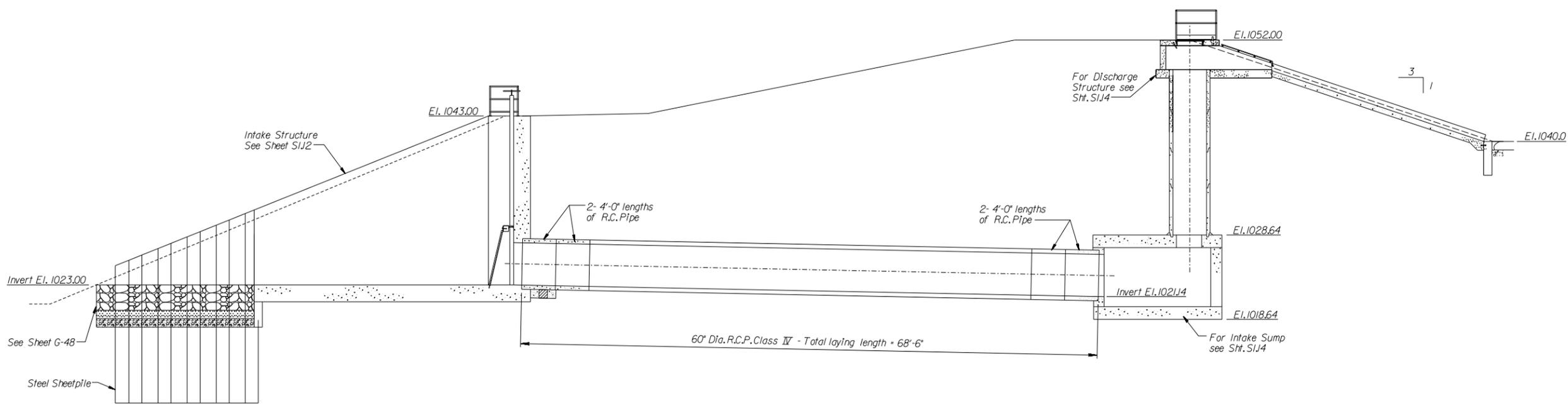


For Reference Only



PUMPING STATION PROFILE

SCALE: 3/8 INCH = 1 FOOT

NOTES:

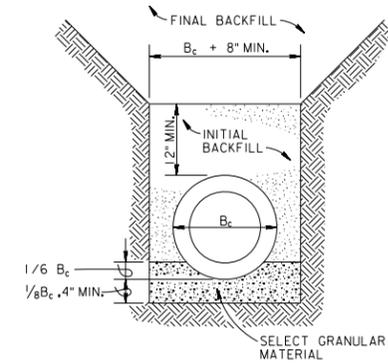
1. REINFORCED CONCRETE:
 - A. CONCRETE: COMPRESSIVE STRENGTH F'C - 4,000 PSI AT 28 DAYS.
 - B. REINFORCING BARS: ASTM A 615, GRADE 60.
2. CLEAR COVER FOR CONCRETE REINFORCING STEEL SHALL BE 3" FOR SLABS CAST AGAINST SOIL AND 2" ELSEWHERE OR AS NOTED.
3. REINFORCING BAR LAP SPLICES NOT SHOWN SHALL BE THE MIN. LENGTHS SHOWN BELOW.

BAR SIZE	LAP SPLICE (INCHES)
#4	24
#5	30
#6	36
#8	48

NOTE: NOT ALL BAR SIZES LISTED MAY BE REQUIRED.

4. MISCELLANEOUS METAL AND STRUCTURAL STEEL:
 - A. ROLLED PLATES AND SHAPES: SPECIFIED YIELD STRENGTH F_y = 36 KSI, (ASTM A36).
 - B. STEEL PIPE: ASTM A53 TYPE E OR TYPE S.
 - C. WELDED ANCHOR STUDS: SHALL CONFORM TO ASTM A108.
 - D. WELDING: ALL WELDING SHALL BE PERFORMED WITH E70 ELECTRODES.
 - E. SHEET PILE: ASTM A328 F_y = 38,500 PSI.
 - F. MISCELLANEOUS METAL (NOT SHEET PILE) SHALL BE GALVANIZED AFTER FABRICATION.

ALL SCALES SHOWN ARE BASED ON A STANDARD DRAWING SIZE OF 28" X 40" OR METRIC DRAWING SIZE OF 841mm X 894mm. IF ANY OTHER SIZE DRAWINGS ARE FURNISHED OR PLOTTED THE CONTRACTOR SHALL ADJUST THE SCALES ACCORDINGLY. THE CONTRACTOR SHALL ALSO ADVISE HIS SUB-CONTRACTORS OF THE ABOVE.



PIPE BEDDING NOTES:
 1. SEE SPECIFICATIONS FOR MATERIAL AND COMPACTION REQUIREMENTS.
 2. MAXIMUM PARTICAL SIZE IN INITIAL BACKFILL SHALL BE 1 1/2".

**CLASS C
PIPE BEDDING DETAIL
NO SCALE**

NOT TO SCALE

\$\$ - THINK VALUE ENGINEERING - \$\$

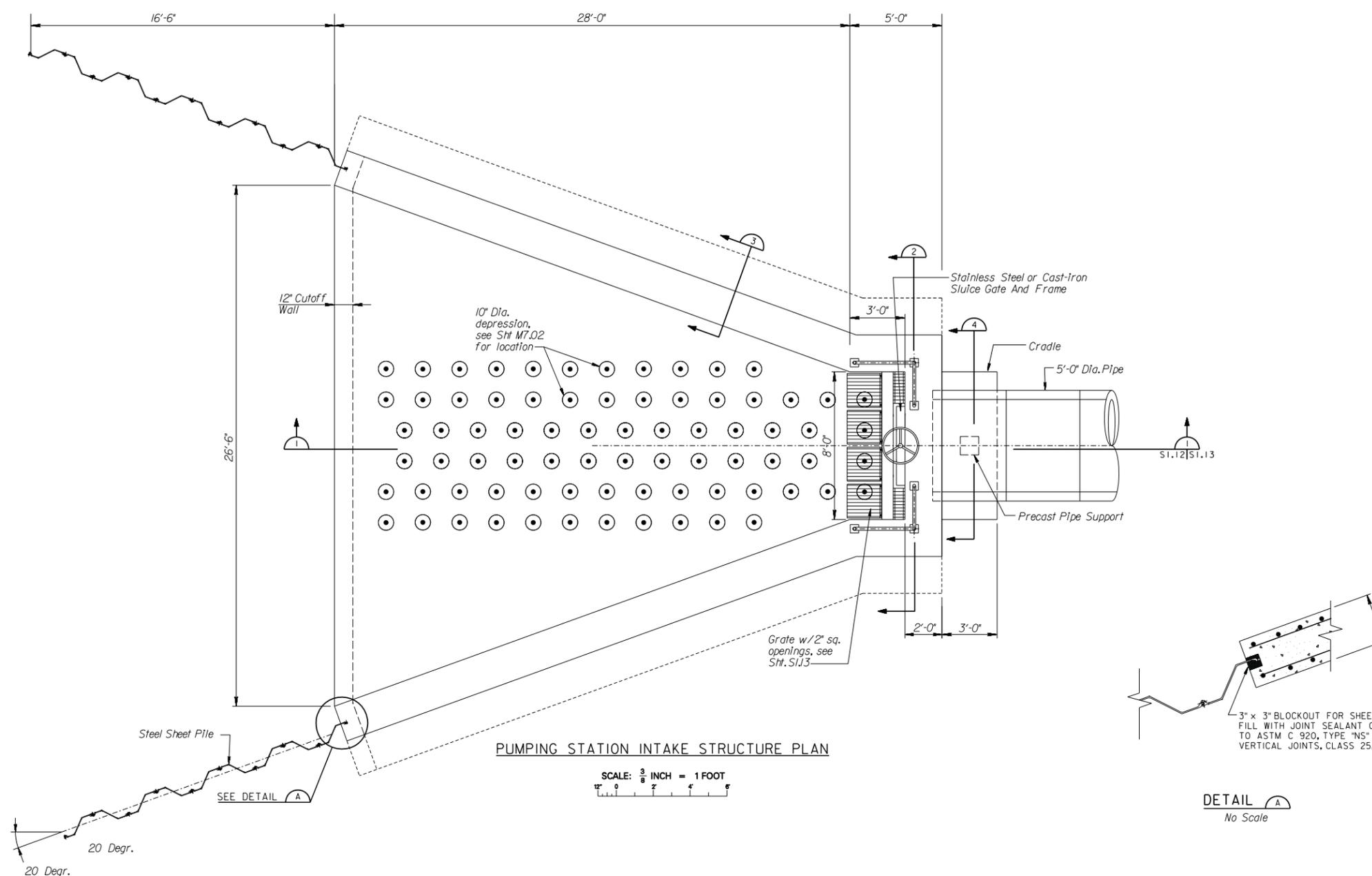
Revisions			
Symbol	Descriptions	Date	Approved
P-3	NEW DRAWING ADDED, REVISED PUMPING STATION	8-20-02	B.N.H.

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

Designed by: D.F. MILLER (402)-221-4572 Date:	MISSOURI RIVER TIEVILLE - DECATUR BEND FISH AND WILDLIFE MITIGATION PUMPING STATION PROFILE	
Submitted by: BRUCE N. HARRIS, PE Date:	Plot Scale Ratio: 2.67:1 Design File: MR14S111.DGN Spec. No.: DACW 45 01 B 0009 Contract No.: DACW 45-02-C-0004	Date: August 22, 2002 Drawing Code: MBTD1-170 Sheet reference number: S1.11

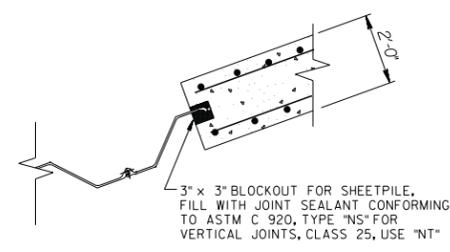
Chief: Structural Section

For Reference Only

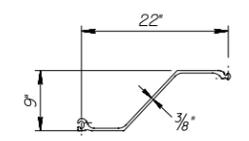


PUMPING STATION INTAKE STRUCTURE PLAN

SCALE: $\frac{3}{8}$ INCH = 1 FOOT

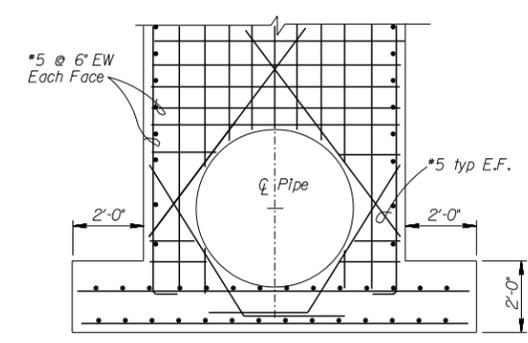


DETAIL A
No Scale

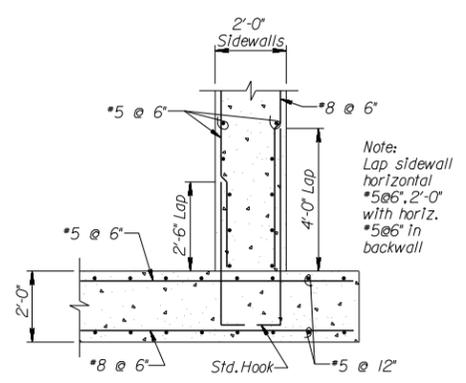


Minor variations from dimensions shown may be submitted for approval. Sheetpile shall have section modulus not less than $S=14 \text{ in}^3$ per foot of wall, and moment of inertia not less than $I=120 \text{ in}^4$ per foot of wall.

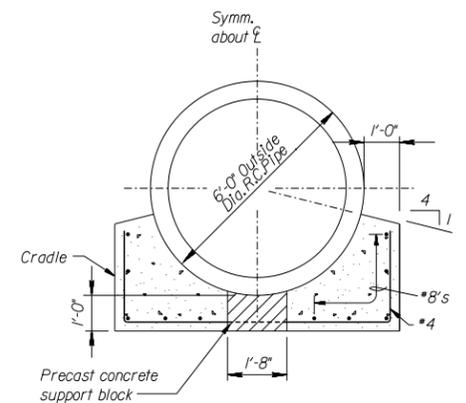
STEEL SHEET PILE DETAIL
No Scale



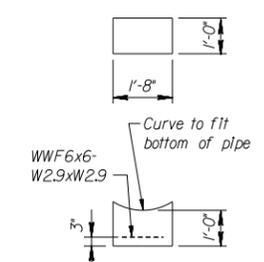
SECTION 2
SCALE: $\frac{1}{2}$ INCH = 1 FOOT



SECTION 3
SCALE: $\frac{1}{2}$ INCH = 1 FOOT



SECTION 4
NO SCALE



PRECAST CONCRETE SUPPORT BLOCK
NO SCALE

NOT TO SCALE

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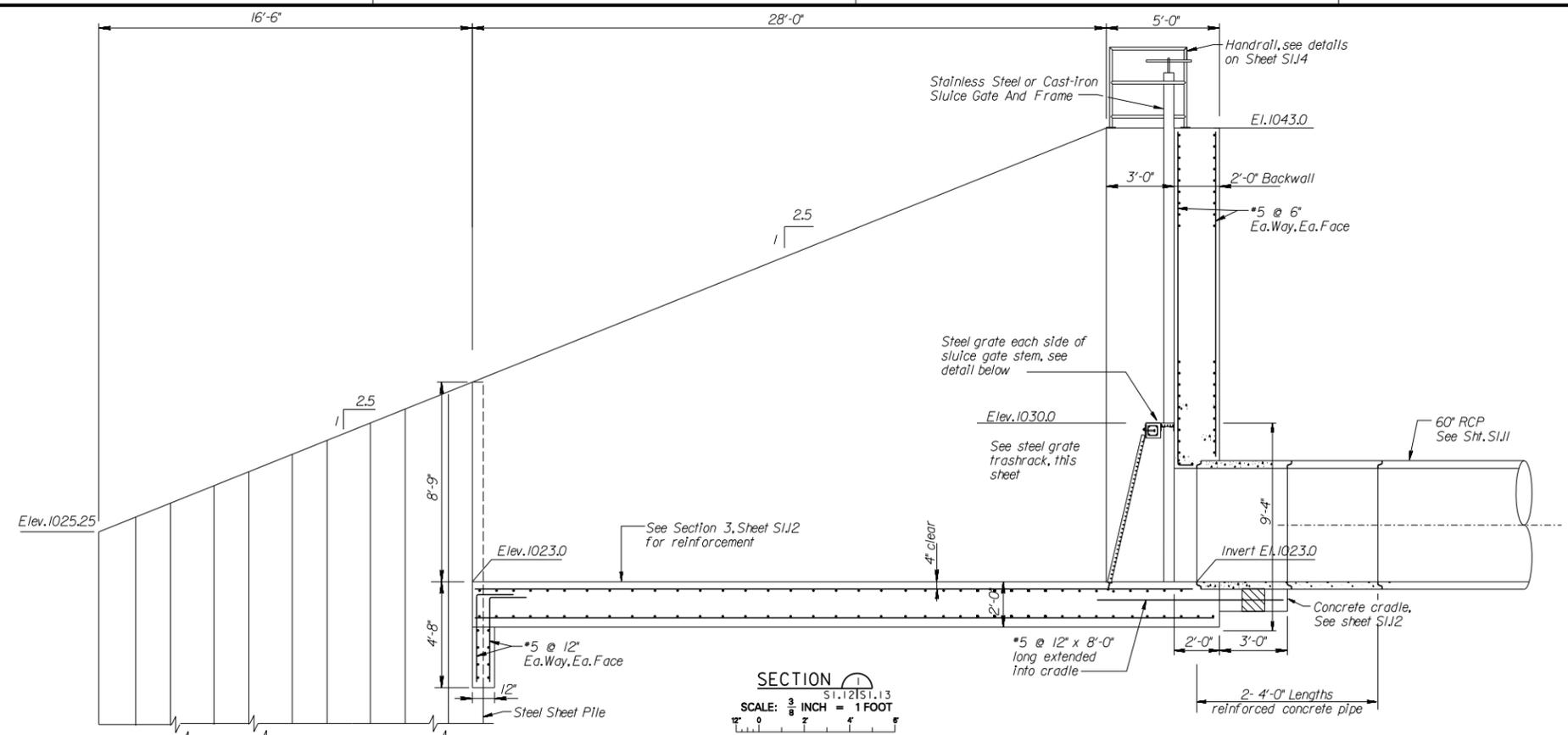
Revisions			
Symbol	Descriptions	Date	Approved
P-3	NEW DRAWING ADDED, ADDED INTAKE STRUCTURE	8-20-02	B.N.H.

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

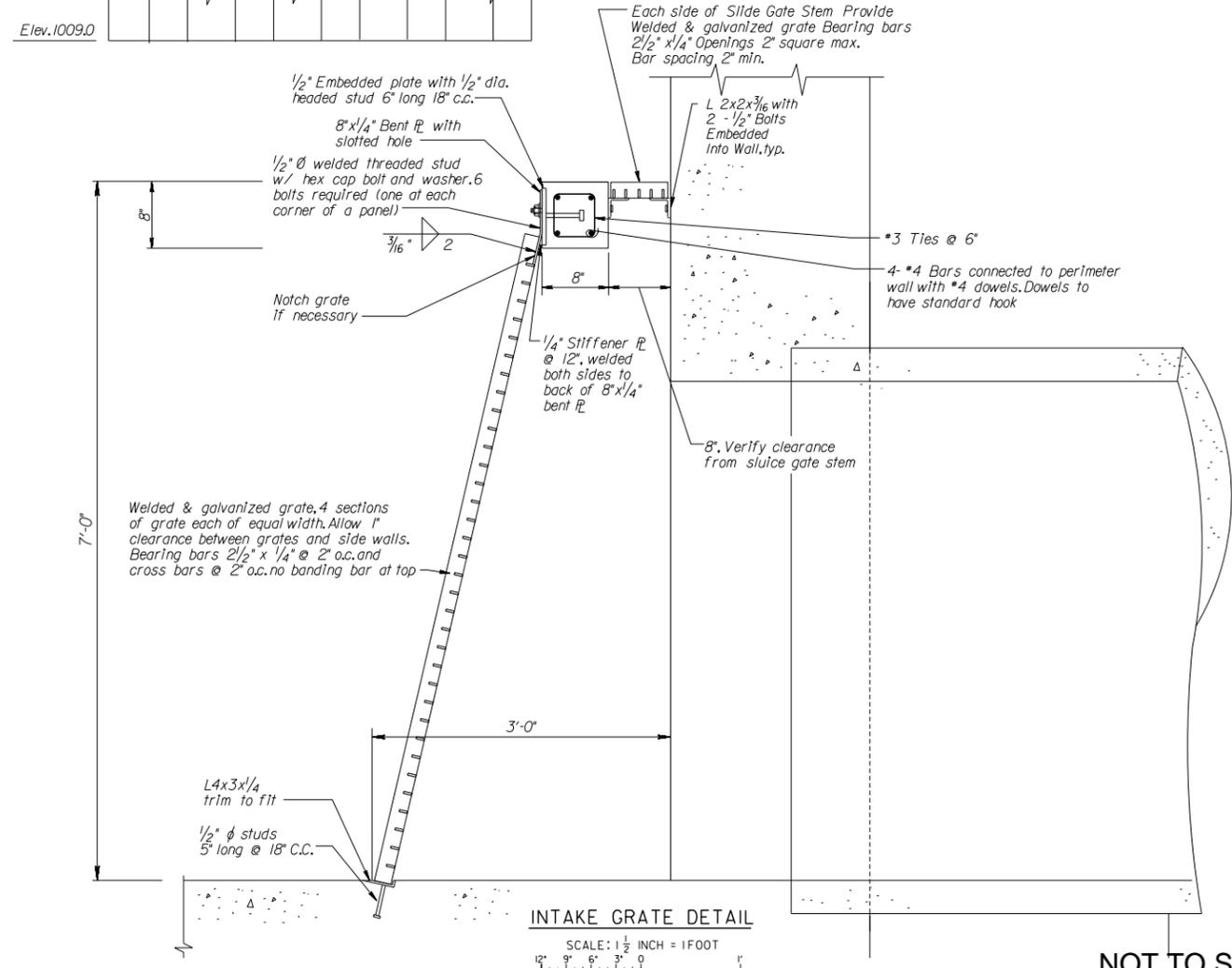
Designed by: D.F. MILLER (402)-221-4572 Date:	MISSOURI RIVER TIEVILLE - DECATUR BEND FISH AND WILDLIFE MITIGATION PUMPING STATION INTAKE STRUCTURE PLAN AND DETAILS		Sheet reference number:
Submitted by: BRUCE N. HARRIS, PE Date:	Plot Scale Ratio: 2.67:1 Design File: MR14S112.DGN Spec. No.: DACW 45 01 B 0009 Contract No.: DACW 45-02-C-0004	Date: August 22, 2002 Drawing Code: MBTD1-170	3 S1.12

Chief: Structural Section

For Reference Only



SECTION 1
S1.12/S1.13
SCALE: 3/8" INCH = 1 FOOT



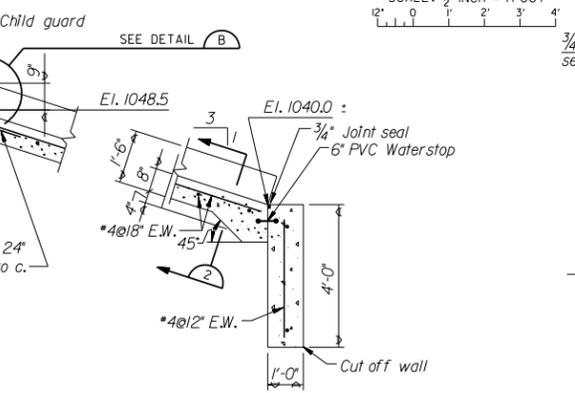
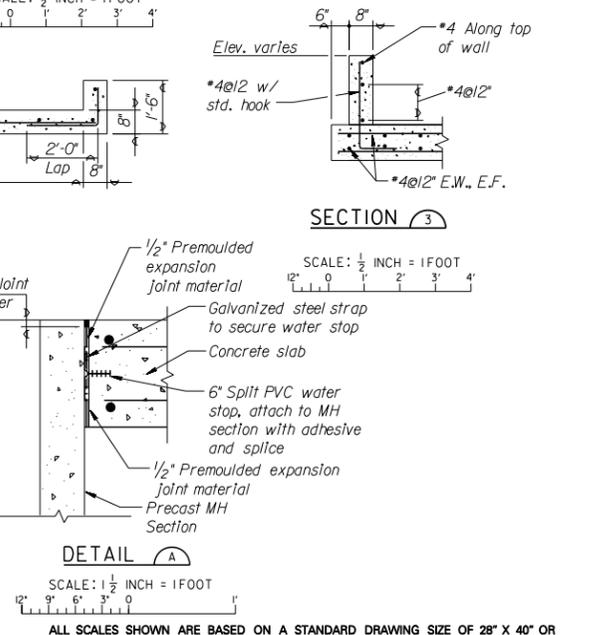
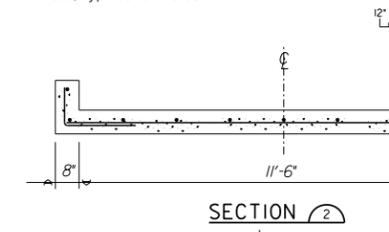
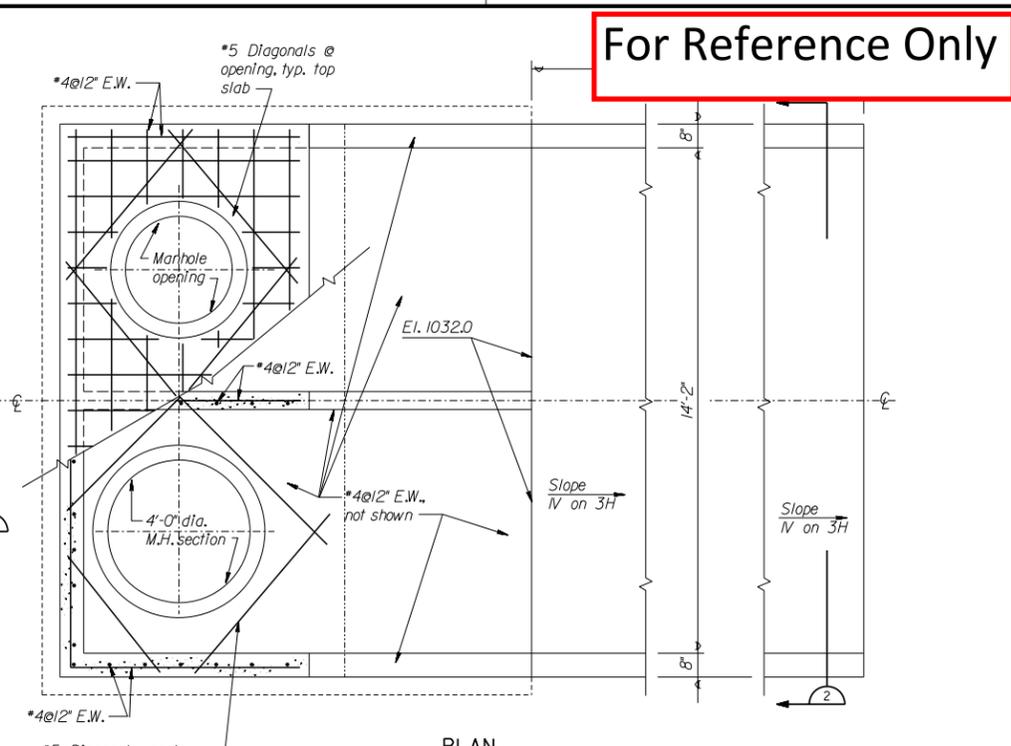
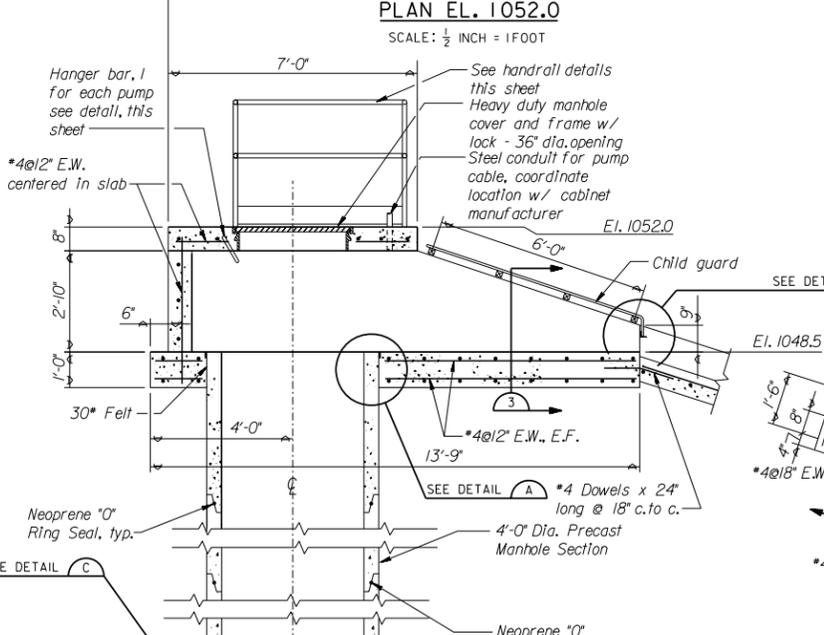
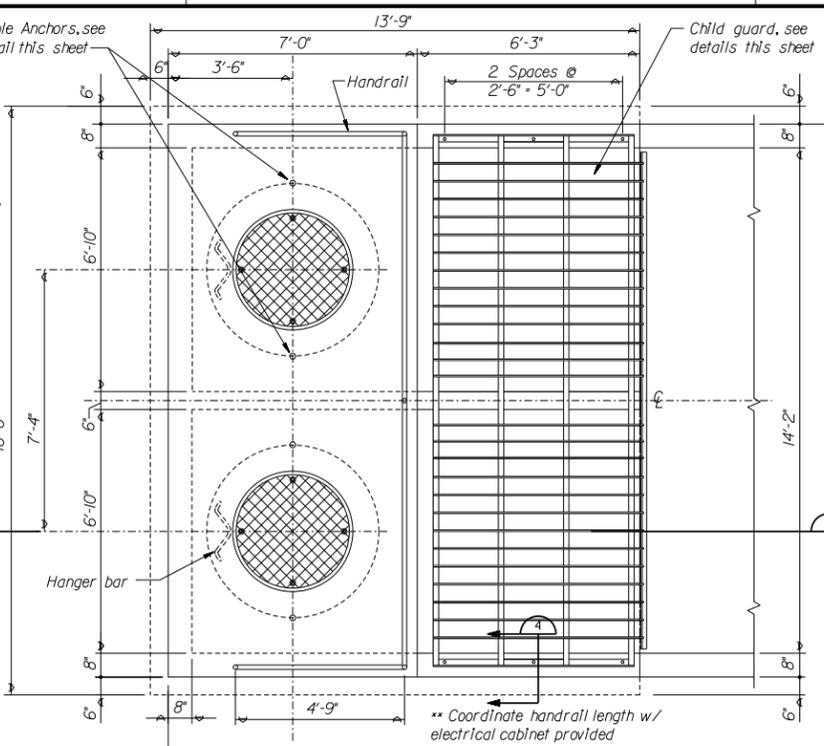
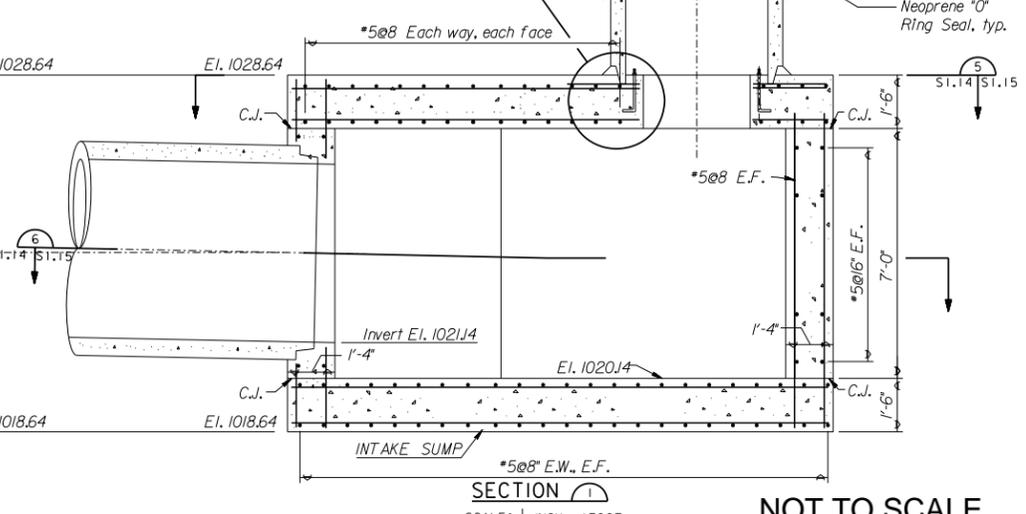
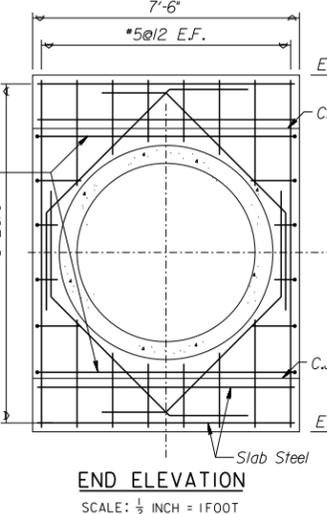
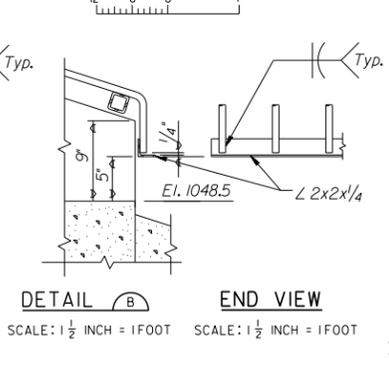
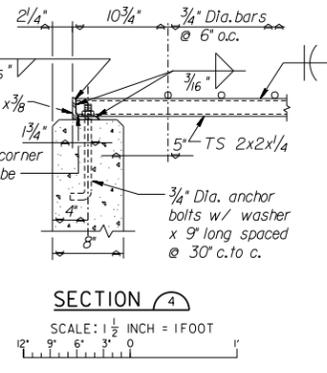
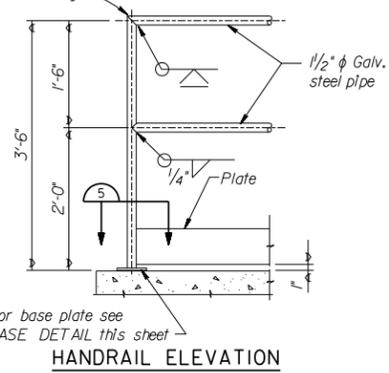
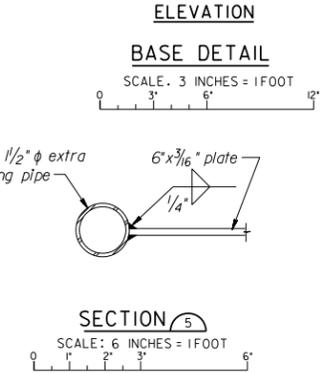
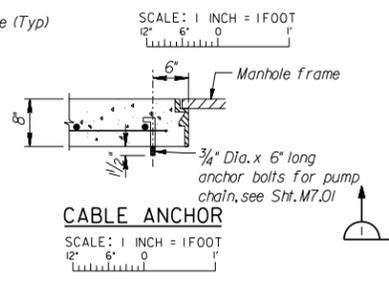
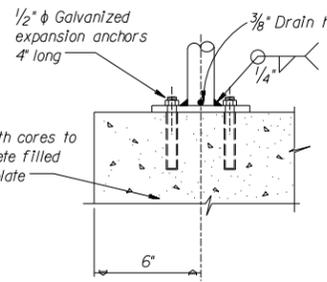
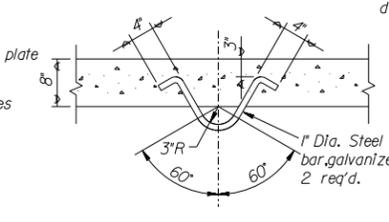
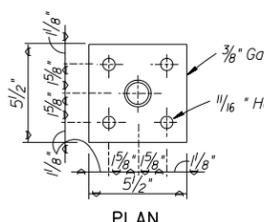
INTAKE GRATE DETAIL
SCALE: 1 1/2" INCH = 1 FOOT

NOT TO SCALE

ALL SCALES SHOWN ARE BASED ON A STANDARD DRAWING SIZE OF 28" X 40" OR METRIC DRAWING SIZE OF 841mm X 594mm. IF ANY OTHER SIZE DRAWINGS ARE FURNISHED OR PLOTTED THE CONTRACTOR SHALL ADJUST THE SCALES ACCORDINGLY. THE CONTRACTOR SHALL ALSO ADVISE HIS SUB-CONTRACTORS OF THE ABOVE.

\$\$ - THINK VALUE ENGINEERING - \$\$			
Revisions			
Symbol	Descriptions	Date	Approved
P-3	NEW DRAWING ADDED, ADDED INTAKE STRUCTURE	8-20-02	B.N.H.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA			
Designed by: D.F. MILLER (402)-221-4572 Date:	MISSOURI RIVER TIEVILLE - DECATUR BEND FISH AND WILDLIFE MITIGATION PUMPING STATION INTAKE STRUCTURE SECTION AND GRATE DETAIL		
Submitted by: BRUCE N. HARRIS, PE Date:	Plot Scale Ratio: 2.67:1 Design File: MR14S113.DGN Spec. No.: DACW 45 01 B 0009 Contract No.: DACW 45-02-C-0004	Date: August 22, 2002 Drawing Code: MBTD1-170	Sheet reference number: 3 S1.13
Chief: Structural Section			

For Reference Only



ALL SCALES SHOWN ARE BASED ON A STANDARD DRAWING SIZE OF 28" X 40" OR METRIC DRAWING SIZE OF 841mm X 594mm. IF ANY OTHER SIZE DRAWINGS ARE FURNISHED OR PLOTTED THE CONTRACTOR SHALL ADJUST THE SCALES ACCORDINGLY. THE CONTRACTOR SHALL ALSO ADVISE HIS SUB-CONTRACTORS OF THE ABOVE.

\$\$\$ - THINK VALUE ENGINEERING - \$\$\$

Revisions			
Symbol	Descriptions	Date	Approved
P-3	NEW DRAWING ADDED, REVISED PUMP STATION	8-20-02	B.N.H.

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

Designed by:
D.F. MILLER
(402)-221-4572
Date:

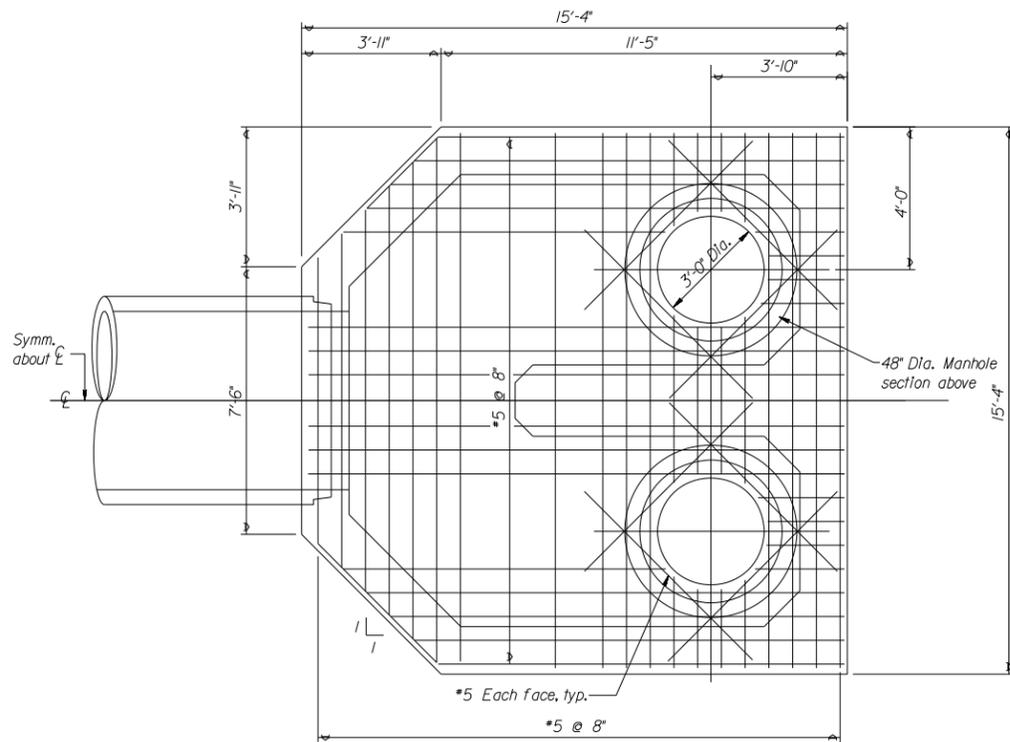
MISSOURI RIVER
**TIEVILLE - DECATUR BEND
FISH AND WILDLIFE MITIGATION**
PUMPING STATION DISCHARGE
STRUCTURE AND INTAKE SUMP

Submitted by:	Plot Scale Ratio: 2.0000	Date: August 22, 2002	Sheet reference number:
Date:	Design File: MRF14S114.DGN	Contract No.: DACW 45 01 B 0009	P 3
Chief: Structural Section	Drawing Code: MBTD1-170	Contract No.: DACW 45-02-C-0004	

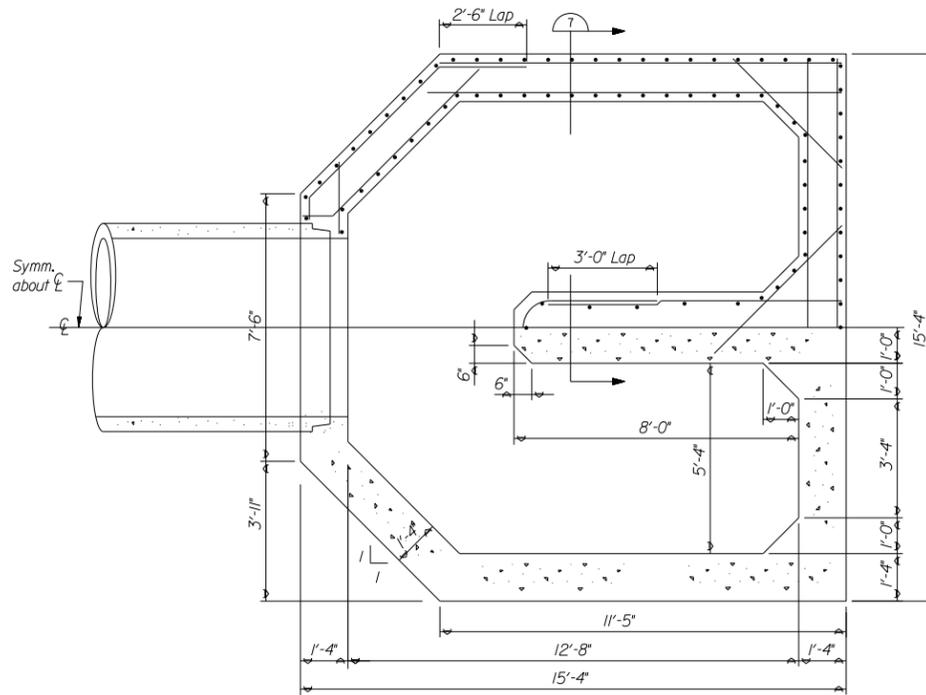
\$1.14

NOT TO SCALE

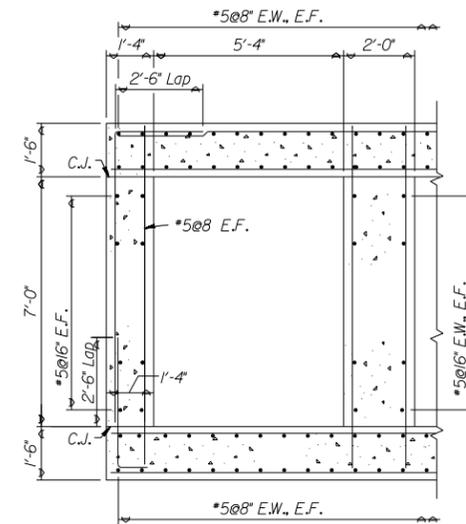
For Reference Only



SECTION 5
 ST.141ST.15
 TOP PLAN AT ELEVATION 1030.0
 SCALE: 1/2 INCH = 1 FOOT



SECTION 6
 ST.141ST.15
 SCALE: 1/2 INCH = 1 FOOT



SECTION 7
 SCALE: 1/2 INCH = 1 FOOT

NOT TO SCALE

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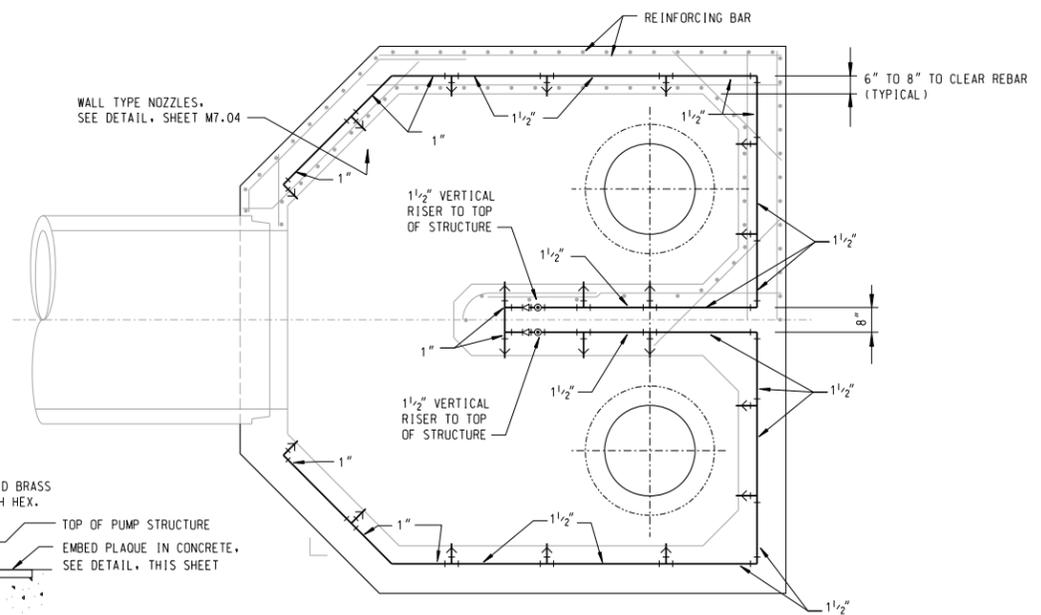
Revisions			
Symbol	Descriptions	Date	Approved
P-3	NEW DRAWING ADDED, REVISED PUMP STATION	8-20-02	B.N.H.

U.S. ARMY ENGINEER DISTRICT
 CORPS OF ENGINEERS
 OMAHA, NEBRASKA

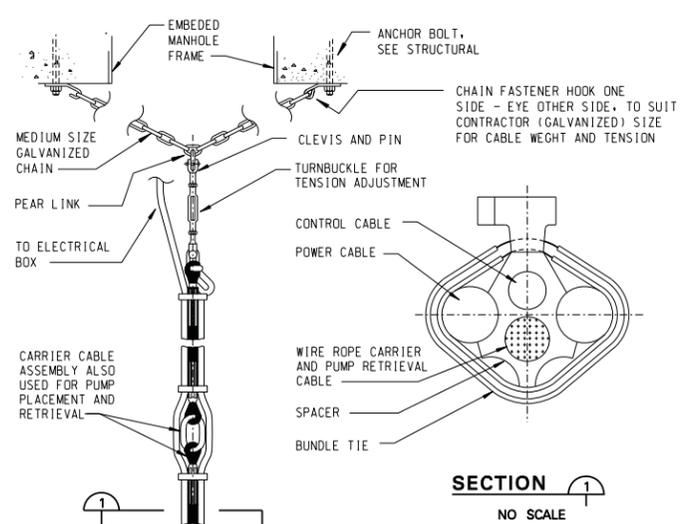
Designed by: D.F. MILLER (402)-221-4572 Date:	MISSOURI RIVER TIEVILLE - DECATUR BEND FISH AND WILDLIFE MITIGATION PUMPING STATION INTAKE SUMP	
Submitted by: Date:	Plot Scale Ratio: 2.0000 Design File: MR14S115.DGN Spec. No.: DACW 45 01 B 0009 Contract No.: DACW 45-02-C-0004	Date: August 22, 2002 Drawing Code: MBTD1-170 Sheet reference number: 3

Chief: Structural Section

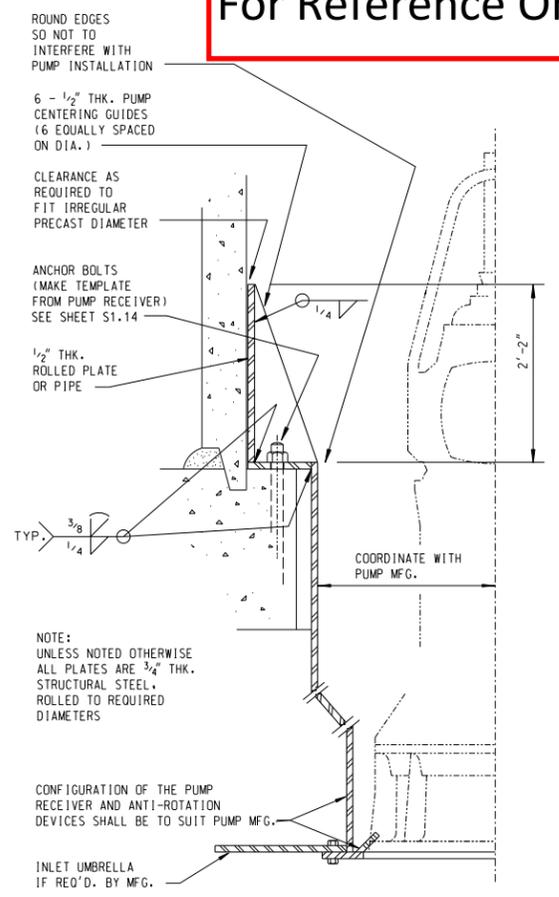
For Reference Only



PLAN PUMPING STATION INTAKE SUMP

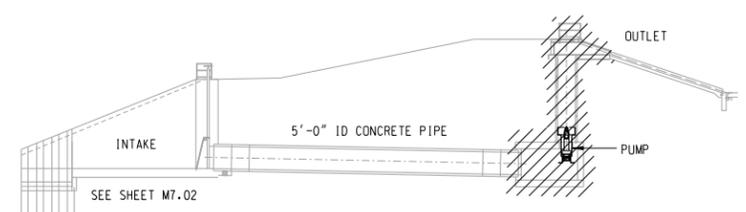


PUMP POWER & CONTROL, CABLE CARRIER AND PUMP REMOVAL SYSTEM
NO SCALE

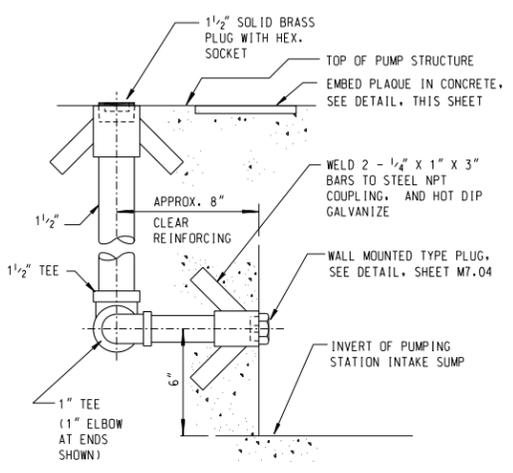


PUMP RECEIVER DETAIL

MAKE: 2
SCALE: 1 1/2 INCH = 1 FOOT

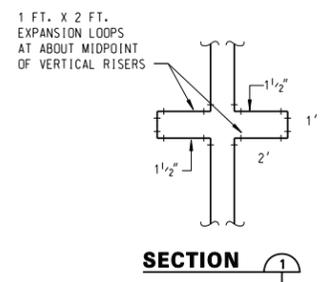


KEY SECTION THRU PUMPING STATION
NO SCALE

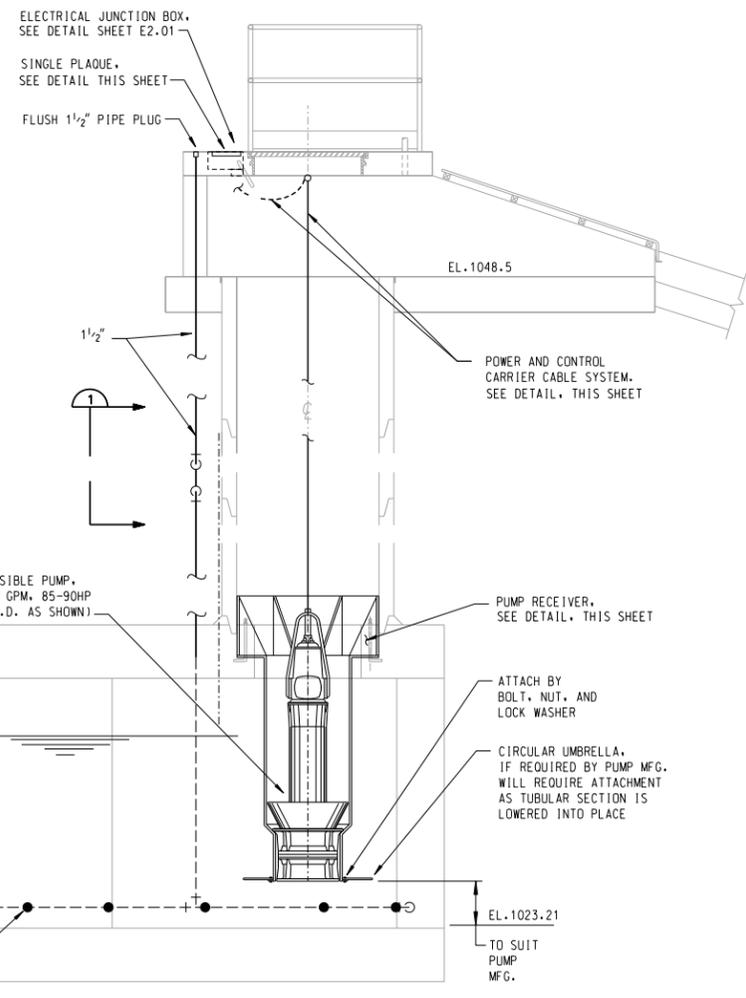


SILT BLOWOUT SYSTEM DETAIL

SCALE: 1 1/2 INCH = 1 FOOT

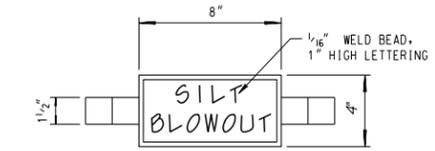


SECTION



TRANSVERSE SECTION THRU PUMPING STATION

SCALE: 1/2 INCH = 1 FOOT



PLAQUE

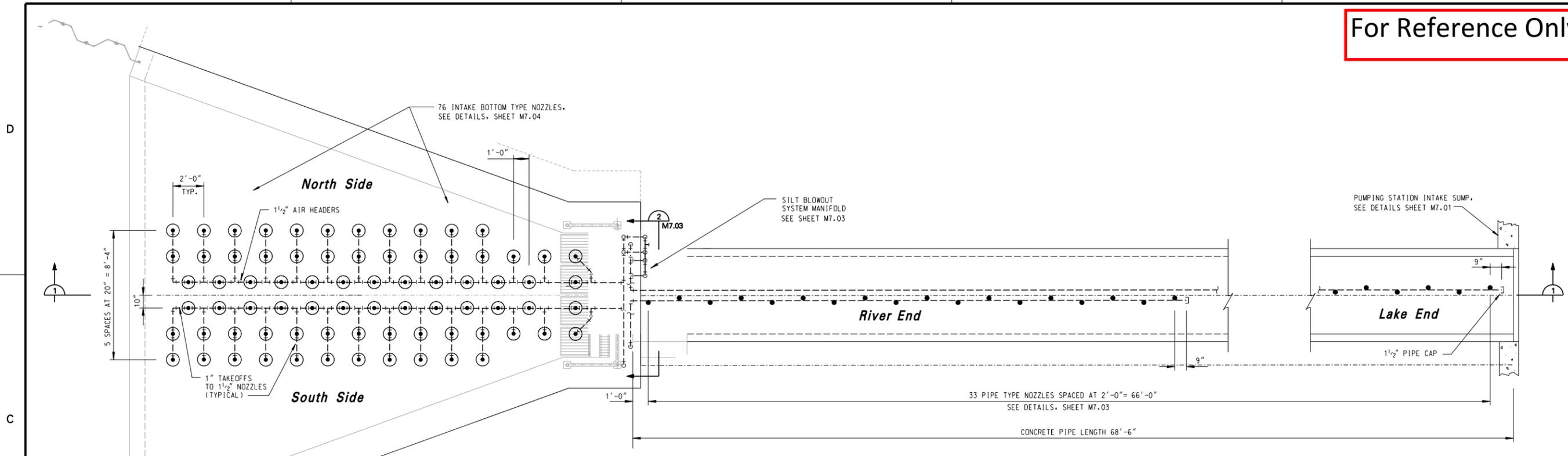
MAKE: 1
MATERIAL: WELDED AND HOT DIPPED GALVANIZED STEEL
SCALE: 1 1/2 INCH = 1 FOOT

ALL SCALES SHOWN ARE BASED ON A STANDARD DRAWING SIZE OF 28" X 40" OR METRIC DRAWING SIZE OF 841mm X 894mm. IF ANY OTHER SIZE DRAWINGS ARE FURNISHED OR PLOTTED THE CONTRACTOR SHALL ADJUST THE SCALES ACCORDINGLY. THE CONTRACTOR SHALL ALSO ADVISE HIS SUB-CONTRACTORS OF THE ABOVE.

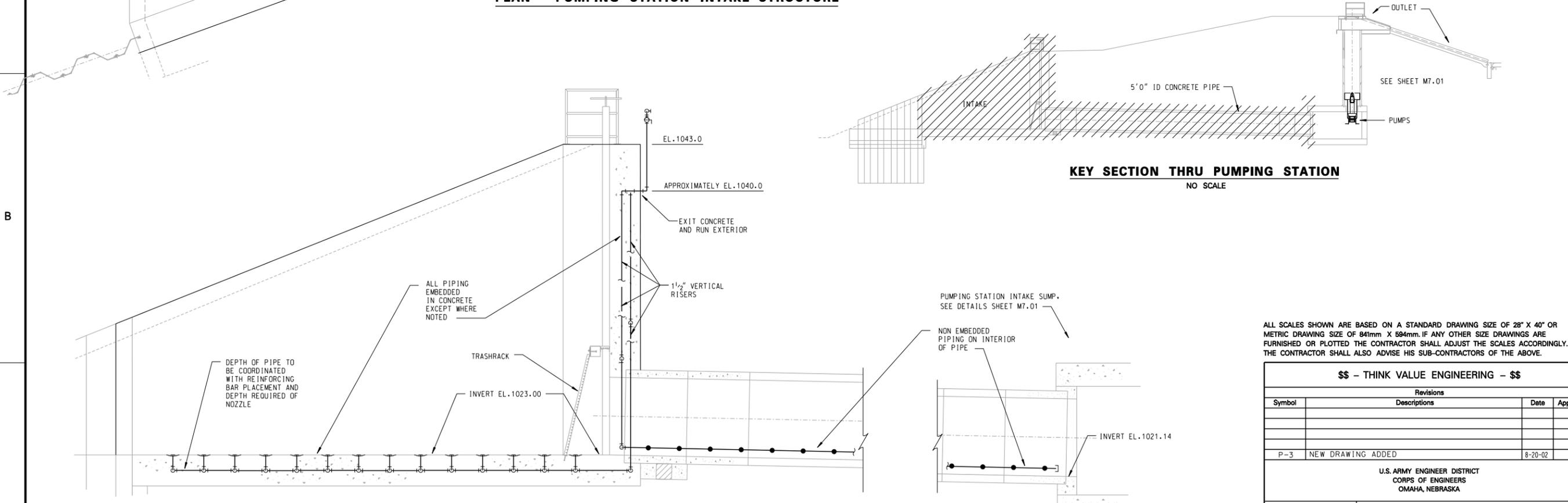
\$\$\$ - THINK VALUE ENGINEERING - \$\$\$			
Revisions			
Symbol	Descriptions	Date	Approved
P-3	REVISED PUMP STATION DESIGN	8-20-02	
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA			
Designed by: K.E.M.	MISSOURI RIVER TIEVILLE - DECATUR BEND FISH AND WILDLIFE MITIGATION		
Drawn by: K.E.M.	SUBMERSIBLE PUMP PLAN, SECTIONS, AND DETAILS		
Submitted by:	Plot Scale Ratio: 2:1	Date: August 22, 2002	Sheet reference number:
Date:	Design File: MR14M701.DGN	Drawing Code: P 3	M7.01
Chief: Mechanical Section	Contract No.: DACW 45-02-C-0004		

NOT TO SCALE

For Reference Only



PLAN - PUMPING STATION INTAKE STRUCTURE



SECTION 1
SCALE: 3/8 INCH = 1 FOOT

NOT TO SCALE

KEY SECTION THRU PUMPING STATION
NO SCALE

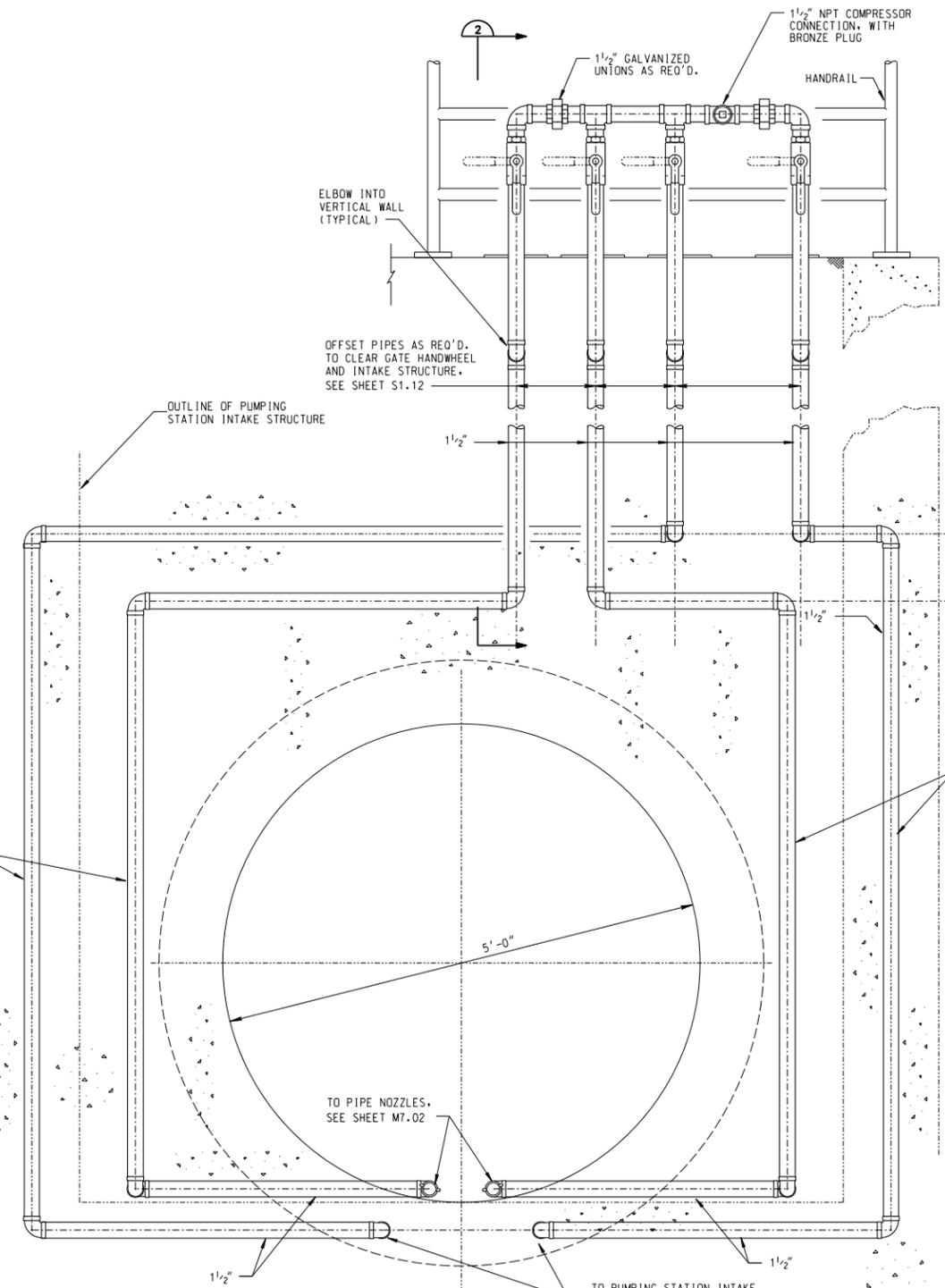
ALL SCALES SHOWN ARE BASED ON A STANDARD DRAWING SIZE OF 28" X 40" OR METRIC DRAWING SIZE OF 841mm X 594mm. IF ANY OTHER SIZE DRAWINGS ARE FURNISHED OR PLOTTED THE CONTRACTOR SHALL ADJUST THE SCALES ACCORDINGLY. THE CONTRACTOR SHALL ALSO ADVISE HIS SUB-CONTRACTORS OF THE ABOVE.

\$\$\$ - THINK VALUE ENGINEERING - \$\$\$			
Revisions			
Symbol	Descriptions	Date	Approved
P-3	NEW DRAWING ADDED	8-20-02	
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA			
Designed by: K.E.M.	MISSOURI RIVER TIEVILLE - DECATUR BEND FISH AND WILDLIFE MITIGATION PUMPING STATION SILT BLOWOUT SYSTEM PLAN, SECTION, AND DETAILS		
Drawn by: K.E.M.	Plot Scale Ratio: 1.333 : 1	Date: August 22, 2002	Sheet reference number:
Submitted by:	Design File: MR14702.DGN		
Date:	Spec. No.: DACW 45 01 B 0009	Drawing Code: MBTD1-170	
Chief: Mechanical Section	Contract No.: DACW 45-02-C-0004		M7.02

EMBED STEEL PLAQUES, LOCATE TO CLEAR HANDRAIL, BUT MAINTAIN ORDER TO AGREE WITH PIPE HEADER INSTALLATION. SEE DETAIL, SHT. M7.01

PIPE RIVER END PIPE LAKE END INLET SOUTH SIDE INLET NORTH SIDE

PARTIAL PLAN - CONCRETE WALL



SECTION M7.02
SCALE: 1 1/2 INCH = 1 FOOT

For Reference Only

DRILL AND TAP SCH. 80 PIPE FOR 1" PLUGS

1/2" NPT - SOLID BRASS PLUG, SQUARE LUG, DRILL THRU PLUG 1/4" DIA. TO MAKE NOZZLE, NOZZLES ALTERNATE SIDES EVERY 12"

1 1/2" DIA. PIPE, SEE NOTE 1

TYPICAL PIPE NOZZLE, SEE DETAIL SHT. M7.04

FOR PIPE SUPPORTS, SEE NOTE 3 THIS SHEET, AND DETAIL, SHEET M7.04

SECTION M7.01 | M7.03
SCALE: 8 INCHES = 1 FOOT

NOTES AND SPECIFICATIONS:

- PIPE SHALL BE SCHEDULE 80, STEEL, THREADED AND COUPLED, GALVANIZED, AND SHALL MEET THE REQUIREMENTS OF ASTM A 53-98 TYPE S, GRADE B (1998) "PIPE, STEEL, BLACK AND HOT-DIPPED, ZINC-COATED WELDED AND SEAMLESS"
- PIPE FITTINGS SHALL BE MALLEABLE-IRON, THREADED, GALVANIZED AND SHALL MEET THE REQUIREMENTS OF ASME B16.3 (1992) "MALLEABLE IRON THREADED FITTINGS"
- PIPE SUPPORTS TO BE SPACED AT 8'-0" MAXIMUM IN BOTTOM OF WATER PASSAGE. SUPPORTS SHALL BE ALTERNATED FROM PIPE TO PIPE SO THAT THERE IS 1/2 SUPPORT SPACING BETWEEN ANY TWO SUPPORTS.
- IF REQUIRED AT THE TIME OF INSTALLATION AS DETERMINED BY THE GOVERNMENT CONTRACTING OFFICER, WORK INSIDE THE RCP WATER PASSAGE MAY REQUIRE USE OF THE LATEST "PERMIT REQUIRED CONFINED SPACE" (PRCS) RULES AS DEFINED IN THE US ARMY CORPS OF ENGINEERS "SAFETY AND HEALTH REQUIREMENTS MANUAL" EM385-1-1, DATED 3 SEPT. 1996. A STANDBY RESCUE TEAM, VENTILATION, AND AIR MONITORING FOR OXYGEN WILL BE REQUIRED.
- IF CONFINED SPACE RULES ARE IN EFFECT AT THE TIME OF PIPE ACCESS A TEMPORARY VENTILATION FAN SHALL BE INSTALLED OVER THE MANHOLE. FAN SHALL PRODUCE 7,000 CFM @ 1/2" STATIC PRESSURE THIS WILL BE SUFFICIENT TO PRODUCE 1000 CFM OF AIR MOVEMENT WITHIN THE WATER PASSAGE. A SIMPLE SMOKE TEST WILL BE DONE TO VERIFY AIR MOVEMENT AT THE WATER PASSAGE ENTRANCE. THIS TEST SHALL BE DONE IN THE PRESENCE OF THE CONTRACTING OFFICER OR HIS REPRESENTATIVE. WATER PASSAGE SHALL THAN BE VENTILATED FOR 15 MINUTES PRIOR TO ENTRANCE. FAN SHALL RUN CONTINUOUS WHILE WATER PASSAGE IS OCCUPIED. VENTILATION ALONE DOES NOT RELAX THE REQUIREMENT OF NOTE 4.
- FOR VENTILATION FAN POWER THE CONTRACTOR SHALL PROVIDE HIS OWN TEMPORARY POWER UNLESS NEW POWER IS AVAILABLE AT THE TIME.
- CONTRACTOR SHALL VERIFY ALL QUANTITIES.

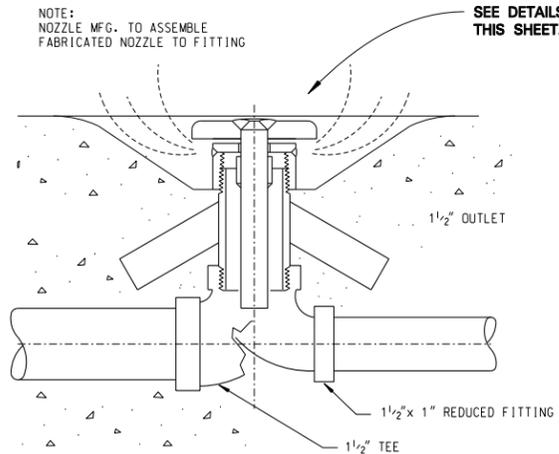
ALL SCALES SHOWN ARE BASED ON A STANDARD DRAWING SIZE OF 28" X 40" OR METRIC DRAWING SIZE OF 841mm X 594mm. IF ANY OTHER SIZE DRAWINGS ARE FURNISHED OR PLOTTED THE CONTRACTOR SHALL ADJUST THE SCALES ACCORDINGLY. THE CONTRACTOR SHALL ALSO ADVISE HIS SUB-CONTRACTORS OF THE ABOVE.

\$\$ - THINK VALUE ENGINEERING - \$\$			
Revisions			
Symbol	Descriptions	Date	Approved
P-3	NEW DRAWING ADDED	8-20-02	
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA			
Designed by: K.E.M.	MISSOURI RIVER TIEVILLE - DECATUR BEND FISH AND WILDLIFE MITIGATION		
Drawn by: K.E.M.	SILT BLOWOUT SYSTEM SECTIONS, AND DETAILS		
Submitted by: S.G.E.	Plot Scale Ratio: 4 : 1	Date: August 22, 2002	Sheet reference number:
Date:	Design File: MRI4M703.DGN		
	Spec. No.: DACW 45 01 B 0009	Drawing Code: P 3	
	Contract No.: DACW 45-02-C-0004	MBTD1-170	M7.03
Chief: Mechanical Section			

OPERATION
THIS SYSTEM WAS DESIGNED FOR A MEDIUM SIZE TRAILER MOUNTED COMPRESSOR HAVING AN OUTPUT OF 175 CFM @ 100 PSI. A LARGER COMPRESSOR MAY BE USED. LINES IN COMBINATION CAN BE OPENED TO SUIT COMPRESSOR SIZE. PORTABLE TRAILER TYPE COMPRESSORS RANGE FROM 105 CFM GASOLINE POWERED TO 800 CFM DIESEL POWERED. RECOMMENDED RANGE IS 175 TO 400 CFM. LACK OF FLOW DOES NOT NECESSARILY MEAN THE PIPING IS PLUGGED. A LARGER COMPRESSOR HAVING MORE FLOW MAY BE REQUIRED.

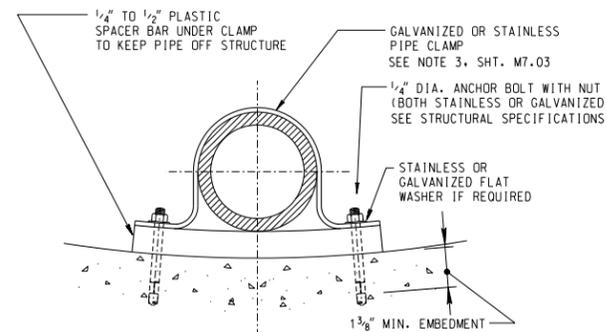
INFORMATION IS FURNISHED FOR FUTURE USE BY THE GOVERNMENT. THIS CONTRACT DOES NOT INCLUDE A COMPRESSOR

NOT TO SCALE



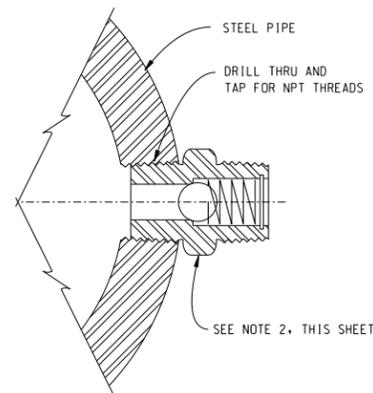
INTAKE BOTTOM TYPE NOZZLE INSTALLATION

SCALE: 3 INCHES = 1 FOOT



WATER PASSAGE PIPE SUPPORT

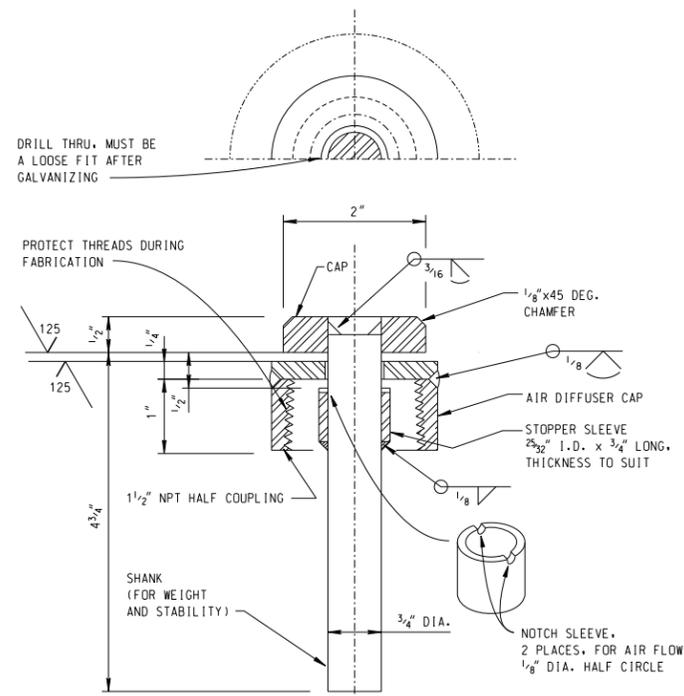
SCALE: 12 INCHES = 1 FOOT



PIPE TYPE NOZZLE

MATERIAL: BRASS BODY WITH STAINLESS BALL
NO. REQUIRED: 33

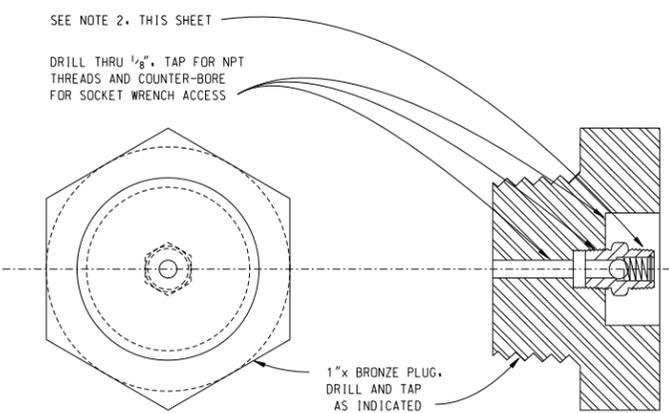
SCALE: 24 INCHES = 1 FOOT



INTAKE BOTTOM TYPE DETAIL

MATERIAL: CARBON STEEL (GALVANIZED AFTER FABRICATION)
MAKE: 78

SCALE: 6 INCHES = 1 FOOT



WALL MOUNTED TYPE NOZZLE

MATERIAL: BRASS BODY WITH STAINLESS BALL
NO. REQUIRED: 20

SCALE: 12 INCHES = 1 FOOT

NOTES:

- SEE SHEET M7.03 FOR SPECIFICATIONS
- 1/8" COMPACT INLINE CHECK VALVE, SPRING LOADED, METAL SEATED, (1 TO 5 PSIG OPENING PRESSURE), SIMILAR OR EQUAL TO MCMaster-CARR # 46105K31, CAT.105, PG 297

ALL SCALES SHOWN ARE BASED ON A STANDARD DRAWING SIZE OF 28" X 40" OR METRIC DRAWING SIZE OF 841mm X 594mm. IF ANY OTHER SIZE DRAWINGS ARE FURNISHED OR PLOTTED THE CONTRACTOR SHALL ADJUST THE SCALES ACCORDINGLY. THE CONTRACTOR SHALL ALSO ADVISE HIS SUB-CONTRACTORS OF THE ABOVE.

Revisions			
Symbol	Descriptions	Date	Approved
P-3	NEW DRAWING ADDED	8-20-02	

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

Designed by: K.E.M.	MISSOURI RIVER TIEVILLE - DECATUR BEND FISH AND WILDLIFE MITIGATION		
Drawn by: K.E.M.	SILT BLOWOUT SYSTEM DETAILS		
Submitted by:	Plot Scale Ratio: .1666 : 1	Date: August 22, 2002	Sheet reference number:
Date:	Design File: MRI4704.DGN	Spec. No.: DACW 45 01 B 0009	Drawing Code: MBTD1-170
Chief: Mechanical Section	Contract No.: DACW 45-02-C-0004		M7.04

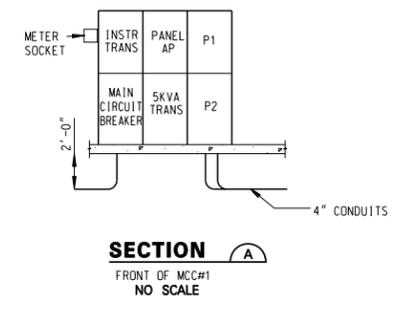
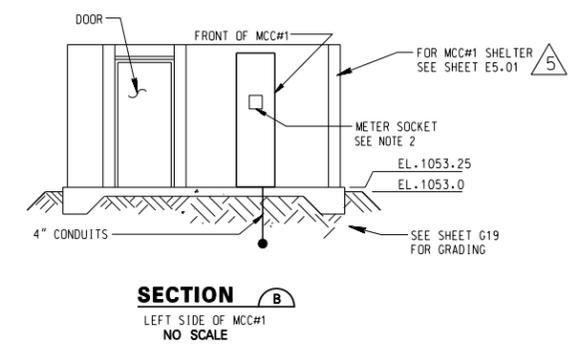
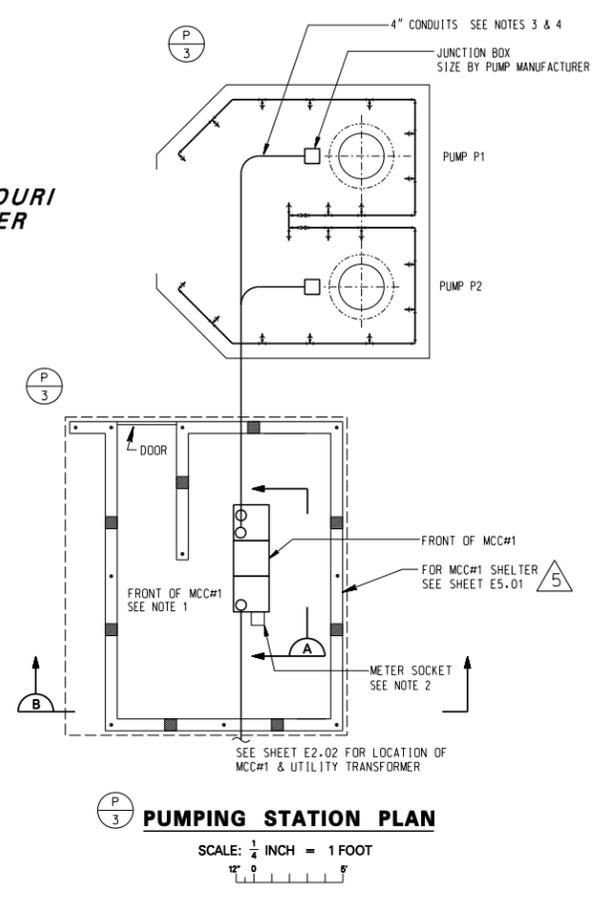
NOT TO SCALE

For Reference Only

NOTES:

1. SEE SHEET E5.01 FOR ONE-LINE DIAGRAM AND SPECIFIC REQUIREMENTS FOR MCC#1
2. MCC#1 SHALL INCLUDE A WATT-HOUR METER SOCKET, 3-300:5A CURRENT TRANSFORMERS, 3-480:120V VOLTAGE TRANSFORMERS FOR WESTERN IOWA POWER COOPERATIVE'S USE. THE CONTRACTOR SHALL COORDINATE METER SOCKET'S MOUNTING HEIGHT WITH MR. JIM FREML, OPERATIONS SUPERINTENDENT, AT PHONE NUMBER (712)263-2943. THE COOPERATIVE WILL PROVIDE THE WATT-HOUR METER.
3. THE SUBMERSIBLE POWER/CONTROL CABLE SHALL BE FURNISHED BY THE PUMP MANUFACTURER AND SIZED IN ACCORDANCE WITH NEC WITH SUFFICIENT CONDUCTORS FOR ALL REQUIRED CONTROL AND MONITORING FUNCTIONS BY ABOVE NOTES AND THE SPECIFICATION. SUITABLE SEALING FITTINGS/BUSHINGS AND STRAIN RELIEF SHALL BE FURNISHED AND INSTALLED TO PREVENT BOTH THE ENTRY OF MOISTURE INTO THE MOTOR HOUSING AND LEAKAGE OF WATER INTO THE JUNCTION BOX.
4. THE CONTRACTOR SHALL INSTALL 4" CONDUITS UNDERGROUND FROM MCC#1 TO JUNCTION BOX SUBMERSIBLE POWER/CONTROL CABLES TO PUMPS.

MISSOURI RIVER

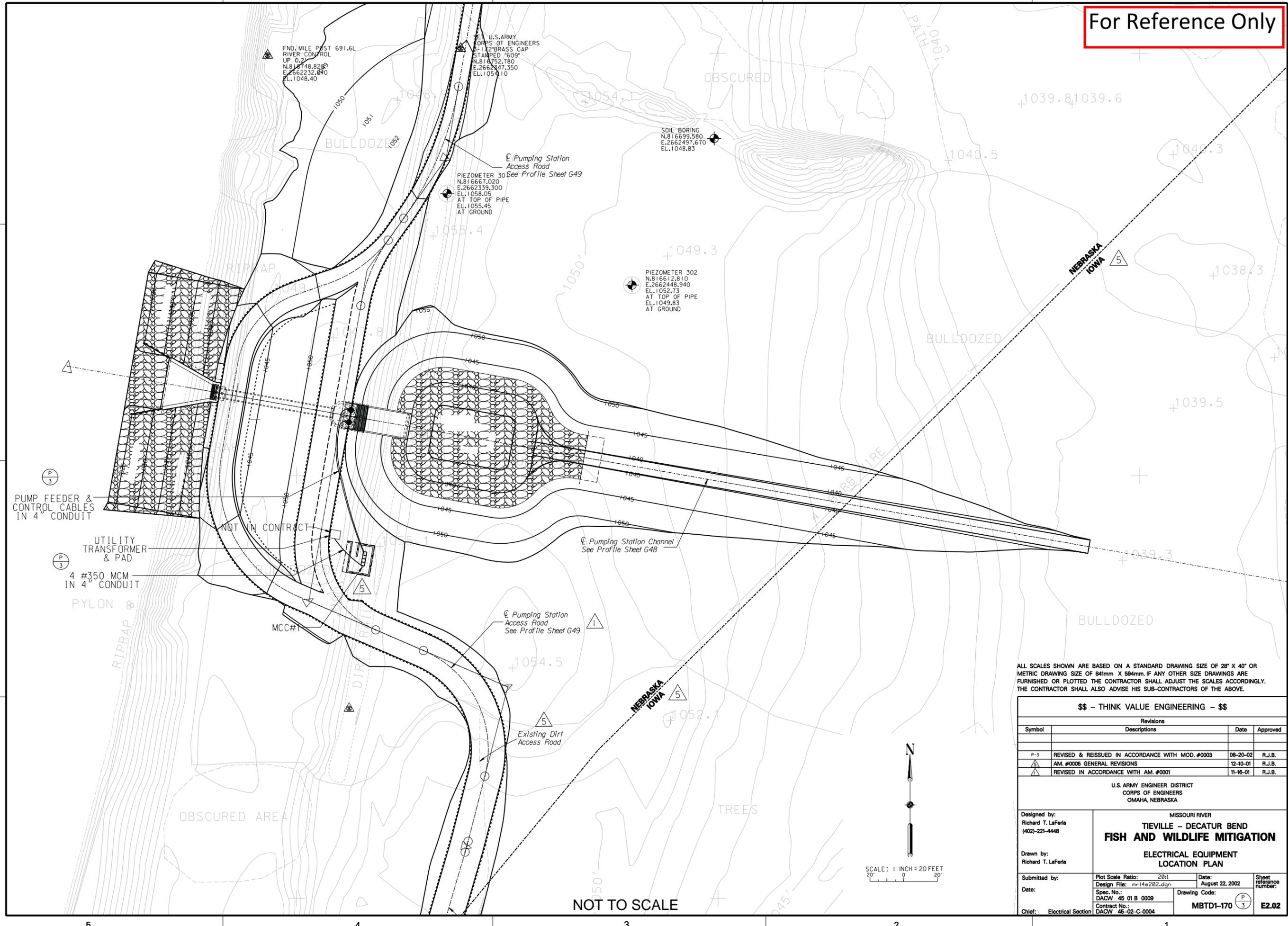


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\$\$ - THINK VALUE ENGINEERING - \$\$			
Revisions			
Symbol	Descriptions	Date	Approved
P-3	REVISED PUMP STATION - DRAWING ISSUED	08-20-02	
△	REVISED IN ACCORDANCE WITH AM. #0005	12-10-01	R.J.B.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA			
Designed by: Richard T. LaFeria (402)-221-4448	MISSOURI RIVER TIEVILLE - DECATUR BEND FISH AND WILDLIFE MITIGATION PUMPING STATION ELECTRICAL PLAN AND ELEVATION		
Drawn by: Richard T. LaFeria			
Submitted by:	Plot Scale Ratio: 8 : 1	Date: August 22, 2002	Sheet reference number:
Date:	Design File: MR14E201.DGN	Drawing Code:	
	Spec. No.: DACW 45 01 B 0009		
	Contract No.: DACW 45-02-C-0004		
Chief: Electrical Section		MBTD1-170	E2.01

NOT TO SCALE

For Reference Only



ALL SCALES SHOWN ARE BASED ON A STANDARD DRAWING SIZE OF 28" X 40" OR METRIC DRAWING SIZE OF 841mm X 594mm. IF ANY OTHER SIZE DRAWINGS ARE FURNISHED OR PLOTTED THE CONTRACTOR SHALL ADJUST THE SCALES ACCORDINGLY. THE CONTRACTOR SHALL ALSO ADVISE HIS SUB-CONTRACTORS OF THE ABOVE.

\$\$ - THINK VALUE ENGINEERING - \$\$			
Revisions			
Symbol	Descriptions	Date	Approved
P-3	REVISED & REISSUED IN ACCORDANCE WITH MOD. #0003	08-20-02	R.J.B.
△	AM. #0005 GENERAL REVISIONS	12-10-01	R.J.B.
△	REVISED IN ACCORDANCE WITH AM. #0001	11-16-01	R.J.B.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA			
Designed by: Richard T. LaFeria (402)-221-4448	MISSOURI RIVER TIEVILLE - DECATUR BEND FISH AND WILDLIFE MITIGATION		
Drawn by: Richard T. LaFeria	ELECTRICAL EQUIPMENT LOCATION PLAN		
Submitted by:	Plot Scale Ratio: 20:1	Date: August 22, 2002	Sheet reference number:
Date:	Design File: mr14e202.dgn	Drawing Code:	
Chief: Electrical Section	Spec. No.: DACW 45 01 B 0009	Contract No.: DACW 45-02-C-0004	<div style="border: 1px solid black; padding: 2px; display: inline-block;"> MBTD1-170 </div> <div style="display: inline-block; vertical-align: middle; text-align: center;"> P 3 </div>
			E2.02

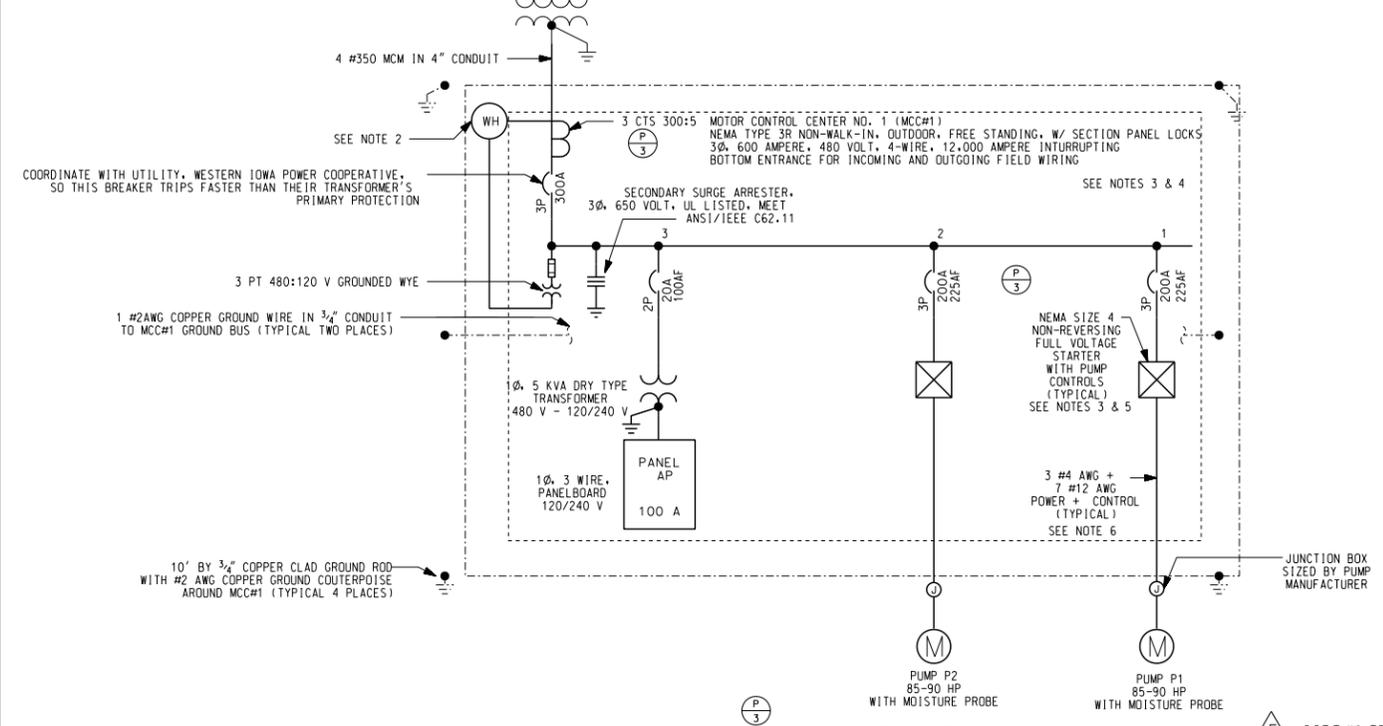
NOT TO SCALE

SCALE: 1 INCH = 20 FEET



PANEL AP								
ENCLOSURE:	NEMA 1	WIRING:	1 PHASE, 3 WIRE					
MOUNTING:	SURFACE	VOLTAGE:	240/120					
OC DEVICE TYPE:	BREAKER	BUS RATING:	100 A					
DEVICE FAMILY:	BOLT-ON	BUS SC RATING:	10 KAIC					
NOTES: MAIN LUGS ONLY								
CK NO	DESCRIPTION	VA	OC	PH	OC	VA	DESCRIPTION	CK NO
1	STRIP HEATERS	200	20/1	A	20/1	800	GEN. RECEPTACLE	2
3	STRIP HEATERS	200	20/1	B	20/1	800	GEN. RECEPTACLE	4
5	CABINET LIGHTS	150	20/1	A	20/1	1,000	SPARE	6
7	EXHAUST FAN	696	20/1	B	20/1	1,000	SPARE	8
ESTIMATED MAXIMUM DEMAND = 4,896 VA								

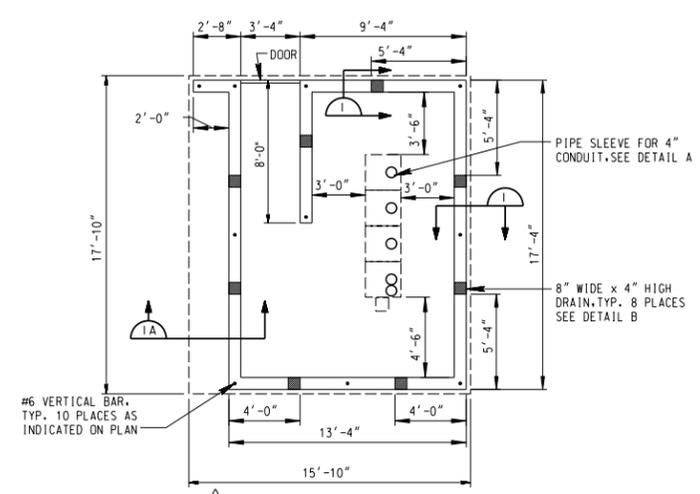
- NOTES:**
- THE CONTRACTOR SHALL COORDINATE THE TRANSFORMER'S LOCATION WITH MR. JIM FREML, OPERATIONS SUPERINTENDENT, WESTERN IOWA POWER COOPERATIVE AT PHONE NUMBER (712)263-2943. WESTERN IOWA POWER COOPERATIVE WILL PROVIDE THE TRANSFORMER AND PAD. THE CONTRACTOR SHALL PROVIDE AND INSTALL THE SECONDARY FEEDER CABLE TO MCC#1.
 - MCC#1 SHALL INCLUDE A WATT-HOUR METER SOCKET, 3-300/5A CURRENT TRANSFORMERS, 3-480/120V VOLTAGE TRANSFORMERS FOR WESTERN IOWA POWER COOPERATIVE'S USE. THE CONTRACTOR SHALL COORDINATE METER SOCKET'S MOUNTING HEIGHT WITH MR. JIM FREML, OPERATIONS SUPERINTENDENT, AT PHONE NUMBER (712)263-2943. THE COOPERATIVE WILL PROVIDE THE WATT-HOUR METER.
 - MCC#1 SHALL BE A FREE STANDING, 3Ø, 600 AMPERE, 480 VOLT, NEMA TYPE 3R NON-WALK-IN, OUTDOOR MOTOR CONTROL CENTER. MCC#1 SHALL BE FACTORY WIRE TO INCLUDE STARTING INTERLOCKS WHICH SHALL ALLOW ONLY ONE PUMP TO START AT ANY ONE TIME WITH NOT LESS THAN 30 SECONDS BETWEEN STARTING THE NEXT PUMP. EACH PUMP SHALL HAVE FOLLOWING:
 - A 3-POLE 100A CIRCUIT BREAKER
 - A NON-REVERSING FULL VOLTAGE TYPE STARTER, NEMA SIZE 4
 - A PUMP MOTOR CONTROL MODULE WITH INDICATING LAMPS (FROM PUMP MANUFACTURER)
 - SEE NOTE 5 BELOW
 - A HAND-OFF-AUTO (H-O-A) CONTROL SWITCH.
 - A STOP PUSH BUTTON.
 - A RED INDICATOR LAMP FOR PUMP RUNNING.
 - A GREEN INDICATOR LAMP FOR PUMP STOPPED.
 - A WHITE INDICATOR LAMP FOR MOISTURE IN PUMP MOTOR PROBE (PUMP STOPPED).
 - A 6-DIGIT ELAPSED RUNNING TIME METER WITH XXXXX.X HOURS DISPLAY.
 - STARTING INTERLOCK TIMERS AND RELAYS AS REQUIRED.
 - DEVICE/LIGHT NAMEPLATES LAMINATED PLASTIC NAMEPLATE WITH WHITE CUT LETTERS.
 THE CONTROLS SHALL INCLUDE 1 MASTER START PUSH BUTTON THAT WILL START BOTH PUMPS (IF THE H-O-A SWITCHES ARE IN THE AUTO POSITION) AFTER IT IS PRESSED AND A MASTER ADJUSTABLE TIMER WITH A RANGE FROM TWO HOURS TO 72 HOURS. AFTER SETTING THE TIMER, PUMP P1 WILL BE STARTED FIRST WITH AT LEAST 30 SECOND DELAY, THEN PUMP P2 WILL START. IF THE H-O-A SWITCHES ARE THE OFF POSITION, THAT PUMP WILL NOT BE STARTED. A BLUE INDICATING LAMP THAT WILL BE ON AFTER PRESSING THE MASTER START PUSH BUTTON AND WILL REMAIN ON UNTIL BOTH PUMPS IN THE AUTO POSITION HAVE BEEN STARTED. AFTER THE PUMPS HAVE STARTED THE BLUE INDICATING LAMP SHALL TURN OFF. AFTER HAVING BEEN STARTED IN AUTO POSITION BY MASTER START PUSH BUTTON THE INDIVIDUAL PUMP CAN BE STOPPED BY PRESSING THEIR STOP PUSH BUTTONS OR PLACING H-O-A IN OFF POSITION. PLACING THE H-O-A SWITCHES IN THE HAND POSITION SHALL START THE PUMP. ALL RELAYS, TIMERS, AUXILIARY CONTACTS, AND WIRING TO INSTALL THE STARTING INTERLOCK SYSTEM SHALL BE FACTORY INSTALLED AND TESTED PRIOR TO SHIPPING TO THE FIELD.
 - MCC#1 SHALL BE PROVIDED WITH THE FOLLOWING:
 - A 3-POINT LOCKS FOR EACH DOOR.
 - A DOOR STOPS AND DOOR HOLDERS FOR EACH DOOR.
 - A FLUORESCENT LIGHT WITH DOOR ACTIVATED SWITCH FOR EACH CABINET (WHICH TURNS ON WHEN OPENED AND OFF WHEN CLOSED).
 - CONDENSATION PROTECTION HEATER STRIPS IN EACH CABINET WITH 30°F TO 50°F THERMOSTAT SIZED FOR AMBIENT TEMPERATURE -20°F.
 - AN EXHAUST FAN WITH 80°F TO 100°F THERMOSTAT SIZED AND ARRANGED FOR ENTIRE MCC FOR AMBIENT TEMPERATURE 104°F.
 - TWO 20-AMPERE DUPLEX GROUND FAULT INTERRUPT RECEPTACLES.
 - A 5 KVA DRY TYPE TRANSFORMER, 1Ø, 480 VOLT - 120/240 VOLT, AND
 - AN 8 CIRCUIT DISTRIBUTION PANELBOARD AP (SCHEDULE THIS SHEET).
 - A MOUNTING CHANNEL FOR LEVELING THE MOTOR CONTROL CENTER.
 - A FULL-LENGTH COPPER GROUND BUS BAR.
 - THE PUMP MANUFACTURER SHALL SUPPLY THEIR STANDARD CONTROL MODULE WITH INDICATING LAMPS TO THE MCC#1 MANUFACTURER FOR FACTORY INSTALLATION IN THE MOTOR CONTROL CENTER. THE CONTROL MODULE SHALL PROVIDE MONITORING AND CONTROL OF THE PUMP WITH AUTOMATIC SHUT DOWN OF THE PUMP AND ANNUNCIATING (INDICATING LIGHTS) OF THE FAULT CONDITION THAT CAUSED A PUMP SHUT DOWN. MANUAL RESET SHALL BE REQUIRED FOR TURNING THE INDICATING LAMPS OFF. THE MODULE SHALL MONITOR AND SHUT DOWN FOR ABNORMAL LEVELS OF THE FOLLOWING:
 - MONITORING STATOR OVERTEMPERATURE.
 - MONITORING THRUST BEARING OVERTEMPERATURE.
 - MONITORING FOR WATER INTRUSION INTO THE STATOR HOUSING.
 - MONITORING FOR WATER INTRUSION INTO JUNCTION BOX.
 - MONITORING GEAR REDUCTION OVERTEMPERATURE (IF GEAR IS PROVIDED).
 - THE SUBMERSIBLE POWER/CONTROL CABLE SHALL BE FURNISHED BY THE PUMP MANUFACTURER AND SIZED IN ACCORDANCE WITH NEC AND WITH SUFFICIENT CONDUCTORS FOR ALL REQUIRED CONTROL AND MONITORING FUNCTIONS BY ABOVE NOTES AND THE SPECIFICATION. SUITABLE SEALING FITTINGS/BUSHINGS AND STRAIN RELIEF SHALL BE FURNISHED AND INSTALLED TO PREVENT BOTH THE ENTRY OF MOISTURE INTO THE MOTOR HOUSING AND LEAKAGE OF WATER INTO THE JUNCTION BOX.



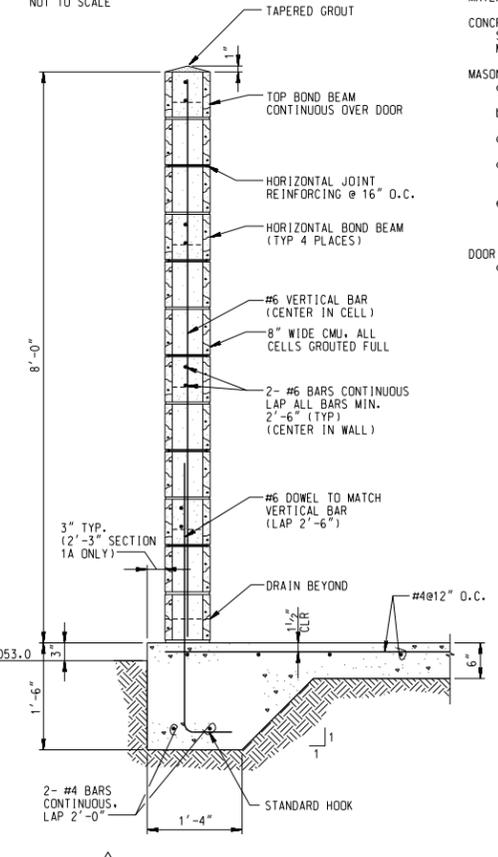
ONE LINE DIAGRAM
NOT TO SCALE

MCC#1 CMU SHELTER NOTES:

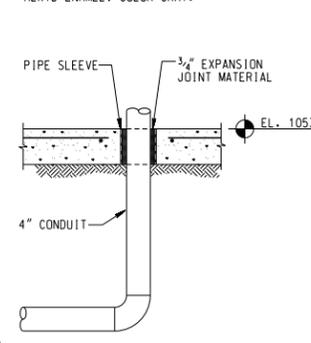
- MATERIAL NOTES:**
CONCRETE: SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 03307. CONCRETE STRENGTH (f'c) SHALL BE 4000 PSI. REINFORCING SHALL MEET THE REQUIREMENTS OF MASONRY ITEM d) BELOW.
- MASONRY:**
- HOLLOW CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C90 GRADE N, TYPE 1, RUNNING BOND.
 - MORTAR SHALL CONFORM TO ASTM C270, TYPE S, AND AVERAGE COMPRESSIVE STRENGTH OF 1500 psi AT 28 DAYS.
 - GROUT SHALL CONFORM TO ASTM C476 WITH f'c OF 2000 psi AT 28 DAYS. ALL GROUT SHALL BE MECHANICALLY VIBRATED.
 - REINFORCING BARS SHALL BE IN ACCORDANCE WITH ASTM A615/A616 GRADE 60. PROVIDE BENT BARS TO MATCH HORIZONTAL BOND BEAM REINFORCING AT CORNERS AND LAP REINFORCING 2'-6".
 - HORIZONTAL JOINT REINFORCING SHALL CONSIST OF NOT LESS THAN TWO PARALLEL LONGITUDINAL, GALVANIZED STEEL WIRES, NO. 9 GAUGE OR LARGER CENTERED IN EACH FACE SHELL WITH CROSS WIRES AT INTERVALS NOT TO EXCEED 8 INCHES.
- DOOR AND FRAME:**
- STANDARD STEEL FRAME - ANSI A250.8, WITH 4" HEAD, CONTINUOUSLY WELD FRAME FACES AT CORNER JOINTS; GRIND WELDS SMOOTH. SET FRAMES IN ACCORDANCE WITH SDI 105. PLUMB, ALIGN, AND BRACE SECURELY UNTIL PERMANENT ANCHORS ARE SET. BACKFILL FRAME WITH MORTAR, ENSURE THAT STOPS ARE FILLED WITH RIGID INSULATION BEFORE MORTAR IS PLACED. IF AN ADDITIVE IS USED IN THE MORTAR, COAT INSIDE OF FRAMES WITH CORROSION-INHIBITING BITUMINOUS MATERIAL. PROVIDE THREE SILENCERS ON DOOR STOP.
 - STANDARD STEEL DOOR - ANSI A250.8, MAXIMUM DUTY, LEVEL 4, PHYSICAL PERFORMANCE LEVEL A, MODEL # WITH CORE CONSTRUCTION AS REQUIRED BY THE MANUFACTURER FOR EXTERIOR DOORS. DOOR SIZE 7'-0"x3'-0"x1 3/4" THICK, STANDARD UNDERCUT. DOOR SHALL HAVE TOP EDGE CLOSED FLUSH AND SEALED TO PREVENT WATER INTRUSION. PREPARE DOOR TO RECEIVE HARDWARE SPECIFIED. HANG DOOR IN ACCORDANCE WITH CLEARANCES SPECIFIED IN ANSI A250.8.
 - HARDWARE - 3 PAIR HINGES, ANSI/BHMA A156.1, MINIMUM 4 1/2"x4 1/2", UNLESS LARGER SIZE REQUIRED BY DOOR MANUFACTURER, STAINLESS STEEL, BORED LOCK, ANSI/BHMA A156.2, SERIES 4000, GRADE 1, FUNCTION F86 UTILITY DOOR, BRUSHED ALUMINUM. KNOBS AND ROSES SHALL BE 0.050 INCH THICK IF UNREINFORCED. IF REINFORCED, OUTER SHELL SHALL BE 0.035 INCH THICK AND COMBINED THICKNESS SHALL BE 0.070 INCH, EXCEPT KNOB SHANK SHALL BE 0.060 INCH THICK. DOOR STOP - WALL BUMPER TYPE LQ2251.
 - PAINT - RED IRON OXIDE PRIMER, TWO COATS FIRST-LINE COMMERCIAL GRADE EXTERIOR ALKYD ENAMEL, COLOR GRAY.



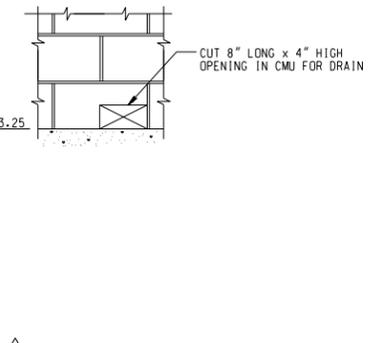
MCC#1 CMU SHELTER
SCALE: 1/4 INCH = 1 FOOT



SECTION 1A ONLY
SCALE: 1 INCH = 1 FOOT



DETAIL A
SCALE: 1 INCH = 1 FOOT



DETAIL B
SCALE: 1 INCH = 1 FOOT

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Revisions			
Symbol	Descriptions	Date	Approved
P-3	REVISED & REISSUED IN ACCORDANCE WITH MOD. #0003	08-20-02	
Δ	REVISED IN ACCORDANCE WITH AM. #0005	12-10-01	R.J.B.

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

Designed by: Richard T. LaFeria (402)-221-4448	MISSOURI RIVER TIEVILLE - DECATUR BEND FISH AND WILDLIFE MITIGATION
Drawn by: Richard T. LaFeria	ONE LINE DIAGRAM
Submitted by:	Plot Scale Ratio: 1:1
Date:	Design File: MR14E501.DGN
Chief: Electrical Section	Spec. No.: DACW 45 01 B 0009
	Contract No.: DACW 45-02-C-0004
	Date: August 22, 2002
	Sheet reference number: MBTD1-170 (P) 3 E5.01