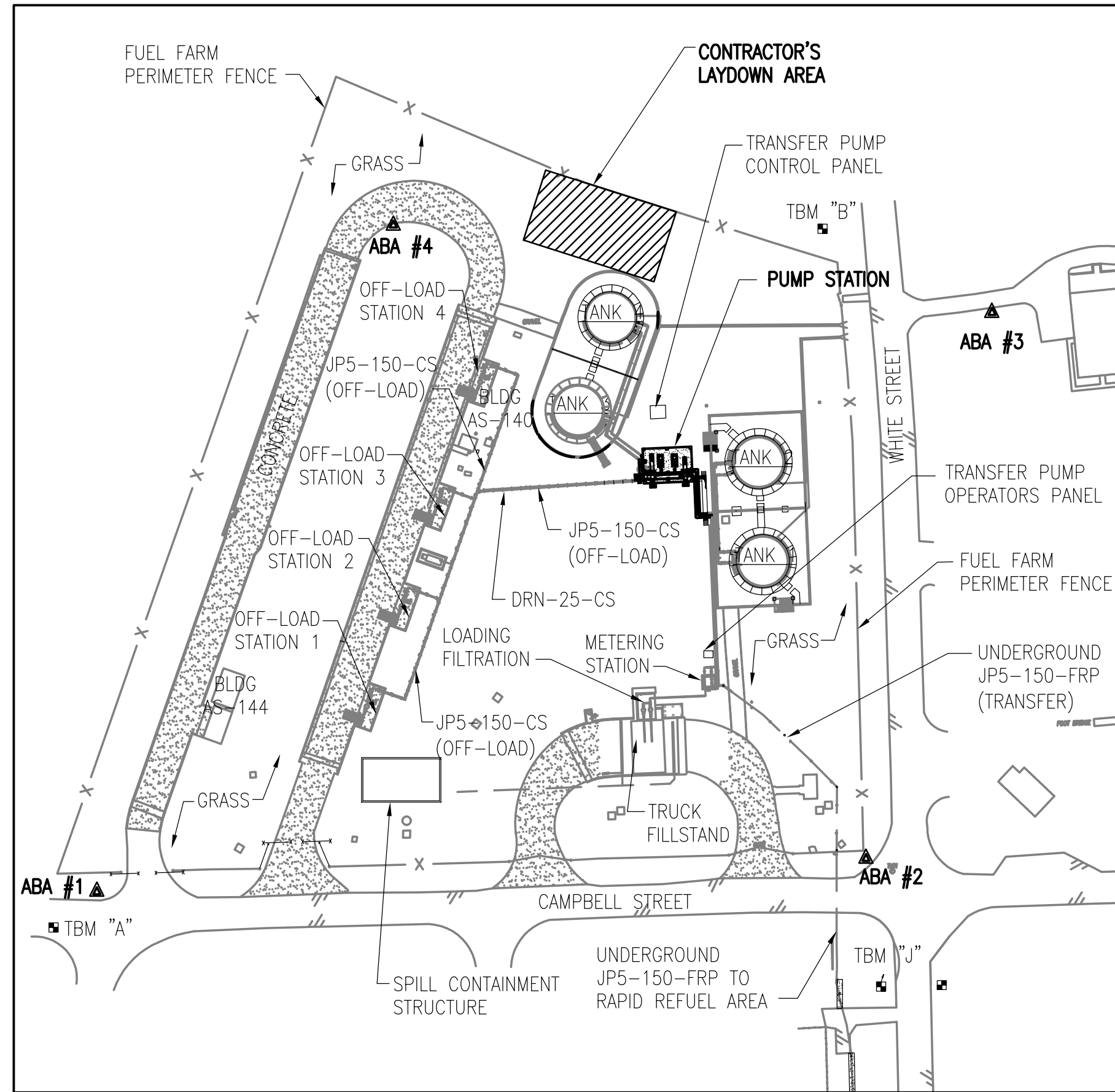




FILE NAME: G:\09 Jobs\09-057 Pump Station Upgrades - MCA5 New River\09\057-002 GENERAL NOTES.dwg LAYOUT NAME: G-002 GENERAL NOTES PLOTTED: Wednesday, February 24, 2010 - 4:52pm USER: administrator



PLAN NORTH  
**TANK FARM SITE PLAN**  
SCALE: 1:1000

**GENERAL NOTES**

- AT THE START OF CONSTRUCTION, THE FACILITY SHALL BE ASSUMED TO BE IN AN OPERATIONAL CONDITION. THE CONTRACTOR SHALL ASSUME THAT ALL MECHANICAL (PIPING, PUMPS, ETC.) AND ELECTRICAL (TRANSFORMERS, MOTOR CONTROL CENTERS, DISTRIBUTION PANELS, LIGHTING, ETC.) SYSTEMS ARE INTACT, FULL OF PRODUCT, ENERGIZED AND OPERATIONAL UNLESS OTHERWISE NOTED. THE GOVERNMENT WILL RETAIN OPERATIONAL CONTROL OF THE EXISTING FACILITY THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR TAKING MECHANICAL AND ELECTRICAL SYSTEMS OUT OF OPERATION TO PERFORM THE INDICATED WORK, AND THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR RETURNING THE SYSTEM BACK TO OPERATIONAL CONDITION. NO EXCEPTION SHALL BE PERMITTED, UNLESS OTHERWISE INDICATED. FOR EXAMPLE, AT THE START OF THE PROJECT THE CONTRACTOR SHALL BE RESPONSIBLE FOR, BUT NOT LIMITED TO, REMOVING FLANGES, BOLTS AND GASKETS, DISCONNECTION OF POWER AND UTILITIES, ETC. AT THE END OF THE PROJECT, THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR, BUT NOT LIMITED TO, PROVIDING FLANGE BOLTS AND GASKETS, FILLING THE SYSTEM WITH PRODUCT, CONNECTION OF POWER AND UTILITIES, START-UP AND COMMISSIONING, ETC. ALL FUEL REQUIRED FOR START-UP AND COMMISSIONING WILL BE PROVIDED BY THE GOVERNMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL TRUCKS AND PERSONNEL REQUIRED FOR THE TESTING, STARTING AND COMMISSIONING PHASES OF THE PROJECT.
- DRAWINGS INDICATE GENERAL DESIGN AND LAYOUT REQUIREMENTS AND SHALL NOT BE CONSIDERED FABRICATION DRAWINGS OR SHOP DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO GENERATE FABRICATION DRAWINGS AND SHOP DRAWINGS WHEN NECESSARY AND/OR SPECIFIED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE CONSTRUCTION BY THE VARIOUS TRADES AND DISCIPLINES EMPLOYED BY THE CONTRACTOR. NO ADDED COMPENSATION SHALL BE PERMITTED FOR VARIATION DUE TO LACK OF COORDINATION BY THE CONTRACTOR BETWEEN TRADES AND DISCIPLINES.
- DRAWINGS SHOW MECHANICAL AND ELECTRICAL SYSTEMS IN DIMENSIONED PLANS AND SECTIONS. THE DRAWINGS DO NOT ATTEMPT TO SHOW EXACT DETAILS OF ALL PIPING, CONDUIT, EQUIPMENT, OFFSETS, FITTINGS, APPURTENANCES, ETC. THAT MAY BE REQUIRED TO SUIT COORDINATION WITH SELECTED EQUIPMENT. FIELD VERIFY ALL EXISTING PIPE, CONDUIT, EQUIPMENT SIZES, ELEVATIONS, PENETRATIONS, INTERFACES WITH NEW WORK, ETC. AND VERIFY ALL DIMENSIONS, ELEVATIONS, CONNECTIONS, ETC. THAT ARE DETERMINED BY EQUIPMENT SELECTION. ADJUST SYSTEMS TO ENSURE THAT EQUIPMENT, PIPE, CONDUIT, APPURTENANCES, ETC. CAN BE INSTALLED IN THE ALLOTTED SPACE. NO ADDED COMPENSATION SHALL BE PERMITTED FOR VARIATION DUE TO EQUIPMENT SELECTION.
- CLEANUP OF ANY FUEL SPILLED AND/OR ANY REQUIRED REMEDIATION OF SOIL OR GROUNDWATER RESULTING FROM A FUEL SPILL DURING THIS PROJECT SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- THESE PLANS DO NOT GUARANTEE THE EXISTENCE, NONEXISTENCE, TYPE, OR LOCATION OF UNDERGROUND UTILITIES. NO SUBSURFACE UTILITY INVESTIGATION WAS PERFORMED. THE UTILITIES SHOWN ARE BASED ON ABOVEGROUND UTILITY STRUCTURES SUCH AS MANHOLES, VALVE BOXES, AND AVAILABLE UTILITY MAPS. THE CONTRACTOR SHALL LOCATE AND VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL HAND DIG WITHIN THREE FEET OF ALL EXISTING UTILITIES.
- ALL WORK AND MATERIAL IS NEW AND SHALL BE PROVIDED BY THE CONTRACTOR UNLESS OTHERWISE NOTED. EXISTING FEATURES ARE TYPICALLY SHOWN USING A LIGHT LINE WEIGHT SIMILAR TO THIS TEXT. NEW FEATURES ARE TYPICALLY SHOWN USING A HEAVY LINE WEIGHT SIMILAR TO THIS TEXT AND ARE DELINEATED WITH CONNECT TO EXISTING SYMBOLS.
- THE PUMP STATION UPGRADES INDICATED ON THESE PLANS WERE ORIGINALLY DESIGNED AS PART OF ANOTHER PROJECT THAT WAS COMPLETED IN 2008, BUT WAS REMOVED FROM THAT SCOPE OF WORK. THESE PLANS SHOW THE PUMP STATION UPGRADES INCLUDING THE CONNECTIONS TO THE EXISTING SYSTEM.

**SEQUENCE OF CONSTRUCTION**

- ALL OUTAGES ARE CALENDAR DAYS, NOT WORKING DAYS. AS BASIS OF BIDS, THEY SHALL START AT 5:00 P.M. ON FRIDAY AND END ON 8:00 A.M. OF THE LAST DAY. FOR EXAMPLE, A FOUR DAY OUTAGE SHALL START ON FRIDAY AND END ON MONDAY. CONTRACTOR SHALL GIVE (30) CALENDAR DAYS NOTICE FOR ALL OUTAGES.
- THE CONTRACTOR SHALL HAVE A (3) DAY OUTAGE TO CONNECT THE TIE-IN FROM THE TANK T-1 ISSUE AND RECEIPT PIPING INTO THE TANK T-2 ISSUE AND RECEIPT PIPING. DURING THIS OUTAGE, TANKS T-3 AND T-4 SHALL BE FULLY OPERATIONAL, BUT TANKS T-1 AND T-2 WILL BE OUT OF SERVICE.
- UPON COMPLETION OF TANKS T-1 AND T-2 RECEIPT AND ISSUE TIE-IN, THE CONTRACTOR SHALL HAVE A (3) DAY OUTAGE TO CONNECT THE TIE-IN FROM THE TANK T-3 ISSUE AND RECEIPT PIPING INTO THE TANK T-4 ISSUE AND RECEIPT PIPING. DURING THIS OUTAGE, TANKS T-1 AND T-2 SHALL BE FULLY OPERATIONAL, BUT TANKS T-3 AND T-4 WILL BE OUT OF SERVICE.
- UPON COMPLETION OF TANKS T-3 AND T-4 ISSUE AND RECEIPT PIPING TIE-INS, THE CONTRACTOR SHALL HAVE A (3) DAY OUTAGE TO CONNECT THE TEMPORARY TIE-IN FROM THE TANKS T-3 AND T-4 ISSUE LINE TO THE EXISTING 200 mm SUCTION HEADER FOR PUMPS P-1 AND P-2. DURING THIS OUTAGE TANKS T-1 AND T-2 SHALL BE FULLY OPERATIONAL, BUT TANKS T-3 AND T-4 WILL BE OUT OF SERVICE.
- UPON COMPLETION OF TANK T-3 TEMPORARY ISSUE TIE-IN, THE CONTRACTOR SHALL HAVE A (3) DAY OUTAGE TO CONNECT THE TEMPORARY TIE-IN FROM THE TANK T-3 RECEIPT LINE TO THE EXISTING 150 mm TRUCK OFF-LOADING SUPPLY PIPING, UP TO AND INCLUDING THE NEW DOUBLE BLOCK AND BLEED VALVE LOCATED AT THE NEW PUMP STATION. DURING THIS OUTAGE, ALL TANKS SHALL BE CAPABLE OF ISSUING FUEL, BUT NONE OF THE TANKS WILL BE ABLE TO RECEIVE FUEL.
- UPON COMPLETION OF TANK T-3 TEMPORARY RECEIPT TIE-IN, THE CONTRACTOR SHALL DEMOLISH THE EXISTING P-3 AND P-4 PUMP STATION IN ITS ENTIRETY, INCLUDING PIPING, EQUIPMENT, CONCRETE, ELECTRICAL AND CONTROL SYSTEMS. THE DEMOLITION OF THE ELECTRICAL POWER SHALL BE COMPLETE UP TO AND INCLUDING THE POLE-MOUNTED TRANSFORMERS. CONTROL SYSTEM DEMOLITION SHALL BE AS INDICATED. THE NEW PUMP STATION UP TO AND INCLUDING THE NEW DOUBLE BLOCK AND BLEED VALVES WILL THEN BE FULLY CONSTRUCTED, INCLUDING COMPLETION OF ELECTRICAL SERVICE AND TIE-IN TO EXISTING PUMP CONTROL RACK. ALL THE TANKS SHALL BE FULLY OPERATIONAL USING PUMPS P-1 AND P-2 DURING THIS OUTAGE.
- UPON COMPLETION OF NEW PUMP PAD, THE CONTRACTOR SHALL HAVE A (3) DAY OUTAGE TO CONNECT THE TIE-INS FROM THE 150 mm TRUCK OFF-LOADING SUPPLY PIPING TO THE NEW PUMP STATION. DURING THIS OUTAGE, THE TANKS WILL BE ABLE TO ISSUE FUEL BUT WILL NOT BE ABLE TO RECEIVE FUEL.
- UPON COMPLETION OF THE OFF-LOADING TIE-INS, THE CONTRACTOR SHALL HAVE A (3) DAY OUTAGE TO CONNECT THE TIE-INS FROM THE EXISTING 150 mm TRANSFER PIPING TO THE NEW PUMP STATION AND CONNECT THE TANK T-1 AND T-2 ISSUE PIPING TO THE NEW PUMP STATION. DURING THIS OUTAGE ALL TANKS SHALL BE ABLE TO RECEIVE FUEL BUT TANKS T-1 AND T-2 WILL NOT BE ABLE TO ISSUE FUEL.
- UPON COMPLETION OF THE TRANSFER LINE TIE-INS, THE CONTRACTOR SHALL HAVE A (1) DAY OUTAGE TO CONNECT THE TIE-INS FROM THE TANK T-1 AND T-2 RECEIPT PIPING TO THE NEW PUMP STATION. DURING THIS OUTAGE TANKS T-3 AND T-4 WILL BE FULLY OPERATIONAL, BUT TANKS T-1 AND T-2 WILL NOT BE ABLE TO RECEIVE FUEL.
- UPON COMPLETION OF TANK T-1 AND T-2 RECEIPT TIE-IN, NEW PUMP STATION SHALL BE COMPLETE. AT THIS TIME P-1 AND P-2 PUMP STATIONS SHALL BE DEMOLISHED IN ITS ENTIRETY, INCLUDING PIPING, EQUIPMENT, CONCRETE, ELECTRICAL AND CONTROL SYSTEMS.

**PROJECT SCOPE**

- THIS PROJECT WILL PROVIDE A NEW JP-5 PUMP STATION AND DEMOLISH THE EXISTING JP-5 PUMP STATION. THE NEW JP-5 PUMP STATION SHALL INCLUDE (2) 37.8 L/s CENTRIFUGAL PUMPS AND ALL ASSOCIATED PIPING, VALVES, EQUIPMENT AND APPURTENANCES.
- ANOTHER PROJECT TO REMOVE AND REPLACE CONTAMINATED SOILS WILL BE UNDER WAY AT THE TANK FARM AT THE SAME TIME AS THIS PROJECT. COORDINATION WILL BE REQUIRED WITH THE CONTAMINATED SOILS CONTRACTOR. THIS COORDINATION SHALL BE ACCOMPLISHED THROUGH COMMUNICATION WITH THE CONTRACTING OFFICER, WHO WILL HAVE AUTHORITY OVER BOTH PROJECTS.

**GOVERNING REGULATIONS**

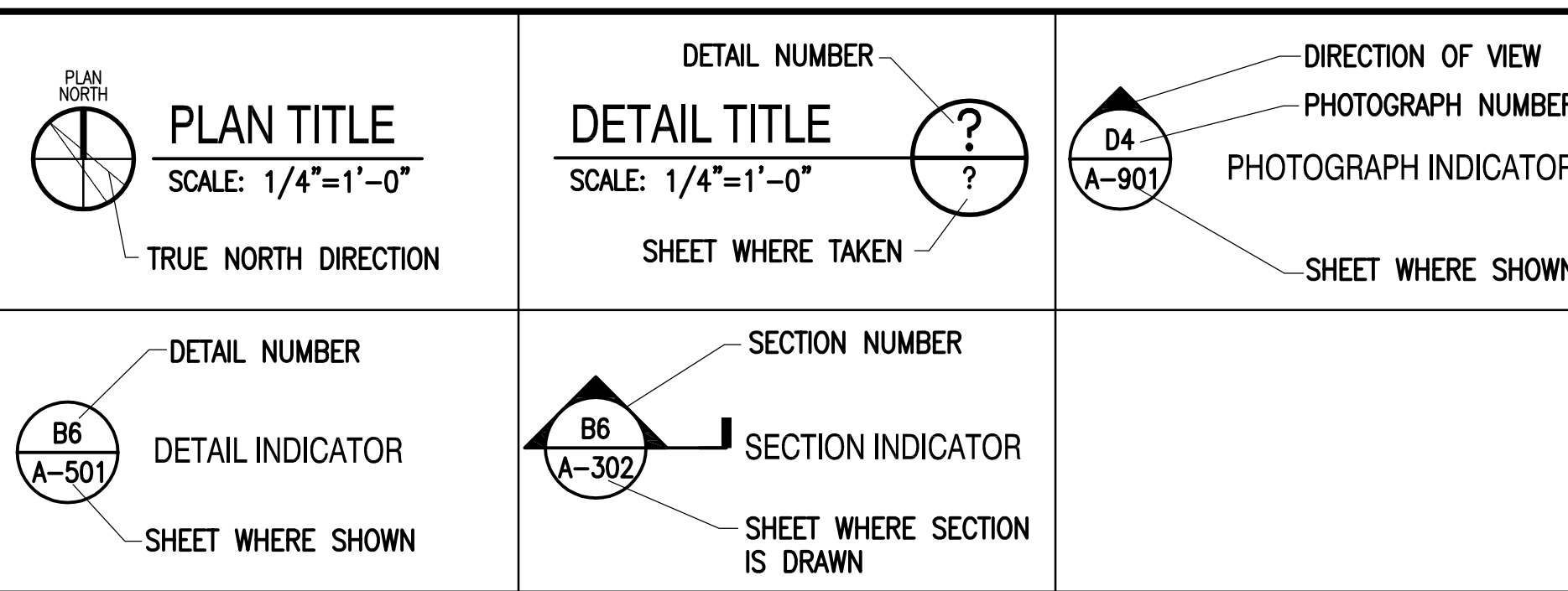
**UNITED FACILITIES CRITERIA**  
UFC 3-460-01 "DESIGN: PETROLEUM FUELING FACILITIES"  
UFC 3-600-01 "DESIGN: FIRE PROTECTION ENGINEERING FOR FACILITIES"  
**ELECTRICAL CODE**  
NFPA 70 "NATIONAL ELECTRIC CODE"

**FIRE PREVENTION & LIFE SAFETY CODES**  
NFPA 1 "UNIFORM FIRE CODE"  
NFPA 101 "LIFE SAFETY CODE"  
NFPA 30 "FLAMMABLE AND COMBUSTIBLE LIQUIDS CODE"

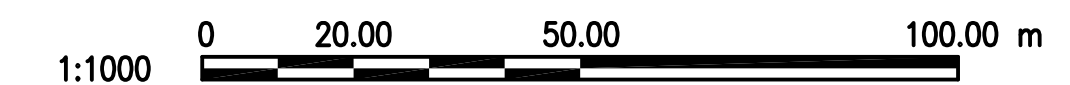
**CONTAMINATED SOILS**

- NO ENVIRONMENTAL ASSESSMENT OF THE SOIL OR GROUNDWATER HAS BEEN PERFORMED ON THE SITE BY THE DESIGNER. FOR BASIS OF BID, ASSUME ALL SOIL AND GROUNDWATER ENCOUNTERED DURING CONSTRUCTION ACTIVITIES IS CONTAMINATED. IN ADDITION, ANOTHER PROJECT WILL BE UNDER WAY BY A SEPARATE CONTRACTOR TO REMOVE AND REPLACE CONTAMINATED SOILS AT THE TANK FARM. THE CONTAMINATED SOILS CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL, TRANSPORT, STORAGE, AND DISPOSAL OF ALL CONTAMINATED SOILS ENCOUNTERED AT THIS SITE.

**GENERAL SYMBOLS**



**GRAPHIC SCALE(S):**



ALL DIMENSIONS WITHOUT A DECIMAL POINT ARE MILLIMETERS AND ALL THOSE WITH A DECIMAL POINT ARE METERS, UNLESS OTHERWISE NOTED

**AUSTIN BROCKENBROUGH & ASSOCIATES, L.L.P.**  
Consulting Engineers  
P.O. Box 4800 Chester, Virginia 23831

APPR. DATE

DESCRIPTION

SYN

COMMONWEALTH OF VIRGINIA  
BRYAN M. STRAYER  
Lic. No. 040268  
PROFESSIONAL ENGINEER

APPROVED

FOR COMMANDER NAVFAC DATE

APPROVED

ACTIVITY - SATISFACTORY TO DATE

PM/DM

DES: DRC DRW: MHK CHK: BMS

FIRE PROTECTION

BRANCH MANAGER

CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND  
JACKSONVILLE, NORTH CAROLINA  
MCA5 NEW RIVER  
MILCON P-725, PUMP STATION UPGRADES  
GENERAL NOTES

CODE ID. NO. 80091 SIZE D

SCALE: AS NOTED

MAXIMO NO.

JOB ORDER NO.

WORK ORDER NO. 859348

CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12556436

SHEET 2 OF 21

**G-002**

DRAWFORM REVISION: 6 AUG 2007

**CIVIL LEGEND**

EXISTING	NEW	DESCRIPTION
—x—x—	△	BASELINE (SURVEY)
---	△	FENCE
---		MINOR CONTOURS (0.25/M INTERVAL)
5.0		MAJOR CONTOURS (0.5/M INTERVAL)
ST-200	S-250	UNDERGROUND UTILITY (SEE ABBREVIATIONS)
JP5-300		ABOVEGROUND UTILITY (SEE ABBREVIATIONS)
— — —		ABOVEGROUND PIPE SUPPORTS
==		CONCRETE CURB
— — —	— — —	TEMPORARY SILT FENCE
— — —	— — —	DITCH OR SWALE
— — —		HANDRAIL OR GUARDRAIL
□ CB	⊙ CB	CATCH BASIN
□ MH/HHL		MANHOLE OR HANDHOLE (AS INDICATED)
○ CO		CLEANOUT
⊙		FIRE HYDRANT
⊙ PIV	⊙ PIV	POST INDICATOR VALVE
⊙ WV		WATER VALVE W/BOX
⊙ ST		STORM MANHOLE/DRAIN MANHOLE
⊙		POWER POLE
— — —		DOWN GUY AND ANCHOR
⊙	⊙	CONNECT TO EXISTING
△ ABA #3		SURVEY TRAVERSE POINT
■		SURVEY BENCH MARK
△		CONTAINMENT DRAINAGE STRUCTURE NUMBER
JP5-200	JP5-200	ABOVEGROUND LINE
— — —		PIPE UTILITY LINE ABBREVIATION
		SIZE
▨		BUILDING/CANOPY
▨		BITUMINOUS CONCRETE
▨	▨	CONCRETE (PLAN)

**SURVEY NOTES**

- SURVEY NOTES:**
- THE SURVEY INFORMATION IS BASED ON FIELD SURVEYS CONDUCTED BY AUSTIN BROCKENBROUGH & ASSOCIATES, LLP ON 11/14-11/18/2005 AND 12/12-12/15/2005.
  - INFORMATION ON EXISTING UTILITIES AND FACILITIES WAS DERIVED FROM LOCATED SURFACE FEATURES AND EXISTING UTILITY MARK-OUTS.
  - ELEVATIONS ARE IN METERS AND ARE BASED ON THE NGVD 1929 DATUM. THE MONUMENTS USED ARE DESCRIBED BELOW.
  - HORIZONTAL CONTROL IS BASED ON NAD83 METRIC COORDINATES WITH THE MONUMENTS USED INDICATED BELOW.
  - FOR PLAN SHOWING ALL SITE CONTROL POINTS SEE "TANK FARM SITE PLAN" ON SHEET G-002
  - THE FOLLOWING BASE CONTROL POINTS WERE USED IN SETTING UP THE EXISTING SURVEY BASELINE.

**HORIZONTAL:**

POINT "HEINZ"  
N 3 843 294.797  
E 276 970.664  
ELEVATION: 7.2

POINT "PW-26"  
N 3 843 831.99  
E 275 366.84  
ELEVATION: 6.76

**VERTICAL:**

POINT "N-27"  
ELEVATION: 5.806

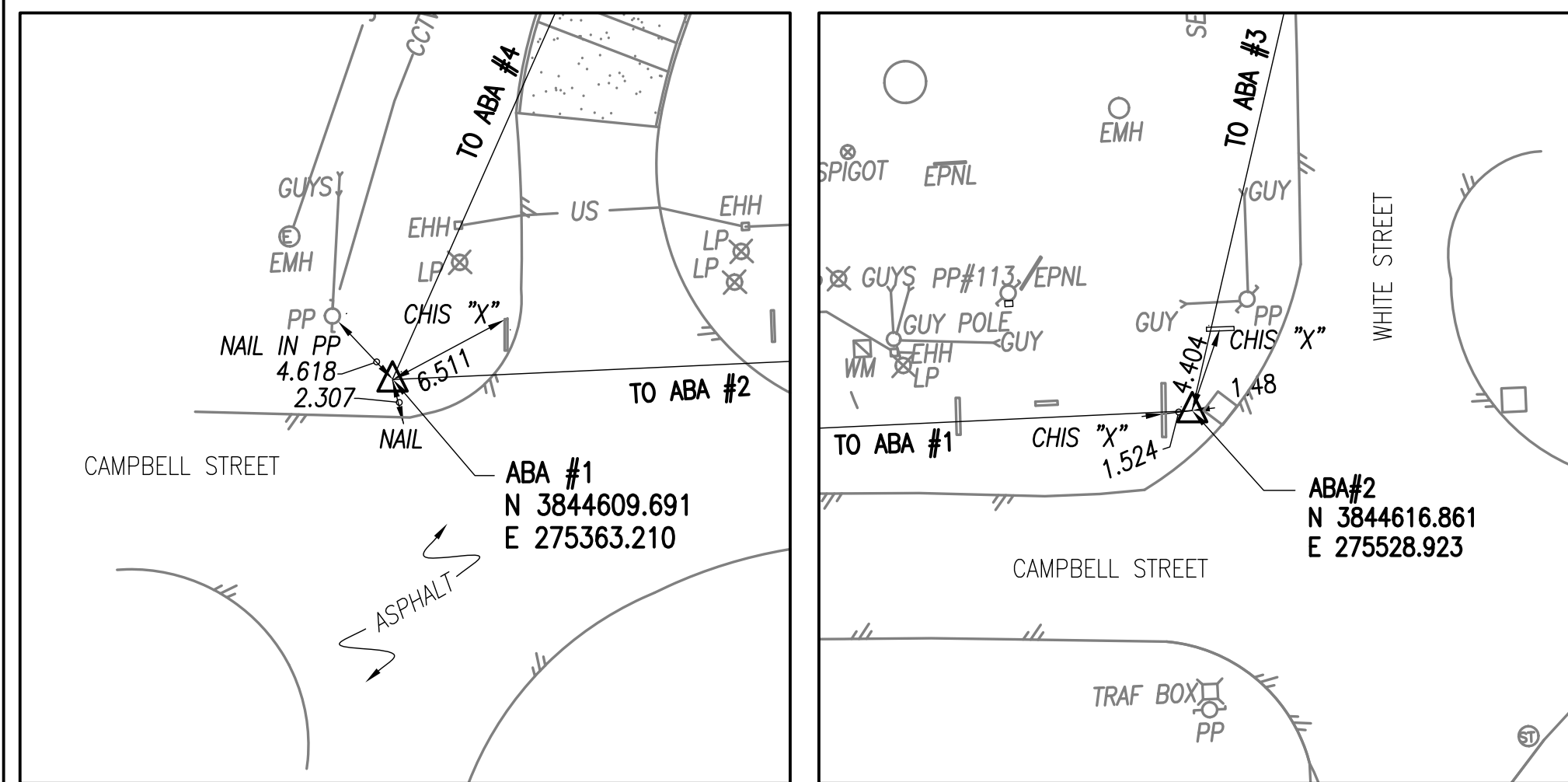
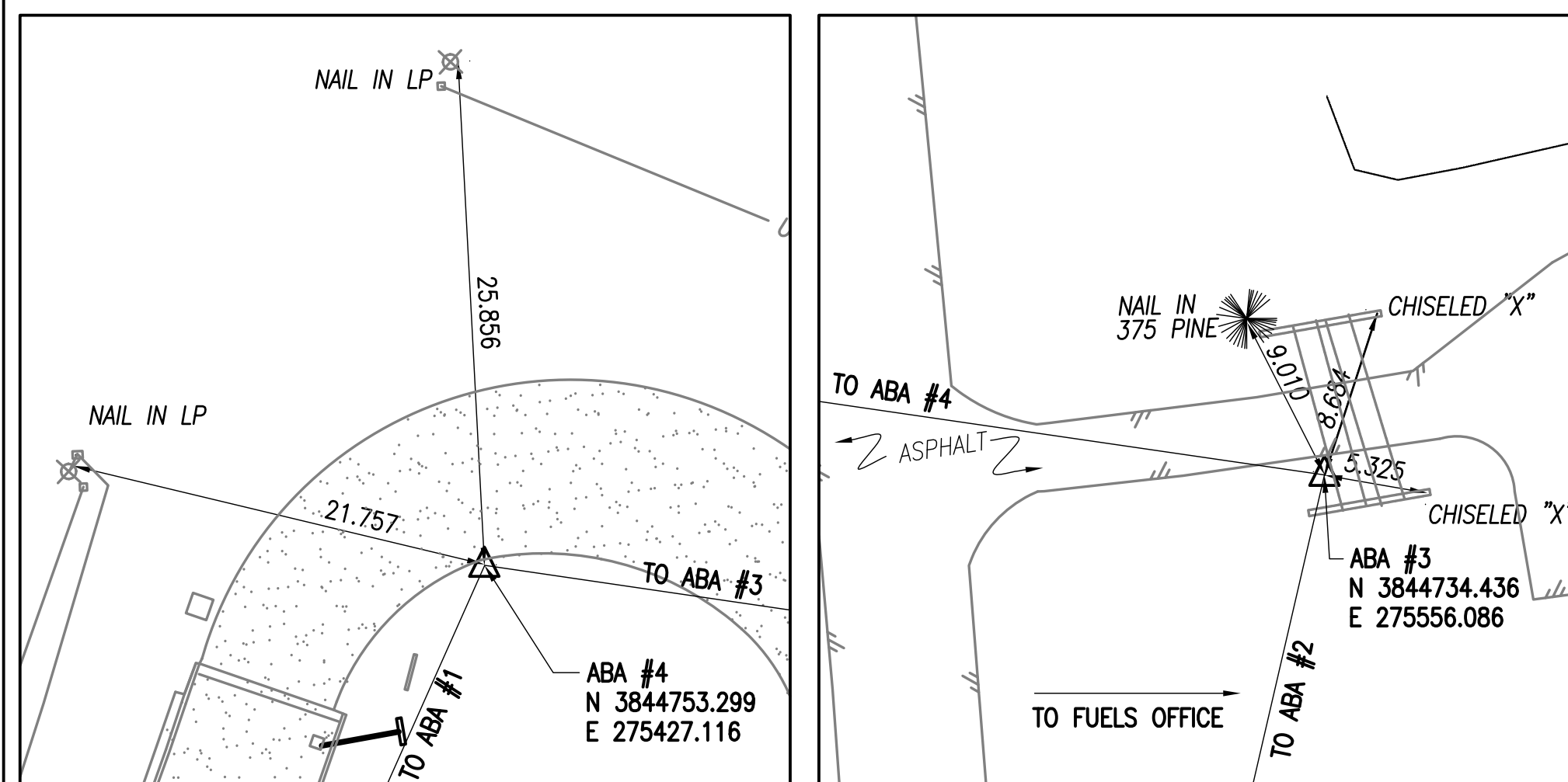
POINT "S-116"  
ELEVATION: 5.274

- THE FOLLOWING TEMPORARY BENCHMARKS WERE USED TO ESTABLISH THE EXISTING SURVEY.

TBM "A"  
ELEV=5.285  
CHISELED SQ NW COR  
CONC HDWL

TBM "B"  
ELEV=5.714  
SPIKE NAIL LP, NE  
CORNER OF TANK FARM

TBM "J"  
ELEV=5.526  
CHISELED SQ SE COR  
CORNER HDWL



**ABBREVIATIONS**

BLDG	BUILDING	WM	WATER MAIN
BLRDS	BOLLARDS	N/S	AIL SET (SURVEY)
BM	BENCHMARK	NE	NORTH EAST
CB	CATCH BASIN	PVC	POLYVINYL CHLORINE
CO	CLEANOUT	PIV	POST INDICATOR VALVE
CONC	CONCRETE	PP	POWER POLE
DI	DROP INLET	PRT	PRODUCT RECOVERY TANK
DIA	DIAMETER	PSP	PUMP STATION PAD
DIP	DUCTILE IRON PIPE	SAN	SANITARY
DRN, D	DRAIN	SFM	SANITARY FORCE MAIN
DWG	DRAWING	SHT	SHEET
E	EAST	S	SOUTH
EL, ELEV	ELEVATION	STRM	STORM
ELEC	ELECTRICAL	ST	STREET
EX, EXIST	EXISTING	STD	STANDARD
FM	FORCE MAIN	SQ	SQUARE
FH	FIRE HYDRANT	TBM	TEMPORARY BENCH MARK
HHL	HANDHOLE	TEL	TELEPHONE
HORIZ	HORIZONTAL	TEMP	TEMPORARY
HYDR	HYDRANT	TP	TRAVERSE POINT
INV	INVERT	TYP	TYPICAL
LP	LIGHT POLE	UG	UNDERGROUND
MAX	MAXIMUM	US	UNDERGROUND SECONDARY
MECH	MECHANICAL	W	WEST OR WATER
MH	MANHOLE	W/	WITH
M	METER	W/O	WITHOUT
mm	MILLIMETER	WV	WATER VALVE
MIN	MINIMUM	⊙	AT
N	NAIL OR NORTH	#	NUMBER



APPROVED

APPROVED

ACTIVITY - SATISFACTORY TO DATE

DES: ABS | DRW: MHK | CHK: JWH

BRANCH MANAGER

CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND  
JACKSONVILLE, NORTH CAROLINA

MILCON P-725, PUMP STATION UPGRADES

SCALE: AS NOTED

WORK ORDER NO. 859348

NAVIFAC DRAWING NO. 12556437  
SHEET 3 OF 21  
C-001

ALL DIMENSIONS WITHOUT A DECIMAL POINT ARE MILLIMETERS AND ALL THOSE WITH A DECIMAL POINT ARE METERS, UNLESS OTHERWISE NOTED

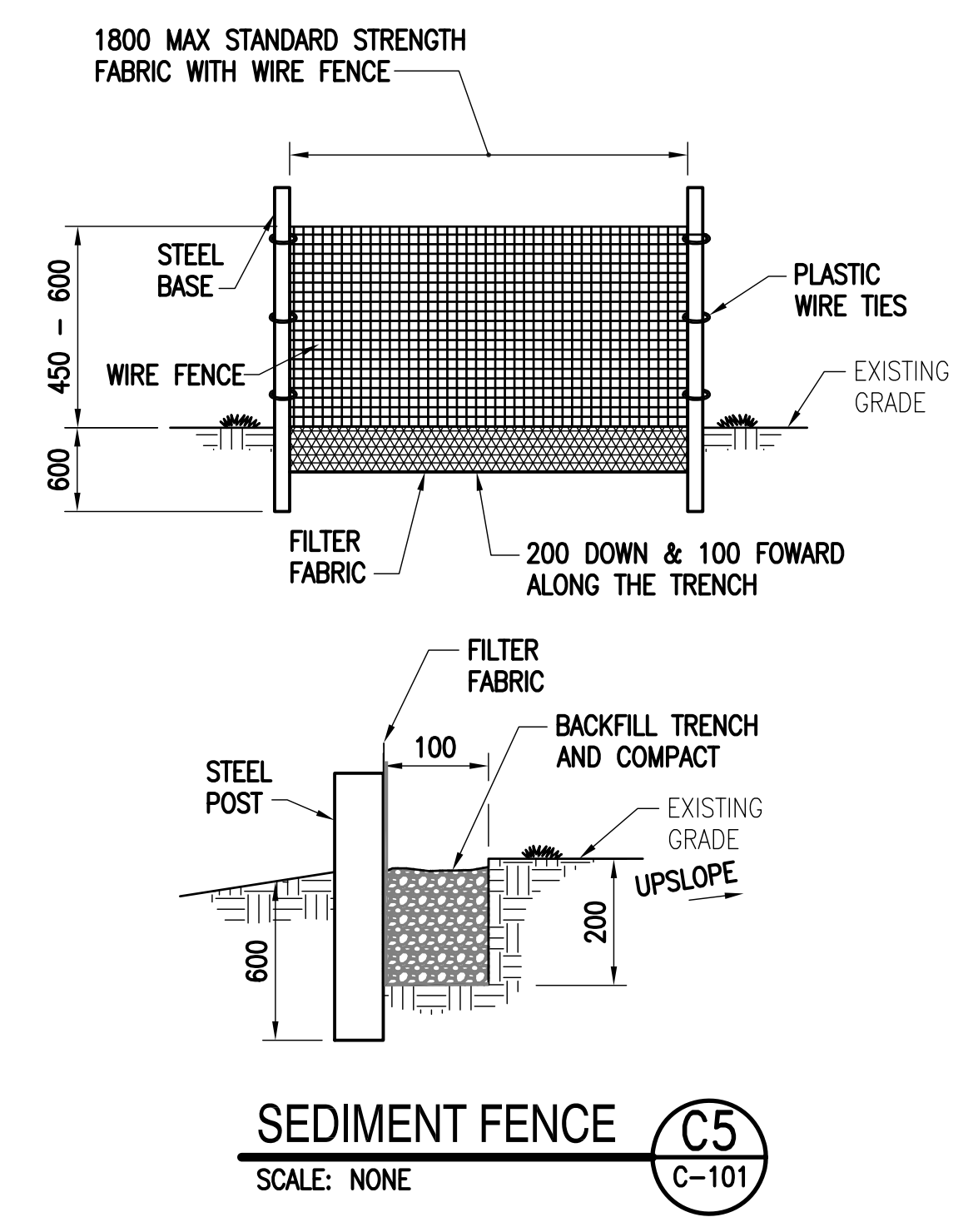
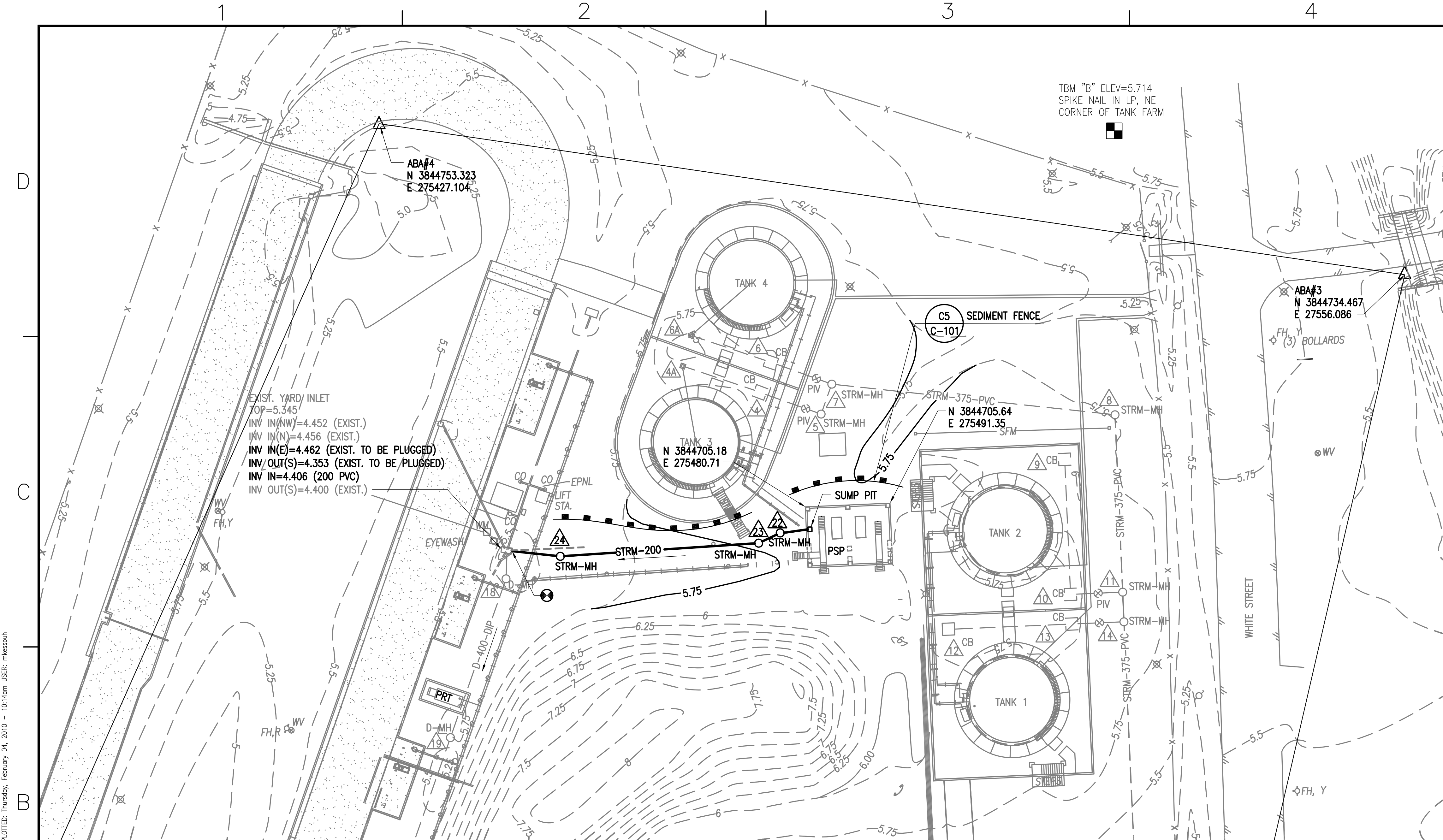


DATE

DESCRIPTION

SYN

FILE NAME: G:\09 Jobs\09-057 Pump Station Upgrades - MCA5 New River\09\057\0001.dwg LAYOUT NAME: CIVIL NOTES LEGEND AND ABBREVIATIONS PLOTTED: Thursday, February 04, 2010 10:14am USER: mkesaiah



**EROSION CONTROL NOTE:**  
A TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT SHALL BE PROVIDED AT ANY POINT CONSTRUCTION EQUIPMENT ENTERS OR EXITS DIRECTLY FROM A CONSTRUCTION SITE TO PAVED ROADWAYS. SEE AIC/C-501 FOR BASIS OF BID, ASSUME TWO TEMPORARY GRAVEL CONSTRUCTION ENTRANCES/EXITS WILL BE REQUIRED.

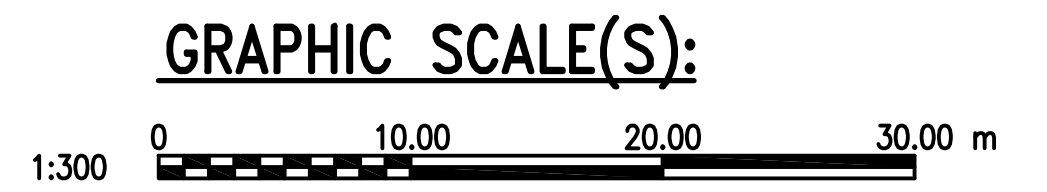
PLAN NORTH  
**DRAINAGE PLAN AND DETAIL**  
SCALE: 1:300

PRE-CONSTRUCTION IMPERVIOUS CONCRETE AREA = 54 m<sup>2</sup>  
POST-CONSTRUCTION IMPERVIOUS CONCRETE AREA = 81m<sup>2</sup>

NOTE: MANHOLES SHALL BE FLAT-TOP TYPE

PIPE RUNS					
STRUCTURE TO STRUCTURE	DIA	LENGTH	SLOPE (%)	INV IN	INV OUT
PSP - 22	200	3.0	7.14	4.997	4.782
22 - 23	200	2.0	1.50	4.747	4.717
23 - 24	200	24.0	0.83	4.682	4.482
24 - EXIST	200	5.6	0.73	4.447	4.406

STRUCTURES						
STRUCTURE NO	NORTHING	EASTING	TYPE	TOP ELEV	INV IN	INV OUT
22	N 3 844 701.90	E 275 477.55	MANHOLE	5.800	4.782	4.747
23	N 3 844 700.62	E 275 474.84	MANHOLE	5.770	4.717	4.682
24	N 3 844 698.96	E 275 449.89	MANHOLE	5.550	4.482	4.447



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**AUSTIN BROCKENBROUGH & ASSOCIATES, L.L.P.**  
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P.O. Box 4800 Chester, Virginia 23831

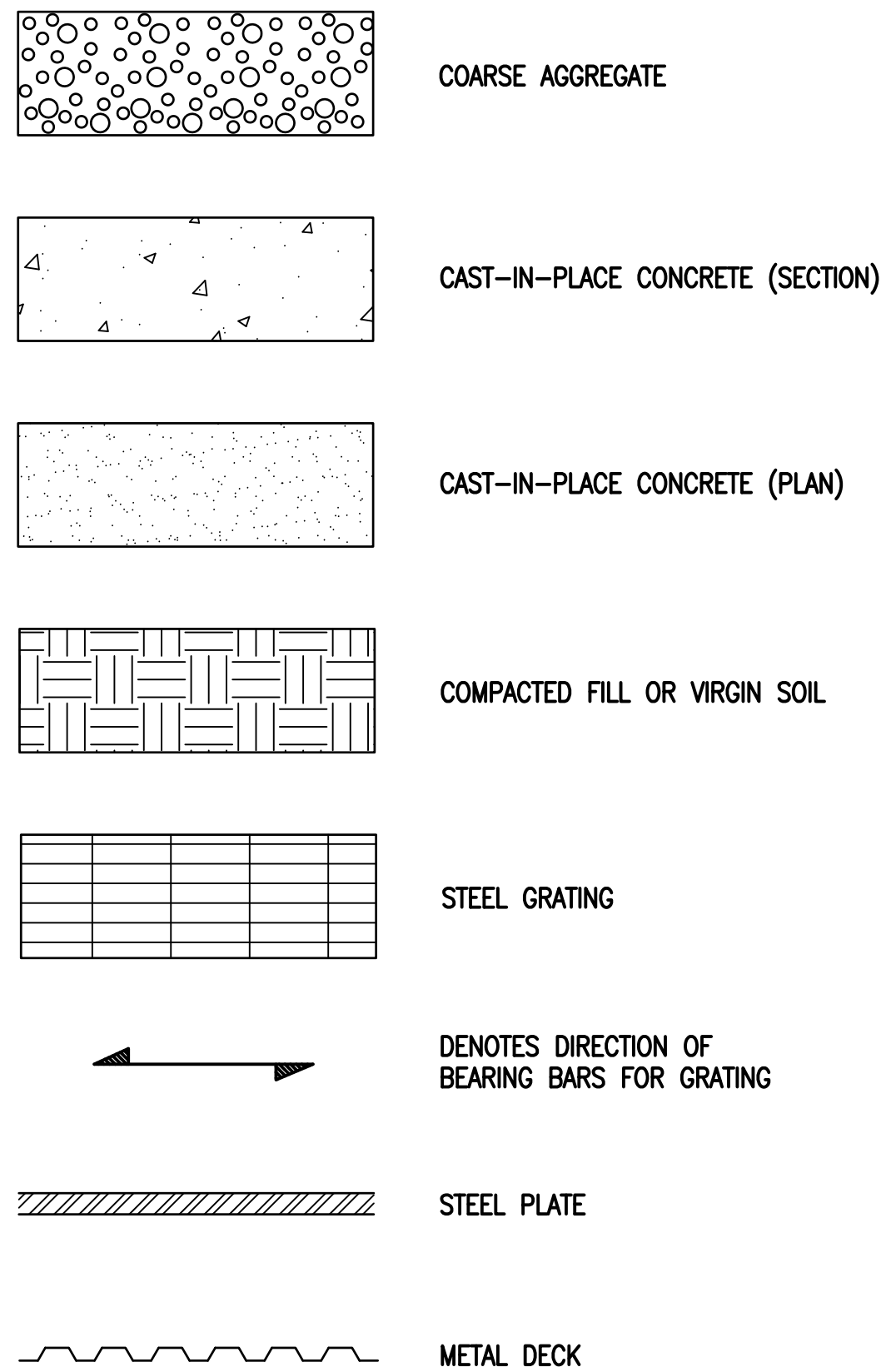
APPROVED	DATE	DESCRIPTION	SYM
APPROVED	DATE	DESCRIPTION	SYM
FOR COMMANDER NAVFAC			
APPROVED			
ACTIVITY - SATISFACTORY TO DATE			
FM/DM			
DES: ABS   DRW: MHK   CHK: JJH			
FIRE PROTECTION			
BRANCH MANAGER			
CHIEF ENG/ARCH			
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND JACKSONVILLE, NORTH CAROLINA MILCON P-725, PUMP STATION UPGRADES JACKSONVILLE, NORTH CAROLINA DRAINAGE PLAN & DETAIL			
CODE ID. NO. 80091	SIZE D	SCALE: AS NOTED	
MAXIMO NO.			
JOB ORDER NO.			
WORK ORDER NO. 859348			
CONSTR. CONTR. NO.			
NAVFAC DRAWING NO. 12556438			
SHEET 4 OF 21			
<b>C-101</b>			
DRAWFORM REVISION: 6 AUG 2007			

FILE NAME: G:\09 Jobs\09-07 Pump Station Upgrades - MCA5 New River\09\09\C101.dwg LAYOUT NAME: DRAINAGE PLAN & DETAIL PLOTTED: Thursday, February 04, 2010 - 10:14am USER: mks504h

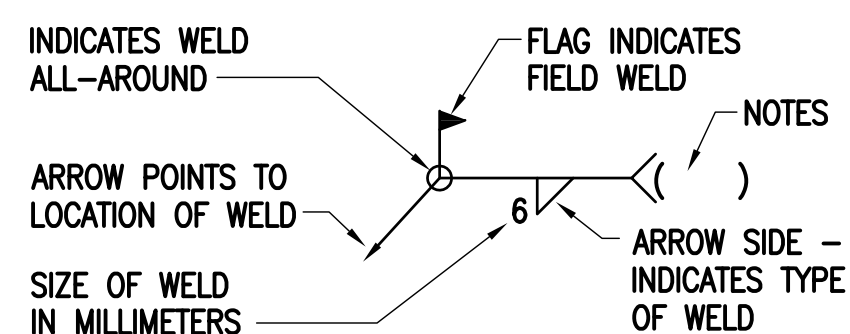
## STRUCTURAL ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE & HIGHWAY TRANSPORTATION OFFICIALS
ACCEL	ACCELERATION
ACI	AMERICAN CONCRETE INSTITUTE
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
CJ	CONTROL JOINT/CONTRACTION JOINT
CLR	CLEARANCE
CONC	CONCRETE
CONT	CONTINUOUS
DIA	DIAMETER
DIM	DIMENSION
DWGS	DRAWINGS
DWLS	DOWELS
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
EMBED	EMBEDMENT
EQ	EQUAL
EW	EACH WAY
FS	FAR SIDE
FIN	FINISHED
FML	FLEXIBLE MEMBRANE LINER
g	GRAVITY
GALV	GALVANIZED
GR	GRADE
h	HOUR
HS	HIGH STRENGTH
HSS	HIGH STRENGTH STEEL OR HOLLOW STRUCTURAL SECTION
IBC	INTERNATIONAL BUILDING CODE
km	KILOMETER
kPa	KILOPASCAL
LLV	LONG LEG VERTICAL
m	METER
MAX	MAXIMUM
MECH	MECHANICAL
MFG	MANUFACTURER
MIN	MINIMUM
MPa	MEGAPASCAL
mm	MILLIMETER
NS	NEAR SIDE
OC	ON CENTER
Pa	PASCAL
PS	PIPE SUPPORT
QTY	QUANTITY
REINF	REINFORCEMENT
REQD	REQUIRED
SP	SPACE(S)
SQ	SQUARE
STD	STANDARD
T&B	TOP AND BOTTOM
TOC	TOP OF CONCRETE
TOG	TOP OF GRATING
TYP	TYPICAL
UFC	UNIFIED FACILITIES CRITERIA
VERT	VERTICAL
90°	90 DEGREES
∠	ANGLE
⊙	AT
∅	DIAMETER
#	NUMBER
⊔	CENTERLINE

## STRUCTURAL LEGEND



## WELD SYMBOL



## GENERAL STRUCTURAL NOTES

- ALL WORK TO BE DONE IN ACCORDANCE WITH INTERNATIONAL BUILDING CODE (IBC) 2006, AS REFERENCED AND MODIFIED BY THE UNIFIED FACILITIES CRITERIA (UFC) 1-200-03 "DESIGN GENERAL BUILDING REQUIREMENTS" AND THE AMERICAN SOCIETY OF CIVIL ENGINEERS STANDARD 7 "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES" 2005 EDITION.
- LOADS
 

A. ROOF LIVE LOAD	0.96 kPa
B. SNOW LOADS	
a. GROUND SNOW LOAD, P <sub>g</sub>	0.48 kPa
b. FLAT ROOF SNOW LOAD, P <sub>f</sub>	0.34 kPa
C. WIND LOADS	
a. BASIC WIND SPEED (3-SECOND GUST)	209 km/h
b. WIND IMPORTANCE FACTOR, I <sub>w</sub>	1.0
c. BUILDING CATEGORY	II
d. WIND EXPOSURE	D
D. SEISMIC DESIGN DATA	
a. MAPPED SPECTRAL RESPONSE ACCEL, S <sub>s</sub>	0.08 (%g)
b. MAPPED SPECTRAL RESPONSE ACCEL, S <sub>1</sub>	0.21 (%g)
c. SEISMIC IMPORTANCE FACTOR, I <sub>s</sub>	1.0
d. SEISMIC DESIGN CATEGORY	D
e. SITE CLASS	D
f. SEISMIC RESPONSE COEFFICIENT, C <sub>s</sub>	0.064
g. RESPONSE MODIFICATION FACTOR, R	3.5 (ORDINARY STEEL MOMENT FRAMES)
- ALL CONCRETE WORK SHALL CONFORM TO ALL REQUIREMENTS OF ACI 318-05 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE".
 

CONCRETE COMPRESSIVE STRENGTH	30 MPa
WATER/CEMENT RATIO	0.50
AIR CONTENT	6%
SLUMP	25 TO 75
REINFORCING STEEL	ASTM A615 GR. 420
- ALL STRUCTURAL STEEL WORK SHALL CONFORM TO THE REQUIREMENTS OF AISC "SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS, MARCH 9, 2005".
 

STRUCTURAL STEEL (UON)	ASTM A36 (MIN)
WIDE FLANGE BEAMS	ASTM A992
STRUCTURAL TUBING	ASTM A500 GRADE B
STEEL PIPE	ASTM A53, TYPE E OR S, GRADE B
HIGH STRENGTH BOLTS	ASTM A325
WELDING ELECTRODES	E70XX SERIES
ANCHOR BOLTS	ASTM F1554 GR. 36
- FOUNDATIONS SHALL BE MAT FOUNDATIONS BASED ON AN ASSUMED ALLOWABLE BEARING CAPACITY OF 72 kPa AS DETERMINED FROM THE PREVIOUS CONSTRUCTION AT THE SITE.
- ALL STRUCTURAL STEEL AND FASTENERS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION. TOUCH UP ALL FIELD WELDS WITH ZINC RICH PAINT.
- ALL EXPOSED SURFACES OF SLABS ON GRADE SHALL BE BROOM FINISHED.
- DESIGN OF OPEN WEB STEEL JOISTS SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF STANDARD PRACTICES PUBLISHED BY THE STEEL JOIST INSTITUTE AND THE AISC "SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS", MARCH 9, 2005. ALL JOISTS SHALL BE DESIGNED AND FABRICATED BY A QUALIFIED AGENCY AND STAMPED BY A PROFESSIONAL ENGINEER. SHORING AND BRIDGING REQUIREMENTS SHALL BE DONE IN ACCORDANCE WITH THE TRUSS MANUFACTURER'S RECOMMENDATIONS.
 

STEEL JOISTS SHALL BE DESIGNED FOR THE FOLLOWING LOADS:

TOP CHORD DEAD LOAD	0.05 kPa
TOP CHORD LIVE LOAD	1.00 kPa
BOTTOM CHORD DEAD LOAD	0.05 kPa
VERTICAL WIND LOAD	± 2.00 kPa
HORIZONTAL WIND LOAD	3.25 kPa

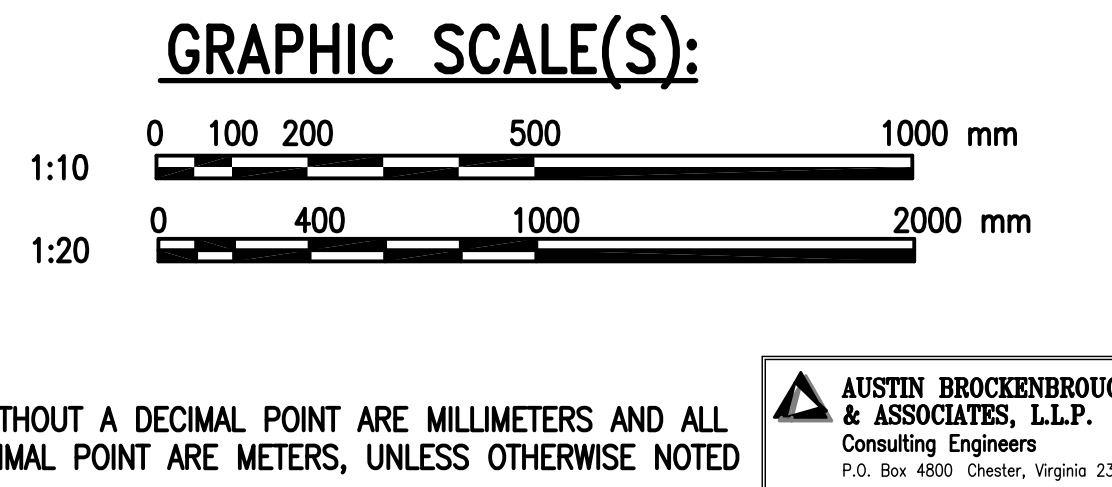
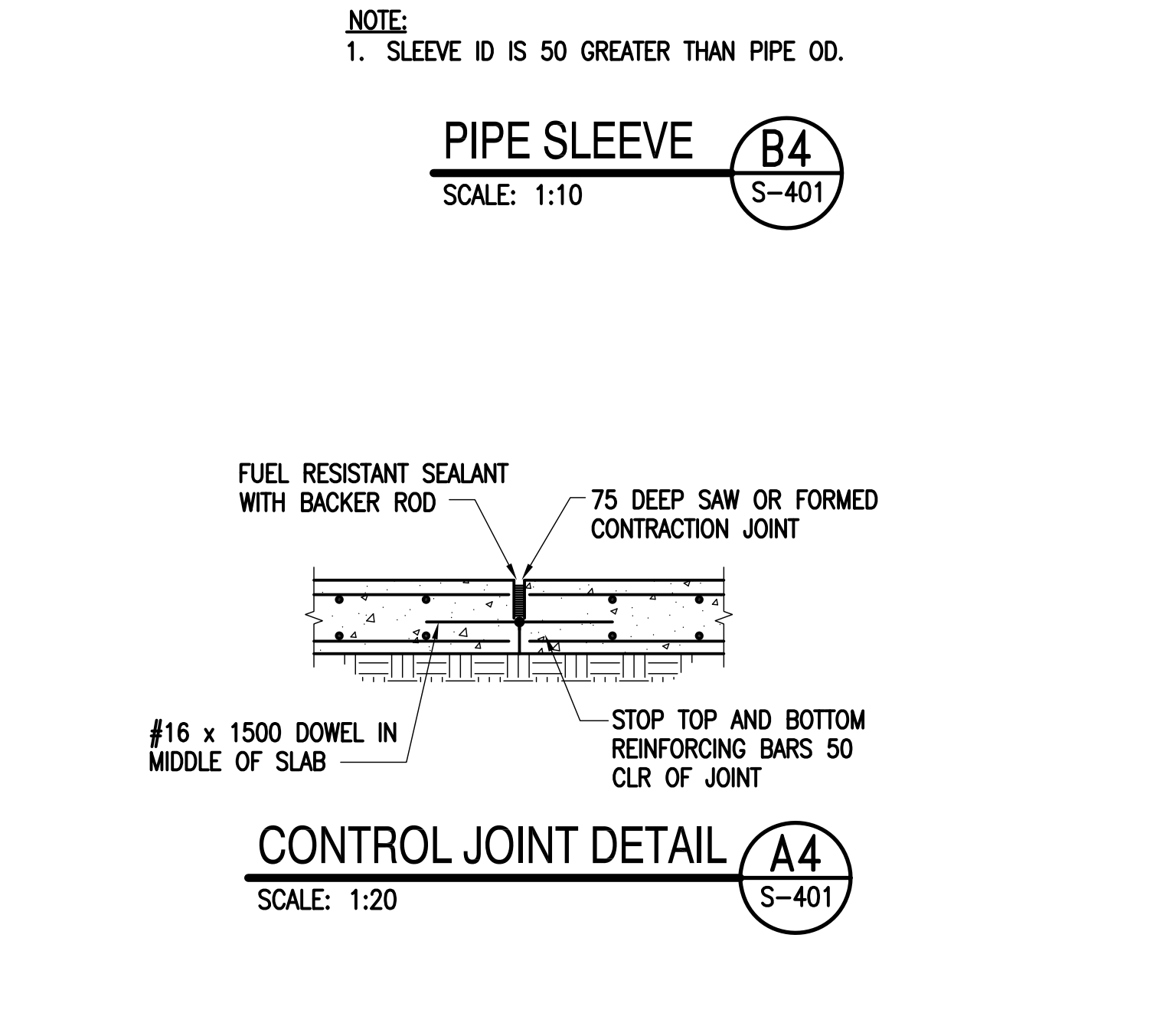
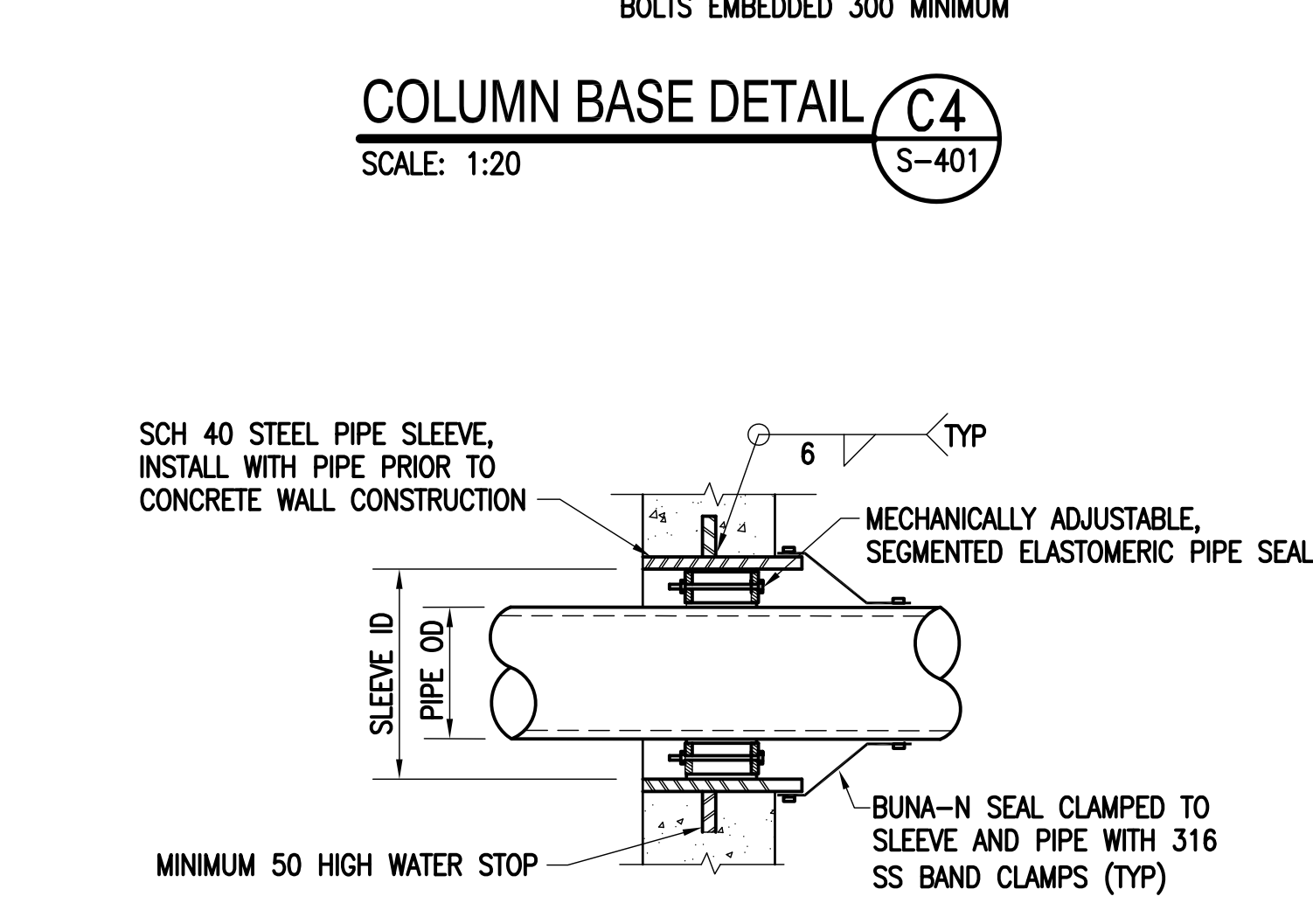
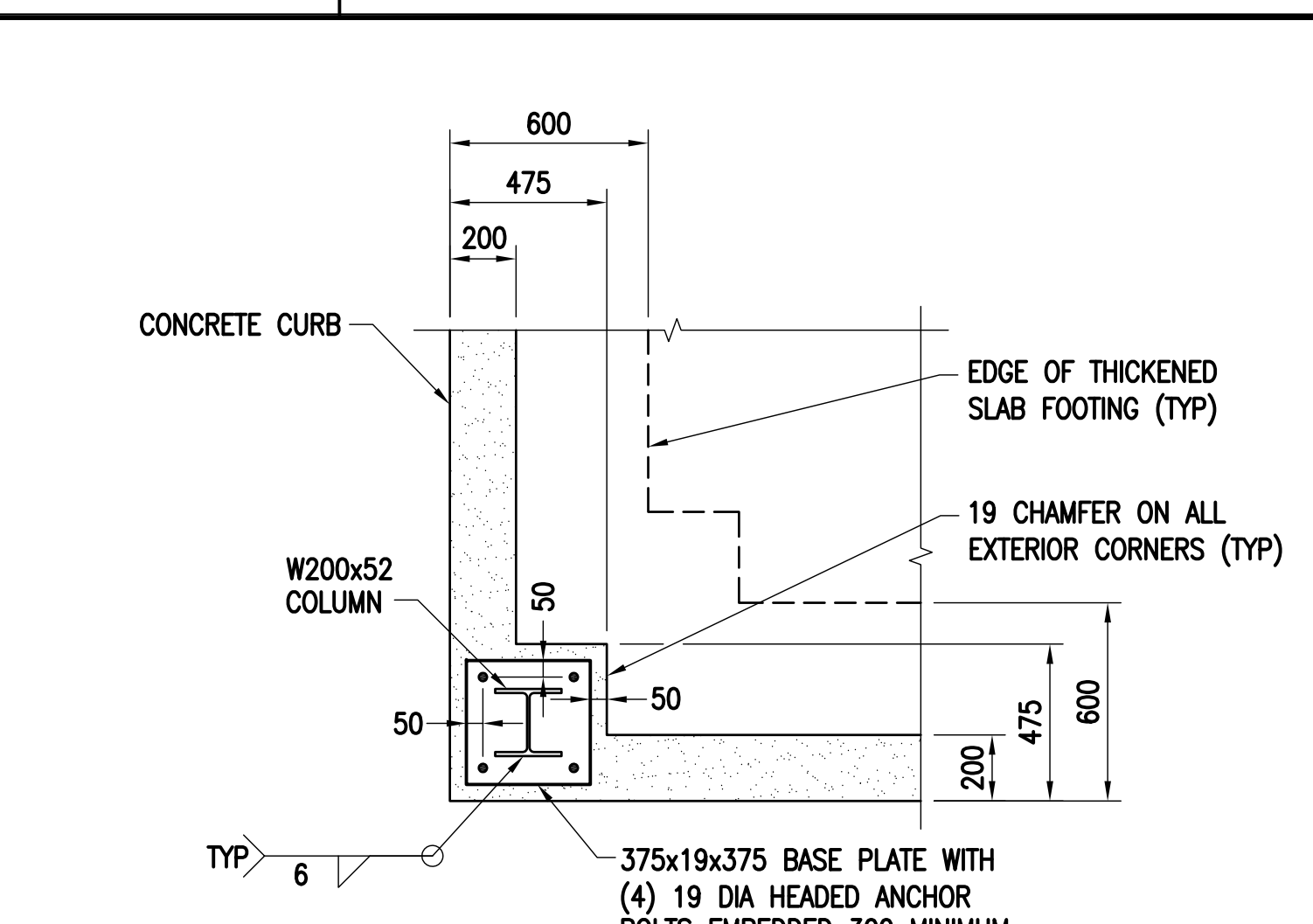
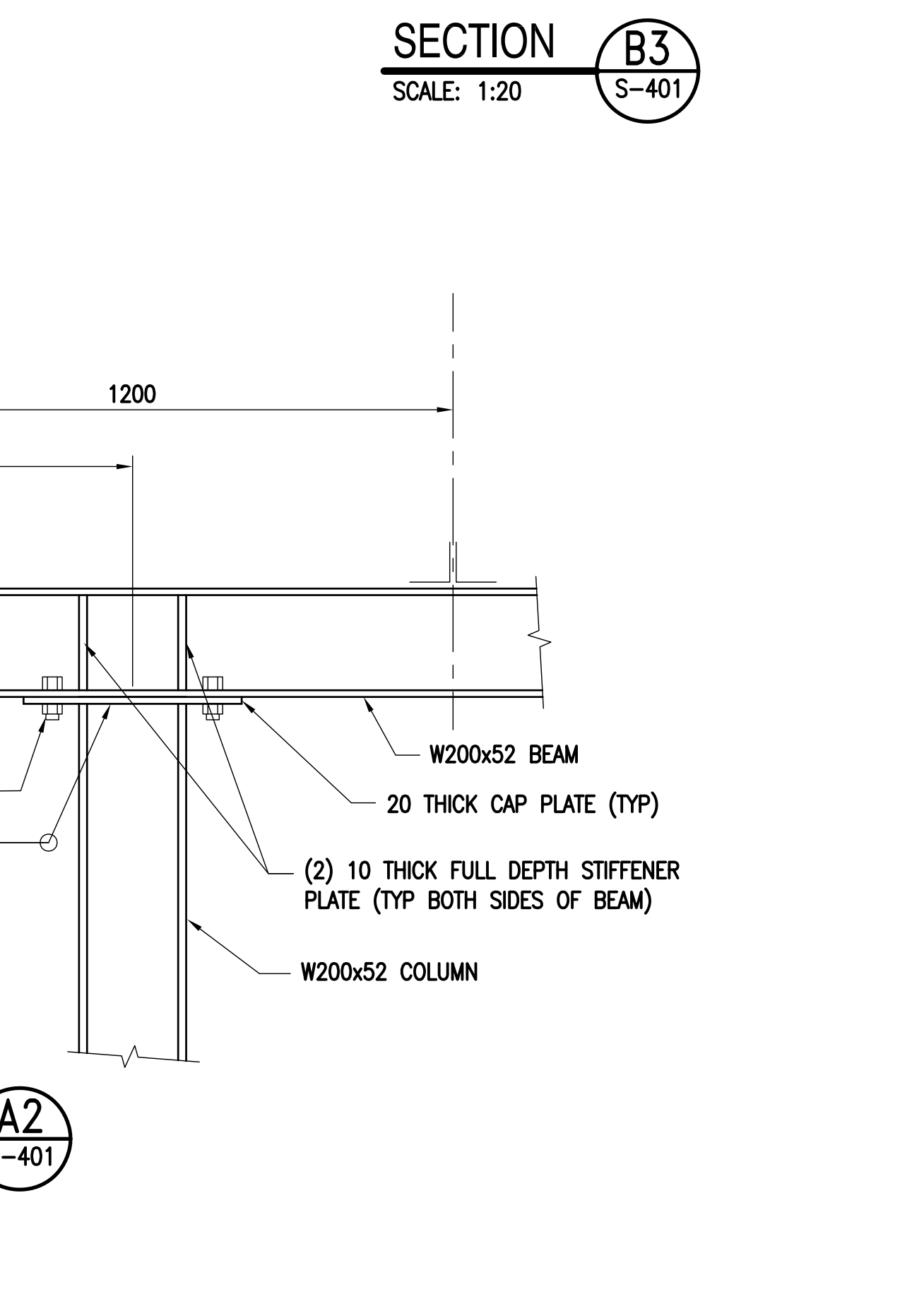
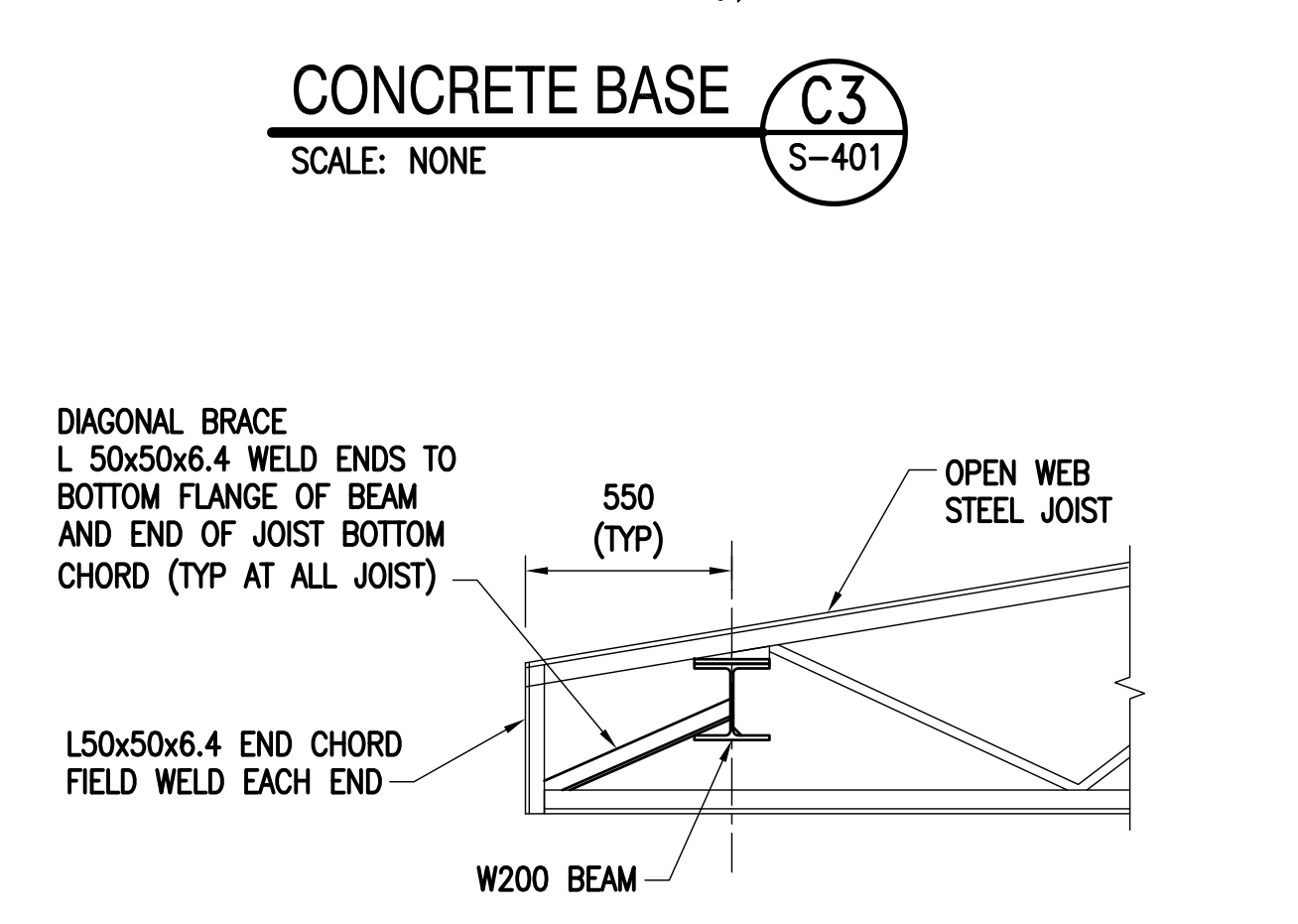
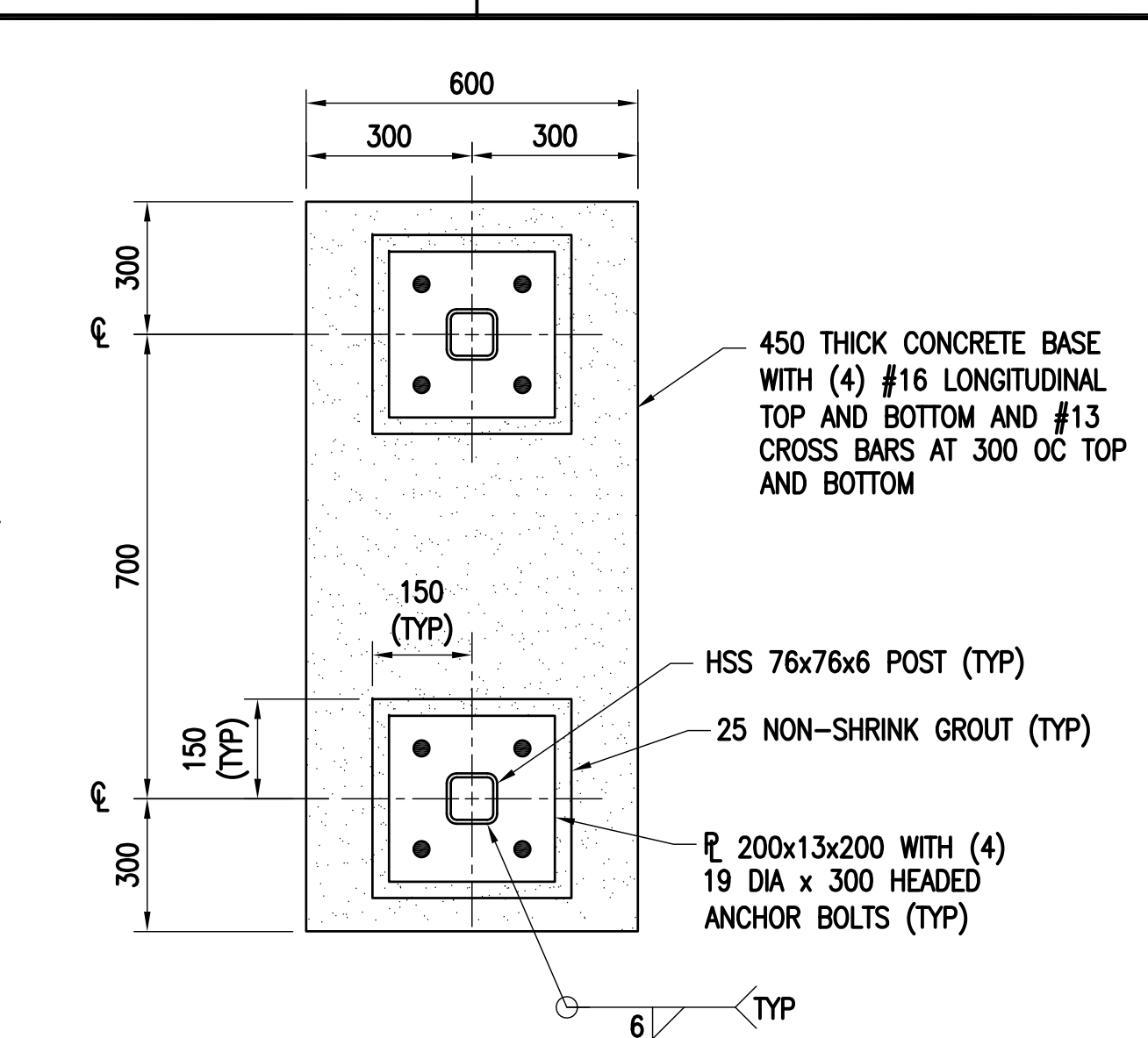
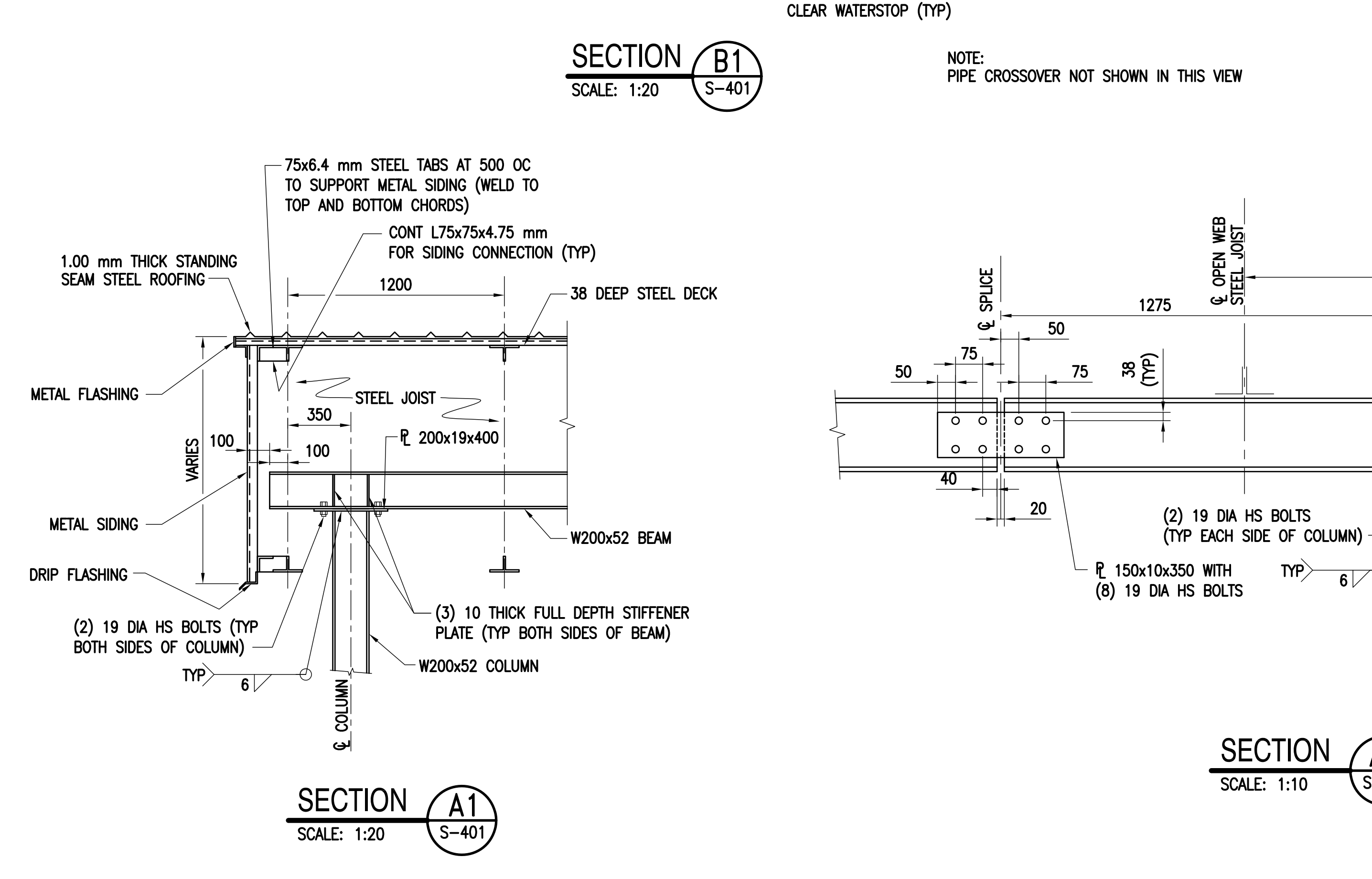
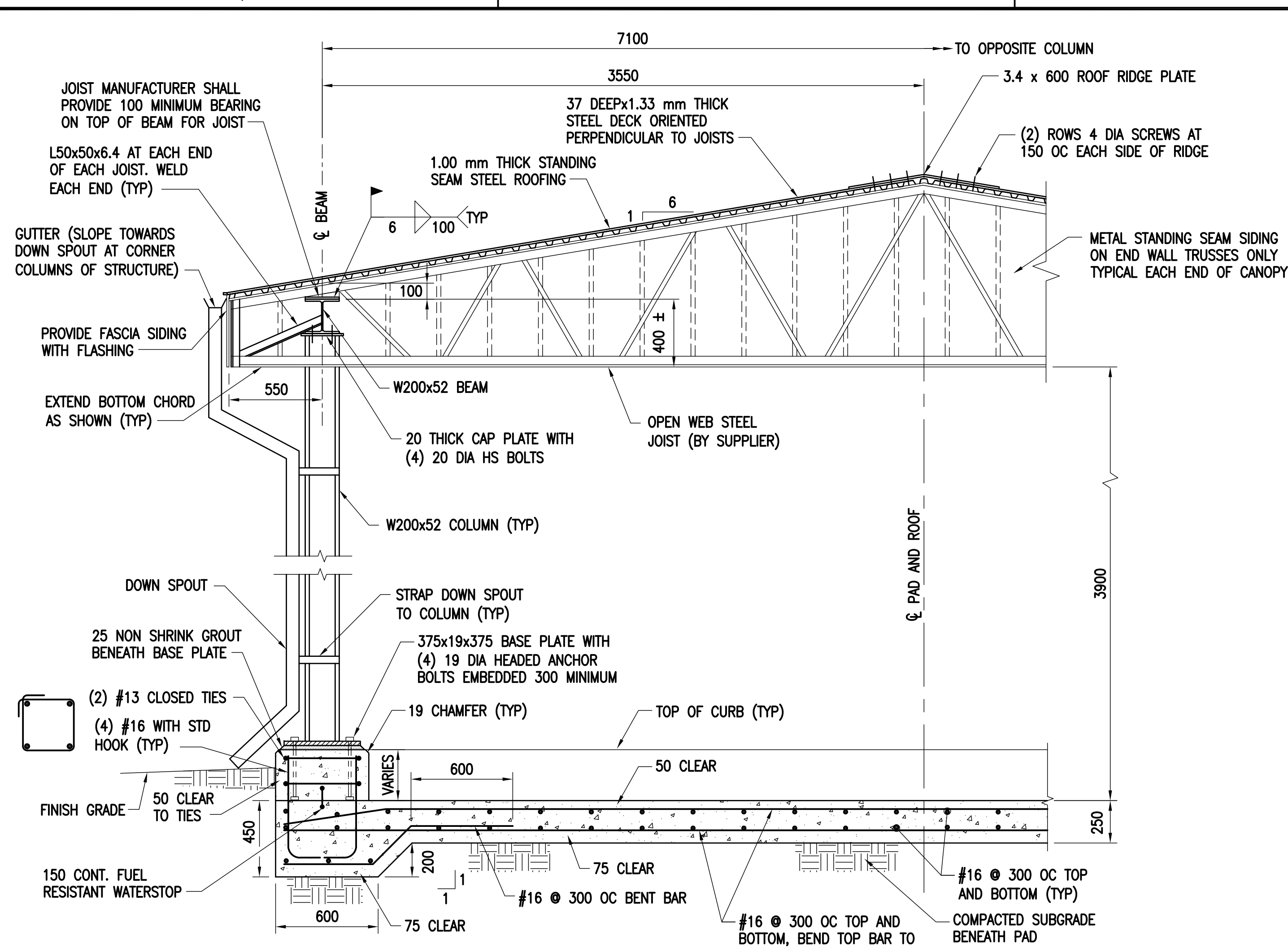
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DESCRIPTION	
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APPROVED	
FOR COMMANDER NAVFAC	
DATE	
ACTIVITY - SATISFACTORY TO	
DATE	
PM/DM	
DES	MWH   DRW   MHK   CHK   GCD
FIRE PROTECTION	
BRANCH MANAGER	
CHIEF ENG/ARCH	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND JACKSONVILLE, NORTH CAROLINA MILCON P-725, PUMP STATION UPGRADES JACKSONVILLE, NORTH CAROLINA STRUCTURAL NOTES, LEGEND AND ABBREVIATIONS	
CODE ID. NO.	80091
SCALE:	AS NOTED
MAXIMO NO.	
JOB ORDER NO.	
WORK ORDER NO.	859348
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	12556439
SHEET	5 OF 21
ALL DIMENSIONS WITHOUT A DECIMAL POINT ARE MILLIMETERS AND ALL THOSE WITH A DECIMAL POINT ARE METERS, UNLESS OTHERWISE NOTED	
S-001	
DRAWFORM REVISION: 6 AUG 2007	

FILE NAME: G:\09 Jobs\09-057 Pump Station Upgrades - MGS New River\09\05-001 LEGEND.dwg LAYOUT NAME: STRUCTURAL NOTES LEGEND AND ABBREVIATIONS PLOTTED: Thursday, February 04, 2010 - 10:14am USER: mksesuh





FILE NAME: G:\09 Jobs\09-057 Pump Station Upgrades - MCA5 New River\09\05-501 MISCELLANEOUS DETAILS.dwg LAYOUT NAME: MISCELLANEOUS DETAILS PLOTTED: Thursday, February 04, 2010 - 10:14am USER: mksessuh



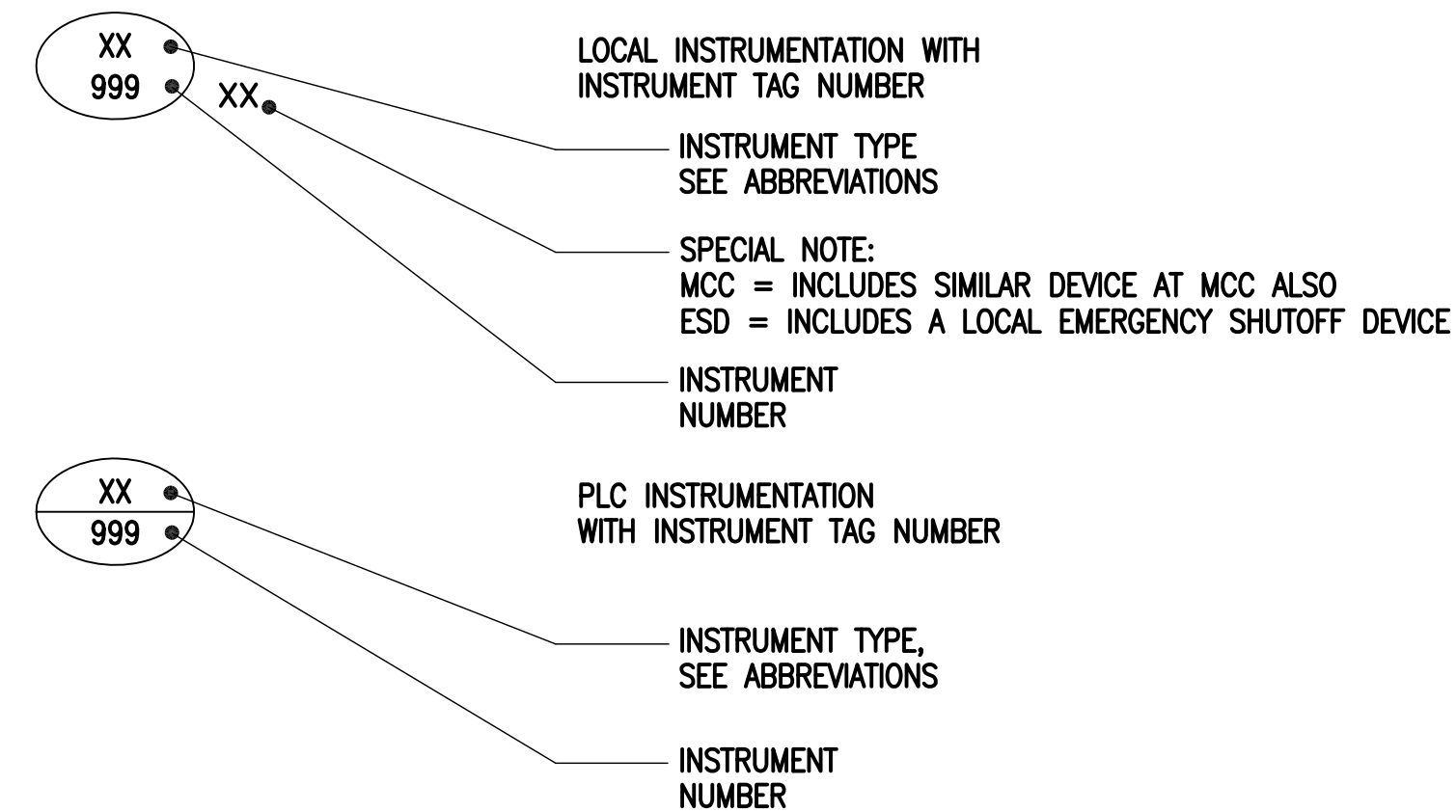
APPROVED	DATE	APPR
DESCRIPTION		
SYN		
APPROVED	DATE	
FOR COMMANDER NAVFAC	DATE	
APPROVED	DATE	
ACTIVITY - SATISFACTORY TO	DATE	
PM/DM		
DES: MWH   BRW   MHK   CHK   GCD		
FIRE PROTECTION		
BRANCH MANAGER		
CHIEF ENG/ARCH		
DEPARTMENT OF THE NAVY	NAVFACILITIES ENGINEERING COMMAND	JACKSONVILLE, NORTH CAROLINA
MCA5 NEW RIVER	MILCON P-725, PUMP STATION UPGRADES	JACKSONVILLE, NORTH CAROLINA
MISCELLANEOUS DETAILS		
CODE ID. NO. 80091	SIZE D	
SCALE: AS NOTED		
MAXIMO NO.		
JOB ORDER NO.		
WORK ORDER NO. 859348		
CONSTR. CONTR. NO.		
NAVFAC DRAWING NO. 12556442		
SHEET 8 OF 21		
S-501		
ALL DIMENSIONS WITHOUT A DECIMAL POINT ARE MILLIMETERS AND ALL THOSE WITH A DECIMAL POINT ARE METERS, UNLESS OTHERWISE NOTED		
DRAWFORM REVISION: 6 AUG 2007		



# MECHANICAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	M	METER
AFG	ABOVE FINISHED GRADE	mm	MILLIMETER
BOP	BOTTOM OF PIPE	MAX	MAXIMUM
BS	BASKET STRAINER	MECH	MECHANICAL
CONC	CONCRETE	MFG	MANUFACTURER
CS	CARBON STEEL	MIN	MINIMUM
CV	CHECK VALVE	MSS	MANUFACTURER STANDARDIZATION SOCIETY
DBB	DOUBLE BLOCK AND BLEED	MOV	MOTOR OPERATOR VALVE
DEMO	DEMOLITION OR DEMOLISH	NO	NUMBER
DIA	DIAMETER	NPSHr	NET POSITIVE SUCTION HEAD REQUIRED
DRN	DRAIN	P	PUMP
DWG	DRAWING	Pa	PASCAL
ECC	ECCENTRIC	PCV	PRESSURE CONTROL VALVE
EMBED	EMBEDMENT	PDI	PRESSURE DIFFERENTIAL INDICATOR
ESD	EMERGENCY SHUT-OFF DEVICE	PI	PRESSURE INDICATOR
ETC	ET CETERA	PLC	PROGRAMMABLE LOGIC CONTROLER
FAH	FLOW ALARM HIGH	PRT	PRODUCT RECOVERY TANK
FAL	FLOW ALARM LOW	RCA	RESOURCE CONSERVATION AND RECOVERY ACT
FCV	FLOW CONTROL VALVE	REC	RECEIPT
FML	FLEXIBLE MEMBRANE LINER	RED	REDUCER
FOT	FLAT ON TOP	REF	REFERENCE
FP	FUEL PUMP	RPM	REVOLUTIONS PER MINUTE
FSH	FLOW SWITCH HIGH	SS	STAINLESS STEEL
FSL	FLOW SWITCH LOW	TDH	TOTAL DYNAMIC HEAD
GALV	GALVANIZED	TOP	TOP OF PIPE
GPM	GALLONS PER MINUTE	TRV	THERMAL RELIEF VALVE
H	HEIGHT	TYP	TYPICAL
HG	MERCURY	W/	WITH
HP	HORSEPOWER	WNF	WELD NECK FLANGE
HPV	HIGH POINT VENT	⊙	AT
HS	HAND SWITCH	⌀	CENTERLINE
HSS	HIGH STRENGTH STEEL	∅	DIAMETER
ISS	ISSUE	±	PLUS/MINUS (APPROXIMATE)
JP5	JP-5 JET FUEL	%	PERCENT
kPa	KILO PASCAL	#	NUMBER
kW	KILOWATT		
L	LITER OR LENGTH		
LCV	LEVEL CONTROL VALVE		
LPD	LOW POINT DRAIN		
L/s	LITERS PER SECOND		

# FLOW DIAGRAM LEGEND



# MECHANICAL LEGEND

EXISTING	NEW	DESCRIPTION
		CONTROL VALVE (ARROW INDICATES INTEGRAL BYPASS RELIEF AND DIRECTION)
		DOUBLE BLOCK AND BLEED VALVE (ARROW INDICATES INTEGRAL BYPASS RELIEF AND DIRECTION)
		BALL VALVE
		BUTTERFLY VALVE
		CHECK VALVE (ARROW INDICATES FLOW DIRECTION)
		WELD NECK FLANGE
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
		THERMAL OR SAFETY RELIEF VALVE
		PRESSURE INDICATOR
		PUMP (TRIANGLE INDICATES FLOW DIRECTION)
		CAM TYPE DISCONNECT W/ DUST CAP
		FLEXIBLE CONNECTOR
		CONNECT TO EXISTING
		PIPE SUPPORT TYPE (SEE M-501)
		FLOW SWITCH
		MOTORIZED ACTUATOR
		DEMOLISH AND REMOVE
		CONCRETE SECTION
		UNDERGROUND LINE
		ABOVEGROUND LINE
		PIPE SERVICE IDENTIFIER
		PIPE SIZE
		PIPE MATERIAL
		TEMPORARY PIPE FOR DEMOLITION

# MECHANICAL NOTES

- EXISTING FUEL SYSTEMS SHALL REMAIN IN OPERATION THROUGHOUT THE PROJECT EXCEPT FOR PIPING AND SYSTEMS TAKEN OUT OF SERVICE TO MAKE NECESSARY MODIFICATIONS. SEE SEQUENCE OF CONSTRUCTION ON G-002 FOR ALLOWABLE OUTAGES.
- UNLESS OTHERWISE INDICATED, ALL PIPING AND FITTINGS WITHIN THE FUEL FARM SHALL BE ASSUMED TO BE CARBON STEEL.
- THE ACTIVITY WILL, TO THE FULLEST EXTENT POSSIBLE, EMPTY THE ACTIVE JP-5 PIPELINES, TANKS AND EQUIPMENT. FOR BASIS OF BID, EXISTING PIPING IS FULL OF FUEL. THE CONTRACTOR SHALL DRAIN, COLLECT, AND TURN OVER TO THE GOVERNMENT ANY FUEL NOT EMPTIED BY THE ACTIVITY. ALL PETROLEUM CONTAMINATED SLUDGE OR WATER BECOMES THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE HANDLED AND DISPOSED OF AS SPECIFIED.
- HIGH POINT VENTS SHALL BE PROVIDED WHERE INDICATED AND AT ALL HIGH POINTS. LOW POINT DRAINS SHALL BE PROVIDED WHERE INDICATED AND AT ALL LOW POINTS. MINIMUM SLOPE OF PIPING FROM HIGH POINTS TO LOW POINTS SHALL BE 0.2% UNLESS OTHERWISE INDICATED.
- HAND EXCAVATE WITHIN 1 METER OF EXISTING UTILITIES.
- SIZE CONCRETE EQUIPMENT PADS TO SUIT ACTUAL EQUIPMENT FURNISHED.
- SEE C-001, E-001 AND S-001 FOR OTHER LEGENDS, SYMBOLS AND ABBREVIATIONS.
- "DEMOLISH AND REMOVE" SHALL INCLUDE THE DEACTIVATION OF ASSOCIATED SYSTEMS; DISCONNECTION FROM ITEMS TO REMAIN; AND REMOVAL, TRANSPORT AND PROPER DISPOSAL OF COMPONENTS BEING DEMOLISHED.



APPROVED \_\_\_\_\_ DATE \_\_\_\_\_

FOR COMMANDER NAVFAC \_\_\_\_\_ DATE \_\_\_\_\_

ACTIVITY - SATISFACTORY TO DATE \_\_\_\_\_

DES: **DRC** | DRW: **MHK** | CHK: **BMS**

NAVAL FACILITIES ENGINEERING COMMAND  
 JACKSONVILLE, NORTH CAROLINA

DEPARTMENT OF THE NAVY  
 NAVAL FACILITIES ENGINEERING COMMAND  
 JACKSONVILLE, NORTH CAROLINA

MILCON P-725, PUMP STATION UPGRADES

MECHANICAL NOTES, LEGEND AND ABBREVIATIONS

CODE ID. NO. 80091 | SIZE D

SCALE: AS NOTED  
 MAXIMO NO.  
 JOB ORDER NO.  
 WORK ORDER NO. 859348  
 CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12556443  
 SHEET 9 OF 21  
**M-001**

ALL DIMENSIONS WITHOUT A DECIMAL POINT ARE MILLIMETERS AND ALL THOSE WITH A DECIMAL POINT ARE METERS, UNLESS OTHERWISE NOTED



DRAWING REVISION: 6 AUG 2007

FILE NAME: G:\09 Jobs\09-057 Pump Station Upgrades - MCG New River\GD\VM-001 LEGEND, ABBREVIATIONS AND NOTES.dwg LAYOUT NAME: MECHANICAL NOTES LEGEND AND ABBREVIATIONS PLOTTED: Thursday, February 04, 2010 - 10:14am USER: mkesoush





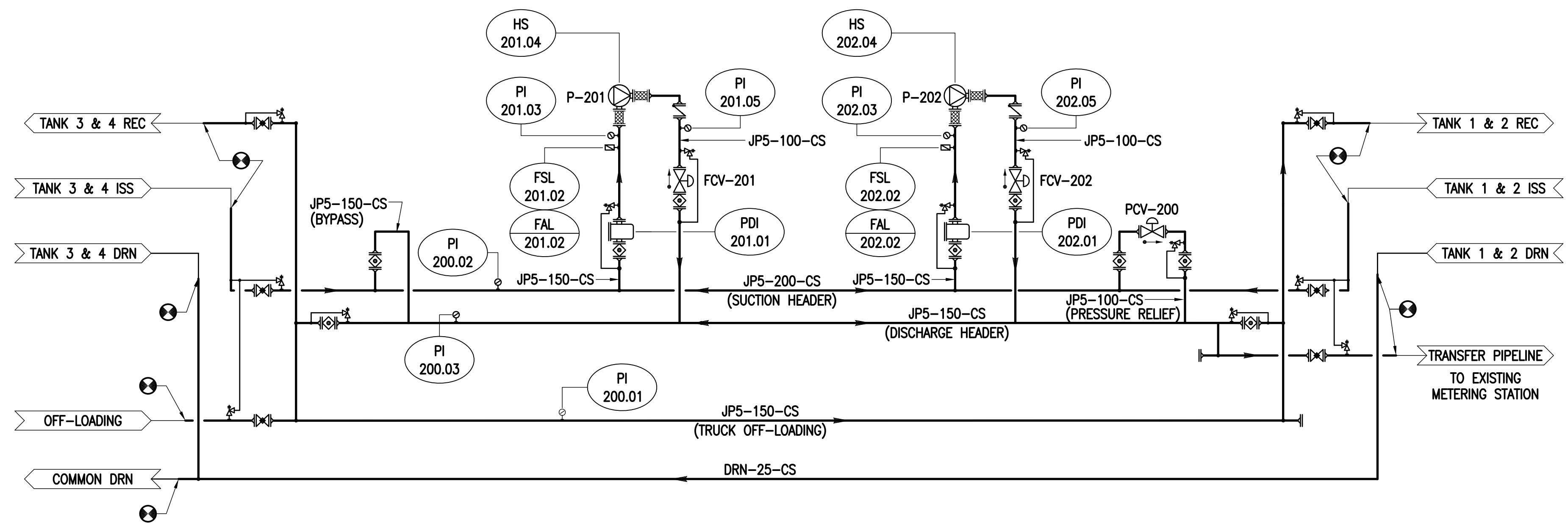




# SEQUENCE OF OPERATION

- THE NEW PUMPS AND ASSOCIATED CONTROL INPUTS AND OUTPUTS SHOWN ON THESE DRAWINGS SHALL BE TIED IN TO THE EXISTING PLC. ALL AUDIBLE AND VISUAL ALARMS LISTED ARE EXISTING AND ARE LOCATED ON THE EXISTING CONTROL PANEL. AS BASIS OF BID, THE CONTRACTOR SHALL ASSUME THAT ALL THE REQUIRED I/O POINTS ARE INCLUDED IN THE EXISTING PLC AS WELL AS ALL THE PROGRAMMING INSTRUCTIONS NECESSARY TO PERFORM ALL THE ITEMS LISTED IN THIS SEQUENCE. THE CONTRACTOR SHALL INDIVIDUALLY VERIFY THE OPERATION OF EACH ITEM LISTED. IF ANY OF THE ITEMS LISTED IN THIS SEQUENCE DO NOT WORK PROPERLY USING THE EXISTING PLC PROGRAMMING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO MODIFY THE PROGRAMMING AS REQUIRED.
- PUMPS START BY DEPRESSING THE PUSHBUTTON AND STOP BY DEPRESSING THE PUSHBUTTON OR BY THE PLC WHEN THE PUMP H-O-A SWITCH IS IN "AUTO".
- IF THE PRODUCT LEVEL IN A BULK STORAGE TANK WITH AN OPEN "ISSUE" MOV FALLS BELOW THE LOW LEVEL SET POINT, THE TRANSFER PUMP SHALL NOT START, AND SHALL BE DISABLED IF RUNNING. NO TRANSFER PUMP CAN START OR BE RE-STARTED UNTIL THE ALARM IS ACKNOWLEDGED AND THE LOW LEVEL CONDITION NO LONGER EXISTS, OR ANOTHER TANK IS SELECTED THAT IS NOT IN AN ALARM CONDITION.
- IF THE PRODUCT LEVEL IN A BULK STORAGE TANK WITH AN OPEN "RECEIPT" MOV RISES ABOVE THE HIGH-HIGH LEVEL SET POINT, THE TRANSFER PUMP SHALL NOT START, AND SHALL BE DISABLED IF RUNNING. NO TRANSFER PUMP CAN START OR BE RE-STARTED UNTIL THE ALARM IS ACKNOWLEDGED AND THE HIGH-HIGH LEVEL CONDITION NO LONGER EXISTS, OR ANOTHER TANK IS SELECTED THAT IS NOT IN AN ALARM CONDITION.
- TO CONDUCT A PIPELINE TRANSFER OPERATION TO SYSTEM A/B OR C/D, ALIGN MANUAL VALVES TO ALLOW A TRANSFER FROM THE SOURCE TANK TO THE RAPID REFUEL AREA. ON THE OPERATOR'S PANEL, TURN DESIRED TANK SELECTOR SWITCH TO "ISSUE" AND THE PUMP SELECTOR SWITCH TO "TRANSFER". WITH THE PUMP H-O-A SWITCH IN "AUTO", START THE TRANSFER BY DEPRESSING THE START PUSHBUTTON ON THE OPERATOR' PANEL. THE PUMP SHALL START AND REMAIN IN OPERATION SUBJECT TO THE ALARM CONDITIONS LISTED ABOVE. TO END THE TRANSFER OPERATION, DEPRESS THE "STOP" PUSHBUTTON ON THE OPERATOR'S PANEL.
- TO CONDUCT A TANK-TO-TANK TRANSFER OPERATION, ALIGN THE MANUAL VALVES TO ALLOW A TRANSFER FROM THE SOURCE TANK TO THE DESTINATION TANK. ON THE OPERATOR'S PANEL, TURN SOURCE TANK SELECTOR SWITCH TO "ISSUE", THE DESTINATION TANK SELECTOR SWITCH TO "RECEIVE" AND THE PUMP SELECTOR SWITCH TO "TRANSFER". WITH THE PUMP H-O-A SWITCH IN "AUTO", START THE TRANSFER BY DEPRESSING THE START PUSHBUTTON ON THE OPERATOR' PANEL. THE PUMP SHALL START AND REMAIN IN OPERATION SUBJECT TO THE ABOVE ALARM CONDITIONS LISTED ABOVE. TO END THE TRANSFER OPERATION, DEPRESS THE "STOP" PUSHBUTTON ON THE OPERATOR'S PANEL.
- TO CONDUCT A TRUCK FILL OPERATION, ALIGN THE MANUAL VALVES TO ALLOW A TRANSFER FROM THE SOURCE TANK TO THE TRUCK FILLSTANDS. ON THE OPERATOR'S PANEL, TURN DESIRED TANK SELECTOR SWITCH TO "ISSUE" AND THE PUMP SELECTOR SWITCH TO "TRUCK FILL". SELECT THE DESTINATION FILLSTAND BY CHOOSING EITHER "RIGHT" OR "LEFT" ON THE SELECTOR SWITCH AT THE TRUCK FILLSTAND ISLAND. CONNECT THE SCULLY SYSTEM OVERFILL PROTECTION PLUG AND GROUND VERIFICATION CLAMP TO THE TRUCK AND ENGAGE THE DEADMAN CONTROLLER. WITH THE PUMP H-O-A SWITCH IN "AUTO", START THE TRANSFER BY DEPRESSING THE START PUSHBUTTON ON THE TRUCK FILLSTAND. THE PUMP SHALL START AND REMAIN IN OPERATION (AND ITS ASSOCIATED INDICATOR ENERGIZED) SUBJECT TO THE ALARM CONDITIONS LISTED ABOVE. IN ADDITION, THE SCULLY SYSTEM SHALL DISABLE THE PUMP IF ANY OF THE FOLLOWING CONDITIONS ARE TRUE:
  - THE DEADMAN IS RELEASED
  - POSITIVE GROUND IS LOST
  - HIGH LEVEL CONDITION IS REACHED ON THE TRUCK BEING FILLED
 TO END THE TRUCK FILL OPERATION, DEPRESS THE "STOP" PUSHBUTTON AT THE FILLSTAND OR RELEASE THE DEADMAN.
- IF AT ANY TIME A "NO FLOW" CONDITION EXISTS FOR MORE THAN 10 SECONDS (AS INDICATED BY THE ASSOCIATED FLOW SWITCH), THE ACTIVE PUMP SHALL BE DISABLED. THE START PUSHBUTTON MUST BE DEPRESSSED AGAIN TO RESTART A PUMP.
- ALL FUEL TRANSFER PUMPS SHALL BE DISABLED WHEN ANY EXISTING EMERGENCY SHUTDOWN DEVICE (ESD) IS DEPRESSSED. DEPRESSING AN ESD SHALL ALSO DE-ENERGIZE ALL SOLENOID PILOTS AND CLOSE ALL MOTOR OPERATED VALVES WHOSE "LOCAL/REMOTE" SELECTOR SWITCH IS IN THE "REMOTE" POSITION. THE ESD ALARM SHALL BE ANNUNCIATED AT THE PLC CONTROL PANEL ON THE TRANSFER PUMP CONTROL RACK. OPERATION OF ALL PUMPS AND VALVES SHALL BE DISCONTINUED UNTIL ALL EMERGENCY SHUTDOWN SWITCHES ARE CLEARED AND THE ALARM IS ACKNOWLEDGED.

PUMP STATION 200 EQUIPMENT SCHEDULE		
EQUIPMENT NO	EQUIPMENT NAME	EQUIPMENT DESCRIPTION
FCV-201 FCV-202	PUMP CONTROL VALVES	NON-SURGE CHECK, FLOW CONTROL TO 37.8 L/s, THERMAL RELIEF SET TO 1035 kPa.
PCV-200	SURGE RELIEF CONTROL VALVE	SURGE PRESSURE RELIEF REGULATOR, PRESSURE CONTROL TO 1725 kPa.
P-201 P-202	TRANSFER PUMPS	HORIZONTAL CENTRIFUGAL, 37.8 L/s, TDH=122 M, NPSHr=4 M, 75 kW (100 HP), 3600 RPM, 480/60Hz/3ø



**PUMP STATION (200)  
FUELING SYSTEM AND INSTRUMENTATION DIAGRAM**

DATE	DESCRIPTION	BY	CHK

  
**NAVFAC**  
 COMMUNALITH OF VIRGINIA  
 BRYAN M. STRAYER  
 Lic. No. 040268  
 PROFESSIONAL ENGINEER

APPROVED	DATE
FOR COMMANDER NAVFAC	DATE
APPROVED	DATE
ACTIVITY - SATISFACTORY TO	DATE
PM/DM	
DES DRC	DRW MHK
CHK BMS	
FIRE PROTECTION	
BRANCH MANAGER	
CHIEF ENG/ARCH	

DEPARTMENT OF THE NAVY  
 NAVAL FACILITIES ENGINEERING COMMAND  
 JACKSONVILLE, NORTH CAROLINA  
 MILCON P-725, PUMP STATION UPGRADES  
 JACKSONVILLE, NORTH CAROLINA  
 NAVFAC DRAWING NO. 12556448

CODE ID. NO. 80091	SIZE D
SCALE: AS NOTED	
MAXIMO NO.	
JOB ORDER NO.	
WORK ORDER NO. 859348	
CONSTR. CONTR. NO.	
NAVFAV DRAWING NO. 12556448	
SHEET 14 OF 21	
<b>M-601</b>	

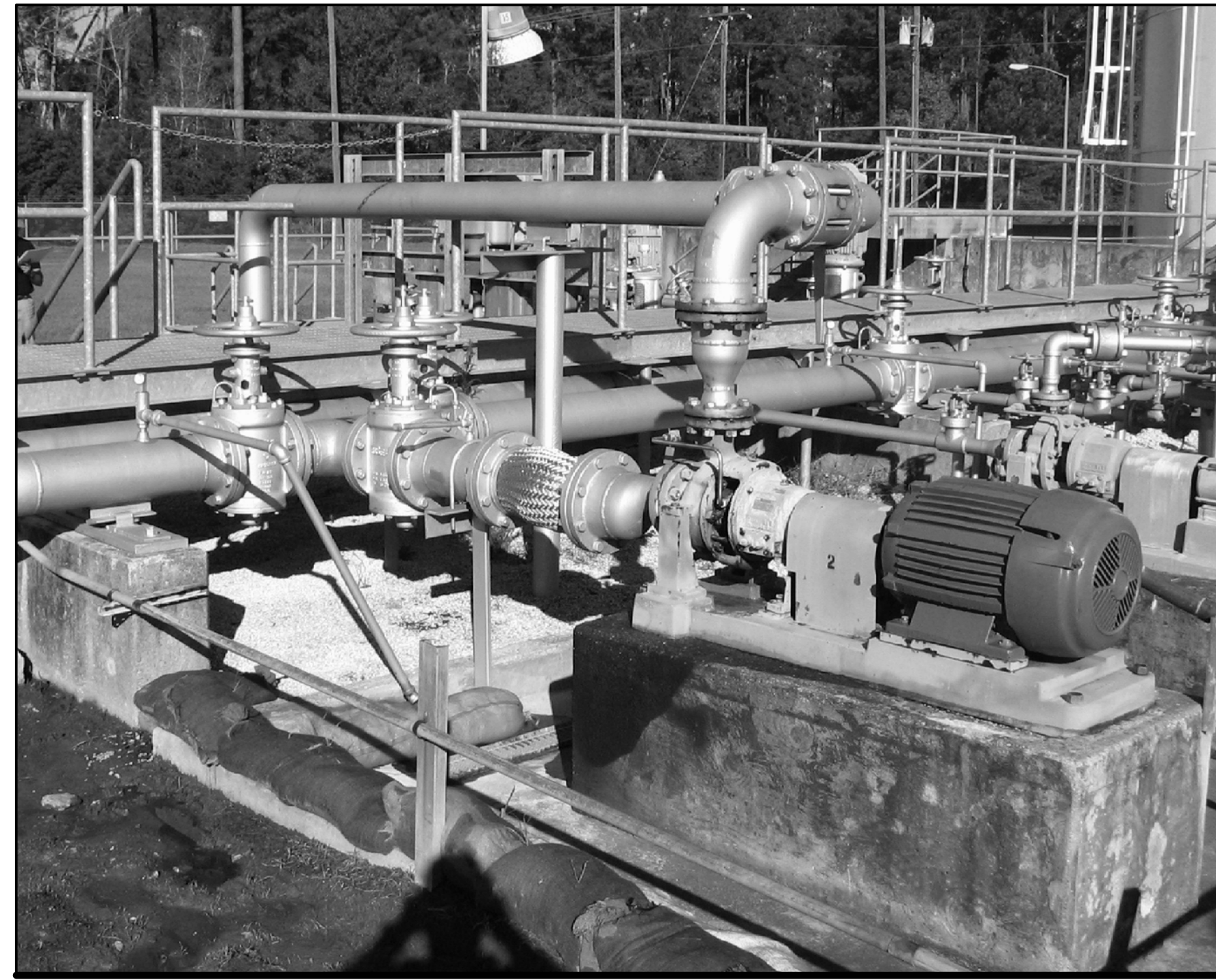
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**AUSTIN BROCKENBROUGH & ASSOCIATES, L.L.P.**  
 Consulting Engineers  
 P.O. Box 4800 Chester, Virginia 23831

FILE NAME: G:\09 Jobs\09-057 Pump Station Upgrades - MGS New River\GD\VM-801 FLOW DIAGRAM AND SCHEDULES.dwg LAYOUT NAME: FLOW DIAGRAM SCHEDULE AND SEQUENCE OF CONSTRUCTION PLOTTED: Thursday, February 04, 2010 - 10:15am USER: mksesah



**PUMP PAD OVERVIEW** **D1**  
MD401



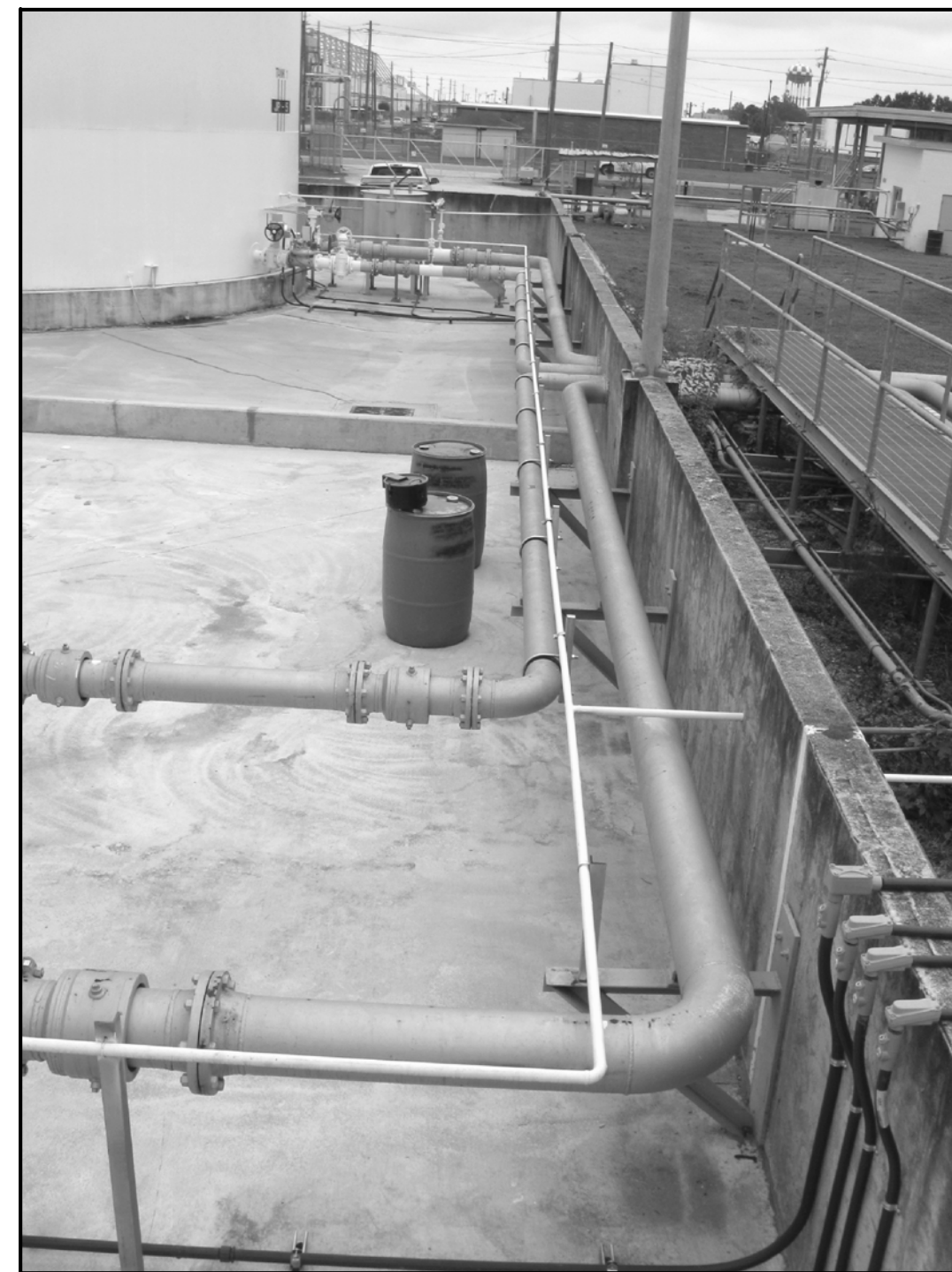
**PUMP PAD, SOUTHERN PORTION** **D2**  
MD401



**PUMP PAD, NORTHERN PORTION** **D3**  
MD401

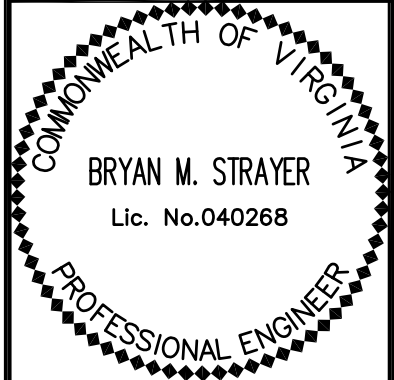


**TANK 3 PIPING** **D4**  
MD401



**TANK 1 AND 2 PIPING** **D5**  
MD401

NO.	DATE	DESCRIPTION	BY



APPROVED  
DATE

FOR COMMANDER NAVFAC  
DATE

ACTIVITY - SATISFACTORY TO  
DATE

PM/DM

DES: **DRC** | DRW: **MHK** | CHK: **BMS**

FIRE PROTECTION

BRANCH MANAGER

CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND  
MILCON P-725, PUMP STATION UPGRADES  
JACKSONVILLE, NORTH CAROLINA  
MCRS NEW RIVER  
JACKSONVILLE, NORTH CAROLINA

CODE ID. NO. 80091 SIZE D  
SCALE: AS NOTED  
MAXIMO NO.  
JOB ORDER NO.  
WORK ORDER NO. 859348  
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12556449

SHEET 15 OF 21

MD901

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Consulting Engineers  
P.O. Box 4800 Chester, Virginia 23831

DRAWFORM REVISION: 6 AUG 2007

FILE NAME: G:\09 Jobs\09-057 Pump Station Upgrades - MCRS New River\09\MD901 PHOTOGRAPHS.dwg LAYOUT NAME: MD901 PHOTOGRAPHS PLOTTED: Thursday, February 04, 2010 - 10:15am USER: messiah

## GENERAL NOTES

- SEE SHEET C-001 FOR CIVIL LEGEND AND ABBREVIATIONS, SHEET M-001 FOR MECHANICAL LEGEND AND ABBREVIATIONS AND SHEET G-003 FOR GENERAL NOTES AND SEQUENCE OF CONSTRUCTION.
- EXISTING FEATURES ARE SHOWN USING A LIGHT LINE AND ARE DELINEATED WITH CONNECT TO EXISTING SYMBOLS. NEW FEATURES ARE SHOWN USING A HEAVY LINE WEIGHT.
- ALL ELECTRICAL WORK AND MATERIAL IS NEW AND SHALL BE PROVIDED BY THE CONTRACTOR UNLESS INDICATED OTHERWISE.
- UTILITY CONNECTIONS SHALL BE APPROVED IN ADVANCE.
- CONSTRUCTION IS PHASED. ELECTRICAL DEMOLITION AND INSTALLATION SHALL BE COORDINATED WITH OTHER DISCIPLINES TO ENSURE EQUIPMENT AND SYSTEMS ARE OPERATIONAL AS REQUIRED BY ACTIVITY. SEE G-002 FOR ADDITIONAL INFORMATION.

## WIRING LOGIC

- SXXX INDICATES POWER CIRCUIT. FOR WIRING, CONDUIT AND TERMINATIONS, SEE SCHEDULE ON E-601.
- CXXX INDICATES CONTROL CIRCUIT FOR WIRING, CONDUIT AND TERMINATIONS, SEE SCHEDULE ON E-601.

## GENERAL LEGEND

- 1 GENERAL NOTE TAG - REFER TO "GENERAL NOTES THIS SHEET" FOR EACH SHEET
- ① NEW WORK NOTE TAG - REFER TO "NEW WORK NOTES - THIS SHEET" FOR EACH SHEET

## LEGEND

- UNDERGROUND DUCTBANK, CONCRETE ENCASED UON, DESCRIPTION AS INDICATED
- US — UNDERGROUND SECONDARY CONDUIT, DIRECT BURIED PVC UON
- UC — UNDERGROUND CONTROL CONDUIT, DIRECT BURIED PVC UON
- US/UC — UNDERGROUND SECONDARY AND CONTROL CONDUITS CO-LOCATED IN COMMON TRENCH, DIRECT BURIED PVC UON
- UP — UNDERGROUND PRIMARY CONDUIT, CONCRETE ENCASED UON, DESCRIPTION AS INDICATED
- G — GROUNDING CONDUCTOR, #4/0 BARE COPPER UON, DIRECT BURIED 1000 BFG
- Ⓝ JUNCTION BOX
- Ⓣ FLOW SWITCH
- Ⓜ-125 MOTOR CONNECTION, HP AS INDICATED
- FLEXIBLE CONNECTION, NEMA 8, CLASS 1, DIVISION 1, GROUP D HAZARDOUS LOCATIONS
- Ⓞ GROUND ROD
- Ⓢ CONNECT TO EXISTING
- Sxp3 THREE-WAY SWITCH, 20A, 120/277 V, CLASS I, DIVISION 1, GROUP D
- HANDHOLE, TYPE 5 UNLESS OTHERWISE NOTED

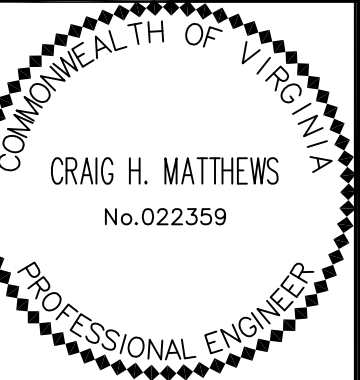
## ONE LINE DIAGRAM LEGEND

- POWER TRANSFORMER, RATINGS AS INDICATED
- CURRENT TRANSFORMER, SINGLE RATIO AS SHOWN
- MEDIUM VOLTAGE CABLE TERMINATION
- GROUNDING ELECTRODE CONNECTION
- CABLE OR BUS, TYPE AND CHARACTERISTICS AS INDICATED
- Ⓜ WHD WATT-HOUR METER WITH DEMAND REGISTER
- Ⓜ MOLDED CASE CIRCUIT BREAKER, TYPE AND SIZE AS INDICATED
- PUSHBUTTON - EMERGENCY STOP, MAINTAINED POSITION
- PUSHBUTTON - NORMALLY OPEN, SPRING RETURN TO NORMAL POSITION
- PUSHBUTTON - NORMALLY CLOSED, SPRING RETURN TO NORMAL POSITION
- RELAY CONTACT - NORMALLY CLOSED
- RELAY CONTACT - NORMALLY OPEN
- FUSE - SIZE & VOLTAGE AS INDICATED
- Ⓜ XXX RELAY COIL - XXX INDICATES FUNCTION
- Ⓜ PLC XXXXX PLC I/O POINT - XXXXX INDICATES INPUT, OUTPUT, OR ANALOG FUNCTION
- xx xx xx SELECTOR SWITCH - OPERATION, CONTACT ARRANGEMENT AND NO. OF CONTACTS AS INDICATED
- TRANSFORMER - CONTROL, VOLTAGE AND COIL ARRANGEMENT AS INDICATED

## ELECTRICAL ABBREVIATIONS

A	AMP	NEUT	NEUTRAL
AIC	AMP INTERRUPTING CAPACITY	O/L	OVERLOAD
AUX	AUXILIARY	PNL	PANEL
BKR	BREAKER	PNLBD	PANELBOARD
BFG	BELOW FINISHED GRADE	PH	PHASE
BLDG	BUILDING	PLC	PROGRAMMABLE LOGIC CONTROLLER
C	CONDUIT OR CONDUCTOR	PVC	POLYVINYL CHLORIDE
CKT	CIRCUIT	PWR	POWER
ESD	EMERGENCY STOP DEVICE	REQ'D	REQUIRED
ESR	EMERGENCY STOP RELAY	SEC	SECONDS
EXIST	EXISTING	SS	STAINLESS STEEL
GND	GROUND	TYP	TYPICAL
HH	HANDHOLE	UG	UNDERGROUND
HP	HORSEPOWER	UC	UNDERGROUND CONTROL
JB	JUNCTION BOX	UP	UNDERGROUND PRIMARY
KAIC	KILOAMP INTERRUPTING CAPACITY	US	UNDERGROUND SECONDARY
KV	KILOVOLT	UON	UNLESS OTHERWISE NOTED
KVA	KILOVOLT AMPERE	V	VOLT
MAX	MAXIMUM	W	WATT OR WIRE
MCB	MAIN CIRCUIT BREAKER	WMD	WATTHOUR DEMAND METER
mm	MILIMETER	W/	WITH
MS	MOTOR STARTER	∅	PHASE
MTD	MOUNTED	#	NUMBER

DATE	DESCRIPTION	SYN	APPR



APPROVED

FOR COMMANDER NAVFAC

DATE

APPROVED

ACTIVITY - SATISFACTORY TO

DATE

PM/DM

DES JAP DRW MHK CHK CHM

FIRE PROTECTION

BRANCH MANAGER

CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING COMMAND

NAVAL FACILITIES ENGINEERING COMMAND

JACKSONVILLE, NORTH CAROLINA

JACKSONVILLE, NORTH CAROLINA

MILCON P-725, PUMP STATION UPGRADES

ELECTRICAL NOTES, LEGEND AND ABBREVIATIONS

CODE ID. NO. 80091 SIZE D

SCALE: AS NOTED

MAXIMO NO.

JOB ORDER NO.

WORK ORDER NO. 859348

CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12556450

SHEET 16 OF 21

E-001

ALL DIMENSIONS WITHOUT A DECIMAL POINT ARE MILLIMETERS AND ALL THOSE WITH A DECIMAL POINT ARE METERS, UNLESS OTHERWISE NOTED

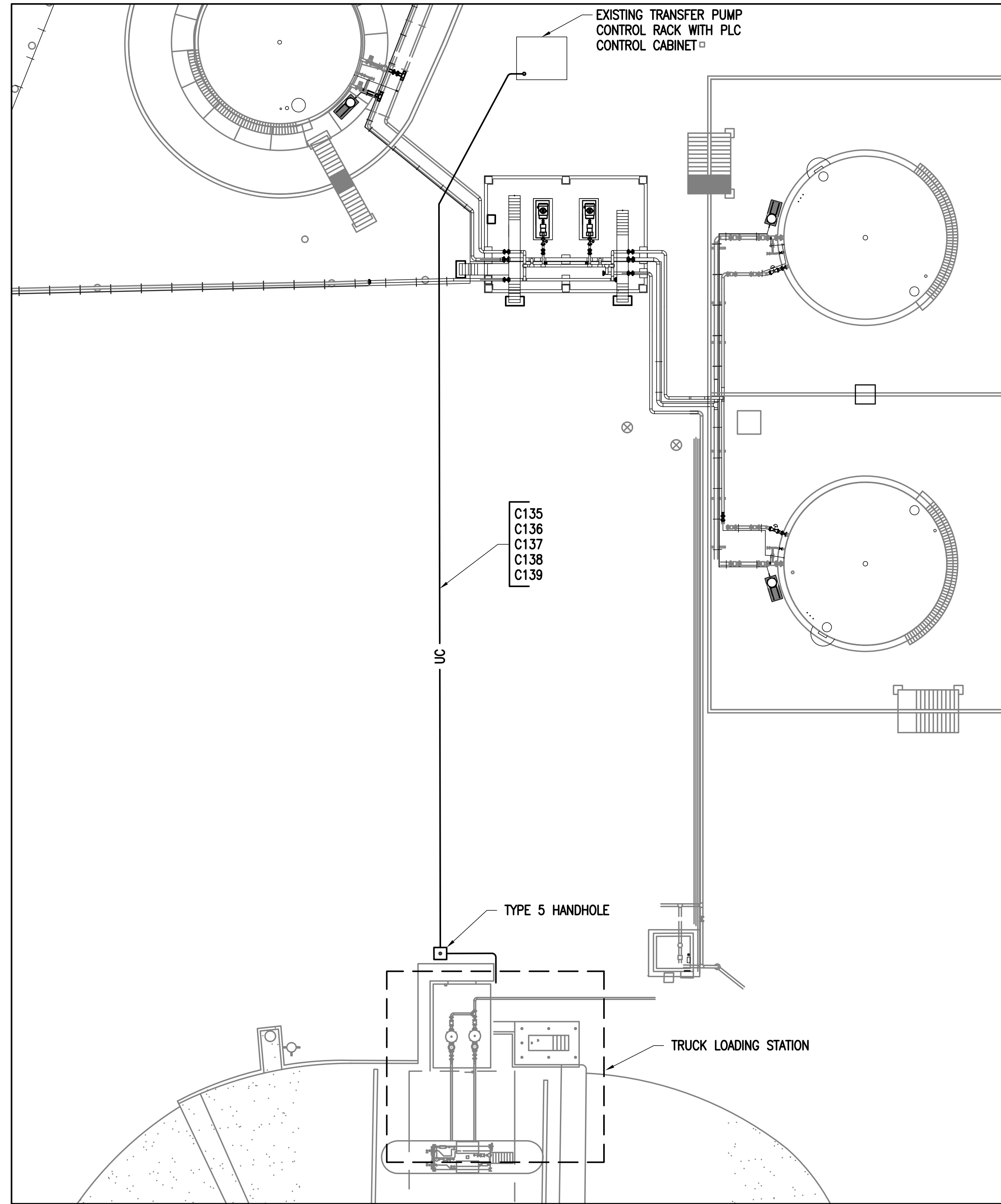
AUSTIN BROCKENBROUGH & ASSOCIATES, L.L.P.  
Consulting Engineers  
P.O. Box 4800 Chester, Virginia 23831

DRAWFORM REVISION: 6 AUG 2007

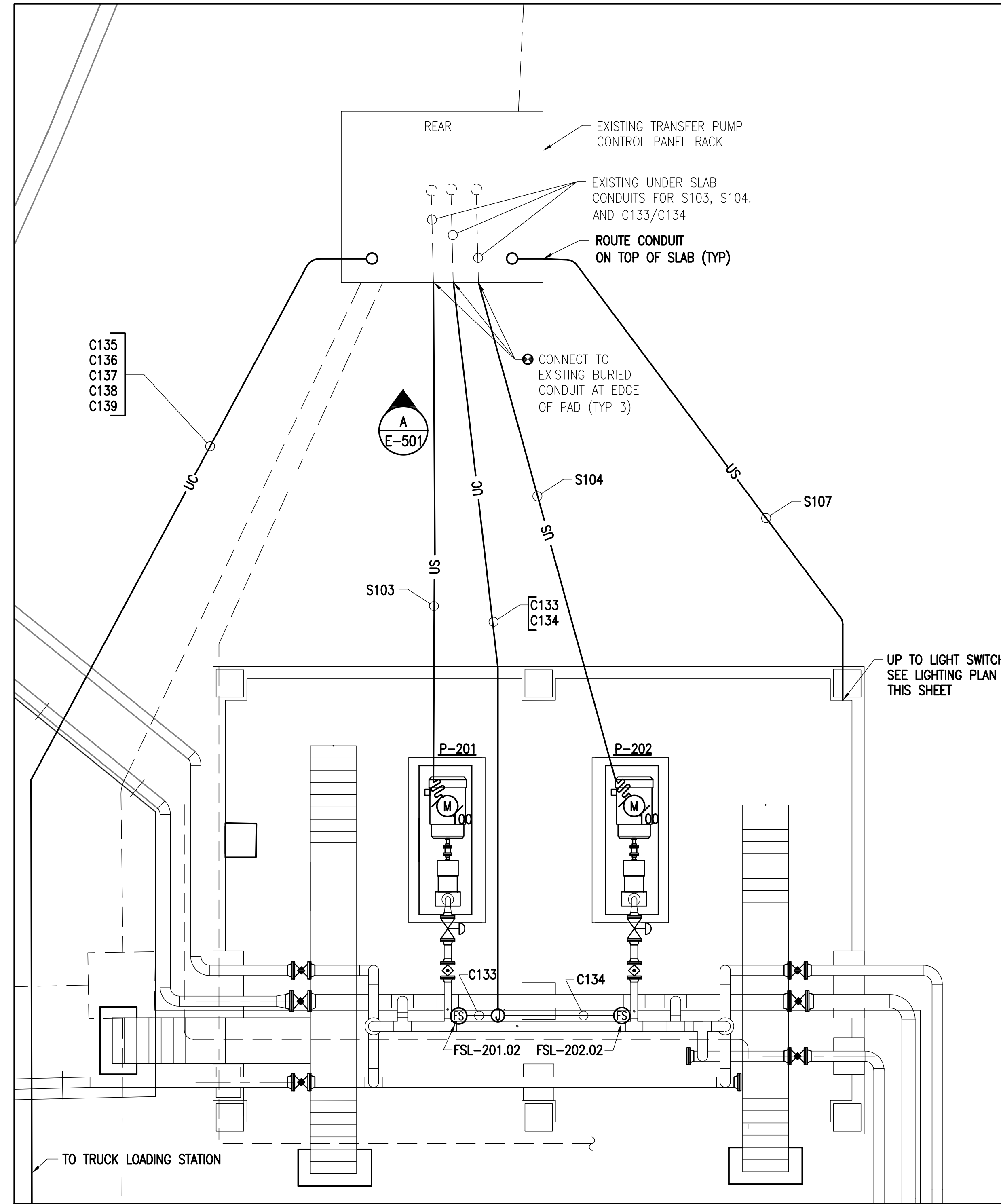
FILE NAME: G:\09 Jobs\09-057 Pump Station Upgrades - MGS New River\09\VE-E-001 LEGEND, ABBREVIATIONS AND NOTES.dwg LAYOUT NAME: ELECTRICAL NOTES LEGEND AND ABBREVIATIONS PLOTTED: Thursday, February 04, 2010 - 10:15am USER: mnessiah



FILE NAME: G:\09 Jobs\09-057 Pump Station Upgrades - MCG New River\09\VE-E-01 PUMP PAD AND SITE PLANS.dwg LAYOUT NAME: E-401 PUMP PAD AND SITE PLANS PLOTTED: Thursday, February 04, 2010 - 10:15am USER: mnessoh



PLAN NORTH  
**SITE PLAN**  
SCALE: 1:200



PLAN NORTH  
**PUMP PAD POWER PLAN**  
SCALE: 1:50

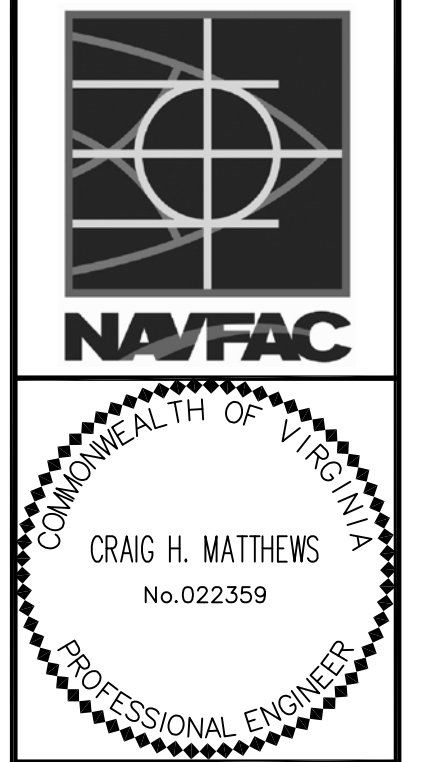
**GRAPHIC SCALE(S):**



ALL DIMENSIONS WITHOUT A DECIMAL POINT ARE MILLIMETERS AND ALL THOSE WITH A DECIMAL POINT ARE METERS, UNLESS OTHERWISE NOTED

**AUSTIN BROCKENBROUGH & ASSOCIATES, L.L.P.**  
Consulting Engineers  
P.O. Box 4500 Chester, Virginia 23831

NO.	DATE	DESCRIPTION	BY	CHKD	APPR



APPROVED	DATE		
FOR COMMANDER NAVFAC	DATE		
APPROVED			
ACTIVITY - SATISFACTORY TO	DATE		
DESIGNER	DRW	CHK	CHM
JAP	MHK		
FIRE PROTECTION			
BRANCH MANAGER			
CHIEF ENG/ARCH			

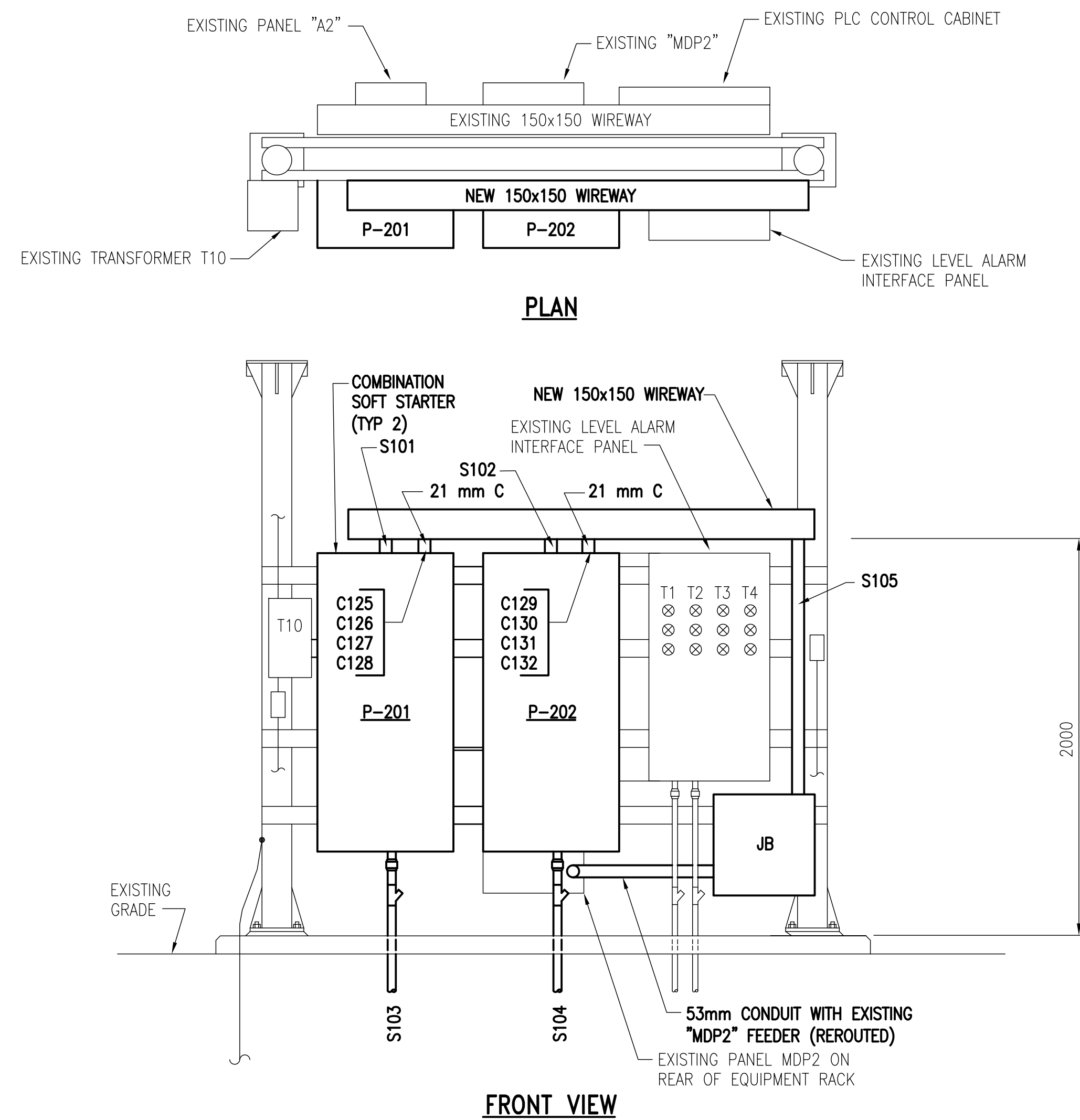
DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND  
JACKSONVILLE, NORTH CAROLINA  
MCGAS NEW RIVER  
MCGAS NEW RIVER  
JACKSONVILLE, NORTH CAROLINA  
**MILCON P-725, PUMP STATION UPGRADES**  
PUMP PAD AND SITE PLANS

CODE ID. NO.	80091	SIZE	D
SCALE:	AS NOTED		
MAXIMO NO.			
JOB ORDER NO.			
WORK ORDER NO.	859348		
CONSTR. CONTR. NO.			
NAVFAC DRAWING NO.	12556451		
SHEET	17	OF	21
<b>E-401</b>			

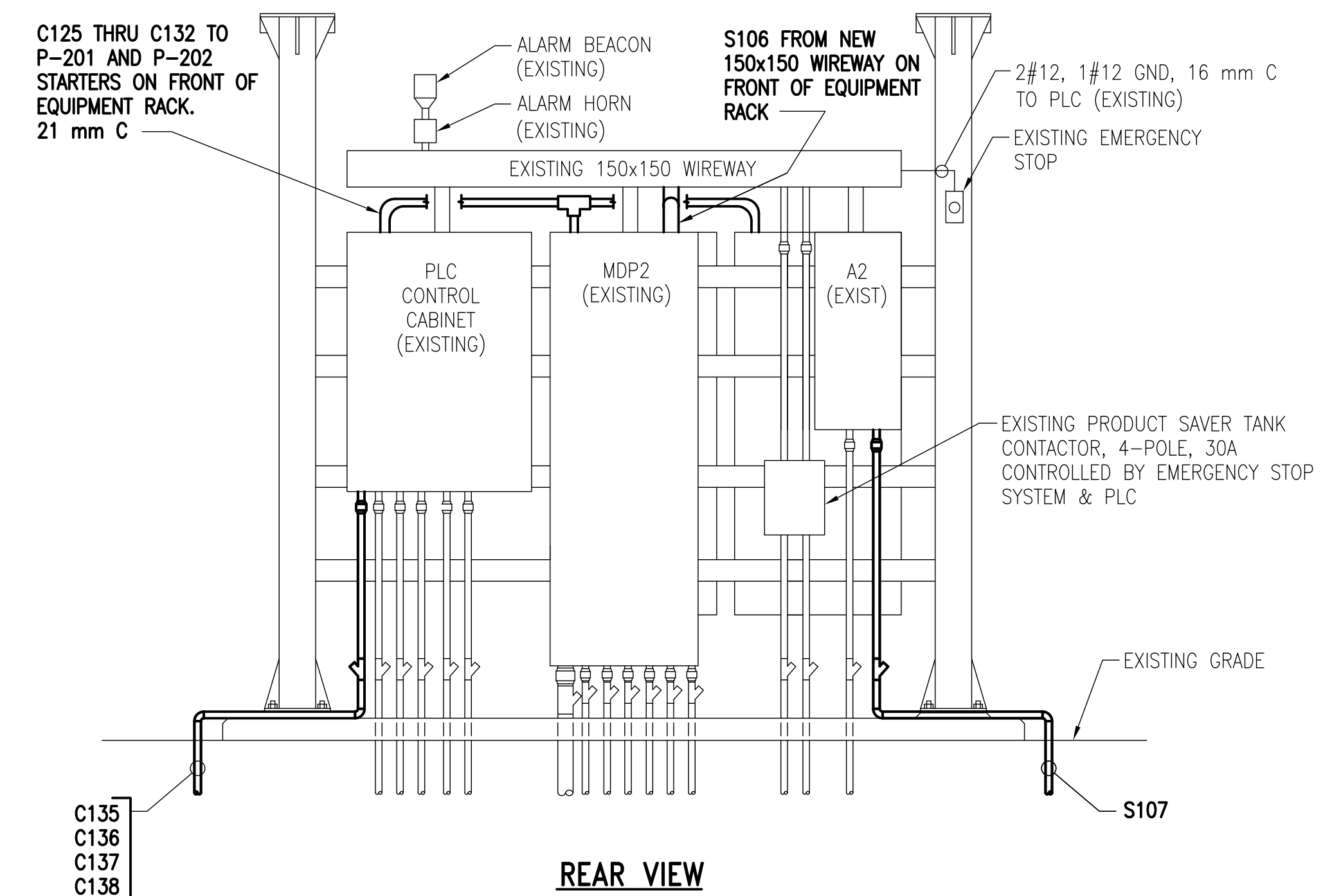
DRAWING REVISION: 6 AUG 2007



FILE NAME: G:\09 Jobs\09-057 Pump Station Upgrades - MCA5 New River\09\VE-501 CONTROL RACK DETAILS AND PLC CONNECTIONS.dwg LAYOUT NAME: E-501 CONTROL RACK DETAILS AND PLC CONNECTIONS PLOTTED: Thursday, February 04, 2010 - 10:15am USER: mikesouh

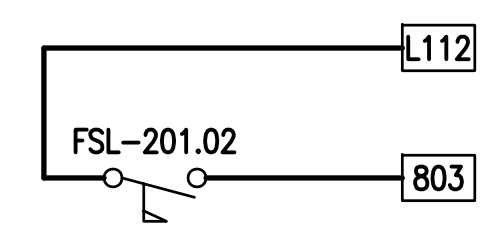
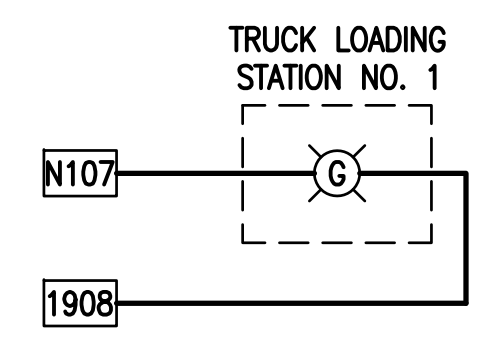
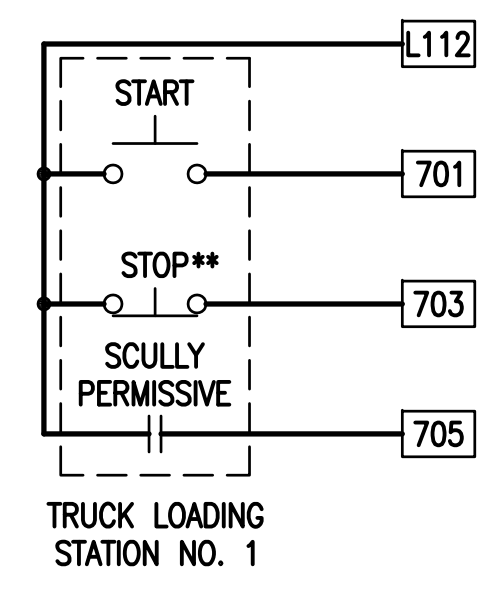


FRONT VIEW

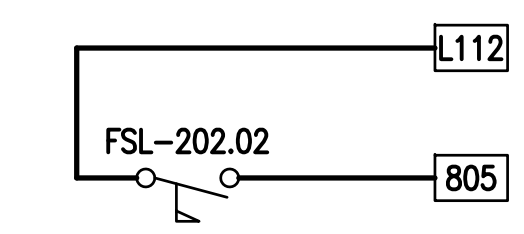
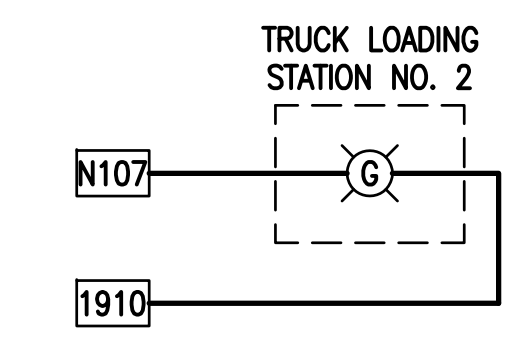
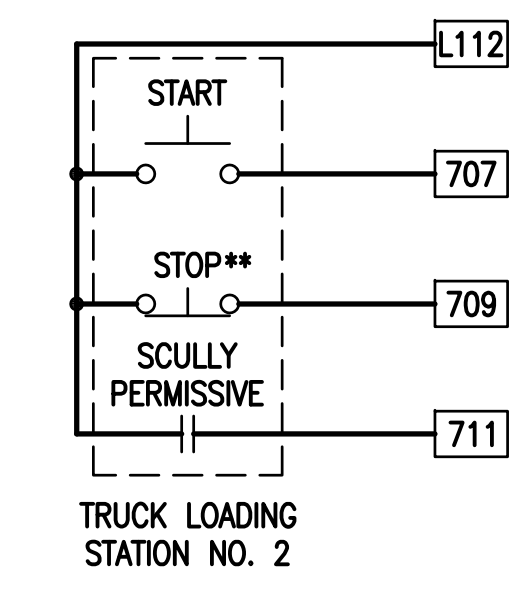


REAR VIEW

TRANSFER PUMP CONTROL PANEL RACK  
SCALE: 1:20

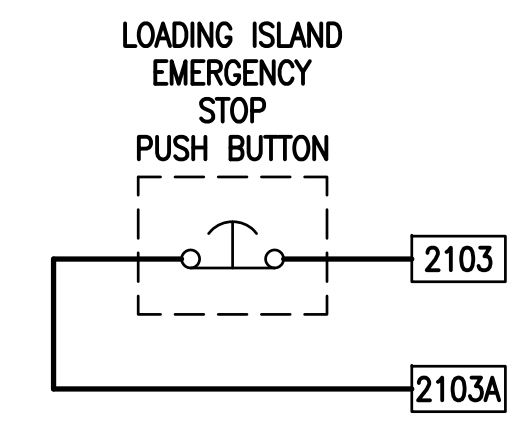
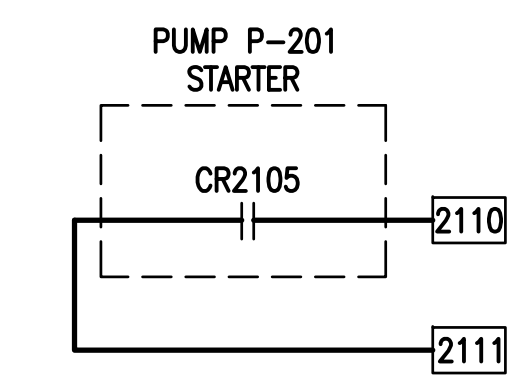
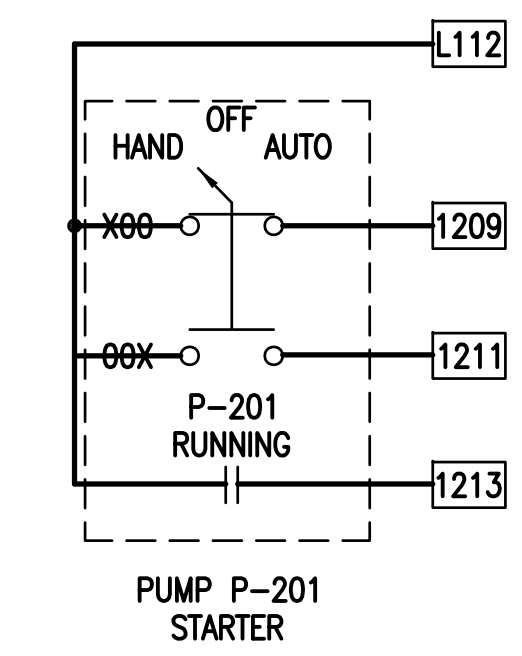


1501 START SIGNAL TO P-201 MOTOR STARTER  
1502 MOTOR STARTER

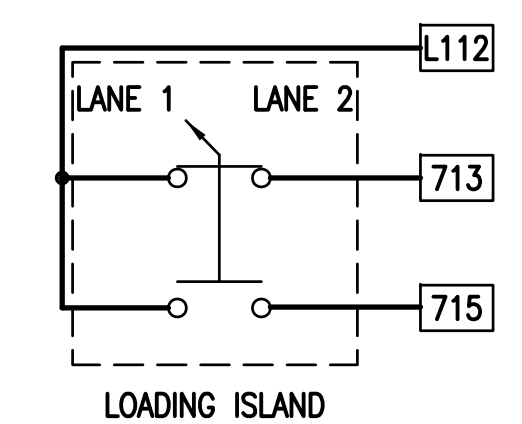
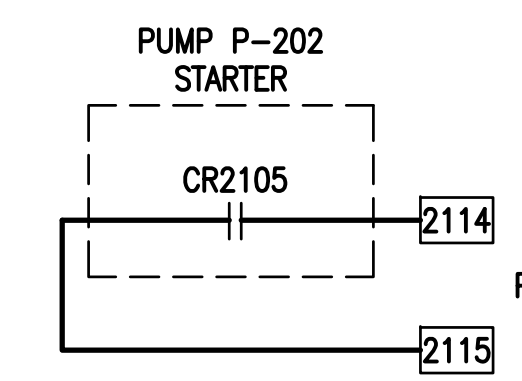
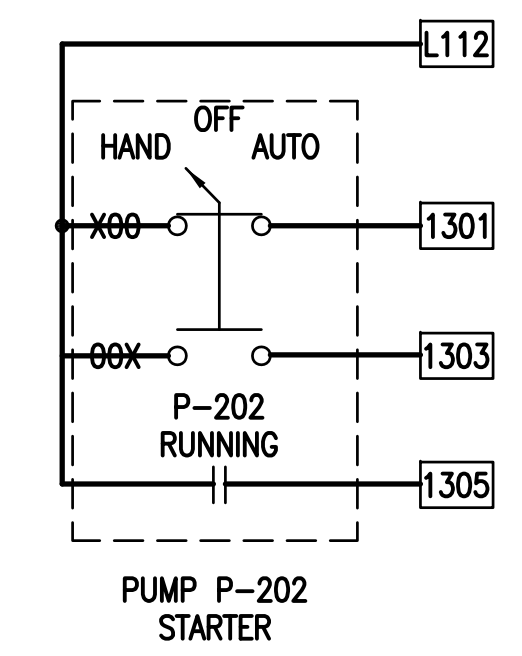


1503 START SIGNAL TO P-202 MOTOR STARTER  
1504 MOTOR STARTER

PLC I/O LEGEND  
1908 TERMINAL POINT IN PLC CONTROL CABINET

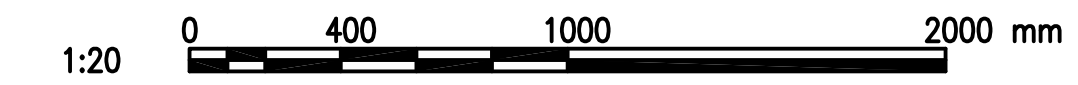


PLC I/O NOTES:  
1. PLC I/O POINTS ARE EXISTING. FIELD VERIFY CONNECTION POINTS PRIOR TO MAKING ANY CHANGES.  
2. CONNECTIONS ARE BASED ON PANEL DRAWINGS PROVIDED BY TELEMETRY AND PROCESS CONTROL, INC. (TPC), STILLWATER, MN, 11320 UPPER 33RD STREET NORTH, LAKE ELMO, MN 55042, TELEPHONE: 651-430-0435. TPC PROJECT NUMBER 27219.

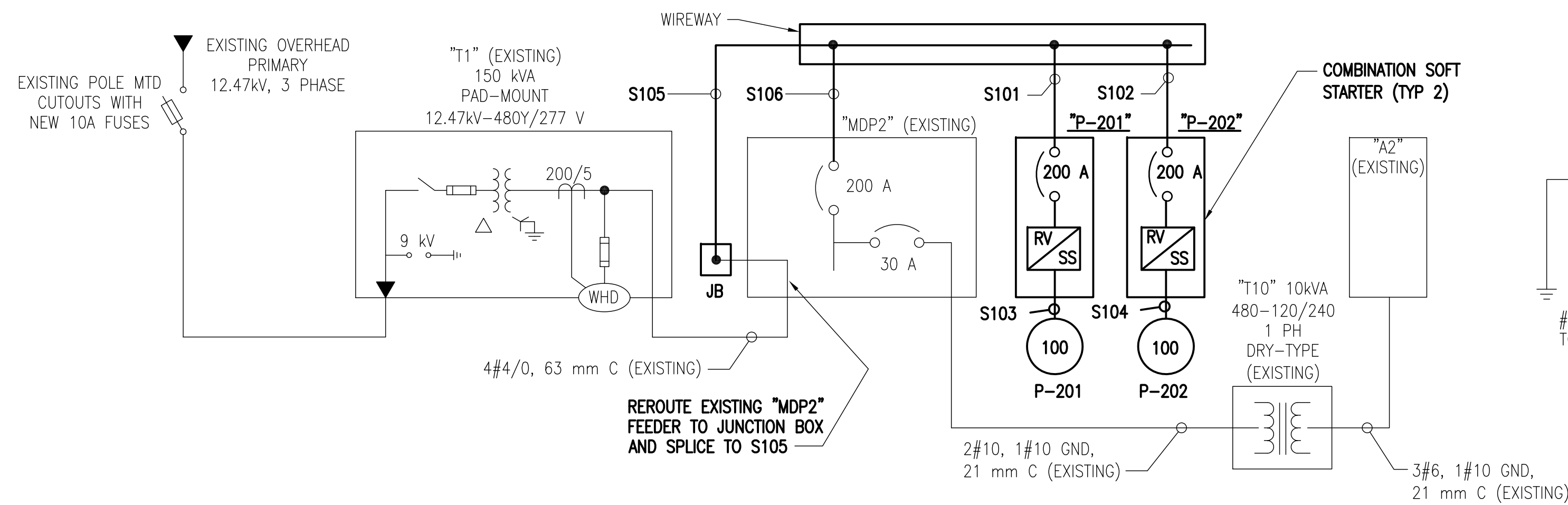


PLC I/O CONNECTIONS  
SCALE: NONE

GRAPHIC SCALE(S):

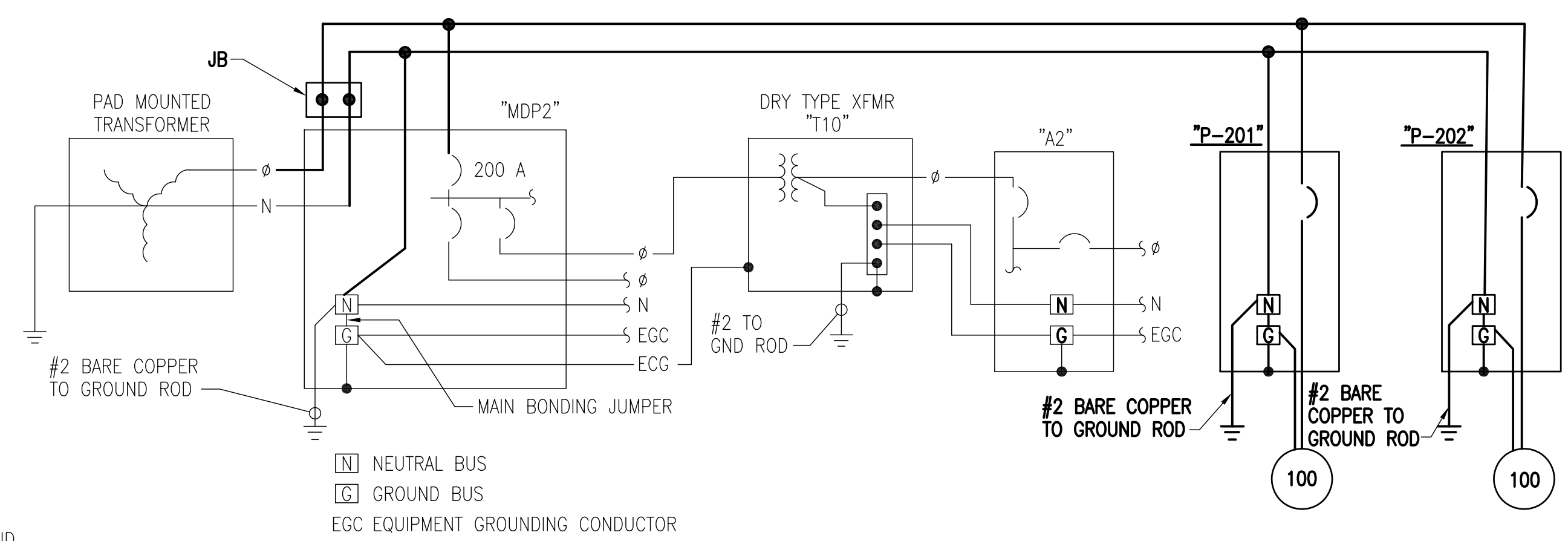


APPROVED	DATE	DESCRIPTION	SYM
APPROVED	DATE	FOR COMMANDER NAVFAC	
APPROVED	DATE	ACTIVITY - SATISFACTORY TO	
DES	JAP	DRW	MHK
CHK	CHM		
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND JACKSONVILLE, NORTH CAROLINA MCA5 NEW RIVER JACKSONVILLE, NORTH CAROLINA <b>MILCON P-725, PUMP STATION UPGRADES</b> CONTROL RACK DETAILS AND PLC CONNECTIONS			
CODE ID. NO.	80091	SIZE	D
SCALE:	AS NOTED		
MAXIMO NO.			
JOB ORDER NO.			
WORK ORDER NO.	859348		
CONSTR. CONTR. NO.			
NAVFAC DRAWING NO.	12556453		
SHEET	19	OF	21
<b>E-501</b>			
AUSTIN BROCKENBROUGH & ASSOCIATES, L.L.P. Consulting Engineers P.O. Box 4500 Chester, Virginia 23831			
ALL DIMENSIONS WITHOUT A DECIMAL POINT ARE MILLIMETERS AND ALL THOSE WITH A DECIMAL POINT ARE METERS, UNLESS OTHERWISE NOTED			
DRAWFORM REVISION: 6 AUG 2007			



**TRANSFER PUMP ONE-LINE/RISER DIAGRAM**

SCALE: NONE



**GROUNDING DIAGRAM**

SCALE: NONE

**CIRCUIT SCHEDULE**

CKT NO	SOURCE	DESTINATION	CONDUCTORS	CONDUIT	REMARKS
S101	S105	P-201 STARTER	3#2/0, #4 NEUT	53	
S102	S105	P-202 STARTER	3#2/0, #4 NEUT	53	
S103	STARTER P-201	PUMP P-201	3#2/0, #6 GND, 4#12	53	MOTOR WINDING HEATER, THERMOSTAT
S104	STARTER P-202	PUMP P-202	3#2/0, #6 GND, 4#12	53	MOTOR WINDING HEATER, THERMOSTAT
S105	EXISTING "MDP2" FEEDER	WIREWAY	4#4/0	53	SPLICE TO EXISTING FEEDER IN NEW JB
S106	S105	"MDP2"	4#4/0	53	TAP IN NEW WIREWAY
S107	A2-4	PUMP PAD LIGHTS	3#12	21	CONNECT TO EXISTING SPARE CIRCUIT BREAKER

**LIGHTING FIXTURE SCHEDULE**

FIXTURE SYMBOL	SKETCH NO AND TYPE	NUMBER AND TYPE OF LAMPS	VOLTAGE	MOUNTING	REMARKS
⚡	NL-28	(2) F32T8	120	SURFACE	①

**LIGHTING FIXTURE SCHEDULE NOTES:**

1. COPPER-FREE ALUMINUM HOUSING WITH POLYCARBONATE LENS.

**PLC I/O SCHEDULE**

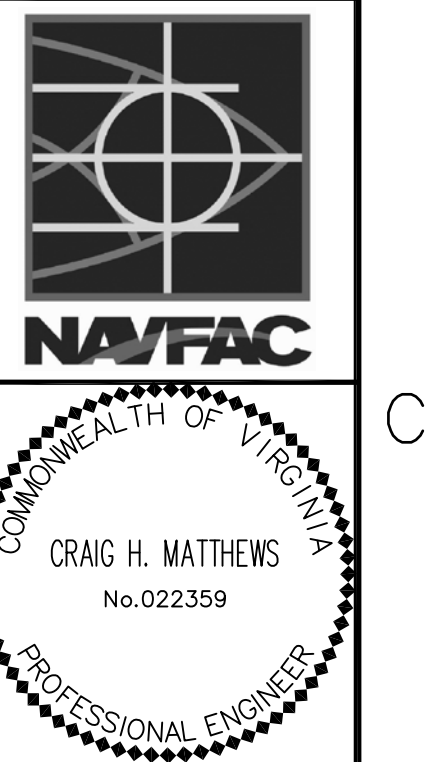
INPUT/OUTPUT	CIRCUIT NO	WIRING	SOURCE/DESTINATION	TYPE*	REMARKS
PUMP P-201 RUN COMMAND	C125	2#12	P-201 STARTER	DO	PERMIT OR PREVENT RUN
PUMP P-201 IN HAND	C126	2#14	P-201 STARTER H-O-A SWITCH	DI	
PUMP P-201 IN AUTO	C127	2#14	P-201 STARTER H-O-A SWITCH	DI	
PUMP P-201 RUNNING	C128	2#14	P-201 MOTOR STARTER	DI	
PUMP P-202 RUN COMMAND	C129	2#12	P-202 STARTER	DO	PERMIT OR PREVENT RUN
PUMP P-202 IN HAND	C130	2#14	P-202 STARTER H-O-A SWITCH	DI	
PUMP P-202 IN AUTO	C131	2#14	P-202 STARTER H-O-A SWITCH	DI	
PUMP P-202 RUNNING	C132	2#14	P-202 MOTOR STARTER	DI	
PUMP P-201 LOW FLOW	C133	2#12	FLOW SWITCH FSL-201.02	DI	COMMON 21 mm CONDUIT BETWEEN PLC PANEL AND JUNCTION BOX AT FLOW SWITCHES
PUMP P-202 LOW FLOW	C134	2#12	FLOW SWITCH FSL-202.02	DI	
PUMP START/STOP/SCULLY PERMISSIVE	C135	4#14	TRUCK LOADING STATION NO. 1 PUSH BUTTON STATION	DI	COMMON 53 mm CONDUIT BETWEEN LOADING RACK EXISTING JUNCTION BOX AND PLC PANEL
PUMP RUN INDICATOR LIGHT		2#14		DO	
PUMP START/STOP/SCULLY PERMISSIVE	C136	4#14	TRUCK LOADING STATION NO. 2 PUSH BUTTON STATION	DI	
PUMP RUN INDICATOR LIGHT		2#14		DO	
LANE SELECTOR SWITCH	C137	3#14	LOADING ISLAND	DI	
EMERGENCY STOP	C138	2#14	LOADING ISLAND	DI	

\* DI = DISCRETE INPUT  
DO = DISCRETE OUTPUT

**PLC PROGRAMMING NOTES:**

1. FOR SEQUENCE OF OPERATION AND REQUIRED PROGRAMMING, SEE MECHANICAL SHEETS.
2. FOR PLC CONNECTION POINTS SEE DRAWING E-501.

APPR	DATE	DESCRIPTION	SYM



APPROVED

FOR COMMANDER NAVFAC

DATE

APPROVED

ACTIVITY - SATISFACTORY TO DATE

FM/DM

DES JAP | DRW MHK | CHK CHM

FIRE PROTECTION

BRANCH MANAGER

CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND  
JACKSONVILLE, NORTH CAROLINA  
MILCON P-725, PUMP STATION UPGRADES  
SCHEDULES AND ONE-LINE DIAGRAM

CODE ID. NO. 80091 SIZE D

SCALE: AS NOTED

MAXIMO NO.

JOB ORDER NO.

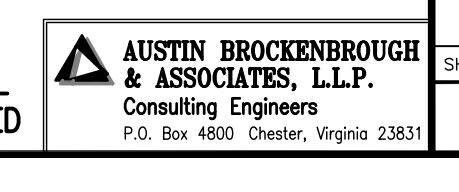
WORK ORDER NO. 859348

CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12556454

SHEET 20 OF 21

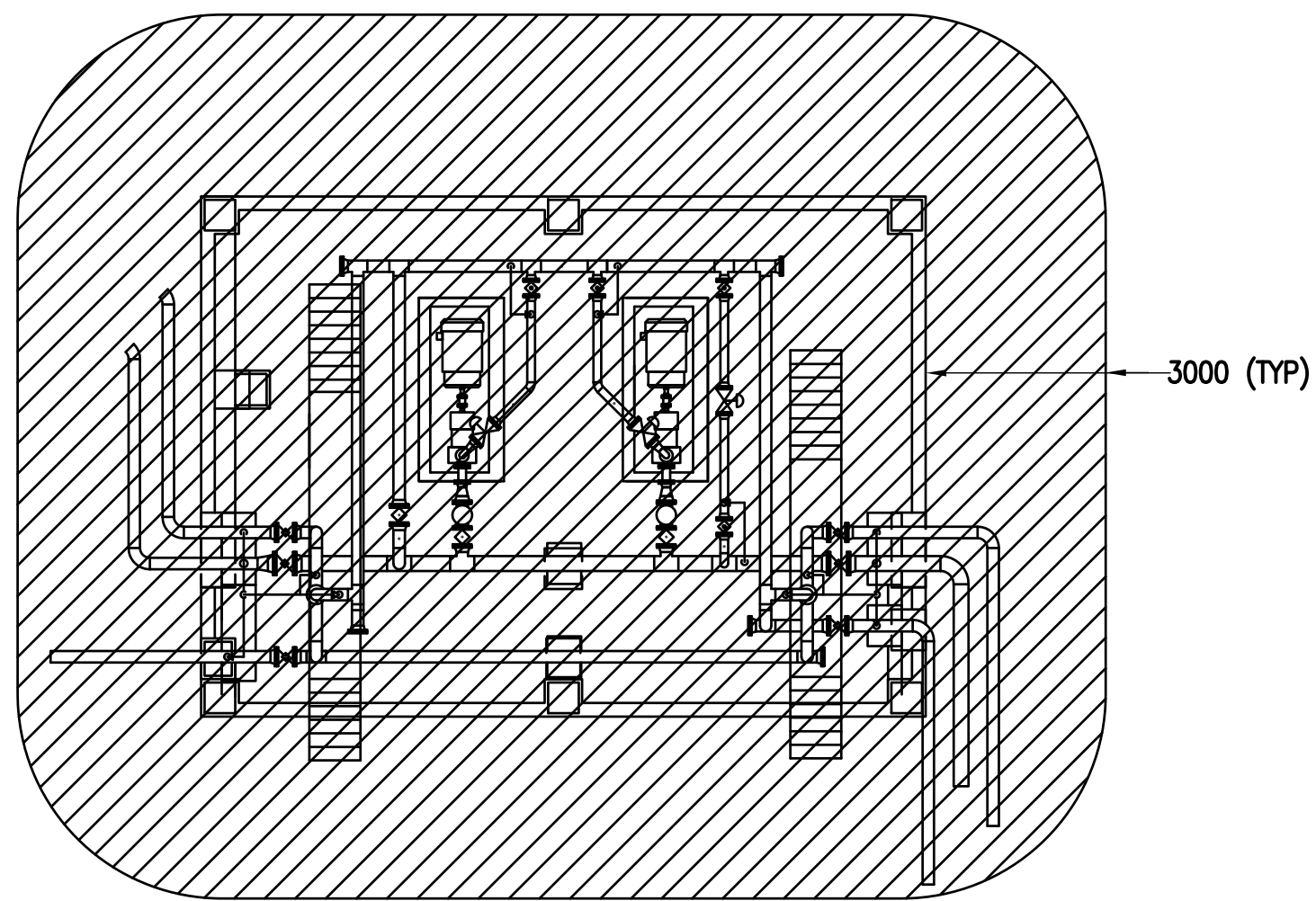
E-601



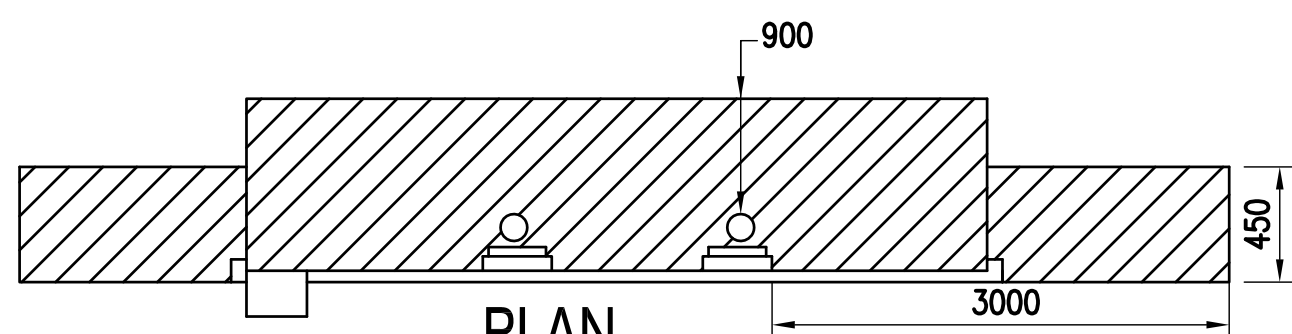
ALL DIMENSIONS WITHOUT A DECIMAL POINT ARE MILLIMETERS AND ALL THOSE WITH A DECIMAL POINT ARE METERS, UNLESS OTHERWISE NOTED

FILE NAME: G:\09 Jobs\09-057 Pump Station Upgrades - MCS New River\09\VE-E-601 SCHEDULES AND ONE-LINE DIAGRAM LAYOUT\NAVIC SCHEDULES AND ONE-LINE DIAGRAM PLOTTED: Thursday, February 04, 2010 - 10:15am USER: mcaesuh

FILE NAME: G:\09 Jobs\09-057 Pump Station Upgrades - MCA's New River\09-057 E-602 PUMP PAD CLASSIFICATION, DETAILS & WIRING DIAGRAMS.dwg LAYOUT NAME: E-602 PUMP PAD CLASSIFICATION, DETAILS & WIRING DIAGRAMS PLOTTED: Thursday, February 04, 2010 - 10:15am USER: mressouth



**SECTION**  
SCALE: NONE

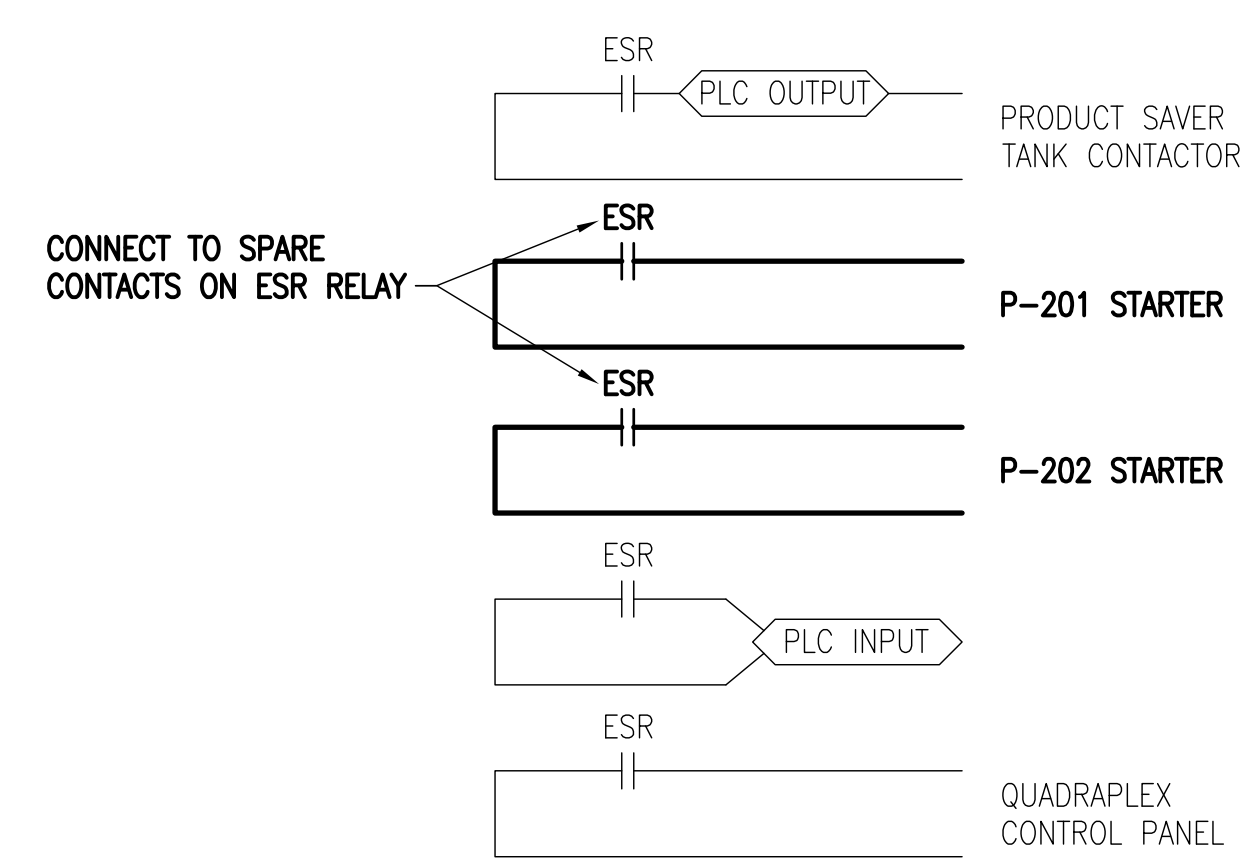
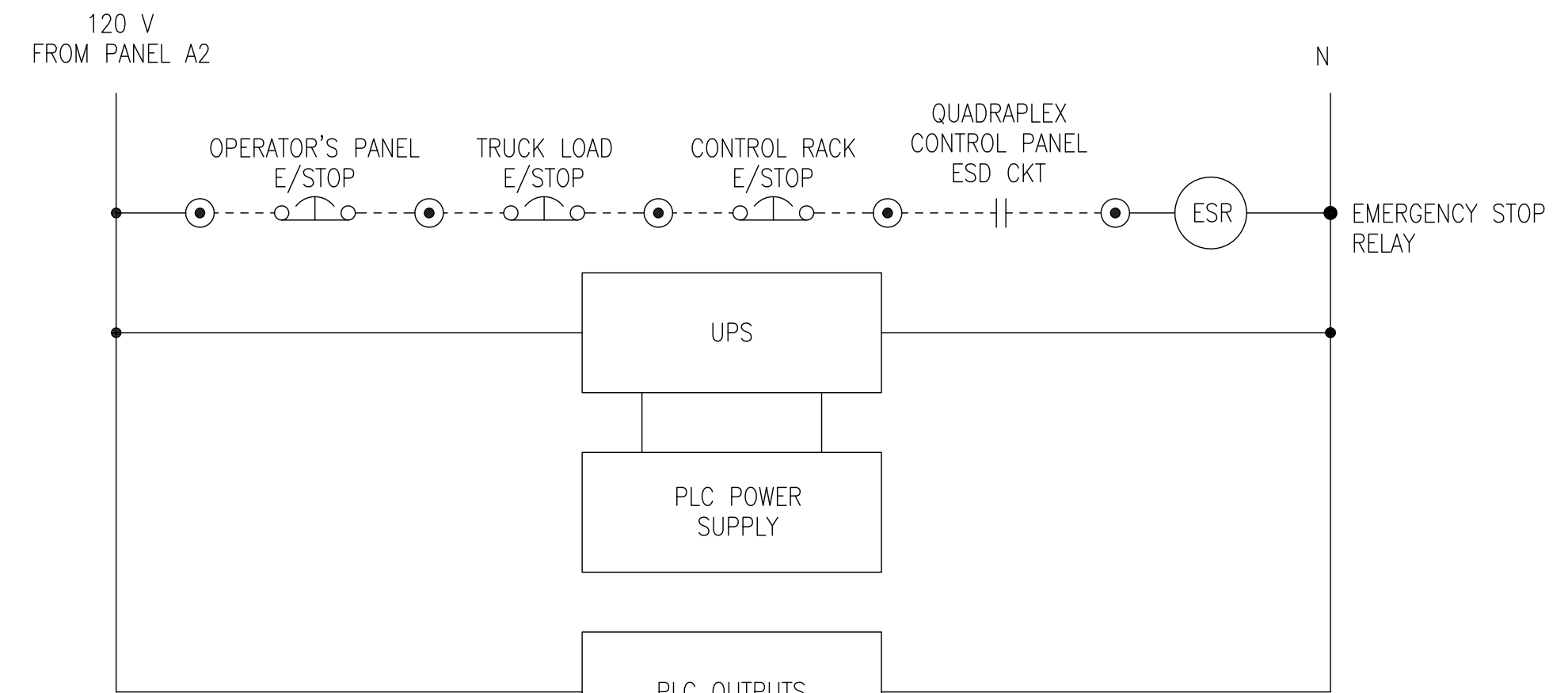


**PLAN**  
SCALE: NONE

**PUMP PAD CLASSIFICATIONS**  
SCALE: NONE

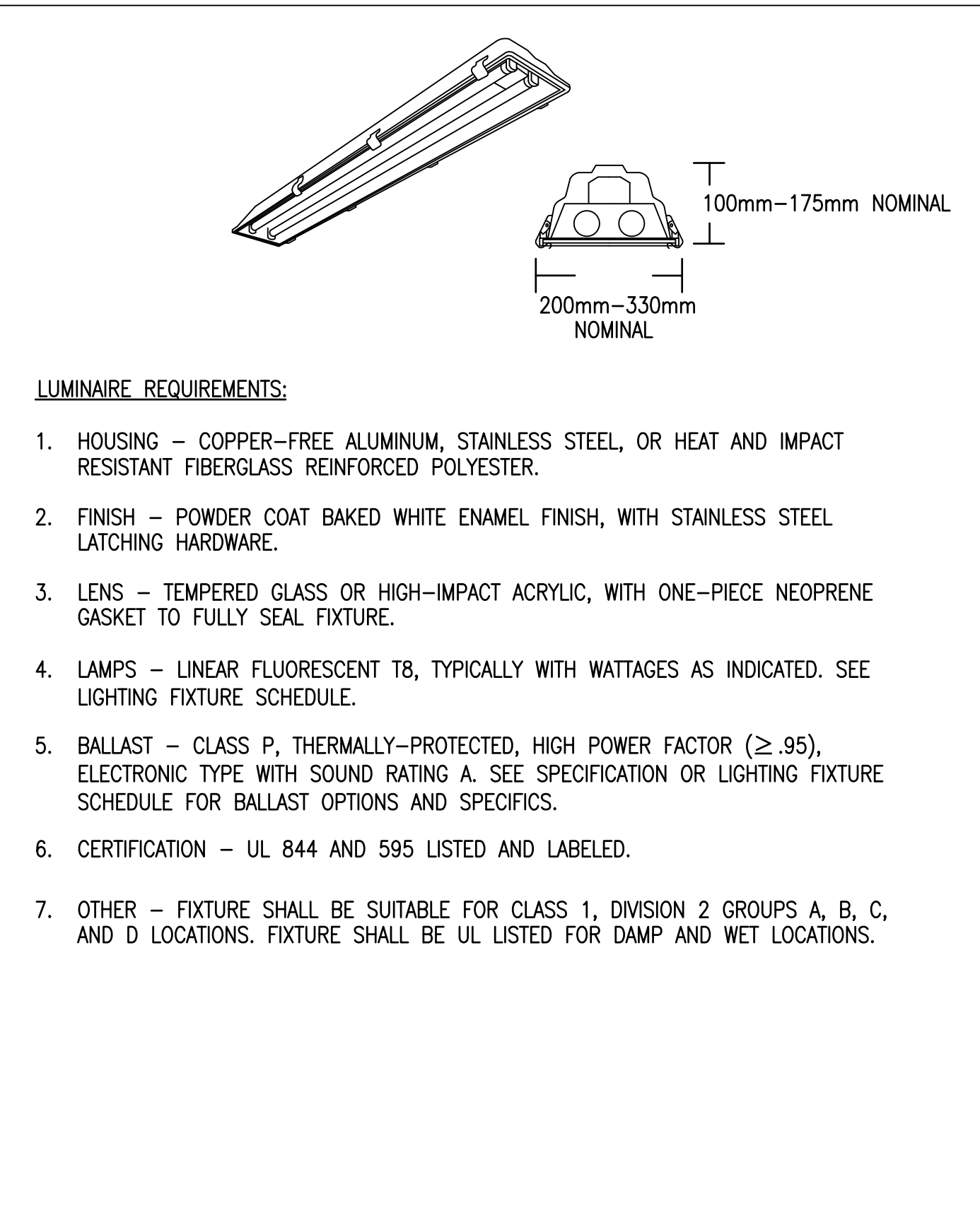
HAZARDOUS AREA CLASSIFICATION SCHEDULE			
CLASS I, GROUP D, DIVISION	SYMBOL	TYPE OF EQUIPMENT/AREA	LIMITS OF AREA
2		PUMPS	WITHIN 900 mm OF EXTERIOR SURFACE OF PUMP. ALSO UP TO 450 mm ABOVE GRADE LEVEL WITHIN 3 METERS HORIZONTALLY OF ANY SURFACE OF THE PUMP
		WITHDRAWAL FITTINGS, AIR RELIEF VENTS, METERS AND SIMILAR DEVICES LOCATED WITHIN PIPELINES	WITHIN 900 mm OF EXTERIOR SURFACE OF PUMP. ALSO UP TO 450 mm ABOVE GRADE LEVEL WITHIN 3 METERS HORIZONTALLY OF ANY SURFACE OF THE DEVICE

- NOTES:**
- PROVIDE CONDUIT SEAL FITTINGS AT ALL HAZARDOUS BOUNDARIES.
  - CLASSIFICATION DIAGRAMS ARE FOR REFERENCE ONLY. REFER TO HAZARDOUS AREA CLASSIFICATION SCHEDULE ON THIS SHEET FOR CLASSIFICATION OF WORK AREAS AND THE DEGREE OF PROTECTION REQUIRED.



**NOTE:**  
ALL EQUIPMENT IS EXISTING

**PLC CONTROL CABINET WIRING**

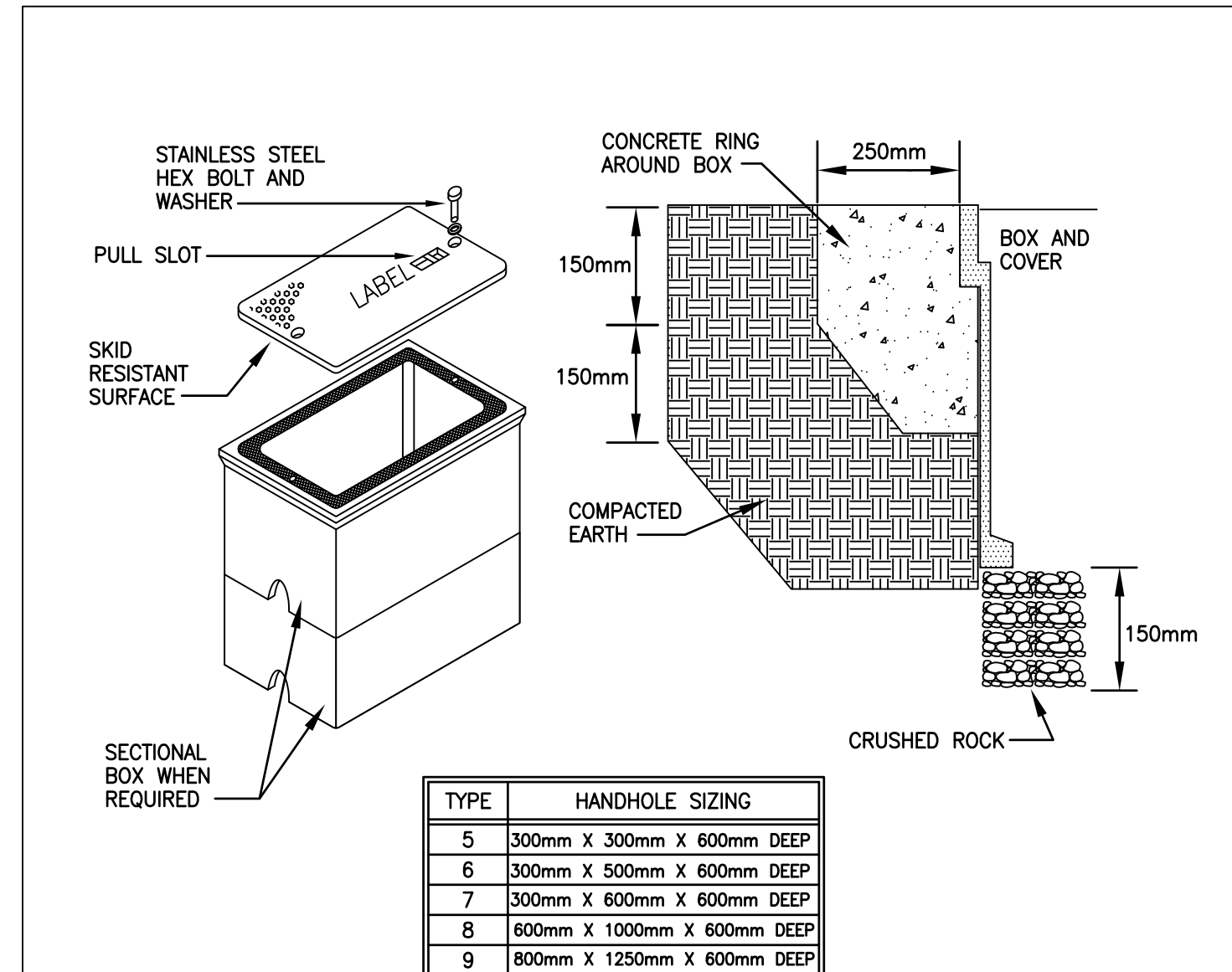


**LUMINAIRE REQUIREMENTS:**

- HOUSING - COPPER-FREE ALUMINUM, STAINLESS STEEL, OR HEAT AND IMPACT RESISTANT FIBERGLASS REINFORCED POLYESTER.
- FINISH - POWDER COAT BAKED WHITE ENAMEL FINISH, WITH STAINLESS STEEL LATCHING HARDWARE.
- LENS - TEMPERED GLASS OR HIGH-IMPACT ACRYLIC, WITH ONE-PIECE NEOPRENE GASKET TO FULLY SEAL FIXTURE.
- LAMPS - LINEAR FLUORESCENT T8, TYPICALLY WITH WATTAGES AS INDICATED. SEE LIGHTING FIXTURE SCHEDULE.
- BALLAST - CLASS P, THERMALLY-PROTECTED, HIGH POWER FACTOR ( $\geq .95$ ), ELECTRONIC TYPE WITH SOUND RATING A. SEE SPECIFICATION OR LIGHTING FIXTURE SCHEDULE FOR BALLAST OPTIONS AND SPECIFICS.
- CERTIFICATION - UL 844 AND 595 LISTED AND LABELED.
- OTHER - FIXTURE SHALL BE SUITABLE FOR CLASS 1, DIVISION 2 GROUPS A, B, C, AND D LOCATIONS. FIXTURE SHALL BE UL LISTED FOR DAMP AND WET LOCATIONS.

HAZARDOUS LOCATION INDUSTRIAL FLUORESCENT

REVISED: AUGUST 2004 LIGHTING PLATE: NL-28



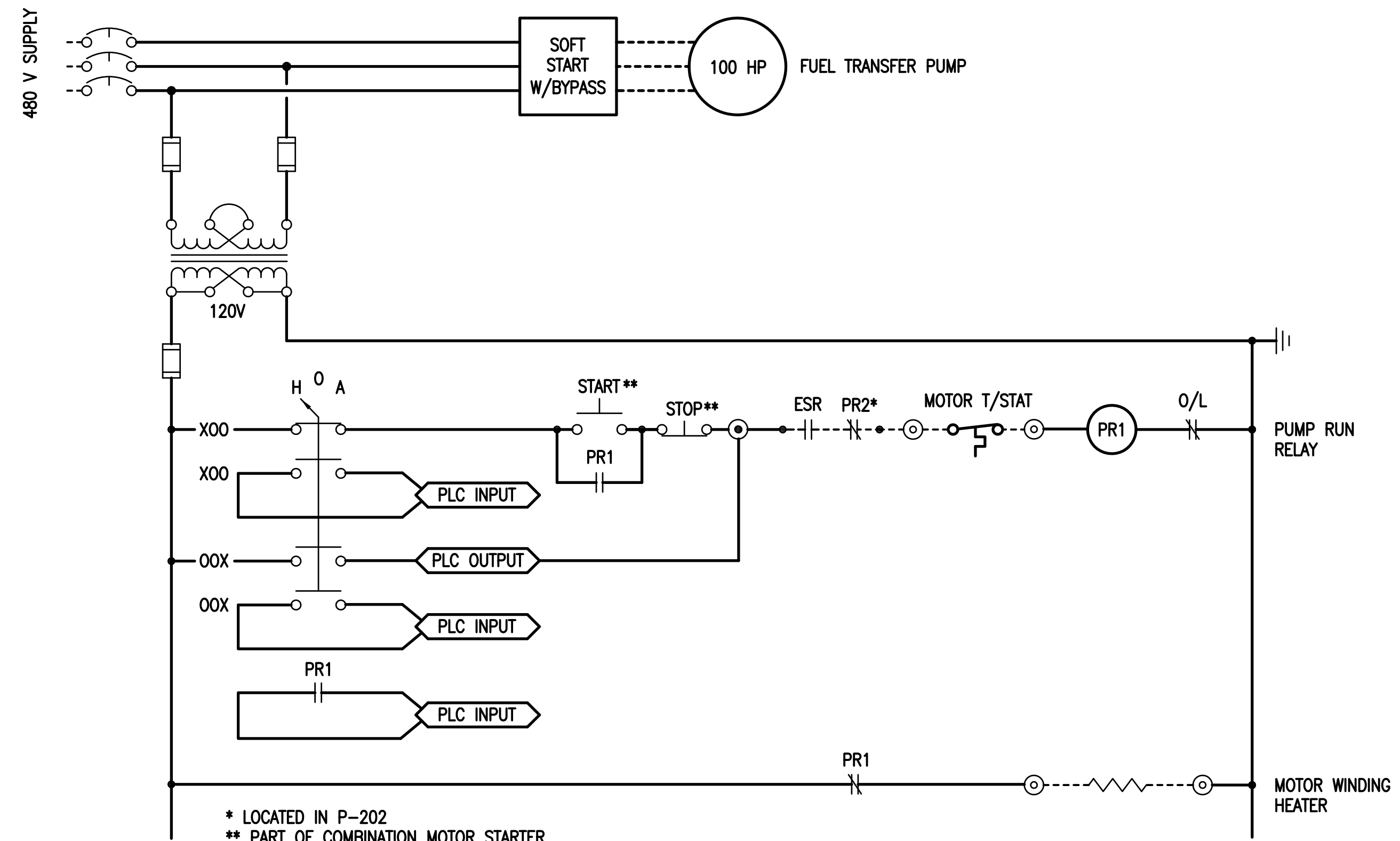
TYPE	HANDHOLE SIZING
5	300mm X 300mm X 600mm DEEP
6	300mm X 500mm X 600mm DEEP
7	300mm X 600mm X 600mm DEEP
8	600mm X 1000mm X 600mm DEEP
9	800mm X 1250mm X 600mm DEEP

**HANDHOLE REQUIREMENTS:**

- HOUSING SHALL BE A POLYMER CONCRETE REINFORCED WITH A HEAVY WEAVE FIBERGLASS REINFORCING WITH COMPRESSIVE STRENGTH OF NO LESS THAN 70 MPa.
- COVER AND BOX SHALL WITHSTAND A SERVICE LOAD OF NO LESS THAN 6800 kg OVER A 250 x 250 AREA.
- PROVIDE STAINLESS STEEL BOLTS AND INSERTS.
- PROVIDE WITH (2) 64mm MOUSEHOLES.
- PROVIDE LABEL "ELECTRICAL" FOR POWER HANDHOLES OR "TELEPHONE" FOR TELEPHONE HANDHOLES, OR AS INDICATED.

STANDARD ELECTRICAL HANDHOLE (NONTRAFFIC) (COMPOSITE/FIBERGLASS) TYPES 5, 6, 7, 8 & 9

SKETCH DATE: JUNE 2002 STYLE: UG-6



\* LOCATED IN P-202  
\*\* PART OF COMBINATION MOTOR STARTER

**NOTE:** P-201 SHOWN, P-202 SIMILAR.

**TYPICAL TRANSFER PUMP STARTER**

ALL DIMENSIONS WITHOUT A DECIMAL POINT ARE MILLIMETERS AND ALL THOSE WITH A DECIMAL POINT ARE METERS, UNLESS OTHERWISE NOTED

**AUSTIN BROCKENBROUGH & ASSOCIATES, L.L.P.**  
Consulting Engineers  
P.O. Box 4800 Chester, Virginia 23831

APPR	DATE	DESCRIPTION	SYM
APPROVED	DATE		
FOR COMMANDER NAVFAC	DATE		
APPROVED	DATE		
ACTIVITY - SATISFACTORY TO DATE			
PM/CM			
DES	JAP	DRW	MHK CHK CHM
FIRE PROTECTION			
BRANCH MANAGER			
CHIEF ENG/ARCH			
DEPARTMENT OF THE NAVY	NAVAL FACILITIES ENGINEERING COMMAND	JACKSONVILLE, NORTH CAROLINA	
MCA'S NEW RIVER	MILCON P-725, PUMP STATION UPGRADES	JACKSONVILLE, NORTH CAROLINA	
PUMP PAD CLASSIFICATION, DETAILS & WIRING DIAGRAMS			
CODE ID. NO.	80091	SIZE	D
SCALE:	AS NOTED		
MAXIMO NO.			
JOB ORDER NO.			
WORK ORDER NO.	859348		
CONSTR. CONTR. NO.			
NAVFAC DRAWING NO.	12556455		
SHEET	21	OF	21
E-602			
DRAWFORM REVISION: 6 AUG 2007			