3
4	19	29	25	37	7	8	3
5	24	36	31	47	9	10	3 3/4
6	29	43	37	56	10	12	4 1/2
7	42	63	54	81	12	14	5 1/4
8	48	72	62	93	14	16	6
9	54	81	70	105	15	19	9 1/2
10	61	91	79	118	17	22	10 3/4
11	74	111	97	145	19	24	11 1/2



BAR TYPE 1 - CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED NOT LESS THAN Db, CLEAR COVER NOT LESS THAN Db, AND STIRRUPS OR TIES THROUGHOUT Ld NOT LESS THAN CODE MINIMUM

OR

CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED NOT LESS THAN 2"Db AND CLEAR COVER NOT LESS THAN Db.

BAR TYPE 2 - TOP BARS WITH MORE THAN 12" OF FRESH CONCRETE CAST BELOW **AND** OTHER CASES

TETRA TECH
www.tetratech.com
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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

GENERAL NOTES

PROJ:	200-12747-23001
DESN:	AJF
DRWN:	AJF
CHKD:	TJM

S-001

Bar measures 1 inch, otherwise drawing is not to scale

1/31/2024 11:01:26 AM Autodesk Docs://200-12747-23001 Mt Clemens WWTP/S-SLUDGE HANDLING BLDG-12747-23001-2023.rvt

CONCRETE MASONRY

1. REFERENCES

   A. TMS 402/ACI 530-08/ASCE 5-08 BUILDING CODE REQUIREMENTS AND SPECIFICATIONS FOR MASONRY STRUCTURES.

2. MATERIALS

   A. MASONRY WALLS SHALL CONSIST OF ASTM C-90, GRADE N-1, HOLLOW CONCRETE MASONRY UNIT
   B. MASONRY SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH f'm = 1500 PSI.
   C. MORTAR SHALL COMPLY WITH ASTM C-270, AND SHALL BE TYPE S (1800 PSI)
   D. CORE FILL GROUT SHALL COMPLY WITH ASTM C-476, WITH A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI.

3. MASONRY SHALL BE LAID IN A RUNNING BOND PATTERN UNLESS OTHERWISE NOTED. NO CONTINUOUS VERTICAL JOINTS ARE PERMITTED AT WALL CORNERS, INTERSECTIONS, AND OPENING EDGES. SAW TOOTH BLOCK EACH ALTERNATE COURSE AT THESE LOCATIONS TO ACHIEVE MONOLITHIC CONSTRUCTION.

4. VERTICAL REINFORCEMENT: LOCATION, SIZE AND SPACING SHALL BE AS INDICATED ON THE STRUCTURAL DRAWINGS. WALLS SHALL BE REINFORCED FULL HEIGHT IN GROUT FILLED CELLS AT ALL WALL CORNERS, INTERSECTIONS, ENDS, AND ADJACENT TO OPENINGS.

5. PROVIDE REINFORCING STEEL DOWELS INTO STRUCTURE ABOVE AND BELOW WITH SIZE AND SPACING TO MATCH VERTICAL REINFORCEMENT, UNLESS OTHERWISE NOTED.

6. PROVIDE DOWELS TO THE FOUNDATIONS WITH SIZE AND SPACING TO MATCH VERTICAL REINFORCING. LAP SPLICES SHALL BE MEASURED ABOVE THE STEM WALL.

7. VERTICAL REINFORCEMENT SHALL BE CENTERED IN GROUT FILLED CELLS UNLESS NOTED OTHERWISE. REINFORCEMENT SHALL BE HELD SECURELY IN POSITION AT THE TOP AND BOTTOM OF WALL.

8. HORIZONTAL JOINT REINFORCEMENT SHALL BE 9 GAGE GALVANIZED DUR-O-WAL LADDER TYPE OR ENGINEER APPROVED SUBSTITUTE, LOCATED AT SIXTEEN (16) INCHES VERTICALLY.

9. CONTROL JOINTS SHALL BE PROVIDED AS SPECIFIED ON PLAN AND COORDINATED WITH ARCHITECT. TERMINATE JOINT REINFORCEMENT EACH SIDE OF CONTROL JOINTS. SEE ARCHITECTURAL DRAWINGS FOR SEALANT REQUIREMENTS AT CONTROL JOINTS.

10. MASONRY CONTROL JOINTS SHALL BE LOCATED A MINIMUM OF 2'-0" FROM ALL WALL OPENINGS, INTERSECTIONS, AND CORNERS, UNLESS NOTED OTHERWISE.

11. MASONRY CONTROL JOINTS SHALL NOT BE LOCATED ABOVE OR BELOW ANY WALL OPENING.

12. GROUTING: CONTRACTOR SHALL SUBMIT PROPOSED GROUT MIX DESIGN FOR ENGINEER REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. GROUT SLUMP SHALL BE BETWEEN 8 AND 11 INCHES. USE OF SUPERPLASTICIZER IS PROHIBITED. CELLS WHICH ARE TO RECEIVE GROUT SHALL BE VERTICALLY ALIGNED WITH A CLEAR, UNOBSTRUCTED AND CONTINUOUS VERTICAL SPACE. CELLS SHALL BE FILLED COMPLETELY AND VIBRATION CONSOLIDATED. GROUTING OPERATIONS SHALL BE CONTINUOUS AND SHALL NOT BE STOPPED FOR A PERIOD EXCEEDING ONE HOUR. WALL SHALL BE CONSTRUCTED IN MAXIMUM 5'-0" LIFTS BETWEEN GROUT POURS

13. GROUTING AND REINFORCING: ALL MASONRY AND GROUTING AND REINFORCING WORK SHALL BE PERFORMED BY MASONRY CRAFTWORKERS WHO HAVE SUCCESSFULLY COMPLETED THE INTERNATIONAL MASONRY INSTITUTE (1-800-IMI-0988) TRAINING COURSE FOR GROUTING AND REINFORCED MASONRY CONSTRUCTION, OR EQUAL."

14. ELECTRICAL CONDUITS NOT PERMITTED IN GROUT FILLED CELLS OF CMU WALL UNLESS APPROVED BY EOR PRIOR TO PLACEMENT. CONTRACTOR TO COORDINATE WITH ELECTRICAL DRAWINGS. VERTICAL CONDUITS, PIPES OR SLEEVES PLACED IN MASONRY COLUMNS OR PILASTERS SHALL NOT DISPLACE MORE THAN 2 PERCENT OF THE NEW CROSS SECTION.

15. CONDUITS, PIPES AND SLEEVES IN HOLLOW MASONRY SHALL BE SPACED NO CLOSER THAN 3X THEIR DIAMETER ON CENTER. MINIMUM SPACING OF CONDUITS, PIPES OR SLEEVES OF DIFFERENT DIAMETER SHALL BE DETERMINED USING LARGER DIAMETER.

TENSION DEVELOPMENT / LAP SPLICE LENGTH IN MASONRY (INCHES)

BAR #	MIN. CLEAR COVER TO FACE OF CMU:			
	1 1/2"	2"	> 3 1/4"	> 5 1/4"
3	19	18	18	18
4	34	26	24	24
5	45	40	30	30
6	54	54	46	36
7	63	63	62	42
8	72	72	72	58

DEFERRED SUBMITTALS

1. IN ACCORDANCE WITH THE SPECIFICATIONS DESIGNS FOR THE ITEMS LISTED BELOW ARE NOT INCLUDED IN THE CONTRACT DOCUMENTS. DESIGN OF THESE ELEMENTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE DESIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MICHIGAN:

   1. FRP PLATFORM

2. DESIGN OF THE ITEMS LISTED ABOVE SHALL BE IN ACCORDANCE WITH THE ICC INTERNATIONAL BUILDING CODE, 2015 EDITION, MICHIGAN BUILDING CODE, 2015 EDITION, OSHA AND SHALL INCLUDE ALL ATTACHMENTS TO THE STRUCTURE

FIBERGLASS REINFORCED PLASTIC

1. STRUCTURAL SHAPES SHALL HAVE A MINIMUM TENSILE STRESS OF 30 KSI PER A.S.T.M. D638, SHORT BEAM SHEAR STRENGTH OF 4.5 KSI PER A.S.T.M D2344 AND A MINIMUM FLEXURAL MODULUS OF 1,800 KSI PER A.S.T.M. D790. THE COEFFICIENT OF EXPANSION PER A.S.T.M. D696 SHALL BE LESS THAN 0.000009 IN./IN./DEG. F.

2. ALL FINISHED SURFACES OF MATERIAL AND FABRICATIONS SHALL BE SMOOTH, RESIN-FREE, FREE OF VOIDS AND WITHOUT DRY SPOTS, CRACKS, CRAZES OR UNREINFORCED AREAS. ALL GLASS FIBERS SHALL BE WELL COVERED WITH RESIN TO PROTECT AGAINST THEIR EXPOSURE DUE TO WEAR OR WEATHERING.

3. ALL SHOP CUTS OR DRILLING SHALL BE COATED WITH VINYL ESTER RESIN TO PROVIDE CORROSION RESISTANCE. ALL FIELD. FABRICATED CUTS AND DRILLING SHALL BE COATED SIMILARLY BY THE CONTRACTOR IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

4. CONNECTIONS OF FRP MEMBERS SHALL BE WITH STAINLESS STEEL TYPE 316, BOLTS AND NUTS, UNLESS SPECIFICALLY NOTED OTHERWISE.

STRUCTURAL STEEL

1. REFERENCES

   A. AISC STEEL CONSTRUCTION MANUAL, 15TH EDITION
   B. AWS D1.1 STRUCTURAL WELDING CODE - STEEL

2. MATERIALS

   A. GRADE STEEL

WIDE FLANGES	ASTM A992, GRADE 50
CHANNELS, ANGLES, AND PLATES	ASTM A36
SHEAR CONNECTOR PLATES	ASTM A572, GRADE 50
STRUCTURAL PIPE	ASTM A53, GRADE B, Fy=35 KSI
ROUND HSS	ASTM A500, GRADE B, Fy=42 KSI
SQUARE OR RECTANGLE HSS	ASTM A500, GRADE C, Fy=50 KSI

   B. WELDED STUDS: ASTM A108, GRADE 60
   C. ANCHOR BOLTS: ASTM F1554, GRADE 55, WELDABLE.
   D. STRUCTURAL BOLTS: ASTM A325-N
   E. WELDS: E70XX ELECTRODES

3. CONNECTIONS

   A. AISC MANUAL STANDARD CONNECTIONS UNLESS NOTED OTHERWISE. HIGH-STRENGTH BOLTS: ASTM A325-N, 3/4" UNLESS NOTED OTHERWISE. BEARING TYPE INSTALLED IN CONFORMANCE WITH "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", RESEARCH COUNCIL ON RIVETED AND BOLTED STRUCTURAL JOINTS. UNLESS NOTED OTHERWISE, STANDARD AISC "USUAL GAGE" DIMENSIONS SHALL BE USED FOR LOCATING HOLES FOR BOLTS, EXPANSION ANCHORS, ETC. IN ALL ANGLES, BEAM FLANGES, ETC.
   B. THE ASSEMBLY SURFACE, INCLUDING THOSE ADJACENT TO THE WASHER, SHALL BE FREE OF MILL SCALE, OIL, PAINT OR OTHER COATINGS.
   C. ALL HIGH STRENGTH BOLTS SHALL BE TIGHTENED TO A BOLT TENSION NOT LESS THAN THAT SPECIFIED IN THE AISC MANUAL. FULL TENSIONING SHALL BE BY THE TURN OF NUT METHOD, BY A DIRECT TENSION INDICATOR, OR BY PROPERLY CALIBRATED WRENCHES. PROVIDE HARDENED WASHERS UNDER THE NUT OR BOLT HEAD, WHICHEVER IS THE ELEMENT TURNED IN TIGHTENING.
   D. WELDING - PERFORM ALL WELDING IN ACCORDANCE WITH AWS D1.1 CODE, LATEST EDITION, WELDS SHALL BE MADE ONLY BY OPERATORS CERTIFIED BY AWS IN PERFORMING THE TYPE OF WORK INDICATED.

4. TOLERANCES: AISC CODE OF STANDARD PRACTICE (LATEST EDITION)

5. CAMBER: PROVIDE POSITIVE CAMBER AS NOTED ON DRAWINGS. WHERE NO CAMBER IS NOTED, RESIDUAL MILL CAMBER IS TO BE UPWARDS.

6. SHOP DRAWINGS
   A. SUBMIT ERECTION AND FABRICATION SHOP DRAWINGS, SEE SPECS.
   B. SUBMIT ERECTION PROCEDURES AND TEMPORARY BRACING PLAN FOR A/E REVIEW.

7. ALL EXPOSED ANGLE AND PLATE LINTELS FOR BLOCK/BRICK SUPPORT SHALL BE HOT DIPPED GALVANIZED.

8. PAINTING: AFTER MATERIAL HAS BEEN PROPERLY CLEANED AND TREATED, APPLY SHOP PRIME COAT TO ALL SURFACES, EXCEPT THOSE INTENDED FOR EMBEDMENT INTO CONCRETE OR TO RECEIVE FIELD WELDING, SLIP CRITICAL BOLTS, OR CEMENTITIOUS FIREPROOFING.

DEMOLITION

1. REFER TO WORK RESTRICTIONS IN THE PROJECT SPECIFICATIONS. CLOSELY FOLLOW THE PROJECT SPECIFICATIONS FOR THE LOCATIONS AND TYPES OF BARRICADES, WORKING HOURS, AND NOTIFICATIONS TO THE OWNER. COORDINATE DEMOLITION TO MAINTAIN PROTECTION OF THE EXISTING FACILITIES.

2. COORDINATE DEMOLITION WORK WITH ALL DISCIPLINES.

3. ITEMS SHOWN OR NOTED TO BE DEMOLISHED ON THE DRAWINGS ARE EXISTING ITEMS TO BE REMOVED FROM SITE BY CONTRACTOR.

4. ALL HAZARDOUS MATERIALS WILL BE ADDRESSED BY GOVERNMENT REGULATIONS. IF HAZARDOUS MATERIALS ARE ENCOUNTERED DURING DEMOLITION OPERATIONS THE CONTRACTOR SHALL NOTIFY THE OWNER AS WELL AS LOCAL, STATE AND FEDERAL AUTHORITIES IMMEDIATELY.

5. CONTRACTOR IS RESPONSIBLE TO REMOVE SITE DEBRIS, TRASH, AND OTHER DISCARDED MATERIALS AND/OR EQUIPMENT RESULTING FROM DEMOLITION OPERATIONS. TRANSPORT AND LEGALLY DISPOSE OFF SITE. ALL DEMOLITION SHALL BE DISPOSED OF IN A MANNER ACCEPTABLE TO LOCAL AND STATE REGULATORY AGENCIES OR AS DIRECTED BY OWNER.

6. SURFACES ADJACENT TO AREAS OF DEMOLITION WHICH ARE AFFECTED BY THE WORK SHALL BE REPAIRED AND FINISHED TO MATCH EXISTING CONDITIONS AND ADJACENT SURFACES (MATERIAL, COLOR, SLOPE, TEXTURE AND APPEARANCE).

7. CONTRACTOR SHALL PROVIDE TEMPORARY MEANS TO MITIGATE DUST AND DEBRIS FROM TRAVELING OFF-SITE. USE WATER MIST, TEMPORARY ENCLOSURES, AND OTHER SUITABLE METHODS TO LIMIT SPREAD OF DUST AND DIRT. COMPLY WITH ENVIRONMENTAL PROTECTION REGULATIONS.

8. CONDUCT DEMOLITION AND DEBRIS REMOVAL OPERATIONS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKWAYS AND OTHER ADJACENT OCCUPIED OR USED FACILITIES. DO NOT CLOSE OR OBSTRUCT ROADS, WALKWAYS, AND OTHER ADJACENT OCCUPIED OR USED FACILITIES WITHOUT PERMISSION FROM AUTHORITIES HAVING JURISDICTION. PROVIDE ALTERNATE ROUTES AROUND CLOSED OR OBSTRUCTED TRAFFIC WAYS IF REQUIRED BY GOVERNING REGULATIONS.

9. DEMOLITION CONTRACTOR IS TO USE CARE WHEN REMOVING STRUCTURAL ELEMENTS SCHEDULED FOR REMOVAL THAT ARE ADJACENT OR ABOVE EXISTING STRUCTURES THAT ARE SCHEDULED TO REMAIN. CONTRACTOR IS TO TAKE ALL NECESSARY PRECAUTIONS TO PROTECT REMAINING STRUCTURES FROM DAMAGE.

10. PROVIDE AND MAINTAIN SHORING BRACING, OR STRUCTURAL SUPPORT TO PRESERVE STABILITY AND PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF ITEMS TO BE SELECTIVELY DEMOLISHED OR STABILIZED AND ITEMS WHICH ARE IMMEDIATELY ADJACENT TO THOSE BEING REMOVED.

11. PROVIDE TEMPORARY BARRICADES AND OTHER PROTECTION REQUIRED TO PREVENT INJURY TO PEOPLE AND DAMAGE TO ADJACENT BUILDINGS AND FACILITIES. ERECT TEMPORARY PROTECTION SUCH AS FENCES, RAILINGS, CANOPIES, AND COVERED PASSAGEWAYS, WHERE REQUIRED BY AUTHORITIES HAVING JURISDICTION.

12. PROMPTLY PATCH AND REPAIR DAMAGE CAUSED TO ADJACENT CONSTRUCTION BY DEMOLITION WORK. RESTORE EXPOSED FINISHES OF PATCHED AREAS IN A MANNER THAT ELIMINATES EVIDENCE OF PATCHING AND REFINISHING.

13. CLEAN ADJACENT STRUCTURES AND IMPROVEMENTS OF DUST, DIRT, AND DEBRIS CAUSED BY DEMOLITION OPERATIONS. RETURN ADJACENT AREAS TO EXISTING CONDITION BEFORE DEMOLITION OPERATIONS BEGAN.

14. CONTRACTOR SHALL FOLLOW THE OWNER'S REQUIREMENTS AS WELL AS LOCAL AND STATE REGULATIONS FOR EROSION PROTECTION CONTROL.

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
GENERAL NOTES

PROJ: 200-12747-23001
DESN: AJF
DRWN: AJF
CHKD: TJM

S-002

Bar measures 1 inch, otherwise drawing is not to scale

INSPECTION DEFINITIONS

PERFORM: PERFORM TASKS FOR THE NOTED LINE ITEM.

OBSERVE: OBSERVE THESE ITEMS RANDOMLY DURING THE COURSE OF EACH WORK DAY TO ENSURE THAT APPLICABLE REQUIREMENTS ARE BEING MET. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS AT CONTRACTOR'S RISK.

DOCUMENT: DOCUMENT, WITH A REPORT, THAT THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

CONTINUOUS: CONSTANT MONITORING OF IDENTIFIED TASKS BY A SPECIAL INSPECTOR OVER THE DURATION OF PERFORMANCE OF SAID TASKS.

CONCRETE CONSTRUCTION, INCLUDING COMPOSITE DECK - VERIFY THE FOLLOWING ARE IN COMPLIANCE IBC TABLE 1705.3 (ACI 318 REFERENCES NOTED IN IBC TABLE)

TASK		INSPECTION TYPE	DESCRIPTION
1.	INSPECT REINFORCEMENT AND VERIFY PLACEMENT	OBSERVE	VERIFY PRIOR TO PLACING CONCRETE THAT REINFORCING IS OF SPECIFIED TYPE, GRADE AND SIZE; THAT IS FREE OF OIL, DIRT, AND UNACCEPTABLE RUST; THAT IT IS LOCATED AND SPACED PROPERLY; THAT HOOKS, BENDS, TIES, STIRRUPS, AND SUPPLEMENTAL REINFORCEMENT ARE PLACED CORRECTLY; THAT LAP LENGTHS, STAGGER AND OFFSETS ARE PROVIDED; AND THAT ALL MECHANICAL CONNECTIONS ARE INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS AND/OR EVALUATION REPORT.
2.	CAST IN PLACE ANCHORS AND PSOT INSTALLED DRILLED ANCHORS (DOWNWARD INCLINED)	OBSERVE	VERIFY PRIOR TO PLACING CONCRETE THAT CAST IN PLACE ANCHORS AND POST INSTALLED DRILLED ANCHORS HAVE PROPER EMBEDMENT, SPACING AND EDGE DISTANCE.
3.	POST-INSTALLED ADHESIVE ANCHORS IN HORIZONTAL OR UPWARD INCLINED ORIENTATIONS	**CONTINUOUS AND DOCUMENT**	INSPECT AS REQUIRED PER APPROVED ICC-ES REPORT; VERIFY THAT INSTALLER IS CERTIFIED FOR INSTALLATION OF HORIZONTAL AND OVERHEAD INSTALLATION APPLICATIONS; INSPECT PROOF LOADING AS REQUIRED BY THE CONTRACT DOCUMENTS
4.	VERIFY USE OF REQUIRED MIX DESIGN	OBSERVE	VERIFY THAT ALL MIXES USED COMPLY WITH THE APPROVED CONSTRUCTION DOCUMENTS.
5.	PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	**CONTINUOUS**	AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TEST VERIFY THESE TESTS ARE PERFORMED BY QUALIFIED TECHNICIANS.
6.	INSPECT CONCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	**CONTINUOUS**	VERIFY PROPER APPLICATION TECHNIQUES ARE USED DURING CONCRETE CONVEYANCE AND DEPOSITING AVOIDS SEGREGATION OR CONTAMINATION. VERIFY THAT CONCRETE IS PROPERLY CONSOLIDATED.
7.	VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUE	OBSERVE	INSPECT CURING, COLD WEATHER PROTECTION, AND HOT WEATHER PROTECTION PROCEDURES
8.	VERIFY IN-SITU CONCRETE STRENGTH PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	OBSERVE	
9.	INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	OBSERVE	

NOTES:

2015 MASONRY CONSTRUCTION - VERIFY THE FOLLOWING ARE IN COMPLIANCE WITH IBC 1705.4 (ACI 530-13 TABLE 3.1.2 & 3.1.3)

TASK		INSPECTION TYPE	DESCRIPTION
1.	VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS PRIOR TO START	OBSERVE	
AS MASONRY CONSTRUCTION BEGINS, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:			
2.	PROPORTIONS OF SITE-PREPARED MORTAR	OBSERVE	
3.	CONSTRUCTION OF MORTAR JOINTS	OBSERVE	
4.	LOCATION OF REINFORCEMENT, CONNECTORS, AND ANCHORAGES	OBSERVE	
PRIOR TO GROUTING, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:			
TASK		**INSPECTION TYPE**	**DESCRIPTION**
5.	GROUT SPACE	OBSERVE	(NOTE: EOR MUST EITHER DELEGATE 'OBSERVE' FOR RISK CATEGORY IV/V, OR DELETE 'CONTINUOUS' FOR RISK CATEGORIES I/II/III)
6.	GRADE, TYPE, AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS.	OBSERVE	
7.	PLACEMENT OF REINFORCEMENT, CONNECTORS, AND ANCHORAGES	OBSERVE	
8.	CONSTRUCTION OF MORTAR JOINTS	OBSERVE	
DURING CONSTRUCTION, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:			
TASK		**INSPECTION TYPE**	**DESCRIPTION**
9.	SIZE AND LOCATION OF STRUCTURAL ELEMENTS	OBSERVE	
10.	TYPE, SIZE, AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL ELEMENTS, FRAMES, OR OTHER CONSTRUCTION	OBSERVE	
11.	PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F (4.4°C)) OR HOT WEATHER (TEMPERATURE ABOVE 90°F (32.2°C))	OBSERVE	
12.	OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS	OBSERVE	

NOTES: FOR LEVEL B QUALITY ASSURANCE ONLY: MINIMUM QUALITY ASSURANCE PROGRAM FOR MASONRY IN RISK CATEGORY I, II, OR III STRUCTURES.

2015 STEEL INSPECTION PRIOR TO BOLTING - VERIFY THE FOLLOWING ARE IN COMPLIANCE - IBC 1705.2.1, AISC 360-10 - TABLE N5.6-1

TASK		INSPECTION TYPE	DESCRIPTION
1.	MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS	**PERFORM**	
2.	FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS	OBSERVE	
3.	PROPER FASTENERS SELECTED FOR JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE)	OBSERVE	
4.	PROPER BOLTING PROCEDURE SELECTED FOR JOINT DETAIL	OBSERVE	
5.	CONNECTING ELEMENTS, INCLUDING APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS	OBSERVE	
6.	PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHOD USED.	**PERFORM**	
7.	PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS, AND OTHER FASTENER COMPONENTS	OBSERVE	
STEEL INSPECTION DURING BOLTING - VERIFY THE FOLLOWING ARE IN COMPLIANCE - IBC 1705.2.1, AISC 360-10 - TABLE N5.6-2			
TASK		**INSPECTION TYPE**	**DESCRIPTION**
8.	FASTENER ASSEMBLIES OF SUITABLE CONDITION, PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED	OBSERVE	
9.	JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO PRETENSIONING OPERATION	OBSERVE	
10.	FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING	OBSERVE	
11.	BOLTS ARE PRETENSIONED IN ACCORDANCE WITH RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES	OBSERVE	
STEEL INSPECTION AFTER BOLTING - VERIFY THE FOLLOWING ARE IN COMPLIANCE - IBC 1705.2.1, AISC 360-10 - TABLE N5.6-3			
TASK		**INSPECTION TYPE**	**DESCRIPTION**
12.	DOCUMENT ACCEPTANCE OR REJECTION OF ALL BOLTED CONNECTIONS	**PERFORM**	

NOTES:

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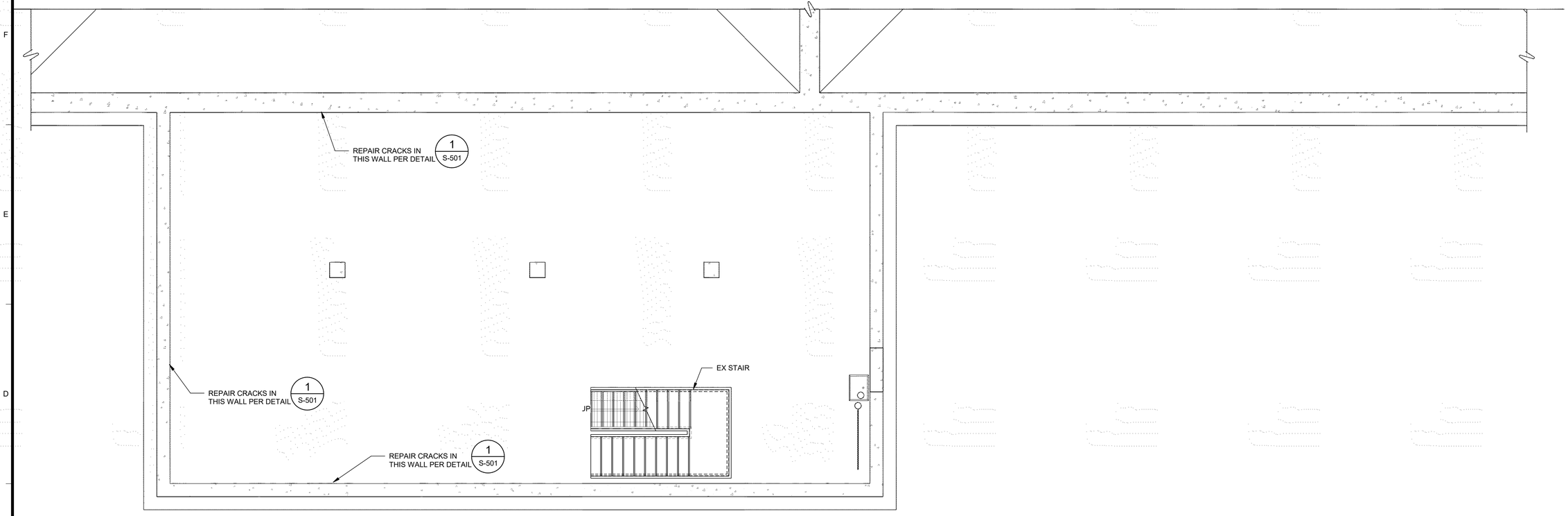
MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
SPECIAL INSPECTIONS

PROJ: 200-12747-23001
DESN: AJF
DRWN: AJF
CHKD: TJM

S-003

Bar measures 1 inch, otherwise drawing is not to scale



BASEMENT PLAN

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

PLAN NOTES:

1. SEE SHEETS S-001 THROUGH S-003 FOR GENERAL NOTES AND SPECIAL INSPECTION REQUIREMENTS.
2. COORDINATE ALL NEW WALL AND SLAB PENETRATIONS WITH PROCESS, MECHANICAL, AND ELECTRICAL. FOR OPENINGS IN CMU WALLS NOT SHOWN IN PLAN; PROVIDE A LINTEL PER DETAIL 5 / S-501
3. FILL IN ABANDONDED WALL OR SLAB OPENINGS IN CONCRETE PER DETAIL 6 / S-501
4. ALL EXPOSED STEEL TO BE GALVANIZED.

N

4' 0' 4' 8'

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

Bar measures 1 inch, otherwise drawing is not to scale

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MARK	DATE	DESCRIPTION
	02/05/24	ISSUED FOR BIDS

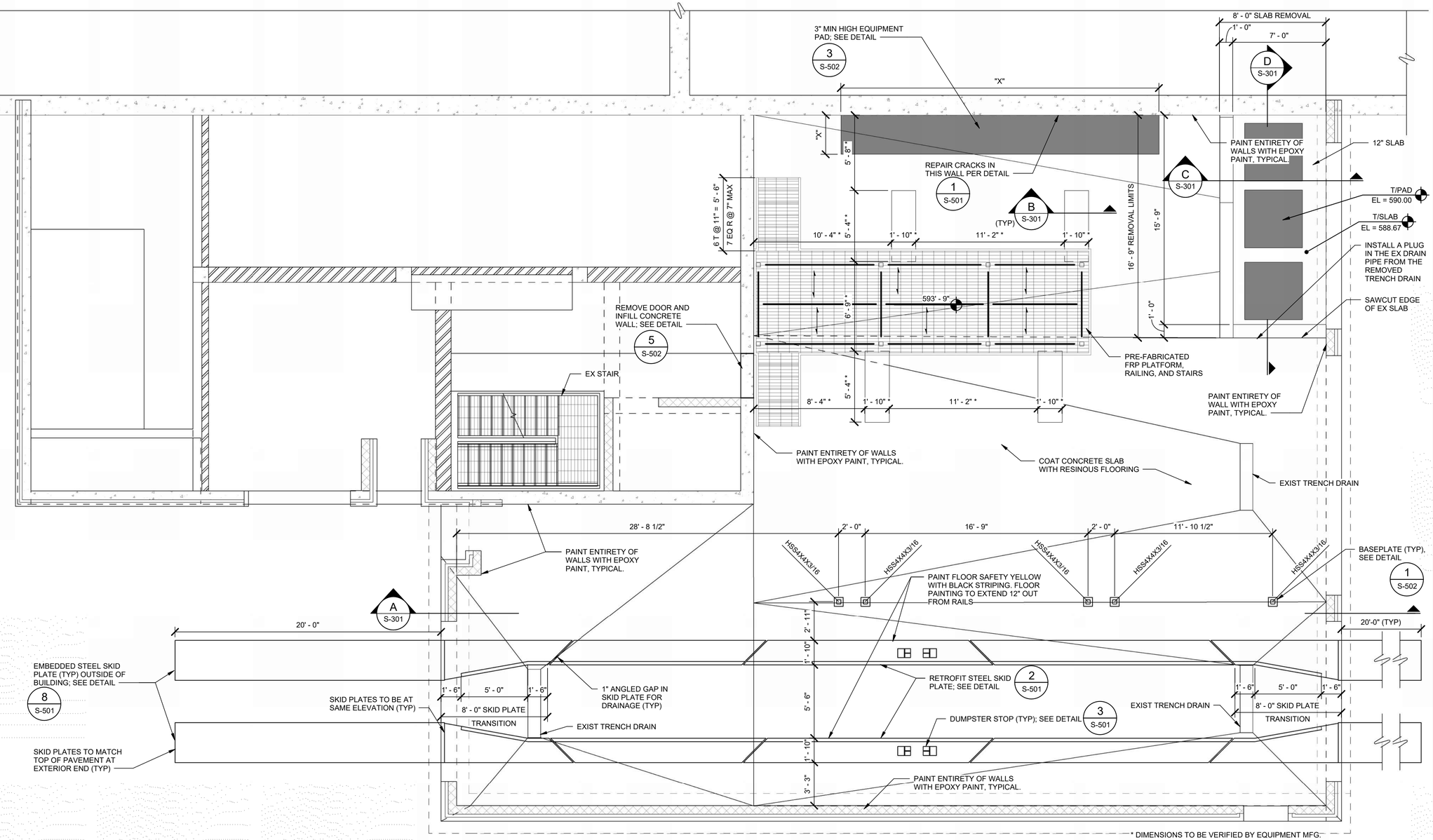
CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

BASEMENT FLOOR PLAN

PROJ:	200-12747-23001
DESN:	AJF
DRWN:	AJF
CHKD:	TJM

S-101



FIRST FLOOR PLAN

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

PLAN NOTES:

1. SEE SHEETS S-001 THROUGH S-003 FOR GENERAL NOTES AND SPECIAL INSPECTION REQUIREMENTS.
2. COORDINATE ALL NEW WALL AND SLAB PENETRATIONS WITH PROCESS, MECHANICAL, AND ELECTRICAL. FOR OPENINGS IN CMU WALLS NOT SHOWN IN PLAN; PROVIDE A LINTEL PER DETAIL 5 S-501
3. FILL IN ABANDONDED WALL OR SLAB OPENINGS IN CONCRETE PER DETAIL 6 S-501
4. ALL EXPOSED STEEL TO BE GALVANIZED.

N

4' 0' 4' 8'

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

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CITY OF MOUNT CLEMENS, MI

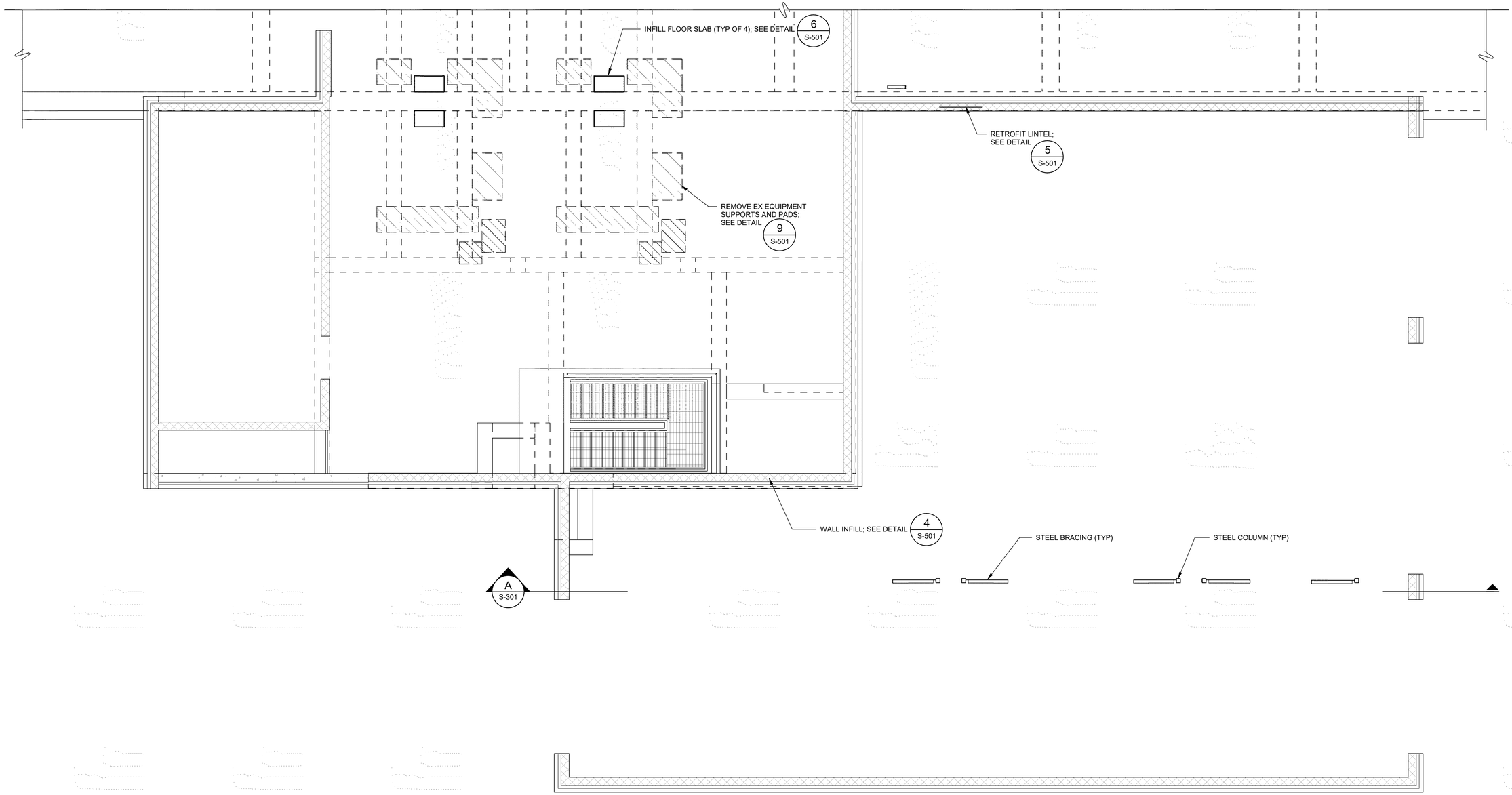
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

FIRST FLOOR PLAN

PROJ:	200-12747-23001
DESN:	AJF
DRWN:	AJF
CHKD:	TJM

S-102

Bar measures 1 inch, otherwise drawing is not to scale



SECOND FLOOR PLAN

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

PLAN NOTES:

1. SEE SHEETS S-001 THROUGH S-003 FOR GENERAL NOTES AND SPECIAL INSPECTION REQUIREMENTS.
2. COORDINATE ALL NEW WALL AND SLAB PENETRATIONS WITH PROCESS, MECHANICAL, AND ELECTRICAL. FOR OPENINGS IN CMU WALLS NOT SHOWN IN PLAN; PROVIDE A LINTEL PER DETAIL 5 S-501
3. FILL IN ABANDONDED WALL OR SLAB OPENINGS IN CONCRETE PER DETAIL 6 S-501
4. ALL EXPOSED STEEL TO BE GALVANIZED.

LEGEND:

- DENOTES ITEM TO BE REMOVED
- DENOTES CMU WALL
- DENOTES EQUIPMENT PAD

N

4' 0' 4' 8'

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

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MARK	DATE	DESCRIPTION	BY
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CITY OF MOUNT CLEMENS, MI

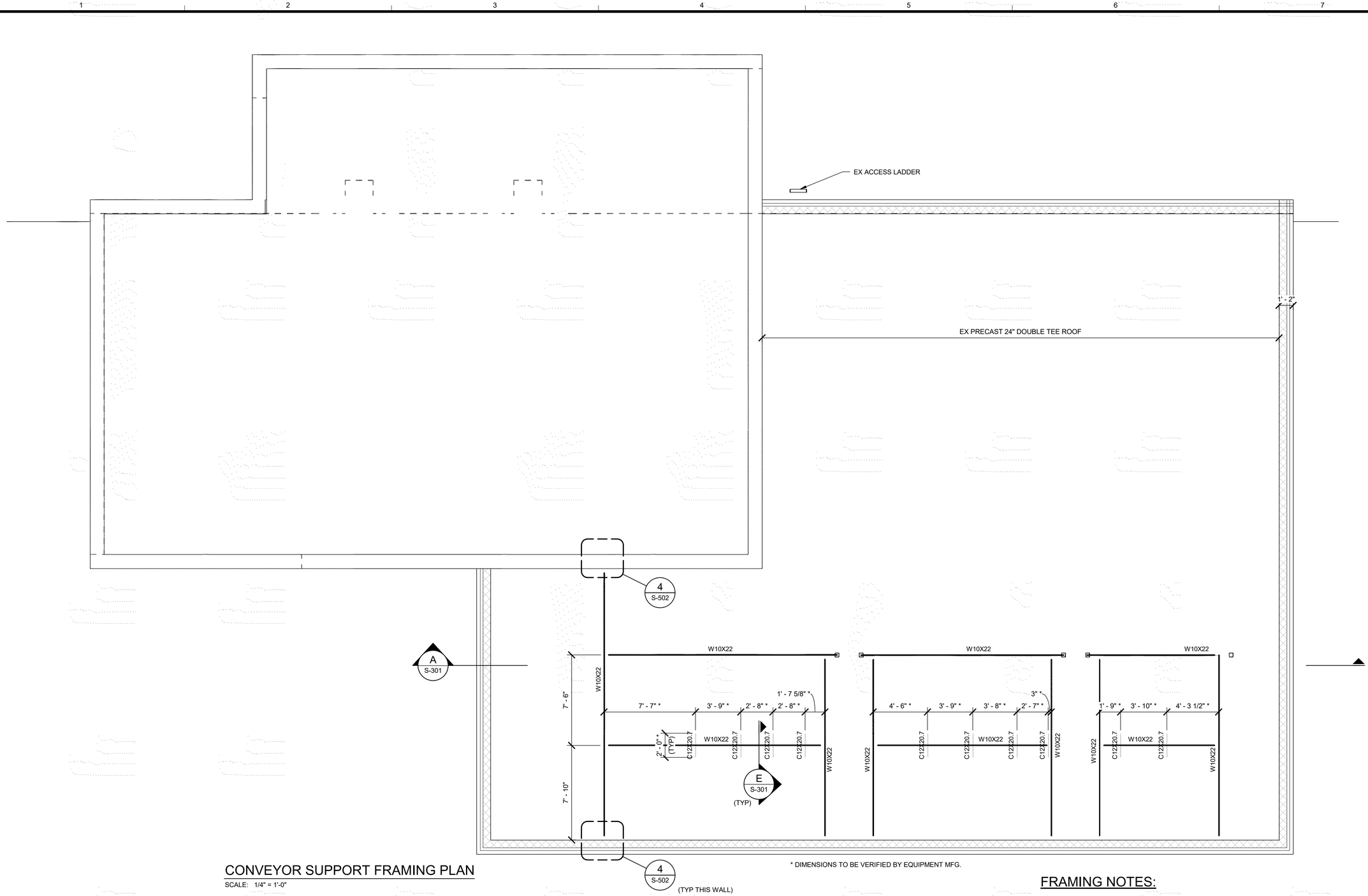
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

SECOND FLOOR PLAN

PROJ:	200-12747-23001
DESN:	AJF
DRWN:	AJF
CHKD:	TJM

S-103

Bar measures 1 inch, otherwise drawing is not to scale



CONVEYOR SUPPORT FRAMING PLAN

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

* DIMENSIONS TO BE VERIFIED BY EQUIPMENT MFG.

FRAMING NOTES:

1. SEE SHEETS S-001 THROUGH S-003 FOR GENERAL NOTES AND SPECIAL INSPECTION REQUIREMENTS.
2. ALL STEEL TO BE GALVANIZED.
3. TOP OF ALL BEAMS IS 607.00 UNLESS NOTED OTHERWISE.
4. FOR BEAM TO COLUMN CONNECTIONS SEE DETAIL 7 / S-501
5. FOR BEAM TO BEAM CONNECTIONS SEE DETAIL 2 / S-502

N

4' 0' 4' 8'

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

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

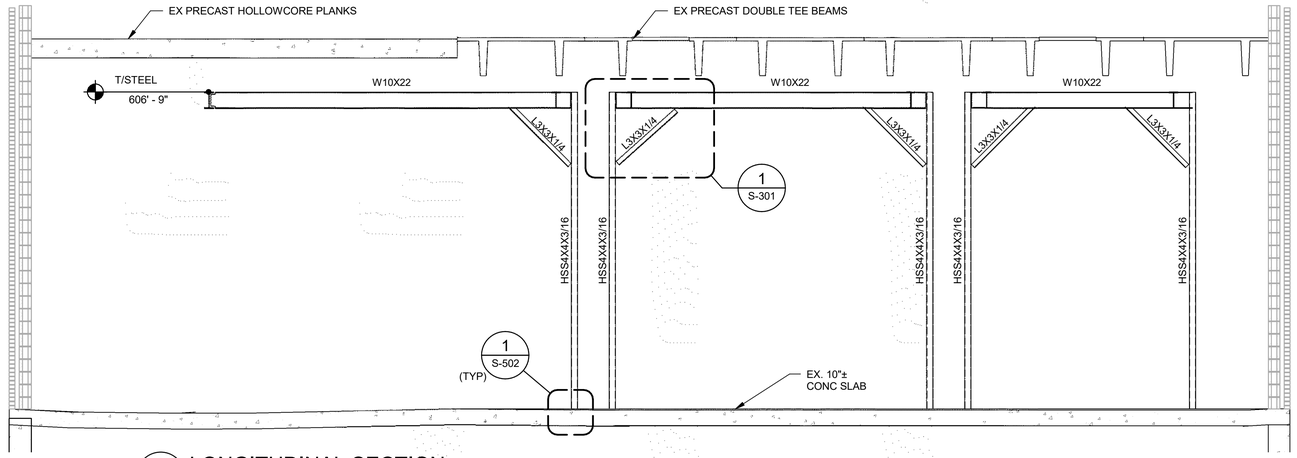
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

CONVEYOR SUPPORT FRAMING PLAN

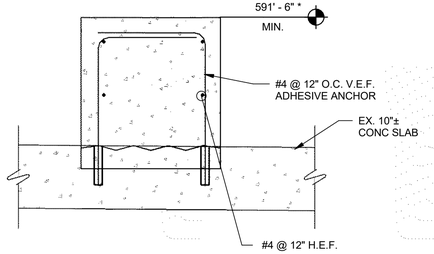
PROJ:	200-12747-23001
DESN:	AJF
DRWN:	AJF
CHKD:	TJM

S-104

Bar measures 1 inch, otherwise drawing is not to scale

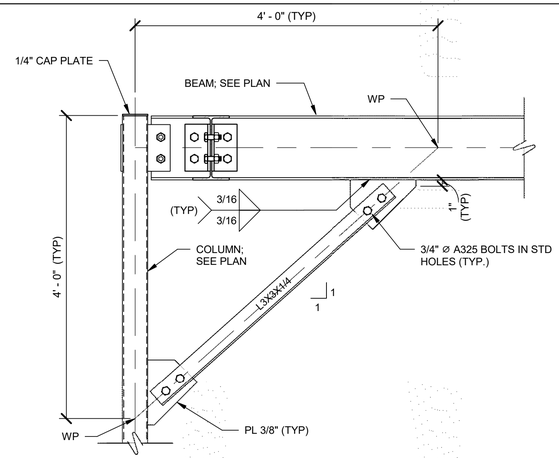


A S-301 LONGITUDINAL SECTION
SCALE: 1/4" = 1'-0"

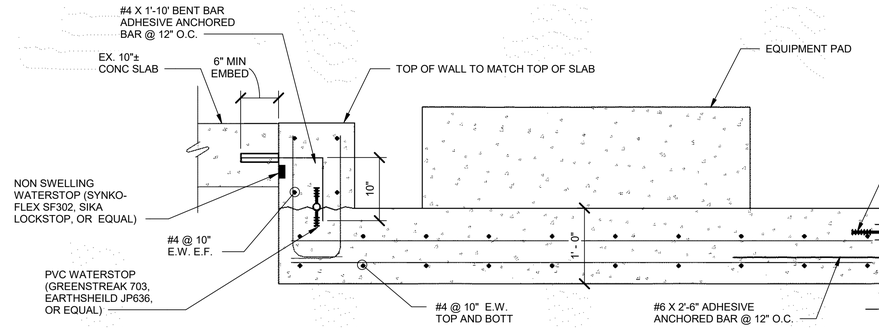


* DIMENSIONS TO BE VERIFIED BY EQUIPMENT MFG.

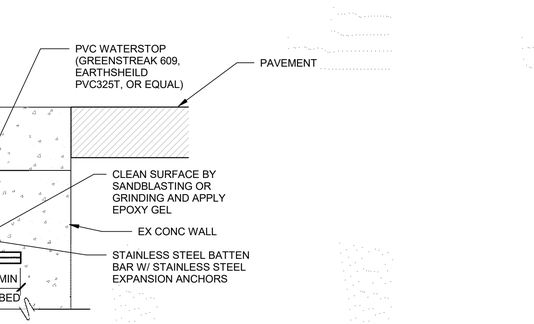
B S-301 EQUIPMENT PEDESTAL SECTION
SCALE: 1" = 1'-0"

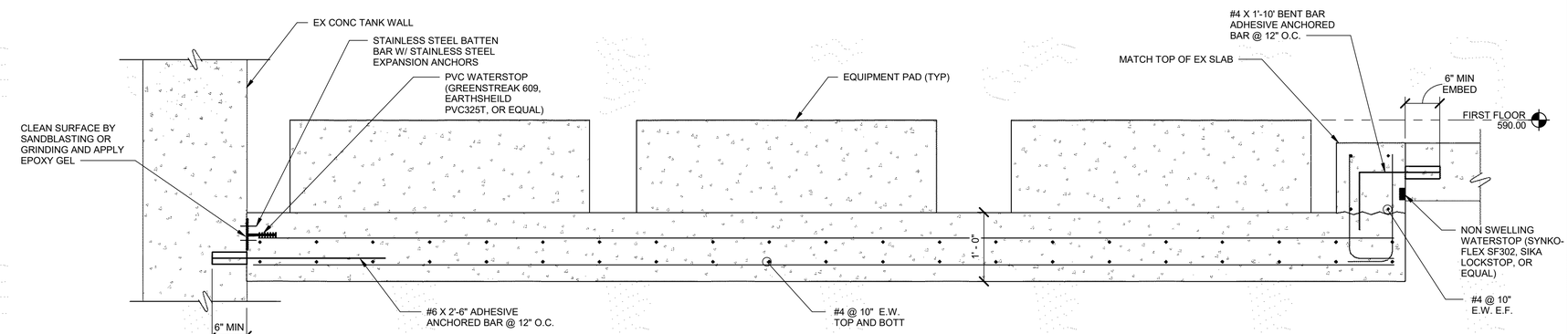


1 S-301 KNEE BRACE CONNECTION DETAIL
SCALE: 1" = 1'-0"

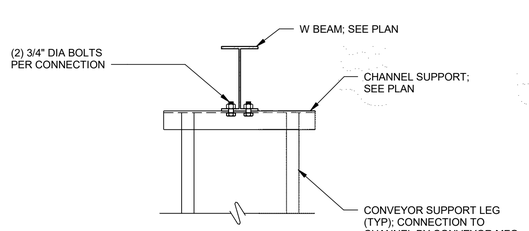


C S-301 TRANSVERSE CONTAINMENT SECTION
SCALE: 1" = 1'-0"





D S-301 LONGITUDINAL CONTAINMENT SECTION
SCALE: 1" = 1'-0"



E S-301 CONVEYOR SUPPORT SECTION
SCALE: 1" = 1'-0"

4' 0' 4' 8'
SCALE: 1/4" = 1'-0"

1' 0' 1' 2'
SCALE: 1" = 1'-0"

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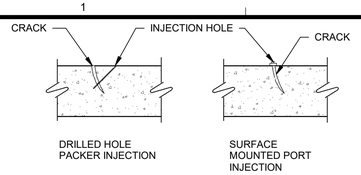
MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
BUILDING SECTIONS

PROJ:	200-12747-23001
DESN:	AJF
DRWN:	AJF
CHKD:	TJM

S-301

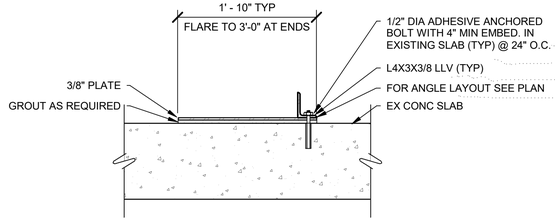
Bar measures 1 inch, otherwise drawing is not to scale



NOTES:

1. IDENTIFY CRACKS TO BE INJECTED. LOCATION OF CRACKS TO INJECTED ARE TO BE CONFIRMED AND APPROVED BY THE ENGINEER.
2. LOCATE REINFORCING STEEL IN CONCRETE STRUCTURE. LOCATE INJECTION HOLE POSITION AND WORK WITH CARE TO AVOID DAMAGE TO EXISTING REINFORCING STEEL. DRILL HOLE SIZED AS RECOMMENDED BY THE INJECTION MATERIAL MANUFACTURER, AT A 45 DEGREE ANGLE TO THE SURFACE, AND BEGINNING AT A DISTANCE AWAY FROM THE CRACK SO THAT THE DRILLED HOLE INTERCEPTS THE CRACK AT APPROXIMATELY ONE-HALF THE CONCRETE DEPTH.
3. INSERT INJECTION PACKERS AS RECOMMENDED BY THE INJECTION MATERIAL MANUFACTURER,INTO THE DRILLED HOLES AND TIGHTEN.
4. CLEAN CONCRETE SURFACE IN ACCORDANCE WITH SECTION 03930
5. PUMP INJECTOR MATERIAL THROUGH THE INJECTION PACKER UNTIL THE HOLE WILL NOT TAKE MORE MATERIAL, OR THE MATERIAL IS NO LONGER VISIBLE SEEPING OUT OF THE CRACKS.
6. INJECTION MAY BE HORIZONTAL, VERTICAL OR OVERHEAD
7. AFTER EPOXY ADHESIVE HAS SET, REMOVE INJECTION PORTS AND GRIND SURFACES SMOOTH.

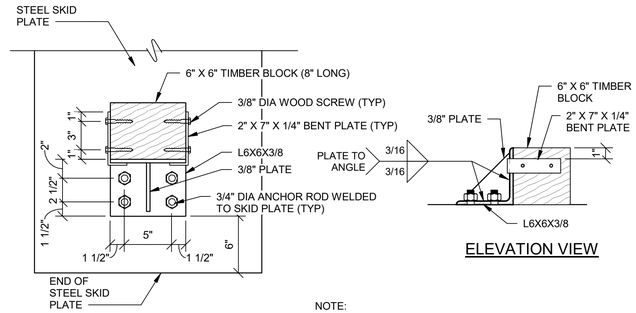
1 CONCRETE CRACK INJECTION
S-501 SCALE: NTS



NOTE:

1. FOR END TRANSITIONS SEE PLAN.
2. PAINT ALL STEEL RAILS AND STOPS SAFETY YELLOW.

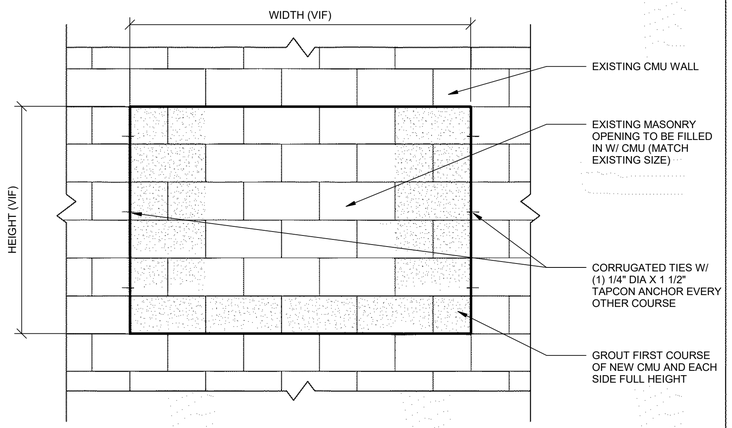
2 RETROFIT SKID PLATE DETAIL
S-501 SCALE: NTS



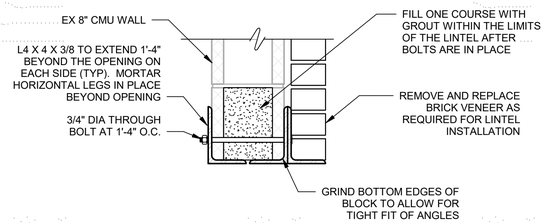
NOTE:

1. PAINT ALL STEEL SAFETY YELLOW, TYPICAL

3 DUMPSTER STOP DETAIL
S-501 SCALE: NTS

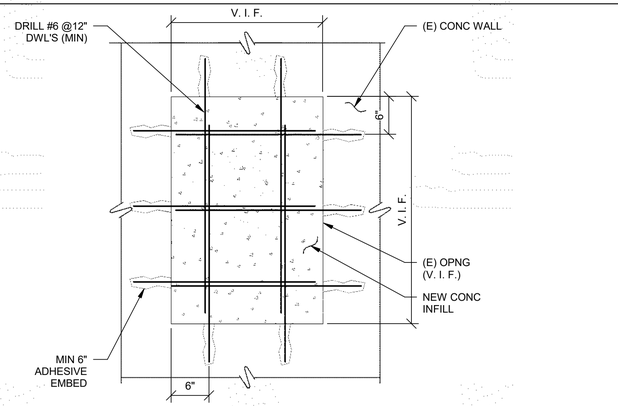


4 TYPICAL CMU INFILL DETAIL
S-501 SCALE: NTS



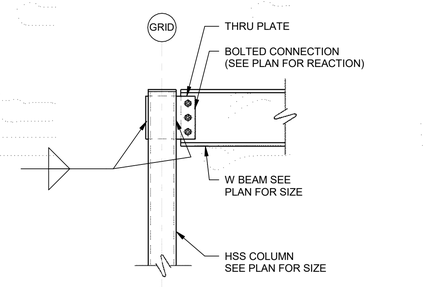
NOTE: DETAIL APPLIES TO OPENINGS WITH MAX CLEAR SPAN OF 3'-8"

5 RETROFIT LINTEL DETAIL
S-501 SCALE: NTS



AT CIRCULAR OPENINGS, CORE WALL TO REMOVE PIPE SLEEVE OR CUT SQUARE OPENING AS SHOWN ABOVE.

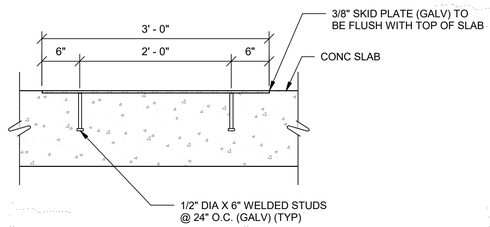
6 EXISTING SLAB OPENING INFILL
S-501 SCALE: NTS



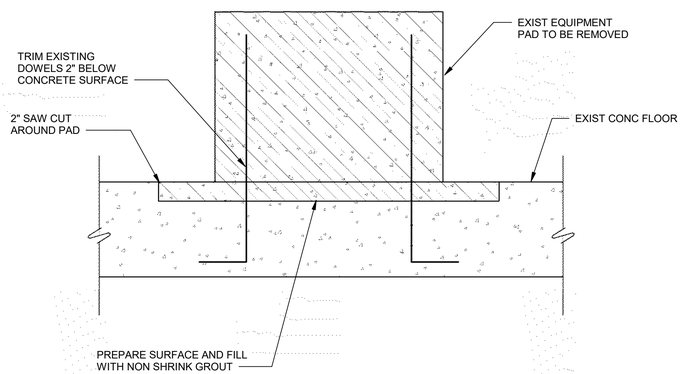
NOTE:
1. MINIMUM CONNECTION DESIGN STRENGTH SHALL BE 10 KIPS. FOR SIMPLE BEAM CONNECTIONS, THE FOLLOWING MINIMUM NUMBER OF BOLTS SHALL BE PROVIDED IN THE FOLLOWING SECTIONS REGARDLESS OF THE REQUIRED DESIGN STRENGTH:

W8, W10: 2 BOLTS

7 TYP COLUMN CONNECTIONS
S-501 SCALE: NTS



8 EMBEDDED SKID PLATE DETAIL
S-501 SCALE: NTS



9 EXISTING CONCRETE SUPPORT REMOVAL DETAIL
S-501 SCALE: NTS

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	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

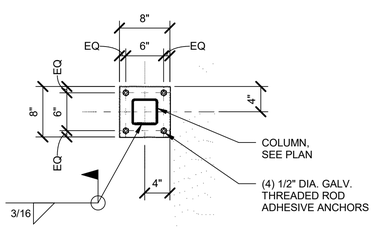
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

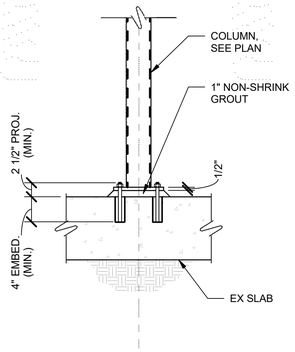
STANDARD DETAILS

PROJ:	200-12747-23001
DESN:	AJF
DRWN:	AJF
CHKD:	TJM

S-501

Bar measures 1 inch, otherwise drawing is not to scale





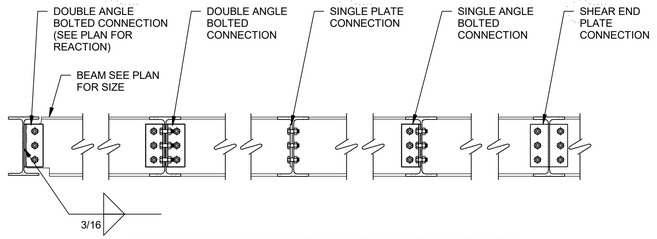
ANCHOR RODS SHALL CONFORM TO ASTM F1554, GRADE 55, WELDABLE.

ALL ANCHOR RODS SHALL BE STRAIGHT BOLTS W/NUTS & STANDARD WASHER TACK WELD.

HOLE SIZES FOR ANCHOR RODS ARE NORMALLY MADE OVERSIZE TO FACILITATE ERECTION.

BOLTS 3/4" TO 1" DIA. = 5/16" OVERSIZE
BOLTS 1 1/4" TO 2" DIA. = 1/2" OVERSIZE
BOLTS OVER 2" DIA. = 1" OVERSIZE

1 BASEPLATE DETAILS
S-502 SCALE: NTS

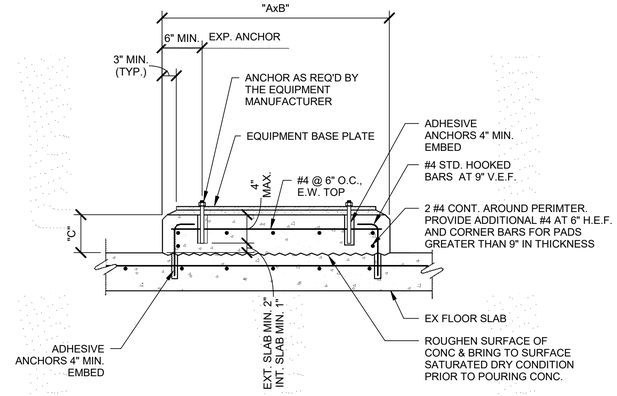


THE FOLLOWING MINIMUM NUMBER OF BOLTS SHALL BE PROVIDED IN THE FOLLOWING SECTIONS REGARDLESS OF THE REQUIRED DESIGN STRENGTH.

W8, W10: 2 BOLTS

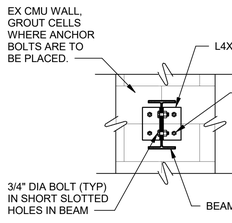
NOTES:
1. BOLT TYPE ASTM F3125 GR A325.
2. FOR AISC SIMPLE SHEAR CONNECTIONS AT SUPPORTED BEAM ENDS, USE DOUBLE ANGLE SINGLE PLATE, OR SINGLE ANGLE U.N.O.
3. WELDED/BOLTED, WELDED/WELDED OR BOLTED/BOLTED CONNECTIONS PER AISC ARE PERMITTED.

2 TYP. BEAM TO BEAM SHEAR CONNECTIONS
S-502 SCALE: NTS

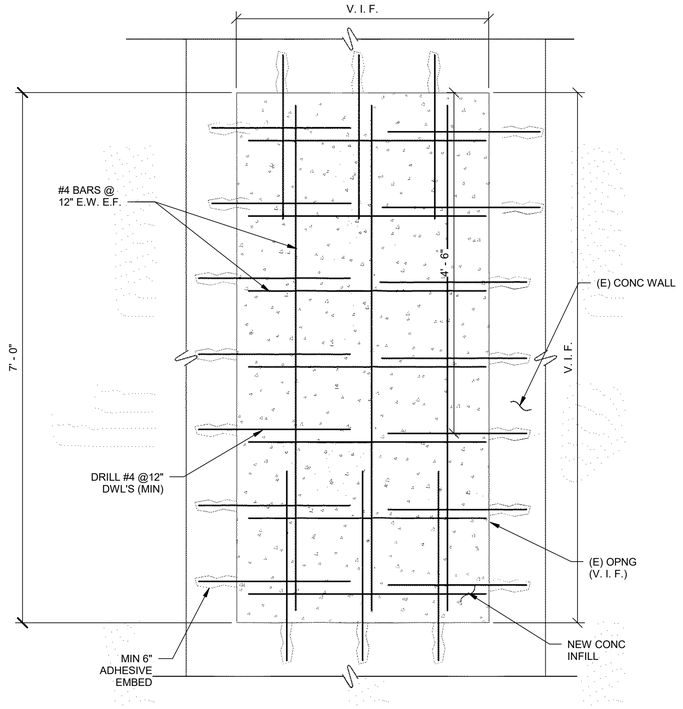


NOTE:
"A","B" & "C" DIMS. AS REQ'D TO SUIT EQUIPMENT. ("C" = 6" TYP. U.N.O.)

3 TYP. EQUIPMENT PAD
S-502 SCALE: NTS



4 BEAM CONNECTION AT CMU WALL
S-502 SCALE: 3/4" = 1'-0"



5 EXISTING WALL OPENING INFILL
S-502 SCALE: NTS

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BY

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MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

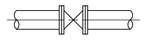
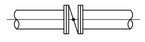
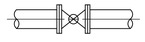
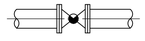
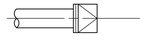
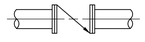
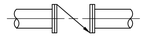
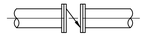
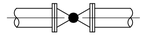
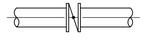
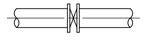
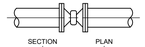
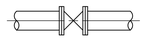
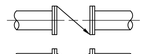
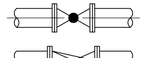
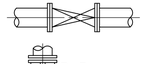
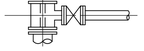
STANDARD DETAILS

PROJ:	200-12747-23001
DESN:	AJF
DRWN:	AJF
CHKD:	TJM

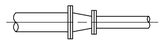
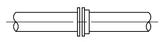
S-502

Bar measures 1 inch, otherwise drawing is not to scale

VALVE DESIGNATIONS

SYMBOLS: PIPEWORK DRAWINGS	SYMBOLS: FLOW DIAGRAMS	MARK	TYPE
		A	GATE VALVE
		B	BUTTERFLY VALVE
		BV	BALL VALVE
		BCV	BALL CONTROL VALVE
		BW	BACKWATER CHECK VALVE
		C	STANDARD CHECK VALVE
		CC	CUSHION CHECK VALVE
		DC	DOUBLE VANE CHECK VALVE
		G	GLOBE VALVE
		IB	INDUSTRIAL BUTTERFLY VALVE
		K	KNIFE GATE VALVE
		P	PLUG VALVE
		PD	PLUG DRAIN VALVE
		RA	RESILIENT SEATED GATE VALVE
		SC	SILENT CHECK VALVE
		SEC WEC	ELECTRIC CHECK VALVE (SEWAGE) (ANGLE OR GLOBE VALVE) (WATER)
		SV	SURGE OR PRESSURE RELIEF VALVE
		TPSV	TAPPING SLEEVE AND VALVE
		PRV	PRESSURE REDUCING VALVE
		ARV	AIR RELIEF VALVE

JOINT DESIGNATIONS

SYMBOLS	MARK	TYPE
	FJ	FLANGED JOINT
	MJ	MECHANICAL JOINT
	SJ	SCREWED JOINT
	POJ	PUSH ON JOINT
	BFC	BOLTED FLEXIBLE COUPLING
	GC	GROOVED COUPLING
	WJ	SHOP WELDED JOINT (STEEL PIPE)
	FWJ	FIELD WELDED JOINT (STEEL PIPE)
	STJ	SOCKET TYPE JOINT (FRP OR PVC PIPE)
	EJ	EXPANSION JOINT
	BF	BLIND FLANGE
	AFC	ADAPTER FLANGE COUPLING

GATE DESIGNATIONS

SYMBOLS: PIPEWORK DRAWINGS	SYMBOLS: FLOW DIAGRAMS	MARK	TYPE
		S	SLUICE GATE (WITH STANDARD WALL THIMBLE)
		S	SLUICE GATE (WITH FLANGE & MECHANICAL JOINT WALL THIMBLE)
		F	FABRICATED SLIDE GATE
		SP	STOP PLATE (SPECIFIED UNDER SLIDE GATES)
		SH	SHEAR GATE
		FG	FLUSHING GATE
		LG	FLAP GATE
		SL	STOP LOGS

SLEEVE AND WALL PIPE DESIGNATIONS

SYMBOL	
	CORED HOLE IN EXISTING WALL
	WALL SLEEVE W/WATER COLLAR (STANDARD)
	FLANGE X PLAIN END WALL PIPE
	FLANGE X PLAIN END WALL PIPE
	FLANGE X FLANGE WALL PIPE
	MECHANICAL JOINT X MECHANICAL JOINT WALL PIPE
	MECHANICAL JOINT X PLAIN END WALL PIPE
	PUSH ON BELL JOINT X PLAIN END WALL PIPE

OPERATOR SYMBOLS

(SCHEMATICS ONLY)

THROTTLING SERVICE	OPEN - SHUT SERVICE
PNEUMATIC	PNEUMATIC
ELECTRIC	ELECTRIC
HYDRAULIC	HYDRAULIC

VALVE & PIPE IDENTIFICATION

PIPING AND EQUIPMENT SYMBOLS

(SCHEMATICS ONLY)

VTR	VENT TO ROOF
PI 0-100 PSI	CHEMICAL SEAL W/PRESS GAUGE RANGE
PI	PRESSURE GAUGE
PI	PULSATION DAMPENER W/PRESS GAUGE
	ELBOW UP
	ELBOW DOWN
	TEE UP
	TEE DOWN
	REDUCER
	WYE STRAINER
	UNION
M	FLOW METER
FD	FLOOR DRAIN
ED	EQUIPMENT DRAIN
CO	CLEANOUT-FLOOR
CO	CLEANOUT-HORIZONTAL
D	PIPE TO DRAIN
BFP D	BACKFLOW PREVENTER
PRV XX PSI	PRESSURE RELIEF VALVE SET POINT
BPV XX PSI	BACK PRESSURE VALVE SET POINT
	PET COCK
	PLUG VALVE - GAS
	PRESSURE RELIEF VALVE
	TEMPERING VALVE
HB	HOSE BIBB (3/4")
FHB	FLUSHING HOSE BIBB (1-1/2")
FC	FLUSHING CONNECTION (1-1/2")
S	SOLENOID VALVE
	MANUAL AIR RELIEF
	PUMP
	SUBMERSIBLE PUMP
	CENTRIFUGE
	CONNECT TO EXISTING
	FLAME ARRESTOR
	BLIND FLANGE
D	SOLIDS DENSITY METER
	MIXER
	PRESSURE ISOLATION RING

PIPING ABBREVIATIONS

AIR	LOW PRESSURE AIR
AFC	ADAPTER FLANGE COUPLING
ARL	AIR RELEASE LINE
B	BOTTOM
BF	BLIND FLANGE
BFC	BOLTED FLEXIBLE COUPLING
BS	BLENDED SLUDGE
CA	COMPRESSED AIR
CI	CAST IRON
CL	CENTERLINE (LOCATION)
CO	CLEANOUT
D	DRAIN
DIP	DUCTILE IRON PIPE
DS	DIGESTED SLUDGE
DWS	DEWATERED SLUDGE
DWW	DIRTY WASH WATER
ED	EQUIPMENT DRAIN
EFF	EFFLUENT
EFS	EFFLUENT SAMPLE
FHB	FLUSHING HOSE BIBB
EL	ELEVATION
EQ	EQUALIZATION
EQD	EQUALIZATION BASIN DRAIN
EQE	EQUALIZATION BASIN EFFLUENT
EQI	EQUALIZATION BASIN INFLUENT
EQR	EQUALIZATION BASIN RETURN
EQS	EQUALIZATION BASIN SLUDGE
EX	EXISTING
F	FILTRATE
FC	FLUSHING CONNECTION
FD	FLOOR DRAIN
FE	FILTER EFFLUENT
FI	FILTER INFLUENT
GR	GRIT
HB	HOSE BIBB
HWL	HIGH WATER LEVEL
IE	INVERT ELEVATION
INF	INFLUENT
IPW (PEW)	INDUSTRIAL PLANT WATER (PLANT EFFLUENT WATER)
LWCO	LOW WATER CUT-OFF
MBS	MIXED BLENDED SLUDGE
MDS	MIXED DIGESTER SLUDGE
NaOCl	SODIUM HYPOCHLORITE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NPW	NON POTABLE WATER
OF	OVERFLOW
PE	PRIMARY EFFLUENT
PI	PRIMARY INFLUENT
POLY	POLYMER
PS	PRIMARY SLUDGE
PW	POTABLE WATER
RAS	RETURN ACTIVATED SLUDGE
RC	RECYCLED
RCS	RECIRCULATED SLUDGE
RS	RAW SEWAGE
SAM	SAMPLE
SAN	SANITARY SEWER
SC	SCUM
SFE	SECONDARY EFFLUENT
SPD	SUMP PUMP DISCHARGE
SW	SERVICE WATER
T	TOP
TE	TERTIARY EFFLUENT
THS	THICKENED SLUDGE
TWAS	THICKENED WASTE ACTIVATED SLUDGE
TYP	TYPICAL
V	VENT
VERT	VERTICAL
VTR	VENT TO ROOF
WAS	WASTE ACTIVATED SLUDGE
W	WATER MAIN

FEED AND MONITORING SYMBOLS

DP	DIFFERENTIAL PRESSURE MEASUREMENT / SWITCH	PH	PH PROBE
DO	DO PROBE	PIT	PRESSURE ELEMENT / TRANSMITTER
FLS	FLOAT SWITCH	SAM	SAMPLE
FS	FLOW SWITCH	TIT	TURBIDITY INDICATOR TRANSMITTER
LIT	LEVEL ELEMENT / TRANSMITTER	ZS	ZERO SPEED SWITCH
NPW	NON POTABLE WATER	PSH	PRESSURE SWITCH HIGH
POLY	POLYMER	CH4	METHANE SENSOR
T	TEMPERATURE WITH THERMOWELL IF ON PIPE OR PIPE FLANGE. MIN. LENGTH 12".		

GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO SHOP DRAWING SUBMITTAL.
2. ALL TAPS/CONNECTIONS SHALL INCLUDE BALL ISOLATION VALVE.
3. ALL PIPE MOUNTED OR FLANGE MOUNTED SENSORS SHALL BE REMOVABLE UNDER PRESSURE. PROVIDE HARDWARE AS REQUIRED WITH TRANSMITTER.
4. WALL PIPES SHALL BE PROVIDED FOR PIPE PENETRATIONS AT TANK WALLS AND EXTERIOR BURIED WALLS. WALL SLEEVES WITH LINK SEAL ARE ACCEPTABLE AT INTERIOR WALL AND EXPOSED SLAB PENETRATIONS.
5. ALL PRESSURE GAUGE LOCATIONS ON SLUDGE PIPES SHALL INCLUDE PRESSURE RING. SEE SCHEMATIC.
6. SEE D-002 FOR ADDITIONAL NOTES.

PIPING AND VALVE GENERAL NOTES

1. INSTALL ALL PIPING SUPPORTS AND PIPING IN ACCORDANCE WITH THE LATEST EDITION OF THE ASME ANSI POWER PIPING CODE B 31.1. PROVIDE STAINLESS STEEL SUPPORTS FOR OVERHEAD PIPING TO WALLS AND CEILING AND PIPING FROM FLOOR. DO NOT BLOCK WALKWAYS OR ACCESS TO EQUIPMENT.
2. LOCATE PRESSURE TAPS ON THE TOP OF PROCESS PIPES.
3. LOCATE SAMPLE TAPS ON THE SIDE OF PROCESS PIPES.
4. LOCATE DRAIN TAPS ON THE BOTTOM OF PROCESS PIPES.
5. UNLESS OTHERWISE NOTED PIPE ELEVATIONS SHOWN ON PIPING DRAWINGS REFER TO CENTERLINE OF THE PIPE.
6. ALL GROUND BURIED PIPING TO HAVE A MINIMUM OF 5'-6" OF EARTH COVER OR AS DETAILED ON THE DRAWINGS. MAINTAIN MINIMUM CLEARANCE BETWEEN PIPES OF 6".
7. INSTALL ALL PLUG, BUTTERFLY AND BALL VALVES WITH THE SHAFT IN THE HORIZONTAL POSITION, UNLESS OTHERWISE DIRECTED.
8. ALL HARDWARE TO BE 304 OR 316 STAINLESS STEEL INCLUDING NUTS, BOLTS, WASHERS, ANCHORS, STRUT, HANGERS, ETC.
9. ALL EQUIPMENT LOCATED ON GRADE OR FLOOR CONCRETE SLAB PROVIDE HOUSEKEEPING/EQUIPMENT PAD. SEE STRUCTURAL FOR DETAILS.
10. EQUIPMENT OR PANELS MOUNTED TO WALLS OR FREE STANDING MOUNT WITH 304 STAINLESS STEEL UNISTRUT. SEE ELECTRICAL FOR TYPICAL DETAIL.
11. CONTRACTOR SHALL COORDINATE ALL OTHER DISCIPLINE EQUIPMENT AND PIPING. NOT ALL OTHER DISCIPLINE ITEMS SHOWN ON PROCESS DRAWINGS. SEE OTHER DISCIPLINE'S SHEETS AND SPECIFICATIONS FOR ITEMS TO BE COORDINATED.
12. ALL NEW PIPING AND VALVES SHALL BE PAINTED.

GENERAL DEMOLITION NOTES

GENERAL DEMOLITION NOTES FOR ALL SHEETS AND ALL DISCIPLINES:

1. DEMOLITION DRAWINGS MAY NOT SHOW ALL DEMOLITION WORK REQUIRED UNDER THIS CONTRACT. OTHER CONTRACT DRAWINGS MAY ALSO SHOW DEMOLITION WORK. COORDINATE DEMOLITION WITH REQUIREMENTS LISTED IN SECTION 01110 OF THE PROJECT MANUAL.
2. SITE INVESTIGATION PRIOR TO BIDS IS RECOMMENDED TO DETERMINE THE COMPLETE EXTENT OF DEMOLITION REQUIRED.
3. WHEN EQUIPMENT ITEMS ARE INDICATED FOR DEMOLITION, ALL ANCILLARY UTILITIES, ELECTRICAL ITEMS, CONCRETE SUPPORTS AND STRUCTURAL STEEL SUPPORTS SHALL BE COMPLETELY REMOVED UNLESS INDICATED OTHERWISE. ALL THE ABOVE MENTIONED ITEMS MAY NOT BE INDICATED ON THE DRAWINGS. SITE VISIT PRIOR TO BID DATE IS RECOMMENDED TO QUANTIFY COMPLETE EXTENT OF EQUIPMENT DEMOLITION.
4. CONCRETE FLOOR SLABS UNDER DEMOLISHED CONCRETE EQUIPMENT PADS, THAT WILL BE EXPOSED IN THE FINISHED CONSTRUCTION SHALL BE PATCHED SMOOTH AND ANY DOWELS OR ANCHORS SHALL BE CUT OFF 2" BELOW THE SURFACE AND PATCHED SMOOTH. IF REQUIRED, EXISTING FLOOR SURFACE SHALL BE CHIPPED OR ROUGHENED AND PATCH APPLIED OVER BONDING AGENT.
5. ALL PIPING SHOWN AS BEING DEMOLISHED SHALL BE COMPLETELY REMOVED INCLUDING INSULATION, HANGERS, EXPANSION AND ANCHOR BOLTS AND PIPE SUPPORTS. CAP PIPES LEFT IN PLACE AS REQUIRED.
6. EXPANSION AND ANCHOR BOLTS REMAINING IN WALL, CEILINGS OR FLOORS SHALL BE POUNDED OR CUT FLUSH WITH THE SURFACE. IN FINISHED AREAS THEY SHALL BE RECESSED AND PATCHED TO MATCH THE EXISTING FINISH.
7. ALL OPENINGS REMAINING IN FLOORS, WALLS OR CEILINGS, INCLUDING SLEEVES, AFTER PIPE OR CONDUIT DEMOLITION SHALL BE PATCHED TO MATCH THE EXISTING FINISH AND AS DETAILED ON THE DRAWINGS. PENETRATIONS BETWEEN AREAS LABELED NEMA 4 AND NEMA 7 SHALL BE SEALED GAS TIGHT.
8. ALL PIPES, PIPE SUPPORTS, PUMPS, AND EQUIPMENT ARE TO BE CLEANED (REMOVE ANY RUST, DIRT, ETC.) AND REPAINTED. PIPES WITH INSULATION ARE TO BE CLEANED AND THE DAMAGED PORTIONS OF INSULATION ARE TO BE REPAIRED/RETAPED AND REPAINTED.
9. FLOORS, WALLS, AND CEILING SURFACES ARE TO BE CLEANED IN EACH AREA AFTER DEMOLITION IS COMPLETE. THE WALLS SHALL BE WET BRUSHED, SCRAPPED, SWEEP, ETC. AS REQUIRED TO REMOVE DIRT, LOOSE CRYSTAL, SCALE, RUST, AND DUST FROM SURFACES PRIOR TO PAINTING OF PIPING.
10. FLOOR DRAINS SHALL BE PROTECTED FROM DIRT AND DEBRIS.
11. PIPE TO BE REMOVED AND REPLACED IS TO BE REPLACED IN KIND UNLESS NOTED OTHERWISE.
12. COORDINATE WITH OWNER DURING ANY INTERRUPTION OF SW OR IPW PIPING, SO THAT THAT OPERATION OF THE PROCESS EQUIPMENT IS NOT EFFECTED.
13. REVIEW WORK ITEMS WITH ENGINEER PRIOR TO PERFORMING WORK.
14. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL MATERIALS GENERATED DURING DEMOLITION WORK.
15. STAFF WILL ATTEMPT TO FLUSH RESIDUAL MATERIAL FROM PIPE PRIOR TO PERFORMING WORK. CONTRACTOR SHALL BE PREPARED TO HANDLE AND DISPOSE OF REMAINING MATERIAL.

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

LEGEND AND ABBREVIATIONS

PROJ:	200-12747-23001
DESN:	BGB
DRWN:	NTK
CHKD:	

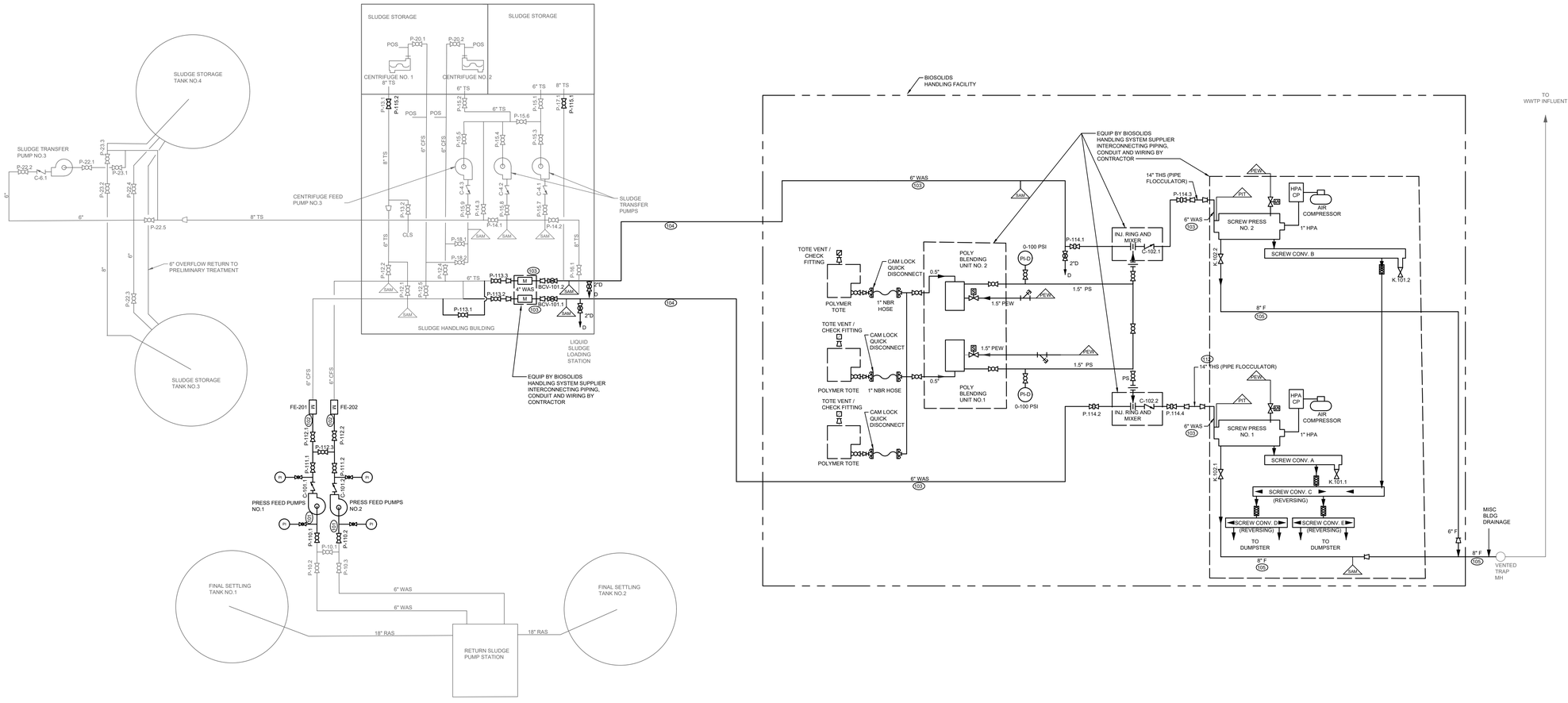
D-001

1/31/2024 10:25:20 AM - \\TT LOCAL\IER\PROJECTS\LANSING\IER\127472000-12747-23001\CAD\SHEETFILES\D-001 LEGEND AND ABBREVIATIONS.DWG - TROTTERKARLL, NIKI

Bar Measures 1 inch, otherwise drawing not to scale

NOTES (ALL SHEETS):

1. ALL PUMPS SHALL HAVE PRESSURE GAUGES WITH DIAPHRAGM SEALS AND FLUSHING CONNECTIONS ON SUCTION AND DISCHARGE PIPE. SUCTION GAUGE SHALL HAVE PRESSURE RANGE -5 PSI TO 30 PSI. DISCHARGE SIDE PRESSURE RANGE 0 TO 100 PSI.
2. ALL ELECTRICAL EQUIPMENT SHALL BE LOCATED TO MEET REQUIRED CODES FOR CLEARANCES AROUND RATED EQUIPMENT AND AREAS.
3. PROVIDE DRAIN AND PURGE TAPS IN PIPING AS RECOMMENDED BY MANUFACTURER. TAP SHALL INCLUDE BALL VALVE.
4. ALL FLUSHING CONNECTIONS (FC) SHOWN ON SCHEMATIC SHALL BE HARD PIPED TO FEW SYSTEM. CONNECTIONS ON PUMP DISCHARGES SHALL INCLUDE 1-1/2" CHECK VALVE TO PREVENT SLUDGE FROM ENTERING FEW LINE AND INCLUDE ISOLATION BALL VALVE.
5. ALL BURIED PRESSURE PIPE SHALL BE FULLY RESTRAINED.
6. PROVIDE FITTINGS AS REQUIRED TO CONNECT TO MANUFACTURER EQUIPMENT.
7. ON ALL MANUFACTURER PACKAGE SYSTEMS CONTRACTOR TO COORDINATE FINAL PIPE ARRANGEMENT, VALVES, PIPE SIZES, ELECTRICAL, AND APPURTENANCES FOR A COMPLETE AND FULLY FUNCTIONAL SYSTEM.
8. ALL PIPE PENETRATIONS THROUGH STRUCTURE WALLS SHALL INCLUDE A SLEEVE AND DOUBLE LINK SEAL OR WALL PIPE WITH COLLAR.
9. CONTRACTOR TO ROUTE 1-1/2" PEW LINE TO POLYMER BLENDING UNITS AND TO PRESS UNITS. LINES SHALL HAVE BALL VALVES AND CONNECTIONS FOR ISOLATION
10. CONTRACTOR TO ROUTE AIR LINE FROM COMPRESSOR TO SCREW PRESS UNIT.



MT. CLEMENS BIOSOLIDS SCHEMATIC

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CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

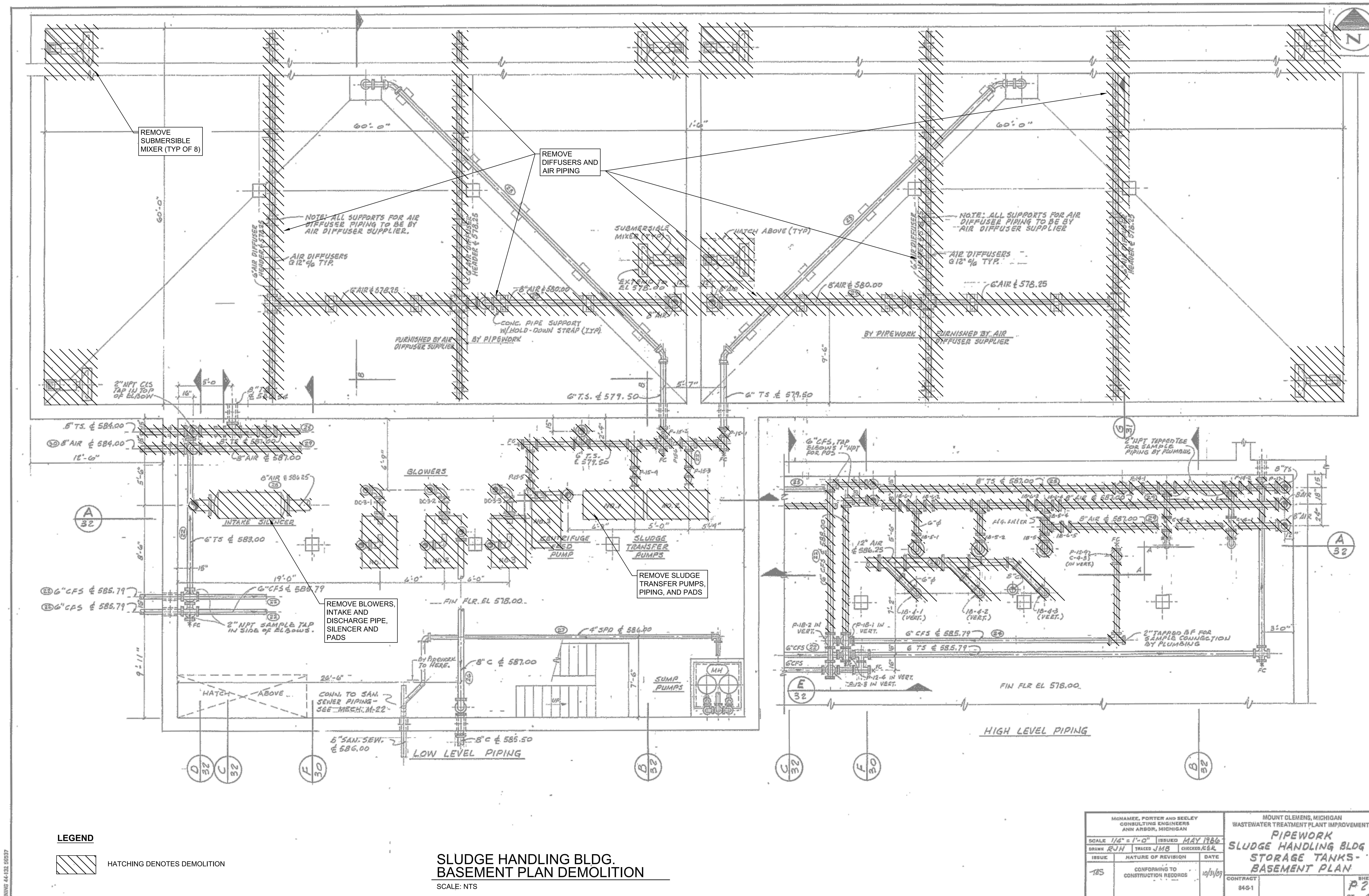
PROPOSED SLUDGE FLOW SCHEMATIC

PROJ: 200-12747-23001
DESN: BGB
DRWN: TJL
CHKD:

D-002

Bar Measures 1 inch, otherwise drawing not to scale

2/1/2024 3:12:27 PM - P:\IER\12747\200-12747-23001\CAD\SHEETFILES\D-002 SLUDGE FLOW SCHEMATIC.DWG - BODE, BRENT



LEGEND

▨ HATCHING DENOTES DEMOLITION

SLUDGE HANDLING BLDG.
BASEMENT PLAN DEMOLITION

SCALE: NTS

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MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

SLUDGE HANDLING BLDG. BASEMENT PLAN DEMOLITION

PROJ: 200-12747-23001
DESN: BGB
DRWN: NTK
CHKD: ####

DD101

Bar Measures 1 inch, otherwise drawing not to scale

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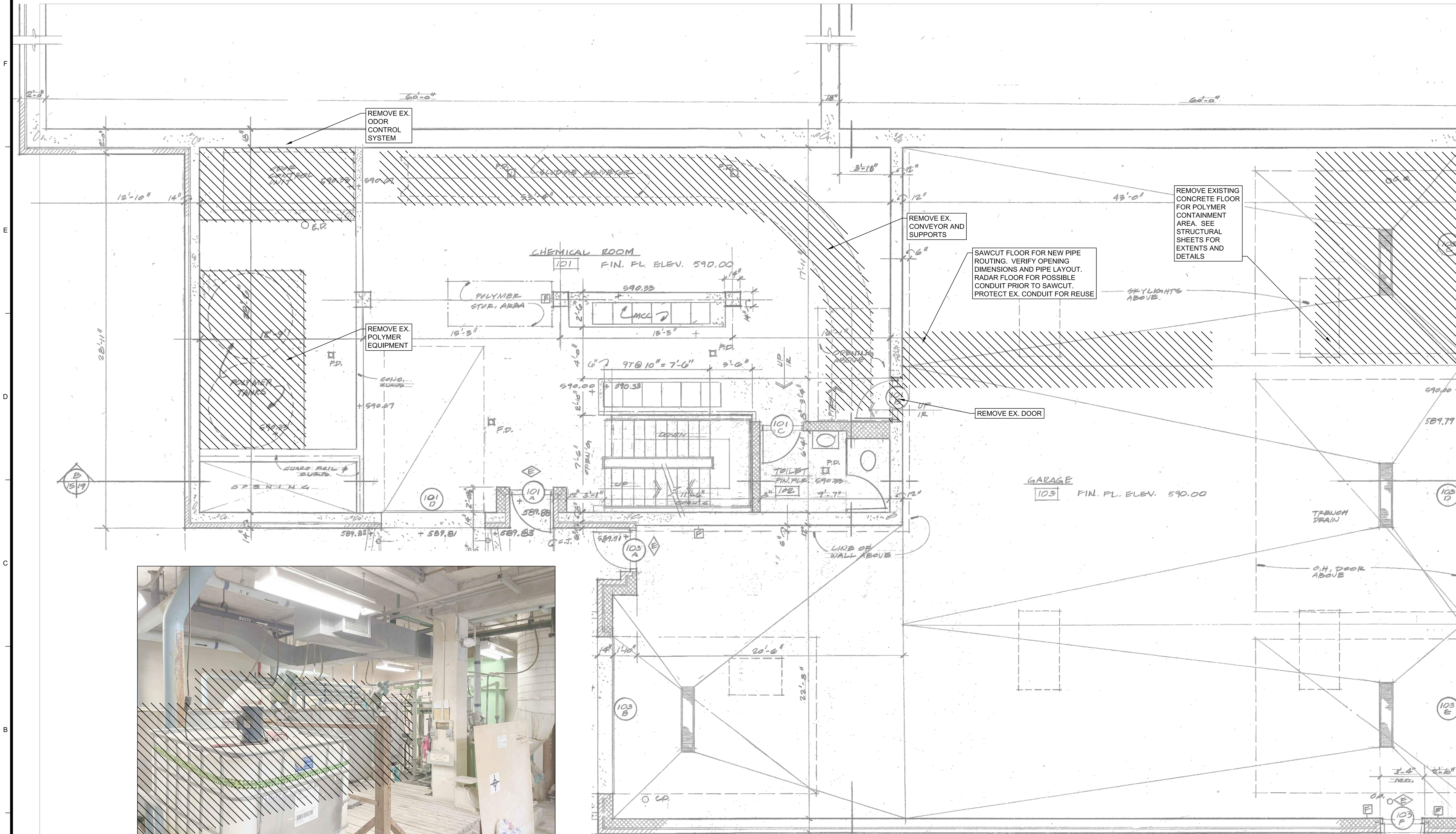

LEGEND

▨ HATCHING DENOTES DEMOLITION

SLUDGE HANDLING BLDG.
1ST FLOOR PLAN DEMOLITION

SCALE: NTS

N

0 2' 4' 8'
SCALE: 1/4" = 1'-0"

McNAMEE, PORTER AND SEELEY CONSULTING ENGINEERS ANN ARBOR, MICHIGAN			
SCALE ¼" = 1'-0"	ISSUED MAY 1986		
DRAWN A.L.	TRACED	CHECKED KFW	
ISSUE	NATURE OF REVISION		DATE
LGU	CONFORMING TO CONSTRUCTION RECORDS		9-5-89

MOUNT CLEMENS, MICHIGAN
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ARCHITECTURAL

SLUDGE HANDLING BUILDING
FIRST FLOOR PLAN

CONTRACT 84-S-1

SHEET A-15

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CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

SLUDGE HANDLING BLDG.
1ST FLOOR PLAN
DEMOLITION

PROJ:	200-12747-23001
DESN:	BGB
DRWN:	NTK
CHKD:	####

DD102

Bar Measures 1 inch, otherwise drawing not to scale

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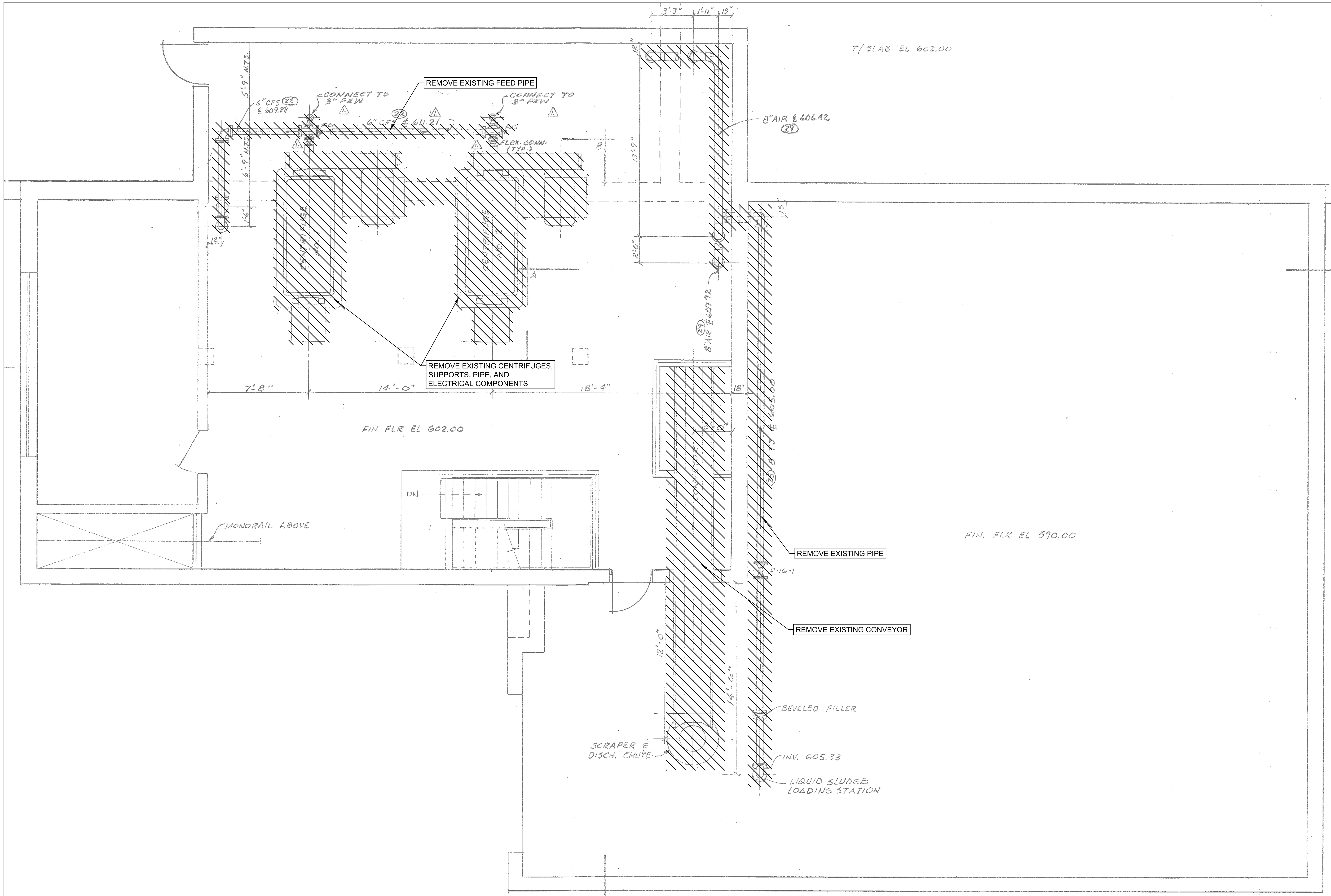
1/31/2024 10:48:39 AM - \\TT.LOCAL\IER\PROJECTS\LANSING\IER\12747\200-12747-23001\CAD\SHEETFILES\DD103_SLUDGE HANDLING 2ND FLOOR DEMO.DWG - TROTTERKARLL, NIKI



N

0 2' 4' 8'
SCALE: 1/4" = 1'-0"

LEGEND

▨ HATCHING DENOTES DEMOLITION

SLUDGE HANDLING BLDG.
2ND FLOOR PLAN DEMOLITION

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

McNAMEE, PORTER AND SEELEY
CONSULTING ENGINEERS
ANN ARBOR, MICHIGAN

SCALE 1/4" = 1'-0"		ISSUED MAY 1986			
DRAWN RJH	TRACED JMB	CHECKED KGK			
ISSUE	NATURE OF REVISION	DATE			
⚠ TAS	CHANGES PER BUL. E CONFORMING TO CONSTRUCTION RECORDS	10/26/87			

MOUNT CLEMENS, MICHIGAN
WASTEWATER TREATMENT PLANT IMPROVEMENTS
PIPEWORK
SLUDGE HANDLING BLDG &
STORAGE TANKS
2ND FLOOR PLAN

CONTRACT 84-S-1
SHEET P 31 OF 40

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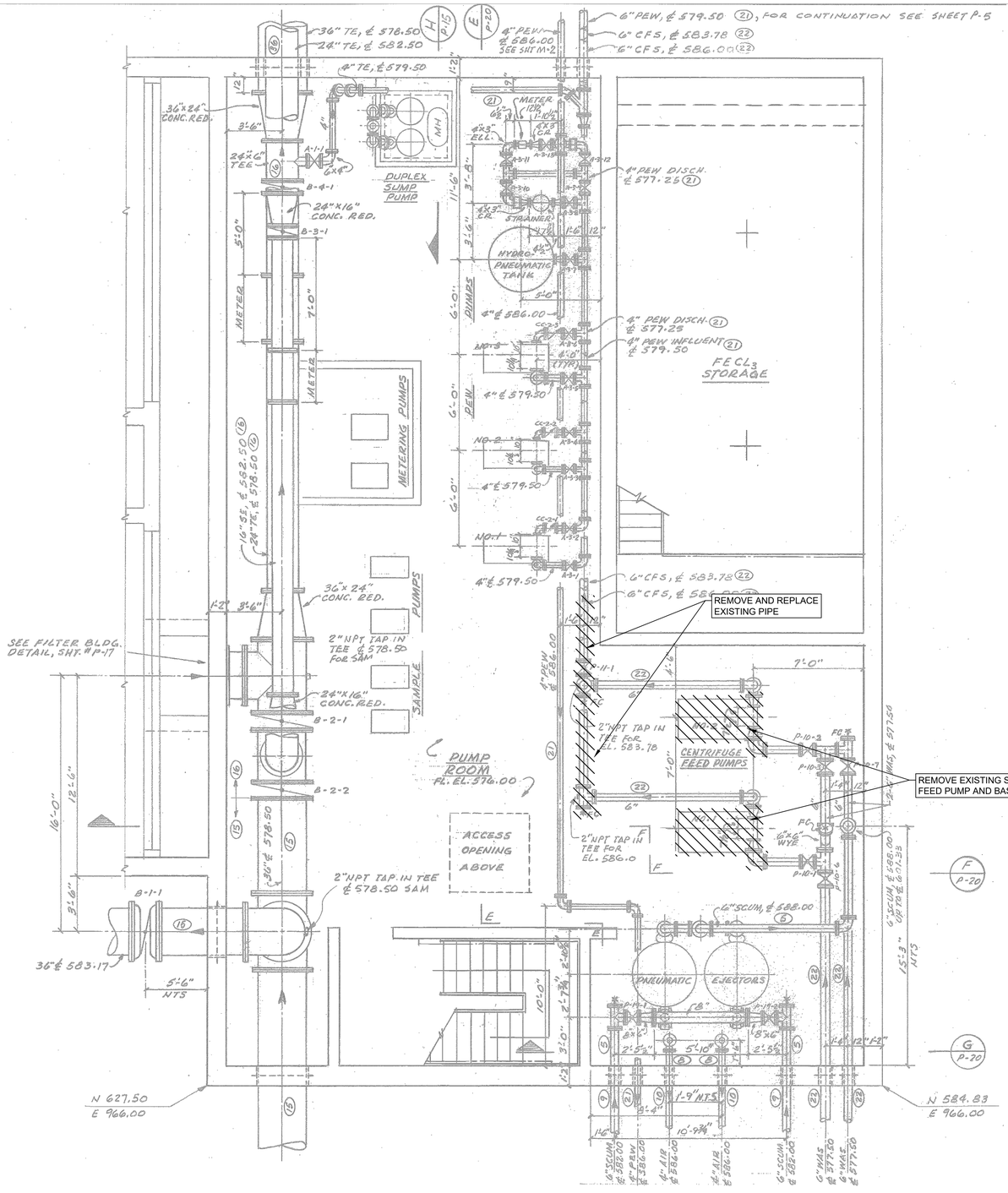
CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
SLUDGE HANDLING BLDG.
2ND FLOOR PLAN
DEMOLITION

PROJ:	200-12747-23001
DESN:	BGB
DRWN:	NTK
CHKD:	####

DD103

Bar Measures 1 inch, otherwise drawing not to scale



LEGEND

HATCHING DENOTES DEMOLITION

FILTER BLDG. BASEMENT PLAN DEMOLITION

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

0 2' 4' 8'

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

McNAMEE, PORTER AND SEELEY CONSULTING ENGINEERS ANN ARBOR, MICHIGAN	MOUNT CLEMENS, MICHIGAN WASTEWATER TREATMENT PLANT IMPROVEMENTS
SCALE 1/4"=1'-0" ISSUED MAY 1986	PIPEWORK PRELIMINARY/FILTER BLDG./ CHEMICAL/MECHANICAL SEGMENT BASEMENT PLAN
DRAWN JWR TRACED JBN CHECKED KEK	
ISSUE: L40 — NATURE OF REVISION: CONFORMING TO CONSTRUCTION RECORDS — DATE: 9-20-89	
CONTRACT: 84-S-1	SHEET: P 15 OF 40

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MARK	DATE	DESCRIPTION	BY
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CITY OF MOUNT CLEMENS, MI

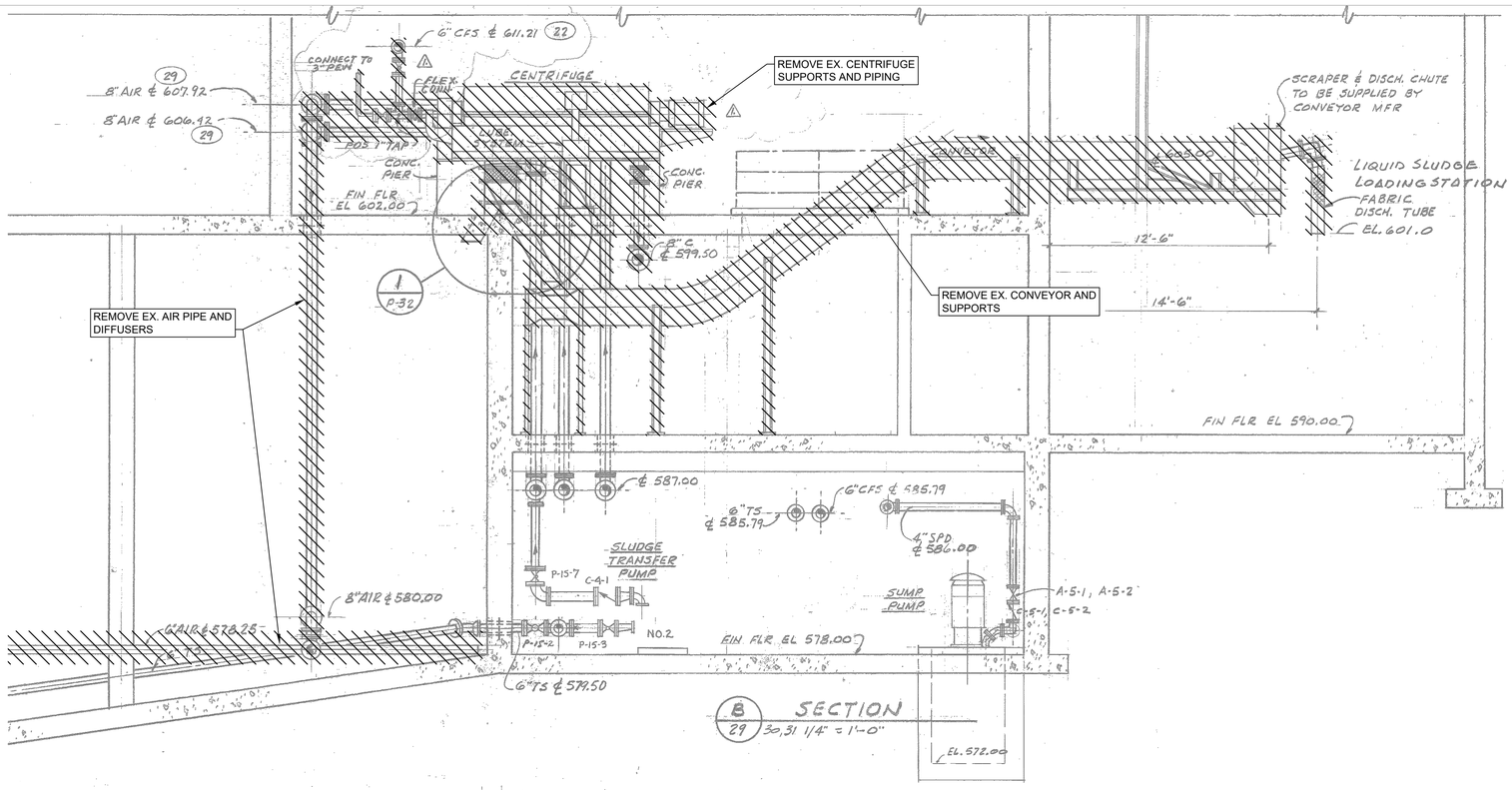
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

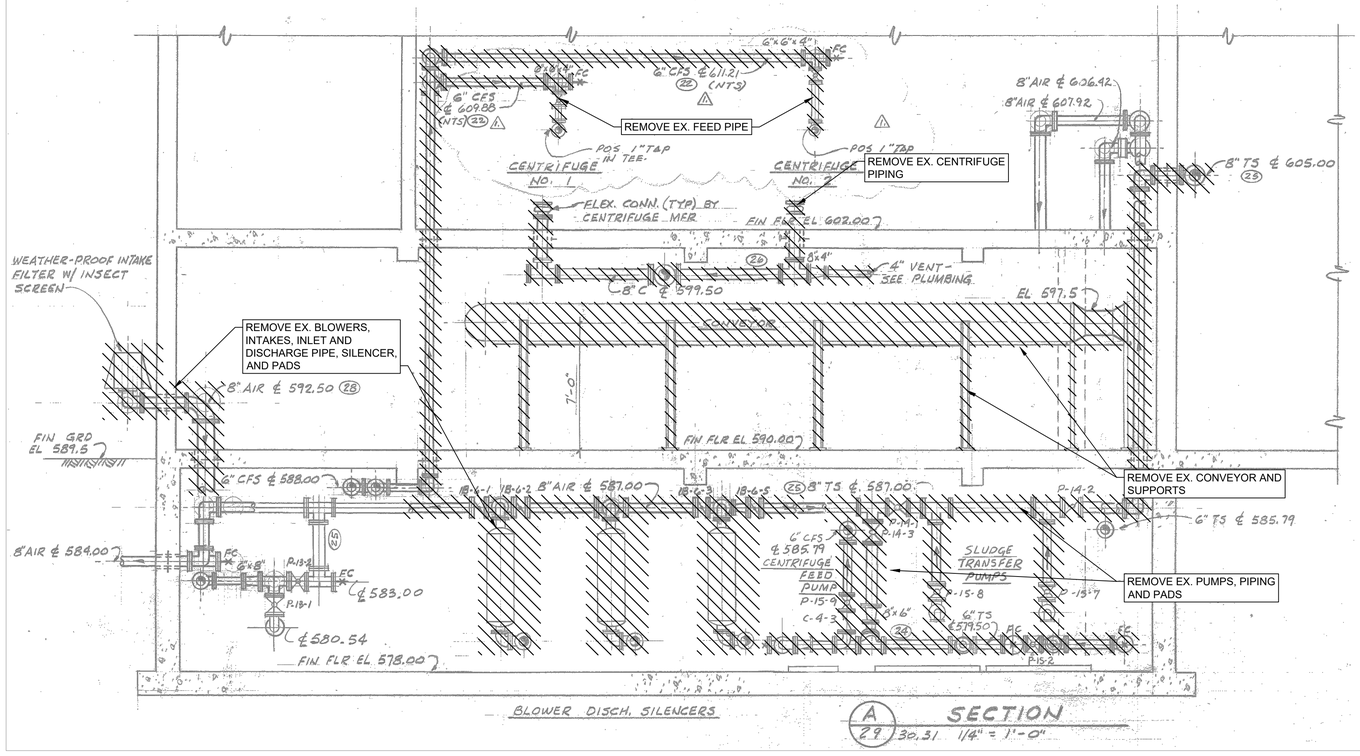
FILTER BLDG. BASEMENT PLAN DEMOLITION

PROJ: 200-12747-23001
DESN: BGB
DRWN: NTK
CHKD: ####

DD104

Bar Measures 1 inch, otherwise drawing not to scale





LEGEND

HATCHING DENOTES DEMOLITION

McNAMEE, PORTER AND SEELEY CONSULTING ENGINEERS ANN ARBOR, MICHIGAN			MOUNT CLEMENS, MICHIGAN WASTEWATER TREATMENT PLANT IMPROVEMENTS
SCALE NOTED	ISSUED MAY 1986		PIPEWORK SLUDGE HANDLING BLDG SECTIONS
DRAWN RJH	TRACED JMB	CHECKED K&K	
ISSUE	NATURE OF REVISION	DATE	
1 TRS	CHANGES PER BUL. E CONFORMING TO CONSTRUCTION RECORDS	11/12/99	CONTRACT 84-S-1
			SHEET P32 OF 40

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

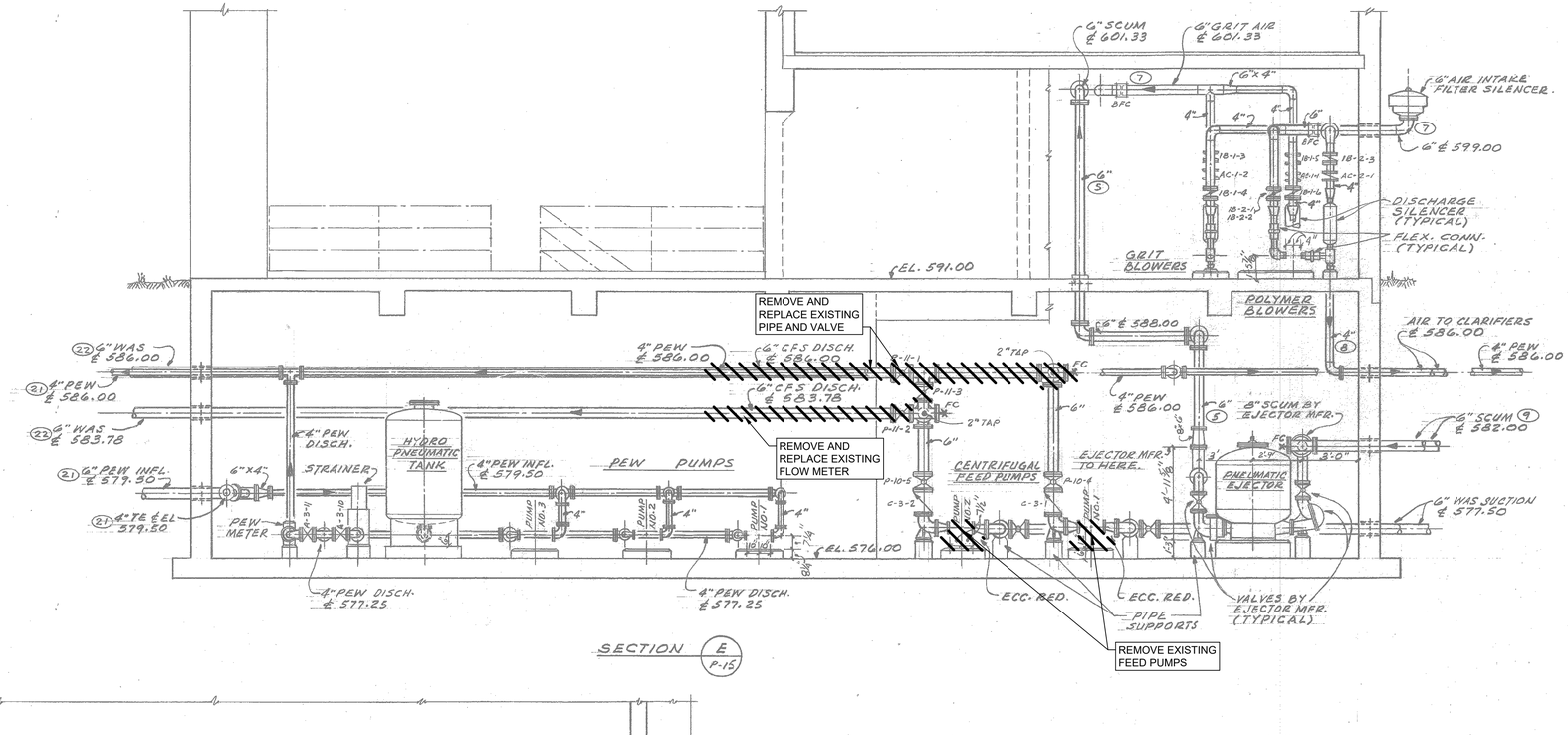
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

SLUDGE HANDLING BLDG. SECTIONS DEMOLITION

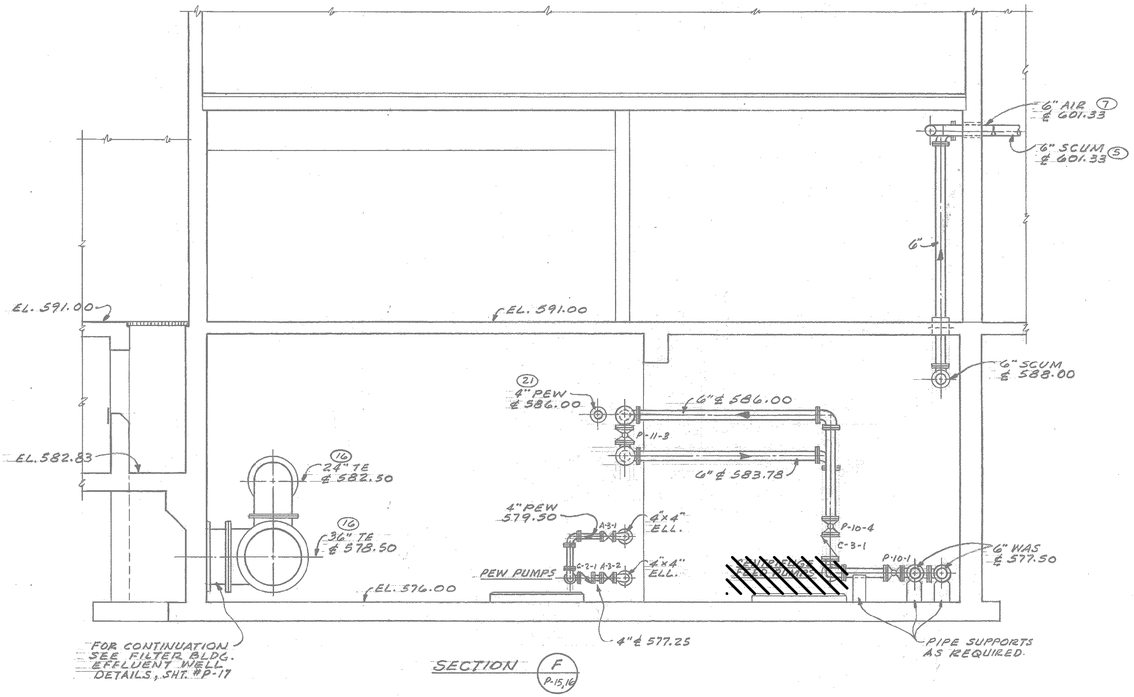
PROJ:	200-12747-23001
DESN:	BGB
DRWN:	NTK
CHKD:	#####

DD301

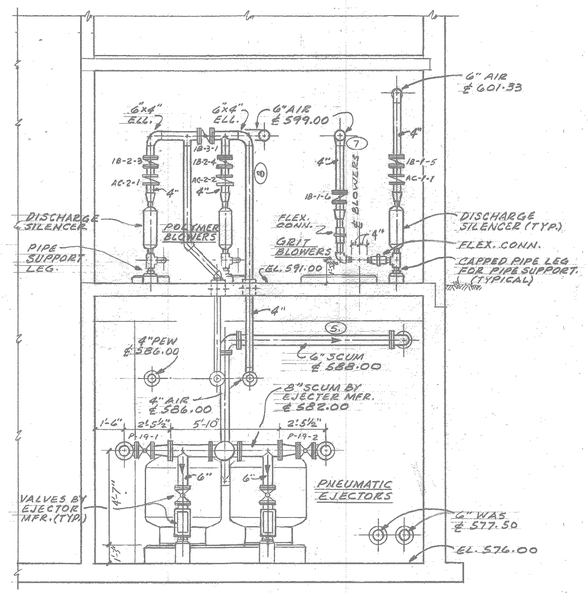
Bar Measures 1 inch, otherwise drawing not to scale



SECTION E P-15



SECTION F P-15,16



SECTION G P-15,16

0 2' 4' 8'
SCALE: 1/4" = 1'-0"

LEGEND

HATCHING DENOTES DEMOLITION

McNAMEE, PORTER AND SEELEY CONSULTING ENGINEERS ANN ARBOR, MICHIGAN	MOUNT CLEMENS, MICHIGAN WASTEWATER TREATMENT PLANT IMPROVEMENTS
SCALE 1/4" = 1'-0" ISSUED MAY 1986	PIPEWORK PRELIMINARY/FILTER BLDG. (CHEMICAL/MECHANICAL) SECTIONS
DRAWN JWR TRACED JBN CHECKED KER	
ISSUE: LGU — NATURE OF REVISION: CONFORMING TO CONSTRUCTION RECORDS — DATE: 9-21-87	
CONTRACT 84-S-1	SHEET P 20 OF 40

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PHONE: 517.316.3963 FAX: 517.484.8140

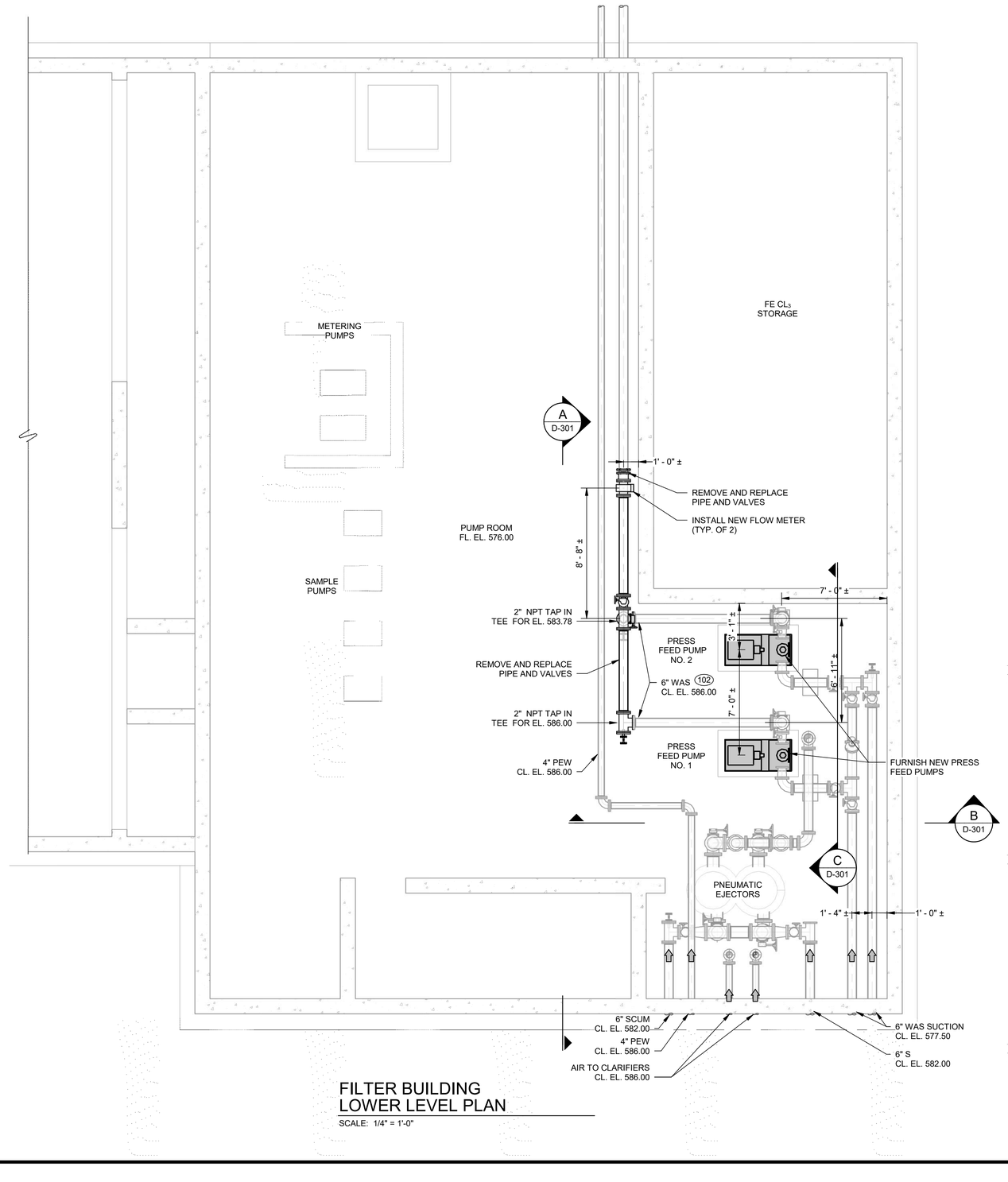
MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
FILTER BUILDING SECTIONS DEMOLITION

PROJ:	200-12747-23001
DESN:	BGB
DRWN:	NTK
CHKD:	####

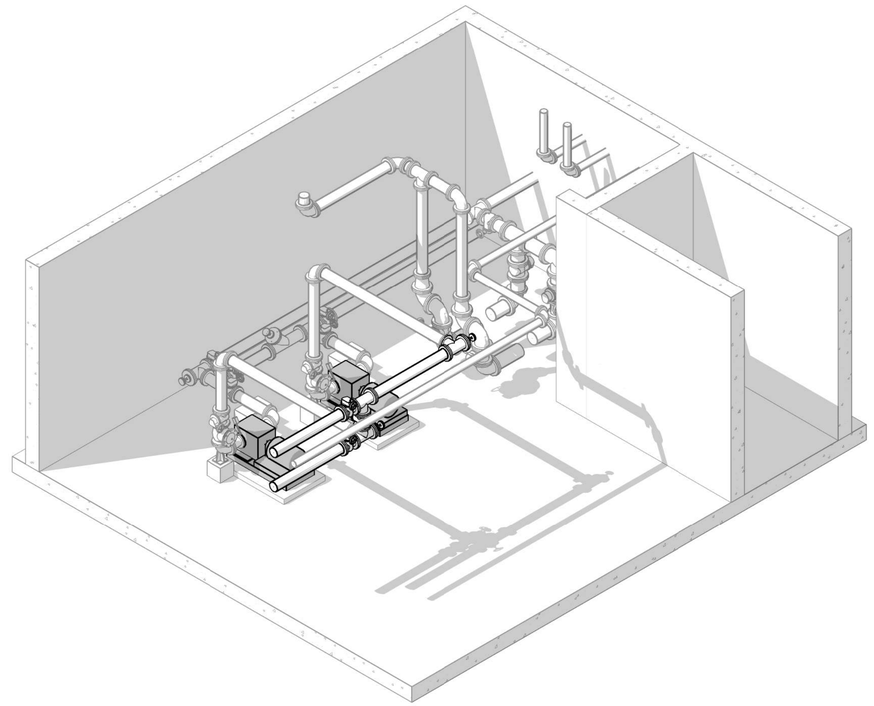
DD302

Bar Measures 1 inch, otherwise drawing not to scale



FILTER BUILDING LOWER LEVEL PLAN

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



3D PERSPECTIVE

SCALE: NTS

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MARK	DATE	DESCRIPTION	BY
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CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

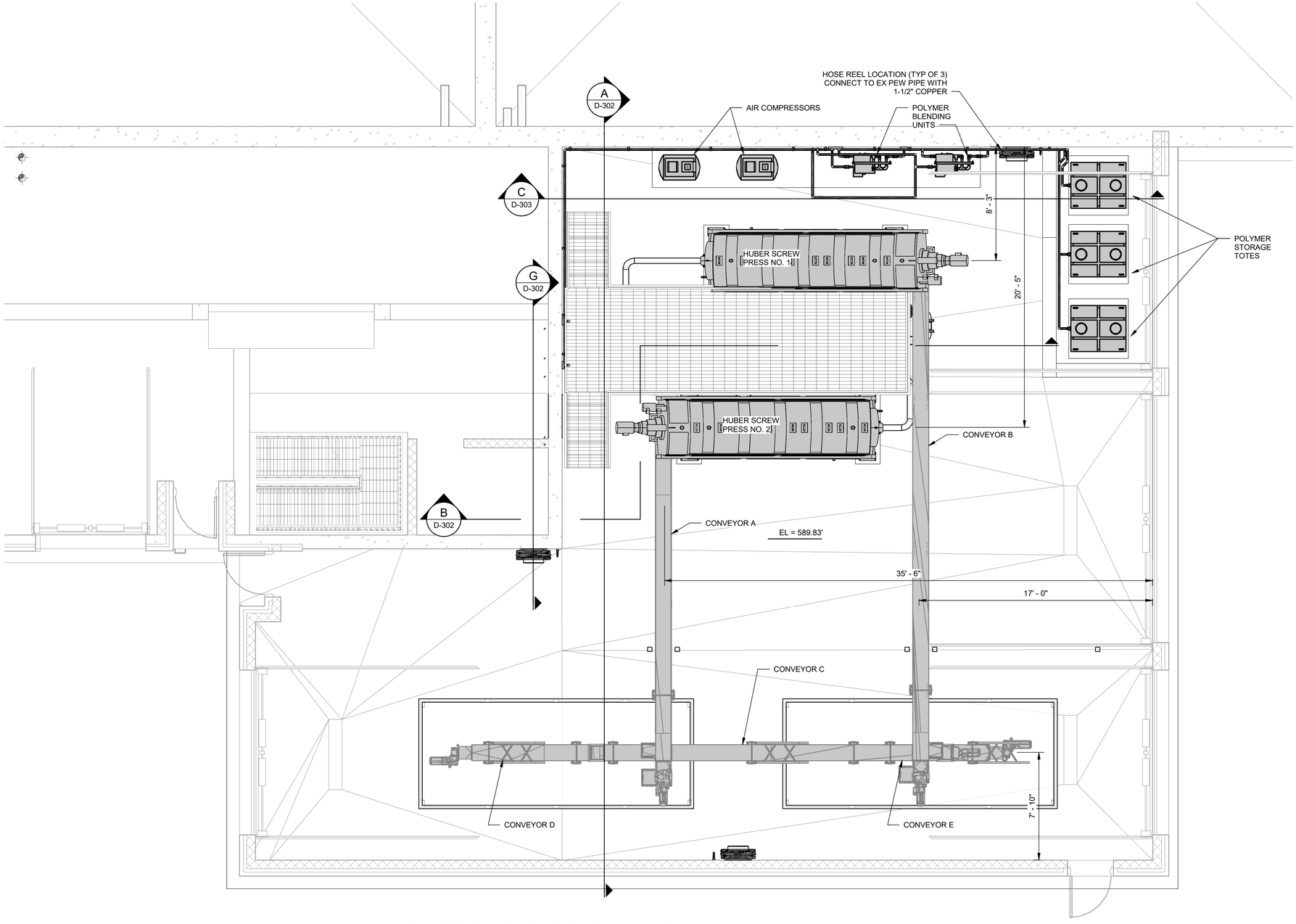
FILTER BUILDING BASEMENT PLAN

PROJ:	200-12747-23001
DESN:	BGB
DRWN:	NTK
CHKD:	

D-101

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

Bar measures 1 inch, otherwise drawing is not to scale



SOLIDS BUILDING - GRADE LEVEL PLAN

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

N

4' 0' 4' 8'

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

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MARK	DATE	DESCRIPTION	BY
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CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

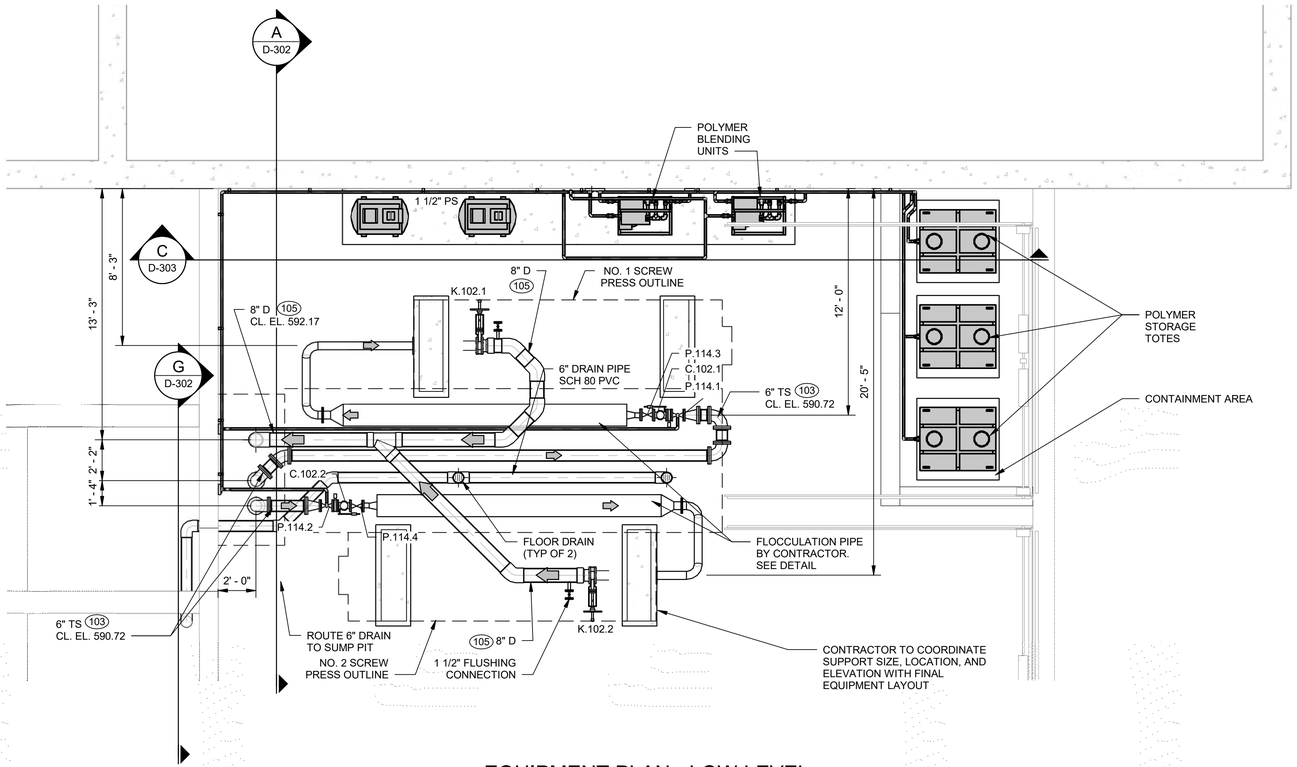
SOLIDS HANDLING EQUIPMENT PLAN

PROJ:	200-12747-23001
DESN:	BGB
DRWN:	TJL
CHKD:	

D-102

Bar measures 1 inch, otherwise drawing is not to scale

2/2/2024 12:08:58 PM Autodesk Docs://200-12747-23001 Mt Clemens WWTP/D-SLUDGE HANDLING BLDG-12747-23001-2023.rvt



EQUIPMENT PLAN - LOW LEVEL

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

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MARK	DATE	DESCRIPTION	BY
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CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

SOLIDS HANDLING PIPING PLAN

PROJ:	200-12747-23001
DESN:	BGB
DRWN:	TJL
CHKD:	

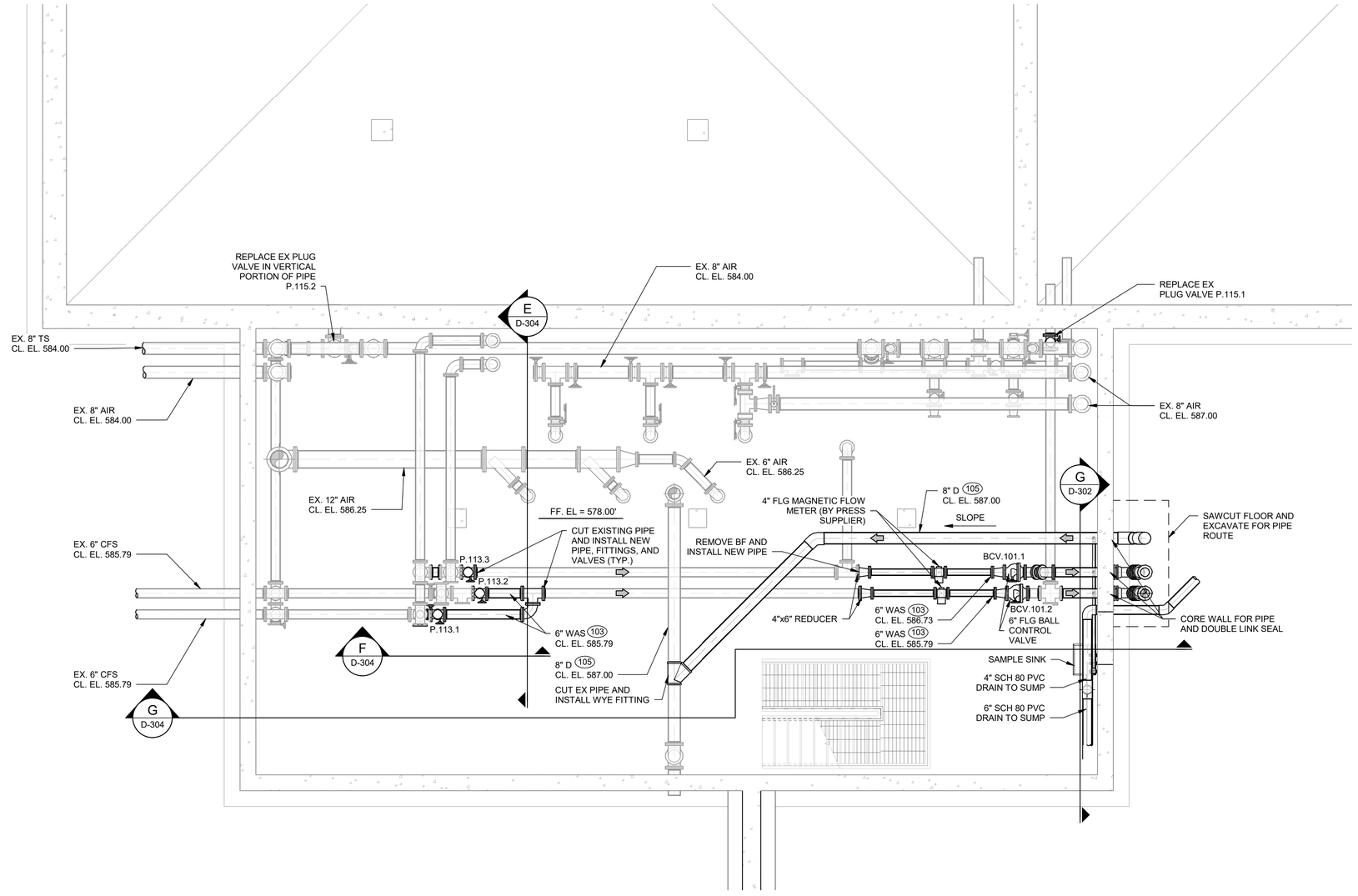
D-103

N

4' 0' 4' 8'

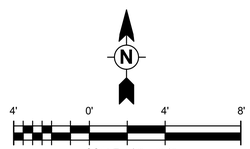
SCALE: 1/4" = 1'-0"

Bar measures 1 inch, otherwise drawing is not to scale



SOLIDS BUILDING LOWER LEVEL PLAN

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



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

Bar measures 1 inch, otherwise drawing is not to scale

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	02/05/24	ISSUED FOR BIDS

BY

CITY OF MOUNT CLEMENS, MI

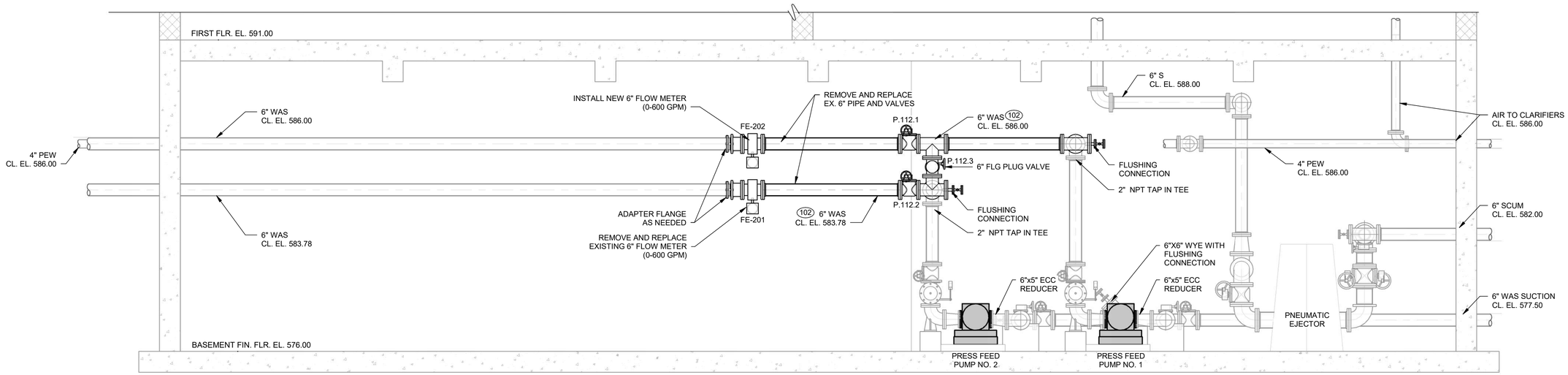
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

SOLIDS HANDLING BASEMENT PLAN

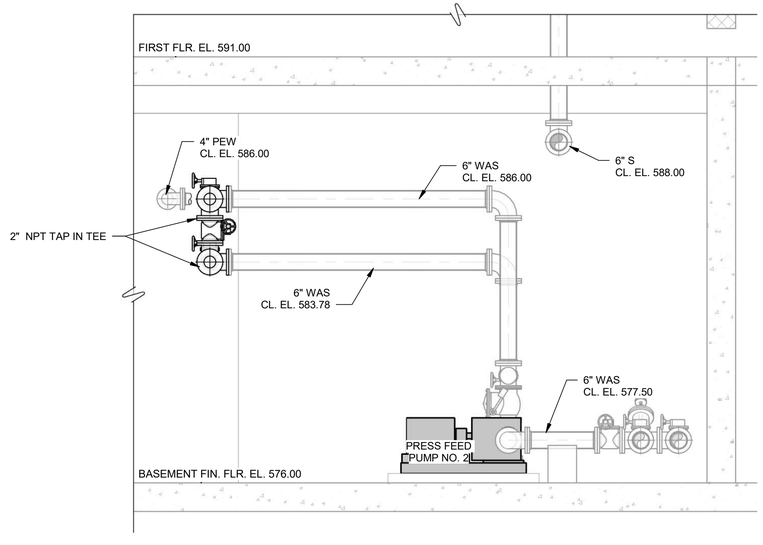
PROJ:	200-12747-23001
DESN:	BGB
DRWN:	TJL
CHKD:	

D-104

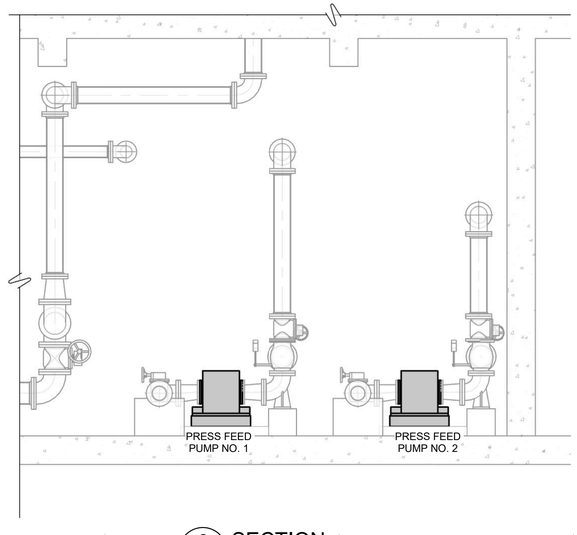
2/5/2024 10:05:46 AM Autodesk Docs://200-12747-23001 MI Clemens WWTP/D-SLUDGE HANDLING BLDG-12747-23001-2023.rvt



A D-101 SECTION
SCALE: 3/8" = 1'-0"



B D-101 SECTION
SCALE: 3/8" = 1'-0"



C D-101 SECTION
SCALE: 3/8" = 1'-0"

2' 0' 2' 4' 6'
SCALE: 3/8" = 1'-0"

Bar measures 1 inch, otherwise drawing is not to scale

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

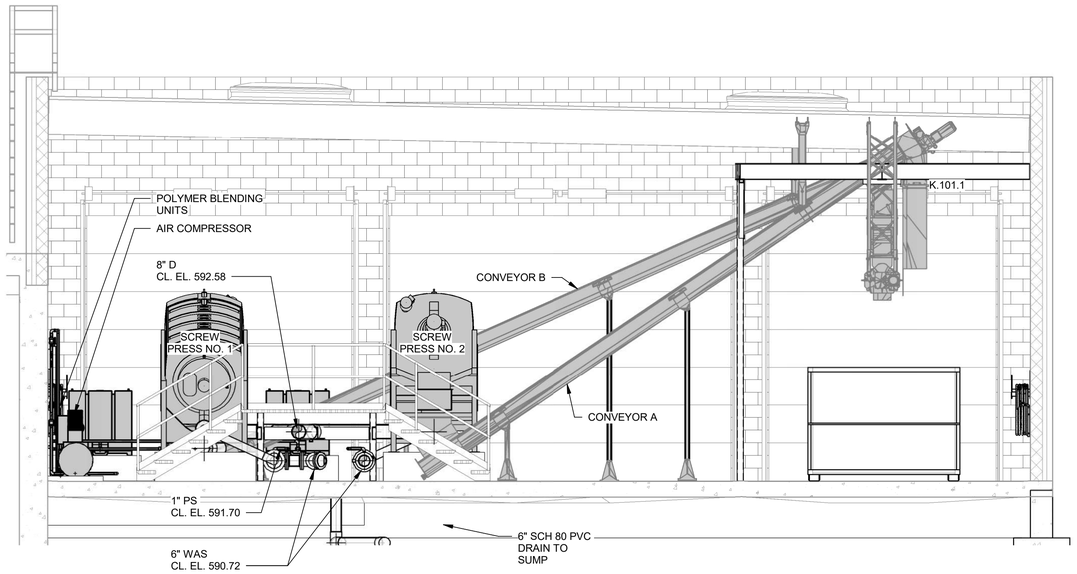
CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

FILTER BUILDLING SECTIONS

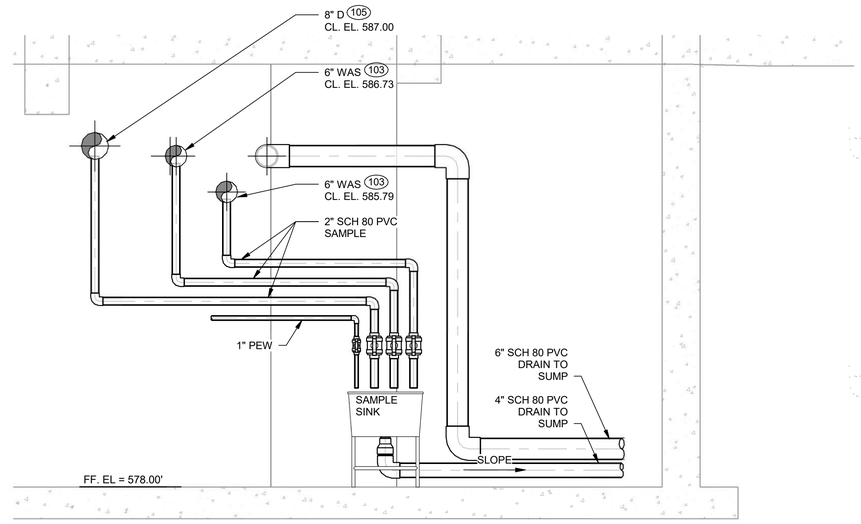
PROJ:	200-12747-23001
DESN:	BGB
DRWN:	NTK
CHKD:	

D-301

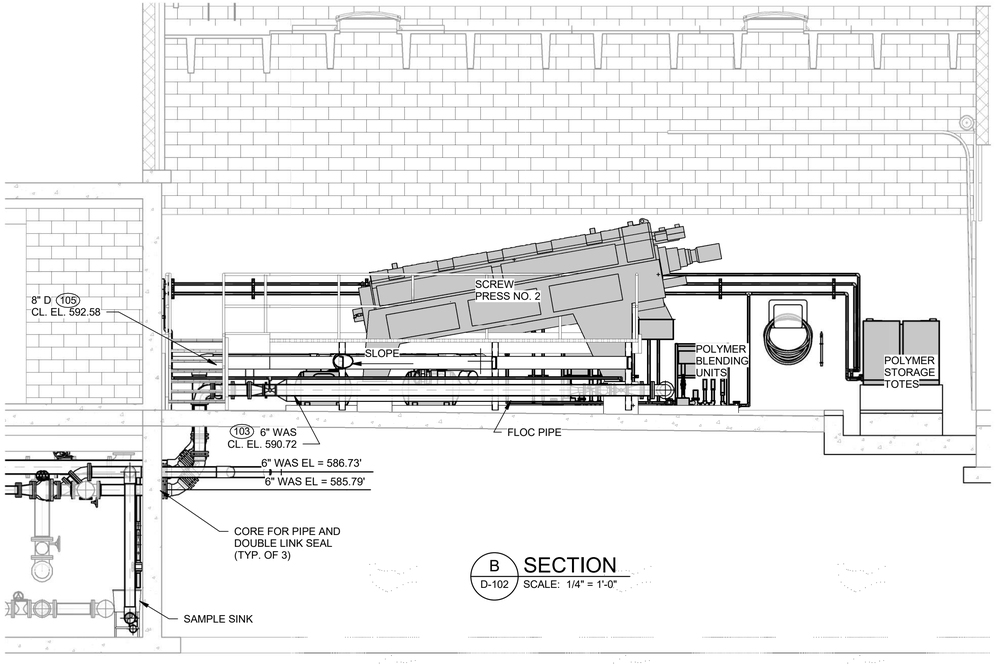
1/31/2024 9:26:31 AM Autodesk Docs://200-12747-23001 Mt Clemens WWTP/D-FILTER BLDG-12747-23001-2023.rvt



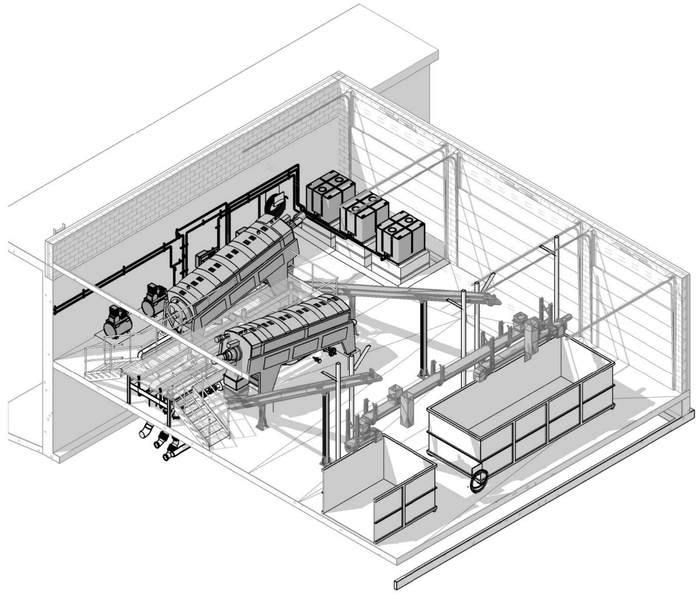
A SECTION
D-102 SCALE: 1/4" = 1'-0"



G SECTION
D-102 SCALE: 1/2" = 1'-0"



B SECTION
D-102 SCALE: 1/4" = 1'-0"



EQUIPMENT PERSPECTIVE
SCALE:

2' 0' 2' 4'
SCALE: 1/2" = 1'-0"

4' 0' 4' 8'
SCALE: 1/4" = 1'-0"

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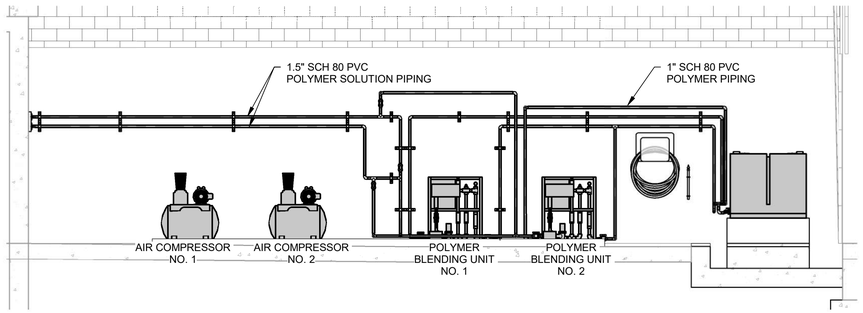
CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
SOLIDS HANDLING SECTIONS

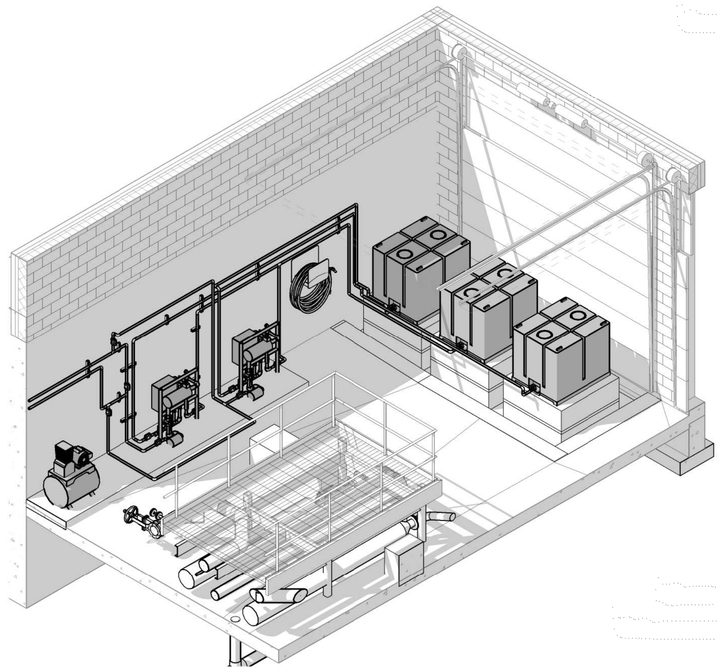
PROJ:	200-12747-23001
DESN:	BGB
DRWN:	TJL
CHKD:	

D-302

Bar measures 1 inch, otherwise drawing is not to scale



C D-102 SECTION
SCALE: 1/4" = 1'-0"



CHEMICAL PERSPECTIVE
SCALE:

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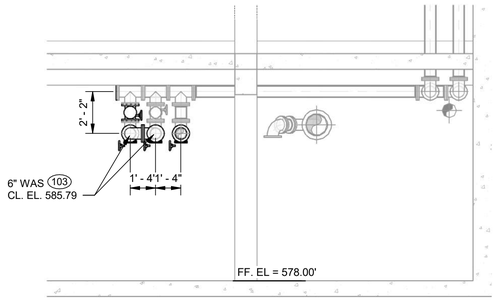
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
SOLIDS HANDLING SECTIONS

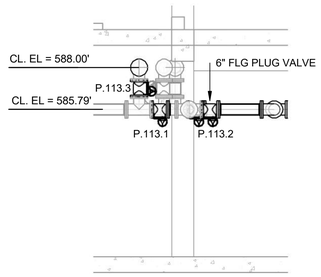
PROJ:	200-12747-23001
DESN:	BGB
DRWN:	TJL
CHKD:	

D-303

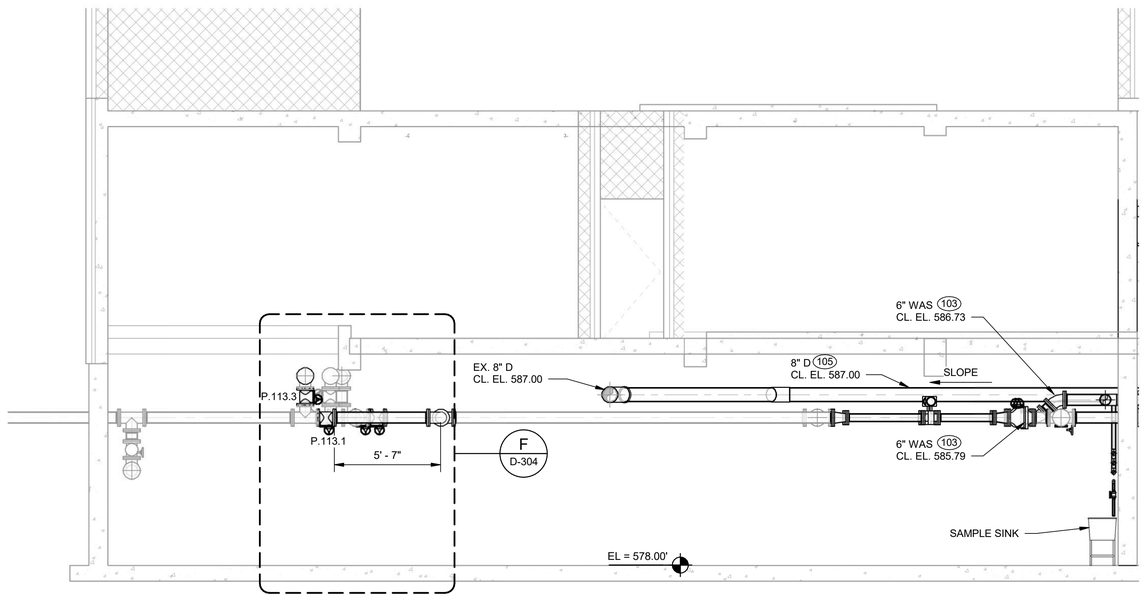
Bar measures 1 inch, otherwise drawing is not to scale



E SECTION
D-104 SCALE: 1/4" = 1'-0"



F SECTION
D-104 SCALE: 1/4" = 1'-0"



G SECTION
D-104 SCALE: 1/4" = 1'-0"

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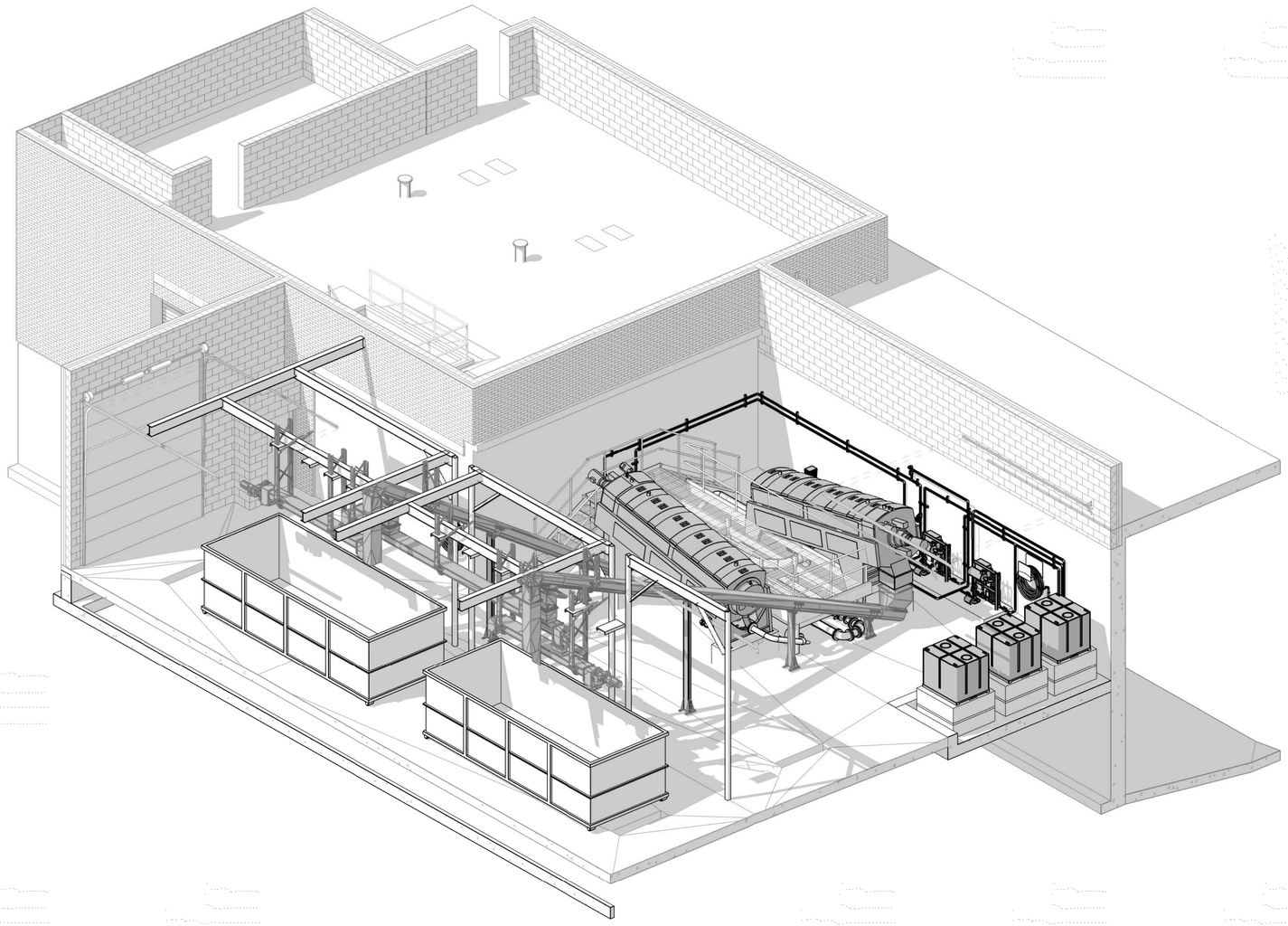
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
SOLIDS HANDLING SECTIONS

PROJ:	200-12747-23001
DESN:	BGB
DRWN:	TJL
CHKD:	

D-304

Bar measures 1 inch, otherwise drawing is not to scale



3D PERSPECTIVE

SCALE:

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CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

SOLIDS HANDLING 3D PERSPECTIVE

PROJ:	200-12747-23001
DESN:	BGB
DRWN:	TJL
CHKD:	

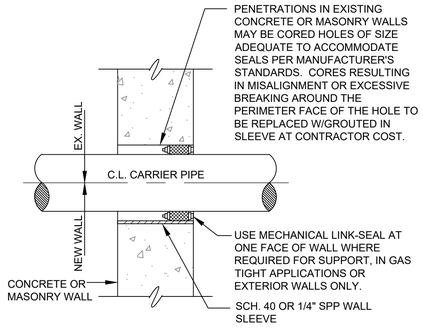
D-305

2/2/2024 12:09:20 PM Autodesk Docs://200-12747-23001 Mt Clemens WWTP/D-SLUDGE HANDLING BLDG-12747-23001-2023.rvt

Bar measures 1 inch, otherwise drawing is not to scale

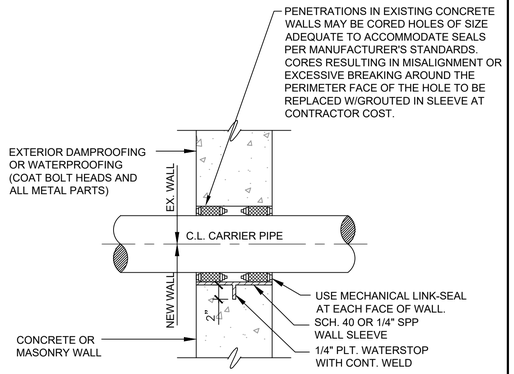
1 TYPICAL PIPE SLEEVE IN NON-EARTH OR NON-LIQUID RETAINING WALLS

SCALE: NTS



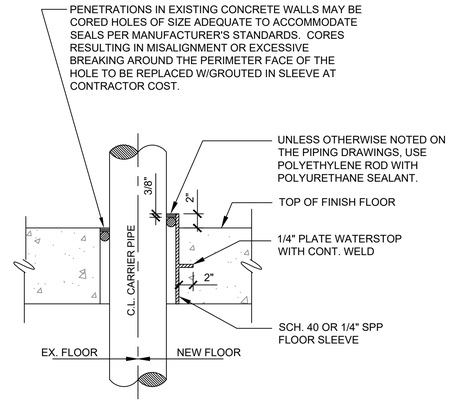
2 TYPICAL PIPE SLEEVE IN EARTH, RETAINING, OR GAS TIGHT WALLS

SCALE: NTS



3 DETAIL

SCALE: NTS

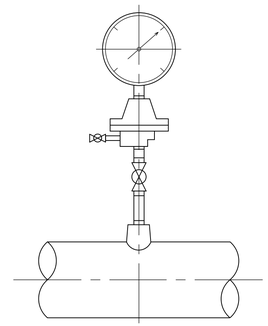


TYPICAL PIPE SLEEVE THROUGH FLOOR

(UNLESS NOTED OTHERWISE ON THE DRAWINGS)

4 PRESSURE GAUGE DIAPHRAGM WITH SEAL

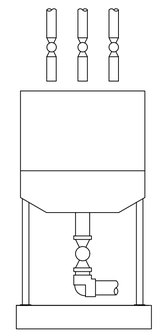
SCALE: NTS



NOTES:
1. FOR ALL PIPE 2" & SMALLER USE BUSHING IN A TEE.
2. FOR DUCTILE IRON 2-1/2" & LARGER USE PIPE SADDLE W/BUSHING.
3. FOR STAINLESS STEEL PIPES 2-1/2" & LARGER AND PRESSURE VESSELS, USE THRED-O-LET AS SHOWN.
4. FOR ALL OTHER PIPING 2-1/2" OR LARGER, USE WELD-O-LET.

5 SAMPLE SINK DETAIL

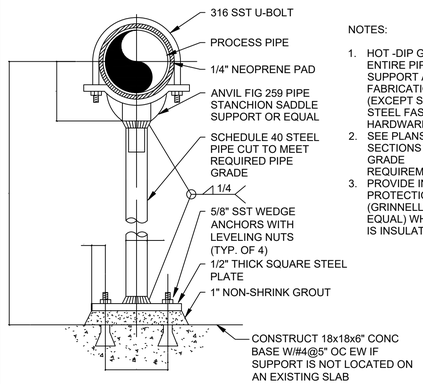
SCALE: NTS



NOTES:
1. ALL SAMPLE POINT SHALL BE TAPPED AS CLOSE AS POSSIBLE TO SINK LOCATION
2. ROUTE SAMPLE LINES TO SINK LOCATION
3. SAMPLE PIPES TO BE LABELED AT SINK

6 PIPE SUPPORT - STANCHION SADDLE W/ U-BOLT

SCALE: NTS



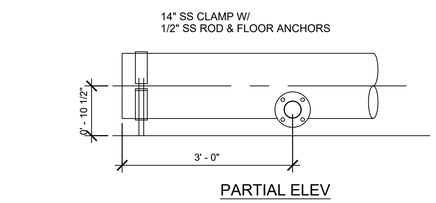
NOTES:
1. HOT -DIP GALVANIZE ENTIRE PIPE SUPPORT AFTER FABRICATION (EXCEPT STAINLESS STEEL FASTENING HARDWARE).
2. SEE PLANS AND SECTIONS FOR PIPE GRADE REQUIREMENT.
3. PROVIDE INSULATION PROTECTION SHIELD (GRINNELL FIG 167 OR EQUAL) WHEN PIPING IS INSULATED.

PIPE SIZE	A	B	C	D	
				MIN	MAX
4	3	4-3/16	7	6	60
6	3	5-7/16	7	8	60
8	3	6-15/16	7	8	60
10	3	8-7/16	7	10	60
12	3	9-15/16	7	12	60
16	3	11-1/2	7	20	60
18	4	13-1/2	7	28	60
20	4	14-1/2	7	36	60
24	4	17-1/2	7	40	60

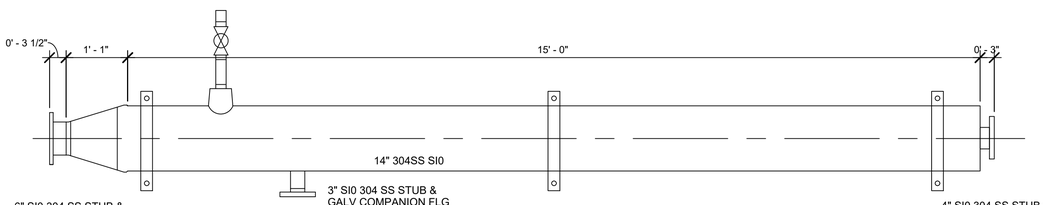
* ALL DIMENSIONS IN INCHES

7 FLOC REACTOR DETAIL

SCALE: NTS



PARTIAL ELEV



PLAN

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

PROCESS DETAILS

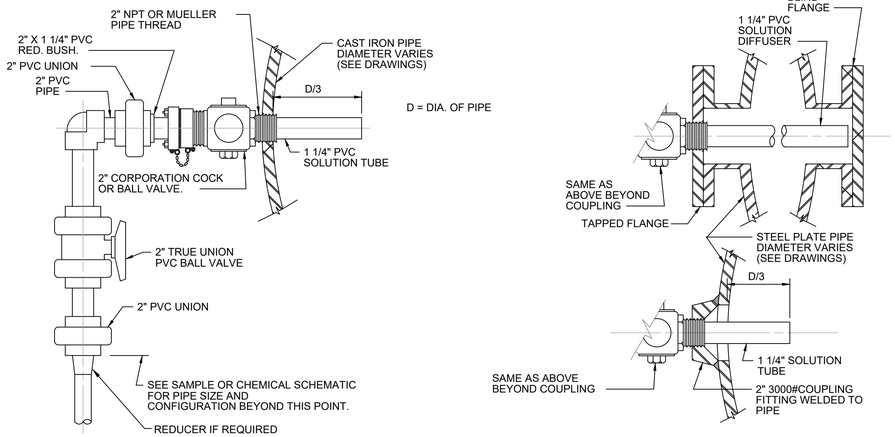
PROJ:	200-12747-23001
DESN:	BGB
DRWN:	NTK
CHKD:	

D-501

Bar Measures 1 inch, otherwise drawing not to scale

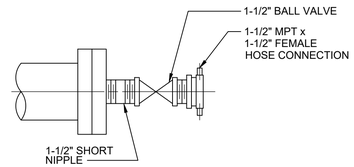
1 SAMPLE AND CHEMICAL DIFFUSER DETAIL

SCALE: NTS



2 MANUAL FLUSHING TAP

SCALE: NTS



SYMBOL: MFT MANUAL FLUSHING TAP

NOTES:
1. INCLUDES ALL NON LISTED HARD PIPED FLUSHING CONNECTIONS

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

PROCESS DETAILS

PROJ:	200-12747-23001
DESN:	BGB
DRWN:	NTK
CHKD:	

D-502

Bar Measures 1 inch, otherwise drawing not to scale

2/2/2024 11:09:00 AM - \\TT.LOCAL\ER\PROJECTS\LANSING\ER\12747\200-12747-23001\CAD\SHEETFILES\D500_PROCESS DETAILS.DWG - TROTTERKARLL, NIKI

PIPEWORK SCHEDULE KEY

GENERAL

THE FOLLOWING PIPE SCHEDULE GIVES THE DESIGNATION FOR EACH PIPE LINE, PIPE SIZE, JOINT, MATERIAL, SERVICE AND OTHER PERTINENT DATA. THE KEY OF SYMBOLS FOR THE SCHEDULE IS AS FOLLOWS: PIPE MATERIAL

PROCESS PIPING

BSP	BLACK STEEL PIPE
CSIP	CHROME SILICON IRON PIPE
DIP	DUCTILE IRON PIPE
FRP	FIBERGLASS REINFORCED PIPE
GSP	GALVANIZED STEEL PIPE
HDPE	HIGH DENSITY POLYETHYLENE
PVC	POLYVINYL CHLORIDE PIPE
PVCP	POLYVINYL CHLORIDE PRESSURE PIPE
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
RCPP	REINFORCED CONCRETE PRESSURE PIPE
SSP	STAINLESS STEEL PIPE
SPP	STEEL PLATE PIPE

PIPE JOINTS

AFC	ADAPTER FLANGE COUPLING
BFC	BOLTED FLEXIBLE COUPLING
BSC	BELL AND SPIGOT CONCRETE
BSL	BELL AND SPIGOT LEAD
BSS	BELL AND SPIGOT STEEL
FJ	FLANGED JOINT
GC	GROOVED COUPLING
MJ	MECHANICAL JOINT
POJ	PUSH-ON JOINT
SJ	SCREWED JOINT
STJ	SOCKET TYPE JOINT
WJ	WELDED JOINT
FWJ	FIELD WELDED JOINT
BSH	BELL AND SPIGOT HDPE
FSJ	FUSED JOINT
TTJ	THREADED TRANSITION

REMARKS

CL	CLASS

VALVE SCHEDULE KEY:

THE FOLLOWING VALVE SCHEDULES GIVES THE DESIGNATION FOR EACH VALVE, ITS LOCATION, SERVICE SIZE, QUANTITY AND OTHER PERTINENT DATA.

THE DISTANCE GIVEN WITH EXTENSION STEMS OR SHAFTS IS THAT FROM CENTER LINE OF PORT TO TOP OF FLOOR AT FLOOR STAND OR FLOOR BOX, OR FROM CENTER LINE OF PORT TO GROUND SURFACE FOR VALVE BOX.

THE DISTANCE GIVEN FOR BUTTERFLY VALVES WITH EXTENSION BONNETS IS THAT FROM CENTER LINE OF VALVE TO CENTER LINE OF THE OPERATOR, 3 FEET ABOVE OPERATING FLOOR OR SLAB.

THE DISTANCE GIVEN WITH CHAINWHEELS IS FROM THE CENTER LINE OF VALVE TO BOTTOM OF LOOP.

THE DISTANCE GIVEN FOR VALVE BOX IS FROM THE CENTER LINE OF VALVE TO GROUND SURFACE.

IN GENERAL, NO VALVES SMALLER THAN 4 INCHES ARE INCLUDED IN THE SCHEDULE.

UNLESS OTHERWISE NOTED ON THE SCHEDULE, THE VALVE CLASS SHALL BE 150, EXCEPT BUTTERFLY VALVES FOR AIR SERVICE SHALL BE CLASS 25, STEMS SHALL BE OF THE NONRISING TYPE FOR VALVES, AND OF THE RISING TYPE FOR FOR GATES, SERVICE USE SHALL BE OPEN-SHUT, MOTORS SHALL BE 220/440 VOLT, 60 CYCLE, 3 PH, A.C. AND ENCLOSURES SHALL BE NEMA 4.

INCLUDED IN THE REMARKS COLUMN WILL BE EXCEPTION TO CLASS, STEM, SERVICE, MOTOR AND MOTOR ENCLOSURE REQUIREMENTS, ETC.

THE KEY OF SYMBOLS FOR SCHEDULE IS AS FOLLOWS:

VALVE JOINT

BSL	BELL AND SPIGOT LEAD
FJ	FLANGED JOINT
GC	GROOVED COUPLING
MJ	MECHANICAL JOINT
POJ	PUSH-ON JOINT
SJ	SCREWED JOINT
W	WAFER

OPERATOR

BG	BEVEL GEAR
C	CRANK/HANDLES
CL	CHAIN LEVER (LENGTH)
CW	CHAIN WHEEL (LENGTH)
H	HANDWHEEL
HO	HYDRAULIC OIL
HW	HYDRAULIC WATER
IL	INFINITE LEVER
L	LEVER
M	MOTOR
PL	POSITION LEVEL
POC	PNEUMATIC CYLINDER
POD	PNEUMATIC DIAPHRAGM
W	WRENCH HEAD
WN	WRENCH NUT

ACCESSORIES

BS	BENCH STANDS
CP	CONTROL PACKAGE
EB	EXTENSION BONNET (LENGTH)
ES	EXTENSION STEM SHAFT (LENGTH)
FB	FLOOR BOX (LENGTH)
FS	FLOOR STAND
LS	LIMIT SWITCH
MS	MANUAL SCREW
OAS	OIL ACCUMULATOR SYSTEM
P	POSITIONER
PA	PILOT ASSEMBLY
PI	POSITION INDICATOR
PO	PORTABLE OPERATOR
RPI	REMOTE POSITION INDICATOR
SC	STEM COVER
SG	STEM GUIDE
THW	"T" HANDLE WRENCH
VB	VALVE BOX (LENGTH)
WB	WALL BRACKET
WG	WORM GEAR

REMARKS

CL	CLASS
FC	FAIL CLOSE
FO	FAIL OPEN
GB	GROUND BURIED
NRS	NONRISING STEM
OS	OPEN SHUT
RS	RISING STEM
TH	THROTTLING TYPE

PIPE SCHEDULE

NO.	LOCATION	SERVICE	SIZE (INCHES)	MATERIALS	JOINTS	EXPOSED OR BURIED	TEST PRESSURE (PSI)	REMARKS
101	FILTER BUILDING	WAS	6	DIP	FJ,GC	EXPOSED	50	
102	FILTER BUILDING	WAS	6	DIP	FJ,GC	EXPOSED	50	
103	BIOSOLIDS	WAS	6	DIP	FJ, GC	EXPOSED	50	
104	BIOSOLIDS	WAS	6	DIP	MJ	BURIED	50	
105	BIOSOLIDS	D	6,8	DIP, PVC	FJ	EXPOSED	25	
						BURIED		

VALVE SCHEDULE

MARK	LOCATION	TYPE	SERVICE	SIZE (INCHES)	QUANT.	JOINT	OPERATOR	ACCESSORIES	REMARKS
PLUG VALVES (P)									
110.1 THRU 2	FILTER BUILDING	P	WAS	6	2	FJ	WN		
111.1 THRU 2	FILTER BUILDING	P	WAS	6	2	FJ	CW		
112.1 THRU 3	FILTER BUILDING	P	WAS	6	3	FJ	CW		
113.1 THRU 3	BIOSOLIDS HANDLING BUILDING	P	WAS	6	3	FJ	CW		
114.1 THRU 4	BIOSOLIDS HANDLING BUILDING	P	WAS	6	4	FJ	WN		
115.1	BIOSOLIDS HANDLING BUILDING	P	WAS	6	1	FJ	WN		
BALL CONTROL VALVE (BCV)									
101.1 THRU 2	BIOSOLIDS HANDLING BUILDING	BCV	WAS	6	2	FJ	WN		
CHECK VALVES (C)									
101.1 THRU 2	FILTER BUILDING	C	WAS	6	2	FJ			
102.1 THRU 2	BIOSOLIDS HANDLING BUILDING	C	WAS	6	2	FJ			BY PRESS MANUFACTURER
SEWAGE AIR RELEASE VALVE (AV)									
201.1	BIOSOLIDS HANDLING BLDG	AV	THS	3	1	TH			
KNIFE GATE (K)									
101.1 THRU 2	BIOSOLIDS HANDLING BLDG	K	DWS	X	2	FJ	CW		
102.1 THRU 2	BIOSOLIDS HANDLING BLDG	K	D	8	2	FJ	HW		
		REPLACEMENT OF VALVE SHALL INCLUDE NEW GASKETS AND FASTENING HARDWARE							

MARK	LOCATION	TYPE	SERVICE	SIZE (INCHES)	QUANT.	JOINT	OPERATOR	RANGE	REMARKS
FLOW METERS									
201 AND 202	BIOSOLIDS HANDLING BLDG	FE	WAS	6	2			0-600	

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CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

PROCESS SCHEDULES

PROJ:	200-12747-23001
DESN:	BGB
DRWN:	NTK
CHKD:	

D-601

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Bar Measures 1 inch, otherwise drawing not to scale

MECHANICAL LEGEND

- 20x12 SA — DUCT SIZE & SYSTEM ABBREVIATION FIRST FIGURE IS DIMENSION SHOWN ON PLAN
- DUCT SECTION, POSITIVE PRESSURE
- DUCT SECTION, NEGATIVE PRESSURE
- NEW DUCTWORK
- FLEXIBLE DUCTWORK
- DUCT TRANSITION
- RECT. TO ROUND TRANSITION
- BRANCH DUCTWORK
- TURNING VANES
- CEILING DIFFUSER - SUPPLY
- CEILING DIFFUSER - RETURN
- CEILING DIFFUSER - EXHAUST
- CEILING DIFFUSER - ROUND
- LINEAR SLOT DIFFUSER (DOUBLE SLOT)
- LOUVER AND SCREEN
- FIRE DAMPER, PROVIDE ACCESS DOOR
- VOLUME DAMPER
- BD — BACKDRAFT DAMPER
- SUPPLY/INTAKE AIRFLOW DIRECTION
- EXHAUST AIRFLOW DIRECTION
- GRILLE OR REGISTER, SIDEWALL
- PIPE CAP
- PIPE CONNECTION, BOTTOM
- PIPE CONNECTION, TOP
- PIPE ELBOW, TURNED UP
- PIPE ELBOW, TURNED DOWN
- PIPE TEE
- ANCHOR, INTERMEDIATE
- BUTTERFLY VALVE
- GATE VALVE
- BALL VALVE
- CHECK VALVE
- STRAINER VALVE
- THREE-WAY CONTROL VALVE
- TWO-WAY CONTROL VALVE
- PRESSURE GAUGE
- -U- — DOOR UNDERCUT
- Ø — DIAMETER

- MANUAL AIR VENT
- AUTOMATIC AIR VENT
- PUMP (SCHEMATIC)
- T — THERMOSTAT
- CO_2 — CARBON DIOXIDE SENSOR
- CO — CARBON MONOXIDE SENSOR
- M — MOTORIZED DAMPER
- A — PNEUMATIC DAMPER
- S — EMERGENCY SHUTDOWN SWITCH
- DP — DIFFERENTIAL PRESSURE SENSOR
- SD — DUCT SMOKE DETECTOR
- M — MASTER EMERGENCY SHUTDOWN SWITCH
- H — HUMIDISTAT
- HVAC - # — EQUIPMENT TAG
- BOD: 4' - 7" — BOTTOM OF DUCT ELEVATION TAG
- POINT OF DISCONNECTION
- POINT OF CONNECTION
- # — KEYED NOTE
- CD-A | W X H | ### — AIR TERMINAL AND AIRFLOW TAG
  - AIR QUANTITY DELIVERED BY DEVICE IN CFM
  - AIR TERMINAL NECK SIZE (IN.)
  - AIR TERMINAL MARK AS INDICATED IN SCHEDULE

OR

- SAD-# / ### CFM
  - AIR TERMINAL MARK AS INDICATED IN SCHEDULE
  - AIR QUANTITY DELIVERED BY DEVICE

- AREA OUT OF SCOPE
- AREA OF DEMOLITION

NOTES:

1. THIS LEGEND IS FOR REFERENCE ONLY.
2. ALL SYMBOLS WITHIN THIS LEGEND MAY NOT APPLY TO THIS PROJECT.

MECHANICAL ABBREVIATIONS

(D)	DEMOLITION
(E)	EXISTING
(R)	RELOCATED
AAV	AUTOMATIC AIR VENT
ABS	ABSOLUTE
AD	ACCESS DOOR
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
APPROX	APPROXIMATE
BFF	BELOW FINISHED FLOOR
BHP	BRAKE HORSEPOWER
CAP	CAPACITY
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CONC	CONCRETE
COND	CONDENSATE
CONN	CONNECTION
CONT	CONTINUATION
CP-1	CONTROL PANEL WITH DESIGNATION
CU	CONDENSING UNIT
CW	CHILLED WATER
DB	DRY BULB
DEG	DEGREES
DEMO	DEMOLITION
DIA	DIAMETER
DN	DOWN
DWG	DRAWING
EA	EXHAUST AIR
EAG	EXHAUST AIR GRILLE
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
EMCS	EMERGENCY MANAGEMENT AND CONTROL SYSTEM
ENT	ENTERING
ERV	ENERGY RECOVERY VENTILATOR
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EUH	ELECTRIC UNIT HEATER
EWT	ENETERING WATER TEMPERATURE
EXH	EXHAUST
F	FAHRENHEIT
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FH	FIRE HYDRANT
FLEX	FLEXIBLE
FM	FLOW METER
FPM	FEET PER MINUTE
GAL	GALLONS
GH	GRAVITY HOOD
GM	GAS METER
GPM	GALLONS PER MINUTE
GUH	GAS UNIT HEATER
HP	HORSEPOWER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
ID	INSIDE DIAMETER/DIMENSION
IE	INVERT ELEVATION
IN	INCH
L	LOUVER
LAT	LEAVING AIR TEMPERATURE
LP	LOUVERED PENTHOUSE
LVL	LEVEL
LWT	LEAVING WATER TEMPERATURE
M	METER
MAX	MAXIMUM
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
N/A	NOT APPLICABLE
NG	NATURAL GAS
NTS	NOT TO SCALE
OA	OUTDOOR AIR
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
PD	PRESSURE DROP
PSI	POUNDS PER SQUARE INCH
R	RADIUS
RA	RETURN AIR
RAG	RETURN AIR GRILLE
REFRIG	REFRIGERANT
RH	RADIANT HEATER
RL	REFRIGERANT LIQUID LINE
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION LINE
SA	SUPPLY AIR
SAG	SUPPLY AIR GRILLE
SB	SECURITY BARS
SF	SUPPLY FAN
SPEC	SPECIFICATION
STD	STANDARD
T	THERMOMETER
TA	TRANSFER AIR
TBD	TO BE DETERMINED
TEMP	TEMPERATURE
TSP	TOTAL STATIC PRESSURE
TSTAT	THERMOSTAT
TYP	TYPICAL
UH	UNIT HEATER
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VIF	VERIFY IN FIELD
VRF	VARIABLE REFRIGERANT FLOW
W	WATT
WB	WET BULB
WMS	WIRE MESH SCREEN
WS	WASTE STACK

APPLICABLE CODES FOR MECHANICAL WORK

CODE	
MICHIGAN MECHANICAL CODE	(MMC 2015)
INTERNATIONAL FUEL GAS CODE	(IFGC 2015)
MICHIGAN ENERGY CODE	(MCC 2015)
NATIONAL FIRE PROTECTION AGENCY (NFPA)	(NFPA 820, 400)

DESIGN CONDITIONS FOR LOAD...

SEASON	OUTDOOR DESIGN CONDITIONS	ELEV. (FT)	INDOOR CONDITIONS / ROOM TYPE
			PROCESS
SUMMER (1.)	89.9 °F	580	85 °F DB
SUMMER (2.)	74.2 °F	580	85 °F DB
WINTER (99% DB)	0.4 °F	580	55 °F DB

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CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ABBREVIATIONS, LEGENDS, AND NOTES

PROJ:	200-12747-23001
DESN:	JRJ
DRWN:	JRJ
CHKD:	CR

M-001

Bar measures 1 inch, otherwise drawing is not to scale

PLUMBING LEGEND

- SANITARY SEWER PIPING
- COLD WATER PIPING
- HOT WATER PIPING
- HOT WATER RECIRCULATION PIPING
- VENT PIPING
- STORM PIPING
- HIDDEN / UNDERGROUND PIPING
- VENT THROUGH ROOF
- CLEAN OUT, EXPOSED
- CLEAN OUT
- DOUBLE YARD CLEANOUT
- FLOOR DRAIN
- TRAP PRIMER LINE (TPL)
- HOSE BIBB W/INTEGRAL VACUUM BREAKER (INTERIOR SURFACE) (HB)
- WALL HYDRANT W/INTEGRAL VACUUM BREAKER (EXTERIOR SURFACE) (WH)
- PIPE CAP
- PIPE CONNECTION, BOTTOM
- PIPE CONNECTION, TOP
- PIPE ELBOW, TURNED UP
- PIPE ELBOW, TURNED DOWN
- PIPE TEE
- ANCHOR, INTERMEDIATE
- BUTTERFLY VALVE
- GATE VALVE
- BALL VALVE
- CHECK VALVE
- STRAINER VALVE
- STRAINER (BLOW-OFF)
- GAS COCK/GAS STOP
- THERMOMETER
- BALANCING VALVE
- THERMOSTATIC MIXING VALVE
- SOLENOID VALVE
- RELIEF VALVE
- WATER HAMMER ARRESTER/SHOCK ABSORBER
- UNION
- PUMP (SCHEMATIC)
- WATER METER (W)
- BACK FLOW PREVENTER (BFP)
- GAS METER (M)
- DIAMETER (Ø)

- SK - # — FIXTURE TAG
- LIMIT OF DEMOLITION
- CONNECT TO EXISTING
- KEYED NOTE
- 3/4"ø HW — PIPE SIZE AND SYSTEM TAG
- AREA OUT OF SCOPE
- AREA OF DEMOLITION

NOTES:

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PLUMBING ABBREVIATIONS

(D)	DEMOLITION
(E)	EXISTING
(R)	RELOCATED
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
APPROX	APPROXIMATE
BFF	BELOW FINISHED FLOOR
BFP	BACKFLOW PREVENTER
CA	COMPRESSED AIR
CAP	CAPACITY
CO	CLEAN OUT
COND	CONDENSATE
CONN	CONNECTION
CONT	CONTINUATION
D	DRAIN
DCW	DOMESTIC COLD WATER
DEG	DEGREES
DEMO	DEMOLITION
DIA	DIAMETER
DN	DOWN
DS	DOWNSPOUT
DWG	DRAWING
EA	EACH
EEW	EMERGENCY EYE/FACE WASH
ENT	ENTERING
ESS	EMERGENCY SAFETY SHOWER
ET	EXPANSION TANK
F	FAHRENHEIT
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
FH	FIRE HYDRANT
FM	FLOW METER
FPH	FREEZE PROOF HYDRANT
FPM	FEET PER MINUTE
GAL	GALLONS
GD	GARBAGE DISPOSAL
GM	GAS METER
GPM	GALLONS PER MINUTE
GWH	GAS WATER HEATER
HB	HOSE BIBB
HD	HEAD
HO	HUB OUTLET
HP	HORSEPOWER
HR	HOSE REEL
HW	HOT WATER
HWR	HOT WATER RETURN
ID	INSIDE DIAMETER/DIMENSION
IE	INVERT ELEVATION
IMVB	ICE MAKER VALVE BOX
IN	INCH
IW	INDUSTRIAL WASTE
IWH	INSTANTANEOUS WATER HEATER
LAV	LAVATORY
M	METER
MAX	MAXIMUM
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
N/A	NOT APPLICABLE
NG	NATURAL GAS
NPW	NON-POTABLE WATER
NTS	NOT TO SCALE
OD	OUTSIDE DIAMETER
PCV	PRESSURE CONTROL VALVE
PD	PRESSURE DROP
PG	PRESSURE GAUGE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
PW	POTABLE WATER
R	RADIUS
RD	ROOF DRAIN
RP	RECIRCULATION PUMP
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
RPM	REVOLUTIONS PER MINUTE
SAN	SANITARY SEWER PIPING
SK	SINK
SP	SUMP PUMP
SPEC	SPECIFICATION
STD	STANDARD
STO	STORM
SW	SERVICE WATER
TBD	TO BE DETERMINED
TCV	TEMPERING VALVE
TD	TRENCH DRAIN
TEMP	TEMPERATURE
TMV	THERMOSTATIC MIXING VALVE
TP	TRAP PRIMER
TW	TEPID WATER
TYP	TYPICAL
UR	URINAL
V	VENT
VIF	VERIFY IN FIELD
VS	VENT STACK
VTR	VENT THRU ROOF
WB	WASHER BOX
WC	WATER CLOSET
WCO	WALL CLEAN OUT
WG	WATER GAUGE
WPD	WATER PRESSURE DROP

PLUMBING GENERAL NOTES

APPLICABLE CODES

APPLICABLE CODES FOR PLUMBING WORK	
CODE	
PLUMBING CODE	MICHIGAN PLUMBING CODE (IPC 2018)
NATURAL GAS	INTERNATIONAL FUEL GAS CODE (IFGC 2021)
FIRE PROTECTION CODES	NATIONAL FIRE PROTECTION ASSOCIATION (NFPA 13)

GENERAL NOTES

1. THESE GENERAL NOTES APPLY TO ALL SHEETS. REFER TO INDIVIDUAL SHEETS FOR SHEET NOTES.
2. CONTRACT DOCUMENT DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY. DO NOT SCALE FOR MATERIAL QUANTITIES. ALL SCALING SHOULD BE REFERENCED TO ARCHITECTURAL PLANS ONLY.
3. ALL EQUIPMENT AND PIPING SHALL BE INSTALLED IN COMPLIANCE WITH THE CODES LISTED IN THE TABLE.
4. CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH OTHER TRADES TO MINIMIZE SPATIAL CONFLICTS.
5. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND DIMENSIONS BEFORE CONSTRUCTION BEGINS.
6. PROVIDE ISOLATION VALVES AT ALL PIPE CONNECTIONS TO EQUIPMENT.
7. PROVIDE WALL PIPE PENETRATIONS AS REQUIRED WHERE PIPE ENTERS BUILDING. SLEEVE AND SEAL OPENING WITH CAULKING AND ESCUTCHEON FOR A WATER-TIGHT INSTALLATION.

NATURAL GAS PIPING NOTES

1. ALL GAS PIPING WITHIN FINISHED SPACES SHALL BE PAINTED YELLOW AND LABELED IN ACCORDANCE WITH APPLICABLE CODE.
2. ALL GAS PIPING SHALL BE LABELED AT BEGINNING, ALL ENDS, AND AT 6' INTERVALS DESIGNATING GAS & PRESSURE. LABELS SHALL BE PER SPECIFICATIONS.
3. PROVIDE/INSTALL THROUGH WALL PIPE PENETRATIONS AS REQUIRED WHERE PIPE ENTERS BUILDING. SLEEVE AND SEAL.
4. THIS CONTRACTOR SHALL CONNECT GAS PIPING AT A TOTAL BUILDING DEMAND OF APPROXIMATELY 620 MBH.

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CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ABBREVIATIONS, LEGENDS, AND NOTES

PROJ:	200-12747-23001
DESN:	JRJ
DRWN:	JRJ
CHKD:	CR

M-002

Bar measures 1 inch, otherwise drawing is not to scale

GENERAL NOTES

GENERAL NOTES

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2. CONTRACT DOCUMENT DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY. DO NOT SCALE FOR MATERIAL QUANTITIES. ALL SCALING SHOULD BE REFERENCED TO ARCHITECTURAL PLANS ONLY.
3. ALL MECHANICAL WORK SHALL BE IN STRICT COMPLIANCE WITH THE LATEST APPLICABLE EDITION OF THE MICHIGAN MECHANICAL AND PLUMBING CODES, AND APPLICABLE PROVISIONS OF THE NATIONAL FUEL GAS CODE (NFPA 54).
4. COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ALL OTHER DISCIPLINES AND AS SHOWN ON OTHER CONTRACT DRAWINGS.
5. CONTRACTOR SHALL VISIT SITE AND PATCHING WITH GENERAL CONTRACTOR AND OTHER DISCIPLINES. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATHING RELATED TO THEIR WORK.
6. COORDINATE ALL CUTTING AND PATCHING WITH GENERAL CONTRACTOR AND OTHER DISCIPLINES. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING RELATED TO THEIR WORK.
7. ALL ATTACHMENTS TO THE BUILDING STRUCTURE SHALL BE COORDINATED WITH THE STRUCTURAL DESIGN. ALL BRACING AND MOUNTING OF PIPES AND DUCTS SHALL MEET THE MINIMUM REQUIREMENTS OF THE MOST RECENT SMACNA HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE. CONTRACTOR SHALL MAINTAIN ONE COPY OF THIS MANUAL ON SITE AT ALL TIMES.
8. PROVIDE FLASHING AND COUNTERFLASHING FOR ALL PENETRATIONS THROUGH WALLS OR ROOF TO MAKE WATERPROOF INSTALLATION.
9. MAINTAIN A MINIMUM OF 6'-8" CLEARANCE TO UNDERSIDE OF PIPES, DUCTS, CONDUITS, SUSPENDED EQUIPMENT, ETC., THROUGHOUT ACCESS ROUTES IN MECHANICAL ROOMS.
10. CONCRETE HOUSEKEEPING PADS FOR MECHANICAL EQUIPMENT SHALL HAVE A MINIMUM PAD THICKNESS OF 6 INCHES. PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 6 INCHES ON EACH SIDE. CONCRETE HOUSEKEEPING PADS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.
11. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN THE DETAILS FOR PIPING, DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
12. ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT OR PIPING INSULATION IS APPLIED.
13. BALANCE AIR FLOW AT ALL AIR INLETS AND OUTLETS TO AIR QUANTITIES SHOWN. BALANCE ALL WATER FLOWS TO COILS AND MECHANICAL EQUIPMENT TO VALUES SHOWN. INSTALL TEST PLUGS WHERE NECESSARY. BALANCING CONTRACTOR SHALL BE INDEPENDENT OF THE INSTALLING CONTRACTORS AND CERTIFIED BY THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) OR ASSOCIATED AIR BALANCE COUNCIL (AABC).
14. ALL EXPOSED PIPE, PIPE SUPPORTS, DUCTWORK, UNFINISHED EQUIPMENT AND DUCT SUPPORTS SHALL MATCH ADJACENT FINISHES AS REQUIRED BY PAINTING SPECIFICATION AND ARCHITECTURAL DRAWINGS.
15. AT COMPLETION OF CONSTRUCTION, CONTRACTOR SHALL PROVIDE COPIES OF BOUND OPERATIONS AND MAINTENANCE MANUALS.
16. REFER TO ARCHITECTURAL PLANS FOR DOOR SCHEDULE WITH DOOR GRILLES AND/OR UNDERCUT DOORS THAT ARE USED FOR TRANSFER AIR.
17. AT THE TIME OF ROUGH INSTALLATION AND DURING STORAGE ON THE CONSTRUCTION SITE UNTIL FINAL STARTUP OF THE HEATING, COOLING AND VENTILATING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEETMETAL OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST, WATER AND DEBRIS WHICH MAY ENTER THE SYSTEM.

EQUIPMENT NOTES

1. INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
2. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
3. IDENTIFY ALL NEW MECHANICAL EQUIPMENT WITH NAMEPLATES PERMANENTLY ENGRAVED PER SPECIFICATIONS.
4. MOTOR STARTERS AND VARIABLE FREQUENCY DRIVES, WHERE REQUIRED, SHALL BE PROVIDED AND MOUNTED BY THE MECHANICAL INSTALLER. CONDUIT AND WIRING SHALL BE PROVIDED BY ELECTRICAL INSTALLER.
5. PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK SYSTEMS (SUPPLY, RETURN, AND EXHAUST) CONNECTED TO AIR HANDLING UNITS AND FANS. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT THE POINT OF CONNECTION TO THE EQUIPMENT UNLESS OTHERWISE INDICATED.
6. PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK SYSTEMS (SUPPLY, RETURN, AND EXHAUST) CONNECTED TO AIR HANDLING UNITS AND FANS. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT THE POINT OF CONNECTION TO THE EQUIPMENT UNLESS OTHERWISE INDICATED.
7. ALL ROOF MOUNTED EQUIPMENT CURBS FOR EQUIPMENT PROVIDED BY THE MECHANICAL CONTRACTOR SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR.
8. EQUIPMENT AND APPLIANCES SHALL BE ACCESSIBLE FOR SERVICE, INSPECTION, REPAIR AND REPLACEMENT WITHOUT REMOVING PERMANENT CONSTRUCTION. SUFFICIENT CLEARANCE SHALL BE MAINTAINED TO PERMIT CLEANING, REPLACEMENT OF FILTERS, BLOWERS, MOTORS, CONTROLS AND LUBRICATION OF MOVING PARTS.

DUCT WORK NOTES

1. ALL SUPPLY AND RETURN AIR DUCTWORK SHALL BE INSULATED WITH NOT LESS THAN THE AMOUNT OF INSULATION INDICATED IN ACCORDANCE WITH THE SPECIFICATIONS, APPLICABLE MECHANICAL CODE AND BUILDING ENERGY EFFICIENCY CODE. ALL DUCTWORK MOUNTED EXTERIOR TO THE BUILDING ENVELOPE SHALL BE SANDWICHED INSULATION WITH DOUBLE WALL SHEETMETAL CONSTRUCTION.
2. ALL DUCT HANGERS AND SUPPORTS SHALL COMPLY WITH THE MECHANICAL CODE AND THE "SMACNA HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE".
3. ALL SUPPLY, RETURN AND NON-LAB EXHAUST AIR DUCTWORK SHALL BE GALVANIZED SHEET METAL IN ACCORDANCE WITH MECHANICAL CODE, SMACNA HVAC DUCT CONSTRUCTION STANDARDS AND ASHRAE STANDARDS. DUCT GAUGE AND CONSTRUCTION SHALL BE SELECTED AT 1.5 TIMES THE DESIGN FAN SUPPLY STATIC, OR GREATER, TO ACCOMMODATE SYSTEM PRESSURE TESTING REQUIREMENTS AND FAN DEADHEAD STATIC. INSTALL TURNING VANES OR RADIUSED ELBOWS AT EACH RECTANGULAR SUPPLY ELBOW AND WHERE SHOWN ON DRAWINGS AND SPECIFICATIONS.
4. DIMENSIONS AND SHAPE OF THE DUCT MAY BE ALTERED, AS LONG AS THE SAME AIR VELOCITY AND FLOW RATE ARE MAINTAINED, TO AVOID INTERFERENCES AND MAINTAIN ADEQUATE CLEARANCES.
5. ALL DUCTWORK DIMENSIONS SHOWN ON THE DRAWINGS ARE INTERNAL CLEAR DIMENSIONS.
6. SEAL ALL DUCT JOINTS, INCLUDING LONGITUDINAL JOINTS, WITH WATER BASED SEALANT. MAXIMUM ALLOWABLE DUCTWORK LEAKAGE SHALL NOT EXCEED 5% AND AS DEFINED ELSEWHERE IN DOCUMENTS.
7. INSTALL VOLUME DAMPERS WHERE SHOWN AND AS REQUIRED FOR PROPER BALANCING OF EACH DIFFUSER/GRILLE/REGISTER, INCLUDING DEVICES WITH OPPOSED BLADE DAMPERS. VOLUME DAMPERS SHALL BE MOUNTED IMMEDIATELY DOWNSTREAM OF BRANCH CONNECTIONS. PROVIDE EXTENDED REGULATORS, WITH CONCEALED COVER PLATES, TO OPERATE DAMPERS LOCATED ABOVE INACCESSIBLE CEILINGS.
8. OUTSIDE AIR FOR A HEATING OR COOLING SYSTEM SHALL NOT BE TAKEN FROM CLOSER THAN TEN (10) FEET FROM AN APPLIANCE VENT OUTLET, VENT OPENING OF A PLUMBING SYSTEM, OR THE DISCHARGE OUTLET OF EXHAUST FAN, UNLESS THE OUTLET IS THREE (3) FEET ABOVE THE OUTSIDE AIR INLET.
9. COORDINATE DIFFUSER, REGISTER, AND GRILLE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS, LIGHTING, AND OTHER CEILING ITEMS AND MAKE MINOR DUCT MODIFICATIONS TO SUIT.
10. INDIVIDUAL RUNS OF FLEXIBLE DUCT SHALL NOT EXCEED FIVE (5) FEET. GRILLES, REGISTERS, AND DIFFUSERS CONNECTED BY FLEXIBLE DUCT SHALL BE SUPPORTED INDEPENDENTLY OF THE FLEXIBLE DUCT.
11. ALL DUCTWORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN DUCTS, INCLUDING DIVIDED DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS, SHALL BE PROVIDED AT NO ADDITIONAL COST.
12. PROVIDE ACCESS DOORS IN DUCTWORK TO PROVIDE ACCESS FOR ALL FANS, SMOKE DETECTORS, FIRE DAMPERS, SMOKE DAMPERS, VOLUME DAMPERS, HUMIDIFIERS, COILS, AND OTHER ITEMS LOCATED IN THE DUCTWORK WHICH REQUIRE ADJUSTMENT AND MAINTENANCE.
13. ALL PENETRATIONS THROUGH FIRE AND SMOKE RATED WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE AND SMOKE STOPPED WITH A UL APPROVED SEALANT SYSTEM.
14. MECHANICAL DUCT PENETRATIONS OF A NON-FIRE RESISTANCE RATED FLOOR ASSEMBLY SHALL BE PROTECTED WITH A SHAFT ASSEMBLY IN ACCORDANCE WITH THE BUILDING CODE. OR, WHEN THE DUCT CONNECTS NOT MORE THAN TWO STORIES, THE ANNULAR SPACE AROUND THE PENETRATING DUCT MUST BE MATERIAL THAT RESISTS THE FREE PASSAGE OF FLAME AND PRODUCTS OF CONSTRUCTION.
15. USE 45 DEG. TAPS FOR DUCT BRANCHES AND PROVIDE VOLUME DAMPER AT EACH BRANCH.

PIPING NOTES

1. SUPPORT ALL PIPING SO THAT IT IS FIRMLY HELD IN PLACE BY APPROVED HANGERS AND SUPPORTS.

ANCHORAGE NOTES

1. ALL MECHANICAL EQUIPMENT SHALL BE ANCHORED OR BRACED TO MEET THE HORIZONTAL AND VERTICAL FORCES PRESCRIBED IN CHAPTER 13 OF ASCE 7-16, IBC 2108 SECTION 1613, AND AS MODIFIED BY CHAPTER 2 OF UFC 3-301-01.
2. THE ATTACHMENT OF THE FOLLOWING ITEMS SHALL RESIST THE ASSIGNED FORCES BUT NEED NOT BE DETAILED ON THE PLANS. THE INSPECTOR SHALL VERIFY THAT THESE EQUIPMENT AND DISTRIBUTION SYSTEMS HAVE BEEN ANCHORED.
   - TEMPORARY OR MOVABLE EQUIPMENT WITH FLEXIBLE CONNECTION TO POWER OR UTILITIES.
   - EQUIPMENT WEIGHING 20 LB OR LESS OR IN CASE OF DISTRIBUTED SYSTEM 5 LB/FT OR LESS.
3. INSTALLATION OF THE COMPONENTS NOT SPECIFICALLY DETAILED ON THE PLANS SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE AND/OR STRUCTURAL ENGINEER.
4. PROVIDE CALCULATIONS AND DETAILS FOR THE SUPPORTS, ATTACHMENTS, AND BRACING OF ALL PIPES, DUCTS, AND CONDUITS.
5. A LICENSED PROFESSIONAL ENGINEER SHALL VERIFY THE ADEQUACY OF STRUCTURE FOR SUPPORT AND ANCHORAGE OF THE EQUIPMENT.

CONTROL NOTES

1. LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH STRAIGHT SECTION OF PIPE OR DUCT UPSTREAM AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR RATED ACCURACY.
2. UNLESS OTHERWISE SHOWN, LOCATE ALL ROOM SENSORS AND THERMOSTATS SUCH THAT OPERABLE PARTS ARE NO HIGHER THAN 48" ABOVE FINISHED FLOOR.
3. COORDINATE ALL CONTROLS AND SEQUENCES OF OPERATION WITH THE BUILDING AUTOMATION SYSTEM (BAS). PROVIDE ALL DEVICES, CONTROLLERS, SENSORS, CONDUIT, WIRING AND LABOR TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM TO MEET THE OWNERS PROJECT REQUIREMENTS AND THE DESIGN INDICATED ON THESE DRAWINGS AND SPECIFICATIONS.
4. ALL CONTROL CONDUIT AND WIRING SHALL COMPLY WITH THE ELECTRICAL CODE AND THE SPECIFICATIONS.
5. THE CONTROLS CONTRACTOR IS RESPONSIBLE FOR POWER CIRCUITS AND WIRING TO ALL CONTROL PANELS.

PLUMBING GENERAL NOTES

1. THESE GENERAL NOTES APPLY TO ALL SHEETS. REFER TO INDIVIDUAL SHEETS FOR SHEET NOTES.
2. CONTRACT DOCUMENT DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY. DO NOT SCALE FOR MATERIAL QUANTITIES. ALL SCALING SHOULD BE REFERENCED TO ARCHITECTURAL PLANS ONLY.
3. ALL EQUIPMENT AND PIPING SHALL BE INSTALLED IN COMPLIANCE WITH THE CODES LISTED IN THE TABLE.
4. CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH OTHER TRADES TO MINIMIZE SPATIAL CONFLICTS.
5. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND DIMENSIONS BEFORE CONSTRUCTION BEGINS.
6. PROVIDE ISOLATION VALVES AT ALL PIPE CONNECTIONS TO EQUIPMENT.
7. PROVIDE WALL PIPE PENETRATIONS AS REQUIRED WHERE PIPE ENTERS BUILDING. SLEEVE AND SEAL OPENING WITH CAULKING AND ESCUTCHEON FOR A WATER-TIGHT INSTALLATION.

NATURAL GAS NOTES

1. ALL GAS PIPING WITHIN FINISHED SPACES SHALL BE PAINTED YELLOW AND LABELED IN ACCORDANCE WITH APPLICABLE CODE.
2. ALL GAS PIPING SHALL BE LABELED AT BEGINNING, ALL ENDS, AND AT 6' INTERVALS DESIGNATING GAS & PRESSURE. LABELS SHALL BE PER SPECIFICATIONS.
3. PROVIDE/INSTALL THROUGH WALL PIPE PENETRATIONS AS REQUIRED WHERE PIPE ENTERS BUILDING. SLEEVE AND SEAL.
4. THIS CONTRACTOR SHALL CONNECT GAS PIPING AT A TOTAL BUILDING DEMAND OF APPROXIMATELY 620 MBH.

PLUMBING EQUIPMENT NOTES

1. INSTALL ALL PLUMBING EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
2. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
3. IDENTIFY ALL NEW PLUMBING EQUIPMENT WITH NAMEPLATES PERMANENTLY ENGRAVED WITH 1/2 INCH HIGH WHITE LETTERS ON A BLACK BACKGROUND. IDENTIFY EQUIPMENT WITH SYMBOLS SHOWN ON THE PLANS AND AREA SERVED DESCRIPTION.
4. PROVIDE FLEXIBLE PIPING CONNECTIONS TO ALL OPERATING EQUIPMENT, UNLESS NOTED OTHERWISE.
5. ALL PLUMBING EQUIPMENT PADS SHALL BE FURNISHED AND INSTALLED BY THE GENERAL CONTRACTOR.
6. EQUIPMENT AND APPLIANCES SHALL BE ACCESSIBLE FOR SERVICE, INSPECTION, REPAIR AND REPLACEMENT WITHOUT REMOVING PERMANENT CONSTRUCTION. SUFFICIENT CLEARANCE SHALL BE MAINTAINED TO PERMIT CLEANING, REPLACEMENT OF PARTS, CONTROLS AND LUBRICATION OF MOVING PARTS.

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MARK	DATE	DESCRIPTION	BY
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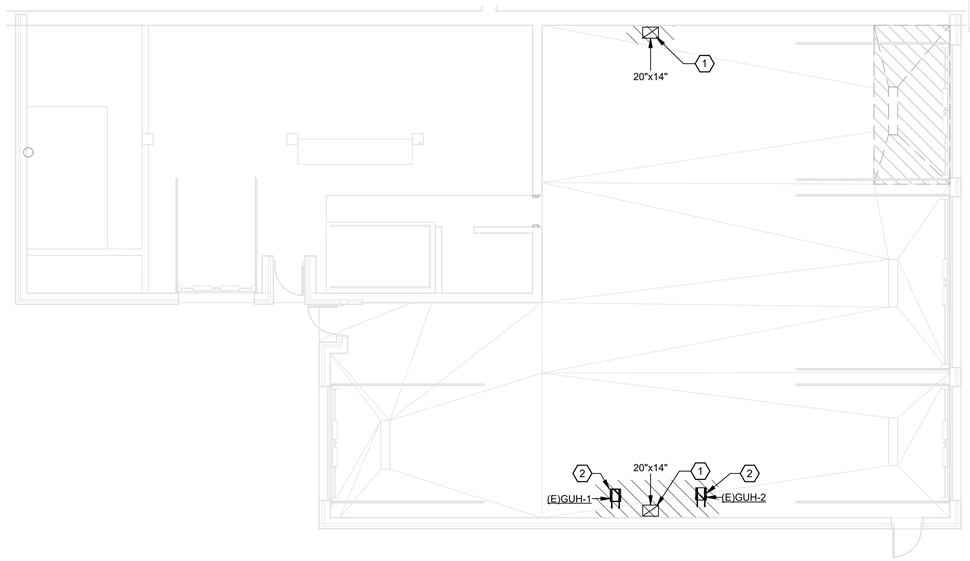
CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
GENERAL NOTES

PROJ:	200-12747-23001
DESN:	JRJ
DRWN:	JRJ
CHKD:	CR

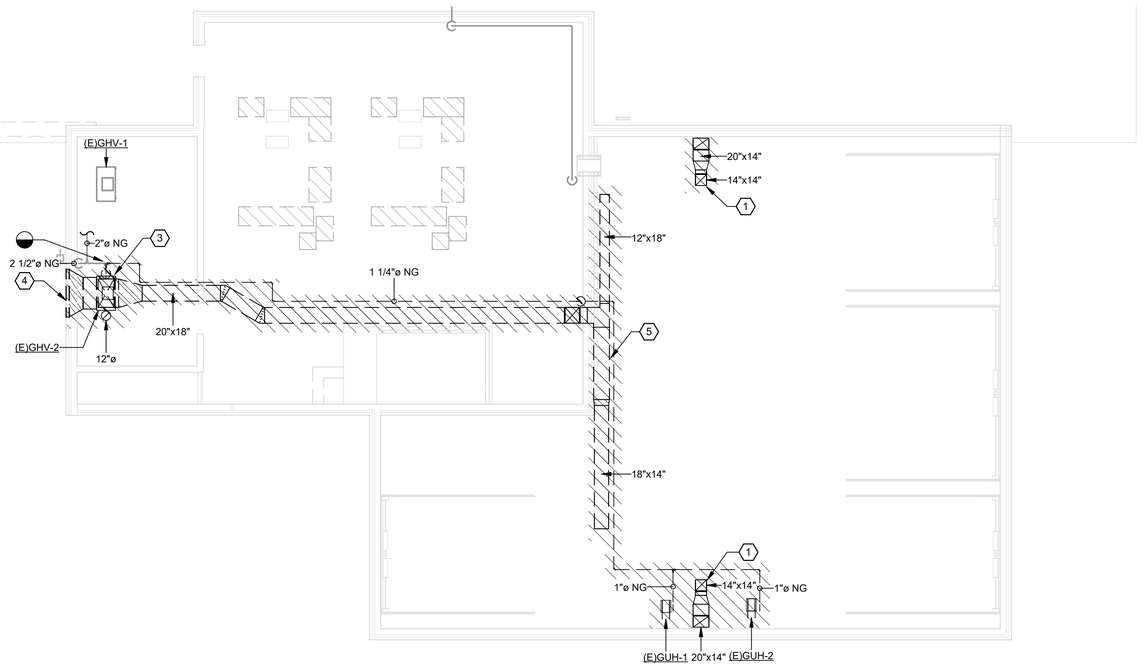
M-003

Bar measures 1 inch, otherwise drawing is not to scale



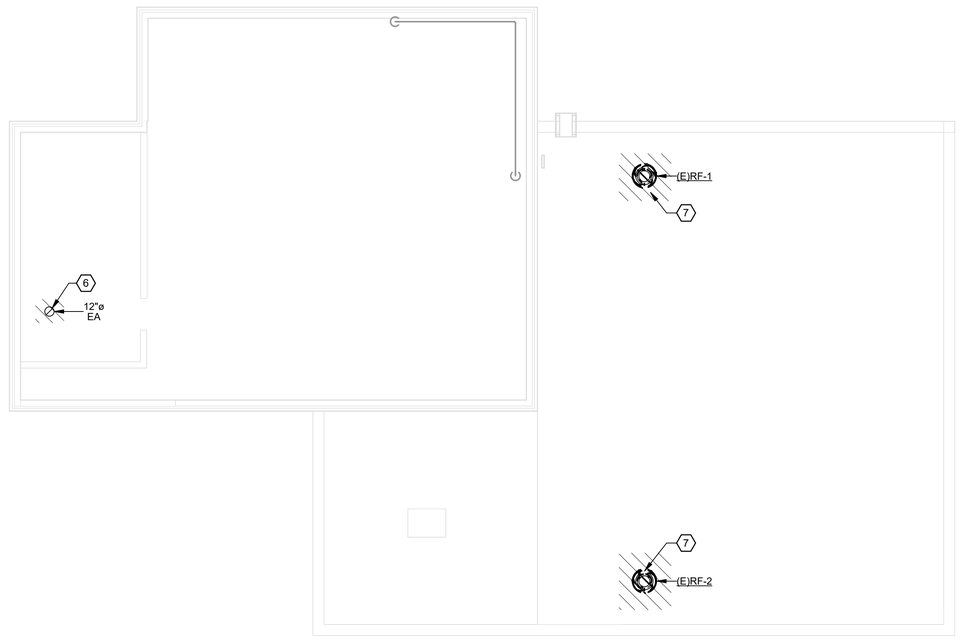
MECHANICAL DEMOLITION - FIRST FLOOR PLAN

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



MECHANICAL DEMOLITION - SECOND FLOOR PLAN

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

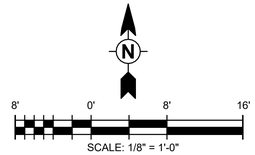


MECHANICAL DEMOLITION - ROOF PLAN

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

KEYNOTES

1. DEMOLISH EXHAUST DUCTWORK IN GARAGE AREA AND ALL ASSOCIATED AIR TERMINALS, ACCESSORIES, SUPPORTS, AND HANGERS.
2. DEMOLISH GAS UNIT HEATERS IN THE GARAGE AREA AND ALL ASSOCIATED ACCESSORIES, VENT DUCT, SUPPORTS, CONTROLS, AND WIRING. DEMOLISH NATURAL GAS PIPING BACK TO MAIN BRANCH, CUT AND CAP.
3. DEMOLISH AND REMOVE GAS FIRED HEATING AND VENTILATION UNIT AND ALL ASSOCIATED ACCESSORIES, SUPPORTS, CONTROLS, AND WIRING. DEMOLISH NATURAL GAS SUPPLY PIPING UP TO MAIN BRANCH, CUT AND CAP. DEMOLISH FLUE VENT DUCT UP THROUGH ROOF. COORDINATE WITH ARCHITECTURAL AND STRUCTURAL TO INFILL AND PATCH ROOF PENETRATION.
4. DEMOLISH INTAKE AIR LOUVER AND ALL ASSOCIATED DUCTWORK, ACCESSORIES, SUPPORTS, CONTROLS, AND WIRING. COORDINATE WITH ARCHITECTURAL AND STRUCTURAL TO INFILL WALL PENETRATION.
5. DEMOLISH SUPPLY AIR DUCTWORK FROM GHV-2 SERVING GARAGE AREA AND ALL ASSOCIATED ACCESSORIES, AIR TERMINALS, SUPPORTS, AND HANGERS. COORDINATE WITH ARCHITECTURAL AND STRUCTURAL TO PATCH AND INFILL WALL PENETRATION BETWEEN SECOND FLOOR MEZZANINE AND GARAGE AREA.
6. DEMOLISH VENT DUCT FROM GHV-2 ABOVE ROOF. COORDINATE WITH ARCHITECTURAL AND STRUCTURAL TO PATCH AND INFILL ROOF PENETRATION.
7. DEMOLISH ROOF MOUNTED EXHAUST FAN AND ALL ASSOCIATED ACCESSORIES, DUCTWORK, SUPPORTS, CONTROLS, AND WIRING. EXISTING ROOF PENETRATION IS TO REMAIN.



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CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

MECHANICAL DEMOLITION PLANS

PROJ:	200-12747-23001
DESN:	JRJ
DRWN:	JRJ
CHKD:	CR

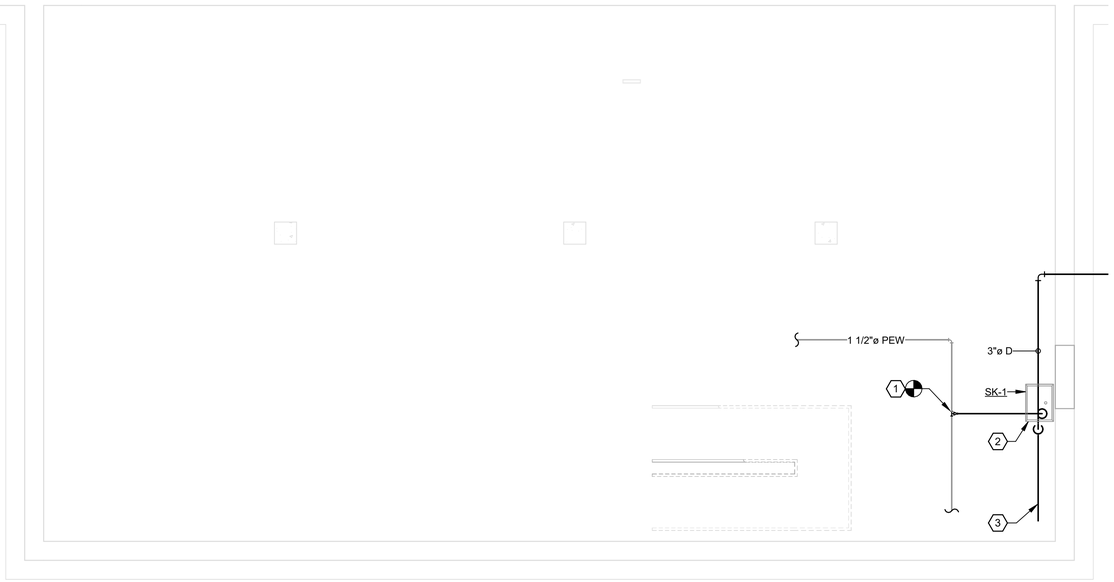
M-101

KEYNOTES

1 CONNECT TO EXISTING PLANT EFFLUENT WATER PIPING AND ROUTE TO NEW SAMPLING SINK.

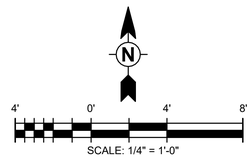
2 COORDINATE WITH PROCESS TO ROUTE DRAIN PIPING FROM SAMPLING SINK TO SUMP WELL.

3 ROUTE DRAIN PIPING FROM SCREW PRESS AREA FLOOR DRAINS TO SUMP WELL. COORDINATE DRAIN PIPING WITH PROCESS PIPING AND BUILDING STURCTURAL ELEMENTS. ROUTE TIGHT TO WALL AND FLOOR.



MECHANICAL NEW WORK FLOOR PLAN - BASEMENT

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



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

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MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

MECHANICAL NEW WORK FLOOR PLAN

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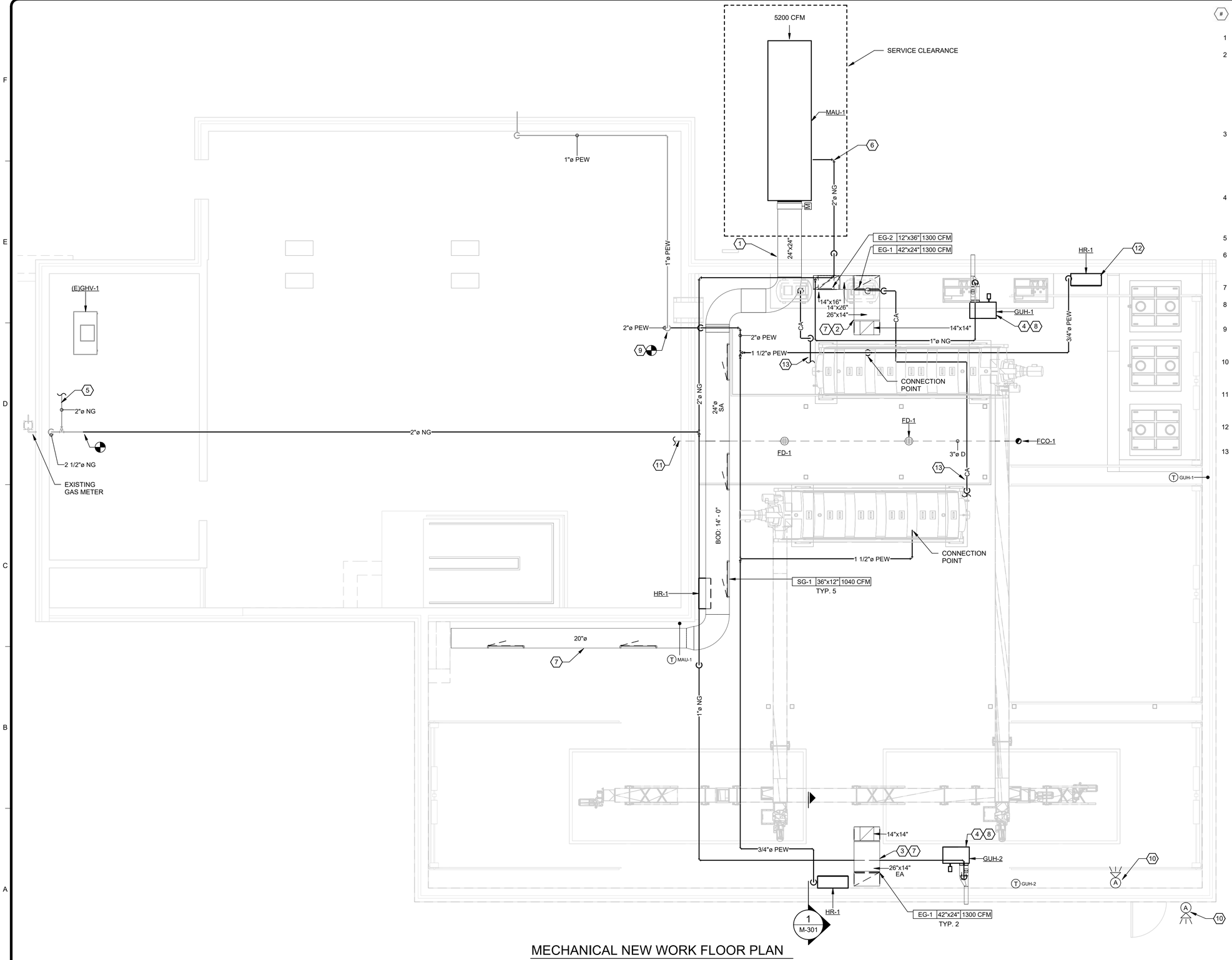
DRWN:	JRJ
CHKD:	CR

M-201

Bar measures 1 inch, otherwise drawing is not to scale



MECHANICAL NEW WORK FLOOR PLAN

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

KEYNOTES

1. COORDINATE WITH ARCHITECTURAL AND STRUCTURAL FOR SUPPLY AIR DUCT WALL PENETRATION.
2. ROUTE EXHAUST AIR DUCTWORK FROM EXISTING ROOF PENETRATION DOWN TOWARDS FLOOR IN COORDINATION WITH OTHER BUILDING DISCIPLINES. PROVIDE OFFSETS TO ROUTE EXHAUST DUCTWORK DOWN BETWEEN AIR COMPRESSORS. COORDINATE WITH PROCESS TO PROVIDE LOW POINT EXHAUST INLET SUCH THAT BOTTOM OF AIR TERMINAL IS MOUNTED AT MOST 1'-6" A.F.F. PROVIDE HIGH POINT EXHAUST INLET SUCH THAT BOTTOM OF AIR TERMINAL IS MOUNTED AT MINIMUM 11'-6" A.F.F.
3. ROUTE EXHAUST AIR DUCTWORK FROM EXISTING ROOF PENETRATION DOWN TOWARDS FLOOR IN COORDINATION WITH OTHER BUILDING DISCIPLINES. PROVIDE LOW POINT EXHAUST INLET SUCH THAT BOTTOM OF AIR TERMINAL IS MOUNTED AT MOST 1'-6" A.F.F. PROVIDE HIGH POINT EXHAUST INLET SUCH THAT BOTTOM OF AIR TERMINAL IS MOUNTED AT MINIMUM 11'-6" A.F.F.
4. PROVIDE FACTORY SIDEWALL MOUNT AND SIDEWALL CONCENTRIC INTAKE-VENT KIT FOR GAS UNIT HEATER. COORDINATE WITH OTHER DISCIPLINES FOR DUCT WALL PENETRATION. REFER TO TYPICAL DETAIL ON SHEET M-501.
5. NATURAL GAS PIPING TO EXISTING HEATING AND VENTILATION UNIT GHV-2 IS TO REMAIN.
6. PROVIDE FLEXIBLE CONNECTION FOR NATURAL GAS SUPPLY TO MAU-1 PER TYPICAL DETAIL. REFER TO MANUFACTURER SPECIFICATIONS FOR FINAL CONNECTION LOCATION AND SIZE.
7. DUCTWORK IN SLUDGE HANDLING AREA IS TO BE OF CORROSION RESISTANT CONSTRUCTION.
8. PROVIDE NATURAL GAS REGULATOR VENT PIPING FROM INDOOR REGULATOR, THROUGH WALL, AND TO EXTERIOR PER MANUFACTURER SPECIFICATIONS.
9. PROVIDE PLANT EFFLUENT WATER PIPING FROM EXISTING 2" RISER TO SCREW PRESS UNITS. COORDINATE WITH PROCESS FOR FINAL CONNECTION HEIGHT, LOCATION, AND DETAIL.
10. PROVIDE NEMA 4X VISUAL AND AUDIBLE ALARMS. ALARMS SHALL BE INITIATED IF NO FLOW IS DETECTED BY EITHER THE MAKEUP AIR SUPPLY OR EXHAUST FLOW SWITCHES.
11. ROUTE DRAIN PIPING FROM FLOOR DRAINS TO SUMP WELL IN BASEMENT. COORDINATE WITH PROCESS TO AVOID COLLISIONS WITH PROCESS PIPING. REFER TO SHEET M-201 FOR CONTINUATION.
12. COORDINATE FINAL HOSE REEL CABINET MOUNTING LOCATION WITH PROCESS PIPING AND OTHER DISCIPLINES.
13. ROUTE COMPRESSED AIR PIPING FROM AIR COMPRESSORS TO CONNECTION POINTS ON SCREW PRESS UNITS. COORDINATE WITH PROCESS FOR FINAL CONNECTION HEIGHT, LOCATION, AND DETAIL. COORDINATE PIPE ROUTING WITH DUCTWORK, OTHER PIPING SYSTEMS, BUILDING STRUCUTRAL ELEMENTS, AND OTHER DISCIPLINES.

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CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

MECHANICAL NEW WORK FLOOR PLAN

PROJ:	200-12747-23001
DESN:	JRJ
DRWN:	JRJ
CHKD:	CR

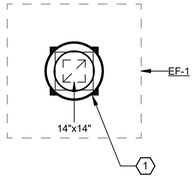
M-202

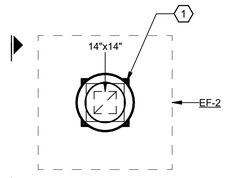
SCALE: 1/4" = 1'-0"

Bar measures 1 inch, otherwise drawing is not to scale

KEYNOTES

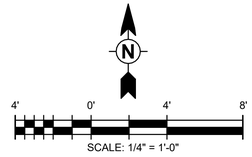
1 PROVIDE NEW ROOF MOUNTED EXHAUST FAN IN SAME LOCATION AS PREVIOUS. ROUTE EXHAUST DUCTWORK TO BELOW USING EXISTING ROOF PENETRATION IN COORDINATION WITH STRUCTURAL AND ARCHITECTURAL.





1
M-301

MECHANICAL NEW WORK ROOF PLAN
SCALE: 1/4" = 1'-0"



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

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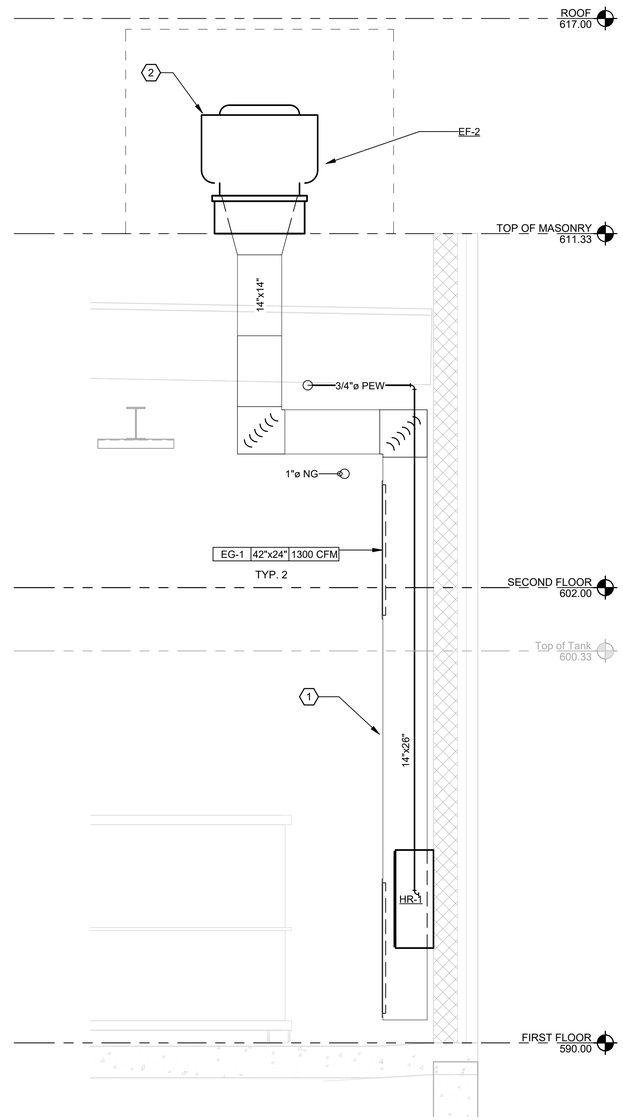
MECHANICAL NEW WORK ROOF PLAN

PROJ:	200-12747-23001
DESN:	JRJ
DRWN:	JRJ
CHKD:	CR

M-203



1 M-301 EXHAUST DUCTWORK SECTION
SCALE: 1/2" = 1'-0"

KEYNOTES

1 ROUTE EXHAUST AIR DUCTWORK FROM EXISTING ROOF PENETRATION DOWN TOWARDS FLOOR IN COORDINATION WITH OTHER BUILDING DISCIPLINES. PROVIDE LOW POINT EXHAUST INLET SUCH THAT BOTTOM OF AIR TERMINAL IS MOUNTED AT MOST 1'-6" A.F.F. PROVIDE HIGH POINT EXHAUST INLET SUCH THAT BOTTOM OF AIR TERMINAL IS MOUNTED AT MINIMUM 11'-6" A.F.F.

2 PROVIDE NEW ROOF MOUNTED EXHAUST FAN IN SAME LOCATION AS PREVIOUS. ROUTE EXHAUST DUCTWORK TO BELOW USING EXISTING ROOF PENETRATION IN COORDINATION WITH STRUCTURAL AND ARCHITECTURAL.

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CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
MECHANICAL SECTIONS

PROJ:	200-12747-23001
DESN:	JRJ
DRWN:	JRJ
CHKD:	CR

M-301

2' 0' 2' 4'
SCALE: 1/2" = 1'-0"

Bar measures 1 inch, otherwise drawing is not to scale

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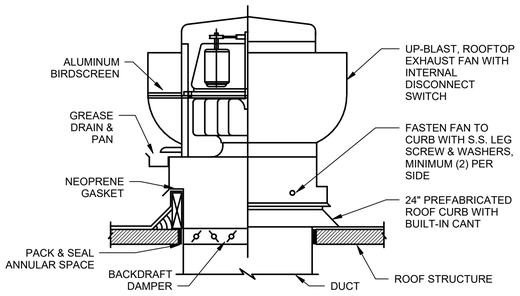
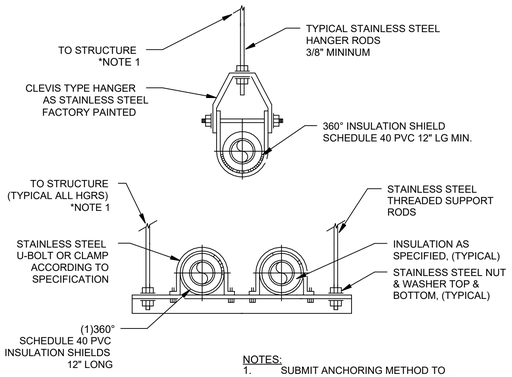


1 UPBLAST EXHAUST FAN DETAIL

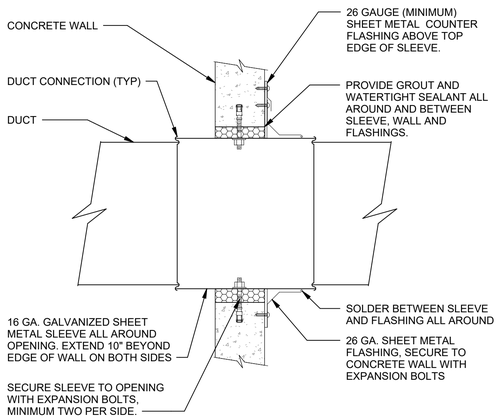
M-501 SCALE: N.T.S.



NOTES:
1. SUBMIT ANCHORING METHOD TO STRUCTURAL ENGINEER FOR APPROVAL.
2. SEE SPECIFICATION FOR PAINT REQUIREMENTS ON SUPPORTS.

2 PIPE HANGER DETAIL

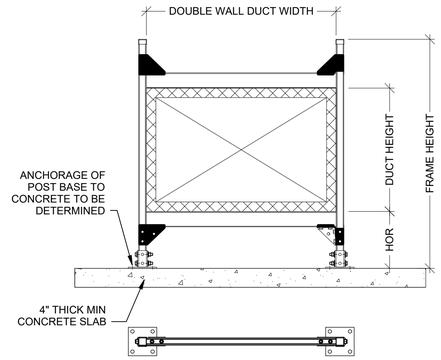
M-501 SCALE: N.T.S.



NOTES:
1. REFER TO ARCHITECTURAL AND STRUCTURAL DESIGNS FOR WEATHERPROOFING AND WALL PENETRATION CONDITIONS.
2. PROVIDE GROUT AND SEALANTS AS NECESSARY TO MAINTAIN WATERTIGHT OPENING. COORDINATE WITH EXTERIOR FINISH AS REQUIRED.

3 EXTERIOR DUCT PENETRATION-CONCRETE WALL

M-501 SCALE: N.T.S.



VERIFICATION OF PROJECT CONDITIONS

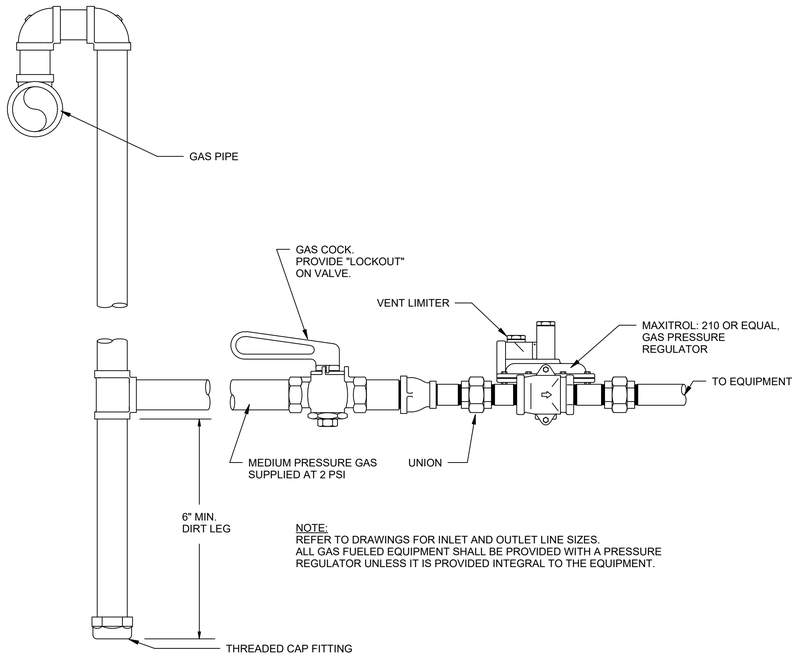
1. ALL EXISTING CONDITIONS, DIMENSIONS, LOCATIONS AND ELEVATIONS OF EXISTING STRUCTURES SHOWN ON THE DRAWINGS SHALL BE VERIFIED BY THE GENERAL CONTRACTOR IN THE FIELD AND COORDINATED WITH THE NEW CONSTRUCTION PRIOR TO PREPARATION OF WORKING, SHOP DRAWINGS OR FABRICATION AND COMMMENCEMENT OF ANY WORK. IF DISCREPANCIES ARE DISCOVERED BETWEEN EXISTING CONDITIONS AND CONTRACT WORK, THE GENERAL CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT OR ENGINEER PRIOR TO PERFORMANCE OF ANY WORK.
2. PRIOR TO SHOP DRAWING PREPARATION, THE GENERAL CONTRACTOR IS TO INVESTIGATE AND VERIFY ACTUAL FIELD CONDITIONS, EXPOSED OR CONCEALED AND TAKE INTO ACCOUNT ANY POSSIBLE CONSTRUCTION INTERFERENCES AND RELOCATIONS OF, BUT NOT LIMITED TO STRUCTURES, EQUIPMENT, UTILITIES, CABLES, DUCT LINES, PIPING, DRAIN LINES, ECT.
3. ANY PORTION OF THE EXISTING STRUCTURE ADJACENT TO THE CONSTRUCTION SHALL BE RESTORED BY THE CONTRACTOR TO A CONDITION AS GOOD AS BEFORE THE COMMENCEMENT OF THE WORK AT NO ADDITIONAL COST TO THE OWNER.
4. EXISTING STRUCTURE/EQUIPMENT SHALL BE PROTECTED, MAINTAINED AND SUPPORTED DURING THE CONSTRUCTION WORK.

NOTES:

1. THE GENERAL CONTRACTOR SHALL OBTAIN AN ENGINEERED DESIGN OF THE DUCT SUPPORT STANDS.
2. THE DESIGN IS TO BE SIGNED AND SEALED BY AN ENGINEER REGISTERED IN THE JURISDICTION. IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO ASSURE THAT ALL SUBMITTALS ARE PROVIDED IN A TIMELY MANNER SO AS TO ALLOW FOR REVIEW AND RESUBMISSION AS REQUIRED.
3. ALL EQUIPMENT SUPPORTS SHALL BE DESIGNED FOR THE APPROPRIATE AND APPLICABLE LOADS.
4. BASIS OF DESIGN DUCT SUPPORTS ARE BY MIRO INDUSTRIES INC. HOWEVER APPROVED EQUAL SUBSTITUTIONS ARE ALLOWED.
5. DUCT DIMENSIONS SHOWN ON THE PLANS ARE INTERIOR FREE AREA DIMENSIONS. DUCTWORK SHALL BE DOUBLE WALL CONSTRUCTION WITH 1" INSULATION.

4 DUCT SUPPORT DETAIL

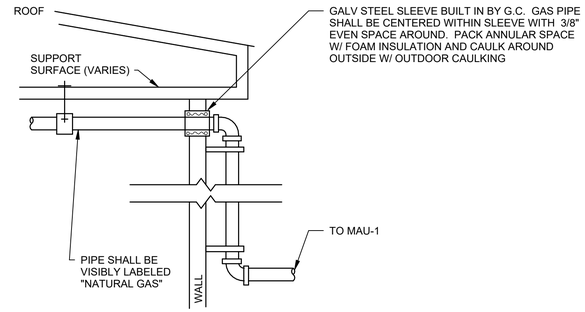
M-501 SCALE: N.T.S.



NOTE:
REFER TO DRAWINGS FOR INLET AND OUTLET LINE SIZES.
ALL GAS FUELED EQUIPMENT SHALL BE PROVIDED WITH A PRESSURE REGULATOR UNLESS IT IS PROVIDED INTEGRAL TO THE EQUIPMENT.

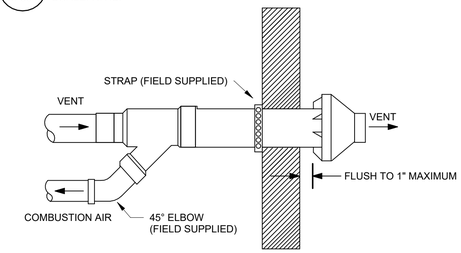
5 GAS CONNECTION TO EQUIPMENT

M-501 SCALE: N.T.S.



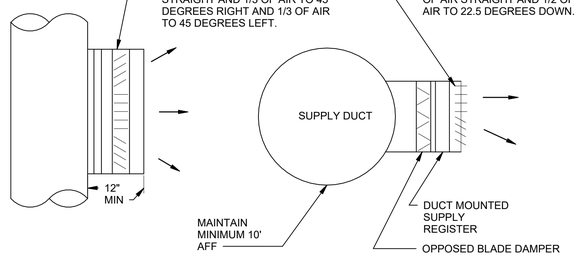
6 NATURAL GAS PIPE PENETRATION

M-501 SCALE: N.T.S.



7 CONCENTRIC VENT DETAIL

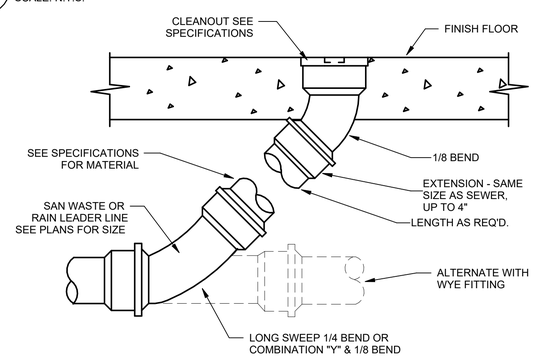
M-501 SCALE: N.T.S.



NOTES:
1. ADJUST INITIAL AIR FLOW DIRECTIONS AS SHOWN. FINAL AIR BALANCE SHALL ADJUST FLOW DIRECTIONS TO REDUCE AIR VELOCITIES IN OCCUPIED SPACE TO 50 FPM (MAXIMUM).

8 EXPOSED DUCT SUPPLY GRILLE

M-501 SCALE: N.T.S.



9 FLOOR CLEANOUT DETAIL (FCO)

M-501 SCALE: N.T.S.

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EAST LANSING, MI 48823
TEL: 517.316.3963 FAX: 517.484.8140

MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

DETAILS

PROJ:	200-12747-23001
DESN:	JRJ
DRWN:	JRJ
CHKD:	CR

M-501

Bar measures 1 inch, otherwise drawing is not to scale

MAKEUP AIR UNIT SCHEDULE

MARK	AREA SERVED	LOCATION	FAN							GAS HEATING COIL						
			AIRFLOW (CFM)		TSP (IN-WC)	ESP (IN-WC)	FAN RPM	WHEEL TYPE	DRIVE TYPE	TYPE	INPUT (MBH)	OUTPUT (MBH)	EAT/LAT (°F)	PRESSURE (IN-WC)	TURNDOWN	STAGES
			SA	OA												
MAU-1	SLUDGE HANDLING	NORTH EXTERIOR	5200	5200	1.19	0.5	1035	MIXED FLOW	DIRECT	INDIRECT	500	400	71.2	7-14	26.6:1	2

MAKEUP AIR UNIT SCHEDULE CONTINUED

MARK	AIR FILTERS		ELECTRICAL							MANUFACTURER	MODEL	NOTES
	TYPE	QUANTITY	MOTOR ENCLOSURE	HP	MOTOR RPM	VOLTS / PH / HZ	MCA	MOCP	CONTROLS			
MAU-1	MERV 13	1	ODP	2	1180	460 / 3 / 60	5.4	15	T-STAT	GREENHECK	IGX-P122-H22-MF	1

NOTES:
1. FURNISH UNIT WITH MANUFACTURER SUPPLIED EQUIPMENT CURB AND VIBRATION ISOLATORS, NEMA-3R DISCONNECT, MICROPROCESSOR, AND WEATHERHOOD W/ BIRDSCREEN.

FAN SCHEDULE

MARK	AREA SERVED	LOCATION	FAN					ELECTRICAL						MOUNTING TYPE	WEIGHT (LBS)	MANUFACTURER	MODEL	NOTES
			AIRFLOW (CFM)	TSP (IN-WC)	FAN RPM	TYPE	DRIVE TYPE	MOTOR ENCLOSURE	HP	VOLTS / PH / HZ	MCA	MOCP	CONTROL					
EF-1	SLUDGE HANDLING	ROOF	2600	0.25	783	CENTRIFUGAL UPBLAST	DIRECT	TEFC	3/4	115 / 1 / 60	12.5	20	ECM	ROOF	91	GREENHECK	CUE-180-VG	
EF-2	SLUDGE HANDLING	ROOF	2600	0.25	783	CENTRIFUGAL UPBLAST	DIRECT	TEFC	3/4	115 / 1 / 60	12.5	20	ECM	ROOF	91	GREENHECK	CUE-180-VG	

NOTES:
1. FURNISH UNIT WITH MANUFACTURER SUPPLIED EQUIPMENT CURB AND VIBRATION ISOLATORS, NEMA 3-R DISCONNECT, BACKDRAFT DAMPER, ALUMINUM BIRD SCREEN, AND VARI-GREEN SPEED CONTROLLER..

GAS UNIT HEATER SCHEDULE

MARK	AREA SERVED	FAN		GAS HEATING COIL					ELECTRICAL		MOUNTING	TYPE	WEIGHT (LBS)	MANUFACTURER	MODEL	NOTES
		AIRFLOW (CFM)	HP	PRESSURE (IN-WC)	INPUT (MBH)	OUTPUT (MBH)	EAT DB (°F)	LAT DB (°F)	VOLTS / PH / HZ	FLA	HEIGHT (FT)					
GUH-1	SLUDGE HANDLING	990	1/12	6 - 7	60.0	49.2	65	110	460 / 3 / 60	0.81	12	PROPELLOR - SEPARATED COMBUSTION	80	MODINE	HDS60	1
GUH-2	SLUDGE HANDLING	990	1/12	6 - 7	60.0	49.2	65	110	460 / 3 / 60	0.81	12	PROPELLOR - SEPARATED COMBUSTION	80	MODINE	HDS60	1

NOTES:
1. FURNISH UNIT WITH FACTORY SUPPPLIED GAS PRESSURE REGULATOR, THERMOSTAT, SIDEWALL CONCENTRIC VENT KIT, AND SIDEWALL MOUNTING BRACKET..

DIFFUSERS, GRILLES, & REGISTER SCHEDULE

TAG	DESCRIPTION	PANEL SIZE (IN)	NECK SIZE (IN)	MAX S.P.D (IN. WG)	MAX NC	MAX THROW (150-100-50 FPM)	MATERIAL	MANUFACTURER	MODEL	NOTES
EG-1	DUCT MOUNTED EXHAUST GRILLE	42 x 24	42 x 24	0.02	17	-	ALUMINUM	TITUS	3FS	
EG-2	DUCT MOUNTED EXHAUST GRILLE	36 X 12	36 X 12	0.13	36	-	ALUMINUM	TITUS	3FS	
SG-1	DUCT MOUNTED SUPPLY GRILLE	36 X 12	36 X 12	0.03	15	19-23-33	ALUMINUM	TITUS	S300FS	

PLUMBING FIXTURE SCHEDULE

MARK	DESCRIPTION	MANUFACTURER	MODEL	CONNECTION SIZE (IN)				NOTES
				CW	HW	WASTE	VENT	
FCO-1	ROUND FLOOR CLEANOUT	ZURN	Z1400-AR	-	-	3	-	
FD-1	ROUND FLOOR DRAIN	ZURN	Z520-NH-Y-SS	-	-	3	-	1
SK-1	UTILITY SINK - SAMPLING					3	-	

NOTES:
1. PROVIDE MECHANICAL TRAP SEAL (RECTORSEAL SURESEAL OR EQUIVALENT)

HOSE REEL SCHEDULE

MARK	HOSE DIA (IN)	HOSE LENGTH (FT)	MAX OP. PRESSURE (PSI)	L / W / D (IN)	WEIGHT (LBS)	MANUFACTURER	MODEL	NOTES
HR-1	3/4	50	300	23 / 20.5 / 20	99	COX REELS	SLP-550	

NOTES:
1. FURNISH UNIT WITH FACTORY SUPPPLIED GAS PRESSURE REGULATOR, THERMOSTAT, SIDEWALL CONCENTRIC VENT KIT, AND SIDEWALL MOUNTING BRACKET..

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SCHEDULES

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CHKD:	CR

M-601

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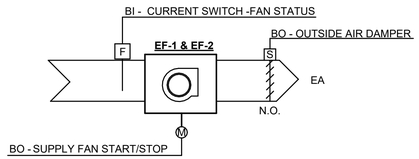
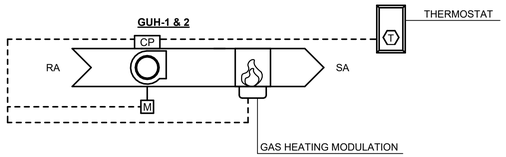


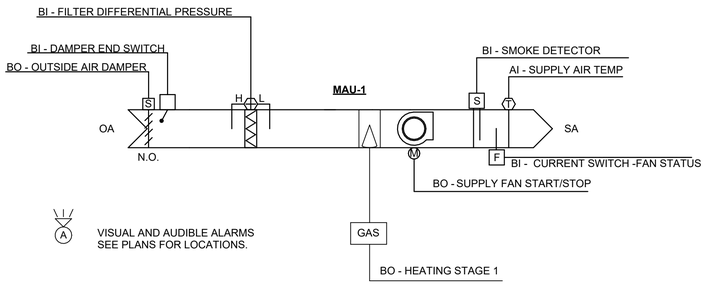


GAS UNIT HEATER CONTROL DIAGRAM (GUH-1 & GUH-2)

RUN CONDITIONS - CONTINUOUS:
- UNIT HEATERS ARE SUPPLEMENTAL TO SUPPORT THE BUILDING ENVELOPE (WALLS AND CEILING). THEY SHALL BE CONTROLLED BY LOCAL THERMOSTATS.
- THE UNIT SHALL CYCLE TO MAINTAIN A HEATING SETPOINT OF 55°F (ADJUSTABLE).

FAN:
- THE FAN SHALL RUN ANYTIME THE ZONE TEMPERATURE DROPS BELOW HEATING SETPOINT. INTERLOCK TO HVAC CONTROL PANEL.
-

GAS HEATING MODULATION:
- THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE HEATING TO MAINTAIN ITS HEATING SETPOINT.



SLUDGE HANDLING ROOM INDIRECT FIRED AIR HANDLING UNIT HEATING AND VENTILATION (MAU-1, EF-1 & EF-2)

SEQUENCE SUMMARY:
MAU-1 IN CONJUNCTION WITH EF-1 & EF-2 SHALL PROVIDE HEATING AND VENTILATION TO THE SLUDGE HANDLING. THE WET WEATHER PUMP STATION IS GOVERNED BY NFPA 820. MAU-1 SHALL RUN CONTINUOUSLY, IN CONJUNCTION WITH EF-1 & EF-2 TO MAINTAIN 6 AIR CHANGES PER HOUR (ACH), 24 HOURS A DAY, 7 DAYS A WEEK. THE MAU-1 INDIRECT NATURAL GAS FIRED HEATING SECTION SHALL ENGAGE WHENEVER THE OUTSIDE AIR TEMPERATURE IS BELOW 55 °F AND SHALL MODULATE TO MAINTAIN A SUPPLY DISCHARGE AT 70 °F (ADJUSTABLE). ALL BINARY INPUTS AND OUTPUTS TO BE WIRED BACK TO THE UNIT CONTROLLER.

THE CONTROL OF MAU-1, EF-1 & EF-2, INSTRUMENTS, GAUGES, CONTROL VALVES, AND ACCESSORIES SHALL UTILIZE THE CONTROL SYSTEM PROVIDED BY THE CONTRACTOR. CONTRACTOR SHALL PROVIDE ALL NECESSARY WIRING AND CONDUIT, DEVICES, CONTROLLERS, INTERLOCKS, AND SWITCHES AS NECESSARY TO MEET THE INTENT OF THESE SEQUENCES AND THE CONTROL DIAGRAMS SHOWN. CONTRACTOR SHALL COORDINATE FOR A FULLY FUNCTIONAL SYSTEM.

RUN CONDITIONS
MAU-1, EF-1 & EF-2 SHALL RUN CONTINUOUSLY, WHILE THE BUILDING IS IN USE, UNLESS SHUT DOWN ON SAFETIES OR TURNED OFF MANUALLY AT THE UNIT CONTROLLERS, MOTOR STARTERS, OR DISCONNECTS.

STATUS = ON (DEFAULT): OUTSIDE AIR DAMPER OPEN, EXHAUST AIR DAMPER OPEN, MAU-1 FAN ON, EF-1 & EF-2 ON, GAS BURNER MODULATES AS INITIALIZED BY DISCHARGE TEMPERATURE SENSOR.

STATUS = OFF: ALL DAMPERS CLOSED, ALL FANS OFF, HEATING VALVE CLOSED.

FILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTER.

FAN STATUS FLOW SWITCH:
PROVIDE A FLOW SWITCH IN THE DISCHARGE OF THE MAU AND ON THE INTAKE OF THE EXHAUST FAN. FLOW SWITCH SHALL BE WIRED TO CONTROLLER AND IF NO FLOW IS DETECTED VISUAL AND AUDIBLE ALARMS SHALL BE INITIATED AT THE LOCAL ALARMS AS SHOWN ON PLANS AND ALSO COMMUNICATED TO THE SCADA OPERATOR DISPLAY.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
FILTER CHANGE REQUIRED: WHEN THE DIFFERENTIAL PRESSURE ACROSS THE FILTER EXCEEDS THE MEAN PRESSURE DROP (150% OF THE CLEAN FILTER PRESSURE DROP).

FREEZE PROTECTION:
IF THE SUPPLY AIR TEMPERATURE IS BELOW 30 °F AND THE FAN HAS BEEN RUNNING FOR 5 MINUTES THE SUPPLY AIR DAMPERS SHALL CLOSE AND AN ALARM SHALL BE PROVIDED. UNITS SHALL REQUIRE MANUAL RESTART ON FREEZE PROTECTION.

OUTSIDE AIR DAMPER:
THE OUTSIDE AIR DAMPER SHALL OPEN ANYTIME MAU-1 RUNS AND SHALL CLOSE ANYTIME THE UNIT STOPS. THE SUPPLY FAN SHALL START ONLY AFTER THE DAMPER STATUS IS OPEN. THE OUTSIDE AIR DAMPER SHALL CLOSE 15 SEC (ADJ.) AFTER THE SUPPLY FAN STOPS.

ALARMS SHALL BE PROVIDED TO SCADA AS FOLLOWS:
- SYSTEM RUNNING: AHU AND EF ARE RUNNING.
- OUTSIDE AIR DAMPER FAILURE: COMMANDED OPEN BUT THE STATUS IS CLOSED.
- OUTSIDE AIR DAMPER IN AUTO: CONTROL PANEL IS IN AUTO POSITION.
- HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS GREATER THAN 10 °F (ADJ.) ABOVE SETPOINT.
- LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS LESS THAN 40 °F (ADJ.) AFTER 5 MINUTES.
- SUPPLY FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- SUPPLY FAN IN AUTO: CONTROL PANEL IS IN AUTO POSITION.

EXHAUST FAN (EF-1 & EF-2):
THE EXHAUST FAN SHALL RUN WHENEVER MAU-1 IS RUNNING AND DAMPER IS OPEN.

ALARMS SHALL BE PROVIDED TO SCADA AS FOLLOWS:
- EXHAUST FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- EXHAUST FAN IN AUTO: HOA CONTROL SWITCH IN AUTO POSITION.

SUPPLY AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE.

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CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
MECHNICAL CONTROLS

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DRWN:	JRJ
CHKD:	CR

M-901

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BACKGROUND PLAN AND ONE LINE SYMBOLS

SYMBOL	DESCRIPTION
●	CONTROL SWITCH (SEL. OR P.B.) SEE CIRCUITS FOR SPECIFIC TYPE
F FL	SEE CIRCUITS FOR SPECIFIC TYPE FLOAT SWITCH - FLOW SWITCH
T M	TEMPERATURE - HUMIDISTAT SWITCH (SUBSCRIPT=NO. OF STAGES)
L P V	LIMIT (PROXIMITY TYPE) PRESSURE - VACUUM SWITCH
ALT	ELECTRICAL OR MECHANICAL ALTERNATOR (SEE WIRING)
OS	OVERLOAD SWITCH OR DEVICE
TB	TERMINAL BOX
⊗	SOLENOID VALVE
PC	PHOTOCELL LINE VOLTAGE
▭	AS NOTED (LIGHTING PANEL, CONTROL PANEL, DISTRIBUTION PANEL, ETC.) WALL MOUNTED
JB	JUNCTION BOX
	TRANSFORMER
	CONDUIT WITH CONDUIT SEAL FITTING
	CONDUIT EXPOSED
	CONDUIT CONCEALED
E	DIRECT BURIED CONDUIT
UG	DIRECT BURIED CABLE
OH	OVERHEAD LINE
DB	UNDERGROUND DUCT BANK
EDB	EXISTING UNDERGROUND DUCT BANK
1 2 3 4 5 6	CONCRETE ENCASED DUCT BANK WITH CABLE LOCATIONS, AND SPARE DUCTS AS INDICATED ON DRAWINGS
	CABLE REEL
L L L L	MULTI-STACK ALARM LIGHTS
	SELECTOR SWITCH / PUSHBUTTON. FUNCTIONS AS SHOWN IN WIRING DIAGRAMS
	LOW VOLTAGE DISCONNECT SWITCH
	LOW VOLTAGE FUSE (BELOW 600V)
	HIGH VOLTAGE FUSE (ABOVE 600V)
1 RV, 2 FVR, 3 2S,2W	ALL STARTERS SHALL BE FULL VOLTAGE, NON-REVERSING UNLESS OTHERWISE INDICATED. (FVR) FULL VOLTAGE REVERSING (RV) REDUCED VOLTAGE (2S, 2W) TWO SPEED, TWO WINDING
	600V, 3 POLE MOLDED CASE CIRCUIT BREAKER, FRAME & RATING AS SHOWN
1 2 A-3	SINGLE PHASE, FRACTIONAL HP MOTOR TO LOCATION INDICATED (SEE NOTE 2 ON STANDARD NOTE SHEET)
86	DEVICE SYMBOL WITH TYPE DEVICE
A 1	THREE PHASE LOAD WITH IDENTIFICATION

SYMBOL	DESCRIPTION
FT 10	TAG NO. (BALLOON) FOR DEVICE INDICATED
FT 10, A-3, MCP OR CP-1	FOR POWER (SEE NOTE 2 ON STANDARD NOTE SHEET) 3/4"C(2/C#18SH) CONDUIT AND WIRE RUN FROM DEVICE INDICATED TO LOCATION INDICATED
	CAPACITOR, 3 PHASE, SIZE AS INDICATED
F C	DISCONNECT SWITCH (F) = FUSED, (C) = CIRCUIT BREAKER
	MAGNETIC STARTER (BACKGROUND DRAWINGS ONLY)
SIZE 2	COMBINATION MAGNETIC STARTER FUSED UNLESS NOTED (CIRCUIT BREAKER)
LC	COMBINATION LIGHTING CONTACTOR WITH HAND-OFF-AUTO SWITCH
R	MANUAL STARTER (R) = REVERSING
CP	CONTROL PANEL
1/8 UH-19	UNIT HEATER, 1/8 HORSEPOWER
	LIGHTING ARRESTOR
A-3	LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2 ON STANDARD NOTE SHEET)
NEMA 4	WATERTIGHT
NEMA 4X	WATERTIGHT AND CORROSION PROOF
NEMA 7	EXPLOSION PROOF - CLASS I, DIVISION 1, GROUP D
NEMA 9	EXPLOSION PROOF - CLASS II, DIVISION 1
K	KEYLOCK
SD	SMOKE DETECTOR
E	EXIT LIGHT
	FLUORESCENT LUMINAIRE
	INCANDESCENT LUMINAIRE
	HIGH INTENSITY DISCHARGE LIGHT
EM	EMERGENCY BATTERY PACK
DS	DESK INTERCOM SET
	CAMERA
PTZ	DOME CAMERA (PAN, TILT, ZOOM)
52	DRAW OUT CIRCUIT BREAKER (ABOVE 600 VOLT)
	CIRCUIT BREAKER WITH STAB CONNECTION
(3) 50/5	CURRENT TRANSFORMER, AND RATIO (WITH NUMBER REQUIRED SHOWN)

WIRING DEVICE SCHEDULE

SYMBOL	DESCRIPTION	NEMA TYPE
	125V, 2P, DUPLEX, 3W	5-20 R
	SIMPLEX RECEPTACLE	
	QUAD RECEPTACLE	
	20A, 120/277V SWITCH	SPST

CONTROL CIRCUIT & PILOT DEVICE LEGEND

SYMBOL	DESCRIPTION
	PRESSURE ACTUATED SWITCH
	FLOW ACTUATED SWITCH
	LIMIT SWITCH - NORMALLY OPEN
	LIMIT SWITCH - NORMALLY CLOSED - HELD OPEN
	LATCHING CABLE SWITCH
	MOMENTARY PUSHBUTTON OPERATOR-NORMALLY CLOSED
	MOMENTARY PUSHBUTTON OPERATOR-NORMALLY OPEN
	CONTROL RELAY CONTACT - NORMALLY OPEN
INST.	TIMING RELAY INSTANTANEOUS CONTACT
CR	CONTROL RELAY COIL
CR L, CR U	TWO COIL LATCHING RELAY
	TIMED CLOSED CONTACT ON ENERGIZATION
	TIMED OPEN CONTACT ON DE-ENERGIZATION
	ZERO SPEED OR ANTI-PLUGGING SWITCH
	MAINTAINED STOP-START PUSHBUTTON OPERATOR
	MAINTAINED PUSH - PULL OPERATOR
	LOCAL TERMINALS WITH EXTERNAL WIRING
T	TIMING RELAY COIL
T 1	TIMING RELAY COIL (OFF DELAY)
G	INDICATING LIGHT
	PUSH-TO-TEST INDICATING LIGHT
X1 X2	SECONDARY TRANSFORMER
	MOLDED CASE CIRCUIT BREAKER
	GENERAL DISCONNECT SWITCH

SYMBOL	DESCRIPTION
	SELECTOR SWITCH - NORMALLY OPEN
	FLOAT ACTUATED SWITCH
	TEMP. ACTUATED SWITCH
	LIMIT SWITCH - NORMALLY CLOSED
	LIMIT SWITCH - NORMALLY OPEN - HELD CLOSED
	TIME DELAY FUSE
	PUSHBUTTON OPERATOR WITH MUSHROOM HEAD
(F)	FIELD LOCATED STOP BUTTON
	CONTROL RELAY CONTACT - NORMALLY CLOSED
INST.	TIMING RELAY INSTANTANEOUS CONTACT
O, H, C	SELECTOR SWITCH OPERATOR WITH FUNCTION SHOWN
	TIMED OPEN CONTACT ON ENERGIZATION
	TIMED CLOSED CONTACT ON DE-ENERGIZATION
R 1	PUSH-TO-TEST INDICATING LIGHT
	MAINTAINED STOP - MOMENTARY START PUSHBUTTON (JOG)
	SOLENOID OR CLUTCH
ETI	ELAPSED TIME INDICATOR
X1 X2	120VAC TRANSFORMER
	PUSHBUTTON OPERATOR WITH MUSHROOM HEAD
	THERMAL OVERLOAD
(F)	FIELD LOCATED
	TERMINAL POINT
	TERMINAL
	LOW VOLTAGE FUSE
	FUSIBLE TERMINAL BLOCK
	CONTROL POWER TRANSFORMER
	RECEPTACLE

NOTE: THE PLC I/O ADDRESS SHALL BE USED AS THE WIRING TAG SCHEME FOR ALL PANEL AND FIELD CONTROL WIRING. COORDINATE WITH ELECTRICAL CONTRACTOR.

I.S.A. STANDARD LETTER FUNCTIONS

SYMBOL	FIRST LETTER	SUCCEEDING LETTERS
A	ANALYSIS, ANALOG	ALARM
B	BURNER, FLAME	BATCH
C	CONDUCTIVITY, COMMAND	CONTROL (FEEDBACK TYPE)
D	DENSITY, SPECIFIC GRAVITY	
E	VOLTAGE	PRIMARY ELEMENT
F	FLOW RATE	RATIO
G	GAGING	GLASS
H	HAND, MANUAL	HIGH
I	CURRENT	INDICATE
J	POWER	SCAN
K	TIME, TIME SCHEDULE	CONTROL (NO FEEDBACK)
L	LEVEL, LIGHT	LOW
M	MOISTURE, HUMIDITY	MIDDLE, MODULATE
N		
O	OVERLOAD	ORIFICE
P	PRESSURE, VACUUM	POINT
Q	QUANTITY	TOTALIZE, INTEGRATE
R	RADIOACTIVITY	RECORD, PRINT, RECEIVE
S	SPEED, FREQUENCY, SOLENOID	SWITCH
T	TEMPERATURE, TURBIDITY	TRANSMIT, TRANSFORM
U	MULTIVARIABLE	MULTIFUNCTION
V	VIBRATION, VISCOSITY	VALVE, DAMPER, LOUVER
W	WEIGHT, FORCE	
X		
Y		RELAY, COMPUTE
Z	POSITION	DRIVE, ACTUATE

PROTECTIVE RELAY LEGEND

DEVICE NO.	DESCRIPTION
2	SYNC. TIMER 0-5 MIN.
25	SYNCHRONIZING
27	SHORT TIME UNDERVOLTAGE
32	REVERSE POWER RELAY
38	TEMPERATURE
40	LOSS OF EXCITATION
43	SELECTOR SWITCH
47	PHASE SEQUENCE & UNDERVOLTAGE
49	THERMAL
50/51	INSTANTANEOUS AND VERY INVERSE
51	VERY INVERSE
51G	INVERSE GROUND FAULT
51N	NEUTRAL OVERCURRENT
51V	OVERCURRENT RELAY WITH VOLTAGE RESTRAINT
52/CS	CONTROL SWITCH
59	INSTANTANEOUS OVERVOLTAGE
60	VOLTAGE BALANCE
62	TIME DELAY
64	SHORT TIME LOW PICK UP OVERVOLTAGE
67	DIRECTIONAL OVERCURRENT
69	LOCKOUT CONTROL SWITCH
78	OUT OF STEP
81	OVER/UNDER FREQUENCY RELAY
83	MULTI-CONTACT AUXILIARY
86/HR	MULTI-CONTACT AUX. HAND RESET
87	DIFFERENTIAL OVERCURRENT

SYMBOL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
PT	POTENTIAL TRANSFORMER	W	WATTMETER
CT	CURRENT TRANSFORMER	AP	ALARM POINT
A	AMMETER	CPT	CONTROL POWER TRANSFORMER
V	VOLTMETER	(2) (3)	NUMBER OF DEVICES REQUIRED
PF	POWER FACTOR METER	ETI	ELAPSED TIME METER

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL LEGEND AND ABBREVIATIONS

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

E-001

Bar Measures 1 inch, otherwise drawing not to scale

GENERAL NOTES:

1. ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN LIGHT LINE WEIGHT ON THE DRAWINGS ARE EXISTING ITEMS TO REMAIN. ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN HEAVY LINE WEIGHTS ARE NEW THIS CONTRACT.

2. ITEMS SHOWN CROSSHATCHED ON THE DRAWINGS ARE EXISTING ITEMS TO BE REMOVED.

3. ALL EQUIPMENT ARE CLASSIFIED AS "FIELD LOCATE", CHECK THE DRAWINGS OF OTHER TRADES FOR INTERFERENCE AND FOR LOCATIONS OF MOUNTING FLANGES, CONNECTIONS POINTS, ETC.

4. INSTALL A SINGLE CONDUCTOR INSULATED (RHW, THHN, OR XHHW) COPPER GROUND WIRE IN EACH CONDUIT, SIZE AS SHOWN ON DRAWINGS, OR AS A MINIMUM PER THE NATIONAL ELECTRICAL CODE. THIS GROUND WIRE SHALL BE CONNECTED AT EACH END TO THE EQUIPMENT GROUND. THIS ALSO INCLUDES INSTRUMENTATION DEVICES SUCH AS LEVEL, PRESSURE, FLOW TRANSMITTERS, LIMIT SWITCHES, CONDUITS, NETWORK AND I/O CABLES.

5. NO WIRES SHALL BE TERMINATED TO TERMINAL STRIPS, OR OTHER EQUIPMENT WITHOUT FIRST VERIFYING SIGNAL TYPE. DAMAGES RESULTING FROM LACK OF VERIFICATION SHALL BE BORNE BY CONTRACTOR. CONTRACTOR SHALL COORDINATE SIGNAL TYPE WITH I/O CARDS.

6. CONDUIT ROUTINGS SHOWN ON BACKGROUND PLANS, AND SITE PLANS ARE INTENDED ROUTINGS ONLY. EXACT CONDUIT ROUTINGS FOR ALL CONDUITS, AND LENGTH SHALL BE FIELD LOCATED AND VERIFIED BY THE CONTRACTOR.

7. RACEWAYS, PULLBOXES AND JUNCTION BOXES TO BE INSTALLED WITH CHANNEL STRUT. MINIMUM STRUT LENGTH TO BE 12 INCHES, WHERE POSSIBLE.

8. CONDUIT ENTERING CONTROL PANELS AND ELECTRICAL EQUIPMENT ENCLOSURES SHALL BE FILLED WITH DUCT SEAL, INCLUDING OPENINGS IN BOTTOM OF PANEL.

9. CABLES (INCLUDING FIBER, ETHERNET, CONTROL WIRE, ETC.) WHERE PASSING THROUGH A PULLBOX SHALL BE LABELED AND COMPLETELY IDENTIFIED WITH IDENTIFICATION NUMBERS AND ORIGINATION/DESTINATION. THIS ALSO INCLUDES ALL CABLE BUNDLES ENTERING CONTROL PANELS, PULLBOXES, ETC.

10. FIELD CONTROL WIRING BETWEEN MOTOR CONTROL CENTERS, FIELD STARTERS, FIELD CONTACTORS, AND CONTROL PANELS SHALL BE SINGLE STRANDED COPPER #14AWG MINIMUM. HARDWIRED POINTS SHALL BE PAIRED AND COLOR CODED PER THE FOLLOWING.
    DIGITAL INPUTS : 1 BLACK, 1 RED CONDUCTOR
    DIGITAL OUTPUTS : 1 BLUE, 1 YELLOW CONDUCTOR
    HARDWIRED SAFETIES/INTERLOCKS: 2 PURPLE CONDUCTORS
11. PROVIDE ALL LABOR AND MATERIALS REQUIRED TO INSTALL ELECTRICAL SYSTEM. THE DESIGN AND METHODS OF INSTALLATION OF THE WIRING MATERIALS, ELECTRICAL EQUIPMENT AND ACCESSORIES SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE AND SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS. ALL MATERIALS SHALL BE UL LISTED AND LABELED.

12. PROCURE ALL NECESSARY PERMITS AND LICENSES. OBSERVE AND ABIDE BY APPLICABLE LAWS, ORDINANCES, AND RULES OF OSHA, EPA, AND THE STATE (POLITICAL SUBDIVISION) WHERE THE WORK IS DONE.

13. UPON COMPLETION OF THE WORK, SECURE CERTIFICATES OF INSPECTION FROM THE INSPECTOR HAVING JURISDICTION AND SUBMIT THREE COPIES TO THE OWNER. PAY THE FEES FOR THE PERMITS, INSPECTIONS, LICENSES AND CERTIFICATIONS.

14. CONDUIT SHALL BE PVC COATED RIGID GALVANIZED STEEL (3/4" MINIMUM SIZE) CONFORMING TO ANSI SPECIFICATION C80.1. JUNCTION BOXES, OUTLET BOXES AND FITTINGS SHALL BE CAST TYPE WITH THREADED HUBS COMPLETE WITH GASKETS AND CAST COVERS. PROVIDE STAINLESS STEEL RACKS/SUPPORT FRAMES WHERE REQUIRED FOR SUPPORT OF ELECTRICAL CONDUIT AND EQUIPMENT. CONDUIT JOINTS SHALL BE MADE WATERTIGHT BY COATING FACTOR AND FIELD THREADS WITH A ZINC POWDER PAINT.

15. WHERE FLEXIBLE CONNECTIONS ARE REQUIRED, LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL BE USED WHERE PERMITTED BY THE NATIONAL ELECTRICAL CODE.

16. CONDUIT AND ALL MATERIAL SHALL BE UL LABELED AND THE INSTALLATION SHALL CONFORM TO THE NEMA CLASSIFICATION NOTED ON THE DRAWINGS. AS A MINIMUM, EQUIPMENT ENCLOSURES SHALL BE NEMA 4 OR 7 UNLESS OTHERWISE NOTED ON DRAWINGS. ELECTRICAL WORK WITHIN HAZARDOUS AREAS SHALL COMPLY WITH NATIONAL ELECTRICAL CODE ARTICLE 500.

17. 600V WIRE SHALL BE SINGLE CONDUCTOR WITH STRANDED COPPER CONDUCTORS OF SIZE (AWG) NOTED ON THE DRAWINGS WITH INSULATION:

SIZE	INSULATION	COLOR
NO. 6 AWG AND LARGER	RHW-USE,	COLOR CODE PER SPECIFICATIONS
NO. 8, 10, 12 (7 STRAND)	RHW-USE,OR XHHW	COLOR CODE PER SPECIFICATIONS
NO. 14 (19 STRAND)	THHN, THWN (MTW)	COLOR CODE PER SPECIFICATIONS

18. GROUND CONDUCTORS SHALL BE PROVIDED IN EACH CONDUIT. CONNECT GROUND WIRE AT EACH END TO PANEL BOX, OUTLET BOX AND DEVICE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE ARTICLE 250.

19. ALL BARE METAL SURFACES SUBJECT TO RUSTING SHALL BE PRIMED AND PAINTED WITH GALVANIZING COMPOUND. PAINT SHALL BE EQUAL TO RUST-OLEUM #7785 APPLIED OVER PRIMER #7769 OR #7773. FACTORY FINISHES SHALL BE TOUCHED UP, PRIMED AND PAINTED TO REMOVE ANY MARKS AND SCRATCHES.

20. SUBMIT FOR ENGINEER'S APPROVAL 6 COPIES OF SHOP DRAWINGS, SPECIFICATIONS, AND CATALOG SHEETS DEMONSTRATING COMPLIANCE WITH THE CONTRACT. ALSO SUBMIT 6 COPIES OF INSTALLATION, OPERATION, AND MAINTENANCE INSTRUCTIONS INCLUDING TEST DATA, WIRING DIAGRAMS, AND SCHEMATICS.

21. AT COMPLETION, TEST AND DEMONSTRATE OPERATION OF ALL EQUIPMENT FOR ENGINEER'S AND OWNER'S ACCEPTANCE. TELEMETRY PANEL SHALL BE TESTED BY SIGNALING FALSE ALARMS.

22. POWER SHALL BE MAINTAINED TO ALL AREAS OF THE SITE AT ALL TIMES DURING CONSTRUCTION. ANY POWER SHUTDOWN SHALL BE COORDINATED AND SCHEDULED WITH THE OWNER. CONTRACTOR TO PROVIDE BYPASS PUMPING OR STORAGE/REMOVAL DURING POWER OUTAGES. TO MAINTAIN SERVICE TO RESIDENTS.

23. ALL NEW PANELBOARDS AND CONTROL PANELS SHALL BE DEAD FRONT SAFETY TYPE IN NEMA 4X STAINLESS STEEL ENCLOSURES WITH MOLDED CASE CIRCUIT BREAKERS, INCLUDING MAIN WHERE INDICATED. INCLUDE SEPARATE NEUTRAL AND GROUND BUSES. CIRCUIT BREAKERS SHALL BE 20A UNLESS OTHERWISE NOTED.

24. COORDINATE ELECTRICAL CONNECTION REQUIREMENTS AND ALL CONDUIT WITH OTHER TRADES.

25. INSTALL SIGN ON TRANSFER SWITCHES INDICATING "CAUTION - DO NOT OPEN UNDER LOAD".

27. PROVIDE SIGNAGE/PLACARD/TAGS AS INDICATED ON THE DRAWINGS DETAILS.

28. OUTSIDE EQUIPMENT MUST BE RATED FOR -40 TO 150 DEG F.

29. SPACE CONSTRAINTS: DRAWINGS SHOW THE LAYOUT OF GENERAL POWER AND CONTROLS EQUIPMENT WITH THE SPACE AVAILABLE FOR NEW EQUIPMENT. CONTRACTOR SHALL ASSUME THAT THE MARKED AREAS ARE THE BOUNDARIES FOR NEW EQUIPMENT PROVIDED UNDER THIS CONTRACT. CONTRACTOR IS RESPONSIBLE FOR SELECTING EQUIPMENT THAT WILL FIT WITHIN THE BOUNDARIES.

30. CONDUIT FILL MUST MEET NFPA REQUIREMENTS. (WHERE NFPA IS SILENT CONDUIT FILL MUST NOT EXCEED 40%)

31. CONDUIT TYPES:
    31.1 INSTRUMENT SIGNAL CONDUIT: SHIELDED SIGNAL WIRES FOR 4-20 MA TYPE INSTRUMENTS OR THERMOCOUPLE WIRES ASSIGNED TO THE SAME CONTROL PANEL MAY BE RUN IN THE SAME CONDUIT. NO OTHER WIRES WILL BE PERMITTED IN AN INSTRUMENT SIGNAL/2-WIRE CONDUIT.

    31.2 CONTROL CIRCUIT CONDUIT (120VAC). 120VAC CONTROL CIRCUIT WIRES USED FOR DISCRETE PLC INPUT OR MCC CONTROL ASSIGNED TO THE SAME CONTROL PANEL/MCC MAY BE RUN IN THE SAME CONDUIT. NO OTHER WIRES WILL BE PERMITTED IN THE CONTROL CIRCUIT CONDUIT.

    31.3 CONTROL CIRCUIT CONDUIT (24VDC). 24VDC CONTROL CIRCUIT WIRES USED FOR DISCRETE PLC INPUT OR MCC CONTROL ASSIGNED TO THE SAME CONTROL PANEL/MCC MAY BE RUN IN THE SAME CONDUIT. NO OTHER WIRES WILL BE PERMITTED IN THE CONTROL CIRCUIT CONDUIT.

32. CONTROL PANELS SHALL HAVE DOOR HANDLES WITH LOCKS. LOCKS SHALL BE KEYED ALIKE AS COORDINATED WITH OWNER.

33. WITHIN CONTROL PANELS, NAMEPLATES SHALL BE PROVIDED TO INDICATE DIFFERENT VOLTAGE LEVELS WITHIN PANELS. ALSO, A NAME TAG (YELLOW BACKGROUND, RED LETTERING) SHALL BE LOCATED ON THE FRONT OF EVERY PANEL INDICATING THAT WHEN MAIN PANEL IS DISCONNECTED 120V IS STILL PRESENT FROM FIELD DEVICES (YELLOW WIRING/ISOLATED INPUT CARDS.)

34. PHENOLIC TAGS ON FACE OF PANELS TO HAVE WHITE BACKGROUND AND BLACK LETTERING (EXCEPT WARNING TAGS; YELLOW BACKGROUND RED LETTERING).

35. STRUT, STRAPS, FITTINGS, BOLTS, WASHERS, BOXES, THREADED ROD AND ASSOCIATED MATERIALS SHALL BE 304 STAINLESS STEEL.

36. CONDUIT RUNS BETWEEN SER DISCONNECT RACK, ATS EQUIPMENT RACK, GENERATOR, AND EXISTING CONTROL PANEL LOCATIONS SHALL BE DIRECT-BURIED.

37. FACILITY SCADA SYSTEM INTEGRATION, PROGRAMMING, PLC HARDWARE BY OTHER. ELECTRICAL CONTRACTOR TO PROVIDE ALL FIELD WIRING, RACEWAYS AND DEVICE INSTALLATION.

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

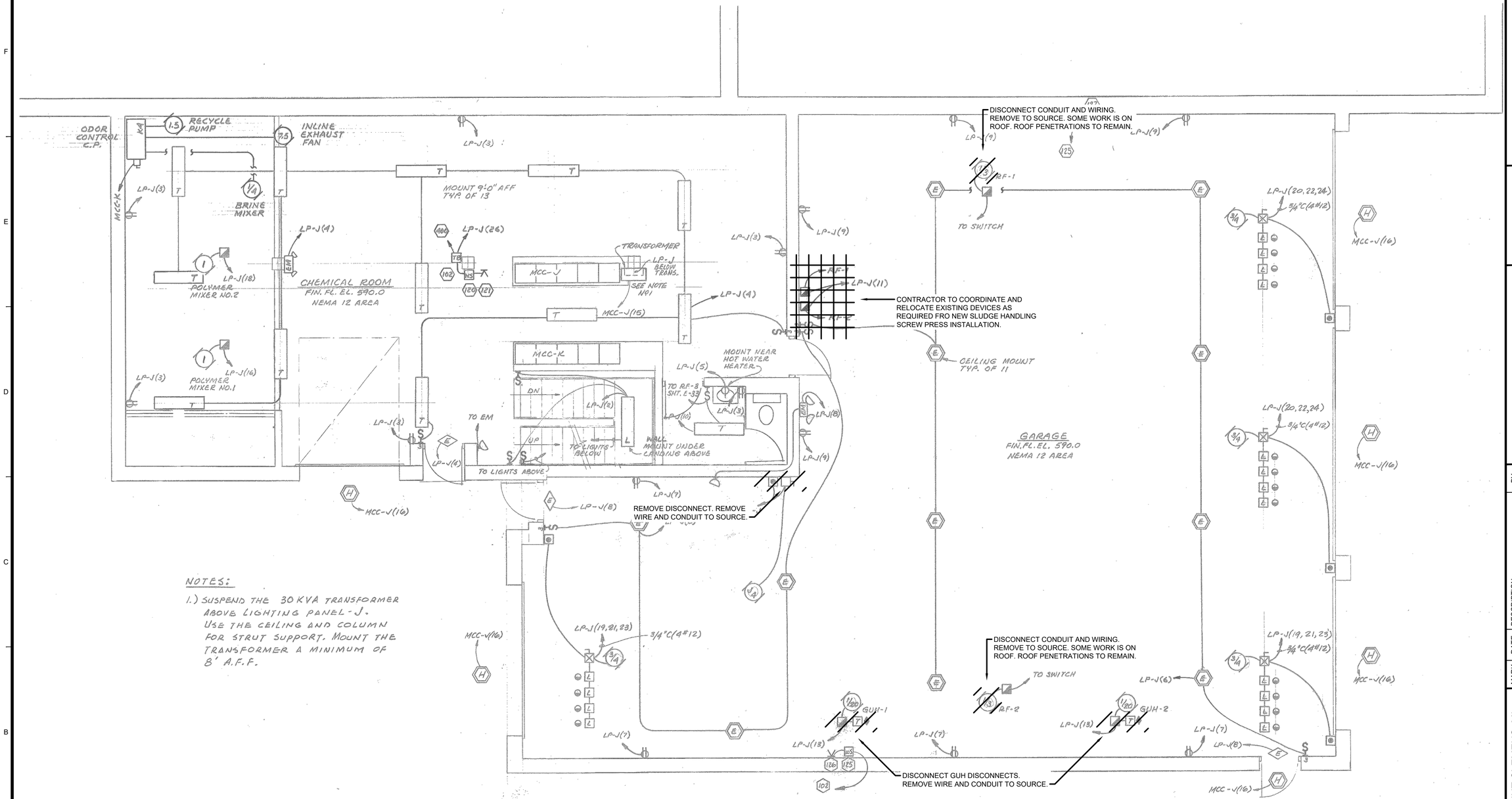
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL SPECIFICATIONS

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

E-002

Bar Measures 1 inch, otherwise drawing not to scale



NOTES:

1.) SUSPEND THE 30 KVA TRANSFORMER ABOVE LIGHTING PANEL-J. USE THE CEILING AND COLUMN FOR STRUT SUPPORT. MOUNT THE TRANSFORMER A MINIMUM OF 8' A.F.F.

FIRST FLOOR PLAN - DEMO

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

0 2' 4' 8'

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

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED.

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MARK	DATE	DESCRIPTION
	02/05/24	ISSUED FOR BIDS

BY

CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL SLUDGE HANDLING 1ST FLOOR DEMO PLAN

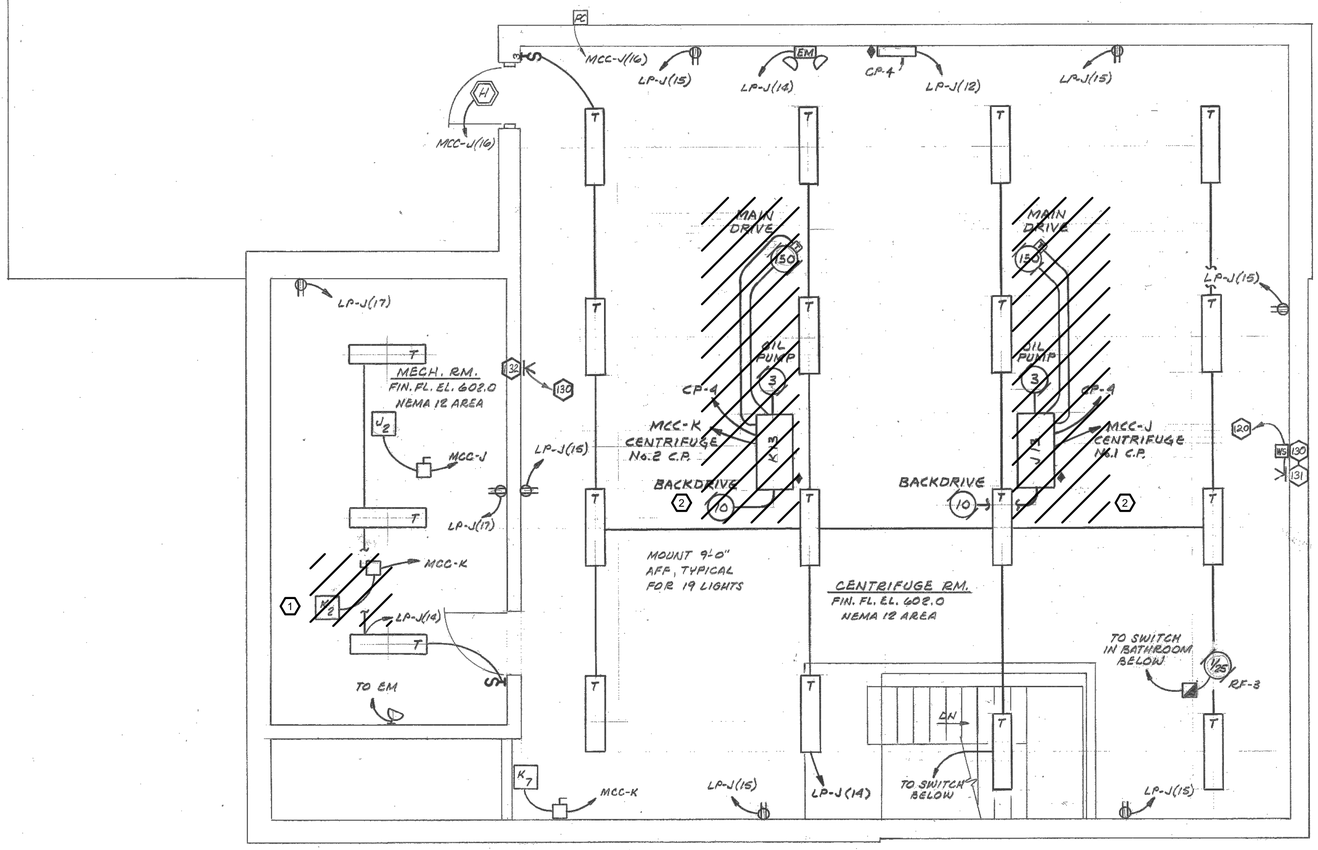
PROJ:	200-12747-23001
DESN:	MAF
DRWN:	VLM
CHKD:	

ED101

Bar Measures 1 inch, otherwise drawing not to scale

KEYNOTES:

1. DISCONNECT ALL POWER WIRING AND CONDUIT ASSOCIATED WITH (E) GHV-2 AND REMOVE TO SOURCE MCC-K.
2. REMOVE CONDUIT AND WIRE FROM EXISTING CENTRIFUGE.



SECOND FLOOR PLAN - DEMO

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

N

0 2' 4' 8'

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

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED.

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	02/05/24	ISSUED FOR BIDS

BY

CITY OF MOUNT CLEMENS, MI

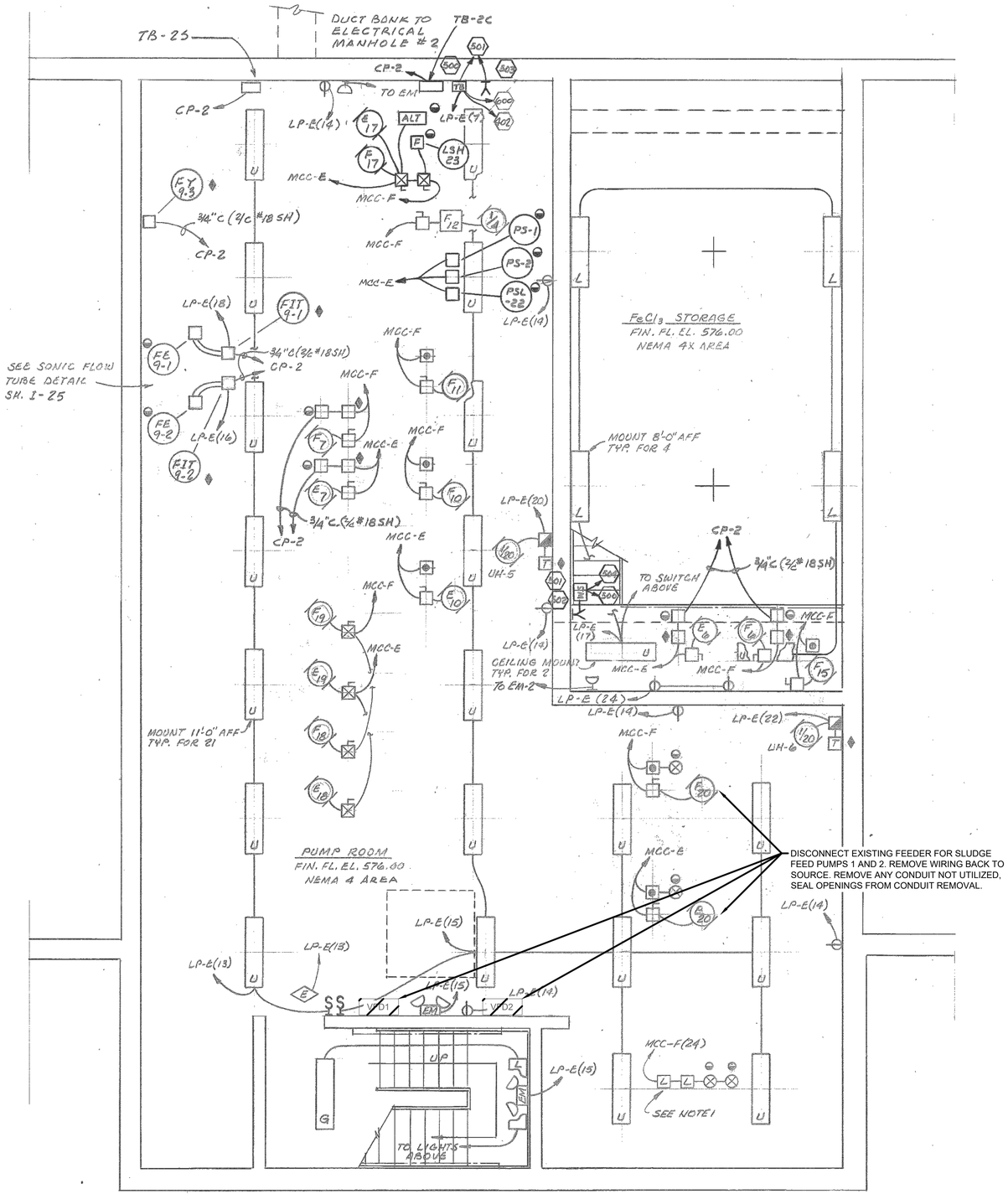
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL
SLUDGE HANDLING 2ND FLOOR DEMO PLAN

PROJ:	200-12747-23001
DESN:	MF
DRWN:	VLM
CHKD:	

ED102

Bar Measures 1 inch, otherwise drawing not to scale



BASEMENT FLOOR PLAN - DEMO

SCALE: 1/4" = 1'

0 2' 4' 8'

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

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED.

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

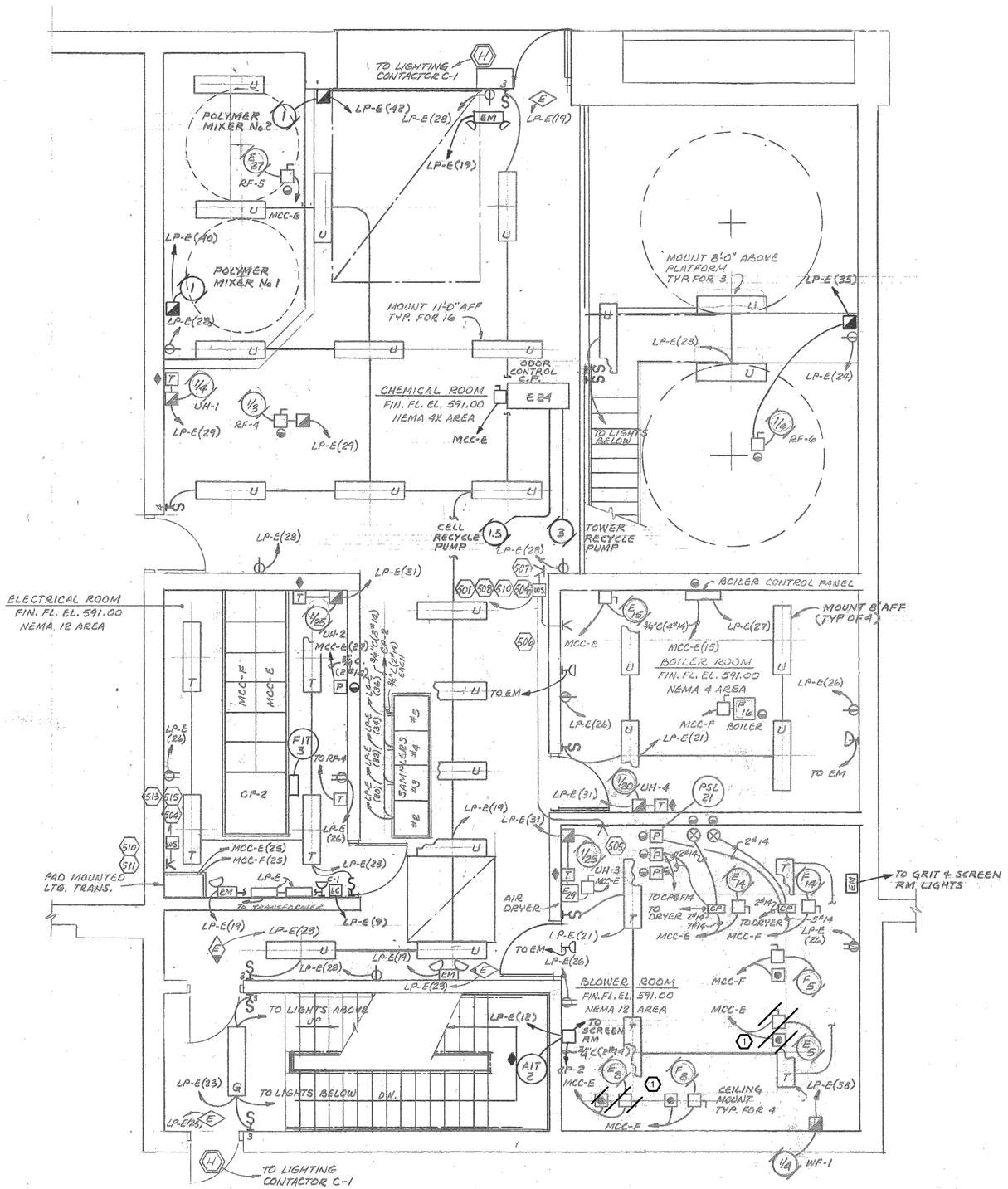
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL FILTER BUILDING BASEMENT DEMO PLAN

PROJ:	200-12747-23001
DESN:	MF
DRWN:	VLM
CHKD:	

ED103

Bar Measures 1 inch, otherwise drawing not to scale



FILTER BUILDING FIRST FLOOR PLAN - DEMO

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

KEYNOTES:

1. DISCONNECT AND REMOVE WIRE TO SOURCE.

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED.

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

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	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL FILTER BUILDING 1ST FLOOR DEMO PLAN

PROJ:	200-12747-23001
DESN:	MAF
DRWN:	VLM
CHKD:	

ED104

Bar Measures 1 inch, otherwise drawing not to scale

NOTES:

1. THE CONTRACTOR SHALL PROVIDE FOR THE SUM OF $3000 IN THIS PROJECT FOR PAYMENT TO THE POWER COMPANY FOR CONSTRUCTION OF ELECTRICAL SERVICES AS SHOWN ON THE DRAWINGS. THE SUM PAID TO THE CONTRACTOR SHALL BE ADJUSTED UPWARDS OR DOWNWARDS TO MEET THE ACTUAL INVOICE AMOUNT. A COPY OF THE INVOICE MUST BE PRESENTED FOR REIMBURSEMENT. CONTRACTOR MARK UP (FEE) ON THE AMOUNT OF THE ADJUSTMENT WILL NOT BE GRANTED. THE ALLOWANCE SHALL BE USED FOR, BUT NOT LIMITED TO RECONNECTING ELECTICAL SERVICE AT THE EXISTING POWER DROP.
2. THE CONTRACTOR SHALL CALL BY PHONE THE UNDERGROUND UTILITIES LOCATING SERVICE 72 HOURS IN ADVANCE BEFORE DIGGING, DRILLING, OR BLASTING. WHEN AN AREA DOES NOT HAVE AN UNDERGROUND UTILITIES LOCATING SERVICE THE CONTRACTOR SHALL CALL THE LOCAL ELECTRIC, GAS AND WATER UTILITIES.

CLARA ST.

PARKING

1750 CLARA ST.

EXIST. CONTROL BLDG

MCC-C

MCC-D

1-1"C. SIGNAL
1-1"C. SPARE
1-1"C. POWER (MCC-D)
CP-1

ICP-3A

EXIST. AP-2

CP-3

FLAGPOLE

POST

MCC-E

CHLORINE CONTACT TANK 001

CHLORINE CONTACT TANK 002

(3/4" PVC, RGS 3#6, 2#12)

DB

MCC-F

TO LIGHTING CONTACTOR C-1 & LP-E (53

(1 LP-E (53) 3/4"C. PVC, RGS (3#6, 2#12)

EXISTING CONDUITS

EXIST. PRIMARY DIGESTER

MCC-L

EXIST. SECONDARY DIGESTER

SLUDGE STORAGE TANKS NO. 1 NO. 2

CP-4

SLUDGE HANDLING BLDG

MCC-J

MCC-K

MCC LOAD (4)
RAW SEWAGE INFLUENT SAMPLE PUMP IN WETWELL

EXIST. BLOWER/ FILTER BLDG

SWITCHGEAR EXIST. MCC-3

XMFR

UTILITY POLE PRIMARY SWITCH

583± BOTT.

584± BOTT.

EXISTING UNDERGROUND CABLES AND CONDUIT

E900

CP-2

MCC-F

MCC-G

PRELIMINARY/ FILTER BLDG

MH #2

AREA OF WORK

EXIST. LAKELET NO. 2

EXIST. LAKELET NO. 2

TO LIGHTING CONTACTOR C-1 & LP-E (53)

DB

3/4"C. PVC, RGS (3#6, 2#12)

EX. LAKELET NO. 1

AREA KEY

1	2
3	4

000 900 1800 — 1000 — 500 — 000

N

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED.

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MARK	DATE	DESCRIPTION
	02/05/24	ISSUED FOR BIDS

BY

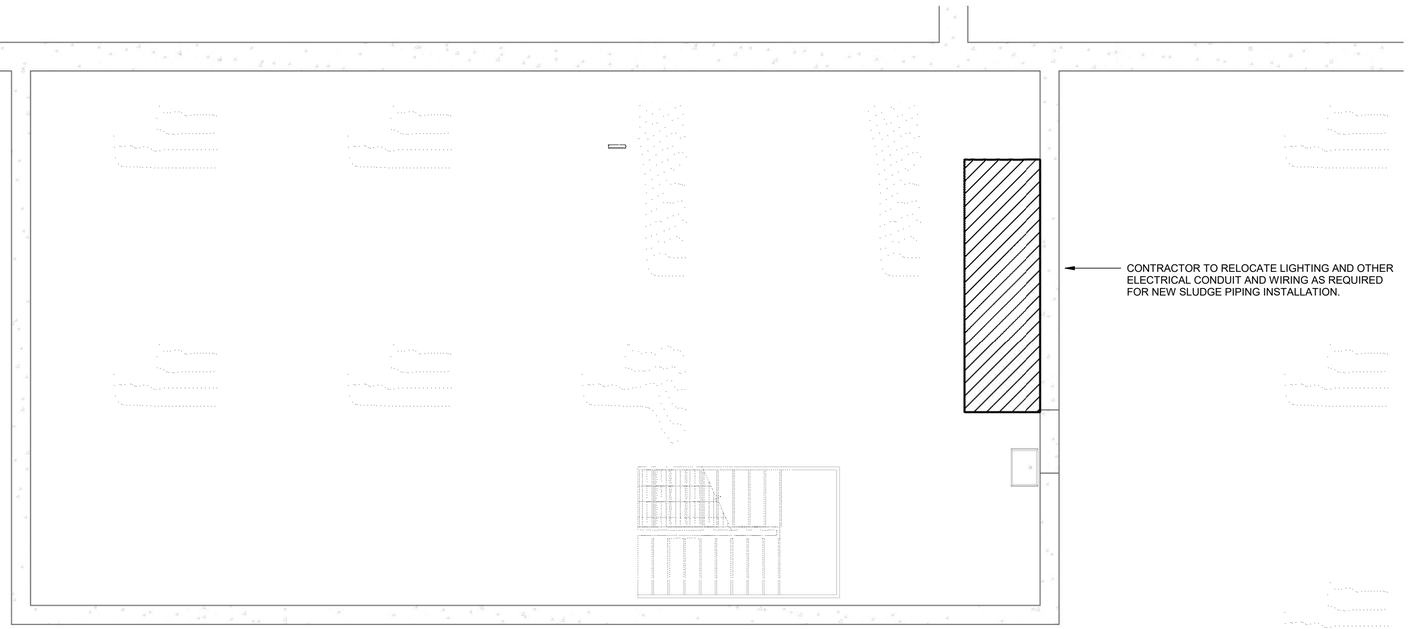
CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL OVERALL SITE PLAN

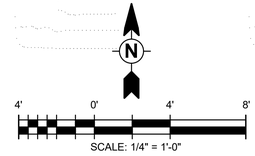
PROJ:	200-12747-23001
DESN:	MF
DRWN:	VLM
CHKD:	

E-100



BASEMENT

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



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

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Project Status

MARK	DATE	DESCRIPTION	BY
	02/05/23	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

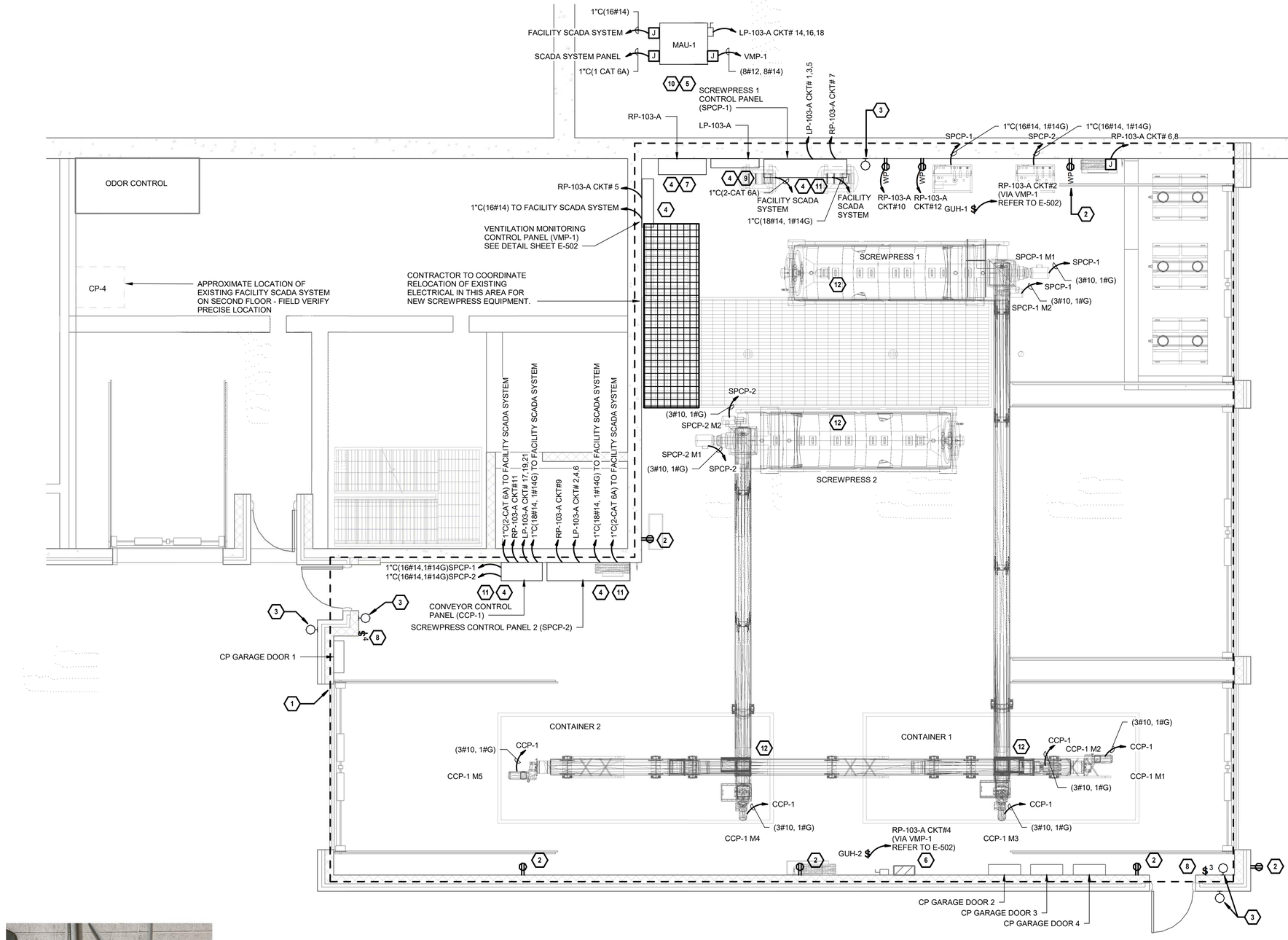
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL SOLIDS BUILDING BASEMENT PLAN

PROJ:	200-12747-23001
DESN:	MAF
DRWN:	VLM
CHKD:	

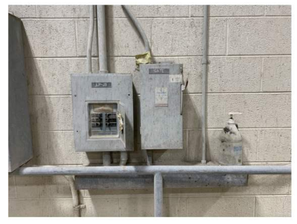
E-101

Bar measures 1 inch, otherwise drawing is not to scale



KEYNOTES

1. ALL NEW ELECTRICAL EQUIPMENT IN BOUNDED AREA TO HAVE A MINIMUM NEMA 4X RATING.
2. EXISTING DUPLEX RECEPTACLES TO BE REMOVED AND REPLACED WITH 20 AMP RATED GFCI SPEC GRAD RECEPTACLES AND CAST IN USE COVERS.
3. AIR MONITORING NOTIFICATION. REFER TO DETAIL SHEET E-500.
4. MOUNT PANELS BACKSPACED OFF WALL WITH 1-5/8" STAINLESS STEEL STRUT, ARRANGED TO DRAIN.
5. PROVIDE WIRING TO VMP-1 FOR INTERLOCKS SHOWN ON E-502.
6. CONTRACTOR TO PROVIDE ENCLOSURE ABOUT NEMA 1 EQUIPMENT TO ISOLATE FROM INGRESS OF MOISTURE AND MAINTAIN ACCESSIBILITY AND CLEARANCES PER NFPA 70 NEC.
7. PROVIDE EATON 30 KVA MINI POWER CENTER P48G28T3024XCUS64X OR APPROVED EQUIVALENT.
8. REMOVE AND REPLACE EXISTING TOGGLE SWITCH AND REPLACE WITH 20 AMP SPEC GRADE SWITCH AND SINGLE ACTION CAST WEATHER PROOF COVER.
9. PROVIDE EATON XLPBDS43XXXXXXX-3M225-X 225A 480V 3 PHASE 4 WIRE PANELBOARD WITH MCB, NEMA 4X, 42 SPACE OR APPROVED EQUIVALENT.
10. MAU-1 TO BE PROVIDED WITH INTEGRAL SERVICE DISCONNECT. PROVIDE SINGLE POINT CONNECTION FOR POWER, PROVIDE CONDUIT AND WIRING FOR SCADA POINTS LISTED ON M-901. PROVIDE WIRING AND RELAY IF REQUIRED FROM MAU-1 FACTORY INSTALLED DUCT SMOKE DETECTOR TO SCADA SYSTEM AND ST-MAU-1. RELAYS FOR DUCT SMOKE DETECTOR TO BE MR-101 OR APPROVED EQUAL.
11. CONTRACTOR TO PROVIDE FIELD WIRING AS SHOWN ON INSTRUMENTATION DRAWINGS. CONTRACTOR TO PROVIDE CONDUIT AND WIRING FOR FACILITY SCADA SYSTEM POINTS LISTED ON INSTRUMENTATION DRAWINGS. IN ADDITION TO WIRING SHOWN ON ELECTRICAL DRAWINGS.
12. SCREWPRESS SYSTEM FIELD DEVICES TO BE INSTALLED BY ELECTRICAL CONTRACTOR. REFER TO HUBER INSTRUMENATION DRAWINGS FOR A COMPLETE LIST OF FIELD DEVICES AND FIELD WIRING TO BE INSTALLED. PROVIDE CONDUIT AND WIRE AS REQUIRED.



6

FIRST FLOOR

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

N

4' 0' 4' 8'

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

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Project Status

MARK	DATE	DESCRIPTION
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BY

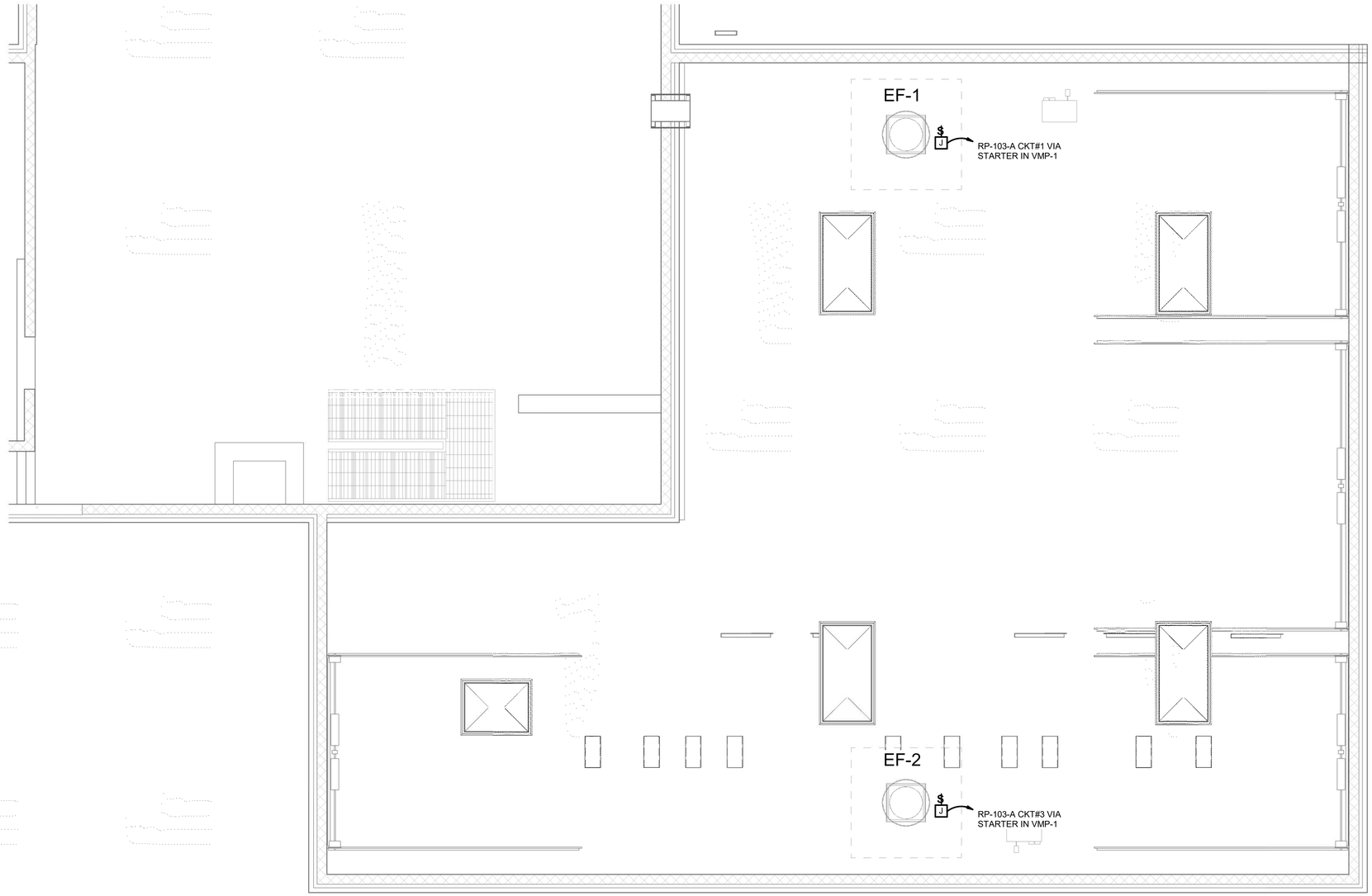
CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL SOLIDS BUILDING FIRST FLOOR PLAN

PROJ:	200-12747-23001
DESN:	MAF
DRWN:	VLM
CHKD:	

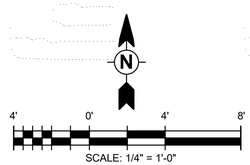
E-102

Bar measures 1 inch, otherwise drawing is not to scale



ROOF

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



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

Bar measures 1 inch, otherwise drawing is not to scale

TETRA TECH
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TEL: (517) 316-3963 FAX: (517) 484-8140

Project Status

MARK	DATE	DESCRIPTION	BY
	02/05/23	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

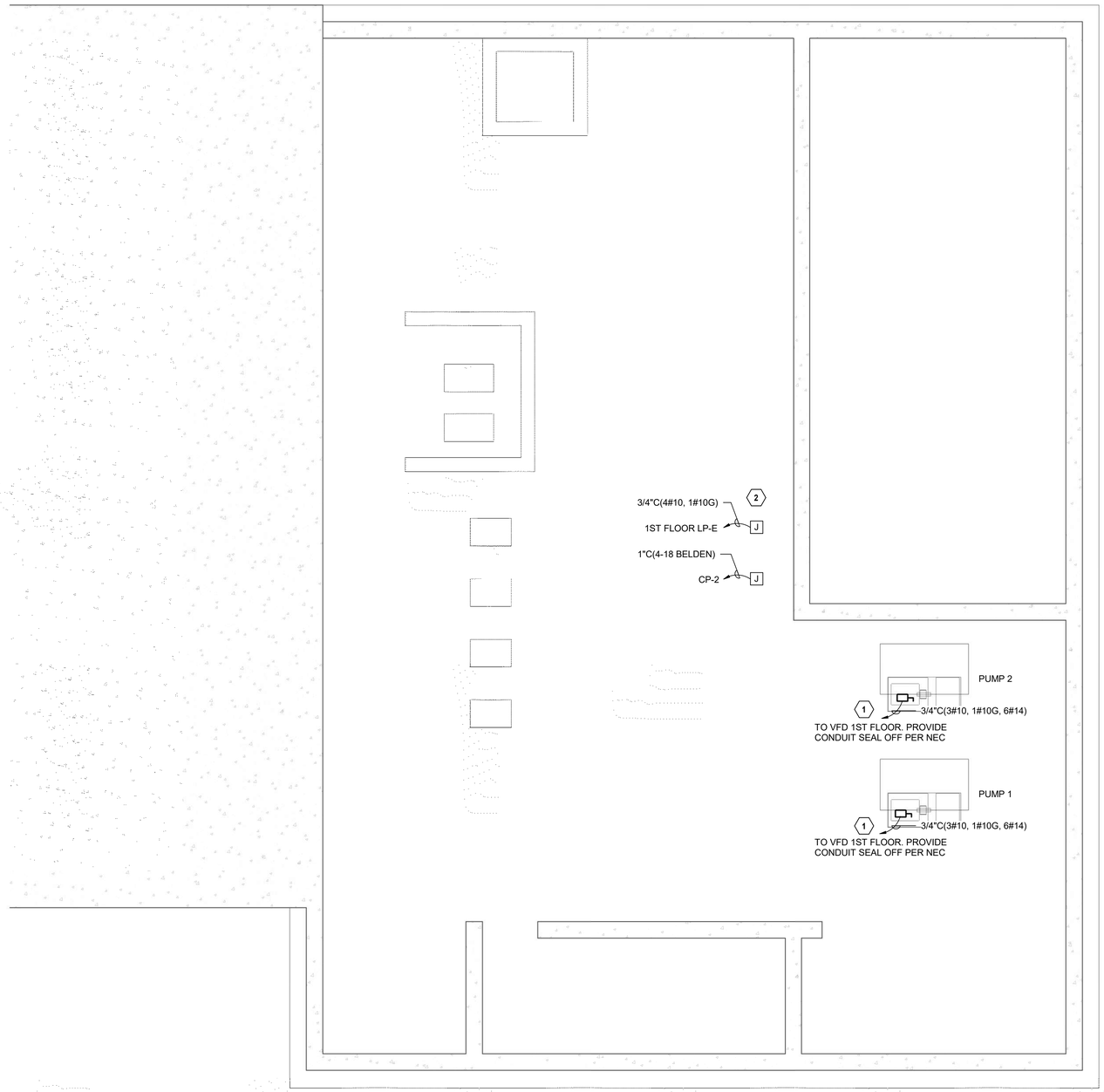
ELECTRICAL SOLIDS BUILDING ROOF PLAN

PROJ:	200-12747-23001
DESN:	MAF
DRWN:	VLM
CHKD:	

E-103

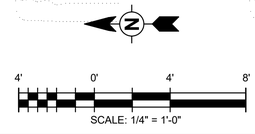
KEYNOTES

1. FURNISH AND INSTALL NEW 600V 30 AMP 3 PHASE CLASS 1 DIV II RATED DISCONNECTS-PROVIDE EARLY BREAK CONTACTS AND HARDWIRE TO VFD-RE INSTALL SALVAGED ON/OFF SWITCHES-CONTRACTOR TO INSTALL WITH PROPER WORKIGN CLEARANCES PER NFPA 70 NEC.
2. FURNISH AND INSTALL POWER AND SIGNALING FOR (2) NEW FLOW METERS. FLOW METERS PROVIDED BY OTHERS.



BASEMENT

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



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EAST LANSING, MI 48823
TEL: (517) 316-3963 FAX: (517) 484-8140

Project Status

MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL FILTER BUILDING BASEMENT PLAN

PROJ:	200-12747-23001
DESN:	MAF
DRWN:	VLM
CHKD:	

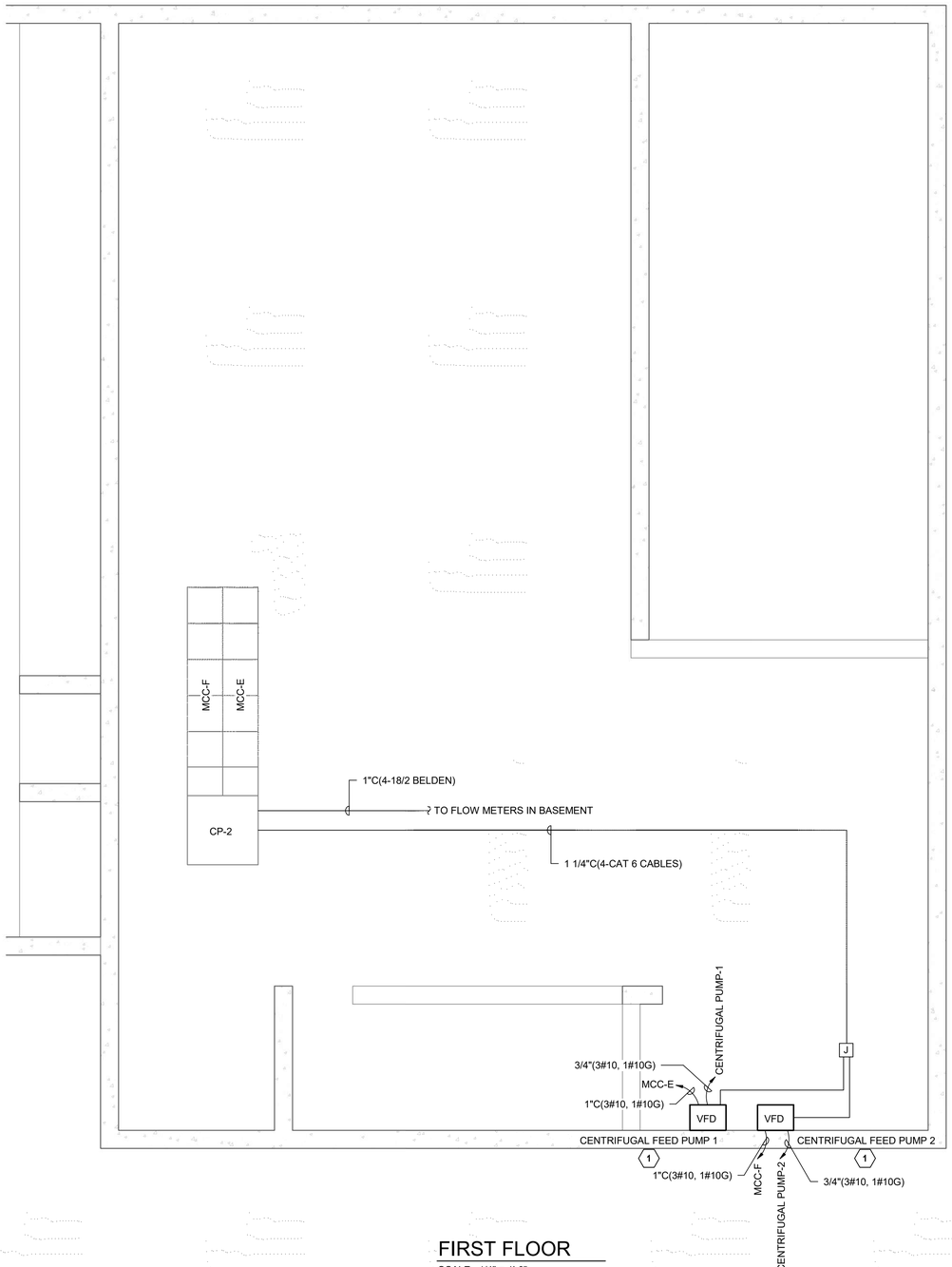
E-104

1/31/2024 9:57:13 AM Autodesk Docs://200-12747-23001 Mt Clemens WWTP/E-FILTER BLDG-12747-23001-2023.rvt

Bar measures 1 inch, otherwise drawing is not to scale

KEYNOTES

1. CONTRACTOR TO COORDINATE PROPER WORKING CLEARANCES PER NFPA 70 NEC. DRIVES TO BE MOUNTED EITHER ON RACKS OR BACKSPACED OFF WALL WITH UNISTRUT. FEED FROM EXISTING BREAKERS LOCATED IN MCC.



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

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EAST LANSING, MI 48823
TEL: (517) 316-3963 FAX: (517) 484-8140

Project Status

MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL FILTER BUILDING FIRST FLOOR PLAN

PROJ:	200-12747-23001
DESN:	MAF
DRWN:	VLM
CHKD:	

E-105

4' 0' 4' 8'
SCALE: 1/4" = 1'-0"

Bar measures 1 inch, otherwise drawing is not to scale

1/31/2024 9:57:14 AM Autodesk Docs://200-12747-23001 Mt Clemens WWTP/E-FILTER BLDG-12747-23001-2023.rvt

Panel: LP-103-A

Location: SLUDGE HANDLING RM 103
Supply From: MCC-J
Mounting: Surface

Volts: 480/277 V
Phases: 3
Wires: 4

A.I.C. Rating: 22000
Main Breaker Rating: MCB 225A
Main BUS Rating: 250

CKT	Circuit Description	Wire & Conduit Size	Trip	Poles	A		B		C		Poles	Trip	Wire & Conduit Size	Circuit Description	CKT
1	SCREWPRESS CONTROL PANEL 1	3#10,1#10G - 1"C	20	3	13301.00	13301.00					3	20	3#10,1#10G - 1"C	SCREWPRESS CONTROL PANEL 2	2
3							13301.00	13301.00							4
5									13301.00	13301.00					6
7	SPARE		30	3	1600.00	1600.00					3	30		SPARE	8
9							1600.00	1600.00							10
11									1600.00	1600.00					12
13	POLYMER PUMPS	2#10,1#10G - 3/4"C	20	1	1800.00	700.00					3	20	3#10,1#10G - 1"C	MAU-1	14
15	POLYMER PUMPS	2#12,1#12G - 3/4"C	20	1			1800.00	700.00							16
17									0.00	700.00					18
19	CONVEYOR CONTROL PANEL	3#10,1#10G - 1"C	20	3	12500.00	0.00					3	30	FACTORY CABLE ASSEMBLY	SPD	20
21							12500.00	0.00							22
23	SPARE		20	1					12500.00	0.00					24
25	SPARE		20	1	0.00	0.00					1	20			26
27	-						0.00	0.00			1	20			28
29	-								0.00	0.00	1	30			30
31	-				0.00	0.00					1	30			32
33	-						0.00	0.00			1	20			34
35	-								0.00	0.00	1	20			36
37	-				0.00						3	30			38
39	-						0.00				-			-	40
41	-										-			-	42
				Total Load:	44802.00 VA		44802.00 VA		43002.00 VA						
				Total Amps:	161.74 A		161.74 A		155.24 A						

Panel: RP-103-A

Location: SLUDGE HANDLING RM 103
Supply From: MCC-J
Mounting: Surface

Volts: 208/120 V
Phases: 3
Wires: 4

A.I.C. Rating: 10kA
Main Breaker Rating: 80A
Main BUS Rating: 80A

CKT	Circuit Description	Wire & Conduit Size	Trip	Poles	A		B		C		Poles	Trip	Wire & Conduit Size	Circuit Description	CKT
1	EF-1	3/4" C 2#10,1#10 GND.	20	1	400.00	200.00					1	20	3/4" C 2#10,1#10 GND.	GUH-1	2
3	EF-2	3/4" C 2#10,1#10 GND.	20	1			400.00	200.00			1	20	3/4" C 2#10,1#10 GND.	GUH-2	4
5	VMP-1	3/4" C 2#10,1#10 GND.	20	1					400.00	1800.00	1	20	3/4" C 2#10,1#10 GND.	N.E. POLYMER GENERAL USE	6
7	SCREWPRESS CONTROL PANEL 1	3/4" C 2#10,1#10 GND.	20	1	1600.00	1800.00					1	20	3/4" C 2#10,1#10 GND.	N.E. POLYMER GENERAL USE	8
9	SCREWPRESS CONTROL PANEL 2	3/4" C 2#10,1#10 GND.	20	1			1600.00	1000.00			1	20	3/4" C 2#10,1#10 GND.	COMPRESSOR 1	10
11	SPARE		20	1						1000.00	1	20	3/4" C 2#10,1#10 GND.	COMPRESSOR 2	12
13	SPARE		20	1							1	20		SPARE	14
15	SPARE		20	1							1	20		SPARE	16
17	-		20	1							1	20		-	18
19	-		20	1							1	20		-	20
21	-		20	1							1	20		-	22
23	-		20	1							1	20		-	24
25	-		20	1							1	20		-	26
27	-		20	1							1	20		-	28
29	-		20	1							1	20		-	30
31	-		20	1							1	20		-	32
33	-		20	1							1	20		-	34
35	-		20	1							1	20		-	36
37	-		20	1							3	30	FACTORY CABLE ASSEMBLY	SPD	38
39	-		20	1							-	-			40
41	-		-	-							-	-			42
			Total Load:		4000.00 VA		3200.00 VA		3200.00 VA						
			Total Amps:		33.33 A		26.67 A		26.67 A						

* AIC RATING FOR POWER CENTER 480V FEED MAY DIFFER FROM 208V SECTION AIC RATINGS. CONTRACTOR TO PROVIDE MAIN BREAKER WITH APPROPRIATE AIC RATING PER COORDINATION STUDY.

TETRA TECH
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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

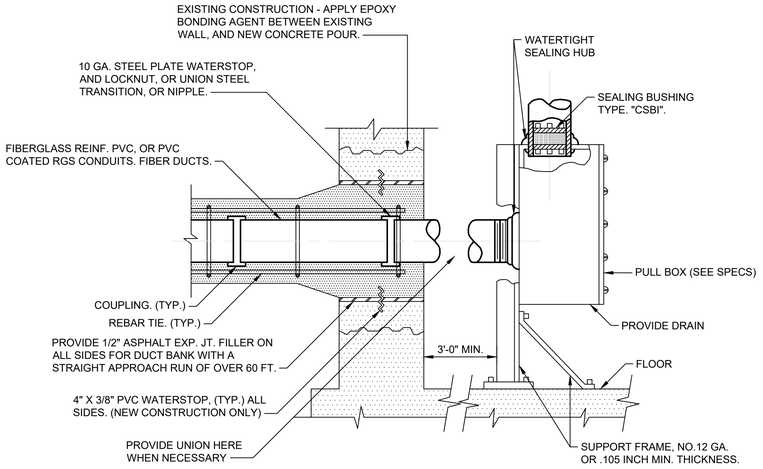
CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL PANEL SCHEDULES

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

E-401

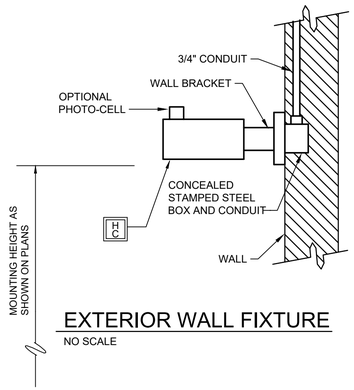
Bar Measures 1 inch, otherwise drawing not to scale



EXISTING, OR NEW CONSTRUCTION FOR WIRE SIZE NO.4 OR LARGER ONLY.

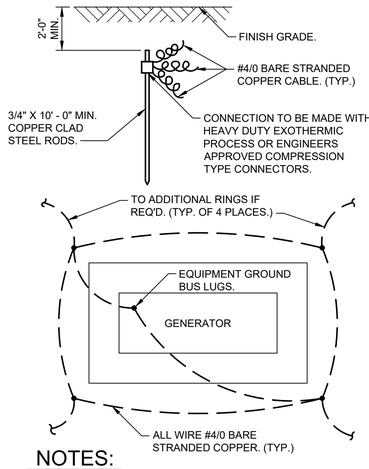
BELOW GRADE DUCT ENTRANCE DETAIL

NO SCALE



EXTERIOR WALL FIXTURE

NO SCALE

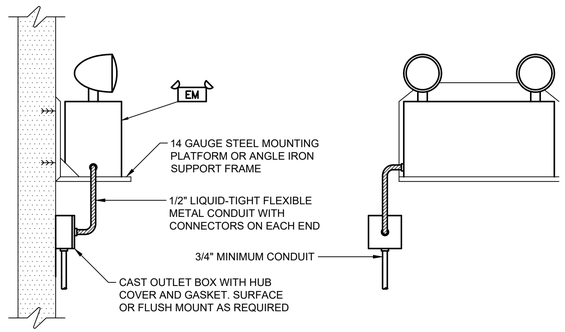


NOTES:

ADDITIONAL CONCENTRIC RINGS SHALL BE ADDED AS REQ'D. TO MEET THE (5) OHM SPECIFIED RESISTANCE. EACH RING TO HAVE 4 GROUND RODS, AND SPACE 10 FEET FROM THE INNER RING.

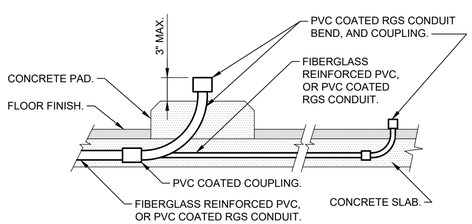
GROUND MAT

NO SCALE



EMERGENCY LIGHT MOUNTING DETAIL

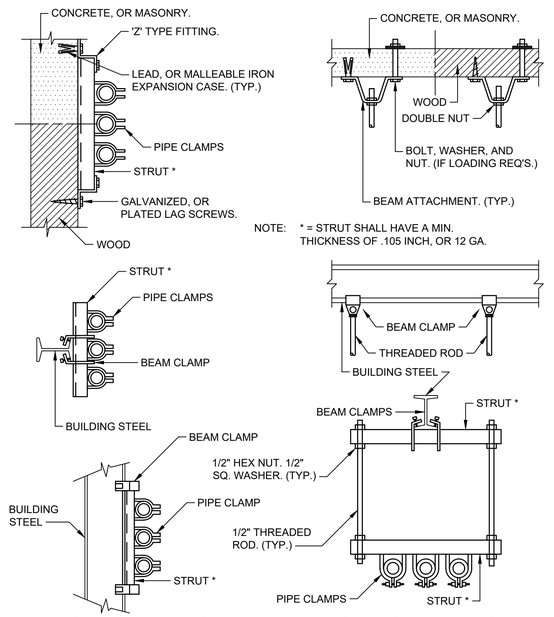
NO SCALE



NOTE:
PVC COATED CONDUIT BENDS, AND FITTINGS SHALL BE USED WHERE CONCEALED CONDUIT RUNS ARE STUBBED UP FROM THE SLAB. RISERS ON POLES SHALL BE PVC COATED RGS INCLUDING WEATHERHEADS.

CONDUIT STUB UP DETAIL

NO SCALE



NOTE: * = STRUT SHALL HAVE A MIN. THICKNESS OF .105 INCH, OR 12 GA.

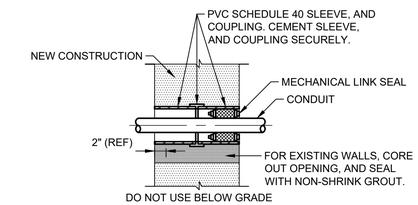
VERTICALLY RACKED AND VERTICAL RUNS

NO SCALE

HORIZONTAL RACKED SUSPENDED RUN

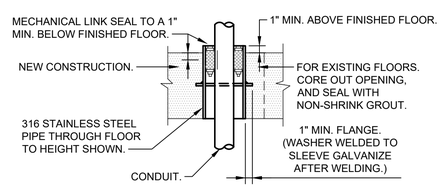
NO SCALE

* ALL MOUNTING HARDWARE TO BE 304 STAINLESS STEEL OR APPROVED EQUAL (TYP.)



EXTERIOR WALL CONDUIT SLEEVE DETAIL

NO SCALE



INTERIOR FLOOR CONDUIT SLEEVE DETAIL

NO SCALE

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

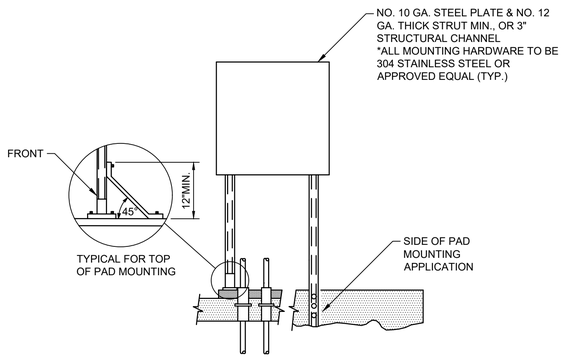
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL DETAILS

PROJ:	200-12747-23001
DESN:	MF
DRWN:	VLM
CHKD:	

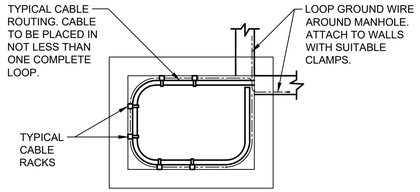
E-500

Bar Measures 1 inch, otherwise drawing not to scale



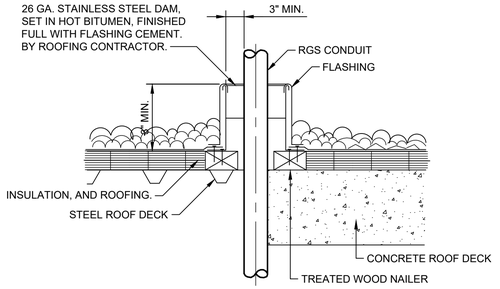
RACK MOUNTED EQUIPMENT DETAIL

NO SCALE



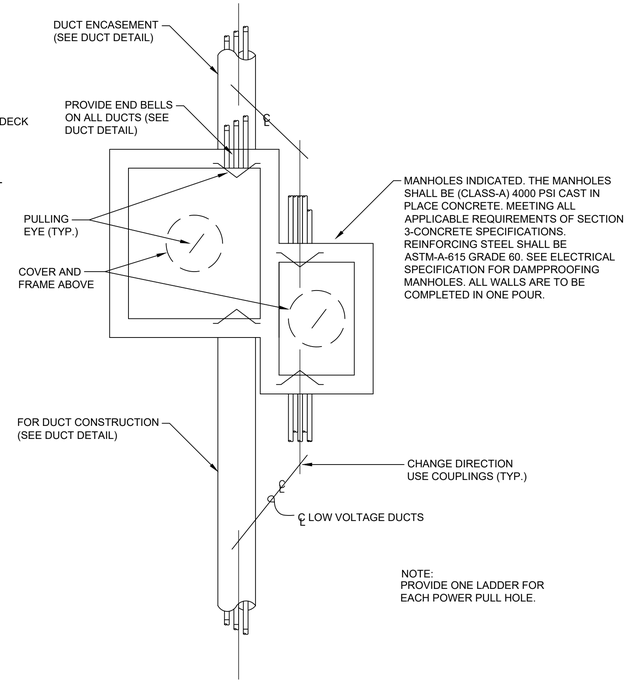
CABLE ROUTING DETAIL

NO SCALE



CONDUIT ROOF PENETRATION DETAIL

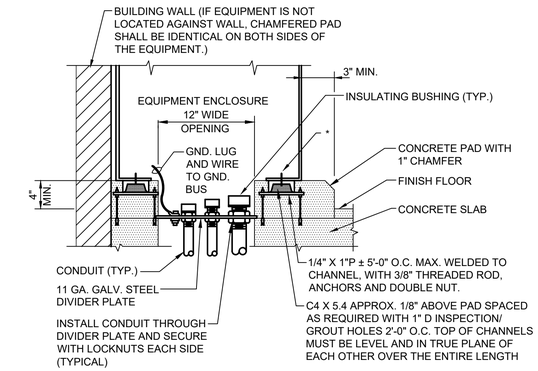
NO SCALE



NOTE:
PROVIDE ONE LADDER FOR EACH POWER PULL HOLE.

DUAL ELECTRICAL MANHOLE

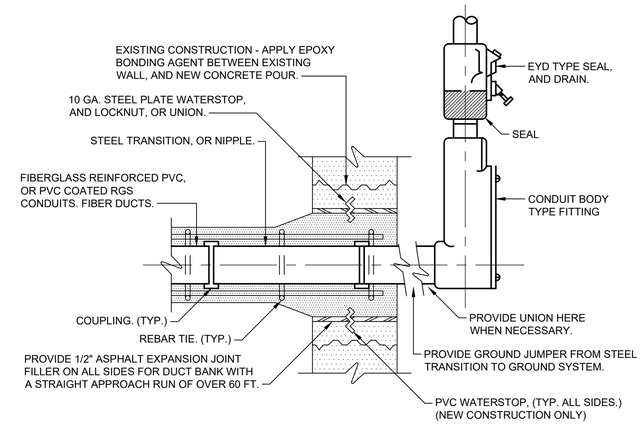
NO SCALE



* SECURE EQUIPMENT TO CHANNELS PER MFR. RECOMMENDATIONS

EQUIPMENT PAD INTERIOR

NO SCALE

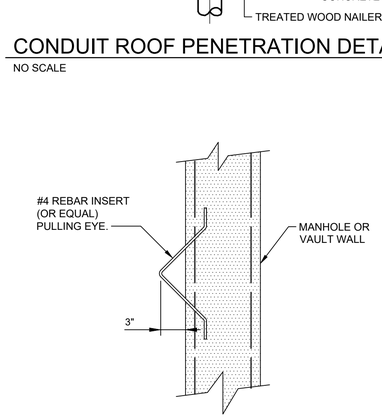


NOTE: ALL CONDUIT ENTRANCES SHALL HAVE SEAL, AND DRAIN.

EXISTING, OR NEW CONSTRUCTION FOR WIRE SIZE NO.4 OR SMALLER ONLY.

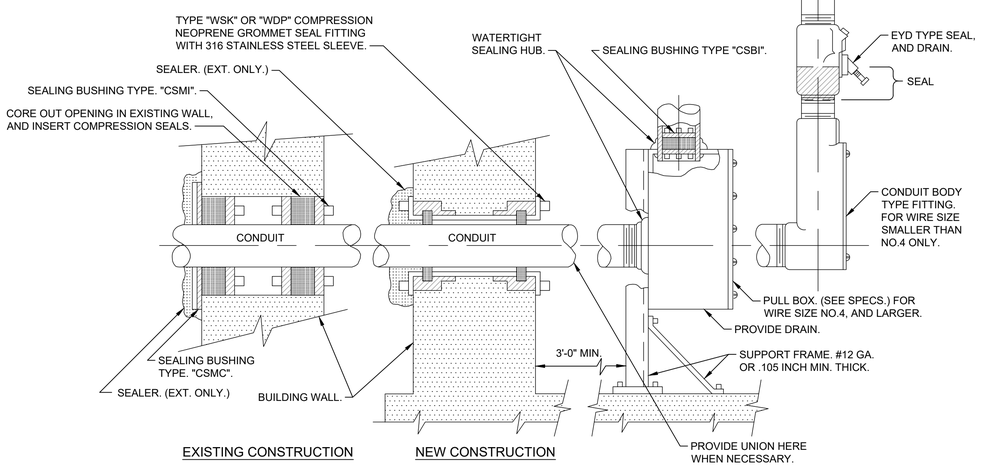
BELOW GRADE DUCT ENTRANCE DETAIL

NO SCALE



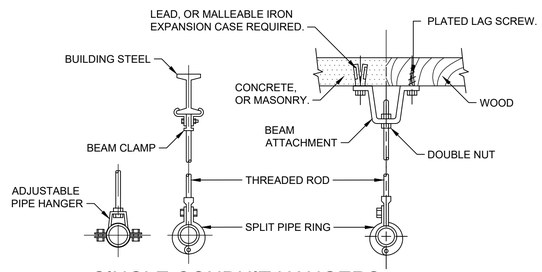
PULLING EYE DETAIL

NO SCALE



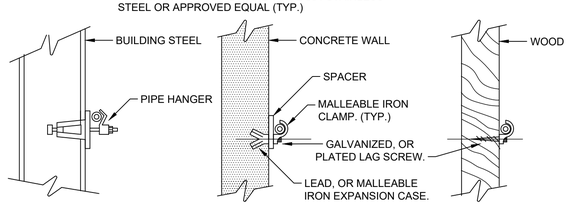
BELOW GRADE CONDUIT ENTRANCE DETAIL

NO SCALE
NOTE: ALL CONDUIT ENTRANCES SHALL HAVE SEAL, AND DRAIN.



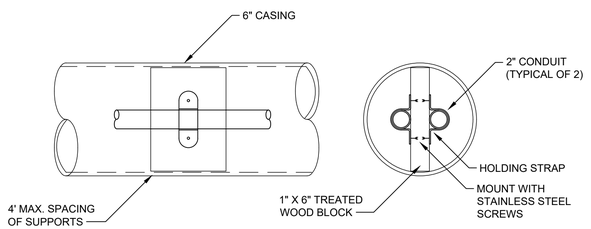
SINGLE CONDUIT HANGERS

NO SCALE
* ALL MOUNTING HARDWARE TO BE 304 STAINLESS STEEL OR APPROVED EQUAL (TYP.)



VERTICAL AND HORIZONTAL CONDUIT RACKS AND HANGERS

NO SCALE



CONCRETE CASING DETAIL (CONDUITS UNDER ROAD)

NO SCALE

NOTES:

1. BEFORE ANY TRENCHING BEGINS, CONTRACTOR SHALL COORDINATE UTILITY LOCATIONS (I.E. GAS, POWER, TELEPHONE, ETC.) WITH APPLICABLE PARTIES. DAMAGE DONE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
2. CONTRACTOR SHALL PERFORM BORING UNDER ROADWAY AT DEPTH SUITABLE TO ASSURE THAT NO DAMAGE WILL OCCUR TO THE CONDUITS BASED ON THE DESIGN LOADING REQUIREMENTS FOR THE ROADWAY.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR INCIDENTAL DAMAGE TO ROADWAY AND SHALL REPAIR AT CONTRACTORS EXPENSE.
4. CONTRACTOR SHALL FURNISH AND INSTALL STEEL CASING, CONDUIT AND SUPPORTS AS SHOWN.
5. SEAL BOTH ENDS OF CASING WITH 1" OF CEMENT GROUT.

TETRA TECH
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EAST LANSING, MI 48823
PHONE: 517.316.3963 FAX: 517.484.8140

MARK	DATE	DESCRIPTION
	02/05/24	ISSUED FOR BIDS

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL DETAILS

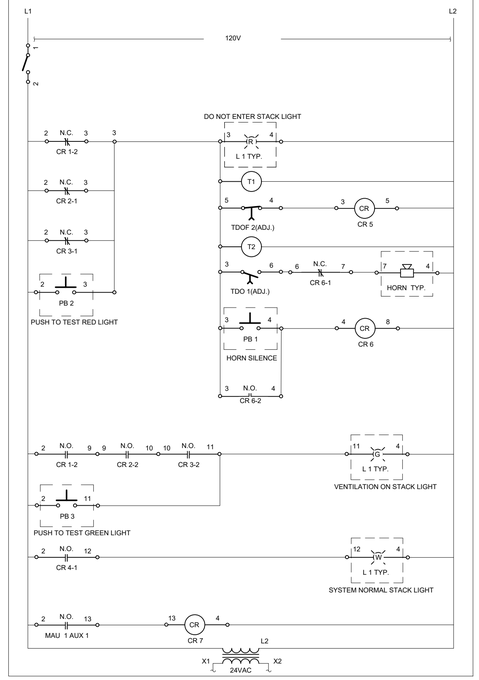
PROJ:	200-12747-23001
DESN:	MF
DRWN:	VLM
CHKD:	

E-501

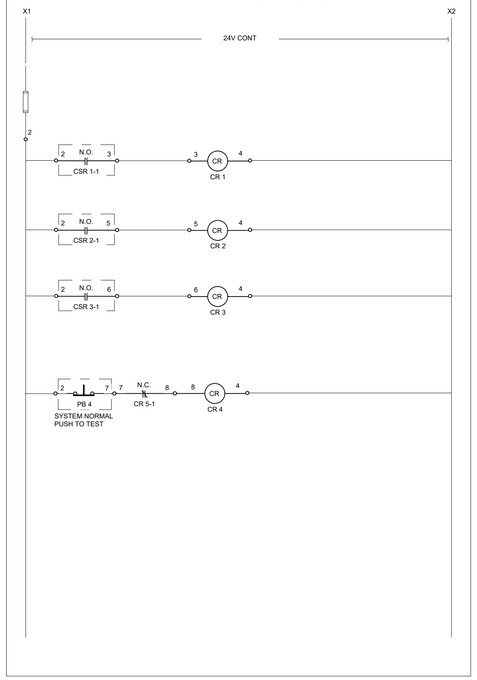
Bar Measures 1 inch, otherwise drawing not to scale

VENTILATION MONITORING PANEL DETAIL TYPICAL

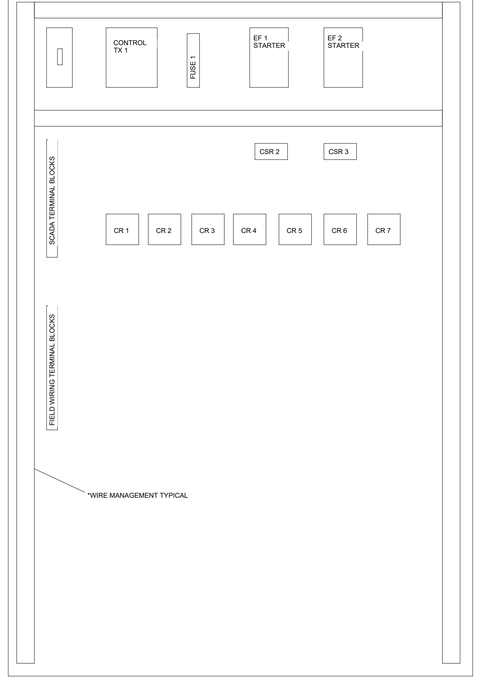
VENTILATION MONITORING PANEL 1 WIRING DETAIL



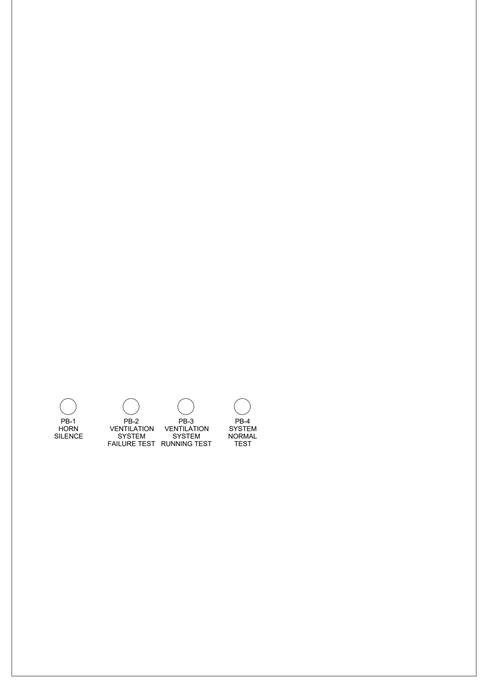
VENTILATION MONITORING PANEL 1 WIRING DETAIL CONTINUED



VENTILATION MONITORING PANEL 1 TYPICAL LAYOUT



VENTILATION MONITORING PANEL 1 PANEL FACE TYPICAL LAYOUT



VENTILATION MONITORING PANEL GENERAL REQUIREMENTS:

1. ENCLOSURE SHALL BE NEMA 4X WITH BACKPLANE AND HINGED COVER.
2. CONTROL RELAYS SHALL HAVE A MINIMUM 4 SETS OF FORM C CONTACTS (4 POLES). CONTROL RELAYS SHALL BE HP RATED, DIN RAIL MOUNTED, ICE CUBE STYLE, PLUG IN BLADE.
3. CURRENT SENSING RELAYS SHALL BE VERIS INDUSTRIES HAWKEYE H308 OR APPROVED EQUAL.
4. WIRE MANAGEMENT SHALL BE NON-METALLIC LEAD FREE PVC FINGER/SLOT DUCT, UL 84 LISTED.
5. ELECTRICAL CONTRACTOR TO ARRANGE FINAL COMPONENTS TO ALLOW FOR ADDITIONS, MODIFICATIONS, PROPER COMPONENT SPACING, AND SERVICE. ALL WORK SHALL BE COMPLETED PER NFPA 70-100.12.
6. CONTRACTOR TO SIZE POWER SUPPLY AND SECONDARY FUSE PROTECTION BASED ON APPROVED DEVICES. POWER SUPPLY TO BE MEAN WELL SDR-120-24.

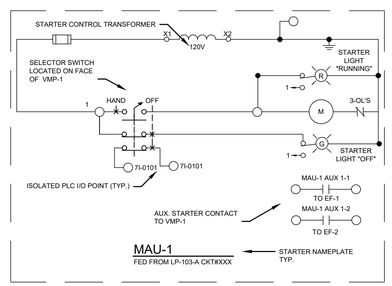
SEQUENCE OF OPERATION VENTILATION MONITROING PANEL 1:

When Ventilation Monitoring Panel 1(VMP-1) is energized, power on status will be proven via Control Relay "ventilation system normal" lights on the light stacks shall energize. When MAU-1, EF-1, or EF-2 is energized "ventilation system running" lights on the light stack shall energize. When either MAU-1, EF-1 or EF-2 fail to prove run status after adjustable time delay, "ventilation system failure-do not enter" lights and horns (panel face mounted push button can silence horns) on the light stacks shall energize and interlocks shall de energize GUH-1 and GUH-2. Panel face mounted push buttons shall test, fan failure, power failure, ventilation system running and system normal.

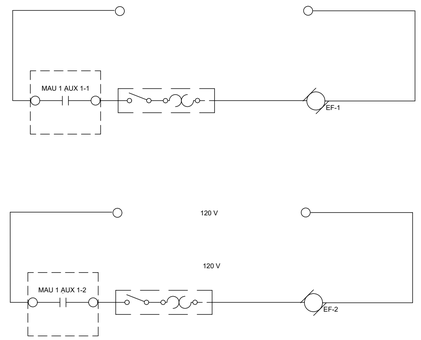
The following hard-wired points will be available to the SCADA system from within VMP-1.

1. VENTILATION MONITORING SYSTEM NORMAL
2. VENTILATION SYSTEM NORMAL
3. VENTILATION SYSTEM FAILURE MAU-1
4. VENTILATION SYSTEM FAILURE EF-1
5. VENTILATION SYSTEM FAILURE EF-2
6. HORN SILENCED

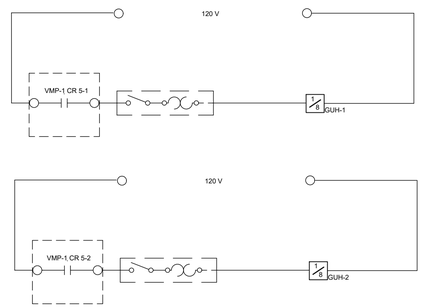
MAU-1 FACTORY PROVIDED STARTER TYP. DETAIL



EF -1,2 WIRING DETAILS



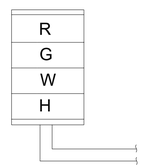
GUH -1,2 WIRING DETAILS



STACK LIGHT TYPICAL

INSTALL SIGNAGE AT EACH LIGHT WITH PHENOLIC NAME PLATES. LETTERING WILL BE WHITE ON RED BACKGROUND. LETTER HEIGHT SHALL BE 1".

RED "DO NOT ENTER"
GREEN "SAFE FOR ENTRY"
WHITE "SYSTEM NORMAL"
NO LIGHTS "DO NOT ENTER"



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EAST LANSING, MI 48823
PHONE: 517.316.3963 FAX: 517.484.8140

MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

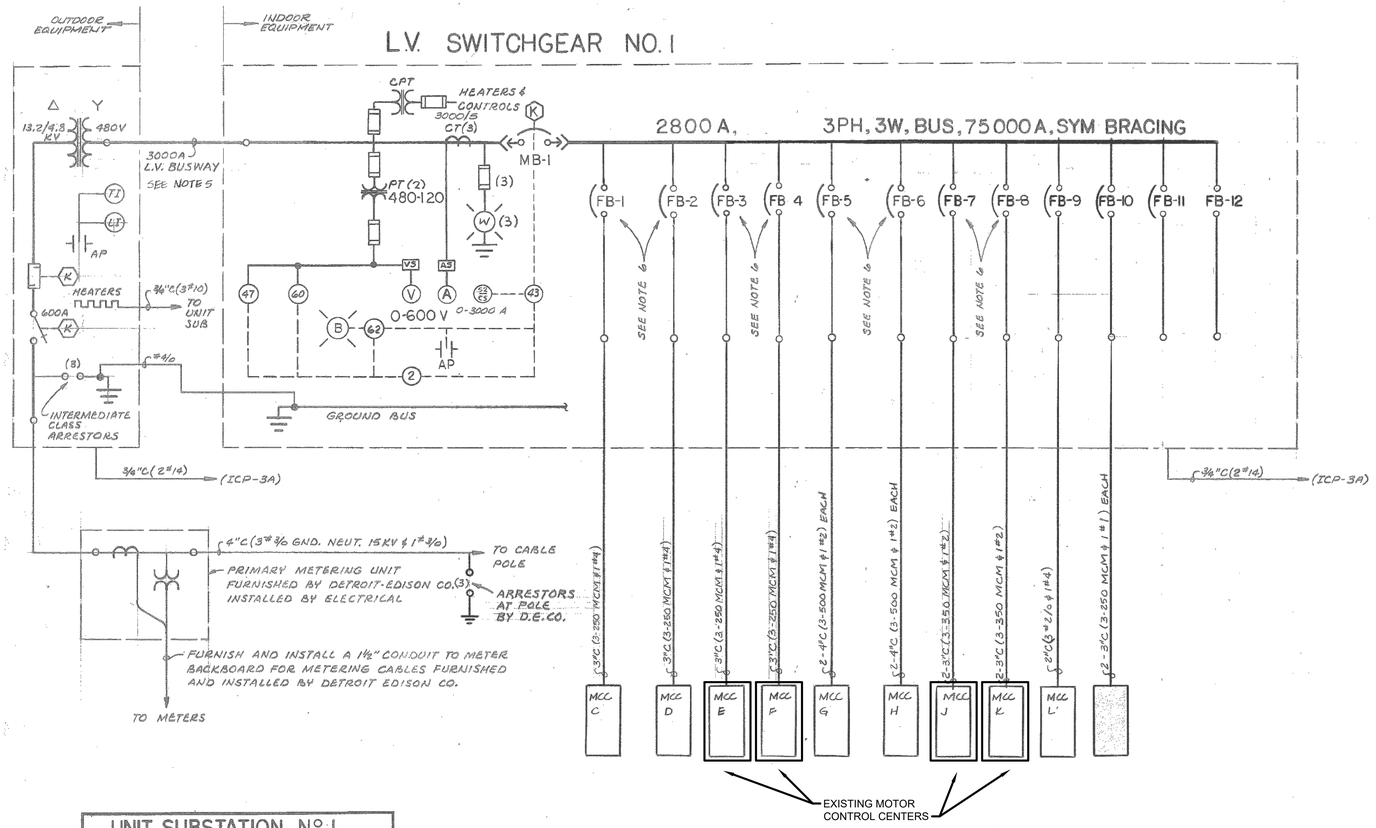
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL DETAILS

PROJ:	200-12747-23001
DESN:	MAF
DRWN:	VLM
CHKD:	

E-502

Bar Measures 1 inch, otherwise drawing not to scale



NOTES:

1. IN THE POWER CIRCUIT BREAKER SCHEDULE THE FOLLOWING REMARKS APPLY:
   - (a) BLANK - INDICATES AN EMPTY COMPARTMENT WITH NO PROVISIONS FOR A FUTURE BREAKER
   - (b) SPACE - INDICATES AN EMPTY COMPARTMENT COMPLETE WITH ALL PROVISIONS FOR RACKING IN A FUTURE BREAKER.
   - (c) SPARE - INDICATES A COMPARTMENT COMPLETE WITH SPARE BREAKER AND ALL RELAYING AND AUXILIARIES NOTED.
   - (d) STARTER - INDICATES A CIRCUIT BREAKER USED AS A STARTER COMPLETE WITH PTS OFF MAIN BUS FOR POWER - CONTROL CIRCUIT TO BE MANUFACTURER'S STANDARD DESIGN CAPABLE OF ACCEPTING MOMENTARY OR MAINTAINED REMOTE STOP - START CONTACT INPUTS.
2. BREAKER RELAY CIRCUIT DESCRIPTION:
   IN THE AUTOMATIC POSITION, THE MAIN BREAKER IS TRIPPED ON PHASE SEQUENCE/UNDERVOLTAGE RELAY (47) OR SINGLE PHASING BY VOLTAGE BALANCE RELAY (60) IN CONJUNCTION WITH (62) DEVICE AND RECLOSED THRU (2) WHEN (60) AND (47) RETURN TO NORMAL. IN THE MANUAL POSITION, THE MAIN BREAKER IS CLOSED VIA 52/CS AND TRIPPED VIA 52/CS. OVERCURRENT TRIP OF MAIN SHALL LOCKOUT THE MAIN.
3. A D.C. POWER SOURCE IS NOT AVAILABLE. POWER FOR BREAKER OPERATION IS BY AUX. P.S. OR CAPACITOR TRIP.
4. SYMBOLS WITHOUT QUANTITY NUMBERS ASSUMED TO BE ONE.
5. PROVIDE TRANSITION SECTION AT TRANSFORMER SECONDARY FOR BUS DUCT TERMINATION.
6. CIRCUIT BREAKERS INDICATED SHALL NOT BE LOCATED IN THE SAME VERTICAL SECTION OF THE SWITCHBOARD.

UNIT SUBSTATION Nº 1

DESCRIPTION	BOTTOM	TOP
PRIMARY CABLE ENTRY	X	
SECONDARY CABLE EXIT		X

TRANSFORMER RATINGS

DESCRIPTION	RATING
INSULATION CLASS - HIGH VOLTAGE	15 KV
B.I.L. HIGH VOLTAGE	95 KV
TAPS - FCBN	2 - 2½ %
TAPS - FCAN	2 - 2½ %
COOLANT	OIL
TEMPERATURE RISE (OA)	65°C
IMPEDANCE	5 TO 6 %
COOLING FAN & CONTROL CK'T	FUTURE
KVA RATING (OA)	2000 KVA
KVA RATING (OA/FA)	2300 KVA
PRI. - WINDING CONNECTION	DELTA
PRIMARY VOLTAGE	13.2/4.8 KV *
SEC. WINDING CONNECTION	WYE
SECONDARY VOLTAGE	480/277

* THE PRIMARY VOLTAGE AT THE PLANT IS CURRENTLY 4.8 KV BUT WILL BE CONVERTED TO 13.8 KV. IN THE FUTURE THE TRANSFORMER SHALL BE FURNISHED WITH THE PRIMARY WINDING TAPPED TO ALLOW CONNECTION TO EITHER 4.8 OR 13.2 KV.

POWER CIRCUIT BREAKER SCHEDULE

DEVICE	FRAME SIZE	CONT. CURRENT RATING	INTERRUPT RATING AMS AMPS Symm.	SOLID STATE TRIP DEVICES	REMARKS
MB-1	3200	3200	65,000	L.S. GFI	ELEC. OPERATED
INSULATED CASE TYPE					
FB-1	250	250A	150,000	L.S.I.	CURRENT LIMITING
FB-2	250	250A		L.S.I.	
FB-3	250	250A		L.S.I.	
FB-4	250	250A		L.S.I.	
FB-5	800	500A		L.S.I.	
FB-6	800	500A		L.S.I.	
FB-7	800	600A		L.S.I	
FB-8	800	600A		L.S.I.	
FB-9	250	150A		L.S.I.	
FB-10	400	400A		L.S.I.	
FB-11	400	400A		L.S.I	
FB-12					(SPACE)

SYMBOL LEGEND

RES.	RESISTOR
PT	POTENTIAL TRANSFORMER
CT	CURRENT TRANSFORMER
A	AMMETER
V	VOLTMETER
AS	AMMETER SWITCH
VS	VOLTMETER SWITCH
PF	POWER FACTOR METER
W	WATTMETER
CS	CONTROL SWITCH
TI	TEMPERATURE INDICATOR
LI	LEVEL INDICATOR
AP	ALARM POINT
L.S.	LONG TIME - SHORT TIME
L.S.I.	LONG TIME - SHORT TIME - INSTANTANEOUS
K	KEY INTERLOCK
(2) (3)	NUMBER OF DEVICES REQUIRED
CPT	CONTROL POWER TRANSFORMER

RELAY LEGEND

DEVICE Nº	G.E. CAT. Nº (OR EQUAL)	WEST. CAT. Nº (OR EQUAL)	DESCRIPTION
2	EAGLE SIGNAL, AGASTAT OR EQUAL		D-C OPERATED TIME DELAY OR SYNC. TIMER WITH (0-120 SEC.) RANGE.
27	IAV-54	CV-2	SHORT TIME UNDER VOLTAGE
43	SB-1	W	SELECTOR SWITCH
47	ICR-53B	CD	PHASE SEQUENCE & UNDERVOLTAGE
52/CS	SB-1	W	CONTROL SWITCH
60	NBV	CVQ	VOLTAGE BALANCE
AUX. P.S.	17B47343		AUX. DC POWER SUPPLY
62	EAGLE SIGNAL, AGASTAT OR EQUAL		PNEUMATIC TIME DELAY
64	IAV-51D	CV-SERIES	SHORT TIME LOW PICK UP OVERVOLTAGE
69	SB-1	W	LOCKABLE CONTROL SWITCH
83	HFA	MG	MULTI-CONTACT AUXILIARY
86/HR	HEA	WL	MULTI-CONTACT AUX. HAND RESET
81	IJF 51B6A	CF-1	FREQUENCY

(K) KEY	INTERLOCK SCHEDULE
FUSE COMPARTMENT	PRIMARY SWITCH AND IT'S MAIN SECONDARY BREAKER MUST BE LOCKED OPEN TO GAIN ACCESS.
MAIN SECONDARY BREAKER (MB-1)	MAY BE CLOSED EXCEPT ON SINGLE PHASING (60) OR UNDERVOLTAGE (47)

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED.

TETRA TECH
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3497 COOLIDGE ROAD
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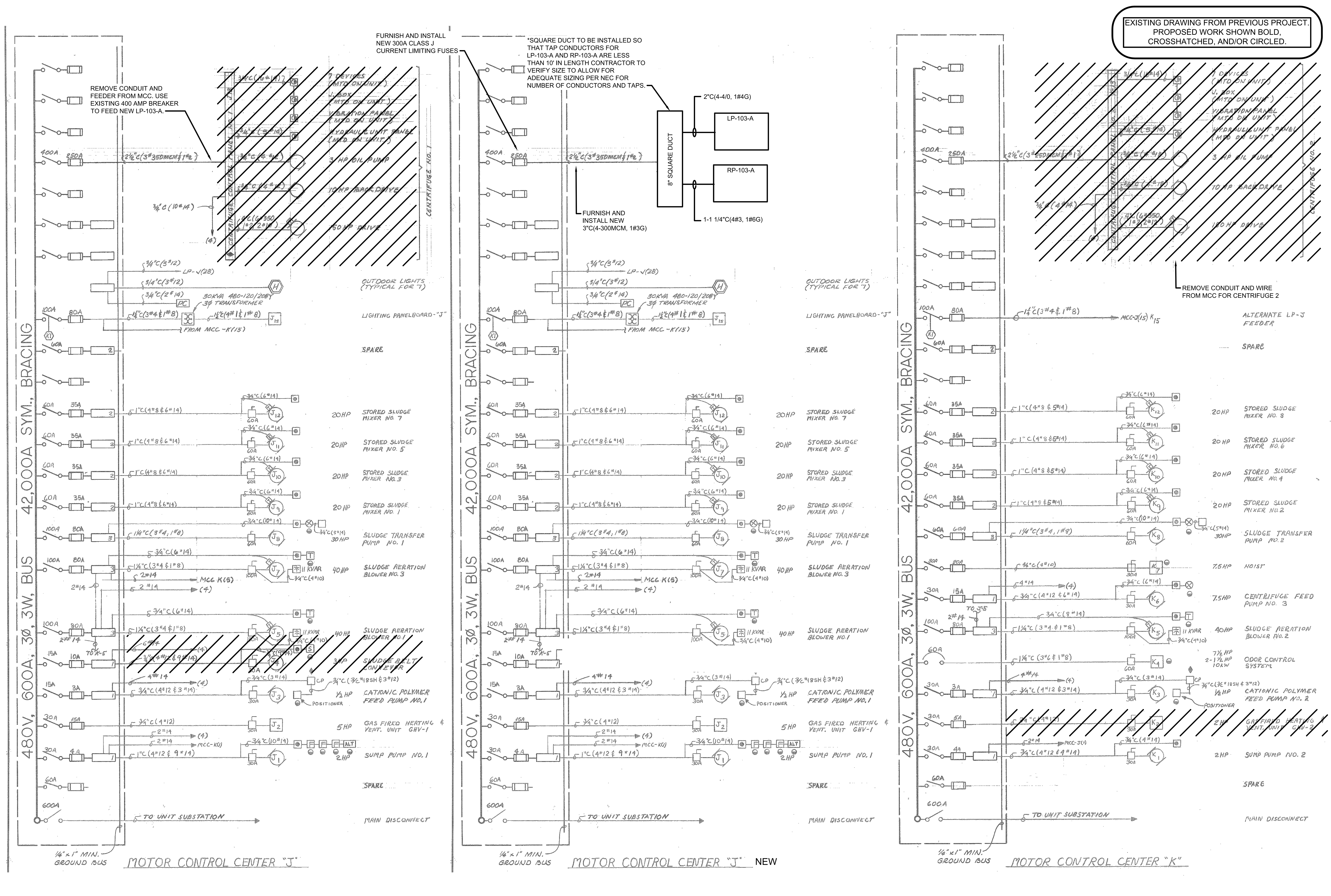
MARK	DATE	DESCRIPTION
	02/05/24	ISSUED FOR BIDS

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
ELECTRICAL OVERALL ONE-LINE DIAGRAM

PROJ:	200-12747-23001
DESN:	MAF
DRWN:	VLM
CHKD:	

E-601

Bar Measures 1 inch, otherwise drawing not to scale



1/31/2024 8:45:45 AM - \\TT.LOCAL\IER\PROJECTS\LANSING\IER\12747\200-12747-23001\CAD\SHEETFILES\E-602 ELECTRICAL ONE-LINE DIAGRAM_II.DWG - MELLING, VICKIE

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

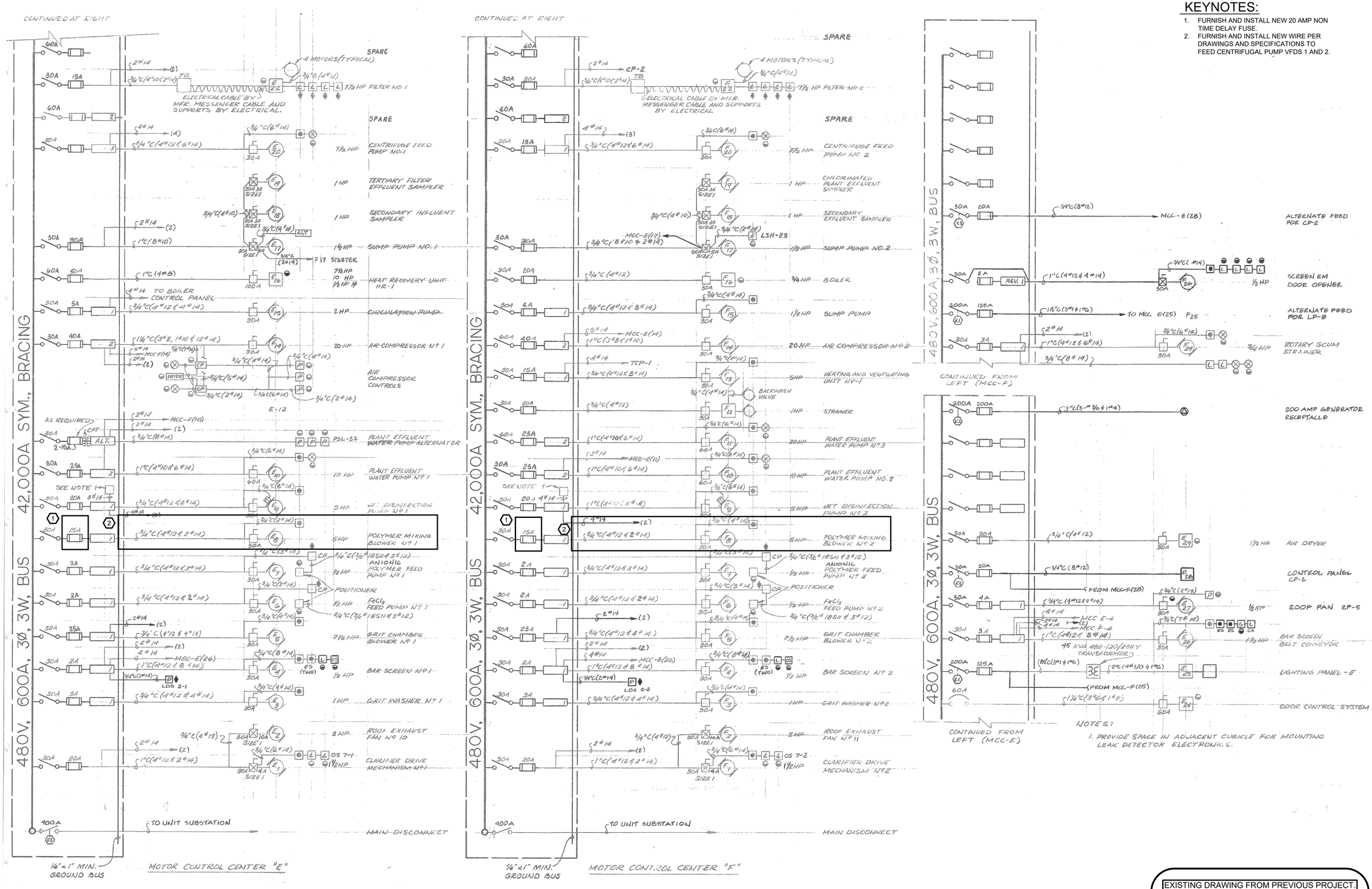
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL OVERALL ONE-LINE DIAGRAM

PROJ: 200-12747-23001
DESN: MAF
DRWN: VLM
CHKD:

E-602

Bar Measures 1 inch, otherwise drawing not to scale



KEYNOTES:

1. FURNISH AND INSTALL NEW 20 AMP NON TIME DELAY FUSE.
2. FURNISH AND INSTALL NEW WIRE PER DRAWINGS AND SPECIFICATIONS TO FEED CENTRIFUGAL PUMP VFDS 1 AND 2.

EXISTING DRAWING FROM PREVIOUS PROJECT. PROPOSED WORK SHOWN BOLD, CROSSHATCHED, AND/OR CIRCLED.

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CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

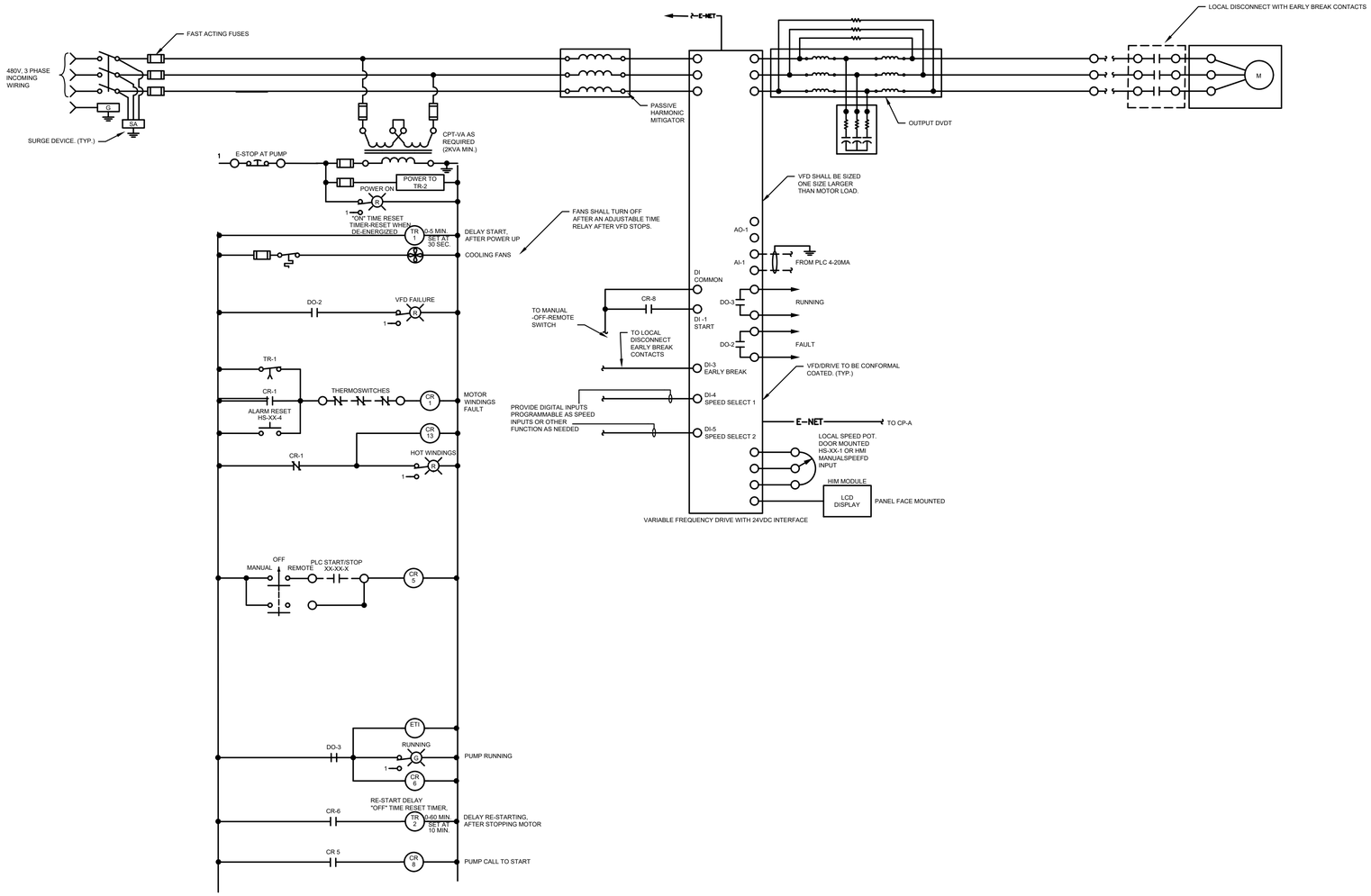
ELECTRICAL OVERALL ONE-LINE DIAGRAM

PROJ:	200-12747-23001
DESN:	MAF
DRWN:	VLM
CHKD:	

E-603

1/31/2024 8:46:37 AM - \\TT.LOCAL\IER\PROJECTS\LANSING\IER\127471200-12747-23001\CAD\SHEETFILES\E-603 ELECTRICAL ONE-LINE DIAGRAM_III.DWG - MELLING, VICKIE

Bar Measures 1 inch, otherwise drawing not to scale



FEED PUMP VFD
WIRING DIAGRAM (TYP OF 2)

SCALE:NOT TO SCALE

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PHONE: 517.316.3963 FAX: 517.484.8140

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CITY OF MOUNT CLEMENS, MI

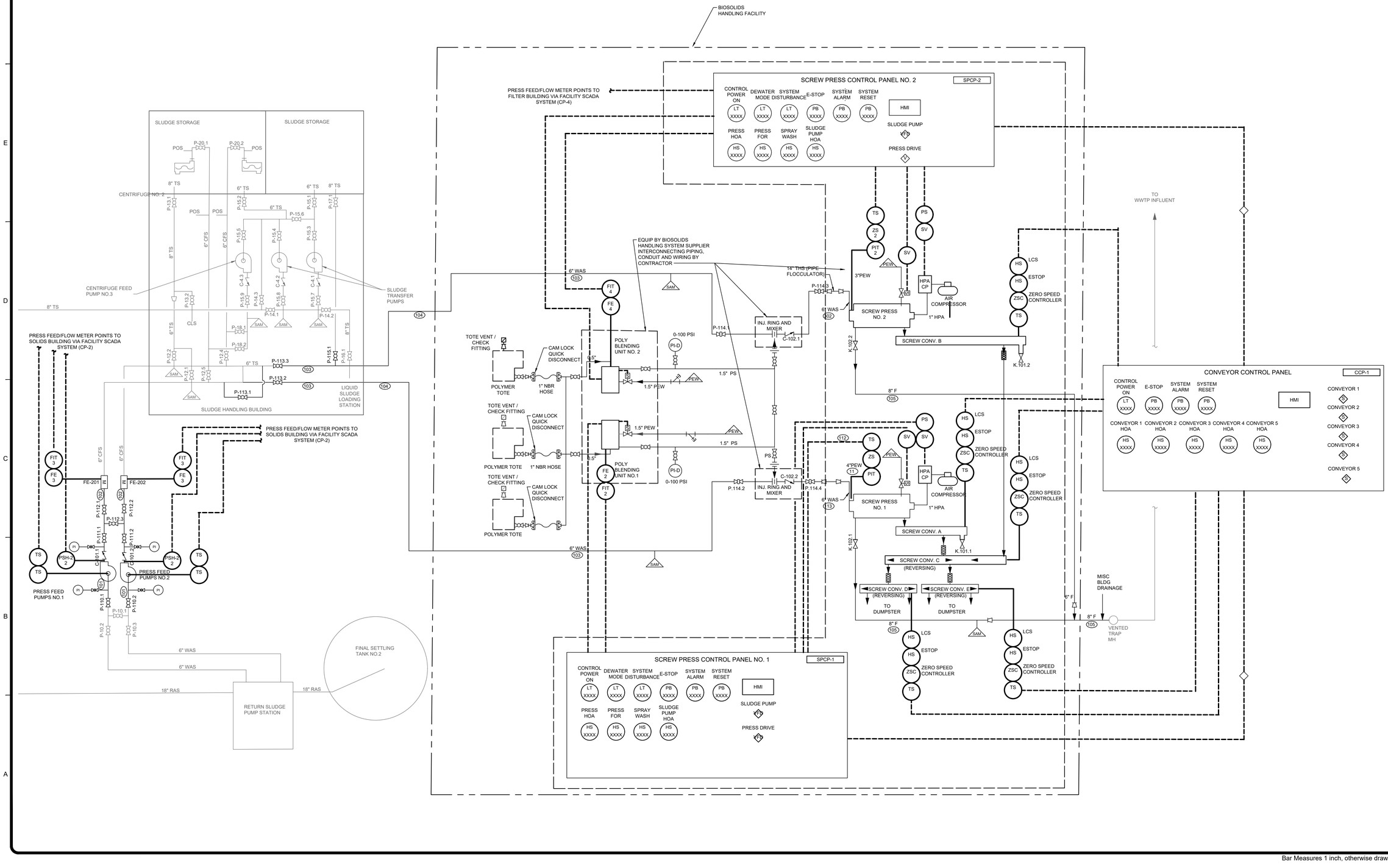
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

ELECTRICAL
VFD WIRING DETAILS

PROJ:	200-12747-23001
DESN:	MAF
DRWN:	VLM
CHKD:	

E-604

Bar Measures 1 inch, otherwise drawing not to scale



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MARK	DATE	DESCRIPTION
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CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION SCREWPRESS CONTROL PANEL SPCP-1

PROJ:	200-12747-23001
DESN:	MF
DRWN:	VLM
CHKD:	

I-100

* QUANTITY 2 FOR SCREW PRESS CONTROL PANELS. HUBER DRAWINGS ARE TYPICAL FOR SPCP-1 AND SPCP-2.

MT. CLEMENS, MI

HBR9464

SPECIFICATION	Q–PRESS CONTROL PANEL
REFERENCE	73010851

TABLE OF CONTENTS

DATE	REVISION	NO.	BY	CK	APP

DESIGNED JN
DETAILED
CHECKED MSN
APPROVED
DATE 11/09/23

HUBER
TECHNOLOGY
1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

Q–PRESS CONTROL PANEL
MT. CLEMENS, MI
SCALE: NONE
PROJECT NUMBER: 73010851
DRAWING NO: HBR9464A01
11 OF 117

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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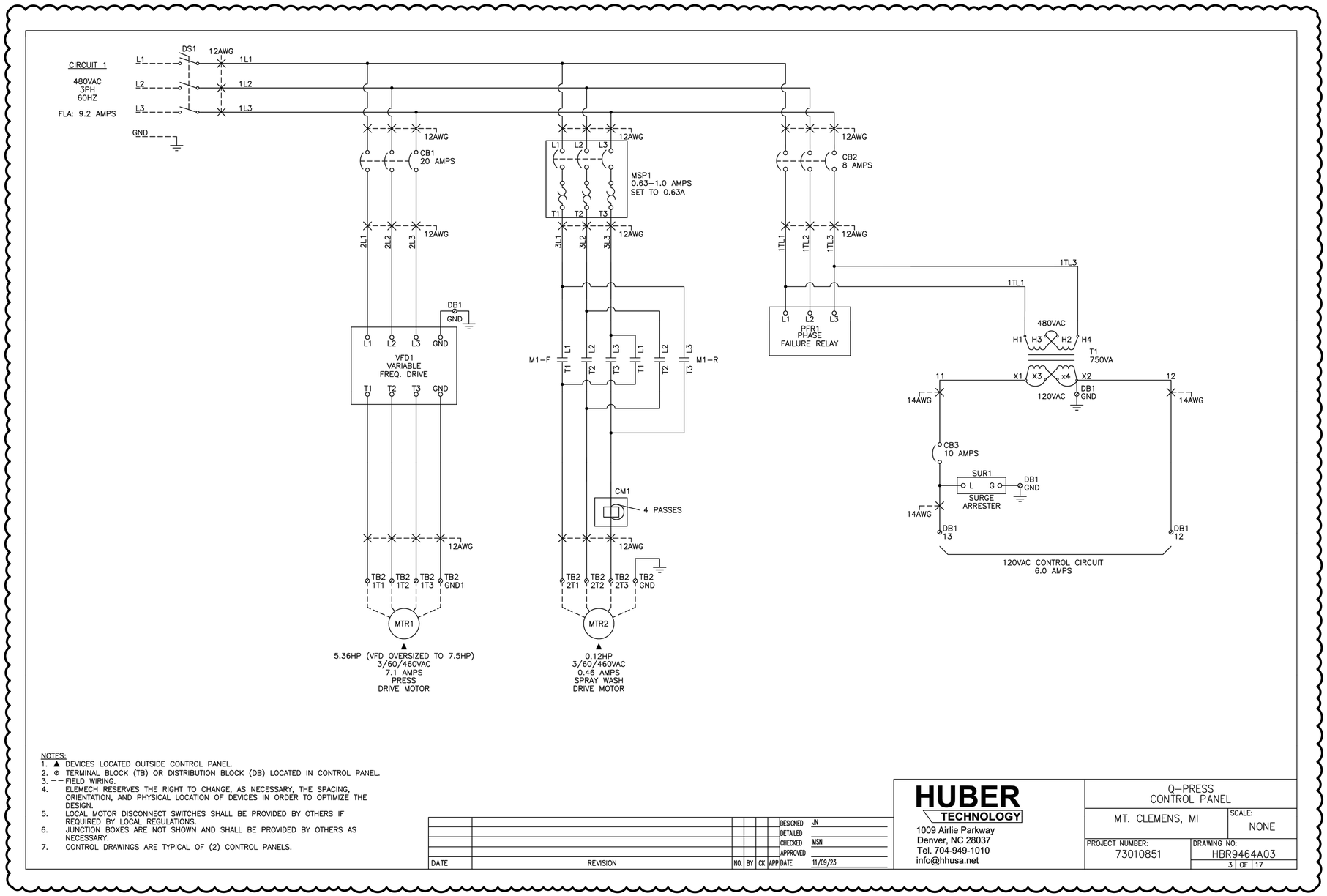
CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
INSTRUMENTATION
SCREWPRESS CONTROL PANEL SPCP-1, SPCP-2

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-102

Bar Measures 1 inch, otherwise drawing not to scale



NOTES:
1. ▲ DEVICES LOCATED OUTSIDE CONTROL PANEL.
2. ⊘ TERMINAL BLOCK (TB) OR DISTRIBUTION BLOCK (DB) LOCATED IN CONTROL PANEL.
3. – – FIELD WIRING.
4. ELEMECH RESERVES THE RIGHT TO CHANGE, AS NECESSARY, THE SPACING, ORIENTATION, AND PHYSICAL LOCATION OF DEVICES IN ORDER TO OPTIMIZE THE DESIGN.
5. LOCAL MOTOR DISCONNECT SWITCHES SHALL BE PROVIDED BY OTHERS IF REQUIRED BY LOCAL REGULATIONS.
6. JUNCTION BOXES ARE NOT SHOWN AND SHALL BE PROVIDED BY OTHERS AS NECESSARY.
7. CONTROL DRAWINGS ARE TYPICAL OF (2) CONTROL PANELS.

DATE	REVISION	NO.	BY	CK	APP

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CHECKED	MSN
APPROVED	
DATE	11/09/23

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TECHNOLOGY
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Q-PRESS
CONTROL PANEL

MT. CLEMENS, MI

SCALE: NONE

PROJECT NUMBER: 73010851

DRAWING NO: HBR9464A03

3 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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MARK	DATE	DESCRIPTION	BY
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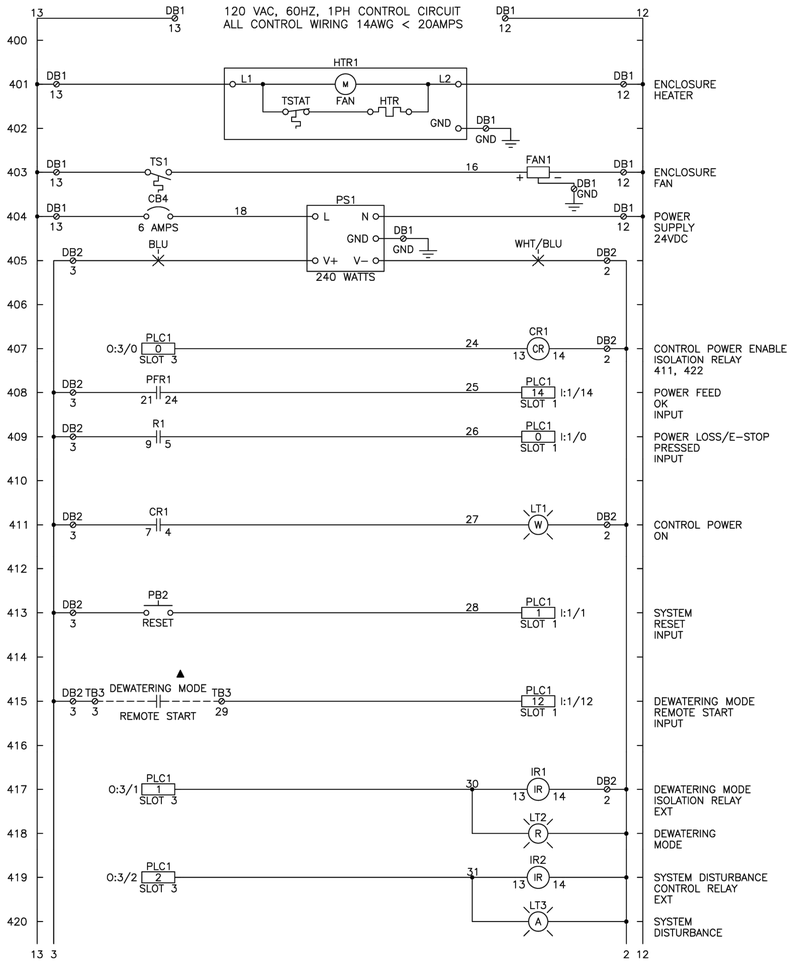
CITY OF MOUNT CLEMENS, MI

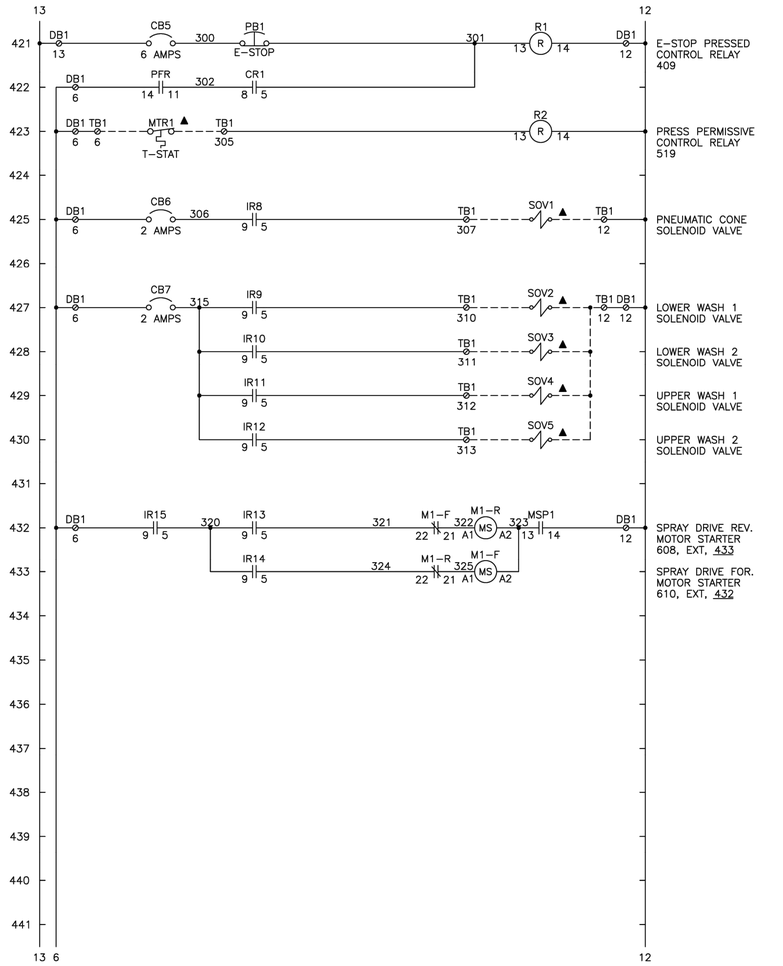
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION SCREWPRESS CONTROL PANEL SPCP-1, SPCP-2

PROJ:	200-12747-23001
DESN:	MF
DRWN:	VLM
CHKD:	

I-103





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DATE 11/09/23

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1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

Q-PRESS CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9464A04

4 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

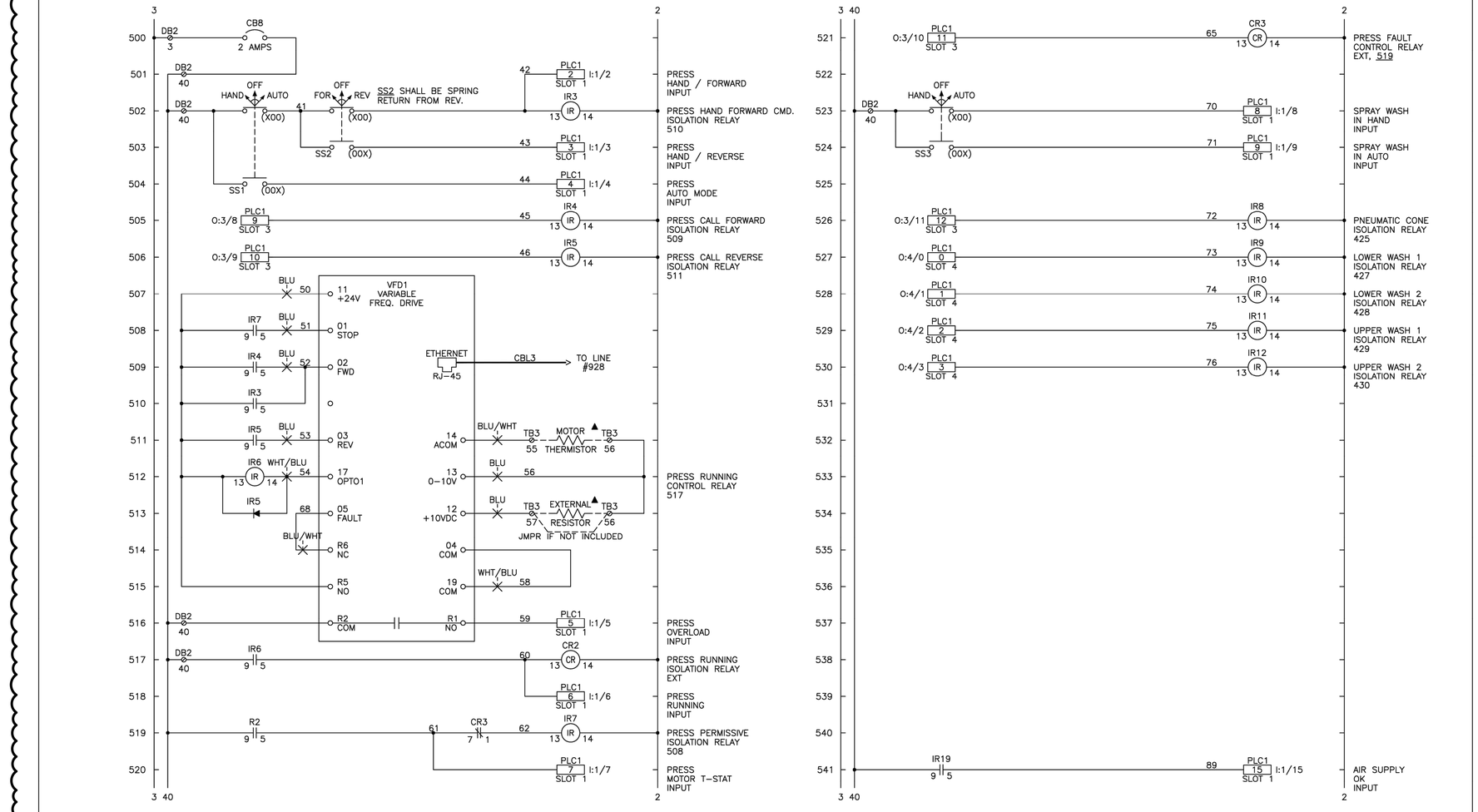
CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION SCREWPRESS CONTROL PANEL SPCP-1, SPCP-2

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-104

Bar Measures 1 inch, otherwise drawing not to scale



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Denver, NC 28037
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info@hhusa.net

Q-PRESS CONTROL PANEL
MT. CLEMENS, MI
SCALE: NONE
PROJECT NUMBER: 73010851
DRAWING NO: HBR9464A05
5 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

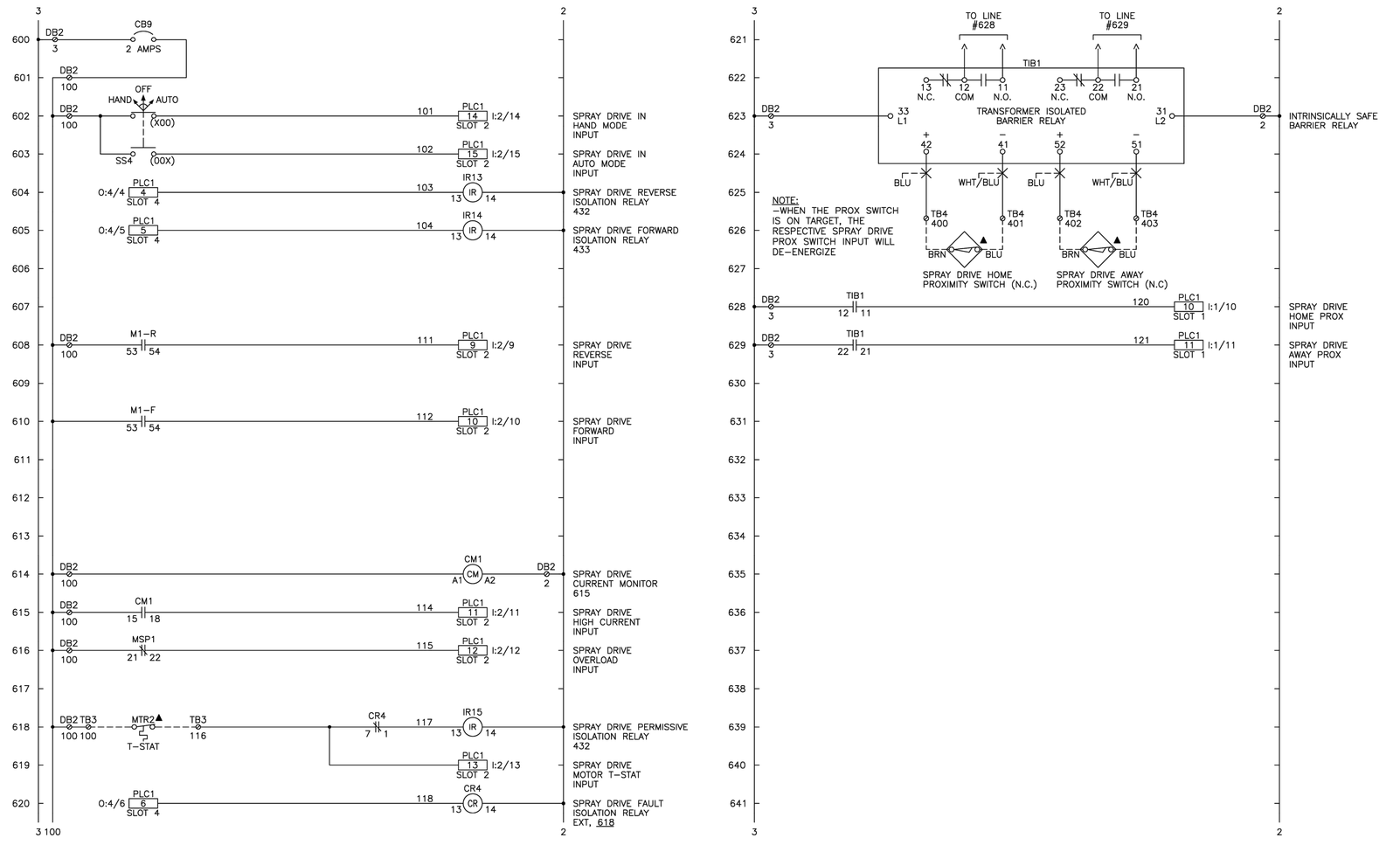
CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION SCREWPRESS CONTROL PANEL SPCP-1, SPCP-2

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-105

Bar Measures 1 inch, otherwise drawing not to scale



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DATE 11/09/23

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Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

Q-PRESS CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9464A06

6 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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MARK	DATE	DESCRIPTION	BY
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CITY OF MOUNT CLEMENS, MI

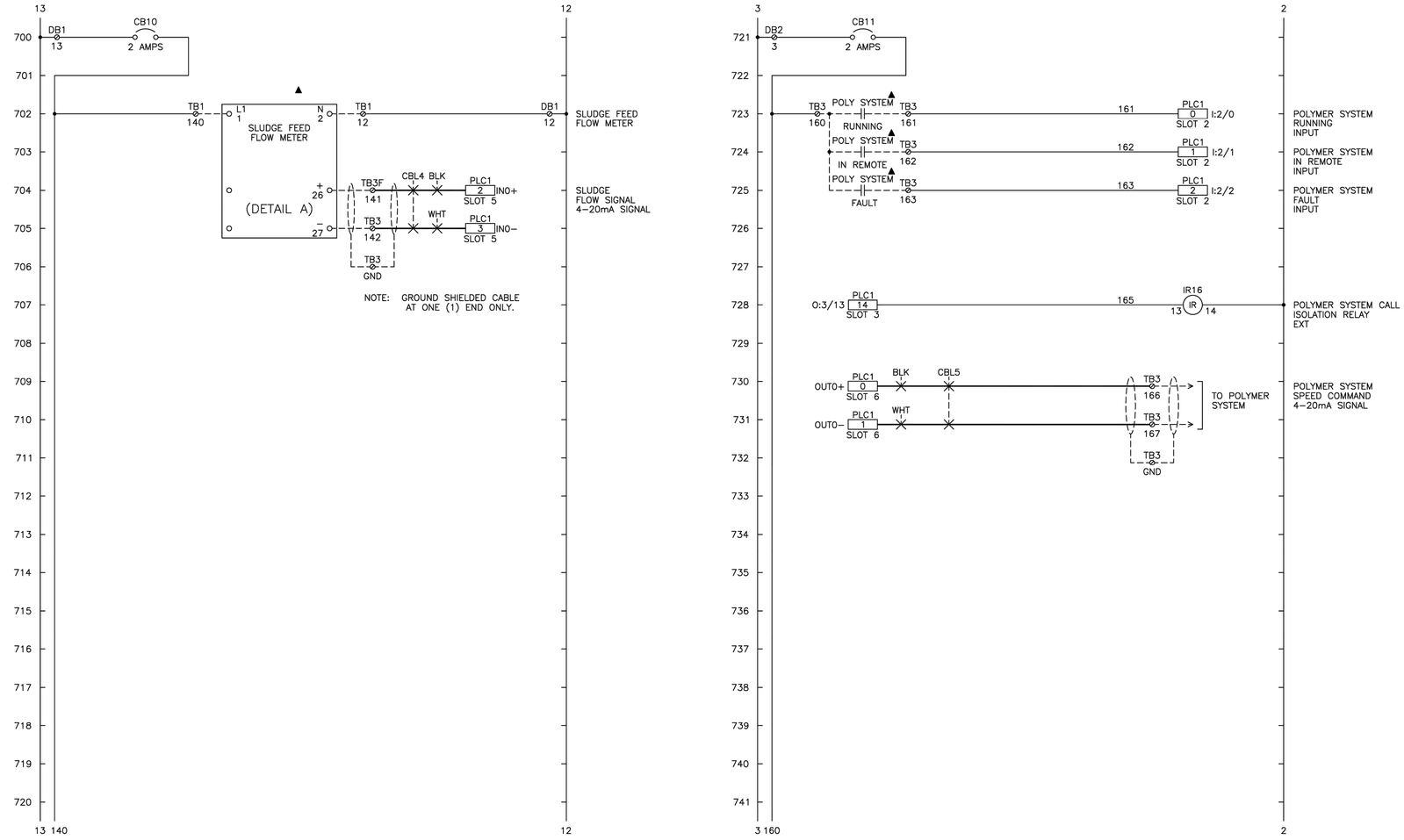
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION SCREWPRESS CONTROL PANEL SPCP-1, SPCP-2

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-106

Bar Measures 1 inch, otherwise drawing not to scale



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CHECKED MSN
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DATE 11/09/23

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TECHNOLOGY
1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

Q–PRESS
CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9464A07

7 | OF | 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH
THIS BID SET FOR EXACT WIRING REQUIREMENTS.
PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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MARK	DATE	DESCRIPTION	BY
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CITY OF MOUNT CLEMENS, MI

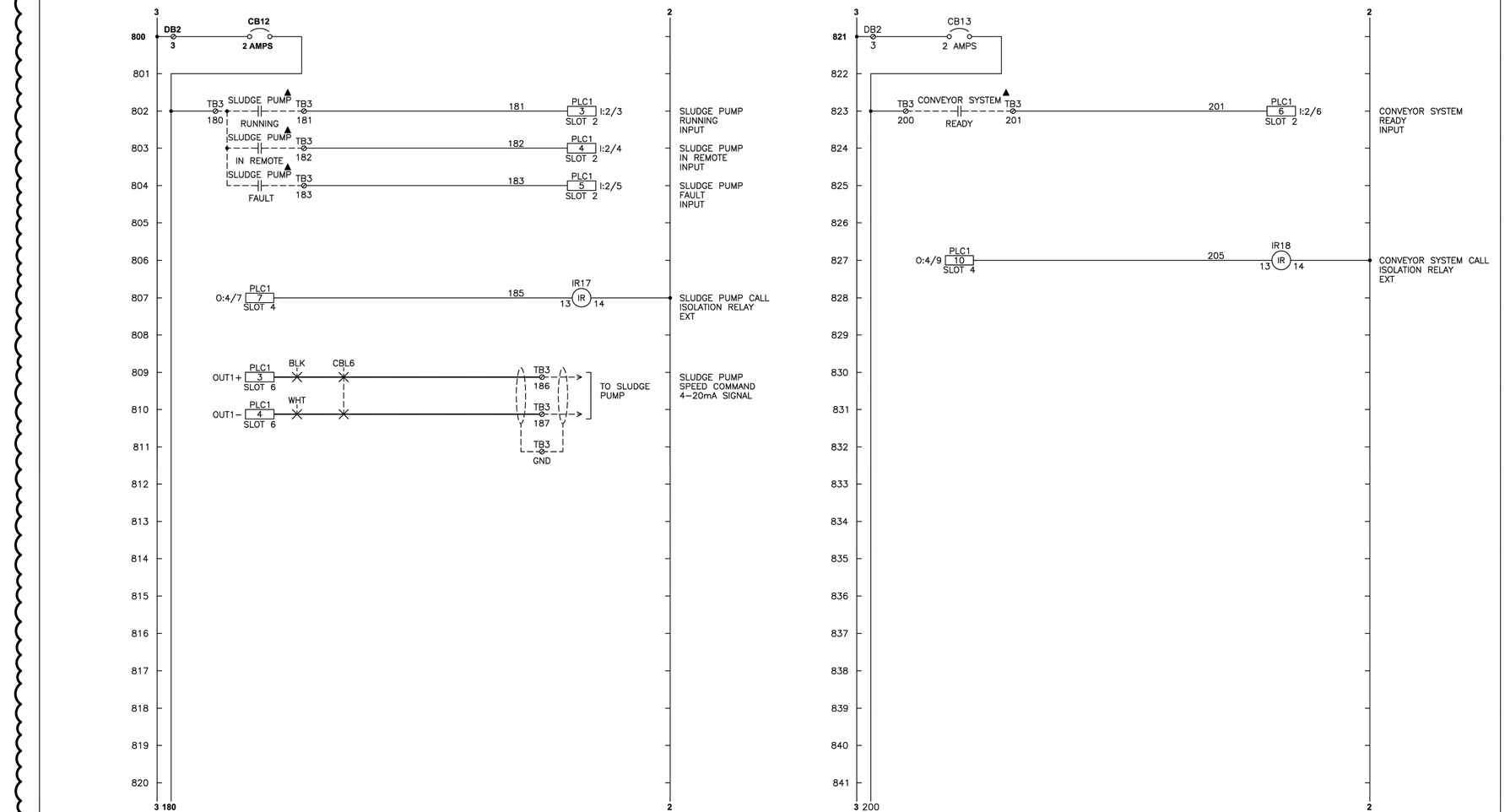
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION SCREWPRESS CONTROL PANEL SPCP-1, SPCP-2

PROJ:	200-12747-23001
DESN:	MF
DRWN:	VLM
CHKD:	

I-107

Bar Measures 1 inch, otherwise drawing not to scale



DATE	REVISION	NO.	BY	CK	APP
11/09/23					

DESIGNED JN
DETAILED
CHECKED MSN
APPROVED
DATE

HUBER TECHNOLOGY
1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

Q–PRESS CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9464A08

8 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

TETRA TECH
www.tetratech.com
3497 COOLIDGE ROAD
EAST LANSING, MI 48823
PHONE: 517.316.3963 FAX: 517.484.8140

MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

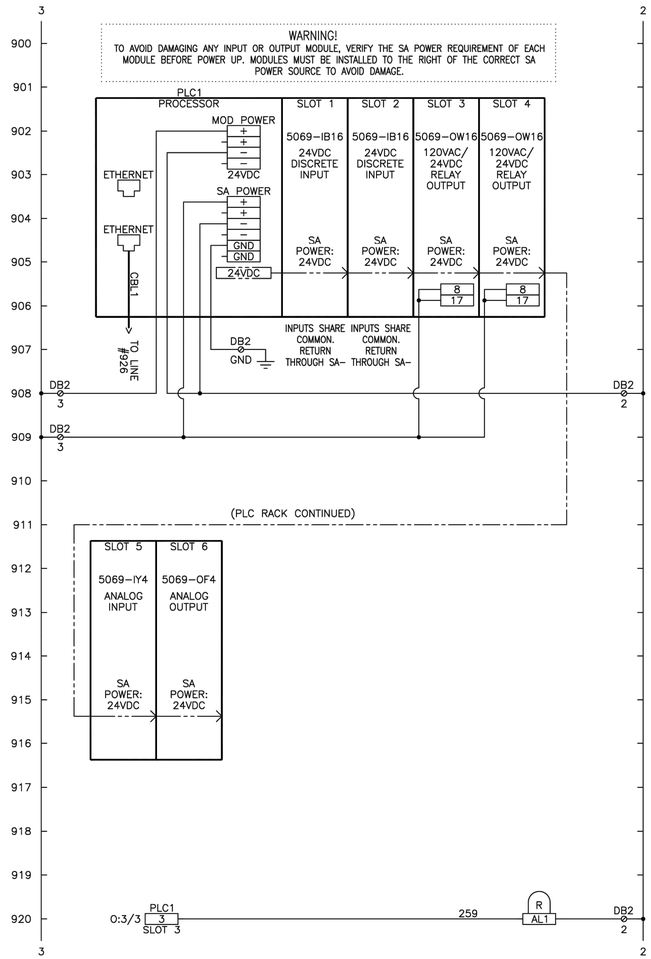
CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

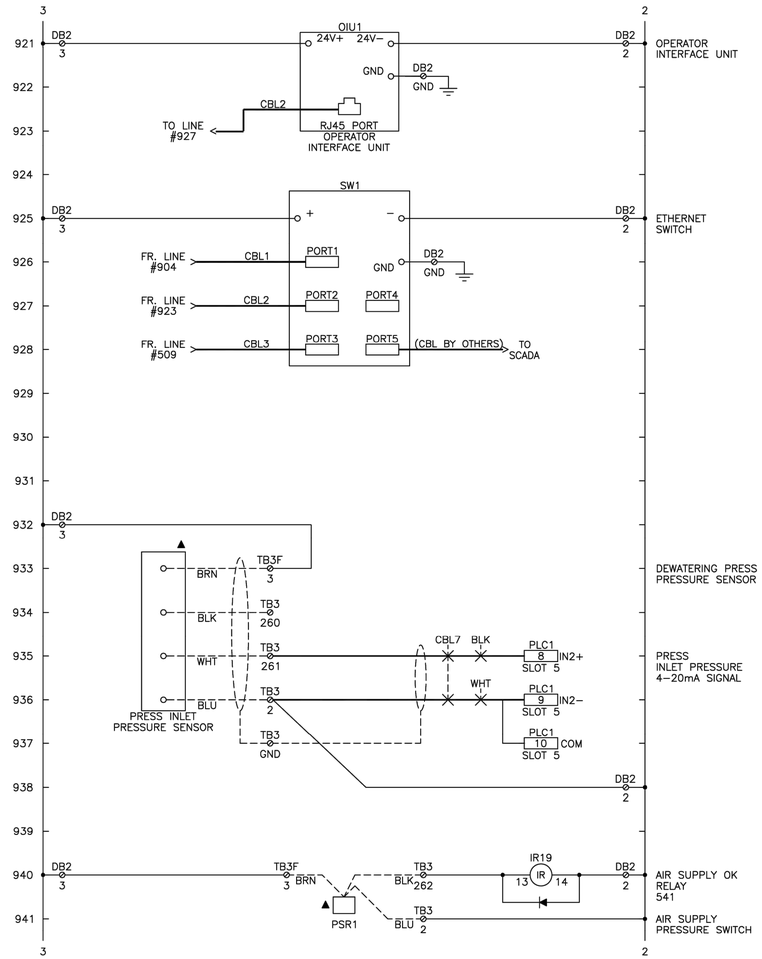
INSTRUMENTATION SCREWPRESS CONTROL PANEL SPCP-1, SPCP-2

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-108

Bar Measures 1 inch, otherwise drawing not to scale





DESIGNED	JN
DETAILED	
CHECKED	MSN
APPROVED	
DATE	11/09/23

DATE	REVISION	NO.	BY	CK	APP

HUBER
TECHNOLOGY
1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

Q-PRESS CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9464A09

9 | OF | 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

TETRA TECH
www.tetratech.com
3497 COOLIDGE ROAD
EAST LANSING, MI 48823
PHONE: 517.316.3963 FAX: 517.484.8140

MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION SCREWPRESS CONTROL PANEL SPCP-1, SPCP-2

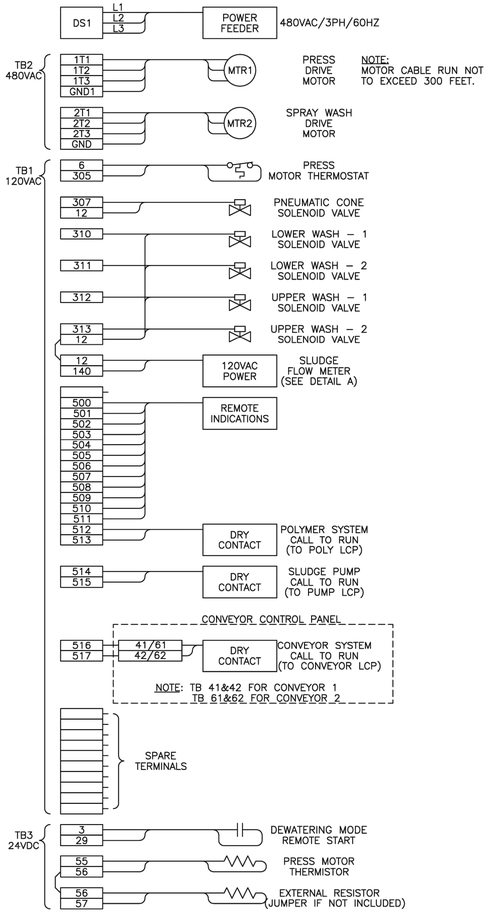
PROJ:	200-12747-23001
DESN:	MF
DRWN:	VLM
CHKD:	

I-109

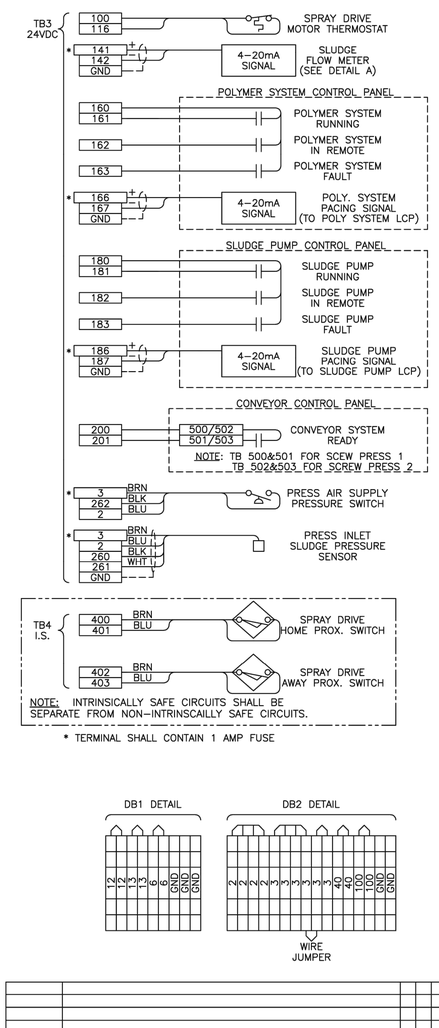
Bar Measures 1 inch, otherwise drawing not to scale

FIELD WIRING DIAGRAM

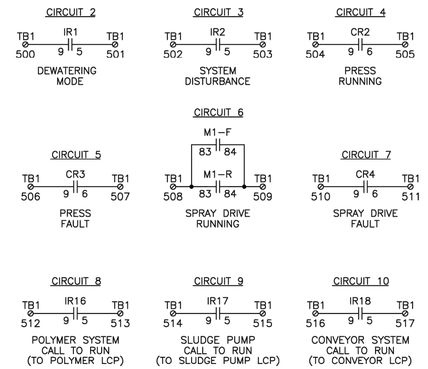
WARNING DAMAGE RESULTING FROM INSTALLATION OF TOP ENTRY CONDUIT WILL VOID WARRANTY.
- AVOID CUTTING HOLES DIRECTLY ABOVE ANY ELECTRICAL COMPONENTS
- PROTECT INTERNAL COMPONENTS FROM METAL SHAVINGS, CUTTING OILS, DEBRIS, AND MOISTURE
- USE PROPER FITTINGS, MYERS TYPE 4 OR EQUAL
- CONDUITS AND FITTING MUST BE WATERTIGHT TO PREVENT WATER ENTRY
- ALL PENETRATIONS MUST BE SEALED OFF TO PREVENT INTRUSION OF MOISTURE, CORROSIVE GASES, AND VAPORS FROM ENTERING THE ENCLOSURE



FIELD WIRING DIAGRAM



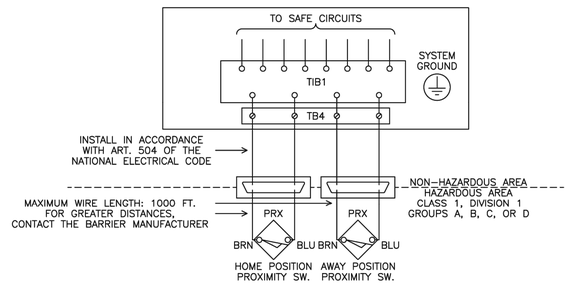
DRY CONTACTS FOR PLANT USE



MAX. CONTROLLED LOAD: 10A @ 120VAC

NOTE: BRANCH CIRCUIT PROTECTION PROVIDED BY OTHERS PER N.E.C.

TIB1 WIRING DETAIL



NOTES:
1. ENSURE CONTROL PANEL IS CONNECTED TO GROUND.
2. CAUTION: MAINTAIN SEPARATION BETWEEN INTRINSICALLY SAFE WIRING AND OTHER WIRING.

DATE	REVISION	NO.	BY	CK	APP

DESIGNED JN
DETAILED
CHECKED MSN
APPROVED
DATE 11/09/23

HUBER TECHNOLOGY
1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

Q–PRESS CONTROL PANEL
MT. CLEMENS, MI
SCALE: NONE
PROJECT NUMBER: 73010851
DRAWING NO: HBR9464A10
10 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

TETRA TECH
www.tetratech.com
3497 COOLIDGE ROAD
EAST LANSING, MI 48823
PHONE: 517.316.3963 FAX: 517.484.8140

MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION SCREWPRESS CONTROL PANEL SPCP-1, SPCP-2

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-110

PLC/OIU SETTINGS

L306ER CPU	DISCRETE IN	DISCRETE OUT	ANALOG IN	ANALOG OUT
	QTY: 2 SLOT 1–2	QTY: 2 SLOT 3,4	QTY: 1 SLOT 5	QTY: 1 SLOT 6

PLC INPUTS – SLOT NO.1

I/0	E–STOP PRESSED
I/1	SYSTEM RESET
I/2	PRESS IN HAND/FORWARD
I/3	PRESS IN HAND/REVERSE
I/4	PRESS IN AUTO
I/5	PRESS OVERLOAD
I/6	PRESS RUNNING
I/7	PRESS MOTOR T–STAT
I/8	SPRAY WASH IN HAND
I/9	SPRAY WASH IN AUTO
I/10	SPRAY DRIVE HOME POSITION
I/11	SPRAY DRIVE AWAY POSITION
I/12	PRESS REMOTE START
I/13	SPARE
I/14	POWER FEED OK
I/15	AIR SUPPLY OK

PLC INPUTS – SLOT NO.2

I/0	POLYMER SYSTEM RUNNING
I/1	POLYMER SYSTEM IN REMOTE
I/2	POLYMER SYSTEM FAULT
I/3	SLUDGE PUMP RUNNING
I/4	SLUDGE PUMP IN REMOTE
I/5	SLUDGE PUMP FAULT
I/6	CONVEYOR SYSTEM READY
I/7	SPARE
I/8	SPARE
I/9	SPRAY DRIVE RUN REVERSE
I/10	SPRAY DRIVE RUN FORWARD
I/11	SPRAY DRIVE HIGH CURRENT
I/12	SPRAY DRIVE OVERLOAD
I/13	SPRAY DRIVE MOTOR T–STAT
I/14	SPRAY DRIVE IN HAND
I/15	SPRAY DRIVE IN AUTO

PLC OUTPUTS – SLOT NO.3

O/0	CONTROL POWER ENABLE
O/1	PRESS DEWATERING MODE
O/2	PRESS SYSTEM DISTURBANCE
O/3	COMMON ALARM
O/4	SPARE
O/5	SPARE
O/6	SPARE
O/7	SPARE
O/8	PRESS CALL TO RUN FORWARD
O/9	PRESS CALL TO RUN REVERSE
O/10	PRESS FAULT
O/11	PRESS PNUEMATIC CONE ENGAGE
O/12	SPARE
O/13	POLYMER SYSTEM CALL TO RUN
O/14	SPARE
O/15	SPARE

PLC OUTPUTS – SLOT NO.4

O/0	PRESS LOWER WASH 1 CALL
O/1	PRESS LOWER WASH 2 CALL
O/2	PRESS UPPER WASH 1 CALL
O/3	PRESS UPPER WASH 2 CALL
O/4	SPRAY DRIVE CALL REVERSE
O/5	SPRAY DRIVE CALL FORWARD
O/6	SPRAY DRIVE FAULT
O/7	SLUDGE PUMP CALL TO RUN
O/8	SPARE
O/9	CONVEYOR SYSTEM CALL TO RUN
O/10	SPARE
O/11	SPARE
O/12	SPARE
O/13	SPARE
O/14	SPARE
O/15	SPARE

PLC ANALOG INPUTS – SLOT NO.5

IN0	SLUDGE FEED FLOW RATE
IN1	SPARE
IN2	PRESS INLET PRESSURE
IN3	SPARE

PLC ANALOG OUTPUTS – SLOT NO.6

OUT0	POLYMER SPEED COMMAND
OUT1	SLUDGE PUMP SPEED COMMAND
OUT2	SPARE
OUT3	SPARE

PLC/OIU SETTINGS

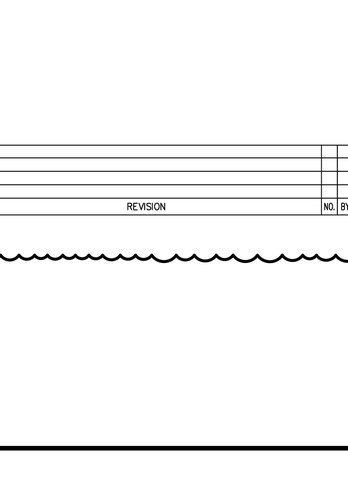
PLC1 – COMMUNICATIONS SETUP

ETHERNET PORT PARAMETERS	VALUE
IP ADDRESS PANEL 1	10.0.0.1
IP ADDRESS PANEL 2	10.0.0.4
SUBNET MASK	255.255.255.0
GATEWAY ADDRESS	0.0.0.0
BOOTP ENABLE	NO

OIU1 – COMMUNICATIONS SETUP

ETHERNET PORT PARAMETERS	VALUE
IP ADDRESS PANEL 1	10.0.0.2
IP ADDRESS PANEL 2	10.0.0.5
SUBNET MASK	255.255.255.0
GATEWAY ADDRESS	0.0.0.0
BOOTP ENABLE	NO

ETHERNET NETWORK MAP



NOTES:
1. – – – CAT5 ETHERNET CABLE

SUBNET MASK: 255.255.255.0

PLC/OIU SETTINGS

Q–PRESS SYSTEM OIU MAINTENANCE REMINDERS

PART DESCRIPTION	OPERATING TIME (HOURS)
INSPECT WIPER	2000
INSPECT COMPLETE SPRAY CAROUSEL	2000
INSPECT LOWER SHAFT SEALS & BUSHING	2000
INSPECT UPPER AUGER SHAFT BEARING	2000
INSPECT SOLENOID VALVES	100
INSPECT WASH SYSTEM HOSES	2000
REPLACE GEARBOX OIL	10000

DATE	REVISION	NO.	BY	CK	APP
11/09/23					

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DETAILED
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DATE

HUBER TECHNOLOGY
1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

Q–PRESS CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9464A11

11 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

TETRA TECH
www.tetratech.com
3497 COOLIDGE ROAD
EAST LANSING, MI 48823
PHONE: 517.316.3963 FAX: 517.484.8140

MARK	DATE	DESCRIPTION
	02/05/24	ISSUED FOR BIDS

CITY OF MOUNT CLEMENS, MI

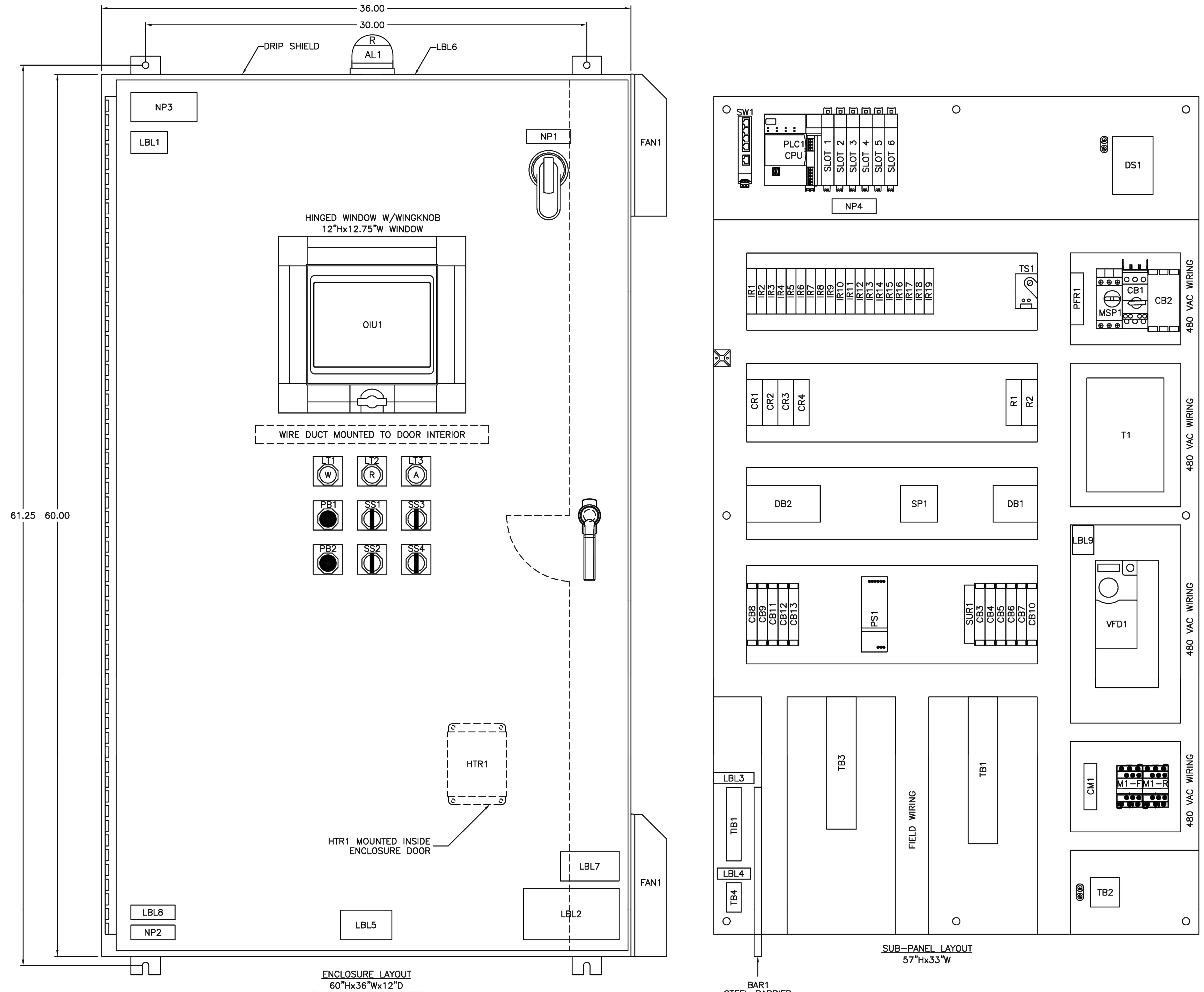
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION SCREWPRESS CONTROL PANEL SPCP-1, SPCP-2

PROJ:	200-12747-23001
DESN:	MF
DRWN:	VLM
CHKD:	

I-111

Bar Measures 1 inch, otherwise drawing not to scale



DATE	REVISION	NO.	BY	CK	APP

DESIGNED JN
DETAILED
CHECKED MSN
APPROVED
DATE 11/09/23

HUBER TECHNOLOGY
1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

Q-PRESS
CONTROL PANEL

MT. CLEMENS, MI

SCALE: NONE

PROJECT NUMBER: 73010851

DRAWING NO: HBR9464A16

16 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

TETRA TECH
www.tetratech.com
3497 COOLIDGE ROAD
EAST LANSING, MI 48823
PHONE: 517.316.3963 FAX: 517.484.8140

MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION SCREWPRESS CONTROL PANEL SPCP-1, SPCP-2

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-112

Bar Measures 1 inch, otherwise drawing not to scale

1/31/2024 9:07:50 AM - \\TT.LOCAL\IER\PROJECTS\LANSING\IER\12747\200-12747-23001\CAD\SHEETFILES\I-112 SPCP-1&2 HBR9464A16.DWG - MELLING, VICKIE

PILOT DEVICE LEGENDPLATES (PANEL DOOR)				
DEVICE TAG	DESCRIPTOR LINE 1	DESCRIPTOR LINE 2	DESCRIPTOR LINE 3	
LT1	CONTROL POWER	ON		
LT2	DEWATERING	MODE		
LT3	SYSTEM	DISTURBANCE		
PB1	EMERGENCY	STOP		
PB2	SYSTEM	RESET		
SS1	PRESS	OFF	HAND	AUTO
SS2	PRESS	OFF	FOR	REV
SS3	SPRAY WASH	OFF	HAND	AUTO
SS4	SPRAY DRIVE	OFF	HAND	AUTO
MAX. CHARACTERS	15	15	4	4

LABEL DESCRIPTION	
LBL1	WARNING MULTIPLE SUPPLY SOURCES OPEN ALL DISCONNECTS BEFORE SERVICING EQUIPMENT OR OTHER UNIT WIRING
LBL2	DANGER HIGH VOLTAGE ENTRY BY QUALIFIED PERSON ONLY
LBL3	WARNING SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY
LBL4	INTRINSICALLY SAFE FIELD WIRING TERMINALS
LBL5	ELEMECH ELECTRICAL CONTROL SYSTEMS
LBL6	WARNING DAMAGE RESULTING FROM INSTALLATION OF TOP ENTRY CONDUIT WILL VOID WARRANTY. – AVOID CUTTING HOLES DIRECTLY ABOVE ANY ELECTRICAL COMPONENTS – PROTECT INTERNAL COMPONENTS FROM METAL SHAVINGS, CUTTING OILS, DEBRIS, AND MOISTURE – USE PROPER FITTINGS, MYERS TYPE 4 OR EQUAL – CONDUITS AND FITTING MUST BE WATERTIGHT TO PREVENT WATER ENTRY – ALL PENETRATIONS MUST BE SEALED OFF TO PREVENT INTRUSION OF MOISTURE, CORROSIVE GASES, AND VAPORS FROM ENTERING THE ENCLOSURE
LBL7	DANGER ARC FLASH AND SHOCK HAZARD FOLLOW ALL REQUIREMENTS NFPA 70E FOR SAFE WORK PRACTICES AND FOR PERSONAL PROTECTIVE EQUIPMENT.
LBL8	WARNING TO PREVENT IGNITION OF FLAMMABLE OR COMBUSTIBLE ATMOSPHERES, DISCONNECT POWER BEFORE SERVICING.
LBL9	VFD SETUP GUIDE

NAMEPLATES			
TAG	DESCRIPTOR LINE 1	DESCRIPTOR LINE 2	DESCRIPTOR LINE 3
NP1	480VAC–3PH–60HZ		
NP2	INTRINSICALLY	SAFE CIRCUITS	
NP3	CONTROL PANEL PROVIDES INTRINSICALLY SAFE CIRCUIT EXTENSIONS FOR USE IN CLASS I, DIVISION 1 GROUPS A,B,C,D; CLASS I, ZONE 0 AND 1, GROUP IIC; CLASS II, DIVISION 1 GROUPS E,F,G HAZARDOUS LOCATIONS WHEN CONNECTED PER PR ELECTRONICS INSTALLATION DRAWING NO. 5202QU01		
NP4	WARNING! TO AVOID DAMAGING ANY INPUT OR OUTPUT MODULE, VERIFY THE SA POWER REQUIREMENT OF EACH MODULE BEFORE POWER UP. MODULES MUST BE INSTALLED TO THE RIGHT OF THE CORRECT SA POWER SOURCE TO AVOID DAMAGE.		

NAMEPLATES AND LEGENDPLATES CONSTRUCTION					
	PANEL LEGENDPLATES	LCS LEGENDPLATES	NAMEPLATES	UL698 NAMEPLATES	DEVICE TAGS
TEXT COLOR	BLACK	BLACK	BLACK	BLACK	BLACK
BACKGROUND COLOR	WHITE/ YELLOW (E–STOPS)	WHITE/ YELLOW (E–STOPS)	WHITE	YELLOW	WHITE
MATERIAL	THERMAL TRANSFER	THERMAL TRANSFER	THERMAL TRANSFER	PHENOLIC ENGRAVED	THERMAL TRANSFER
ATTACHMENT	ADHESIVE	ADHESIVE	ADHESIVE	ADHESIVE	ADHESIVE
TEXT SIZE	5/32" HIGH	5/32" HIGH	3/16" HIGH	1/8" HIGH	1/8" HIGH
DIMENSIONS	2.375"X2.375"	1.875"X1.875"	2.72"X1"	4"X2"	1"X$\frac{1}{2}$"
MAX. CHARACTERS PER LINE	15	15	17	35	7

PANEL DATA LABEL

ELEMECH
ELECTRICAL AND MECHANICAL ENGINEERING SERVICES

ELEMECHINC.COM 630–499–7080

WARRANTY NOTICE
NO ALLOWANCE OR PAYMENT WILL BE MADE FOR WARRANTY REPAIR UNLESS PRIOR AUTHORIZATION HAS BEEN REQUESTED AND OBTAINED FROM THE ELEMECH SERVICE DEPT.

SERIAL: HBR9464 | POWER: 3/60/480
REF: # 73010851 | FLA: 9.2A
DATE: TBD | LOST MOT: 7.1A

SHORT CIRCUIT CURRENT RATING
5 KA RMS SYMMETRICAL @ 480 VOLTS MAX

ENCLOSURE RATING: NEMA TYPE 4X

NAME: MT. CLEMENS, MI

CIRCUIT 2–16: 10A @ 120VAC

TORQUE SCREWS TO 12 IN–LBS

ALL FIELD WIRING SHALL BE 60°C COPPER CONDUCTOR ONLY

NOTE:
THE CONTROL PANEL WILL ALSO BE LISTED AND LABELED WITH A SERIALIZED LABEL AS OUTLINED IN THE CONTROL PANEL SPECIFICATION NOTES.

REPLACE TBF WITH FAST ACTING FUSE RATED AT 250V, MAX 1 AMP BUSSMAN AGC–1 OR EQUAL

PILOT DEVICE LEGENDPLATES

LINE 1
LINE 2
LINE 3 LINE 3

PANEL NAMEPLATE

LINE 1
LINE 2
LINE 3

NOTE:
TEXT WILL REMAIN VERTICALLY CENTERED IF LESS THAN 3 LINES ARE USED.

DEVICE TAG

TAG

DATE	REVISION	NO.	BY	CK	APP

DESIGNED JN
DETAILED
CHECKED MSN
APPROVED
DATE 11/09/23

HUBER TECHNOLOGY
1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

Q–PRESS CONTROL PANEL
MT. CLEMENS, MI | SCALE: NONE
PROJECT NUMBER: 73010851 | DRAWING NO: HBR9464A17
17 | OF | 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

TETRA TECH
www.tetratech.com
3497 COOLIDGE ROAD
EAST LANSING, MI 48823
PHONE: 517.316.3963 FAX: 517.484.8140

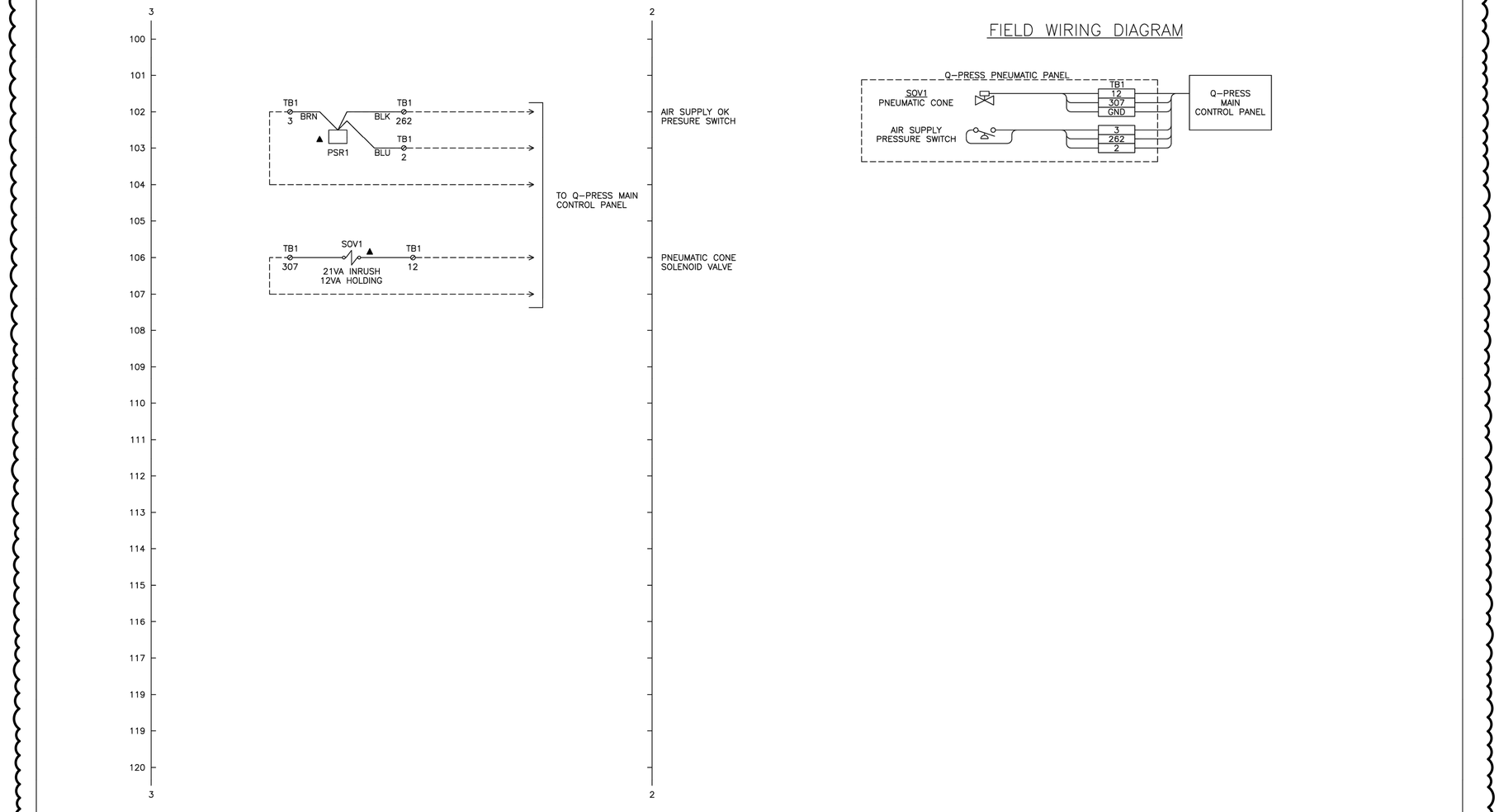
MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
INSTRUMENTATION
SCREWPRESS CONTROL PANEL SPCP-1, SPCP-2

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-113

Bar Measures 1 inch, otherwise drawing not to scale



FIELD WIRING DIAGRAM

DATE	REVISION	NO.	BY	CK	APP

DESIGNED JN
DETAILED
CHECKED MSN
APPROVED
DATE 11/09/23

HUBER
TECHNOLOGY
1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

Q-PRESS PNEUMATIC CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9464B01

1 OF 3

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

TETRA TECH
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EAST LANSING, MI 48823
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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION SCREWPRESS CONTROL PANEL SPCP-1, SPCP-2

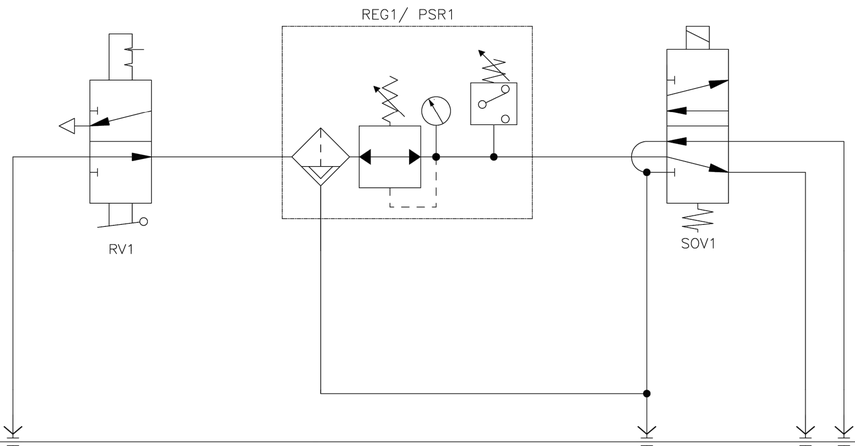
PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-114

Bar Measures 1 inch, otherwise drawing not to scale

PNEUMATIC
CONTROL PANEL

NOTE: ALL AIR LINES WILL BE 3/8" BLUE POLYURETHANE TUBING.



DATE	REVISION	NO.	BY	CK	APP
11/09/23	DESIGNED JN DETAILED CHECKED MSN APPROVED				

HUBER
TECHNOLOGY
1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

Q-PRESS PNEUMATIC CONTROL PANEL

MT. CLEMENS, MI	SCALE: NONE
PROJECT NUMBER: 73010851	DRAWING NO: HBR9464B02
	2 OF 3

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

TETRA TECH
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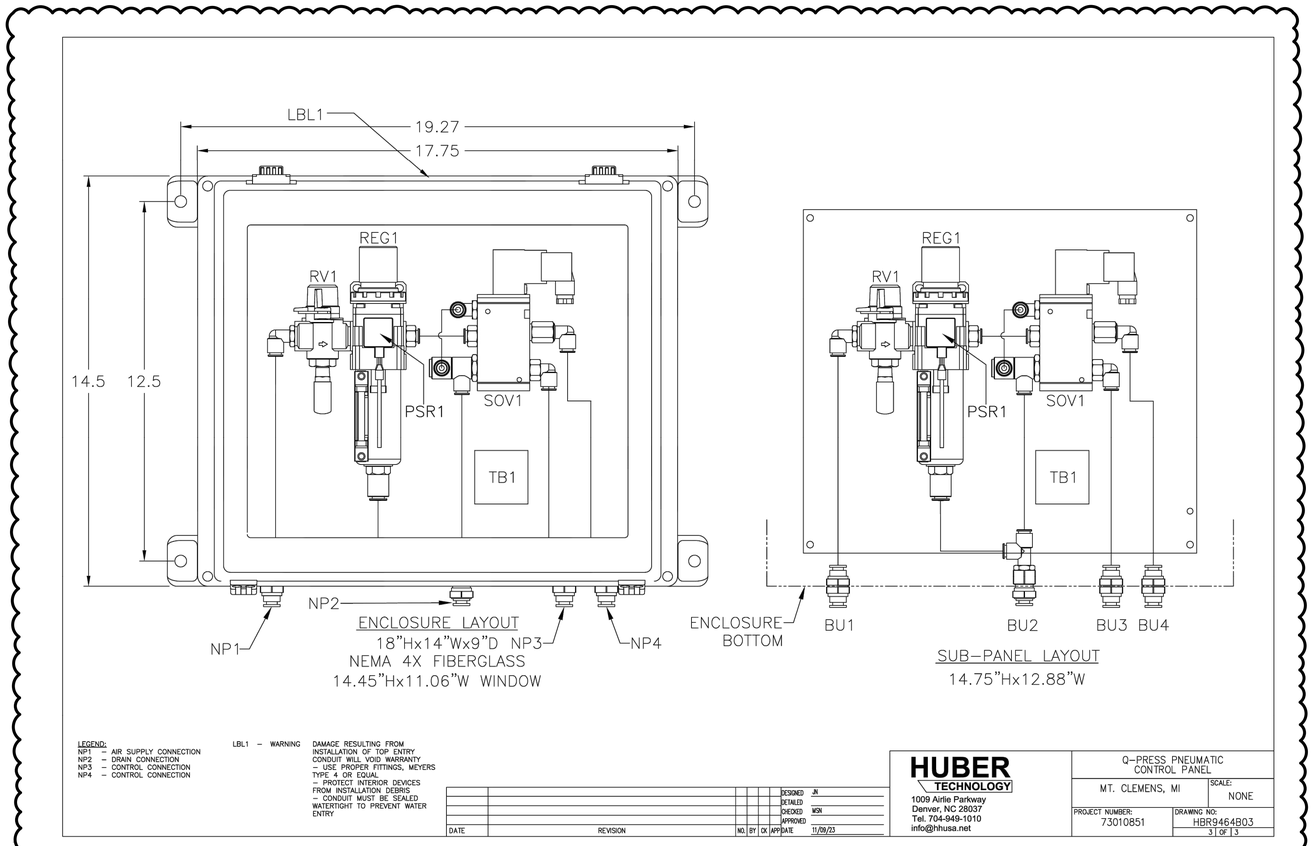
MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
INSTRUMENTATION
SCREWPRESS CONTROL PANEL SPCP-1, SPCP-2

PROJ:	200-12747-23001
DESN:	MF
DRWN:	VLM
CHKD:	

I-115

Bar Measures 1 inch, otherwise drawing not to scale



LEGEND:
NP1 – AIR SUPPLY CONNECTION
NP2 – DRAIN CONNECTION
NP3 – CONTROL CONNECTION
NP4 – CONTROL CONNECTION

LBL1 – WARNING DAMAGE RESULTING FROM INSTALLATION OF TOP ENTRY CONDUIT WILL VOID WARRANTY – USE PROPER FITTINGS, MEYERS TYPE 4 OR EQUAL – PROTECT INTERIOR DEVICES FROM INSTALLATION DEBRIS – CONDUIT MUST BE SEALED WATERTIGHT TO PREVENT WATER ENTRY

DATE	REVISION	NO.	BY	CK	APP
11/09/23	DESIGNED JN; DETAILED ; CHECKED MGR; APPROVED				

HUBER TECHNOLOGY
1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

Q-PRESS PNEUMATIC CONTROL PANEL
MT. CLEMENS, MI
SCALE: NONE
PROJECT NUMBER: 73010851
DRAWING NO: HBR9464B03
3 | OF | 3

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

TETRA TECH
www.tetratech.com
3497 COOLIDGE ROAD
EAST LANSING, MI 48823
PHONE: 517.316.3963 FAX: 517.484.8140

MARK	DATE	DESCRIPTION
	02/05/24	ISSUED FOR BIDS

BY

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
INSTRUMENTATION
SCREWPRESS CONTROL PANEL SPCP-1, SPCP-2

PROJ:	200-12747-23001
DESN:	MF
DRWN:	VLM
CHKD:	

I-116

Bar Measures 1 inch, otherwise drawing not to scale

MT. CLEMENS, MI

HBR9465

SPECIFICATION	CONVEYOR CONTROL PANEL
REFERENCE	73010851

TABLE OF CONTENTS

DATE	REVISION	NO.	BY	CK.	APP.

DESIGNED JN
DETAILED
CHECKED MDN
APPROVED
DATE 11/10/23

HUBER TECHNOLOGY
1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhiusa.net

CONVEYOR CONTROL PANEL
MT. CLEMENS, MI
SCALE: NONE
PROJECT NUMBER: 73010851
DRAWING NO: HBR9465A01
1 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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3497 COOLIDGE ROAD
EAST LANSING, MI 48823
PHONE: 517.316.3963 FAX: 517.484.8140

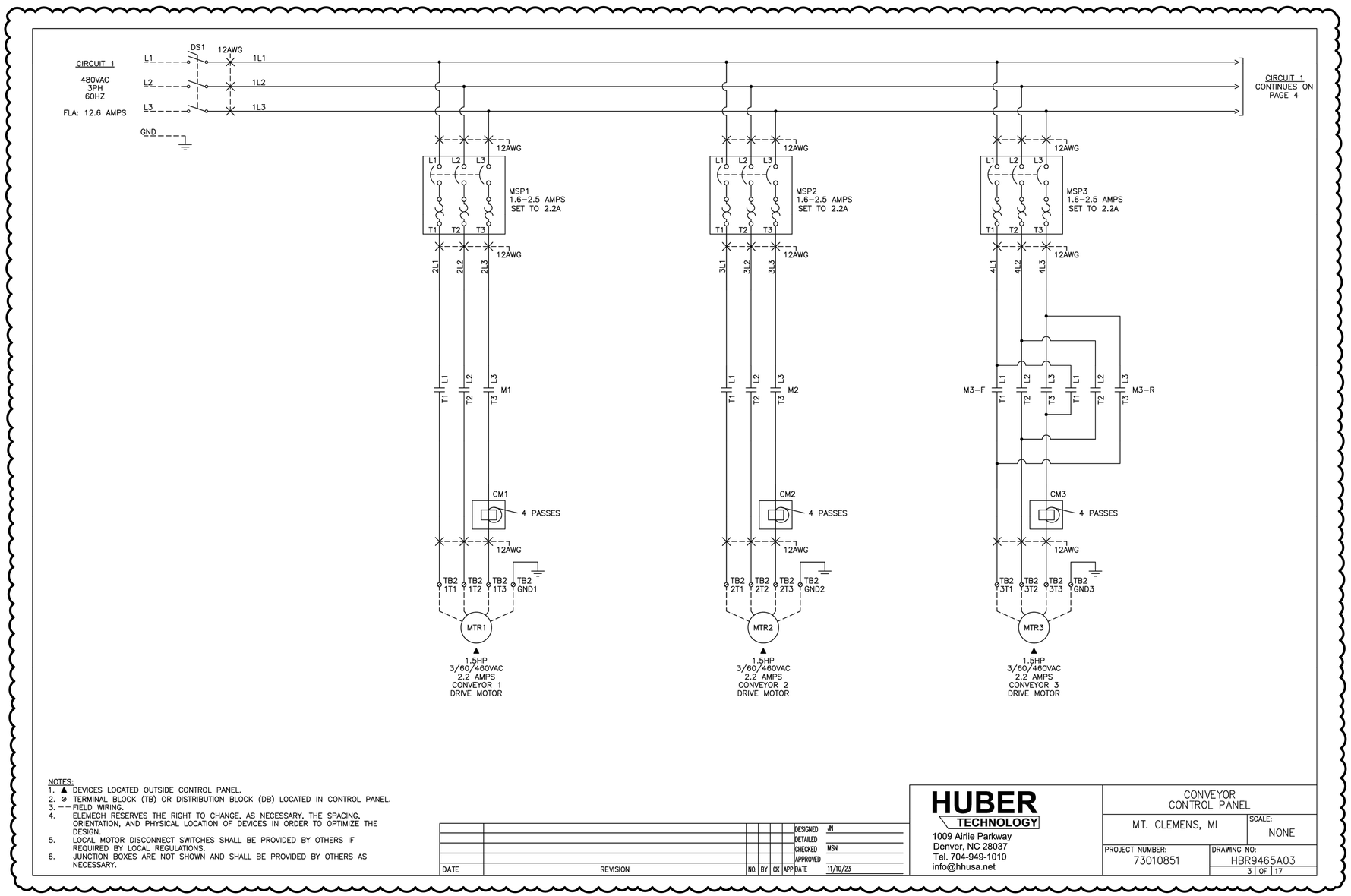
MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
INSTRUMENTATION
CONVEYOR CONTROL PANEL

PROJ:	200-12747-23001
DESN:	MF
DRWN:	VLM
CHKD:	

I-117

Bar Measures 1 inch, otherwise drawing not to scale



NOTES:
1. ▲ DEVICES LOCATED OUTSIDE CONTROL PANEL.
2. ⌀ TERMINAL BLOCK (TB) OR DISTRIBUTION BLOCK (DB) LOCATED IN CONTROL PANEL.
3. – – FIELD WIRING.
4. ELEMECH RESERVES THE RIGHT TO CHANGE, AS NECESSARY, THE SPACING, ORIENTATION, AND PHYSICAL LOCATION OF DEVICES IN ORDER TO OPTIMIZE THE DESIGN.
5. LOCAL MOTOR DISCONNECT SWITCHES SHALL BE PROVIDED BY OTHERS IF REQUIRED BY LOCAL REGULATIONS.
6. JUNCTION BOXES ARE NOT SHOWN AND SHALL BE PROVIDED BY OTHERS AS NECESSARY.

DATE	REVISION	NO.	BY	CK	APP

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DATE 11/10/23

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TECHNOLOGY
1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

CONVEYOR
CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9465A03

3 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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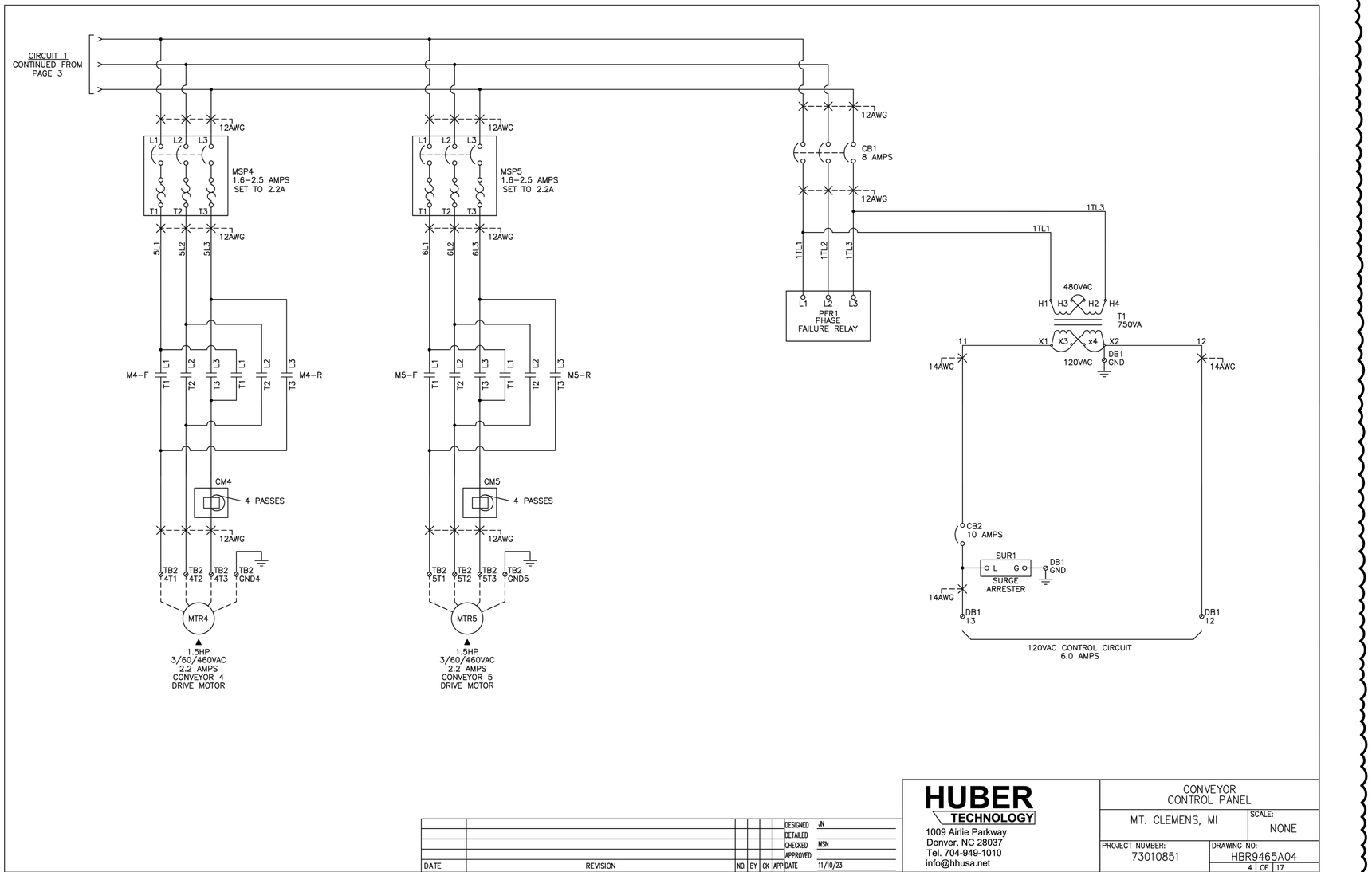
CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION CONVEYOR CONTROL PANEL

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-118

Bar Measures 1 inch, otherwise drawing not to scale



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CONVEYOR
CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9465A04

4 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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MARK	DATE	DESCRIPTION	BY
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CITY OF MOUNT CLEMENS, MI

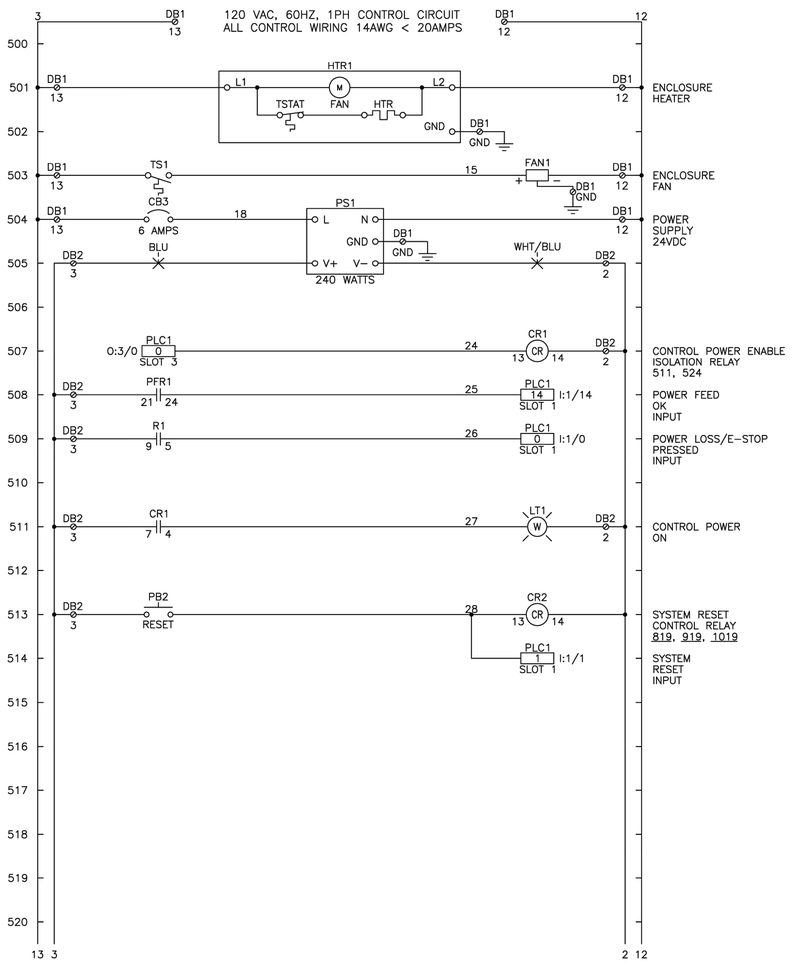
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

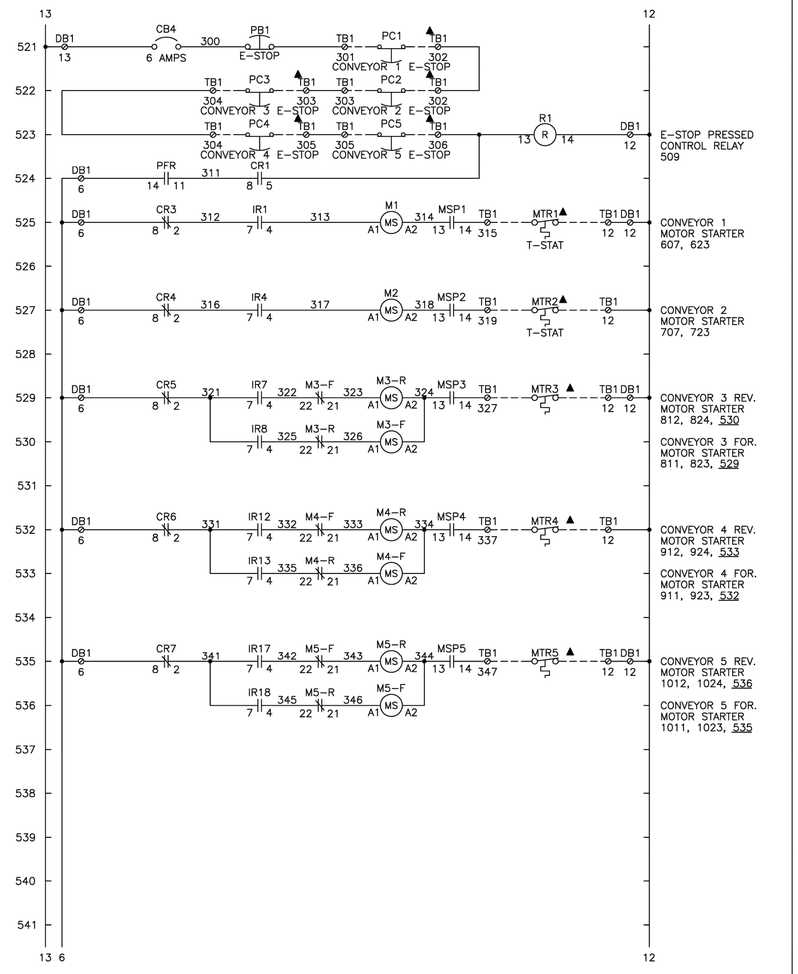
INSTRUMENTATION CONVEYOR CONTROL PANEL

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-119

Bar Measures 1 inch, otherwise drawing not to scale





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info@hhusa.net

CONVEYOR CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9465A05

5 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

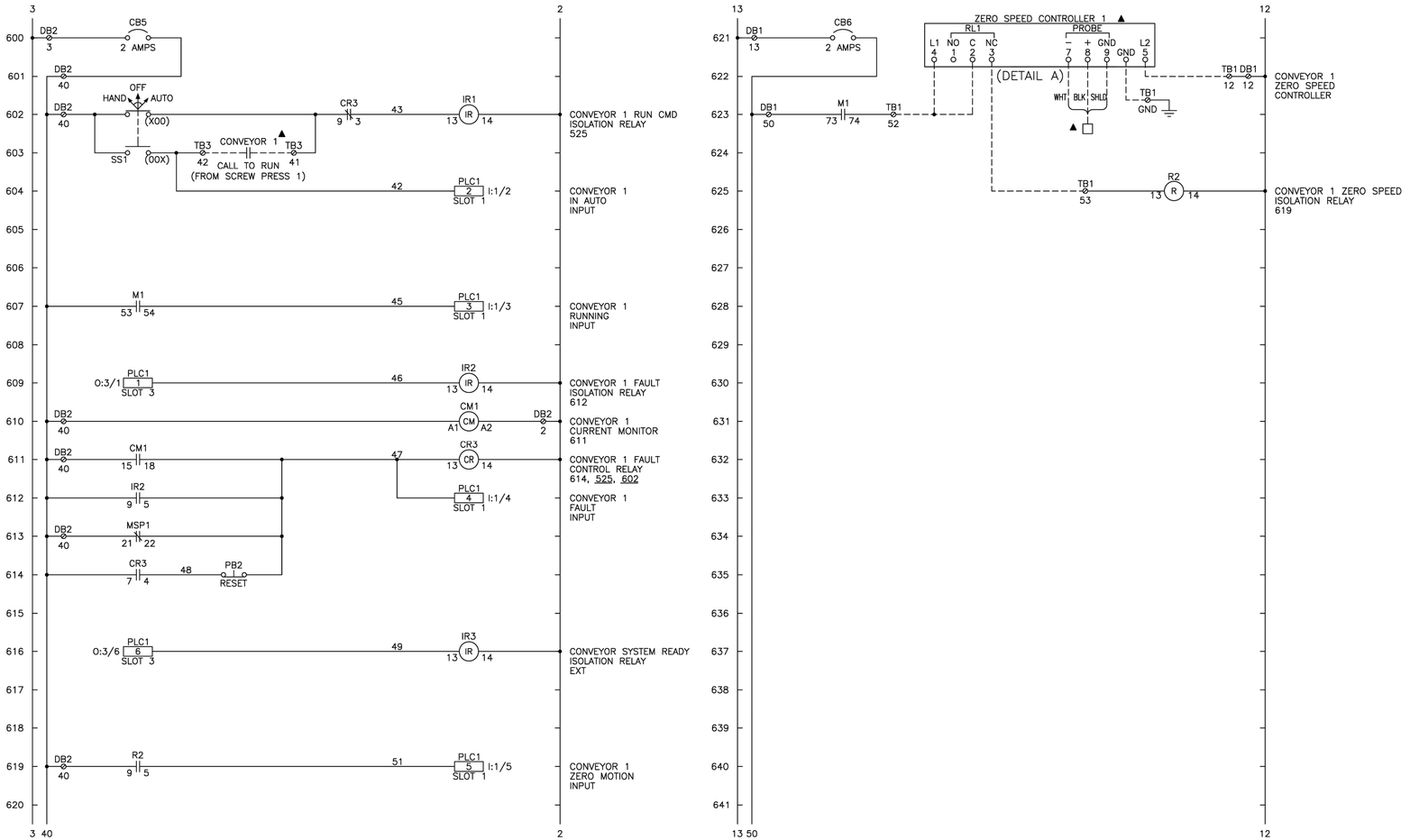
CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION CONVEYOR CONTROL PANEL

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-120

Bar Measures 1 inch, otherwise drawing not to scale



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					CHECKED	MSN
					APPROVED	
					DATE	11/10/23

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info@hhusa.net

CONVEYOR CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9465A06 | 6 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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MARK	DATE	DESCRIPTION	BY
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CITY OF MOUNT CLEMENS, MI

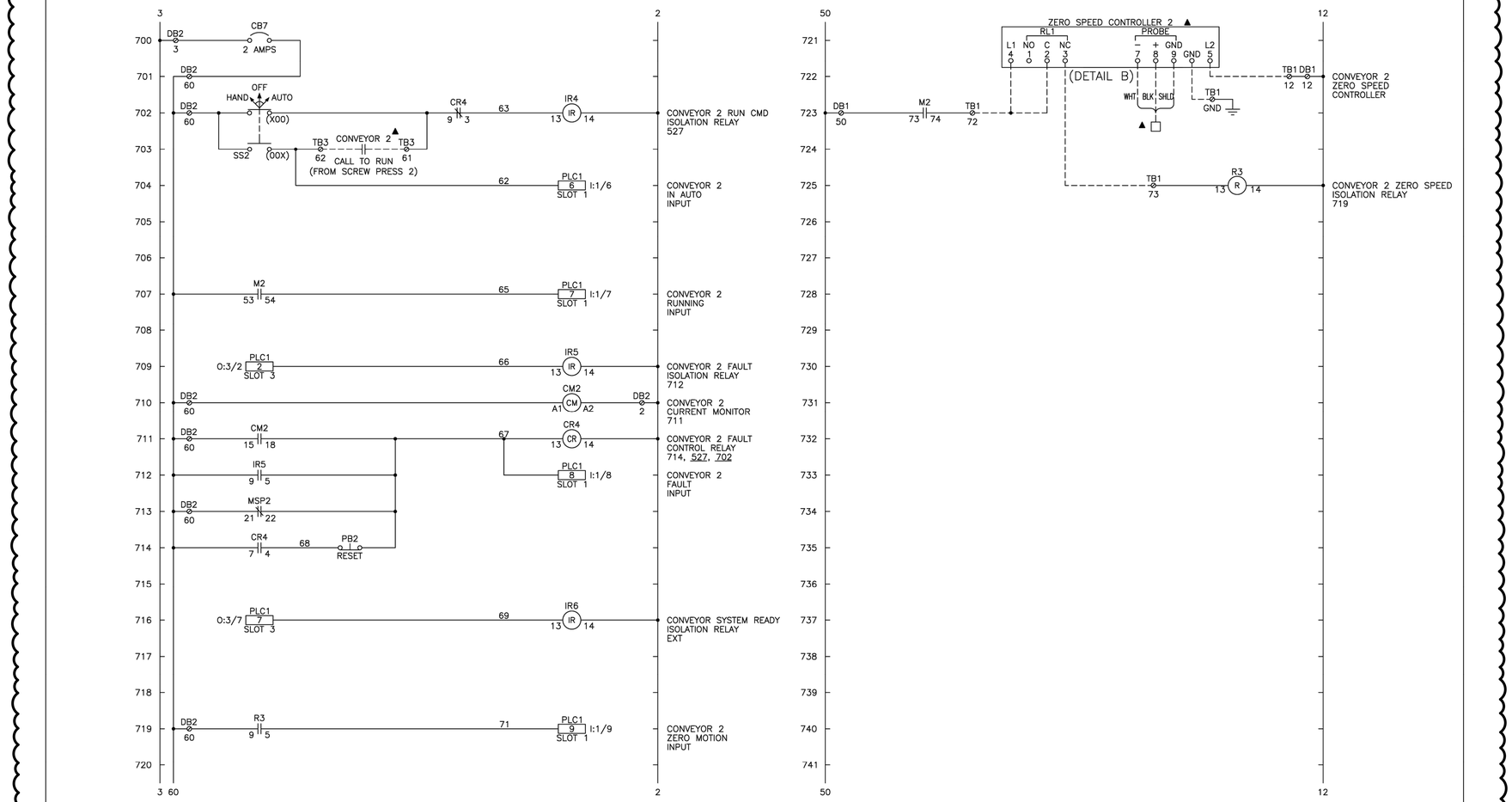
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION CONVEYOR CONTROL PANEL

PROJ:	200-12747-23001
DESN:	MF
DRWN:	VLM
CHKD:	

I-121

Bar Measures 1 inch, otherwise drawing not to scale



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info@hhusa.net

CONVEYOR CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9465A07

7 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

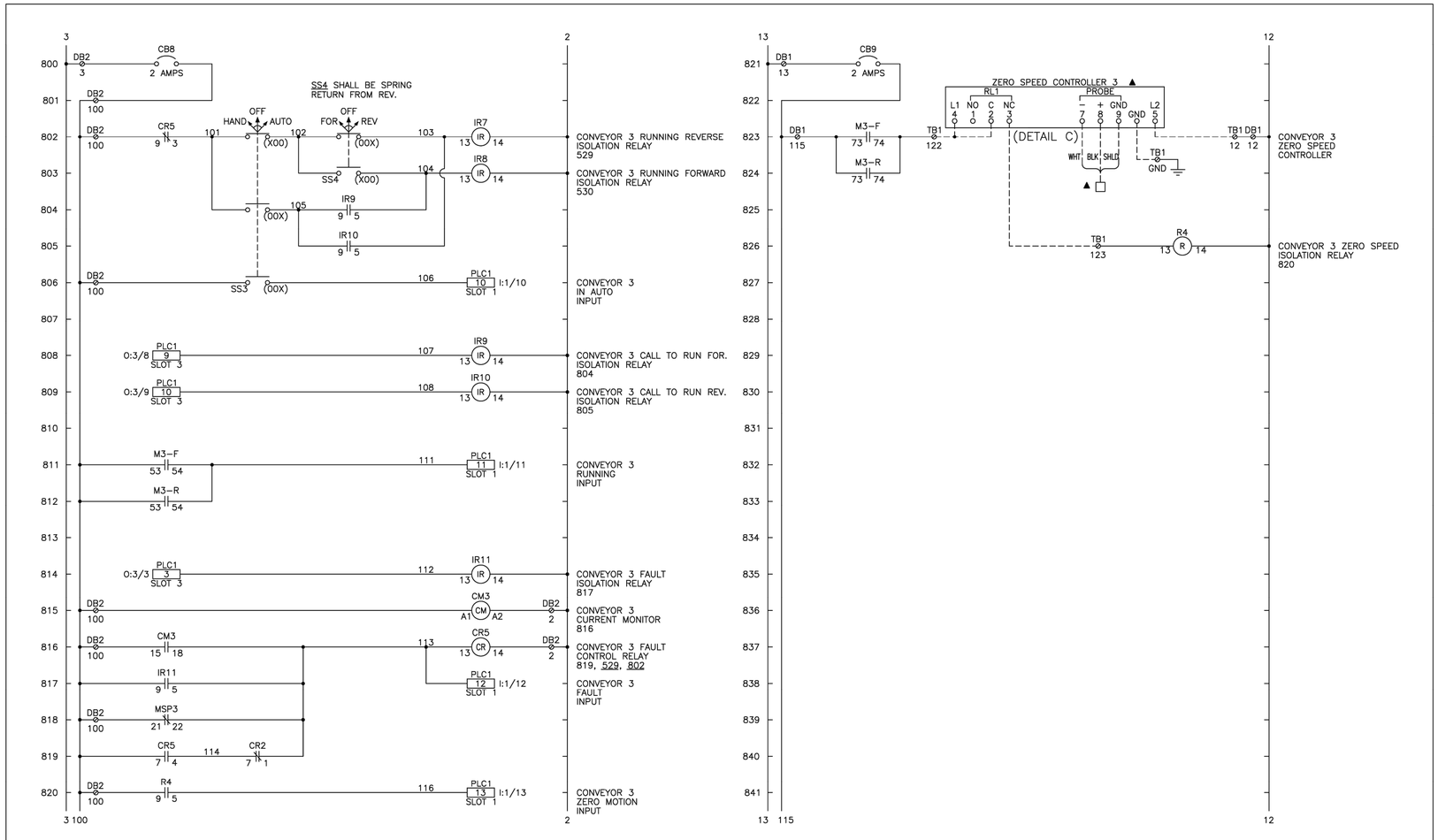
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION CONVEYOR CONTROL PANEL

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-122

Bar Measures 1 inch, otherwise drawing not to scale



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					DETAILED	
					CHECKED	MSN
					APPROVED	

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CONVEYOR CONTROL PANEL
MT. CLEMENS, MI
SCALE: NONE
PROJECT NUMBER: 73010851
DRAWING NO: HBR9465A08
8 | OF | 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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MARK	DATE	DESCRIPTION	BY
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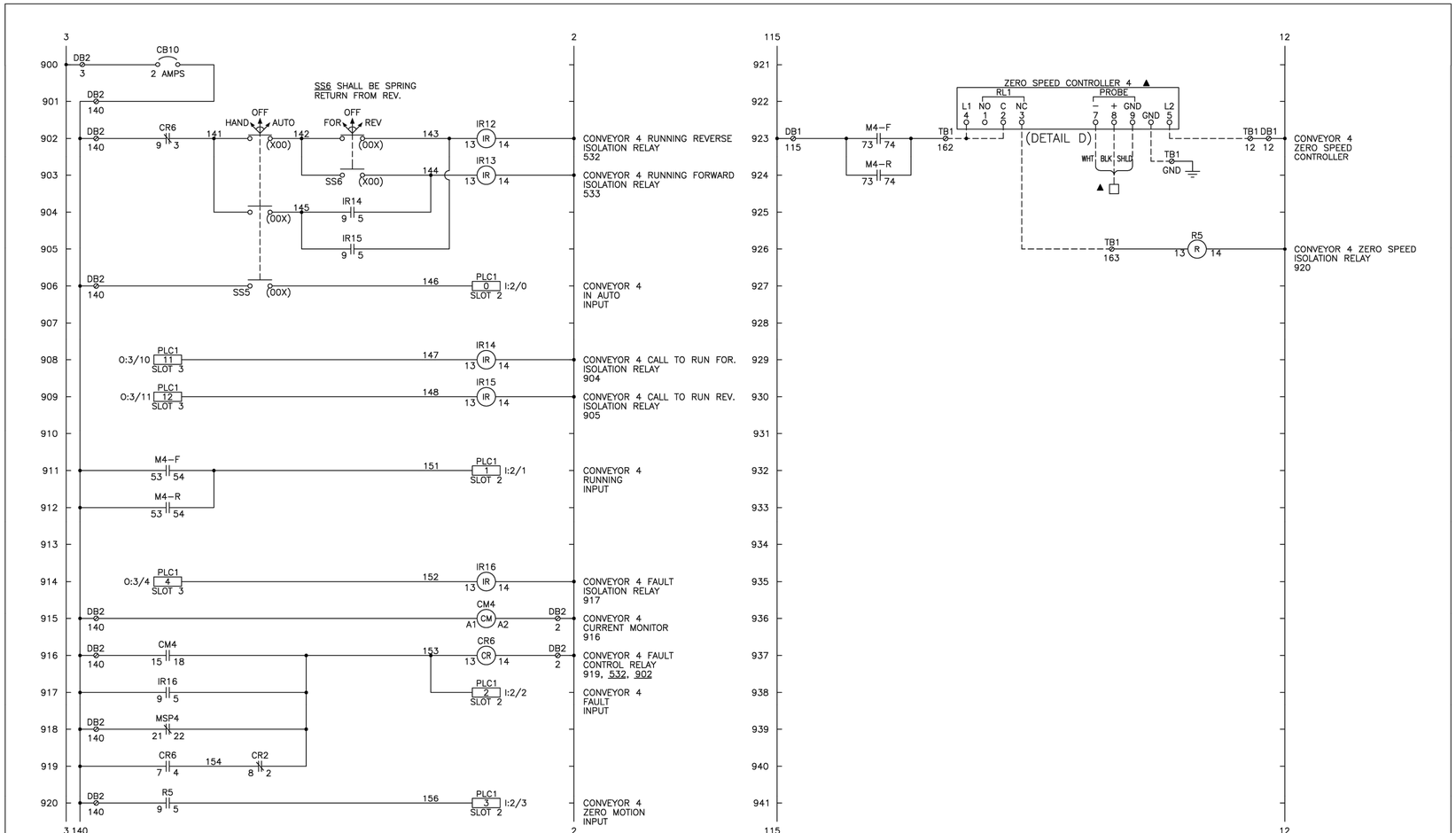
CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
INSTRUMENTATION CONVEYOR CONTROL PANEL

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-123

Bar Measures 1 inch, otherwise drawing not to scale



						DESIGNED	JN
						DETAILED	
						CHECKED	MSN
						APPROVED	
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Denver, NC 28037
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info@hhusa.net

CONVEYOR CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9465A09

9 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

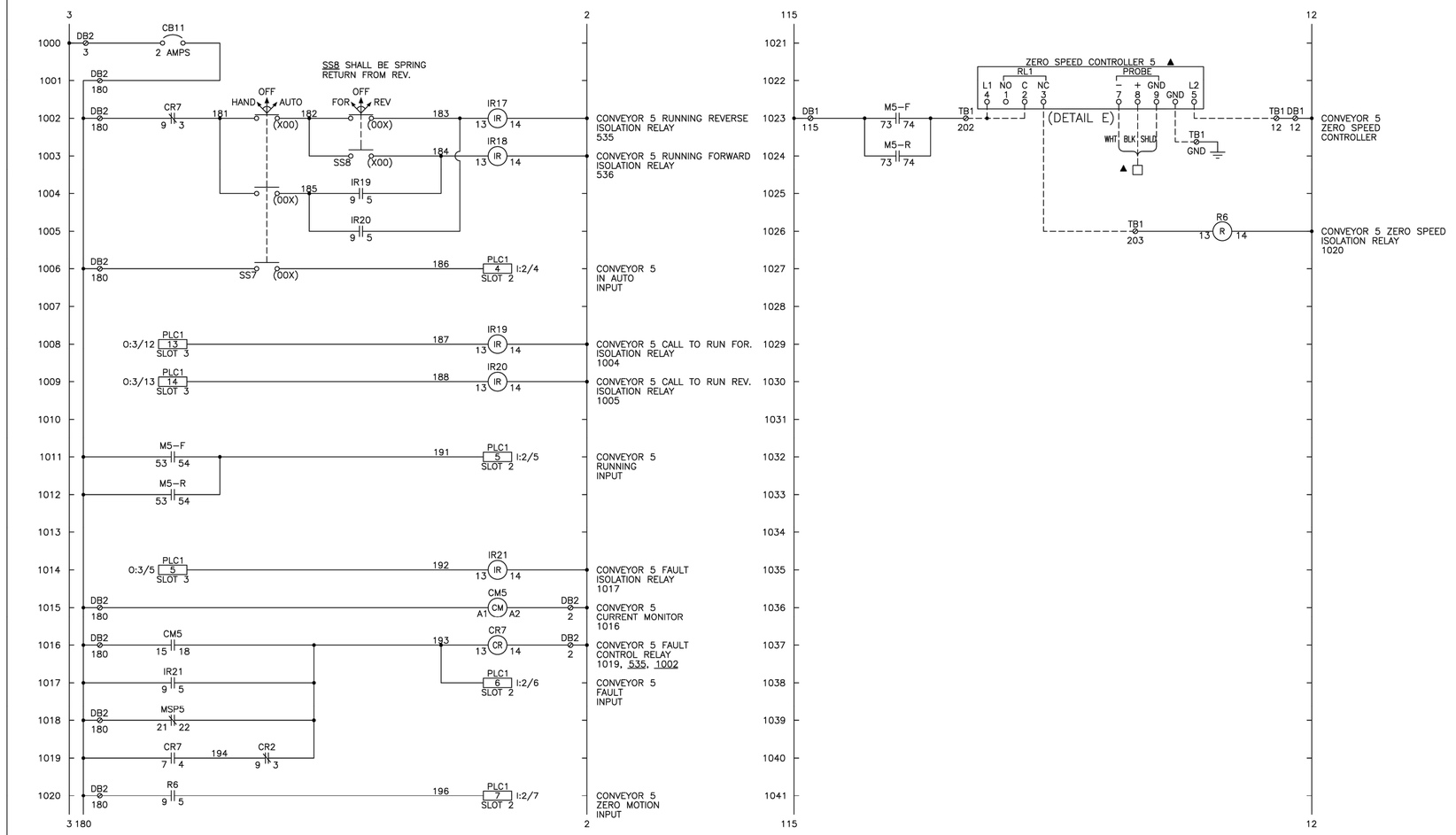
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION CONVEYOR CONTROL PANEL

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-124

Bar Measures 1 inch, otherwise drawing not to scale



DESIGNED	JN
DETAILED	
CHECKED	MSN
APPROVED	
DATE	11/10/23

DATE	REVISION	NO.	BY	CK	APP

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1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

CONVEYOR CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9465A10

10 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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EAST LANSING, MI 48823
PHONE: 517.316.3963 FAX: 517.484.8140

MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

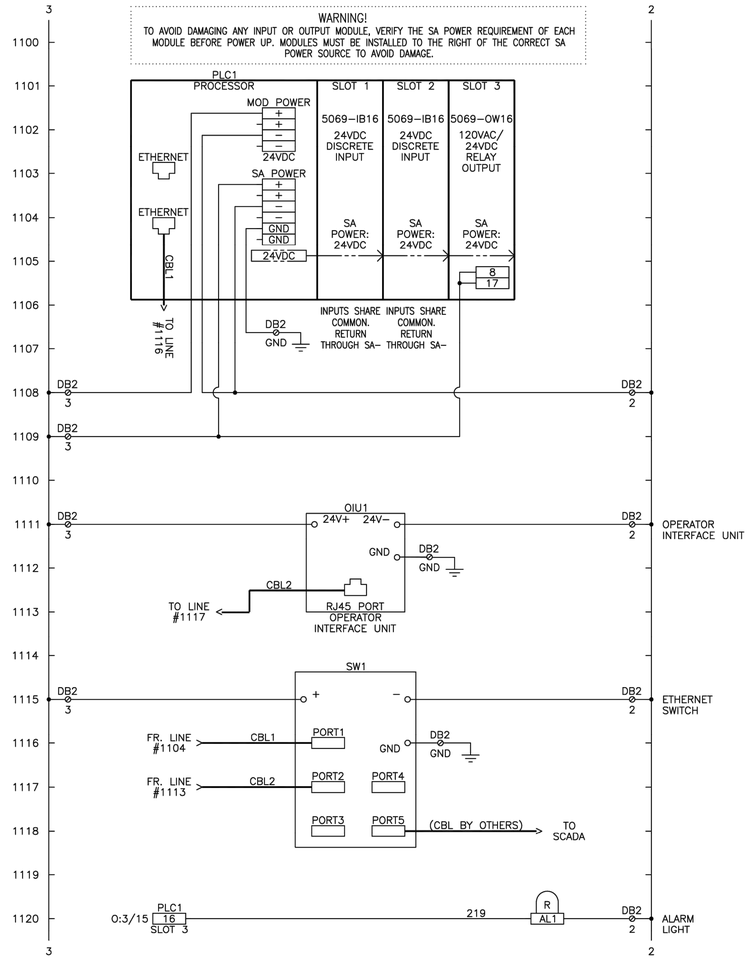
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION CONVEYOR CONTROL PANEL

PROJ:	200-12747-23001
DESN:	MF
DRWN:	VLM
CHKD:	

I-125

Bar Measures 1 inch, otherwise drawing not to scale



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					DETAILED	
					CHECKED	MSN
					APPROVED	
					DATE	11/10/23

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1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

CONVEYOR CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9465A11 | 11 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

TETRA TECH
www.tetratech.com
3497 COOLIDGE ROAD
EAST LANSING, MI 48823
PHONE: 517.316.3963 FAX: 517.484.8140

MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION CONVEYOR CONTROL PANEL

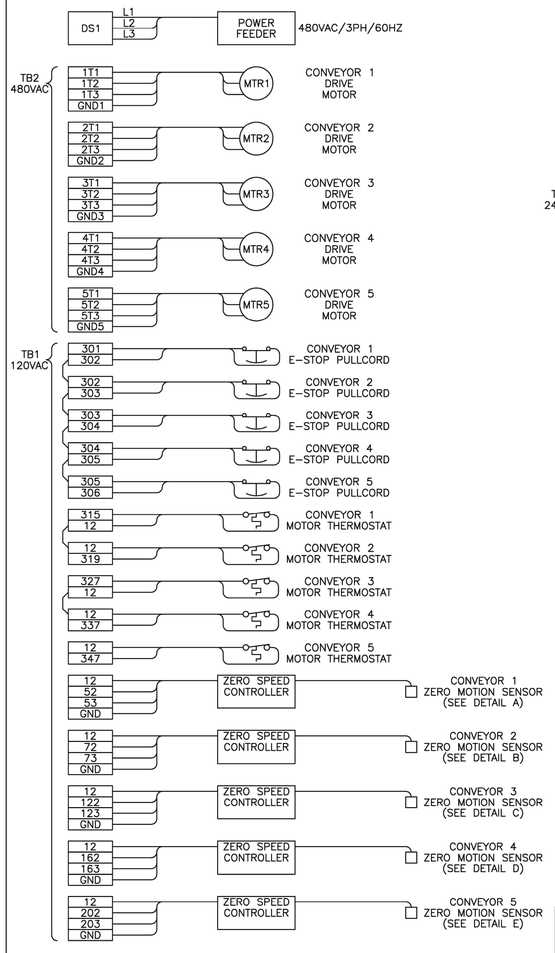
PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-126

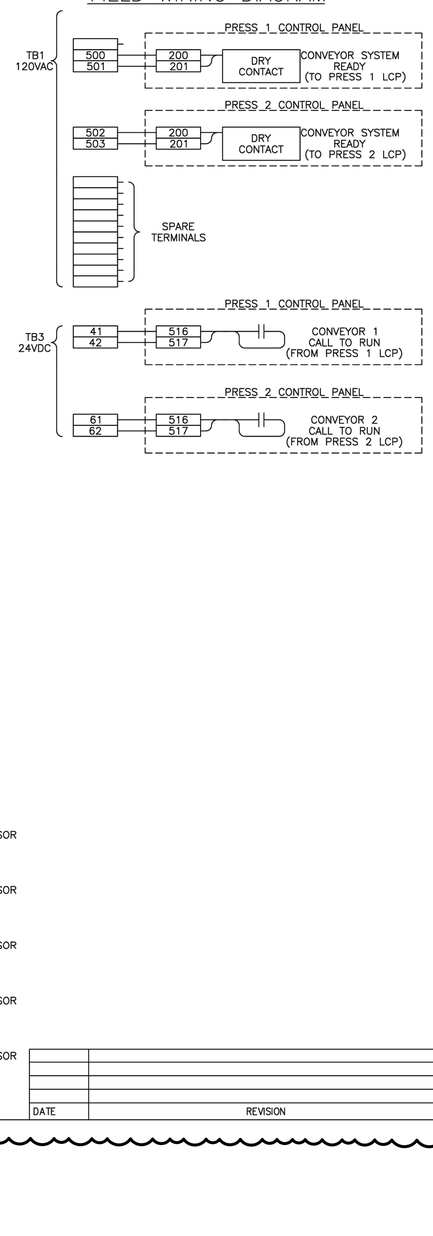
Bar Measures 1 inch, otherwise drawing not to scale

FIELD WIRING DIAGRAM

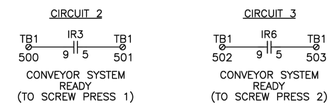
WARNING DAMAGE RESULTING FROM INSTALLATION OF TOP ENTRY CONDUIT WILL VOID WARRANTY.
- AVOID CUTTING HOLES DIRECTLY ABOVE ANY ELECTRICAL COMPONENTS
- PROTECT INTERNAL COMPONENTS FROM METAL SHAVINGS, CUTTING OILS, DEBRIS, AND MOISTURE
- USE PROPER FITTINGS, MYERS TYPE 4 OR EQUAL
- CONDUITS AND FITTING MUST BE WATERTIGHT TO PREVENT WATER ENTRY
- ALL PENETRATIONS MUST BE SEALED OFF TO PREVENT INTRUSION OF MOISTURE, CORROSIVE GASES, AND VAPORS FROM ENTERING THE ENCLOSURE



FIELD WIRING DIAGRAM

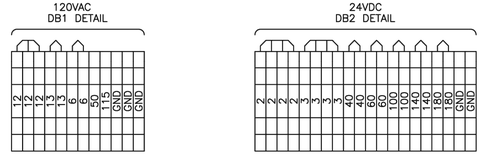


DRY CONTACTS FOR PLANT USE



MAX. CONTROLLED LOAD: 10A @ 120VAC

NOTE: BRANCH CIRCUIT PROTECTION PROVIDED BY OTHERS PER N.E.C.



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DATE 11/10/23

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Tel. 704-949-1010
info@hhusa.net

CONVEYOR CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9465A12

12 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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EAST LANSING, MI 48823
PHONE: 517.316.3963 FAX: 517.484.8140

MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION CONVEYOR CONTROL PANEL

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-127

Bar Measures 1 inch, otherwise drawing not to scale

PLC/OIU SETTINGS

L306ER CPU	DISCRETE IN	DISCRETE OUT
	QTY: 2 SLOT 1,2	QTY: 1 SLOT 3

PLC INPUTS – SLOT NO.1

I/0	E-STOP PRESSED
I/1	SYSTEM RESET
I/2	CONVEYOR 1 IN AUTO
I/3	CONVEYOR 1 RUNNING
I/4	CONVEYOR 1 FAULT
I/5	CONVEYOR 1 ZERO MOTION
I/6	CONVEYOR 2 IN AUTO
I/7	CONVEYOR 2 RUNNING
I/8	CONVEYOR 2 FAULT
I/9	CONVEYOR 2 ZERO MOTION
I/10	CONVEYOR 3 IN AUTO
I/11	CONVEYOR 3 RUNNING
I/12	CONVEYOR 3 FAULT
I/13	CONVEYOR 3 ZERO MOTION
I/14	POWER FEED OK
I/15	SPARE

PLC INPUTS – SLOT NO.2

I/0	CONVEYOR 4 IN AUTO
I/1	CONVEYOR 4 RUNNING
I/2	CONVEYOR 4 FAULT
I/3	CONVEYOR 4 ZERO MOTION
I/4	CONVEYOR 5 IN AUTO
I/5	CONVEYOR 5 RUNNING
I/6	CONVEYOR 5 FAULT
I/7	CONVEYOR 5 ZERO MOTION
I/8	SPARE
I/9	SPARE
I/10	SPARE
I/11	SPARE
I/12	SPARE
I/13	SPARE
I/14	SPARE
I/15	SPARE

PLC OUTPUTS – SLOT NO.3

O/0	CONTROL POWER ENABLE
O/1	CONVEYOR 1 FAULT
O/2	CONVEYOR 2 FAULT
O/3	CONVEYOR 3 FAULT
O/4	CONVEYOR 4 FAULT
O/5	CONVEYOR 5 FAULT
O/6	CONVEYOR SYSTEM READY (TO PRESS 1 CP)
O/7	CONVEYOR SYSTEM READY (TO PRESS 2 CP)
O/8	CONVEYOR 3 CALL TO RUN FOR.
O/9	CONVEYOR 3 CALL TO RUN REV.
O/10	CONVEYOR 4 CALL TO RUN FOR.
O/11	CONVEYOR 4 CALL TO RUN REV.
O/12	CONVEYOR 5 CALL TO RUN FOR.
O/13	CONVEYOR 5 CALL TO RUN REV.
O/14	SPARE
O/15	COMMON ALARM

PLC/OIU SETTINGS

PLC1 – COMMUNICATIONS SETUP

ETHERNET PORT

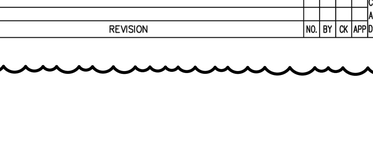
PARAMETERS	VALUE
IP ADDRESS	10.0.0.1
SUBNET MASK	255.255.255.0
GATEWAY ADDRESS	0.0.0.0
BOOTP ENABLE	NO

OIU1 – COMMUNICATIONS SETUP

ETHERNET PORT

PARAMETERS	VALUE
IP ADDRESS	10.0.0.2
SUBNET MASK	255.255.255.0
GATEWAY ADDRESS	0.0.0.0
BOOTP ENABLE	NO

ETHERNET NETWORK MAP



NOTES:
1. – – – CAT5 ETHERNET CABLE

SUBNET MASK: 255.255.255.0

DEVICE SETTINGS

CM1–5 – CURRENT MONITOR

DIP SETTINGS

1	ON
2	OFF
3	ON
4	OFF
5	OFF
6	ON

DIAL SETTINGS

HYSTERESIS	0%
LEVEL	FLA
DELAY	0.5s

WIRE PASSES	MAX AMPS	LEVEL RANGE (10–110%)
1	20	2–22A
2	10	1–11A
3	6.6	0.6–7.3A
4	5	0.5–5.5A

* ABOVE VALUES ASSUME 20A MAX DIP SETTNGS

NOTES:
1. FIELD CONFIGURATION SHALL BE PERFORMED BY THE STARTUP TECHNICIAN PER THE APPROPRIATE TECHNICAL DOCUMENTS.
2. MEASURING RANGE MAXIMUM AMPS SET BY DIP SETTINGS 1 AND 2
   SW1 ON/SW2 OFF = 20A; SW1 ON/SW2 ON = 50A; SW1 OFF/SW2 ON = 100A

HTR1 – SETTINGS

HEATER ON/OFF	60 °F

TS1 – SETTINGS

FAN ON/OFF	60 °F

AL1 – ALARM LIGHT

SWITCH 1 2 — FLASH

SINGLE FLASH SETTING
SWITCH 1 = ON
SWITCH 2 = OFF

PFR1 – SETTINGS

DIAL	SETTING
VOLTAGE	480 ON DELAY
Tt	5s
>U	10%
<U	10%

DATE	REVISION	NO.	BY	CK	APP

DESIGNED JN
DETAILED
CHECKED MSN
APPROVED
DATE 11/10/23

HUBER
TECHNOLOGY
1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

CONVEYOR CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9465A13

13 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

TETRA TECH
www.tetratech.com
3497 COOLIDGE ROAD
EAST LANSING, MI 48823
PHONE: 517.316.3963 FAX: 517.484.8140

MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI

MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION
CONVEYOR CONTROL PANEL

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-128

Bar Measures 1 inch, otherwise drawing not to scale

PLC/OIU SETTINGS

PLC1 – SETPOINTS

REGISTER	DESCRIPTION	UNITS	DEFAULT	MIN	MAX
SP1[0].INT	EQUIPMENT STARTUP DELAY	SEC.	3	0	10
SP1[1].INT	DURATION MODE RUN DURATION	MIN.	900	1	9999
SP1[2].INT	VOLUME MODE PROCESS VOLUME	GAL	100	1	99999
SP1[3].INT	DATALOGGER INTERVAL	SEC.	10	1	999
SP1[110].INT	CONVEYOR 1 OFF DELAY	SEC.	30	0	999
SP1[111].INT	CONVEYOR 1 ZERO MOTION DELAY	SEC.	10	1	999
SP1[112].INT	CONVEYOR 1 FAIL TO RUN FAULT DELAY	SEC.	10	1	999
SP1[120].INT	CONVEYOR 2 OFF DELAY	SEC.	30	0	999
SP1[121].INT	CONVEYOR 2 ZERO MOTION DELAY	SEC.	10	1	999
SP1[122].INT	CONVEYOR 2 FAIL TO RUN FAULT DELAY	SEC.	10	1	999
SP1[130].INT	CONVEYOR 3 OFF DELAY	SEC.	30	0	999
SP1[131].INT	CONVEYOR 3 ZERO MOTION DELAY	SEC.	10	1	999
SP1[132].INT	CONVEYOR 3 FAIL TO RUN FAULT DELAY	SEC.	10	1	999
SP1[133].INT	CONVEYOR 3 DIRECTION CHANGE DWELL	SEC.	5	0	999
SP1[140].INT	CONVEYOR 4 OFF DELAY	SEC.	30	0	999
SP1[141].INT	CONVEYOR 4 ZERO MOTION DELAY	SEC.	10	1	999
SP1[142].INT	CONVEYOR 4 FAIL TO RUN FAULT DELAY	SEC.	10	1	999
SP1[143].INT	CONVEYOR 4 DIRECTION CHANGE DWELL	SEC.	5	0	999
SP1[150].INT	CONVEYOR 5 OFF DELAY	SEC.	30	0	999
SP1[151].INT	CONVEYOR 5 ZERO MOTION DELAY	SEC.	10	1	999
SP1[152].INT	CONVEYOR 5 FAIL TO RUN FAULT DELAY	SEC.	10	1	999
SP1[153].INT	CONVEYOR 5 DIRECTION CHANGE DWELL	SEC.	5	0	999
SP1[160].INT	DISCHARGE POINT 1 DURATION	MIN.	10	0	9999
SP1[161].INT	DISCHARGE POINT 2 DURATION	MIN.	10	0	9999
SP1[162].INT	DISCHARGE POINT 3 DURATION	MIN.	10	0	9999
SP1[163].INT	DISCHARGE POINT 4 DURATION	MIN.	10	0	9999
SP1[170].INT	PRESS 1 OFF DELAY	SEC.	30	0	999
SP1[171].INT	PRESS 1 FAIL TO RUN FAULT DELAY	SEC.	10	1	999
SP1[172].INT	PRESS 2 OFF DELAY	SEC.	30	0	999
SP1[173].INT	PRESS 2 FAIL TO RUN FAULT DELAY	SEC.	10	1	999

PLC/OIU SETTINGS

PLC1 – SCADA COMMUNICATIONS

REGISTER NUMBER	DESCRIPTION	DATA TYPE	NORMAL STATE	ACTIVE STATE	SCADA FUNCTION
PLC IO STATUS					
S_INT[1]	PLC SLOT 1 DISCRETE INPUTS	(BIT)	0	1	READ
S_INT[2]	PLC SLOT 2 DISCRETE INPUTS	(BIT)	0	1	READ
S_INT[3]	PLC SLOT 3 DISCRETE OUTPUTS	(BIT)	0	1	READ
CONVEYOR 1					
S_INT[14].0	CONVEYOR 1 RUNNING	(BIT)	0	1	READ
S_INT[14].1	CONVEYOR 1 IN AUTO	(BIT)	0	1	READ
S_INT[14].2	CONVEYOR 1 FAULT	(BIT)	0	1	READ
S_INT[14].3	CONVEYOR 1 ZERO SPEED	(BIT)	0	1	READ
CONVEYOR 2					
S_INT[15].0	CONVEYOR 2 RUNNING	(BIT)	0	1	READ
S_INT[15].1	CONVEYOR 2 IN AUTO	(BIT)	0	1	READ
S_INT[15].2	CONVEYOR 2 FAULT	(BIT)	0	1	READ
S_INT[15].3	CONVEYOR 2 ZERO SPEED	(BIT)	0	1	READ
CONVEYOR 3					
S_INT[16].0	CONVEYOR 3 RUNNING	(BIT)	0	1	READ
S_INT[16].1	CONVEYOR 3 IN AUTO	(BIT)	0	1	READ
S_INT[16].2	CONVEYOR 3 FAULT	(BIT)	0	1	READ
S_INT[16].3	CONVEYOR 3 ZERO SPEED	(BIT)	0	1	READ
CONVEYOR 4					
S_INT[17].0	CONVEYOR 4 RUNNING	(BIT)	0	1	READ
S_INT[17].1	CONVEYOR 4 IN AUTO	(BIT)	0	1	READ
S_INT[17].2	CONVEYOR 4 FAULT	(BIT)	0	1	READ
S_INT[17].3	CONVEYOR 4 ZERO SPEED	(BIT)	0	1	READ
CONVEYOR 5					
S_INT[18].0	CONVEYOR 5 RUNNING	(BIT)	0	1	READ
S_INT[18].1	CONVEYOR 5 IN AUTO	(BIT)	0	1	READ
S_INT[18].2	CONVEYOR 5 FAULT	(BIT)	0	1	READ
S_INT[18].3	CONVEYOR 5 ZERO SPEED	(BIT)	0	1	READ
GENERAL					
S_INT[20].0	E-STOP PRESSED	(BIT)	0	1	READ
S_INT[21].1	POWER FEED OK	(BIT)	0	1	READ

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DATE 11/10/23

HUBER TECHNOLOGY
1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

CONVEYOR CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9465A14

14 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION CONVEYOR CONTROL PANEL

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-129

Bar Measures 1 inch, otherwise drawing not to scale

SEQUENCE OF OPERATION

CONTROL POWER ON–DELAY:
EACH TIME THE CONTROL PANEL POWER SUPPLY IS CYCLED, THE PLC WILL ALLOW ALL SOLID STATE DEVICES TO FULLY ENERGIZE BEFORE ENABLING THE CONTROL POWER CIRCUIT.

CONVEYOR 1–2 MODES OF OPERATION:
HAND: WHEN THE CONVEYOR SELECTOR IS IN THE HAND POSITION, THE CONVEYOR WILL RUN CONTINUOUSLY
AUTO: WHEN THE CONVEYOR SELECTOR IS IN THE AUTO POSITION, THE CONVEYOR WILL BE CALLED TO RUN WHENEVER THE PRESS IS RUNNING. THE CONVEYOR WILL CONTINUE TO RUN AFTER THE PRESS HAS STOPPED FOR THE TIME SET IN THE CONVEYOR OFF DELAY TIMER SET THROUGH THE OIU.

NOTE: THE SCREW PRESS 1 WILL CALL CONVEYOR 1
THE SCREW PRESS 2 WILL CALL CONVEYOR 2

CONVEYOR 3–5 MODES OF OPERATION:
HAND: WHEN THE CONVEYOR SELECTOR IS IN THE HAND POSITION, THE CONVEYOR WILL RUN CONTINUOUSLY IN THE DIRECTION SELECTED BY THE CONVEYOR FOR–OFF–REV SELECTOR.
AUTO: WHEN THE CONVEYOR SELECTOR IS IN THE AUTO POSITION, THE CONVEYOR WILL RUN PER THE CONVEYOR OPERATION TABLE BELOW ONCE THE PRESS IS RUNNING. THE CONVEYOR DISCHARGE POINT CAN BE SELECTED MANUALLY OR SET TO TIME OPERATION. THIS SELECTION WILL BE MADE FROM THE OPERATOR INTERFACE. ONCE THE PRESS HAS STOPPED, EACH CONVEYOR THAT IS RUNNING WILL CONTINUE TO RUN FOR THE TIME SET IN THE CONVEYOR OFF DELAY TIMER.

MANUAL MODE: WHEN THE MANUAL MODE IS SELECTED FROM THE OPERATOR INTERFACE, THE OPERATOR CAN SELECT WHICH DISCHARGE POINT WILL BE FILLED

TIME MODE: WHEN THE TIMED MODE IS SELECTED FROM THE OPERATOR INTERFACE, THE CONVEYORS WILL FILL EACH DISCHARGE POINT FOR A USER SELECTED TIME. WHEN EVERY POINT HAS BEEN FILLED, THE SYSTEM WILL ENTER THE SHUTDOWN MODE

IN THE AUTO MODE THE CONVEYOR WILL OPERATE PER THE CONVEYOR OPERATION TABLE DETAILED BELOW.

CONVEYOR OPERATION

DISCHARGE POINT	CONVEYOR 3 OPERATION	CONVEYOR 4 OPERATION	CONVEYOR 5 OPERATION
1 (DUMPSTER 1)	FORWARD	REVERSE	OFF
2 (DUMPSTER 1)	FORWARD	FORWARD	OFF
3 (DUMPSTER 2)	REVERSE	OFF	FORWARD
4 (DUMPSTER 2)	REVERSE	OFF	REVERSE

FORCED DISCHARGE:
WHEN THE CONVEYOR ARE IN THE AUTOMATIC MODE, THE OPERATOR CAN SELECT THE FORCE DISCHARGE OPTION TO TOP OFF ANY DISCHARGE POINT. WHEN THE OPTION IS SELECTED THE CONVEYOR WILL DISCHARGE TO THE SELECTED POINT FOR A USER SELECTED TIME. WHEN THE FORCED DISCHARGE IS COMPLETE, THE CONVEYOR WILL RESUME NORMAL OPERATION.

NOTES:
ANY DISCHARGE POINT CAN BE DISABLED FROM THE OIU. WHEN DISABLED THE CONVEYOR WILL NOT DISCHARGE TO THIS POINT IN AUTOMATIC MODE

SEQUENCE OF OPERATION

SYSTEM FAULTS:
1. CONVEYOR MOTOR OVERLOAD DETECTED
2. CONVEYOR HIGH CURRENT DETECTED
3. CONVEYOR RUNNING INDICATION NOT RECEIVED WHILE CALLED TO RUN
4. CONVEYOR ZERO MOTION INDICATION RECEIVED FOR THE TIME SET IN THE CONVEYOR ZERO MOTION DELAY
5. NO CONVEYOR DISCHARGE POINTS ARE AVAILABLE

– WHEN ANY OF FAULTS 1 – 5 OCCUR, THE THE ALARM BEACON WILL ENERGIZE AND THE ENTIRE SYSTEM WILL SHUT DOWN IMMEDIATELY. THE ALARM BEACON WILL REMAIN ENERGIZED UNTIL THE CONDITION IS CORRECTED.

ALARM BEACON:
THE ALARM BEACON WILL ENERGIZE IF ANY OF THE SYSTEM FAULTS OCCUR. THE ALARM BEACON WILL REMAIN ENERGIZED UNTIL THE FAULT IS CLEARED AND THE SYSTEM RESET PUSHBUTTON IS PRESSED.

EMERGENCY STOP:
ALL CONVEYOR EQUIPMENT WILL STOP IMMEDIATELY IF THE E–STOP PUSHBUTTON IS ACTIVATED. THE CONVEYOR SYSTEM WILL NOT RESUME OPERATION UNTIL THE E–STOP IS RESET AND THE SYSTEM RESET PUSHBUTTON IS PRESSED.

OIU – INFORMATION:
1. THE OIU WILL DISPLAY THE ELAPSED MOTOR RUN TIMES.
2. ALL ADJUSTABLE SETPOINTS CAN BE ACCESSED AND ADJUSTED THROUGH THE OIU.
3. THE PRESENT FAULT WILL BE DISPLAYED ON THE OIU.
4. THE HISTORY OF ALL PAST FAULTS CAN BE ACCESSED THROUGH THE OIU.
5. RUNNING AND FAULTED STATUS FOR ALL MOTORS WILL BE DISPLAYED ON THE OIU.
6. THE CONVEYOR DISCHARGE MODE CAN BE SELECTED THROUGH THE OIU.

CONVEYOR SYSTEM READY:
A NORMALLY OPEN, CLOSED WHEN CONVEYOR SYSTEM IS READY SIGNAL WILL BE PROVIDED WHEN THE FOLLOWING CONDITIONS ARE PRESENT:
– ALL E–STOPS READY
– ALL CONVEYOR SELECTOR SWITCHES IN AUTO
– NO EQUIPMENT FAULTS
– DISCHARGE POINTS AVAILABLE

DATE	REVISION	NO.	BY	CK	APP

DESIGNED JN
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DATE 11/10/23

HUBER
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Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

CONVEYOR CONTROL PANEL
MT. CLEMENS, MI
SCALE: NONE
PROJECT NUMBER: 73010851
DRAWING NO: HBR9465A15
15 OF 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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www.tetratech.com
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EAST LANSING, MI 48823
PHONE: 517.316.3963 FAX: 517.484.8140

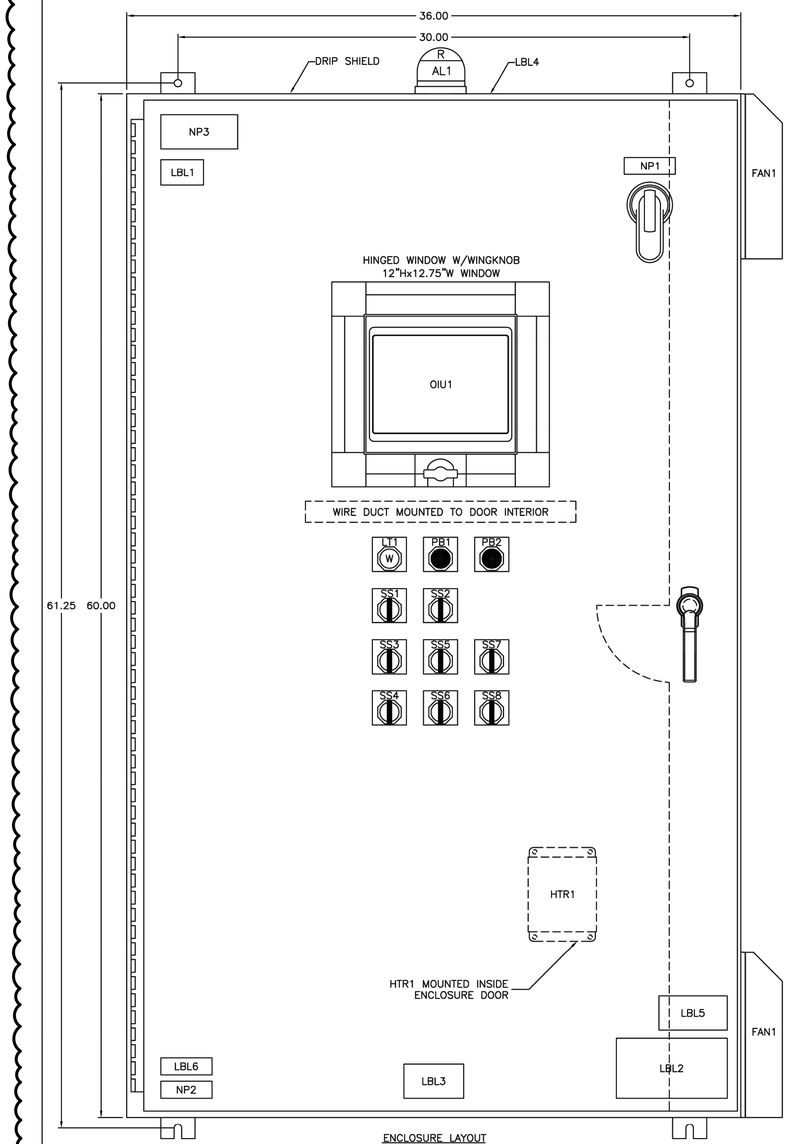
MARK	DATE	DESCRIPTION	BY
	02/05/24	ISSUED FOR BIDS	

CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
INSTRUMENTATION
CONVEYOR CONTROL PANEL

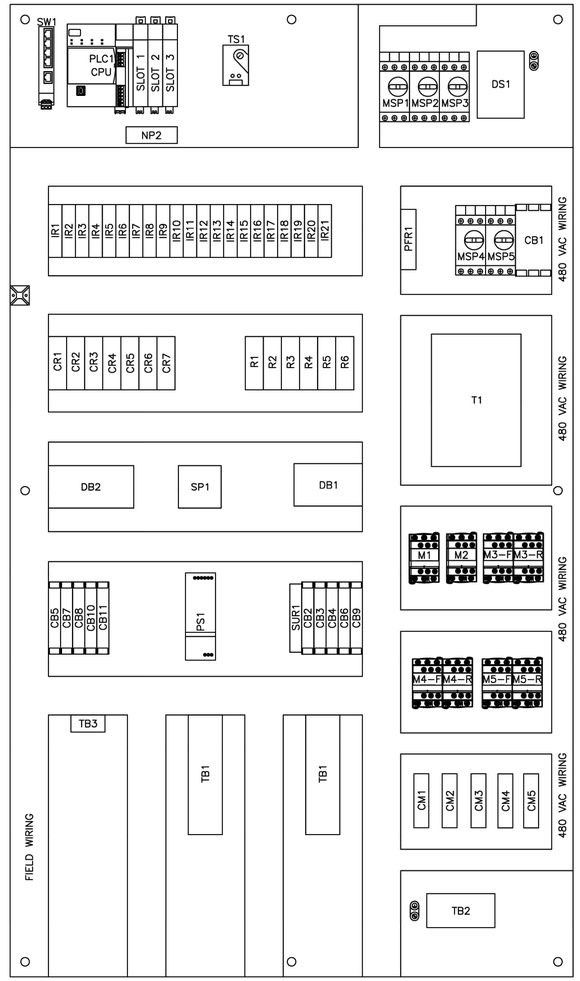
PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-130

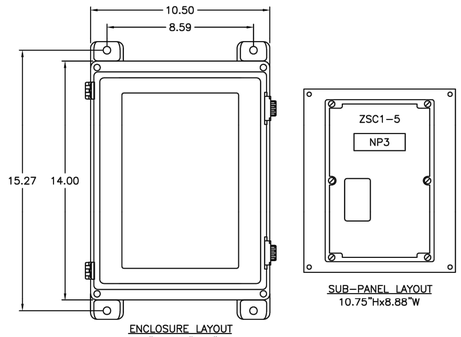
Bar Measures 1 inch, otherwise drawing not to scale



ENCLOSURE LAYOUT
60"Hx36"Wx12"D
NEMA 4X, 304 STAINLESS STEEL

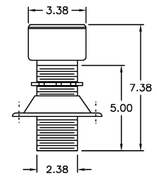


SUB-PANEL LAYOUT
57"Hx33"W

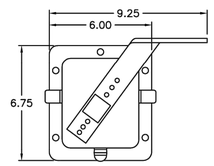


ENCLOSURE LAYOUT
14"Hx12.5"Wx7"D
NEMA 4X FIBERGLASS
10.28"Hx6.84"W WINDOW

SUB-PANEL LAYOUT
10.75"Hx8.88"W



ZSS1-5 - ZERO MOTION SENSOR - MSP-12
1/2" NPT FEMALE CONDUIT ENTRANCE (TOP)
2" PHENOLIC PROBE W/MOUNTING FLANGE AND LOCKNUT
GENERAL PURPOSE



PC1-5 - PULL CORD SAFETY SWITCH
6-3/4"Hx6"Wx8-7/16"D
NEMA 4X
CAST ALUMINUM

DATE	REVISION	NO.	BY	CK	APP	DATE
					DESIGNED	JN
					DETAILED	
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					DATE	11/10/23

HUBER
TECHNOLOGY
1009 Airlie Parkway
Denver, NC 28037
Tel. 704-949-1010
info@hhusa.net

CONVEYOR
CONTROL PANEL

MT. CLEMENS, MI | SCALE: NONE

PROJECT NUMBER: 73010851 | DRAWING NO: HBR9465A16

16 | OF | 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

TETRA TECH
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MARK	DATE	DESCRIPTION	BY
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CITY OF MOUNT CLEMENS, MI
MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS

INSTRUMENTATION CONVEYOR CONTROL PANEL

PROJ: 200-12747-23001
DESN: MF
DRWN: VLM
CHKD:

I-131

Bar Measures 1 inch, otherwise drawing not to scale

1/31/2024 9:21:27 AM - \\TT.LOCAL\ER\PROJECTS\LANSING\ER\12747\200-12747-23001\CAD\SHEETFILES\I-131 CPP HBR9465A16.DWG - MELLING, VICKIE

PILOT DEVICE LEGENDPLATES (PANEL DOOR)				
DEVICE TAG	DESCRIPTOR LINE 1	DESCRIPTOR LINE 2	DESCRIPTOR LINE 3	
LT1	CONTROL POWER	ON		
PB1	EMERGENCY	STOP		
PB2	SYSTEM	RESET		
SS1	CONVEYOR 1	OFF	HAND	AUTO
SS2	CONVEYOR 2	OFF	HAND	AUTO
SS3	CONVEYOR 3	OFF	HAND	AUTO
SS4	CONVEYOR 3	OFF	FOR	REV
SS5	CONVEYOR 4	OFF	HAND	AUTO
SS6	CONVEYOR 4	OFF	FOR	REV
SS7	CONVEYOR 5	OFF	HAND	AUTO
SS8	CONVEYOR 5	OFF	FOR	REV
MAX. CHARACTERS	15	15	4	4

LABEL DESCRIPTION	
LBL1	WARNING MULTIPLE SUPPLY SOURCES OPEN ALL DISCONNECTS BEFORE SERVICING EQUIPMENT OR OTHER UNIT WIRING
LBL2	DANGER HIGH VOLTAGE ENTRY BY QUALIFIED PERSON ONLY
LBL3	ELEMECH ELECTRICAL CONTROL SYSTEMS
LBL4	WARNING DAMAGE RESULTING FROM INSTALLATION OF TOP ENTRY CONDUIT WILL VOID WARRANTY. – AVOID CUTTING HOLES DIRECTLY ABOVE ANY ELECTRICAL COMPONENTS – PROTECT INTERNAL COMPONENTS FROM METAL SHAVINGS, CUTTING OILS, DEBRIS, AND MOISTURE – USE PROPER FITTINGS, MYERS TYPE 4 OR EQUAL – CONDUITS AND FITTING MUST BE WATERTIGHT TO PREVENT WATER ENTRY – ALL PENETRATIONS MUST BE SEALED OFF TO PREVENT INTRUSION OF MOISTURE, CORROSIVE GASES, AND VAPORS FROM ENTERING THE ENCLOSURE
LBL5	DANGER ARC FLASH AND SHOCK HAZARD FOLLOW ALL REQUIREMENTS NFPA 70E FOR SAFE WORK PRACTICES AND FOR PERSONAL PROTECTIVE EQUIPMENT.
LBL6	WARNING TO PREVENT IGNITION OF FLAMMABLE OR COMBUSTIBLE ATMOSPHERES, DISCONNECT POWER BEFORE SERVICING.

NAMEPLATES				
TAG	DESCRIPTOR LINE 1	DESCRIPTOR LINE 2	DESCRIPTOR LINE 3	
NP1	480VAC–3PH–60HZ			
NP2	WARNING! TO AVOID DAMAGING ANY INPUT OR OUTPUT MODULE, VERIFY THE SA POWER REQUIREMENT OF EACH MODULE BEFORE POWER UP. MODULES MUST BE INSTALLED TO THE RIGHT OF THE CORRECT SA POWER SOURCE TO AVOID DAMAGE.			
NP3	ZERO SPEED	CONTROLLER		

NAMEPLATES AND LEGENDPLATES CONSTRUCTION					
	PANEL LEGENDPLATES	LCS LEGENDPLATES	NAMEPLATES	UL698 NAMEPLATES	DEVICE TAGS
TEXT COLOR	BLACK	BLACK	BLACK	BLACK	BLACK
BACKGROUND COLOR	WHITE/ YELLOW (E–STOPS)	WHITE/ YELLOW (E–STOPS)	WHITE	YELLOW	WHITE
MATERIAL	THERMAL TRANSFER	PHENOLIC ENGRAVED	THERMAL TRANSFER	PHENOLIC ENGRAVED	THERMAL TRANSFER
ATTACHMENT	ADHESIVE	ADHESIVE	ADHESIVE	ADHESIVE	ADHESIVE
TEXT SIZE	5/32" HIGH	5/32" HIGH	3/16" HIGH	1/8" HIGH	1/8" HIGH
DIMENSIONS	2.375"X2.375"	1.875"X1.875"	2.72"X1"	4"X2"	1"X1"
MAX. CHARACTERS PER LINE	15	15	17	35	7

PANEL DATA LABEL

ELEMECH
ELECTRICAL AND MECHANICAL ENGINEERING SERVICES

ELEMECHINC.COM 630–499–7080

WARRANTY NOTICE
NO ALLOWANCE OR PAYMENT WILL BE MADE FOR WARRANTY REPAIR UNLESS PRIOR AUTHORIZATION HAS BEEN REQUESTED AND OBTAINED FROM THE ELEMECH SERVICE DEPT.

SERIAL: HBR9465 | POWER: 3/60/480
REF: # 73010851 | FLA: 12.6A
DATE: TBD | LGST MOT: 2.2A

SHORT CIRCUIT CURRENT RATING
5 KA RMS SYMMETRICAL @ 480 VOLTS MAX

ENCLOSURE RATING: NEMA TYPE 4X

NAME: MT. CLEMENS, MI

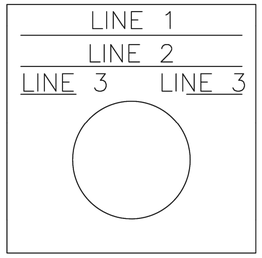
CIRCUIT 2–18: 10A @ 120VAC

TORQUE SCREWS TO 12 IN–LBS

ALL FIELD WIRING SHALL BE 60°C COPPER CONDUCTOR ONLY

NOTE:
THE CONTROL PANEL WILL ALSO BE LISTED AND LABELED WITH A SERIALIZED LABEL AS OUTLINED IN THE CONTROL PANEL SPECIFICATION NOTES.

PILOT DEVICE LEGENDPLATES



PANEL NAMEPLATE

LINE 1
LINE 2
LINE 3

NOTE:
TEXT WILL REMAIN VERTICALLY CENTERED IF LESS THAN 3 LINES ARE USED.

DEVICE TAG

TAG

						DESIGNED	JN
						DETAILED	
						CHECKED	MSN
						APPROVED	
DATE	REVISION	NO.	BY	CK	APP	DATE	11/10/23

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CONVEYOR CONTROL PANEL
MT. CLEMENS, MI | SCALE: NONE
PROJECT NUMBER: 73010851 | DRAWING NO: HBR9465A17
17 | OF | 17

NOTE:
SEE HUBER PANEL DRAWINGS INCLUDED WITH THIS BID SET FOR EXACT WIRING REQUIREMENTS. PROVIDE CONDUIT/WIRE AS REQUIRED.

PROPOSED WORK SHOWN BUBBLED.

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MOUNT CLEMENS WWTP BIOSOLIDS IMPROVEMENTS
INSTRUMENTATION
CONVEYOR CONTROL PANEL

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CHKD:

I-132

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