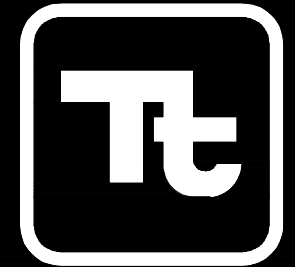


PLANS FOR CITY OF TAMPA HFC AWTP DIFFUSED AIR REACTORS IMPROVEMENTS, PHASE I CONTRACT No. 15-C-00037

201 EAST PINE STREET, SUITE 1000
ORLANDO, FL 32801
PHONE: (407) 839-3955 FAX: (407) 839-3790



TETRA TECH

ENGINEERING BUSINESS NO. 2429 www.tetrattech.com

PROJECT LOCATION:

2700 MARITIME BLVD.
TAMPA, FL 33605

CLIENT INFORMATION:

CITY OF TAMPA
306 E. JACKSON ST
TAMPA, FL 33602

Tt PROJECT No.:

200-08494-14001

CLIENT PROJECT No.:

1000100

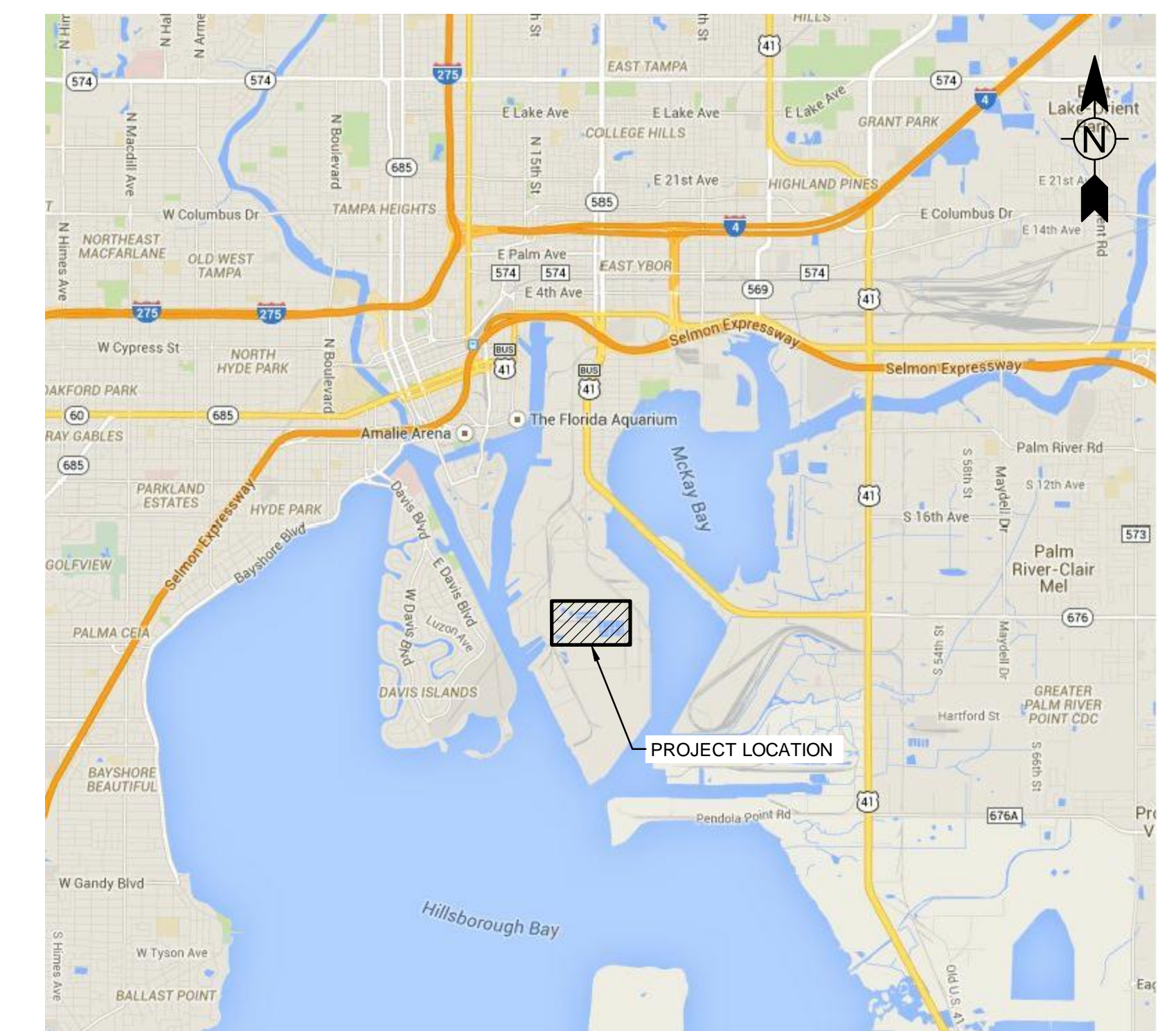
PROJECT DESCRIPTION / NOTES:

1. DEMOLISH OR REMOVE EXISTING DIFFUSERS, DEBRIS, DROP LEGS, AND MIXERS FROM DIFFUSED AERATION REACTOR NO. 1.
2. INSTALL NEW DROP LEGS WITH BUTTERFLY VALVE, AIR FLOW METERS AND ELECTRICALLY ACTUATED FLOW CONTROL VALVES FOR EACH ZONE FOR AIR FLOW CONTROL TO EACH ZONE OF DAR NO. 1.
3. INSTALL NEW PANEL DIFFUSERS IN ALL ZONES OF DAR NO. 1.
4. INSTALL NEW VERTICAL MIXERS IN ZONES 1, 2, AND 3.
5. INSTALL NEW HORIZONTAL PROPELLER PUMP WITH VFD FOR INTERNAL RECYCLE AND DAVIT CRANE BUILDING FOR NEW ELECTRICAL EQUIPMENT
6. MODIFY EXISTING SUPPORT STRUCTURE BETWEEN DIFFUSED AERATION REACTORS AND ELECTRICAL BUILDING FOR NEW ELECTRICAL EQUIPMENT
7. INSTALL NEW ELECTRICAL EQUIPMENT IN EXISTING ELECTRICAL BUILDING TO SUPPORT NEW EQUIPMENT INTALLED UNDER THIS CONTRACT.
8. INSTALL NEW AERATION CONTROL PANEL (ACP),
9. INSTALL NEW DISSOLVED OXYGEN, NITRATE, AMMONIUM, TSS, PH PROBES, AND ASSOCIATED CONTROLLERS FOR MONITORING AND CONTROL.
10. INSTALL NEW FIBER OPTICS CABLE AND EQUIPMENT FOR CONNECTION TO EXISTING PLANT SCADA SYSTEM.
11. PROVIDE CONTROL PROGRAMS FOR INTERNAL RECYCLE AND AIR FLOW TO EACH ZONE.

ISSUED:

100% SUBMITTAL - OCTOBER 2015

VICINITY MAP:



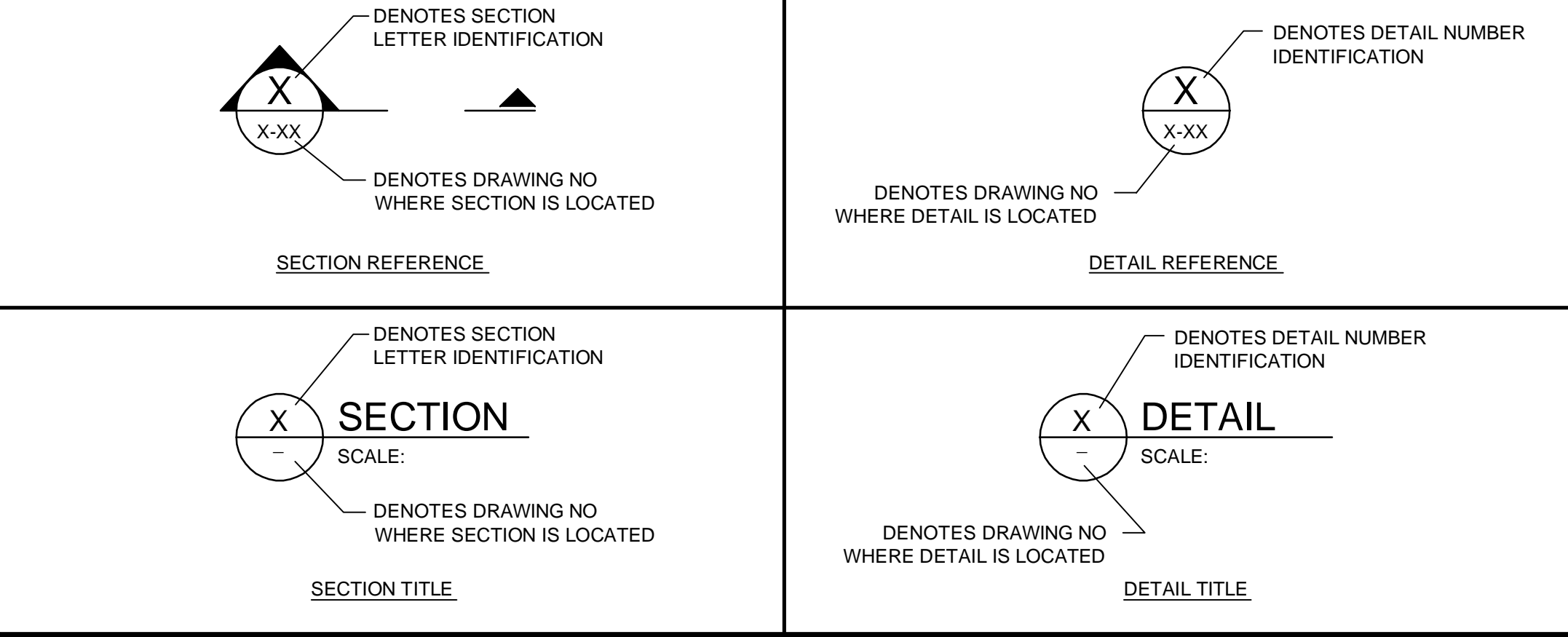
LIST OF STANDARD ABBREVIATIONS

Table with columns for Abbreviation, Description, and Unit/Notes. Includes sections for Alarm Annunciator Panel, Automatic Air Release, Diameter, Direction, etc.

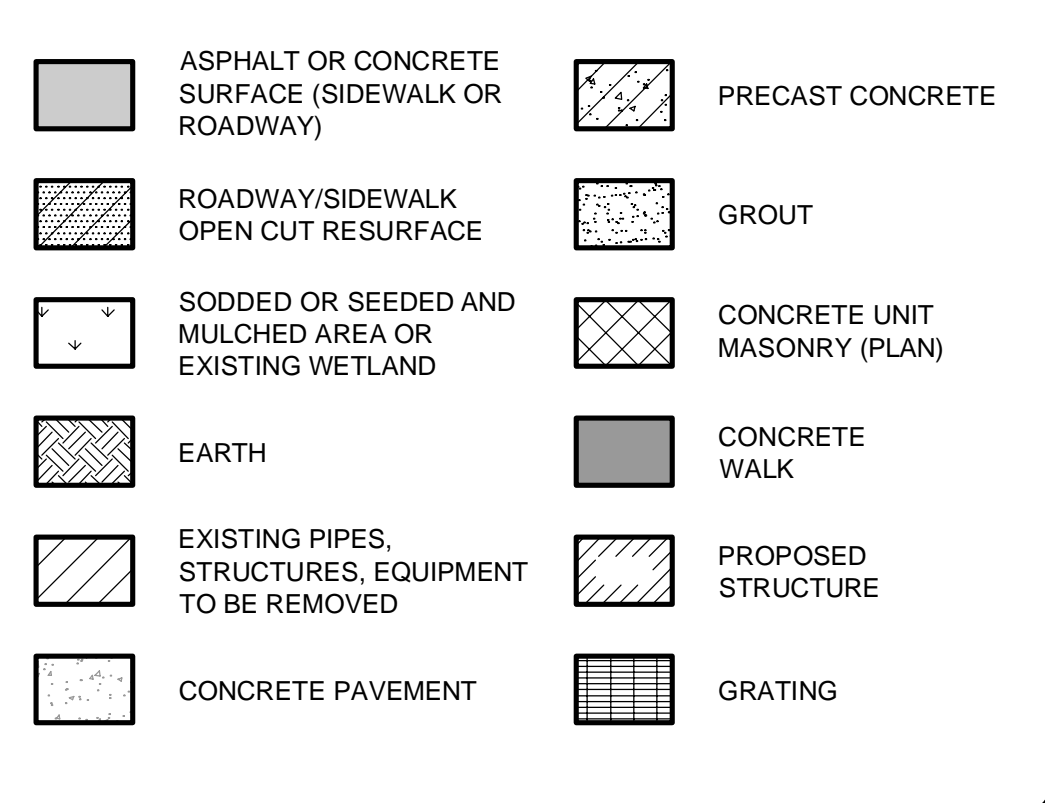
Table with columns for Abbreviation, Description, and Unit/Notes. Includes sections for Plate, Pounds per Square Foot, Pounds per Square Inch, etc.

Table with columns for Abbreviation, Description, and Unit/Notes. Includes sections for Thread, Underdrain, Utility, etc.

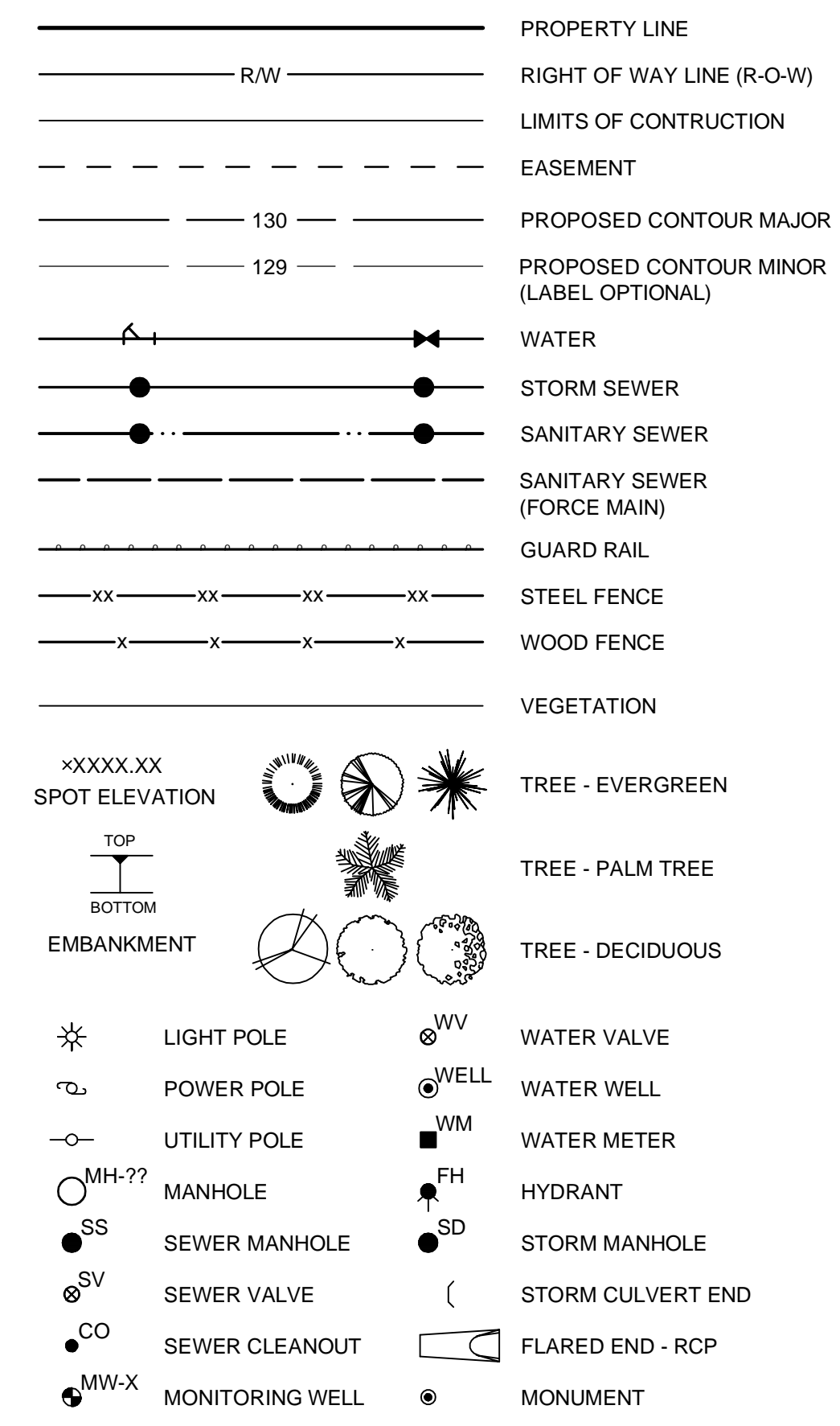
REFERENCE SYMBOLS



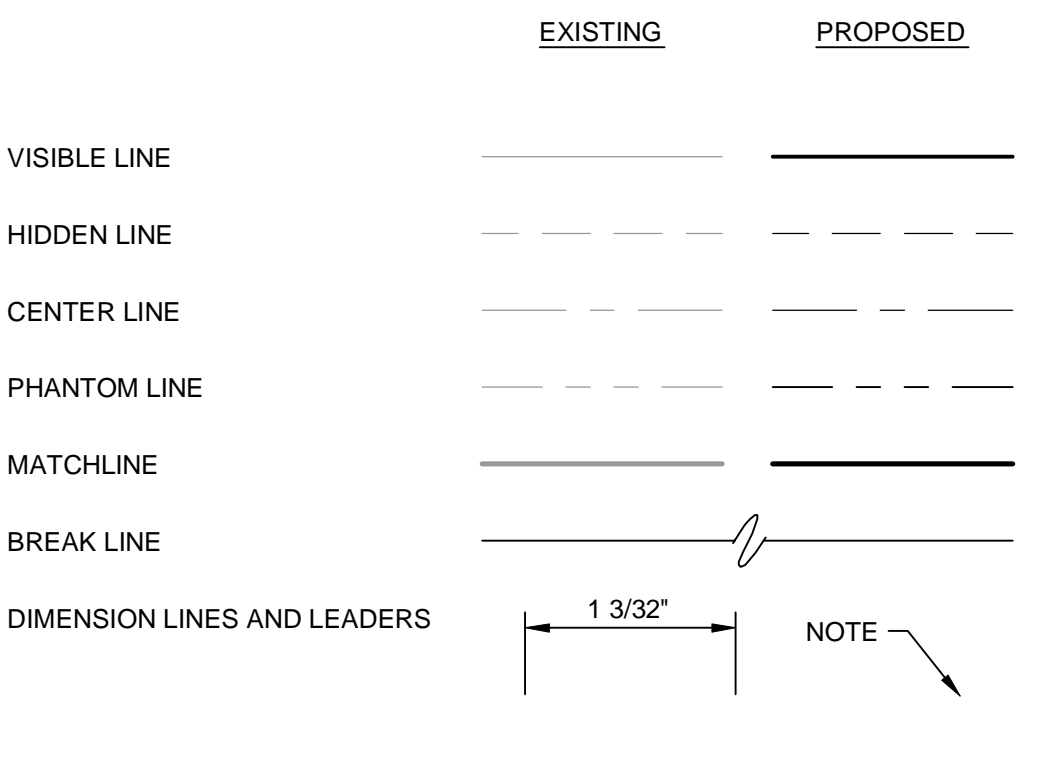
HATCHING LEGEND



CIVIL LEGEND



MECHANICAL/DRAFTING LEGEND



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TETRA TECH ENGINEERING BUSINESS NO. 2429. Logo and contact information.

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Table with columns: BY, DATE, DESCRIPTION, MARK. A grid for tracking revisions.

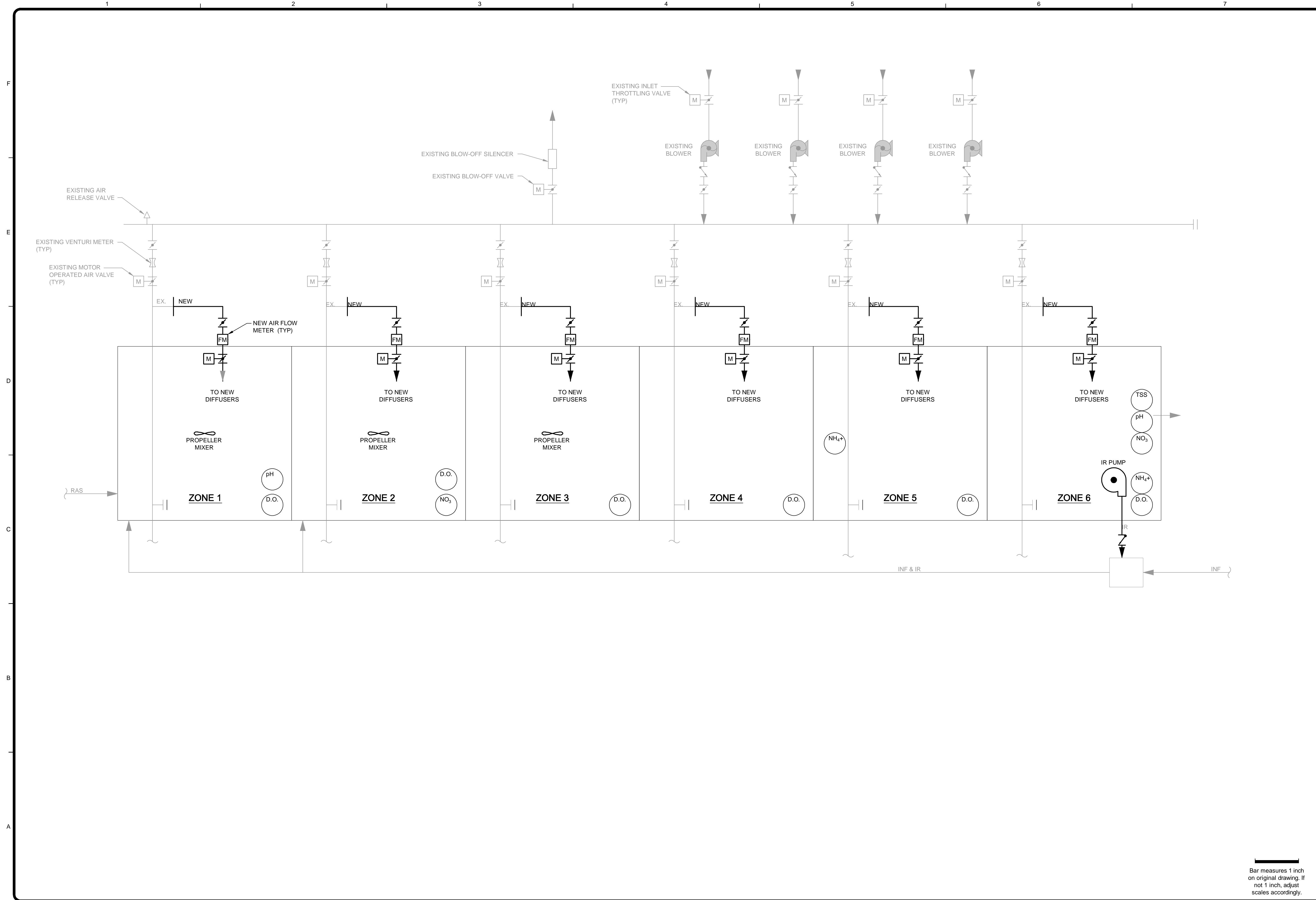
CITY OF TAMPA HFC A/WTP DIFFUSED AIR REACTORS IMPROVEMENTS, PHASE I LEGEND & ABBREVIATIONS

Project No.: 200-08494-14001
Designed By: LEH
Drawn By: JTE
Checked By: JPT

G-002

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

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BY	DATE	DESCRIPTION

MARK	DATE	DESCRIPTION

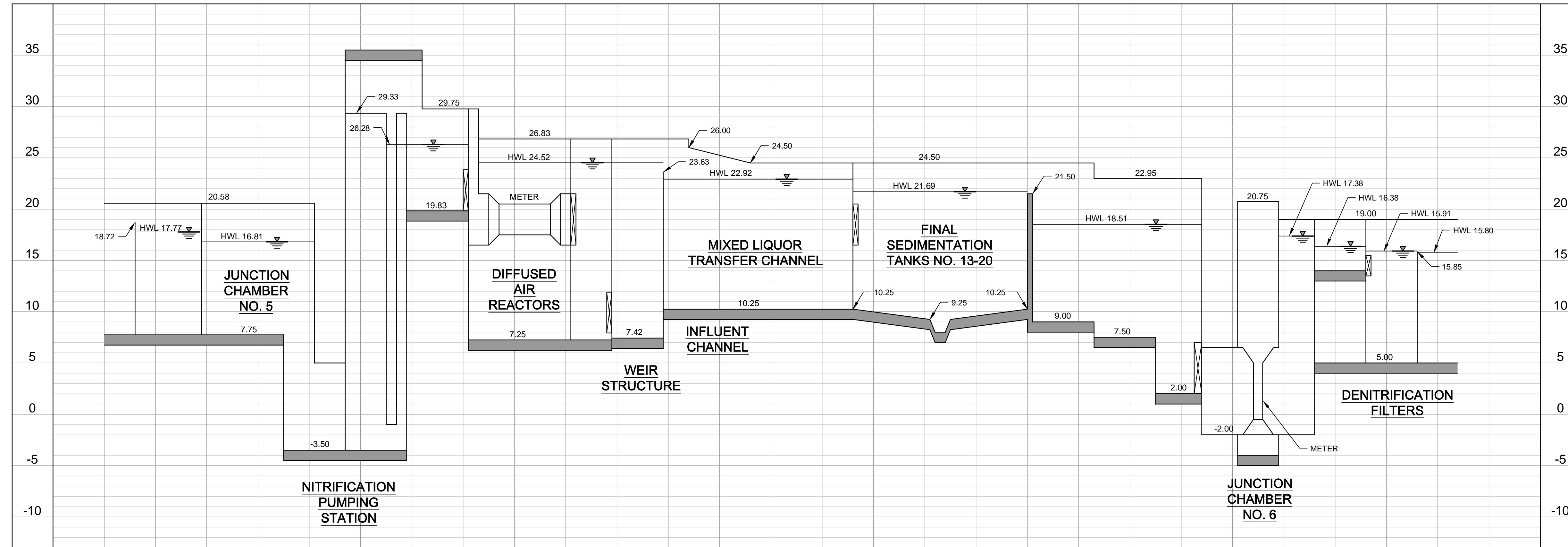
CITY OF TAMPA
HFC AWTP DIFFUSED AIR REACTORS
IMPROVEMENTS, PHASE I
**DIFFUSED AIR REACTORS
PROCESS FLOW DIAGRAM**

Project No.: 200-08494-14001
Designed By: LEH
Drawn By: JTE
Checked By: JPT

G-003

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NOTE: WATER SURFACE ELEVATIONS SHOWN ARE FOR PEAK FLOW RATE

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

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MARK	DATE	DESCRIPTION	BY

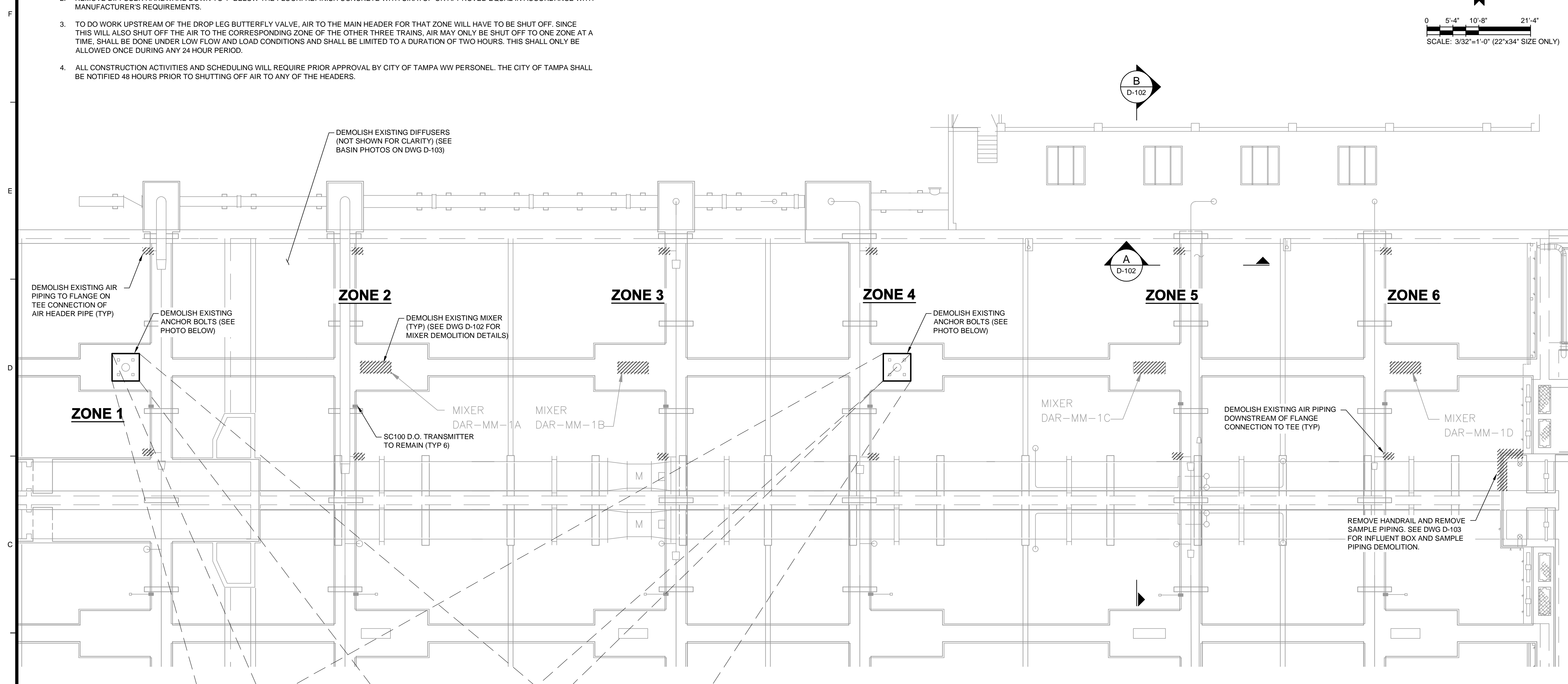
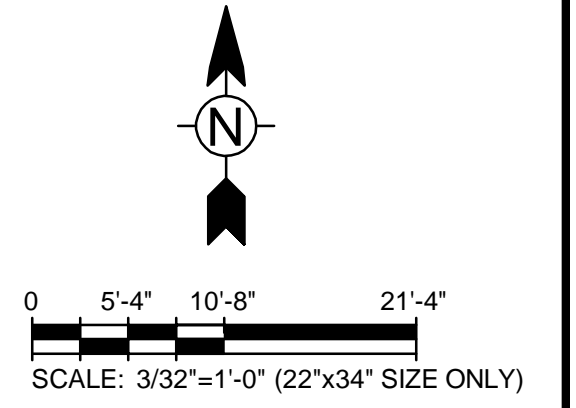
CITY OF TAMPA
HFCAWTP DIFFUSED AIR REACTORS IMPROVEMENTS, PHASE I
HYDRAULIC PROFILE

Project No.: 200-08494-14001
Designed By: LEH
Drawn By: JTE
Checked By: JPT

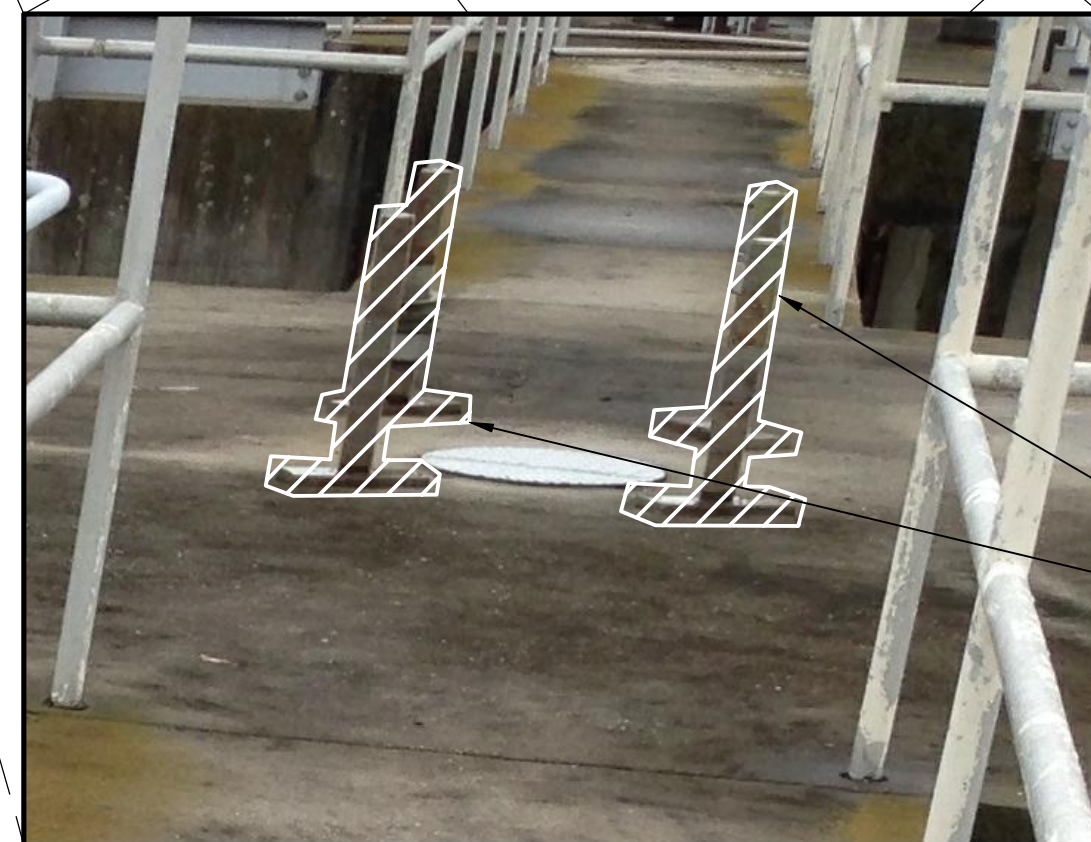
G-004
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NOTES:

1. DAR TRAIN 1 IS CURRENTLY OUT OF SERVICE AND DRAINED. CONTRACTOR SHALL CLEAN OUT SLUDGE, DEBRIS, VEGETATION FROM THE BASIN IN ADDITION TO THE DIFFUSERS, DIFFUSER MOUNTING HARDWARE AND MIXERS.
2. REMOVE DIFFUSER HARDWARE DOWN TO 1" BELOW THE FLOOR. REFINISH CONCRETE WITH SIKATOP OR APPROVED EQUAL IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
3. TO DO WORK UPSTREAM OF THE DROP LEG BUTTERFLY VALVE, AIR TO THE MAIN HEADER FOR THAT ZONE WILL HAVE TO BE SHUT OFF. SINCE THIS WILL ALSO SHUT OFF THE AIR TO THE CORRESPONDING ZONE OF THE OTHER THREE TRAINS, AIR MAY ONLY BE SHUT OFF TO ONE ZONE AT A TIME. SHALL BE DONE UNDER LOW FLOW AND LOAD CONDITIONS AND SHALL BE LIMITED TO A DURATION OF TWO HOURS. THIS SHALL ONLY BE ALLOWED ONCE DURING ANY 24 HOUR PERIOD.
4. ALL CONSTRUCTION ACTIVITIES AND SCHEDULING WILL REQUIRE PRIOR APPROVAL BY CITY OF TAMPA WW PERSONEL. THE CITY OF TAMPA SHALL BE NOTIFIED 48 HOURS PRIOR TO SHUTTING OFF AIR TO ANY OF THE HEADERS.

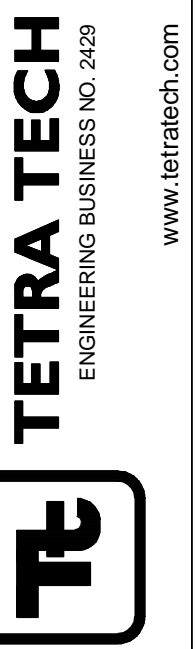


DEMOLITION PLAN
SCALE: 3/32"=1'-0" (22"x34" SIZE ONLY)



MIXER BOLTS
SCALE: NTS

REMOVE / CUT BOLTS TO 1" BELOW SURFACE. REFINISH CONCRETE WITH SIKATOP OR APPROVED EQUAL IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.



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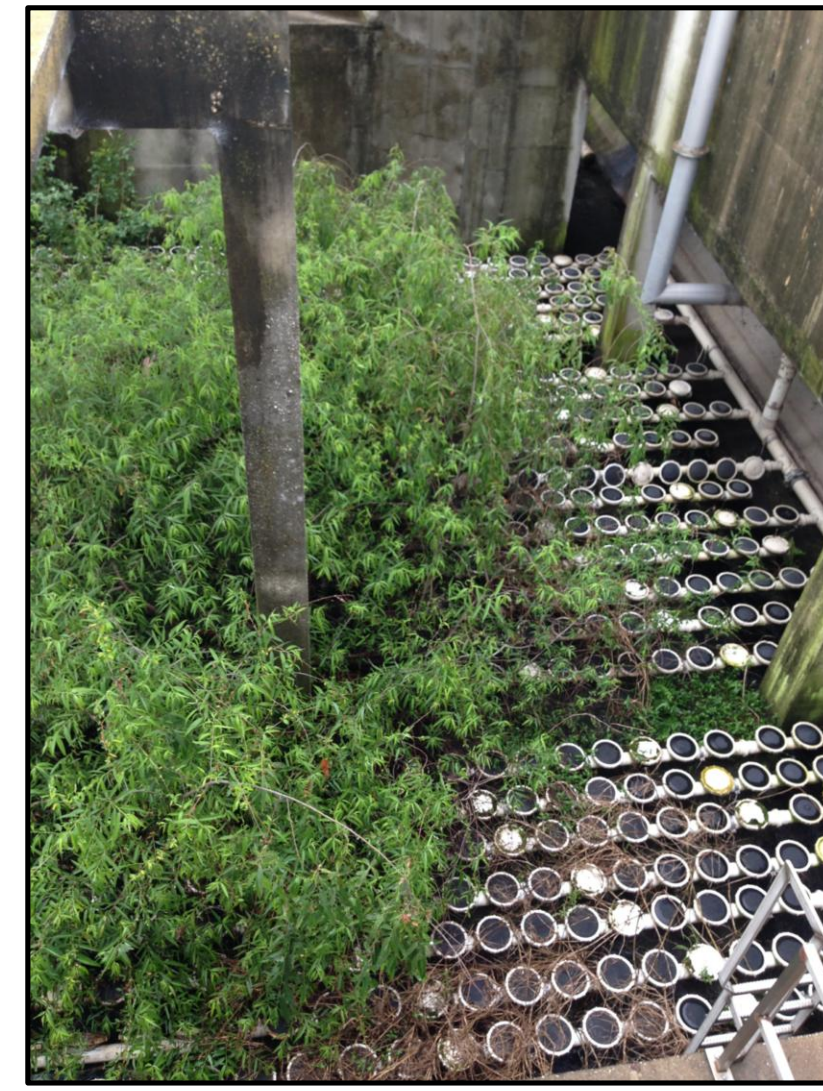
MARK	DATE	DESCRIPTION

CITY OF TAMPA
HFCAWTP DIFFUSED AIR REACTORS
IMPROVEMENTS, PHASE I
**DIFFUSED AIR REACTORS
DEMOLITION PLAN**

Project No.: 200-08494-14001
Designed By: LEH
Drawn By: JTE
Checked By: JPT

D-101

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.



ZONE 1
SCALE: NTS



ZONE 2
SCALE: NTS



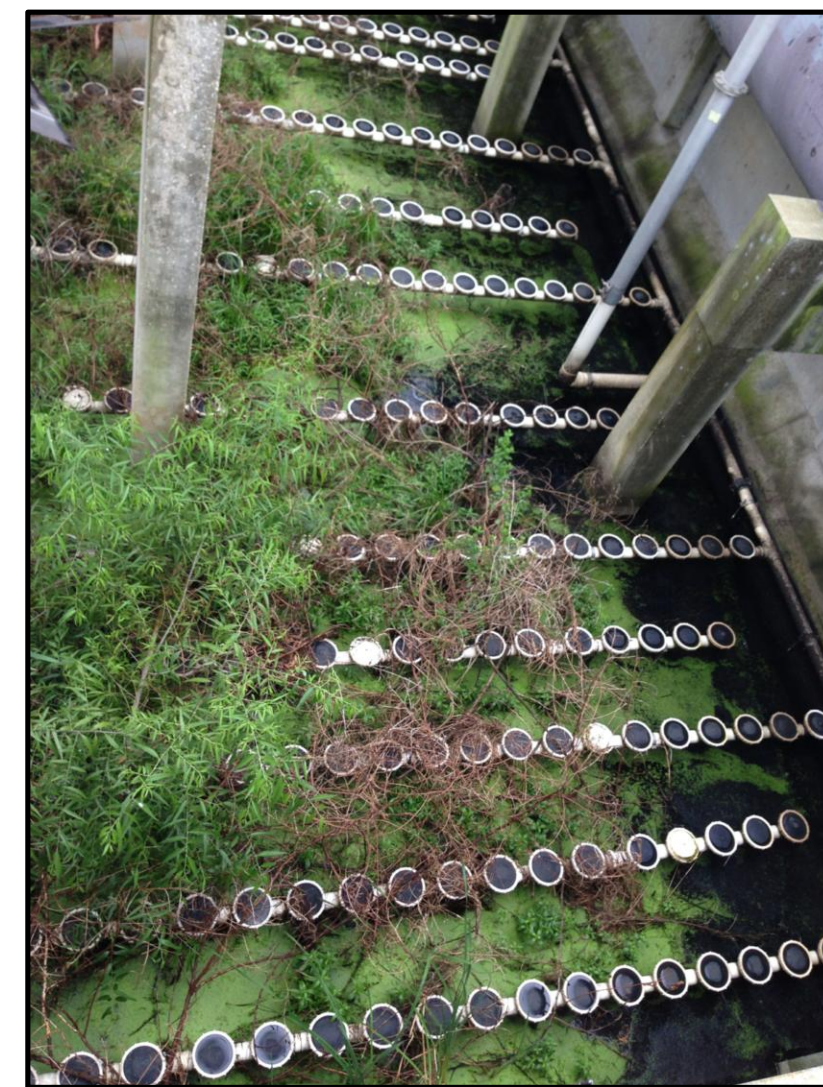
ZONE 3
SCALE: NTS



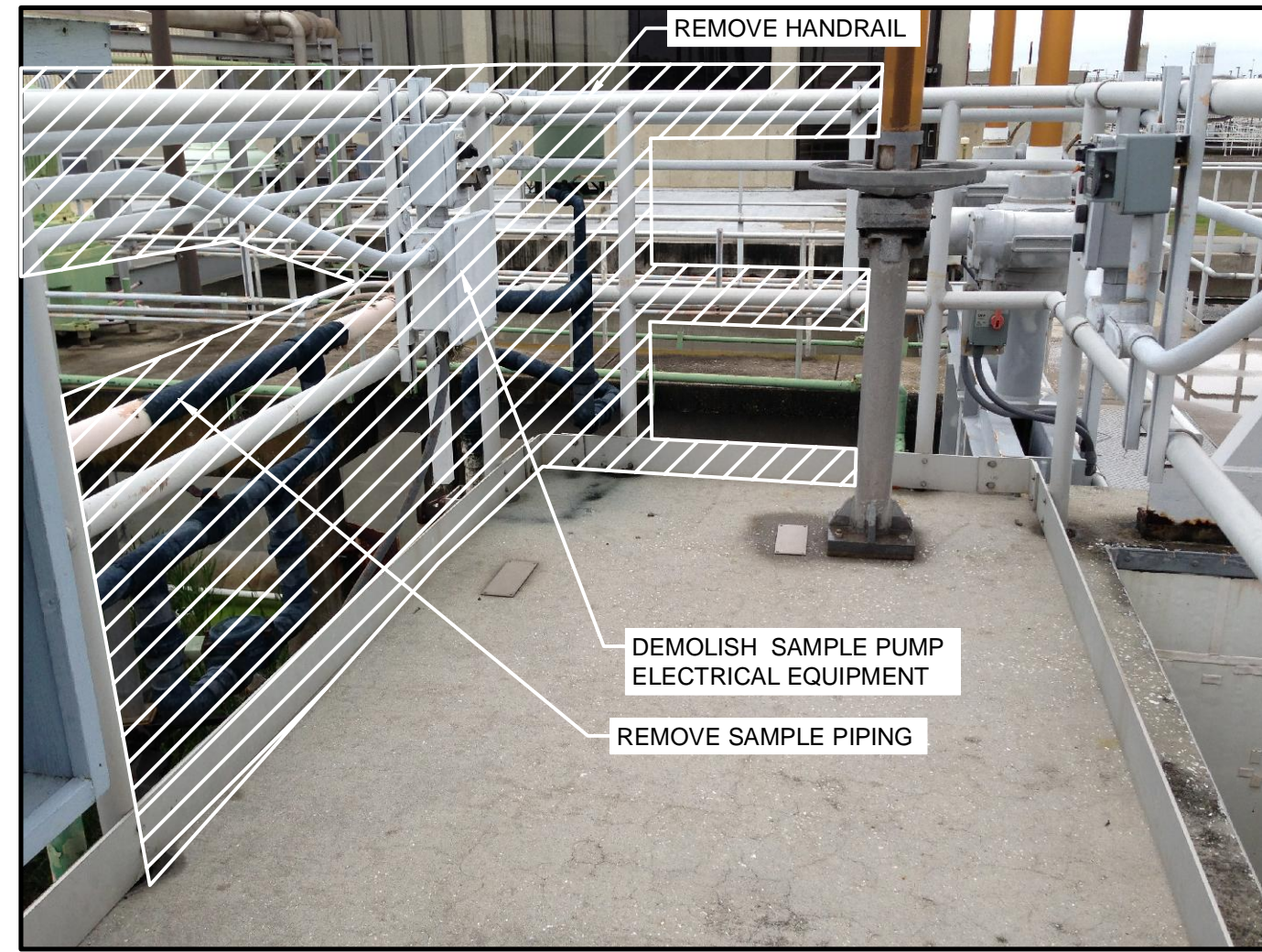
ZONE 4
SCALE: NTS



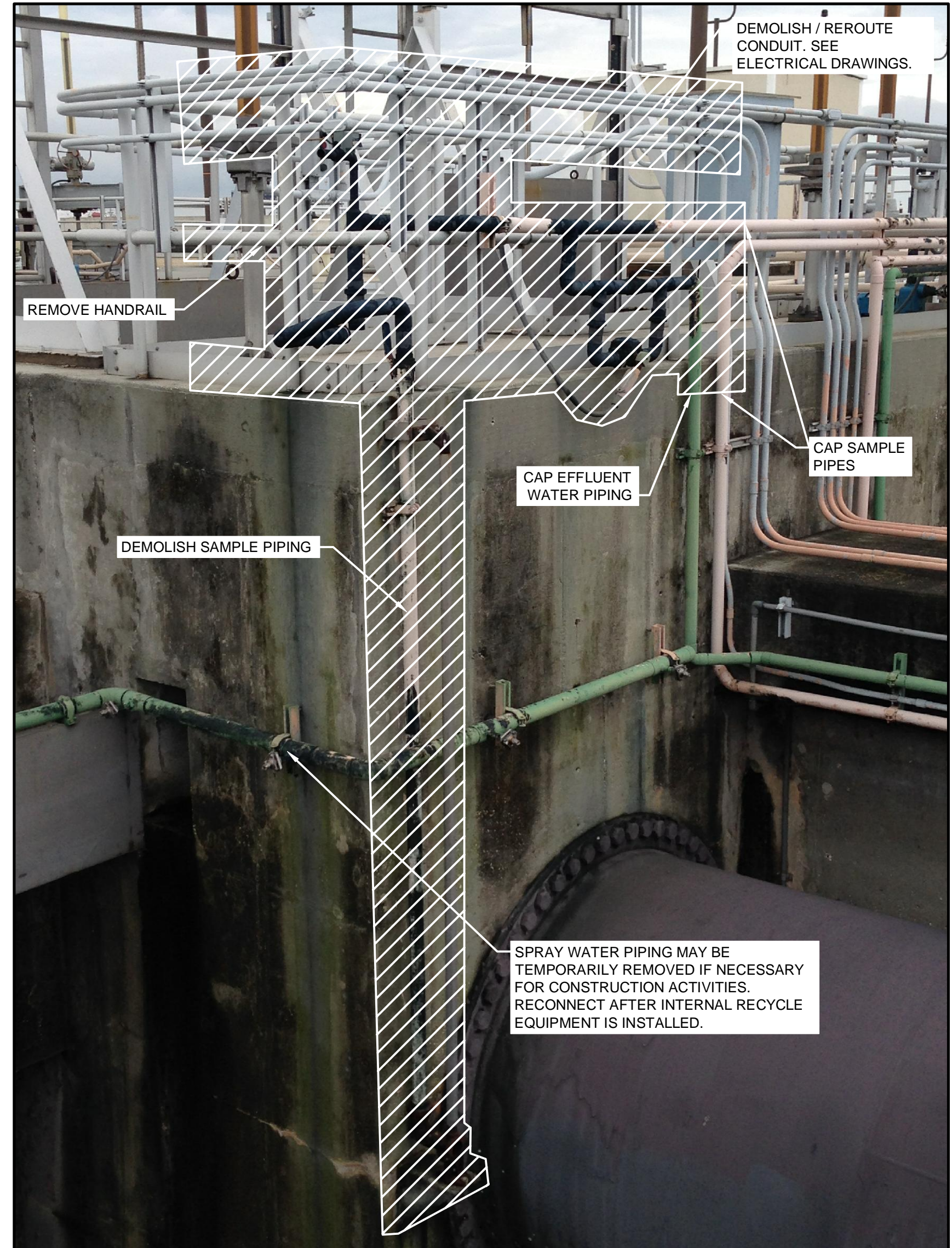
ZONE 5
SCALE: NTS



ZONE 6
SCALE: NTS



INFLUENT BOX
SCALE: NTS



NOTE:
COPPER WATER TUBE REQUIRING
REPLACEMENT SHALL CONFORM TO
ASTM B88 TYPE L, HARD DRAWN.

SAMPLE PIPING
SCALE: NTS

Bar measures 1 inch
on original drawing. If
not 1 inch, adjust
scales accordingly.

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MARK	DATE	DESCRIPTION	BY

CITY OF TAMPA
HFC AWTP DIFFUSED AIR REACTORS
IMPROVEMENTS, PHASE I

DEMOLITION PHOTOS

Project No.: 200-08494-14001
Designed By: LEH
Drawn By: JTE
Checked By: JPT

D-103

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STRUCTURAL GENERAL NOTES

- A. 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.
B. ALL REFERENCES TO REFERENCE 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
C. ALL EXISTING DIMENSIONS SHOWN WITH THE ± SYMBOL ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR BEFORE FABRICATION AND CONSTRUCTION.
D. DIMENSIONS MARKED WITH A "X" SHALL BE DETERMINED BY EQUIPMENT MANUFACTURER
E. SUBMIT SHOP DRAWINGS, PROJECT DATA AND SAMPLES AS SPECIFIED IN PROJECT SPECIFICATIONS.
F. ABBREVIATIONS

Table with 2 columns: Abbreviation and Full Name. Includes entries like A.R. ANCHOR ROD, ADD'L. ADDITIONAL, AISC. AMERICAN INSTITUTE OF STEEL CONSTRUCTION, etc.

Table with 2 columns: Abbreviation and Full Name. Includes entries like EXIST. EXISTING, EXP. EXPANSION, EXTG. EXISTING, F.F. FAR FACE, etc.

Table with 2 columns: Abbreviation and Full Name. Includes entries like NA. NOT APPLICABLE, NEC. NECESSARY, O.C. ON CENTER, O.D. OUTSIDE DIAMETER, etc.

DESIGN CRITERIA

- A. REFERENCES: 1. ICC INTERNATIONAL BUILDING CODE, 2012 EDITION RISK CATEGORY III IN ACCORDANCE WITH TABLE 1604.5
B. DEAD LOADS: SELF WEIGHT
C. LIVE LOADS (J.N.O.): WALKWAYS/PLATFORMS = 200 PSF, PROCESS FLOORS = 200 PSF, ELECTRICAL EQUIPMENT FLOOR = 300 PSF

STRUCTURAL CONCRETE

- A. REFERENCES: 1. ACI 318-08 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, 2. ACI 350-06 CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES, 3. ACI SP-66 ACI DETAILING MANUAL, 4. CRSI MSP-2-01 MANUAL OF STANDARD PRACTICE, 5. CRSI REINFORCING BAR DETAILING, 6. CRSI PLACING REINFORCING BARS
B. MATERIALS: 1. STRUCTURAL CONCRETE a) MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS (fc).....4000 PSI, b) ALL CONCRETE EXPOSED TO THE ELEMENTS SHALL BE AIR-ENTRAINED IN ACCORDANCE WITH ASTM C260 SEE SPECIFICATIONS. ALL CONCRETE AGGREGATE SHALL COMPLY WITH ASTM C33 (NORMAL WEIGHT)
C. REINFORCEMENT DETAILING: 1. ALL REINFORCING STEEL DETAILS SHALL BE IN ACCORDANCE WITH THE ACI CODE REQUIREMENTS (ACI 318 OR 350 - CURRENT EDITIONS), 2. 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, 3. 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, 4. SPECIFIED COVER FOR REINFORCING: SEE DRAWINGS, 5. HOOKS AND BENDS SHALL MEET ACI STANDARD UNLESS OTHERWISE INDICATED, 6. SPLICES: CONTINUOUS REINFORCING BARS SHALL BE FURNISHED WITH CLASS 'B' TENSION LAPS SPLICES INCLUDING CORNER BARS, UNLESS NOTED OTHERWISE, 7. MECHANICAL SPLICES SHALL NOT BE PERMITTED UNLESS SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER, 8. REINFORCING STEEL FABRICATION AND PLACEMENT SHALL BE IN ACCORDANCE WITH CRSI MANUAL OF STANDARD PRACTICE AND CRSI PLACING REINFORCING BARS (LATEST EDITIONS), 9. ALL REINFORCING SHALL BE HELD SECURELY IN POSITION WITH STANDARD ACCESSORIES IN CONCRETE, 10. 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, 11. WELDING, INCLUDING TACK WELDING, FOR REINFORCING STEEL IS PROHIBITED. WELDING OF REINFORCING STEEL AND HIGH STRENGTH BOLTS, I.E. A36, F1554, WILL BE PERMITTED ONLY BY WRITTEN APPROVAL OF THE ENGINEER, 12. MODIFICATION AND REPAIR TO EXISTING CONCRETE: (A) SEE CONCRETE SPECIFICATIONS FOR COMPLETE EXPLANATION, (B) CONNECTION METHODS - METHOD A - BONDING TO SATURATED SURFACE METHOD B - BONDING BY USING BONDING AGENT METHOD C - DOWELS USING EPOXY BONDING AGENT
D. FORMWORK: 1. SEE SPECIFICATIONS, 2. RUSTICATION STRIPS, CHAMFERS, DRIPS, MISC. EMBEDS, ETC. SEE DRAWINGS, 3. PROVIDE 3/4" CHAMFER AT ALL EXPOSED CORNERS UNLESS OTHERWISE NOTED, 4. OPENINGS FOR MEP TRADES ARE TO BE INCLUDED IN THE BID. ALL HOLES FOR OTHER TRADES WHICH MUST BE CUT OR FORMED AND WHICH ARE NOT SHOWN ON THE STRUCTURAL DESIGN(S) DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER DESIGNER FOR REVIEW AND APPROVAL. ANY STRENGTHENING OR ADDITIONAL REINFORCEMENT REQUIRED SHALL BE FURNISHED BY THE CONTRACTOR WITHOUT ADDITIONAL COST TO THE OWNER.
E. CONCRETE FINISHES: SEE SPECIFICATIONS
F. CURING AND PROTECTION: SEE SPECIFICATIONS.
G. 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.
H. SIZE AND LOCATION OF EQUIPMENT PADS AND ANCHOR BOLTS SHALL BE AS REQUIRED BY THE EQUIPMENT MANUFACTURER.
J. SUBMITTALS: 1. CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING THE FOLLOWING DOCUMENTS TO THE ENGINEER OF RECORD: a) CONCRETE MIX DESIGN, b) CONCRETE REINFORCING DRAWINGS

Table: TENSION DEVELOPMENT / LAP SPlice SCHEDULE (UNCOATED BARS). Columns: BAR SIZE, DEVELOPMENT / LAP SPlice LENGTH IN CONCRETE (fc = 4000 PSI), CLASS 'B' LAP SPlice LENGTH (IN). Rows: 3, 4, 5, 6, 7, 8, 9, 10, 11.

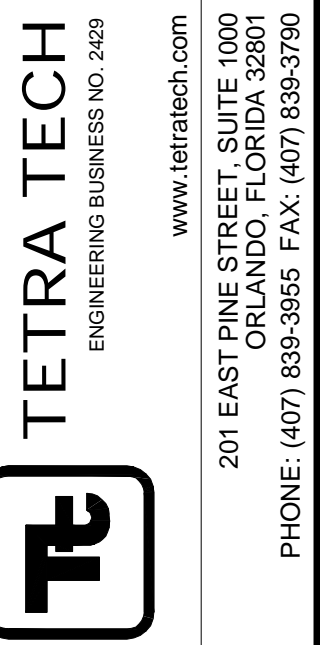
BAR TYPE 1 - CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED NOT LESS THAN Ds. CLEAR COVER NOT LESS THAN Ds, AND STIRRUPS OR TIES THROUGHOUT Ld NOT LESS THAN CODE MINIMUM OR CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED NOT LESS THAN 2'Ds AND CLEAR COVER NOT LESS THAN Ds.
BAR TYPE 2 - TOP BARS WITH MORE THAN 12" OF FRESH CONCRETE CAST BELOW AND OTHER CASES

STRUCTURAL ALUMINUM

- A. REFERENCES: 1. AA ALUMINUM DESIGN MANUAL, 2. AA ALUMINUM STANDARDS AND DATA, 3. ANS/DWS D1.2 ALUMINUM WELDING CODE
B. MATERIALS: 1. PLATES AND ROLLED SHAPES: 6061-T6, STRUCTURAL BOLTS: 316 STAINLESS STEEL
C. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER CONSTRUCTION IS FULLY COMPLETED. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIE DOWNS WHICH MIGHT BE NECESSARY. SUCH MATERIAL SHALL REMAIN THE CONTRACTOR'S PROPERTY AFTER THE COMPLETION OF THE PROJECT.
D. PROVIDE MIN. (2) 3/4" DIA STAINLESS STEEL BOLTS, WASHERS, AND NUTS FOR ALL CONNECTIONS, UNLESS NOTED OTHERWISE.
E. ALL WELDING SHALL CONFORM TO AWS D1.2. SHOP DRAWINGS SHALL SHOW ALL SHOP AND ERECTION DETAILS INCLUDING CUTS, COPE CONNECTIONS, HOLES, THREADED FASTENERS, RIVETS, AND WELDS. GRIND ALL WELDS FOR SMOOTH TRANSITIONS.
F. THE APPROVAL OF THE SHOP DRAWINGS WILL BE FOR SIZE AND ARRANGEMENT OF PRINCIPAL AND AUXILIARY MEMBERS AND STRENGTH OF CONNECTIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DIMENSIONS SHOWN ON THE SHOP DRAWINGS.
G. LAYOUT AND DESIGN FOR GUARDRAIL, HANDRAIL AND THEIR COMPONENTS SHALL ADHERE TO THE APPLICABLE BUILDING CODES.
H. BURNING OF HOLES IN ALUMINUM IS NOT PERMITTED WITHOUT PRIOR APPROVAL OF THE ENGINEER.

STRUCTURAL STEEL

- A. REFERENCES: 1. AISC STEEL CONSTRUCTION MANUAL, 13TH EDITION, 2. AWS D1.1 STRUCTURAL WELDING CODE - STEEL
B. MATERIALS: 1. GRADE STEEL WIDE FLANGES.....ASTM A992, GRADE 50 ANGLES, AND PLATES.....ASTM A36, 2. WELDED STUDS: ASTM A108, GRADE 60, 3. ANCHOR BOLTS: ASTM F1554, GRADE 55, STAINLESS STEEL, WELDABLE, 4. STRUCTURAL BOLTS: ASTM A325-N, 5. WELDS: E70XX ELECTRODES
C. CONNECTIONS: 1. AISC MANUAL STANDARD CONNECTIONS UNLESS NOTED. 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., 2. THE ASSEMBLY SURFACE, INCLUDING THOSE ADJACENT TO THE WASHER, SHALL BE FREE OF MILL SCALE, OIL, PAINT OR OTHER COATINGS, 3. ALL HIGH STRENGTH BOLTS SHALL BE TIGHTENED TO A BOLT TENSION NOT LESS THAN THAT SPECIFICATION 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, 4. 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, 5. ALL BEAMS SHALL HAVE SIMPLE SHEAR CONNECTIONS DESIGNED TO SUPPORT 1/2 THE TOTAL UNIFORM LOAD LISTED IN THE AISC MANUAL OF STEEL CONSTRUCTION OR THE REACTION NOTED ON THE DRAWINGS, WHICHEVER IS GREATER, 6. WHERE INDICATED ON THE DRAWINGS, CONNECTIONS SHALL BE DESIGNED FOR THE REACTIONS SHOWN. WHERE NO REACTIONS ARE INDICATED, REFER TO NOTE #6 ABOVE OR DESIGN FOR A MINIMUM REACTION OF 10 KIPS.
D. TOLERANCES: AISC CODE OF STANDARD PRACTICE (LATEST EDITION)
E. CAMBER: PROVIDE POSITIVE CAMBER AS NOTED ON DRAWINGS. WHERE NO CAMBER IS NOTED, RESIDUAL MILL CAMBER IS TO BE UPWARDS.
F. SHOP DRAWINGS: 1. SUBMIT ERECTION AND FABRICATION SHOP DRAWINGS. SEE SPECS, 2. SUBMIT ERECTION PROCEDURES AND TEMPORARY BRACING PLAN FOR A/E REVIEW, 3. SUBMIT CONNECTION CALCULATIONS FOR ALL BEAM TO BEAM AND BEAM TO COLUMN CONNECTIONS, 4. SHOP DRAWINGS AND CALCULATIONS MUST BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE STRUCTURAL STEEL WILL BE INSTALLED.



100% SUBMITTAL

BY

DESCRIPTION

DATE

MARK

CITY OF TAMPA

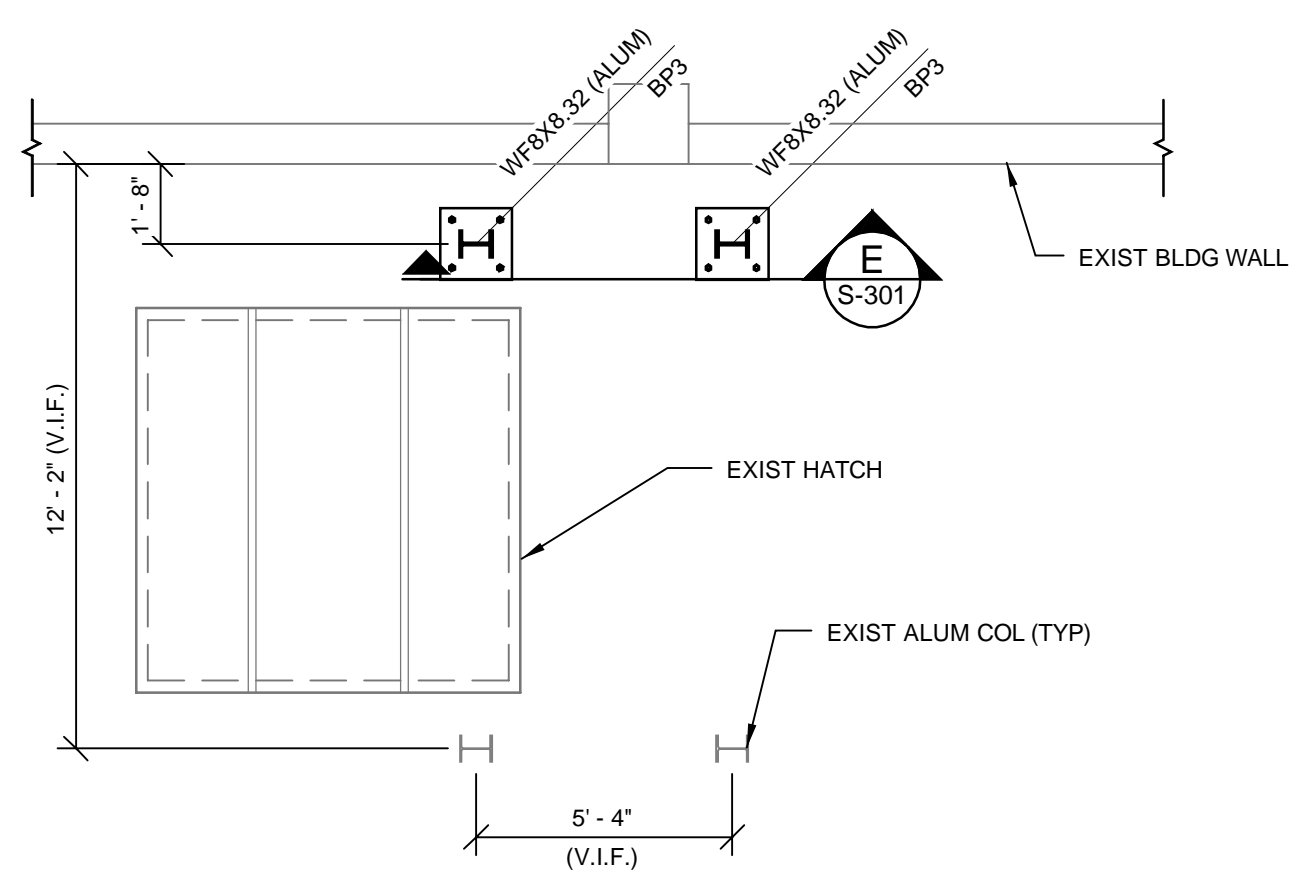
Project No.: 200-08494-14001

Designed By: JRG, Drawn By: JRG, Checked By: JLB

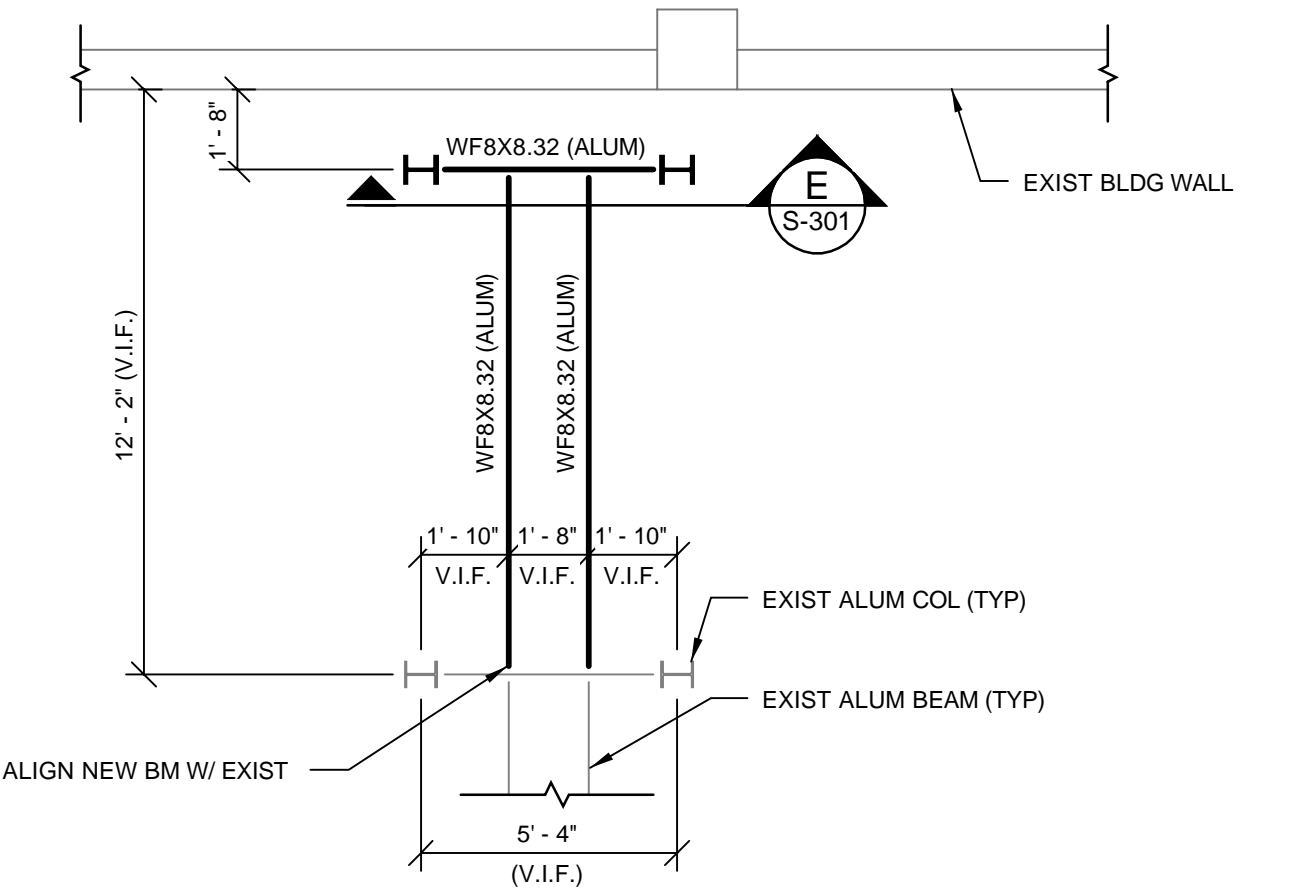
S-001

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

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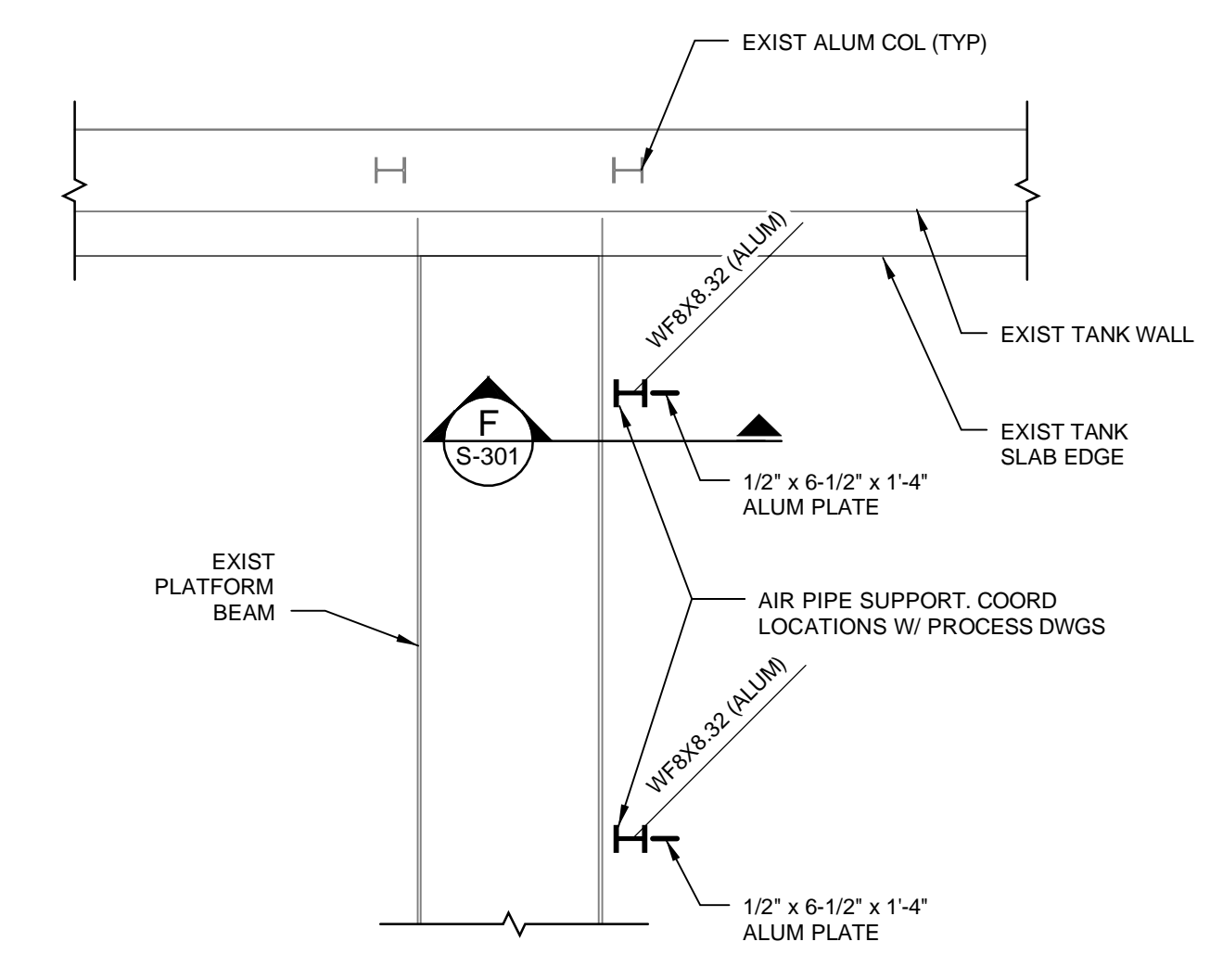


1 CONDUIT SUPPORT LOWER PLAN
S-101 SCALE: 1/4" = 1'-0" (22"x34" SIZE ONLY)



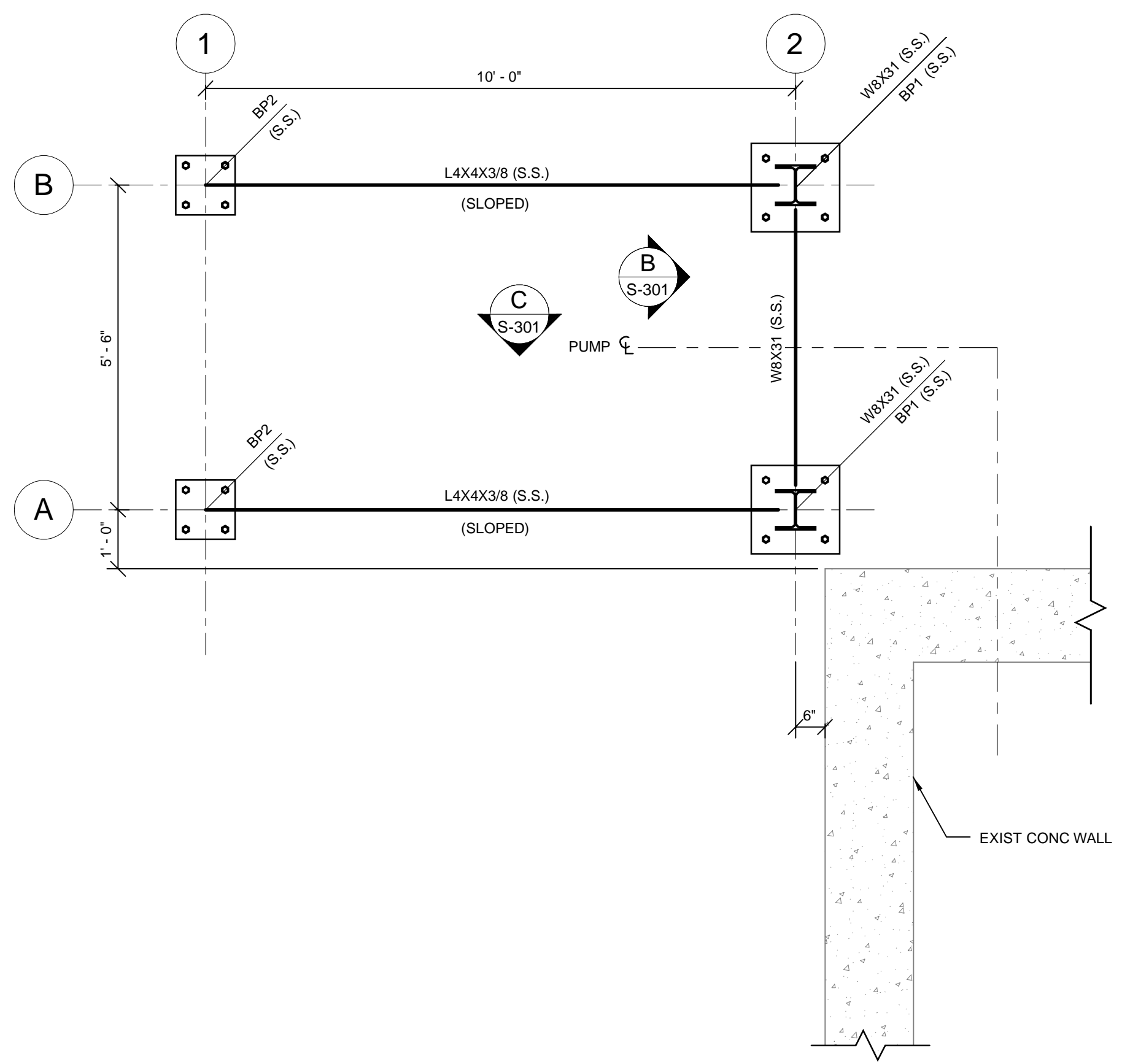
2 CONDUIT SUPPORT UPPER PLAN
S-101 SCALE: 1/4" = 1'-0" (22"x34" SIZE ONLY)

NOTE: REFER TO KEY PLAN & PROCESS DWGS FOR LOCATION(S)

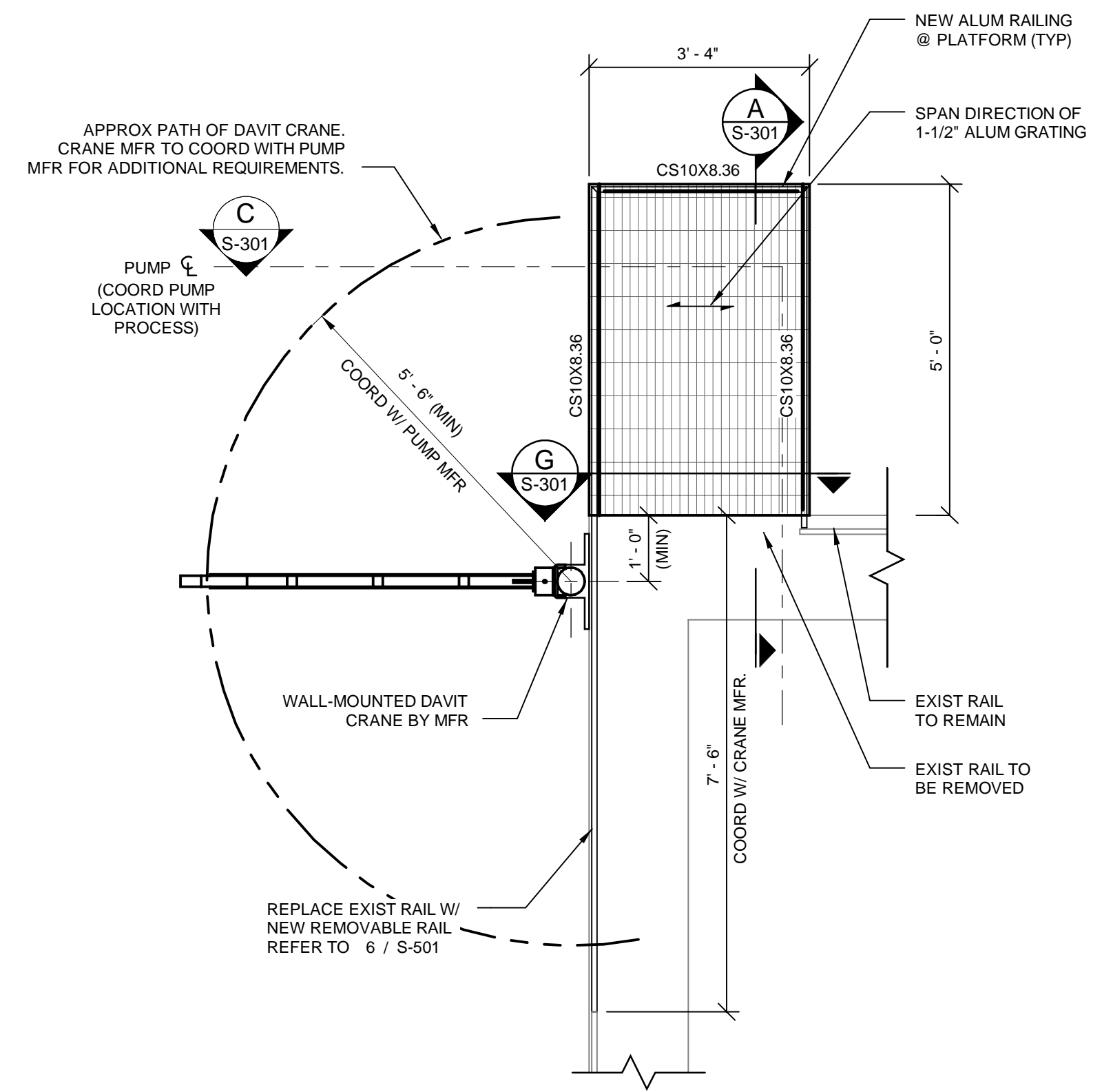


3 PIPE SUPPORT PLAN
S-101 SCALE: 1/4" = 1'-0" (22"x34" SIZE ONLY)

NOTE: REFER TO KEY PLAN & PROCESS DWGS FOR LOCATION(S)



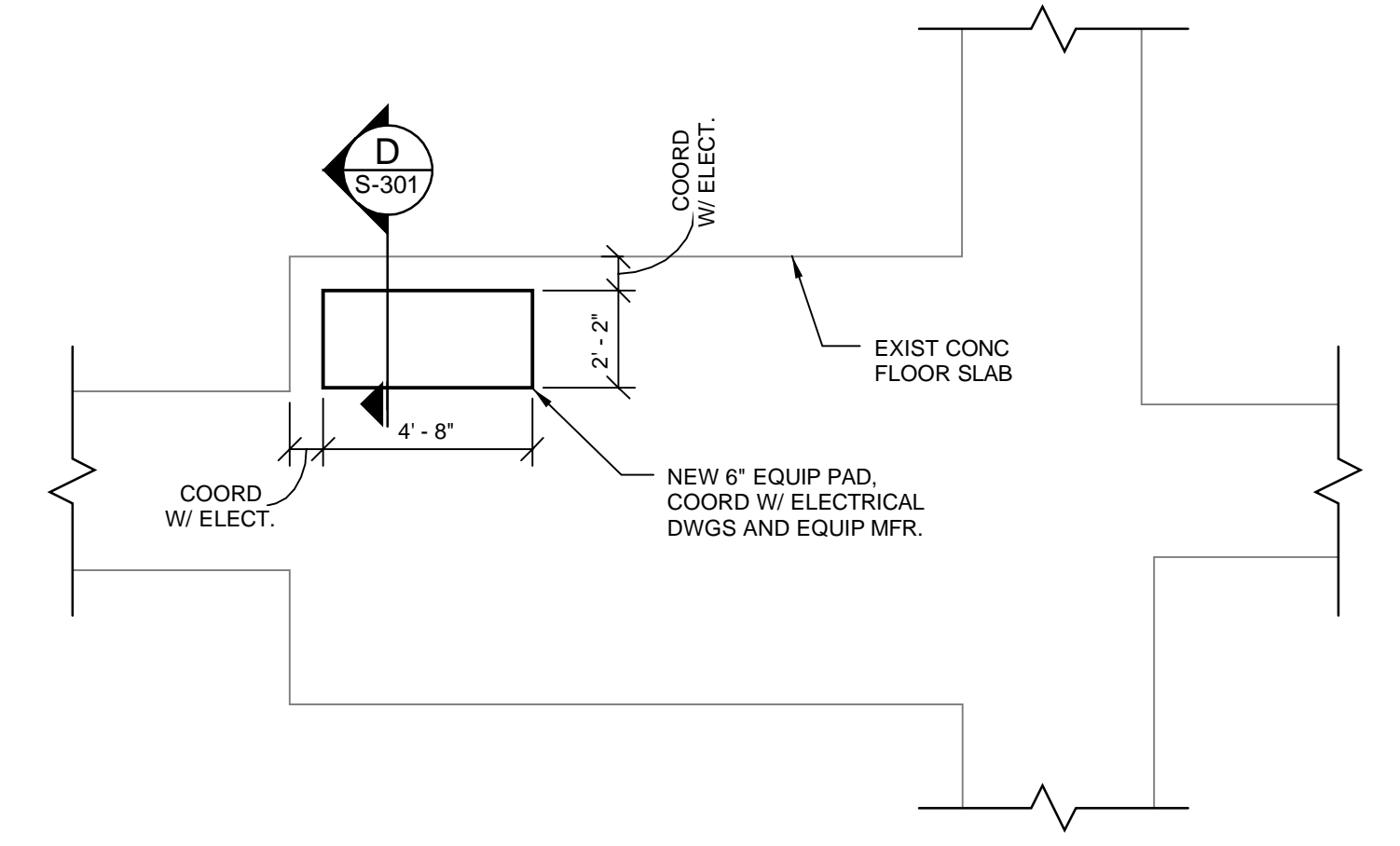
4 PUMP SUPPORT LOWER PLAN
S-101 SCALE: 1/2" = 1'-0" (22"x34" SIZE ONLY)



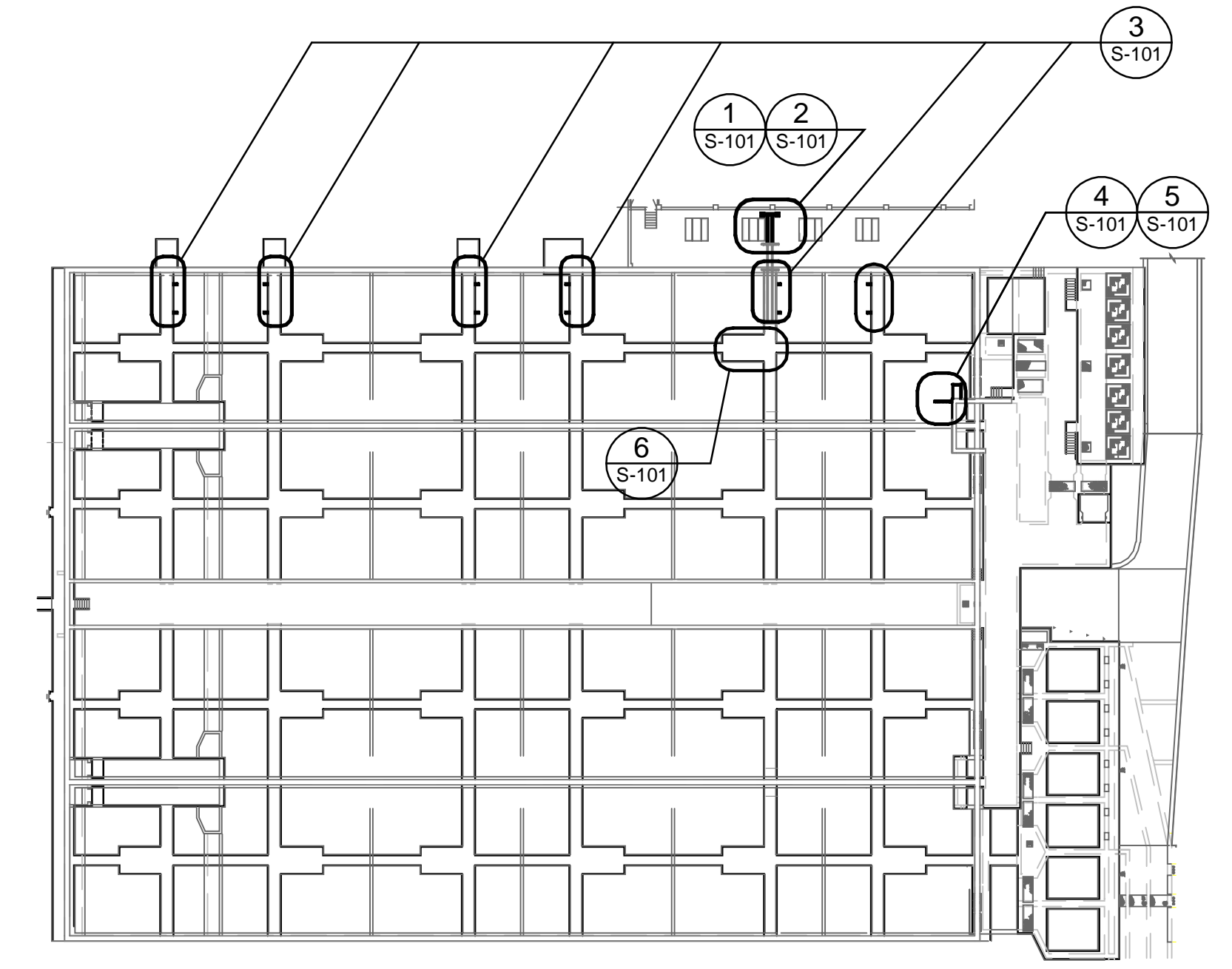
5 PUMP SUPPORT UPPER PLAN
S-101 SCALE: 1/2" = 1'-0" (22"x34" SIZE ONLY)

NOTE: REFER TO KEY PLAN & PROCESS DWGS FOR LOCATION(S)

- PLAN NOTES:
1. FOR GENERAL NOTES REFER TO SHEET S-001.
 2. ALL FRAMING MEMBERS ARE STANDARD ALUMINUM ASSOCIATION SECTIONS UNLESS NOTED OTHERWISE.
 3. COORDINATE ALL PIPING SIZES AND LOCATIONS WITH PROCESS DRAWINGS PRIOR TO CONSTRUCTION.
 4. CONFIRM ALL EXISTING DIMENSIONS IN THE FIELD PRIOR TO CONSTRUCTION.
 5. S.S. DENOTES GRADE 316 STAINLESS STEEL FRAMING.
 6. ALUMINUM SURFACES IN CONTACT WITH CONCRETE, GROUT OR DISSIMILAR METALS WILL BE PROTECTED WITH A COAT OF BITUMINOUS PAINT OR OTHER APPROVED MATERIAL.



6 EQUIPMENT PAD PLAN
S-101 SCALE: 1/4" = 1'-0" (22"x34" SIZE ONLY)



KEY PLAN
SCALE: 1" = 50'-0" (22"x34" SIZE ONLY)

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

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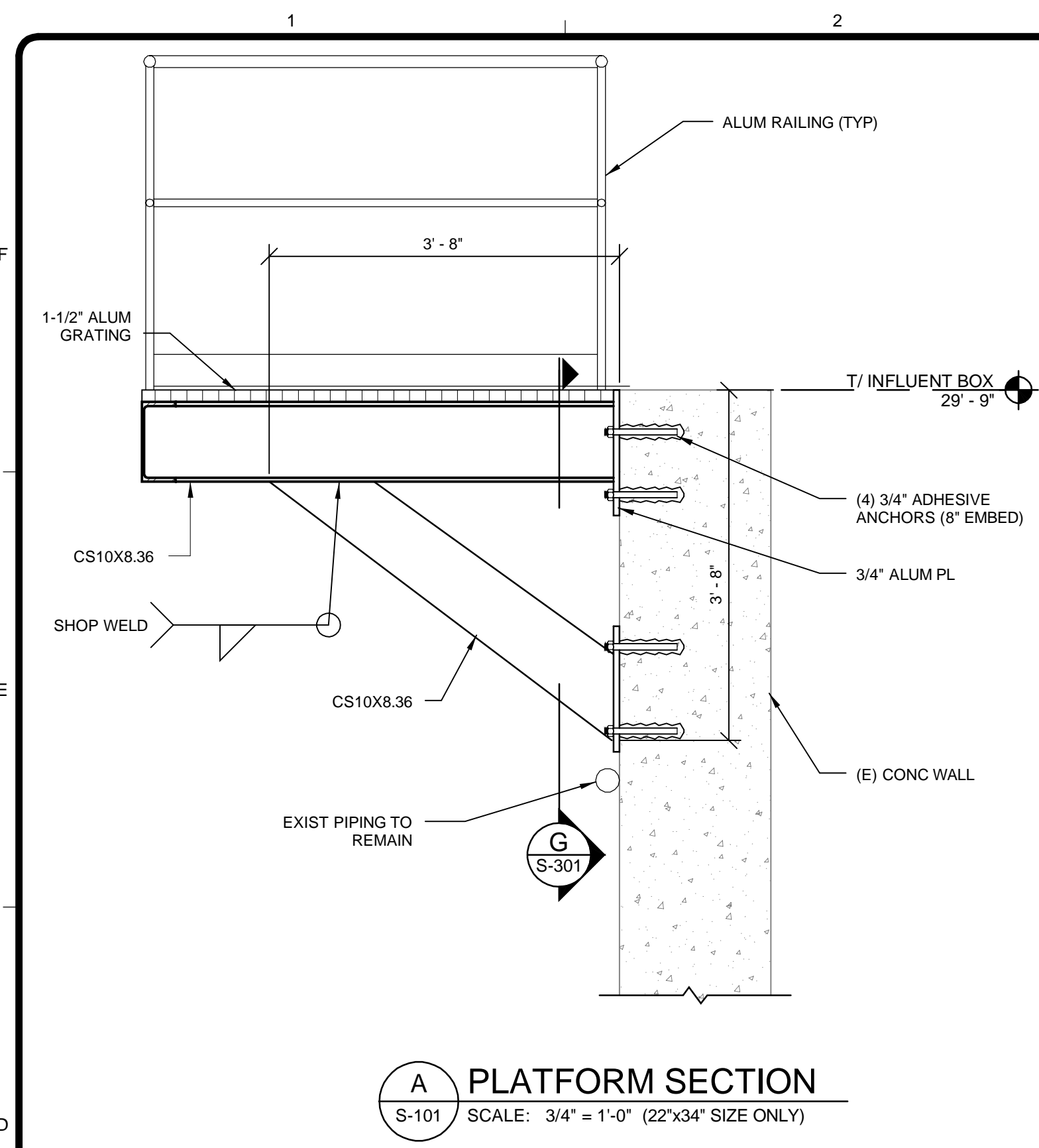
MARK	DATE	DESCRIPTION	BY

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IMPROVEMENTS, PHASE I
STRUCTURAL PLANS

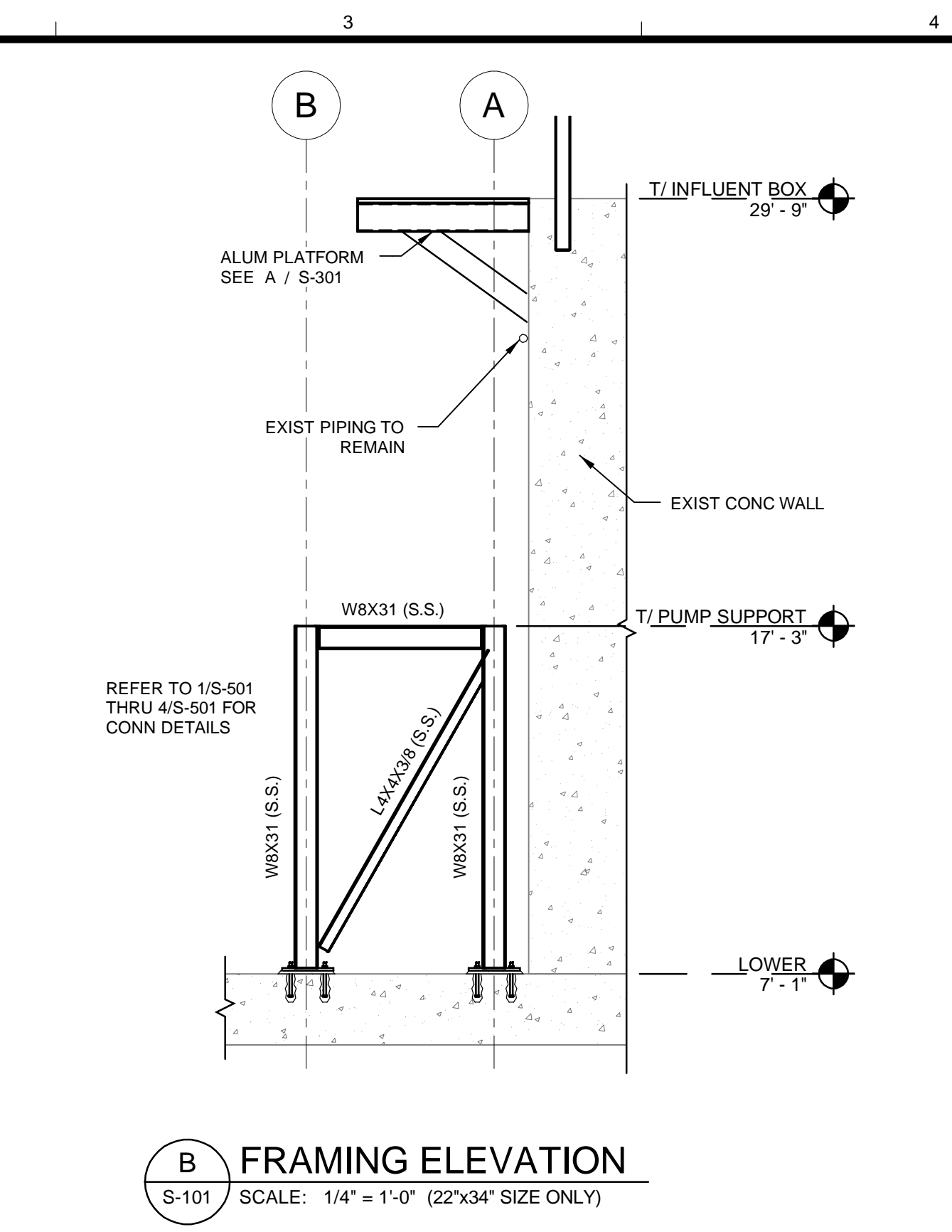
Project No.: 200-08494-14001
Designed By: JRG
Drawn By: JRG
Checked By: JLB

S-101

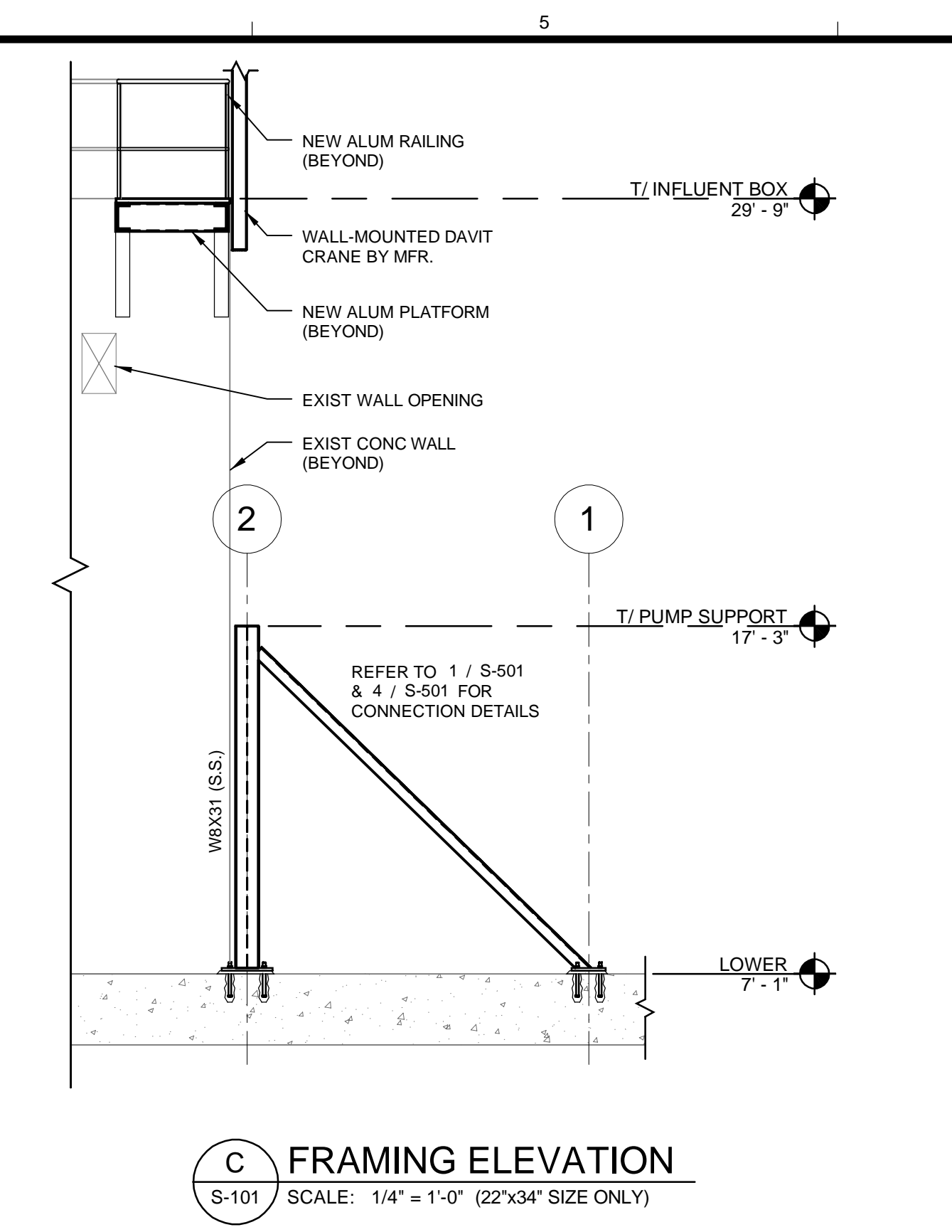
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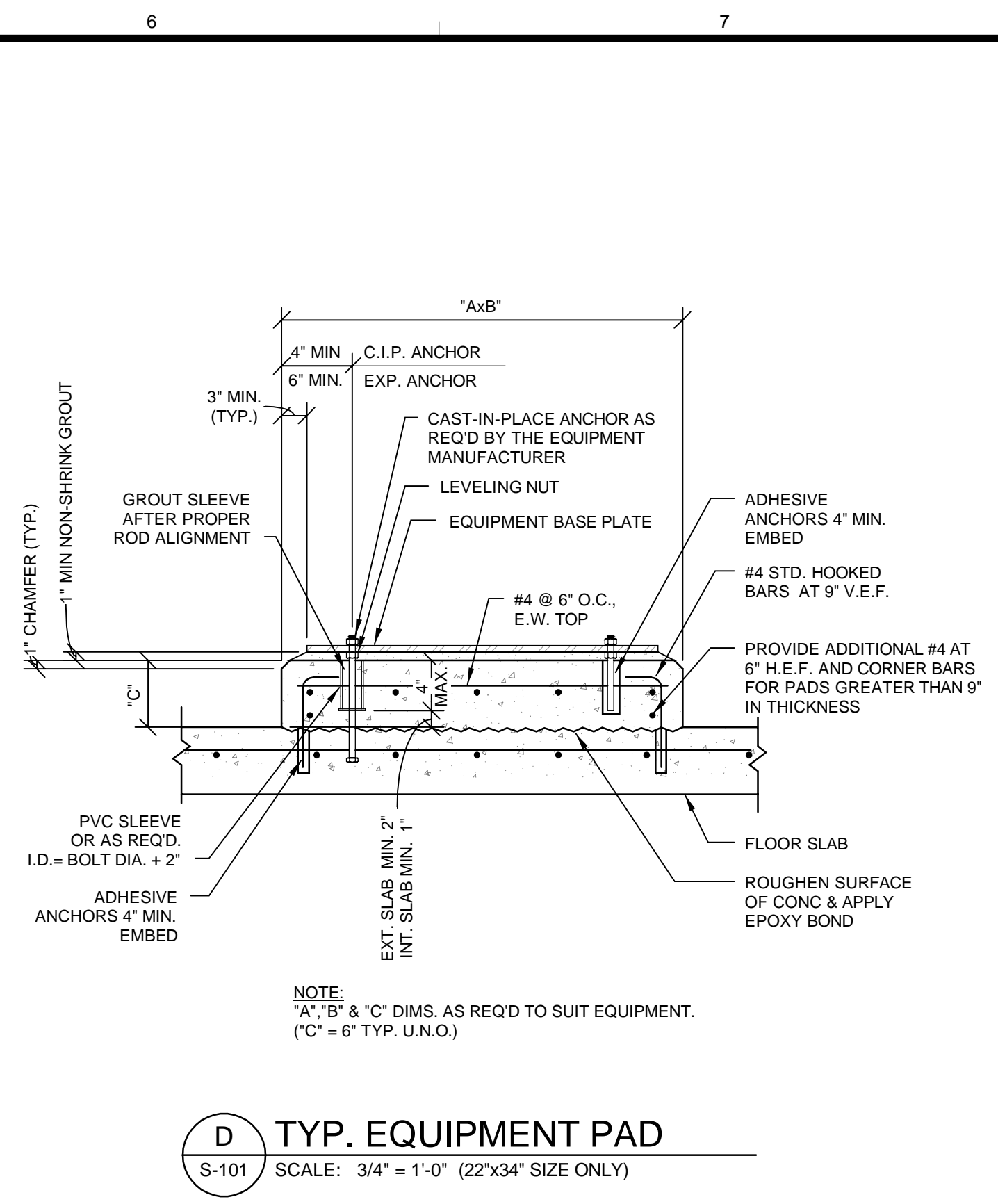
A PLATFORM SECTION
S-101 SCALE: 3/4" = 1'-0" (22"x34" SIZE ONLY)



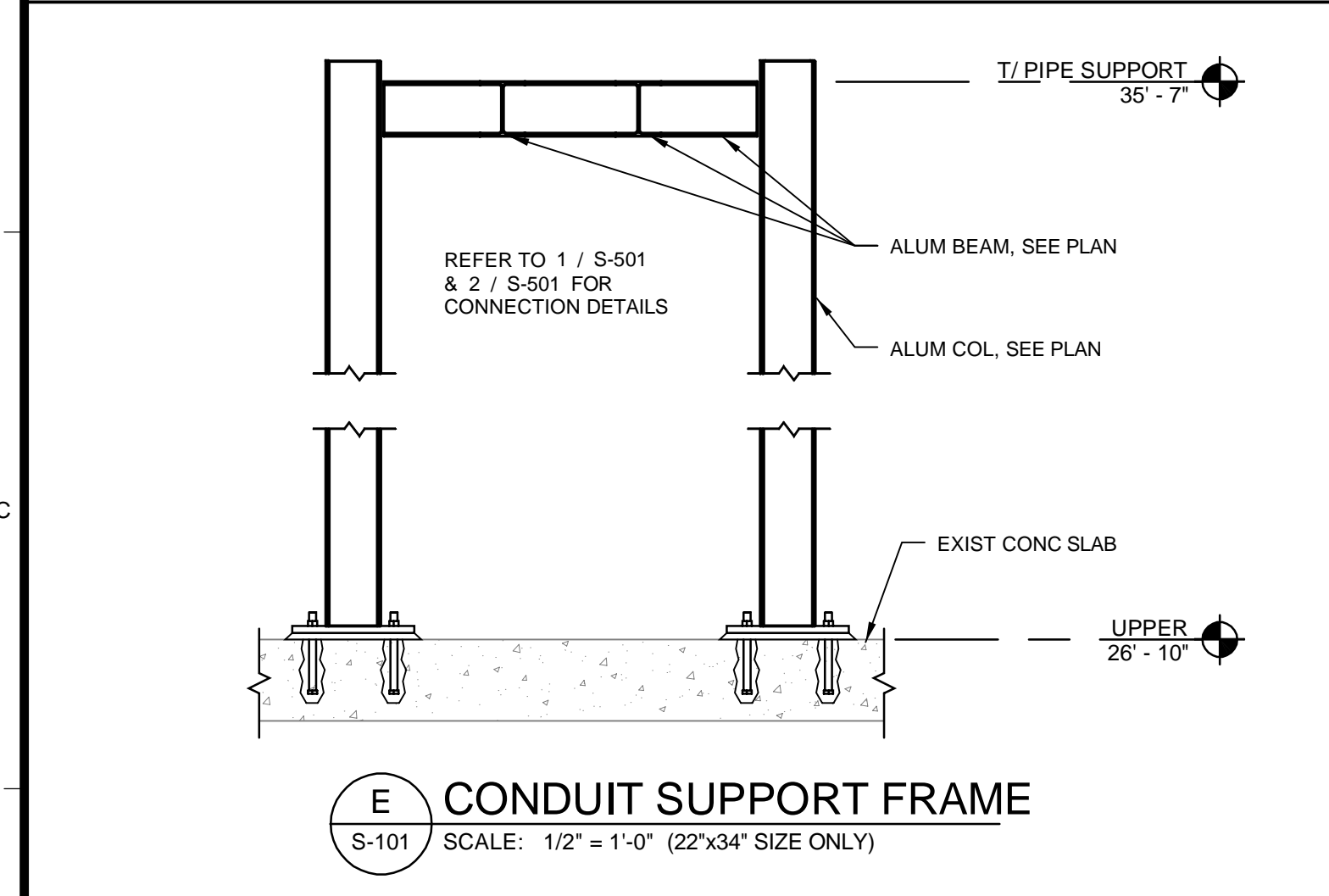
B FRAMING ELEVATION
S-101 SCALE: 1/4" = 1'-0" (22"x34" SIZE ONLY)



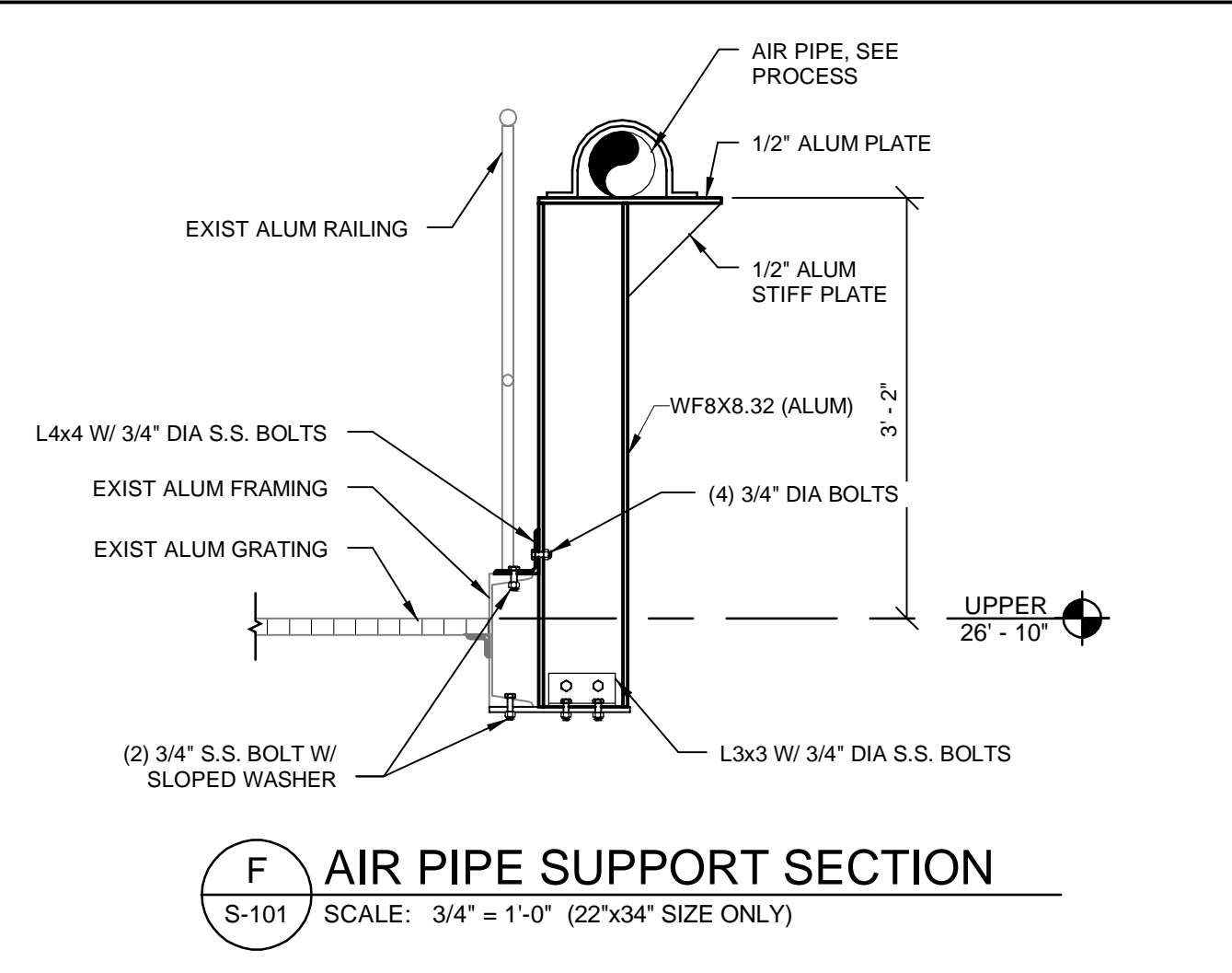
C FRAMING ELEVATION
S-101 SCALE: 1/4" = 1'-0" (22"x34" SIZE ONLY)



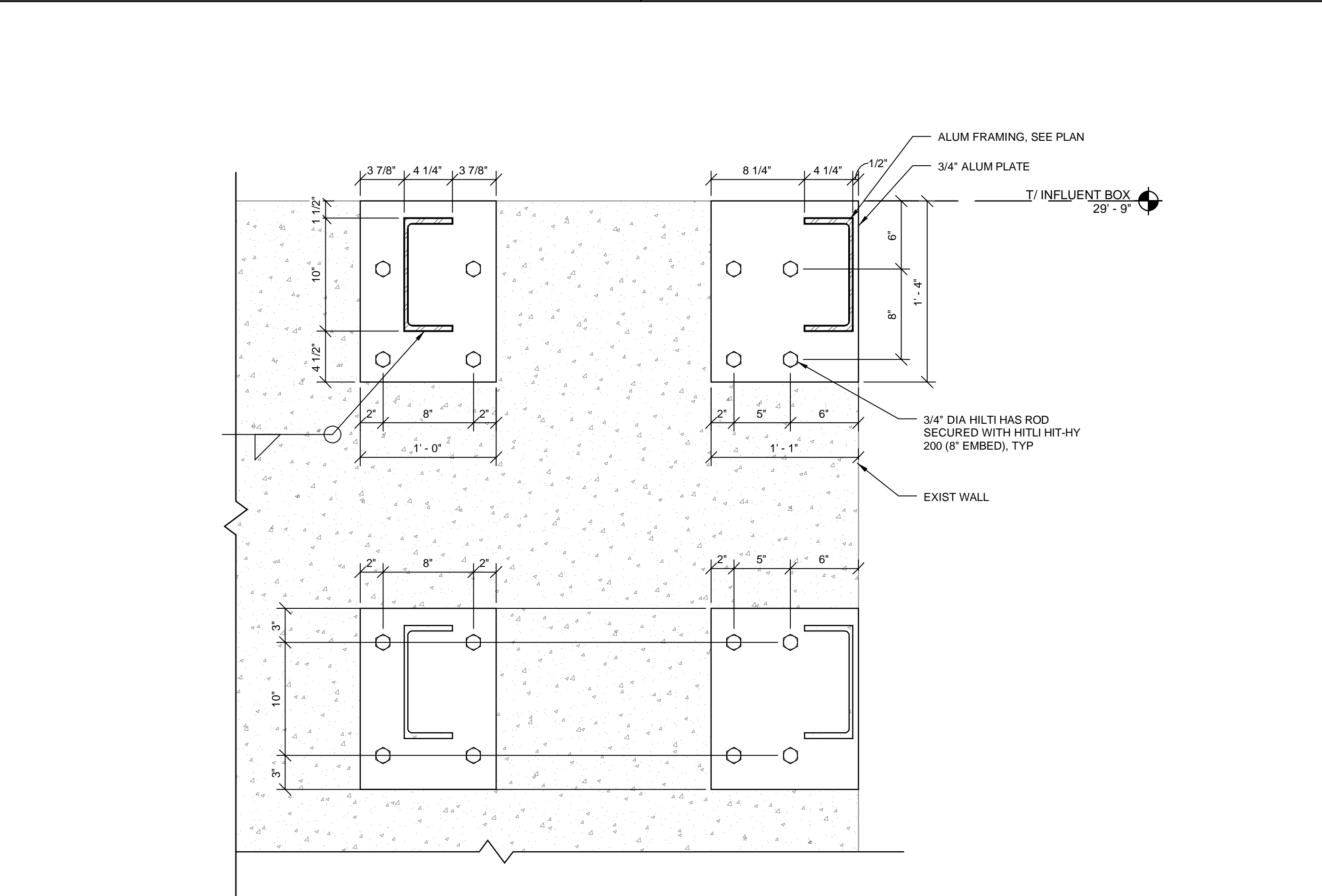
D TYP. EQUIPMENT PAD
S-101 SCALE: 3/4" = 1'-0" (22"x34" SIZE ONLY)



E CONDUIT SUPPORT FRAME
S-101 SCALE: 1/2" = 1'-0" (22"x34" SIZE ONLY)



F AIR PIPE SUPPORT SECTION
S-101 SCALE: 3/4" = 1'-0" (22"x34" SIZE ONLY)



G PLATFORM ANCHORAGE
S-101 SCALE: 1 1/2" = 1'-0" (22"x34" SIZE ONLY)

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STRUCTURAL SECTIONS AND DETAILS

Project No.: 200-08494-14001
Designed By: JRG
Drawn By: JRG
Checked By: JLB

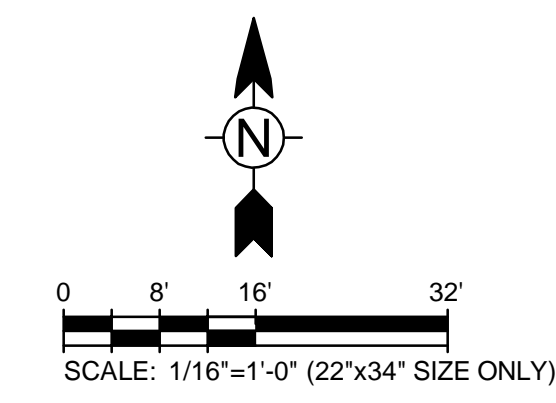
S-301

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NOTES:
1. SEE DWGS M-102 THRU M-107 FOR INDIVIDUAL ZONE IMPROVEMENTS PLANS.



TRAIN 1

TRAIN 2

ZONE 1

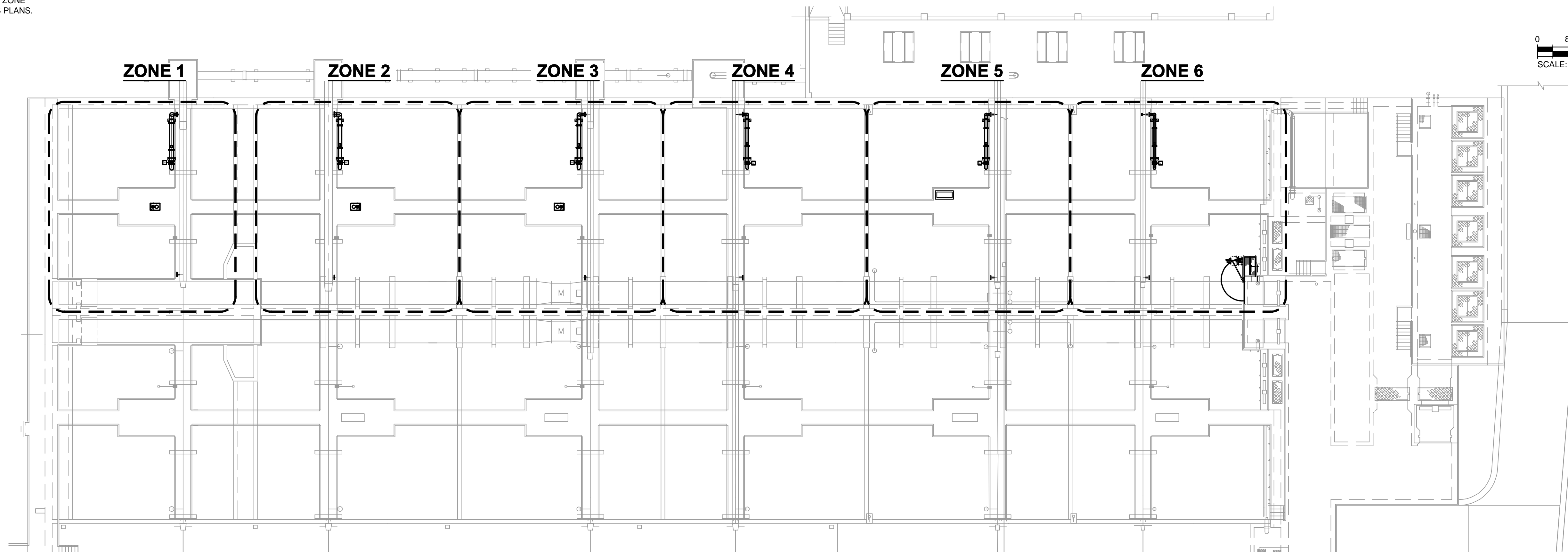
ZONE 2

ZONE 3

ZONE 4

ZONE 5

ZONE 6



UPPER PLAN

TRAIN 1

TRAIN 2

ZONE 1

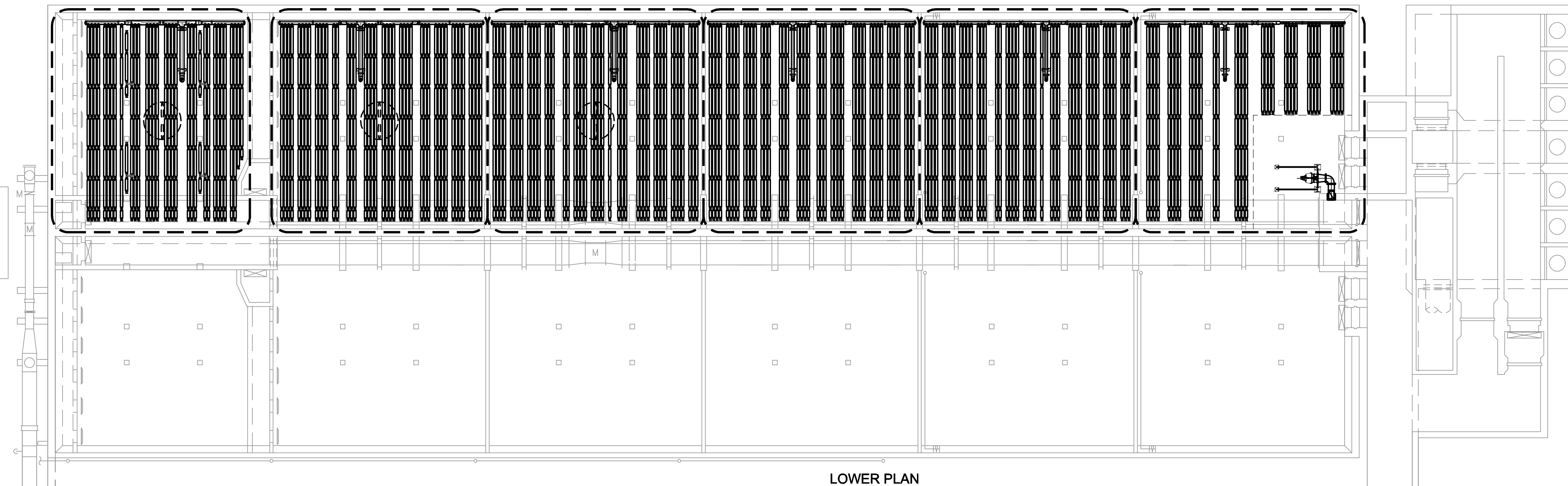
ZONE 2

ZONE 3

ZONE 4

ZONE 5

ZONE 6



LOWER PLAN

OVERALL MODIFICATION PLANS

SCALE: 1/16"=1'-0" (22"x34" SIZE ONLY)

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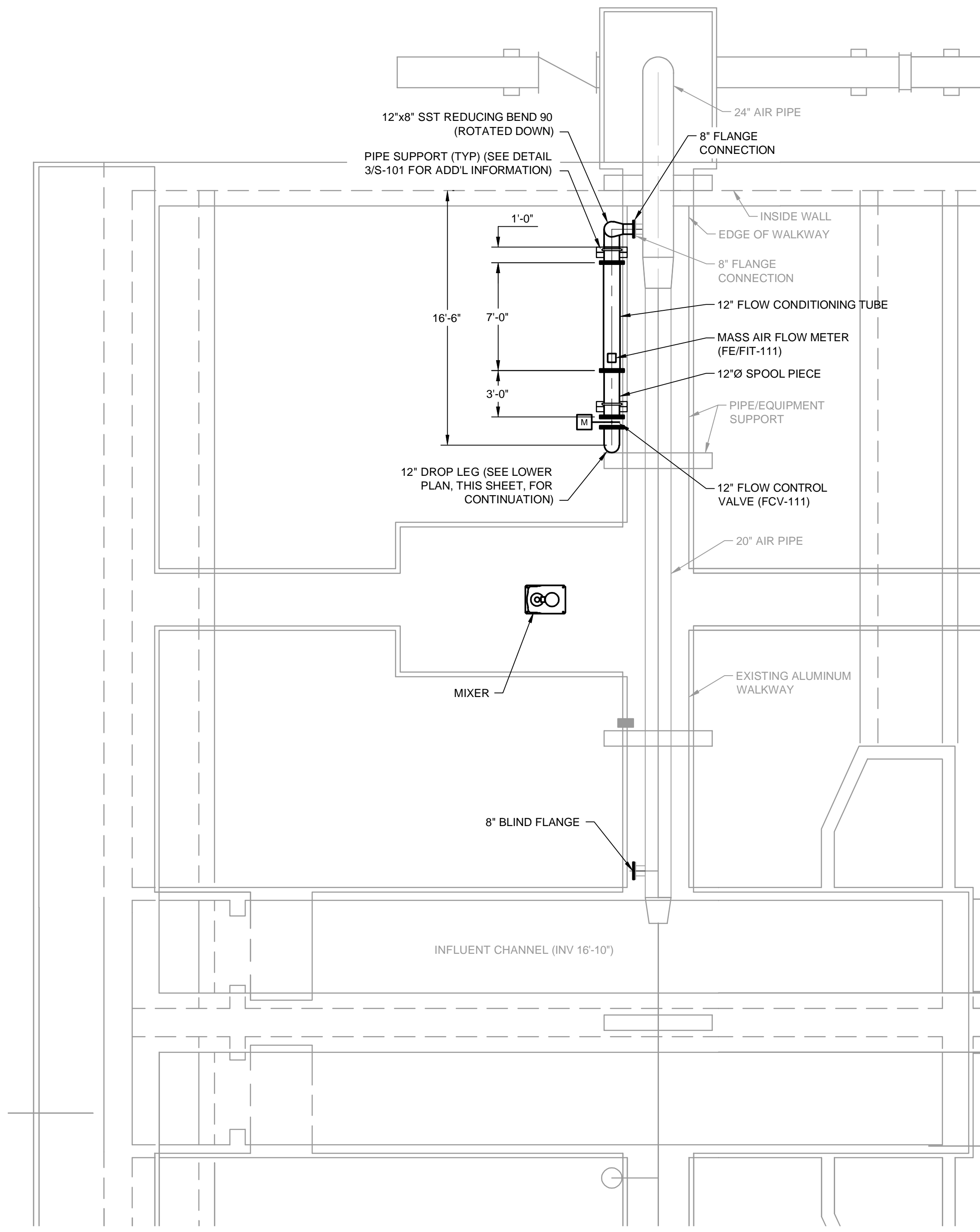
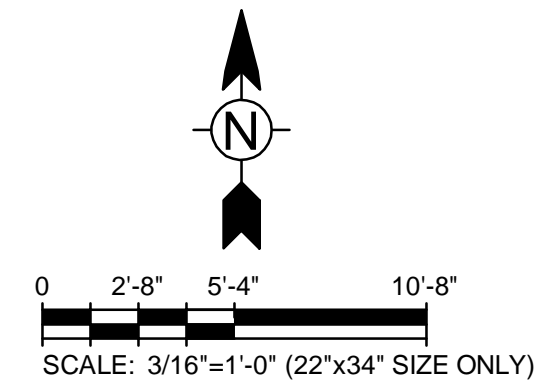
CITY OF TAMPA
HFC AWT/P DIFFUSED AIR REACTORS IMPROVEMENTS, PHASE I
DIFFUSED AIR REACTORS TRAIN 1 MODIFICATIONS TOP PLAN

Project No.: 200-08494-14001
Designed By: LEH
Drawn By: JTE
Checked By: JPT

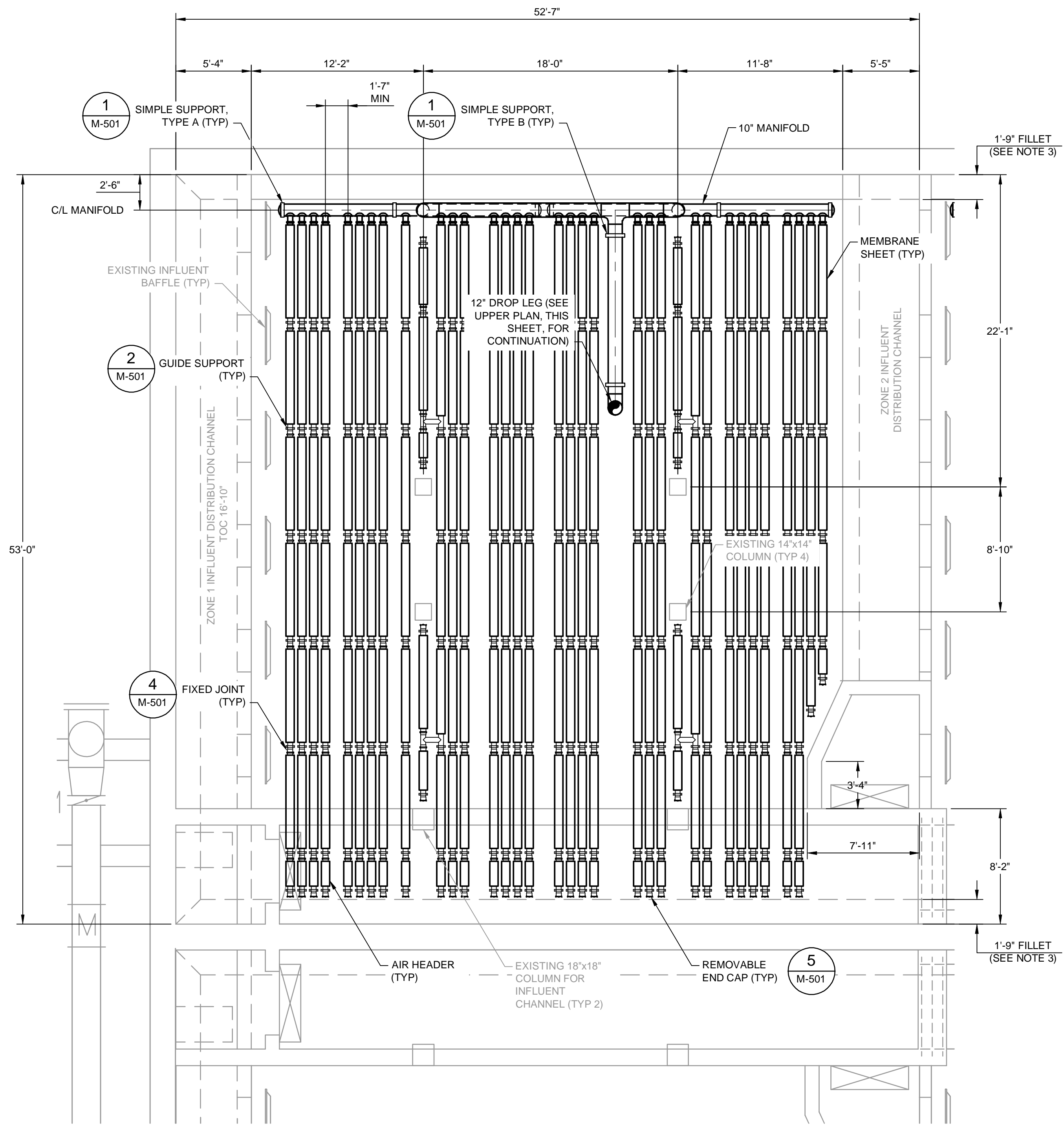
M-101
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NOTES:

1. FIELD VERIFY DIMENSIONS OF STRUCTURES INSIDE THE BASIN.
2. DIFFUSER LAYOUTS ARE APPROXIMATE. FINAL DIFFUSER DESIGN, NUMBER OF DIFFUSERS AND LAYOUT SHALL BE BY DIFFUSED AERATION SYSTEM SUPPLIER PER SPECIFICATION SECTION 11376.
3. DIMENSIONS BASED ON AVAILABLE RECORD DRAWINGS. CONTRACTOR TO FIELD VERIFY DIMENSION.
4. DIFFUSED AIR REACTOR DETAILS CALLED OUT ON THIS SHEET ARE TYPICAL FOR DWGS M-102 THRU M-107.



**ZONE 1 MODIFICATIONS
UPPER PLAN**
SCALE: 3/16"=1'-0" (22"x34" SIZE ONLY)



**ZONE 1 MODIFICATIONS
LOWER PLAN**
SCALE: 3/16"=1'-0" (22"x34" SIZE ONLY)

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**DIFFUSED AIR REACTORS
ZONE 1 MODIFICATIONS
PLANS**

Project No.: 200-08494-14001
Designed By: LEH
Drawn By: JTE
Checked By: JPT

M-102

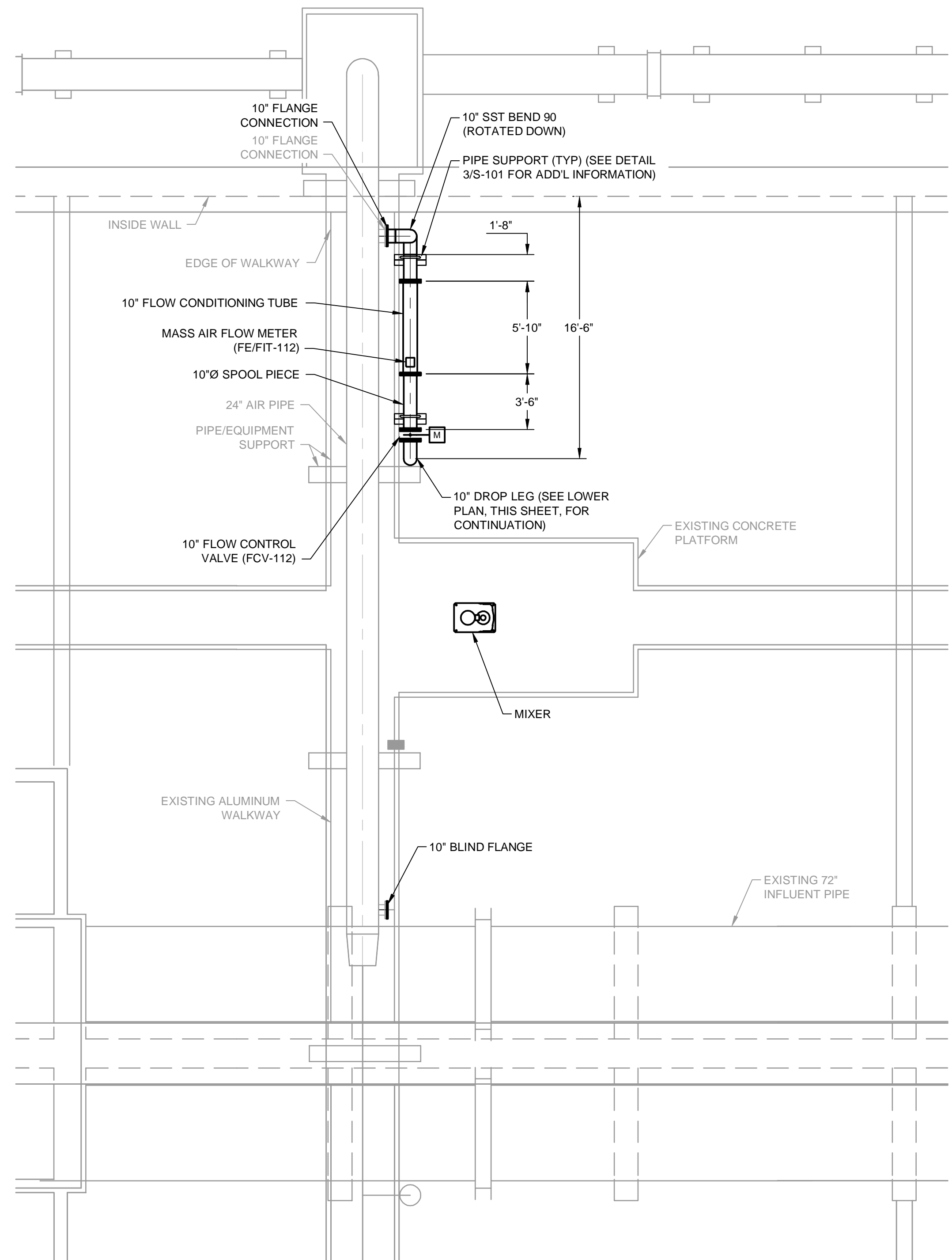
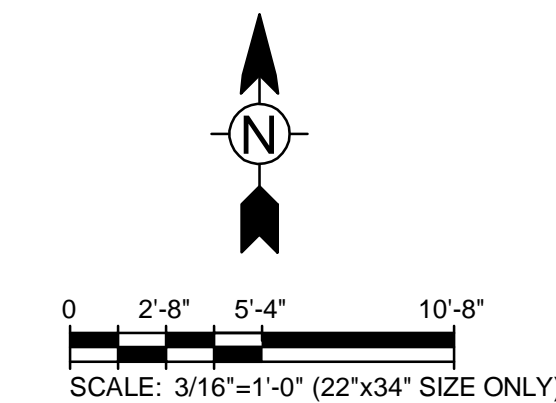
Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

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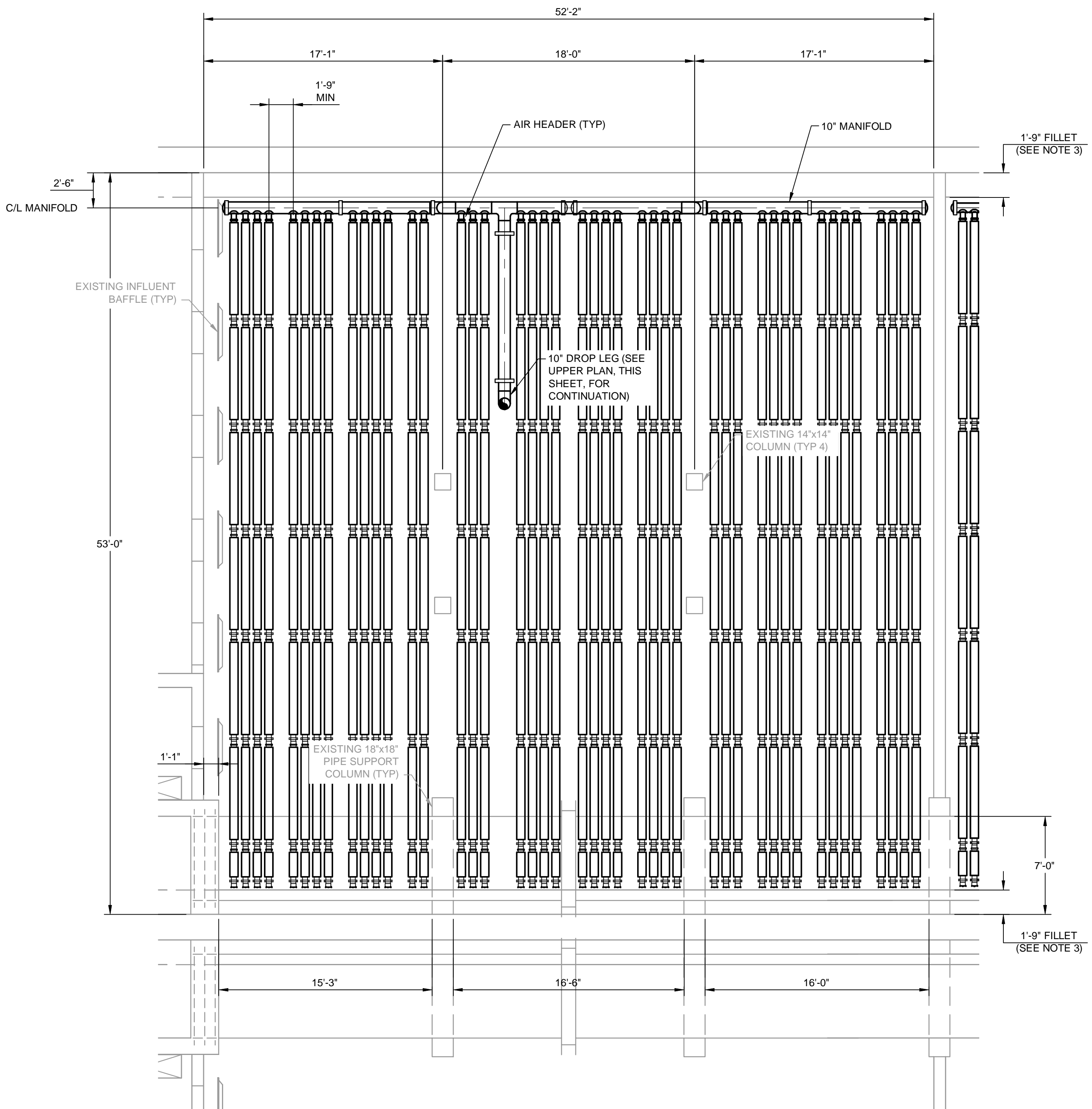
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NOTES:

- FIELD VERIFY DIMENSIONS OF STRUCTURES INSIDE THE BASIN.
- DIFFUSER LAYOUTS ARE APPROXIMATE. FINAL DIFFUSER DESIGN, NUMBER OF DIFFUSERS AND LAYOUT SHALL BE BY DIFFUSED AERATION SYSTEM SUPPLIER PER SPECIFICATION SECTION 11376.
- DIMENSIONS BASED ON AVAILABLE RECORD DRAWINGS. CONTRACTOR TO FIELD VERIFY DIMENSION.
- SEE DWG M-102 FOR DIFFUSED AIR REACTORS DETAIL CALLOUTS.



**ZONE 2 MODIFICATIONS
UPPER PLAN**
SCALE: 3/16"=1'-0" (22"x34" SIZE ONLY)



**ZONE 2 MODIFICATIONS
LOWER PLAN**
SCALE: 3/16"=1'-0" (22"x34" SIZE ONLY)



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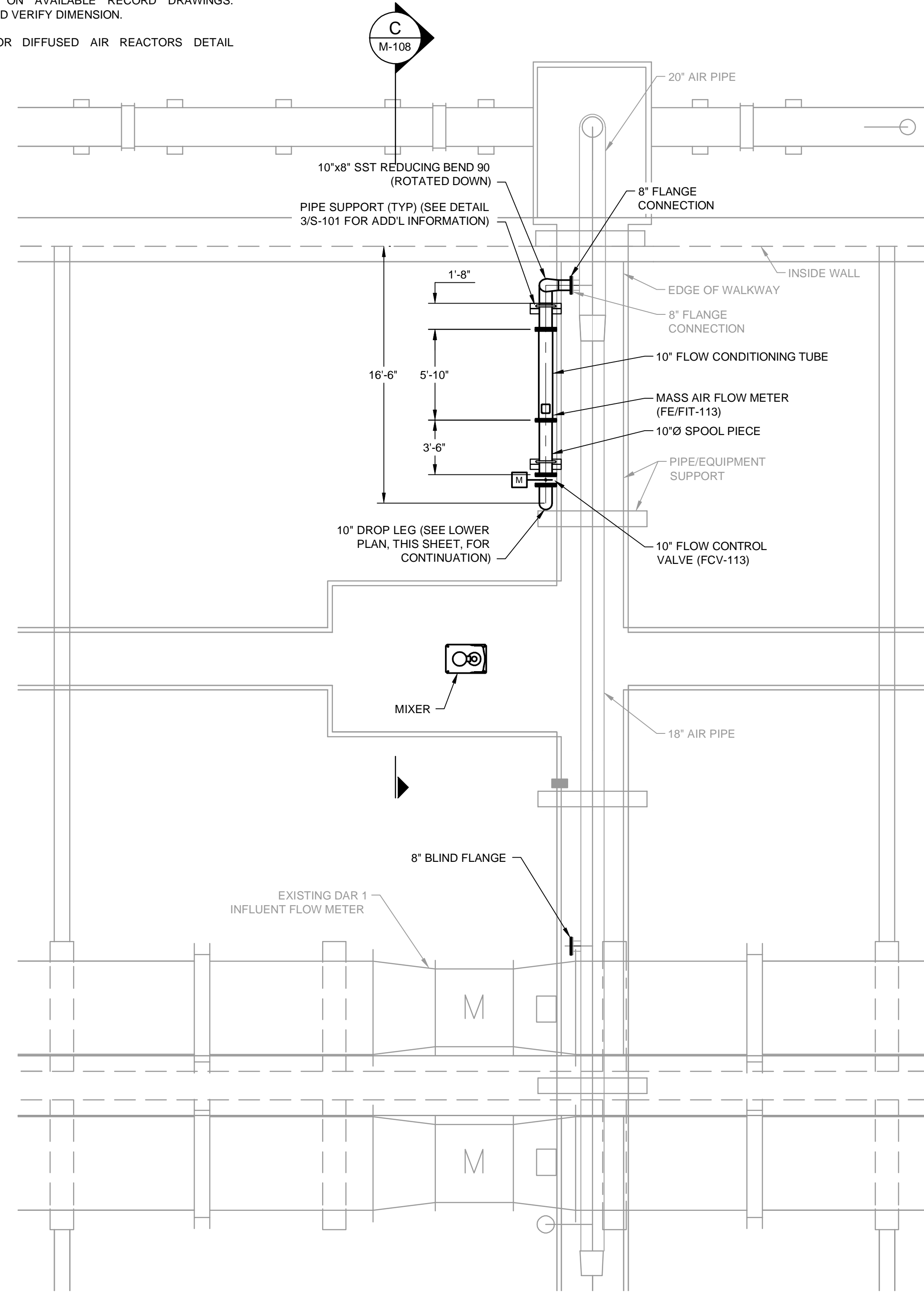
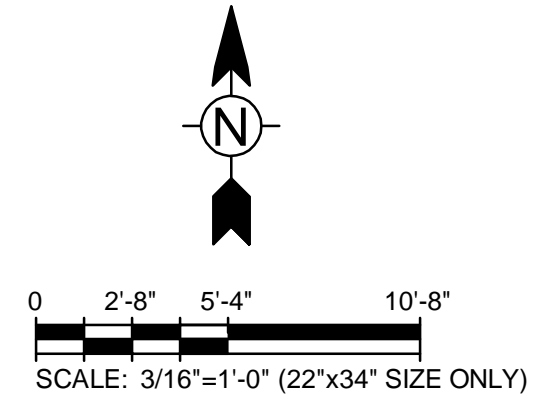
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IMPROVEMENTS, PHASE I
**DIFFUSED AIR REACTORS
ZONE 2 MODIFICATIONS
PLANS**

Project No.: 200-08494-14001
Designed By: LEH
Drawn By: JTE
Checked By: JPT

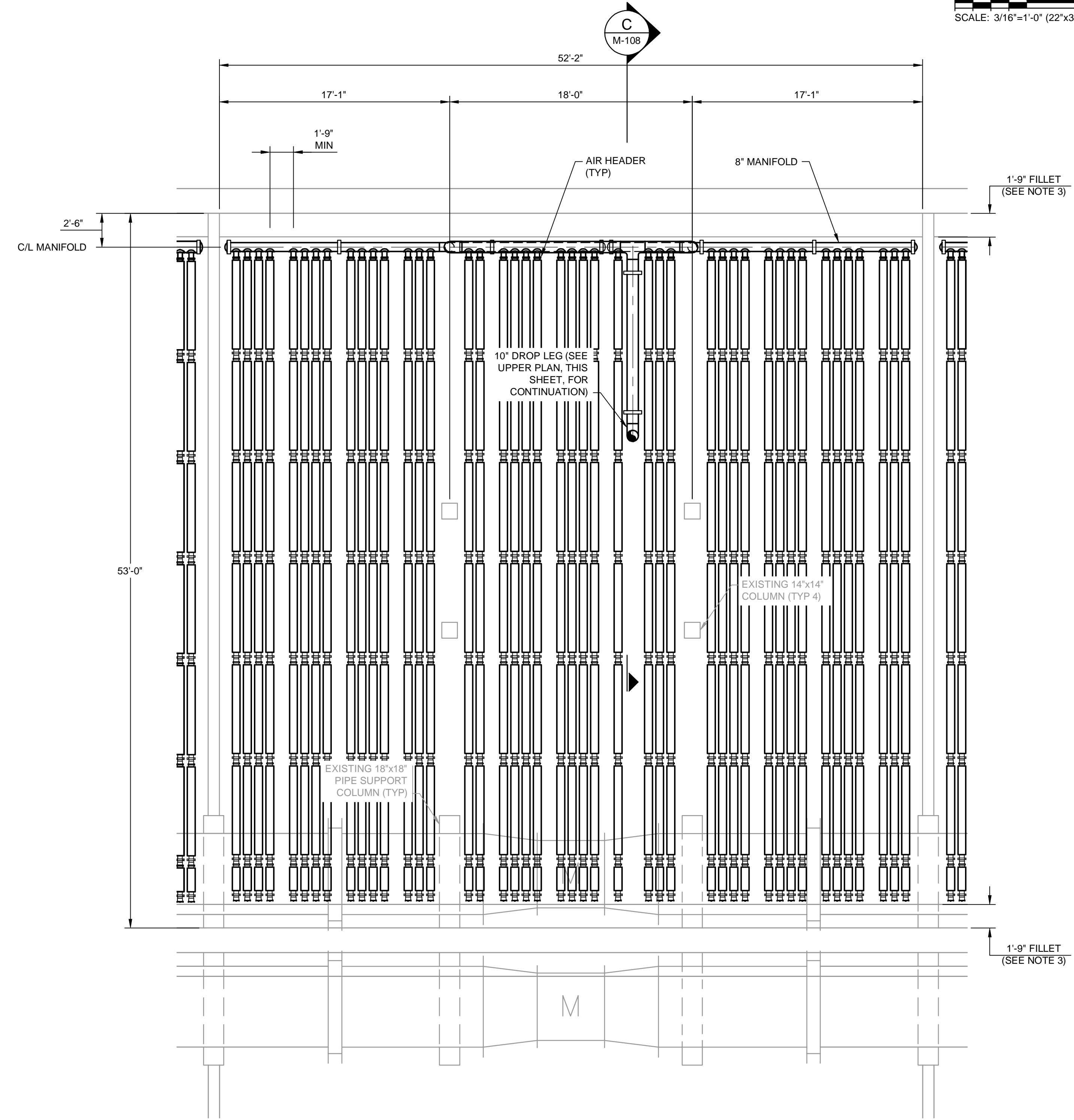
M-103

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

- NOTES:**
1. FIELD VERIFY DIMENSIONS OF STRUCTURES INSIDE THE BASIN.
 2. DIFFUSER LAYOUTS ARE APPROXIMATE. FINAL DIFFUSER DESIGN, NUMBER OF DIFFUSERS AND LAYOUT SHALL BE BY DIFFUSED AERATION SYSTEM SUPPLIER PER SPECIFICATION SECTION 11376.
 3. DIMENSIONS BASED ON AVAILABLE RECORD DRAWINGS. CONTRACTOR TO FIELD VERIFY DIMENSION.
 4. SEE DWG M-102 FOR DIFFUSED AIR REACTORS DETAIL CALLOUTS.

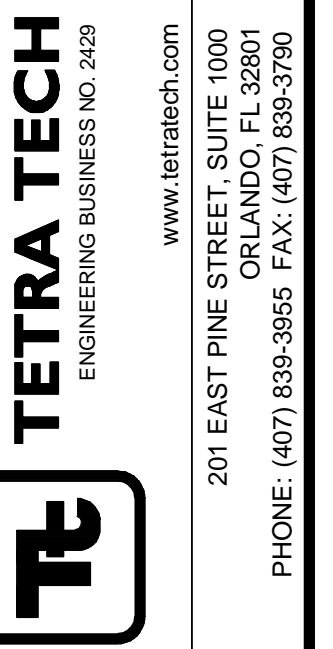


**ZONE 3 MODIFICATIONS
UPPER PLAN**
SCALE: 3/16"=1'-0" (22"x34" SIZE ONLY)



**ZONE 3 MODIFICATIONS
LOWER PLAN**
SCALE: 3/16"=1'-0" (22"x34" SIZE ONLY)

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ZONE 3 MODIFICATIONS
PLANS**

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Drawn By: JTE
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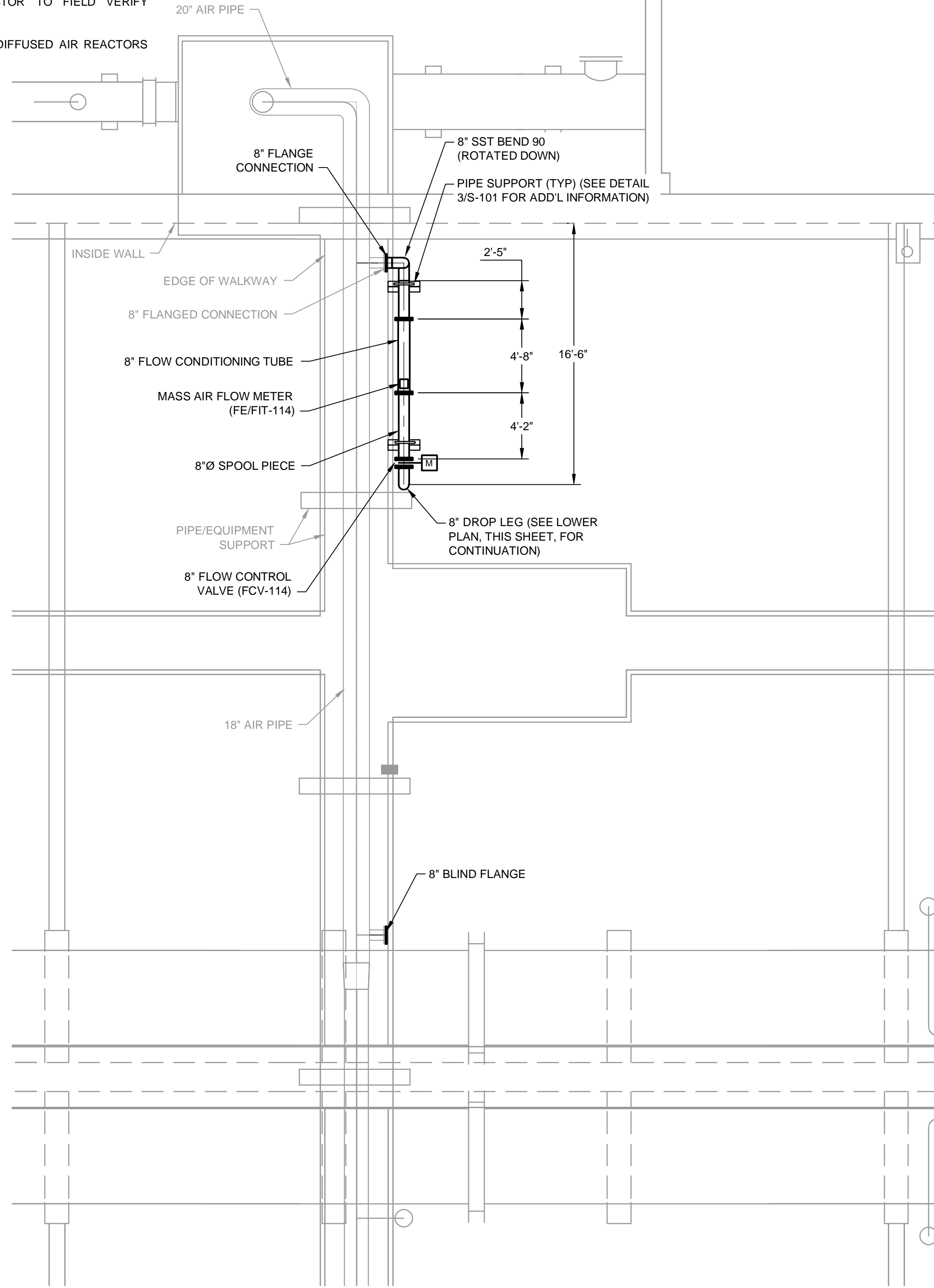
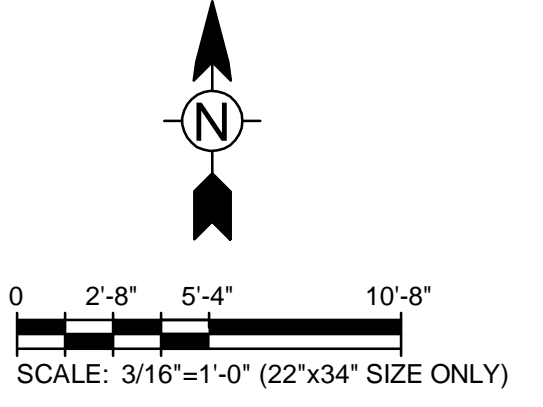
M-104

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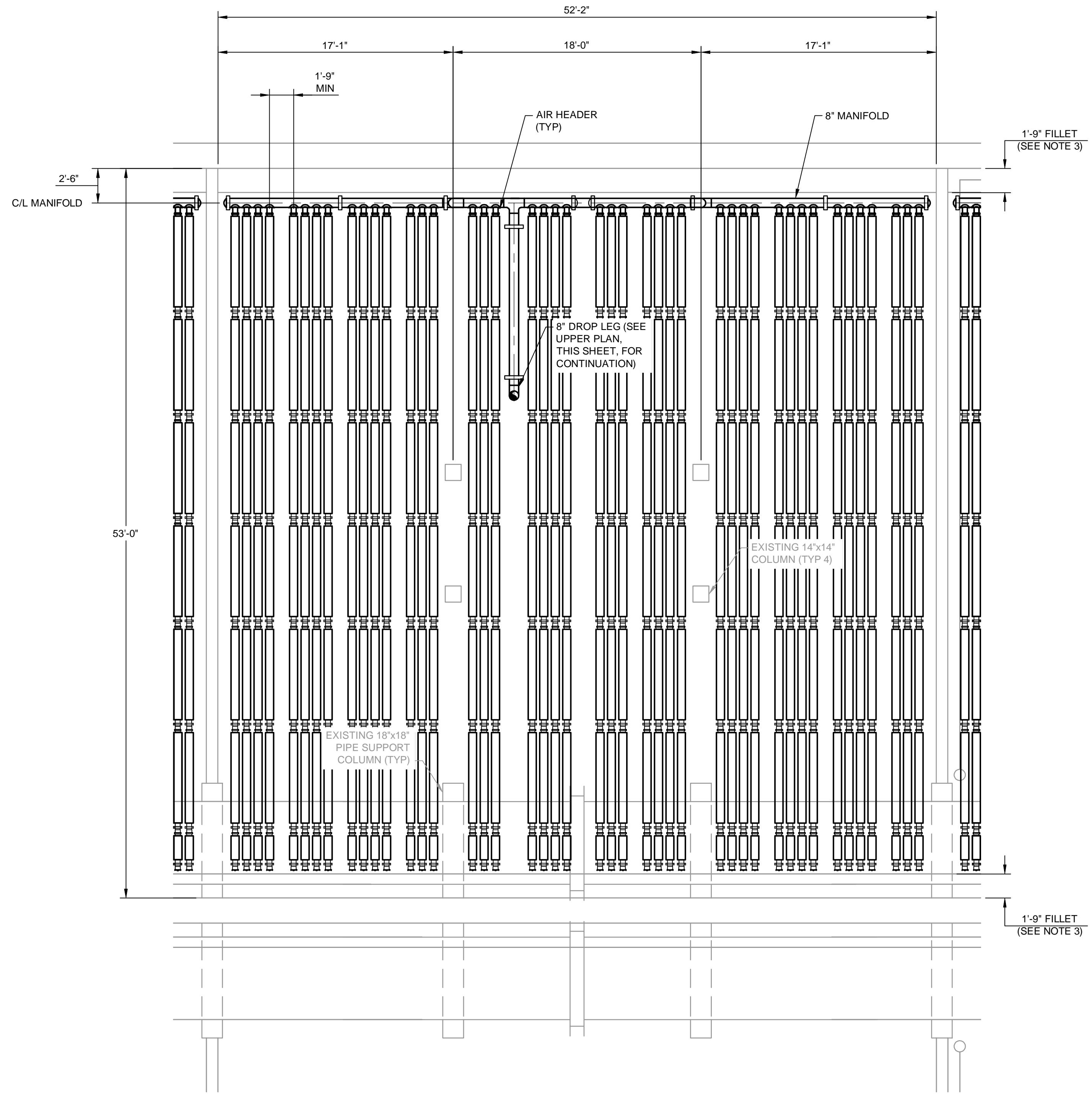
NOTES:

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- DIMENSIONS BASED ON AVAILABLE RECORD DRAWINGS. CONTRACTOR TO FIELD VERIFY DIMENSION.
- SEE DWG M-102 FOR DIFFUSED AIR REACTORS DETAIL CALLOUTS.



ZONE 4 MODIFICATIONS
UPPER PLAN

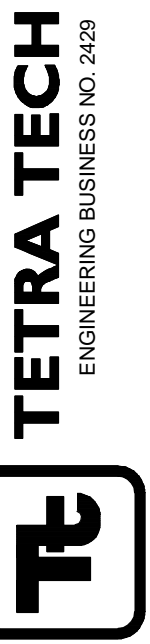
SCALE: 3/16"=1'-0" (22"x34" SIZE ONLY)



ZONE 4 MODIFICATIONS
LOWER PLAN

SCALE: 3/16"=1'-0" (22"x34" SIZE ONLY)

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PLANS**

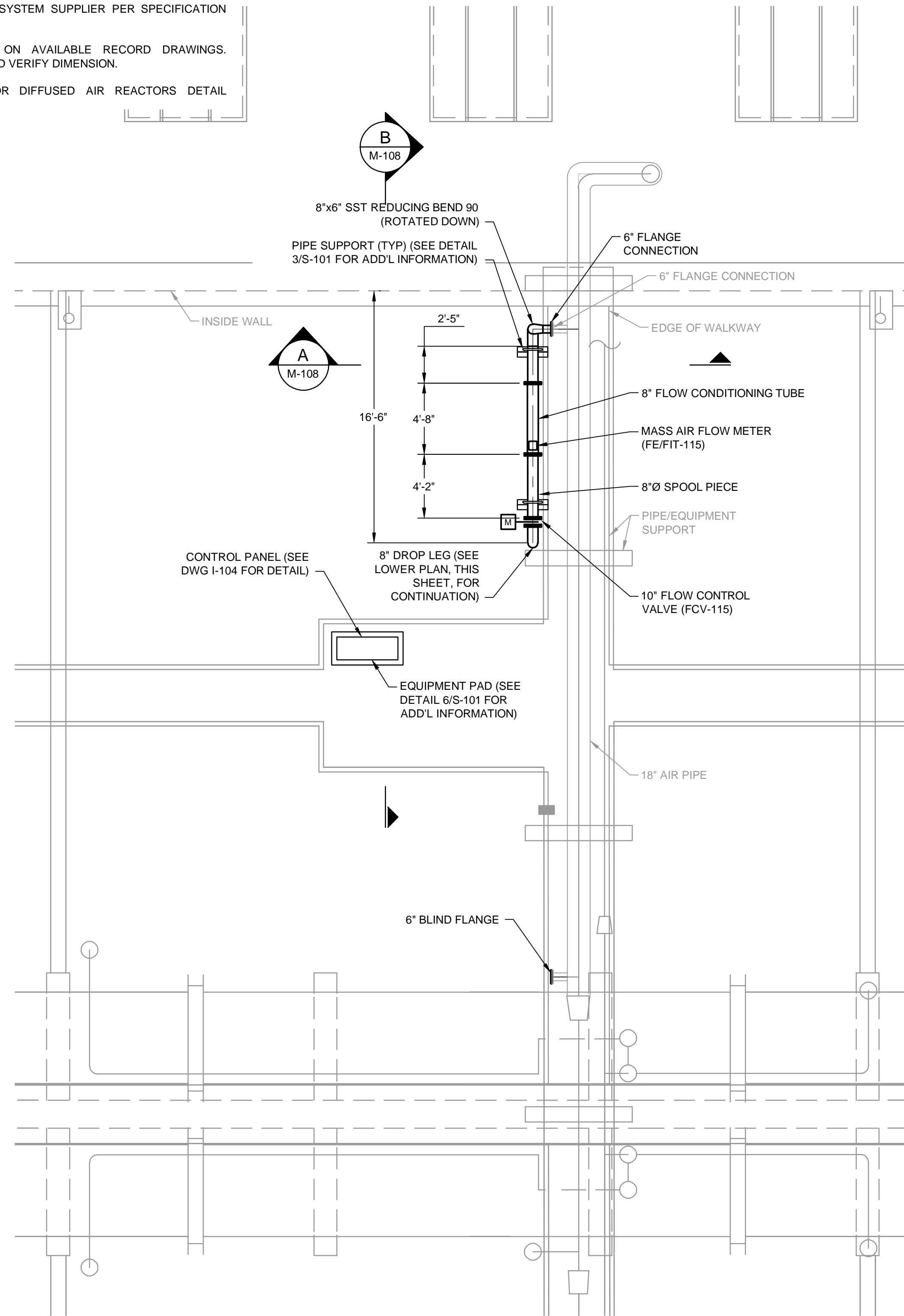
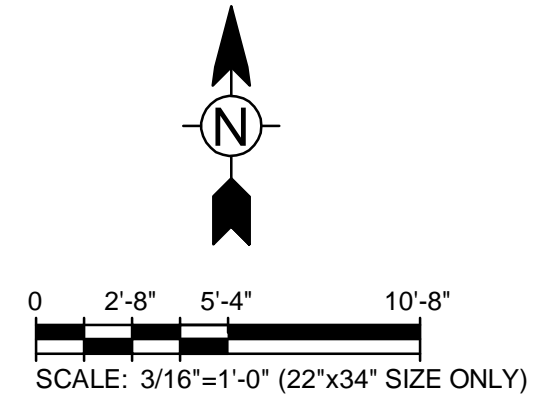
Project No.: 200-08494-14001
Designed By: LEH
Drawn By: JTE
Checked By: JPT

M-105

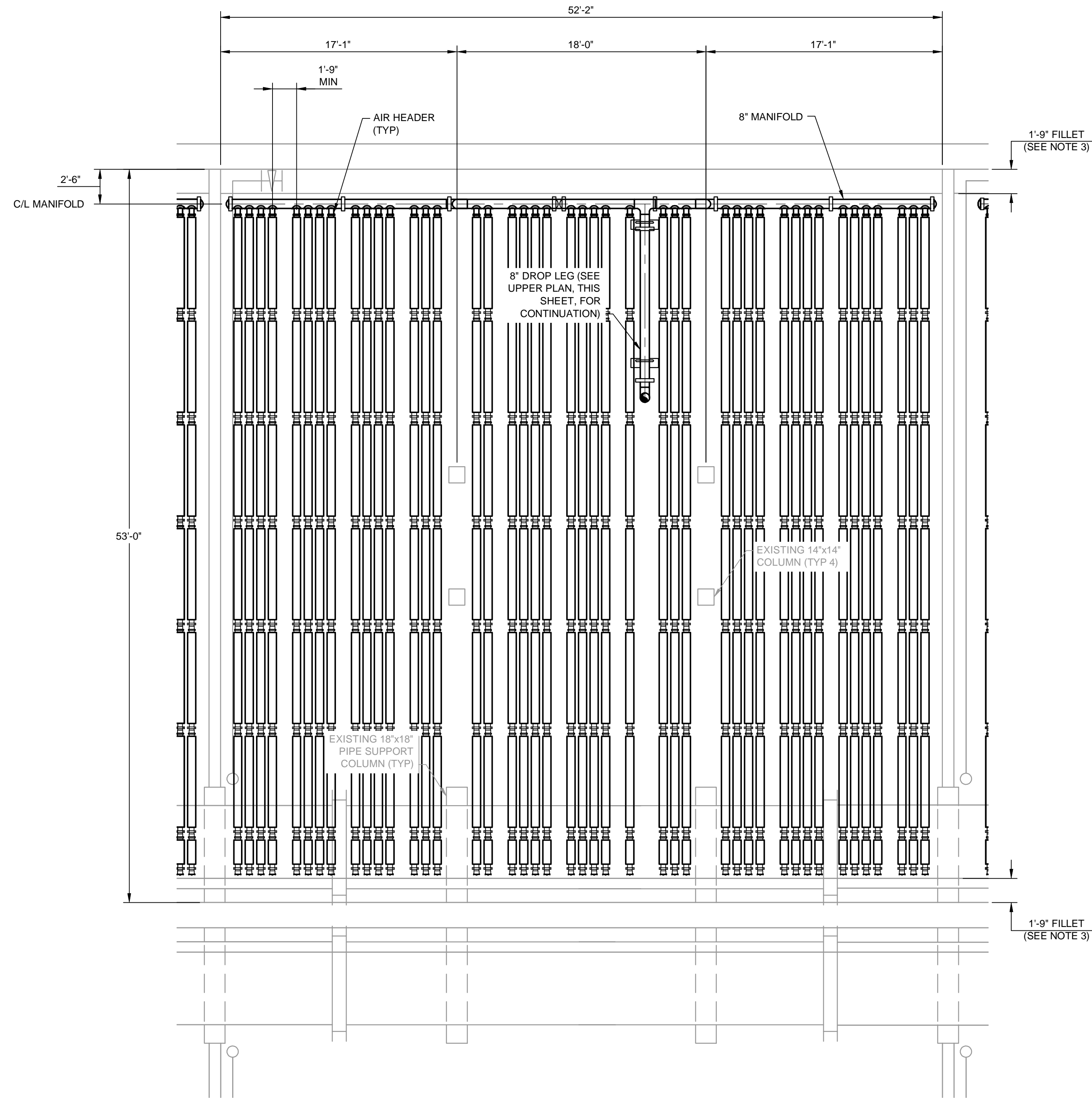
Bar measures 1 inch
on original drawing. If
not 1 inch, adjust
scales accordingly.

NOTES:

1. FIELD VERIFY DIMENSIONS OF STRUCTURES INSIDE THE BASIN.
2. DIFFUSER LAYOUTS ARE APPROXIMATE. FINAL DIFFUSER DESIGN, NUMBER OF DIFFUSERS AND LAYOUT SHALL BE BY DIFFUSED AERATION SYSTEM SUPPLIER PER SPECIFICATION SECTION 11376.
3. DIMENSIONS BASED ON AVAILABLE RECORD DRAWINGS. CONTRACTOR TO FIELD VERIFY DIMENSION.
4. SEE DWG M-102 FOR DIFFUSED AIR REACTORS DETAIL CALLOUTS.

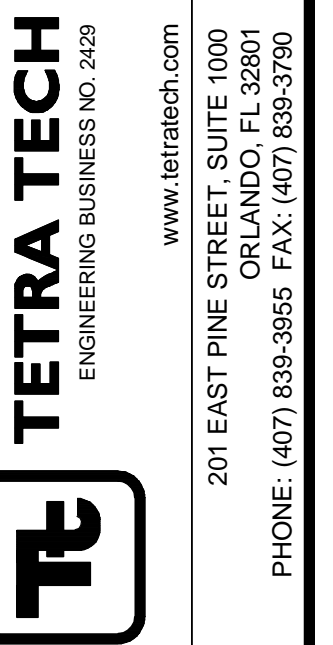


**ZONE 5 MODIFICATIONS
UPPER PLAN**
SCALE: 3/16"=1'-0" (22"x34" SIZE ONLY)



**ZONE 5 MODIFICATIONS
LOWER PLAN**
SCALE: 3/16"=1'-0" (22"x34" SIZE ONLY)

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ZONE 5 MODIFICATIONS
PLANS**

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Designed By: LEH
Drawn By: JTE
Checked By: JPT

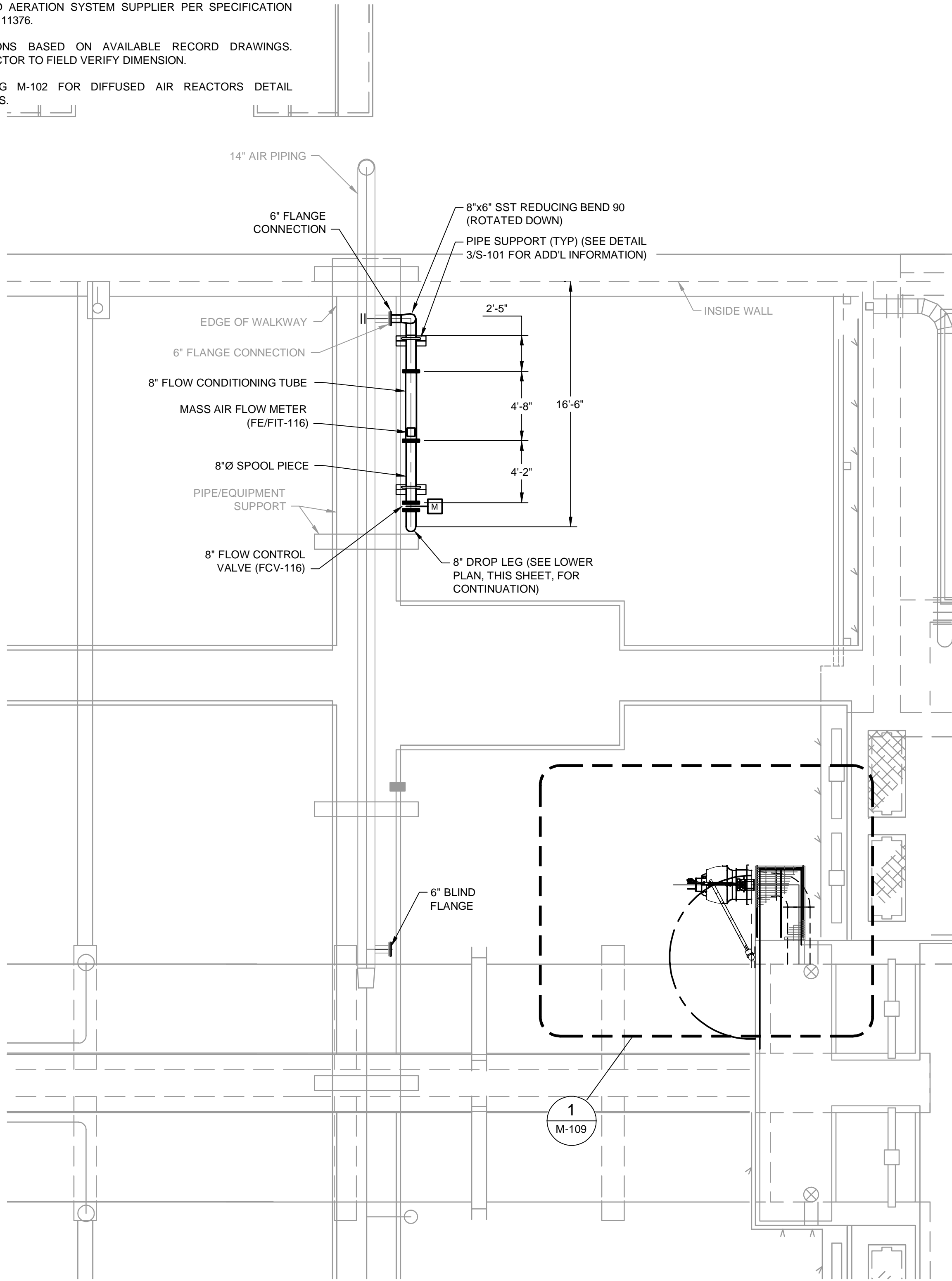
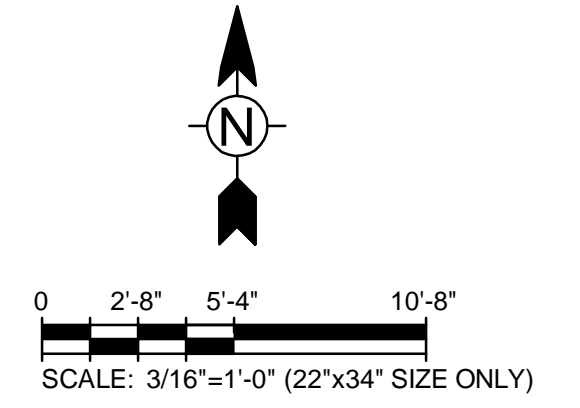
M-106

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

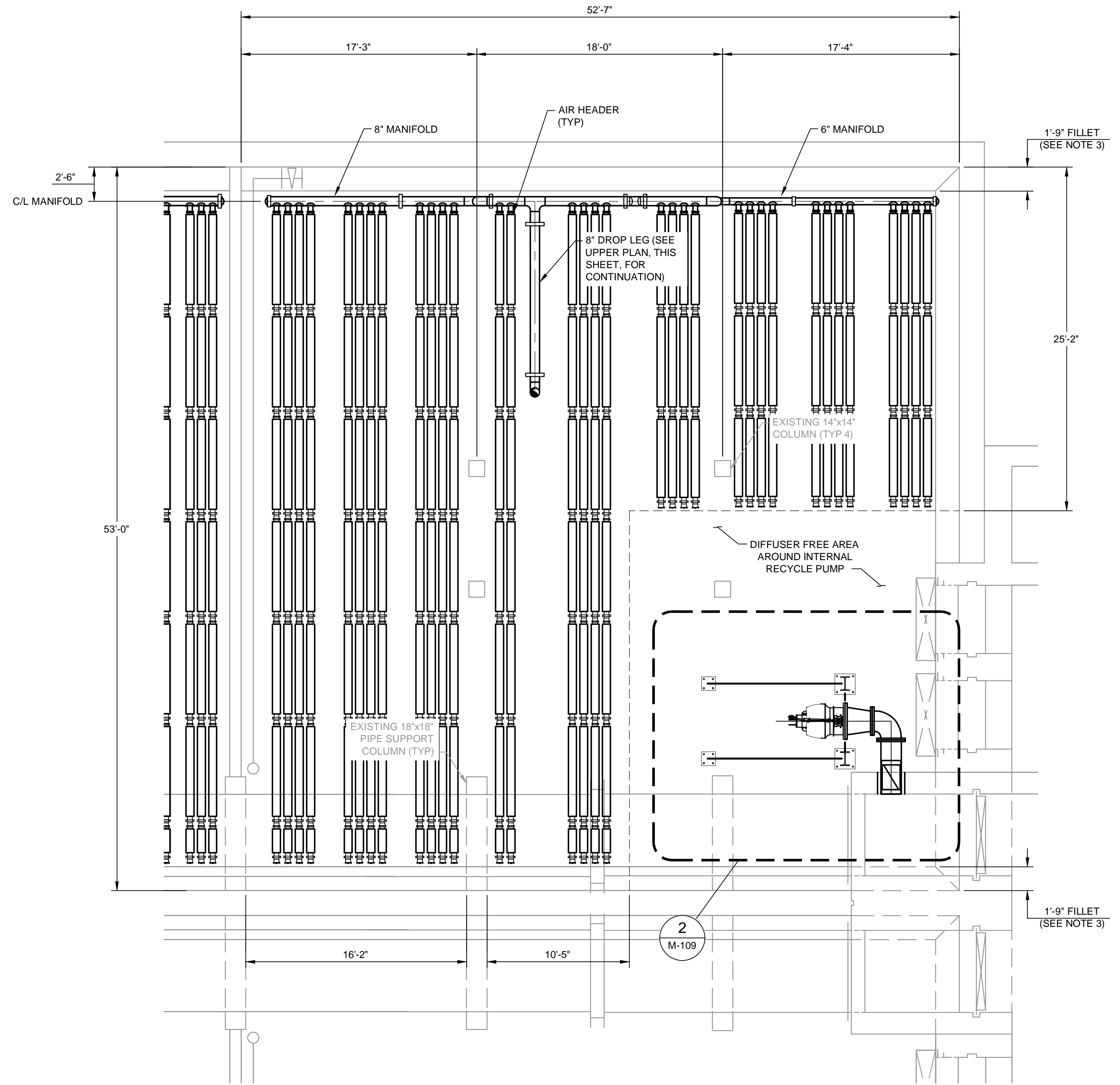
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NOTES:

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- DIMENSIONS BASED ON AVAILABLE RECORD DRAWINGS. CONTRACTOR TO FIELD VERIFY DIMENSION.
- SEE DWG M-102 FOR DIFFUSED AIR REACTORS DETAIL CALLOUTS.



**ZONE 6 MODIFICATIONS
UPPER PLAN**
SCALE: 3/16"=1'-0" (22"x34" SIZE ONLY)



**ZONE 6 MODIFICATIONS
LOWER PLAN**
SCALE: 3/16"=1'-0" (22"x34" SIZE ONLY)

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**DIFFUSED AIR REACTORS
ZONE 6 MODIFICATIONS
PLANS**

Project No.: 200-08494-14001
Designed By: LEH
Drawn By: JTE
Checked By: JPT

M-107

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

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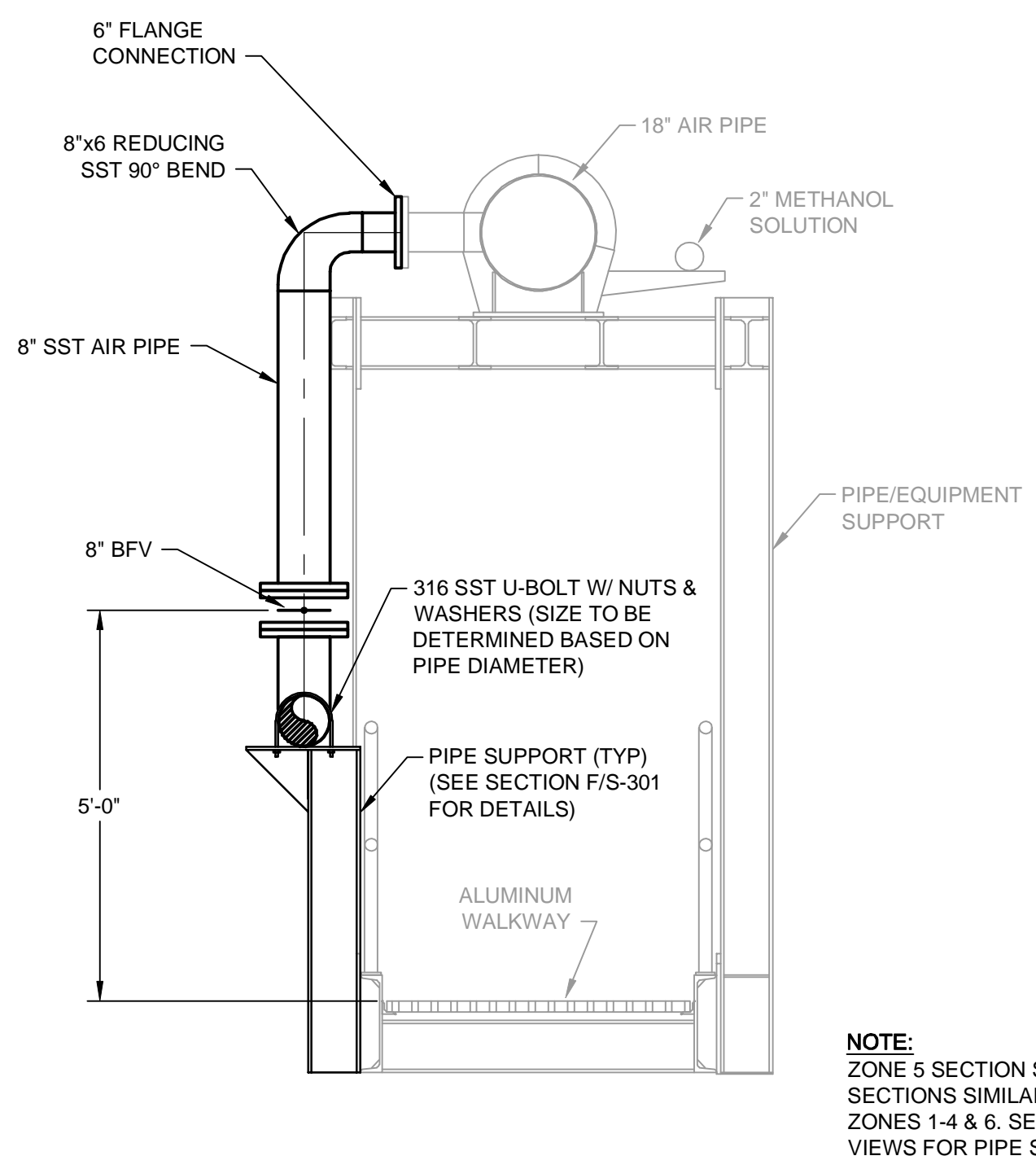
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IMPROVEMENTS, PHASE I
**DIFFUSED AIR REACTORS
MODIFICATIONS
SECTIONS & DETAILS**

Project No.: 200-08494-14001
Designed By: LEH
Drawn By: JTE
Checked By: JPT

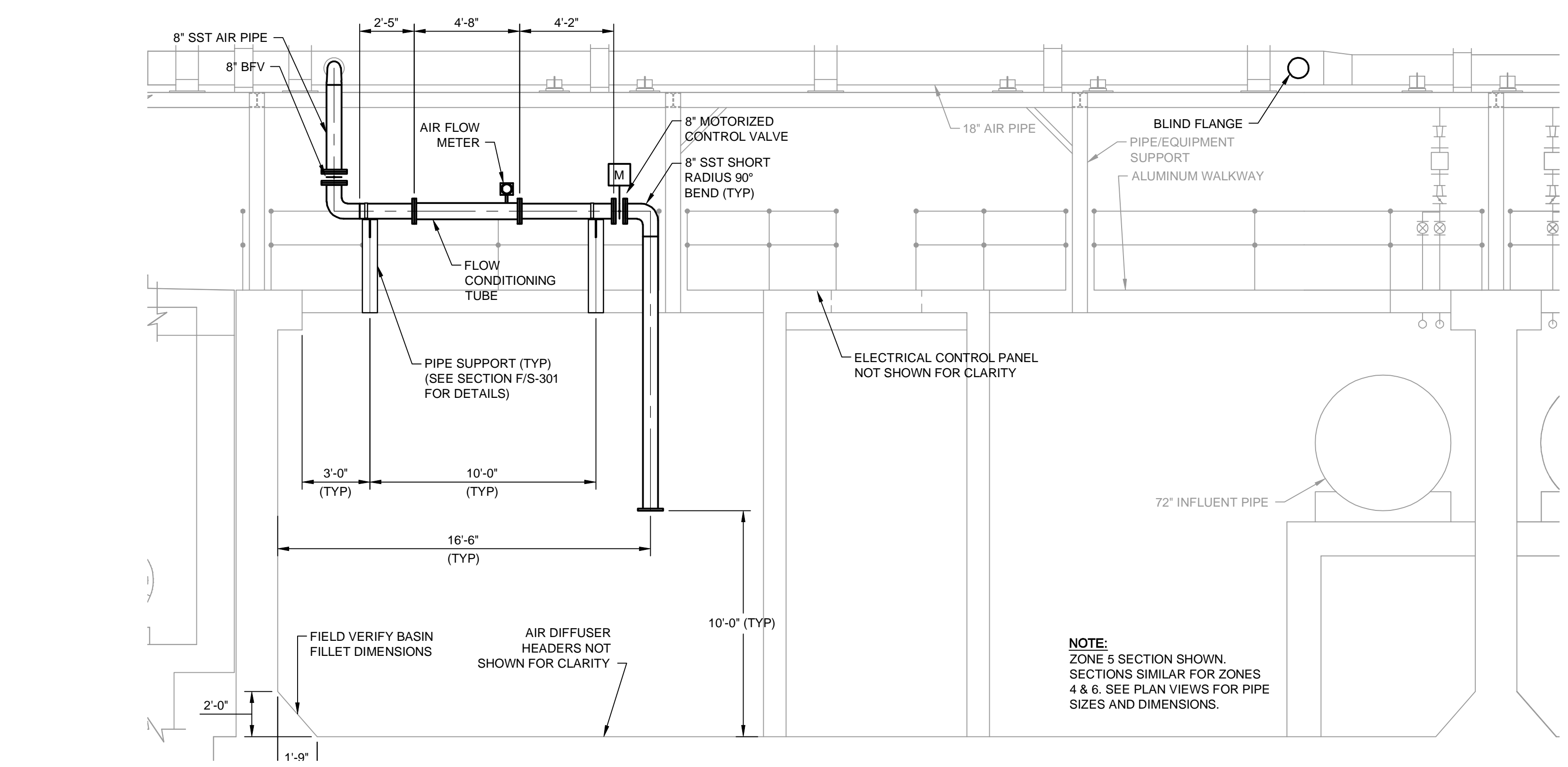
M-108

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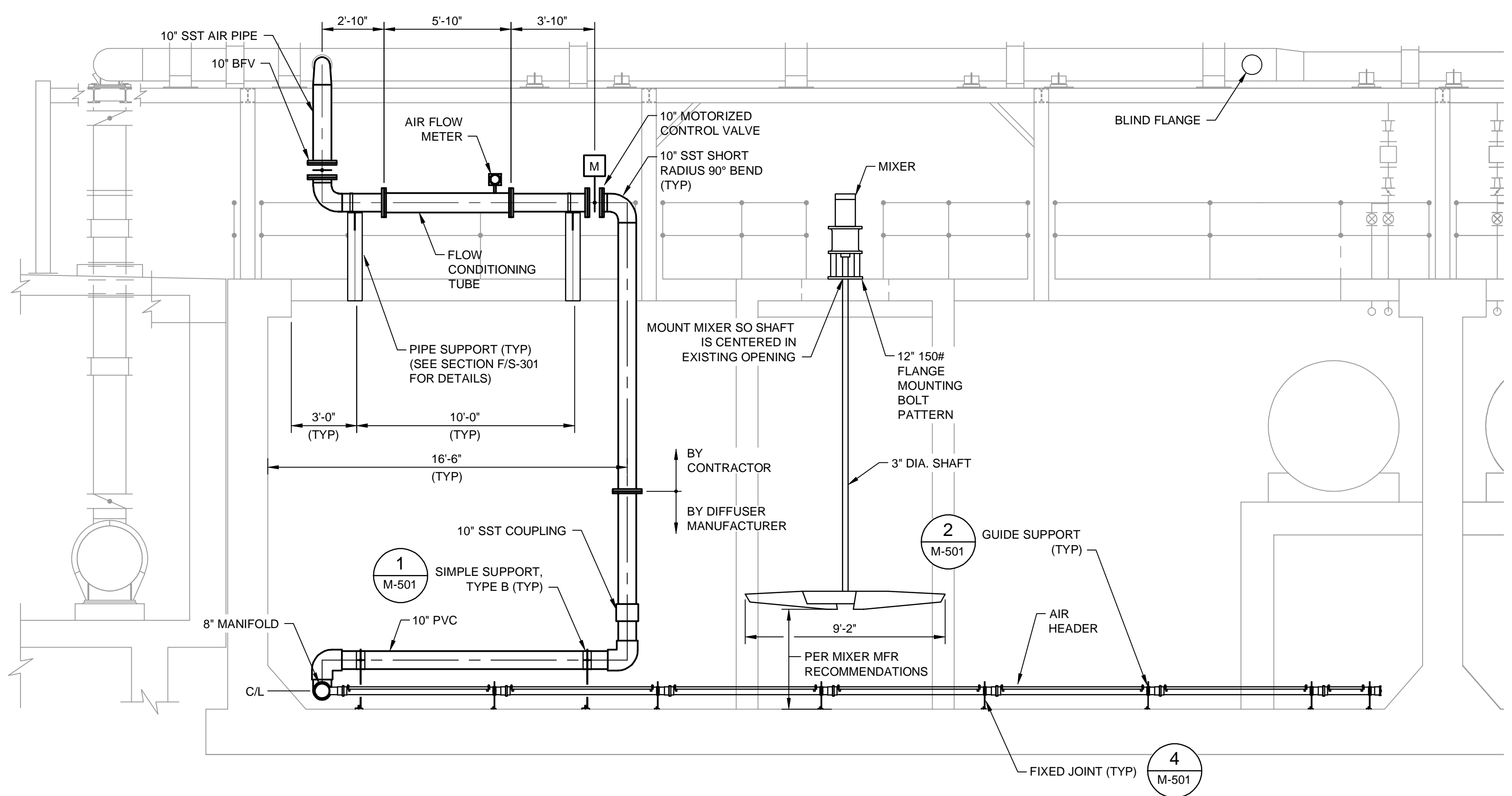
A SECTION
M-106 SCALE: 1/2"=1'-0" (22"x34" SIZE ONLY)

NOTE:
ZONE 5 SECTION SHOWN.
SECTIONS SIMILAR FOR
ZONES 1-4 & 6. SEE PLAN
VIEWS FOR PIPE SIZES.



B SECTION
M-106 SCALE: 1/4"=1'-0" (22"x34" SIZE ONLY)

NOTE:
ZONE 5 SECTION SHOWN.
SECTIONS SIMILAR FOR ZONES
4 & 6. SEE PLAN VIEWS FOR PIPE
SIZES AND DIMENSIONS.



C SECTION
M-104 SCALE: 1/4"=1'-0" (22"x34" SIZE ONLY)

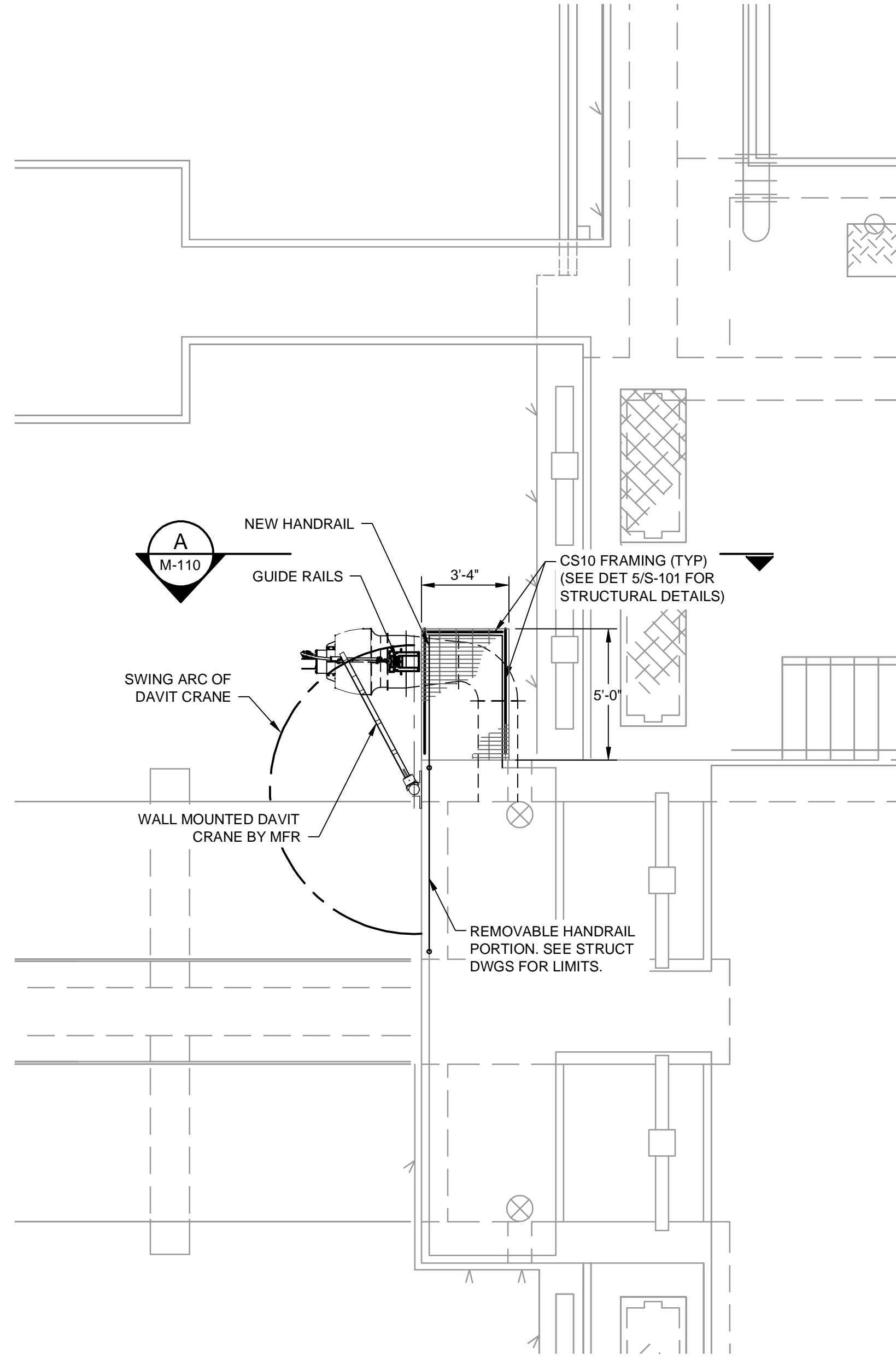
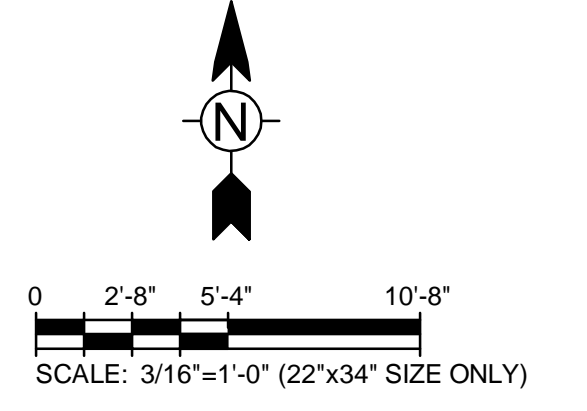
NOTE:
ZONE 3 SECTION SHOWN.
SECTIONS SIMILAR FOR ZONES 1 &
2. SEE PLAN VIEWS FOR PIPE SIZES
AND DIMENSIONS.

Bar measures 1 inch
on original drawing. If
not 1 inch, adjust
scales accordingly.

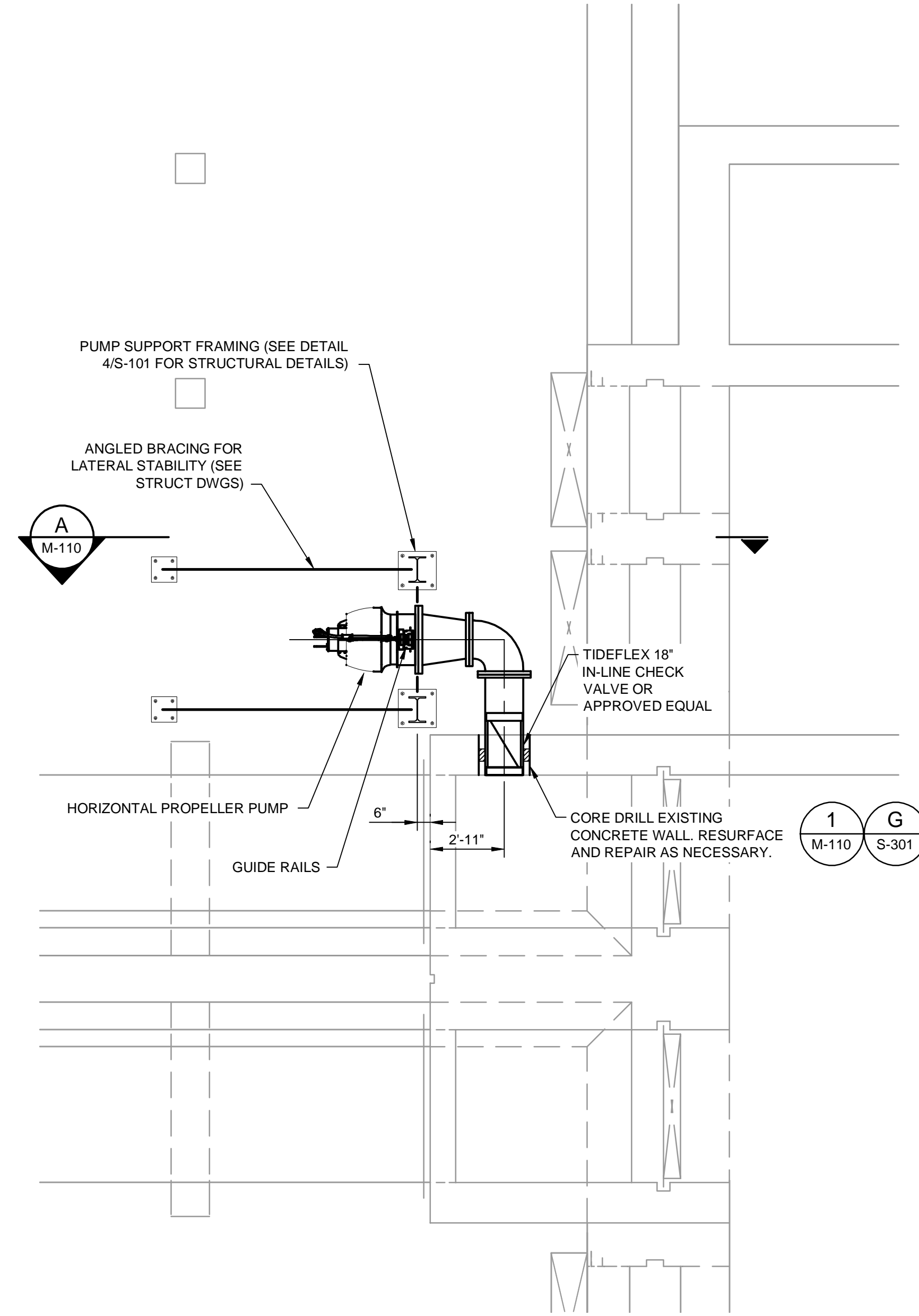
10/27/2015 2:44:22 PM -\\TTS181FS1\PROJECTS\IER\08494\200-08494-14001\CAD\DWG\SECTIONS & DETAILS.DWG - EVANS, JON

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NOTES:
1. DIFFUSERS NOT SHOWN FOR CLARITY.



1
UPPER PLAN
M-107 SCALE: 3/16"=1'-0" (22"x34" SIZE ONLY)



2
LOWER PLAN
M-107 SCALE: 3/16"=1'-0" (22"x34" SIZE ONLY)

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MARK	DATE	DESCRIPTION

CITY OF TAMPA
HFC AWTP DIFFUSED AIR REACTORS
IMPROVEMENTS, PHASE I
**INTERNAL RECYCLE
PUMPING PLANS**

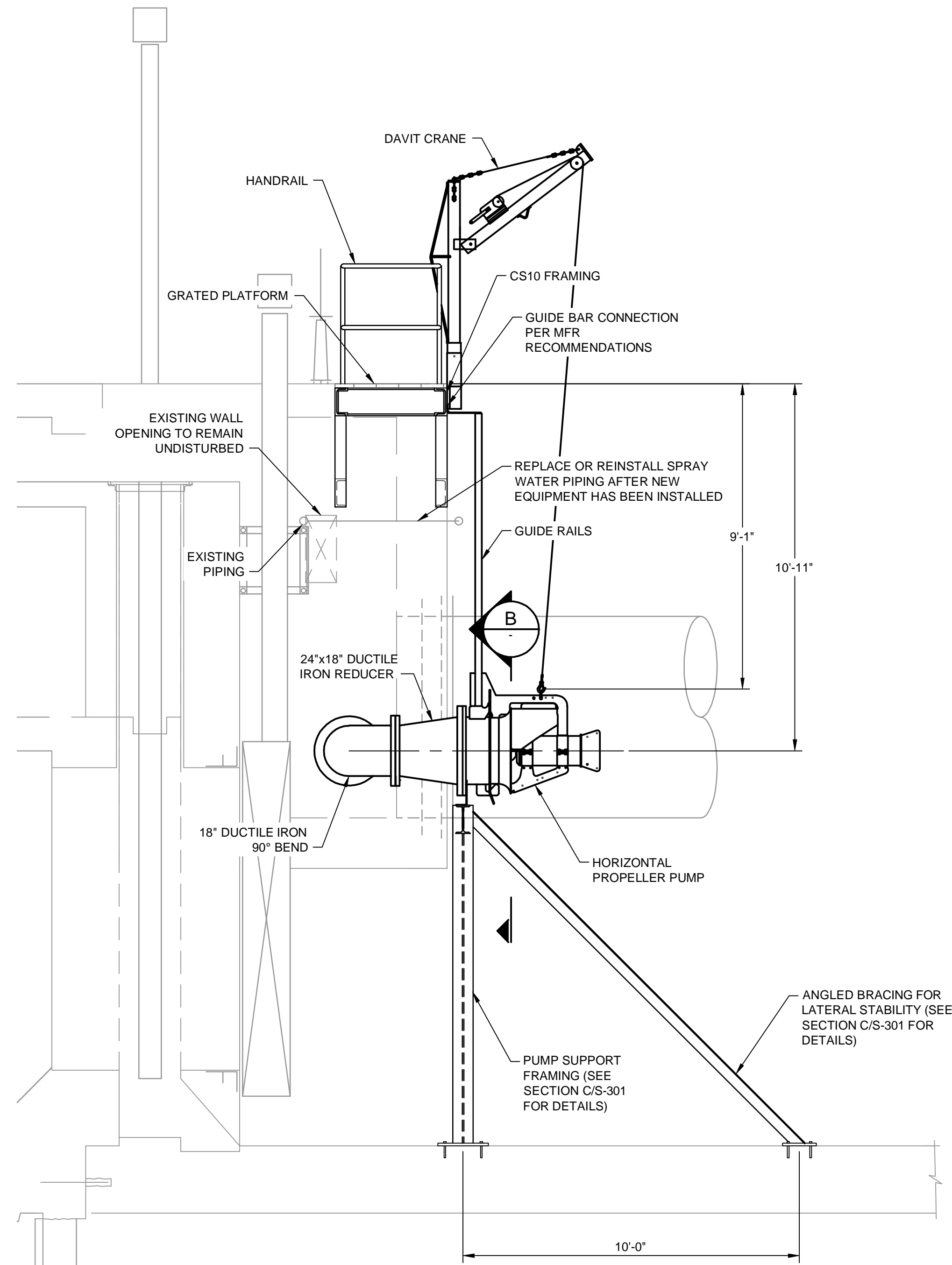
Project No.:	200-08494-14001
Designed By:	LEH
Drawn By:	JTE
Checked By:	JPT

M-109

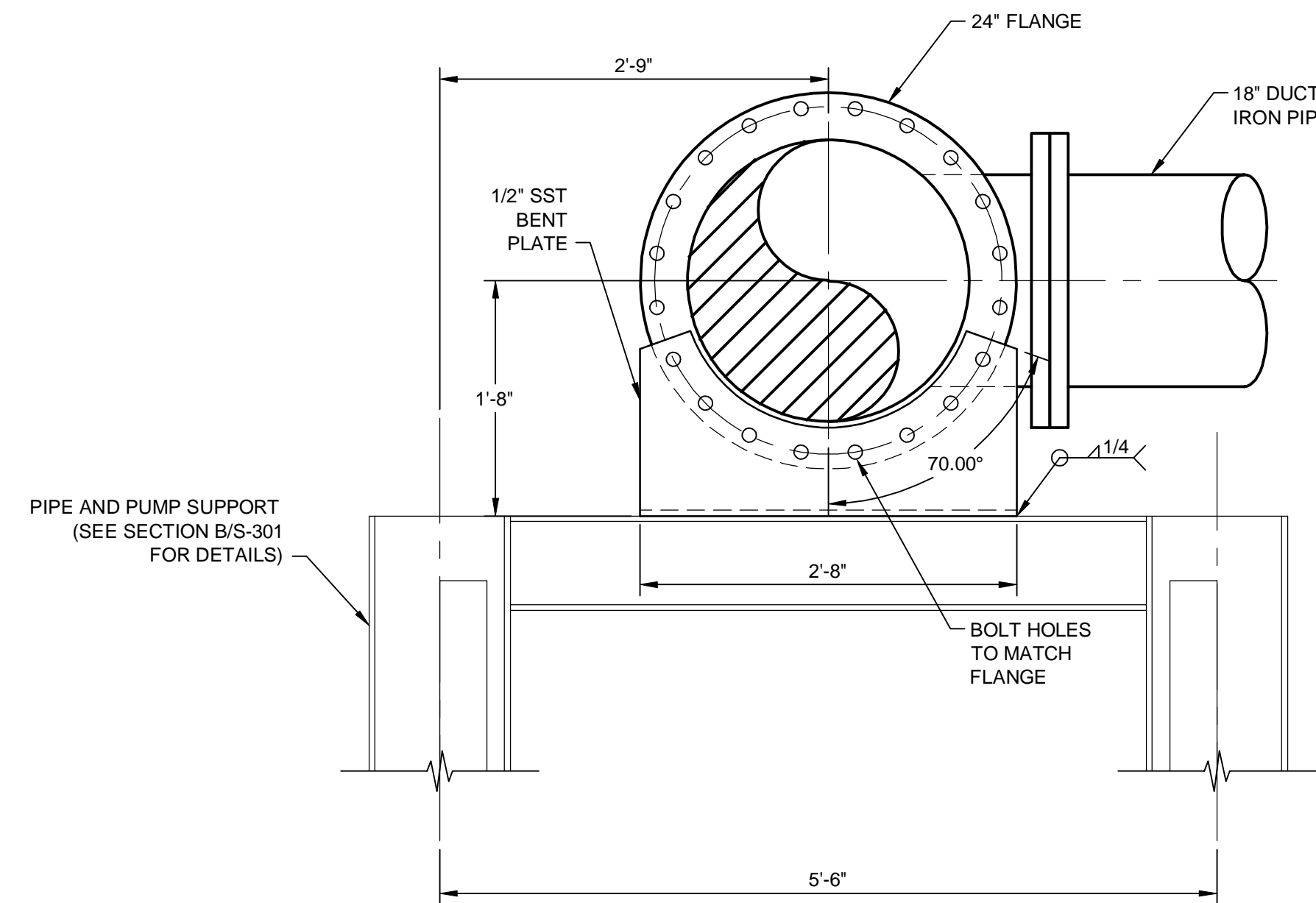
Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

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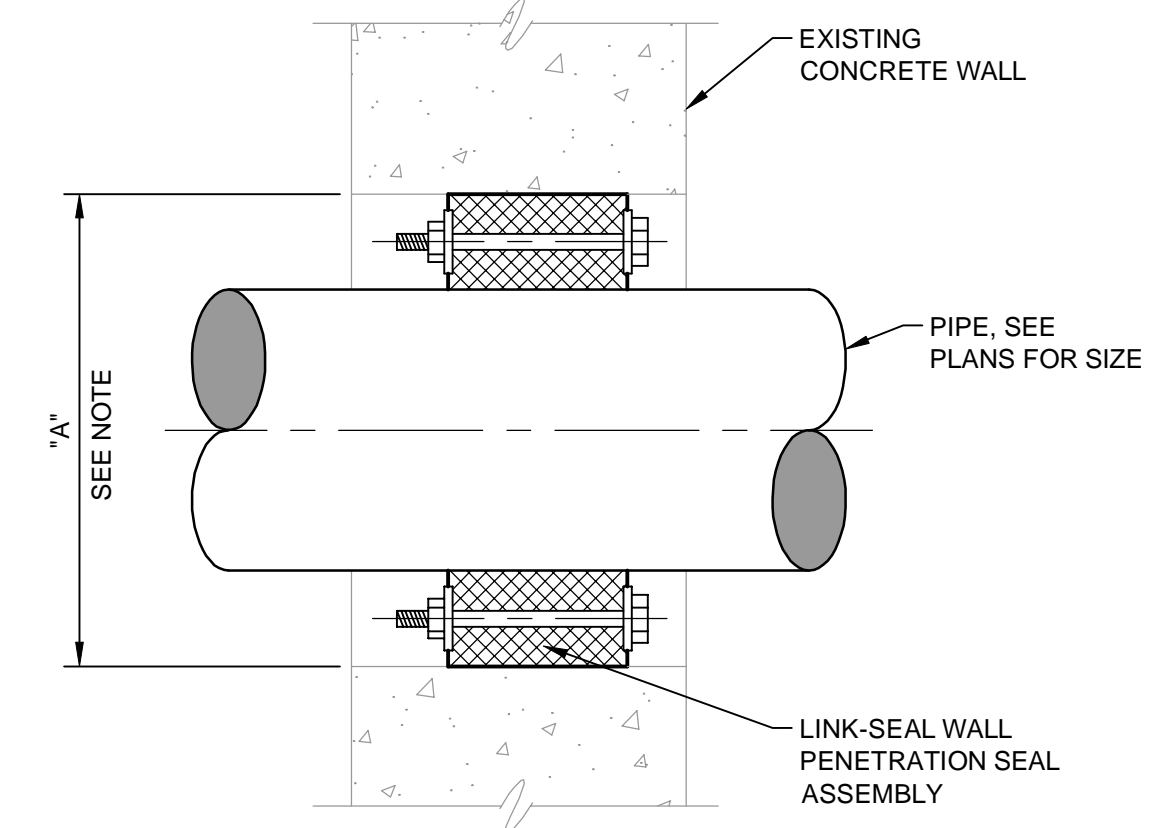
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A SECTION
M-109 SCALE: 3/8"=1'-0" (22"x34" SIZE ONLY)



B SECTION
SCALE: 1"=1'-0" (22"x34" SIZE ONLY)



NOTE:
COORDINATE SIZE OF PENETRATION WITH LINK-SEAL MANUFACTURER.

EXISTING WALL PENETRATION WITH LINK SEAL

1 DETAIL
M-109 SCALE: NTS

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.



100% SUBMITTAL

BY	DATE	DESCRIPTION

CITY OF TAMPA
HFC AWT/DIFFUSED AIR REACTORS
IMPROVEMENTS, PHASE I
**INTERNAL RECYCLE
PUMPING SECTIONS**

Project No.: 200-08494-14001
Designed By: LEH
Drawn By: JTE
Checked By: JPT

M-110

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2 3/4" REF

ANCHOR BOLT (SEE CHART)

NUT

WASHER

PLATE WASHER- 2" x 1 1/2" S.S. (2278-1W4)

ROD SUPPORT

GUIDE CLAMP

WASHER- 5/8" FLAT S.S.

NUT- 5/8" HEX S.S.

NUT- 5/8" HEX S.S.

PLATE WASHER- 2" x 1 1/2" S.S. (2278-1W4)

WASHER- 5/8" FLAT S.S.

NUT- 5/8" HEX S.S.

GUIDE CLAMP

PLATE WASHER- 2" x 1 1/2" S.S. (2278-1W4)

WASHER- 5/8" FLAT S.S.

NUT- 5/8" HEX S.S.

ROD SUPPORT

ANCHOR BOLT (SEE CHART)

NUT

WASHER

PLATE WASHER- 2" x 1 1/2" S.S. (2278-1W4)

2 3/4" REF

ANCHOR BOLT (SEE CHART)

NUT

WASHER

PLATE WASHER- 2" x 1 1/2" S.S. (2278-1W4)

ROD SUPPORT

STRUT

NUT

WASHER

PLATE WASHER- 2" x 1 1/2" S.S. (2278-1W4)

2 3/4" REF

ANCHOR BOLT (SEE CHART)

NUT

WASHER

PLATE WASHER- 2" x 1 1/2" S.S. (2278-1W4)

ROD SUPPORT

STRUT

NUT

WASHER

PLATE WASHER- 2" x 1 1/2" S.S. (2278-1W4)

2 3/4" REF

ANCHOR BOLT (SEE CHART)

NUT

WASHER

PLATE WASHER- 2" x 1 1/2" S.S. (2278-1W4)

ROD SUPPORT

STRUT

NUT

WASHER

PLATE WASHER- 2" x 1 1/2" S.S. (2278-1W4)

2 3/4" REF

FINE BUBBLE AERATION SYSTEM EXPANSION ANCHOR CHART

MANIFOLD OR DROPLEG DIAMETER	ANCHOR BOLT	PROJECTION	EMBEDMENT
4" (100) - 8" (200)	1/2" x 4 1/2"	1 3/4" (45)	2 3/4" (70)
10" (250) & 12" (300)	5/8" x 4 3/4"	2" (51)	2 3/4" (70)

NOTE:
FOR 1/2" & 5/8" ANCHORS THAT ARE USED ON SUPPORT STIFFENING STRUTS OR WALL SUPPORT AND FLOOR PLATES INCREASE THE EMBEDMENT TO 3 1/4", TO REDUCE THE PROJECTION BY 1/2".

ANCHOR SPACING		
MANIFOLD DIAMETER	A	B
4"	6 5/8"	3 5/16"
6"	8 3/4"	4 3/8"
8"	10 3/4"	5 3/8"
10"	12 7/8"	6 7/16"
12"	14 7/8"	7 7/16"

MAN. IDENT	MAN. DIA.	SUPPORT BASE	GUIDE CLAMP		PLATE WASHER	
			304	316	304	316
FB-4	4"	SEE DRAWINGS	CG4500-4	CG4500-6	2278-1W4	2278-1W6
FB-6	6"		CG6625-4	CG6625-6	2278-1W4	2278-1W6
FB-8	8"		CG8825-4	CG8825-6	2278-1W4	2278-1W6
FB-10	10"		CG1075-4	CG1075-6	2278-1W4	2278-1W6
FB-12	12"		CG1275-4	CG1275-6	2278-1W4	2278-1W6

1 **DETAIL**
SCALE: NTS

NOTE:
DETAILS ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE NUMBER OF SUPPORTS AND DESIGN OF SUCH SUPPORTS SHALL BE THE RESPONSIBILITY OF THE DIFFUSER AERATION EQUIPMENT MANUFACTURER.

5 3/4"

GUIDE CLAMPS S.S.

ROD- 5/16" S.S.

GUIDE SUPPORT ANCHOR BOLT SEE DETAIL 3, THIS SHEET

2 3/4"

316 S.S. 4"
2346-12S 10"
2346-13S 13"

5 3/4"

GUIDE CLAMPS S.S.

ROD- 1/2" S.S.

GUIDE SUPPORT ANCHOR BOLT SEE DETAIL 3, THIS SHEET

2 3/4"

316 S.S. 4"
2354-12S 10"
2354-13S 13"
2354-14S 1'-4"
2354-15S 1'-7"
2354-16S 1'-10"
2354-17S 2'-1"

2 **DETAIL**
SCALE: NTS

NUT- 3/8" HEX S.S.

WASHER- 3/8" FLAT S.S.

LOCATING PLATE

ANCHOR BOLT- 3/8" x 3 3/4" LG S.S. EXPANSION TYPE w/ NUT & WASHER BY SANITAIRE
1 1/4" (32mm) PROJECTION
2 1/2" (64mm) EMBEDMENT

SOCKET WITH SPLINES
THREAD (DO NOT LUBRICATE)

O-RING 4" GRAY
(DO NOT LUBRICATE THIS O-RING WITH GREASE, A LIQUID SOAP SOLUTION MAY BE APPLIED FOR EASE OF INSTALLATION)

SPIGOT WITH GROOVES

RETAINER RING (DO NOT LUBRICATE)

AIR DISTRIBUTOR

AIR DISTRIBUTOR

SOCKET WITH SPLINES
THREAD (DO NOT LUBRICATE)

O-RING 4" GRAY
(DO NOT LUBRICATE THIS O-RING WITH GREASE, A LIQUID SOAP SOLUTION MAY BE APPLIED FOR EASE OF INSTALLATION)

PVC REMOVABLE END CAP

RETAINER RING (DO NOT LUBRICATE)

3 **DETAIL**
SCALE: NTS

4 **DETAIL**
SCALE: NTS

5 **DETAIL**
SCALE: NTS

PVC FOLLOWER FLANGE

GASKET

NUT

PVC FOLLOWER FLANGE

BOLT

HEADER SIZE O.D.	GASKET PART NO.	BOLT SIZE	QUANTITY REQ'D PER FLANGE
4 1/2"	4-GASKET	5/8" x 3 1/2"	8
6 5/8"	6-GASKET	3/4" x 4"	8
8 5/8"	8-GASKET	3/4" x 4 1/2"	8
10 3/4"	10-GASKET	7/8" x 5"	12
12 3/4"	12-GASKET	7/8" x 5"	12

REDUCER BUSHING- 1/2" SLIP x 3/8" FPT

MANIFOLD

ORIFICE- ORANGE (237-Y)

FLEX-CAP- 3/8" MPT (38-FLEX)

4 1/4" NOMINAL

AIR ORIFICE

6 **DETAIL**
SCALE: NTS

7 **DETAIL**
SCALE: NTS

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PRELIMINARY

BY	DATE	DESCRIPTION

FAYETTE COUNTY
REDWINE ROAD
STARSMILL PATH PROJECT

AIR HEADER SUPPORT & CONNECTION DETAILS

Project No.: 100-ATL-T34887.1

Designed By: LEH

Drawn By: JTE

Checked By: JPT

M-501

Bar Measures 1 inch

11/16/2015 11:24:39 AM - L:\2015510 HCAWTP NITRIFICATION REACTORS\15510 E-101.DWG - LORENZO ROMAN

A B C D E F

ELECTRICAL LEGEND

	NEW AERATION CONTROL PANEL	-
	NON-FUSED DISCONNECT SWITCH	-
	MOTOR CONNECTION	-
	CONTROL STATION (REFER TO INDIVIDUAL PLAN NOTES)	46"
	HOMERUN, PANELBOARD CIRCUIT DESIGNATION	-
	JUNCTION BOX	-
	INDICATOR LIGHT	-
	RUN TIMER	-
	CONTACTOR COIL	-
	LOW VOLTAGE CONTROL TRANSFORMER	-
	FUSE	-
	INDICATES AREA OR DEVICE TO BE DEMOLISHED	-
	WEATHER PROOF, NEMA 4X	-
	EXISTING TO BE REMOVED	-
	SECTION CALLOUT A - SECTION NUMBER BB - SHEET NUMBER	-
	ELEVATION/PERSPECTIVE CALLOUT A - SECTION NUMBER BB - SHEET NUMBER	-

CONDUIT AND CABLE SCHEDULE

CONDUIT NO.	SIZE	NUMBER OF CONDUCTORS/SIZE	FROM	TO	REMARKS
82M30	3/4"	3#12, 1#12 GRD	MCC-82	DISCONNECT MIXER 1	-
82M30A	3/4"	3#12, 1#12 GRD	DISCONNECT MIXER 1	MIXER 1 MOTOR	-
82M31	3/4"	3#12, 1#12 GRD	MCC-82	DISCONNECT MIXER 2	-
82M31A	3/4"	3#12, 1#12 GRD	DISCONNECT MIXER 2	MIXER 2 MOTOR	-
82M32	3/4"	3#12, 1#12 GRD	MCC-82	DISCONNECT MIXER 3	-
82M32A	3/4"	3#12, 1#12 GRD	DISCONNECT MIXER 3	MIXER 3 MOTOR	-
82M33	3/4"	3#10, 1#10 GRD	MCC-82	INTERNAL RECYCLE PUMP VFD	-
82M33A	3/4"	3#10, 1#10 GRD	INTERNAL RECYCLE PUMP VFD	INTERNAL RECYCLE PUMP	-
LP82BM1	3/4"	2#10, 1#10 GRD	PANEL LP-82B	ACP	-
82C1	3/4"	4#14	MCC-82	MIXER 1 CONTROL STATION	-
82C2	3/4"	4#14	MCC-82	MIXER 2 CONTROL STATION	-
82C3	3/4"	4#14	MCC-82	MIXER 3 CONTROL STATION	-
82C4	3/4"	4#14	INTERNAL RECYCLE PUMP VFD	INTERNAL RECYCLE PUMP CONTROL STATION	-
82C5	3/4"	2#14	INTERNAL RECYCLE PUMP VFD	INTERNAL RECYCLE PUMP	STATOR TEMP & SEAL LEAK
82C6	3/4"	2#14	SCADA INTERFACE PANEL	MIXER 1 CONTROL STATION	STATUS MONITORING
82C7	3/4"	2#14	SCADA INTERFACE PANEL	MIXER 2 CONTROL STATION	STATUS MONITORING
82C8	3/4"	2#14	SCADA INTERFACE PANEL	MIXER 3 CONTROL STATION	STATUS MONITORING
82C9	3/4"	6#14	SCADA INTERFACE PANEL	MCC-82 CUBICLE 1C	STATUS MONITORING
82C10	3/4"	6#14	SCADA INTERFACE PANEL	MCC-82 CUBICLE 1D	STATUS MONITORING
82C11	3/4"	6#14	SCADA INTERFACE PANEL	MCC-82 CUBICLE 2C	STATUS MONITORING
ACPN1	3/4"	2#12, 1#12 GRD	ACP	ZONE 1 POWER JUNCTION BOX	POWER FOR MOTORIZED VALVES & MASS FLOW
ACPN2	3/4"	2#12, 1#12 GRD	ACP	ZONE 2 POWER JUNCTION BOX	POWER FOR MOTORIZED VALVES & MASS FLOW
ACPN3	3/4"	2#12, 1#12 GRD	ACP	ZONE 3 POWER JUNCTION BOX	POWER FOR MOTORIZED VALVES & MASS FLOW
ACPN4	3/4"	2#12, 1#12 GRD	ACP	ZONE 4 POWER JUNCTION BOX	POWER FOR MOTORIZED VALVES & MASS FLOW
ACPN5	3/4"	2#12, 1#12 GRD	ACP	ZONE 5 POWER JUNCTION BOX	POWER FOR MOTORIZED VALVES & MASS FLOW
ACPN6	3/4"	2#12, 1#12 GRD	ACP	ZONE 6 POWER JUNCTION BOX	POWER FOR MOTORIZED VALVES & MASS FLOW
ACPN7	0'-1"	3#18 TSP, 6#14	ACP	ZONE 1 I&C JUNCTION BOX	SIGNAL & CONTROL FOR MOTORIZED VALVES AND MASS FLOW METERS
ACPN8	0'-1"	3#18 TSP, 6#14	ACP	ZONE 2 I&C JUNCTION BOX	SIGNAL & CONTROL FOR MOTORIZED VALVES AND MASS FLOW METERS
ACPN9	0'-1"	3#18 TSP, 6#14	ACP	ZONE 3 I&C JUNCTION BOX	SIGNAL & CONTROL FOR MOTORIZED VALVES AND MASS FLOW METERS
ACPN10	0'-1"	3#18 TSP, 6#14	ACP	ZONE 4 I&C JUNCTION BOX	SIGNAL & CONTROL FOR MOTORIZED VALVES AND MASS FLOW METERS
ACPN11	0'-1"	3#18 TSP, 6#14	ACP	ZONE 5 I&C JUNCTION BOX	SIGNAL & CONTROL FOR MOTORIZED VALVES AND MASS FLOW METERS
ACPN12	0'-1"	3#18 TSP, 6#14	ACP	ZONE 6 I&C JUNCTION BOX	SIGNAL & CONTROL FOR MOTORIZED VALVES AND MASS FLOW METERS
ACPN13	0'-1"	1-6 STRAND MM FIBER	ACP	CNTRL RM SCADA PNL	MODBUS COMMUNICATION
ACPN14	3/4"	1-BELDON 8770	ACP	ZONE 3 IQSN	COMMUNICATIONS
ACPN15	3/4"	1-BELDON 8770	ACP	ZONE 5 IQSN	COMMUNICATIONS
ACPN16	3/4"	1-BELDON 8770	ZONE 3 IQSN	ZONE 2 IQSN	COMMUNICATIONS
ACPN17	3/4"	1-BELDON 8770	ZONE 2 IQSN	ZONE 1 IQSN	COMMUNICATIONS
ACPN18	3/4"	1-BELDON 8770	ZONE 5 IQSN	ZONE 4 IQSN	COMMUNICATIONS
ACPN19	3/4"	1-BELDON 8770	ZONE 5 IQSN	ZONE 6 IQSN	COMMUNICATIONS
ACPN20	3/4"	1-BELDON 8770	ZONE 1 - I & C JB	FE/FIT 111	COMMUNICATIONS
ACPN21	3/4"	1#18 TSP	ZONE 2 - I & C JB	FE/FIT 112	FLOW SIGNAL
ACPN22	3/4"	1#18 TSP	ZONE 3 - I & C JB	FE/FIT 113	FLOW SIGNAL
ACPN23	3/4"	1#18 TSP	ZONE 4 - I & C JB	FE/FIT 114	FLOW SIGNAL
ACPN24	3/4"	1#18 TSP	ZONE 5 - I & C JB	FE/FIT 115	FLOW SIGNAL
ACPN25	3/4"	1#18 TSP	ZONE 6 - I & C JB	FE/FIT 116	FLOW SIGNAL
ACPN26	3/4"	2#18 TSP, 6#14	ZONE 1 - I & C JB	FCV-111	SIGNAL & CONTROL
ACPN27	3/4"	2#18 TSP, 6#14	ZONE 2 - I & C JB	FCV-112	SIGNAL & CONTROL
ACPN28	3/4"	2#18 TSP, 6#14	ZONE 3 - I & C JB	FCV-113	SIGNAL & CONTROL
ACPN29	3/4"	2#18 TSP, 6#14	ZONE 4 - I & C JB	FCV-114	SIGNAL & CONTROL
ACPN30	3/4"	2#18 TSP, 6#14	ZONE 5 - I & C JB	FCV-115	SIGNAL & CONTROL
ACPN31	3/4"	2#18 TSP, 6#14	ZONE 6 - I & C JB	FCV-116	SIGNAL & CONTROL

CONDUIT AND CABLE SCHEDULE LEGEND

82 M 123 - TYPICAL CONDUIT AND CABLE RUN NUMBER

INDICATES SPECIFIC CONDUIT AND CABLE RUN NUMBER FROM SOURCE DISTRIBUTION CENTER

CODE LETTER INDICATING SOURCE DISTRIBUTION CENTER TYPE AND OR WIRING SYSTEM

INDICATES SOURCE DISTRIBUTION CENTER NUMBER

EXAMPLE: 82M10 - INDICATES CONDUIT AND CABLE RUN NUMBER OF 10 OF WIRING SYSTEM FROM MOTOR CONTROL CENTER NO. 82

CODE LETTER WIRING SYSTEM AND/OR SOURCE

M CONTROL, POWER AND INSTRUMENTATION FROM AND TO MOTOR CONTROL CENTERS, PUMP CONTROL PANELS AND 480V SWITCHGEAR

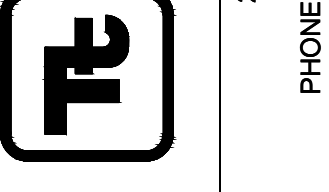
H 13.2 KV FEEDERS

C CONTROL, METERING AND PROTECTIVE RELAYING WIRING FROM AND TO 13.2 KV AND 4.16 KV SWITCHGEAR AND STANDBY GENERATION SYSTEMS

N ALARM, DATA LOGGING, SCADA AND INSTRUMENTATION SYSTEM WIRING

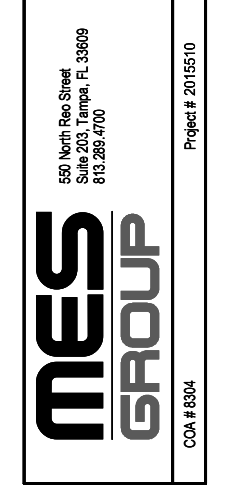
T 4.16 KV AND 480V FEEDERS FROM POWER TRANSFORMERS

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DALE A. BACIK
PE #36564



MARK	DATE	DESCRIPTION	BY

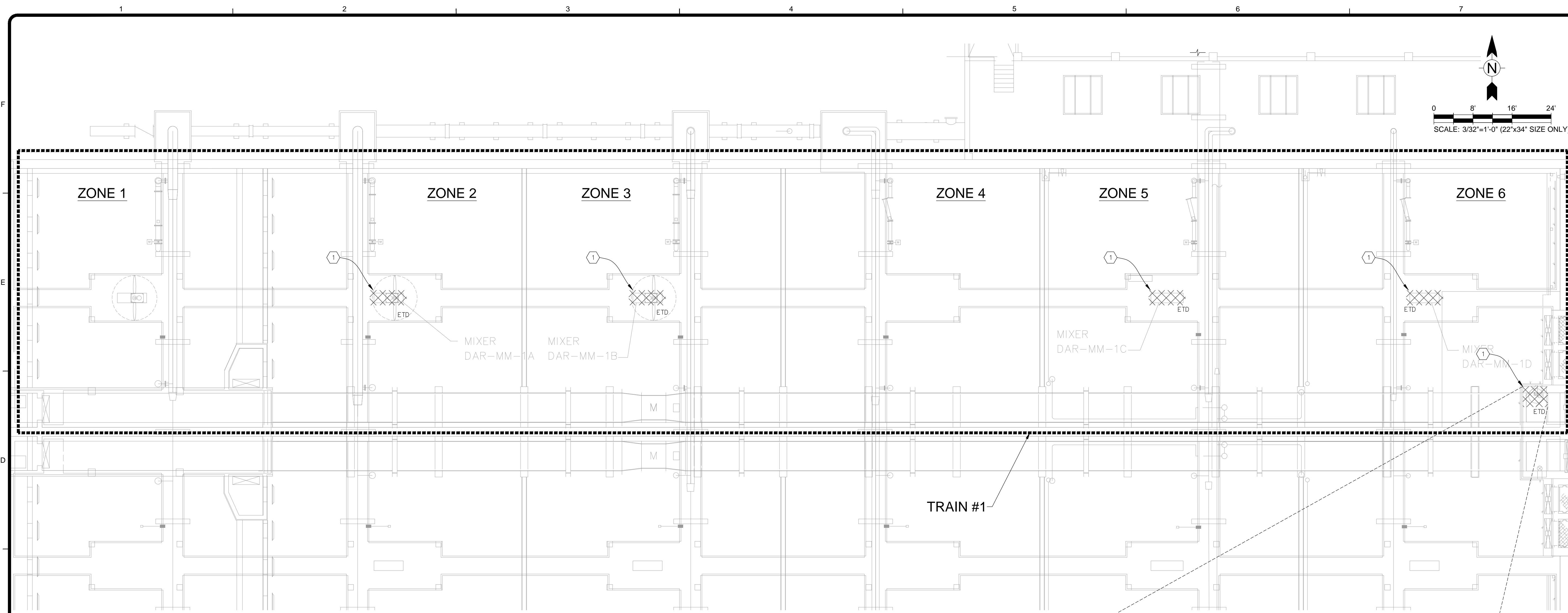
CITY OF TAMPA
HFC AWTP DIFFUSED AIR REACTORS IMPROVEMENTS, PHASE 1
DIFFUSED AIR REACTORS ELECTRICAL LEGEND

Project No.: 200-08494-14001
Designed By: PAM/NGB
Drawn By: PAM/LER
Checked By: DAB/INGB

E-001

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

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1 UPPER DEMOLITION PLAN
SCALE: 3/32"=1'-0" (22"x34" SIZE ONLY)

KEYED NOTES:
1 REMOVE ALL CONDUIT WIRE AND BOXES BACK TO SAFETY HANDRAIL, CAP AND TERMINATE AT THIS LOCATION. EXISTING MIXERS FED FROM BUILDING 030, MCC-51.



EXISTING SAMPLE PUMP
SCALE: N.T.S.

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

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100% SUBMITTAL

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PE #36564

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BOCA RATON, FL 33433
PHONE: (561) 368-1300
FAX: (561) 368-1309
PROJECT # 2015510

BY	MARK	DATE	DESCRIPTION

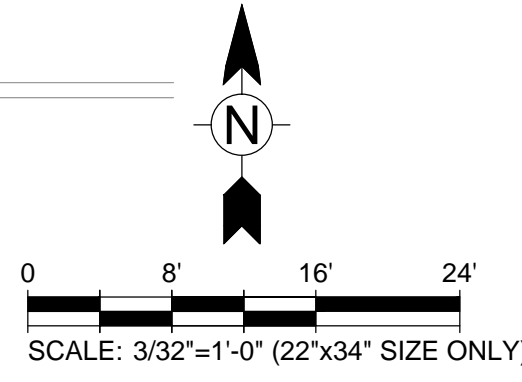
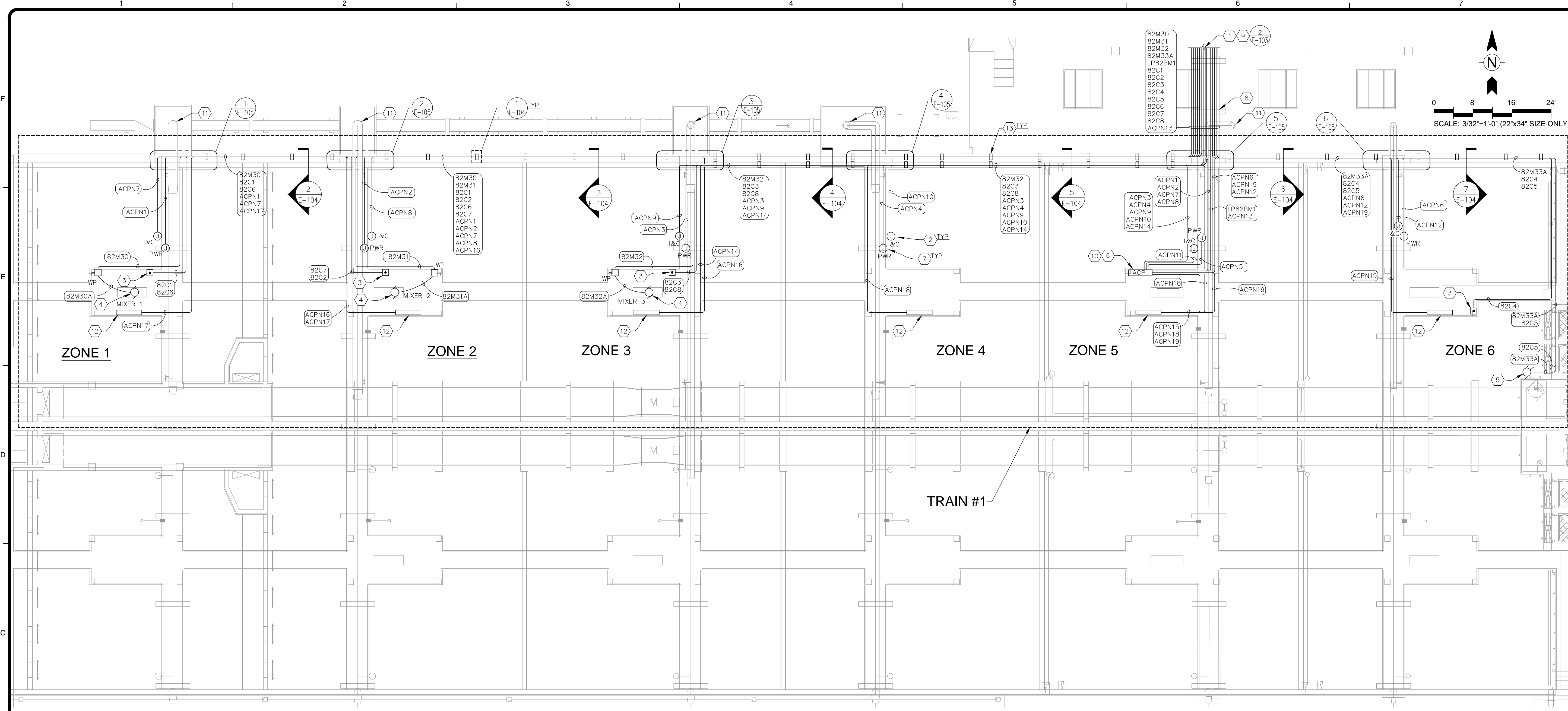
CITY OF TAMPA
HFC AWTP DIFFUSED AIR REACTORS IMPROVEMENTS, PHASE 1
DIFFUSED AIR REACTORS EQUIPMENT & INSTRUMENTATION LOCATION DEMOLITION PLAN

Project No.: 200-08494-14001
Designed By: PAM/NGB
Drawn By: PAM/LER
Checked By: DAB/NGB

E-100

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1 UPPER NEW PLAN
SCALE: 3/32"=1'-0" (22"x34" SIZE ONLY)

KEYED NOTES:

- 1 ALL CONDUIT IS TO EXIT BUILDING THROUGH A NEW 24"x6"x12" PULL BOX AND DOWN TO THE BOTTOM OF THE SUPPORT RACK. SEE DETAIL 2 ON SHEET E-103.
- 2 JUNCTION BOX FOR INSTRUMENTATION AND CONTROLS FOR MOTORIZED AIR VALVE AND MASS FLOW AIR METER. REFER TO DIAGRAM 1/E-104 AND SHEET I-100 FOR ADDITIONAL INFORMATION.
- 3 CONTROL STATION WITH MOTOR AND LOCK OUT STOP WITH STATUS MONITORING.
- 4 NEW 7.5HP MIXER MOTOR.
- 5 NEW 11HP INTERNAL RECYCLE PUMP. SEE SHEET E-102 FOR VFD LOCATION.
- 6 NEW AERATION CONTROL PANEL FED FROM PANEL LP-82B. SEE SHEET E-102 FOR BRANCH PANEL LOCATION.
- 7 JUNCTION BOX LOCATION FOR MOTORIZED AIR VALVE AND MASS FLOW METER. REFER TO DIAGRAM 1/E-104 AND SHEET I-100 FOR ADDITIONAL INFORMATION.
- 8 CONDUIT SUPPORT, SEE STRUCTURAL DRAWINGS FOR FURTHER INFORMATION.
- 9 SEE SHEET E-102 FOR CONTINUATION.
- 10 AERATION CONTROL PANEL WILL BE FREE STANDING. SEE I-104 FOR ADDITIONAL INFORMATION.
- 11 EXISTING WATER PIPING ROUTED ABOVE STRUCTURAL STEEL.
- 12 XYLEM IQSN INTERFACE MODULE. COORDINATE WITH INSTRUMENTATION AND CONTROLS DRAWINGS FOR EXACT LOCATIONS.
- 13 CONDUIT RACKING SUPPORT SHOWN DIAGRAMMATICALLY. CONDUIT RACKING SHALL BE INSTALLED AND SPACED IN ACCORDANCE WITH NEC 344.30 (A) AND (B) FOR PROPER CONDUIT SECURING AND SUPPORT.

GENERAL NOTES:

- 1. ALL CONDUIT, CONNECTORS, JUNCTION BOXES, FITTINGS, STRAPS, ETC. SHALL BE RIGID ALUMINUM.
- 2. DISCONNECTS SHALL BE INSTALLED IN A NEMA 4X RATED ENCLOSURE ON 316 STAINLESS STEEL STAND.
- 3. CONDUIT SHALL NOT BE SUPPORTED BY EXISTING HANDRAILS IN ANY WAY DIRECTLY OR INDIRECTLY.
- 4. REFER TO PERSPECTIVES ON SHEETS E-107, E-108 & E-109 FOR COORDINATION WITH EXISTING CONDITIONS.
- 5. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE 5TH EDITION 2014, THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) SERIES 70/NATIONAL ELECTRICAL CODE (NEC) 2014 EDITION AND CHAPTER 5 OF THE CITY OF TAMPA CODE.

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Lakeland, FL 33853
813.281.4100
Project # 201501

BY	MARK	DATE	DESCRIPTION

CITY OF TAMPA
HFC AWT/P DIFFUSED AIR REACTORS
IMPROVEMENTS, PHASE 1
**DIFFUSED AIR REACTORS
EQUIPMENT & INSTRUMENTATION
LOCATION NEW PLAN**

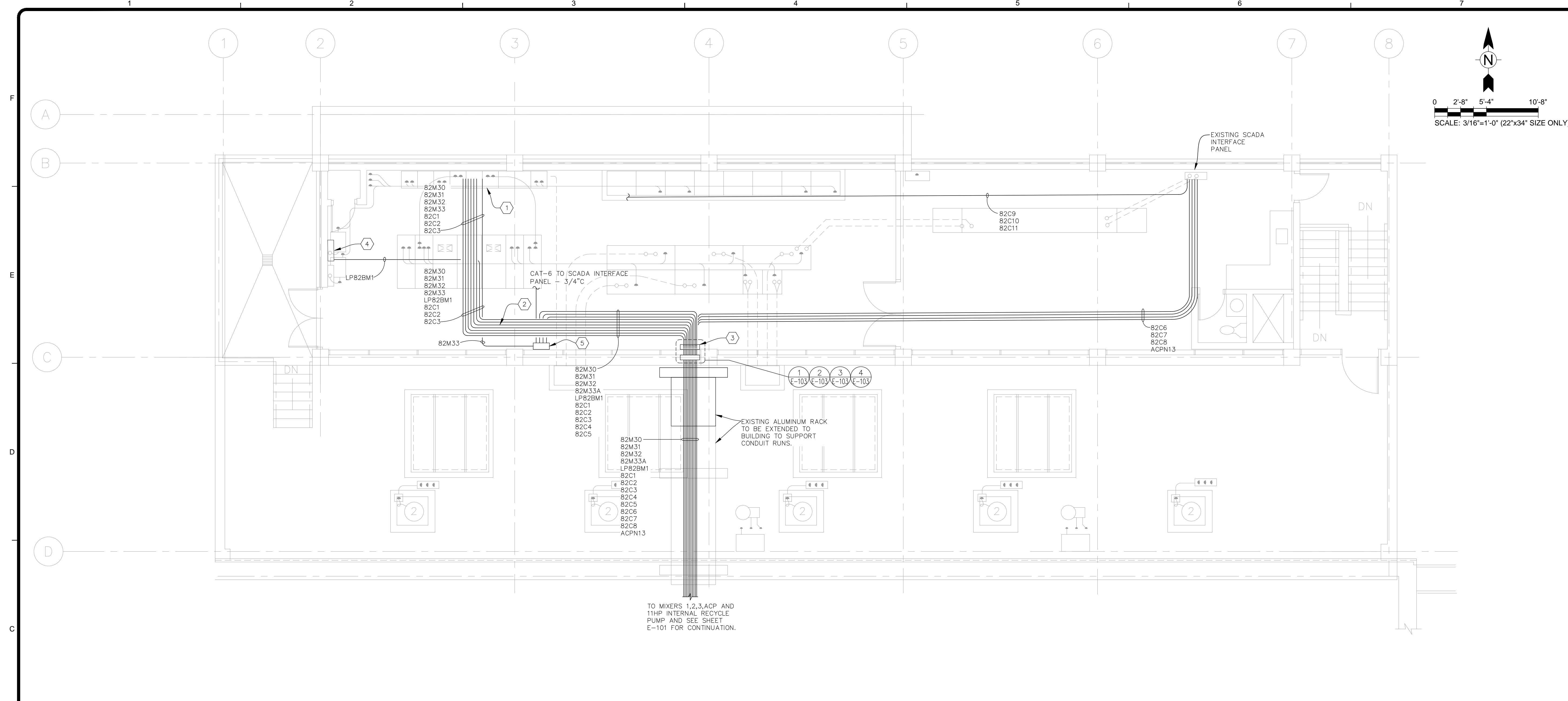
Project No.: 200-08494-14001
Designed By: PAM/NGB
Drawn By: PAM/LER
Checked By: DAB/INGB

E-101

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

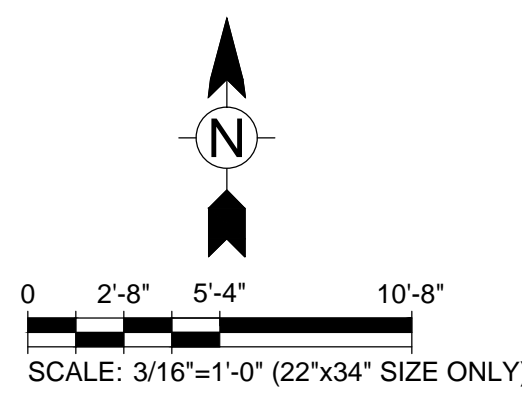
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1 INTERIOR ELECTRICAL ROOM (PROPOSED MODIFICATIONS ARE SHOWN IN BOLD LINE WEIGHT)
 SCALE: 3/16"=1'-0" (22"x34" SIZE ONLY)

- GENERAL NOTES:**
- ALL CONDUIT SHALL BE RIGID ALUMINUM. ALL CONNECTORS, JUNCTION BOXES, FITTINGS, STRAPS ETC... SHALL BE RIGID ALUMINUM.
- KEYED NOTES:**
- EXISTING MOTOR CONTROL CENTER MCC-82. SEE E-104 & E-105 FOR MODIFICATIONS.
 - ALL CONDUIT TO BE SUPPORTED FROM CEILING.
 - ALL CONDUIT IS TO EXIT BUILDING THROUGH NEW 24"x6"x12" PULL BOX, SECURED VERTICALLY DOWN THE EXTERIOR WALL TO THE BOTTOM OF THE SUPPORT RACK.
 - EXISTING PANEL LP-82B, SEE SHEET E-105.
 - NEW 11HP INTERNAL RECYCLE PUMP VFD LOCATION. SEE SHEET E-101 FOR PUMP LOCATION.



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 PROJECT # 2009-010

MARK	DATE	DESCRIPTION	BY

CITY OF TAMPA
 HFC AWTP DIFFUSED AIR REACTORS
 IMPROVEMENTS, PHASE 1
 DIFFUSED AIR REACTORS
 EQUIPMENT & INSTRUMENTATION
 INTERIOR ELECTRICAL ROOM PLAN

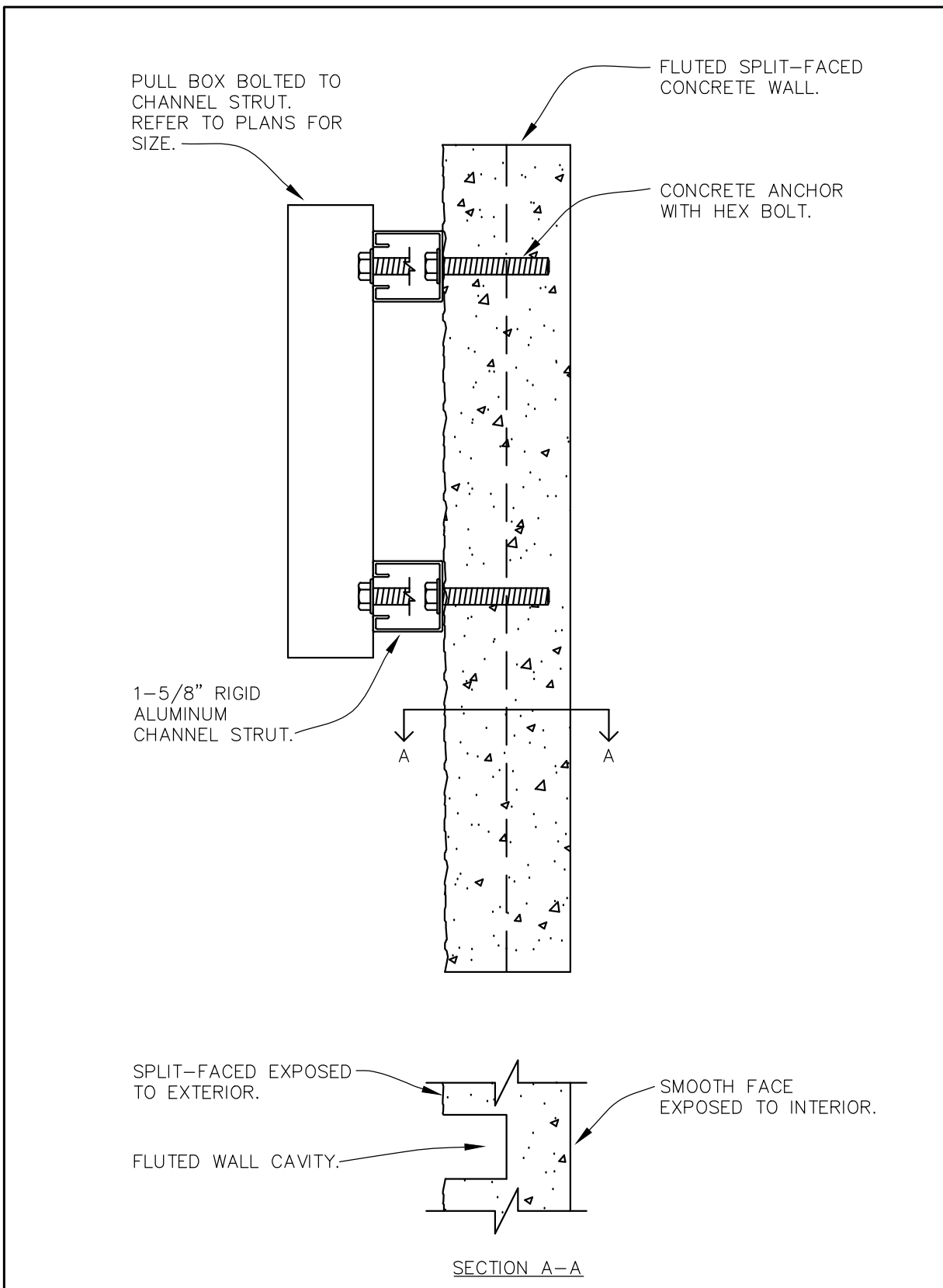
Project No.: 200-08494-14001
 Designed By: PAM/NGB
 Drawn By: PAM/LER
 Checked By: DAB/NGB

E-102

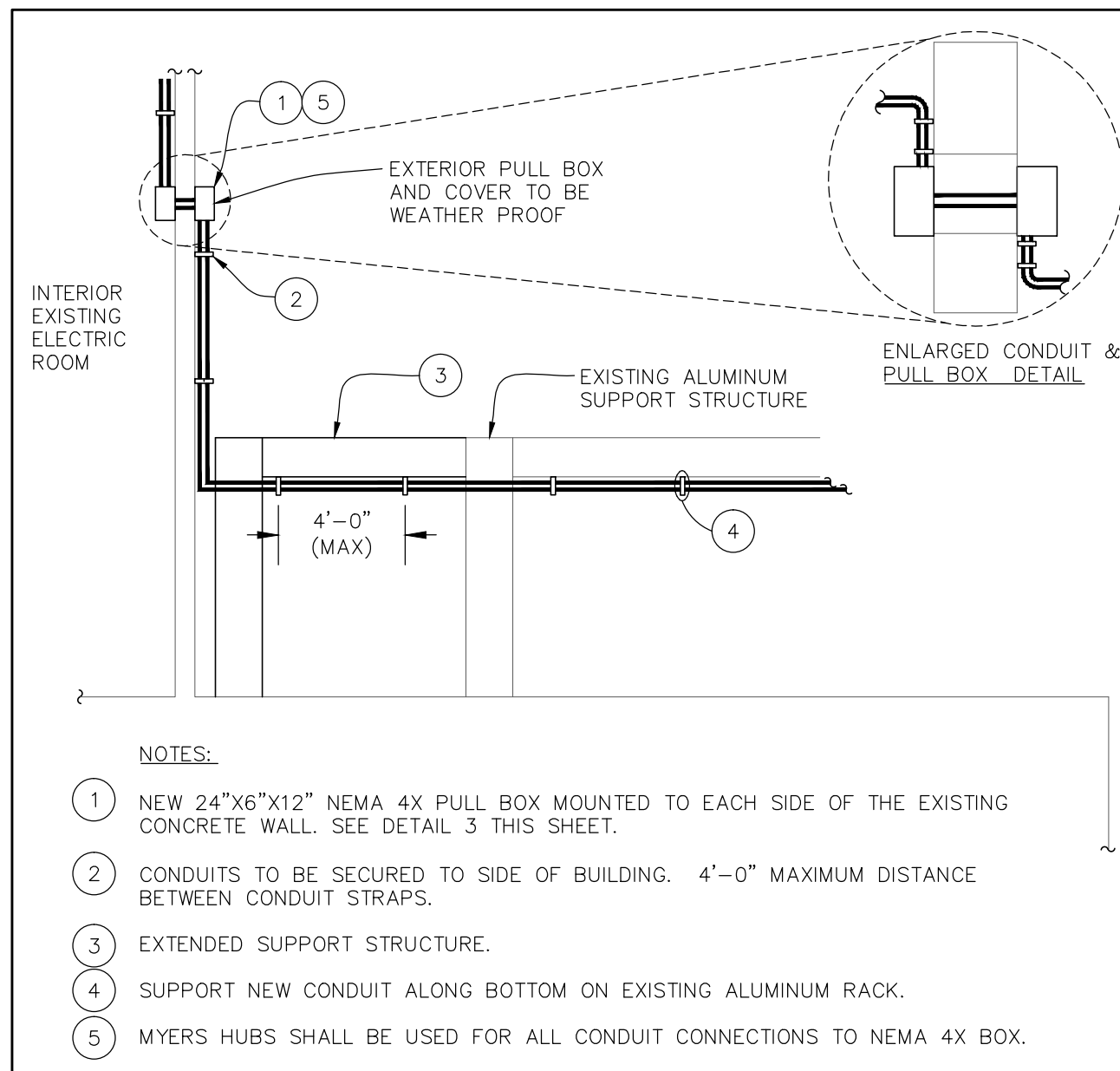
Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

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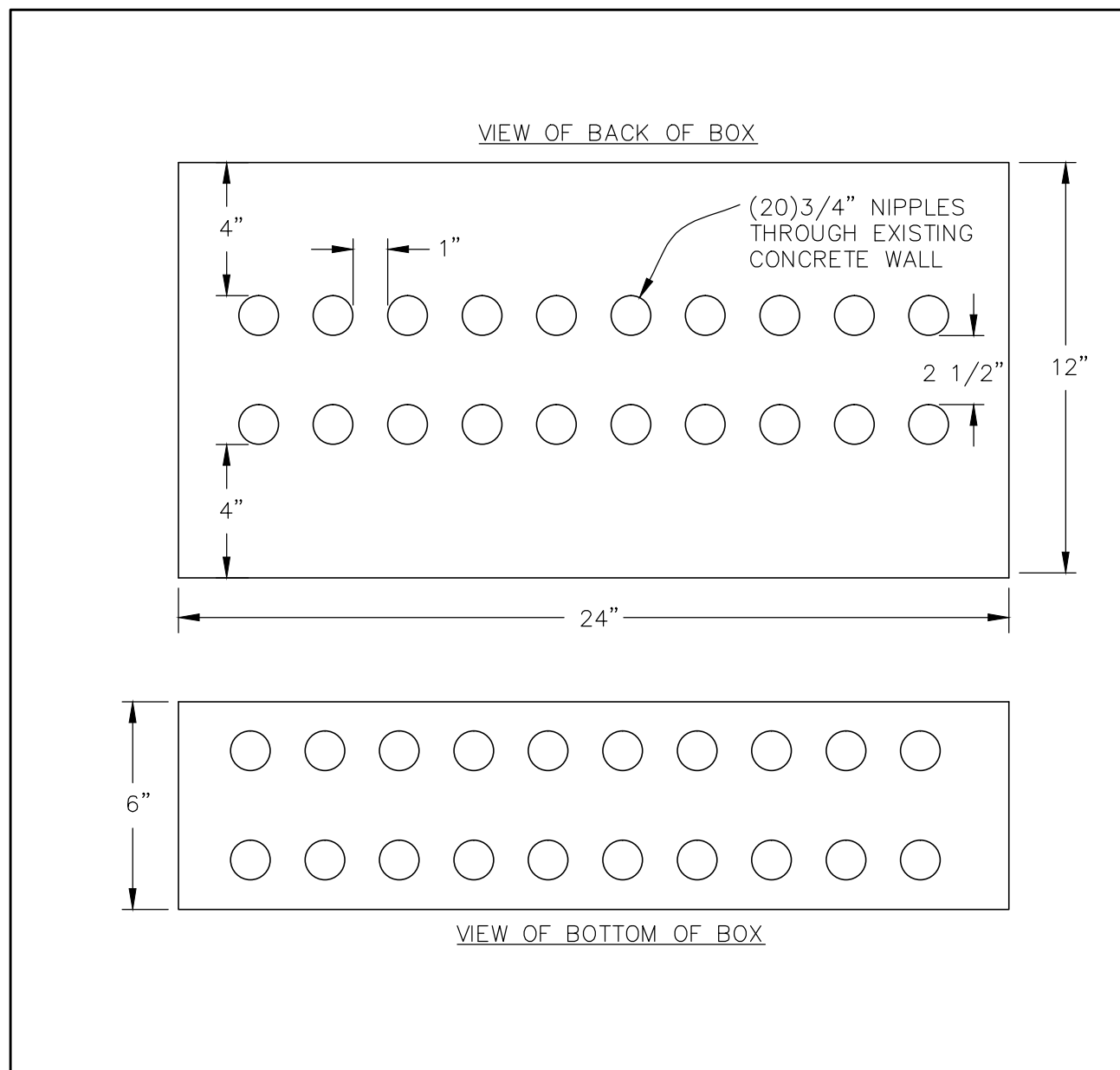
1 2 3 4 5 6 7



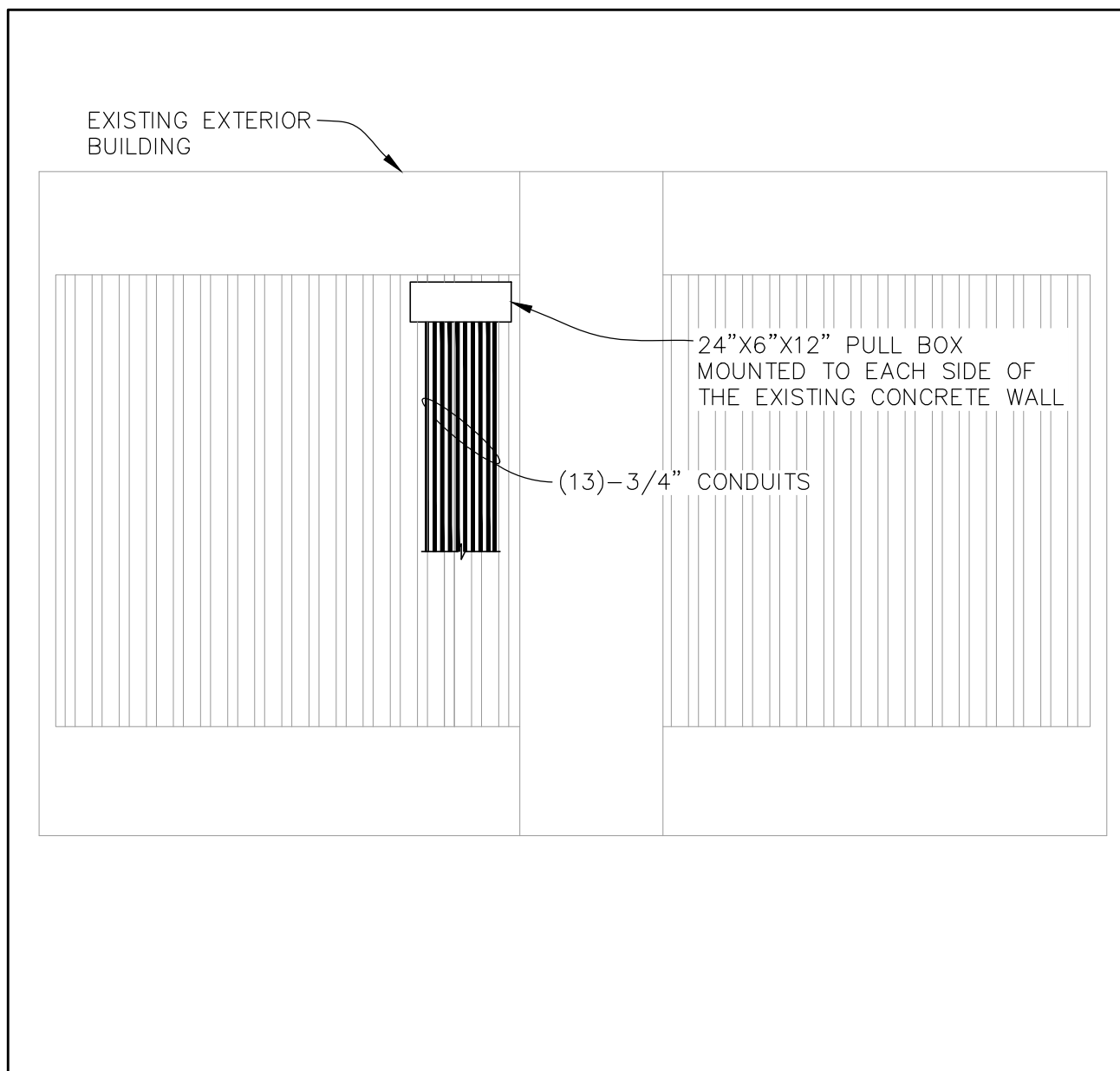
① FLUTED WALL - PULL BOX MOUNTING DETAIL NTS



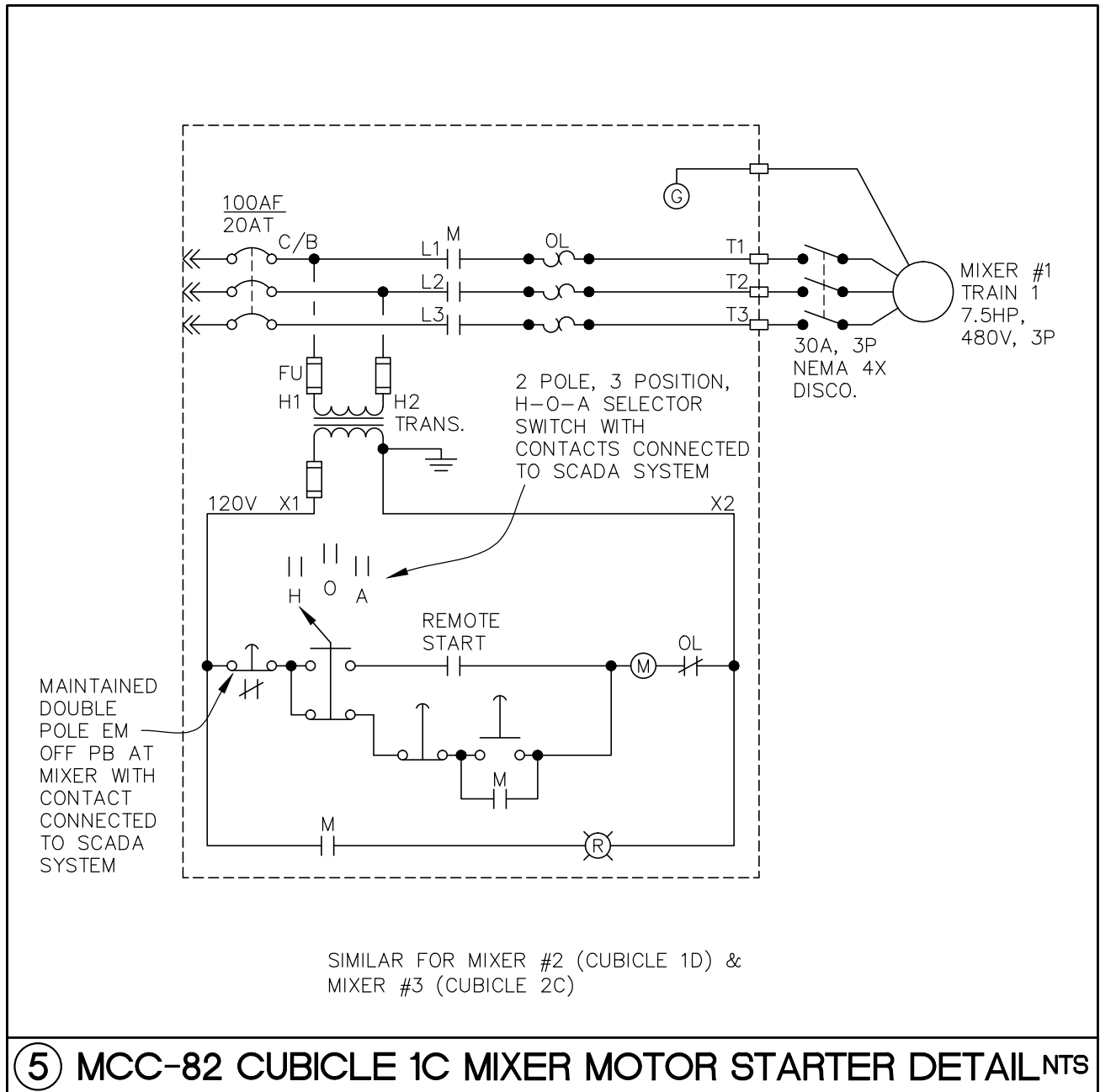
② STRUCTURE AND CONDUIT RUN DETAIL NTS



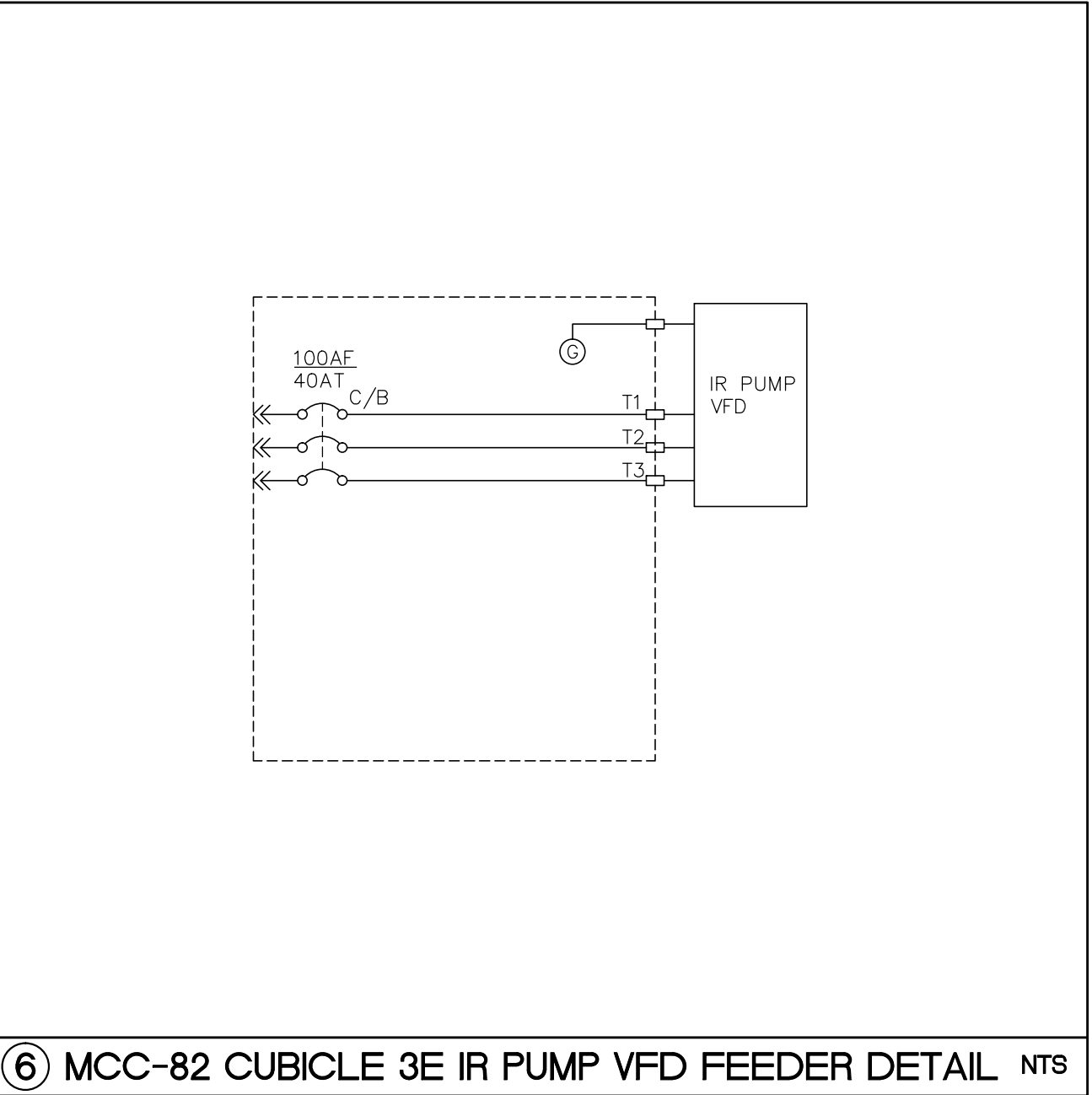
③ NEW PULL BOX AND NIPPLE DETAIL NTS



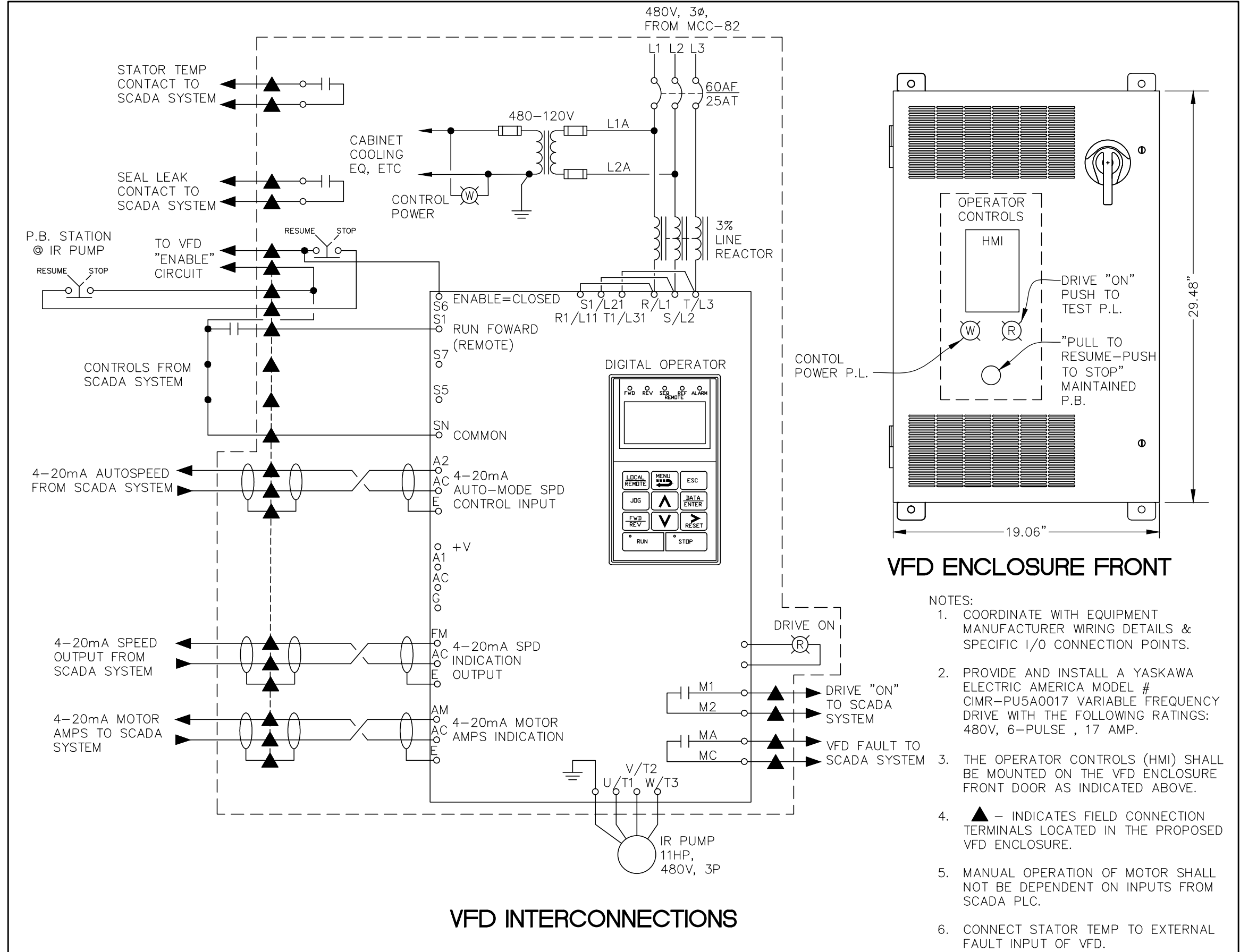
④ CONDUIT THROUGH WALL DETAIL NTS



⑤ MCC-82 CUBICLE 1C MIXER MOTOR STARTER DETAIL NTS



⑥ MCC-82 CUBICLE 3E IR PUMP VFD FEEDER DETAIL NTS



⑦ VFD WIRING DETAIL NTS

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MES GROUP
CON-100A
Project # 200801
City of Tampa
HFC AWT/P Diffused Air Reactors
Improvements, Phase 1

BY	DATE	DESCRIPTION

CITY OF TAMPA
HFC AWT/P DIFFUSED AIR REACTORS
IMPROVEMENTS, PHASE 1
**DIFFUSED AIR REACTOR
DETAILS**

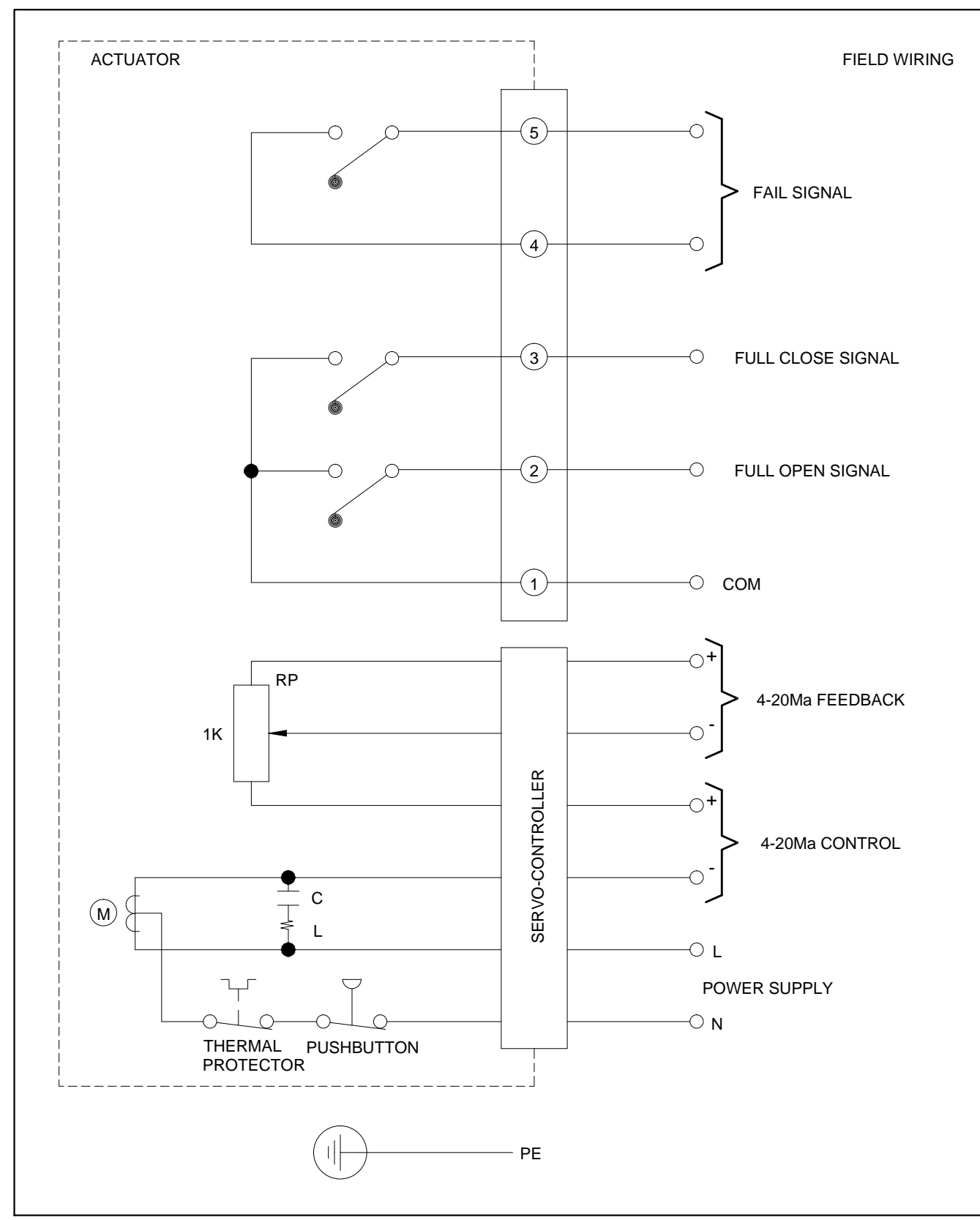
Project No.: 200-08494-14001
Designed By: PAM/NGB
Drawn By: PAM/LER
Checked By: DAB/INGB

E-103

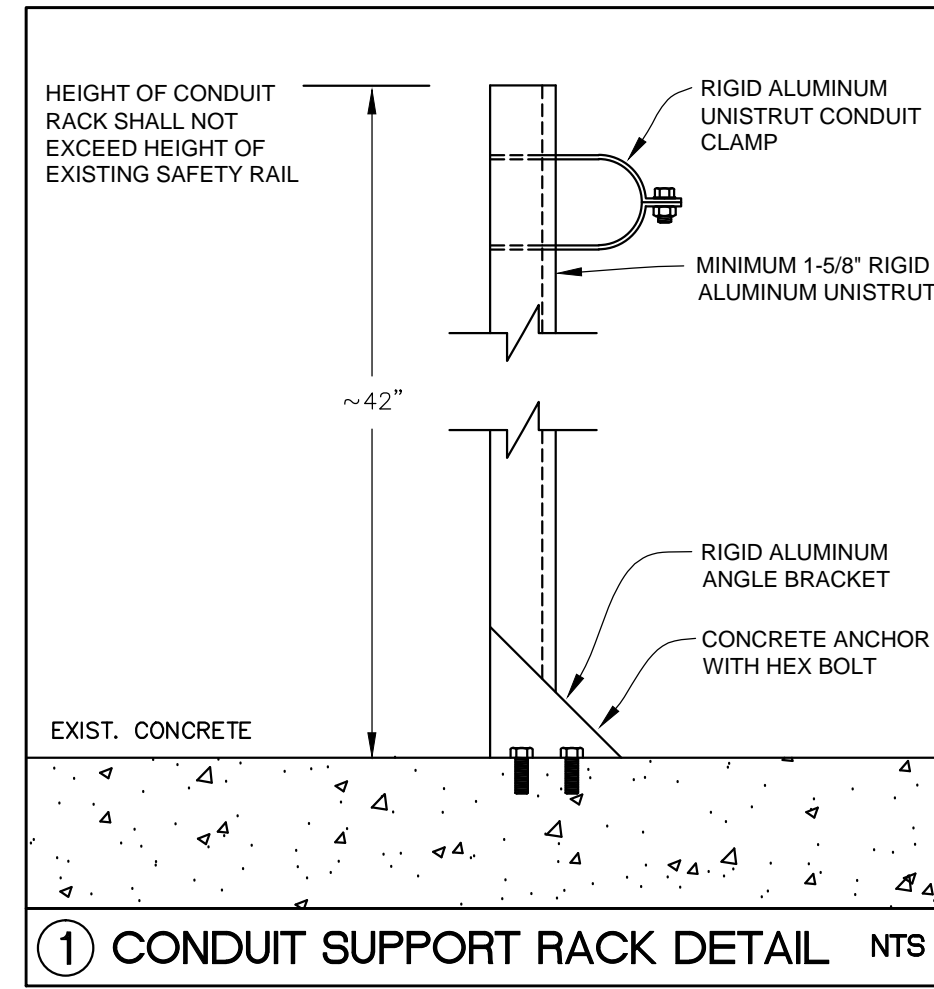
Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

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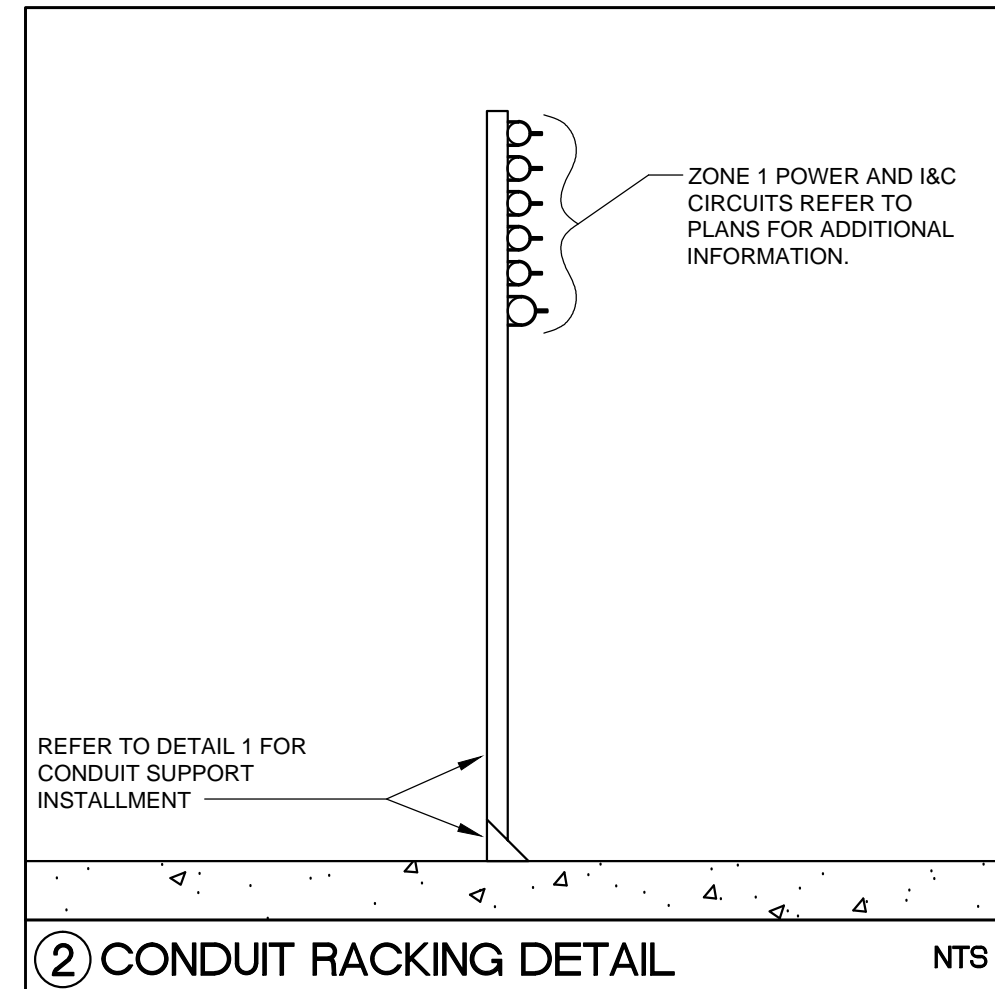
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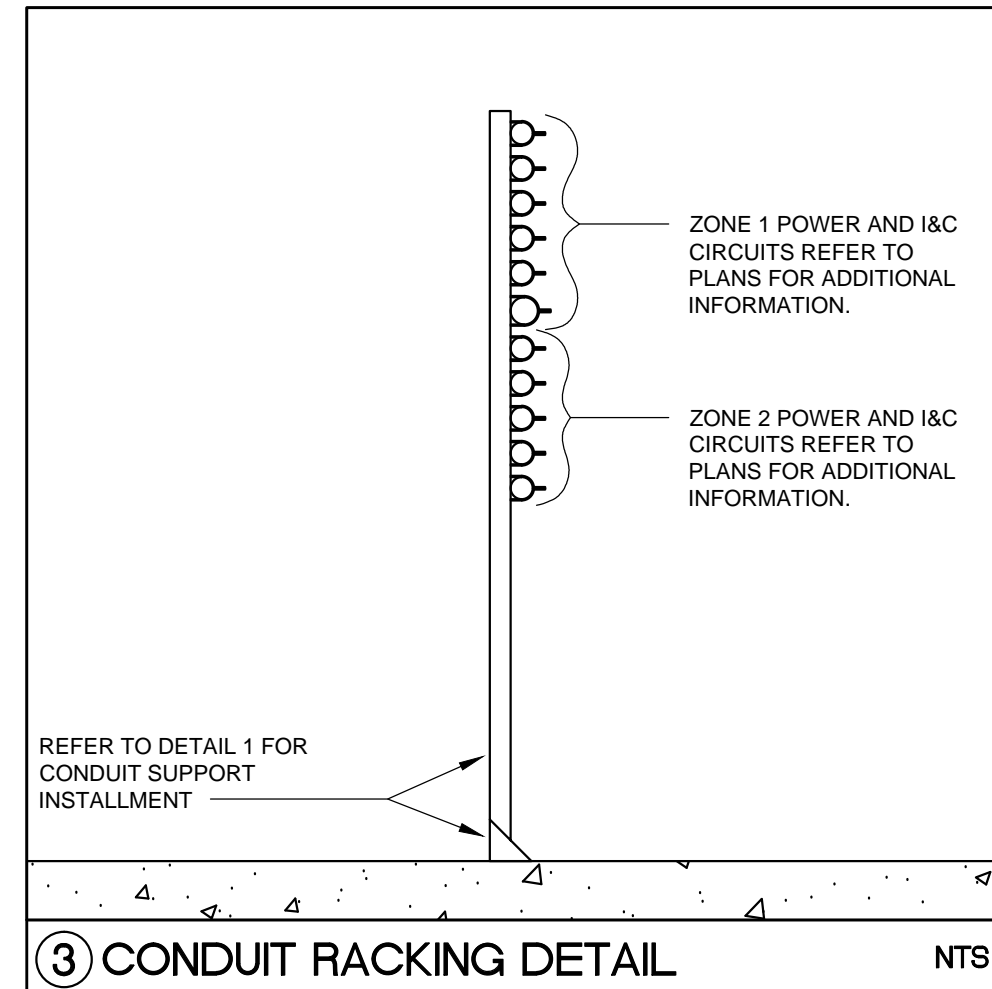
2 ACTUATOR WIRING DIAGRAM
SCALE: NTS



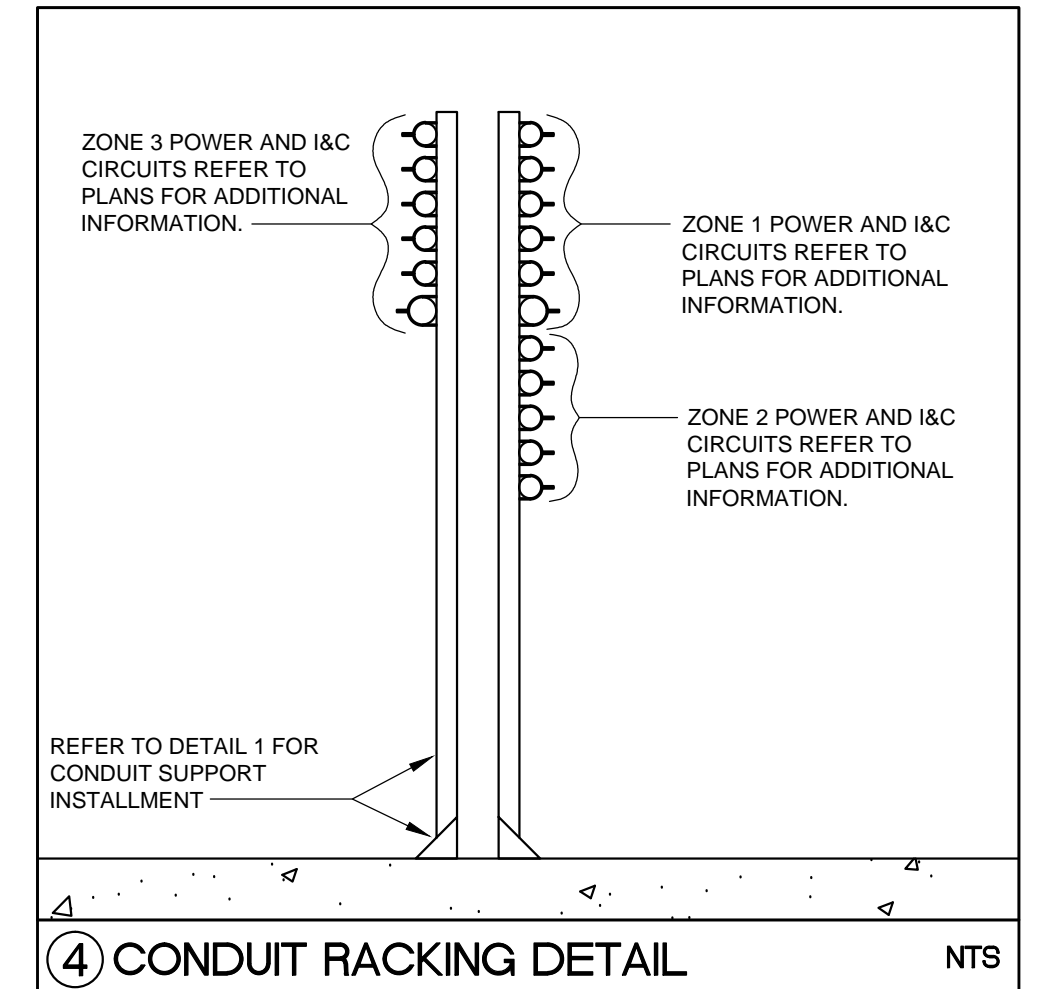
1 CONDUIT SUPPORT RACK DETAIL NTS



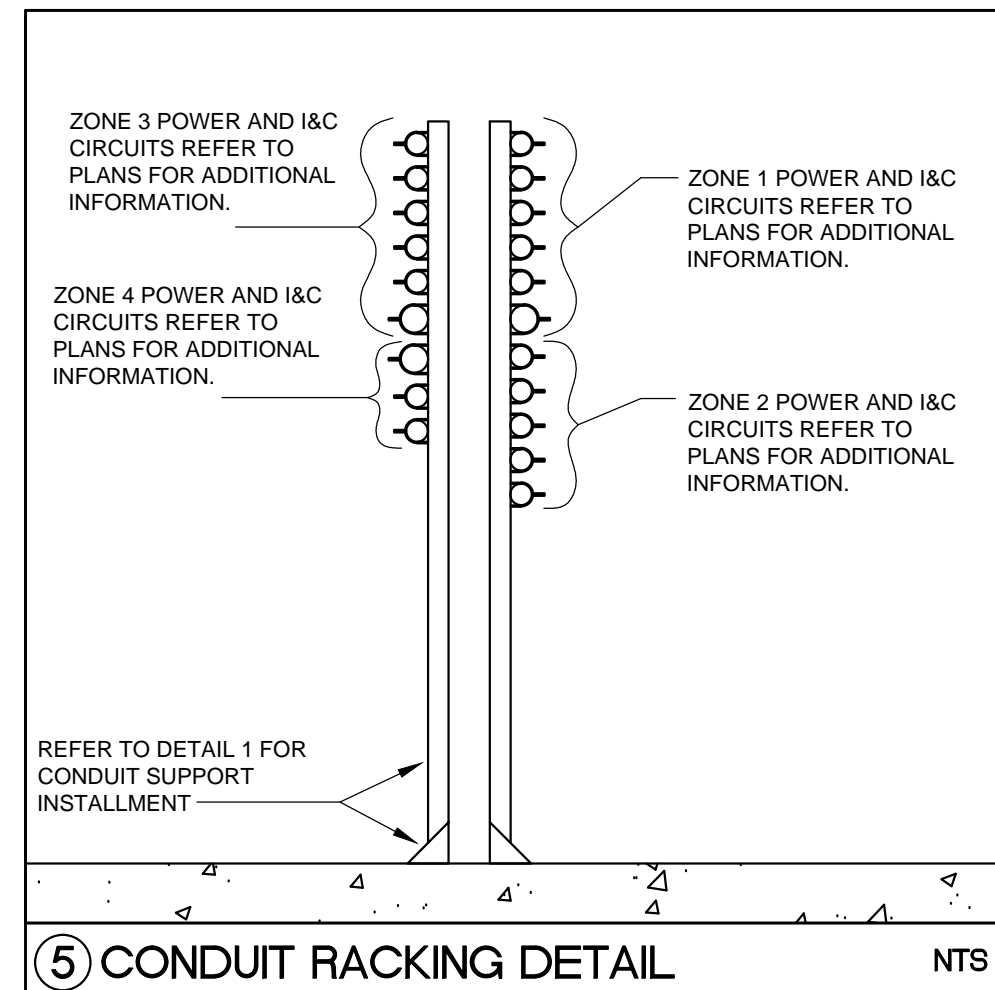
2 CONDUIT RACKING DETAIL NTS



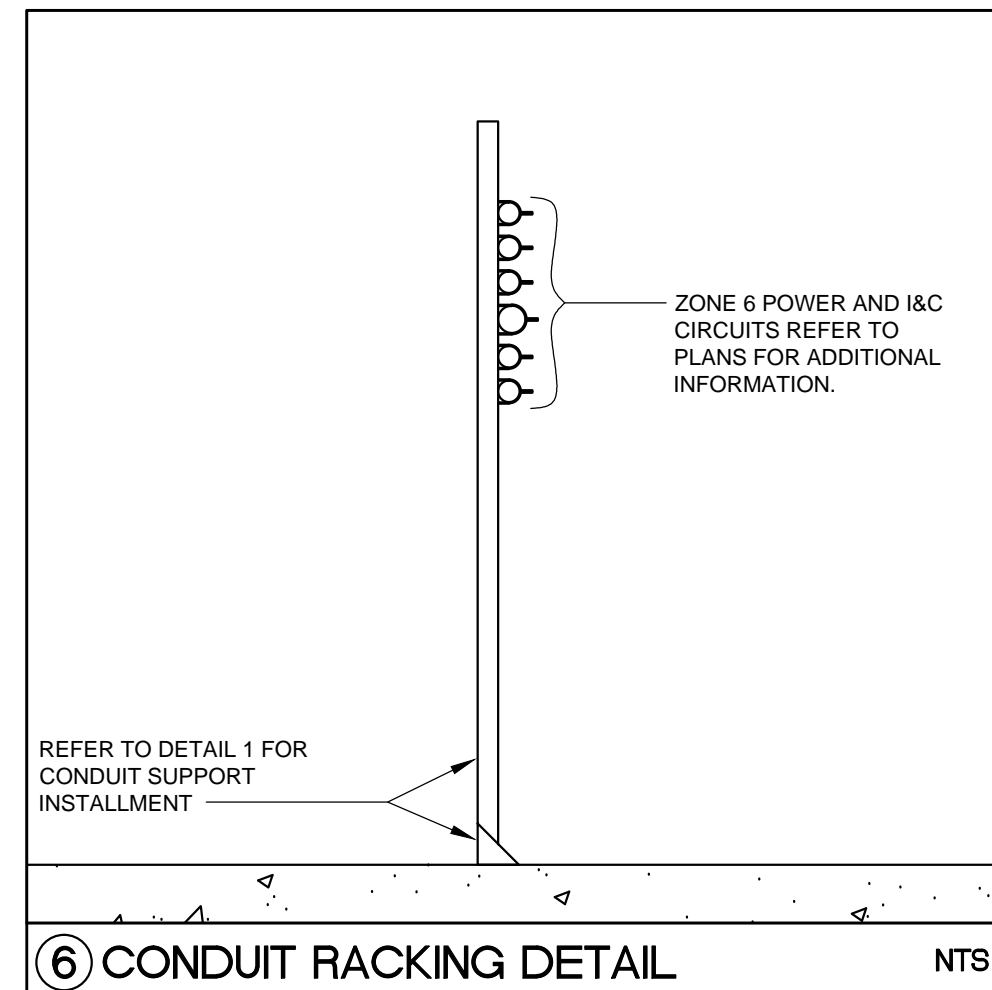
3 CONDUIT RACKING DETAIL NTS



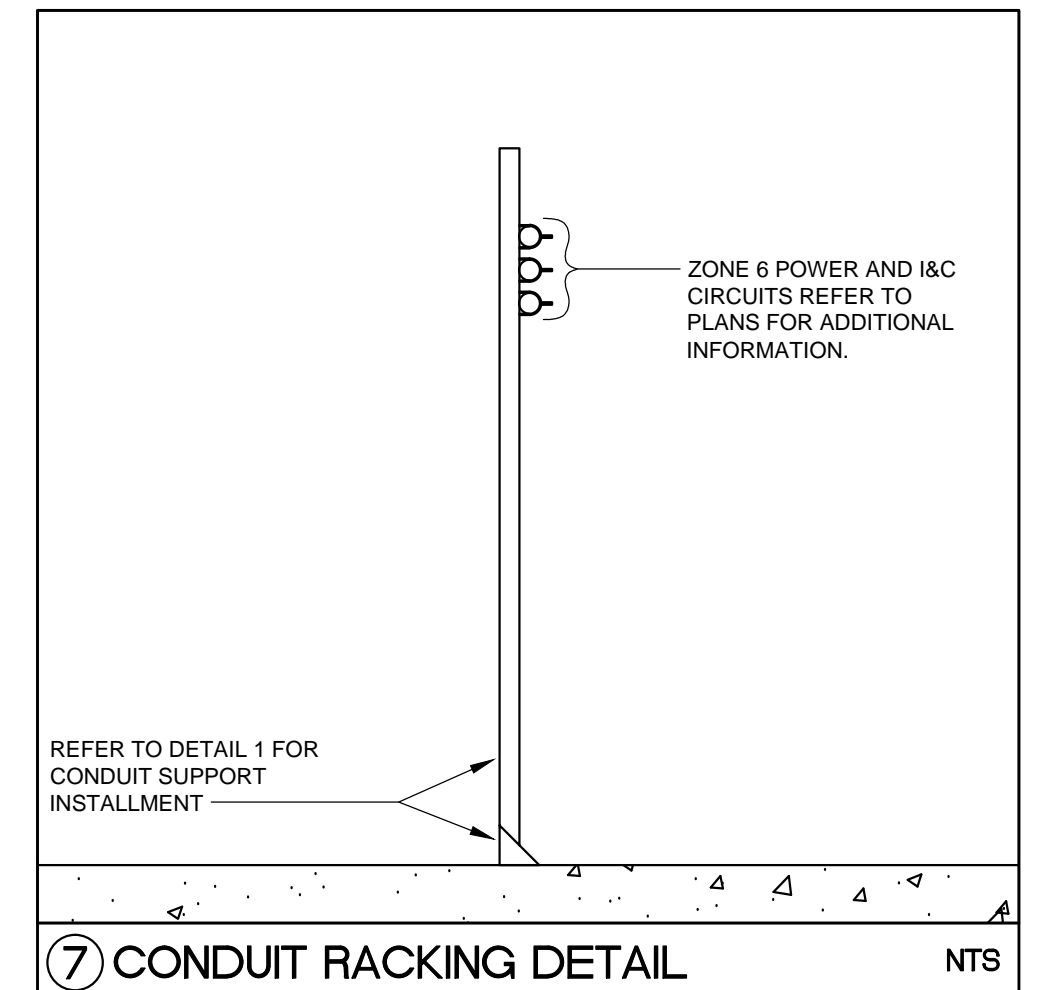
4 CONDUIT RACKING DETAIL NTS



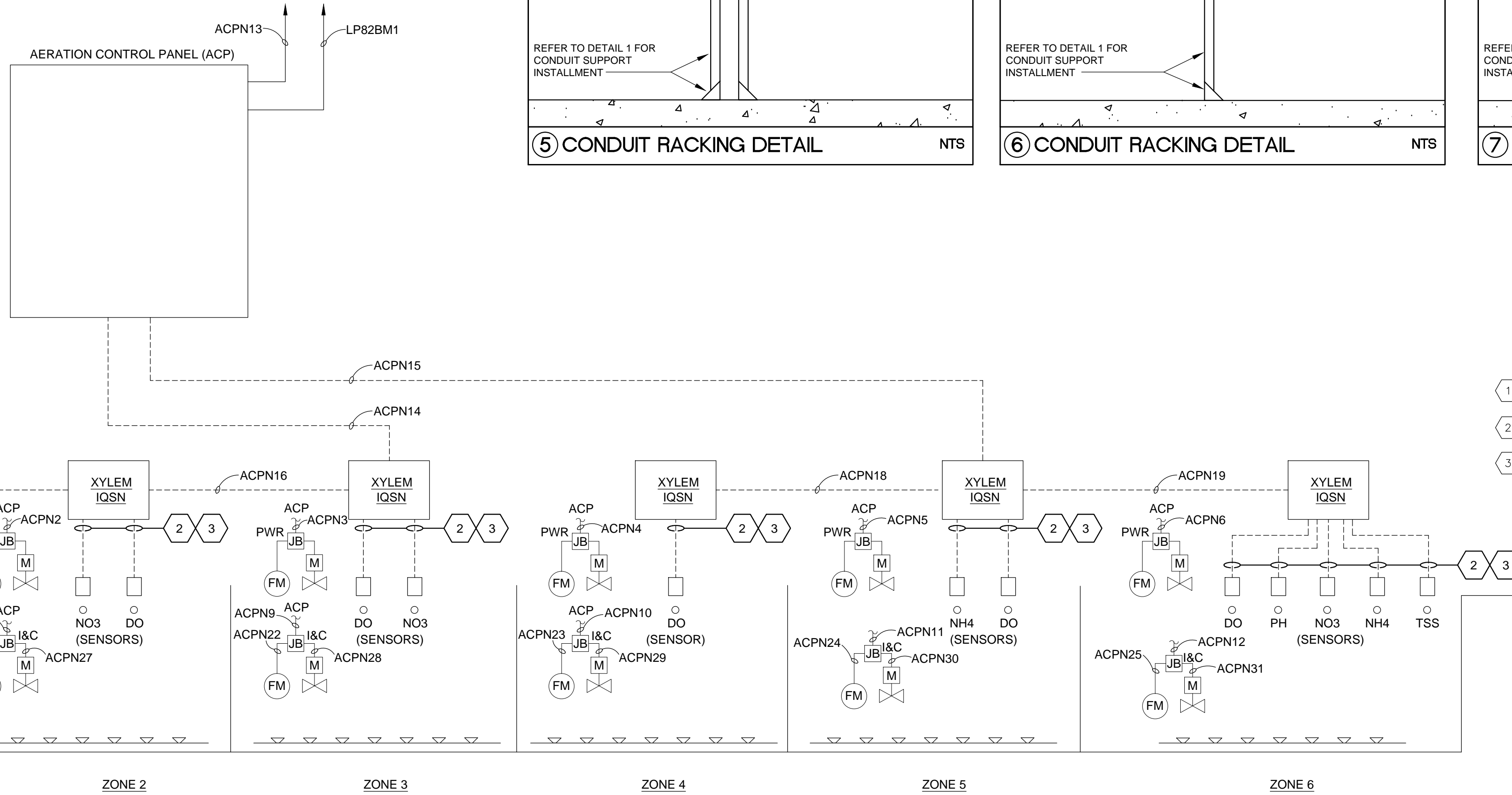
5 CONDUIT RACKING DETAIL NTS



6 CONDUIT RACKING DETAIL NTS



7 CONDUIT RACKING DETAIL NTS



1 INSTRUMENTATION RISER DIAGRAM
SCALE: NTS

- KEYED NOTES:**
- 1 SEE SHEET I-100 FOR EXACT LOCATIONS OF MOTORIZED VALVES AND MASS FLOW METERS.
 - 2 FACTORY CABLE - TYPICAL ALL PH, DO, NO3, NH4 AND TSS SENSORS.
 - 3 VENDOR SUPPLIED PRE-MANUFACTURED CABLE AND SENSOR, INSTALLED BY ELECTRICAL CONTRACTOR.

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

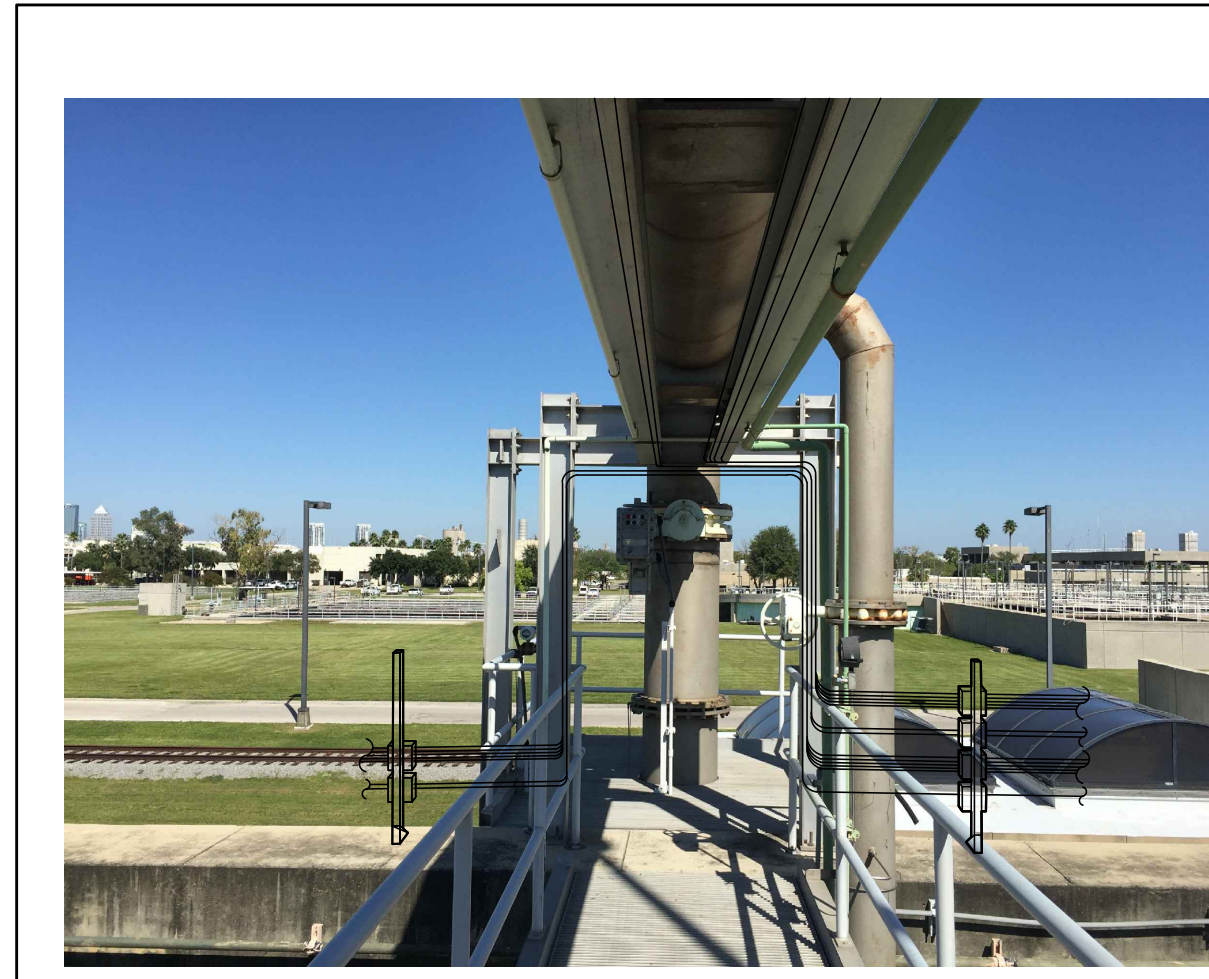
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① ZONE 1 CONDUIT ARRANGEMENT CONCEPT NTS



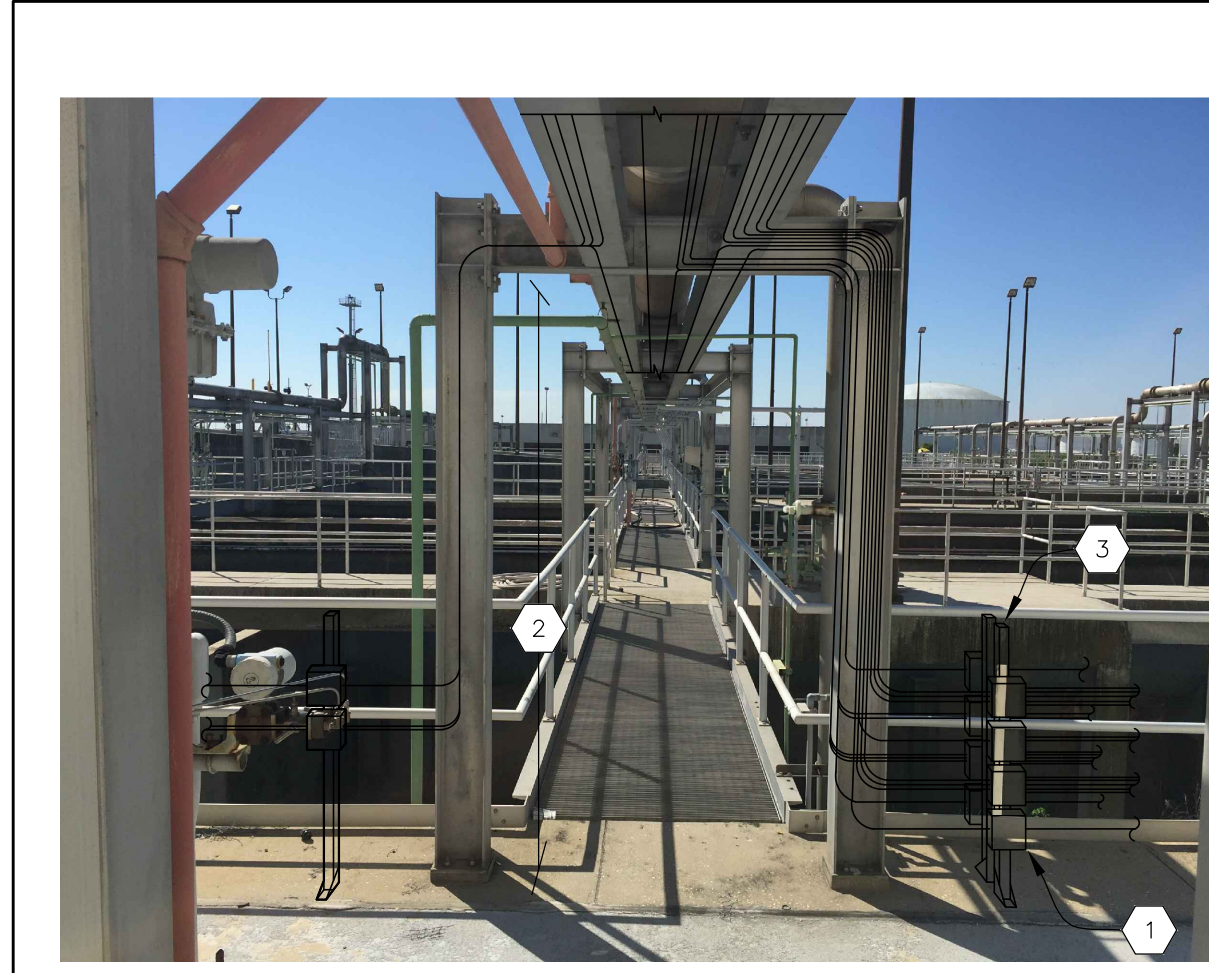
② ZONE 2 CONDUIT ARRANGEMENT CONCEPT NTS



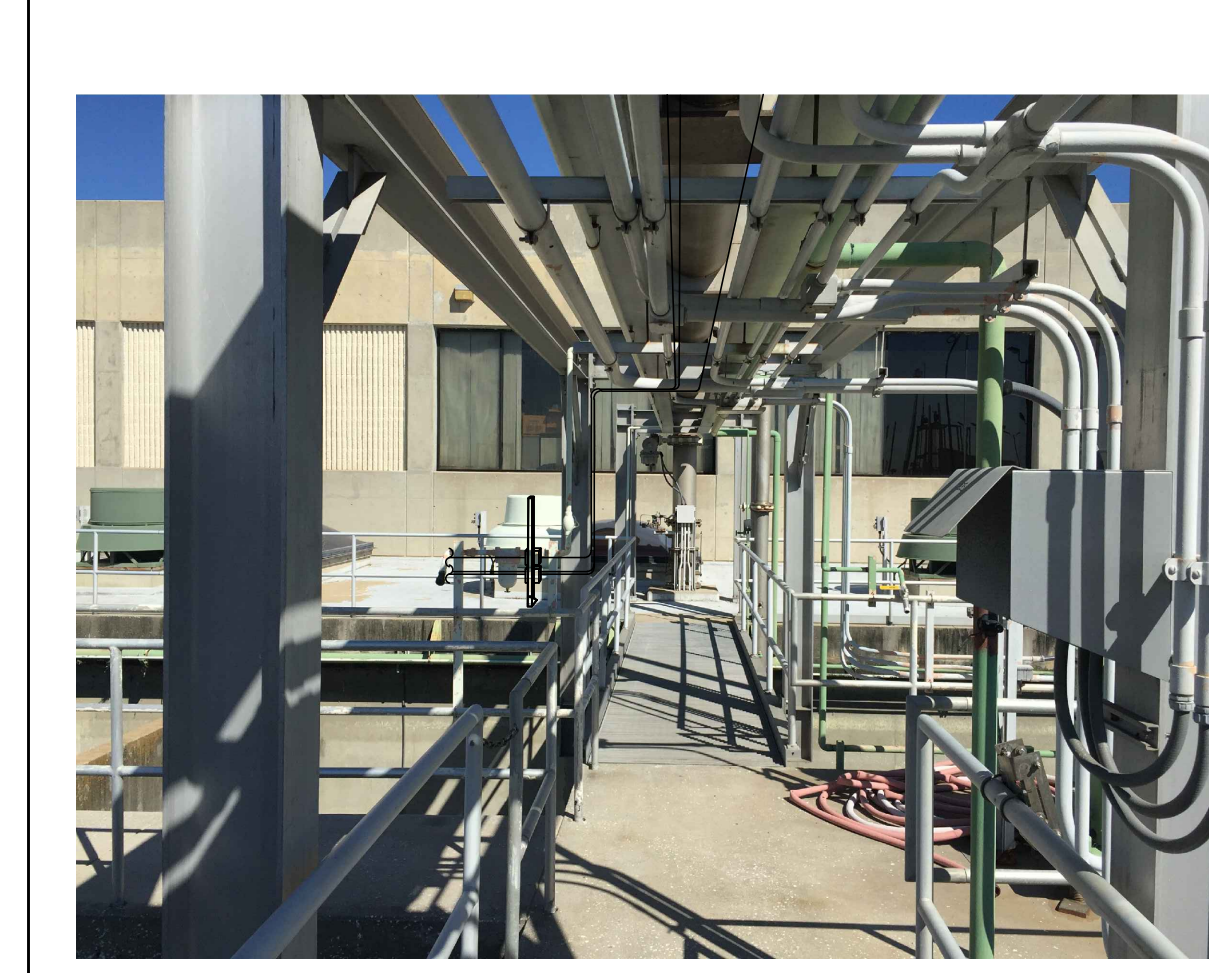
③ ZONE 3 CONDUIT ARRANGEMENT CONCEPT NTS



④ ZONE 4 CONDUIT ARRANGEMENT CONCEPT NTS



⑤ ZONE 5 CONDUIT ARRANGEMENT CONCEPT NTS



⑥ ZONE 6 CONDUIT ARRANGEMENT CONCEPT NTS

GENERAL NOTES:

1. DETAIL KEY NOTES SHOWN ON DETAIL 5/E-105 ARE TYPICAL FOR ALL DETAILS ON THIS SHEET.

KEYED NOTES:

- ① 6" L X 6" W X 4" D RIGID ALUMINUM PULL BOX.
- ② WALKWAYS SHALL MAINTAIN A MINIMUM VERTICAL CLEARANCE OF 7'-0".
- ③ REFER TO DETAIL 1/E104.

① CONDUIT ARRANGEMENT DETAIL
SCALE: NTS

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

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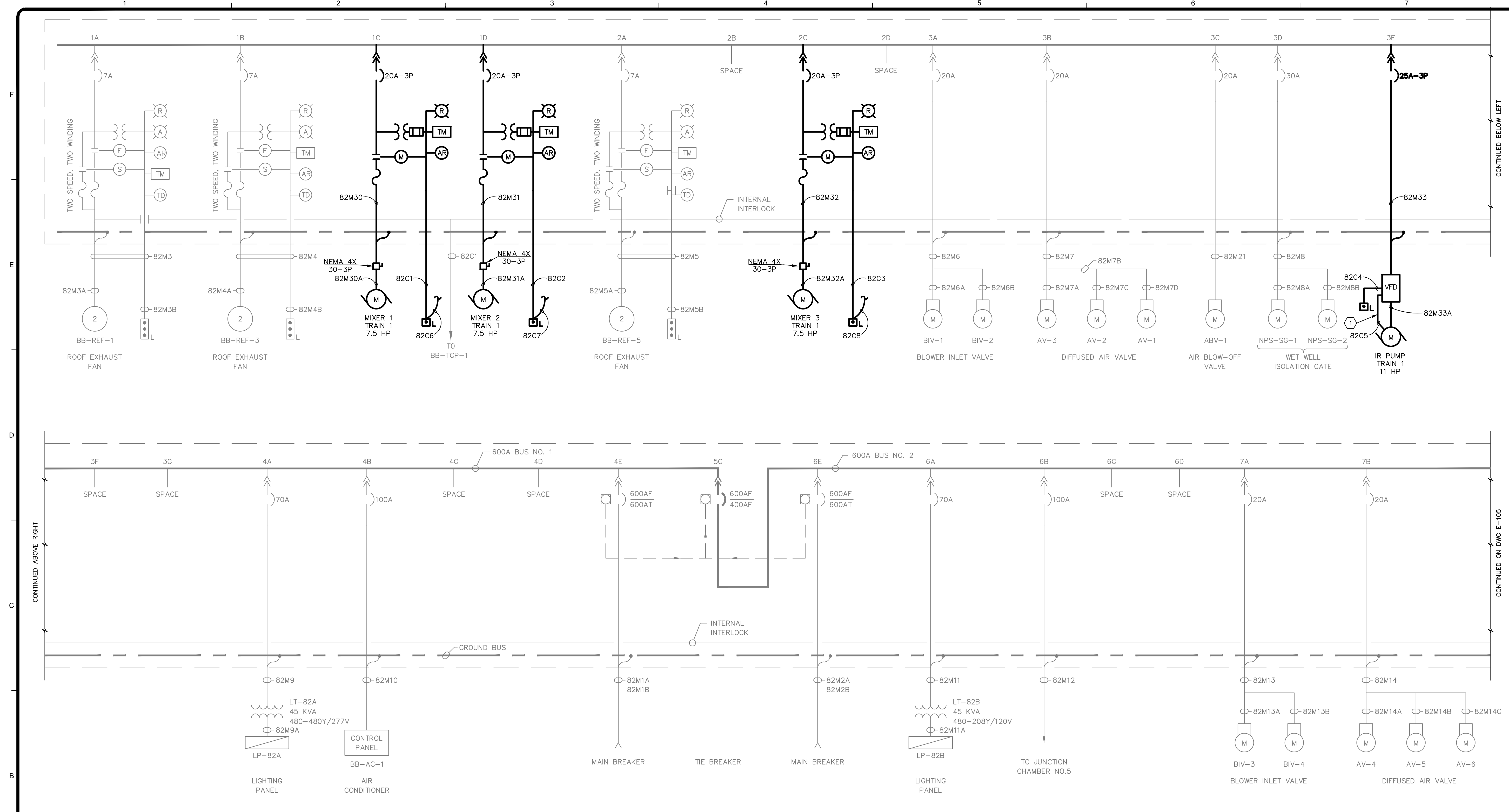
CITY OF TAMPA
HFC AWTP DIFFUSED AIR REACTORS IMPROVEMENTS, PHASE 1
CONDUIT ARRANGEMENT CONCEPT DETAILS

Project No.: 200-08494-14001
Designed By: PAM/NGB
Drawn By: PAMILER
Checked By: DAB/NGB

E-105

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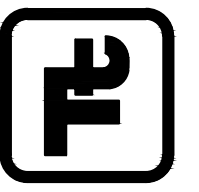


**EXISTING MOTOR CONTROL CENTER MCC-82 ONE LINE DIAGRAM
(PROPOSED MODIFICATIONS ARE SHOWN IN BOLD LINE WEIGHT)**

SCALE: NOT TO SCALE

KEYED NOTES:
 1 LOCK OUT STOP, MOTOR TEMP AND SEAL LEAK CONDUCTORS TO VFD.

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.




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BY	DATE	DESCRIPTION

CITY OF TAMPA
HFC AWTP DIFFUSED AIR REACTORS
IMPROVEMENTS, PHASE 1

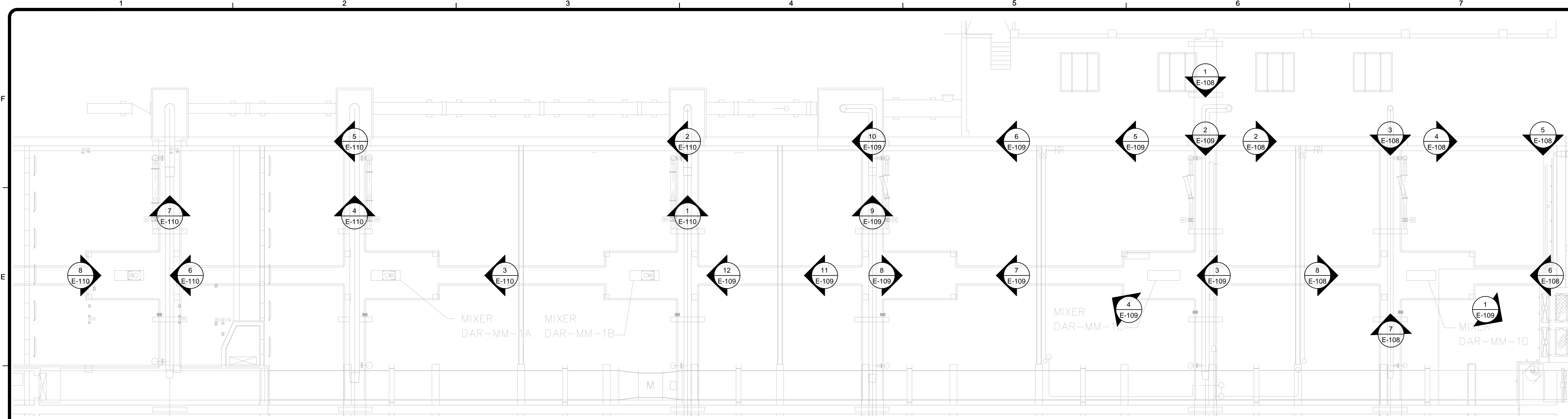
**ELECTRICAL RISER
ONE LINE DIAGRAM**

Project No.: 200-08494-14001
Designed By: PAM/NGB
Drawn By: PAM/LER
Checked By: DAB/NGB

E-106

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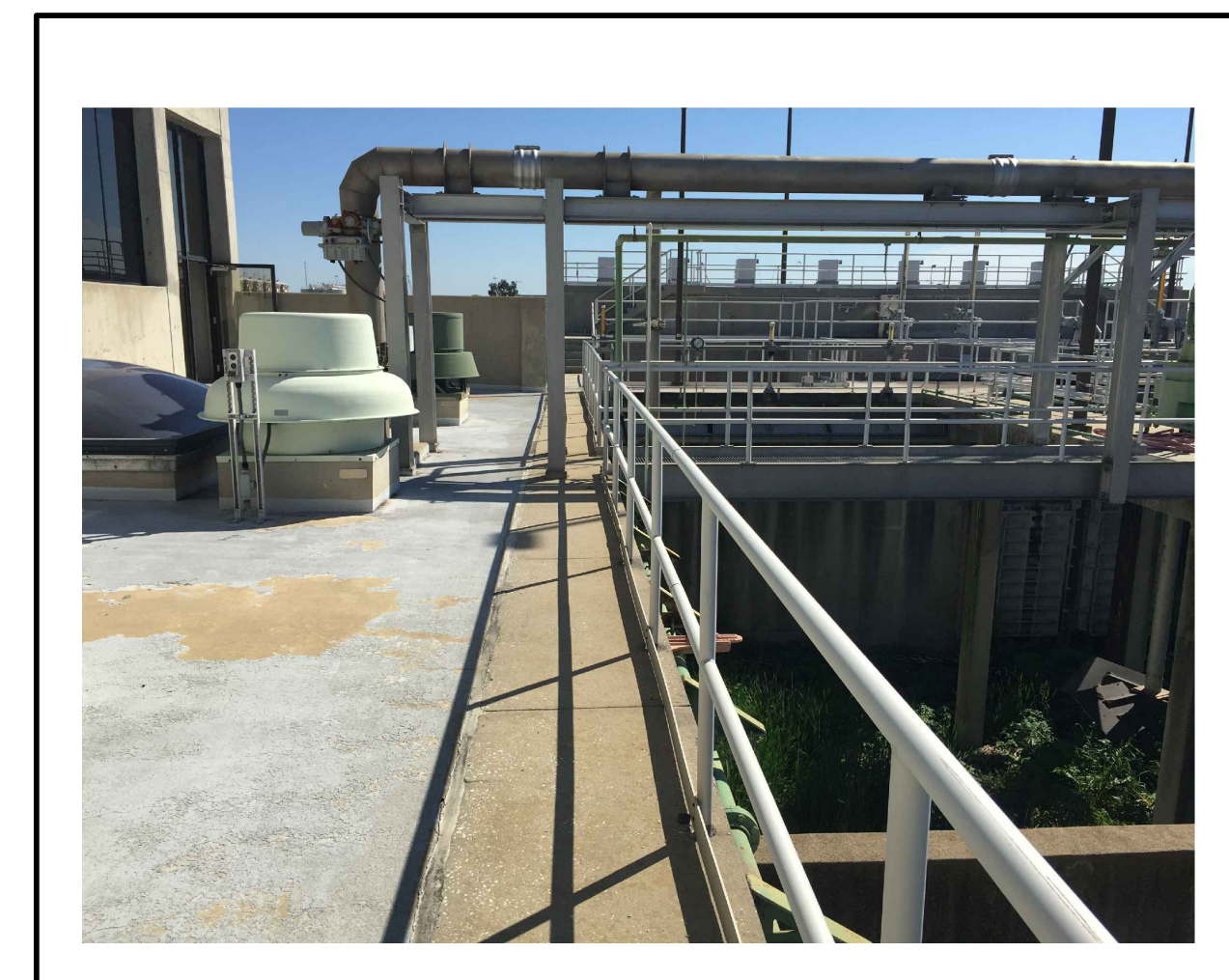
11/16/2015 11:25:26 AM - L:\2015510 HCAWTP NITRIFICATION REACTORS\15510 E-105.DWG - LORENZO ROMAN



1 UPPER PERSPECTIVES PLAN
SCALE: 3/32"=1'-0" (22"x34" SIZE ONLY)



1 ZONE 5 SOUTH PERSPECTIVE NTS



2 ZONE 6 EAST PERSPECTIVE NTS



3 ZONE 6 SOUTH PERSPECTIVE NTS



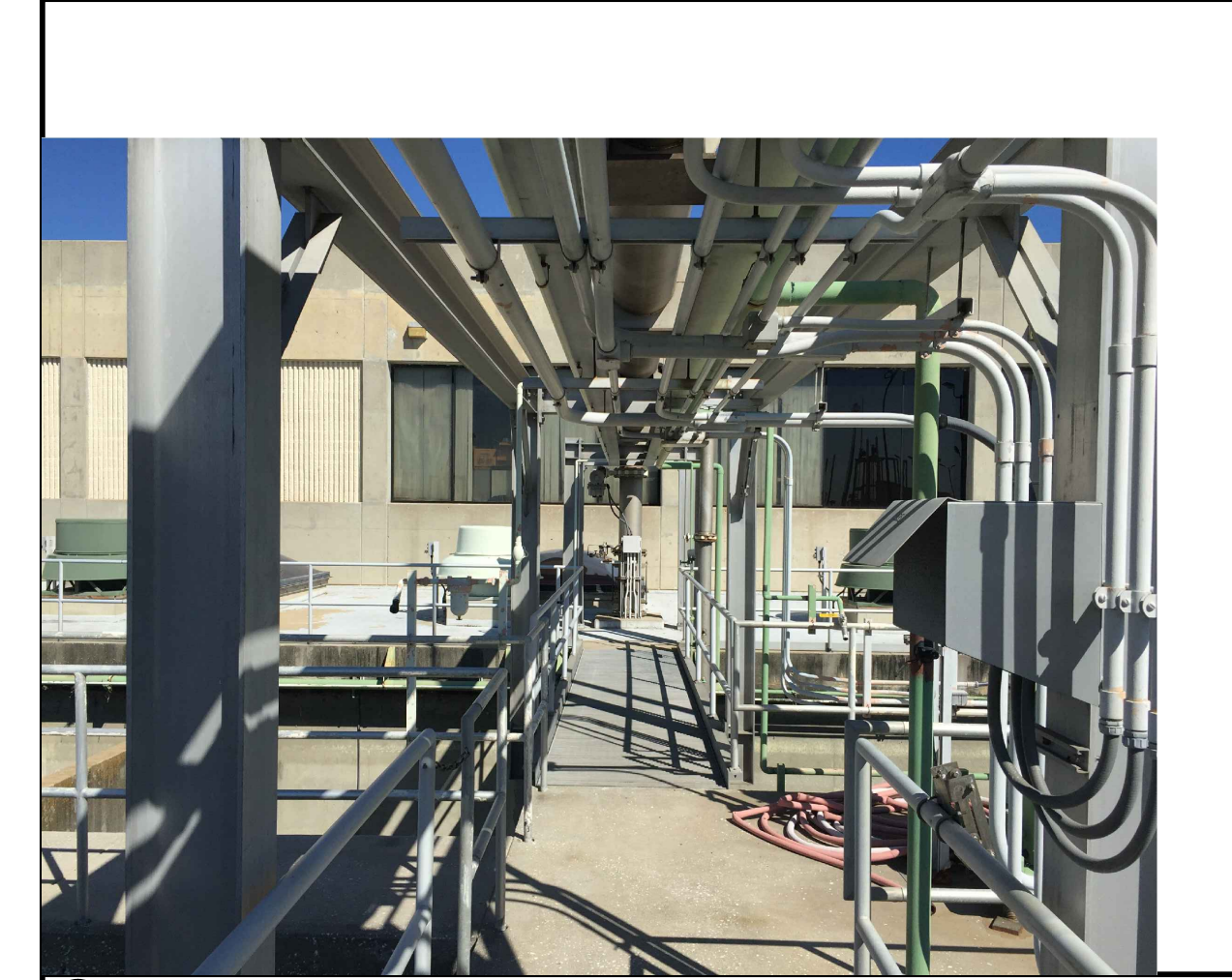
4 ZONE 6 EAST PERSPECTIVE NTS



5 ZONE 6 SOUTH PERSPECTIVE NTS



6 ZONE 6 WEST PERSPECTIVE NTS



7 ZONE 6 NORTH PERSPECTIVE NTS



8 ZONE 6 EAST PERSPECTIVE NTS

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

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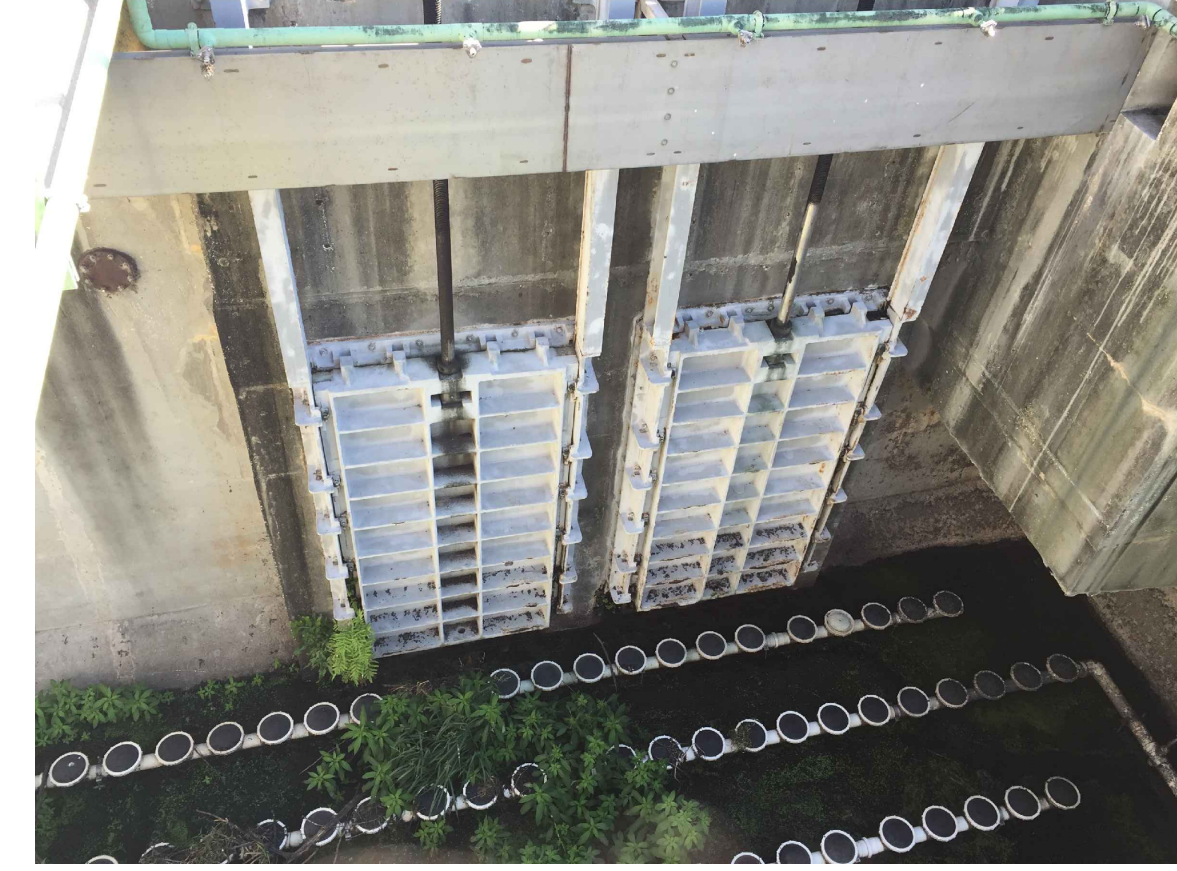
CITY OF TAMPA
HFC AWT/P DIFFUSED AIR REACTORS
IMPROVEMENTS, PHASE 1
ELECTRICAL RISER ONE LINE
DIAGRAM

Project No.: 200-08494-14001
Designed By: PAM/NGB
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E-107

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① ZONE 6 SOUTHEAST PERSPECTIVE NTS



② ZONE 5 SOUTH PERSPECTIVE NTS



③ ZONE 5 WEST PERSPECTIVE NTS



④ ZONE 5 NORTHWEST PERSPECTIVE NTS



⑤ ZONE 5 WEST PERSPECTIVE NTS



⑥ ZONE 4 WEST PERSPECTIVE NTS



⑦ ZONE 4 WEST PERSPECTIVE NTS



⑧ ZONE 4 EAST PERSPECTIVE NTS



⑨ ZONE 4 NORTH PERSPECTIVE NTS



⑩ ZONE 4 WEST PERSPECTIVE NTS



⑪ ZONE 4 WEST PERSPECTIVE NTS



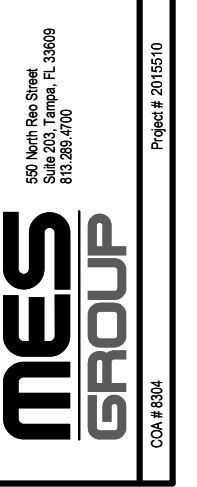
⑫ ZONE 3 WEST PERSPECTIVE NTS

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.



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PE #36564



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CITY OF TAMPA
HFC AWTP DIFFUSED AIR REACTORS
IMPROVEMENTS, PHASE 1
EXISTING CONDITIONS PLAN
AND PERSPECTIVES

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Drawn By: PAM/LER
Checked By: DAB/NGB

E-108

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① ZONE 3 NORTH PERSPECTIVE NTS



② ZONE 3 WEST PERSPECTIVE NTS



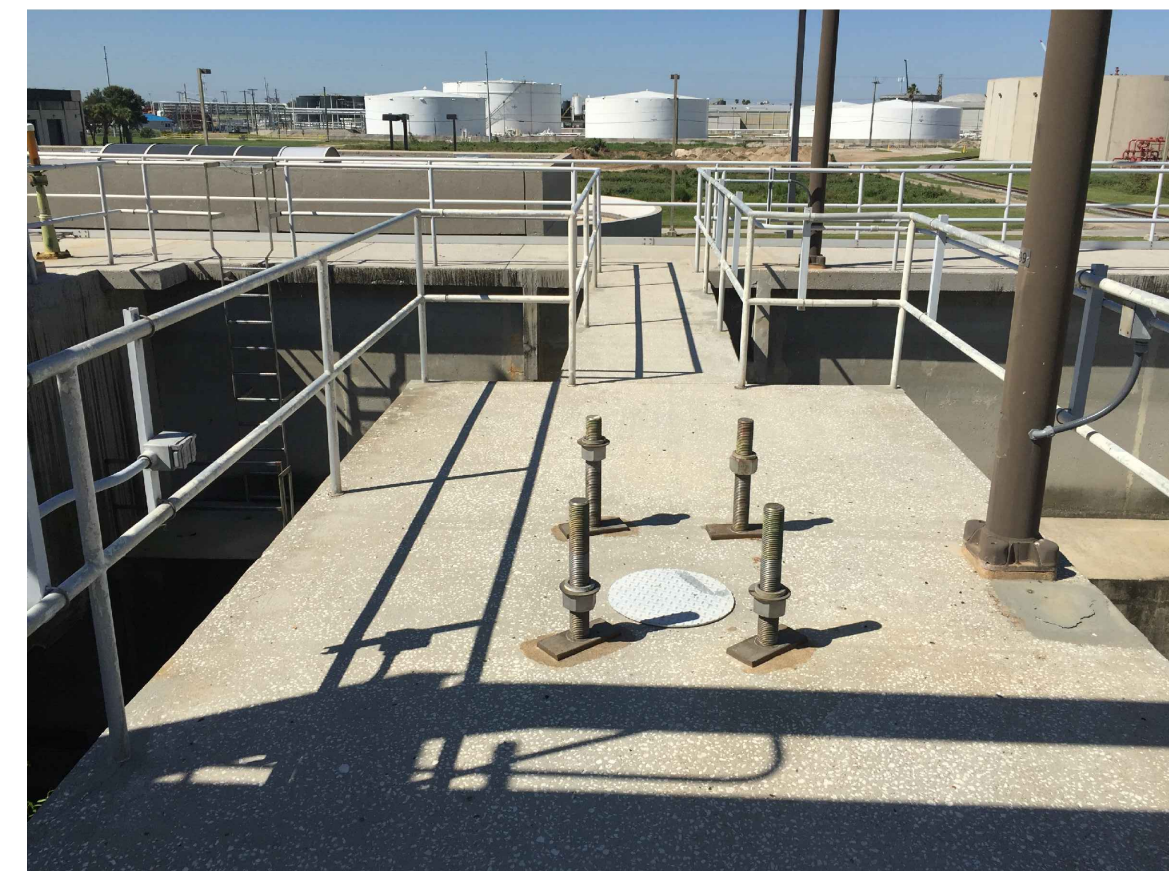
③ ZONE 2 WEST PERSPECTIVE NTS



④ ZONE 2 NORTH PERSPECTIVE NTS



⑤ ZONE 2 WEST PERSPECTIVE NTS



⑥ ZONE 1 WEST PERSPECTIVE NTS

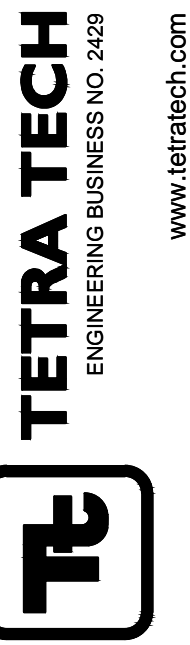


⑦ ZONE 1 NORTH PERSPECTIVE NTS



⑧ ZONE 1 EAST PERSPECTIVE NTS

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.



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MARK	DATE	DESCRIPTION	BY

CITY OF TAMPA
HFC AWTP DIFFUSED AIR REACTORS
IMPROVEMENTS, PHASE 1
EXISTING CONDITIONS
PERSPECTIVES

Project No.: 200-08494-14001
Designed By: PAM/NGB
Drawn By: PAM/LER
Checked By: DAB/INGB

E-109

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ANNOTATION SYMBOLS

INSTRUMENT IDENTIFICATION

ACTUATORS & OPERATORS

INSRUMENTATION IDENTIFICATION LETTERS

FIRST LETTER		SUCCEEDING LETTERS		
MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM	
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY			CONTROL
D	USER'S CHOICE	DIFFERENTIAL		
E	VOLTAGE			
F	FLOW RATE	RATIO (FRACTION)		
G	USER'S CHOICE		SENSOR (PRIMARY ELEMENT)	
H	HAND		GLASS, VIEWING DEVICE	
I	CURRENT (ELECTRICAL)		INDICATE	HIGH
J	POWER	SCAN		
K	TIME, TIME SCHEDULE			CONTROL STATION
L	LEVEL			LOW, MIDDLE, INTERMEDIATE
M	USER'S CHOICE	MOMENTARY		
N	USER'S CHOICE			USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION	
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION	
Q	QUANTITY	INTEGRATE, TOTALIZE		
R	RADIATION		RECORD	
S	SPEED, FREQUENCY	SAFETY		SWITCH
T	TEMPERATURE			TRANSMIT
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER
W	WEIGHT, FORCE		WELL	
X	UNCLASSIFIED ALARM, FAULT	X AXIS	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT
Z	POSITION, DIMENSION	Z AXIS		DRIVE, ACTUATE, UNCLASSIFIED FINAL CONTROL ELEMENT

VALVES AND GATES

- Butterfly Valve (BFV)
- Gate/General Valve (GV)
- Swing Check Valve (CV)
- Ball Valve (BV)
- Globe Valve (GLV)
- Diaphragm Valve (DV)
- Plug Valve (PV)
- Combination Air Valve (AVRV)
- Three Way Valve
- Three Way Globe Valve
- Ball Check Valve (BCV)
- Back Pressure Relief Valve (BPR)
- Pressure Control Valve (PCV)
- Solenoid Control Valve (SV)
- 3 Way Solenoid
- Needle Valve (NV)
- Pinch Valve (PIV)
- Pressure Relief Valve (PRV)
- Flush Valve (FV)
- Disc Check Valve (DCV)
- Vacuum Breaker Valve (VBV)
- Air Vent Valve (AV)

PUMPS & COMPRESSORS

- Centrifugal Pump
- Blower
- Vacuum
- Vertical Turbine Pump
- Diaphragm Metering Pump
- Peristaltic Metering Pump
- Turbo

TANKS AND VESSELS

- Storage Tank as Identified
- Storage Tank as Identified
- Storage Tank as Identified
- Tank/Process as Identified
- Pressurized Tank/Process as Identified
- Cartridge Filter
- Bag Filter
- Strainer

INSTRUMENT ABBREVIATIONS

ABBREVIATION	DESCRIPTION
AC	ALTERNATING CURRENT
AI	ANALOG INPUT
AM	AUTO MANUAL
AMR	AUTO MANUAL REMOTE
AO	ANALOG OUTPUT
C	CLOSE
CL	CHLORINE
CP	CONTROL PANEL
DI	DISCRETE INPUT
DO	DISCRETE OUTPUT/DISSOLVED OXYGEN
ETM	ELAPSED TIME METER
FRS	FLOW RATIO
HA	HAND-AUTO
HL	HIGH-LOW
HGOR	HIGH-LOW-OFF-REMOTE
HOA	HAND-OFF-AUTO
HSC	HAND SWITCH COMPUTER
I/O	INPUT/OUTPUT
LOR	LOCAL OFF-REMOTE
LOS	LOCK-OUT STOP
LR	LOCAL-REMOTE
MCC	MOTOR CONTROL CENTER
MCP	MASTER CONTROL PANEL
MODEM	MODULATE-DEMODULATE
O	OPEN
OAC	OPEN-AUTO-CLOSE
OO	ON-OFF
OOA	ON-OFF-AUTO
OOR	ON-OFF-REMOTE
OSC	OPEN-STOP-CLOSE
OSCA	OPEN-STOP-CLOSE-AUTO
OSCR	OPEN-STOP-CLOSE-REMOTE
P	PROPORTIONAL
P/A	PULSE TO ANALOG
PC	PARTICLE COUNTER
PH	ALKALINITY
PID	PROPORTIONAL-INTEGRAL-DERIVATIVE
P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
PLC	PROGRAMMABLE LOGIC CONTROLLER
PRV	PRESSURE REDUCING VALVE
RSP	REMOTE SET POINT
RTU	REMOTE TERMINAL UNIT
SCS	SUPERVISORY CONTROL STATION
SEL	SELECT
SMC	SOLID-STATE MOTOR CONTROLLER
SP	SET POINT
SS	START-STOP
STCD	STATUS-TO-COMMAND DISAGREEMENT
TOT	TOTALIZATION
TPC	TIME PROPORTIONAL CONTROL
TSP	TWISTED SHIELDED PAIR
TTR	TOE TELEMETRY RECEIVER
TTT	TOE TELEMETRY TRANSMITTER
TURB	TURBIDITY

FLOW STREAM IDENTIFICATION

ABBREVIATION	DESCRIPTION
AS	ANTISCALANT (SCALE INHIBITOR)
CAS	CARBONIC ACID SOLUTION
CH	CALCIUM HYDROXIDE
CI	CORROSION INHIBITOR
CIP	CLEAN-IN-PLACE
CIPF	CIP FEED
CIPP	CIP PERMEATE
CIPR	CIP RETURN
Cl ₂	CHLORINE
CO ₂	CARBON DIOXIDE GAS
CTW	CHLORINATED TREATED WATER
DGS	DEGASIFIER
DR	DRAIN
DTW	DEGASIFIED TREATED WATER
FRW	FILTERED RAW WATER
FW	FINISHED WATER
FWW	FINISHED WATER TO WASTE
INF	INFLUENT
IR	INTERNAL RECYCLE
NHS	AMMONIUM SULFATE
NH ₄	AMMONIUM
NO ₃	NITRATE
NWAS	NEUTRALIZED WASTE
OF	OVERFLOW
PTFW	PRETREATED FILTERED WATER
PTRW	PRETREATED RAW WATER
PW	POTABLE WATER
RO	REVERSE OSMOSIS
ROBP	RO BLENDED PERMEATE
ROC	RO CONCENTRATE
ROFW	RO FEED WATER
ROP	RO PERMEATE (COMBINED)
ROPW	RO PERMEATE TO WASTE
RW	RAW WATER
RWB	RAW WATER BYPASS
RWW	RAW WATER TO WASTE
SA	SULFURIC ACID
SD	STORM DRAIN
SH	SODIUM HYDROXIDE
SHC	SODIUM HYPOCHLORITE
SMP	SAMPLE
SS	SANITARY SEWER
VENT	VENT

MECHANICAL EQUIPMENT

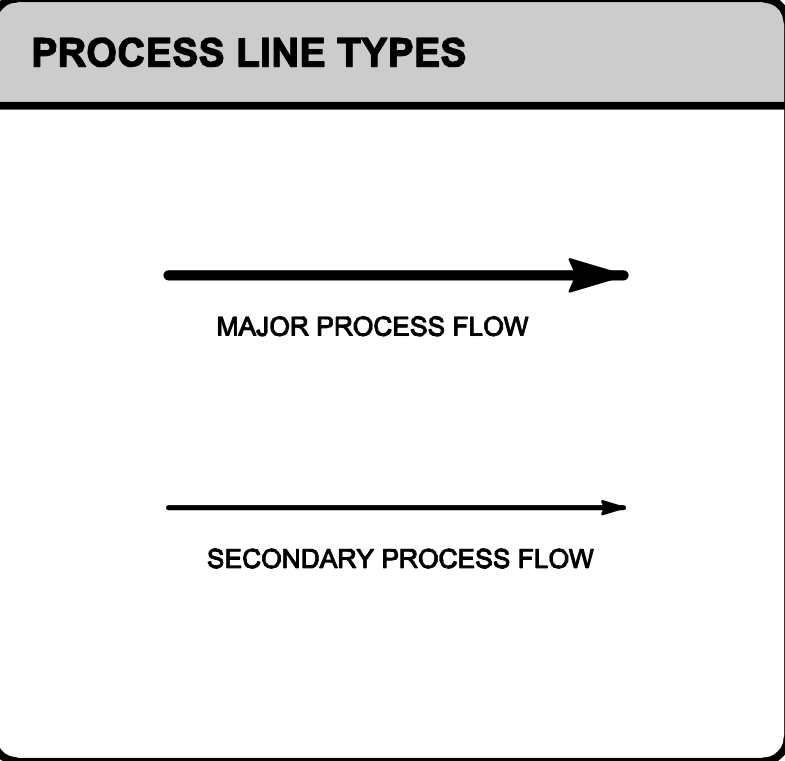
- Magnetic Flowmeter
- Orifice Plate
- Venturi Flowmeter
- Annubar
- Turbine Flowmeter
- Rotameter
- Positive Displacement Flowmeter
- Ultrasonic Level Instrument
- Normal Liquid Level
- Level Sensor, Float Type
- Mixer
- Calibration Column
- Pulsation Dampener
- Reducer
- Y Strainer
- Blind Flange
- Sample Port
- Diaphragm Seal
- Capped or Plugged
- Quick Connect Coupling
- Camlock w/ Male Cap
- Rupture Disk
- Injector
- Drain
- Ultrasonic Level Sensor
- Pipe Material Change
- Pipe Break
- Pipe Crossing
- Propeller Mixer
- Injection Quill with Corp Stop
- Backflow Preventor
- Vapor Seal
- Flexible Hose
- Vent
- Mass Air Flow Meter
- Junction Box as Necessary for Field Conditions
- Stream to/from I-005
- Stream to and from
- Stream to and from
- Stream to and from

PIPE MATERIAL CODES

ABBREVIATION	DESCRIPTION
A400	MONEL (ALLOY 400)
C20	SCHEDULE 40 CARPENTER 20 ALLOY PIPE
CMLS	CEMENT MORTAR-LINED STEEL PIPE
CPVC	SCHEDULE 80 CPVC PIPE
CU	COPPER TUBING
DI	DUCTILE IRON PIPE
EPDM	EPDM TUBING
FRP	150 PSI PRESSURE CLASS FIBERGLASS REINFORCED PLASTIC PIPE
HDPE	150 PSI PRESSURE CLASS HIGH-DENSITY POLYETHYLENE PIPE
PP	150 PSI PRESSURE CLASS POLYPROPYLENE PIPE
PVC	SCHEDULE 80 PVC PIPE
PVC-D	PVC GRAVITY SEWER PIPE
PVDF	230 PSI PRESSURE CLASS POLYVINYLIDENE FLUORIDE PIPE
SD2507	SUPER DUPLEX STAINLESS STEEL PIPE
SST	TYPE 316/316L STAINLESS STEEL PIPE
STL	FABRICATED STEEL PIPE
STL-EL	FABRICATED STEEL, EPOXY LINED PIPE

EQUIPMENT IDENTIFICATION

ABBREVIATION	DESCRIPTION
BWR	BLOWER
BTF	BIOTRICKLING FILTER
CF	CARTRIDGE FILTER
CP	CONTROL PANEL
DGS	DEGASIFIER
FCV	FLOW CONTROL VALVE
IQ	INJECTION QUILL
M	MECHANICAL EQUIPMENT
MP	METERING PUMP
MXR	MIXER
PMP	PUMP
PD	PULSATION DAMPENER
STR	STRAINER
TK	TANK



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BY	DATE	DESCRIPTION

CITY OF TAMPA
HFC AWTP DIFFUSED AIR REACTORS
IMPROVEMENTS, PHASE I
INSTRUMENTATION LEGEND

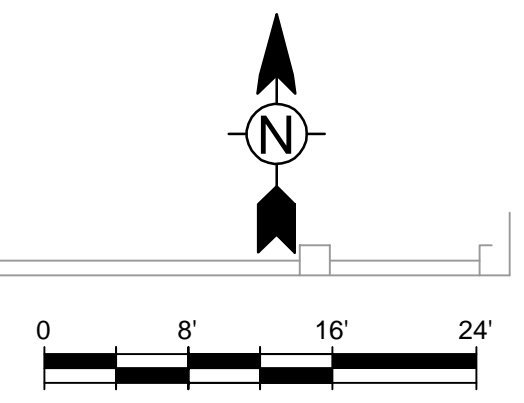
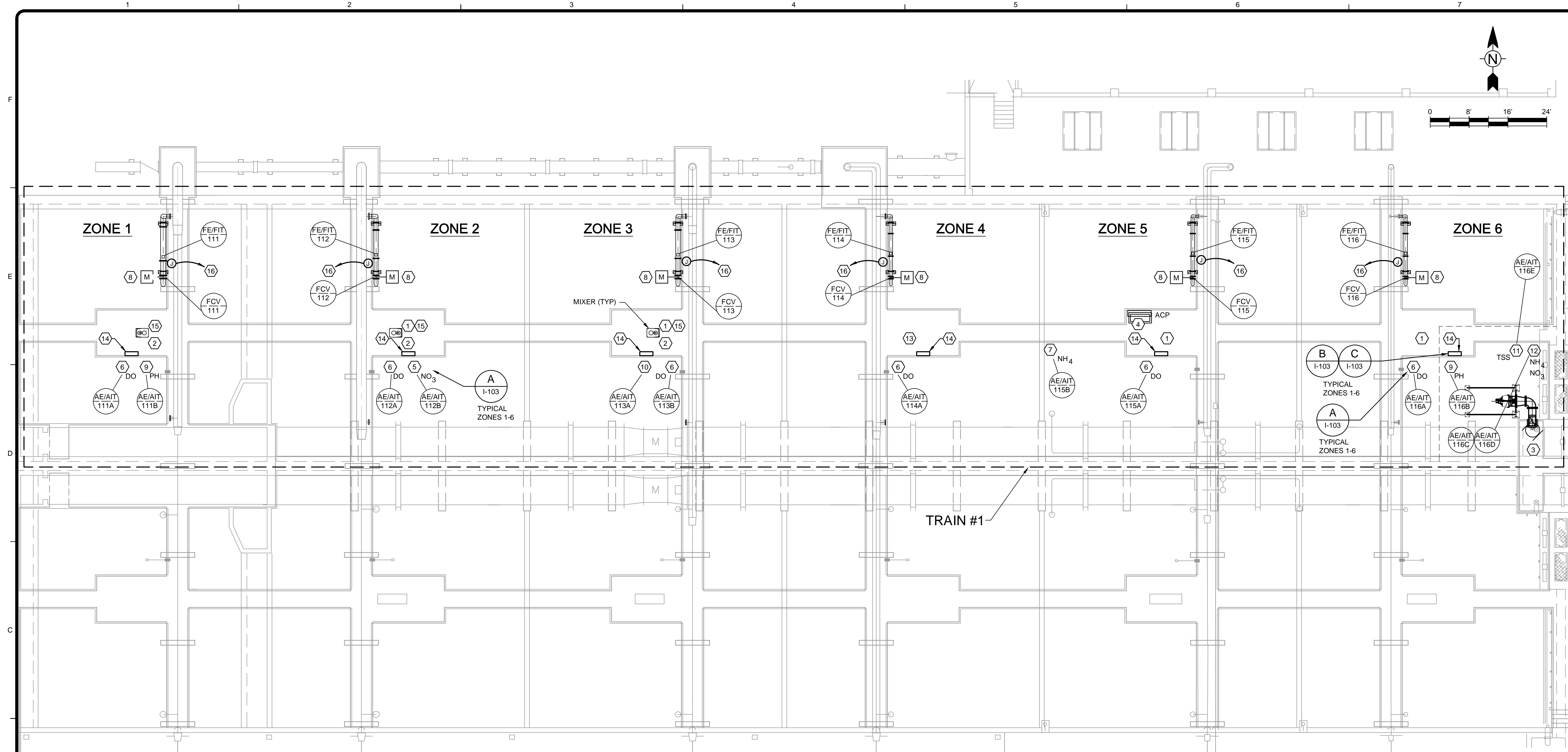
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Designed By: BCS
Drawn By: BCS
Checked By: BCS

I-001

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

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10/27/2015 2:45:11 PM \\TTS\181\PROJECTS\IER\08494\200-08494-14001\CAD\SHSHEETFILES\I-100 DIFFUSED REACTORS PLAN.DWG - EVANS, JON



1 UPPER PLAN
SCALE: 3/32"=1'-0"

KEY NOTES

- ① EXISTING MIXER TO BE REMOVED.
- ② NEW 7.5 HP MIXER.
- ③ NEW 11 HP SUBMERSIBLE PUMP.
- ④ NEW AERATION CONTROL PANEL (ACP).
- ⑤ LOCATION OF NEW NO 3 SENSOR.
- ⑥ LOCATION OF NEW DO SENSOR.
- ⑦ LOCATION OF NEW NH 4 SENSOR.
- ⑧ NEW MOTORIZED VALVE & AIR MASS FLOW METER LOCATIONS.
- ⑨ LOCATION OF NEW PH SENSOR.
- ⑩ SECONDARY MOUNTING LOCATION FOR NO 3 SENSOR FROM ZONE 2.
- ⑪ LOCATION OF NEW TSS SENSOR.
- ⑫ NEW COMBINATION NH 4 AND NO 3 SENSOR.
- ⑬ EXISTING MIXER LOCATION-MIXER NOT INSTALLED.
- ⑭ XYLEM IQSN INTERFACE MODULE.
- ⑮ EMERGENCY STOP FOR 7.5 HP MIXER. SEE E-101
- ⑯ 1"C(3#18TSP, 6#14) TO AERATOR CONTROL PANEL (ACP). SEE I-103

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

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MARK	DATE	DESCRIPTION

CITY OF TAMPA
HFCAWTP DIFFUSED AIR REACTORS
IMPROVEMENTS, PHASE I
**DIFFUSED REACTOR
PLAN**

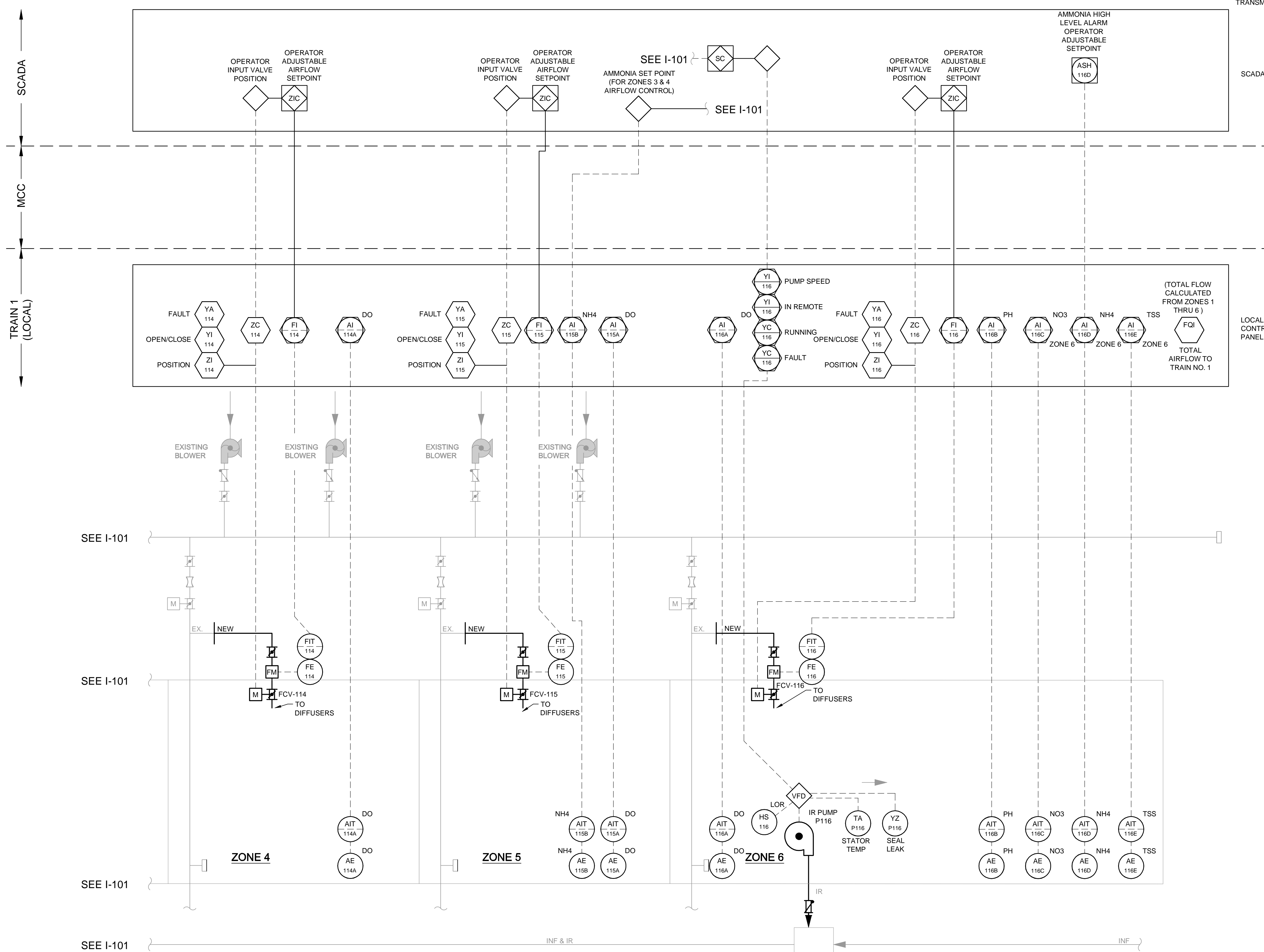
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Designed By: RTM
Drawn By: TAC
Checked By: RTM

I-100

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1 2 3 4 5 6 7

F
E
D
C
B
A



NOTE:
COMMUNICATION BETWEEN THE SCADA
AND LOCAL CONTROL PANEL
TRANSMITTED BY FIBER OPTIC.

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CITY OF TAMPA
HFC AWT/P DIFFUSED AIR REACTORS
IMPROVEMENTS, PHASE I
**DIFFUSED AIR REACTOR
P & ID**

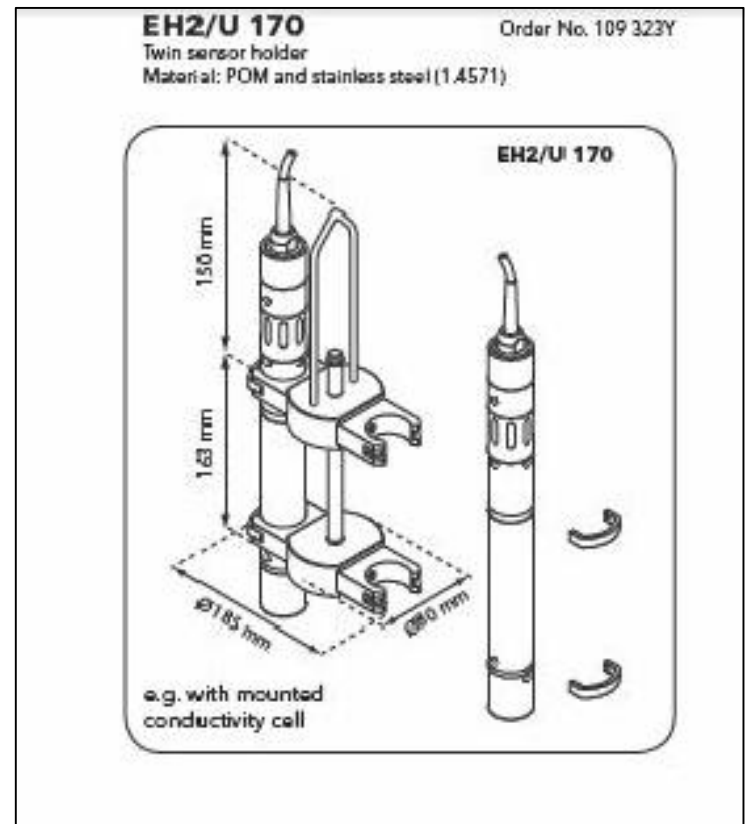
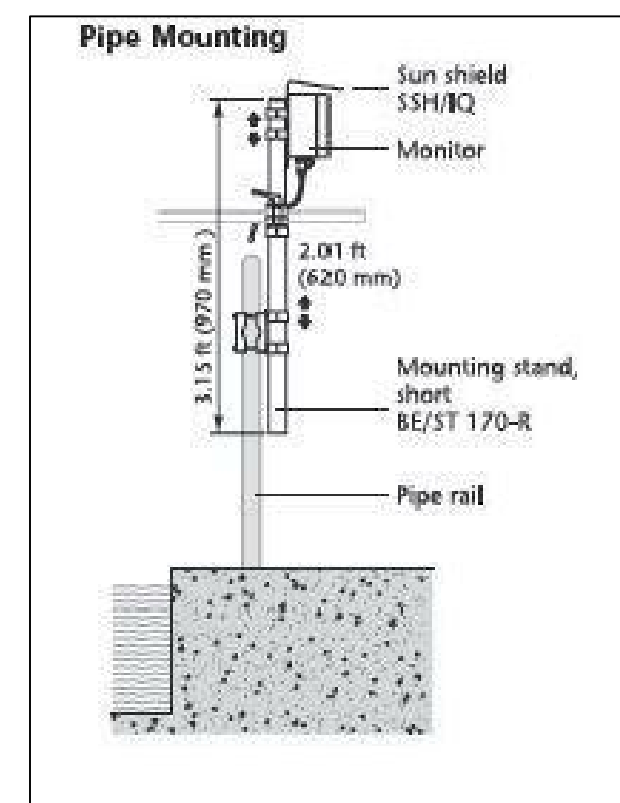
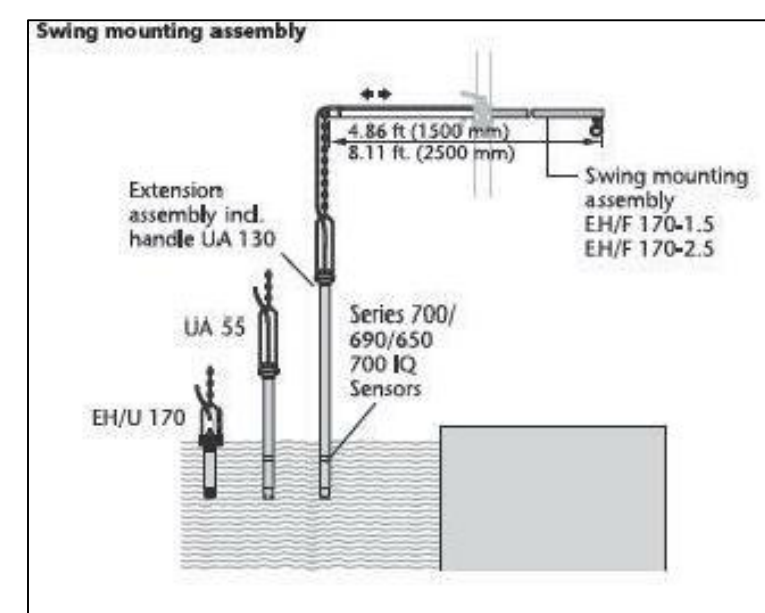
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Designed By: RTM
Drawn By: TAC
Checked By: RTM

I-102

Bar measures 1 inch on original drawing. If not 1 inch, adjust scales accordingly.

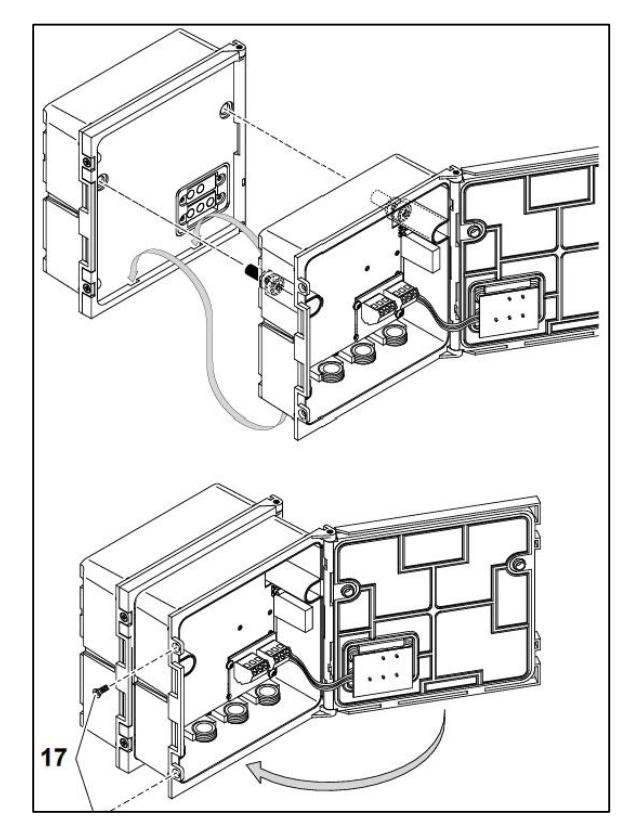
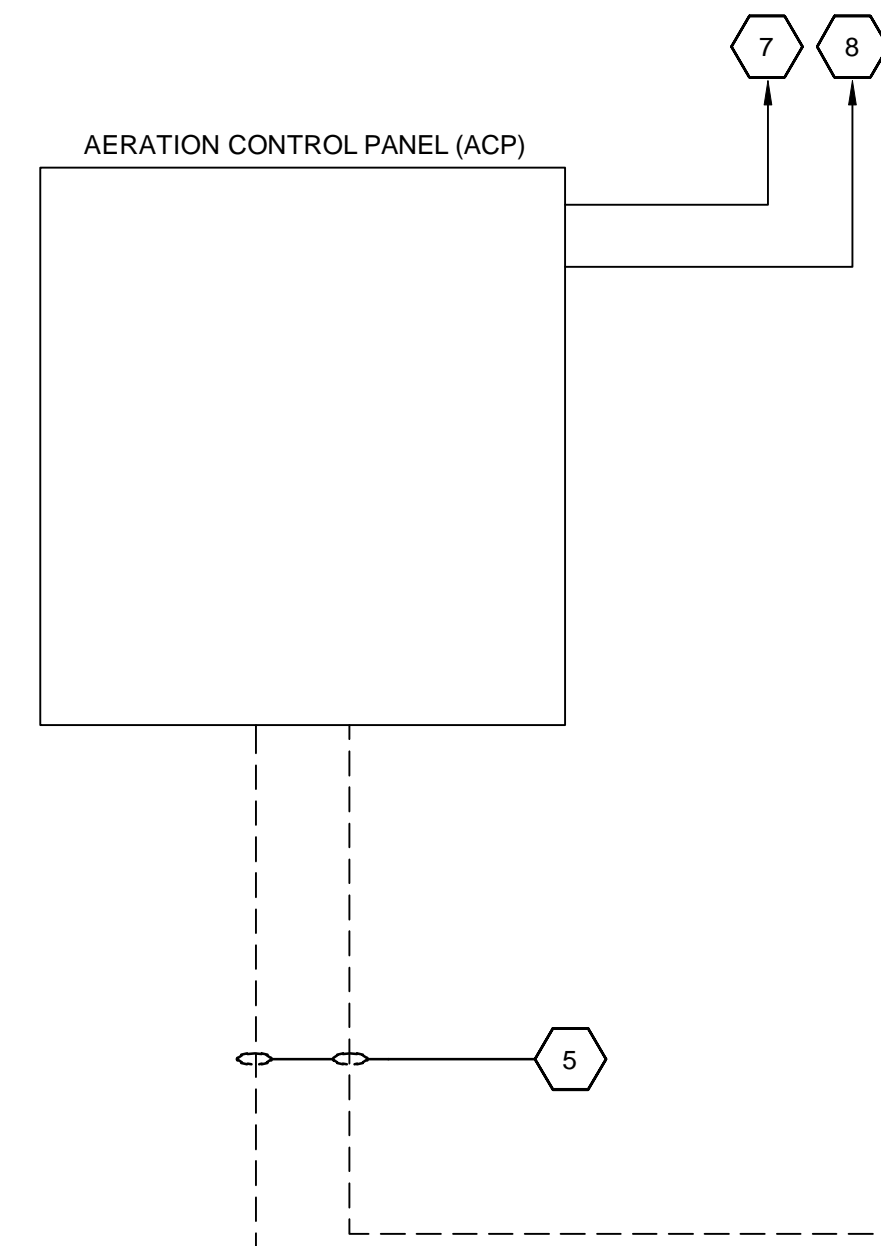
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1 2 3 4 5 6 7

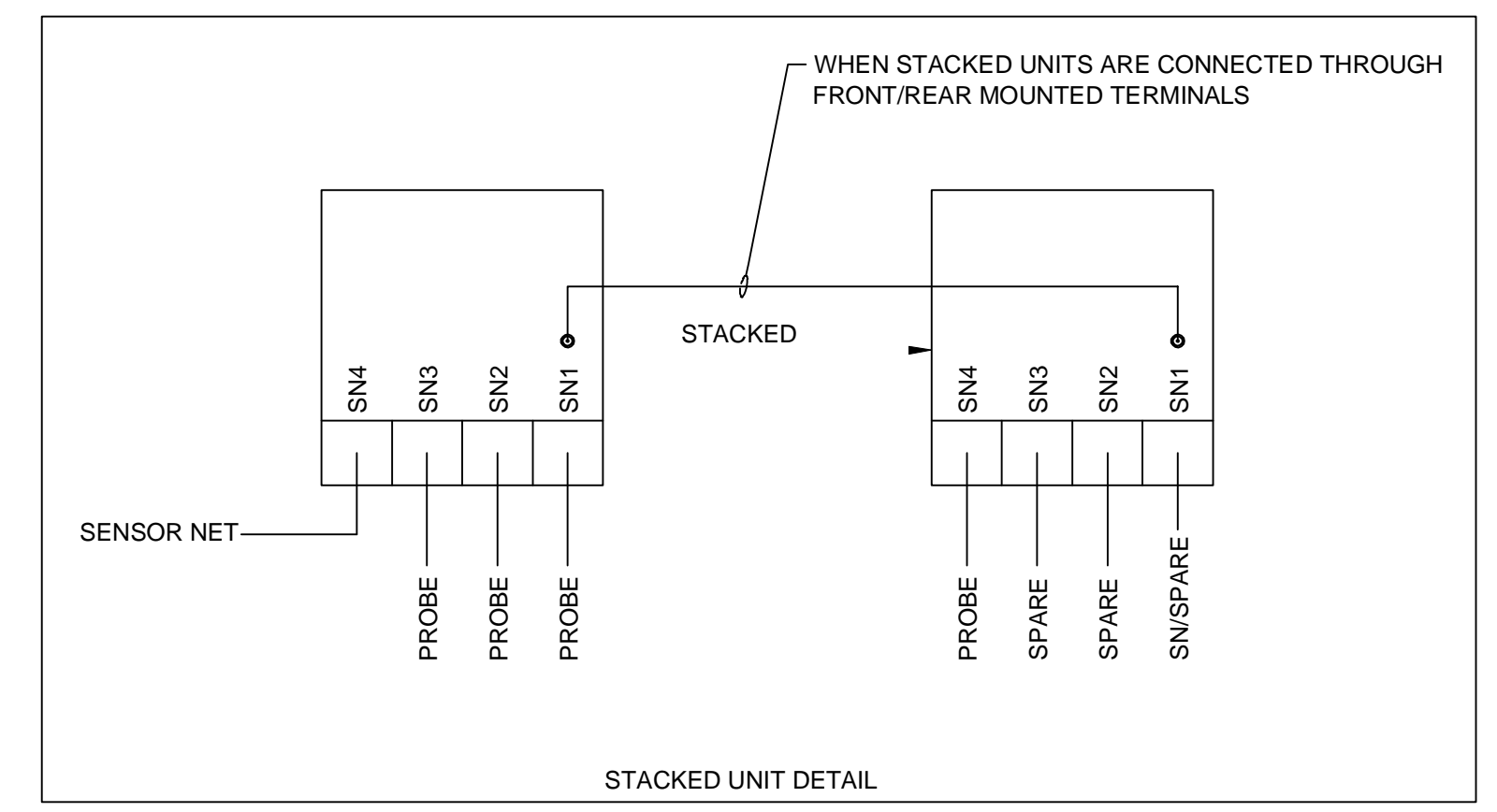


- SPECIFIC NOTES:**
- 1 3/4"C(2#12, 1#12 GROUND) TO ACP TYPICAL ALL MASS FLOW METERS AND MOTORIZED VALVES.
 - 2 3/4"C(1#18TSP) - TYPICAL ALL MASS FLOW METERS.
 - 3 3/4"C(2#18TSP, 6#14) - TYPICAL ALL MOTORIZED VALVES.
 - 4 1"C(3#18TSP, 6#14) - TYPICAL FOR MASS FLOW METERS AND MOTORIZED VALVES.
 - 5 3/4"C(1-BELDON 8770 CABLE) TO IQSN UNIT IN ACP.
 - 6 FACTORY CABLE - TYPICAL ALL PH, DO, NO3, NH4 AND TSS SENSORS.
 - 7 1"C(1-6 STRAND MULTI-MODE FIBER TO CONTROL ROOM SCADA INTERFACE PANEL. SEE SHEET E-102 FOR LOCATION
 - 8 1"C(2#10, 1#10G) TO LP-82B, SEE SHEET E-102 FOR LOCATION.
 - 9 VENDOR SUPPLIED PRE-MANUFACTURED CABLE AND SENSOR, INSTALLED BY ELECTRICAL CONTRACTOR.
- NOTE:**
1. SEE SHEET I-100 AND SHEET E-101 FOR SPECIFIC LOCATIONS OF MOTORIZED VALVES AND MASS FLOW METERS.

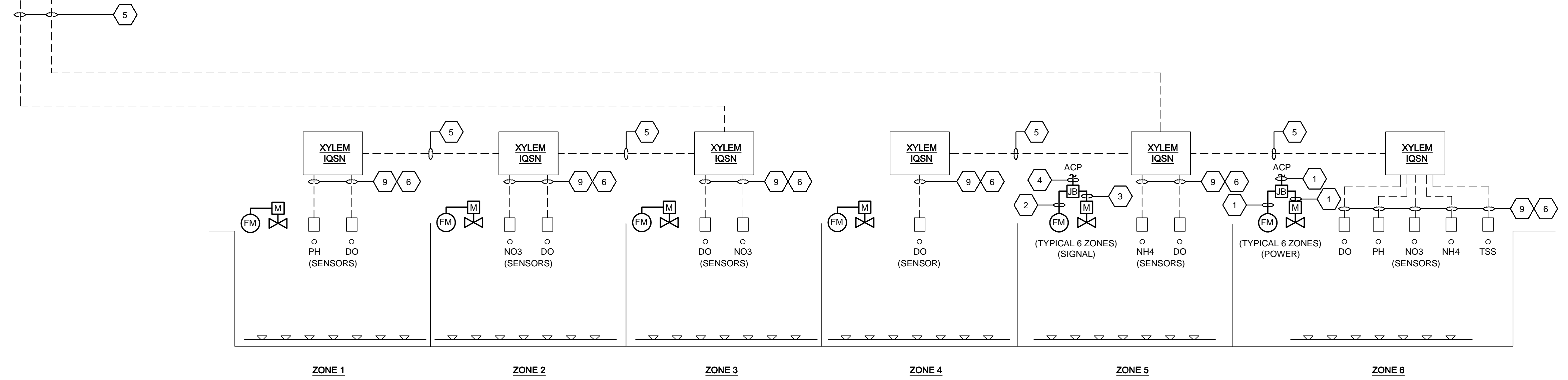
A **SENSOR MOUNTING**
I-103 SCALE: NTS



B **STACKED MODULES - XYLEM IQSN**
I-103 SCALE: NTS



C **STACKED MODULES WIRING DETAIL**
I-103 SCALE: NTS



ZONE 1 ZONE 2 ZONE 3 ZONE 4 ZONE 5 ZONE 6

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HFCAWTP DIFFUSED AIR REACTORS
IMPROVEMENTS, PHASE I
**INSTRUMENTATION
RISER**

Project No.: 200-08494-14001
Designed By: RTM
Drawn By: TAC
Checked By: RTM

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