GW - 028

FIRE WATER PONDS

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, April 23, 2010 8:03 AM
To: 'Moore, Darrell'
Cc: VonGonten, Glenn, EMNRD; Lackey, Johnny; Blohm, Bob
Subject: RE: Drawings for new fire pond

Approved.

Please be advised that OCD approval of this plan does not relieve Navajo Refining Company of responsibility should their operations pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve Navajo Refining Company of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Moore, Darrell [mailto:Darrell.Moore@hollycorp.com]
Sent: Friday, April 23, 2010 7:41 AM
To: Chavez, Carl J, EMNRD
Cc: VonGonten, Glenn, EMNRD; Lackey, Johnny; Blohm, Bob
Subject: RE: Drawings for new fire pond

The water is groundwater from Navajo's water wells. No treatment. The water quality will be drinking water quality.

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Thursday, April 22, 2010 4:15 PM
To: Moore, Darrell
Cc: VonGonten, Glenn, EMNRD
Subject: RE: Drawings for new fire pond

Where is the water coming from? Is it treated? What will be the water quality? Thnx.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
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E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Moore, Darrell [mailto:Darrell.Moore@hollycorp.com]
Sent: Monday, March 22, 2010 1:36 PM

To: Chavez, Carl J, EMNRD
Subject: FW: Drawings for new fire pond

Carl

Attached are the drawings and a Google Earth map showing the location of a new Fire Water Pond we will be building in the next few months here at the Artesia facility. As part of our Discharge Permit (GW-028) we are required to notify OCD of new construction.

From: Blohm, Bob
Sent: Tuesday, March 16, 2010 10:27 AM
To: Moore, Darrell
Subject: Drawings for new fire pond

Drawings attached.
Holler if you need anything else.

B.

Chavez, Carl J, EMNRD

From: Moore, Darrell [Darrell.Moore@hollycorp.com]
Sent: Monday, March 22, 2010 1:36 PM
To: Chavez, Carl J, EMNRD
Subject: FW: Drawings for new fire pond
Attachments: 3043_001.pdf; Anchors STD A-1.pdf; Base Support Lined Pipe STD-BSL.pdf; Electrical Drawings 0-2.pdf; Electrical Oneline.pdf; Fire Water Pump Data Sheet.pdf; Fire Water Pump Skid data sheet.xls; Grounding Standards Drawings 3-8.pdf; P&ID, Line List, Plot Plan, Civil & Mech Package.pdf; P&ID, Plot Plan, Line List.pdf; Pipe Spec A 2-3FW.xls; Piping Specs.pdf; Rest of Electrical Drawings & Cable Schedule.pdf; Suction Strainer Detail.pdf; U-Bolts STD-UB.pdf; New Fire Water Pond.kmz

Carl

Attached are the drawings and a Google Earth map showing the location of a new Fire Water Pond we will be building in the next few months here at the Artesia facility. As part of our Discharge Permit (GW-028) we are required to notify OCD of new construction.

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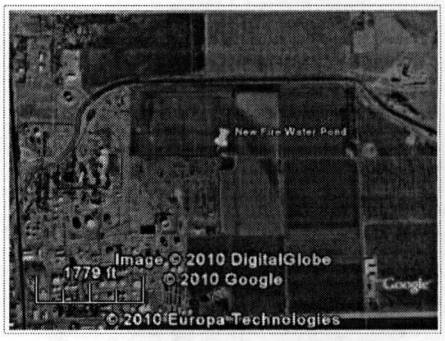
Sent: Tuesday, March 16, 2010 10:27 AM
To: Moore, Darrell
Subject: Drawings for new fire pond

Drawings attached.
Holler if you need anything else.

B.

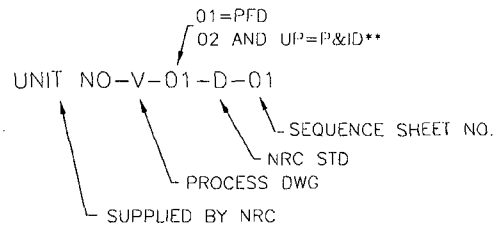
New Fire Water Pond.kmz

New Fire Water Pond



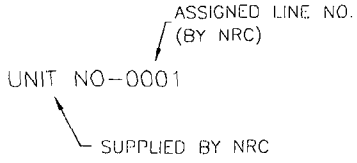
UNIT #60

P&ID's AND PFD's

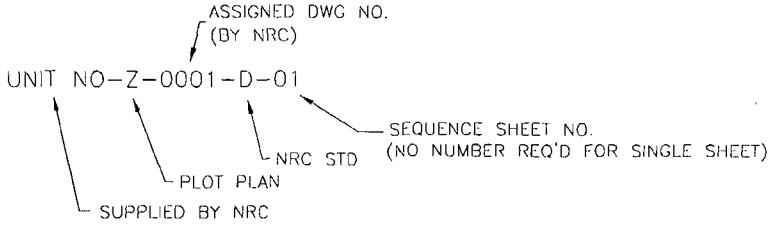


**03, 04, ETC FOR DIFFERENT SYSTEMS WITHIN SAME UNIT

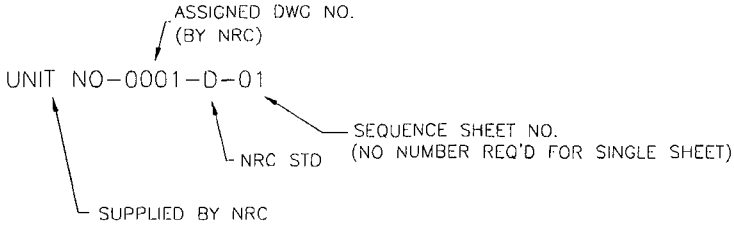
PIPING ISO's



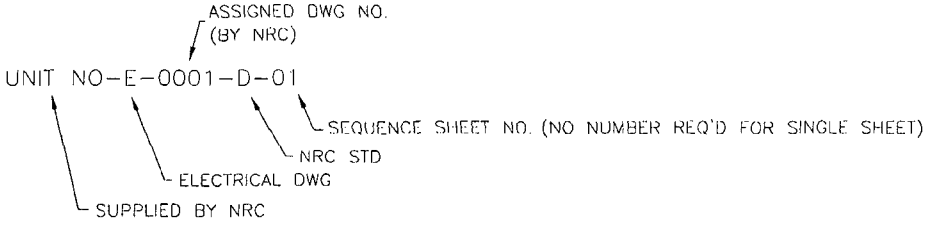
PLOT PLANS



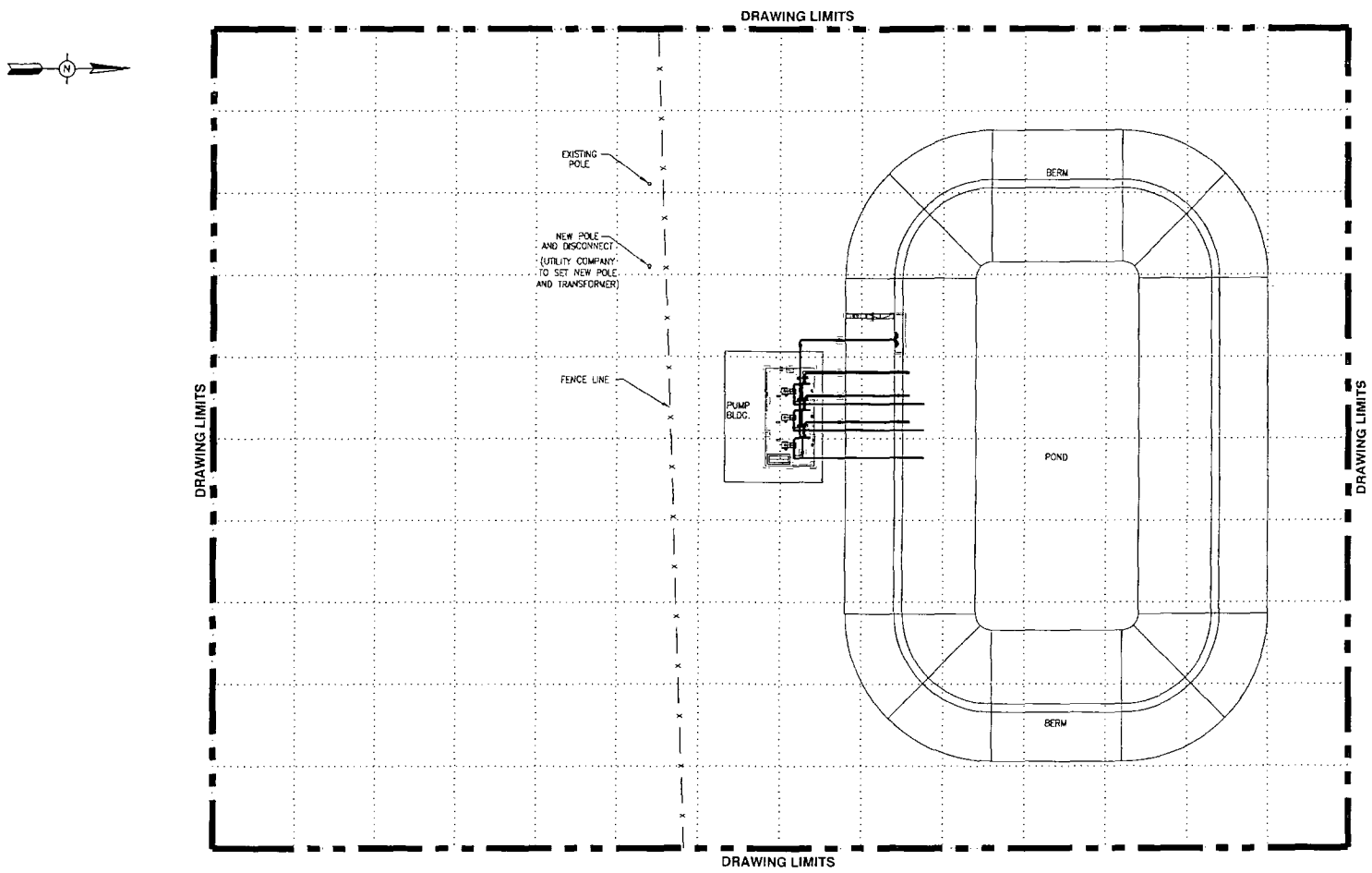
PIPING, STRUCTURAL PLANS/DETAIL DWG's



ELECTRICAL DWG's



NAVAJO REFINING CO. ENGINEERING DEPARTMENT P.O. DRAWER 159 ARTESIA, NEW MEXICO	DRAWING NUMBERING STANDARD		STD.-100-D-02
DRAWING NO.: 55-STD-DWGNUMBERING-100-D-02	DRAWN BY: DGJ	CHK'D BY: RCH	DATE 8/06



ISSUED
MAR 07 2010
FOR APPROVAL

SCALE = 3/32" = 1'-0"
0 10 20 30 40 FT

NOTE:

REFERENCE DRAWINGS	
NO.	TITLE

REVISIONS						
NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SEC	3/05/10	ISSUED FOR APPROVAL	PS	DWR	JWS

ENGINEERING RECORD		
	BY	DATE
DRN:	PS	2/10/10
DES:	PS	2/10/10
CHK:	JWS	
APP:		
AFE NO.		
SE&C JOB NO.	6174	
PROJ. ENGR:		
SCALE:	AS NOTED	

SAULSBURY
ENGINEERING & CONSTRUCTION
A SAULSBURY INDUSTRIES COMPANY
TEXAS REGISTERED ENGINEERING FIRM F-518
WWW.SI-TX.COM

NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

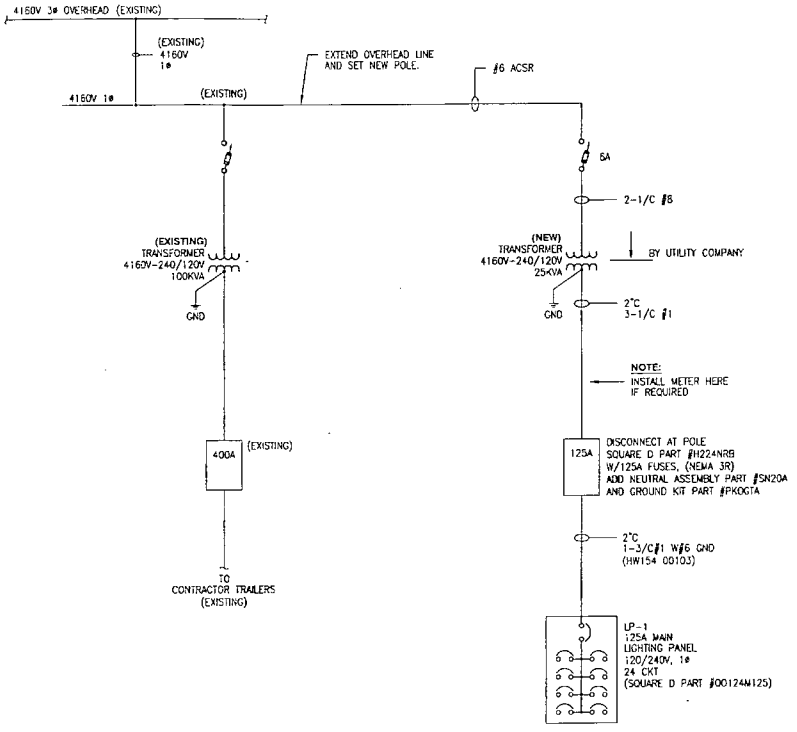
ELECTRICAL
FIRE WATER POND #3
OVERALL PLOT PLAN
ARTESIA, NEW MEXICO

PLOT SCALE
CAD NO. 60ED0000

DWG. NO. 60-E-0000-D

REV A

J:\Work\6174 Artesia Fire Pumps and Pond\03 Engineering Design\3.5 Electrical\3.5.1 Elect Drawings\60-E-0000-D Plot Plan.dwg20100304,15472567



ISSUED

MAR 07 2010

FOR APPROVAL

NOTE:

REFERENCE DRAWINGS

NO.	TITLE

REVISIONS

NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SEC	2/11/09	ISSUED FOR APPROVAL	PS	DMR	JMS
B	SEC	3/05/10	ISSUED FOR APPROVAL	PS	DMR	JMS

ENGINEERING RECORD

	BY	DATE
DRN:	PS	2/10/10
DES:	PS	2/10/10
CHK:	JMS	
APP:		
AFE No.		
SE&C JOB NO.		6174
PROJ. ENGR:		
SCALE:	NONE	

SAULSBURY
ENGINEERING & CONSTRUCTION
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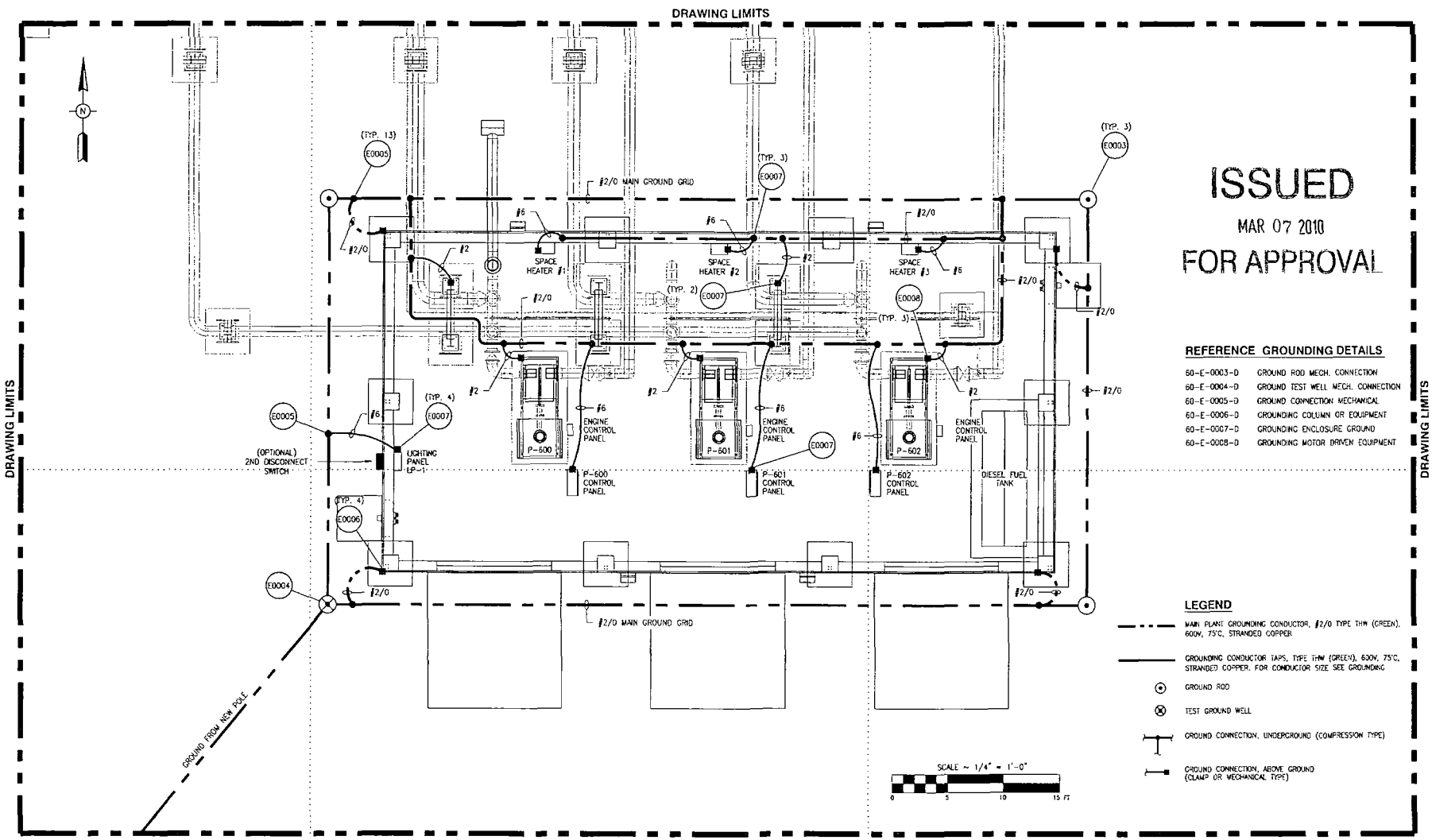
NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

ELECTRICAL
FIRE WATER POND #3
INCOMING SERVICE ONE LINE DIAGRAM
ARTESIA, NEW MEXICO

PLOT SCALE
CAD NO. 60E00010

DWG. NO.
60-E-0001-D

REV
B



NOTE:

REFERENCE DRAWINGS	
NO.	TITLE

REVISIONS						
NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SEC	3/05/10	ISSUED FOR APPROVAL	PS	DMR	JMS

ENGINEERING RECORD		
	BY	DATE
DRN:	PS	2/10/10
DES:	PS	2/10/10
CHK:	JMS	
APP:		
AFE No.		
SE&C JOB NO.	6174	
PROJ. ENGR:		
SCALE:	AS NOTED	

SAULSBURY
ENGINEERING & CONSTRUCTION
A SAULSBURY INDUSTRIES COMPANY
TEXAS REGISTERED ENGINEERING FIRM F-515
WWW.SI-TX.COM

NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, N.M. MEXICO

ELECTRICAL
FIRE WATER POND #3
GROUNDING PLAN
ARTESIA, NEW MEXICO

PLOT SCALE	DWG. NO.	REV
CAD NO. 60E0002D	60-E-0002-D	A

J:\Wendy\6174 Artesia Fire Pumps and Pond\03 Engineering, Design\3.3 Electrical\3.3.1 Elect Drawings\60-E-0002-D Grounding Plan.dwg 2010.03.05 16:20:09

FIRE WATER PUMP SKID WITH DRIVER

BY: RP | JOB NO: 6174 | PAGE 1 OF 2

DATE: 3/5/2010 | ITEM NO.: P-600, P-601, P-602

CUSTOMER: Navajo Refining Company

PLANT: Artesia NM Refinery

SERVICE: New Fire Water Pond

QUANTITY: 3 TYPE: Horizontal Centrifugal Pump

SAULSBURY INDUSTRIES

SAULSBURY Engineering & Construction

Texas Registered Engineering Firm F-518

Work by Saulsbury Engineering: rev. no. RFQ

REV. Request for Quotation | DATE 3/5/2010 | BY RP | APPR. | NO. RFQ | FIRM SE&C

OPERATING CONDITIONS

FLUID: Pond Water		GPM NOR.	2000 RATED	SPEED	* RPM
PUMPING TEMPERATURE	60 °F	GPM MIN. CONT. FLOW		DES. EFFN	* % RATED
SPEC. GRAVITY	1 @ 60 °F	DISCHARGE PRESS. (PSIG)	182 RATED	BHP	* RATED
VISCOSITY	1 cP @ 60 °F	SUCTION PRESS. (PSIG)	1 RATED	BHP	* NON-OVERLOAD
VAPOR PRES. (PSIA)	0.6 @ 100 °F	DIFF. PRESS., (PSI)	181 RATED	BHP	* RECOMMENDED
NPSH. (FT.) 28 AVAIL.	* REQ'D.	DIFF. HEAD FT.	414 RATED		
SUSPENDED SOLIDS					
CORROSIVES					
ENTRAINED GASES					

PUMP SPECIFICATIONS

MODEL	Note 2	SIZE *			ROTATION CCW	FACING CPLG.	
NO. OF STAGES	one	MAX. WORKING PRESSURE		250 (PSIG)	MAX. WORKING TEMPERATURE	100	° F
SUCTION SIZE	10" RATING	125	FACING	FF	POSITION	Side	
DISCHARGE SIZE	8" RATING	125	FACING	FF	POSITION	Side	
IMPELLER DIA. RATED:	*		MAX.	*	BACK PULL-OUT REQ'D.	NO	(YES/NO)

MATERIALS - MAJOR COMPONENTS

PART	MATERIAL/TYPE	PART	MATERIAL/TYPE
SUPPORT		MECHANICAL SEAL - TYPE	*
CASE	SPLIT CASE, CAST IRON	MECHANICAL SEAL - MFG.	*
SHAFT	*	METAL PARTS	
IMPELLER	*	SEAL FACES	
CASE WEAR RING	*	SEAL FLUSH PLAN	
IMPELLER WEAR RING	*	PACKING - NO. RINGS (X) -	
SHAFT SLEEVE	*	LANTERN RING	
RADIAL BEARING		PACKING BOX	
HOUSING MATERIAL	*	PACKING BOX BUSHING	
COUPLING	DRIVE SHAFT	PACKING GLAND	
COUPLING GUARD	YES	PRESSURE RED. BUSHING	
PUMP & DRIVE BASE	SKID	CASE VENT	
LUBRICATION	OIL	CASE DRAIN	YES
BASE PLATE / DRIP PAN		GAUGE CONN.	
BEARING SEAL			
MULTI-STAGE PUMP		COOLING WATER -SEAL	
IMPELLER HUB SLEEVES		-GLAND	
SPACER SLEEVES		-BEARINGS	
INTERSTAGE SLEEVES		-PEDESTAL	
INTERSTAGE DIAPHRAGMS		TOTAL WATER REQUIRED	GPM@ 0 F
INTERSTAGE DIAPHRAGM BUSH			
DIFFUSER		SETTING DEPTH (VERT. PUMP)	
THRUST BEARING		**MOTOR DATA**	
HOUSING MATERIAL		ITEM NO. Note 3	MFG. *
BALANCING DRUM		H.P. * S.F. *	RPM *
BALANCING RING		* VOLTS * HERTZ	* PHASE
SHOP TEST PREFERENCE		ENCLOSURE *	FRAME *
SHOP TEST NPSH		RADIAL BRG. *	LUBE *
SHOP TEST HYDRO		INSUL. *	TEMP. RISE *
		STARTING TORQUE * %	F.L. AMPS. *
		INNER BRG. CAP *	JUNCTION BOX *

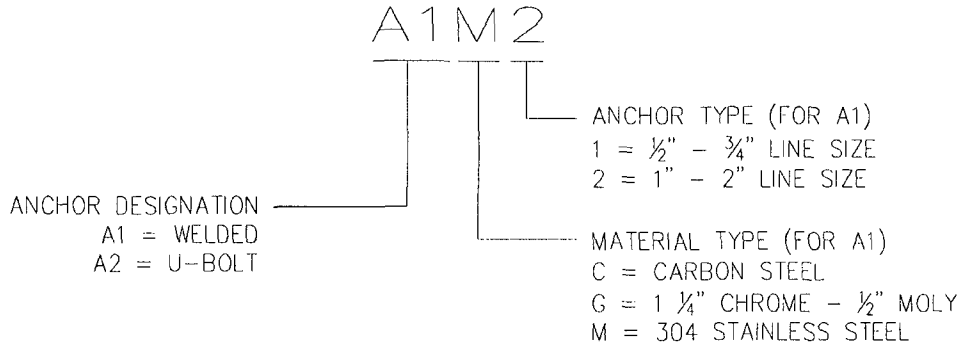
NOTES:
1. "*" DENOTES MANUFACTURER SUGGESTION OR STANDARD IS REQUESTED
2. A-C FIRE PUMP SYSTEMS, BY ITT INDUSTRIES, CENTRIFUGAL FIRE PUMP TYPE 8100, OR EQUAL
3. DRIVER WILL NOT BE A MOTOR. DRIVER TO BE A DIESEL ENGINE, SEE NEXT PAGE

ANCHORS

1. DESIGN APPLICATION
   - 1.1. USE THIS A1 ONLY ON WELDABLE PIPE.
   - 1.2. STRESS ENGINEERING APPROVAL WHEN:
     - 1.2.1. 32 DEGREES FAHRENHEIT OR BELOW.
     - 1.2.2. OPERATING PRESSURE 3000# PSI AND OVER.
     - 1.2.3. TO AND FROM RECIPROCATING PUMPS AND RECIPROCATING COMPRESSORS.
     - 1.2.4. CHROME ALLOYS OF 2% THROUGH 17% CHROME.
     - 1.2.5. COLUMBIM STABILIZED STEEL (TYPE 347 THICKER THAN STANDARD WEIGHT OR EXCEEDING ¼" THICKNESS.
     - 1.2.6. LINES IN HYDROGEN (100 PSI PARTIAL PRESSURE AND UP), OXYGEN, OR LETHAL PRODUCT SERVICE.
   - 1.3. USE THE FOLLOWING CHART FOR SELECTION OF ANCHORS

	2" & SMALLER (FIELD FAB)	3" THRU 54"
WITHOUT SHOE	A	USE DIRECTIONAL ANCHOR & GUIDE (DA & G)
WITH SHOE	***SPECIAL DETAIL REQUIRED***	

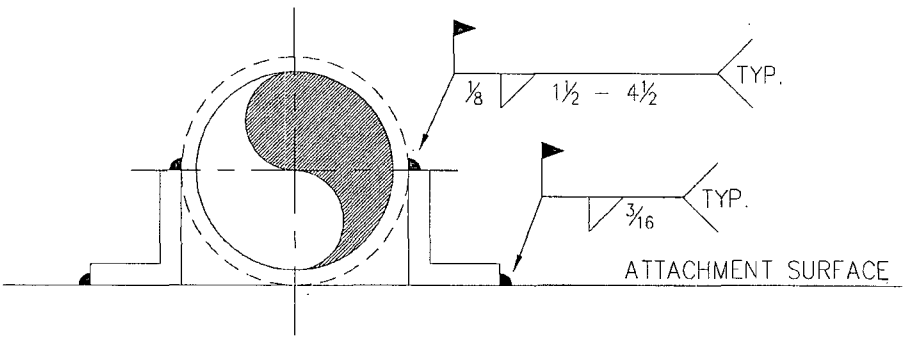
2. ASSEMBLY TAG NO.S ARE AS FOLLOWED:



DATE: X/X/2008 REV: 0

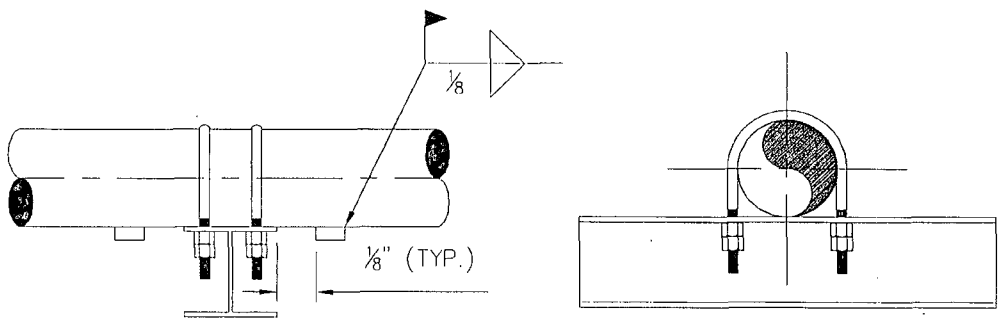
ANCHORS

3. FABRICATION DETAILS
   3.1. FABRICATION NOTES.
      3.1.1. SEE GENERAL NOTES.
   3.2. ANCHOR FOR PIPE, 2" AND SMALLER, WITHOUT SHOES.
      3.2.1. FOR CARBON STEEL ANCHOR.



LINE SIZE	MARK NO.	DESCRIPTION	TYPE	QUANTITY REQ'D
½" – ¾"		L ½" X ½" X ⅛" CARBON STEEL, ASTM – A36, 6" LONG	A1C1	2
1" – 2"		L 1" X 1" X 3/16" CARBON STEEL, ASTM – A36, 6" LONG	A1C2	2

   3.3. ANCHOR FOR PIPE, 2" AND SMALLER, WITHOUT SHOE.
      3.3.1. FOR CARBON STEEL U-BOLTS.

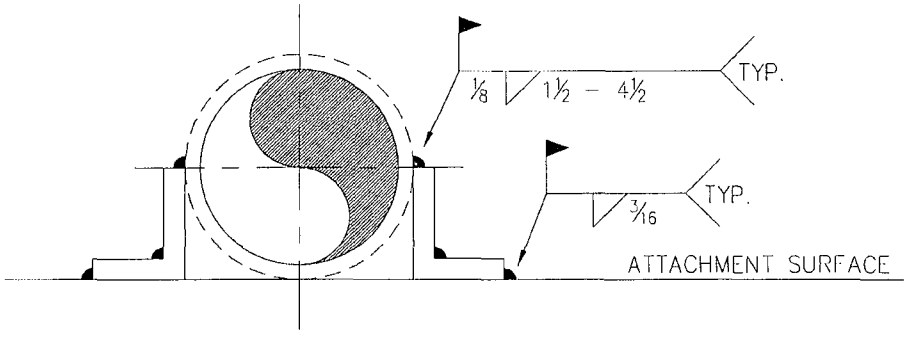


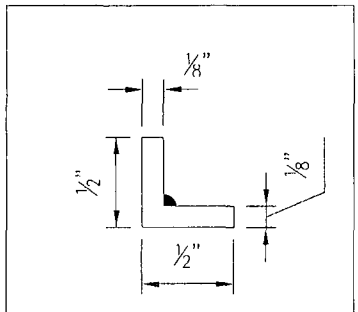
PIPE SIZE	MARK NO.	DESCRIPTION	TYPE	QUANTITY REQ'D
½" – 2"		U-BOLT, CARBON STEEL, WITH FOUR (4) FINISHED HEX NUTS GRINNELL FIG. NO. 137 OR EQUAL	A2	2
½" – 2"		MATERIAL BY FIELD (SAME MATERIAL AS PIPE)	A2	2

ANCHORS

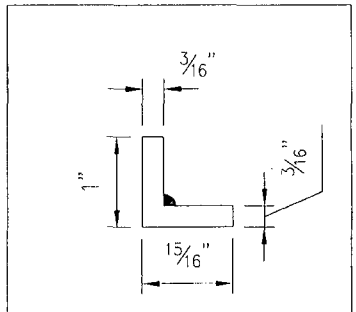
3.4. ANCHOR FOR PIPE, 2" AND SMALLER, WITHOUT SHOE (CONTINUED)

3.4.1. FOR STAINLESS AND 1¼" CHROME – 1½" MOLY ANCHORS.





FOR LINE SIZE ½" – ¾"

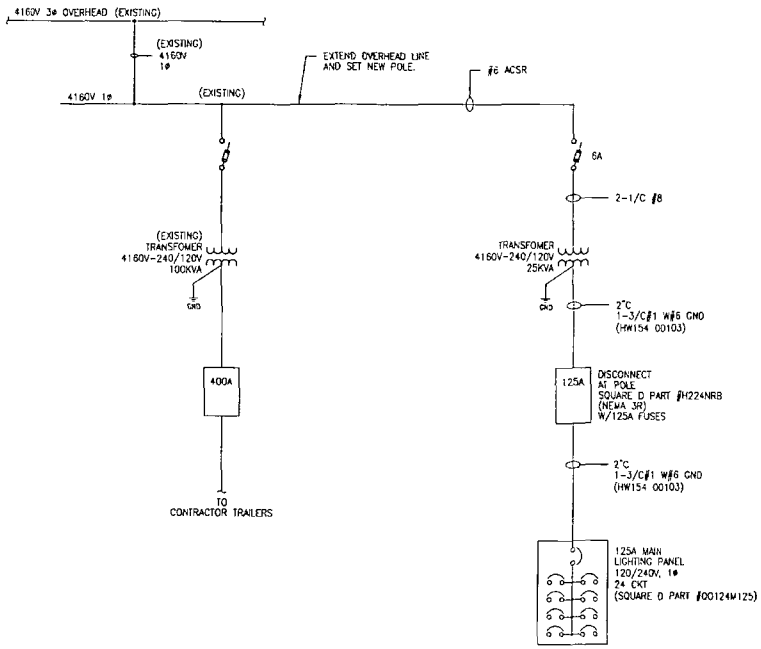


FOR LINE SIZE 1" – 2"

LINE SIZE	MARK NO.	DESCRIPTION	TYPE	QUANTITY REQ'D
½" – ¾"		½" X ⅛" 1 ¼" CHROME – ½" MOLY PLATE, ASTM – A387 GR 11, 6" LONG	A1G1	2
½"		½" X ⅛" 304 STAINLESS STEEL PLATE, ASTM – A240, 6" LONG	A1M1	2
½" – ¾"		⅜" X ⅛" 1 ¼" CHROME – ½" MOLY PLATE, ASTM – A387 GR 11, 6" LONG	A1G1	2
½" – ¾"		⅜" X ⅛" 304 STAINLESS STEEL PLATE, ASTM – A240, 6" LONG	A1M1	2
1" – 2"		1" X 3⁄16" 1 ¼" CHROME – ½" MOLY PLATE, ASTM – A387 GR 11, 6" LONG	A1G2	2
1" – 2"		1" X 3⁄16" 304 STAINLESS STEEL PLATE, ASTM – A240, 6" LONG	A1M2	2
1" – 2"		¾" X 3⁄16" 1 ¼" CHROME – ½" MOLY PLATE, ASTM – A387 GR 11, 6" LONG	A1G2	2
1" – 2"		¾" X 3⁄16" 304 STAINLESS STEEL PLATE, ASTM – A240, 6" LONG	A1M2	2

REV: 0

DATE: X/X2008



ISSUED

FEB 12 2010

FOR APPROVAL

NOTE:

REFERENCE DRAWINGS	
NO.	TITLE

REVISIONS						
NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SEC	02/11/09	ISSUED FOR APPROVAL	PS	CWR	[illegible]

ENGINEERING RECORD		
	BY	DATE
DRN:	PS	02/10/10
DES:	PS	2/10/10
CHK:	JMS	
APP:		
AFE No.		
SE&C JOB NO.		6174
PROJ. ENGR:		
SCALE:		NONE

SAULSBURY
ENGINEERING & CONSTRUCTION
A SAULSBURY INDUSTRIES COMPANY
TEXAS REGISTERED ENGINEERING FIRM F-518
WWW.SI-TX.COM

NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

ELECTRICAL
FIRE WATER POND #3
INCOMING SERVICE ONE LINE DIAGRAM
ARTESIA, NEW MEXICO

PLOT SCALE

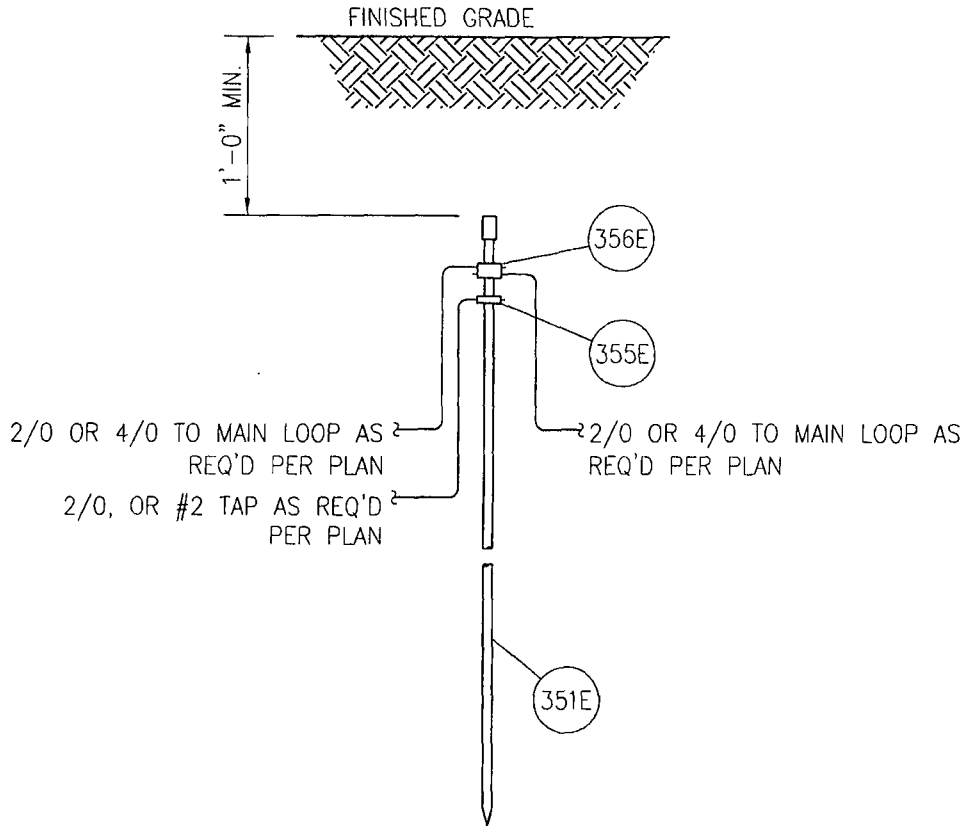
DWG. NO. D-6174-E17-100

REV A

CAD NO. 6174E17100

J:\Work\6174 Artesia Fire Pumps and Pond\03 Engineering Design\3.5 Electrical\3.5.1 Elect Drawings\6174E17100_Onelins.dwg 2010/02/12 08:55:58

ITEM	BOM DESCRIPTION	QTY.
351E	3/4"X10' GROUND ROD, COPPERWELD HUBBARD # 9450 (ERITECH #613400)	1
355E	GROUND ROD CONNECTOR, 1x #4 SOL-2/0 STR TO 3/4" GROUND ROD, BURNDY # GAR6426	1
356E	GROUND ROD CONNECTOR, 2x #2/0 SOL-250 KCMIL TO 3/4" GROUND ROD, BURNDY # GP6429	1



DATE: 06/16/2008 REV: A

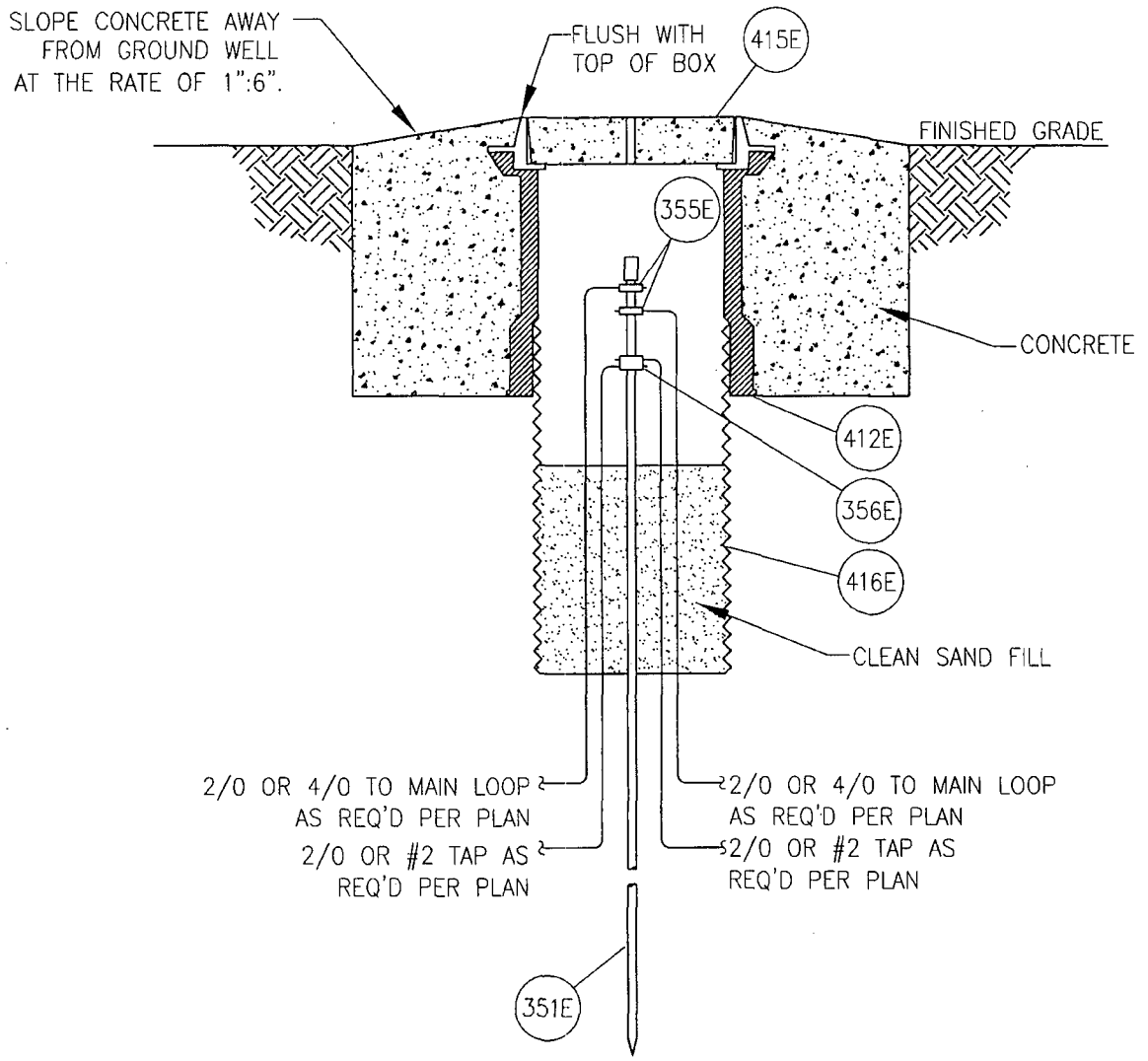
GROUND ROD SYMBOL

SAULSBURY
ENGINEERING & CONSTRUCTION
A SAULSBURY INDUSTRIES COMPANY
TEXAS REGISTERED ENGINEERING FIRM F-518

ELECTRICAL STANDARDS
GROUNDING
GROUND ROD
MECH. CONNECTION

STANDARD DWG NO:
60-E-0003-D
1 OF 1

ITEM	BOM DESCRIPTION	QTY.
351E	3/4"X10' GROUND ROD, COPPERWELD HUBBARD # 9450 (ERITECH #613400)	1
355E	GROUND ROD CONNECTOR, 1x #2/0 SOL-250 KCMIL TO 3/4" GROUND ROD, BURNDY # GAR6429	1
356E	GROUND ROD CONNECTOR, 2x #4 SOL-2/0 STR TO 3/4" GROUND ROD, BURNDY # GP6426	1
412E	9"DIA x 12"LG FIBRELYTE BOX, CHRISTY # FL08 BOX	1
415E	REINFORCED CONCRETE LID FOR FL08BOX OR F08NBOX, CHRISTY # F08D	1
416E	12" EXTENSTION FOR FL08 BOX, CHRISTY # G05XP12	1

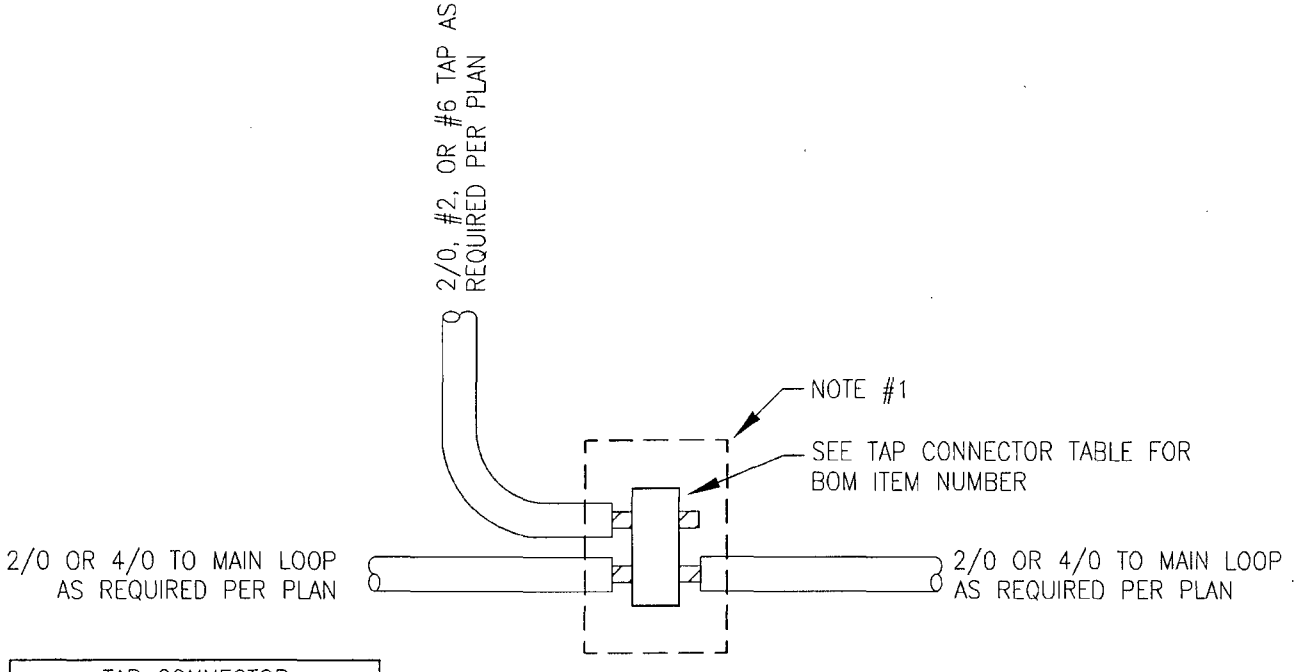


⊗ GROUND TEST WELL

DATE: 06/16/2008 REV: A

SAULSBURY ENGINEERING & CONSTRUCTION A SAULSBURY INDUSTRIES COMPANY TEXAS REGISTERED ENGINEERING FIRM F-518	ELECTRICAL STANDARDS GROUNDING GROUND TEST WELL MECH. CONNECTION	STANDARD DWG NO: **60-E-0004-D** 1 OF 1

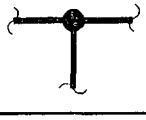
ITEM	BOM DESCRIPTION	QTY.
364E	GROUND TAP CONNECTOR, #1 STR-2/0 STR TO #6 SOL-#2 STR, BURNDY # YGHC26C2	1
365E	GROUND TAP CONNECTOR, #1 STR-2/0 STR TO #1 STR-#2/0 STR, BURNDY # YGHC26C26	1
366E	GROUND TAP CONNECTOR, 3/0 STR-250 KCMIL TO #6 SOL-#2 STR, BURNDY # YGHC29C26	1
367E	GROUND TAP CONNECTOR, 3/0 STR-250 KCMIL TO #1 STR-#2/0 STR, BURNDY # YGHC29C29	1



TAP CONNECTOR		
ITEM	RUN	TAP
364E	2/0	#6
364E	2/0	#2
365E	2/0	2/0
366E	4/0	#6
366E	4/0	#2
367E	4/0	2/0

GENERAL NOTES

1. SEAL SPLICE CONNECTION TO INSULATED CABLE AS FOLLOWS:
   - A. APPLY TAPE AS FOLOWS:
     - i. APPLY SCOTCH FILL TO SMOOTH AREA TO BE TAPED
     - ii. APPLY (2) LAYERS OF $\frac{1}{2}$ LAPPED SCOTCH 130C RUBBER TAPE.
     - III. APPLY (2) LAYERS OF $\frac{1}{2}$ LAPPED SCOTCH 33+ OR SCOTCH 88 VINYL TAPE.
     - iv. APPLY (1) COAT OF SCOTCHKOTE SEALER.
   - B. APPLY A SCOTCHCAST 85 RESIN SPLICE KIT PER MANUFACTURER RECOMMENDATIONS.


GROUND CONNECTION SYMBOL

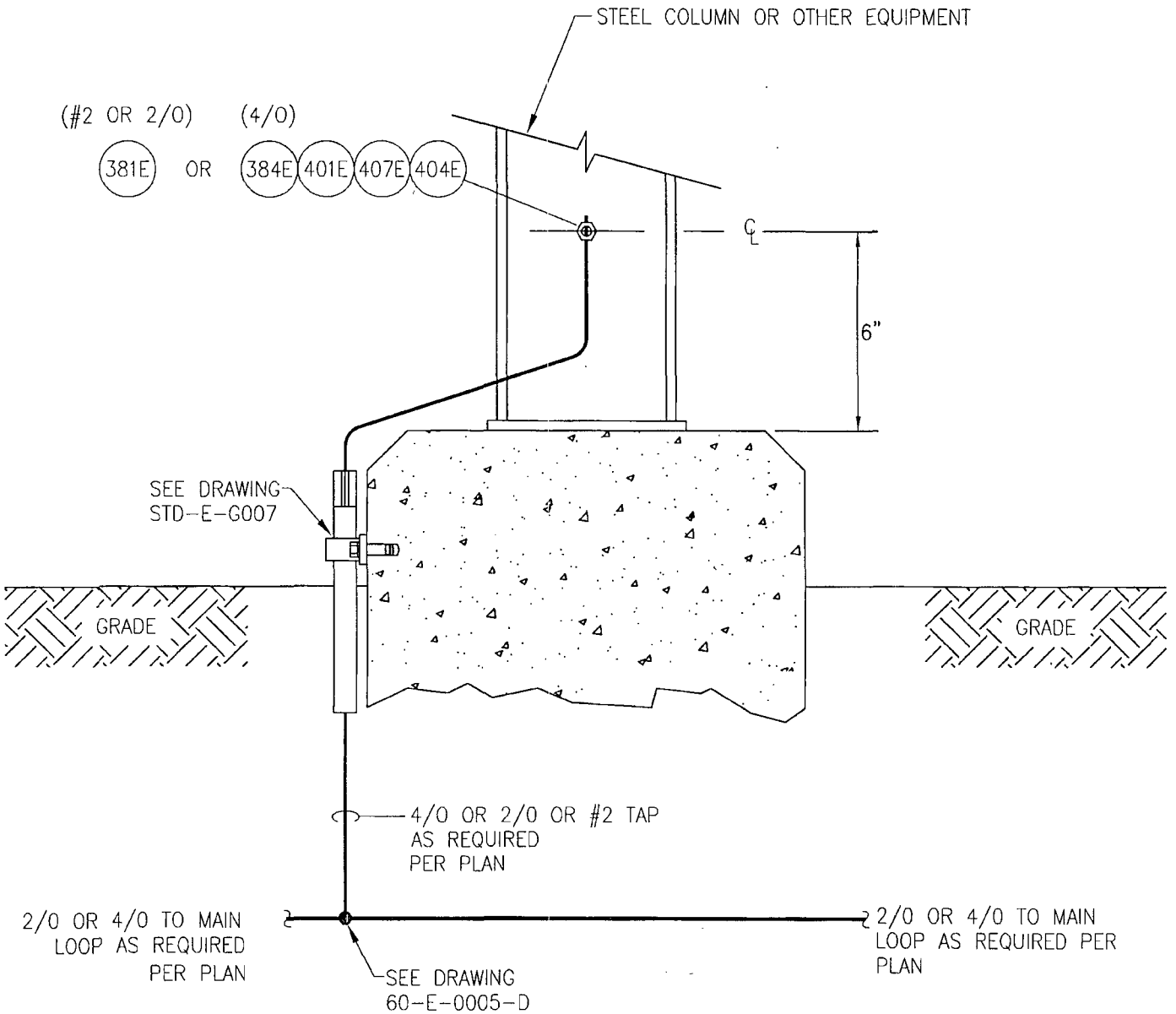
DATE: 06/16/2008 REV: A

SAULSBURY
ENGINEERING & CONSTRUCTION
A SAULSBURY INDUSTRIES COMPANY
TEXAS REGISTERED ENGINEERING FIRM F-518

ELECTRICAL STANDARDS
GROUNDING
GROUNDING CONNECTION
MECHANICAL

STANDARD DWG NO:
60-E-0005-D
1 OF 1

ITEM	BOM DESCRIPTION	QTY.
381E	GROUND CONNECTOR, SERVIT POST, 1/2"–13 x 3/4" STUD, 2 x #2 STR – 2/0 STR, BURNDY # K2C26	1
384E	GROUND CONNECTOR, SERVIT POST, 5/8"–11 x 1 1/2" STUD, 2 x #1 STR – 4/0 STR, BURNDY # K2C28B1	1
401E	1/2"–13 HEX NUT, SILICON–BRONZE, BURNDY # 50C HEN	1
404E	1/2" FLAT WASHER, SILICON–BRONZE, BURNDY # 50 FW	2
407E	1/2" SPLIT LOCKWASHER, SILICON–BRONZE, BURNDY # 50 SW	1



GENERAL NOTES

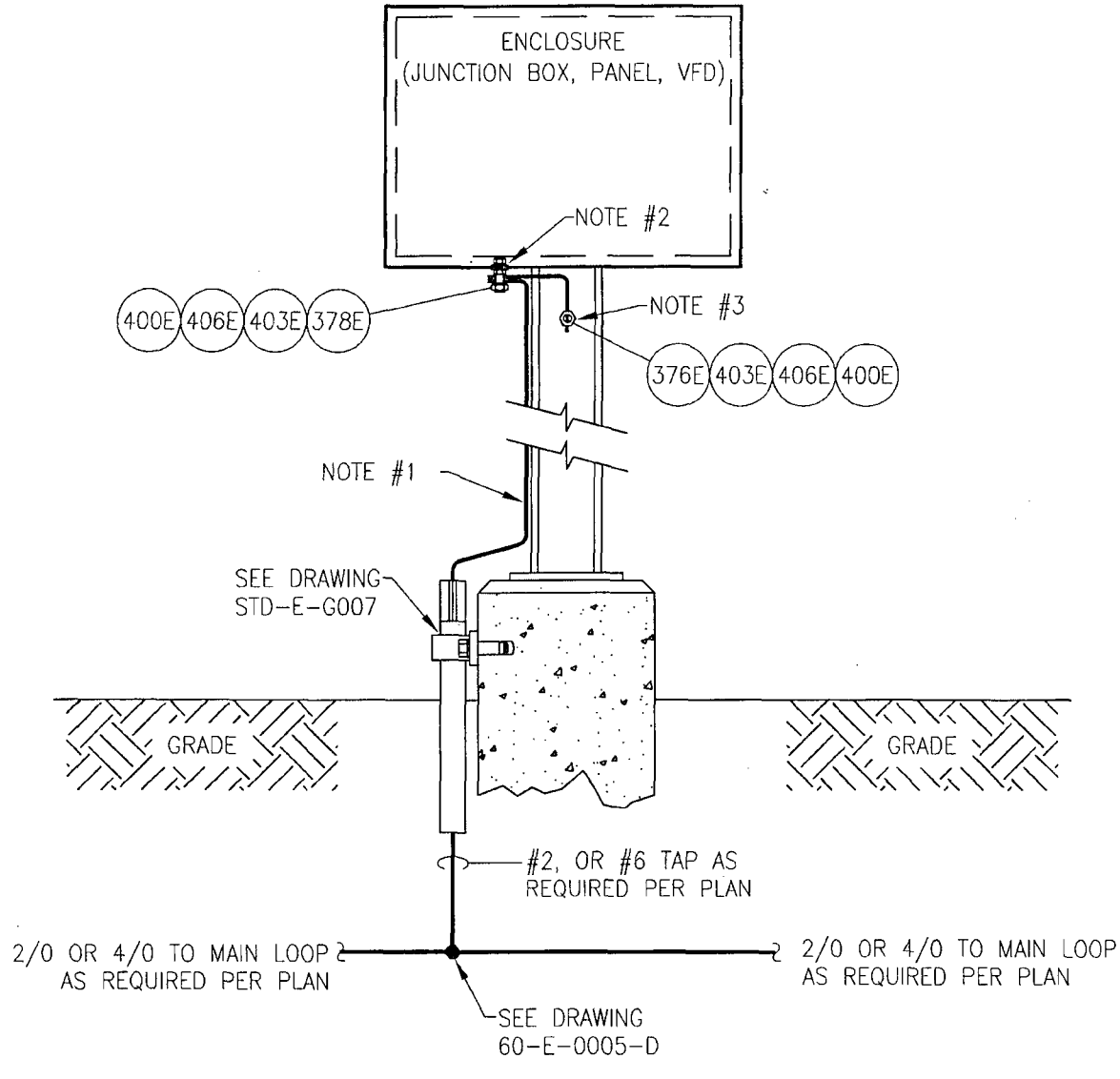
1. REMOVE ALL PAINT FROM GROUNDING POINT TO INSURE A GOOD CONNECTION. TOUCH UP PAINT AFTER INSTALLATION OF GROUNDING CONNECTION.

SAULSBURY
ENGINEERING & CONSTRUCTION
A SAULSBURY INDUSTRIES COMPANY
TEXAS REGISTERED ENGINEERING FIRM F–518

ELECTRICAL STANDARDS
GROUNDING
COLUMN OR EQUIPMENT
CONNECTION

STANDARD DWG NO:
60-E-0006-D
1 OF 1

ITEM	BOM DESCRIPTION	QTY.
376E	GROUND CONNECTOR, SERVIT POST, 3/8"-16 x 5/8" STUD, 2 x #8 STR – #2 STR, BURNDY # K2C23	1
378E	GROUND CONNECTOR, SERVIT POST, 3/8"-16 x 1 1/8" STUD, #8 STR – #2 STR, BURNDY # KC23B1	1
400E	3/8"-16 HEX NUT, SILICON-BRONZE, BURNDY # 38C HEN	2
403E	3/8" FLAT WASHER, SILICON-BRONZE, BURNDY # 38 FW	4
406E	3/8" SPLIT LOCKWASHER, SILICON-BRONZE, BURNDY # 38 SW	2



GENERAL NOTES

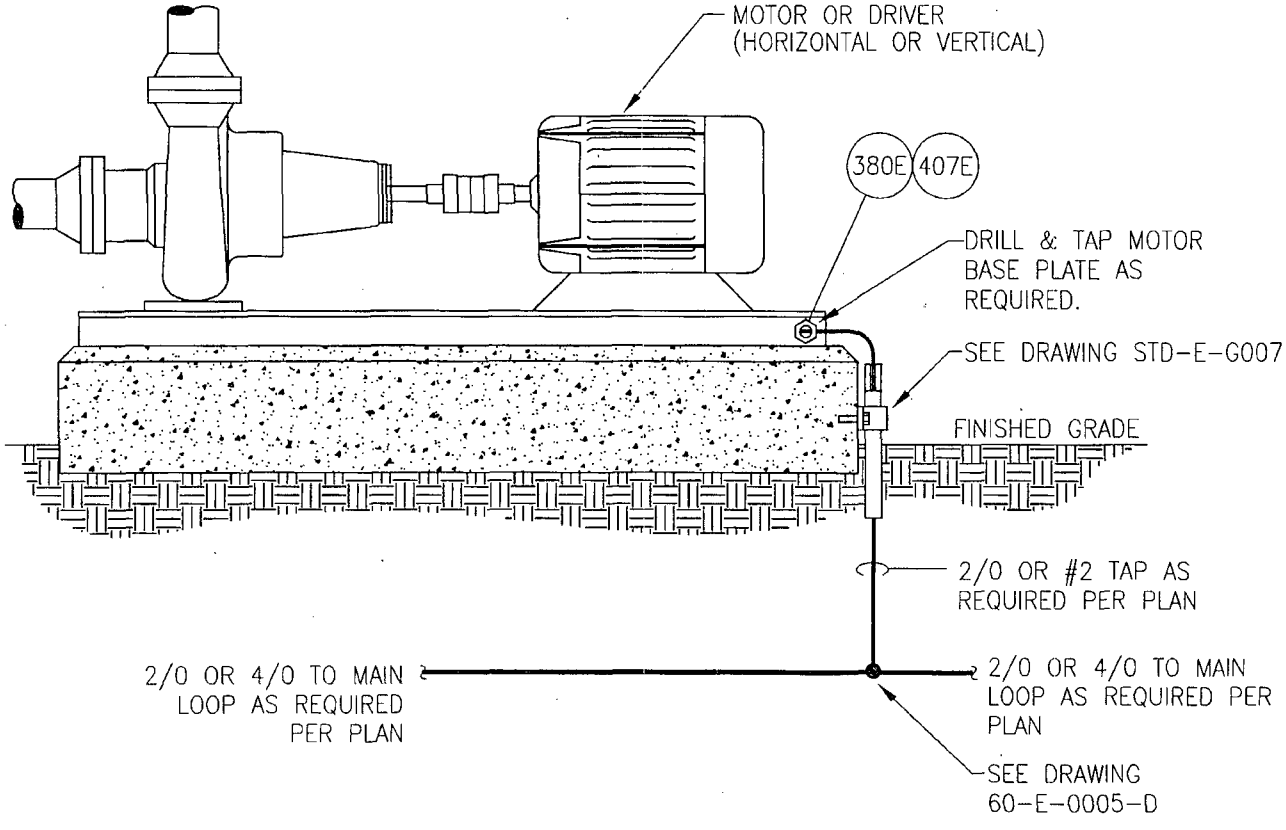
1. ADDITIONAL SUPPORT REQUIRED IF DISTANCE FROM THE GROUND TO THE ENCLOSURE IS MORE THEN 3'.
2. REMOVE PAINT TO BARE METAL INSIDE ON AND OUT TO INSURE A GOOD GROUND TO CABINET. AFTER INSTALLATION OF THE GROUND CONNECTOR SPRAY AREAS OF EXPOSED BARE METAL WITH PAINT MATCHING CABINET.
3. GROUND CONNECT REQUIRED WHEN STRUCTURE IS NOT GROUNDED BY ANOTHER MEANS.

SAULSBURY
ENGINEERING & CONSTRUCTION
A SAULSBURY INDUSTRIES COMPANY
TEXAS REGISTERED ENGINEERING FIRM F-518

ELECTRICAL STANDARDS
GROUNDING
ENCLOSURE GROUND

STANDARD DWG NO:
60-E-0007-D
1 OF 1

ITEM	BOM DESCRIPTION	QTY.
380E	GROUND CONNECTOR, SERVIT POST, 1/2"–13 x 3/4" STUD, #2 STR – 2/0 STR, BURNDY # KC26	1
407E	1/2 SPLIT LOCKWASHER, SILICON–BRONZE, BURNDY # 50 SW BOX	1



APPLICATION

1. ELECTRIC DRIVEN PUMPS
2. ELECTRIC DRIVEN COMPRESSOR
3. SKID MOUNTED ELECTRIC DRIVEN EQUIPMENT

SAULSBURY ENGINEERING & CONSTRUCTION A SAULSBURY INDUSTRIES COMPANY TEXAS REGISTERED ENGINEERING FIRM F–518	ELECTRICAL STANDARDS GROUNDING MOTOR DRIVEN EQUIPMENT GROUNDING	STANDARD DWG NO: **60-E-0008-D** 1 OF 1

BASE SUPPORT–LINED PIPE

1. DESIGN APPLICATION
   - 1.1. THIS SUPPORT TO BE USED FOR LINED PIPE AND NON–WELDABLE PIPE SIZES 1½" TO 10" (150# ONLY).
   - 1.2. STRESS ENGINEERING APPROVAL WHEN:
     - 1.2.1. 32 DEGREES FARENHEIT OR BELOW.
     - 1.2.2. OPERATING PRESSURE 3000# psi AND OVER.
     - 1.2.3. TO AND FROM RECIPROCATING PUMPS AND RECIPROCATING COMPRESSORS.
     - 1.2.4. CHROME ALLOYS OF 2% THROUGH 17% CHROME.
     - 1.2.5. COLUMBIUM STABILIZED STEEL (TYPE 347) THICKER THAN STANDARD WEIGHT OR EXCEEDING ¼" THICKNESS.
     - 1.2.6. LINES IN HYDROGEN (100 psi PARTIAL PRESSURE AND UP), OXYGEN, OR LETHAL PRODUCT SERVICE.
2. ASSEMBLY TAG NO.'S ARE AS FOLLOWS:

BSL

BASE SUPPORT DESIGNATION

3. FABRICATION DETAILS
   - 3.1. FABRICATION NOTES.
     - 3.1.1. SEE GENERAL NOTES.
     - 3.1.2. FIELD TO CUT PIPE LENGTH REQUIRED. PIPE TO BE CENTERED ON PLATE.
     - 3.1.3. THE LENGTH OF FLANGE BOLTS (2) WILL NEED TO BE INCREASED BY ½".

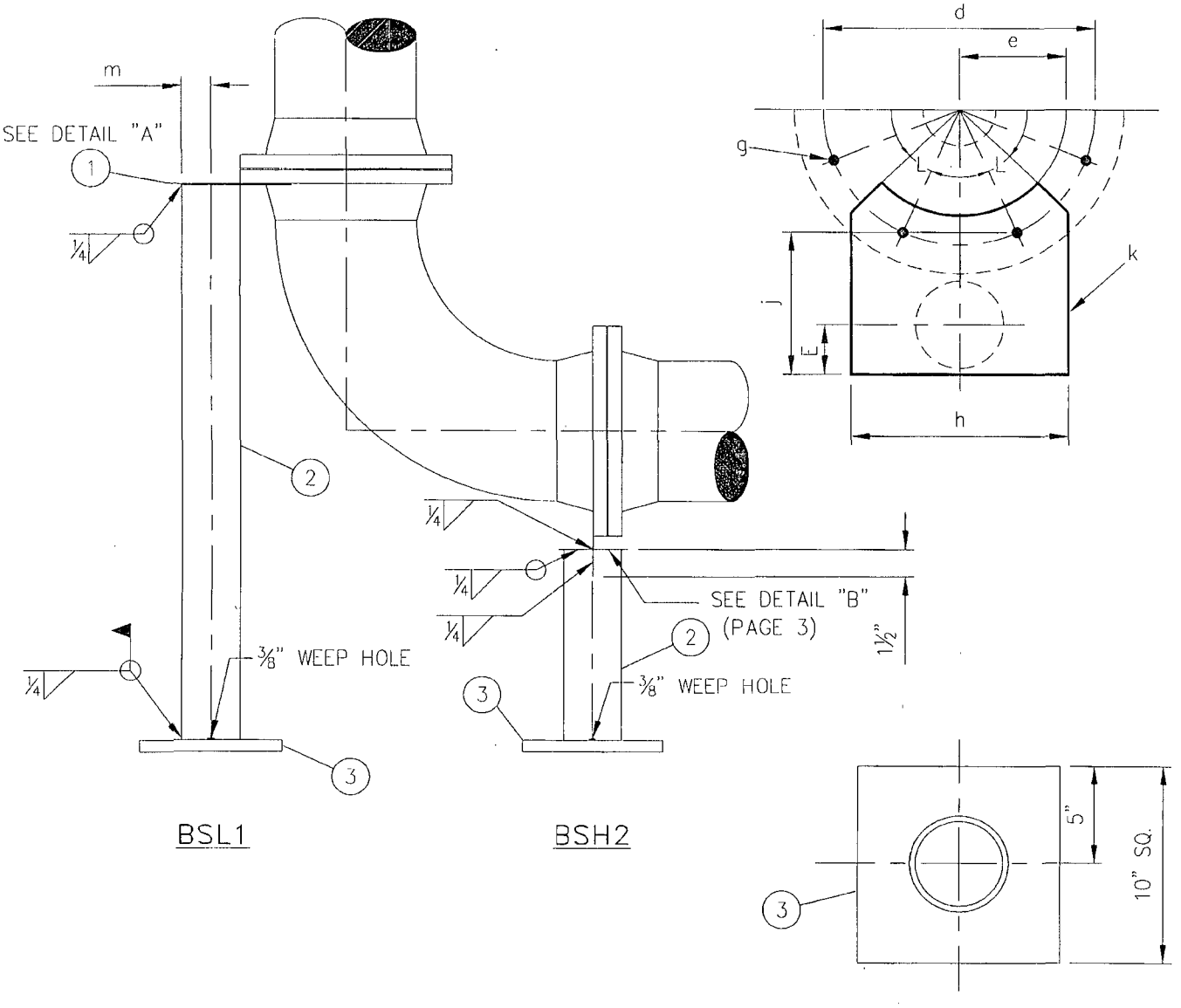
REV:

DATE:

BASE SUPPORT – LINED PIPE

4.2. FABRICATION NOTES:

4.2.1. NON-WELDABLE/LINED PIPE (SIZES 3" THRU 10" – 150# FLANGES.)



BSL1

BSH2

REV:

DATE:

BASE SUPPORT – LINED PIPE

NOTE: THE LENGTH OF FLANGE BOLTS (2) WILL NEED TO BE INCREASED APPROXIMATLY ½".

TABLE–1

		d	e	f	g	h	j	k	l	m	
NPS	MARK NO STUB SIZE	BOLT CIRCLE	INSIDE RADIUS	ANGLE	DIA OF BOLT HOLE			THKNS OF PL.	ANGLE		NPS
3	3" SCH 40	6"	2 3/16"	90°	¾"	6¼"	4 3/8"	⅜"	22½"	2"	3
4	3" SCH 40	7½"	2¾"	45°	¾"	6⅜"	4⅞"	½"	22½"	2"	4
6	3" SCH 40	9½"	3 15/16"	45°	⅞"	7½"	4¾"	½"	22½"	2"	6
8	6" SCH 40	11¾"	5"	45°	⅞"	9½"	7⅝"	⅝"	22½"	3 9/16"	8
10	6" SCH 40	14¼"	6⅛"	30°	1"	7⅞"	8"	⅝"	15"	3 9/16"	10

LINE SIZE	MARK NO.	DESCRIPTION	TYPE	QTY REQ'D
3"–10"	(1)	CARBON STEEL PLATE, ASTM–A36, THICKNESS "K" PER TABLE 1	BSL	1
3"–10"	(2)	CARBON STEEL PIPE, STUB SIZE AND SCH PER TABLE 1 MAXIMUM 4'–0" (NOTE 4.1.2.)	BSL	1
3"–10"	(3)	¾" CARBON STEEL PLATE, ASTM–A36, DIMENSION AS SHOWN	BSL	1
3"–10"	(4)	¼" CARBON STEEL PLATE, ASTM–A36. DIAMETER TO BE 1" LARGER THAN STUB.	BSL	1

REV:

DATE:

SAULSBURY
ENGINEERING & CONSTRUCTION
A SAULSBURY INDUSTRIES COMPANY

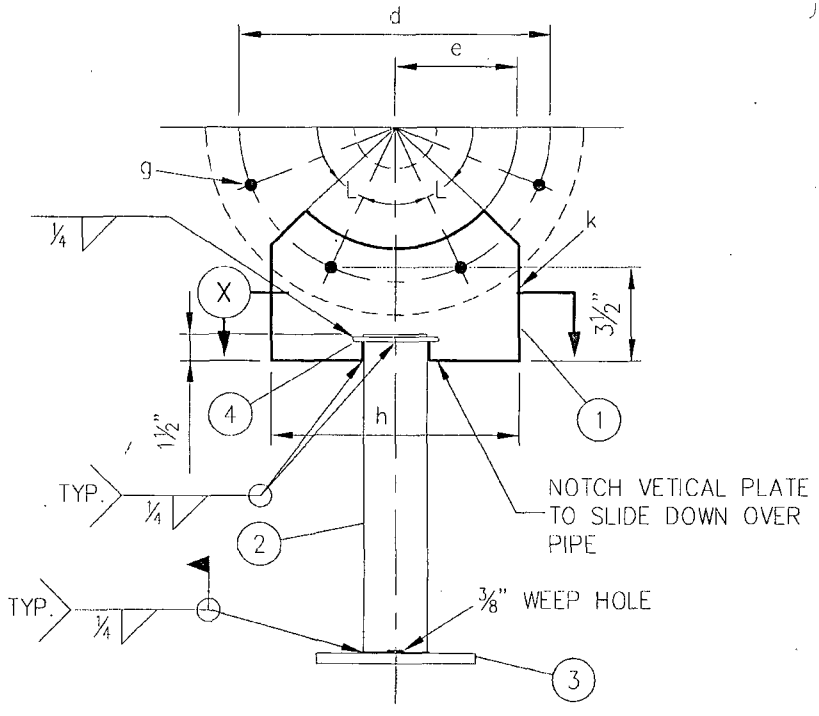
PIPING STANDARDS
BASE SUPPORT
LINED PIPE

STANDARD DWG NO:
STD-BSL

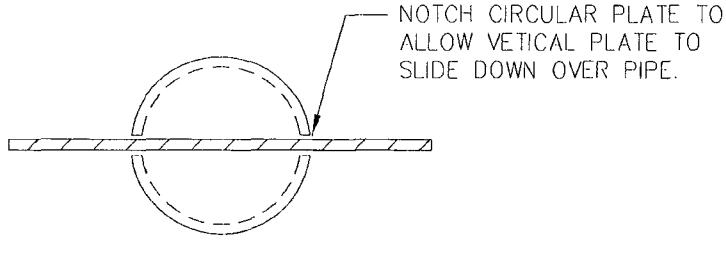
BASE SUPPORT – LINED PIPE

4.3. FABRICATION NOTES:

4.3.1. NON-WELDABLE/LINED PIPE (SIZES 3" THRU 10" – 150# FLANGES.)



DETAIL "B"



SECTION "X-X"

REV:

DATE:

SAULSBURY ENGINEERING & CONSTRUCTION A SAULSBURY INDUSTRIES COMPANY	PIPING STANDARDS BASE SUPPORTS LINED PIPE	STANDARD DWG NO: **STD-BSL** 4 OF 4

FIRE WATER PUMP SKID WITH DRIVER

BY: RP | JOB NO: 6174 | PAGE 1 OF 2

DATE: 3/5/2010 | ITEM NO.: P-600, P-601, P-602

CUSTOMER: Navajo Refining Company

PLANT: Artesia NM Refinery

SERVICE: New Fire Water Pond

QUANTITY: 3 TYPE: Horizontal Centrifugal Pump

SAULSBURY INDUSTRIES

SAULSBURY Engineering & Construction

Texas Registered Engineering Firm F-518

Work by Saulsbury Engineering: rev. no. RFQ

REV. | DATE | BY | APPR. | NO. | FIRM

Request for Quotation | 3/5/2010 | RP | RFQ | SE&C

OPERATING CONDITIONS

FLUID: Pond Water		GPM NOR.	2000 RATED	SPEED	* RPM
PUMPING TEMPERATURE	60 °F	GPM MIN. CONT. FLOW		DES. EFF IN	* % RATED
SPEC. GRAVITY	1 @ 60 °F	DISCHARGE PRESS. (PSIG)	182 RATED	BHP	* RATED
VISCOSITY	1 cP @ 60 °F	SUCTION PRESS. (PSIG)	1 RATED	BHP	* NON-OVERLOAD
VAPOR PRES. (PSIA)	0.6 @ 100 °F	DIFF. PRESS., (PSI)	181 RATED	BHP	* RECOMMENDED
NPSH. (FT.) 28 AVAIL.	* REQ'D.	DIFF. HEAD FT.	414 RATED		
SUSPENDED SOLIDS					
CORROSIVES					
ENTRAINED GASES					

PUMP SPECIFICATIONS

MODEL Note 2		SIZE *		ROTATION CCW	FACING CPLG.
NO. OF STAGES one		MAX. WORKING PRESSURE	250 (PSIG)	MAX. WORKING TEMPERATURE	100 ° F
SUCTION SIZE 10"	RATING 125	FACING FF		POSITION Side	
DISCHARGE SIZE 8"	RATING 125	FACING FF		POSITION Side	
IMPELLER DIA. RATED: *		MAX. *		BACK PULL-OUT REQ'D. NO (YES/NO)	

MATERIALS - MAJOR COMPONENTS

PART	MATERIAL/TYPE	PART	MATERIAL/TYPE
SUPPORT		MECHANICAL SEAL - TYPE	*
CASE	SPLIT CASE, CAST IRON	MECHANICAL SEAL - MFG.	*
SHAFT	*	METAL PARTS	
IMPELLER	*	SEAL FACES	
CASE WEAR RING	*	SEAL FLUSH PLAN	
IMPELLER WEAR RING	*	PACKING - NO. RINGS (X) -	
SHAFT SLEEVE	*	LANTERN RING	
RADIAL BEARING		PACKING BOX	
HOUSING MATERIAL	*	PACKING BOX BUSHING	
COUPLING	DRIVE SHAFT	PACKING GLAND	
COUPLING GUARD	YES	PRESSURE RED. BUSHING	
PUMP & DRIVE BASE	SKID	CASE VENT	
LUBRICATION	OIL	CASE DRAIN	YES
BASE PLATE / DRIP PAN		GAUGE CONN.	
BEARING SEAL			
MULTI-STAGE PUMP		COOLING WATER -SEAL	
IMPELLER HUB SLEEVES		-GLAND	
SPACER SLEEVES		-BEARINGS	
INTERSTAGE SLEEVES		-PEDESTAL	
INTERSTAGE DIAPHRAGMS		TOTAL WATER REQUIRED	GPM@ 0 F
INTERSTAGE DIAPHRAGM BUSH			
DIFFUSER		SETTING DEPTH (VERT. PUMP)	
THRUST BEARING		**MOTOR DATA**	
HOUSING MATERIAL		ITEM NO. Note 3	MFG. *
BALANCING DRUM		H.P. * S.F. *	RPM *
BALANCING RING		* VOLTS * HERTZ	* PHASE
SHOP TEST PREFERENCE		ENCLOSURE *	FRAME *
SHOP TEST NPSH		RADIAL BRG. *	LUBE *
SHOP TEST HYDRO		INSUL. *	TEMP. RISE *
		STARTING TORQUE * %	F.L. AMPS. *
		INNER BRG. CAP *	JUNCTION BOX *

NOTES: 1. "*" DENOTES MANUFACTURER SUGGESTION OR STANDARD IS REQUESTED

2. A-C FIRE PUMP SYSTEMS, BY ITT INDUSTRIES, CENTRIFUGAL FIRE PUMP TYPE 8100, OR EQUAL

3. DRIVER WILL NOT BE A MOTOR. DRIVER TO BE A DIESEL ENGINE, SEE NEXT PAGE

FIRE WATER PUMP SKID WITH DRIVER

BY: RP	JOB NO: 6174	PAGE 2	OF 2
DATE: 3/5/2010	ITEM NO.: P-600, P-601, P-602
CUSTOMER:	Navajo Refining Company
PLANT:	Artesia NM Refinery
SERVICE:	New Fire Water Pond
QUANTITY: 3	TYPE: Horizontal Centrifugal Pump

SAULSBURY INDUSTRIES

SAULSBURY Engineering & Construction

Texas Registered Engineering Firm F-518

Work by Saulsbury Engineering: rev. no. RFQ

REV.	DATE	BY	APPR	NO.	FIRM
Request for Quotation	3/5/2010	RP		RFQ	SE&C

SKID

Quantity:	One per pump
Dimensions:	
Other:	Skid to support pump, driver, and control panel

DRIVER

Quantity:	One per pump
Make:	John Deere, or equal
Model:	
Type:	12.5 Litre Diesel, 6 cylinder
Horsepower:	
RPM:	
Class:	Tier 3
Batteries:	
Other:	with JW heat exchanger loop
Other:	with fuel pump
Other:	with 8" engine exhaust

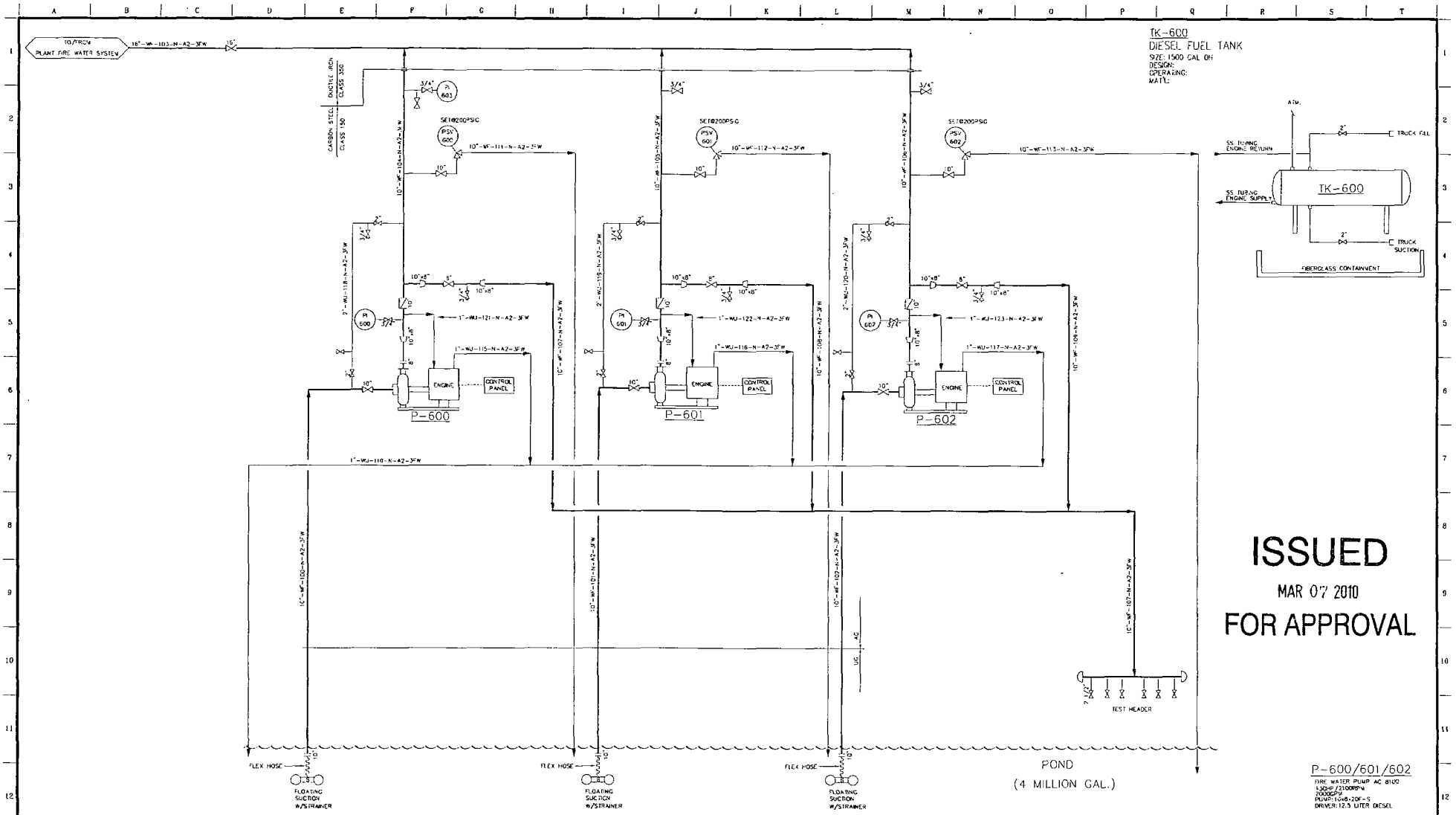
CONTROL PANEL

Quantity:	One per pump
Make:	Metron, or equal
Model:	
Codes:	NFPA 20 and UL 218 std.
Buttons:	manual start / stop, auto-off-manual selector, battery disconnect switches
Alarms:	
Mode:	automatic operation per customer preference

TOTAL WEIGHT _____ lbs.

including pump, driver, skid, panel

(? = Manufacturer to correct or fill in all missing data where applicable)



ISSUED

MAR 07 2010

FOR APPROVAL

P-600/601/602

FIRE WATER PUMP AC 8100
1,004HP/2100RPM
2000GPM
PUMP:10x8-20F-S
DRIVER:12.5 LITER DIESEL

NOTE:

REFERENCE DRAWINGS	
NO.	TITLE

REVISIONS						
NO.	FIRM	DATE	DESCRIPTION	BY	CHK	APP.
A	SEC	01/25/10	ISSUE FOR APPROVAL	ALH	–	
B	SEC	03/05/10	ISSUE FOR APPROVAL	ALH		

ENGINEERING RECORD		
	BY	DATE
DRN:	ALH	1/11/10
DES:	JW	1/11/10
CHK:	–	–
APP:	–	–
AFE No.:	–	–
SE&C JOB NO:	6174	
PROJ. ENGR.:	MG	
SCALE:	NONE	

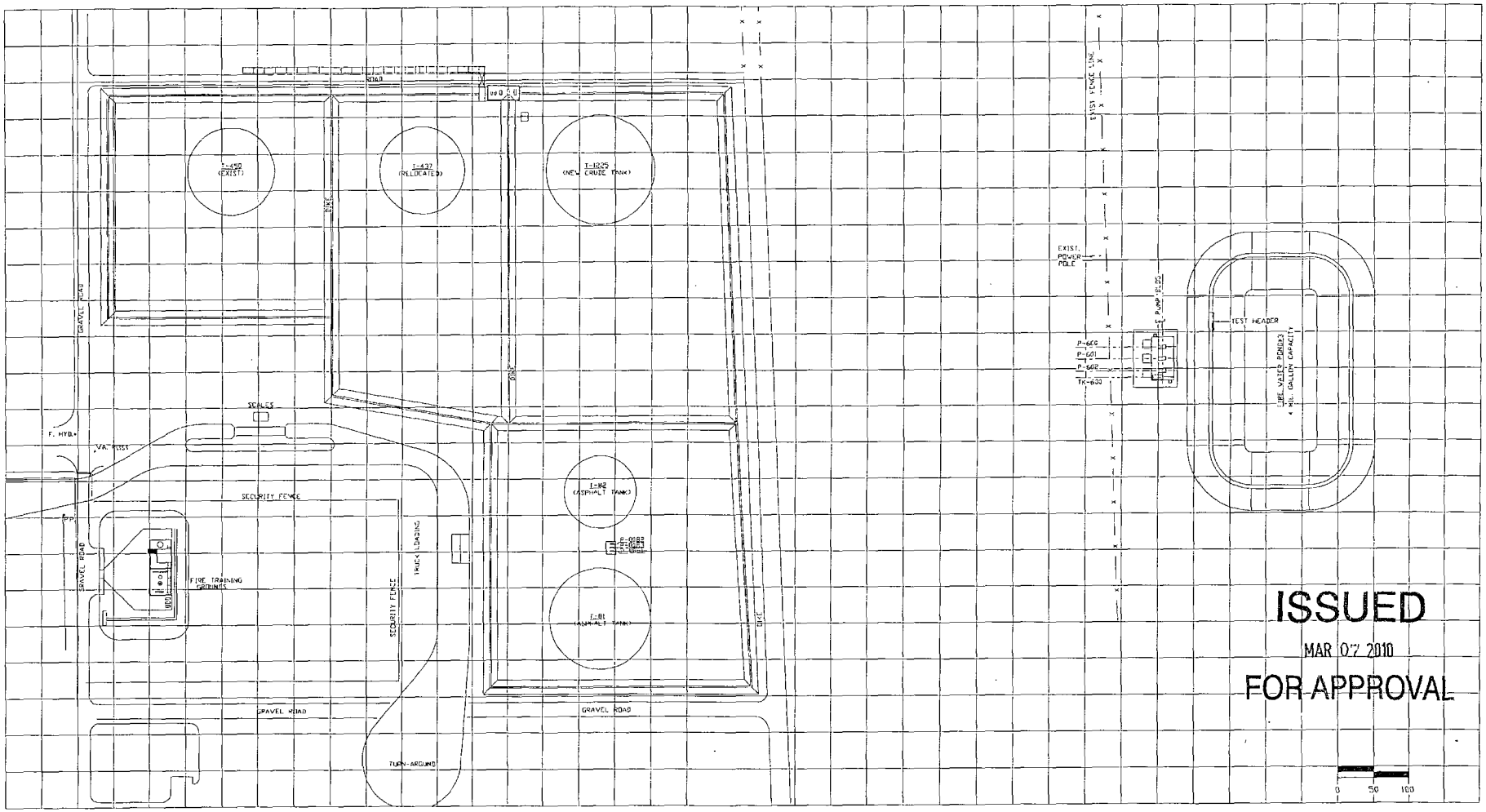
SAULSBURY
ENGINEERING & CONSTRUCTION
A SAULSBURY INDUSTRIES COMPANY
TEXAS REGISTERED ENGINEERING FIRM F-516
WWW.SI-TX.COM

NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

P&ID
UNIT 60
FIRE WATER POND #3

ARTESIA, NEW MEXICO

PLOT SCALE: 1:1
CAD NO.: 02-0-01
DWG. NO.: 60-V-02-D-01
REV: 3



NOTE:

REFERENCE DRAWINGS	
NO.	TITLE

REVISIONS				BY	CHK.	APP.
NO.	FIRM	DATE	DESCRIPTION			
A	SEC	01/25/10	ISSUE FOR APPROVAL	JW	–	
B	SEC	03/05/10	ISSUE FOR APPROVAL	JW	–	

ENGINEERING RECORD		
	BY	DATE
DRN:	JW	01/22/10
DES:	JW	01/22/10
CHK.	–	–
APP.	–	
AFE No.	–	–
SE&C JOB NO.	6174	
PROJ. ENGR:	MC	
SCALE:	3/32"=1'-0"	

SAULSBURY
ENGINEERING & CONSTRUCTION
A SAULSBURY INDUSTRIES COMPANY
TEXAS REGISTERED ENGINEERING FIRM F-518
WWW.SI-TX.COM

NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

PLOT PLAN
UNIT 60
FIRE WATER POND #3
ARTESIA, NEW MEXICO

PLOT SCALE 1:1 | CAD NO. 100-D-01 | DWG. NO. 60-Z-100-D-01 | REV B

J:\Work\6174 Artesia Fire Pumps and Pond\03 Engineering Dis\01\4 Pond\3.4.3 Drawings - Plot Plans\100-D-01.dwg 20/09/2010 11:46:13 AM

SAULSBURY ENGINEERING & CONSTRUCTION
A SAULSBURY INDUSTRIES COMPANY
TEXAS REGISTERED ENGINEERING FIRM F-518

Work by Saulsbury Engineering = Revision B

Master Line List

Client: Navajo Refining Company
Project: New Fire Water Pond Project
Location: Artesia, New Mexico
Job #: 6174
Revision: B - Issue for Approval
Firm: SE&C
Date: March 5, 2010

Line Size, inch	Service	Line No	Spec	Insulation Thickness, Inch	Insulation H-Hot C-Cold P-PP F-Freeze N-None	Electric Trace	P&ID Number	From	To	Service	Normal Operating Conditions Barg. + 13.1 PSIA		Design		Test Medium	Max Test Pressure	Paint Code	NDE	PWHT	Design Flow Parameters					Tie In No.	Comments
											Temp, F	Press, PSIG	Temp, F	Press PSIG	Hydro/ Pneum	PSIG				Vis cP	Density LB/FT³	Flow Rate Lb/Hr	Flow Rate MMSCFD	Flow Rate GPM		
10	WF	100	A2-3FW				02-D-01	Fire Water Pond	P-600	Fire Water	60	2	100	200	Hydro	300								2000		
10	WF	101	A2-3FW				02-D-01	Fire Water Pond	P-601	Fire Water	60	2	100	200	Hydro	300								2000		
10	WF	102	A2-3FW				02-D-01	Fire Water Pond	P-602	Fire Water	60	2	100	200	Hydro	300								2000		
16	WF	103	A2-3FW				02-D-01	Fire Water Pond	P-600/601/603	Fire Water	60	180	100	200	Hydro	300										
10	WF	104	A2-3FW				02-D-01	P-600	16"-WF-103-N-A2-3FW	Fire Water	60	182	100	200	Hydro	300										
10	WF	105	A2-3FW				02-D-01	P-601	16"-WF-103-N-A2-3FW	Fire Water	60	182	100	200	Hydro	300										
10	WF	106	A2-3FW				02-D-01	P-602	16"-WF-103-N-A2-3FW	Fire Water	60	182	100	200	Hydro	300										
10	WF	107	A2-3FW				02-D-01	P-600	Test Header	Fire Water	60	182	100	200	Hydro	300										
10	WF	108	A2-3FW				02-D-01	P-601	Test Header	Fire Water	60	182	100	200	Hydro	300										
10	WF	109	A2-3FW				02-D-01	P-602	Test Header	Fire Water	60	182	100	200	Hydro	300										
1	WF	110	A2-3FW				02-D-01	P-600/601/603	Fire Water Pond	Engine Jacket Water	60	182	100	200	Hydro	300										
10	WF	111	A2-3FW				02-D-01	PSV-600	1"-WU-114-N-A2-3FW	PSV Discharge	60	40	100	50	Hydro	75										
10	WF	112	A2-3FW				02-D-01	PSV-601	1"-WU-114-N-A2-3FW	PSV Discharge	60	40	100	50	Hydro	75										
10	WF	113	A2-3FW				02-D-01	PSV-602	1"-WU-114-N-A2-3FW	PSV Discharge	60	40	100	50	Hydro	75										
12	WF	114	A2-3FW				02-D-01	deleted	deleted	deleted	-	-	-	-	-	-										
1	WU	115	A2-3FW				02-D-01	P-600	1"-WU-116-N-A2-3FW	Engine Jacket Water	60	182	100	200	Hydro	300										
1	WU	116	A2-3FW				02-D-01	P-601	1"-WU-116-N-A2-3FW	Engine Jacket Water	60	182	100	200	Hydro	300										
1	WU	117	A2-3FW				02-D-01	P-602	1"-WU-116-N-A2-3FW	Engine Jacket Water	60	182	100	200	Hydro	300										
2	WU	118	A2-3FW				02-D-01	P-600 Suction/Discharge	P-600 Suction/Discharge	Bypass	60	182	100	200	Hydro	300										
2	WU	119	A2-3FW				02-D-01	P-601 Suction/Discharge	P-601 Suction/Discharge	Bypass	60	182	100	200	Hydro	300										
2	WU	120	A2-3FW				02-D-01	P-602 Suction/Discharge	P-602 Suction/Discharge	Bypass	60	182	100	200	Hydro	300										
1	WU	121	A2-3FW				02-D-01	10"-WF-104-N-A2-3FW	P-600	Cooling Water	60	182	100	200	Hydro	300										
1	WU	122	A2-3FW				02-D-01	10"-WF-105-N-A2-3FW	P-601	Cooling Water	60	182	100	200	Hydro	300										
1	WU	123	A2-3FW				02-D-01	10"-WF-106-N-A2-3FW	P-602	Cooling Water	60	182	100	200	Hydro	300										

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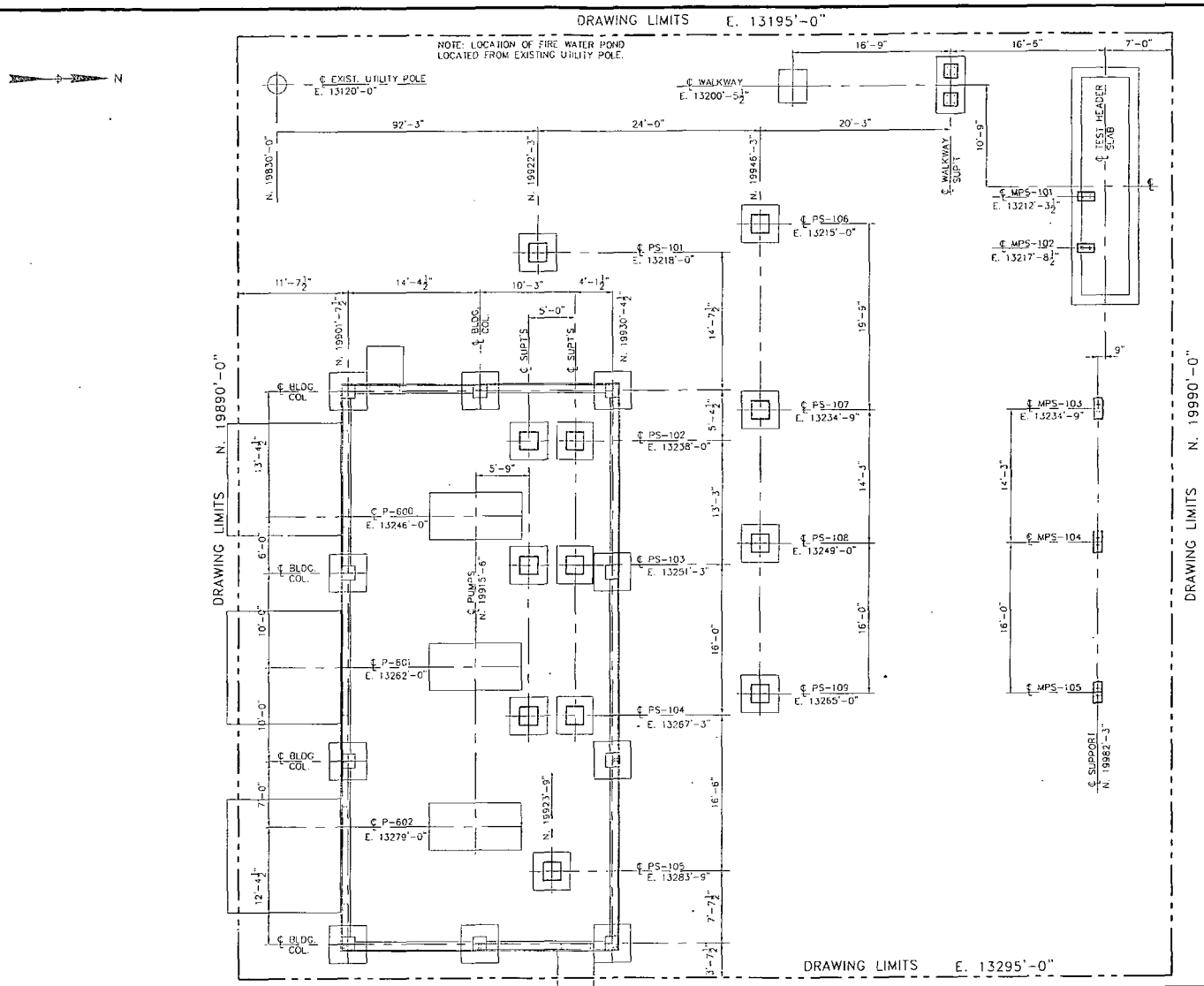
Test pressures shown do not reflect any testing thru equipment. Test circuits including equipment to be reviewed for proper "set pressure".



ISSUED

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NOTE:

REFERENCE DRAWINGS	
NO.	TITLE

REVISIONS						
NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SEC	03/05/10	ISSUE FOR APPROVAL		–	

ENGINEERING RECORD		
	BY	DATE
DRN:	JW	01/22/10
DES:	JW	01/22/10
CHK:	–	–
APP.	TC	
AFE No.	–	–
SE&C JOB NO.	6174	
PROJ. ENGR:	MC	
SCALE:	3/16"=1'-0"	

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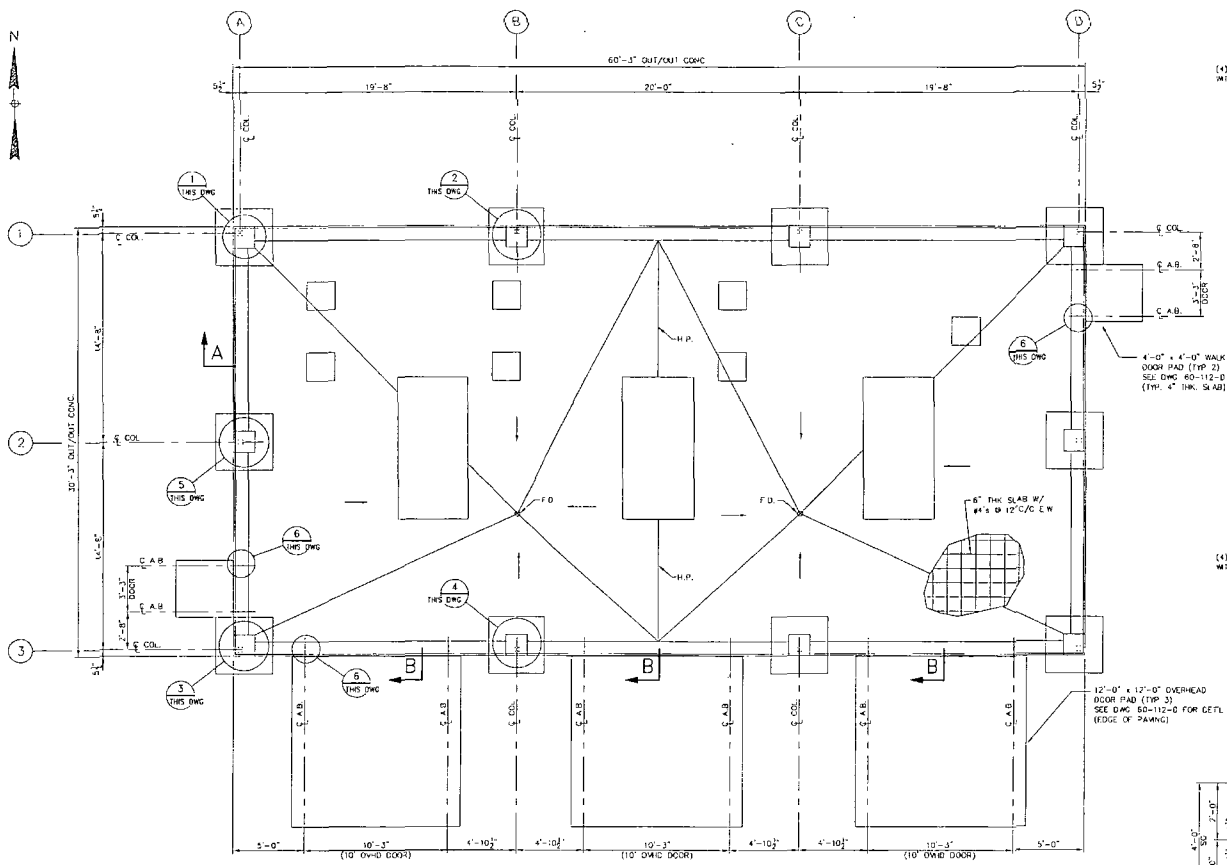
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

FOUNDATION LOCATION PLAN

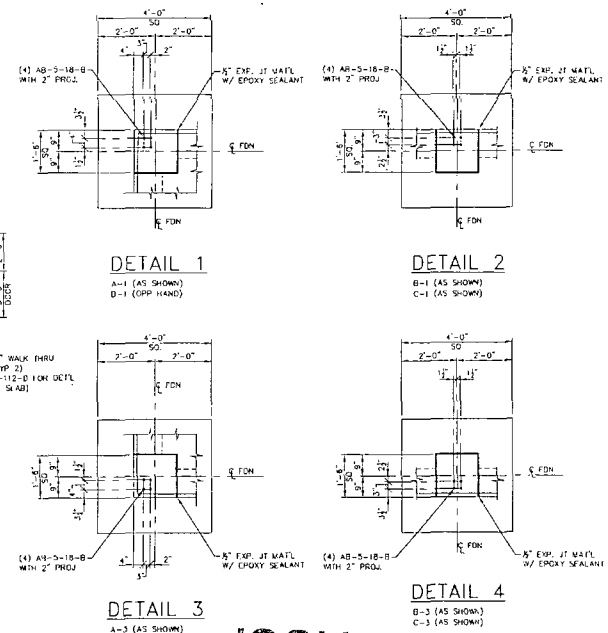
UNIT 60
FIRE WATER POND #3
ARTESIA, NEW MEXICO

PLOT SCALE 1:1
CAD NO. 60-100-D
DWG. NO. 60-100-D
REV A

J:\Navajo\Artesia Fire Pumps and Pond\03 Engineering Design\3.2 Civil\3.2.1 Civil Drawings\60-100-D.dwg 20100307 10:23:57



PLAN



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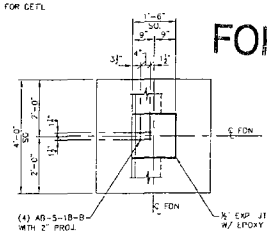
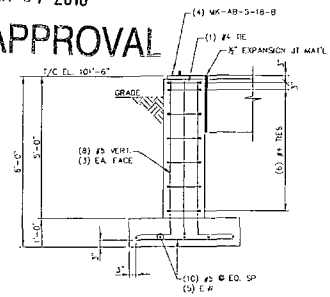
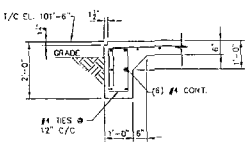
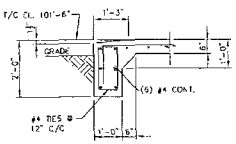




TYP COL. SECTION



SECTION A-A



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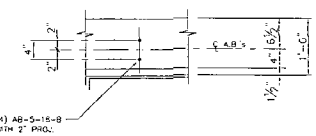

DETAIL 6
(10) PLACES

NOTE:

HOLD FOR FINAL BUILDING DETAILS.

REFERENCE DRAWINGS	
NO.	TITLE
60-101-D-02	BUILDING PENETRATION DETAILS

REVISIONS						
NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SEC	03/05/10	ISSUE FOR APPROVAL		-	

ENGINEERING RECORD		
	BY	DATE
DRN:	JW	01/22/10
DES	JW	01/22/10
CHK	-	-
APP	-	-
AFE No.	-	-
SEAC JOB NO.	6174	
PROJ. ENGR:	MG	
SCALE:	3/32"=1'-0"	

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P.O. DRAWER 159
ARTESIA, NEW MEXICO

BUILDING FOUNDATION DETAILS
FIRE WATER PUMP HOUSE
UNIT 60
FIRE WATER POND #3
ARTESIA, NEW MEXICO

PLOT SCALE 1:1 | DWG. NO. 60-101-D-01 | REV A
CAD NO 60-101-D-01

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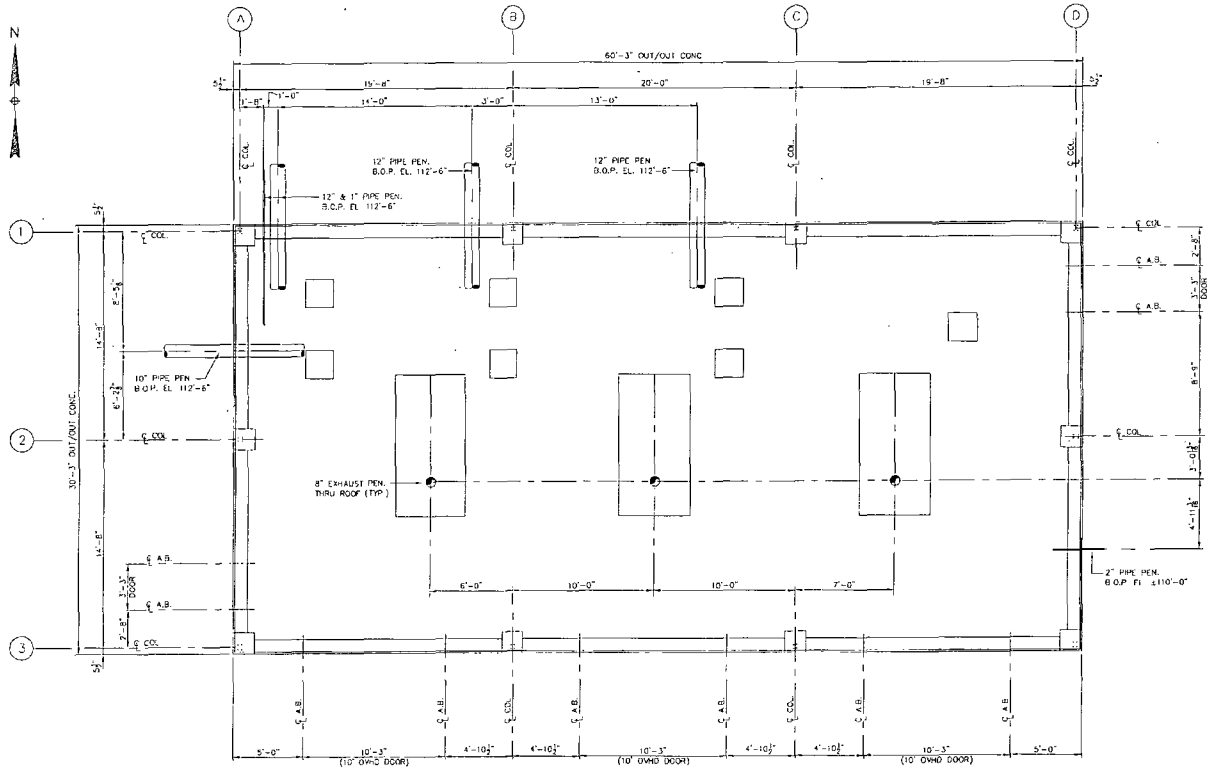

PLAN

BUILDING SPECIFICATIONS

ERECTION DRAWINGS ARE TO BE FURNISHED AND APPROVED PRIOR TO FABRICATION
BIDS ARE TO INCLUDE EVERYTHING NECESSARY TO COMPLETE THE BUILDING AS OFFERED ON ON THE DRAWING PACKAGE.
BIDS ARE TO INCLUDE ALL FREIGHT AND SHIPPING CHARGES TO THE SITE, ARTESIA, NM

DESIGN CRITERIA SUMMARY

THE 2006 EDITION OF THE "INTERNATIONAL BUILDING CODE"

ROOF LIVE LOAD

VERIFY

OCCUPANCY TYPE	CLOSED EQUIPMENT (COMPRESSOR BUILDING)
ROOF LIVE LOAD	20 PSF
ROOF SNOW LOAD	20 PSF
SNOW IMPORTANCE FACTOR	1.20
SNOW EXPOSURE FACTOR Ce	0.90
SNOW THERMAL FACTOR Ct	1.10

WIND DESIGN DATA

WIND SPEED	100 MPH
WIND IMPORTANCE FACTOR	1.00
WIND EXPOSURE CATEGORY	C
EXPOSURE CLASSIFICATION	PARTIALLY OPEN

EARTHQUAKE DESIGN DATA

SEISMIC USE GROUP	1
SEISMIC IMPORTANCE FACTOR	1.000
SEISMIC ZONE	2
SEISMIC COEFFICIENT	0.37

BUILDING FRAME

COATING	PRIME BEAMS, PURLIN, TUBING, ETC...
BOLTING	ASTM A325 OR A490 W/ F1F KEE NUTS
PURLINS	USE HIGH STRENGTH CEE'S, ZEE'S AND EAVE STRUTS, 14 GA
SHEETING/PANELS	26 GA. PAINTED OR GALVALUME, "R" OR "U", W/ 20/25 YR PAINT WARRANTY (MIN. 80,000 PSI GALVALUME - 16-20 GAUGE)
FASTENERS	TEK 1.25 (ROOF), TEK 1.25 (WALLS) FASTENERS TO MATCH SHEETING
FASTEN TYPE	CONSTANT DEPTH (PRIMED AND PAINTED)
COLUMN TYPE	CONSTANT DEPTH (PRIMED AND PAINTED)

COLOR / FINISH SCHEDULE

PRIMARY STRUCTURAL MEMBERS	PRIME
SECONDARY STRUCTURAL MEMBERS	PRIME
ROOF PANELS	TAN
WALL PANELS	TAN
RAKE TRIM	TAN
GUTTERS	TAN
DOWNSPOUTS	TAN
EXTERIOR WALL TRIM	TAN
WOOD TRIM WOODS	TAN
PERSONNEL DOOR	N/A
CRANE	N/A
SKYLIGHTS	N/A

INSULATION

INSULATION	YES

NOTES

BUILDING CO. BASE PLATE ELEVATION = 101'-6"
EVE HEIGHT = 15'-0" + 1'-6" = 16'-6"
ROOF SLOPE = 1:12
2 MORE PENETRATIONS NEED FOR VENT AND FAN IN THE EAST AND WEST WALLS

ISSUED

MAR 07 2010

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NOTE:

REFERENCE DRAWINGS		REVISIONS							ENGINEERING RECORD		
NO.	TITLE	NO	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.		BY	DATE
60-101-D-01	BUILDING FOUNDATION DETAILS	A	SEC	03/05/10	ISSUE FOR APPROVAL		–		DRN:	JW	01/22/10
									DES:	JW	01/22/10
									CHK:	–	–
									APP:	–	–
									AFE No.	–	–
									SEAC JOB NO.		6174
									PROJ ENGR.		MG
									SCALE:		3/32"=1'-0"

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ARTESIA, NEW MEXICO

BUILDING PENETRATION DETAILS
FIRE WATER PUMP HOUSE
UNIT 60
FIRE WATER POND #3
ARTESIA, NEW MEXICO

PLOT SCALE 1:1 | DWG. NO. 60-101-D-02 | REV. A
CAD NO60-101-D-02

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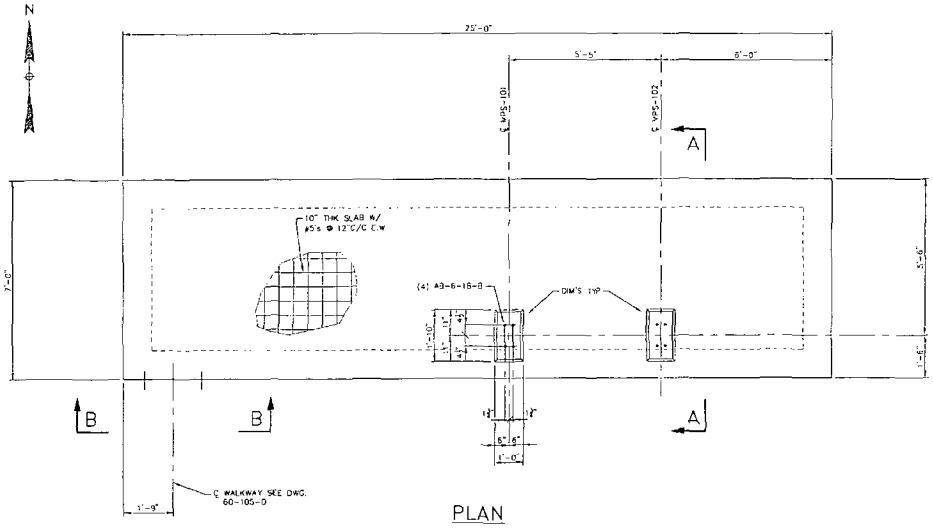
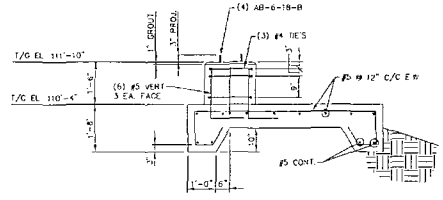
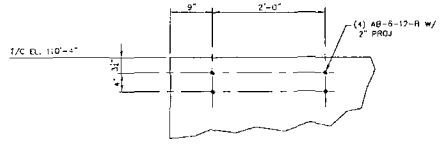


PLAN



SECTION A-A



SECTION B-B

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FOR APPROVAL

NOTE:

REFERENCE DRAWINGS	
NO.	TITLE
60-100-D	FOUDATION LOCATION PLAN

REVISIONS						
NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SEC	03/05/10	ISSUE FOR APPROVAL		-	

ENGINEERING RECORD		
	BY	DATE
DRN.	JW	01/22/10
DES.	JW	01/22/10
CHK:	-	-
APP:	-	-
AFE No.	-	-
SE&C JOB NO.	6174	
PROJ. ENGR.	MG	
SCALE:		

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ARTESIA, NEW MEXICO

FOUNDATION DETAILS
TEST HEADER
UNIT 60
FIRE WATER POND #3
ARTESIA, NEW MEXICO

PLOT SCALE 1:1 | DWG. NO. 60-102-D | REV A

CAD NO 60-102-D

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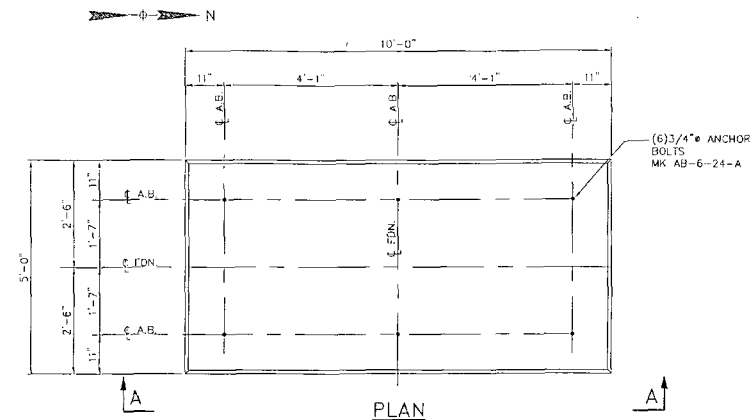
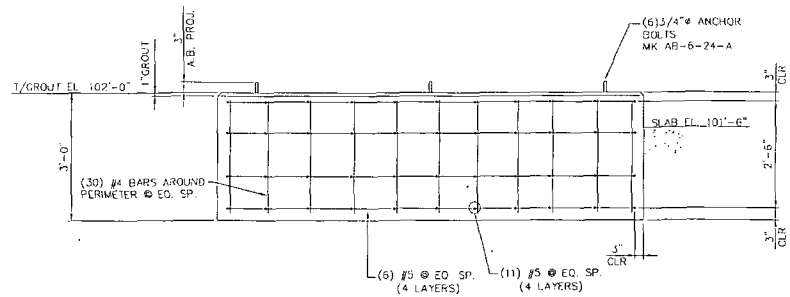


PLAN
P-600,601,&602



SECTION A-A

ISSUED
MAR 07 2010
FOR APPROVAL

NOTE:

REFERENCE DRAWINGS	
NO.	TITLE
60-100-D	FOUNDATION LOCATION PLAN

REVISIONS				BY	CHK.	APP.
NO	FIRM	DATE	DESCRIPTION			
A	SEC	03/05/10	ISSUE FOR APPROVAL	AH	-	

ENGINEERING RECORD		
	BY	DATE
DRN:	JW	01/22/10
DES:	JW	01/22/10
CHK:	-	-
APP:	DE	-
AFE No.	-	-
SE&C JOB NO.	6174	
PROJ. ENGR.	MG	
SCALE:	3/4"=1'-0"	

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P.O. DRAWER 159
ARTESIA, NEW MEXICO

FOUNDATION DETAILS
PUMPS 600,601,602
UNIT 60
FIRE WATER POND #3
ARTESIA, NEW MEXICO

PLOT SCALE 1:1
CAD NO 60-103-D
DWG. NO. 60-103-D
REV A

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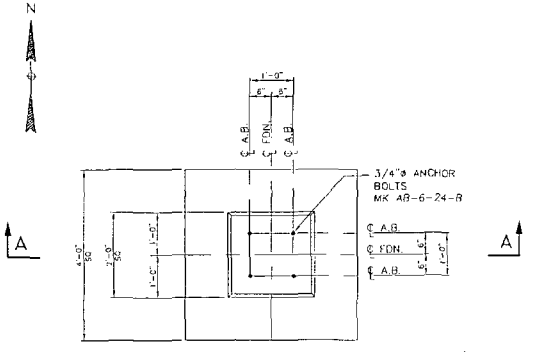
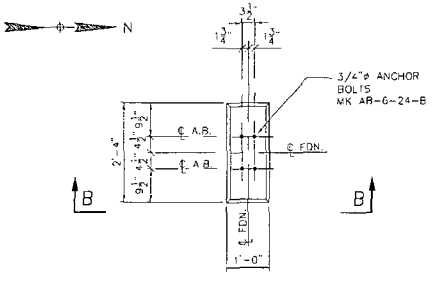


PLAN
P.S.-101 THRU P.S.-109
(2 REQ'D @ PS-102,103, & 104)
(12 TOTAL REQ'D)



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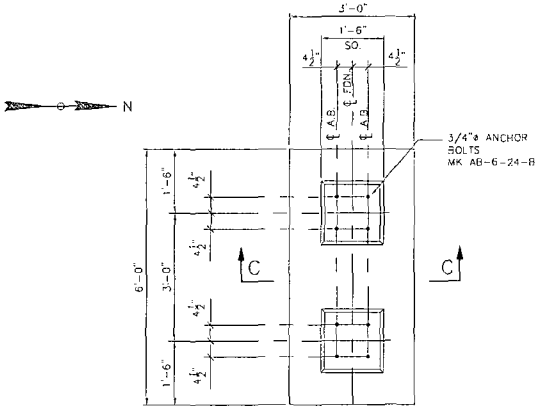
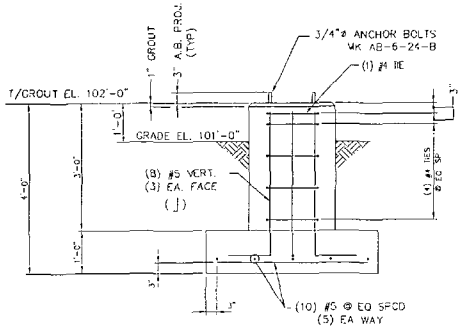
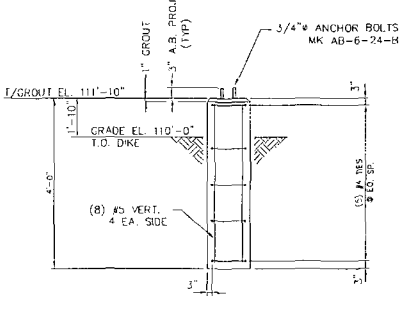
M.P.S.-103 THRU M.P.S.-105
(3 TOTAL REQ'D)



PLAN
WALKWAY SUPPORT



SECTION A-A



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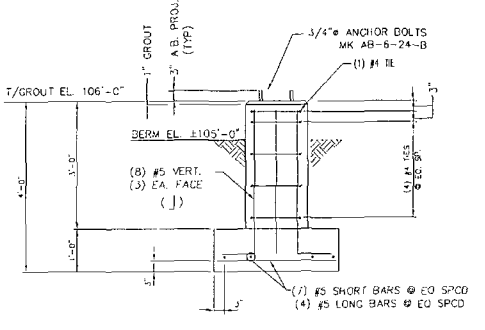

SECTION C-C

ISSUED
MAR 07 2010
FOR APPROVAL

NOTE:

REFERENCE DRAWINGS	
NO.	TITLE
60-100-D	FOUNDATION LOCATION PLAN

REVISIONS							
NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SCC	03/05/10	ISSUE FOR APPROVAL		-	

ENGINEERING RECORD		
	BY	DATE
DRN:	JW	01/22/10
DES:	JW	01/22/10
CHK:	-	-
APP:	-	-
AFE No.	-	-
SE&C JOB NO.	6174	
PROJ. ENGR:	MG	
SCALE:	3/32"=1'-0"	

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ARTESIA, NEW MEXICO

FOUNDATION DETAILS
PIPE SUPPORTS
UNIT 60
FIRE WATER POND #3
ARTESIA, NEW MEXICO

PLOT SCALE 1:1 | DWG NO. 60-104-D | REV A
CAD NO. 60-104-D

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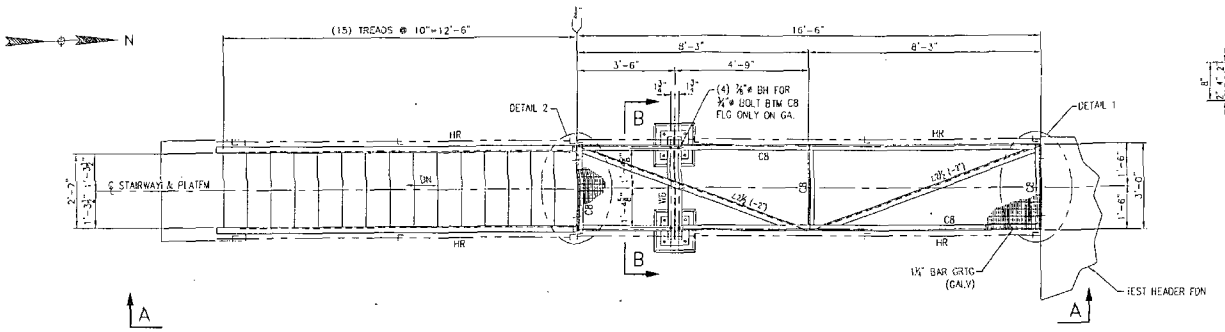
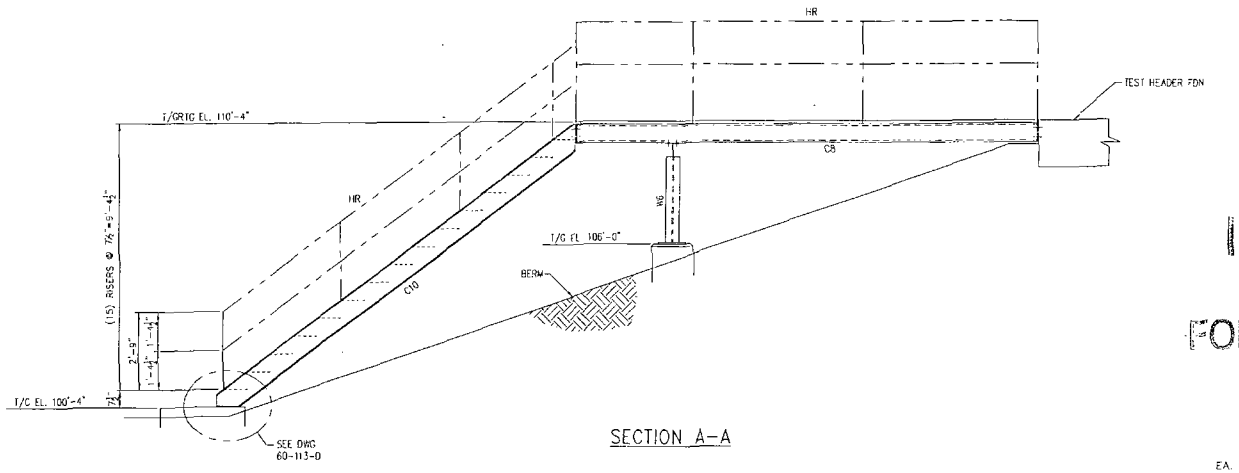
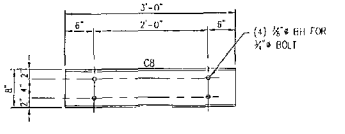


PLAN

SEE DWG. 60-115-D FOR DETAILS

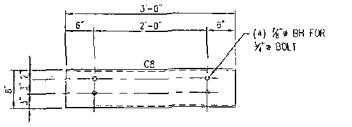


SECTION A-A



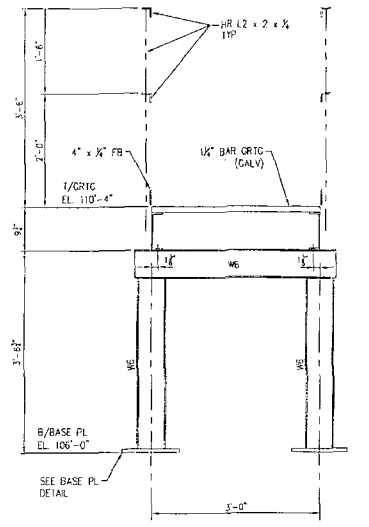
DETAIL 1

LOOKING NORTH



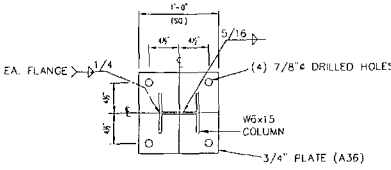
DETAIL 2

LOOKING NORTH



SECTION B-B

SEE DWG. 60-118-D FOR DETAILS



BASE PLATE DETAIL

2 REQ'D

ISSUED

MAR 07 2010

FOR APPROVAL

LEGEND		
C8	=	CHANNEL C8 x 11.5
C10	=	CHANNEL C10 x 15.3
L2½	=	ANGLE 2½ x 2½ x ¼
W6	=	WF W6 x 15

NOTE:

REFERENCE DRAWINGS	
NO.	TITLE
60-100-D	FOUNDATION LOCATION PLAN
60-104-D	FOUNDATION DETAILS

REVISIONS						
NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SEC	03/05/10	ISSUE FOR APPROVAL			

ENGINEERING RECORD		
	BY	DATE
DRN:	JW	01/22/10
DES	JW	01/22/10
CHK:	-	-
APP:	-	-
AFE NO.	-	-
SC&C JOB NO.		6174
PROJ. ENGR:	VG	
SCALE:		

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ARTESIA, NEW MEXICO

STRUCTURAL STEEL DETAILS
TEST HEADER ACCESS WALKWAY & STAIR
UNIT 60
FIRE WATER POND #3
ARTESIA, NEW MEXICO

PLOT SCALE: 1:1
CAD NO. 60-105-D

DWG. NO. 60-105-D

REV A

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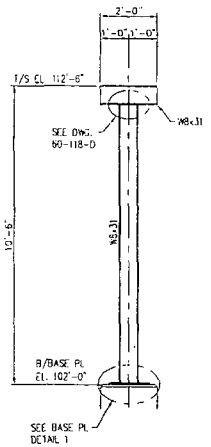

PS-101,105
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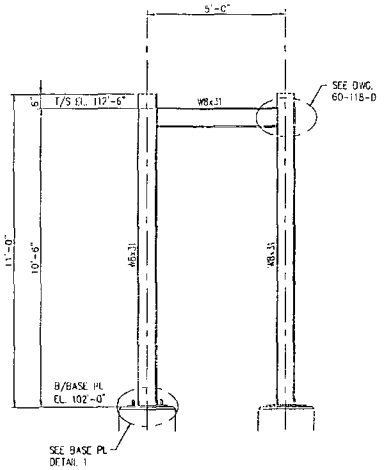
(2) REQ'D



PS-102,103,104
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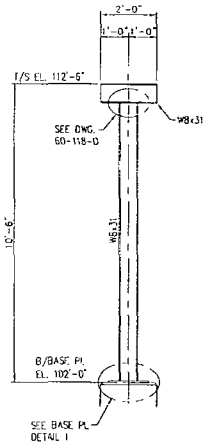

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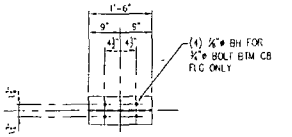

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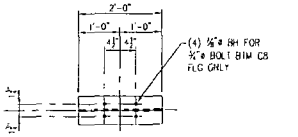

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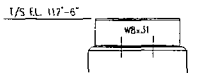

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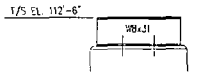

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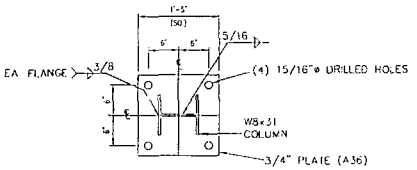
(3) REQ'D



BASE PLATE DETAIL 1
(12) REQ'D

ISSUED
MAR 07 2010
FOR APPROVAL

NOTE:

REFERENCE DRAWINGS	
NO.	TITLE
60-100-D	FOUNDATION LOCATION PLAN

NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SEC	03/05/10	ISSUE FOR APPROVAL			

ENGINEERING RECORD	BY	DATE
DRN:	JW	01/22/10
DES:	JW	01/22/10
CHK:	-	-
APP:	DE	-
AFE No.	-	-
SE&C JOB NO.	6174	
PROJ. ENGR.	MC	
SCALE:		

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ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

STRUCTURAL STEEL DETAILS
PIPE SUPPORTS
UNIT 60
FIRE WATER POND #3
ARTESIA, NEW MEXICO

PLOT SCALE: 1:1
CAD NO: 60-105-D
DWG. NO. 60-105-D
REV. A

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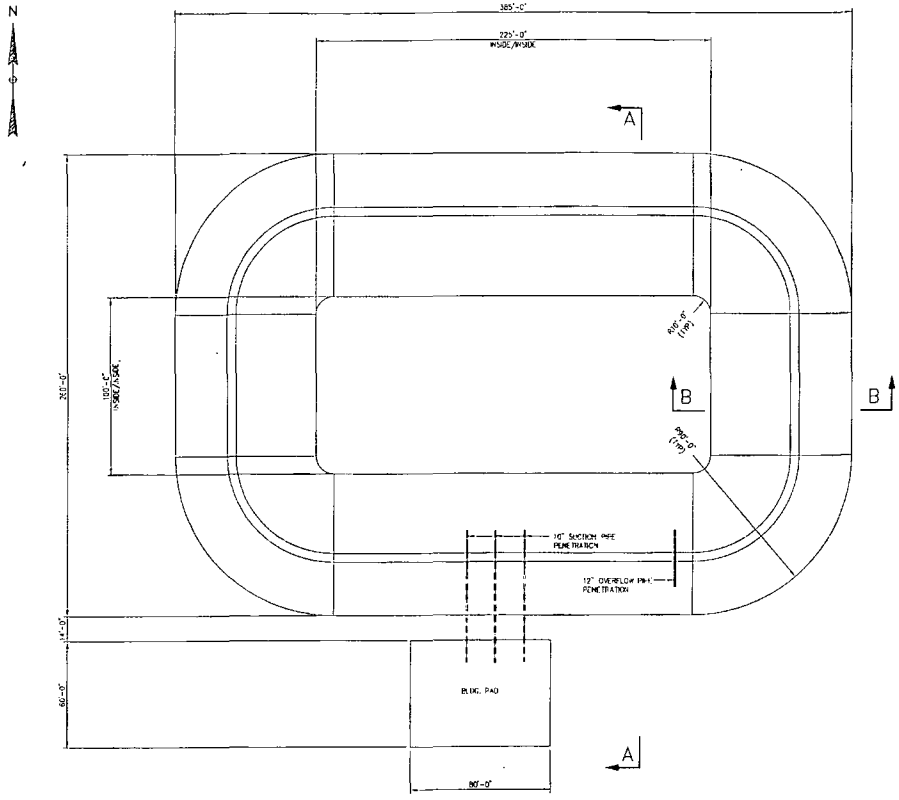

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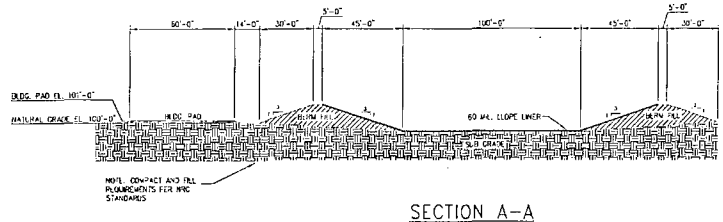
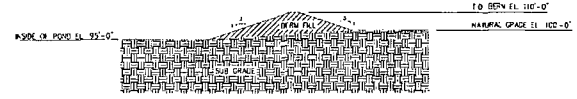


SECTION A–A



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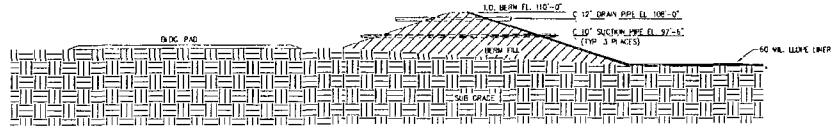

DETAIL–1

ISSUED

MAR 07 2010

FOR APPROVAL

NOTE:

REFERENCE DRAWINGS	
NO.	TITLE
60-100-D	FOUNDATION LOCATION PLAN

REVISIONS						
NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SEC		ISSUE FOR APPROVAL		–	

ENGINEERING RECORD		
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SE&C JOB NO.	6174	
PROJ. ENGR:	MG	
SCALE:		

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P.O. DRAWER 159
ARTESIA, NEW MEXICO

GRADING DETAILS
FIRE WATER POND
UNIT 60
FIRE WATER POND #3
ARTESIA NEW MEXICO

PLOT SCALE 1:1
CAD NO. 60-107-D

DWG. NO. 60-107-D

REV A

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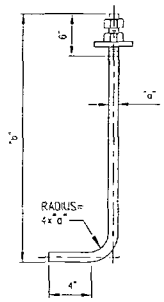
CONCRETE CONSTRUCTION NOTES

1. ALL CONSTRUCTION AND MATERIALS USED SHALL CONFORM TO LOCAL BUILDING CODES AND THE LATEST A.C.I. 318 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.
2. THE CONCRETE CONTRACTOR SHALL PROVIDE CONTINUOUS INSPECTION FOR PLACEMENT OF ALL CONCRETE.
3. ALL MATERIAL SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS, UNLESS NOTED OTHERWISE:
   a. AGGREGATE- A.S.T.M. C33 (MAX. 1 1/2"ø)
   b. REINFORCING BARS- A.S.T.M. A615 GRADE 60
   c. WELDED WIRE FABRIC- A.S.T.M. A82 AND A185
   d. CEMENT- PORTLAND CEMENT CONFORMING TO A.S.T.M. C150 TYPE I, UNLESS NOTED OTHERWISE ON DRAWINGS
4. FIELD TO REFER TO ELECTRICAL, PIPING, UTILITY, INSTRUMENTATION AND VENDOR DRAWINGS FOR EMBEDDED ITEMS NOT SHOWN ON THE CIVIL DRAWINGS.
5. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF AT LEAST 3000 PSI AT 28 DAYS. CONCRETE CONTRACTOR TO RETAIN SPECIMENS FOR COMPLETE LAB TEST AS PER A.C.I. CODE.
6. ALL AREAS OF FILL UNDER FOOTINGS AND SLABS TO BE COMPACTED TO A FIELD DENSITY OF 95% PER SOIL REPORT OF STANDARD PROCTOR LABORATORY DENSITY. (A.S.T.M. D698-58T). WHEN A ROCK LAYER IS EXPOSED DURING EXCAVATION, AND IF THE ENTIRE FOOTER CAN BE PLACED UPON THE ROCK LAYER, THE ROCK LAYER CAN BE USED AS A FIRM BASE FOR THE FOOTER. THE EXCAVATION CAN BE STOPPED AT THAT LEVEL. THE PIER SHALL THEN BE ADJUSTED VERTICALLY FOR THE ELEVATION CHANGES.
7. ALL EXPOSED PEDESTALS AND WALLS SHALL HAVE SUFFICIENT FINISH TO REMOVE ALL HONEYCOMB AND FORM MARKS.
8. ALL EXPOSED 90° CONCRETE CORNERS TO HAVE A 1" CHAMFER.
9. FOUNDATIONS WITHOUT GROUT ARE TO BE STEEL TROWELED SMOOTH AND LEVEL AND TO THE ELEVATION SHOWN ON THE DRAWINGS.
10. FOUNDATIONS WITH GROUT ARE TO BE POURED TO CORRECT ELEVATION ± 1/4" BEFORE GROUTING ROUGHEN TOP BY CHIPPING ± 1/2".
11. PROVIDE FORMED KEYWAYS AT ALL CONSTRUCTION JOINTS UNLESS OTHERWISE NOTED. CONSTRUCTION JOINT SHALL OCCUR PER APPROVED DRAWING OR ONLY WHERE APPROVED BY CONSTRUCTION SUPERINTENDENT.
12. ALL REBAR AND ANCHOR BOLTS TO BE BUNDLED ACCORDING TO SIZE, LENGTH, AND MARK NUMBERS EACH BUNDLE TO BE CLEARLY MARKED OR TAGGED CONTAINING MARK NUMBER AND QUANTITY PER DRAWINGS.
13. ALL REINFORCING TO BE FABRICATED IN ACCORDANCE WITH A.C.I. "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" (LATEST EDITION).
14. MINIMUM LAP FOR ALL BAR SPLICES SHALL BE PER DRAWING DETAILS OR 36 BAR DIAMETERS BUT NOT LESS THAN 12". MINIMUM LAP FOR WELDED WIRE MESH TO BE 1 FULL MESH PLUS 2 INCHES. REINFORCING TO BE CONTINUOUS AROUND ALL CORNERS UNLESS NOTED OTHERWISE. GRADE BEAM REINFORCEMENT TO BE CONTINUOUS THROUGH PIERS UNLESS NOTED OTHERWISE.
15. SLAB FINISHES:
   a. FLOORS- DUSTING OF SURFACES WITH CEMENT IS NOT ACCEPTABLE. AT DRAIN LOCATIONS, SLOPE SURROUNDING CONCRETE AS INDICATED ON DRAWING OR NO LESS THAN 1/8" PER FOOT. GRADE AND SCREED TO THE ELEVATION OR SLOPE REQUIRED. FLOAT FINISH WITH METAL FLOATS OR FINISHING MACHINES.
   b. SIDEWALKS- SCREED TO PROPER LEVEL, STEEL TROWEL, AND SCORE TO A MEDIUM BROOM FINISH. USE EDGING TOOL AT EDGES AND JOINTS.
   c. DITCHES- SCREED TO PROPER SLOPE AND TROWEL FINISH.
16. PROVIDE CONCRETE PROTECTION FOR REINFORCEMENT:
   a. CONCRETE DEPOSITED DIRECTLY AGAINST GROUND: 3" CLEAR COVER
   b. FORMED CONCRETE EXPOSED TO WEATHER OR GROUND AFTER REMOVAL OF FORMS: 2" CLEAR COVER
   c. FORMED CONCRETE NOT EXPOSED TO WEATHER OR GROUND: 2" CLEAR COVER FOR COLUMNS, BEAMS & GIRDERS, 2" CLEAR COVER FOR SLABS AND WALLS OVER 6" THICK.
17. MINIMUM OF 1" SHALL BE MAINTAINED BETWEEN ANY EMBEDDED PLATE AND THE REINFORCING STEEL BEHIND IT.
18. CONTROL JOINTS SHALL BE LOCATED AT MAXIMUM SPACING OF 20'-0" EACH WAY. EXPANSION JOINTS SHALL BE LOCATED AT MAXIMUM SPACING OF 60'-0" EACH WAY.
19. FOR LOCATION OF CATCH BASINS SEE UNDERGROUND PIPING DRAWINGS.
20. ALL UNDERGROUND PIPING AND ELECTRICAL SHALL BE IN PLACE BEFORE PLACEMENT OF PAVING.
21. ALL ROADS SHALL HAVE A RADIUS OF 20'-0" TO THE EDGE OF ROAD UNLESS OTHERWISE NOTED.
22. PROVIDE A UNIFORM SLOPE FROM H.P. TO L.P. AS INDICATED ON PAVING SCHEMATIC.
23. 4" THICK PAVING SHALL BE REINFORCED WITH WWF 6x6 – W2.9xW2.9.
24. 6" THICK PAVING SHALL BE REINFORCED WITH WWF 6x6 – W4.0xW4.0
25. 8" THICK PAVING SHALL BE REINFORCED WITH #5 BARS @ 12" C/C EA. WAY
26. SLABS THAT WILL SUPPORT LOAD CARRYING CRANES WILL BE 8" THICK WITH 2 LAYERS OF #5 REBARS @ 12" C/C EACH WAY.
27. FOR PAVING 6" THICK AND SMALLER, REBAR (MESH) WILL BE PLACED AT MID THICKNESS. 8" THICK SLABS, REBAR (MESH) IS TO BE 3" FROM BOTTOM.
28. ALL CONCRETE JOINTS SHALL BE FILLED WITH JOINT SEALANT UNLESS OTHERWISE NOTED. JOINT SEALANT FOR SIDEWALKS, SLAB ISOLATION JOINTS AND SIMILAR USES SHALL BE AN ELASTOMERIC, NON-SAG, SELF-LEVELING, TRAFFIC BEARING, CONFORMING TO THE REQUIREMENTS OF ASTM C-920. THE SEALANT SHALL BE RESISTANT TO SOLVENTS, FUELS AND OTHER HYDROCARBONS AND CHEMICALS. THE SEALANT SHALL BE ABLE TO WITHSTAND CYCLIC MOVEMENTS OF AT LEAST 25 PERCENT OF THE JOINT WIDTH. JOINT FILLERS SHALL BE A MATERIAL COMPATIBLE WITH THE JOINT SEALANT. JOINT SEALANT INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.



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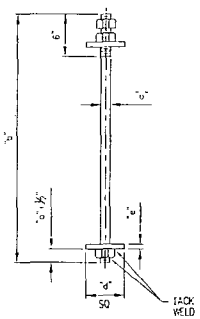
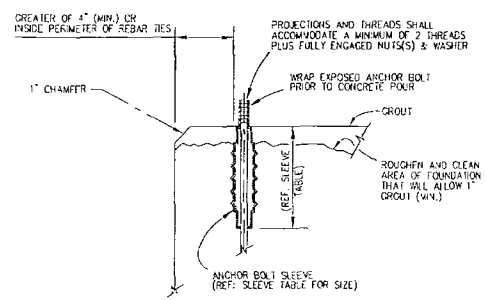


TYPE "B"
SEE CHART FOR DIM'S "a" & "b"



ANCHOR BOLT SLEEVE DETAIL
SCALE: NONE

ISSUED
MAR 07 2010
FOR APPROVAL

ANCHOR BOLT IDENTIFICATION

AB-6-30-A
- TYPE
- LENGTH INCHES "b" (30")
- BOLT DIA IN 8TH'S "a" (3/4")

AB-8-36-BS
- TYPE WITH SLEEVE
- LENGTH INCHES "b" (36")
- BOLT DIA IN 8TH'S "a" (1")

ANCHOR BOLTS GENERAL NOTES

1. ANCHOR BOLTS SHALL CONFORM TO ASTM A36 FOR TYPE A & TYPE B.
2. ANCHOR PLATE MATERIAL SHALL CONFORM TO ASTM A36.
3. NUTS SHALL CONFORM TO ASTM A-194 GR. 1 OR EQUAL, HEAVY HEX FOR TYPE A AND ASTM A194, GRADE 2H FOR TYPE B.
4. WELDING ELECTRODES SHALL CONFORM TO AWS A5.1, E60.
5. THREADS OF BOLTS 1" OR LESS IN DIAMETER SHALL BE STANDARD UNC, CLASS 2A FIT, PER ANSI B1.1. THREADS OF BOLTS WITH DIAMETERS GREATER THAN 1" SHALL BE 8 THREAD SERIES, CLASS 2A FIT, PER ANSI B1.1
6. SLEEVES SHALL BE WILSON ANCHOR BOLT SLEEVES AS MANUFACTURED BY SINCO PRODUCTS, INC., OR APPROVED EQUAL. SEE SLEEVE TABLE FOR SIZES
7. COATING REQUIREMENTS: HOT-DIPPED GALVANIZED UNLESS NOTED OTHERWISE.

MARK	"a"	"e"
AB-4-	1 1/2"	1/4"
AB-5-	1 1/2"	1/4"
AB-6-	2"	3/8"
AB-7-	2"	3/8"
AB-8-	2 1/2"	1/2"
AB-9-	2 1/2"	1/2"
AB-10-	3"	3/4"
AB-11-	3"	3/4"
AB-12-	3"	1"
AB-13-	4"	1"
AB-14-	4"	1 1/4"
AB-15-	4"	1 1/4"
AB-16-	5"	1 3/8"
AB-17-	5"	1 3/8"
AB-18-	6"	1 1/2"
AB-19-	6"	1 1/2"
AB-20-	6"	1 3/4"
AB-24-	6"	1 3/4"

SLEEVE TABLE	
BOLT DIAMETER	SLEEVE SIZE DIAMETER & LENGTH
1/2"	2" X 3"
5/8"	2" X 7"
3/4"	
7/8"	
1"	3" x 10"
1 1/8"	
1 1/4"	
1 3/8"	4" X 15"
1 1/2"	
1 3/4"	
2"	4" X 18"
2 1/4"	
2 1/2"	6" x 24"

NOTE:

REFERENCE DRAWINGS	
NO.	TITLE

REVISIONS						
NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SEC	03/05/10	ISSUE FOR APPROVAL		-	

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SEAC JOB NO.	6174	
PROJ. ENGR:	VG	
SCALE:	NONE	

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ARTESIA, NEW MEXICO

GENERAL CONCRETE NOTES AND ANCHOR BOLT DETAILS
UNIT 60
FIRE WATER POND #3
ARTESIA NEW MEXICO

PLOT SCALE 1:1 | CAD NO. 60-110-D | DWG. NO. 60-110-D | REV A

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GROUT

1. UNLESS NOTED OTHERWISE, CEMENTITIOUS NON-SHRINK GROUT, "NONSHRINK CEMENTITIOUS GROUT" SHALL BE USED UNDER ALL NON ROTATING EQUIPMENT, PIPE RACK AND STRUCTURE COLUMNS. THE FOLLOWING GROUTS ARE ACCEPTABLE:

   A. FIVE STAR NON-SHRINK CEMENTITIOUS GROUT AS MANUFACTURED BY FIVE STAR PRODUCTS INC. OF FAIRFIELD, CONNECTICUT.
   B. MASTERFLOW 713 GROUT AS MANUFACTURED BY MASTER BUILDINGS COMPANY OF CLEVELAND, OHIO

2. FOR COMMERCIAL GROUTS, ALL MIXING AND PLACEMENT OF GROUT COMPONENTS SHALL BE DONE IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDED PROCEDURES.

3. ALL SURFACES ON WHICH GROUTS TO BE PLACED SHALL BE CLEANED AND WET CURED JUST BEFORE GROUTING, CONCRETE SHALL BE FREE OF LAITANCE. GROUT SHALL BE SO PLACED AS TO FILL THE SPACE COMPLETELY AND TO BE IN CONTACT WITH THE UNDERSIDE OF THE BASE PLATES OR EQUIPMENT SUPPORTS.

4. EPOXY GROUT SHALL BE USED UNDER ALL PUMPS, COMPRESSORS OR OTHER ROTATING EQUIPMENT.

GENERAL GUIDELINES FOR EPOXY GROUT

PRIOR TO ANY WORK BEING PERFORMED, THE GROUT MANUFACTURER OR HIS REPRESENTATIVE / INSPECTOR SHALL BE PRESENT ON SITE TO PERFORM AN INITIAL INSPECTION OF THE SURFACES TO BE GROUTED. THE REPRESENTATIVE SHALL BE PRESENT DURING THE GROUT POUR TO ENSURE PROPER PROCEDURES ARE FOLLOWED.
GROUT SHALL NOT BE POURED UNLESS A GROUT REPRESENTATIVE / INSPECTOR IS PRESENT

A PRE-GROUT MEETING SHALL DISCUSS ALL ASPECTS OF EQUIPMENT GROUTING BETWEEN THE CONTRACTOR AND THE REPRESENTATIVE / INSPECTOR.

THE GROUT MANUFACTURER REPRESENTATIVE AND CLIENT REPRESENTATIVE WILL APPROVE THE:
PREPARATION OF THE FOUNDATION FOR GROUTING
TYPE AND PLACEMENT OF FORMS, BACKING, BOND PREVENTION MATERIALS, ETC.
PREPARATION OF THE BASE PLATE OR FRAME OF THE EQUIPMENT
THE STORAGE, HANDLING, MIXING, TRANSPORTATION AND PLACEMENT OF THE GROUT
THE CURING METHOD OF THE GROUT
THE REMOVAL OF FORMS, BACKING, BOND PREVENTION MATERIALS, ETC.

IN THE ABSENCE OF A GROUT MANUFACTURER REPRESENTATIVE, ENGINEERING RECOMMENDS THE FOLLOWING GUIDELINES;

MATERIAL STORAGE
ALL EPOXY GROUT COMPONENTS SHALL BE STORED AT A MINIMUM TEMPERATURE OF 65 F AND A MAXIMUM OF 80 F FOR AT LEAST 48 HOURS PRIOR TO MIXING AND PLACEMENT AND SHALL BE STORED IN A DRY AREA IN ORIGINAL UNOPENED CONTAINERS

PREPARATION OF FOUNDATION
AN ENCLOSURE SHALL BE MADE OVER THE EQUIPMENT TO BE GROUTED TO PROTECT FROM SUDDEN TEMPERATURE CHANGES AND DIRECT SUNLIGHT.

NEW CONCRETE - PERFORM A SHRINKAGE TEST PER ASTM C 157-80, ON NEW CONCRETE TO DETERMINE WHEN SHRINKAGE IS COMPLETE.
GROUT SHALL NOT BE POURED UNTIL SHRINKAGE OF THE FOUNDATION IS COMPLETE.

IF NO SHRINKAGE TEST IS PERFORMED, CURE TIME WILL BE APPROXIMATED AS FOLLOWS STANDARD CONCRETE 21-28 DAYS MINIMUM
HI-EARLY CONCRETE (6-7 BAG MIX) 7 DAYS MINIMUM

THE CONCRETE FOUNDATION SHALL BE DRY AND FREE OF OIL.

THE CONCRETE SHALL BE CHIPPED TO EXPOSE A MINIMUM OF 50% AGGREGATE. AVOID DEEP HOLES OR GROOVES THAT COULD HINDER FLOW OF GROUT. HAND CHIPPING GUNS ONLY WILL BE USED. NO JACKHAMMERS WILL BE PERMITTED AFTER CHIPPING, THE EXPOSED SURFACES SHALL BE BLOWN FREE OF DUST AND CONCRETE CHIPS USING WATER-FREE AND OIL-FREE COMPRESSED AIR.

AFTER FOUNDATION HAS BEEN CHIPPED AND CLEANED, IT SHALL BE COVERED TO PREVENT IT FROM BECOMING WET OR CONTAMINATED.

JACKSCREW LEVELING PADS

JACKSCREW LEVELING PADS SHALL BE SET AND PREPARED AS FOLLOWS.
- PADS ARE TO BE MADE OF 3" DIAMETER, 1/2" THICK STEEL
- PADS WILL BE SANDBLASTED TO "WHITE METAL FINISH" AND PRIMED WITH A EPOXY PRIMER
- PADS WILL BE ROUNDED ON THE EDGES (NO SHARP CORNER LEVELING PADS PERMITTED)

JACKSCREWS WHEN USED SHALL BE GREASED OR WRAPPED WITH DUCT TAPE TO AID IN THEIR REMOVAL ONCE THE GROUT HAS CURED OR HAVE FORMS AROUND TO BLOCK GROUT.

PREPARATION OF BASEPLATE, RAILS, OR SOLEPLATES
ALL VERTICAL AND HORIZONTAL SHARP EDGES OF THE BASE PLATE, RAIL, OR SOLEPLATE THAT COMES IN CONTACT WITH EPOXY GROUT SHALL BE ROUNDED A MINIMUM OF 1/2" RADIUS

ALL SURFACES COMING IN CONTACT WITH THE GROUT SHALL BE SANDBLASTED TO A "WHITE METAL FINISH" IF THE GROUTING IS NOT TO BE DONE IMMEDIATELY THE BASE PLATE, RAILS, OR SOLEPLATES SHALL BE EPOXY PRIMED.

FORMING
ALL FORMING MATERIAL COMING IN CONTACT WITH THE GROUT SHALL BE COATED WITH TWO COATS OF A GOOD QUALITY PASTE WAX. NO LIQUID WAX WILL BE PERMITTED.

FORMS SHALL BE MADE LIQUID TIGHT TO PREVENT LEAKING OF GROUT MATERIAL BUT ALLOW AIR TO PASS THROUGH FOR PROPER FLOW TO ALL CORNERS. ALL INSIDE RIGHT ANGLES MUST BE ELIMINATED BY USING CHAMFER STRIPS, 1/2" TO 2"

EXPANSION JOINTS
EXPANSION JOINTS SHALL BE INSTALLED AT LOCATIONS AS CALLED OUT ON THE INSTALLATION DRAWING AND APPROVED BY GROUT REPRESENTATIVE

EXPANSION JOINTS, WHEN CONSTRUCTED, SHALL BE MADE FROM 1" THICK STYROFOAM, REDWOOD, OR ANY OTHER MATERIAL APPROVED BY THE GROUT MANUFACTURER.

EXPANSION JOINTS SHOULD INCORPORATE THE "SECONDARY SEAL" DESIGN WHERE THE BOTTOM OF THE EXPANSION JOINT COMES IN CONTACT WITH THE FOUNDATION.

PROVISIONS SHOULD BE MADE TO ALLOW FOR REMOVAL (AFTER THE GROUT HAS BEEN POURED AND CURED) OF 1/2" OF THE EXPOSED EXPANSION JOINT SURFACE. THIS AREA IS TO BE FILLED WITH THE ELASTOMERIC EPOXY OR ANY OTHER SEALANT APPROVED BY THE GROUT MANUFACTURER.

MIXING
BEFORE MIXING GROUT COMPONENTS CONFIRM AMBIENT AND MATERIAL TEMPERATURES ARE WITHIN GROUT MANUFACTURERS SPECIFICATIONS.

A JIFFY BLADE OR ANY OTHER MIXING BLADE APPROVED BY THE GROUT MANUFACTURER SHALL BE USED ALONG WITH A DRILL MOTOR TO MIX THE EPOXY RESIN AND HARDENER. CHECK GROUT INSTRUCTIONS FOR PROPER MIXING TIME

THE AGGREGATE SHALL BE MIXED WITH THE EPOXY RESIN AND HARDENER SOLUTION IN A MORTAR MIXER AT 15-20 RPM. DO NOT USE A CEMENT MIXER

GROUT PLACEMENT
WHEN REQUIRED, A SUITABLE HEAD BOX SHALL BE PREPARED TO HYDRAULICALLY FORCE THE GROUT INTO THE BASE PLATE CAVITIES.

GROUTING SHALL BE CONTINUOUSLY POURED UNTIL THE PLACEMENT OF EPOXY GROUT IS COMPLETE UNDER ALL SECTIONS OF THE COMPARTMENTS OF THE BASE PLATE. GROUT SHALL BE POURED FROM ONE SIDE, CORNER OR END TO PREVENT AIR ENTRAPMENT.

EPOXY GROUT CLEARANCE GUIDELINES
69° F TO 78° F (MATERIAL & BASE)
2" OF CLEARANCE REQUIRED FOR THE FIRST 4' OF DISTANCE
2 ½" OF CLEARANCE REQUIRED FOR 5' TO 7' OF DISTANCE
3 ½" OF CLEARANCE REQUIRED FOR 8' TO 16' OF DISTANCE

FOR COOLER TEMPERATURES OF 55° F TO 68° F INCREASE CLEARANCE BY ¾"
2 ¾" OF CLEARANCE REQUIRED FOR THE FIRST 4' OF DISTANCE
3" OF CLEARANCE REQUIRED FOR 5' TO 7' OF DISTANCE
4" OF CLEARANCE REQUIRED FOR 8' TO 16' OF DISTANCE

FOR WARMER TEMPERATURES OF 79° F TO 90° F A GOOD RULE OF THUMB IS ¼" CLEARANCE FOR EVERY FOOT ABOVE 2'
2" OF CLEARANCE REQUIRED FOR 2' TO 7' OF DISTANCE
3" OF CLEARANCE REQUIRED FOR 8' TO 16' OF DISTANCE

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GENERAL CONCRETE NOTES

UNIT 60
FIRE WATER POND #3
ARTESIA, NEW MEXICO

PLOT SCALE 1:1
CAD NO. 60-111-D
DWG. NO. 60-111-D
REV. A

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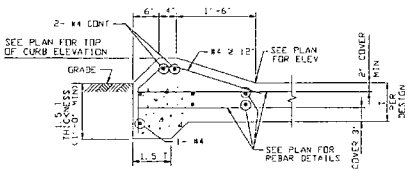
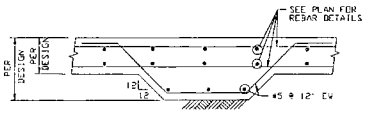


C02103A

EDGE OF PAVEMENT W/ SLOPED CURB



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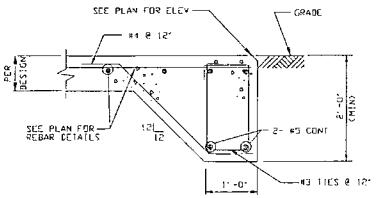
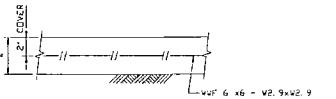
(THICKENED SLAB FOR TWO LAYER REINF)

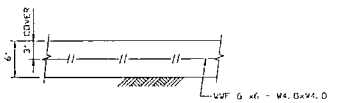


C02103C

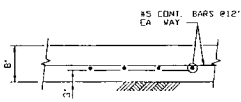
EDGE OF PAVING WITH GRADE BEAM



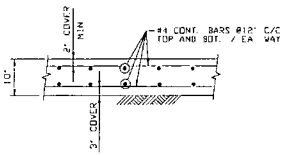
TYPICAL 4" THK. SLAB



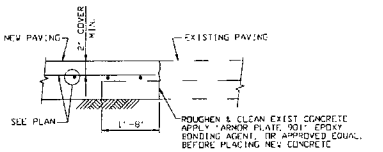
TYPICAL 6" THK. SLAB



TYPICAL 8" THK. SLAB



TYPICAL 10" THK. SLAB



TIE-IN TO EXIST. SLAB

(NEW TO EXIST SLAB/ONE LAYER REINF)

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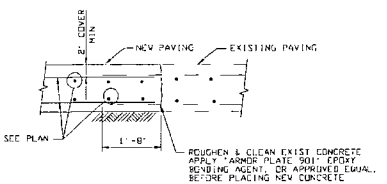

TIE-IN TO EXIST. SLAB

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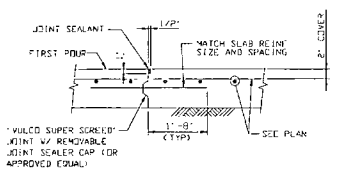
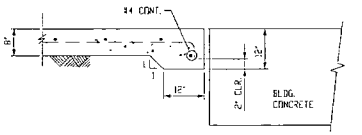
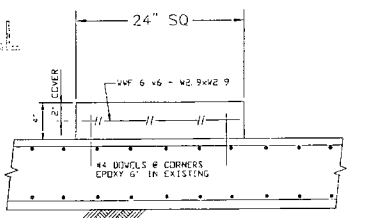


"KEYED" CONST. JOINT

(ONE LAYER REINF. SLAB)



EDGE OF PAVING



TYPICAL 4" THK. PAD ON EXISTING CONCRETE

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CONCRETE PAVING STANDARDS

UNIT 60
FIRE WATER POND #3
ARTESIA, NEW MEXICO

PLOT SCALE 1:1
CAD NO. 60-112-D
DWG. NO. 60-112-D
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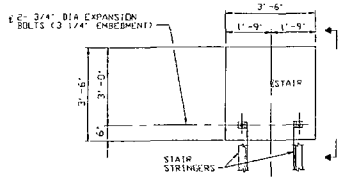
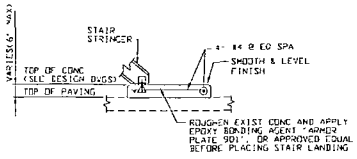
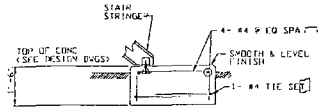


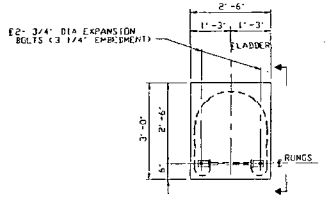
CONCRETE LANDING FOR STAIR



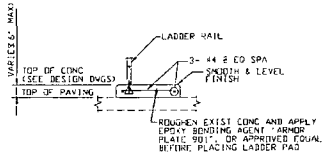
SECTION ON PAVED AREA



SECTION ON UNPAVED AREA



CONCRETE LANDING FOR LADDER



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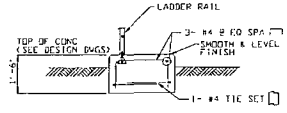

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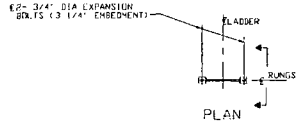
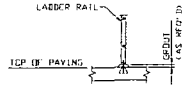
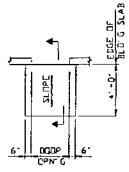


PLAN



SECTION

LADDER FEET INST. DETAIL



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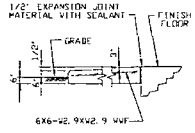
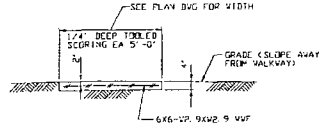


SECTION

TYPICAL DOOR PAD DETAIL



TYPICAL WALKWAY DETAIL

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SCALE:		NONE

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STANDARDS FOR LADDER AND STAIR LANDINGS

UNIT 60
FIRE WATER POND #3
ARTESIA NEW MEXICO

PLOT SCALE 1:1	DWG. NO. 60-113-D	REV A
CAD NO. 60-113-D		

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GENERAL STRUCTURAL STEEL NOTES

1. DESIGN, FABRICATION, MATERIAL, WORKMANSHIP AND ERECTION SHALL BE IN ACCORDANCE WITH THE LATEST A.I.S.C. SPECIFICATION OF DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS, A.I.S.C. CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS & LOCAL BUILDING CODES THAT APPLY TO THE DESIGN DRAWINGS AND THESE NOTES.

2. ALL STRUCTURAL STEEL UNLESS NOTED SHALL CONFORM TO A.S.T.M. SPECIFICATION A-36.

3. SAULSBURY WILL APPROVE ALL SHOP DRAWINGS FOR DESIGN ONLY. SUBSTITUTION OF MATERIALS SIZES OR SHAPES SHALL NOT BE MADE WITHOUT PRIOR APPROVAL OF SAULSBURY ENGINEER.

4. STANDARD FRAMED CONNECTIONS SHALL BE EQUAL TO THE MINIMUM REQUIREMENTS OF "FRAMED BEAM CONNECTIONS" OF THE A.I.S.C. MANUAL, TABLE II-A (BEARING-TYPE), TABLE II-C AND TABLE III UNLESS NOTED. THE MAXIMUM NUMBER OF BOLT ROWS SHALL BE PROVIDED FOR EACH BEAM DEPTH IN ACCORDANCE WITH THE TABLE BELOW UNLESS NOTED. USE 3/4" DIAMETER BOLTS, 5/16" THICK CONNECTION ANGLES WITH 3 1/2" WELDING LEG AND 1/4" FILLET WELD TO BEAM WEB UNLESS NOTED. CONNECTIONS FOR CHANNEL MEMBERS MAY USE THE CONNECTION ANGLE ON ONE SIDE ONLY.

BEAM DEPTH	NO. BOLTS	BEAM DEPTH	NO. BOLTS	BEAM DEPTH	NO. BOLTS
4" TO 7"	2	18"	10	27"	16
8" TO 10"	4	21"	12	30"	18
12" TO 14"	6	24"	14	33" & 36"	20
15" & 16"	8				

5. SHOP CONNECTIONS SHALL BE BOLTED OR WELDED AND FIELD CONNECTIONS SHALL BE BOLTED UNLESS SPECIFICALLY NOTED OTHERWISE ON DRAWINGS. BOLTED SHOP CONNECTIONS SHALL BE COMPLETELY ASSEMBLED IN THE SHOP.

6. BOLTED CONNECTIONS SHALL BE BEARING TYPE UNLESS FRICTION TYPE IS SPECIFIED. THREADS SHALL BE INCLUDED IN THE SHEAR PLANE UNLESS OTHERWISE NOTED. BOLTS SHALL BE 3/4" DIAMETER HIGH STRENGTH CONFORMING TO A.S.T.M. A325, EXCEPT WHERE OTHERWISE SPECIFIED. LENGTH OF HIGH STRENGTH BOLTS SHALL BE SHOWN ON ERECTION DRAWINGS. BOLT HOLES SHALL NOT BE MORE THAN 1/16" DIAMETER (EXCEPT WHEN STEEL IS TO BE GALVANIZED THEY MAY BE 7/8" DIAMETER) BOLTED JOINTS SHALL BE IN ACCORDANCE WITH THE LATEST A.I.S.C. SPECIFICATIONS STRUCTURAL JOINT USING A.S.T.M. A325 OR A490 BOLTS. BOLTS 5/8" DIAMETER AND SMALLER SHALL BE A307 UNLESS NOTED. HANDRAIL BOLTS SHALL BE 5/8" DIAMETER UNLESS NOTED. STAIR TREAD BOLTS SHALL BE 3/8" DIA. UNLESS NOTED.

7. WELDED CONNECTIONS SHALL BE MADE WITH E-70 ELECTRODES EXCEPT THAT FACKS AND ROOT PASSES MAY BE MADE WITH E-60 ELECTRODES. ALL WELDING SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE LATEST AMERICAN WELDING SOCIETY STANDARD D-1.1 AS MODIFIED BY A.I.S.C. SPECIFICATIONS. FILLET WELDS SHALL BE 3/16" UNLESS OTHERWISE NOTED ON THE DRAWING.

8. COLUMN BASES AND SPLICED ENDS SHALL BE MILLED OR SAW CUT SQUARE TO PROVIDE FULL BEARING.

9. WHEN USED, ALL DOUBLE ANGLE BRACING MEMBERS SHALL HAVE SPACERS AT 2'-0" MAXIMUM. BOLT SINGLE ANGLE CROSS BRACING AT INTERSECTION WITH ONE BOLT. USE MINIMUM 2-BOLT CONNECTIONS UNLESS NOTED.

10. ALL GUSSET AND STIFFENER PLATES TO BE 3/8" MINIMUM THICKNESS UNLESS OTHERWISE NOTED.

11. HOLES REQUIRED FOR FIELD ERECTION SHALL BE DRILLED AND REAMED. NO BURNING PERMITTED WITHOUT APPROVAL OF SAULSBURY ENGINEER.

12. FLOOR PLATE WHERE SHOWN SHALL BE 1/4" CHECKERED STEEL UNLESS OTHERWISE NOTED. USE 2 1/2" X 2 1/2" X 1/4" ANGLES TO STIFFEN FLOOR PLATE FOR SPANS GREATER THAN 3'-0" (4'-0" MAXIMUM SPACING).

13. FLOOR PLATE SHALL BE CONNECTED TO SUPPORTING MEMBERS BY:
    - ☐ WELDING WITH 3/16" WELD 2" LONG ON 12" CENTERS.
    - ☐ SEAL WELD WHERE SHOWN ON DRAWINGS
    - ☐ BOLTED WITH 3/8" GALVANIZED FLAT HEAD MACHINE SCREWS IN COUNTERSUNK HOLES ON 12" CENTERS
    - ☐ WELD AS ABOVE EXCEPT IN AREAS MARKED REMOVABLE WHICH SHALL BE BOLTED AS ABOVE.

14. FLOOR GRATING WHERE SHOWN SHALL BE EQUIVALENT TO RYERSON TYPE 19-W-4 PLAIN, (1" X 3/16") FURNISH WITH SADDLE CLIP FASTENERS AND SELF-TAPPING SCREWS. PROVIDE GRATING SUPPORT WHERE REQUIRED ALONG FACES OF COLUMNS WITH L 2 1/2" x 2 1/2" X 1/4".

15. STAIR TREADS TO BE STANDARD GRATING WITH A NON-SLIP PLATE NOSING. (CHK'D PLATE)

16. OPENINGS 4" OR LESS SHALL BE FIELD CUT IN NON-GALVANIZED GRATING OR FLOORING. OPENINGS 4" OR LESS SHALL BE FIELD CUT IN GALVANIZED GRATING AND FLOORING EDGES SHALL BE TOUCHED UP WITH INORGANIC ZINC COATING.

17. ALL STANDARD DRAWINGS SHALL BE LABLED "S02-XXX" AND USED FOR CONNECTION DETAILS UNLESS NOTED OTHERWISE.

18. BOLTED CONNECTIONS TO FIREPROOFED MEMBERS SHALL BE GUSSET PLATE CONNECTIONS PROVIDING AMPLE CLEARANCE TO ERECT THE BOLTED MEMBER WITH FIREPROOFING ALREADY IN PLACE UNLESS NOTED.

19. ALL ASTM A325 BOLTS SHALL BE PROVIDED AND INSTALLED IN STRICT ACCORDANCE WITH THE "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS" APPROVED BY RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS OF THE ENGINEERING FOUNDATION, NOVEMBER 13, 1985. SLIP-CRITICAL CONNECTIONS WILL BE DEFINED ON DESIGN DRAWINGS. BOLTS IN SLIP-CRITICAL CONNECTIONS, IN MOMENT CONNECTIONS, IN DIRECT TENSION, AND IN COLUMN AND BEAM SPLICES SHALL BE TIGHTENED TO FULL PRETENSION FORCE IN ACCORDANCE WITH WITH SUBSECTIONS 8(d)(1) THROUGH 8(d)(4). OTHER BOLTS NEED ONLY BE TIGHTENED TO THE SNUG TIGHT CONDITION.

20. HANDRAIL SHALL BE SHIPPED IN THE LARGEST SECTION PRACTICAL. LADDERS AND CAGES SHALL BE SHIPPED ASSEMBLED.

21. ALL STRUCTURAL STEEL (INCLUDING HANDRAIL, LADDERS, GRATING, CHECKERED PLATE AND BOLTS), SHALL BE EITHER PAINTED PER PROJECT SPECIFICATIONS OR GALVANIZED.

22. STRUCTURAL STEEL NOTED (FP) SHALL BE FIREPROOFED IN ACCORDANCE WITH PROJECT SPECIFICATIONS. FIREPROOFING THICKNESS SHALL BE 2 INCHES MIN UNLESS NOTED.

23. FOR GROUTING, ANCHOR BOLT TIGHTENING AND SLIDE PLATE SEALANT REQUIREMENTS, REFER TO GENERAL CONCRETE NOTES.

BOLT TORQUE/TENSION CHART

NOMINAL BOLT DIAMETER	MINIMUM TENSION (IN KIPS)	
	A325 BOLTS	A490 BOLTS
1/2"	12	15
5/8"	19	24
3/4"	28	35
7/8"	39	49
1"	51	64
1 1/8"	56	80
1 1/4"	71	102
1 3/8"	85	121
1 1/2"	103	148

· INFORMATION FROM MANUAL OF STEEL CONSTRUCTION, SECTION 6, SPECIFICATION FOR STRUCTURAL JOINTS, TABLES 4 AND 5 (11/13/85)

NUT ROTATION (From Snug Tight Condition)

BOLT LENGTH (UNDER SIDE OF HEAD TO END OF BOLT)	DISPOSITION OF OUTER FACE OF BOLTED PARTS		
	BOTH FACES NORMAL TO BOLT AXIS	ONE FACE NORMAL TO BOLT AXIS AND OTHER SLOPED NOT MORE THAN 1:20 (BEVELED WASHER NOT USED)	BOTH FACES SLOPED NOT MORE THAN 1:20 FROM NORMAL TO THE BOLT AXIS (BEVELED WASHER NOT USED)
UP TO AND INCLUDING 4 DIAMETERS	1/3 TURN	1/2 TURN	2/3 TURN
OVER 4 DIAMETERS BUT NOT EXCEEDING 12 DIA'S	1/2 TURN	2/3 TURN	5/6 TURN
OVER 4 DIAMETERS BUT NOT EXCEEDING 12 DIA'S	2/3 TURN	5/6 TURN	1 TURN

· NUT ROTATION IS RELATIVE TO BOLT REGARDLESS OF THE ELEMENT (NUT OR BOLT) BEING TURNED. FOR BOLTS INSTALLED BY 1/2 TURN AND LESS, THE TOLERANCE SHOULD BE PLUS OR MINUS 30 DEGREES; FOR BOLTS INSTALLED BY 2/3 TURN AND MORE, THE TOLERANCE SHOULD BE PLUS OR MINUS 45 DEGREES

· THIS TABLE DOES NOT APPLY TO BOLT LENGTHS OVER 12 DIAMETERS

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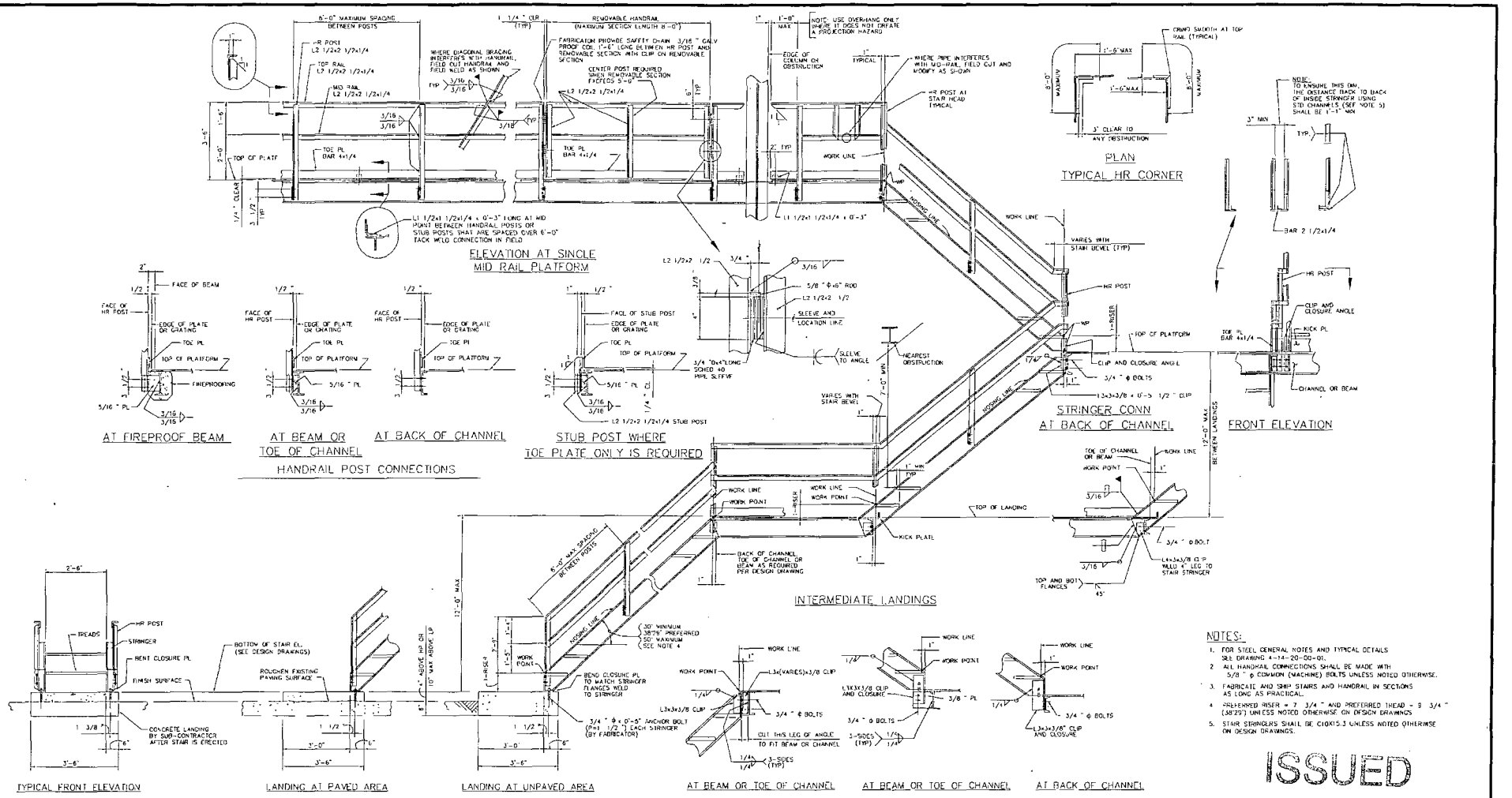
FIRE WATER POND #3
ARTESIA, NEW MEXICO

PLOT SCALE: 1:1 | DWG. NO. 60-114-D | REV A

CAD NO. 60-114-D

J:\Navajo\6174 Artesia Fire Pumps and Pond\03 Engineering Design\12 Civil\321 Civil Drawings\60-114-D dwg 2010.03.04 18:20:26



NOTES:

1. FOR STEEL GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING 4-14-20-00-01.
2. ALL HANDRAIL CONNECTIONS SHALL BE MADE WITH 5/8 " ϕ COMMON (MACHINE) BOLTS UNLESS NOTED OTHERWISE.
3. FABRICATE AND SHIP STAIRS AND HANDRAIL IN SECTIONS AS LONG AS PRACTICAL.
4. PREFERRED RISER = 7 3/4 " AND PREFERRED TREAD = 9 3/4 " (38"29') UNLESS NOTED OTHERWISE ON DESIGN DRAWINGS
5. STAIR STRINGERS SHALL BE C10X15.3 UNLESS NOTED OTHERWISE ON DESIGN DRAWINGS.

ISSUED

MAR 07 2010

FOR APPROVAL

NOTE:

REFERENCE DRAWINGS	
NO.	TITLE

REVISIONS						
NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SEC	03/05/10	ISSUE FOR APPROVAL	JW	-	

ENGINEERING RECORD		
	BY	DATE
DRN:	JW	03/04/10
DES:	JW	03/04/10
CHK	-	-
APP	-	-
AFE No.	-	-
SE&C JOB NO	6174	
PROJ. ENGR	MC	
SCALE:	NONE	

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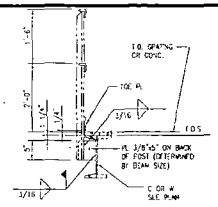
NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

STANDARD STAIR LANDING AND STRINGER DETAILS

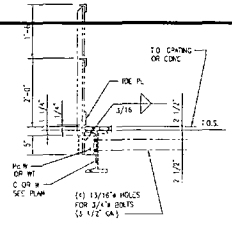
UNIT 60
FIRE WATER POND #3
ARTESIA, NEW MEXICO

PLOT SCALE 1:1	DWG. NO. 60-115-0-01	REV A
CAD NO 60-115-0-01		

J:\Navajo\6174 Artesia Fire Pumps and Pond\03 Engineering Design\3.2 Civil\3.2.1 Civil Drawings\60-115-0-01.dwg 20100304 181459



DETAIL 1



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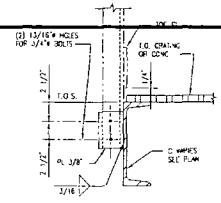
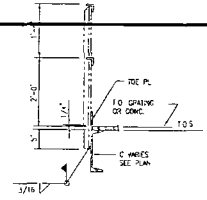


DETAIL 3



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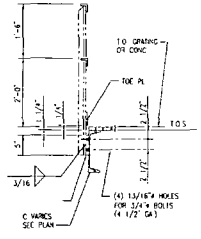
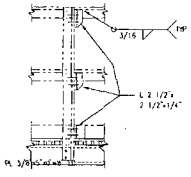
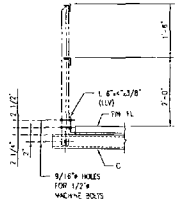


DETAIL 5

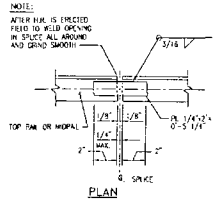


TYP. SPLICE DETAIL @ COL.

DETAIL 6



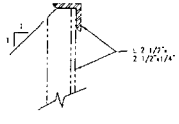
DETAIL 7



PLAN

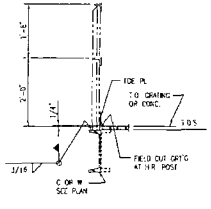
HANDRAIL SPLICE

DETAIL 8

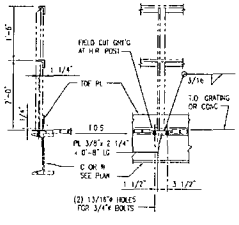


TYP. POST @ TOP RAIL

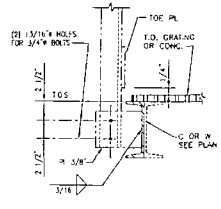
DETAIL 9



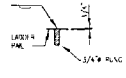
DETAIL 10



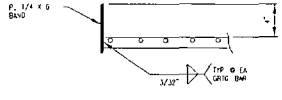
DETAIL 11



DETAIL 12

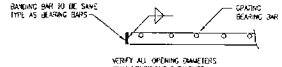


RUNG DETAIL



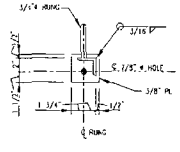
TOE PL BANDED OPENING DETAIL

N.T.S



BANDED OPENING DETAIL

N.T.S



BASE PL DETAIL

ISSUED

MAR 07 2010

FOR APPROVAL

NOTES:

1. FOR GENERAL NOTES SEE DWG D-5-028
2. USE PLASTIC DOUBLE BAR SWEEP GATE MODEL D027L AS MANUFACTURED BY MIFAB G-DUMPERS, INC. PASADENA, TX OR APPROVED EQUAL.
3. HANDRAIL LAYOUT IS SHOWN ON THE DESIGN DRAWING
4. HANDRAIL SHALL BE ALL SHOP WELDED CONSTRUCTION, UNLESS NOTED WITH PUNCH EDGES AND WELDS GROUND SMOOTH
5. ALL HANDRAIL SHALL BE L 2 1/2"x2 1/2"x1/4" (POSTS AND RAILS), WITH POSTS SPACED AT 8'-0" CENTERS (MAX.)
6. NO FIELD WELDING OF HANDRAIL WILL BE ALLOWED (UNLESS NOTED OTHERWISE)
7. TOE PLATES SHALL BE 1/4"x4".

NOTE:

REFERENCE DRAWINGS		REVISIONS							ENGINEERING RECORD		
NO.	TITLE	NO	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.		BY	DATE
		A	SEC	03/05/10	ISSUE FOR APPROVAL		–		ORN.	JW	03/04/10
									DES.	JW	03/04/10
									CHK.	–	–
									APP.	DC	
									APE NO.	–	–
									SE&C JOB NO.	6174	
									PROJ. ENGR.	MG	
									SCALE	NONE	

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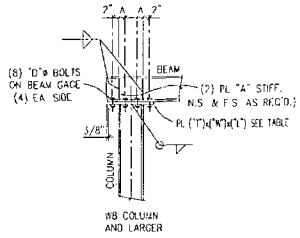
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

STANDARD LADDER AND HANDRAIL DETAILS

UNIT 60
FIRE WATER POND #3
ARTESIA NEW MEXICO

PLOT SCALE 1:1 | DWG. NO 60-115-D-02 | REV A
CAD NO60-115-D-02

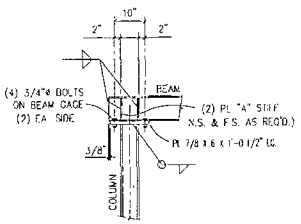
J:\Navajo\6174 Artesia Fire Pumps and Ponds\03 Engineering Design\13 Civil\121 Civil Drawings\60-115-D-02.dwg 2010/03/04 11:22:45.38



W8 COLUMN AND LARGER

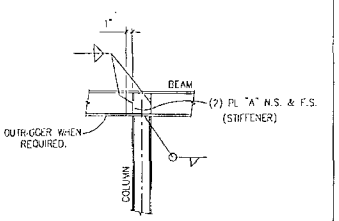
DETAIL #101

W10x49	1 1/4"	11"	1'-5 1/2"	7/8	2 1/2
W8x31	1"	9"	1'-2 1/2"	3/4	2 1/4
W6x25	3/4"	7"	1'-2 3/8"	3/4	2 1/4
BEAM	PL "T" THK.	PL "T" WIDTH	PL "T" LENGTH	PL "T" SIZE	"A"

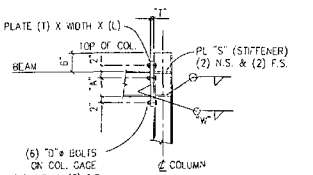


W6 COLUMN ONLY

DETAIL #102

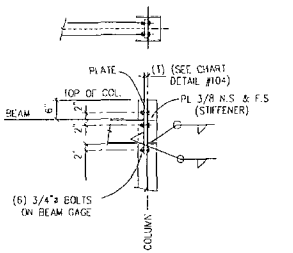


DETAIL #103



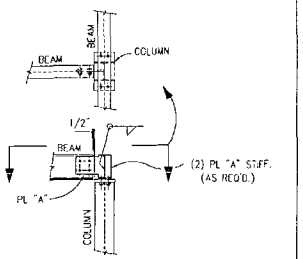
DETAIL #104

W6x15	7/8	7	2	3/8	1/4	3/4	1'-0 1/2"
W8x18	1	6 3/4	2	3/8	3/8	3/4	1'-2 5/8"
W8x24	1 1/8	8	2	3/8	3/8	3/4	1'-2 3/8"
W10x22	1	6 3/4	2	3/8	3/8	3/4	1'-4 5/8"
W10x33	1 1/4	9	2 1/2	7/16	3/8	7/8	1'-4 3/4"
W12x26	1	7 1/2	2 1/2	3/8	3/8	3/4	1'-6 3/4"
W12x40	1 1/4	9	2 1/2	1/2	7/16	1	1'-7 1/2"
W12x53	1 1/4	11	2-1/2	9/16	1/2	1 1/8	1'-8"
BEAM	PLATE THICK.	PLATE WIDTH	"A"	"S"	"W"	"D"	"L"

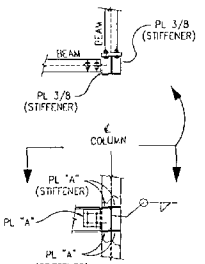


FOR W8 COLUMN & LARGER

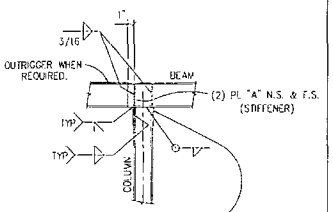
DETAIL #105



DETAIL #106

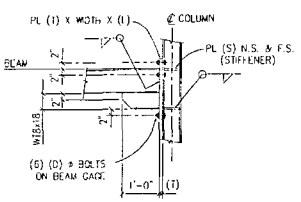


DETAIL #107



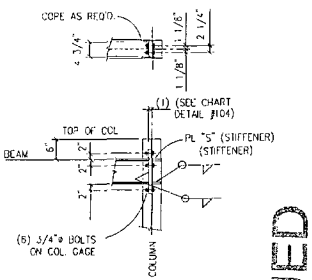
PL 3/8 x 8 x 0'-7 1/4" FOR 6" COLUMNS
PL 3/8 x 8 x 0'-9 1/4" FOR 8" COLUMNS
PL 3/8 x 8 x 0'-11 1/4" FOR 10" COLUMNS

DETAIL #108



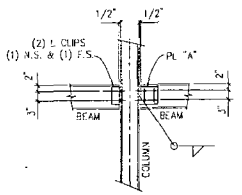
W10x33	11"	5/16	7/8	1"	2'-0 13/16"
W12x40	9"	1/2	3/4	1"	2'-2 7/16"
W12x53	9"	7/16	3/4	1"	2'-2 7/16"
BEAM	PLATE WIDTH	"S"	"D"	"T"	"L"

DETAIL #109

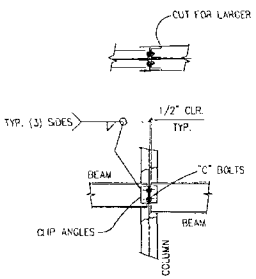


FOR W6 COLUMN

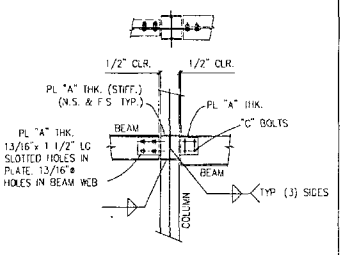
DETAIL #110



DETAIL #111

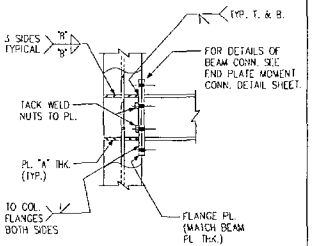


DETAIL #112



NOTE:
BOLTS IN SLOTTED CONNECTION SHALL BE SNUG TIGHTENED (DO NOT TORQUE). DOUBLE NUT OR PEEN THREADS AFTER NUT IS IN PLACE TO PREVENT BACK-OFF

DETAIL #113



NOTES:
1. FOR GALVANIZED STEEL, PROVIDE 4-7/16" DRAINAGE HOLES AT CORNERS OF ENCLOSED BOX IN EACH FLANGE STIFFENER PLATE.
2. TIGHTEN BOLTS TO FULL PRETENSION FORCE.

DETAIL #114

LEGEND

DET.	A	B	C
REF. DWG NO			

A = PLATE THICKNESS (3/8" IF NOT INDICATED)
B = FILLET WELD SIZE (3/16" IF NOT INDICATED)
C = NUMBER OF BOLTS IN CONN (TWO IF NOT INDICATED)

NOTES

1. FOR GENERAL STRUCTURAL STEEL AND FIREPROOFING NOTES SEE DWG D-5433-C9-100
2. STIFFENER PLATE WIDTH SHALL EXTEND FROM WEB TO EDGE OF FLANGE, EXCEPT AS NOTED.
3. FILLET WELD SIZES SHOWN ARE MINIMUM. ALL FILLET WELDS MUST SATISFY REQUIREMENTS OF SECTION J2.2 OF THE AISC CODE.

ISSUED FOR APPROVAL
MAR 07 2010

NOTE:

REFERENCE DRAWINGS

NO.	TITLE

REVISIONS

NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SEC	03/05/10	ISSUE FOR APPROVAL			

ENGINEERING RECORD

	BY	DATE
DRN:	JW	03/04/10
DES:	JW	03/04/10
CHK:	-	-
APP:	DE	-
AFE No.	-	-
SC&C JOB NO	6174	
PROJ. ENGR:	MC	
SCALE:	NONE	

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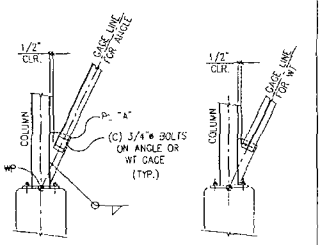
NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

STRUCTURAL STEEL
STANDARD STEEL CONNECTIONS
UNIT 60
FIRE WATER POND #3
ARTESIA, NEW MEXICO

PLOT SCALE 1:1
CAD NO. 60-116-D
DWG. NO. 60-116-D
REV. A

J:\Navajo\6174 Artesia Fire Pumps and Ponds\03 Engineering, Design\02 Civil\321 Civil Drawings\60-116-D.dwg|2010.04.16 23:09:18



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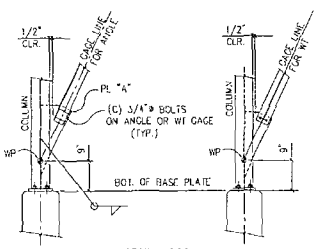

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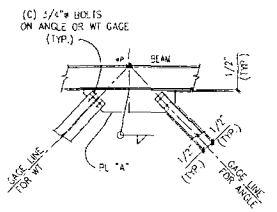

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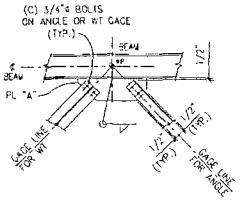
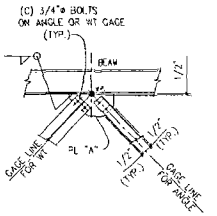
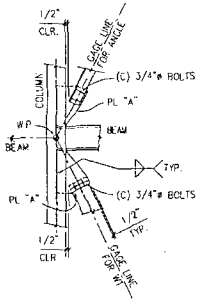


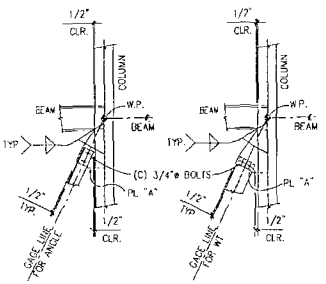
DETAIL #204



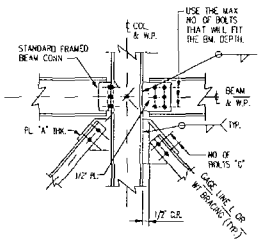
DETAIL #205



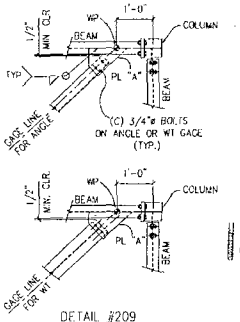
DETAIL #206



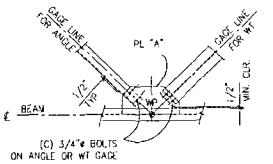
DETAIL #207



DETAIL #208



DETAIL #209

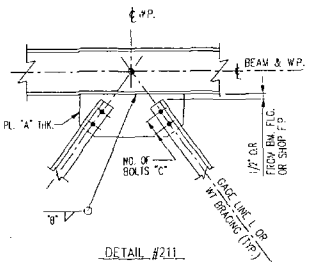


DETAIL #210

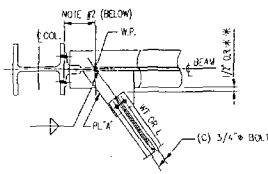
ISSUED

MAR 07 2010

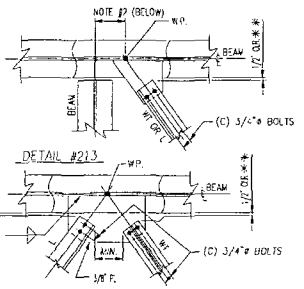
FOR APPROVAL



DETAIL #211



DETAIL #212



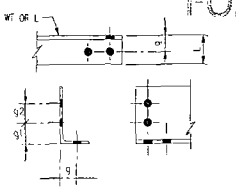
DETAIL #214

** CLEAR FROM EDGE OF FLG OR FIREPROOFING AS APPLICABLE.

NOTES

1. ANGLE BRACING SIMILAR.
2. SEE DESIGN DRAWINGS FOR W.P. DIMENSIONS.

TYPICAL HORIZ. BRACING CONNECTIONS



L	1 1/2"	1 3/4"	2"	2 1/2"	3"	3 1/2"	4"	5"	6"	7"	8"
g	7/8"	1"	1 1/4"	1 3/4"	1 3/4"	2"	2 1/2"	3"	3 1/2"	4"	4 1/2"
g1								2"	2 1/4"	2 1/2"	3"
g2								1 3/4"	2 1/2"	3"	3"

STANDARD WT & L GAGES

DETAIL #215

LEGEND

DET. #	A	B	C
REF. DWG. NO.			

A = PLATE THICKNESS (3/8" IF NOT INDICATED)
B = FILLET WELD SIZE (3/16" IF NOT INDICATED)
C = NUMBER OF BOLTS IN CONN (TWO IF NOT INDICATED)

NOTES

1. FOR GENERAL STRUCTURAL STEEL AND FIREPROOFING NOTES SEE DWG D-5433-09-100
2. STIFFENER PLATE WIDTH SHALL EXTEND FROM WEB TO EDGE OF FLANGE, EXCEPT AS NOTED
3. FILLET WELD SIZES SHOWN ARE MINIMUM. ALL FILLET WELDS MUST SATISFY REQUIREMENTS OF SECTION J2.2 OF THE AISC CODE

NOTE:

REFERENCE DRAWINGS

NO.	TITLE

REVISIONS

NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SEC	03/05/10	ISSUE FOR APPROVAL		-	

ENGINEERING RECORD

	BY	DATE
DRN:	JW	03/04/10
DES:	JW	03/04/10
CHK:	-	-
APP:	DL	-
AFE NO.	-	-
SE&C JOB NO.	6174	
PROJ. ENGR:	MG	
SCALE:	NONE	

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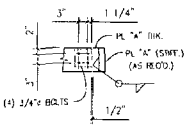
NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

STANDARD STEEL CONNECTIONS

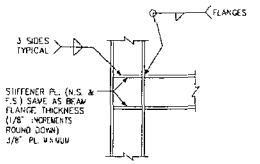
UNIT 60
FIRE WATER POND #3
ARTESIA, NEW MEXICO

PLOT SCALE 1:1 | DWG. NO. 60-117-D | REV. A
CAD NO. 60-117-D

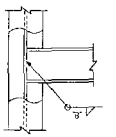
J:\Navajo\6174 Misc Fire Ponds and Pond #3\03 Engineering, Design\32 Civil\321 Civil Drawings\60-117-D.dwg 03/05/2010 4:18:17 PM



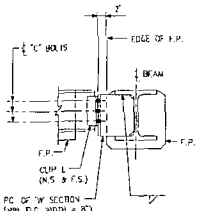
DETAIL #301



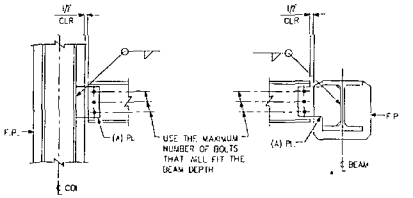
DETAIL #302



DETAIL #303

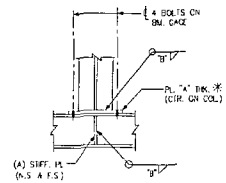


DETAIL #304



DETAIL #305 DETAIL #306

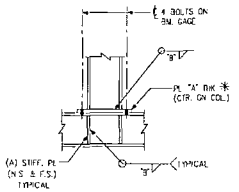
TYPICAL SIMPLE BEAM CONNECTION TO FIREPROOFED MEMBERS (USE UNLESS NOTED OTHERWISE)



NOTES:

✱ 1 EXTEND PLATES 3/8" BEYOND EACH FLANGE OF COLUMN

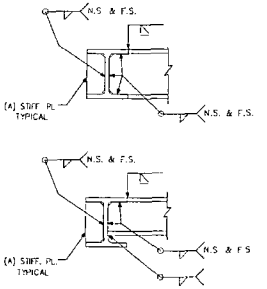
DETAIL #307



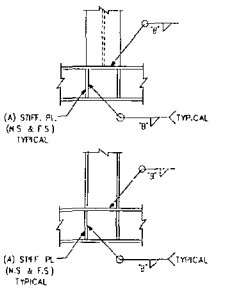
NOTES:

✱ 1 EXTEND PLATES 3/8" BEYOND EACH FLANGE OF COLUMN.

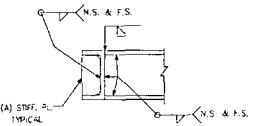
DETAIL #308



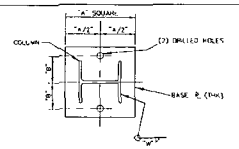
DETAIL #309



DETAIL #310



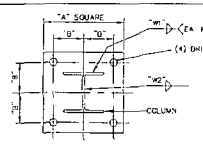
DETAIL #311



DETAIL NO.	COLUMN SIZE	BASE PL THK.	"A"	"B"	HOLE	ANCHOR BOLT SIZE	"W"
312-1	W6x15	3/4"	8"	2"	13/16"	3/4"	1/4"
312-2	W8x24	1"	10"	3"	15/16"	3/4	5/16"
312-3	W8x31	1"	10"	3"	1 1/4"	1"	5/16"
312-4	W10x33	1 1/4"	12"	3 1/2"	1 9/16"	1 1/4"	3/8"
312-5	W10x49	1 1/4"	12"	3 1/2"	1 9/16"	1 1/4"	5/8"
312-6	W12x40	1 1/2"	14"	4"	1 5/16"	1 1/4"	7/16"
312-7	W12x53	1 1/2"	14"	4"	1 9/16"	1 1/4"	7/16"
312-8	W12x65	1 1/4"	15"	5"	1 9/16"	1 1/4"	7/16"

2-BOLT BASE PLATE DETAIL

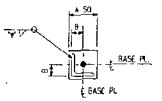
DETAIL #312



DETAIL NO.	COLUMN SIZE	BASE PL THK.	"A"	"B"	HOLE	ANCHOR BOLT SIZE	"W1"	"W2"	MOMENT
313-1	W6x15	5/8"	12"	4 1/2"	13/16"	5/8"	1/4"	5/16"	11.0 1K
313-2	W8x15	3/4"	12"	4 1/2"	15/16"	3/4"	1/4"	5/16"	16.0 1K
313-3	W8x24	3/4"	15"	5 1/2"	15/16"	3/4"	5/16"	5/16"	20.6 1K
313-4	W8x24	1"	15"	5 1/2"	1 1/4"	1"	3/16"	5/16"	26.6 1K
313-5	W8x31	3/4"	15"	6"	15/16"	3/4"	7/16"	5/16"	22.4 1K
313-6	W8x31	1"	17"	6"	1 1/4"	1"	7/16"	5/16"	40.0 1K
313-7	W10x49	1 1/8"	18"	6 1/2"	1 7/16"	1 1/4"	1/2"	5/16"	MAX
313-8									

4-BOLT BASE PLATE DETAIL

DETAIL #313



DETAIL	COLUMN	BASE PL THK	A	B	W	HOLE DIA.	A.B. DIA.	WT. LBS.
314-1	2 1/2X2 1/2	3/8"	3 1/2"	1 1/4"	3/16"	13/16"	1/2"	1.5
314-2	3X3	3/8"	4"	1 1/2"	3/16"	15/16"	5/8"	1.7
314-3	3 1/2X3 1/2	1/2"	4 1/2"	1 3/4"	3/16"	1 1/16"	3/4"	2.8
314-4	4X4	1/2"	5"	2"	3/16"	1 1/16"	3/4"	3.5
314-5	6X6	1/2"	7"	3"	3/16"	1 1/16"	3/4"	6.9
314-6	8X8	1/2"	9"	4"	3/16"	1 1/16"	3/4"	11.5

1-BOLT BASE PLATE DETAIL

DETAIL #314

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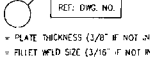
DETAIL #315

LEGEND



A = PLATE THICKNESS (3/8" IF NOT INDICATED)
B = FILLET WELD SIZE (3/16" IF NOT INDICATED)
C = NUMBER OF BOLTS IN CONN. (TWO IF NOT INDICATED)

NOTES

1. FOR GENERAL STRUCTURAL STEEL AND FIREPROOFING NOTES SEE DWG. D-XXXX-S02-101
2. STIFFENER PLATE WIDTH SHALL EXTEND FROM WEB TO EDGE OF FLANGE, EXCEPT AS NOTED.
3. FILLET WELD SIZES SHOWN ARE MINIMUM. ALL FILLET WELDS MUST SATISFY REQUIREMENTS OF SECTION J2.2 OF THE AISC CODE.

NOTE:

REFERENCE DRAWINGS	
NO.	TITLE

REVISIONS						
NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SEC	03/05/10	ISSUE FOR APPROVAL		–	

ENGINEERING RECORD		
	BY	DATE
DRN:	JW	03/04/10
DES:	JW	03/04/10
CHK:	–	–
APP:		
AFE No.	–	–
SEAC JOB NO.	6174	
PROJ. ENGR:	MG	
SCALE:	NONE	

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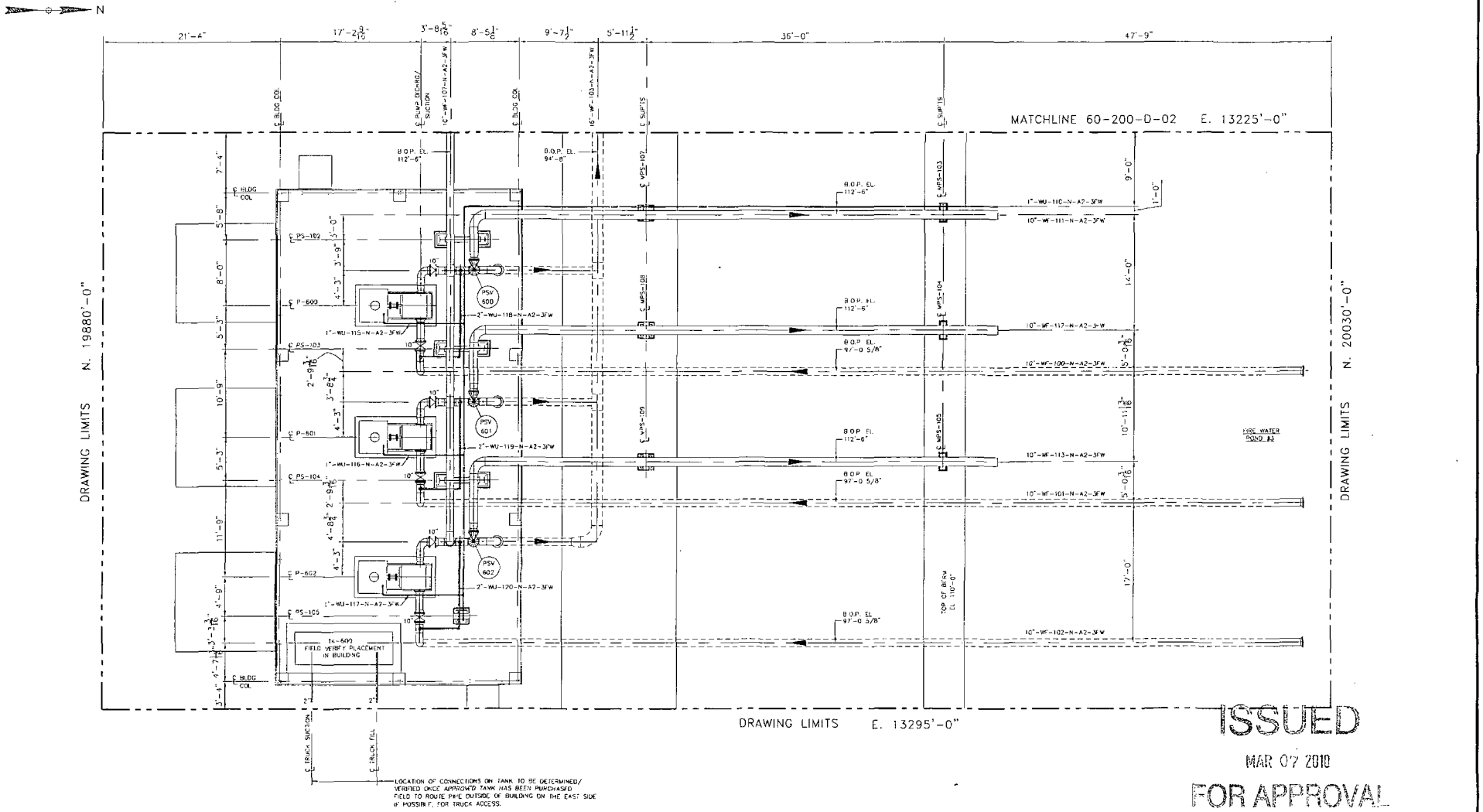
NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

STANDARD STEEL CONNECTIONS

UNIT 60
FIRE WATER POND #3
ARTESIA, NEW MEXICO

PLOT SCALE: 1:1
CAD NO. 60-118-D
DWG. NO. 60-118-D
REV. A

J:\Navajo\6174 Artesia Fire Pumps and Ponds\03 Engineering, Design\3.2 Civil\3.2.1 C-4 Drawings\60-118-D.dwg 2010/03/04 - 16:26:48 by



ISSUED

MAR 07 2010

FOR APPROVAL

NOTE:

REFERENCE DRAWINGS		REVISIONS							ENGINEERING RECORD		
NO.	TITLE	NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.		BY	DATE
		A	SEC	03/05/10	ISSUE FOR APPROVAL	JW	-		DRN:	JW	03/05/10
									DES:	JW	03/05/10
									CHK:	-	-
									APP:	-	-
									AFE No.	-	-
									SE&C JOB NO.	6174	
									PROJ. ENGR:	MG	

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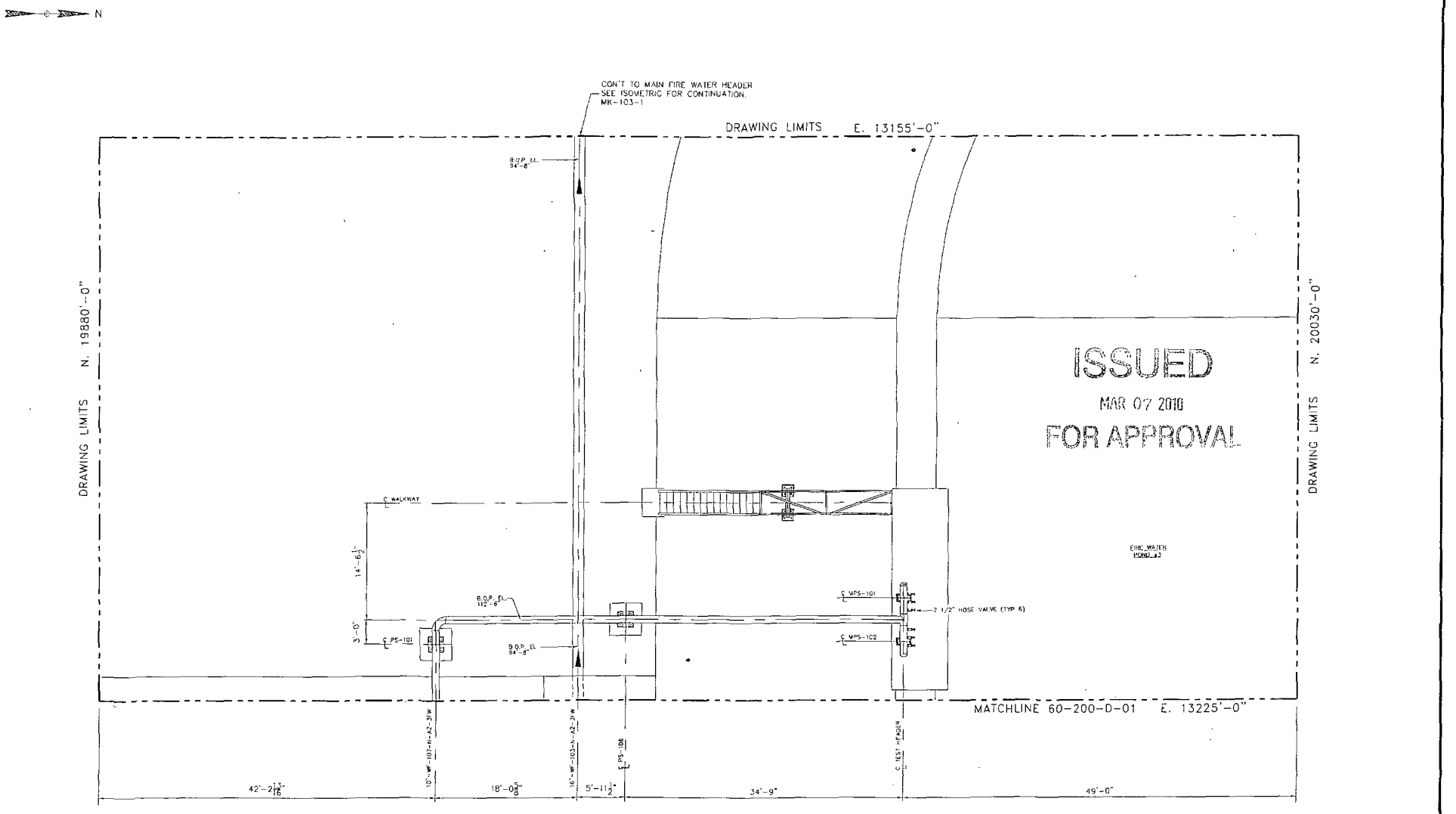
NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

PIPING PLAN
UNIT 60
FIRE WATER POND #3
ARTESIA, NEW MEXICO

SCALE: 3/16"=1'-0" | PLOT SCALE 1:1 | DWG. NO. 60-200-D-01 | REV A
CAD NO 60-200-D-01

J:\Navajo\6174 Artesia Fire Pumps and Pond\00 Engineering Design\3-4 Piping\3-4-4 Drawings - Pipe\60-200-D-01.dwg 2010/03/07 12:16:28



NOTE:

REFERENCE DRAWINGS	
NO.	TITLE

REVISIONS						
NO.	FIRM	DATE	DESCRIPTION	BY	CHK.	APP.
A	SEC	03/05/10	ISSUE FOR APPROVAL			

ENGINEERING RECORD		
	BY	DATE
DRN:	JW	03/05/10
DES:	JW	03/05/10
CHK:	–	–
APP:	–	–
AFE No.	–	
SE&C JOB NO	6174	
PROJ. ENGR:	MG	
SCALE:	3/16"=1'-0"	

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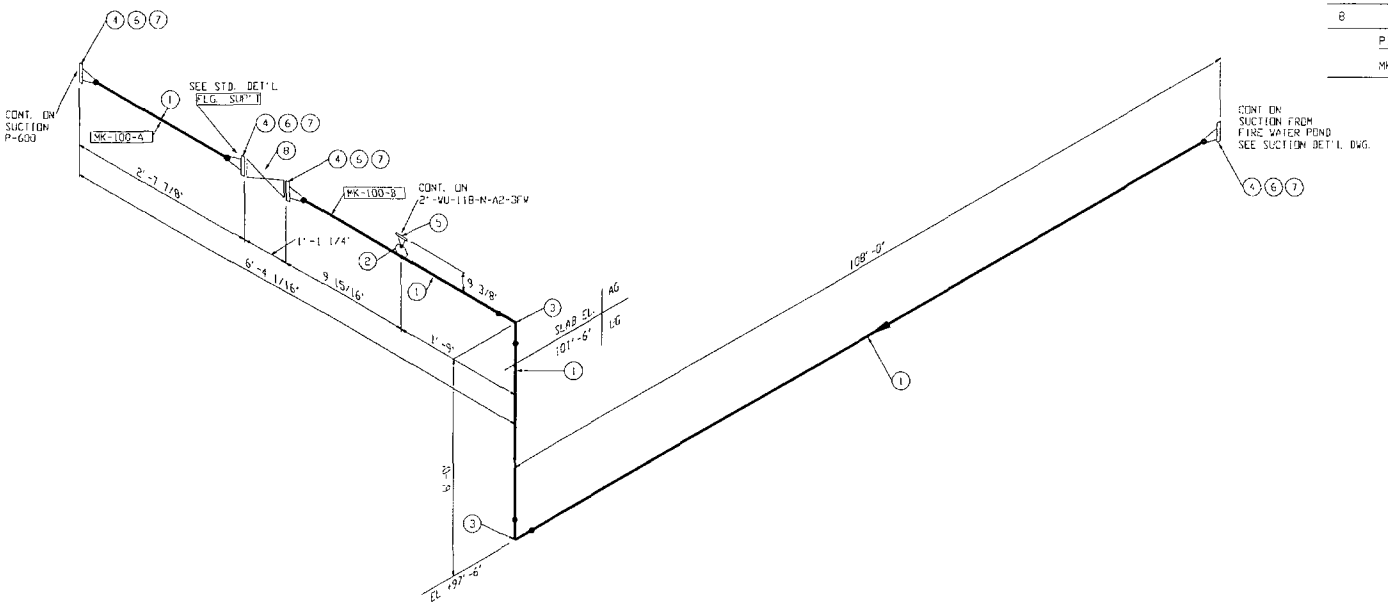
NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

PIPING PLAN
UNIT 60
FIRE WATER POND #3
ARTESIA NEW MEXICO

PLOT SCALE 1:1
CAD NO60-200-D-02
DWG. NO. 60-200-D-02
REV A

J:\Navajo\6174 Artesia Fire Pumps and Pond\03 Engineering Design\3.4 Piping\3.4.1 Drawings - Piping\60-200-D-02.dwg 2010/03/27/21:41:18



BILL OF MATERIAL

SPEC: 150

MARK	SIZE	DESCRIPTION	QTY
1	10	PIPE, S/STD SMLS, ASTM A-53 GR B	113'0"
2	10X2	WELDOLET, SCH XS, ASTM A-105	1
3	10	ELL, 90 LR S/STD, ASTM A-234 GR WPB	2
4	10	FLG, RFWN 150LB, ASTM A-105	4
5	2	FLG, RFWN 150LB S/XS BORE, ASTM A-105	1
6	10	FULL FACE GASKET, 1/8" THK, 150LB	4
7	7/8X4 3/4	(12) STUD BOLTS W/ NUTS	4
8	10	GATE VALVE, 125LB FLG, FF	1

PIPE SPOOLS

MK-100-A MK-100-B

ISSUED

MAR 07 2010

FOR APPROVAL

MK-100

NOTE:

1. FIELD VERIFY ALL DIMENSIONS
2. FFU = FIELD FIT-UP. FFU TO INCLUDE 6" OF ADDITIONAL PIPE

DESCRIPTION	REMARKS	CONDITION	PSIG	TEMP (°F)
PAINT	PER NAVAJO SPECIFICATIONS	DESIGN	200	100
INSULATION	-	OPERATING	2	60
ELECT TRACE	NO			
NDE	10% (100% FW's)	HYDRO-TEST	300	
P.W.H.T.	NO	HYDRO/PNEUM TEST APPROVAL	APP. BY	DATE
STRESS ANALYSIS	N/A		RP	03/05
HARDNESS CHK	N/A			

REFERENCE DRAWINGS

NO.	TITLE
60-V-02-D-01	PAID

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REVISIONS

NO.	DATE	DESCRIPTION	BY	CHK.	APP.
A	03/05/10	ISSUED FOR APPROVAL	JW	RP	RP

ENGINEERING RECORD

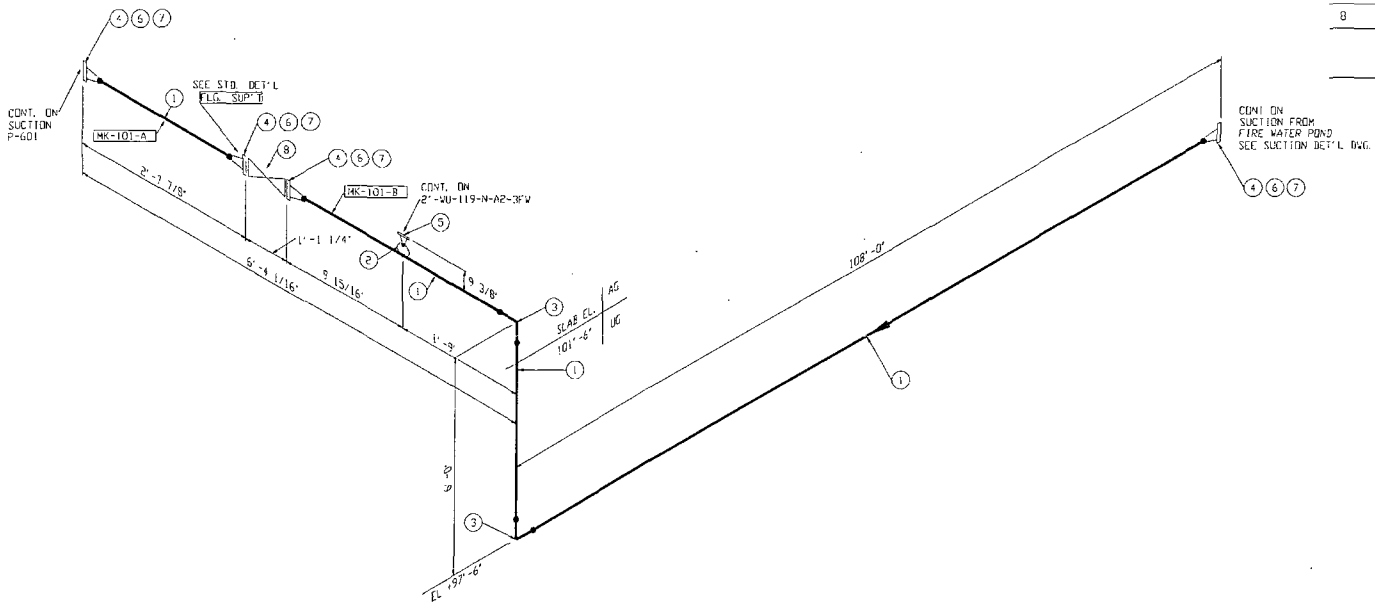
	BY	DATE
DRN:	JW	03/05/10
DES.		
CHK:	RP	
APP:	RP	
AFE No.		
S E & C JOB NO.	6174	
PROJ. ENGR:	WG	
SCALE	N/A	

NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISOMETRICS
SUCTION FROM POND
UNIT 60
FIRE WATER POND #3
ARTESIA, NM

WELD CODE: B31.3 | DWG. NO: 10"-WF-100-N-A2-3FW | DRG 1 OF 1 | REV A

CAD NO. MK-100-1



BILL OF MATERIAL

SPEC 150

MARK	SIZE	DESCRIPTION	QTY
1	10	PIPE, S/STD SMLS, ASTM A-53 GR B	113'-0"
2	10X2	WELDOLET, SCH XS, ASTM A-105	1
3	10	ELL, 90 LR S/STD, ASTM A-234 GR WPB	2
4	10	FLG, RFWN 150LB, ASTM A-105	4
5	2	FLG, RFWN 150LB S/XS BORE, ASTM A-105	1
6	10	FULL FACE GASKET, 1/8" THK, 150LB	4
7	7/8X4 3/4	(12) STUD BOLTS W/ NUTS	4
8	10	GATE VALVE, 125LB FLG, FF	1

PIPE SPOOLS

MK-101-A MK-101-B

ISSUED

MAR 07 2010

FOR APPROVAL

MK-101

NOTE

1. FIELD VERIFY ALL DIMENSIONS
2. FFU - FIELD FIT-UP. FFU TO INCLUDE 6" OF ADDITIONAL PIPE

DESCRIPTION	REMARKS
PAINT	PER NAVAJO SPECIFICATIONS
INSULATION	-
ELECT TRACE	NO
NDE	10% (101% FW's)
P.W.H.T	NO
STRESS ANALYSIS	N/A
HARDNESS CHK	N/A

CONDITION	PSIG	TEMP. (F)
DESIGN	200	100
OPERATING	2	60
HYDRO-TEST	300	
HYDRO/PNEUM TEST APPROVAL	APP. BY: RP	DATE: 03/05

REFERENCE DRAWINGS

NO.	TITLE
60-V-02-D-01	P&ID

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHK.	APP.
A	03/05/10	ISSUED FOR APPROVAL	JP	RP	RP

ENGINEERING RECORD

	BY	DATE
DRN:	JP	03/05/10
DES:		
CHK:	RP	
APP	RP	
AFE No.		
S E & C JOB NO		6174
PROJ. ENGR:		NG
SCALE:		N/A

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TEXAS REGISTERED ENGINEERING FIRM F-518
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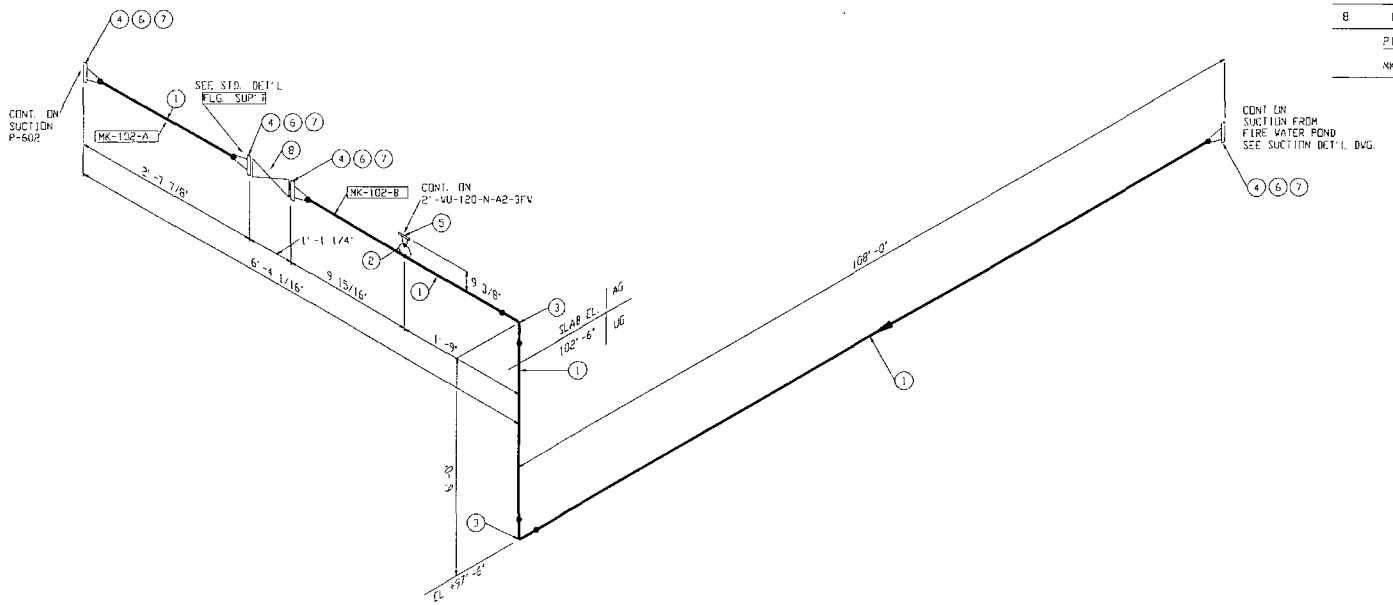
NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISOMETRICS
SUCTION FROM POND
UNIT 60
FIRE WATER POND #3
ARTESIA, NM

YELD CODE: 931.3	DWG. NO	DRG.	REV
CAD NO. MK-101-1	10"-WF-101-N-A2-3FW	1 OF 1	A



BILL OF MATERIAL

SPEC: 150

MARK	SIZE	DESCRIPTION	QTY
1	10	PIPE, S/STD SMLS. ASTM A-53 GR B	113'-0"
2	10X2	WELDOLET, SCH XS, ASTM A-105	1
3	10	ELL, 90 LR S/STD, ASTM A-234 GR WPB	2
4	10	FLG, FFWN 150LB, ASTM A-105	4
5	2	FLG, RFWN 150LB S/XS BORE, ASTM A-105	1
6	10	FULL FACE GASKET, 1/8" THK, 150LB	4
7	7/8X4 3/4	(12) STUD BOLTS W/ NUTS	4
8	10	GATE VALVE, 125LB FLG, FF	1

PIPE SPOOLS

MK-102-A MK-102-B

ISSUED

MAR 07 2010

FOR APPROVAL

MK-102

NOTE:

1. FIELD VERIFY ALL DIMENSIONS
2. FFU = FIELD FIT-UP. FFU TO INCLUDE 6" OF ADDITIONAL PIPE

DESCRIPTION	REMARKS
PAINT	PER NAVAJO SPECIFICATIONS
INSULATION	-
ELECT TRACE	NO
NDE	10% (102% FW's)
P.W.H.T.	NO
STRESS ANALYSIS	N/A
HARDNESS CHK.	N/A

CONDITION	PSIG	TEMP. (F)
DESIGN	200	100
OPERATING	2	60
HYDRO-TEST	300	

HYDRO/PNEUM TEST APPROVAL	APP. BY	DATE
	RP	03/05

REFERENCE DRAWINGS

NO	TITLE
60-V-07-0-01	P&ID

NO.	DATE	DESCRIPTION	BY	CHK.	APP.
A	03/05/10	ISSUED FOR APPROVAL	JW	RP	RP

ENGINEERING RECORD

	BY	DATE
DRN:	JW	03/05/10
DES:		
CHK:	RP	
APP:	RP	
AFE No.		
S. E. & C. JOB NO.	6174	
PROJ. ENGR:	MG	
SCALE:	N/A	

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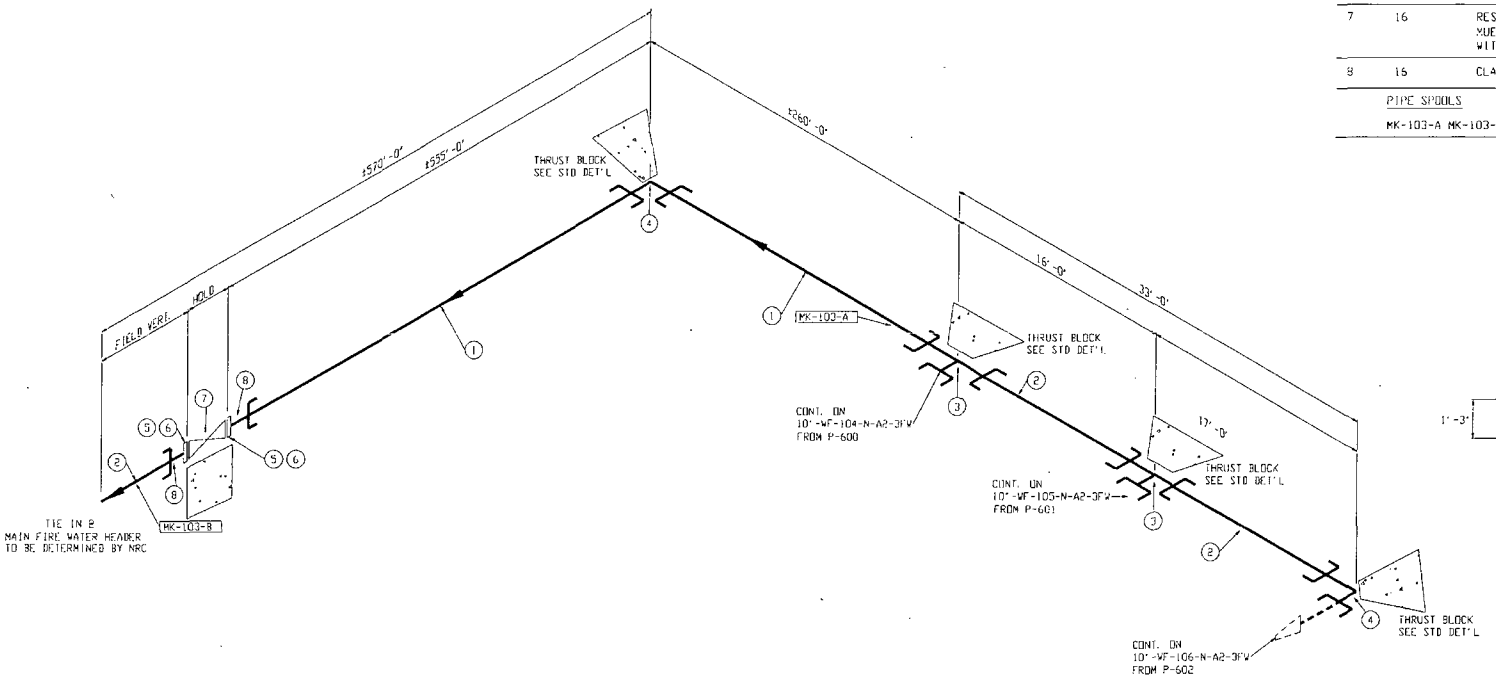
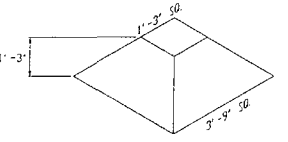
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISOMETRICS
SUCTION FROM POND
UNIT 60
FIRE WATER POND #3
ARTESIA, NM

VELD CODE: B31.3	DWG. NO	DRG	REV
CAD NO MK-102-1	10"-WT-102-N-A2-3FW	1 OF 1	A





THRUST BLOCK SIZE DETAIL
(TYP. ALL U/G FITTINGS)
(SEE NRC STD. DETAIL FOR INSTALLATION)

BILL OF MATERIAL

SPEC: 350 DUCTILE IRON

MARK	SIZE	DESCRIPTION	QTY
1	16	CLASS 350 DUCTILE IRON PIPE, PUSH ON TYPE JOINTS, SUCH AS TYTON OR FASTITE	842'-7"
2	16	CLASS 350 DUCTILE IRON PIPE PE X PE	40'-0"
3	16X16X10	CLASS 350 DUCT IRON MJ X MJ X MJ RED TEE	2
4	16	CLASS 350 DUCT IRON MJ X MJ 90° BEND	2
5	16	FLG. FFWN 150LB S/STD BORE, ASTM A-105	2
6	16	FULL FACE GASKET, 1/8" THK, 150LB	2
7	16	RESILIENT SEAT WEDGE GATE VALVE MUELLER P2360 SERIES FF FLG P-2360-6 WITH A20806 ADJ. INDICATOR POST INSTALLED	1
8	16	CLASS 350 DUCT IRON MJ X FE ADAPTER	2

PIPE SPOOLS

MK-103-A MK-103-B

ISSUED

MAR 07 2010

FOR APPROVAL

MK-103

NOTE:

1. FIELD VERIFY ALL DIMENSIONS
2. U/G PIPE SHALL BE BEDDED IN SAND, MIN. 4" BENEATH THE PIPE AND A MIN. 6" ABOVE PIPE.

DESCRIPTION	REMARKS
PAINT	PER NAVAJO SPECIFICATIONS
INSULATION	-
ELECT TRACE	NO
NDE	10% (100% FW's)
P.W.H.T.	NO
STRESS ANALYSIS	N/A
HARDNESS CHK	N/A

CONDITION	PSIG	TEMP (F°)
DESIGN	200	100
OPERATING	182	60
HYDRO-TEST	300	
HYDRO/PNEUM TEST APPROVAL	APP. BY: RP	DATE: 03/05

REFERENCE DRAWINGS	
NO.	TITLE
60-V-02-D-01	PMID

REVISIONS					
NO.	DATE	DESCRIPTION	BY	CHK.	APP.
A	03/05/10	ISSUED FOR APPROVAL	RP	RP	RP

ENGINEERING RECORD		
	BY	DATE
DRN:	JW	03/05/10
DES:		
CHK:	RP	
APP:	RP	
AFE No.		
S E & C JOB NO.	6174	
PROJ. ENGR:	MG	
SCALE:	N/A	

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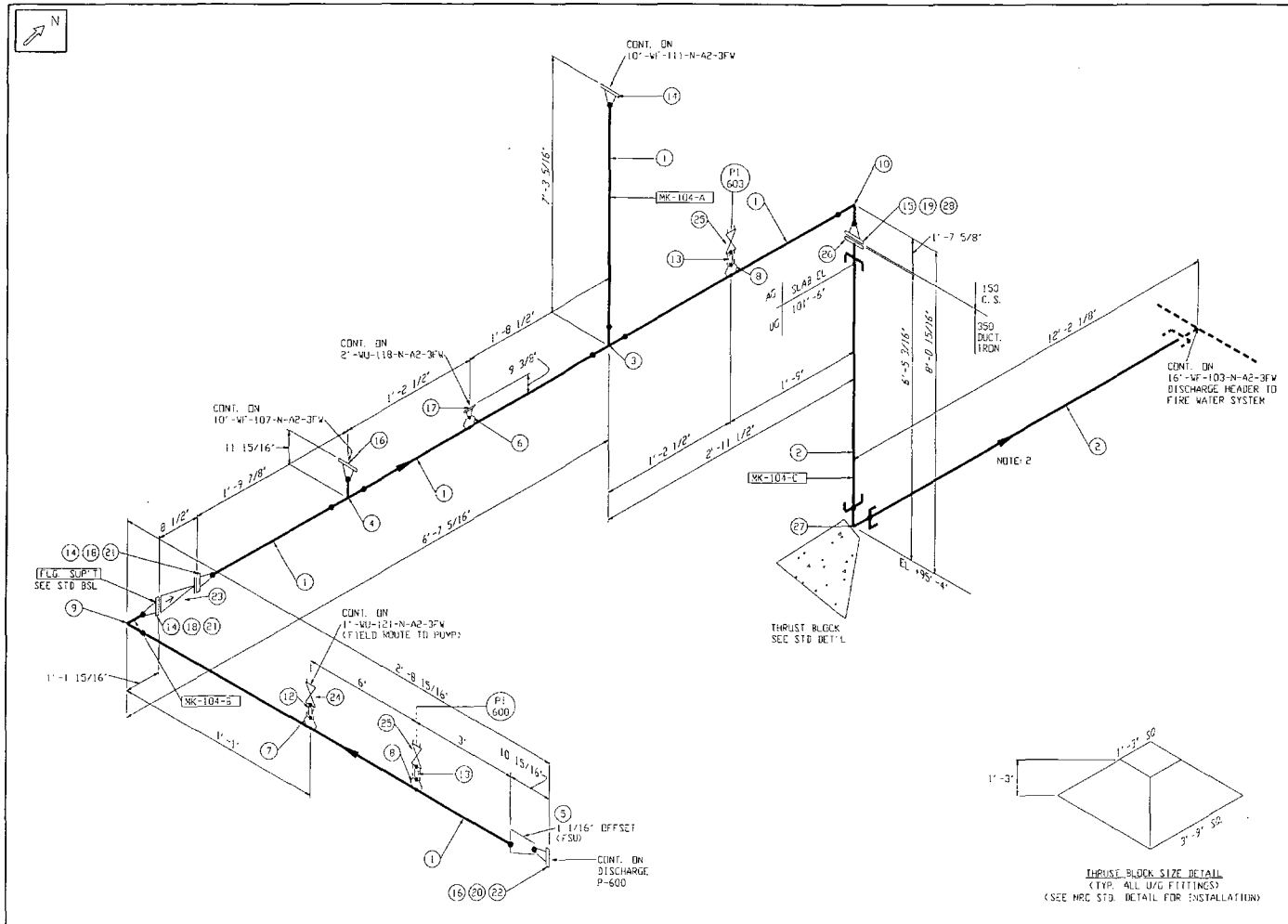
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISOMETRICS
DISCHARGE FROM PUMPS
UNIT 60
FIRE WATER POND #3
ARTESIA, NM

WELD CODE: B31.3	DWG NO.	DRG.	REV
CAD NO. MK-103-1	10"-WF-103-N-A2-3FW	1 OF 1	A



THRUST BLOCK SIZE DETAIL
(TYP. ALL U/G FITTINGS)
(SEE NRC STD. DETAIL FOR INSTALLATION)

BILL OF MATERIAL

SPEC: 150

MARK	SIZE	DESCRIPTION	QTY
1	10	PIPE, S/STD SMLS, ASTM A-53 GR B	10' 7"
2	10	CLASS 350 DUCTILE IRON PIPE, PE X PE	14' 7"
3	10X10	TEE, STR. S/STD, ASTM A-234 GR WPB	1
4	10X8	TEE, REDUCING S/STD, ASTM A-234 GR WPB	1
5	10X8	REDUCER, ECC S/STD, ASTM A-234 GR WPB	1
6	10X2	WELDOLET, SCH XS, ASTM A-105	1
7	12X1	SOCKOLET, 3000LB FS, ASTM A-105	1
8	10X3/4	SOCKOLET, 3000LB FS, ASTM A-105	2
9	10	ELL, 90 SR S/STD, ASTM A-234 GR WPB	1
10	10	ELL, 90 LR S/STD, ASTM A-234 GR WPB	1
11	10	ELL, 90 LR S/STD, ASTM A-234 GR WPB	1
12	1	NIPPLE, S/XXS SMLS, ASTM A-106 GR B PBE (4" LG)	1
13	3/4	NIPPLE, S/XXS SMLS, ASTM A-106 GR B PBE (4" LG)	2
14	10	FLG, FFWN 150LB, ASTM A-105	3
15	10	FLG, FFWN 150LB S/STD BORE, ASTM A-105	1
16	8	FLG, FFWN 150LB, ASTM A-105	2
17	2	FLG, RFWN 150LB S/XS BORE, ASTM A-105	1
18	10	FULL FACE GASKET, 1/8" THK, 150LB	2
19	10	FULL FACE GASKET, 1/8" THK, 150LB	1
20	8	FULL FACE GASKET, 1/8" THK, 150LB	1
21	7/8X14	(12) STUD BOLTS W/ NUTS	2
22	3/4X4 1/4	(8) STUD BOLTS W/ NUTS	1
23	10	CHECK VALVE, WAFER, 125LB	1
24	1	GATE VALVE, 800LB SWxTHRD	1
25	3/4	GATE VALVE, 800LB SWxTHRD	2
26	10	CLASS 350 DUCT IRON MJ X FE ADAPTER	1
27	10	CLASS 350 DUCT IRON MJ X MJ 90° BEND	1
28	7/8X4 1/2	(12) STUD BOLTS W/ NUTS	1

PIPE SPOOLS

MK-104-A MK-104-B MK-104-C

ISSUED

MAR 07 2010

FOR APPROVAL

MK-104

NOTE:

1. FIELD VERIFY ALL DIMENSIONS
2. U/G PIPE SHALL BE BEDDED IN SAND, MIN. 4" BENEATH THE PIPE AND A MIN 6" ABOVE PIPE

DESCRIPTION	REMARKS
PAINT	PER NAVAJO SPECIFICATIONS
INSULATION	-
ELECT. TRACE	NO
NDE	10% (100% FW's)
P.W.H.T.	NO
STRESS ANALYSIS	N/A
HARDNESS CHK.	N/A

CONDITION	PSIG	TEMP. (F)
DESIGN	200	100
OPERATING	182	60
HYDRO-TEST	300	
HYDRO/PNEUM TEST APPROVAL	APP. BY: RP	DATE: 03/05

REFERENCE DRAWINGS

NO.	TITLE
50-V-02-D-01	P&ID

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHK.	APP.
A	03/05/10	ISSUED FOR APPROVAL		RP	RP

ENGINEERING RECORD

	BY	DATE
DRN:	JP	03/05/10
DES:		
CHK:	RP	
APP:	RP	
AFE No.		
S E & C JOB NO.	6174	
PROJ. ENGR:	MG	
SCALE:	N/A	

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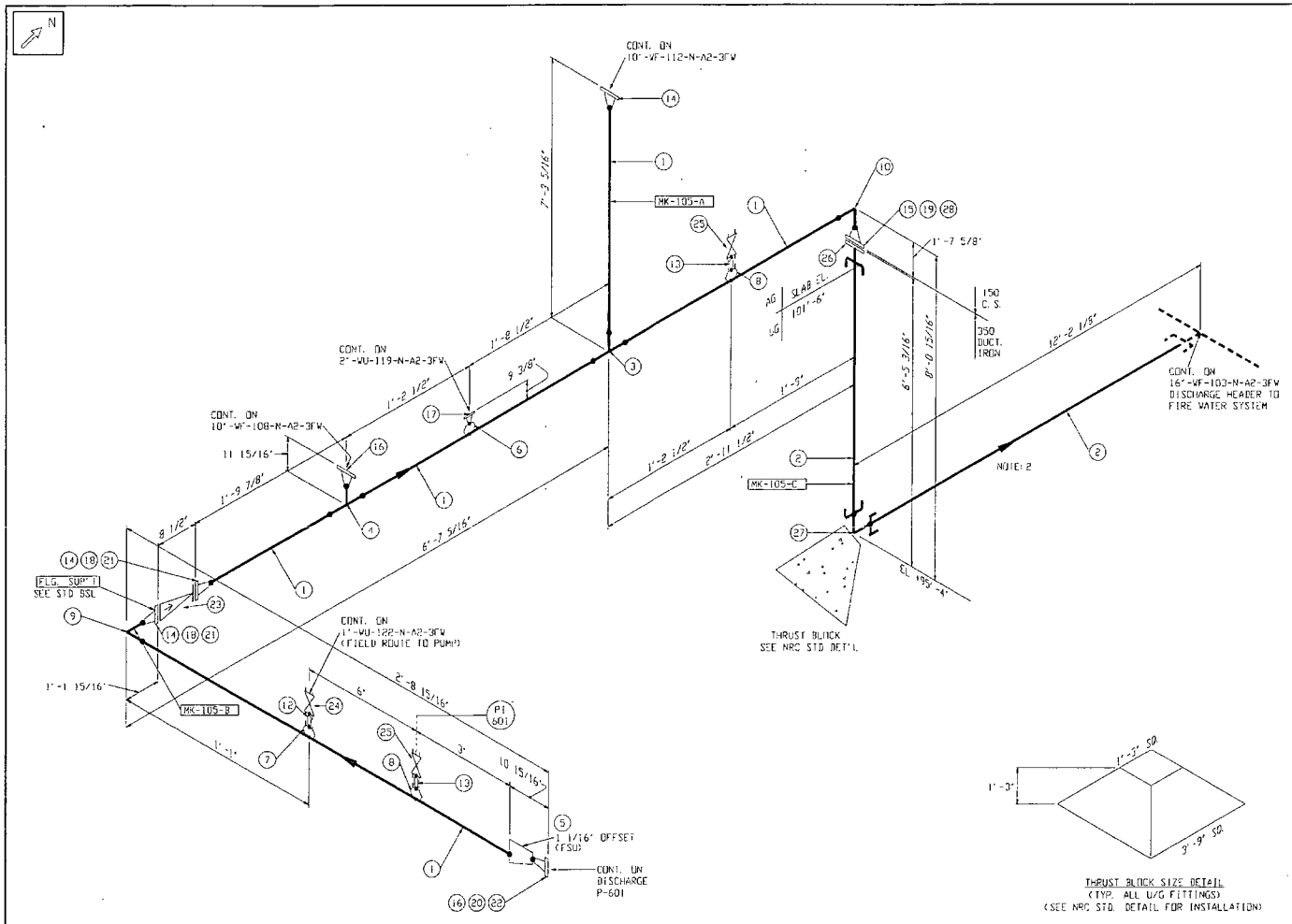
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISOMETRICS
DISCHARGE FROM PUMP
UNIT 60
FIRE WATER POND #3
ARTESIA, NM

WELD CODE: B31.3	DWG. NO.	BRG.	REV
CAD NO. MK-104-1	10"-WF-104-N-A2-3FW	1 OF 1	A



THRUST BLOCK SIZE DETAIL
(TYP. ALL D/G FITTINGS)
(SEE NRC STD. DETAIL FOR INSTALLATION)

BILL OF MATERIAL
SPEC 150

MARK	SIZE	DESCRIPTION	QTY
1	10	PIPE, S/STD SMLS, ASTM A-53 GR B	10' 7"
2	10	CLASS 350 DUCTILE IRON PIPE, PE X PE	14' 7"
3	10X10	TEE, STR. S/STD, ASTM A-234 GR WPB	1
4	10X8	TEE, REDUCING S/STD, ASTM A-234 GR WPB	1
5	10X8	REDUCER, ECC S/STD, ASTM A-234 GR WPB	1
6	10X2	WELDOLET, SCH XS, ASTM A-105	1
7	10X1	SOCKOLET, 3000LB FS, ASTM A-105	1
8	10X3/4	SOCKOLET, 3000LB FS, ASTM A-105	2
9	10	ELL, 90 SR S/STD, ASTM A-234 GR WPB	1
10	10	ELL, 90 LR S/STD, ASTM A-234 GR WPB	1
11	10	ELL, 90 LR S/STD, ASTM A-234 GR WPB	1
12	1	NIPPLE, S/XXS SMLS, ASTM A-106 GR B PBE (4" LG)	1
13	3/4	NIPPLE, S/XXS SMLS, ASTM A-106 GR B PBE (4" LG)	2
14	10	FLG, FFWN 150LB, ASTM A-105	3
15	10	FLG, FFWN 150LB S/STD BORE, ASTM A-105	1
16	8	FLG, FFWN 150LB, ASTM A-105	2
17	2	FLG, RFWN 150LB S/XS BORE, ASTM A-105	1
18	10	FULL FACE GASKET, 1/8" THK, 150LB	2
19	10	FULL FACE GASKET, 1/8" THK, 150LB	1
20	8	FULL FACE GASKET, 1/8" THK, 150LB	1
21	7/8X14	(12) STUD BOLTS W/ NUTS	2
22	3/4X4 1/4	(8) STUD BOLTS W/ NUTS	1
23	10	CHECK VALVE, WAFER, 125LB	1
24	1	GATE VALVE, 800LB SWxTHRD	1
25	3/4	GATE VALVE, 800LB SWxTHRD	2
26	10	CLASS 350 DUCT IRON MJ X FE ADAPTER	1
27	10	CLASS 350 DUCT IRON MJ X MJ 90° BEND	1
28	7/8X4 1/2	(12) STUD BOLTS W/ NUTS	1

PIPE SPOOLS

MK-105-A MK-105-B MK-105-C

ISSUED
MAR 07 2010
FOR APPROVAL

MK-105

NOTE:
1. FIELD VERIFY ALL DIMENSIONS
2. U/G PIPE SHALL BE BEDDED IN SAND, MIN. 4" BENEATH THE PIPE AND A MIN. 6" ABOVE PIPE

DESCRIPTION	REMARKS	CONDITION	PSIG	TEMP (°F)
PAINT	PER NAVAJO SPECIFICATIONS	DESIGN	200	100
INSULATION	–	OPERATING	182	60
ELECT TRACE	NO			
N.D.E.	10% (100% FW's)	HYDRO-TEST	300	
P.W.H.T.	NO	HYDRO/PNEUM TEST APPROVAL	APP. BY: RP	DATE: 03/05
STRESS ANALYSIS	N/A			
HARDNESS CHK	N/A			

REFERENCE DRAWINGS

NO.	TITLE
60-V-02-0-01	P&ID

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHK	APP.
A	03/05/10	ISSUED FOR APPROVAL	RP	RP	RP

ENGINEERING RECORD

	BY	DATE
DRN:	JW	03/05/10
DES:		
CHK:	RP	
APP:	RP	
AFE No.		
S E & C JOB NO.	6174	
PROJ. ENGR:	MG	
SCALE:	N/A	

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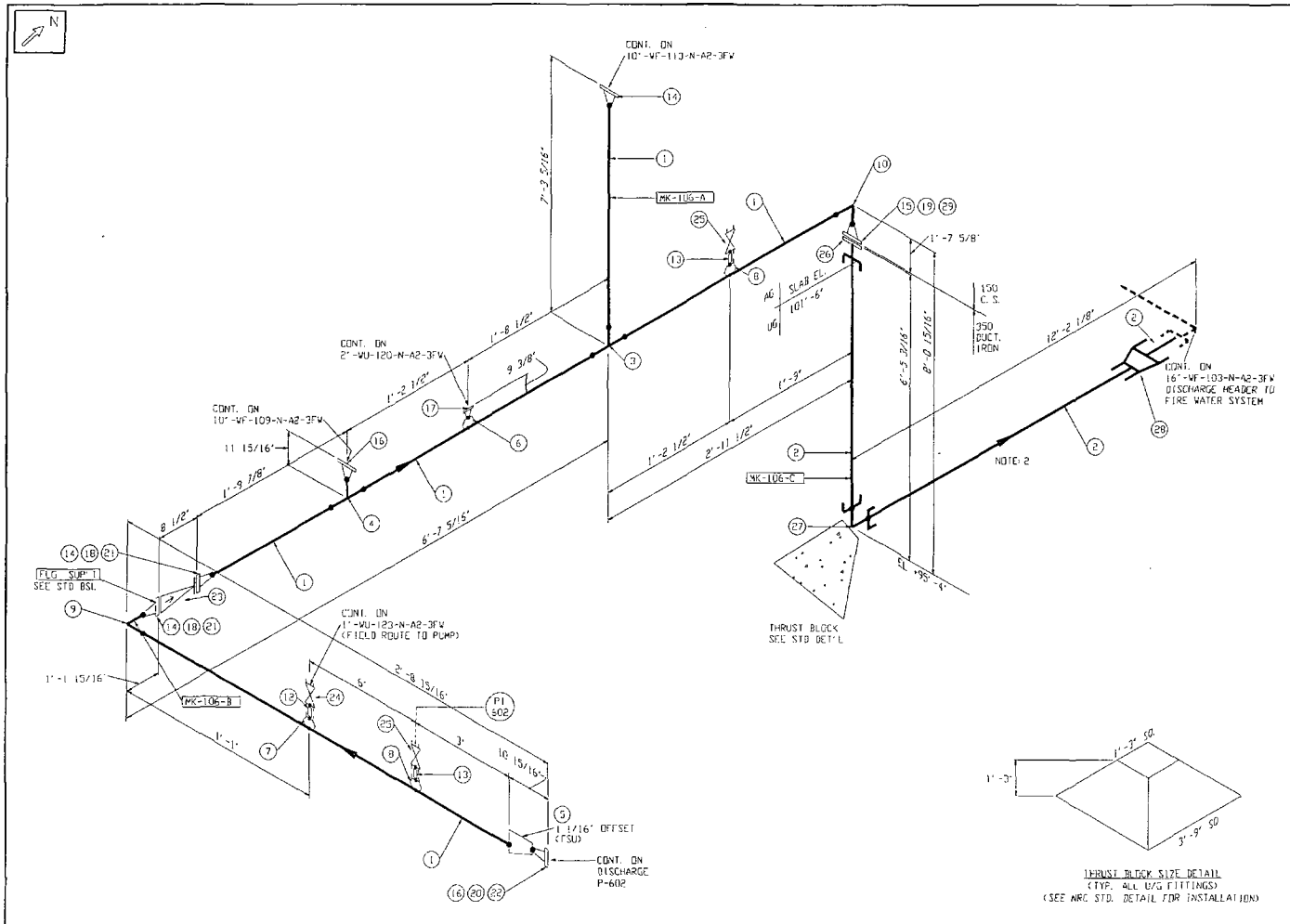
NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISOMETRICS
DISCHARGE FROM PUMP
UNIT 60
FIRE WATER POND #3
ARTESIA, NM

WELD CODE: B31.3 | DWG. NO. 10"-WF-105-N-A2-3FW | DRG. 1 OF 1 | REV A
CAD NO. MK-105 - 1



THRUST BLOCK SIZE DETAIL
(TYP. ALL U/G FITTINGS)
(SEE NRC STD. DETAIL FOR INSTALLATION)

BILL OF MATERIAL

SPEC: 150

MARK	SIZE	DESCRIPTION	QTY
1	10	PIPE, S/STD SMLS, ASTM A-53 GR B	10' 7"
2	10	CLASS 350 DUCTILE IRON PIPE, PE X PE	14' 7"
3	10X10	TEE, STR. S/STD, ASTM A-234 GR WPB	1
4	10X8	TEE, REDUCING S/STD, ASTM A-234 GR WPB	1
5	10X8	REDUCER, ECC S/STD, ASTM A-234 GR WPB	1
6	10X2	WELDOLET, SCH XS, ASTM A-106	1
7	10X1	SOCKOLET, 3000LB FS, ASTM A-106	1
8	10X3/4	SOCKOLET, 3000LB FS, ASTM A-106	2
9	10	ELL, 90 SR S/STD, ASTM A-234 GR WPB	1
10	10	ELL, 90 LR S/STD, ASTM A-234 GR WPB	1
11	10	ELL, 90 LR S/STD, ASTM A-234 GR WPB	1
12	1	NIPPLE, S/XXS SMLS, ASTM A-106 GR B PBE (4" LG)	1
13	3/4	NIPPLE, S/XXS SMLS, ASTM A-106 GR B PBE (4" LG)	2
14	10	FLG, FFWN 150LB, ASTM A-106	3
15	10	FLG, FFWN 150LB S/STD BORE, ASTM A-105	1
16	8	FLG, FFWN 150LB, ASTM A-106	2
17	2	FLG, RFWN 150LB S/XS BORE, ASTM A-106	1
18	10	FULL FACE GASKET, 1/8" THK, 150LB	2
19	10	FULL FACE GASKET, 1/8" THK, 150LB	1
20	8	FULL FACE GASKET, 1/8" THK, 150LB	1
21	7/8X14	(12) STUD BOLTS W/ NUTS	2
22	3/4X4 1/4	(8) STUD BOLTS W/ NUTS	1
23	10	CHECK VALVE, WAFER, 125LB	1
24	1	GATE VALVE, 800LB SWTHRD	1
25	3/4	GATE VALVE, 800LB SWTHRD	2
26	10	CLASS 350 DUCT IRON MJ X FE ADAPTER	1
27	10	CLASS 350 DUCT IRON MJ X MJ 90° BEND	1
28	16X10	CLASS 350 DUCT IRON MJ X MJ REDUCER	1
29	7/8X4 1/2	(12) STUD BOLTS W/ NUTS	1

PIPE SPOOLS

MK-106-A MK-106-B MK-106-C

ISSUED

MAR 07 2010

FOR APPROVAL

MK-106

NOTE:

1. FIELD VERIFY ALL DIMENSIONS.
2. U/G PIPE SHALL BE BEDDED IN SAND, MIN. 4" BENEATH THE PIPE AND A MIN. 6" ABOVE PIPE

DESCRIPTION	REMARKS	CONDITION	PSIG	TEMP (F)
PAINT	PER NAVAJO SPECIFICATIONS	DESIGN	200	100
INSULATION	-	OPERATING	182	60
ELECT TRACE	NO			
NDE	10% (100% FW's)	HYDRO-TEST	300	
P.W.H.T.	NO	HYDRO/PNEUM. TEST APPROVAL	APP. BY: NP	DATE: 03/05
STRESS ANALYSIS	N/A			
HARDNESS CHK	N/A			

REFERENCE DRAWINGS

NO.	TITLE
60-V-02-D-01	P&ID

NO.	DATE	DESCRIPTION	BY	CHK.	APP.
A	03/05/10	ISSUED FOR APPROVAL		RP	RP

ENGINEERING RECORD

	BY	DATE
DRN: JH		03/05/10
DES		
CHK: RP		
APP: RP		
AFE No.		
S E & C JOB NO.	5174	
PROJ. ENGR.	MG	
SCALE:	N/A	

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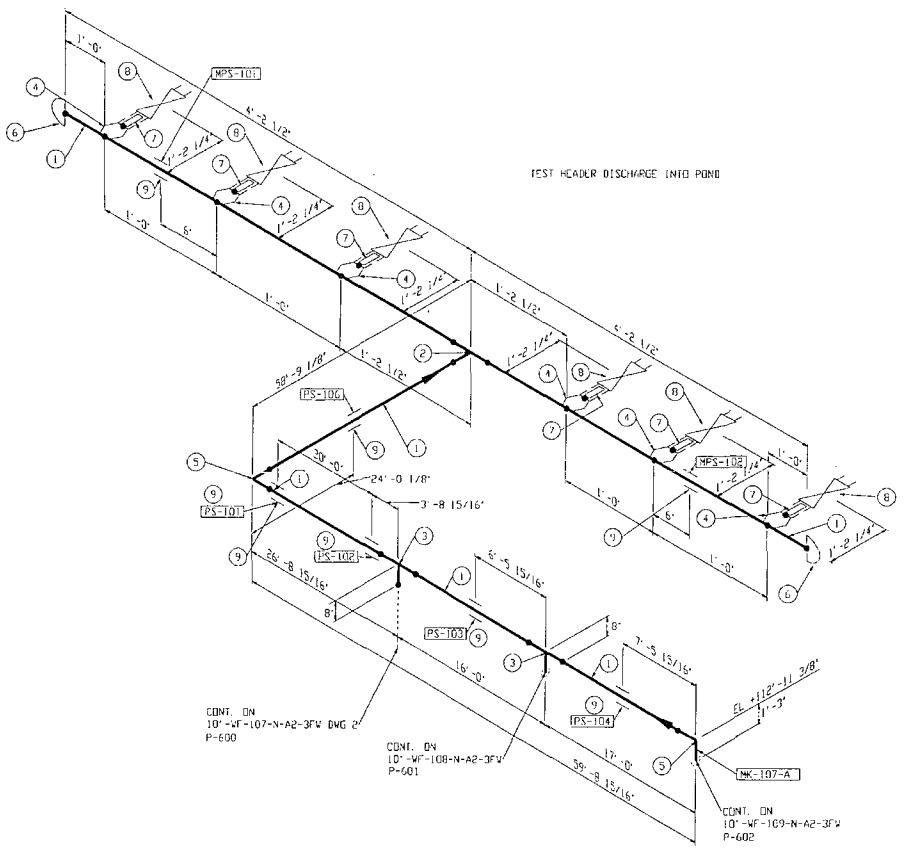
NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISOMETRICS
DISCHARGE FROM PUMP
UNIT 60
FIRE WATER POND #3
ARTESIA, NM

WELD CODE: B31.3 | DWG. NO.
CAD NO. MK-106-1 | 10"-WF-106-N-A2-3FW

DRG 1 OF 1 | REV A



BILL OF MATERIAL

SPEC: 150

MARK	SIZE	DESCRIPTION	QTY
1	10	PIPE, S/STD SMLS, ASTM A-53 GR B	118'-3"
2	10X10	TEE, STR, S/XS, ASTM ASTM A-234 GR WPB	1
3	10X8	TEE, REDUCING S/STD, ASTM A-234 GR WPB	2
4	10X2 1/2	SOCKOLET, 3000LB FS, ASTM A-105	6
5	10	ELL, 90 LR S/STD, ASTM A-234 GR WPB	2
6	10	CAP, S/STD, ASTM A-234 GR WPB	2
7	2 1/2	NIPPLE, S/XS SMLS, ASTM A-106 GR B PDE-TDE (6" LG)	6
8	2 1/2	BRASS HOSE VALVE, THRD.	6
9	10	U-BOLT 5US-10	8

PIPE SPOOLS

MK-107-A

ISSUED

MAR 07 2010

FOR APPROVAL

MK-107

NOTE:

1. FIELD VERIFY ALL DIMENSIONS.
2. FFU = FIELD FIT-UP. FFU TO INCLUDE 6" OF ADDITIONAL PIPE

DESCRIPTION	REMARKS	CONDITION	PSIG	TEMP (F)
PAINT	PER NAVAJO SPECIFICATIONS	DESIGN	200	100
INSULATION	–	OPERATING	182	60
ELECT TRACE	NO			
NDE	10% (100% FW's)	HYDRO-TEST	300	
P.W.H.T.	NO	HYDRO/PNEUM TEST APPROVAL	APP BY: RP	DATE: 03/05
STRESS ANALYSIS	N/A			
HARDNESS CHK	N/A			

REFERENCE DRAWINGS

NO	TITLE
60-V-02-D-01	P&ID

REVISIONS

NO	DATE	DESCRIPTION	BY	CHK.	APP.
A	03/05/10	ISSUED FOR APPROVAL	JW	RP	RP

ENGINEERING RECORD

	BY	DATE
DRN:	JW	03/05/10
DES.		
CHK:	RP	
APP.:	RP	
AFE No.		
S E & C JOB NO	6174	
PROJ. ENGR:	MG	
SCALE:	N/A	

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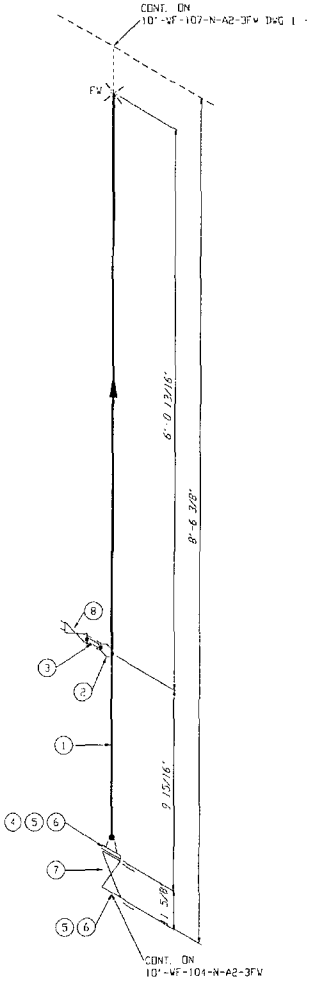
NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISOMETRICS
TEST HEADER DISCHARGE FROM PUMPS
UNIT 60
FIRE WATER POND #3
ARTESIA, NM

WELD CODE: B31.3 | DWG. NO. 10"-WF-107-N-A2-3FW | DRG. 1 OF 2 | REV A

CAD NO. MK-107-1



BILL OF MATERIAL

SPEC: 150

MARK	SIZE	DESCRIPTION	QTY
1	8	PIPE, S/STD SMLS, ASTM A-53 GR B	6'-7"
2	8X3/4	SOCKOLET, 3000LB FS, ASTM A-105	1
3	3/4	NIPPLE, S/XXS SMLS, ASTM A-106 GR B P3E (4" LG)	1
4	8	FLG, FFWN 150LB, ASTM A-105	1
5	8	FULL FACE GASKET, 1/8" THK, 150LB	2
6	3/4X4 1/4	(8) STUD BOLTS W/ NUTS	2
7	8	GATE VALVE, 125LB FLG, FF	1
8	3/4	GATE VALVE, 800LB SWxTHRD	1

ISSUED

MAR 07 2010

FOR APPROVAL

MK-107

NOTE:

1. FIELD VERIFY ALL DIMENSIONS
2. FFU = FIELD FIT-UP. FFU TO INCLUDE 6" OF ADDITIONAL PIPE

DESCRIPTION	REMARKS	CONDITION	PSIG	TEMP (F)
PAINT	PER NAVAJO SPECIFICATIONS	DESIGN	200	100
INSULATION	–	OPERATING	182	60
ELECT TRACE	NO			
NDE	10% (100% FW's)	HYDRO-TEST	300	
P.W.H.T	NO	HYDRO/PNEUM TEST APPROVAL	APP. BY: RP	DATE: 03/09
STRESS ANALYSIS	N/A			
HARDNESS CHK	N/A			

REFERENCE DRAWINGS

NO.	TITLE
60-V-02-0-01	P&ID

SAULSBURY
ENGINEERING & CONSTRUCTION
A SAULSBURY INDUSTRIES COMPANY
TEXAS REGISTERED ENGINEERING FIRM F-518
WWW.SI-TX.COM

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHK.	APP.
A	03/05/10	ISSUED FOR APPROVAL		RP	RP

ENGINEERING RECORD

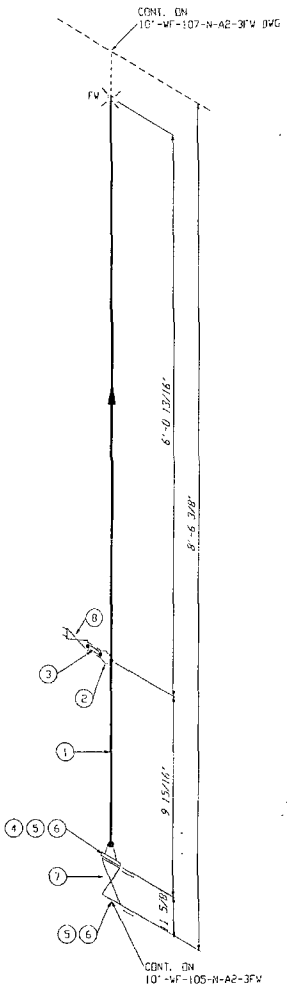
	BY	DATE
DRN:	JW	03/05/10
DES:		
CHK:	RP	
APP:	RP	
APE No.		
S. E. & C. JOB NO.	6174	
PROJ. ENGR	MC	
SCALE:	N/A	

NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISOMETRICS
TEST HEADER DISCHARGE FROM PUMPS
UNIT 60
FIRE WATER POND #3
ARTESIA, NM

WELD CODE: B31.3 | DWG. NO. 10"-WF-107-N-A2-3FW | DRG. 2OF 2 | REV A

CAD NO. MK-107-2



BILL OF MATERIAL

SPEC: 150

MARK	SIZE	DESCRIPTION	QTY
1	8	PIPE, S/STD SMLS, ASTM A-53 GR B	6' 7"
2	8X3/4	SOCKOLET, 3000LB FS, ASTM A-105	1
3	3/4	NIPPLE, S/XXS SMLS, ASTM A-106 GR B PBE (4" LG)	1
4	8	FLG, FFWN 150LB, ASTM A-105	1
5	8	FULL FACE GASKET, 1/8" THK, 150LB	2
6	3/4X4 1/4	(8) STUD BOLTS W/ NUTS	2
7	8	GATE VALVE, 125LB FLG, FF	1
8	3/4	GATE VALVE, 800LB SW×THRD	1

ISSUED

MAR 07 2018

FOR APPROVAL

MK-108

NOTES:

1. FIELD VERIFY ALL DIMENSIONS
2. FFU = FIELD FIT-UP. FFU TO INCLUDE 6" OF ADDITIONAL PIPE

DESCRIPTION	REMARKS
PAINT	PER NAVAJO SPECIFICATIONS
INSULATION	-
ELECT TRACE	NO
NDE	10% (100% FW's)
P.W.H.T.	NO
STRESS ANALYSIS	N/A
HARDNESS CHK.	N/A

CONDITION	PSIG	TEMP (F°)
DESIGN	200	100
OPERATING	182	60
HYDRO-TEST	300	
HYDRO/PNEUM TEST APPROVAL	APP. BY: RP	DATE: 03/05

REFERENCE DRAWINGS

NO	TITLE
60-V-02-0-01	P&ID

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TEXAS REGISTERED ENGINEERING FIRM F-515
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REVISIONS

NO.	DATE	DESCRIPTION	BY	CHK.	APP.
A	03/05/10	ISSUED FOR APPROVAL	JW	RP	RP

ENGINEERING RECORD

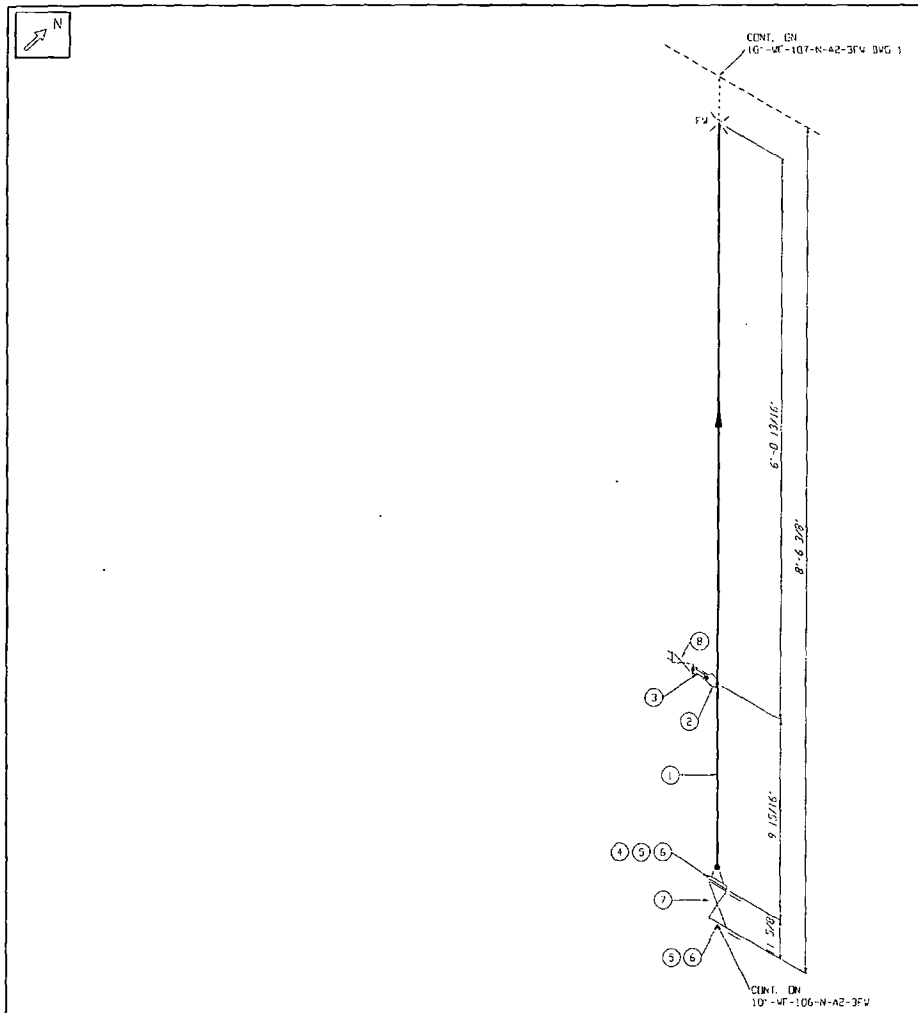
	BY	DATE
DRN:	JW	03/05/10
DES:		
CHK:	RP	
APP:	RP	
AFE No.		
S. E. & C. JOB NO.	6174	
PROJ. ENGR.	MC	
SCALE:	N/A	

NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISUMETRICS
TEST HEADER DISCHARGE FROM PUMPS
UNIT 60
FIRE WATER POND #3
ARTESIA, NM

WELD CODE: 331.3 | DWG. NO.
CAD NO. MK-108- 2 | 10"-WF-106-N-A2-3FW

DRG. 1 OF 1 | REV. A



BILL OF MATERIAL

SPEC: 1SQ

MARK	SIZE	DESCRIPTION	QTY
1	8	PIPE, S/STD SMLS, ASTM A-53 GR B	6' 7"
2	8X3/4	SOCKOLET, 3000LB FS, ASTM A-105	1
3	3/4	NIPPLE, S/XXS SMLS, ASTM A-106 GR B PBE (4" LG)	1
4	8	FLG, FFWN 150LB, ASTM A-105	1
5	8	FULL FACE GASKET, 1/8" THK, 150LB	2
6	3/4X4 1/4	(8) STUD BOLTS W/ NUTS	2
7	8	GATE VALVE, 125LB FLG, FF	1
8	3/4	GATE VALVE, 800LB SW×THRD	1

ISSUED

MAR 07 2010

FOR APPROVAL

MK-109

NOTE:

1. FIELD VERIFY ALL DIMENSIONS
2. FTU = FIELD FIT-UP. FTU TO INCLUDE 6" OF ADDITIONAL PIPE

DESCRIPTION	REMARKS	CONDITION	PSIG	TEMP (F)
PAINT	PER NAVAJO SPECIFICATIONS	DESIGN	200	100
INSULATION	-	OPERATING	182	60
ELECT TRACE	NO			
NDE	10% (100% FW's)	HYDRO-TEST	300	
P.W.H.T.	NO		APP. BY	DATE
STRESS ANALYSIS	N/A	HYDRO/PNEUM TEST APPROVAL	RP	03/05
HARDNESS CHK	N/A			

REFERENCE DRAWINGS NO.	TITLE
60-V-02-0-01	P&ID

REVISIONS NO.	DATE	DESCRIPTION	BY	CHK.	APP.
A	03/05/10	ISSUED FOR APPROVAL		RP	RP

ENGINEERING RECORD	BY	DATE
DRN: JF		03/05/10
DES:		
CHK: RP		
APP: RP		
AFE No.		
S E & C JOB NO.	6174	
PROJ. ENGR:	MG	
SCALE:	N/A	

SAULSBURY ENGINEERING & CONSTRUCTION
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TEXAS REGISTERED ENGINEERING FIRM F-518
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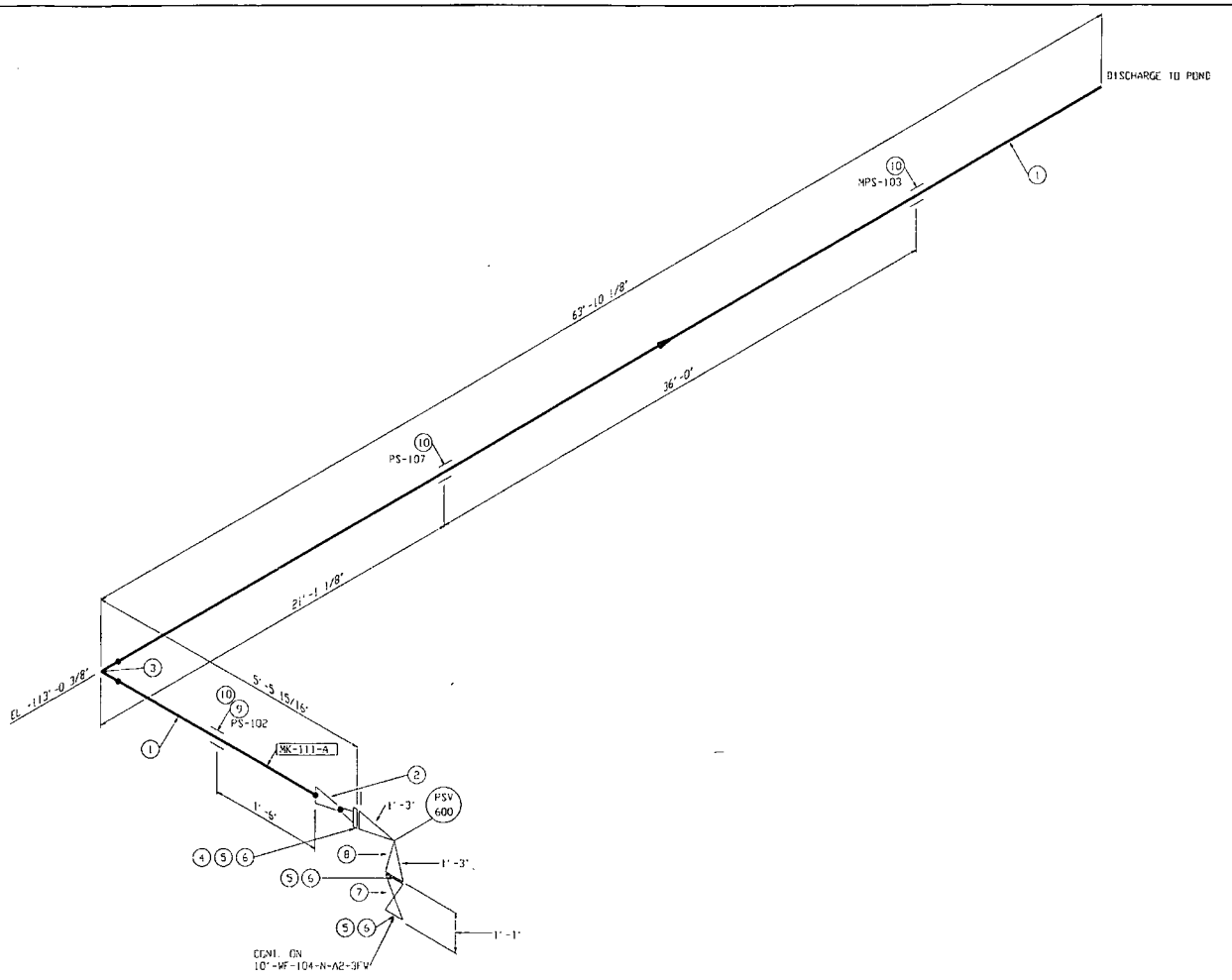
NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISOMETRICS
TEST HEADER DISCHARGE FROM PUMPS
UNIT 60
FIRE WATER POND #3
ARTESIA, NM

WELD CODE: B31.3 | DWG. NO. | DRG. 1 OF 1 | REV A
CAD NO: MK-109-2 | 10"-WF-109-N-A2-3FV



BILL OF MATERIAL

SPEC: 150

MARK	SIZE	DESCRIPTION	QTY
1	12	PIPE, S/STD SMLS, ASTM A-53 GR B	65'-5"
2	12X10	REDUCER, CONC S/STD, ASTM A-234 GR WPB	1
3	12	ELL, 90 LR S/STD, ASTM A-234 GR WP3	1
4	10	FLG, FFWN 150LB, ASTM A-105	1
5	10	GASKET, 1/8" THK, 150LB	3
6	7/8X4 3/4	(12) STUD BOLTS W/ NUTS	3
7	10	GATE VALVE, 125LB FLG	1
8	10	ANGLE VALVE, 150LB FLG (WATTS ACV FIG. 1116)	1
9	12	DIRECTIONAL ANCHOR SDA2C	1
10	12	U-BOLT SUS12	3

PIPE SPOOLS

MK-111-A

ISSUED

MAR 07 2010

FOR APPROVAL

MK-111

NOTE:

1. FIELD VERIFY ALL DIMENSIONS
2. FFU = FIELD FIT-UP. FFU TO INCLUDE 6" OF ADDITIONAL PIPE

DESCRIPTION	REMARKS	CONDITION	PSIG	TEMP (F)
PAINT	PER NAVAJO SPECIFICATIONS	DESIGN	50	100
INSULATION	-	OPERATING	40	60
ELECT TRACE	NO			
NDE	10% (100% FW's)	HYDRO-TEST	75	
P.W.H.T.	NO		APP. BY	DATE
STRESS ANALYSIS	N/A	HYDRO/PNEUM TEST APPROVAL	RP	03/05
HARDNESS CHK	N/A			

REFERENCE DRAWINGS

NO.	TITLE
60-V-02-D-01	P&ID

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHK.	APP.
A	03/05/10	ISSUED FOR APPROVAL		RP	RP

ENGINEERING RECORD

	BY	DATE
DRN:	JH	03/05/10
DES:		
CHK:	RP	
APP:	RP	
AFE No		
S E & C JOB NO.	6174	
PROJ. ENGR:	MG	
SCALE:	N/A	

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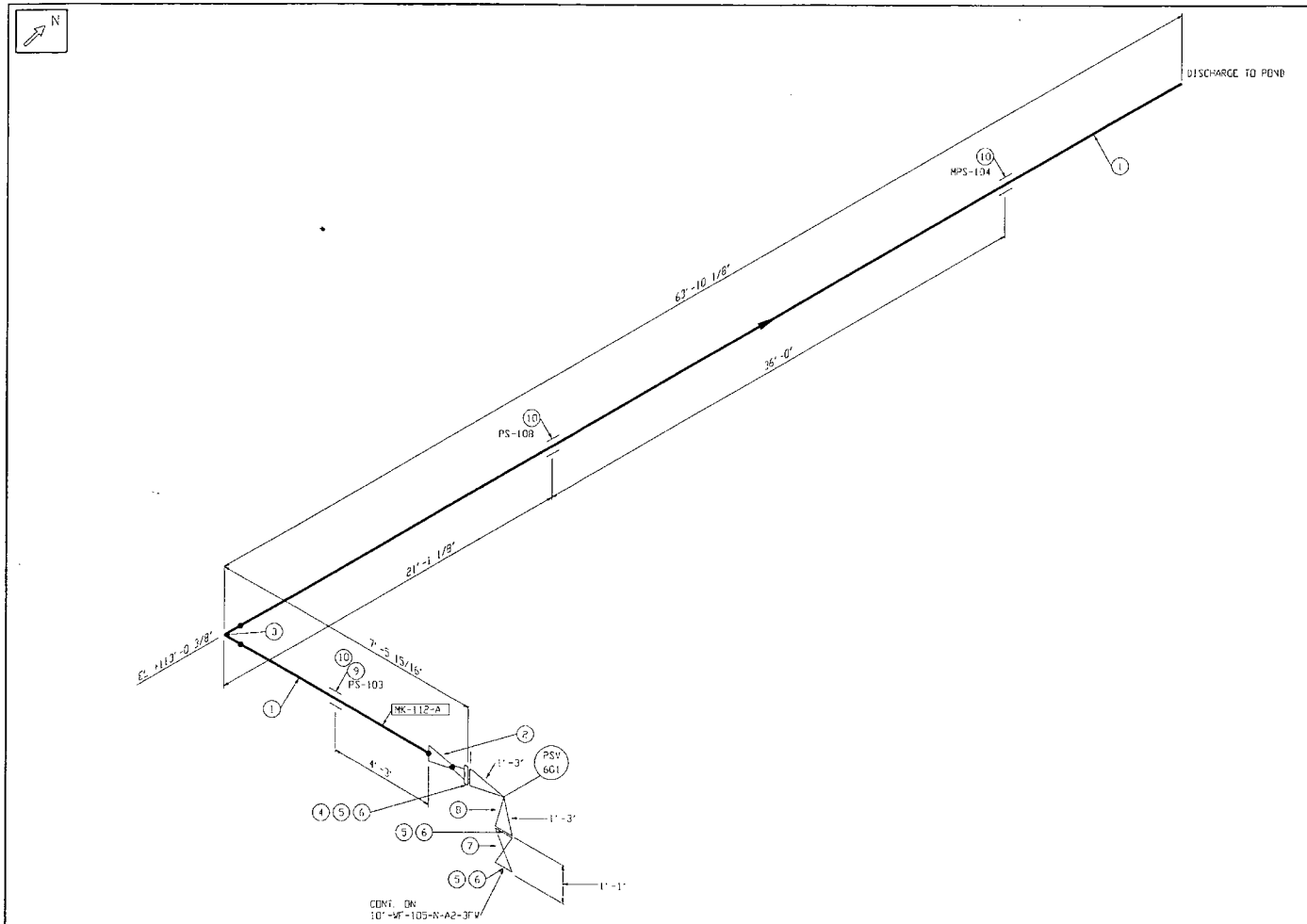
NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISOMETRICS
PSV DISCHARGE FROM PUMP
UNIT GO
FIRE WATER POND #3
ARTESIA, NM

WELD CONT: 831: 3	DWG. NO.	DRG.	REV
CAD NO. MK-111-1	10"-WF-111-N-A2-3FV	1 OF 1	A



BILL OF MATERIAL

SPEC: 150

MARK	SIZE	DESCRIPTION	QTY
1	12	PIPE, S/STD SMLS, ASTM A-53 GR B	65'-5"
2	12X10	REDUCER, CONC S/STD, ASTM A-234 GR WPB	1
3	12	ELL, 90 LR S/STD, ASTM A-234 GR WPB	1
4	10	FLG, RFWN 150LB, ASTM A-105	1
5	10	GASKET, 1/8" THK, 150LB	3
6	7/8X4 3/4	(12) STUD BOLTS W/ NUTS	3
7	10	GATE VALVE, 125LB FLG	1
8	10	ANGLE VALVE, 150LB FLG (WATTS ACV FIG. 1116)	1
9	12	DIRECTIONAL ANCHOR 5DA2C	1
10	12	U-BOLT 5US12	3

PIPE SPOOLS

MK-112-A

ISSUED

MAY 07 2010

FOR APPROVAL

MK-112

NOTE:

1. FIELD VERIFY ALL DIMENSIONS
2. FFU = FIELD FIT-UP, FFU TO INCLUDE 6" OF ADDITIONAL PIPE

DESCRIPTION	REMARKS
PAINT	PER NAVAJO SPECIFICATIONS
INSULATION	-
ELECT TRACE	NO
NDE	10% (100% FW's)
P.W.H.T	NO
STRESS ANALYSIS	N/A
HARDNESS CHK	N/A

CONDITION	PSIG	TEMP (F°)
DESIGN	50	100
OPERATING	40	60
HYDRO-TEST	75	

HYDRO/PNUM TEST APPROVAL	APP. BY	DATE
	RP	03/05

REFERENCE DRAWINGS

NO.	TITLE
60-V-02-D-01	P&ID

REVISIONS NO.	DATE	DESCRIPTION	BY	CHK.	APP.
A	03/05/10	ISSUED FOR APPROVAL	JW	RP	RP

ENGINEERING RECORD	BY	DATE
DRN:	JW	03/05/10
DES:		
CHK:	RP	
APP:	RP	
AFE No.		
S E & C JOB NO.	6174	
PROJ. ENGR:	VG	
SCALE:	N/A	

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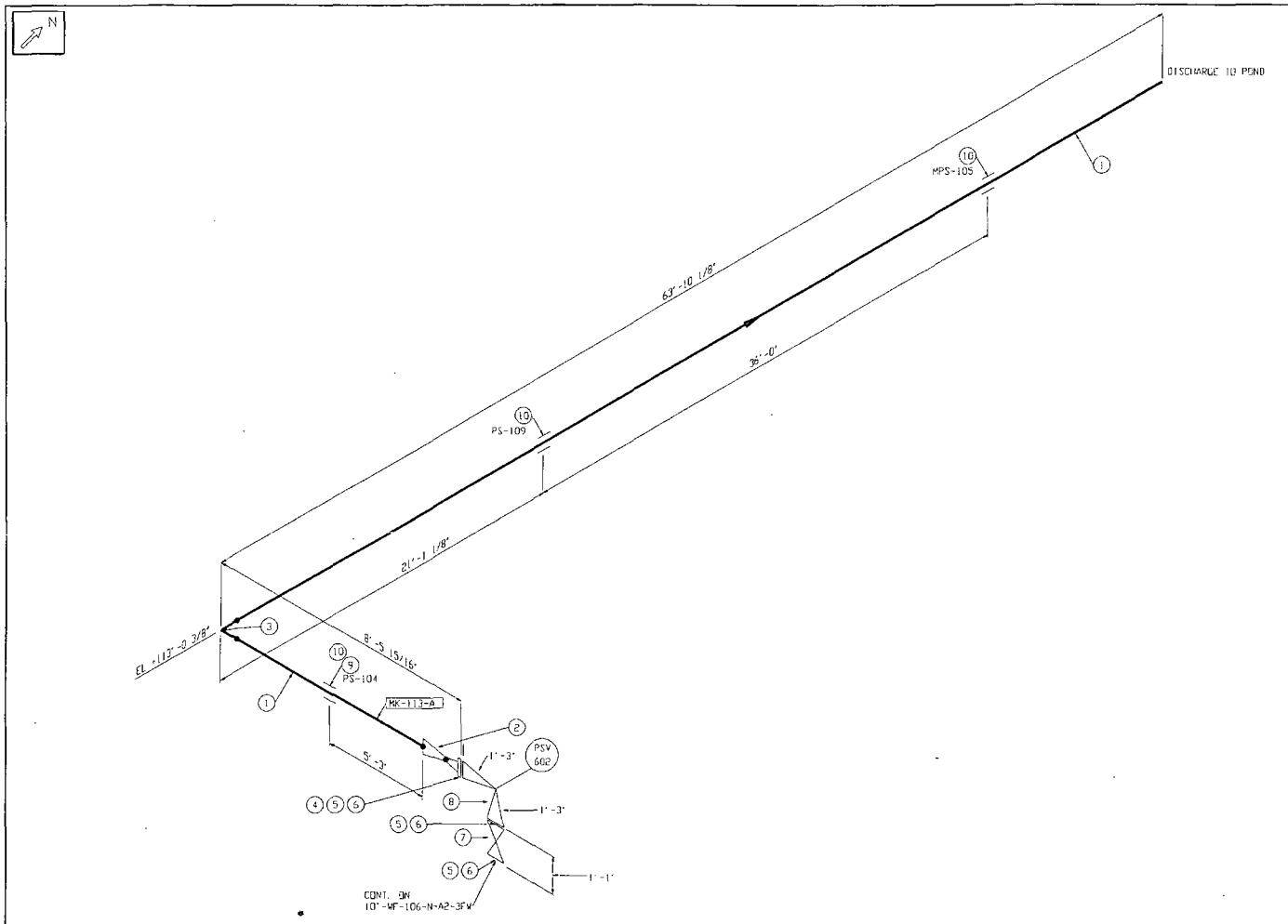
NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISOMETRICS
PSV DISCHARGE FROM PUMP
UNIT 60
FIRE WATER POND #3
ARTESIA, NM

WELD CODE: B31.3 | DWG. NO. | DRG. | REV
CAD NO. MK-112-1 | 10"-WF-112-N-A2-3FV | 1 OF 1 | A



BILL OF MATERIAL

SPEC: 150

MARK	SIZE	DESCRIPTION	QTY
1	12	PIPE, S/STD SMLS, ASTM A-53 GR B	65'-5"
2	12X10	REDUCER, CONC S/STD, ASTM A-234 GR WPB	1
3	12	ELL, 90 LR S/STD, ASTM A-234 GR WPB	1
4	10	FLG, FFWN 150LB, ASTM A-105	1
5	10	GASKET, 1/8" THK, 150LB	3
6	7/8X4 3/4	(12) STUD BOLTS W/ NUTS	3
7	10	GATE VALVE, 125LB FLG	1
8	10	ANGLE VALVE, 150LB FLG (WATTS ACV FIG. 8816)	1
9	12	DIRECTIONAL ANCHOR 50A2C	1
10	12	U-BOLT 50S12	3

PIPE SPOOLS

MK-113-A

ISSUED

MAR 02 2010

FOR APPROVAL

MK-113

NOTE:

1. FIELD VERIFY ALL DIMENSIONS
2. FFU = FIELD FIT-UP. FFU TO INCLUDE 6" OF ADDITIONAL PIPE

DESCRIPTION	REMARKS	CONDITION	PSIG	TEMP (F)
PAINT	PER NAVAJO SPECIFICATIONS	DESIGN	50	100
INSULATION	-	OPERATING	40	60
ELECT TRACE	NO			
NDE	10% (100% FW'S)	HYDRO-TEST	75	
P.W.H.T	NO		APP. BY	DATE
STRESS ANALYSIS	N/A	HYDRO/PNEUM TEST APPROVAL	RP	03/05
HARDNESS CHK	N/A			

REFERENCE DRAWINGS NO.	TITLE
60-V-02-0-01	P&ID

REVISIONS NO.	DATE	DESCRIPTION	BY	CHK.	APP.
A	03/05/10	ISSUED FOR APPROVAL	RP	RP	RP

ENGINEERING RECORD	BY	DATE
DRN:	JF	03/05/10
DES:		
CHK:	RP	
APP.	RP	
AFE No.		
S.E. & C JOB NO.	6174	
PROJ. ENGR:	VG	
SCALE:	N/A	

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TEXAS REGISTERED ENGINEERING FIRM F-515
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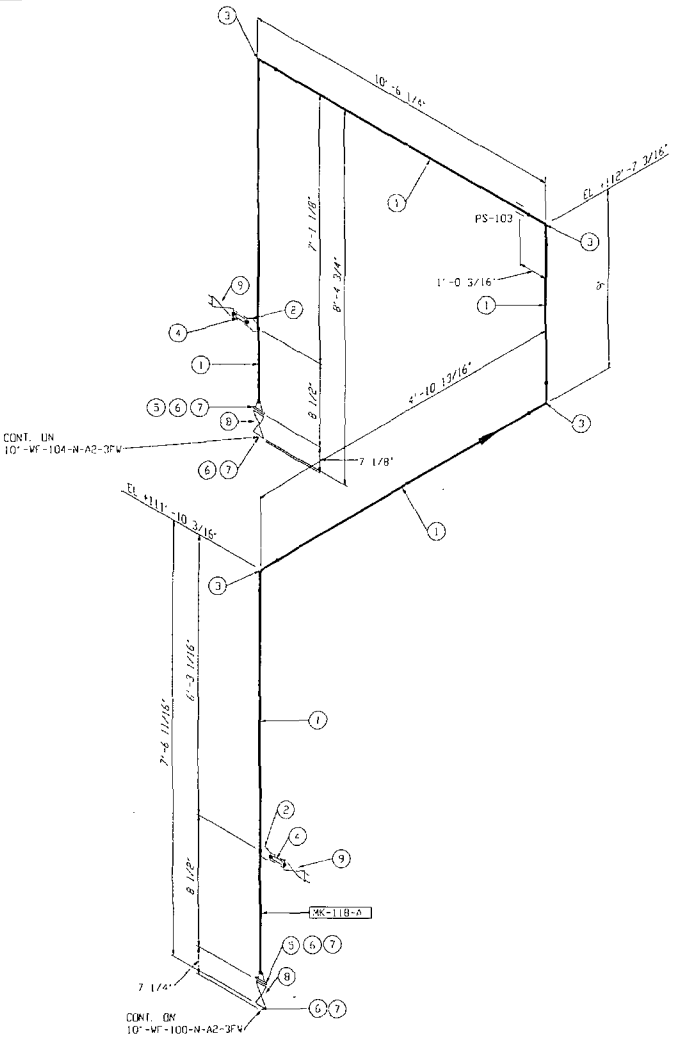
NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISOMETRICS
PSV DISCHARGE FROM PUMP UNIT 60
FIRE WATER POND #3
ARTESIA, NM

WELD CODE: B31.3 | DWG. NO. | DRG | REV
CAD NO. MK-113-1 | 10"-WF-113-N-A2-3FW | 1 OF 1 | A



BILL OF MATERIAL — SPEC: 150

MARK	SIZE	DESCRIPTION	QTY
1	2	PIPE, S/XS SMLS, ASTM A-106 GR B	28' 7"
2	2X3/4	SOCKOLET, 3000LB FS, ASTM A-105	2
3	2	ELL, 90 LR S/XS, ASTM A-234 GR WPB	4
4	3/4	NIPPLE, S/XXS SMLS, ASTM A-106 GR B PBE (4" LG)	2
5	2	FLG, RFWN 150LB S/XS BORE, ASTM A-105	2
6	2	GASKET, 1/8" THK, 150LB	4
7	5/8X3 1/4	(4) STUD BOLTS W/ NUTS	4
8	2	GATE VALVE, 150LB FLG, RF	2
9	3/4	GATE VALVE, 800LB SWXTHRD	2
	PIPE SPOOLS		
	MK-118-A		

ISSUED

MAR 07 2010

FOR APPROVAL

MK-118

NOTE:

1. FIELD VERIFY ALL DIMENSIONS.
2. FFU = FIELD FIT-UP. FFU TO INCLUDE 6" OF ADDITIONAL PIPE.

DESCRIPTION	REMARKS
PAINT	PER NAVAJO SPECIFICATIONS
INSULATION	-
ELECT TRACE	NO
NDE	10% (100% FW's)
P.W.H.T.	NO
STRESS ANALYSIS	N/A
HARDNESS CHK	N/A

CONDITION	PSIG	TEMP (F)
DESIGN	200	100
OPERATING	182	60
HYDRO-TEST	300	

HYDRO/PNEU TEST APPROVAL	APP. BY	DATE
	RP	03/05

REFERENCE DRAWINGS

NO.	TITLE
60-V-02-D-01	P&ID

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REVISIONS

NO.	DATE	DESCRIPTION	BY	CHK.	APP.
A	03/05/10	ISSUED FOR APPROVAL		RP	RP

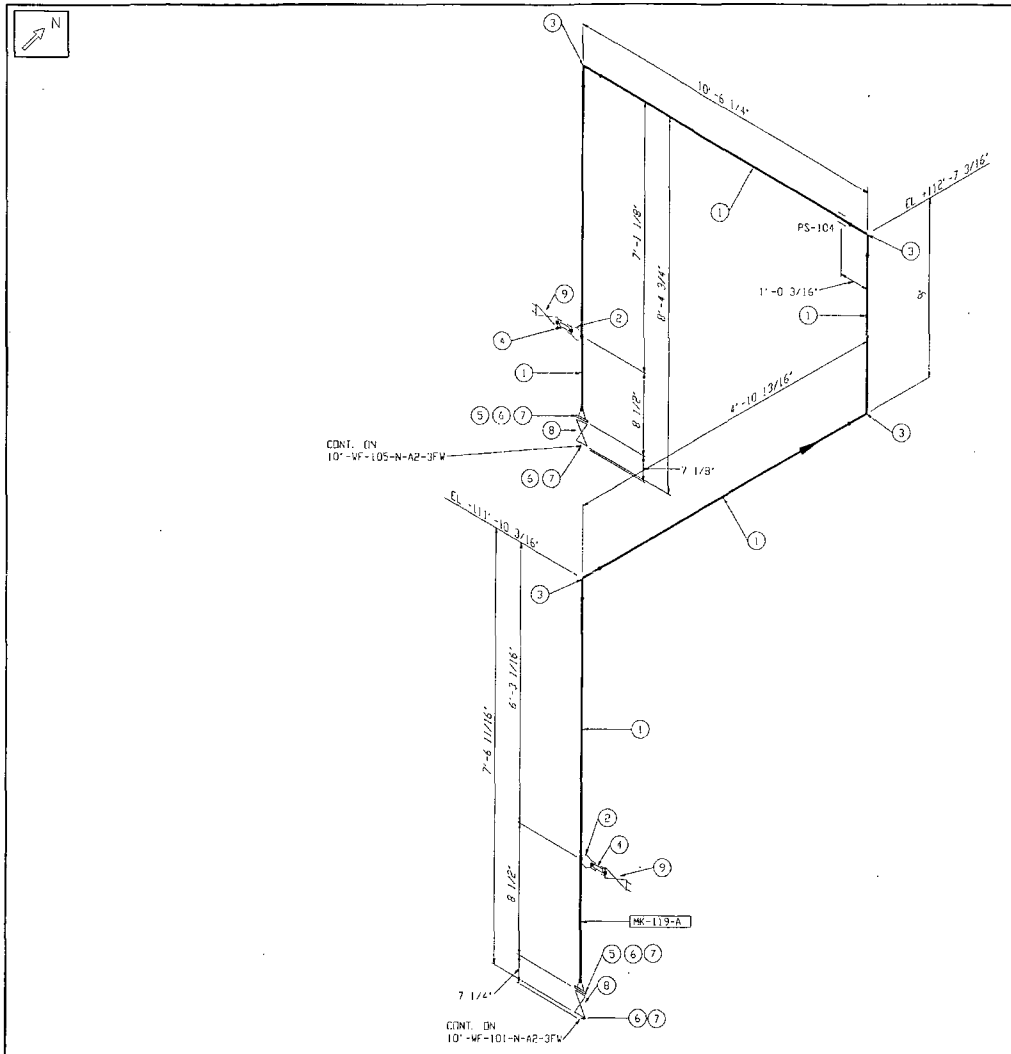
ENGINEERING RECORD

	BY	DATE
DRN	JW	03/05/10
DES:		
CHK:	RP	
APP:	RP	
AFE No.		
S E & C JOB NO.	6174	
PROJ. ENGR:	VG	
SCALE:	N/A	

NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISOMETRICS
BYPASS LINE
UNIT 60
FIRE WATER POND #3
ARTESIA, NM

WELD CODE: B31.3	DWG. NO.	DRG.	REV
CAD NO. MK-118-1	2"-WU-118-N-A2-3FW	1 OF 1	A



BILL OF MATERIAL

SPEC. 150

MARK	SIZE	DESCRIPTION	QTY
1	2	PIPE, S/XS SMLS, ASTM A-106 GR B	28' 7"
2	2X3/4	SOCKOLET, 3000LB FS, ASTM A-105	2
3	2	ELL, 90 LR S/XS, ASTM A-234 GR WPB	4
4	3/4	NIPPLE, S/XXS SMLS, ASTM A-106 GR B PBE (4" LG)	2
5	2	FLG, RFWN 150LB S/XS BORE, ASTM A-105	2
6	2	GASKET, 1/8" THK, 150LB	4
7	5/8X3 1/4	(4) STUD BOLTS W/ NUTS	4
8	2	GATE VALVE, 150LB FLG, RF	2
9	3/4	GATE VALVE, 800LB SW×THRD	2

PIPE SPOOLS

MK-119-A

ISSUED

MAR 07 2019

FOR APPROVAL

MK-119

NOTE:

1. FIELD VERIFY ALL DIMENSIONS
2. FFU = FIELD FIT-UP, STU TO INCLUDE 6" OF ADDITIONAL PIPE

DESCRIPTION	REMARKS	CONDITION	PSIG	TEMP (F)
PAINT	PER NAVAJO SPECIFICATIONS	DESIGN	200	100
INSULATION	-	OPERATING	182	60
ELECT TRACE	NO			
NDE	10% (100% FW's)	HYDRO-TEST	300	
P.W.H.T	NO	-	APP. BY	DATE
STRESS ANALYSIS	N/A	HYDRO/PNEUM TEST APPROVAL	RP	03/05
HARDNESS CHK.	N/A			

REFERENCE DRAWINGS NO.	TITLE
60-V-02-D-01	P&ID

REVISIONS NO.	DATE	DESCRIPTION	BY	CHK.	APP.
A	03/05/19	ISSUED FOR APPROVAL		RP	RP

ENGINEERING RECORD	BY	DATE
DRN:	JF	03/05/19
DES:		
CHK:	RP	
APP:	RP	
AFE No.		
S E & C JOB NO.	6174	
PROJ. ENGR:	MG	
SCALE:	N/A	

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TEXAS REGISTERED ENGINEERING FIRM F-518
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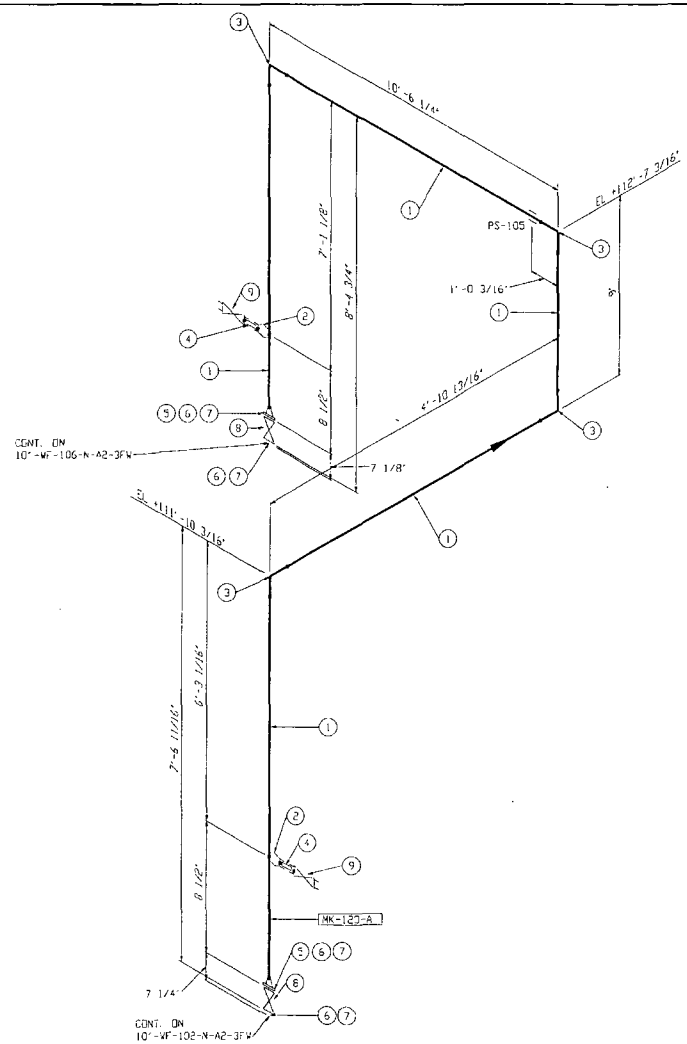
NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISOMETRICS
BYPASS LINE
UNIT 60
FIRE WATER POND #3
ARTESIA, NM

WELD CODE: B31.3 | DWG. NO.
CAD NO. MK-119-1 | 2"-WU-119-N-A2-3FW

DRG. 1 OF 1 | REV A



BILL OF MATERIAL — SPEC: 150

MARK	SIZE	DESCRIPTION	QTY
1	2	PIPE, S/XS SMLS. ASTM A-106 GR B	28' 7"
2	2X3/4	SOCKOLET, 3000LB FS, ASTM A-105	2
3	2	ELL, 90 LR S/XS, ASTM A-234 GR WP3	4
4	3/4	NIPPLE, S/XXS SMLS. ASTM A-106 GR B PBE (4" LG)	2
5	2	FLG. RFWN 150LB S/XS BORE. ASTM A-105	2
6	2	GASKET, 1/8" THK, 150LB	4
7	5/8X3 1/4	(4) STUD BOLTS W/ NUTS	4
8	2	GATE VALVE, 150LB FLG. RF	2
9	3/4	GATE VALVE, 800LB SWxTHRD	2

PIPE SPOOLS

MK-120-A

ISSUED

MAR 07 2010

FOR APPROVAL

MK-120

NOTE:

1. FIELD VERIFY ALL DIMENSIONS
2. FFU = FIELD FIT-UP. FFU TO INCLUDE 6" OF ADDITIONAL PIPE

DESCRIPTION	REMARKS	CONDITION	PSIG	TEMP. (F)
PAINT	PER NAVAJO SPECIFICATIONS	DESIGN	200	100
INSULATION	--	OPERATING	182	60
ELECT TRACE	NO			
NDE	10% (100% FW's)	HYDRO-TEST	300	
P.W.H.T	NO	HYDRO/PNEUM TEST APPROVAL	APP. BY: RP	DATE: 03/05
STRESS ANALYSIS	N/A			
HARDNESS CHK	N/A			

REFERENCE DRAWINGS

NO.	TITLE
60-V-02-0-01	P&ID

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHK.	APP.
A	03/05/10	ISSUED FOR APPROVAL		RP	RP

ENGINEERING RECORD

	BY	DATE
DRN:	JY	03/05/10
DES:		
CHK.	RP	
APP:	RP	
AFE No.		
S E & C JOB NO.	6174	
PROJ. ENGR:	VG	
SCALE:	N/A	

SAULSBURY
ENGINEERING & CONSTRUCTION
A SAULSBURY INDUSTRIES COMPANY
TEXAS REGISTERED ENGINEERING FIRM F-5414
WWW.SI-TX.COM

NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO

FABRICATION ISOMETRICS
BYPASS LINE
UNIT 60
FIRE WATER POND #3
ARTESIA, NM

WELD CODE: B31.3 | DWG. NO. 2"-WU-120-N-A2-3FW | DRG. 1 OF | REV. A

CAD NO. MK-120-1