## GENERAL DESIGN DATA

### A. BUILDING CODE

- 1. 2015 MINNESOTA STATE BUILDING CODE (MSBC).
- 2. 2012 INTERNATIONAL BUILDING CODE (IBC).
- ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDINGS & OTHER STRUCTURES, RISK CATEGORY III.

### DESIGN LOADS

1.	LIVE LOAD:	UNIFORM (PSF)	CONCENTRATED (LB)
	PLATFORMS & STAIRS:	100 10 PSF	1000#

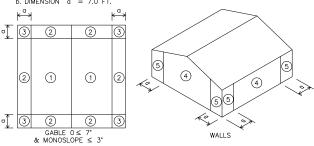
- ROOF LIVE LOAD 20 PSF MAX (REDUCIBLE)
- ROOF SNOW LOAD: 60 PSF GROUND SNOW PLUS SNOW ACCUMULATION IN ACCORDANCE WITH ASCE 7-10, SECTIONS 7.5, 7.6 & 7.7

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o. FLAT ROOF SNOW LOAD, P<sub>f</sub> = 55.4 PSF b. SNOW EXPOSURE FACTOR, C<sub>e</sub> = 1.0 c. SNOW IMPORTANCE FACTOR, I<sub>s</sub> = 1.1 d. THERMAL FACTOR, C<sub>t</sub> = 1.2
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- 120 MPH ULTIMATE (3 SEC. GUST), EXPOSURE C, INTERNAL PRESSURE COEFFICIENT =  $\pm 0.18$ WIND LOAD:
- 5. COMPONENTS AND CLADDING WIND PRESSURES

TRIBUTARY AREA ROOF NEGATIVE:	<u>0-10 FT</u> <sup>2</sup>	10-50 FT <sup>2</sup>	50-100 FT <sup>2</sup>
AREA 1: AREA 2: AREA 3:	37.9 PSF 63.6 PSF 95.7 PSF	35.6 PSF 47.9 PSF 57.5 PSF	34.7 PSF 41.1 PSF 41.1 PSF
ROOF POSITIVE:	16.0 PSF	16.0 PSF	16.0 PSF
TRIBUTARY AREA: WALLS NEGATIVE:	0-10 FT <sup>2</sup>	10-100 FT <sup>2</sup>	100-500 FT <sup>2</sup>
AREA 4: AREA 5:	37.6 PSF 46.2 PSF	32.5 PSF 36.0 PSF	28.9 PSF 28.9 PSF
WALLS POSITIVE: AREA 4 & 5:	34.7 PSF	29.6 PSF	26.0 PSF

a. REFER TO WIND PRESSURE DIAGRAM FOR ZONES. b. DIMENSION "a" =  $7.0~{\rm FT}$ .



## EARTHQUAKE DESIGN DATA:

- a. SEISMIC IMPORTANCE FACTOR, I = 1.25
  b. RISK CATEGORY = III
  c. MAPPED SPECTRAL RESPONSE ACCELERATIONS: SS=.049, S1=.018
  d. SITE CLASS = D
  e. SPECTRAL RESPONSE COEFFICIENTS: SDS=.052, SD1=.028
  f. SEISMIC DESIGN CATEGORY = A
  g. BASIC SEISMIC-FORCE-RESISTING SYSTEM(S) = ORDINARY STEEL CONCENTRICALLY
- BRACED FRAMES AND/OR ORDINARY STEEL MOMENT FRAMES

  DESIGN BASE SHEAR = 0.01W

  SEISMIC RESPONSE COEFFICIENT(S), CS = 0.01
- RESPONSE MODIFICATION FACTOR(S) R = 3.5
- . ANALYSIS PROCEDURE USED = EQUIVALENT LATERAL FORCE
- LOADS ARE UNFACTORED ALLOWABLE STRESS DESIGN LOADS. 1.33 ALLOWABLE STRESS INCREASE FOR SHORT—TERM LOADING IS NOT ALLOWED.

## GENERAL CONSTRUCTION NOTES

- SEE GEOTECHNICAL REPORT "LINE 3 REPLACEMENT SWATARA PUMP STATION, HILI CITY, MINNESOTA" DATED DECEMBER 2018 BY BARR ENGINEERING CO. FOR DESIGN RECOMMENDATIONS. SOIL CONDITIONS SHALL BE VERIFIED BY A LICENSED GEOTECHNICAL ENGINEER
- 2. FROST PROTECTION DEPTH FROM EXTERIOR GRADE TO BOTTOM OF HEATED BUILDING PERIMETER FOOTINGS AND ALL UNHEATED BUILDING OR OPEN AIR FOUNDATIONS SHALL BE A MINIMUM OF 80".
- BOTH SIDES OF FOUNDATION WALLS SHALL BE BACKFILLED SIMULTANEOUSLY SO AS TO PREVENT OVERTURNING OR LATERAL MOVEMENT OF WALLS.
- FOUNDATIONS SHALL BEAR ON UNDISTURBED, UNFROZEN SUBGRADE, EXCEPT WHERE COMPACTED SUBGRADE OR FILL IS OTHERWISE SPECIFIED.
- PROVIDE STANDARD 90 DEGREE HOOK DOWELS BETWEEN FOUNDATIONS AND WALLS EQUAL TO THE SIZE AND SPACING OF THE VERTICAL REINFORCING UNLESS SPECIFICALLY NOTED OTHERWISE.
- RIGID INSULATION SHALL BE EXTRUDED POLYSTYRENE MEETING ASTM C578-08, TYPE IV, 25 PSI MINIMUM COMPRESSIVE RESISTANCE, MANUFACTURED FOR USE BELOW GRADE. PLACE ALL RIGID INSULATION IN TWO EQUAL THICKNESS LAYERS
- THE CONTRACTOR SHALL INCLUDE A 4" MUD SLAB BELOW ALL THE FOOTINGS IN THE BID PRICE. THE CONCRETE STRENGTH SHALL BE EQUAL TO OR GREATER THAN THE CONCRETE STRENGTH OF THE FOUNDATION ABOVE.
- DRAIN TILE SHALL BE MINIMUM 4" PERFORATED PVC PIPE CONFORMING TO ASTM 3034 SURROUNDED WITH DRAINAGE FILL CONFORMING TO M-DOT 3149.2H COARSE FILTER AGGREGATE AND M-DOT TYPE 1 GEOTEXTILE FABRIC. SEE FOUNDATION PLAN & CIVIL DRAWINGS FOR DRAIN TILE ROUTING.
- FOUNDATIONS SHALL NOT BE CONSTRUCTED WITHIN 1 FOOT OF NEW OR EXISTING, ABOVE OR BELOW GROUND UTILITIES. NOTIFY ENGINEER BEFORE PROCEEDING.

### B. FILL NOTES

### MATERIALS

- a. GENERAL FILL: SEE CIVIL DRAWING D-93-1.21-C0001--1356 FOR REQUIREMENTS.
- b. GRANULAR / ENGINEERED FILL (NFS): CONFORMING TO MnDOT 3149.2B2 SELECT GRANULAR BORROW, MODIFIED SO THAT OF THE PORTION PASSING THE 1 NCH SIEVE, NOT MORE THAN 6% PASSES THE NO. 200 SIEVE. THE MAXIMUM PARTICLE SIZE SHALL NOT EXCEED 2 INCHES AND NO LESS THAN 71% SHALL PASS THE 3/4 INCH SIEVE. NO SALVAGED BITUMINOUS OR CONCRETE MATERIALS ARE ALLOWED.
- c. SAND: CONFORMING TO MnDOT 3149.2G AGGREGATE BEDDING MODIFIED SO THAT NOT MORE THAN 5% PASSES THE NO 200 SIEVE.
- d. IMPERVIOUS SOIL: SEE CIVIL DRAWING D-93-1.21-C0001--1356 FOR REQUIREMENTS
- SEE CIVIL DRAWING D-93-1.21-C0001--1356 FOR REQUIRED SUBGRADE PREPARATION PLACE AND COMPACT MATERIALS IN EQUAL CONTINUOUS LAYERS NOT EXCEEDING 8 INCHES
- COMPACTED FILL SHALL MEET THE FOLLOWING MINIMUM STANDARD PROCTOR TEST VALUES (ASTM D698) AND SHALL BE TESTED BY A QUALIFIED GEOTECHNICAL ENGINEER.
- a. SLABS-ON-GRADE: ONE TEST FOR EVERY 1000 SQ. FT. PER LIFT TO 100% OF MAXIMUM
- b. FOUNDATION WALLS AND FOOTINGS: ONE TEST FOR EVERY 25 LIN. FT OF WALL / FOOTING LENGTH AND ONE TEST UNDER EACH SPREAD FOOTING TO 100% OF MAXIMUM DRY RENSIDE.

### 5. FILL AT SPECIFIC LOCATIONS

- a. USE GENERAL FILL UNLESS OTHERWISE SPECIFIED.
- b. UNDER FOOTINGS: USE GRANULAR/ENGINEERED FILL
- c. UNDER INTERIOR SLABS-ON-GRADE: USE GRANULAR/ENGINEERED FILL UP TO SUBGRADE, THEN SAND AS SPECIFIED ON THE DRAWINGS.
- d. OVER ALL EXCAVATED AREAS & ADJACENT TO BUILDING FOUNDATIONS USE IMPERVIOUS SOIL BELOW SURFACING MATERIAL.

## C. CONSTRUCTION NOTES

- ALL DIMENSIONS INVOLVING COORDINATION OF NEW WORK WITH EXISTING CONSTRUCTION SHALL BE FIELD-CHECKED BY THE CONTRACTOR AND FURNISHED TO THE SUBCONTRACTORS PRIOR TO FABRICATION OF ANY WORK. THE VERIFIED DIMENSIONS SHALL APPEAR AND BE NOTED ON THE
- THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF EXISTING BUILDINGS, UTILITIES, STREETS, ETC. DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR DESIGN AND INSTALLATION OF ALL NECESSARY TEMPORARY BRACING.
- ANY HOLES CUT IN NEW OR EXISTING CONSTRUCTION THAT ARE NOT DETAILED ON THE STRUCTURAL DRAWINGS SHALL BE REVIEWED WITH THE STRUCTURAL ENGINEER. COORDINATE ALL HOLES AND PENETRATIONS WITH OTHER DISCIPLINES.
- THE STRUCTURE SHALL BE ADEQUATELY BRACED AND SHORED DURING CONSTRUCTION AGAINST WIND, ERECTION AND OTHER LOADS. STRUCTURAL MEMBERS ARE DESIGNED FOR IN-PLACE LOADS BASED ON FINAL SUPPORT CONDITIONS.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF DISCREPANCIES FOUND BETWEEN CONSTRUCTION DOCUMENTS AND ACTUAL FIELD CONDITIONS.

## D. QUALITY ASSURANCE AND CONTROL

- a. CONCRETE MIX IN ACCORDANCE WITH ACI 301.4.2 & ACI 318.5.3.
  - CONCRETE MATERIALS:
  - CEMENT & FLY ASH CERTIFICATION FINE & COARSE AGGREGATE GRADATION & COMPLIANCE ADMIXTURE PRODUCT DATA

  - CONCRETE MIX PROPORTIONS
  - REQUIRED AVERAGE STRENGTH & STANDARD DEVIATION ANALYSIS CONCRETE MIX PAST PERFORMANCE RECORDS AND/OR TRIAL MIX DATA THERMAL ANALYSIS & PROTECTION PLAN FOR MASS CONCRETE
- SHOP DRAWINGS FOR CONCRETE REINFORCING & MILL CERTIFICATES. SHOP DRAWINGS FOR STRUCTURAL STEEL.
- WELDER CERTIFICATION.

## TESTING REQUIREMENTS:

## a. CONCRETE:

- i. COMPRESSIVE STRENGTH ASTM C39. FOUR CYLINDERS FOR EACH TYPE OF CONCRETE FOR EVERY 25 YARDS EACH DAY.

  II. ONE SLUMP TEST FOR EACH TRUCK, ASTM C143

  III. ONE TEST FOR EACH TRUCK, ASTM C231

  IV. ONE TEMPERATURE TEST FOR EACH TRUCK, ASTM C1064

## b. FIELD BOLTING & WELDING:

i. VISUAL INSPECTION OF ALL FIELD WELDS & BOLTS SHALL BE PERFORMED

- i. VERIFY EXISTING SUBGRADE PRIOR TO BACKFILLING ii. TEST SOIL COMPACTION, SEE NOTE B.4.
- d. OWNER TO PROVIDE AND PAY FOR ALL TESTING BY AN OWNER APPROVED TESTING FIRM. TESTING REPORTS SHALL BE SUBMITTED TO OWNER ON A WEEKLY BASIS.

## USE OF DRAWINGS

DETAILS NOTED TYPICALLY APPLY TO ALL SIMILAR CONDITIONS. WHERE NO SPECIFIC DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ELSEWHERE ON THE PROJECT.

CONSTRUCTION SPECIFICATIONS ALL WORK SHALL CONFORM TO THE ENBRIDGE SPECIFICATION FOR FACILITY CONSTRUCTION. THE DRAWINGS SHALL SUPERCEDE REQUIREMENTS OF SPECIFICATION.

## CAST-IN-PLACE CONCRETE

# A. MATERIAL PROPERTIES 1. CONCRETE PROPERTIES:

	f'c (PSI)	EXPOSURE	EXPOSURE	SLUMP	MAX	ENTR.	MAX	
	28 DAYS	CATEGORY F	CATEGORY S	INCHES	AGGR.	AIR (%)	W/C	
FOOTINGS:	4,000	F0	S0	<b>(</b> 6 ± 1.5)	3/4"	0	_	
PIERS, WALLS, GRADE BEAMS:	4,500	F2	S0 (	6 ± 1.5	3/4"	$6 \pm 1.5$	0.45	
INTERIOR SLAB ON GRADE (NW): .	4,000	F0				0-4 MAX		
EXTERIOR STOOPS & APRONS:	4,500	F3	so (	6 ± 1.5	3/4"	6 ± 1.5	0.45	
CAISSONS:	5,000	F2	S0 (	6 ± 1.5	3/4"	$6 \pm 1.5$	0.45	
PUMP/TRANSFORMER PIER/MASS			<i>`</i>	• •	<b>(</b>			
CONCRETE:	4,500	F2	S0 (	6 ± 1.5	3/4"	6 ± 1.5	0.40	
CONTROLLED LOW-STRENGTH			`	$\sim\sim$	Λ.			
MATERIAL (CLSM):	50	-	-	8 /	J\ -	-	_	
				_	_			

a. SLUMP MEASURED BEFORE THE ADDITION OF WATER REDUCERS.

b. INCORPORATE AIR ENTRAINMENT AS REQUIRED.

c. CONTROLLING EXPOSURE CLASS IN ACCORDANCE WITH ACI 318 CHAPTER 4.

d. MASS CONCRETE MIX DESIGN IN ACCORDANCE WITH ACI 301 & ACI 207.

e. CLSM SHALL BE DESIGNED IN ACCORDANCE WITH ACI 229 & FCS-002 AND ONLY USED AS INDICATED ON THE DRAWINGS OR WHEN APPROVED BY ENGINEER.

### REINFORCING PROPERTIES:

	Fy (PSI)	<u>ASTM</u>
ALL BARS UNLESS NOTED OTHERWISE:	60,000	A615
TIES & STIRRUPS:	60,000	A615

- CHAIRS AND BOLSTERS SHALL BE PLASTIC OR EPOXY COATED.
- IF CONCRETE SUPPORT BLOCKS ARE USED, THEIR STRENGTH SHALL BE EQUAL TO OR GREATER THAN THAT OF THE CONCRETE BEING PLACED.
- 5. THE FOLLOWING MATERIALS SHALL NOT EXCEED THE LISTED PERCENT OF TOTAL CEMENTITIOUS MATERIAL BY WEIGHT:

FLY ASH IN	SLABS: .			 15% MAX
FLY ASH IN	FOOTINGS,	WALLS &	PIERS:	 25% MAX

6. CONCRETE COMPONENTS SHALL MEET THE FOLLOWING ASTM SPECIFICATIONS:

PORTLAND CEMENT:	
FINE AND COARSE AGGREGATES:	C33
FLYASH:	C618, CLASS C OR F
AIR ENTRAINING ADMIXTURES:	C260
OTHER CHEMICAL ADMIXTURES:	C494, TYPE A-G
WATER CLEAN & NOT DETRIMENTAL TO CONCRETE.	C1602

- GROUT: NON-SHRINK, NON-METALLIC AGGREGATE TYPE, COMPLYING WITH ASTM C1107 AND CAPABLE OF DEVELOPING A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 7 DAYS AND 7,200 PSI AT 28 DAYS. APPROVED PRODUCTS ARE DEGUSSA MASTER FLOW 713 & SIKA GROUT 212 HP.
- 8. EQUIPMENT BASE PLATE GROUTING: GROUT SHALL BE THREE COMPONENT, HIGH STRENGTH, 100% SOLIDS EPOXY GROUT SYSTEM. APPROVED PRODUCTS ARE ESCOWELD 7505E/7530, DEGUSSA MASTERFLOW 648, SIKADUR 42 GROUT PAK LE, OR CHOCKFAST RED. SEE ENBRIDGE SPECIFICATION USFCS—SPEC—CIVIL—005 FOR REQUIREMENTS.
- 9. WATERSTOP: POLYVINYL CHLORIDE, MINIMUM 1750 PSI TENSILE STRENGTH, MINIMUM MINUS 50 DEGREES F TO PLUS 175 DEGREES F WORKING TEMPERATURE RANGE, 6 INCH WIDE, MAXIMUM POSSIBLE LENGTHS, RIBBED PROFILE, PREFORMED CORNER SECTIONS, HEAT WELDED JOINTING. SEC CONSTRUCTION SPECIFICATION FOR
- 10. EXPANSION JOINT MATERIAL SHALL BE PRE MOLDED BITUMINOUS IMPREGNATED FIBER OR RUBBER CONFORMING TO ASTM D1751 OR ASTM D1752 TYPE 1, 1/2 INCH THICKNESS AND DEPTH TO SUIT THE APPLICATION.
- 11. JOINT FILLER SHALL BE A POLYETHYLENE, CLOSED CELL EXPANSION JOINT FILLER
- 12. JOINT SEALANT SHALL BE MASTERSEAL NP 1 OR SIKAFLEX—1A JOINT SEALANT FOR HORIZONTAL JOINTS & ISOLATION JOINTS & SIKAFLEX 1A FOR VERTICAL JOINTS.
- 13. EPOXY PASTE ADHESIVE SHALL BE HILTI HIT-HY 200 OR APPROVED EQUAL.
- 14. VOID FORM SHALL BE ETHAFOAM NOVA BRAND POLYETHYLENE FOAM OR APPROVED EQUAL.

## B. FORMWORK

13.

- 1. ALL FORMWORK SHALL COMPLY WITH ACI 347-R, ACI SP-4, ACI 301 & ACI 318.
- 2. FORM MATERIALS SHALL BE OF A MATERIAL AS TO PROVIDE A SMOOTH, STAIN FREE FINAL APPEARANCE & MINIMUM NUMBER OF JOINTS, PROVIDE MATERIAL WITH SUFFICIENT STRENGTH TO RESIST BOW OR DEFLECTION.

- 1. PERFORM WORK IN ACCORDANCE WITH ACI 301-10 AND ACI 318-11.
- 2. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENTS

CONCRETE CAST AGAINST & PERMANENTLY EXPOSED TO EARTH:	3
CONCRETE EXPOSED TO EARTH OR WEATHER:	_
#6 THRU #11 BARS:	
#5 & SMALLER BARS:	2
SLABS & WALLS:	1-1/2
BEAMS & COLUMNS:	1-1/2

- 3. PROVIDE A 1" CHAMFER ON ALL EXPOSED CONCRETE CORNERS.
- PROVIDE LAP SPLICES AT ALL CORNERS AND INTERSECTIONS, SAME SIZE AND SPACING AS HORIZONTAL
- 5. ALL HORIZONTAL WALL REINFORCING SHALL RUN CONTINUOUS THROUGH PIERS
- 6. PROVIDE SUPPORTS AND SPACERS FOR ALL REINFORCING
- CONSOLIDATE ALL CONCRETE, INCLUDING SLABS, BY VIBRATING
- ALL CONCRETE SHOWN SHALL BE REINFORCED. PLANS, SECTIONS AND DETAILS SHOWN WITHOUT REINFORCEMENT ARE INTENDED TO SHOW DIMENSIONS AND DETAILS OF CONSTRUCTION ONLY. REINFORCEMENT OF THESE SECTIONS SHALL BE PROVIDED IN ACCORDANCE WITH THE DETAILS SHOWING REINFORCEMENT.
- 9. LAP ALL SPLICES 48 BAR DIAMETERS UNLESS NOTED OTHERWISE
- 10. MIX DESIGNS SHALL INCORPORATE ADMIXTURES AS APPROPRIATE FOR ENVIRONMENTAL CONDITIONS.
- ALL REINFORCING SHALL BE DETAILED, FABRICATED & PLACED IN ACCORDANCE WITH CRSI "MANUAL OF STANDARD PRACTICE". 11.
- 12. SAWCUT ALL CONTROL JOINTS WITHIN 8 HOURS OF PLACEMENT. CONSTRUCTION AND CONTROL JOINTS SHALL BE AS INDICATED ON THE DRAWINGS.

ALL INTERIOR/NON-AIR ENTRAINED SLABS SHALL HAVE STEEL TROWEL FINISH WITH LIGHT BROOM FINISH. I HEREBY CERTIFY that this plan, specifica-FINISHING SHALL BE DONE BY MULTIPLE TROWELLING AND DONE WITH POWER TROWEL. EXTERIOR SLABS SHALLLION or report was prepared by me or under HAVE LIGHT BROOM FINISH. my direct supervision and that/I am a duly my direct supervision and that am a duly 14. FORMED CONCRETE SURFACES SHALL BE SMOOTH FORM FINISH, EXPOSED SURFACES SHALL BE SMOOTH RUBBEBlicensed Professional Engineer under the FINISH.

MINIMUM COVER (IN.)

15. SPACING OF SLAB & WALL CONSTRUCTION OR CONTROL JOINTS SHALL BE LOCATED AS SHOWN ON DRAWINGS. PROVIDE EXTRA REINFORCING ON EACH FACE AROUND ALL OPENINGS 12" OR LARGER IN ALL SLABS & WALLS EQUAL TO (2) #5 BARS ON ALL FOUR SIDES AND EXTEND 2 FT BEYOND OPENINGS.

PROMIDE ISOLATION JOINTS AROUND COLUMN & PIPE SUPPORT PIERS & CONDUIT PENETRATIONS AT SLAB ON DATE: 04/30/20 REG. NO.: 22540

- 18. COORDINATE CONDUIT & GROUNDING REQUIREMENTS BETWEEN FOUNDATION AND ELECTRICAL
- CONCRETE SLABS ON GRADE SHALL HAVE A 6 MIL POLY VAPOR RETARDER UNDER ALL SLABS. ALL HOLES OR PENETRATIONS IN VAPOR RETARDER SHALL BE SEALED.
  - 20. WELDING, STRAIGHTENING OR REBENDING OF REBAR IS NOT ALLOWED UNLESS DETAILED ON THE DRAWINGS.

## D. CURING AND SEALING

- 1. CURING SHALL BE PERFORMED WITH ABSORPTIVE MOISTURE SHEET FOR 7 DAYS.
- ALL SLABS SHALL BE SEALED WITH DAYTON SUPERIOR DAY—CHEM SURE HARD (J—17) COMBINATION HARDENING, DUST & SEALER PRODUCT. APPLICATION SHALL BE IN ACCORDANCE W/MANUFACTURERS RECOMMENDATIONS. SEALER SHALL NOT BE APPLIED UNTIL 30 DAYS AFTER CONCRETE IS PLACED.

### STRUCTURAL STEEL

## A. MATERIAL PROPERTIES

1.	STEEL PROPERTIES:	Fy (PSI)	Fu (PSI)	<u>ASTM</u>
	W SHAPES: OTHER SHAPES, PLATES:	50,000 36,000 50,000	65,000 58,000 62,000	A992, A572 A36 A500. GR C
	STEEL PIPES:	35,000	60,000	A53, GR B
	BEARING CONNECTIONS: HIGH STRENGTH BOLTS, SLIP CRITICAL CONNECTIONS,	-	120,000	A325N, TYPE 1
	(WHERE NOTED):	-	120,000	A325 TYPE 1 SC CLASS A
	NUTS:	_	-	A563 HEAVY HEX*
	WASHERS:	36,000 -	58,000 E70XX	F436 HARDENED STL F1554 GR 36 OR GR 55

## \* GRADE DH WHEN GALVANIZED

### B. STRUCTURAL STEEL NOTES

- STRUCTURAL STEEL DESIGN AND CONSTRUCTION SHALL CONFORM TO AISC 325-11.
- THE CONTRACTOR AND FABRICATOR SHALL REVIEW THE CONTRACT DOCUMENTS AND INCORPORATE ANY ADDITIONAL PROVISIONS NECESSARY TO MEET APPLICABLE SAFETY
- THE STRUCTURE IS A NON-SELF SUPPORTING STEEL FRAME REQUIRING INTERACTION WITH OTHER ELEMENTS TO PROVIDE THE REQUIRED STABILITY. THE STEEL ERECTOR SHALL PROVIDE THE PROPERARY SUPPORTS UNIT, FINAL STABILITY IS PROVIDED. AT A MINIMUM, TEMPORARY SUPPORTS SHALL BE PROVIDED AT EACH GRID IN BOTH DIRECTIONS.
- UNLESS NOTED OTHERWISE, ALL SHOP CONNECTIONS SHALL BE DESIGNED BY THE FABRICATOR. ALL DETAILING SHALL CONFORM TO AISC AND OSHA ERECTION STANDARDS. COMPLIANCE IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- 5. CONNECTIONS SHALL BE DESIGNED AS FOLLOWS:

- a. CONNECTIONS SHALL BE DESIGNED FOR ONE HALF THE TOTAL UNIFORM LOAD CAPACITY OR THE REACTION GIVEN ON THE DRAWINGS
  b. ALL SHOP CONNECTIONS SHALL BE WELDED OR BOLTED.
  c. ALL FIELD CONNECTIONS SHALL BE BOLTED UNLESS WELDS ARE SPECIFIED.
  d. BOLTS SHALL BE ASTM A325 IN ACCORDANCE WITH AISC 348 RCSC SPECIFICATION FOR STRUCTURAL JOINTS USING HICH STERNORTH BOLTS.
  e. MINIMUM BOLT DIAMETER SHALL BE 3/4"
  f. MINIMUM CONNECTION ANGLE THICKNESS SHALL BE 5/16"
  g. MINIMUM CONNECTION ANGLE THICKNESS SHALL BE 3/8"
  h. BOLTS FOR SECONDARY MEMBERS (GRTS, STRISS) MAY BE ASTM A307, 3/4".
  i. ALL CONNECTIONS SHALL BE 5'MMETRICAL. ONE SIDED CONNECTIONS ARE NOT ALLOWED.

## C. MISCELLANEOUS METALS

- GRATING SHALL BE HOT-DIPPED GALVANIZED SAFETY GRATING W/STANDARD SERRATED SURFACE. PLANK SHALL BE 5-DIAMOND, 11-3/4" WIDE (MAXIMUM), 2-1/2" CHANNEL, 12 GAUGE AND STAIR TREADS SHALL BE 5-DIAMOND, 11-3/4" WIDE, 2" CHANNEL, 12 GAUGE WITH ABRASIVE NOSING UNLESS NOTED OTHERWISE.
- a. ALL GRATING SHALL BE FASTENED WITH REMOVABLE GALVANIZED OR STAINLESS STEEL CLIPS.
   b. TOE PLATE AT OPENINGS SHALL BE 1/4 X 8-1/2".
   c. PROVIDE ABRASIVE NOSING AT STAIR OPENINGS.

- HANDRAIL SHALL BE FABRICATED FROM 1-1/2" SCHEDULE 40 PIPE. POSTS SHALL BE SPACED AT 6'-0" (MAX.) CENTERS WITH TOP RAIL, ONE INTERMEDIATE RAIL AND 1/4X6" TOE PLATE. ALL HANDRAILS SHALL BE REMOVABLE UNLESS NOTED OTHERWISE. 3. WHERE HANDRAIL TURNS A CORNER, PROVIDE A POST WITHIN 18" OF THE CORNER.
  - 4. HANDRAIL SHALL BE SHOP WELDED CONSTRUCTION WITH ROUGH EDGES AND WELDS GROUND SMOOTH.

## HANDRAIL AND BOLLARDS SHALL BE PAINTED SAFETY YELLOW.

RE-155UED FOR

SIGNATURE: WM ///W

CONSTRUCTION

- 1. ALL STRUCTURAL STEEL & MISCELLANEOUS METALS SHALL BE PAINTED OR GALVANIZED.
- 2. CABLE TRAY SUPPORTS SHALL BE HOT-DIPPED GALVANIZED.

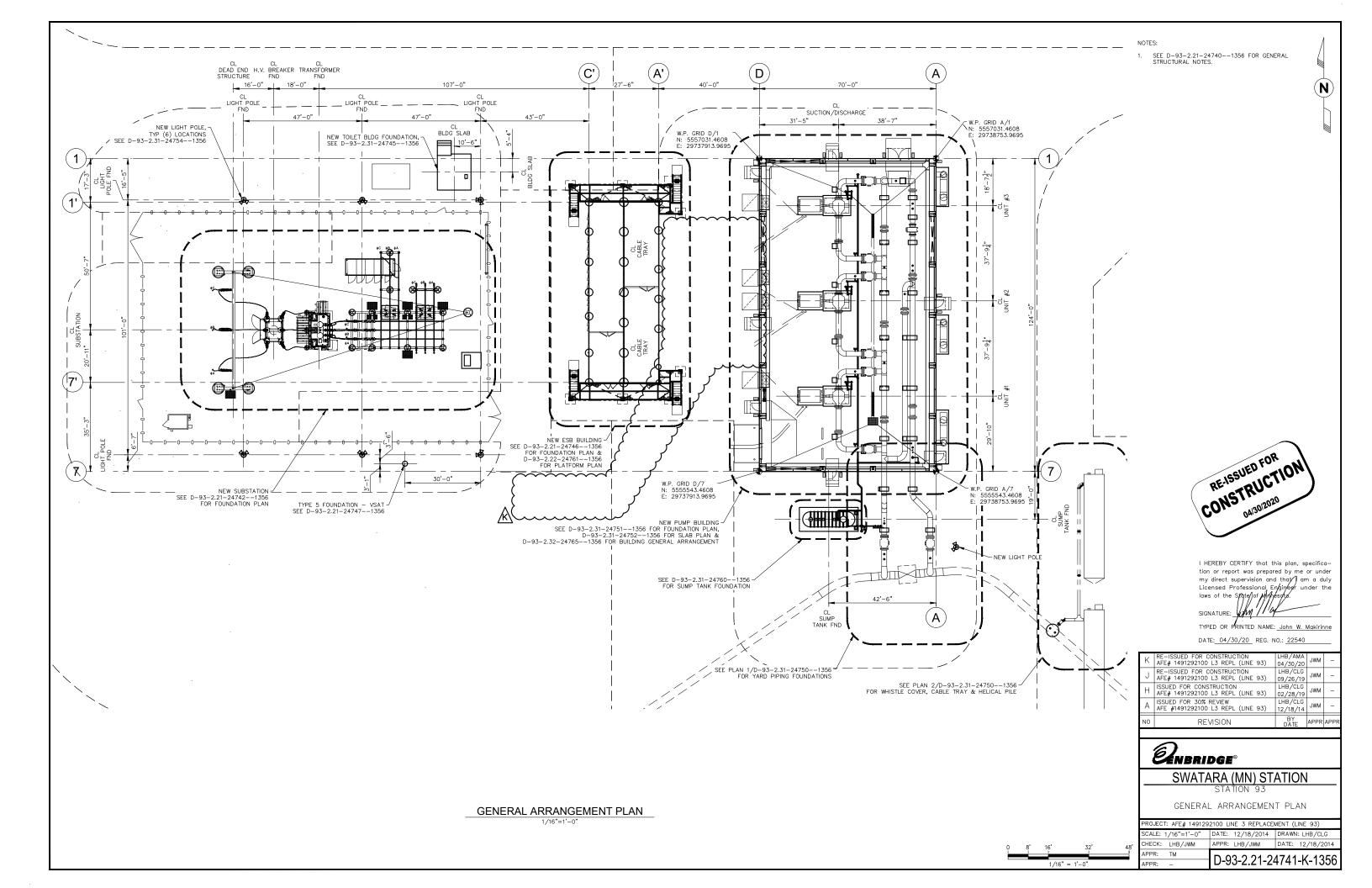
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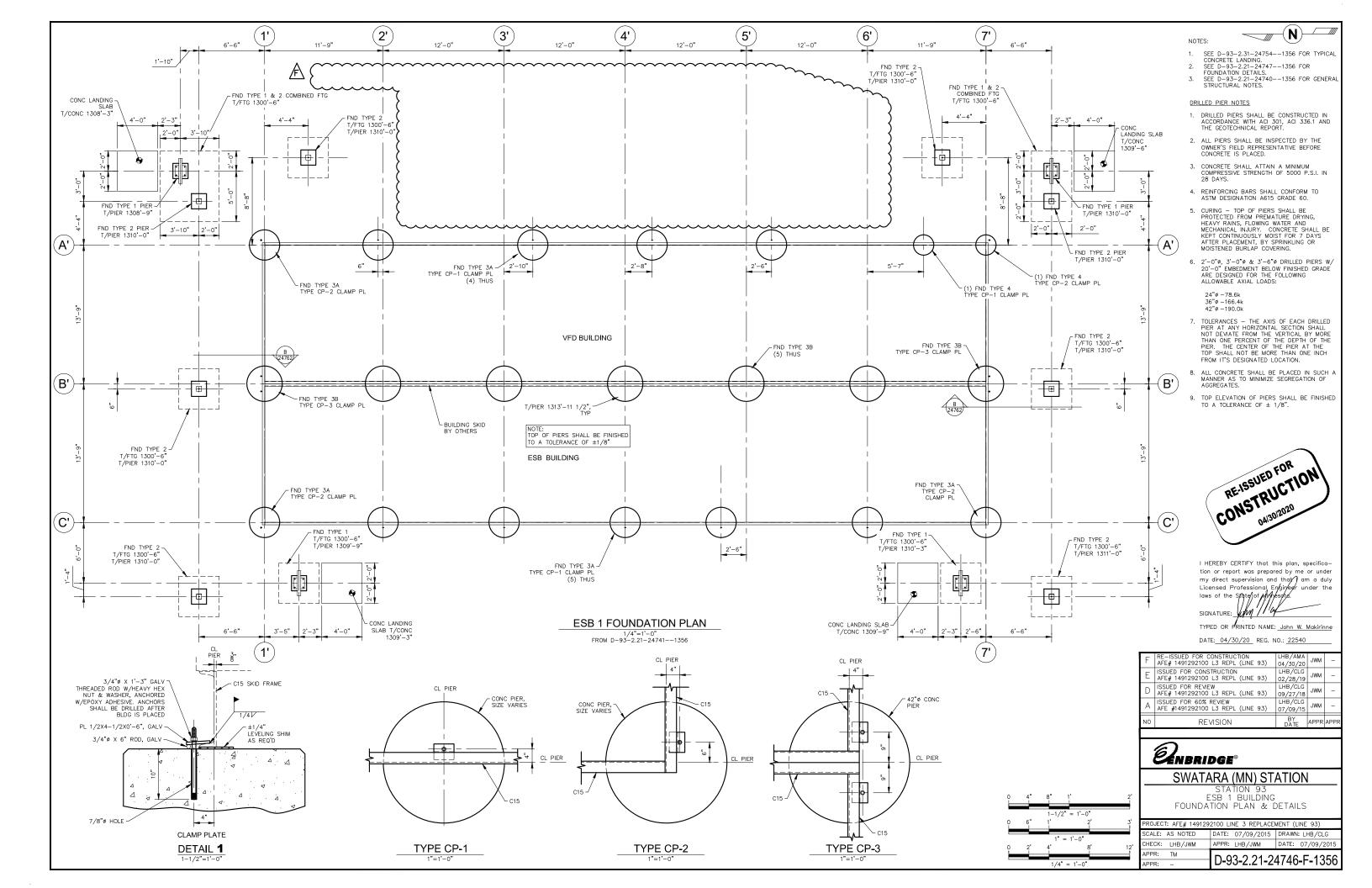


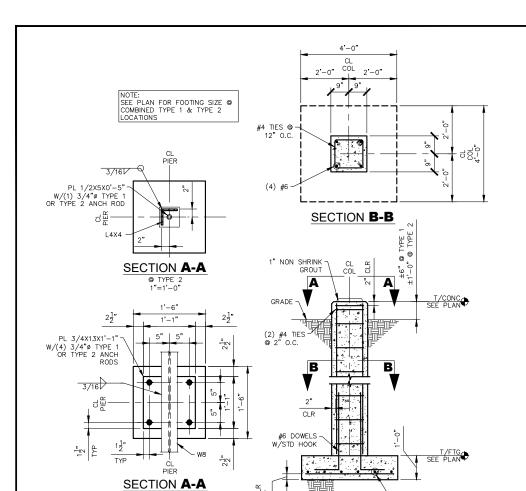
# **SWATARA (MN) STATION**

GENERAL STRUCTURAL NOTES

	PROJECT	Γ: AFE# 149129	2100 LI	NE 3 REPLACE	MENT (L	INE 93)
	SCALE: N	O SCALE	DATE:	12/18/2014	DRAWN	I: LHB/CLG
irinne	CHECK:	LHB/JWM	APPR:	LHB/JWM	DATE:	12/18/2014
	APPR:	TM	D 0	2 2 24 2	1710	1 1256
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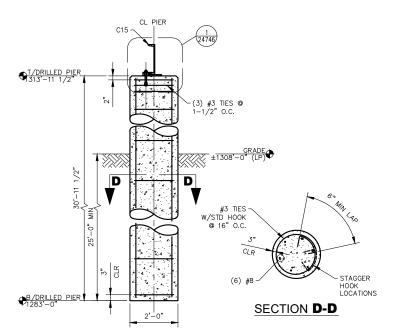




## FOUNDATION TYPE 1 (STAIR) & TYPE 2 (PLATFORM) FOUNDATION TYPE 3A & 3B (BUILDING) 1/2"=1'-0" (4) REQ'D TYPE 1, (8) REQ'D TYPE 2 FROM DWG D-93-2.21-24746--1356

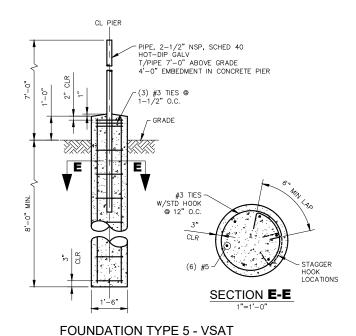
T/DRILLED PIER 1313'-11 1/2"

⊕B/DRILLED PIER 1 1283'-0"



## **FOUNDATION TYPE 4 (BUILDING)** 1/2"=1'-0"

(2) REQUIRED FROM DWG D-93-2.21-24746--1356



1/2" = 1'-0" (1) REQUIRED FROM DWG D-93-2.21-24741--1356

C

1/2"=1'-0" (12) REQ'D TYPE 3A, (7) REQ'D TYPE 3B FROM DWG D-93-2.21-24746--1356

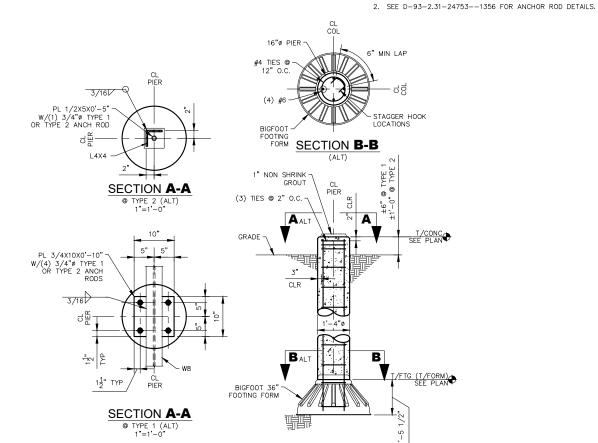
±1308'-0" (LP)

#3 TIES -W/STD HOOK

3'-0" - TYPE 3A

3'-6"ø - TYPE 3B

SECTION C-C



NOTES:

SEE D-93-2.21-24740--1356 FOR GENERAL STRUCTURAL NOTES.

## ALTERNATE FOUNDATION TYPE 1 (STAIR) & TYPE 2 (PLATFORM)

1/2"=1'-0" (4) REQ'D TYPE 1, (8) REQ'D TYPE 2 FROM DWG D-93-2.21-24746--1356



I HEREBY CERTIFY that this plan, specification or report was prepared by me or under my direct supervision and that am a duly Licensed Professional Engineer

TYPED OR PRINTED NAME: John W. Makirinne

DATE: 2/28/19 REG. NO.: 22540

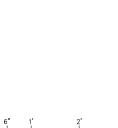
Ε	ISSUED FOR CONSTRUCTION AFE# 1491292100 L3 REPL (LINE 93)	LHB/CLG 02/28/19	JWM	-
D	ISSUED FOR REVIEW AFE# 1491292100 L3 REPL (LINE 93)	LHB/CLG 09/27/18	JWM	-
С	ISSUED FOR BID AFE# 1491292100 L3 REPL (LINE 93)	LHB/CLG 02/15/17	JWM	-
Α	ISSUED FOR 60% REVIEW AFE #1491292100 L3 REPL (LINE 93)	LHB/CLG 07/09/15	JWM	-
NO	REVISION	BY DATE	APPR	APPR

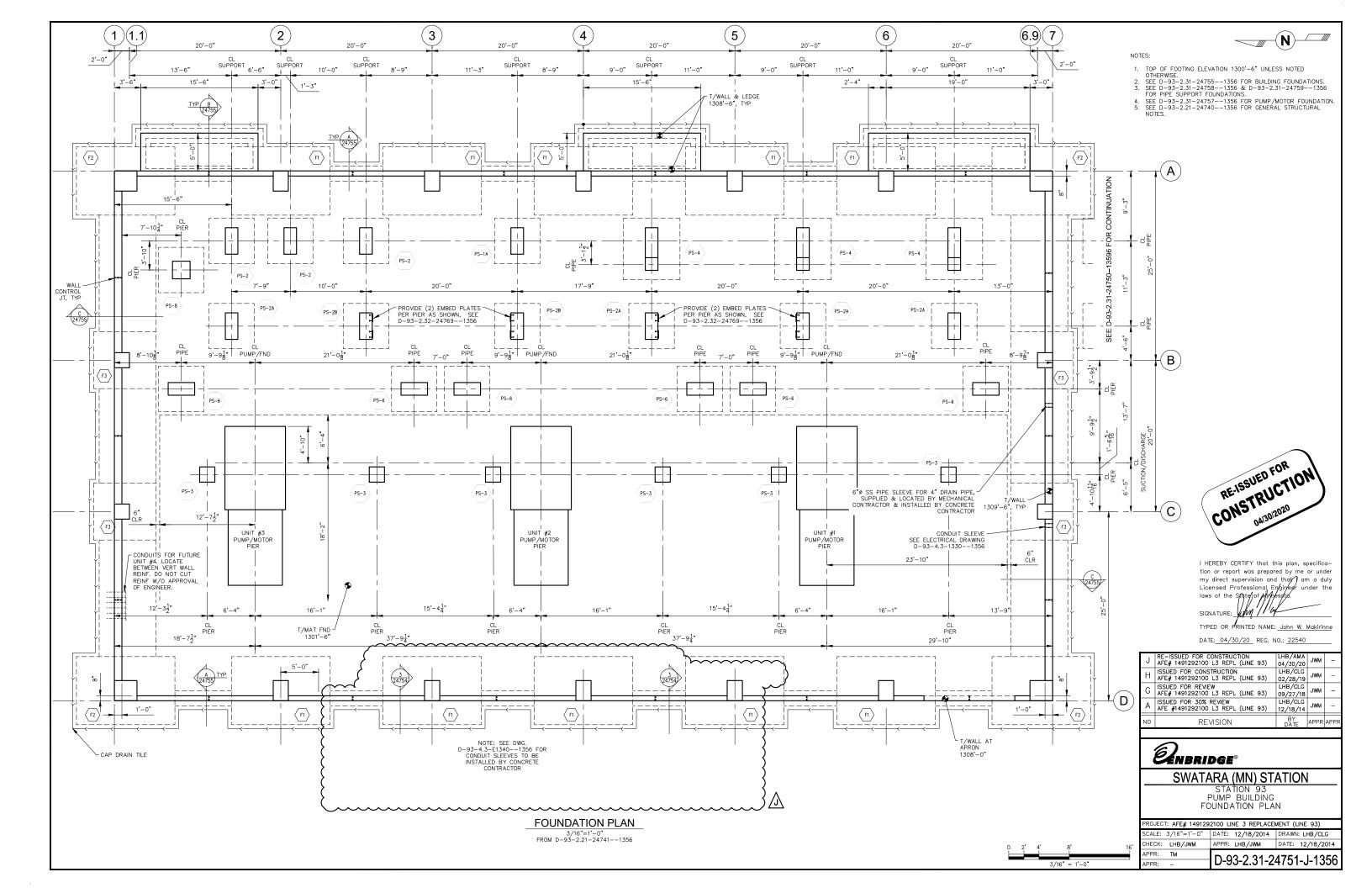


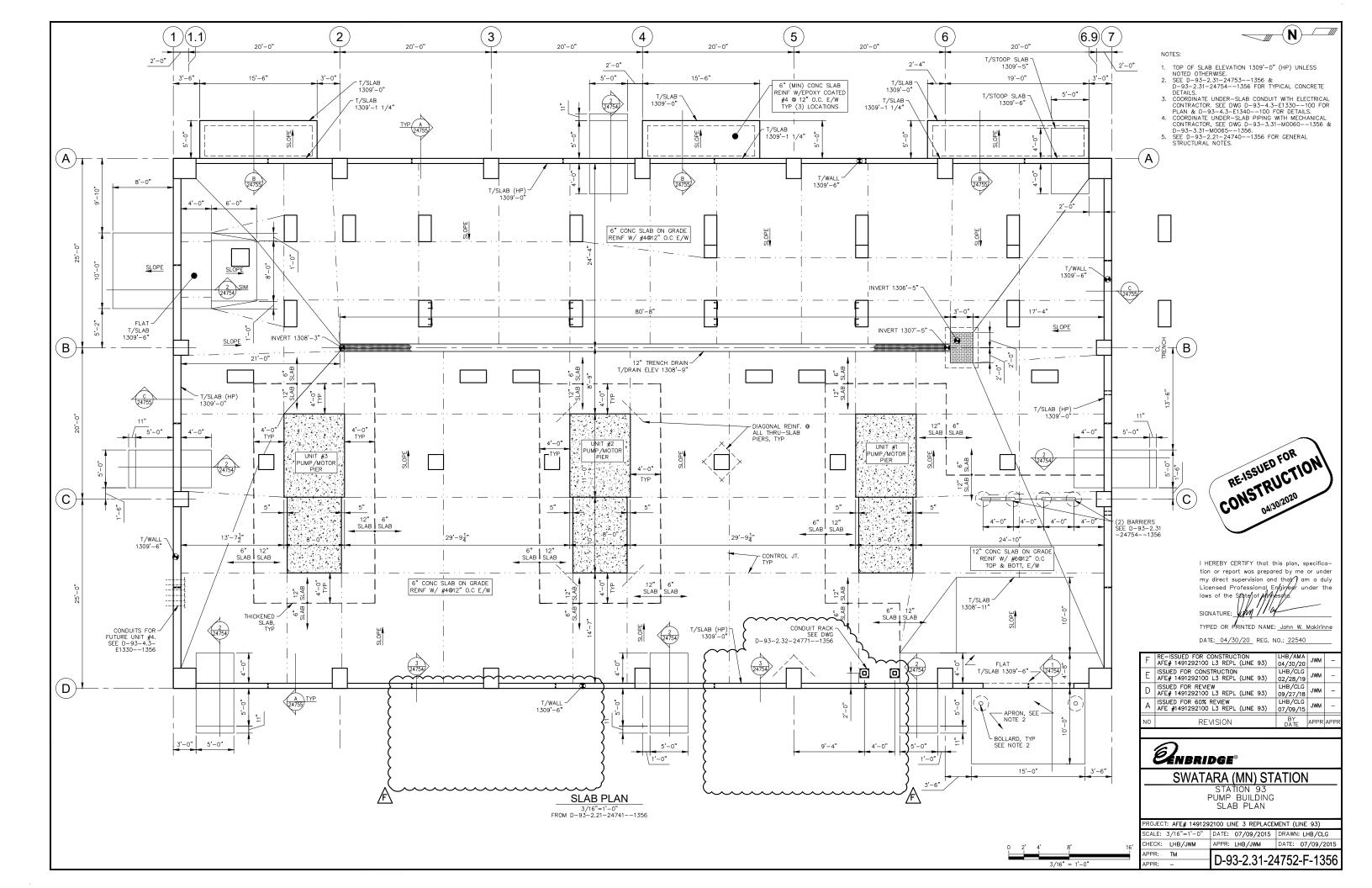
# SWATARA (MN) STATION

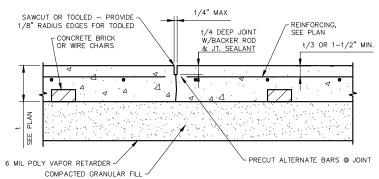
STATION 93 ESB 1 BUILDING FOUNDATION DETAILS

6"	1,'	2'	3'	PROJECT: AFE# 149129	2100 LINE 3 REPLACE	MENT (LINE 93)
_	1" =	1' 0"		SCALE: AS NOTED	DATE: 07/09/2015	DRAWN: LHB/CLG
1'	2'	4'	6'	CHECK: LHB/JWM	APPR: LHB/JWM	DATE: 07/09/2015
Ĺ				APPR: TM	D 02 2 24 2	4747 □ 40E6
	1/2" -	1'-0"		APPR	D-93-2.21-2	4/4/-E-1300





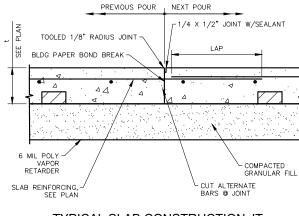




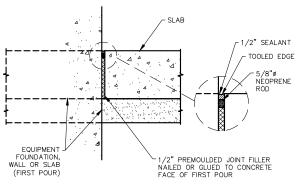
- 1. SLAB POURS SHALL BE SUBDIVIDED BY CONTROL JOINTS AT A SPACING (IN FEET) NOT TO EXCEED 3 TIMES THE
- SLAB POURS SHALL BE SUBDIVIDED BY CONTROL JOINTS AT A SPACING (IN FEET) NOT TO EXCEED 3 TIMES THE
  SLAB THICKNESS (IN INCHES) OR 20 FEET IN ANY ONE DIRECTION UNLESS NOTED ON THE PLANS.
   CONSTRUCTION JOINTS AND CONTROL JOINTS MAY BE INTERCHANGED TO SUIT CONCRETE POUR SEQUENCE.
   EXACT LOCATION OF CONTROL JOINTS SHALL BE ESTABLISHED PRIOR TO CUTTING OR REINFORCEMENT AND PLACING
  OF CONCRETE.
   SAWING OF CONTROL JOINTS SHALL BEGIN AS SOON AS CONCRETE SUFFACE HAS HARDENED SUFFICIENTLY TO
  PERMIT SAWING WITHOUT EXCESSIVE RAYELING AND BEFORE RANDOM SHRINKAGE CRACKS CAN FORM IN THE
  CONCRETE SLAB. AT WALLS OR OTHER PLACES WHERE THE SAW CANNOT ACCESS, TOOLED OR FORMED JOINTS
  SHALL BE PROVIDED TO JOIN THE SAW CUT JOINT AND COMPLETE THE CONTROL JOINT. CONTROL JOINTS SHALL
  EXTEND THROUGH CURBS CAST MONOLITHICALLY WITH THE SLAB.
   SEE GENERAL NOTES FOR JOINT SEALANT DESCRIPTION.

TYPICAL SLAB CONTROL JT NO SCALE

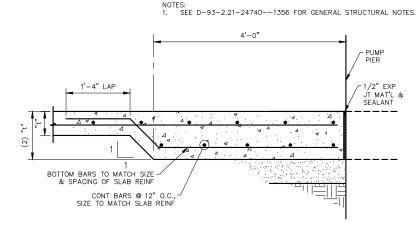
PREVIOUS POUR , NEXT POUR



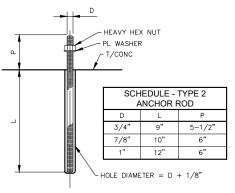
TYPICAL SLAB CONSTRUCTION JT



TYPICAL SLAB ISOLATION **JOINT & SEALANT** 

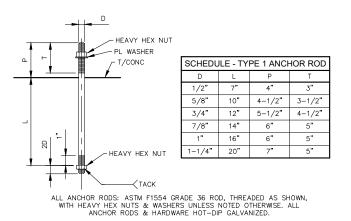


THICKENED SLAB @ PUMP PIER NO SCALE

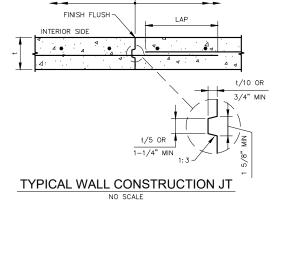


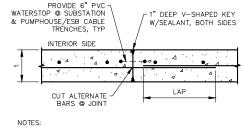
ALL ANCHOR RODS: ASTM F1554 GRADE 36, HOT-DIP GALVANIZED THREADED ROD

TYPICAL ANCHOR ROD - TYPE 2 NO SCALE



TYPICAL ANCHOR ROD - TYPE 1 NO SCALE





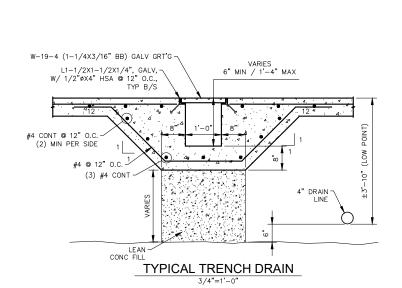
- NOTES:

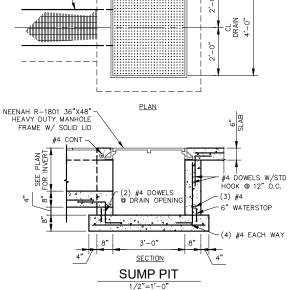
  1. SPACING SHALL BE 25 FEET MAXIMUM ALONG LENGTH OF WALL. SEE PLAN FOR APPROXIMATE LOCATIONS.

  2. MAXIMUM LENGTH OF WALL CAST IN SINGLE POUR = 50'-0"

TYPICAL WALL CONTROL JT NO SCALE

TRENCH DRAIN, SEE DETAIL THIS SHEET





3'-0"





DATE: 2/28/19 REG. NO.: 22540					
Ε	ISSUED FOR CONSTRUCTION AFE# 1491292100 L3 REPL (LINE 93)	LHB/CLG 02/28/19	JWM	-	
D	ISSUED FOR REVIEW AFE# 1491292100 L3 REPL (LINE 93)	LHB/CLG 09/27/18	JWM	-	
С	ISSUED FOR BID AFE# 1491292100 L3 REPL (LINE 93)	LHB/CLG 02/15/17	JWM	-	
Α	ISSUED FOR 60% REVIEW AFE #1491292100 L3 REPL (LINE 93)	LHB/CLG 07/09/15	JWM	-	
NO	REVISION	BY DATE	APPR	APPR	

laws of the State of Minhesotte

I HEREBY CERTIFY that this plan, specification or report was prepared by me or under my direct supervision and that am a duly Licensed Professional Engineer under the

TYPED OR PRINTED NAME: John W. Makirinne

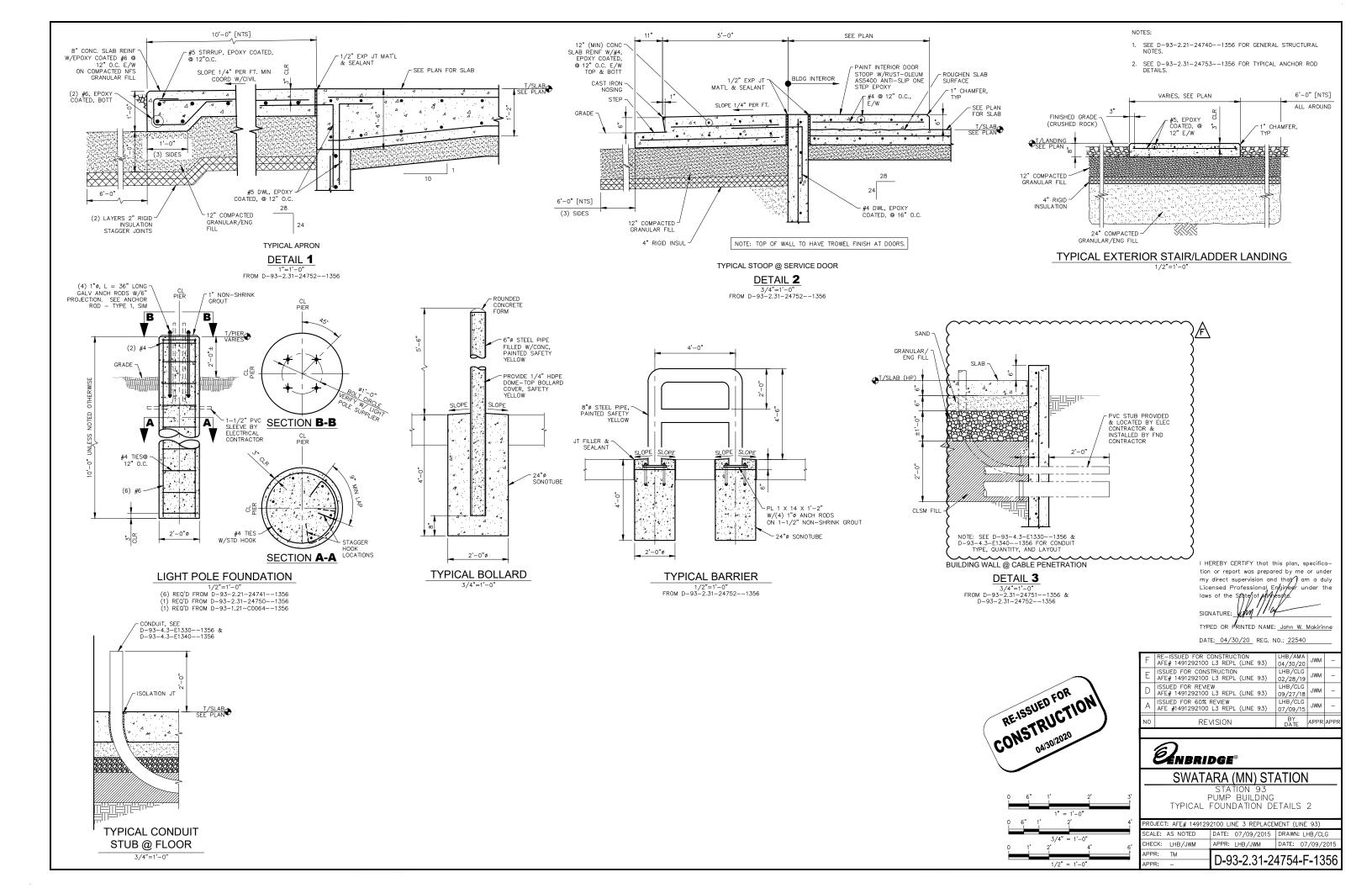
DATE: 2/29/10 DEC NO. 22540

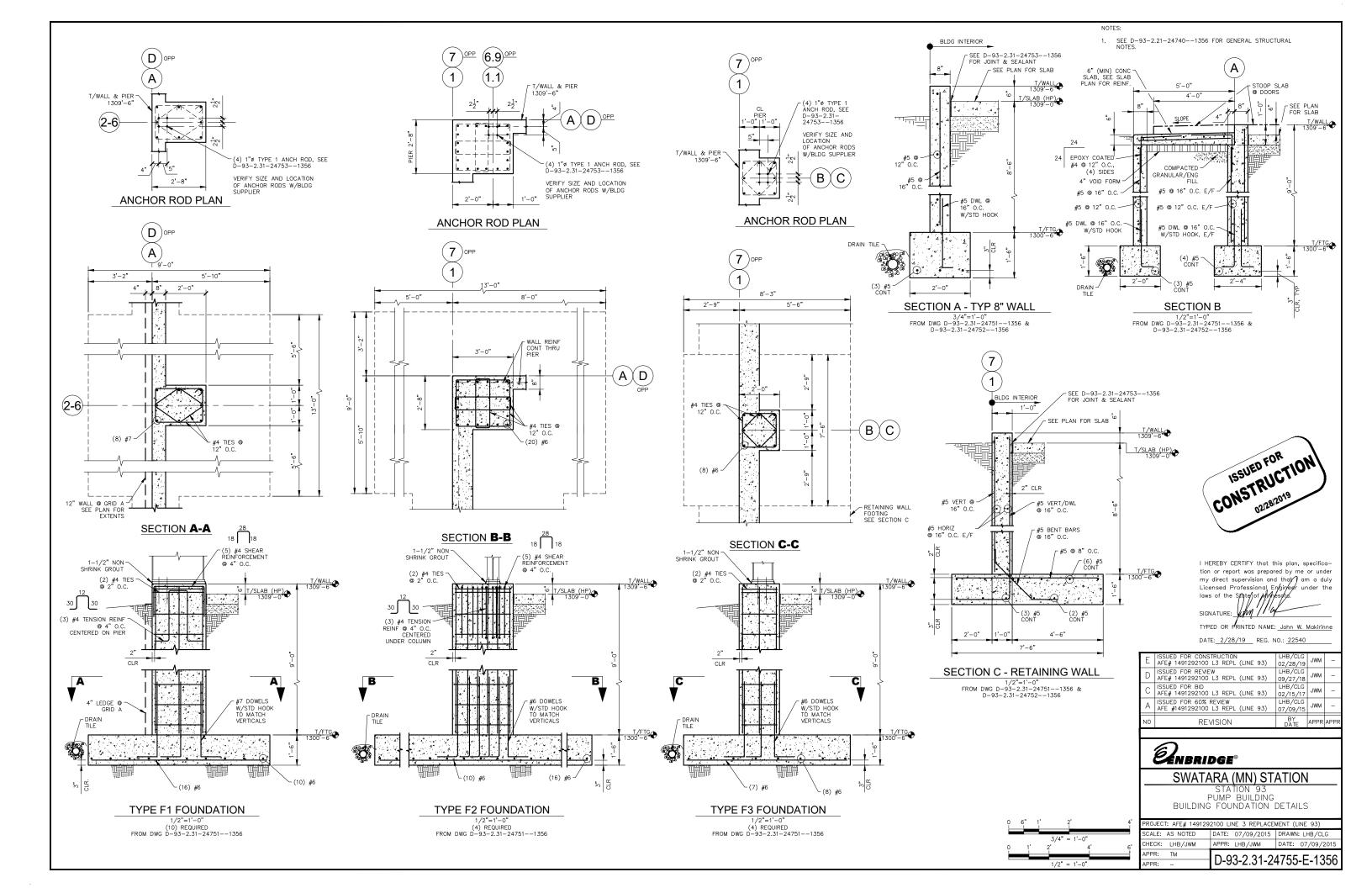


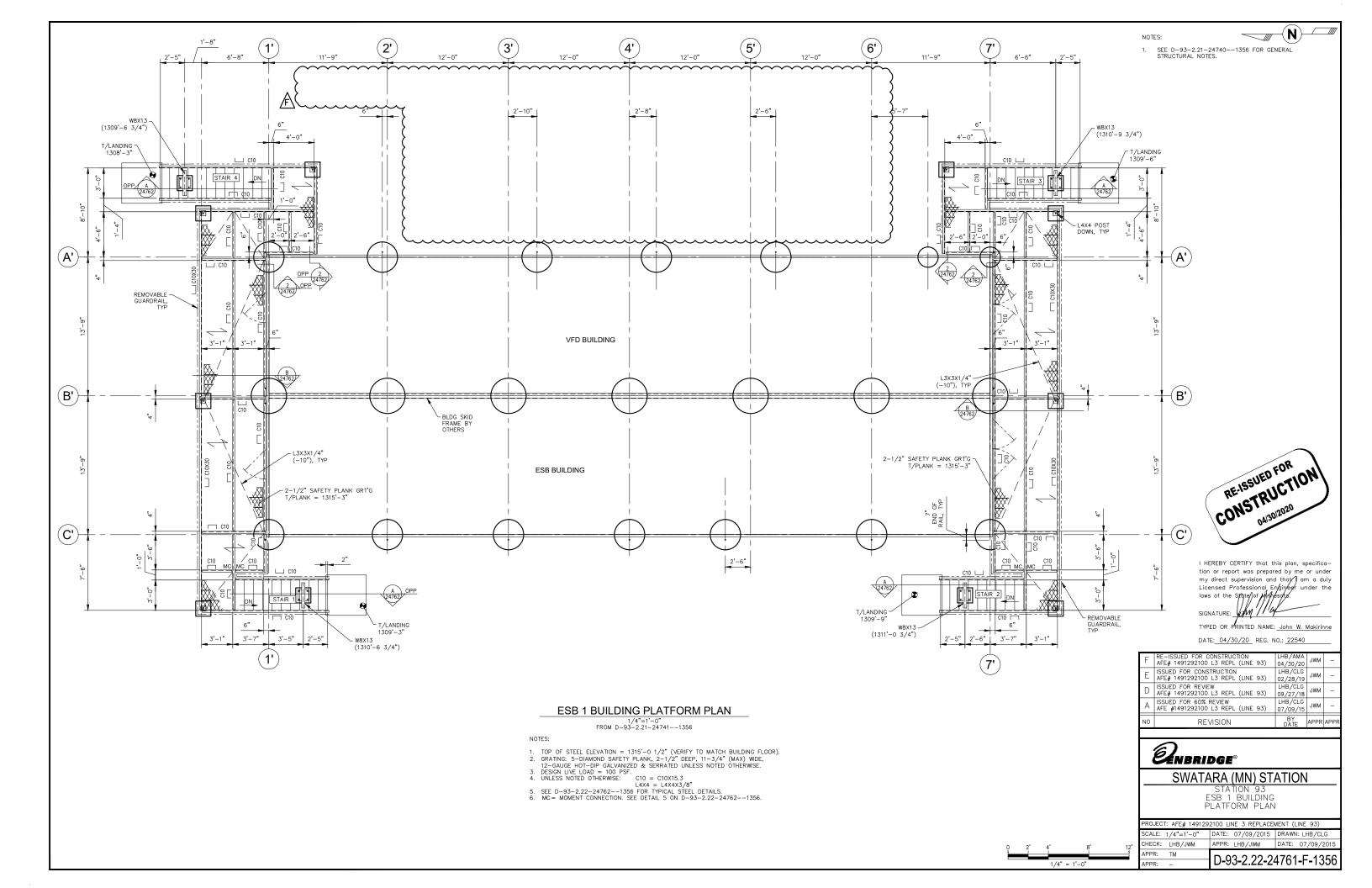
# **SWATARA (MN) STATION**

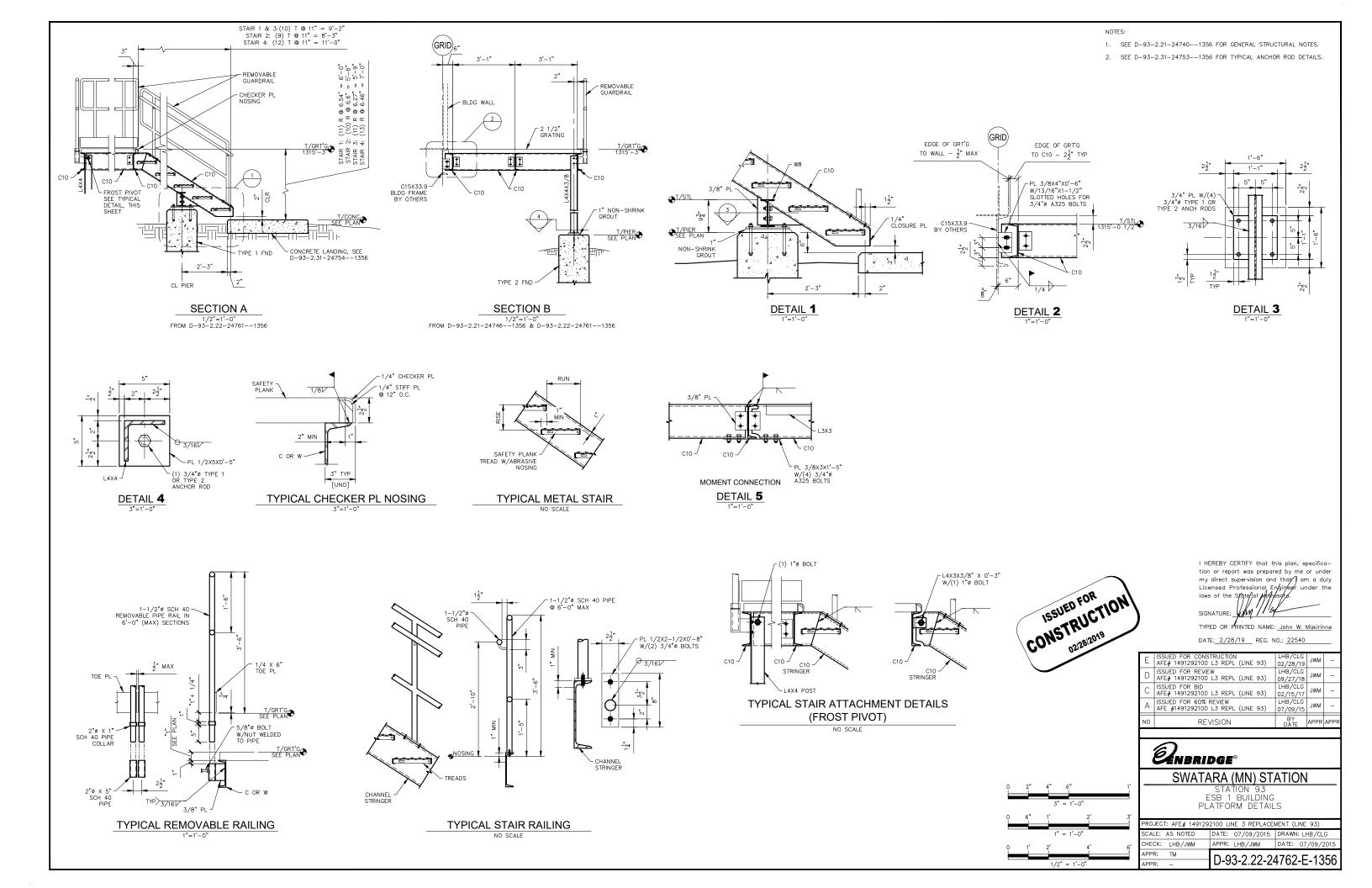
STATION 93
PUMP BUILDING
TYPICAL FOUNDATION DETAILS 1

4'	PROJECT: AFE# 1491292100 LINE 3 REPLACEMENT (LINE 93)					
	SCALE:	AS NOTED	DATE:	07/09/2015	DRAWN	: LHB/CLG
6'	CHECK:	LHB/JWM	APPR:	LHB/JWM	DATE:	07/09/2015
	APPR:	TM	D 02 2 24 24752 E 4256			
	APPR:	_	D-93-2.31-24753-E-1356			-E-1330









### BUILDING NOTES:

- BUILDING SHALL BE GABLE END CLEAR SPAN RIGID FRAME CONFIGURATION W/BYPASS GIRTS, COLUMNS AND BEAMS WITH EXPANDABLE END WALLS AS NOTED. BUILDING ROOF SHALL BE INSULATED WITH INTERIOR VAPOR BARRIER.
- B. SEE DRAWING D-93-2.21-24740--1356 FOR DESIGN LOADS.
- C. BUILDING DEFLECTIONS SHALL MEET THE FOLLOWING LIVE LOAD DEFLECTION LIMITS:

BUILDING FRAME LATERAL DRIFT: ROOF & WALL SECONDARY MEMBERS: L/180

- THE BUILDING MANUFACTURER SHALL BE A MEMBER OF MBMA & ACCREDITED UNDER THE INTERNATIONAL SERVICES IAS AC472 PROGRAM AND SHALL SUBMIT A CERTIFICATE OF COMPLIANCE.
- BUILDINGS SUPPLIER SHALL FURNISH SHOP DRAWINGS FOR REVIEW INCLUDING FOUNDATION LOADS, CALCULATIONS CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MINNESOTA AND CERTIFIED ERECTION DRAWINGS.
- F. STEEL FRAMING MATERIAL PROPERTIES:

## Fy (PSI) Fu (PSI) ASTM

WELDED BUILT-UP SECTIONS:	50,000	65,000	A572, A529
W SHAPES:	50,000	65,000	A992, A572
OTHER SHAPES, PLATES:	50,000	65,000	A572, A529
RODS USED FOR BRACING:	50,000	65,000	A572, A529
COLD FORMED MEMBERS:	55,000	70,000	A653 GR 55 (G90)
HIGH STRENGTH BOLTS:	_	120,000	A325
NUTS:	-	_	A563 HEAVY HEX
WASHERS:	_	_	F436 HARDENED STEEL
SLOPED CAST IRON WASHERS:	_	-	A48 CLASS 30
WELDING ELECTRODES:	_	E70XX	

## G. ROOF AND WALL PANEL PROPERTIES:

- PANELS SHALL BE 24 GAGE MINIMUM STEEL CONFORMING TO ASTM A653 GRADE 50 WITH G90 ZINC COATING.
- ROOF PANELS SHALL BE 24 GAGE MINIMUM STEEL CONFORMING TO ASTM A653 GRADE 50 WITH G90 ZINC COATING..
- PANELS SHALL BE PAINTED WITH FLUOROPOLYMER COATING PRODUCED WITH MINIMUM 70% PVDF RESIN OR SILICONE-MODIFIED POLYESTER (SMP). FINISH COLOR SHALL BE FROM MANUFACTURERS STANDARD COLORS. SUBMIT SAMPLE COLORS FOR APPROVAL.
- 4. PANEL SHALL BE ONE CONTINUOUS LENGTH.

## H. PANEL PROFILES

EXTERIOR WALL PANEL:

1 1/2" DEEP MAJOR RIBS AT 12 INCH CENTER WHICH TAPER FROM 1 INCH TO 3

1/2 INCHES AND 2 MINOR STIFFENING RIBS BETWEEN MAJOR RIBS. THE PANEL

SHALL PROVIDE 36 INCHES OF COVERAGE.

### ROOF PANEL: STANDING SEAM TYPE WITH 16 INCH WIDE PANELS WITH 3 INCH HIGH RIBS AT 16 INCH CENTERS.

## FLASHING / TRIM & CLOSURES:

- FLASHING AND OR TRIM SHALL BE FURNISHED AT EAVES, RAKE, CORNERS, BASE OPENINGS AND WHEREVER REQUIRED TO SEAL AGAINST WEATHER AND DUST ON EXTERIOR AND INTERIOR SURFACES. ALL TRIM SHALL BE PREFINISHED.
- MATERIAL FOR BASE FLASHING SHALL BE GALVANIZED 18 GAGE OF THE SAME SPECIFICATION AS THE WALL COVERING.
- MATERIAL FOR OTHER FLASHING, TRIM, ETC. SHALL BE 24 GAGE OF THE SAME SPECIFICATION AS THE ROOF AND WALL COVERING.
- PREFORMED, CLOSED CELL POLYETHYLENE CLOSURE STRIPS MATCHING THE PROFILE OF THE PANEL SHALL BE INSTALLED AT ALL EXTERIOR FLASHING/TRIM LOCATIONS TO PROVIDE WEATHER TIGHTNESS.

- ROOF PANEL SEAMS SHALL BE FASTENED WITH GALVANIZED CONCEALED CLIPS AT SUPPORT LOCATIONS. INTERLOCKING LEGS SHALL BE FIELD SEAMED WITH SEAMING MACHINE, PANELS SHALL HAVE FACTORY APPLIED SEALANT,
- WALL FASTENERS SHALL BE SELF DRILLING STAINLESS STEEL SCREWS WITH INTEGRAL HEX WASHER HEAD AND NEOPRENE WASHER. FASTENERS SHALL BE #12 X 1 1/4" TO STRUCTURAL SUPPORTS AND #14 X 7/8" AT PANEL SIDELAPS.
- 3. EXPOSED FASTENERS SHALL HAVE HEADS PAINTED TO MATCH MATERIAL COLOR.

## K. SEALANTS:

- SEALANTS FOR SIDE LAPS, END LAPS, ACCESSORIES, CLOSURES, ETC. SHALL BE A PREFORMED, BUTYL RUBBER BASED COMPOUND. THE MATERIAL SHALL BE NON-HARDENING, NON-SHRINKING, NON-CORROSIVE, NON-TOXIC AND NON-VOLATILE. SERVICE TEMPERATURE RANGE SHALL BE FROM -60 F TO 210 F.
- CAULK AT DOORS WINDOWS AND LOUVERS SHALL BE POLYURETHANE CAULK SIKAFLEX 219LM OR APPROVED EQUAL MEETING REQUIREMENTS OF FEDERAL SPECIFICATION TT-S-00230C, TYPE II, CLASS A.

## L. EAVE GUTTERS AND DOWNSPOUTS:

- GUTTERS SHALL BE FORMED FROM 26 GAGE PREFINISHED GALVANIZED SHEET STEEL CONFORMING TO ASTM A653 G90 WITH GUTTER STRAPS, GOOSENECKS, OUTLETS & STRAINER BASKET. JOINTS SHALL BE FASTENED AND SEALED.
- DOWNSPOUTS SHALL BE 4 INCH X 5 INCH
- 3. GUTTERS AND DOWNSPOUTS SHALL BE PREFINISHED.

## M. STANDARD DOORS AND FRAMES:

- EXTERIOR DOORS SHALL BE 3' X 7' 1 3/4" THICK INSULATED HOLLOW METAL (R12) CONSTRUCTED OF 16 GAGE GALVANIZED SHEET STEEL IN ACCORDANCE WITH SDI A250.8
- FRAMES SHALL BE WELDED TYPE, 16 GAGE GALVANIZED SHEET STEEL WITH MITERED OR
- 3. DOORS SHALL HAVE 2 FOOT X 2 FOOT GLAZING WITH 1/4" WIRED SAFETY GLASS.
- 4. SEE THIS SHEET FOR DOOR SCHEDULE.

### N. DOOR HARDWARF:

- 1. ALL DOORS SHALL BE PROVIDED WITH THE FOLLOWING:
  - a. (3) PAIRS HEAVY WEIGHT BALL BEARING BUTT HINGES W/NON-REMOVABLE PINS. b. PANIC HARDWARE WITH THUMB LATCH AND LOCKSET.
  - C. HEAVY DUTY CLOSURE WITH HOLD OPEN ARM.
    d. STORM CHAIN.
    e. ALUMINUM THRESHOLD
    f. BOTTOM SWEEP

  - a. EXTRUDED ALUMINUM/VINYL WEATHER STRIPPING

## O. OVERHEAD COILING DOOR:

- 1. EXTERIOR SECTIONAL DOORS SHALL BE OVERHEAD COILING TYPE, 3/4", INSULATED.

- G. 20 GA EXTERIOR SLAT SKIN, 20 GA INTERIOR (BOTH GALVANIZED) WITH MINIMUM 2.2 LB DENSITY POLYURETHANE FOAM CORE R7.7.
  b. GALVANIZED STEEL ANGLE GUIDES
  c. BOTTOM WEATHER STRIPPING AND JAMB WEATHER SEALS
  d. ELECTRIC MOTOR OPERATOR, SIZE & TYPE AS RECOMMENDED BY SUPPLIER TO MOVE DOOR AT 1 FOOT PER SECOND, OPERATOR SHALL BE RATED FOR CLASS I, DIV II, GROUP D FOR EXPLOSION/IGNITION PROOF CLASSIFICATION.
  - INTERIOR MOUNTED PUSH-BUTTON OPERATOR CONTROLS WITH OPEN, CLOSE & STOP BUTTONS.
    ELECTRIC SENSING EDGE
- iii) WIRING CONNECTIONS SUITABLE FOR 230 VOLT, SINGLE PHASE, 60 HZ.
  e. STANDARD SPRINGS
  f. HARDWARE SHALL BE GALVANIZED.
  g. FACTORY FINISH (CURTAIN) BAKED ON WHITE POLYESTER

# 2. SEE DOOR SCHEDULE ON THIS SHEET

- 1. 5'-0" WIDE X 3'-6" DEEP OVERHEAD CANOPIES ATTACHED TO THE BUILDING WALL FRAMING SHALL BE PROVIDED AT ALL DOORS INDICATED.
- ALL MECHANICAL EQUIPMENT SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE. THE BUILDING SUPPLIER SHALL PROVIDE ALL DESIGN WORK OF SUPPORTS & COORDINATE W/ MECHANICAL SUPPLIERS.

### Q. FINISHES & COLORS:

PAINTING SHALL BE IN ACCORDANCE WITH ENBRIDGE SPECIFICATION P-210

FINISH SCHEDULE					
ITEM	FINISH	COLOR			
BUILDING FRAMES	MANUFACTURER STANDARD PRIMER OR HOT-DIP GALVANIZED	LIGHT GRAY			
GIRTS & PURLINS	GALVANIZED	-			
ROOF PANEL	PVDF OR SMP	WHITE			
WALL PANEL	PVDF OR SMP	WHITE (INTERIOR) GOLD (EXTERIOR)			
BASE TRIM	PVDF OR SMP	WHITE			
EAVE/RAKE/CORNER TRIM/GUTTERS	PVDF OR SMP	WHITE			
DOWNSPOUTS	PVDF OR SMP	GOLD			
OVERHEAD DOORS	MANUFACTURER STANDARD	WHITE			
FLASHING, LOUVERS, VENTS, ETC.	PVDF OR SMP	GOLD			
BRIDGE CRANE	MANUFACTURER STANDARD	SAFETY YELLOW			

## R. ERECTION

ERECTION SHALL BE IN ACCORDANCE WITH THE APPROVED ERECTION INSTRUCTIONS AND DRAWINGS, APPLICABLE PROVISIONS OF AISC CODE OF STANDARD PRACTICE AND MBMA MANUAL.

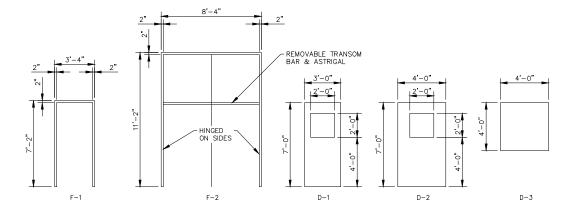
- THE BUILDING SHALL INCLUDE A THREE (3) YEAR LIMITED WARRANTY AGAINST FAILURE CAUSED BY FAULTY OR SUBSTANDARD MATERIAL AND A ONE (1) YEAR WORKMANSHIP GUARANTEE.
- ALL WALL AND ROOF PANEL COATINGS SHALL PROVIDE A 20 YEAR WARRANTY AGAINST CHALK, FADE, CRACK, CHECK, BLISTER OR PEEL.

## T. OVERHEAD CRANE:

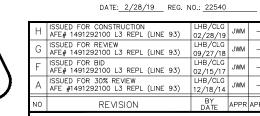
- 1. CRANE SERVICE CLASSIFICATION SHALL BE CMAA CLASS C MODERATE DUTY.
- 2. SERVICE ENVIRONMENT OPERATING TEMPERATURE -20° F 100° F, HIGH HUMIDITY
- CRANE SHALL BE DESIGNED, FABRICATED AND INSTALLED IN ACCORDANCE WITH CMAA 70, ANSI
- CRANE SHALL BE ELECTRICALLY OPERATED, TOP RUNNING SINGLE GIRDER OR DOUBLE GIRDER HAUNCH SUPPORTED CONFIGURATION RATED FOR 20 TON. CONTROL SHALL BE PUSH BUTTON PENDANT OPERATED WITH REMOTE RADIO CONTROL STATION.
- 5. CRANE & HOIST COMPONENTS SHALL BE RATED FOR CLASS I, DIVISION II, GROUP D HAZARD CLASSIFICATION WITH NON—SPARKING WHEELS, HOOKS, CABLES & GUIDES.
- 6. SUPPLIER SHALL INCLUDE BRIDGE, TROLLEYS, HOIST, RUNWAY CONDUCTORS, COLLECTORS, CABLES, BLOCKS, HOOK, MOTORS, MOTOR CONTROLS, DRIVE GUARDS, AND ALL RECOMMENDED SAFETY DEVICES.
- 7. BRIDGE, HOIST & TROLLEY SHALL ALL BE TWO SPEED OPERATION.
- THE CRANE SHALL BE SUITABLE FOR OPERATION ON A 460 VOLT, THREE PHASE, 60 HERTZ GROUNDED SYSTEM. CONTROLS SHALL BE 120 VOLT SINGLE PHASE.
- THE CRANE SUPPLIER SHALL PROVIDE A 100 AMP DISCONNECT LOCKABLE SWITCH IN THE POWER SUPPLY.
- 10. SEE DRAWINGS FOR BRIDGE SPANS, HOOK LIFT, AND HOOK APPROACH ENVELOPE
- SEE ENGINEERING EQUIPMENT SPECIFICATION EESOO9 "OVERHEAD CRANES" VERSION 8.1 FOR ADDITIONAL REQUIREMENTS.
- MANUFACTURER SHALL SUBMIT COMPLETE BRIDGE CRANE SPECIFICATIONS TO OWNER PRIOR TO PURCHASE FOR APPROVAL.
- 13. THE CONTRACTOR SHALL CONDUCT A LOAD TEST IN ACCORDANCE WITH ANSI B30.2 WITH 125% OF THE RATED 20-TON BRIDGE CAPACITY USING A CONTRACTOR PROVIDED HOIST. THE CRANE EQUIPMENT SHALL BE OPERATED THROUGH A COMPLETE TRAVEL OF THE BRIDGE & TROLLEY, THE CRANE SHALL BE TESTED FOR CAPACITY, SPEED & DEFLECTION. TEST WEIGHTS SHALL BE PROVIDED BY THE CONTRACTOR. A CERTIFICATE OF THE LOAD TEST & OSHA COMPLIANCE SHALL BE PROVIDED TO THE OWNER.

- U. VENTILATION AND COOLING: SEE MECHANICAL DRAWING D-93-3.32-M0005--1356.
- ROOF INSULATION SHALL BE GLASS FIBER R30 WITH VAPOR BARRIER ON THE INSIDE THAT IS GLASS FIBER REINFORCED FOIL AND KRAFT OR FOIL AND VINYL FACTORY ADHERED TO THE INSULATION. NO INSULATION FOR WALLS.
- W. SNOW RETENTION SYSTEM SHALL BE PROVIDED AND INSTALLED BY GENERAL CONTRACTOR AT BUILDING EAVES & ALL PERSON DOOR CANOPIES. SNOW RETENTION SYSTEM SHALL BE BAR TYPE SYSTEM CLAMPED TO STANDING SEAM ROOF RIBS. CLAMPS SHALL BE STALES STEEL AND BAR HOT-DIP GALVANIZED 16 GA STEEL. SYSTEM SHALL INCLUDE INTERMEDIATE ICE STOPS BETWEEN
- X. CONTRACTOR SHALL PROVIDE PRECAST CONCRETE SPLASH BLOCKS AT ALL DOWNSPOUT

	DOOR SCHEDULE						
MARK	SIZE	DOOR TYPE	FRAME TYPE	GLASS			
100	12'-0" X 14'-0"	COILING OH	-	_			
101	3'-0" X 7'-0"	D-1	F-1	1/4" WRED SAFETY GLASS			
102	3'-0" X 7'-0"	D-1	F-1	1/4" WRED SAFETY GLASS			
103	3'-0" X 7'-0"	D-1	F-1	1/4" WRED SAFETY GLASS			
104	3'-0" X 7'-0"	D-1	F-1	1/4" WIRED SAFETY GLASS			
105	PAIR 4'-0 X 7'-0"	D-2	F-2	1/4" WIRED SAFETY GLASS - ACTIVE LEAF ONLY			
105A	PAIR 4'-0" X 4'-0"	D-3	F-2	NONE			
106	3'-0" X 7'-0"	D-1	F-1	1/4" WIRED SAFETY GLASS			
107	3'-0" X 7'-0"	D-1	F-1	1/4" WRED SAFETY GLASS			
108	3'-0" X 7'-0"	D-1	F-1	1/4" WIRED SAFETY GLASS			



TYPED OR PRINTED NAME: John W. Makirinne



I HEREBY CERTIFY that this plan, specification or report was prepared by me or under

my direct supervision and that am a duly Licensed Professional Engineer under the

laws of the State of Minhesotte.

SIGNATURE: WM // W

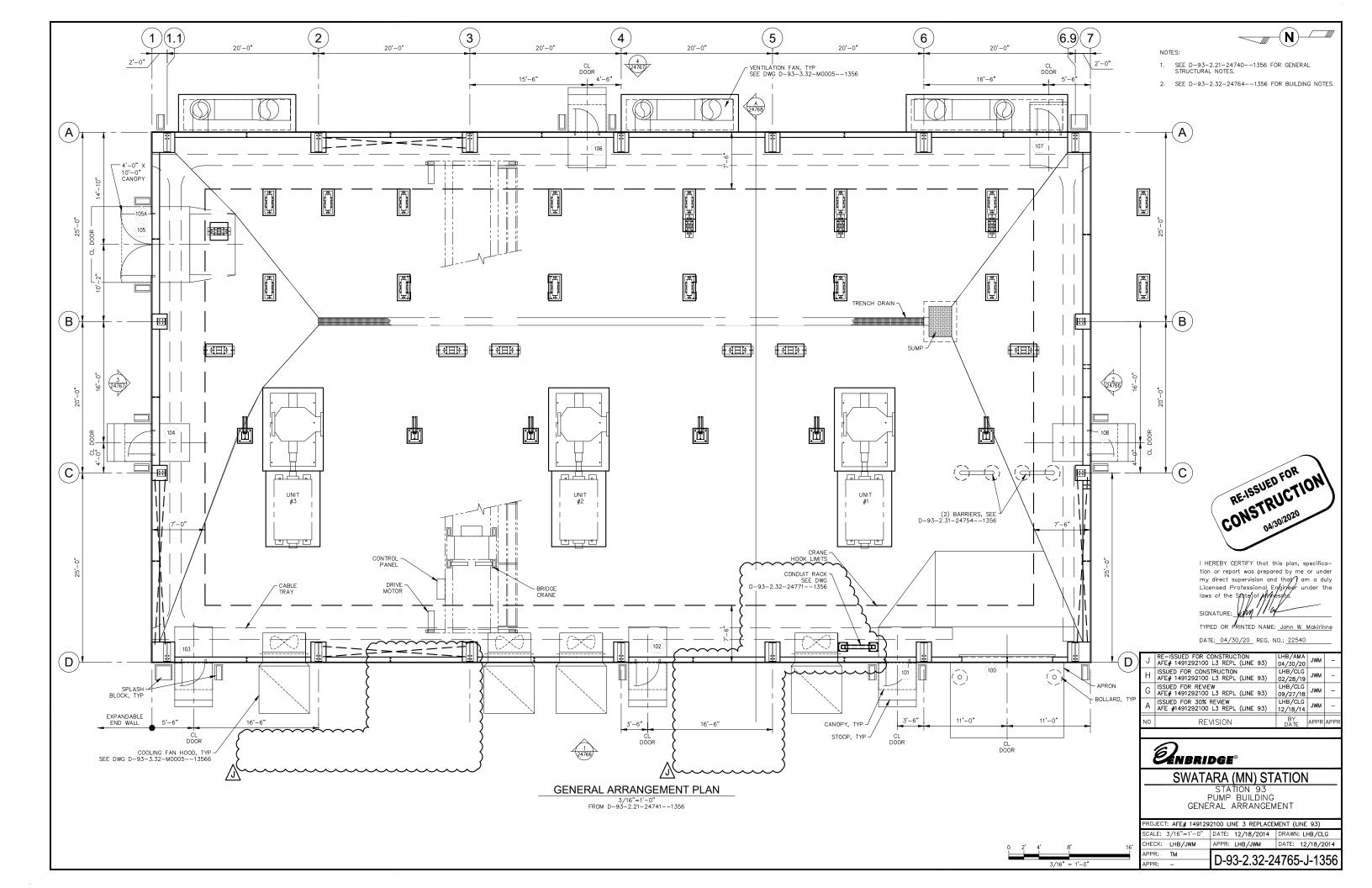


SWATARA (MN) STATION STATION 93 PUMP BUILDING

OJECT: AFE# 1491292100 LINE 3 REPLACEMENT (LINE 93) DATE: 12/18/2014 DRAWN: LHB/CLG SCALE: NO SCALE HECK: LHB/JWM PPR: TM D-93-2.32-24764-H-1356

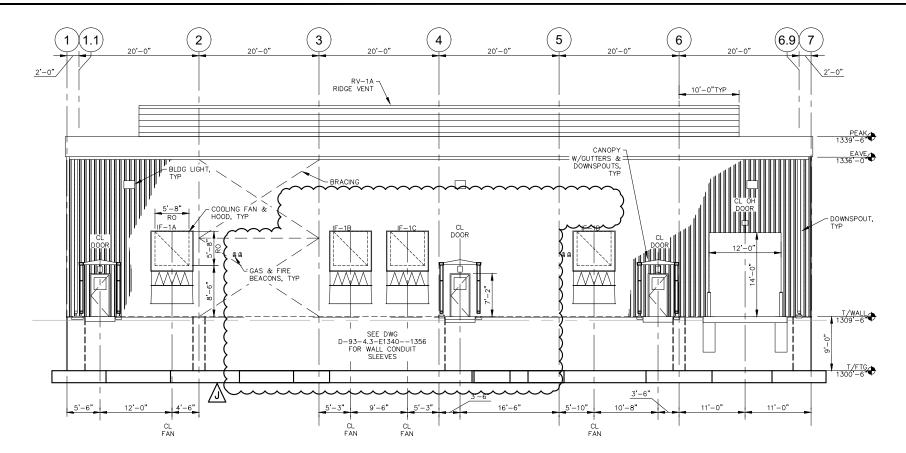
BUILDING NOTES



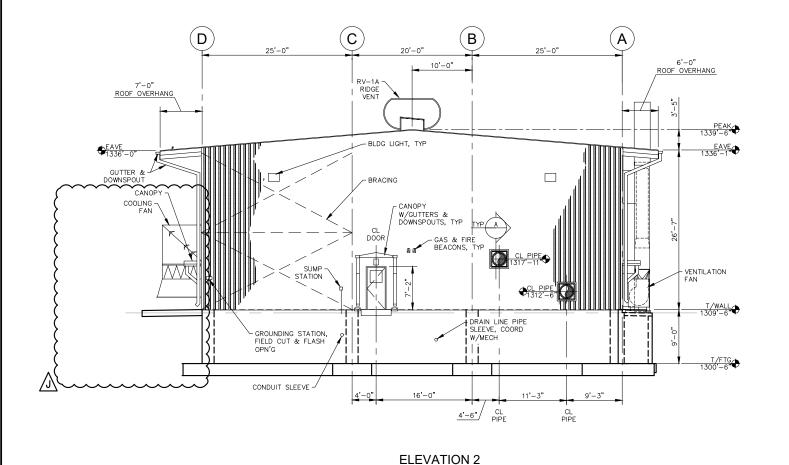




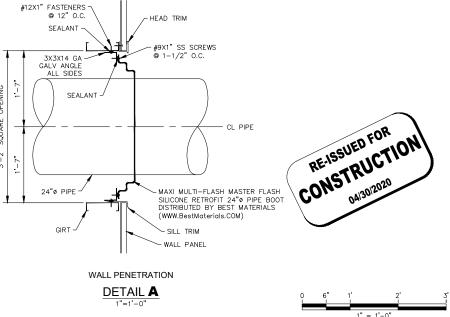
- 1. SEE D-93-2.21-24740--1356 FOR GENERAL STRUCTURAL
- NOTES.
  2. SEE D-93-2.32-24764--1356 FOR BUILDING NOTES.



## ELEVATION 1 1/8"-1'-0" FROM DWG D-93-2.32-24765--1356



1/8"-1'-0" FROM DWG D-93-2.32-24765--1356



NOTE:

VERIFY SIZE & LOCATION OF FAN/DUCT PENETRATIONS WITH MECHANICAL SUPPLIER. DEVIATIONS FROM FAN/DUCT OPENINGS, BRACING, DOOR, ETC. LOCATIONS SHOWN SHALL BE APPROVED BY OWNER.

I HEREBY CERTIFY that this plan, specification or report was prepared by me or under my direct supervision and that am a duly Licensed Professional Engineer under the laws of the Space of which the space of the Sp

TYPED OR PRINTED NAME: John W. Makirinne

DATE: 04/30/20 REG. NO.: 22540

	RE-ISSUED FOR CONSTRUCTION AFE# 1491292100 L3 REPL (LINE 93)	LHB/AMA 04/30/20	JWM	-
	ISSUED FOR CONSTRUCTION AFE# 1491292100 L3 REPL (LINE 93)	LHB/CLG 02/28/19	JWM	-
G	ISSUED FOR REVIEW AFE# 1491292100 L3 REPL (LINE 93)	LHB/CLG 09/27/18	JWM	-
Α	ISSUED FOR 30% REVIEW AFE #1491292100 L3 REPL (LINE 93)	LHB/CLG 12/18/14	JWM	-
NO	REVISION	BY DATE	APPR	APPR



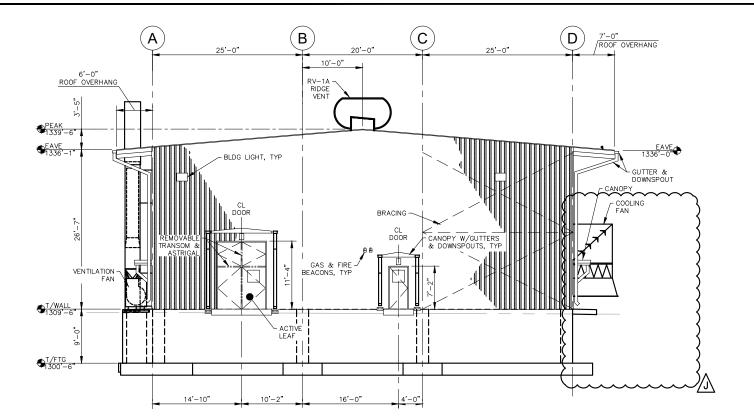
# SWATARA (MN) STATION

STATION 93 PUMP BUILDING BUILDING ELEVATIONS 1

,	PROJECT: AFE# 1491292100 LINE 3 REPLACEMENT (LINE 93)				
	SCALE: AS NOTED	DATE: 12/18/2014	DRAWN: LHB/CLG		
ı,	CHECK: LHB/JWM	APPR: LHB/JWM	DATE: 12/18/2014		
	APPR: TM	D 02 2 22 2	47CC   40EC		
	APPR: -	D-93-2.32-24766-J-1356			

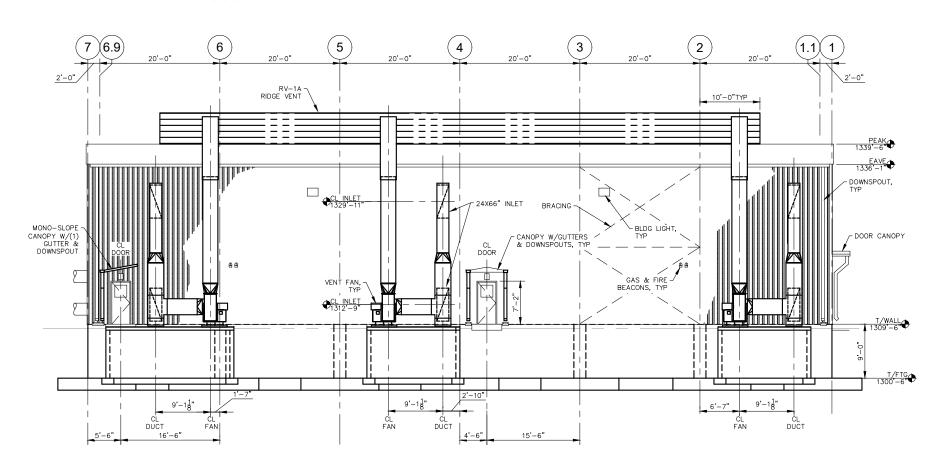


- 1. SEE D-93-2.21-24740--1356 FOR GENERAL STRUCTURAL
- NOTES. 2. SEE D-93-2.32-24764--1356 FOR BUILDING NOTES.



VERIFY SIZE & LOCATION OF FAN/DUCT PENETRATIONS WITH MECHANICAL SUPPLIER. DEVIATIONS FROM FAN/DUCT OPENINGS, BRACING, DOOR, ETC. LOCATIONS SHOWN SHALL BE APPROVED BY OWNER.

## **ELEVATION 3** 1/8"-1'-0" FROM DWG D-93-2.32-24765--1356



**ELEVATION 4** 

1/8"-1'-0" FROM DWG D-93-2.32-24765--1356

CONSTRUCTION



ISSUED FOR CONSTRUCTION
AFE# 1491292100 L3 REPL (LINE 93)

ISSUED FOR REVIEW AFE# 1491292100 L3 REPL (LINE 93)

ISSUED FOR 30% REVIEW AFE #1491292100 L3 REPL (LINE 93)

SWATARA (MN) STATION STATION 93 PUMP BUILDING BUILDING ELEVATIONS 2

ROJECT: AFE# 1491292100 LINE 3 REPLACEMENT (LINE 93)

I HEREBY CERTIFY that this plan, specification or report was prepared by me or under

TYPED OR PRINTED NAME: John W. Makirinne DATE: 04/30/20 REG. NO.: 22540

LHB/CLG 12/18/14 JWM

Licensed Professional Engineer

HECK: LHB/JWM APPR: TM D-93-2.32-24767-J-1356

