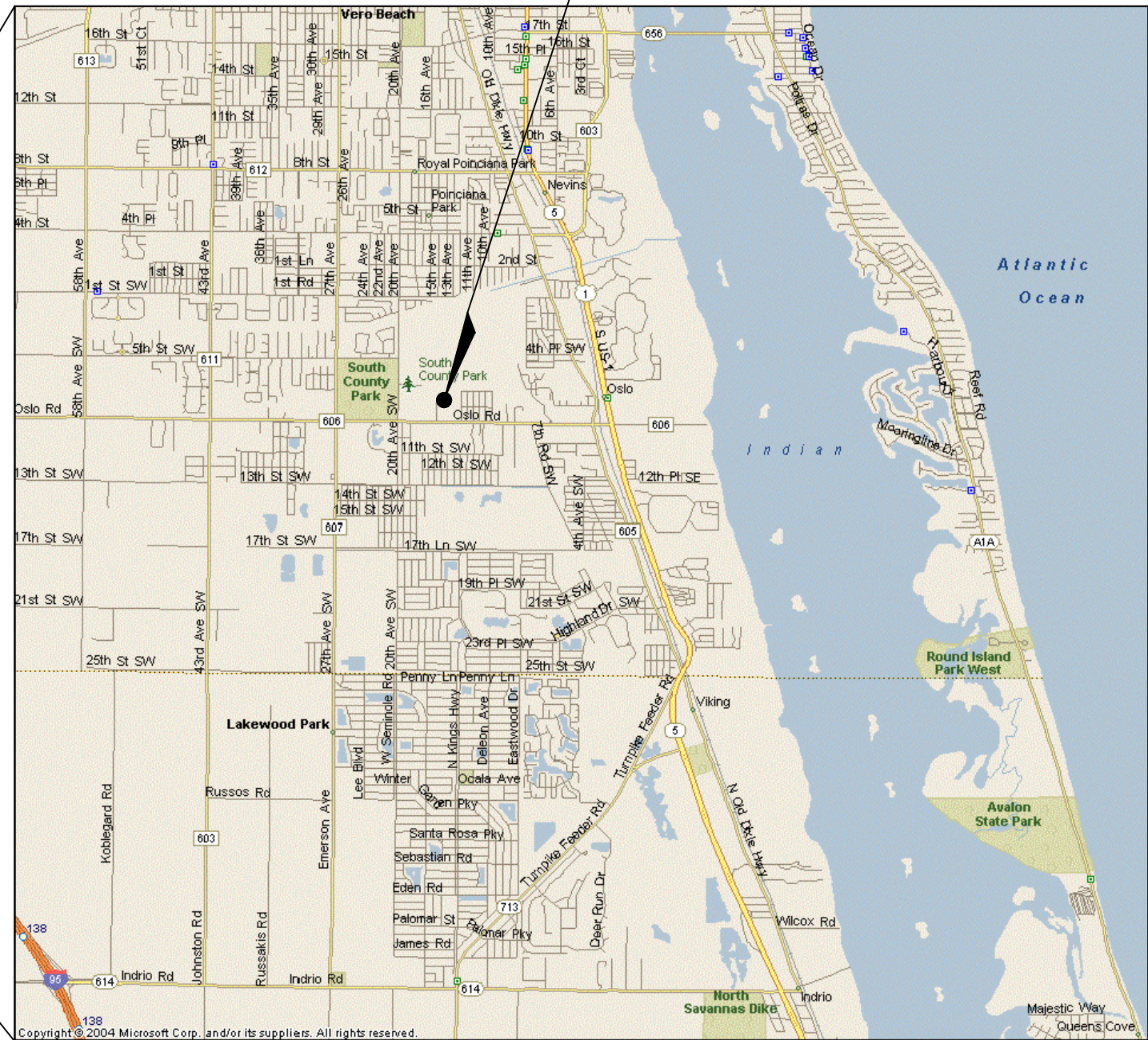
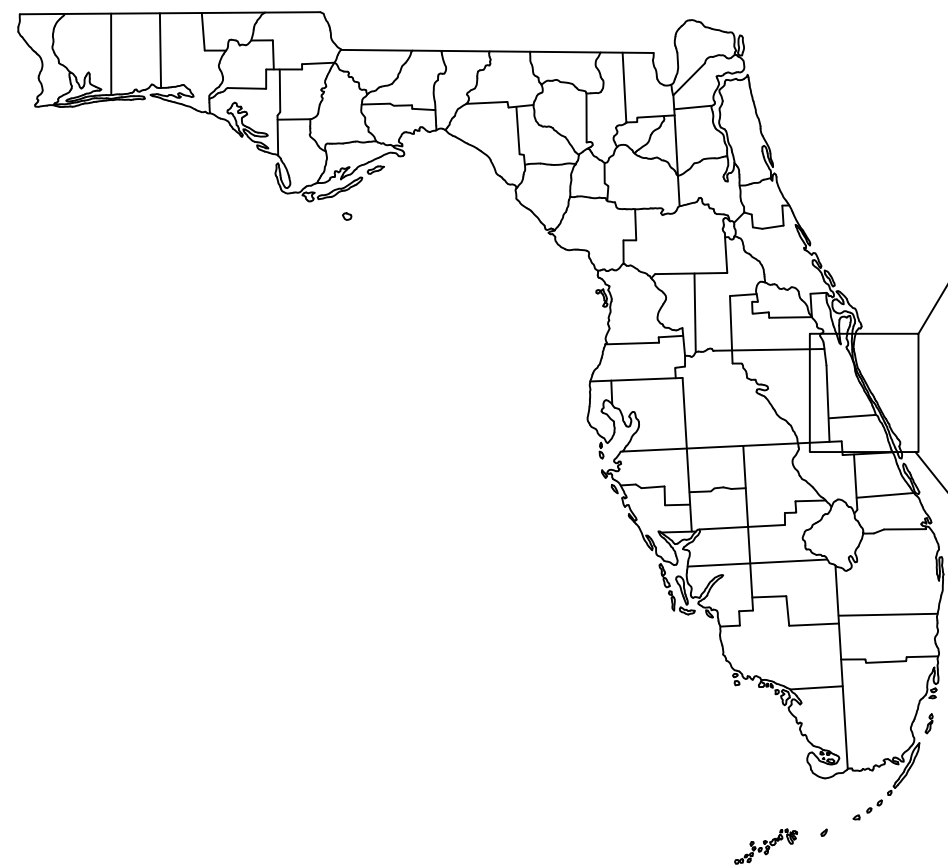


CONSTRUCTION PLANS FOR
SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
INDIAN RIVER COUNTY UTILITIES DEPARTMENT
MARCH 2021



PROJECT SITE
SOUTH OSLO ROAD WTP
1550 SW 9TH STREET
VERO BEACH, FL 32962

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NICHOLAS P.O. BLACK, PE #84908 (PROCESS, MECHANICAL, SITE CIVIL)
CHELSEA MARAJH, PE #84300 (STRUCTURAL)
MICHAEL GUIDA, PE #60755 (ELECTRICAL)



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SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
INDIAN RIVER COUNTY UTILITIES
DEPARTMENT

INDIAN RIVER
COUNTY,

FLORIDA

LICENSED PROFESSIONAL
NICHOLAS P.O. BLACK
FLORIDA LICENSE NUMBER
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COVER SHEET

SHEET NUMBER
G-1
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(A)ARV	(AUTOMATIC) AIR RELEASE VALVE
ABFV	ACTUATED BUTTERFLY VALVE
AC	ASBESTOS CONCRETE
ACI	ASSOCIATION OF CONSTRUCTION INSPECTORS
ADD'L	ADDITIONAL
AFG	ABOVE GROUND
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALUM	ALUMINUM
ALT	ALTERNATE
APPROX	APPROXIMATE
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AVG	AVERAGE
AWS	AMERICAN WELDING SOCIETY
BCV	BALL CHECK VALVE
BF	BLIND FLANGE
BFP	BACKFLOW PREVENTER
BFPA	BACKFLOW PREVENTER ASSEMBLY
BFV	BUTTERFLY VALVE
BLDG	BUILDING
BM	BENCH MARK
B.O.	BOTTOM OF
BOS	BOTTOM OF SLAB
BOT	BOTTOM
BV	BALL VALVE
CCV	CRITICAL CHECK VALVE
C.F.	CUBIC FOOT
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CFV	CARTRIDGE FILTER VESSEL
CGA	COMPRESSED GAS ASSOCIATION
CIP	CLEAN IN PLACE
CJ	CONSTRUCTION JOINT
CL, 4	CENTER LINE
CLR	CLEAR(ANCE)
CLX	CONTROL LOGICS
CMU	CONCRETE MASONRY UNIT
CO2	CARBON DIOXIDE
CONC.	CONCENTRIC
CONCR.	CONCRETE
COND	CONDUCTIVITY
CONST.	CONSTRUCT(ION)
CONT.	CONTINUE(D)
CPLG	COUPLING
CPVC	CHLORINATED POLYVINYL CHLORIDE
C.T.	CERAMIC TILE
CTF	CONCENTRATE TREATMENT FACILITY
CV	CHECK VALVE
DEMO	DEMOLITION/DEMOLISH
DI	DUCTILE IRON
DIA, Ø	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DP	DISPLAY
DV	DUMP VALVE
DWV	DRAIN, WASTE, AND VENT
E	EAST(ING)
EA	EACH
ECC	ECCENTRIC
EF	EACH FACE
EL(EV)	ELEVATION
ELEC	ELECTRICAL(LY)
E.O.R.	ENGINEER OF RECORD
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
EQUIP	EQUIPMENT
EST	ESTIMATE(D)
E.W.	EACH WAY
EXIST.	EXISTING
EXP	EXPANSION
FAB	FABRICATE(D)
FCA	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION
FFL	FINISHED FLOOR
FIG	FIGURE
FL	FLANGE(D)
FLR	FLOOR
FM	FORCE MAIN
FNPT	FEMALE NATIONAL PIPE THREAD
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FOOT OR FEET
FW	FEEDWATER
FWP	FEEDWATER PUMP
GAL	GALLON(S)
GALV	GALVANIZE(D)
GCV	GAS CONTROL VALVE
GE	GROOVED END
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GPS	GALLONS PER SECOND

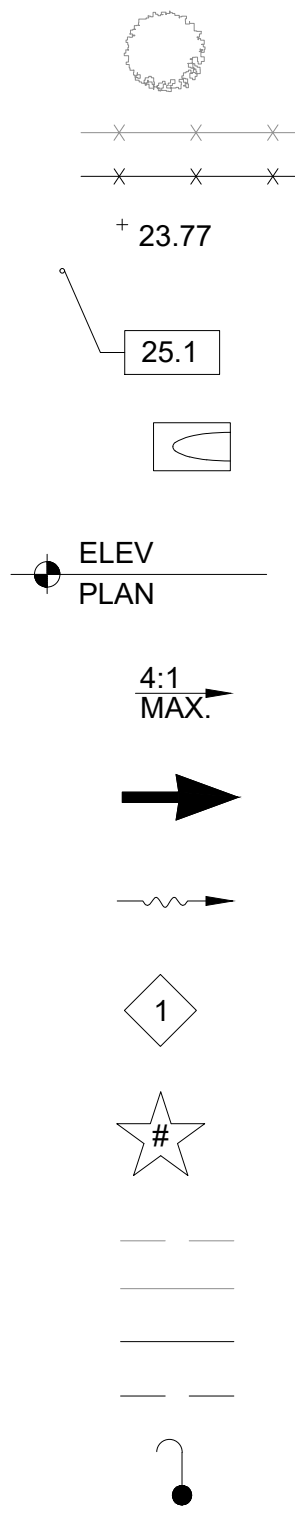
STANDARD ABBREVIATIONS

GST	GROUND STORAGE TANK
GV	GATE VALVE
HALAR	ETHYLENE CHLOROTRIFLUOROETHYLENE
HDPE	HIGH-DENSITY POLYETHYLENE
HFA	HYDROFLUORIC ACID
HP	HORSEPOWER
HR	HOUR
HSP(S)	HIGH SERVICE PUMP (STATION)
HT	HEIGHT
IN	INCH(ES)
INV	INVERT
I/O	INPUT/OUTPUT
IPS	INTERNATIONAL PIPE STANDARD
IRCDUS	INDIAN RIVER COUNTY DEPARTMENT OF UTILITY SERVICES
IRCU	INDIAN RIVER COUNTY UTILITIES
JB	JUNCTION BOX
JT	JOINT
LAB	LABORATORY
LB(S)	POUND(S)
LF	LINEAR FEET
LR	LONG RADIUS
LS	LIME SLURRY
MAN	MANUAL
MANF	MANUFACTURE(D)
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
ME	MATCH EXISTING
MECH	MECHANICAL
MG	MILLION GALLONS
MGD	MILLION GALLONS PER DAY
MID	MIDDLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
N	NORTH(ING)
N/A	NOT APPLICABLE
N.C.	NORMALLY CLOSED
NE	NORTHEAST
NF	NANOFILTRATION
NO., #	NUMBER
N.O.	NORMALLY OPEN
NPT	NATIONAL PIPE TAPER
NTS,N.T.S.	NOT TO SCALE
NW	NORTHWEST
O&M	OPERATION AND MAINTENANCE
O.C.(E.W.)	ON CENTER (EACH WAY)
O.D.	OUTER DIAMETER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
PC	POINT OF CURVE
PE	PLAIN END
PFD	PROCESS FLOW DIAGRAM
PG	PRESSURE GAUGE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PPD	POUNDS PER DAY
PPM	PARTS PER MILLION
PRES	PRESSURE
PROP.	PROPOSED
PS	PUMP STATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PVC-D	POLYVINYLCHLORIDE (DOUBLE CONTAINED)
PVDF	POLYVINYLIDENE FLUORIDE (KYNAR)
QTY	QUANTITY
R,RT	RIGHT
RAD., R.	RADIUS
RAW	RAW WATER
R/C	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
REBAR	REINFORCING STEEL
RED	REDUCER
REF	REFERENCE(D)
REQ'D	REQUIRED
RFCA	RESTRAINED FLANGED COUPLING ADAPTER
RIO	REMOTE INPUT/OUTPUT
RPM	REVOLUTIONS PER MINUTE
RSGV	RESILIENT SEAT GATE VALVE
RW	RAW WATER
RWB	RAW WATER BLEND
RWM	RAW WATER MAIN
S	SOUTH
SAT	SUSPENDED ACOUSTICAL TILE
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SCH	SCHEDULE
SE	SOUTHEAST
SEC	SECTION
S.F.	SQUARE FOOT OR FEET
SFW	SPARE FEEDWATER

SMP	SKID MONITORING PANEL
SP	SAMPLE POINT(S)
SPEC(S)	SPECIFICATIONS(S)
SS	SANITARY SEWER
SSWR	STORM SEWER
SST	STAINLESS STEEL
STD	STANDARD
SW	SOUTHWEST
S.Y.	SQUARE YARD
SYM	SYMBOL
T&B	TOP AND BOTTOM
T/B	TIED JOINT
TEFC	TOTALLY ENCLOSED FAN COOLED
TEMP	TEMPORARY
TH	TEST HOLE
THK	THICK(NESS)
THRU	THROUGH
T.O.	TOP OF
T.O.S.	TOP OF SLAB
TS&V	TAPPING SLEEVE AND VALVE
T.U.	TRUE UNION
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
VB	VALVE BOX
VEL	VELOCITY
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VIC	VICINITY
VOL	VOLUME
VSF	VAN STONE FLANGE
W	WEST
WI	WITH
WF	WIDE FLANGE
WM	WATER MAIN
W/O	WITHOUT
WT	WEIGHT
WTP	WATER TREATMENT PLANT
WW	WASTEWATER
W.W.F.	WELDED WIRE FABRIC
XFER	TRANSFER
YD	YARD(S)
YR	YEAR(S)

PROCESS FLOW STREAMS

CS	CHLORINE SOLUTION
CSR	CLEANING SYSTEM RETURN
CSS	CLEANING SYSTEM SUPPLY
CSW	CLEANING SYSTEM WASTE
FWM	FINISH WATER MAIN
NaOCI	SODIUM HYPOCHLORITE
NaOH	SODIUM HYDROXIDE
PRW	PRODUCT WATER
PSW	PERMEATE SERVICE WATER
NFC	NANOFILTRATION CONCENTRATE
NFF	NANOFILTRATION FEEDWATER
NFI	NANOFILTRATION INTERSTAGE
NFP	NANOFILTRATION PERMEATE
NFPR	NANOFILTRATION PRETREATMENT
SA	SULFURIC ACID
SG	SOUR GAS
SI	SCALE INHIBITOR
SL	SAMPLE LINE



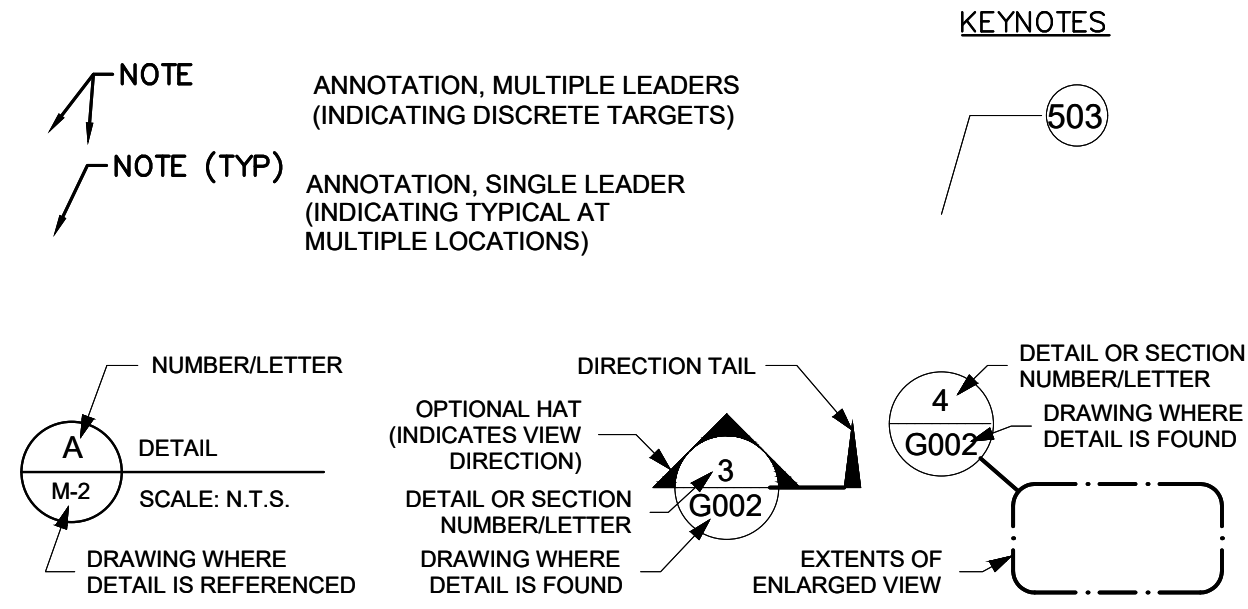
EXIST. TREE
EXIST. FENCE
PROP. FENCE
EXIST. GRADE
PROP. GRADE
CULVERT WITH MITERED END
PROP. ELEVATION
PROP. SLOPE
DIRECTION OF AIR FLOW
WATER FLOW
PIPE SUPPORT DETAIL INDICATOR
ADDITIVE ALTERNATES DENOTED WITH STAR
EXIST. UG
EXIST. AFG
PROP. UG
PROP. AFG
PROP. SAMPLE POINT (SP#)

NOTE:
THIS LEGEND IS FOR GENERAL REFERENCE. NOT ALL ABBREVIATIONS, SYMBOLS, PROCESSES, MATERIALS, OR FITTINGS MAY BE USED IN THIS DESIGN, NOR IS THIS LEGEND COMPREHENSIVE. REFER TO INDIVIDUAL DRAWING LEGEND(S) IF SYMBOLS ARE NOT LISTED. INDIVIDUAL DISCIPLINE STANDARD LEGENDS SUPERCEDE THIS GENERAL LEGEND, IF PROVIDED.

NORTHINGS AND EASTINGS USED ON THE PAVING, GRADING AND DRAINAGE PLANS ARE TO THE CENTER OF MANHOLES AND DRAINAGE STRUCTURES.

NORTHINGS AND EASTINGS USED ON THE YARD PIPING PLANS ARE TO THE CENTER AND/OR INTERSECTIONS OF FITTINGS.

DRAFTING LEGEND



HATCHING LEGEND

EXIST. ASPHALT	PROP. ASPHALT	PROP. STAGING AREA
EXIST. CONCR.	PROP. CONCR.	PROP. ASPHALT TO BE REMOVED
EXIST. BLDG	PROP. BLDG	
EXIST. DIRT ROAD	PROP. GRAVEL	
EXIST. GROUND/EARTH		

ADDITIVE ALTERNATE DESCRIPTIONS
(SEE SUMMARY OF WORK DESCRIPTION 01010)

- 1 DEMOLITION AND REPLACEMENT OF MEMBRANE CIP SYSTEM, COMPLETE
- 2 LABORATORY RENOVATIONS, COMPLETE
- 3 CAUSTIC STORAGE TANK, COMPLETE
- 4 CO₂ STORAGE TANK, COMPLETE
- 5 REDUNDANT TRANSFER MAIN, COMPLETE
- 6 FINISHED WATER FLOW PANEL
- 7 MISC. WELLFIELD STARTER AND INSTRUMENT REPLACEMENT

No.	REVISIONS	DATE	BY



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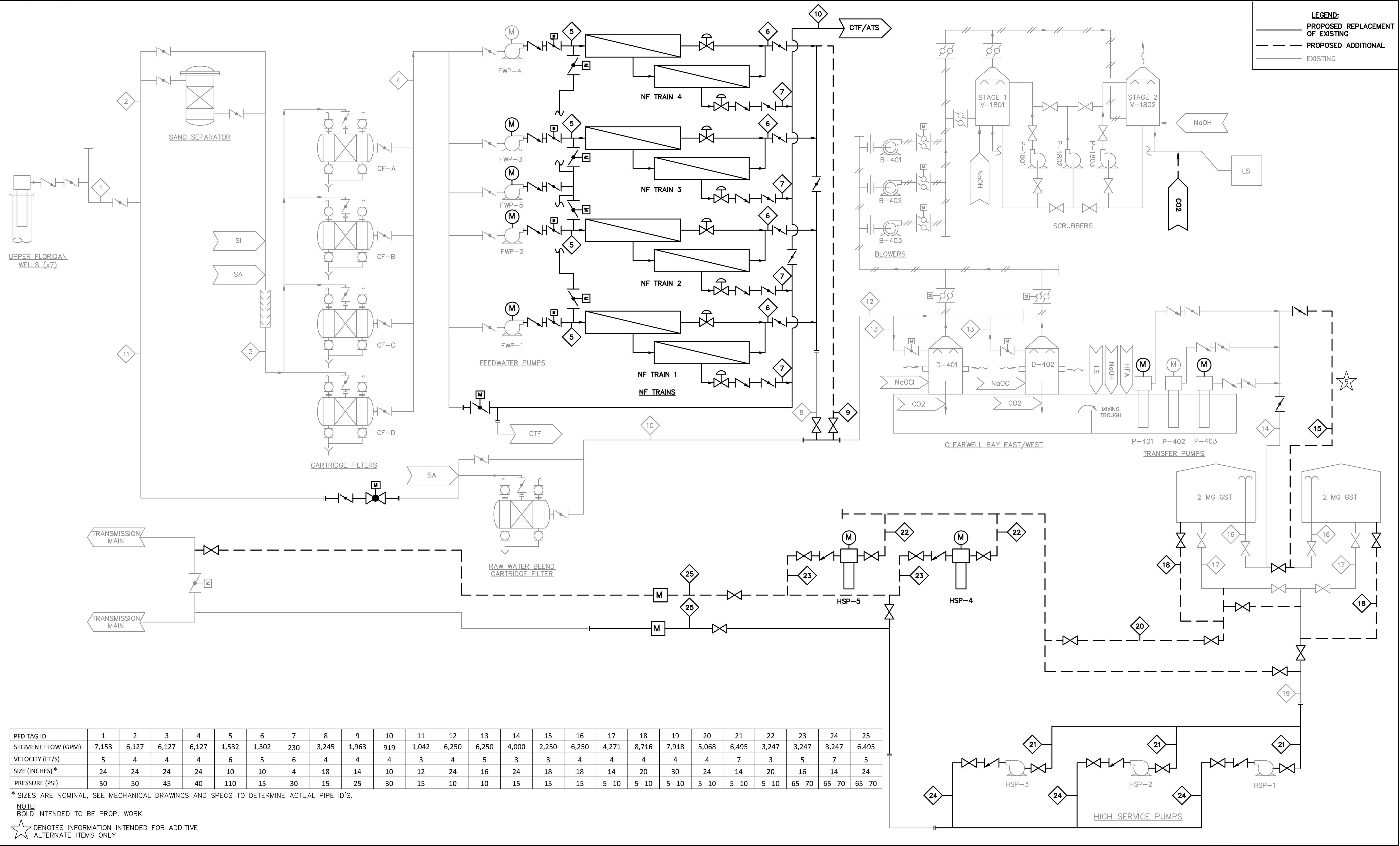
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NICHOLAS P.O. BLACK
FLORIDA LICENSE NUMBER 84908

LEGEND AND ABBREVIATIONS

Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS - Layout: G-5 PROCESS FLOW DIAGRAM - March 19, 2021 - 06:37:20am - K:\WEB_Civil\044572100 - South OSLO ROAD WTP Design\CAD\PlanSheets\G-5 PROCESS FLOW DIAGRAM.dwg
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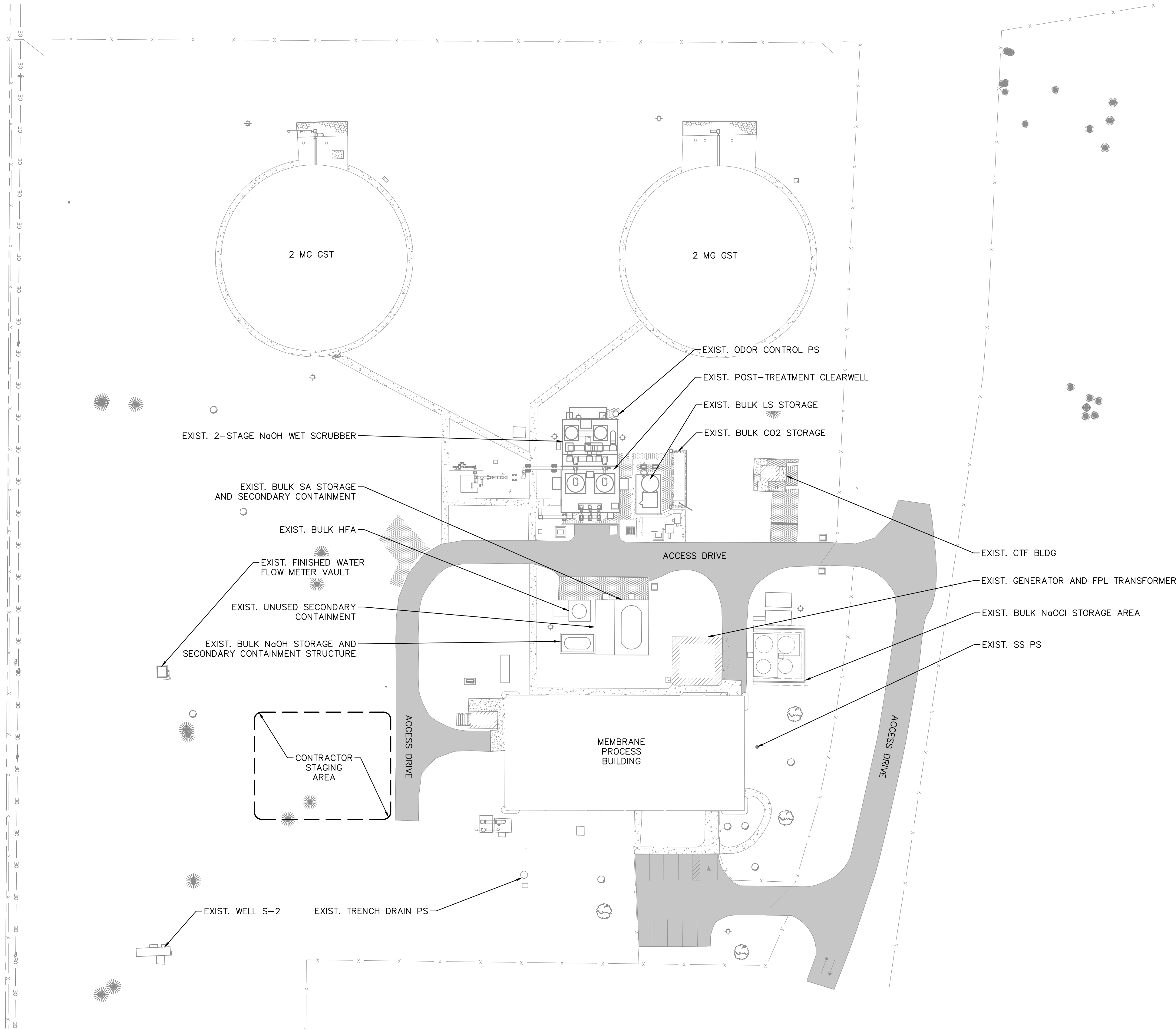
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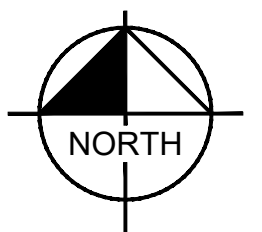
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PROCESS FLOW DIAGRAM

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G-5
5 OF 132

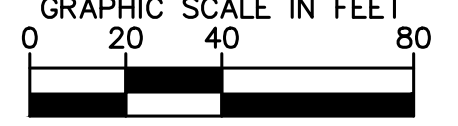
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NORTH

GRAPHIC SCALE IN FEET



0 20 40 80

24x36 SHEET SIZE: 1"= 40'

11x17 SHEET SIZE: 1"= 80'

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WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT
044572100
DATE
MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY JTV
CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
**INDIAN RIVER COUNTY UTILITIES
DEPARTMENT**
INDIAN RIVER
COUNTY,
FLORIDA

LICENSED PROFESSIONAL

NICHOLAS P.O. BLACK

FLORIDA LICENSE NUMBER
84908
DATE: _____

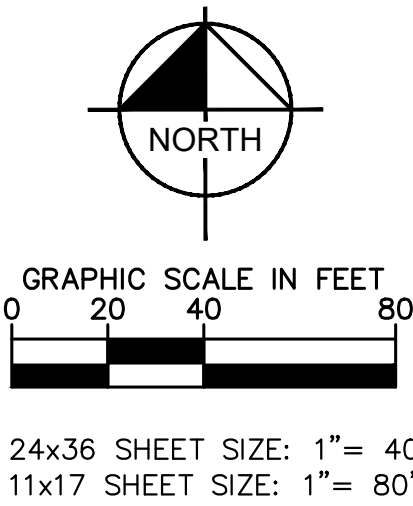
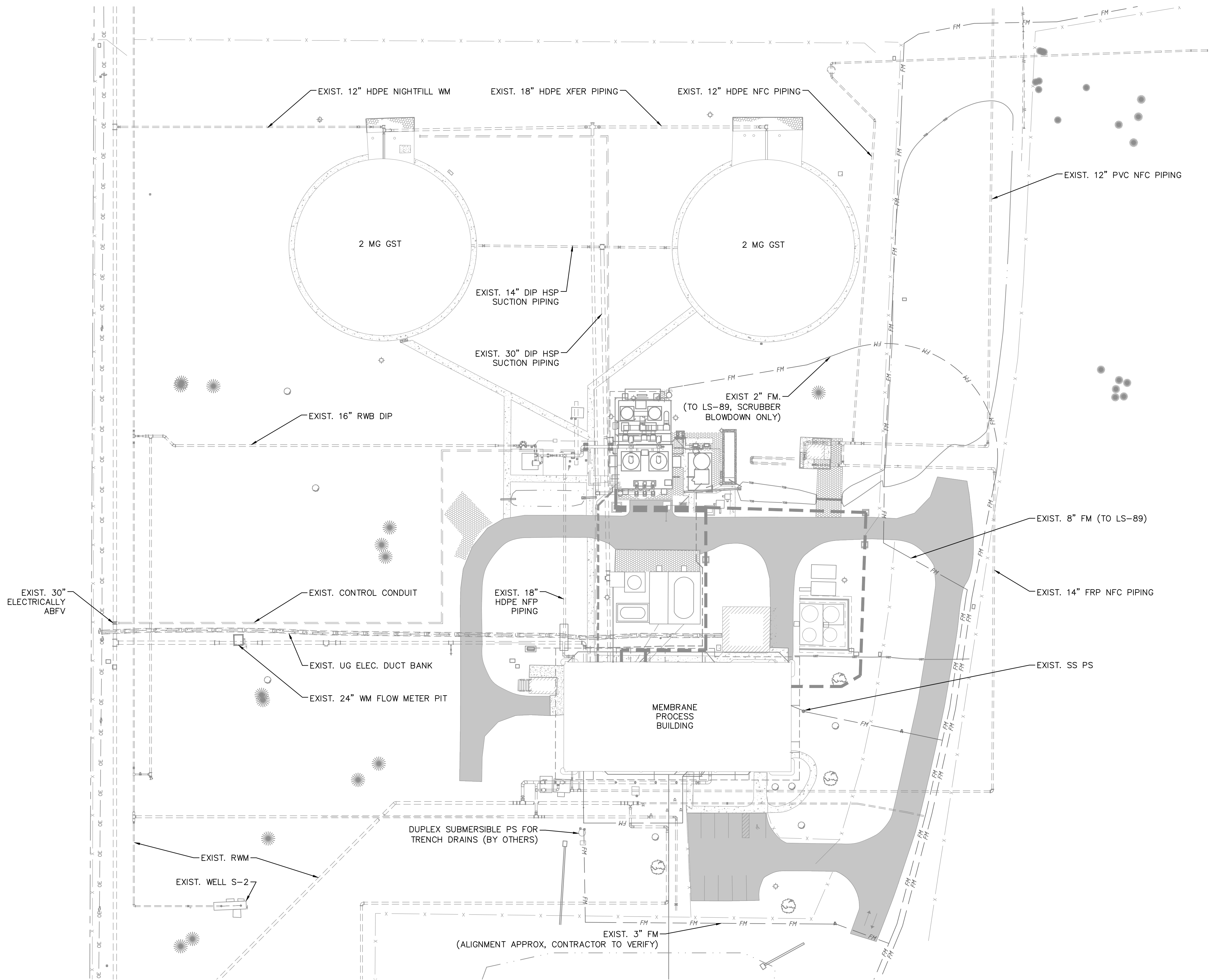
EXISTING OVERALL SITE PLAN

SHEET NUMBER


C-1

6 OF 132

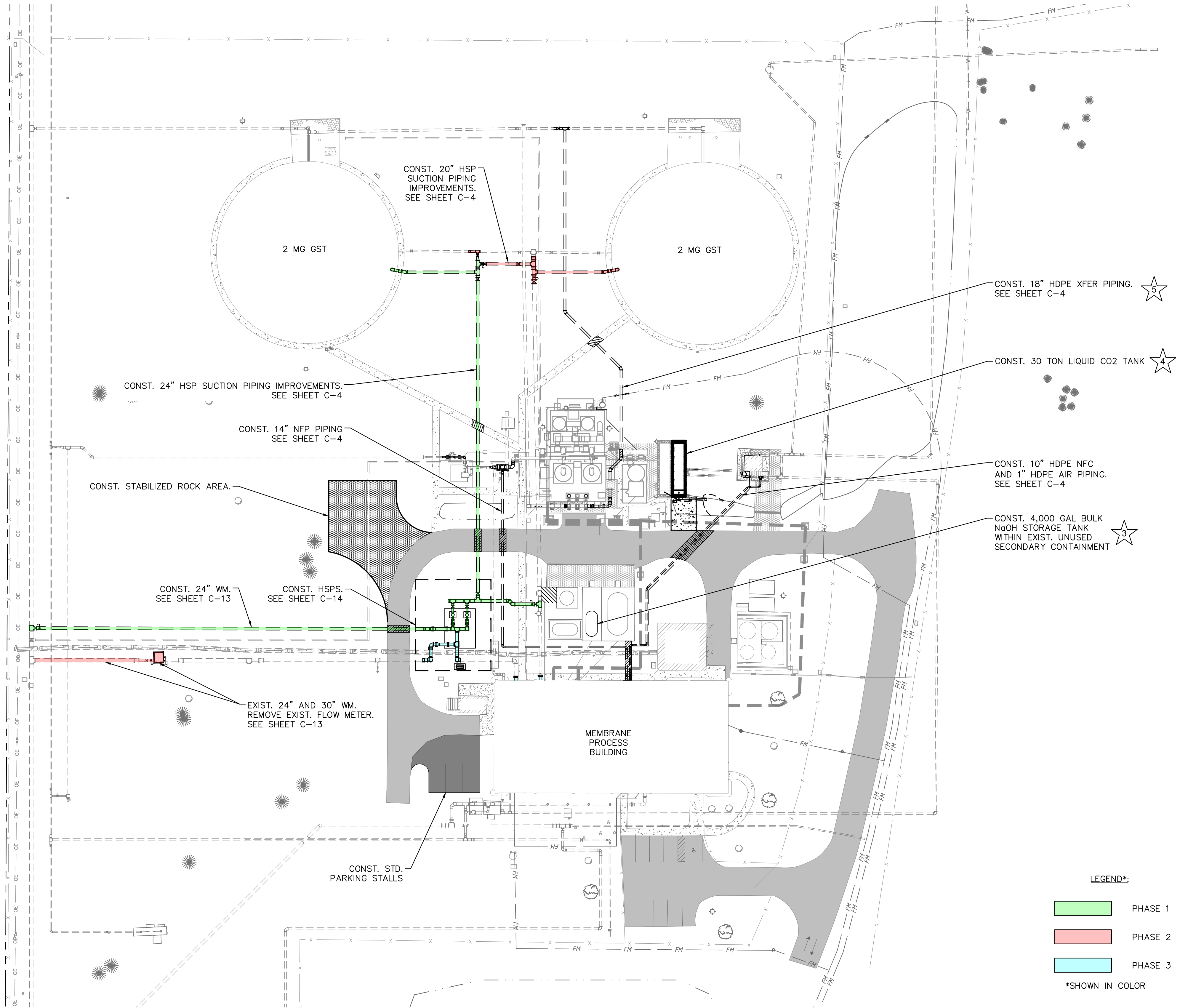
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Plotted By: King, Bertrand
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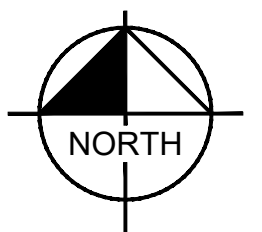


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<div><p>© 2021 KIMLEY-HORN AND ASSOCIATES, INC. 1920 WEKIVA WAY SUITE 200, WEST PALM BEACH, FL 33411 PHONE: 561-845-0665 FAX: 561-863-8175 WWW.KIMLEY-HORN.COM CA 00000696</p></div>	<div><p>KHA PROJECT 044572100</p><p>DATE MAR 2021</p><p>SCALE AS SHOWN</p><p>DESIGNED BY NPOB</p><p>DRAWN BY JTV</p><p>CHECKED BY MDM</p></div>	<div><p>SOUTH OSLO ROAD WTP IMPROVEMENTS</p><p>PREPARED FOR</p><p>INDIAN RIVER COUNTY UTILITIES DEPARTMENT</p><p>INDIAN RIVER COUNTY, FLORIDA</p></div>	<div><p>LICENSED PROFESSIONAL</p><p>NICHOLAS P.O. BLACK</p><p>FLORIDA LICENSE NUMBER 84908</p><p>DATE: _____</p></div>	<div><p>EXISTING YARD PIPING PLAN</p></div>	<div><p>SHEET NUMBER</p><p>C-2</p><p>7 OF 132</p></div>
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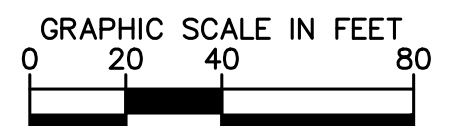
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Plotted By: King, Bertrand
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NORTH

GRAPHIC SCALE IN FEET



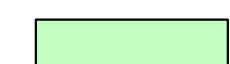
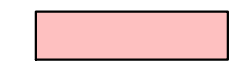
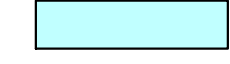
0 20 40 80

24x36 SHEET SIZE: 1"= 40'

11x17 SHEET SIZE: 1"= 80'

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LEGEND*:

	PHASE 1
	PHASE 2
	PHASE 3

*SHOWN IN COLOR

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KHA PROJECT 044572100
DATE MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY JTV
CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
INDIAN RIVER COUNTY UTILITIES
DEPARTMENT

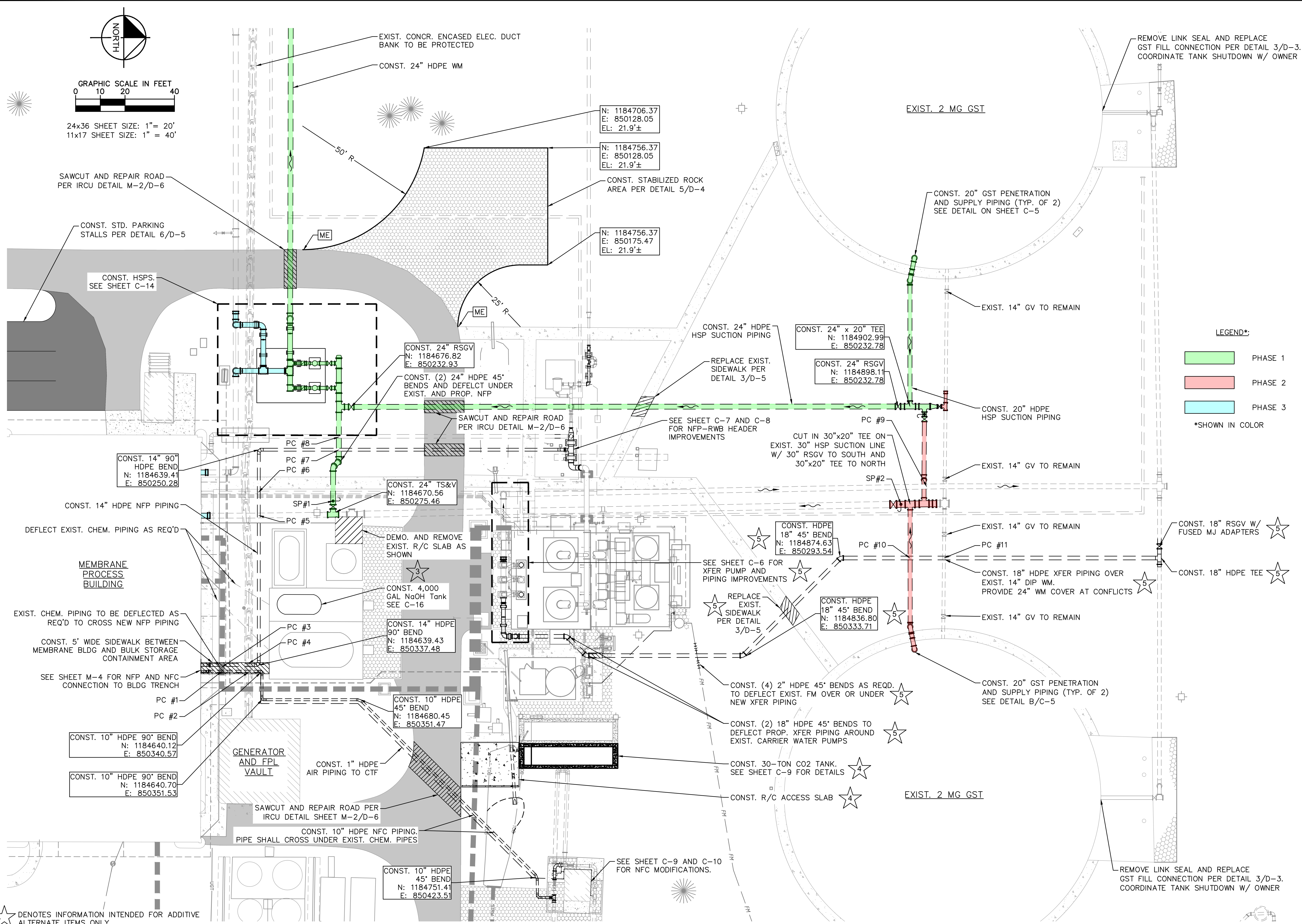
INDIAN RIVER
COUNTY,
FLORIDA

LICENSED PROFESSIONAL
NICHOLAS P.O. BLACK
FLORIDA LICENSE NUMBER 84908
DATE: _____

OVERALL PROPOSED YARD
PIPING KEY SHEET

SHEET NUMBER
C-3
8 OF 132

Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS - Layout: C-4 - PROPOSED YARD PIPING PLAN - March 19, 2021 - 06:37:48pm - K:\WPB_Civil\044572100 - South OSLO WTP Design\CAD\PlanSheets\PROPOSED YARD PIPING PLAN.dwg
Plotted By: King, Bertrand
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PIPE CROSSING #1
PROP. 10" HDPE NFC PIPING TO CROSS
EXIST. CHEM. TRENCH
GRADE = 23.94'±
BOT OF NFP PIPING EL. = 21.10'±
TOP OF CHEM. TRENCH EL. = 21.75'±
CLEAR. = CONFLICT, DEFLECT CHEM. PIPING AS REQ'D

PIPE CROSSING #2
PROP. 10" HDPE NFC PIPING
TO CROSS OVER EXIST. CONCR. ENCASED DUCT BANK
GRADE = 23.79'±
BOT OF NFP PIPING EL. = 21.10'±
TOP OF DUCT BANK EL. = 21.00'±
CLEAR. = 0.10'±
CONST. NEW SIDEWALK IN BETWEEN MEMBRANE BLDG
AND SA BULK STORAGE

PIPE CROSSING #3
PROP. 14" HDPE NFP PIPING TO CROSS
EXIST. CHEM. TRENCH
GRADE = 23.94'±
BOT OF NFP PIPING EL. = 21.10'±
TOP OF CHEM. TRENCH EL. = 21.75'±
CLEAR. = CONFLICT, DEFLECT CHEM. PIPING AS REQ'D

PIPE CROSSING #4
PROP. 14" HDPE NFP PIPING TO CROSS OVER
EXIST. CONCR. ENCASED DUCT BANK
GRADE = 23.93'±
BOT OF NFP PIPING EL. = 21.10'±
TOP OF DUCT BANK EL. = 21.00'±
CLEAR. = 0.10'±
CONST. NEW SIDEWALK IN BETWEEN MEMBRANE
BLDG AND SA BULK STORAGE

PIPE CROSSING #5
PROP. 14" HDPE NFP PIPING TO CROSS OVER
PROP. 24" HSP SUCTION PIPING
GRADE = 23.88'±
BOT OF NFP PIPING EL. = 18.73'±
TOP OF HSP SUCTION PIPING EL. = 18.19'±
CLEAR. = 0.54'±

PIPE CROSSING #6
PROP. 14" HDPE NFP PIPING
EXIST. CHEM. CORRIDOR TO CROSS OVER
GRADE = 23.74'±
BOT OF NFP PIPING EL. = 18.73'±
TOP OF CHEM. CORRIDOR EL. = 20.10'±
CLEAR. = CONFLICT, DEFLECT CHEM. PIPING AS REQ'D

PIPE CROSSING #7
PROP. 14" HDPE NFP PIPING TO CROSS OVER
PROP. 24" HSP SUCTION PIPING
GRADE = 22.82'±
BOT OF NFP PIPING EL. = 18.73'±
TOP OF HSP SUCTION PIPING EL. = 16.35'±
CLEAR. = 2.38'±

PIPE CROSSING #8
PROP. 24" HSP SUCTION PIPING, GRADE = 22.79'±
EXIST. 18" HDPE NFP PIPING TO CROSS UNDER
BOT OF NFP PIPING EL. = 17.8'±
TOP OF HSP SUCTION PIPING EL. = 16.35'±
CLEAR. = 1.41'±

PIPE CROSSING #9
PROP. 20" GST EFFLUENT LINE, GRADE = 22.60'±
EXIST. 24" XFER TO CROSS OVER
BOT OF XFER EL. = 18.47'±
TOP OF GST EFFLUENT LINE EL. = 17.9'±
CLEAR. = 0.57'±

PIPE CROSSING #10
PROP. 18" HDPE GST INFLUENT LINE TO CROSS
OVER PROP. 20" GST EFFLUENT LINE
GRADE = 22.58'±
BOT OF XFER EL. = 19.00'±
TOP OF GST EFFLUENT LINE EL. = 18.31'±
CLEAR. = 0.69'±

PIPE CROSSING #11
PROP. 18" HDPE XFER TO CROSS
OVER EXIST. 14" GST EFFLUENT LINE
GRADE = 23.00'±
BOT OF XFER EL. = 19.00'±
TOP OF GST EFFLUENT LINE EL. = 18.26'±
CLEAR. = 0.73'±

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KHA PROJECT
044572100
DATE
MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY JTV
CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
**INDIAN RIVER COUNTY UTILITIES
DEPARTMENT**

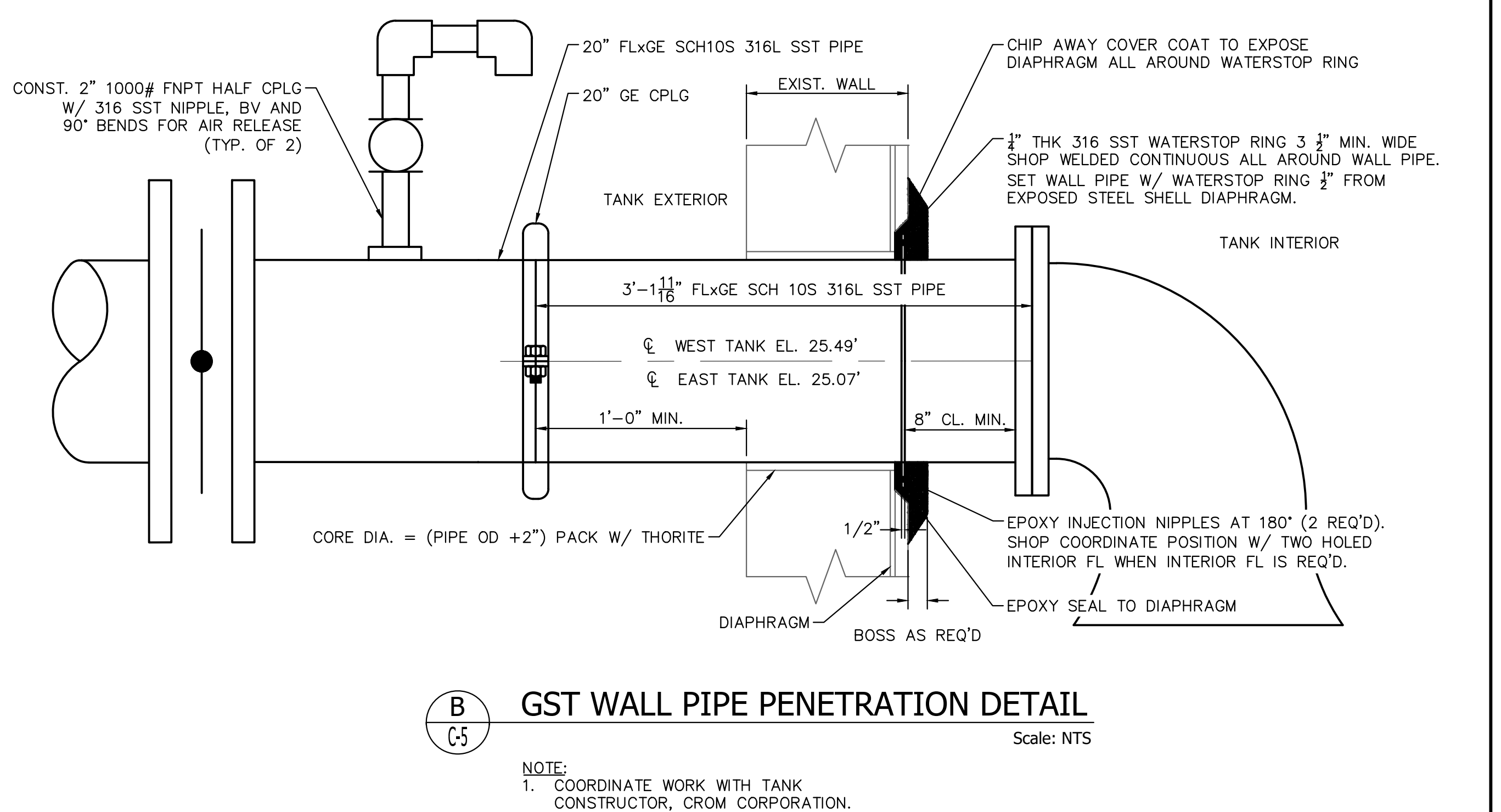
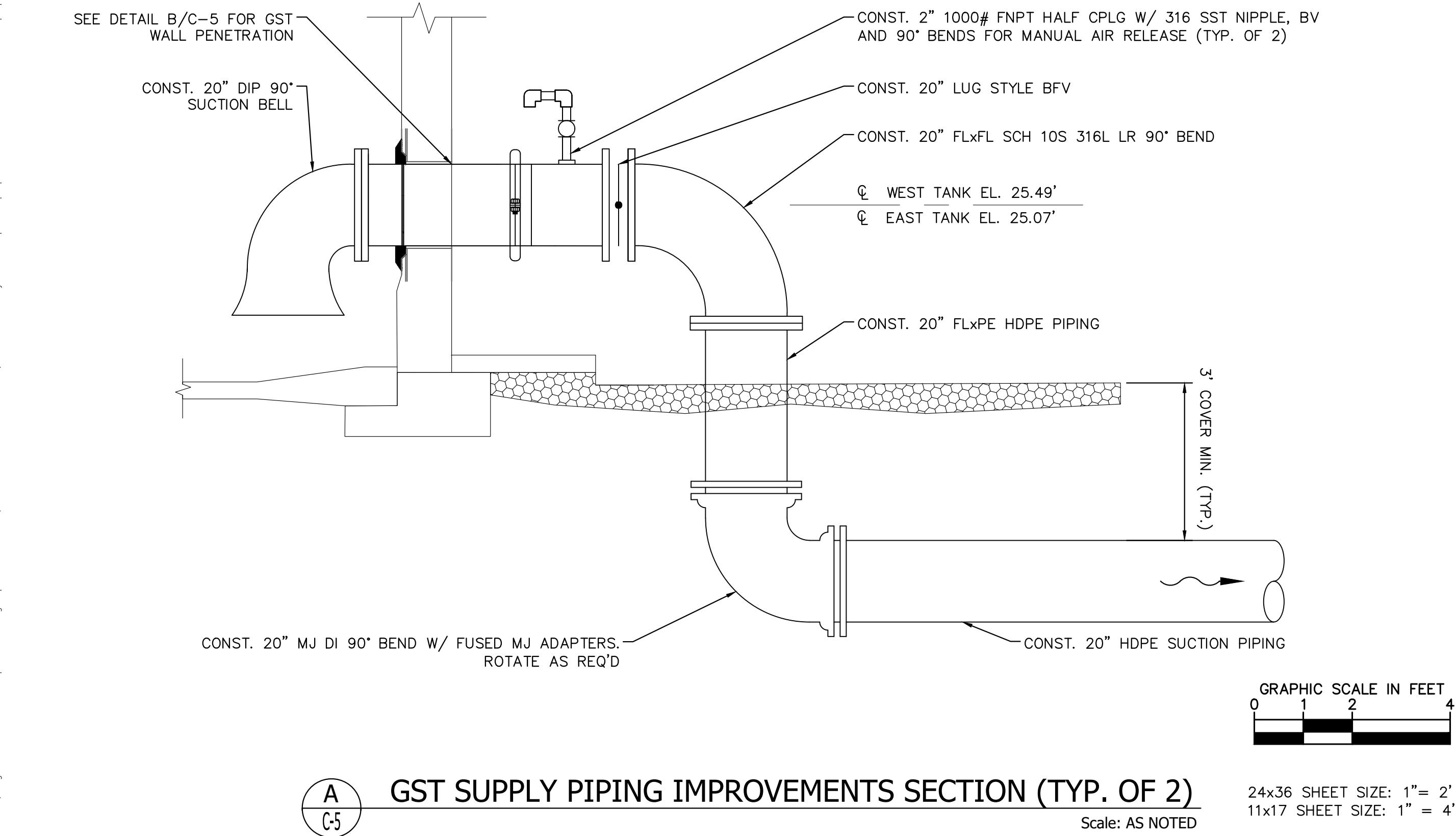
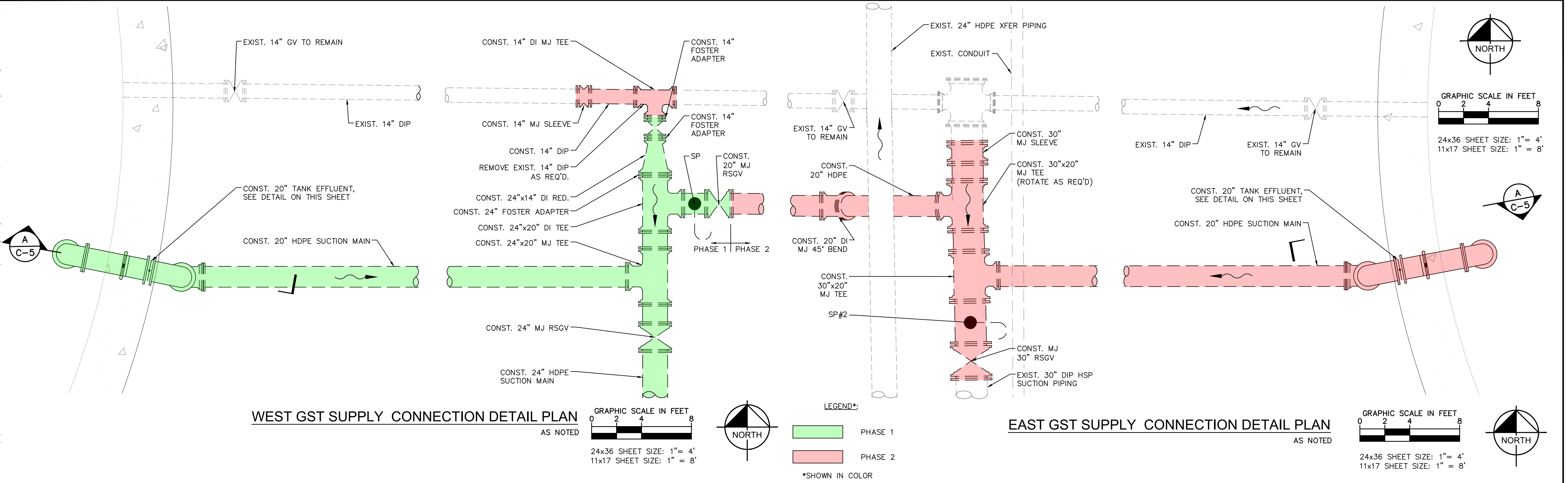
INDIAN RIVER
COUNTY,
FLORIDA

LICENSED PROFESSIONAL
NICHOLAS P.O. BLACK
FLORIDA LICENSE NUMBER
84908
DATE: _____

PROPOSED YARD PIPING PLAN

SHEET NUMBER
C-4
9 OF 132

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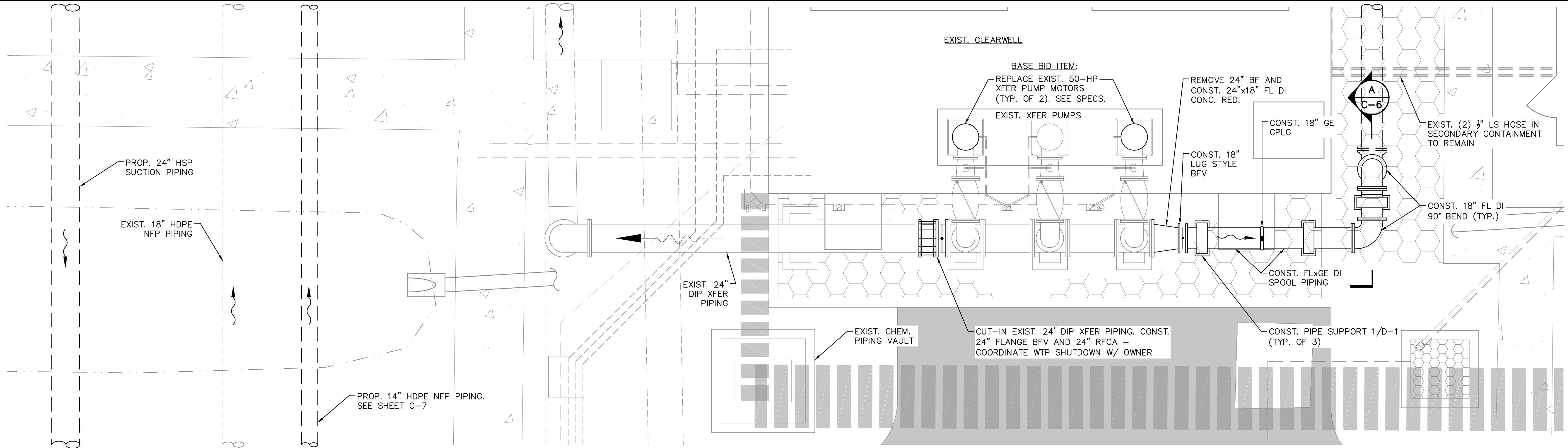


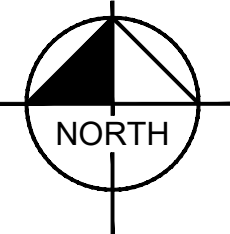
B
C-5
GST WALL PIPE PENETRATION DETAIL
Scale: NTS

NOTE:
1. COORDINATE WORK WITH TANK
CONSTRUCTOR, CROM CORPORATION.

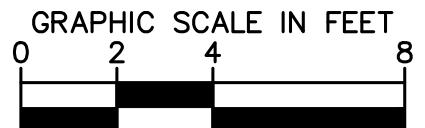
				Kimley»Horn				SOUTH OSLO ROAD WTP IMPROVEMENTS				LICENSED PROFESSIONAL				GROUND STORAGE TANK				SHEET NUMBER			
				© 2021 KIMLEY-HORN AND ASSOCIATES, INC. 1920 WEKIVA WAY SUITE 200, WEST PALM BEACH, FL 33411 PHONE: 561-845-0665 FAX: 561-863-8175 WWW.KIMLEY-HORN.COM CA 00000696				INDIAN RIVER COUNTY UTILITIES DEPARTMENT				NICHOLAS P.O. BLACK				EFFLUENT PIPING PLAN AND				C-5			
				KHA PROJECT 044572100 DATE MAR 2021 SCALE AS SHOWN DESIGNED BY NPOB DRAWN BY JTV CHECKED BY MDM				INDIAN RIVER COUNTY, FLORIDA				FLORIDA LICENSE NUMBER 84908				DETAILS				10 OF 132			
No.				REVISIONS				DATE				BY											

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NORTH

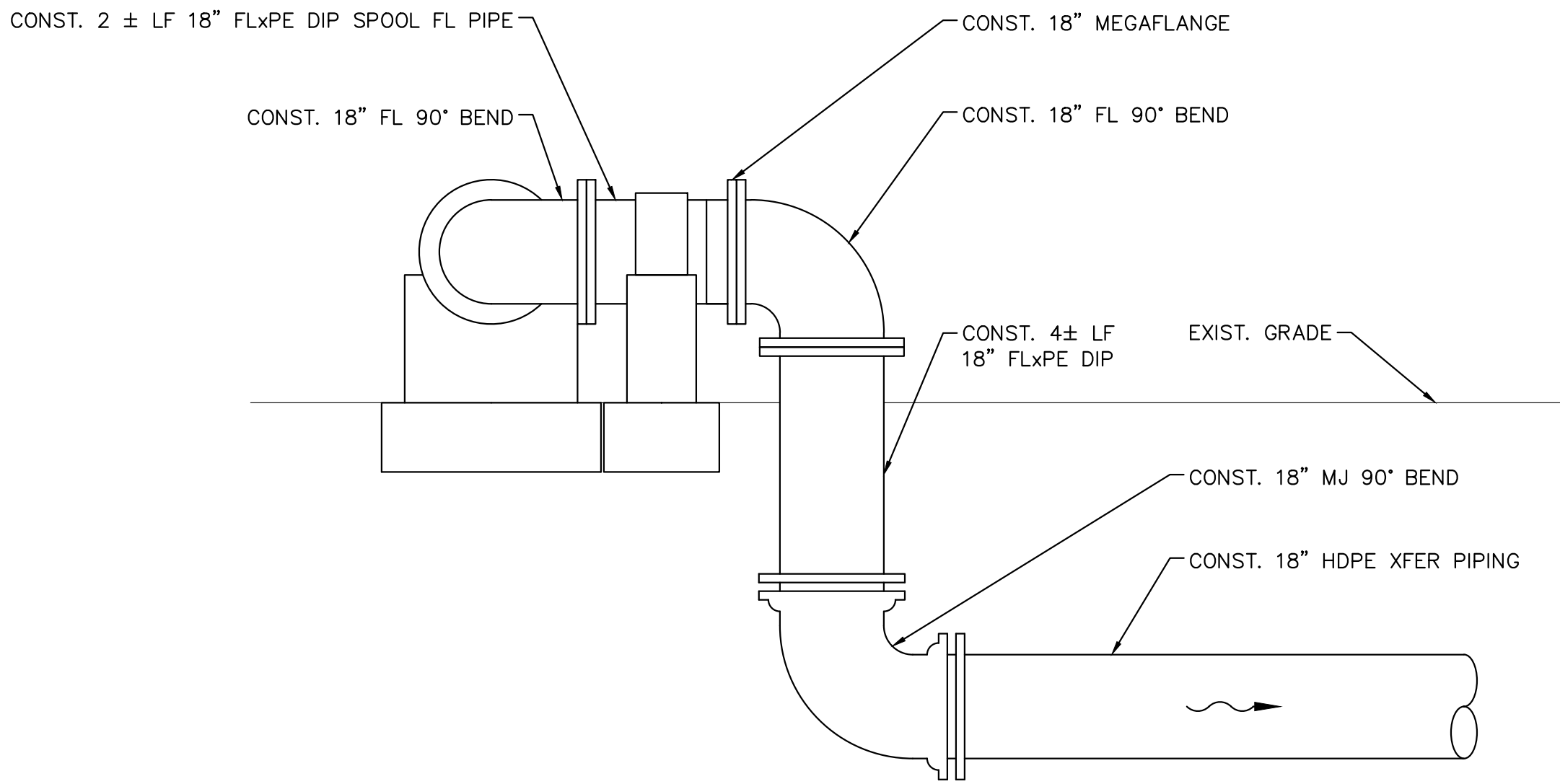


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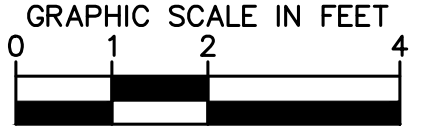
24x36 SHEET SIZE: 1" = 4'

11x17 SHEET SIZE: 1" = 8'

TRANSFER PIPING DEMOLITION AND PROPOSED SITE PLAN  AS NOTED




 TRANSFER PIPING IMPROVEMENTS SECTION  Scale: AS NOTED



GRAPHIC SCALE IN FEET

24x36 SHEET SIZE: 1" = 2'

11x17 SHEET SIZE: 1" = 4'

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KHA PROJECT 044572100
DATE MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
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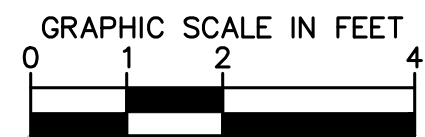
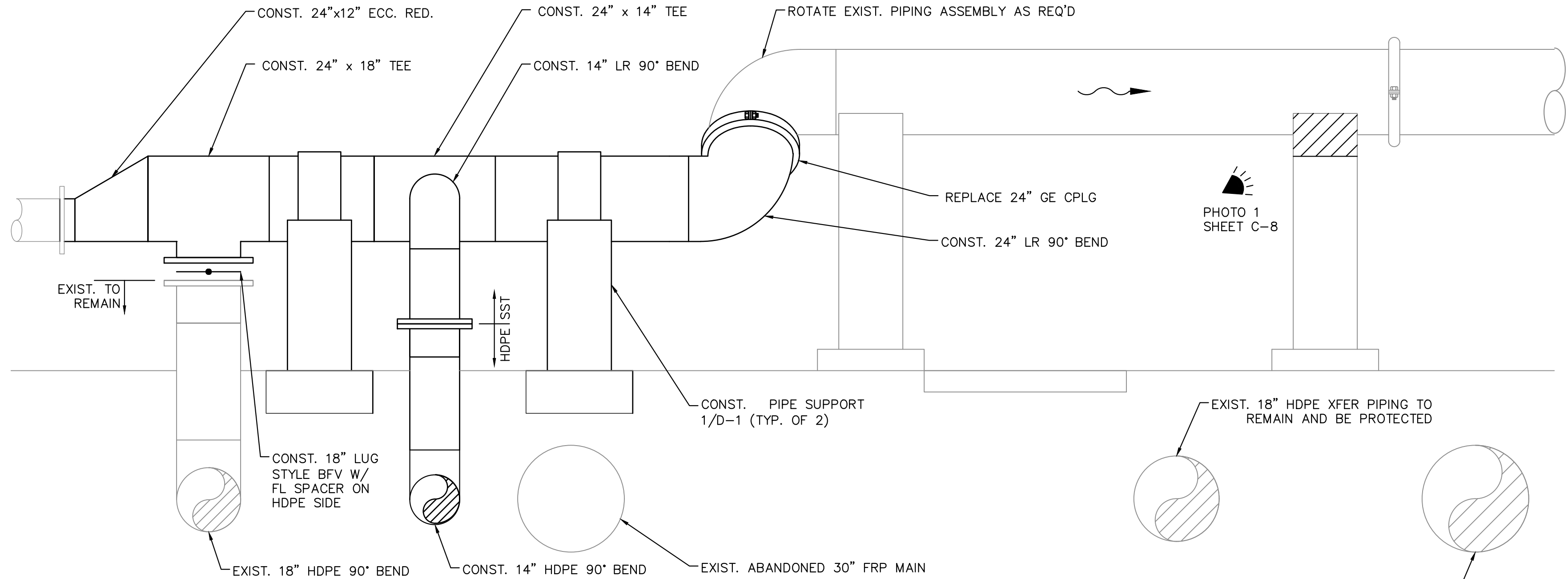
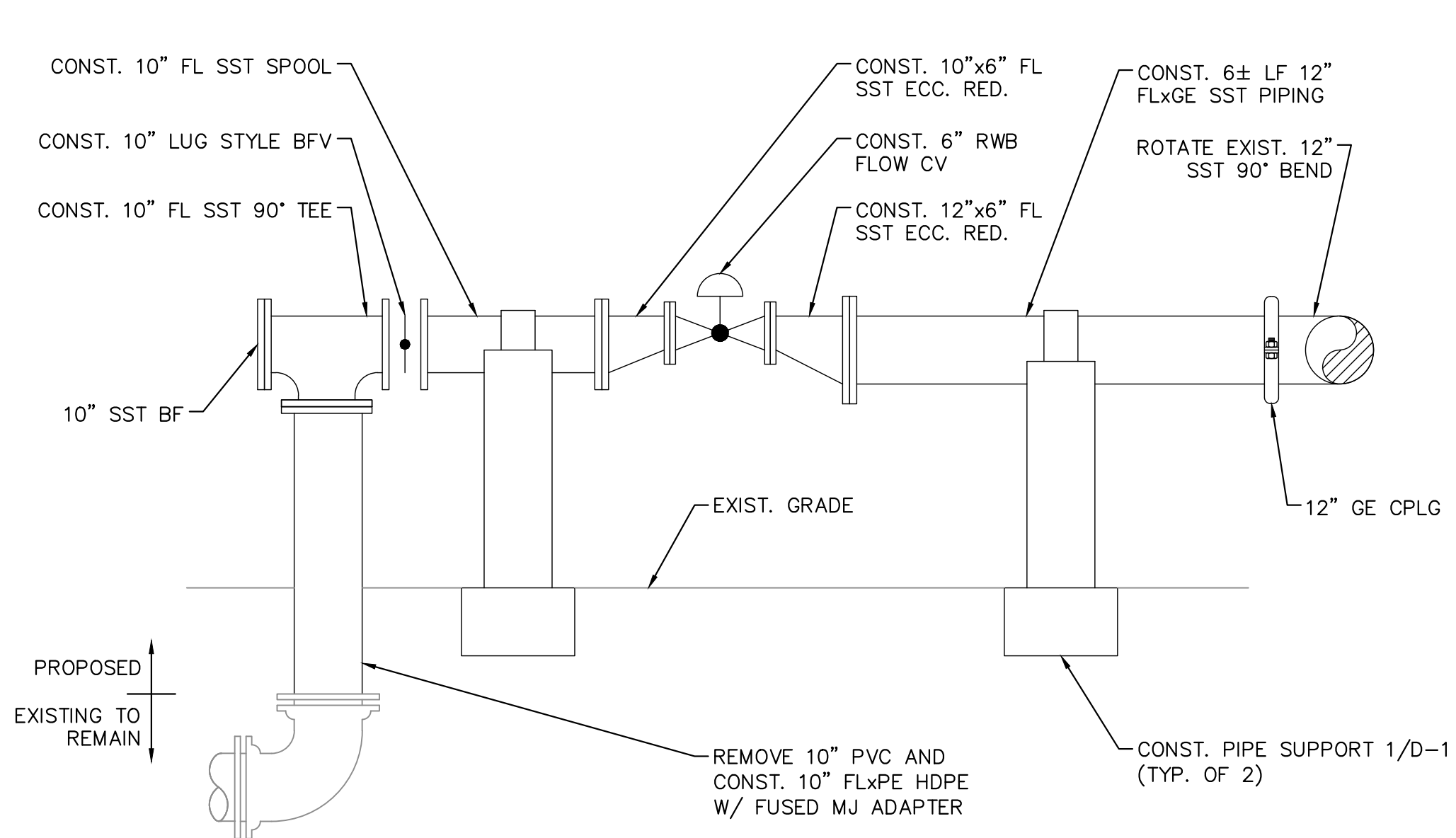
SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
INDIAN RIVER COUNTY UTILITIES DEPARTMENT
INDIAN RIVER COUNTY, FLORIDA

LICENSED PROFESSIONAL
NICHOLAS P.O. BLACK
FLORIDA LICENSE NUMBER 84908

TRANSFER PIPING IMPROVEMENTS

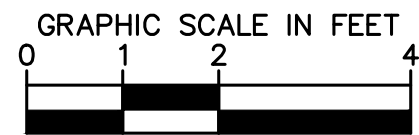
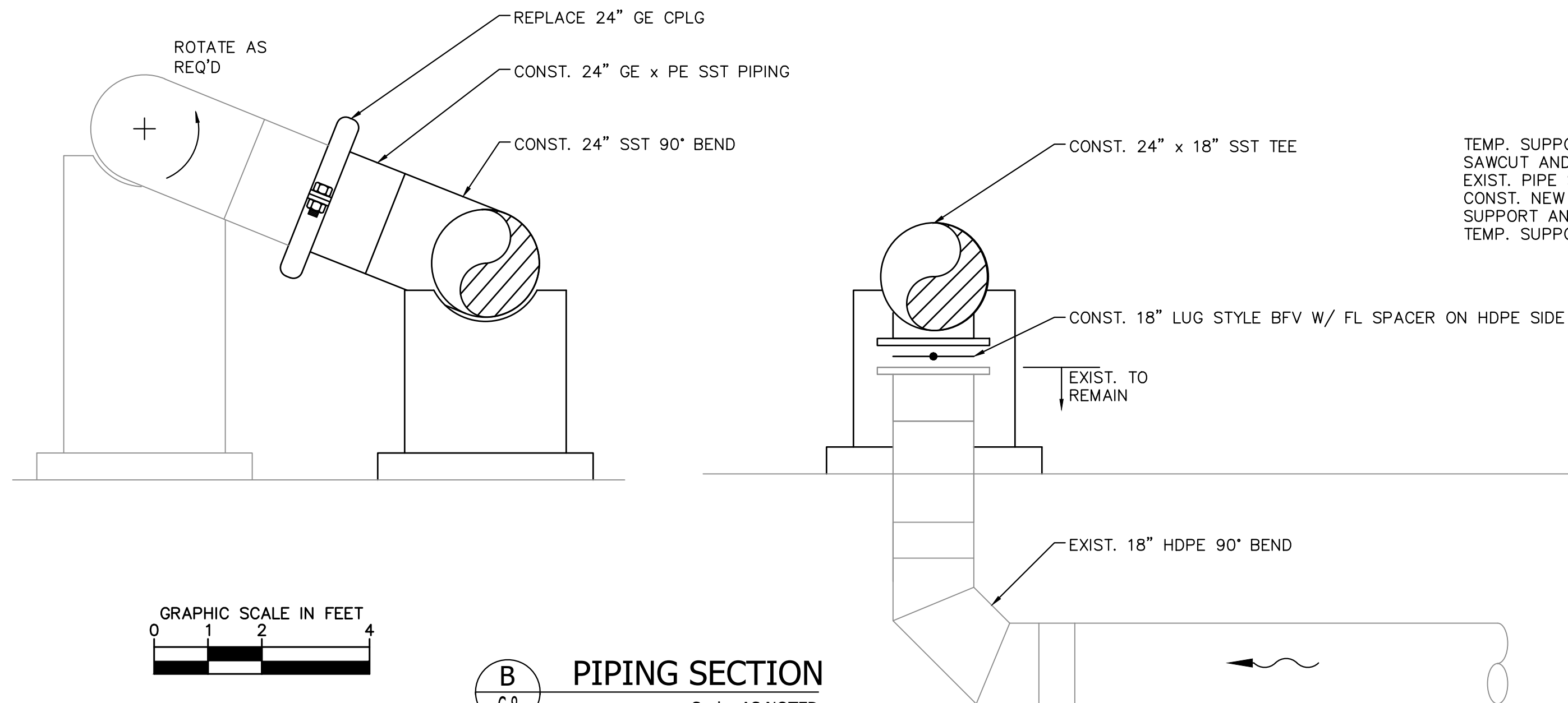
SHEET NUMBER
C-6
11 OF 132

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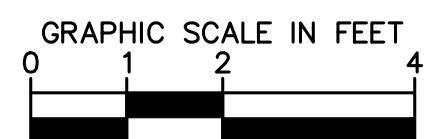
24x36 SHEET SIZE: 1" = 2'
11x17 SHEET SIZE: 1" = 4'

PIPING SECTION
Scale: AS NOTED



24x36 SHEET SIZE: 1" = 2'
11x17 SHEET SIZE: 1" = 4'

PIPING SECTION
Scale: AS NOTED



24x36 SHEET SIZE: 1" = 2'
11x17 SHEET SIZE: 1" = 4'

PIPING SECTION
Scale: AS NOTED



PHOTO #1
NTS

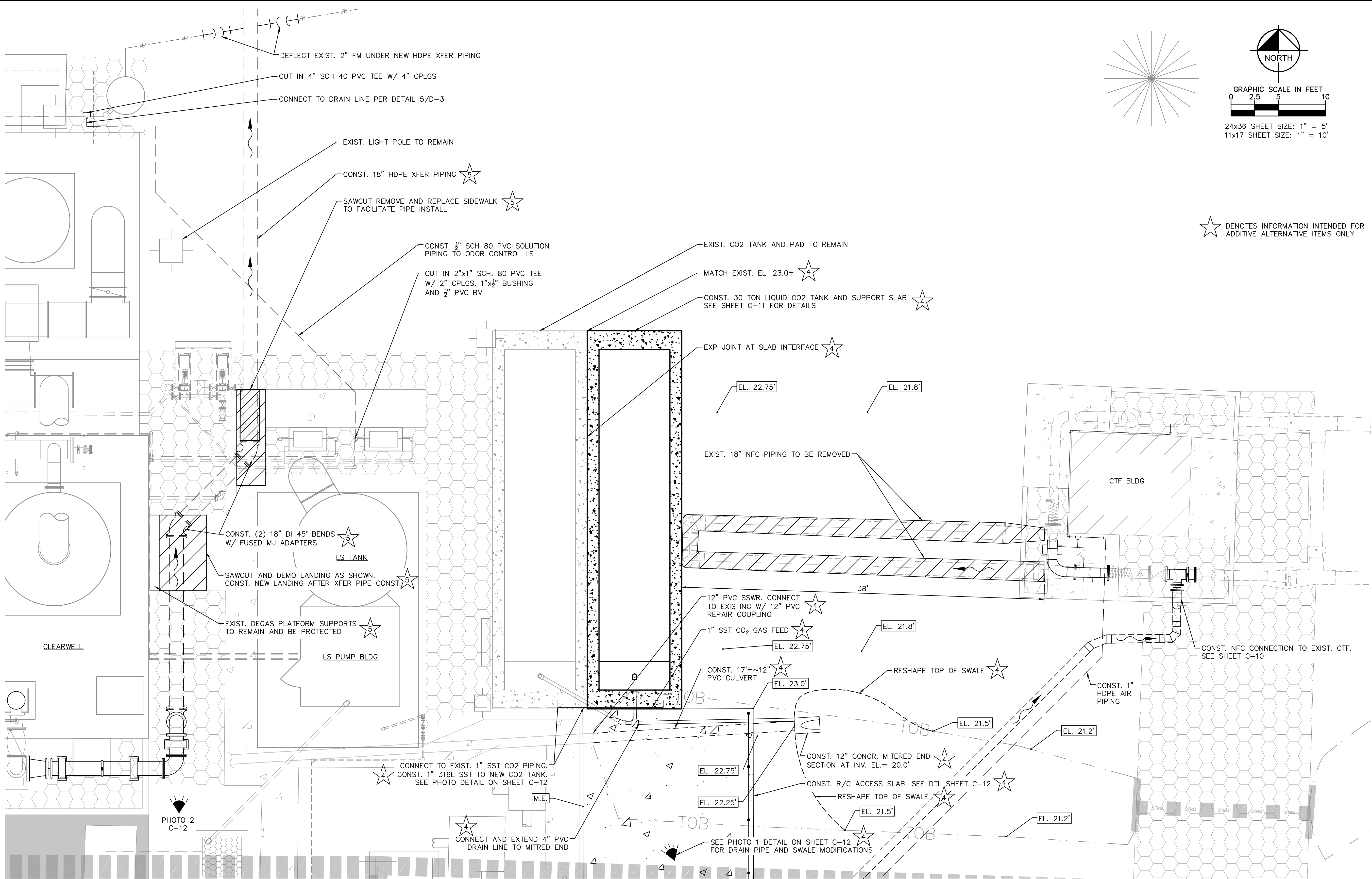


PHOTO #2
NTS

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KHA PROJECT
044572100
DATE
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DESIGNED BY NPOB
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SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
**INDIAN RIVER COUNTY UTILITIES
DEPARTMENT**

INDIAN RIVER
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LICENSED PROFESSIONAL

NICHOLAS P.O. BLACK

FLORIDA LICENSE NUMBER
84908

DATE: _____

**CO2 AND CONCENTRATE
TREATMENT FACILITY PLAN**

SHEET NUMBER

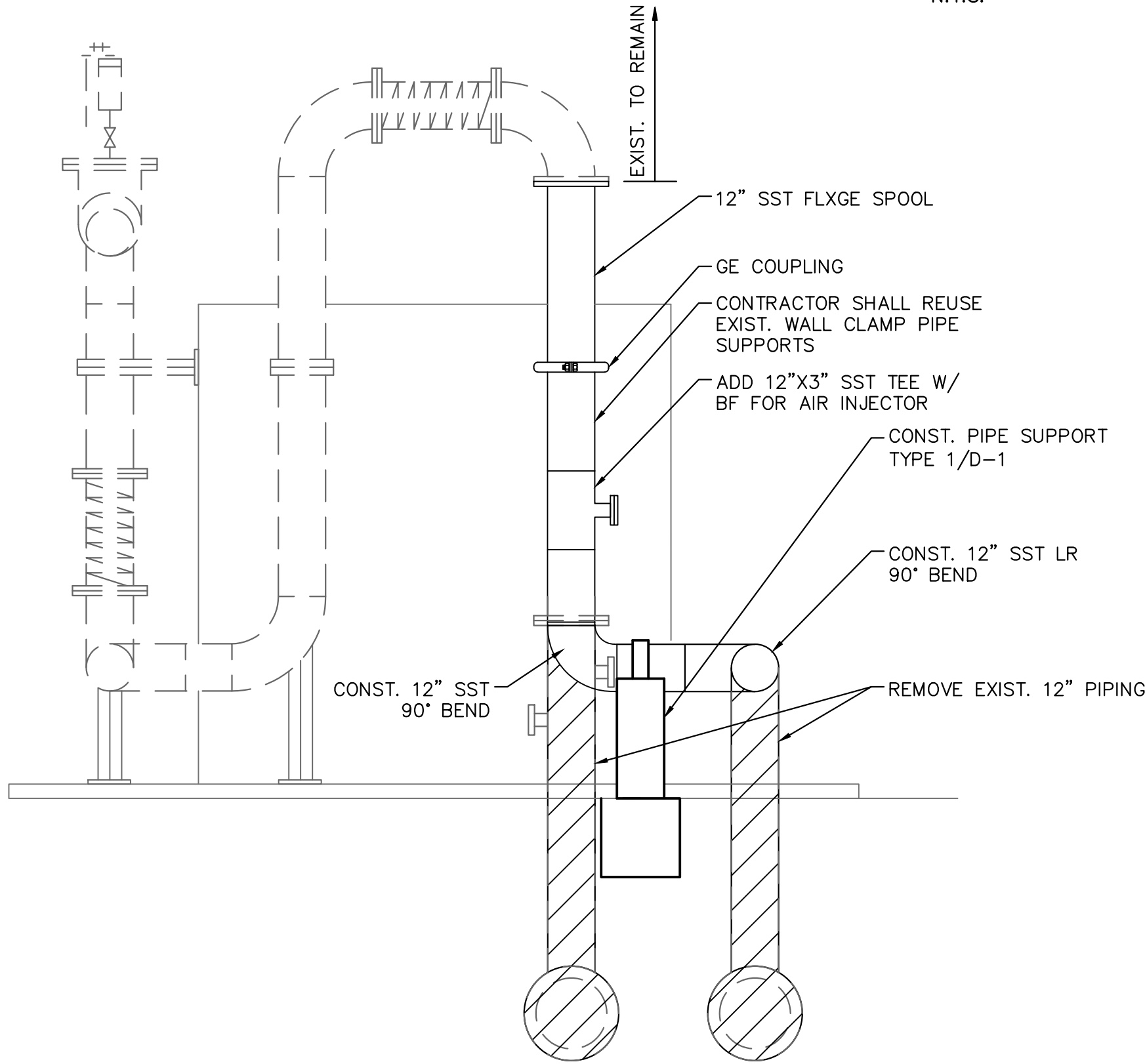
C-9

14 OF 132

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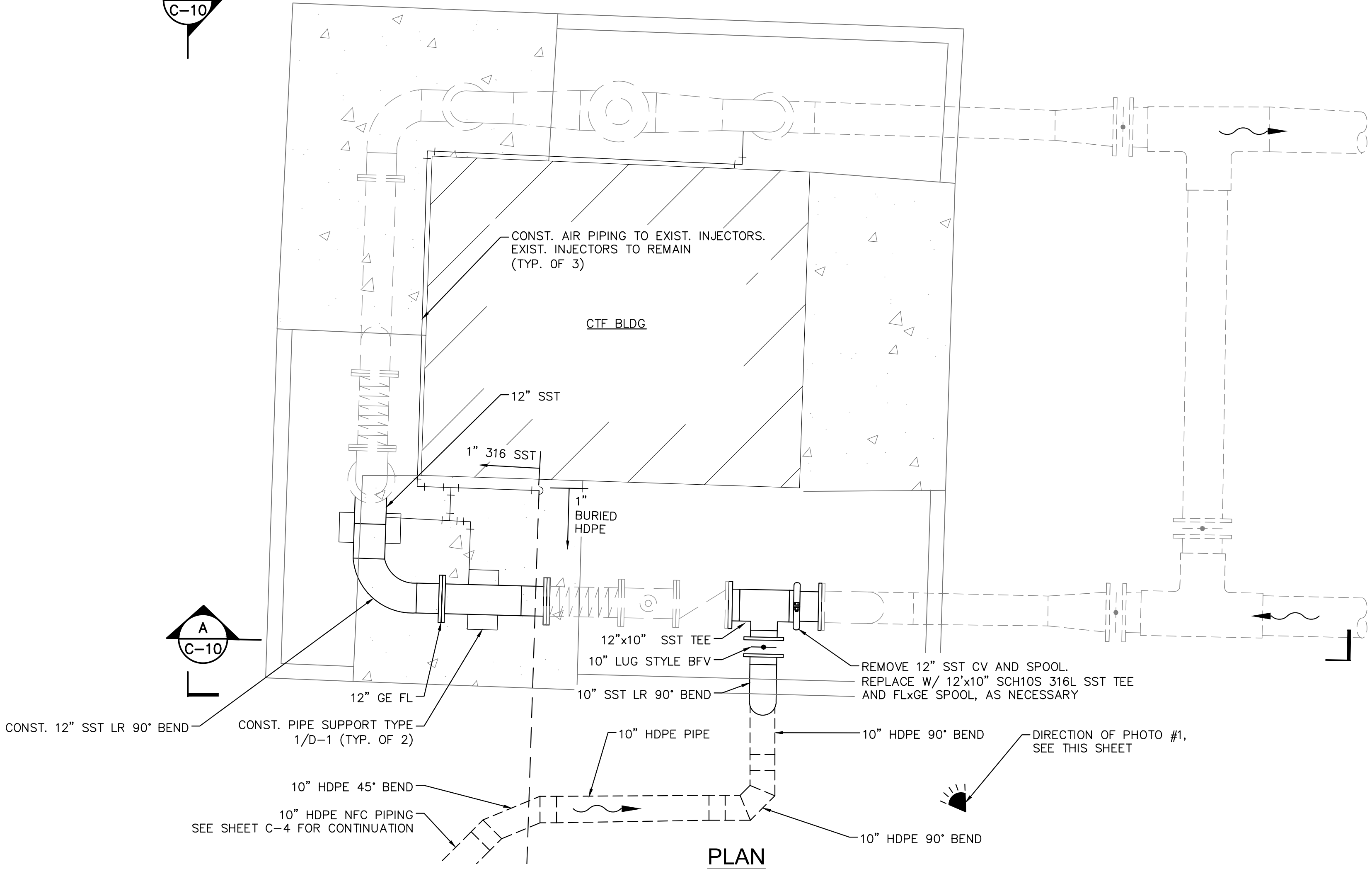
PHOTO #1-ABOVE GROUND PIPING TO REMAIN
N.T.S.



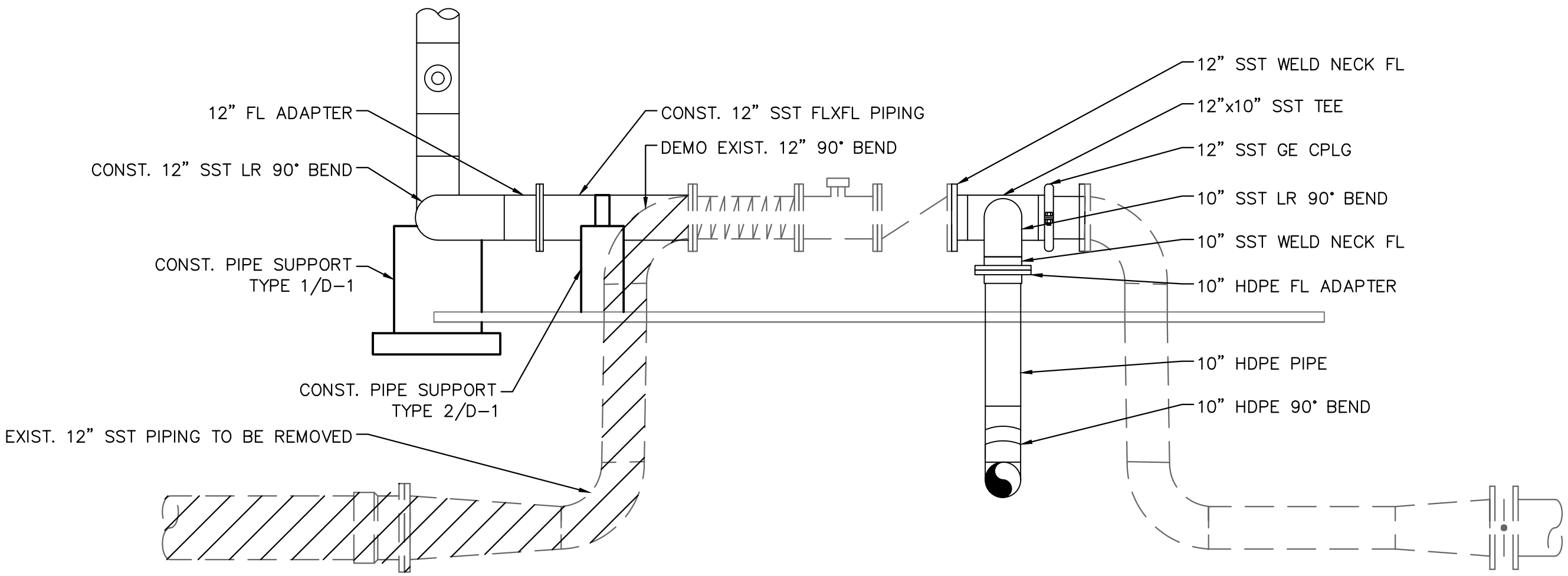
B
C-10
CTF PIPING MODIFICATIONS
Scale: AS NOTED

B
C-10

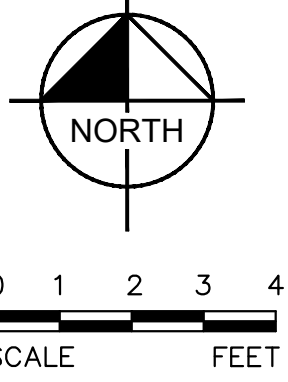
A
C-10



PLAN



A
C-10
CONCENTRATE-CTF CONNECTION DETAIL
Scale: AS NOTED



24x36 SHEET SIZE: $\frac{3}{8}$ " = 1'-0"
11x17 SHEET SIZE: $\frac{3}{16}$ " = 1'-0"

No.	REVISIONS	DATE	BY

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FLORIDA LICENSE NUMBER
84908

DATE: _____

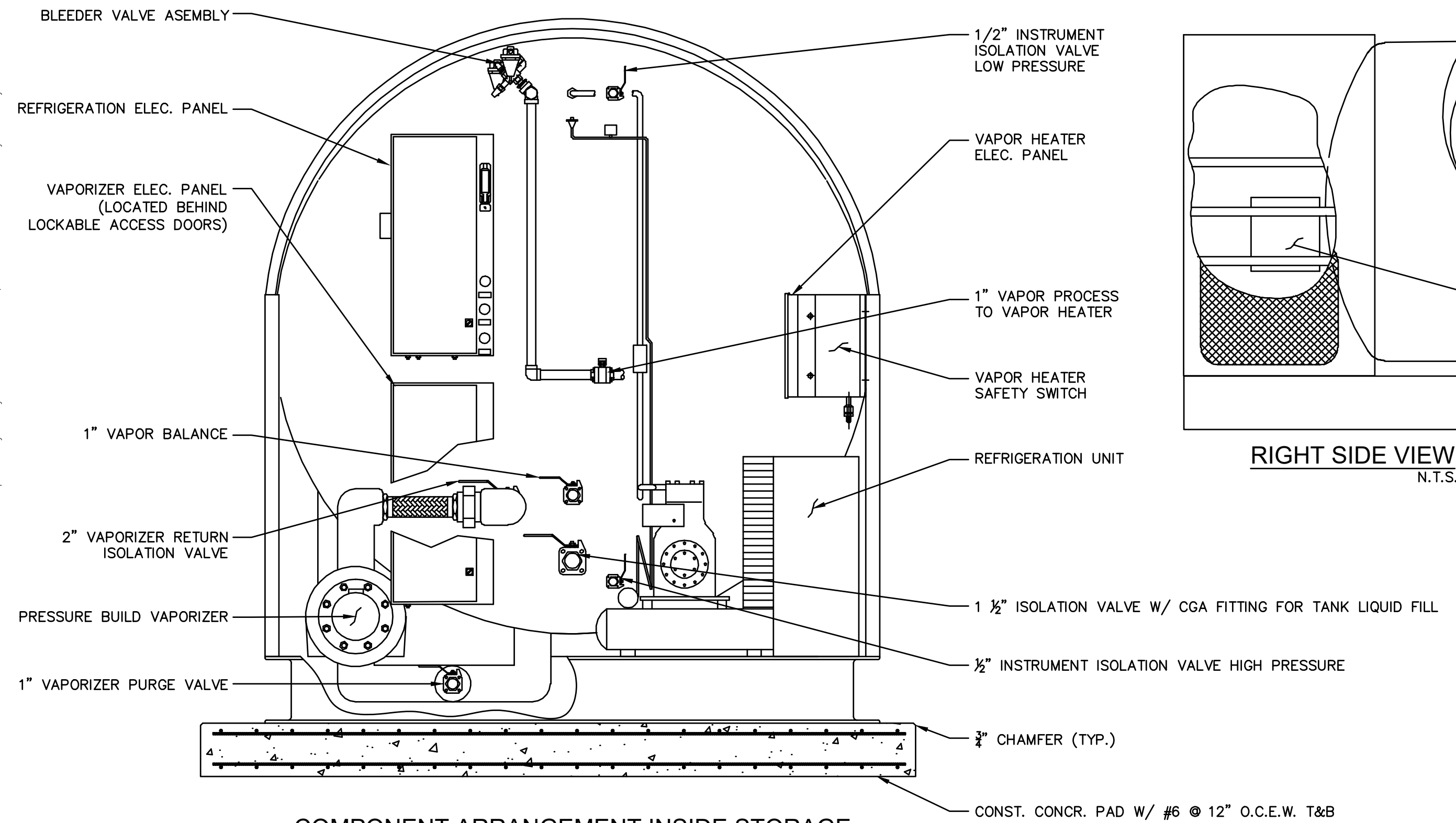
**CONCENTRATE PIPING
IMPROVEMENT DETAILS**

SHEET NUMBER

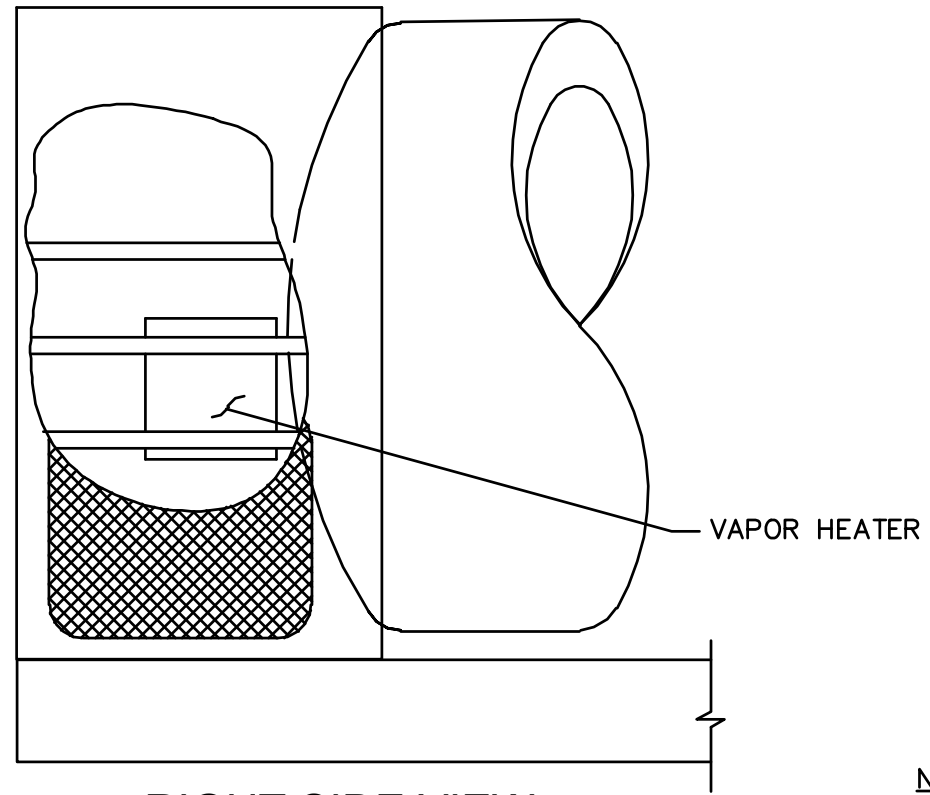
C-10

15 OF 132

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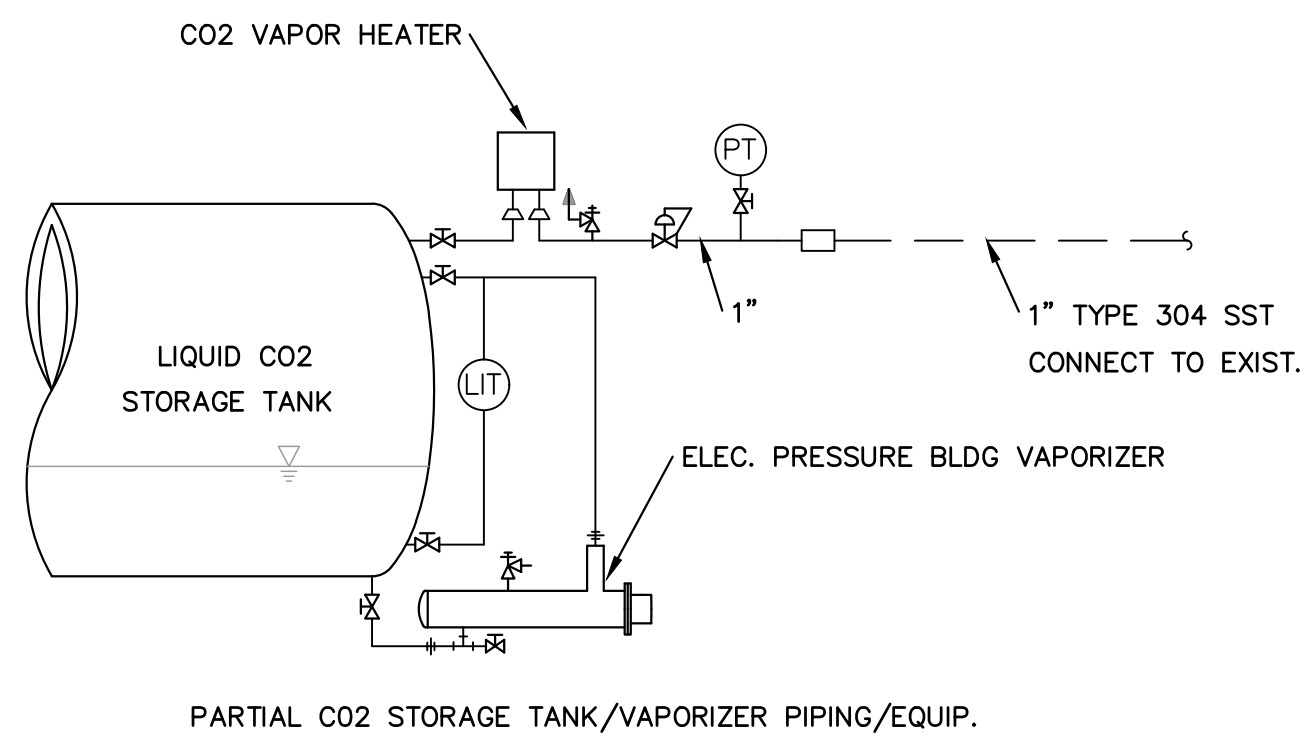
COMPONENT ARRANGEMENT INSIDE STORAGE
TANK / EQUIPMENT ENCLOSURE
N.T.S.



RIGHT SIDE VIEW
N.T.S.

NOTES:

1. TO ENSURE PROPER SYSTEM PERFORMANCE THE SOLUTION FEED LINES BETWEEN THE SOLUTION FEED PANELS AND THE SOLUTION DIFFUSERS SHALL BE INSTALLED TO MINIMIZE PRESSURE DROP. ANY ABRUPT CHANGE IN THE PIPING SYSTEM, WHICH MAY RESULT IN HIGH LOCALIZED PRESSURE DROPS, SHALL BE AVOIDED.
2. THE SOLUTION DIFFUSER IS DESIGNED TO PROVIDE THE SPECIFIED SOLUTION FLOW WHEN OPERATING AT A DIFFERENTIAL PRESSURE ACROSS THE DIFFUSER ORIFICES OF APPROXIMATELY 45 PSI.
3. THE SOLUTION DIFFUSER HAS FIXED ORIFICES, AND THESE ORIFICES CONTROL THE SYSTEM SOLUTION FLOW.
4. IF SOLUTION LINE PRESSURE FALLS TOO LOW CO2 GAS/VAPOR MAY COME OUT OF SOLUTION AND INFLUENCE SYSTEM PERFORMANCE.
5. ALL CO2 GAS/VAPOR LINE SECTIONS WHICH CAN BE ISOLATED BETWEEN TWO BLOCK VALVES SHALL BE EQUIPPED WITH A LINE SAFETY.
6. THE OUTLETS OF LINE SAFETY VALVES WHICH ARE SUBJECT TO RELIEVING INSIDE A CONFINED SPACE SHALL BE PIPED TO THE OUTSIDE. CARBON DIOXIDE GAS/VAPOR IN CERTAIN CONCENTRATIONS CAN LEAD TO SUFFOCATION. OUTLET PIPING FROM SAFETIES SHALL BE SIZED SUCH THAT THE FLOW THROUGH THE RELIEF VALVE IS NOT RESTRICTED.
7. SYSTEM SUPPLIER TO CONFIRM FINAL SIZING OF PIPING TO/FROM PANEL.

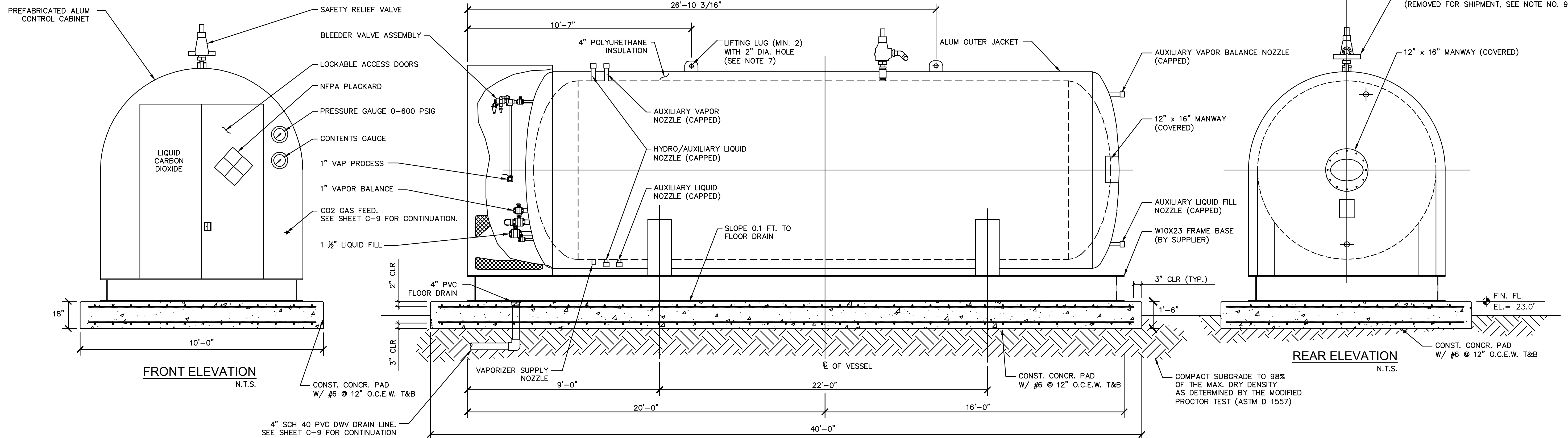


PARTIAL CO2 STORAGE TANK/VAPORIZER PIPING/EQUIP.

GENERAL NOTES:

1. WEIGHT EMPTY: 30,000 LBS
2. NOMINAL WEIGHT CONTENTS (FULL): 60,000 LBS
3. TOTAL VOLUME: 1,012 CU. FT. (7,570 GAL)
4. MAXIMUM ALLOWABLE WORKING PRESSURE OF VESSEL: 350 PSIG @ 200° F
5. MINIMUM DESIGN METAL TEMPERATURE OF VESSEL: -40° F @ 350 PSIG
6. NOTE: VESSEL NOT INTENDED TO BE FILLED WITH LIQUID CO COLDER THAN -20° F
7. LIFTING LUGS ARE TO BE USED ONLY WHEN VESSEL IS EMPTY
8. PRIOR TO STORAGE TANK INSTALLATION AND OPERATION, THOROUGHLY READ AND COMPLY WITH ALL INSTRUCTIONS IN THE INSTALLATION AND SERVICE MANUAL
9. THE SAFETY RELIEF VALVE ASSEMBLY IS REMOVED FOR SHIPMENT. THE ASSEMBLY MUST BE INSTALLED PRIOR TO THE INITIAL FILLING AND OPERATION OF THE TANK
10. THE STORAGE TANK SHALL CONSIST OF A WELDED STEEL PRESSURE VESSEL, DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SECTION VIII OF THE ASME "CODE FOR UNFIRED PRESSURE VESSELS"
11. THE INNER PRESSURE VESSEL OF THE STORAGE TANK SHALL BE FABRICATED FROM ASME SA612, GRADE B CARBON STEEL
12. THE CO2 STORAGE TANK SHALL BE TAGGED WITH IDENTIFICATION NUMBERS AS DIRECTED BY THE PROJECT DRAWINGS AND/OR SPECS. SEE THE PROJECT SPECS. FOR SPECIAL EQUIPMENT IDENTIFICATION PLATE REQUIREMENTS
13. SLAB DIMENSIONS, REINFORCING, AND ANCHORAGE DETAILS APPLICABLE ONLY TO THE TANK SHOWN ON THIS PAGE. IF AN ALTERNATE TANK IS TO BE USED, CONTRACTOR TO SUBMIT THE FOLLOWING ITEMS FOR REVIEW:
 - A. TANK SHOP DRAWINGS
 - B. TANK FOUNDATION SLAB DESIGN, CALCULATIONS SHOULD BE SIGNED AND SEALED BY A P.E. IN THE STATE OF FLORIDA.
 - C. TANK ANCHOR DESIGN. CALCULATIONS SHOULD BE SIGNED AND SEALED BY A P.E. IN THE STATE OF FLORIDA.
14. FOUNDATIONS SHOULD BE SUPPORTED ON COMPACTED MATERIAL WITH A MIN. SOIL BEARING CAPACITY OF 2500 PSF, U.O.N.

CO2 TANK SUPPLY SCHEMATIC
N.T.S.



GENERAL ARRANGEMENT & PIPING LOCATIONS
SIDE ELEVATIONS
N.T.S.

★ ALL ITEMS ON THIS SHEET TO BE INCLUDED UNDER ADDITIVE ALTERNATE

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KHA PROJECT
044572100
DATE
MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY SS
CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
INDIAN RIVER COUNTY UTILITIES
DEPARTMENT
INDIAN RIVER
COUNTY,
FLORIDA

LICENSED PROFESSIONAL
NICHOLAS P.O. BLACK
FLORIDA LICENSE NUMBER
84908
DATE: _____

CO2 STORAGE TANK DETAILS ★

SHEET NUMBER
C-11
16 OF 132

Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: CO2 AND CTF PHOTOS March 19, 2021 06:38:59am K:\WEB_Civil\044572100 - South OSLO WTP Design\CAD\PlanSheets\CO2 AND CTF PHOTOS.dwg This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

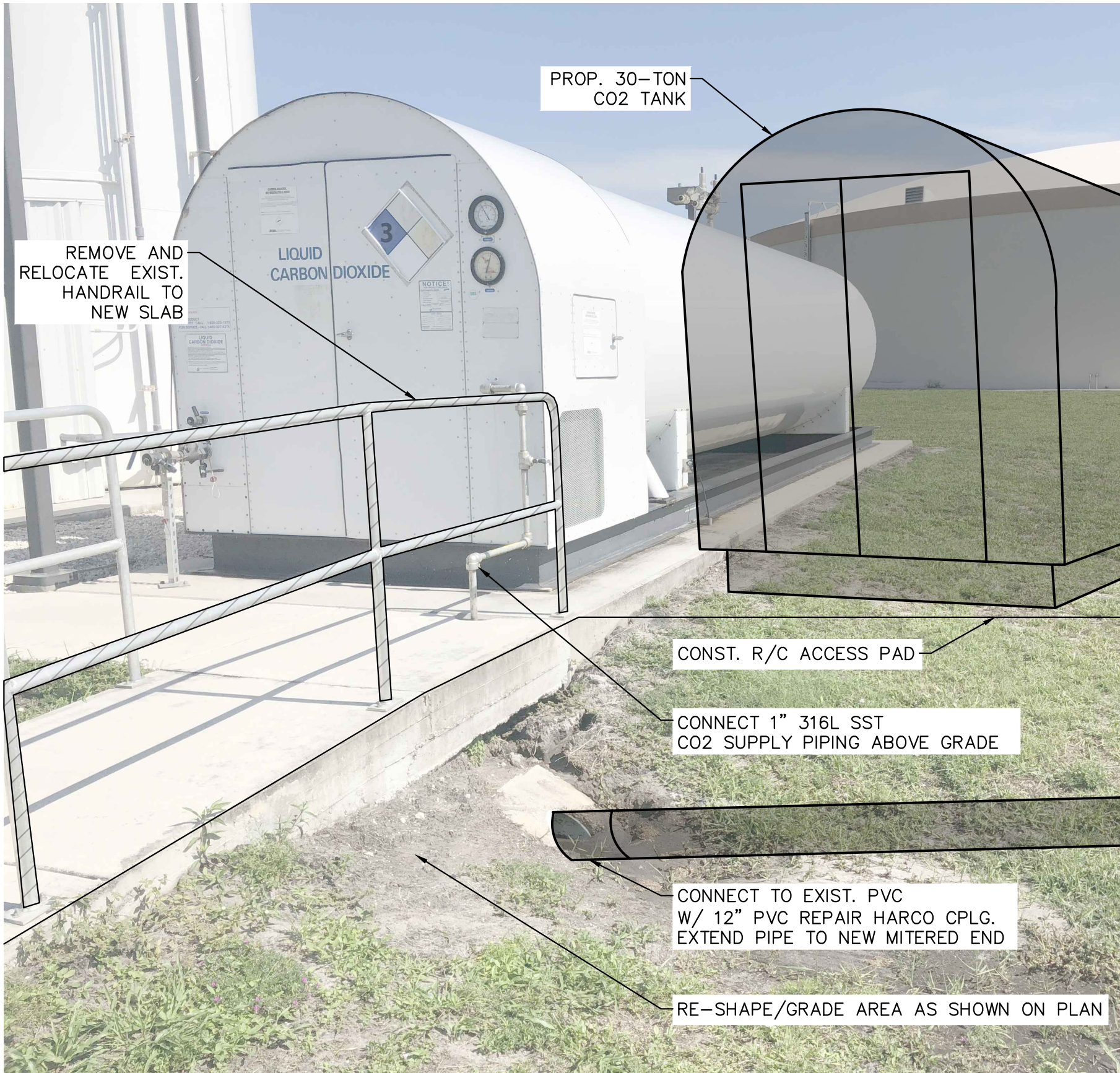


PHOTO 1 - EXIST. CO2 TANK AND MITERED END DRAIN PIPE ☆
N.T.S.

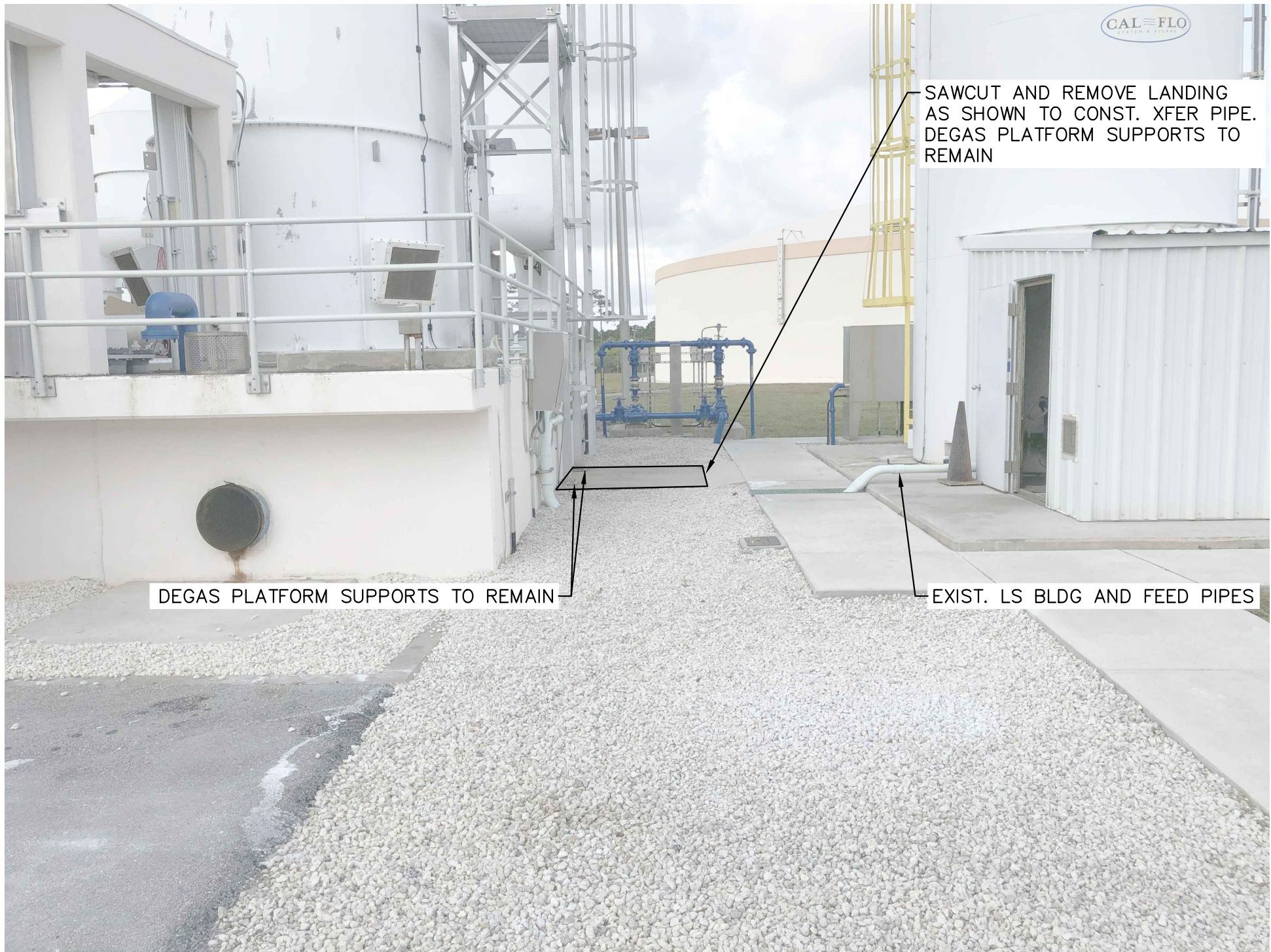
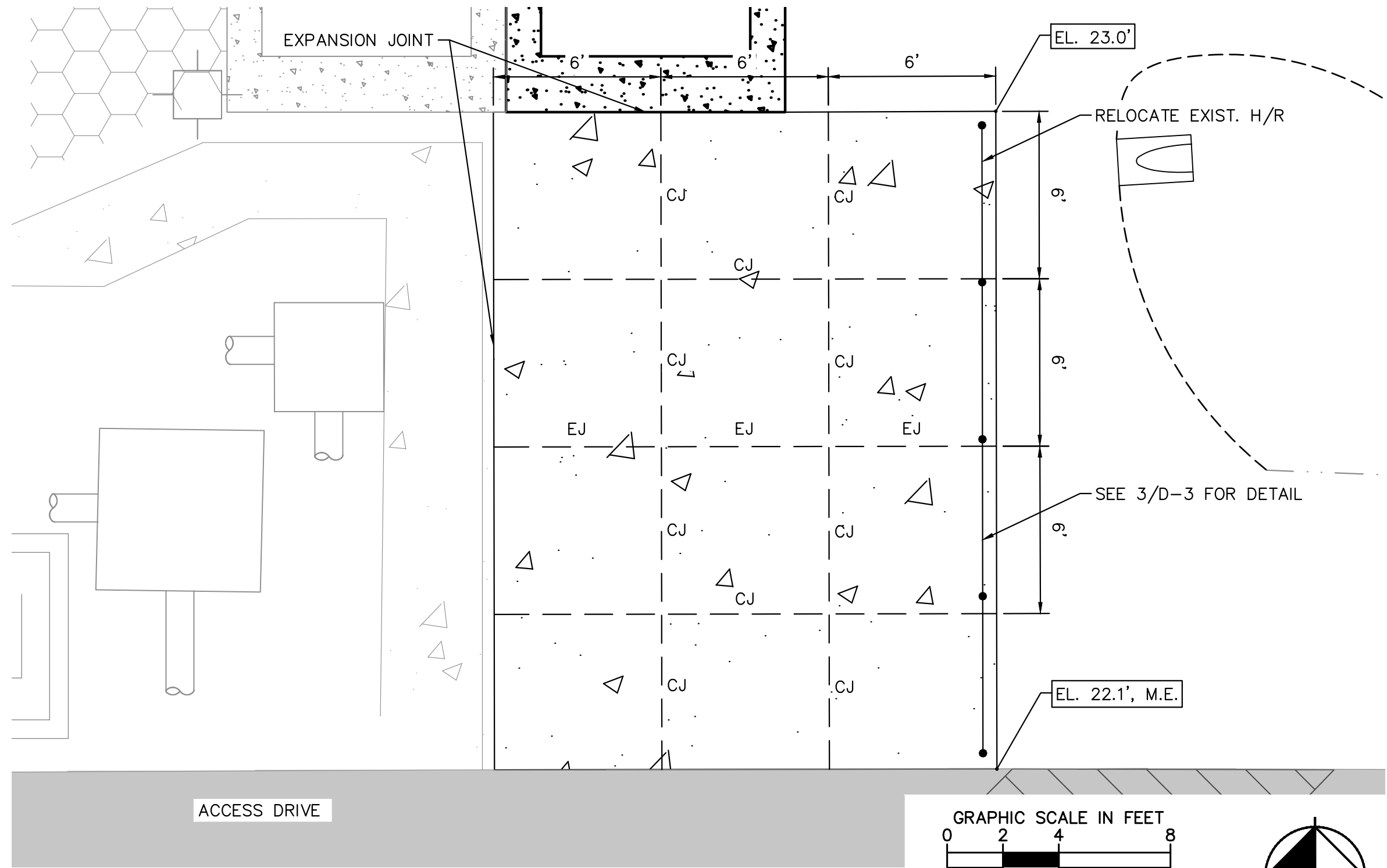


PHOTO 2 - EXIST. DEGASIFIER LADDER AND LANDING ☆
N.T.S.



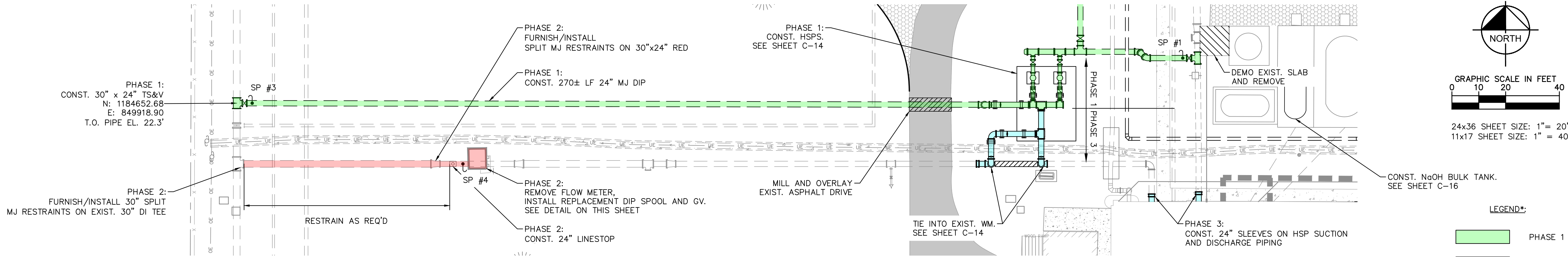
R/C SLAB DETAIL ☆
AS NOTED

☆ ALL ITEMS ON THIS SHEET TO BE INCLUDED UNDER ADDITIVE ALTERNATE

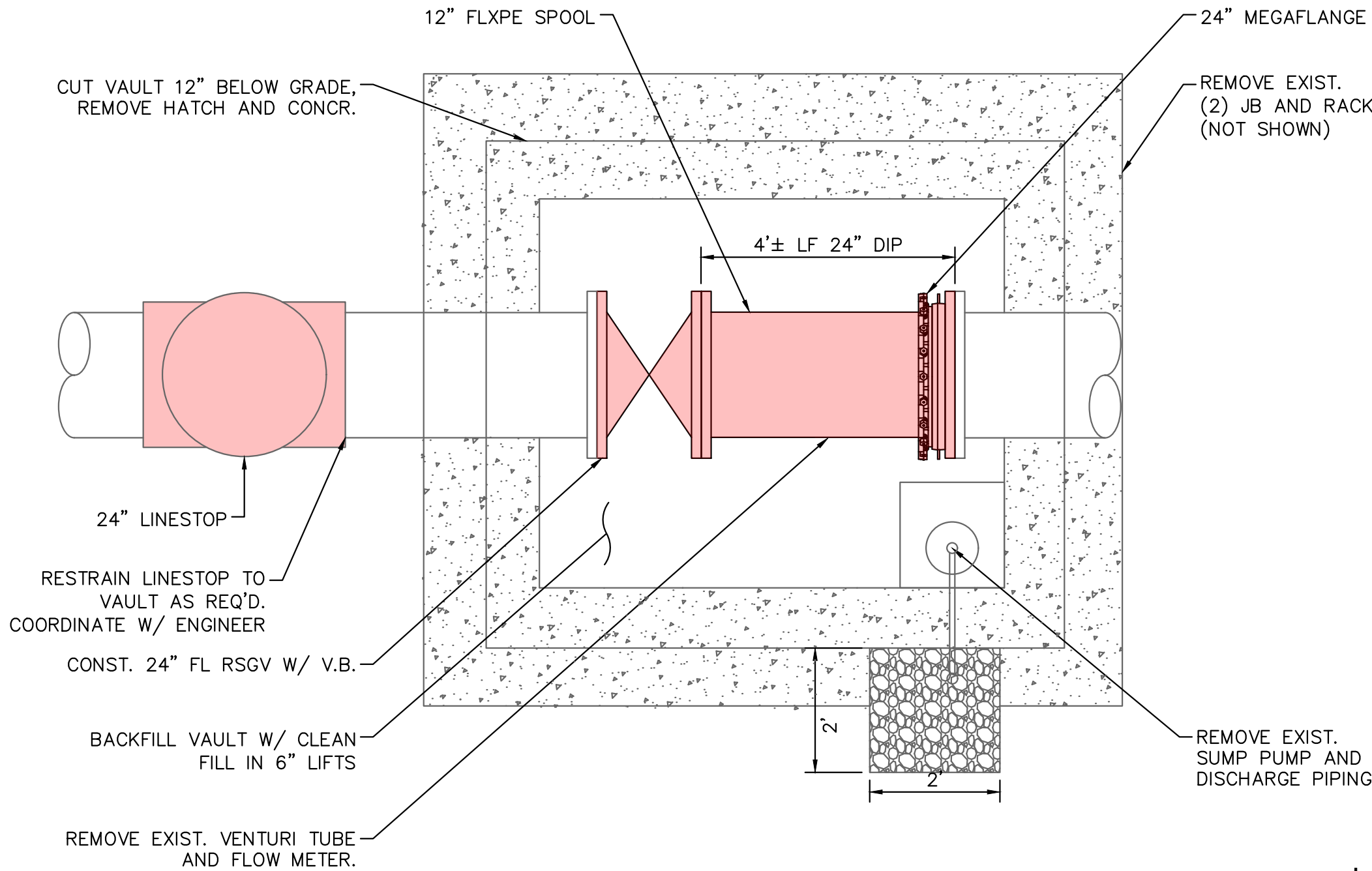
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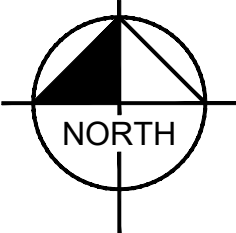
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TRANSMISSION PIPING IMPROVEMENTS



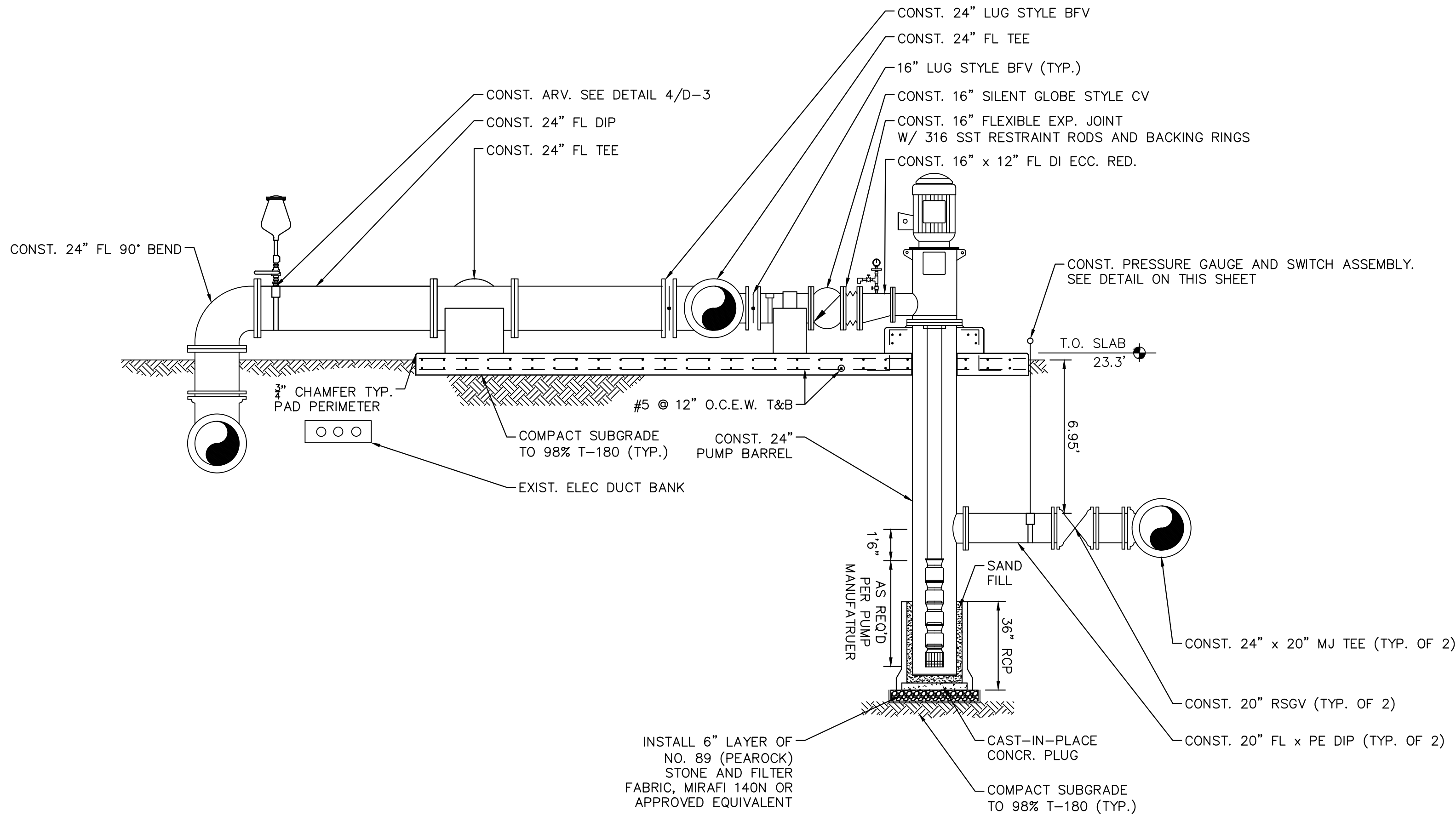
EXISTING TRANSMISSION FLOWMETER AND VAULT PLAN
N.T.S.



No.	REVISIONS	DATE	BY

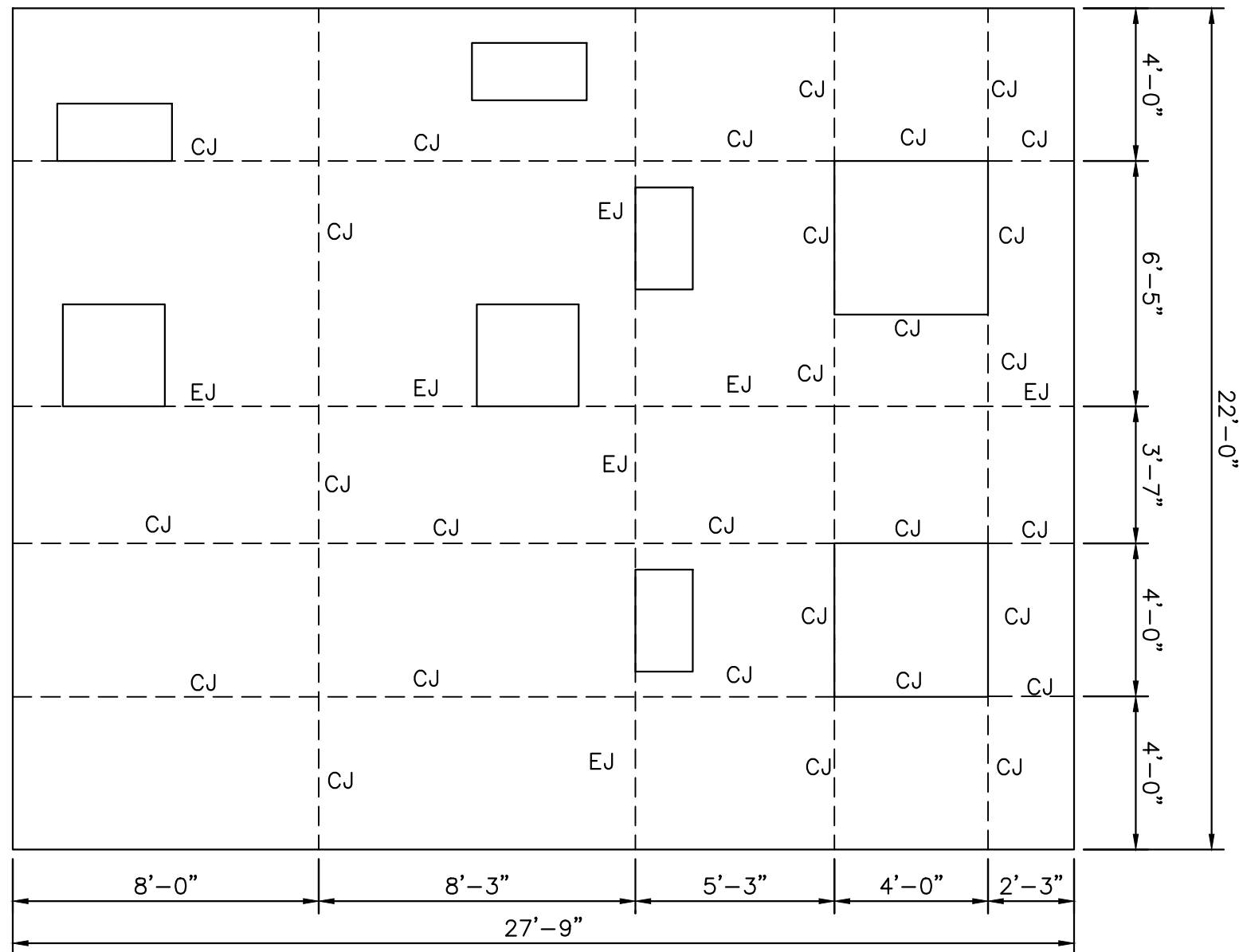
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Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS. Layout-PROPOSED HIGH SERVICE PUMPS SECTION DETAIL. March 19, 2021. 06:39:21am. K:\WPB_Civil\044572100 - South OSLO ROAD WTP Design\CAD\PlanSheets\PROPOSED HIGH SERVICE PUMPS SECTION DETAIL.dwg
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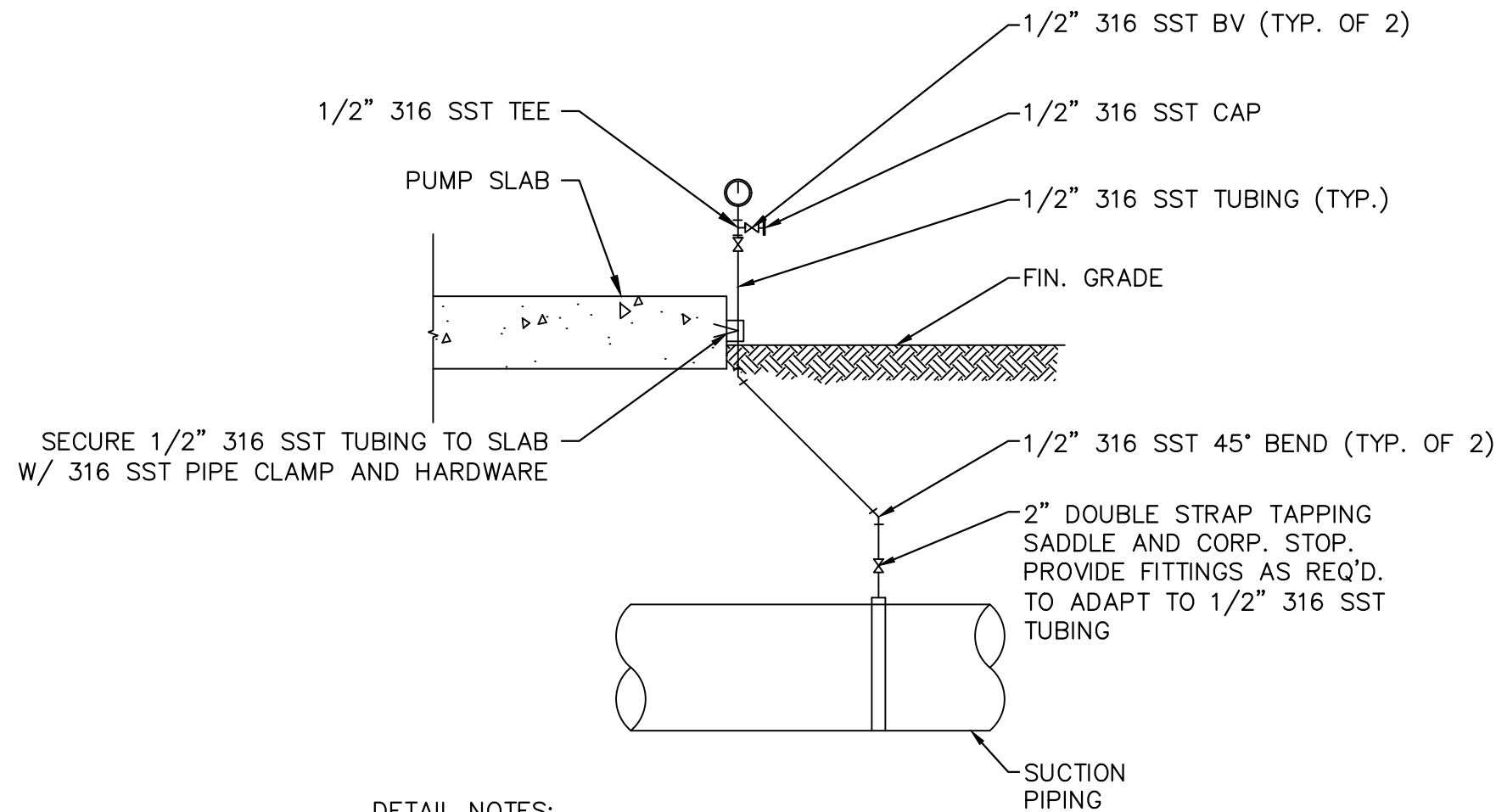
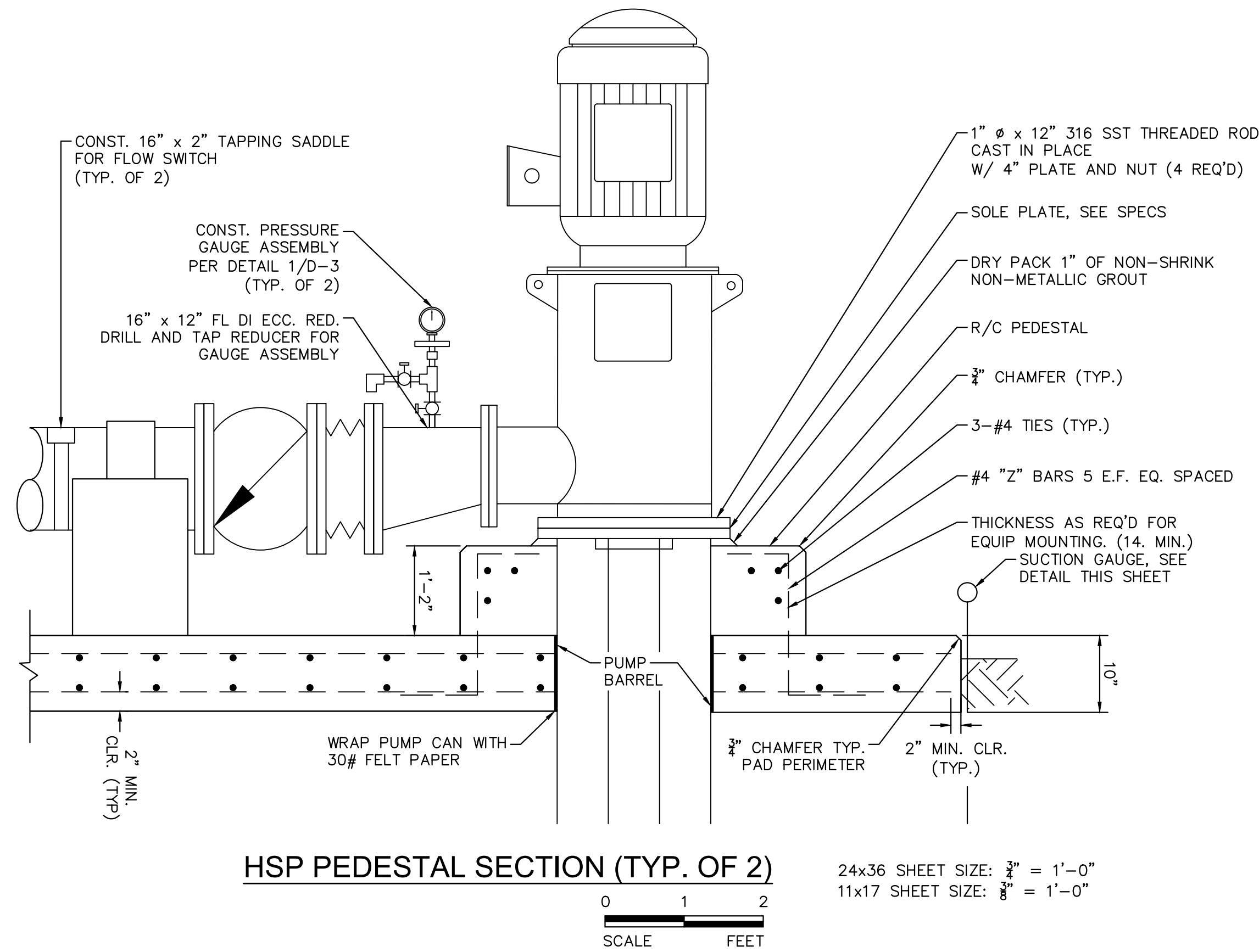
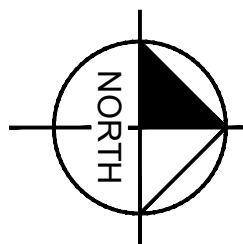
1
C-15
HIGH SERVICE PUMP IMPROVEMENTS SECTION
Scale: AS NOTED

0 1 2 3 4
SCALE FEET
24x36 SHEET SIZE: 1/4" = 1'-0"
11x17 SHEET SIZE: 3/8" = 1'-0"



HSP PAD PLAN VIEW
AS NOTED

0 1 2 3 4
SCALE FEET
24x36 SHEET SIZE: 1/4" = 1'-0"
11x17 SHEET SIZE: 3/8" = 1'-0"



DETAIL NOTES:

1. CONTRACTOR TO SUBMIT SHOP DRAWINGS ON THIS SUPPORT DETAIL FOR APPROVAL.
2. ALL UNISTRUT AND ACCESSORIES TO BE 316 SST.
3. ALL FASTENERS AND HARDWARE TO BE 316 SST.

PUMP SUCTION PRESSURE INDICATOR DETAIL
N.T.S.

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DATE MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY SS
CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
INDIAN RIVER COUNTY UTILITIES DEPARTMENT
INDIAN RIVER COUNTY, FLORIDA

LICENSED PROFESSIONAL
NICHOLAS P.O. BLACK
FLORIDA LICENSE NUMBER 84908
DATE: _____

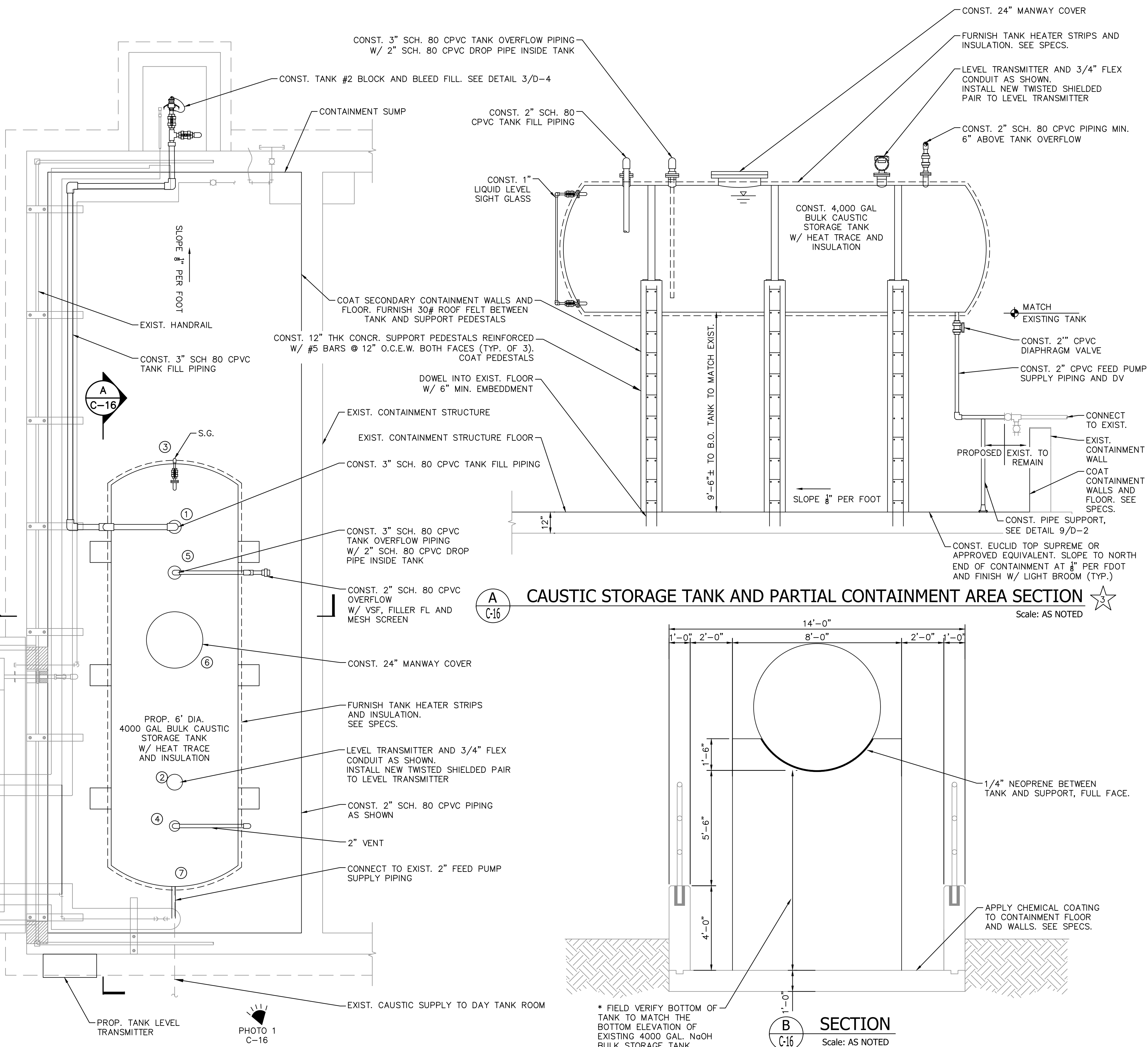
PROPOSED HIGH SERVICE PUMPS SECTION DETAIL

SHEET NUMBER
C-15
20 OF 132

3D rendering of a chemical feed supply system. The image shows a large, light-colored cylindrical tank with a complex network of pipes and structural supports. Annotations include:

- CONTRACTOR PERMITTED TO UTILIZE EXIST. THERMOSTAT AND HEAT EQPT. FOR NEW PIPING
- UTILIZE EXIST. UNISTRUT SUPPORTS FOR TANK FILL PIPING
- DEMO EXIST. CONCR. SUPPORT AND CONST. NEW FILL SUPPORT
- TANK NOT SHOWN FOR CLARITY
- CONNECT TO EXIST. 2" SST BV FOR CHEM. FEED SUPPLY
- CONST. CONCR. TOPPING AND SLOPE TO CONTAINMENT SUMP. COAT FLOOR, WALLS AND PIEDISTAL SUPPORTS PER SPECS

4,000 GAL HORIZONTAL STEEL 50% CAUSTIC STORAGE TANK - FITTING SCHEDULE						
	TANK FITTING	QUANTITY	SIZE	PIPE MATERIAL	LOCATION	NOTES
1	TANK FILL	1	2"	SCH. 80 CPVC	TOP OF SHELL	BLOCK AND BLEED FILL ASSEMBLY
2	LEVEL TRANSMITTER	1	4"	N/A	TOP OF SHELL	316 SST BOLT MATERIAL, EPDM GASKETS FOR LEVEL TRANSMITTER
3	LIQUID LEVEL SIGHT GLASS	2	1"	SCH. 80 CPVC	T&B OF DISHED END	SIGHT INDICATOR W/ ISOLATION VALVES (2) FOR T&B TANK CONNECTIONS
4	VENT	1	2"	SCH. 80 CPVC	TOP OF SHELL	PIPING MIN. 6" ABOVE OVERFLOW, VSF W/ MESH SCREEN AND FILLER FL
5	OVERFLOW	1	3"	SCH. 80 CPVC	TOP OF SHELL	316 SST BOLT MATERIAL, EPDM GASKETS. 2-INCH SCH. 80 CPVC DROP PIPING INSIDE TANK
6	MANWAY COVER	1	24"	N/A	TOP OF SHELL	BF WITH 316 SST BOLT MATERIAL AND EPDM GASKETS
7	FEED PUMP SUPPLY	1	2"	SCH. 80 CPVC	BOT. OF SHELL	316 SST BOLT MATERIAL, EPDM GASKETS, SCH. 80 CPVC DIAPHRAGM



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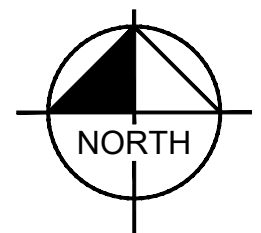
BULK CAUSTIC STORAGE TANK AND CONTAINMENT

SHEET NUMBER

C-16

11 OF 132

Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS, Layout: M-1, EXISTING N.F. BUILDING PLAN - FLOOR PLAN, March 19, 2021, 11:36:30am, K:\WPB_Civil\044572100 - South OSLO WTP Design\CAD\PlanSheets\EXISTING N.F. BUILDING PLAN - FLOOR PLAN.dwg, This document, together with the concepts and designs presented herein, is an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of any information contained herein without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



0 4 8 12
SCALE FEET

24x36 SHEET SIZE: $\frac{1}{8}" = 1'-0"$
11x17 SHEET SIZE: $\frac{1}{16}" = 1'-0"$

LEGEND*:

- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4

*SHOWN IN COLOR

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DATE
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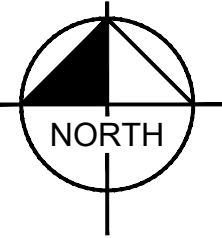
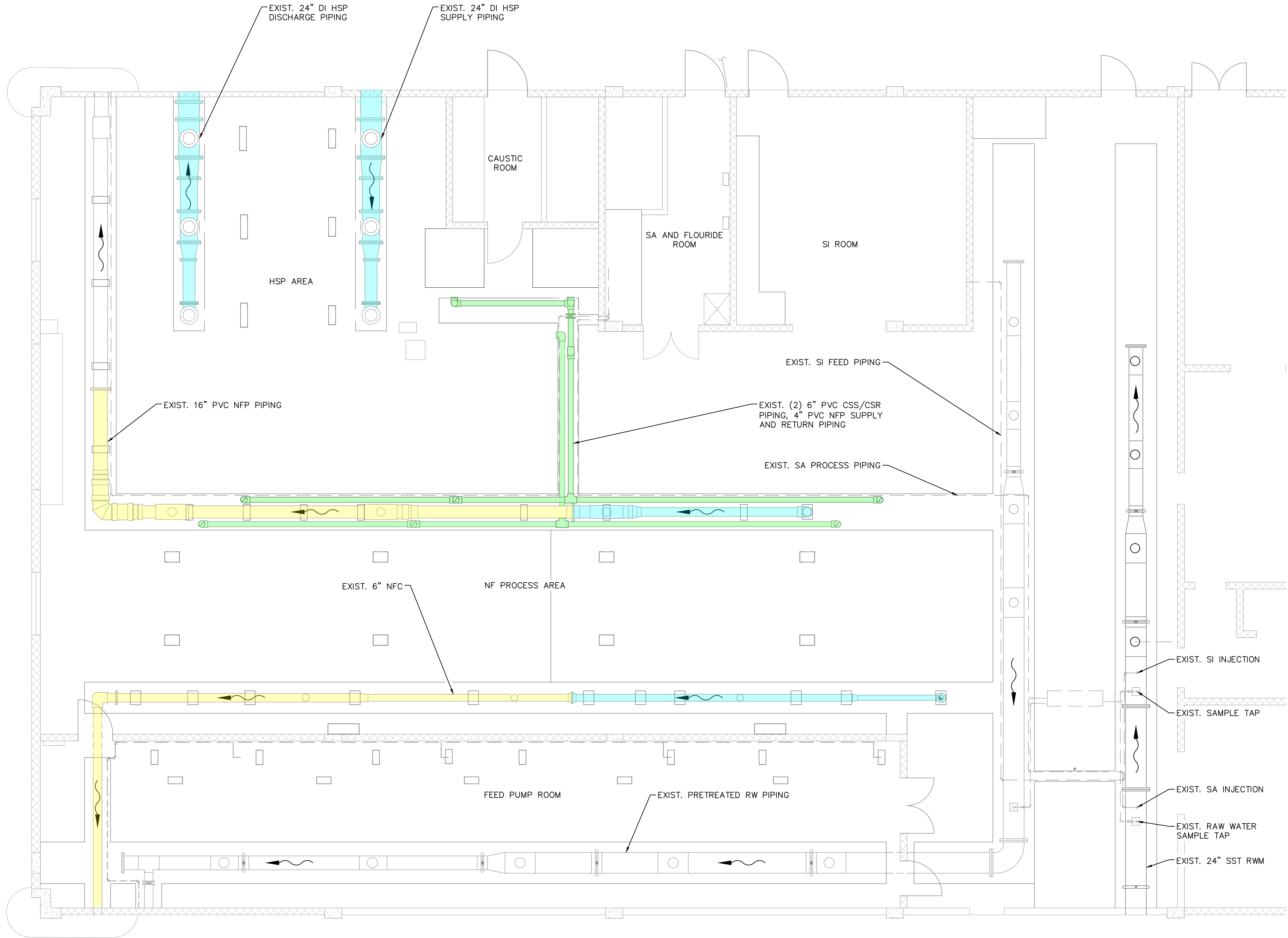
INDIAN RIVER
COUNTY,
FLORIDA

LICENSED PROFESSIONAL
NICHOLAS P.O. BLACK
FLORIDA LICENSE NUMBER
84908

EXISTING N.F. BUILDING PLAN -
FLOOR PLAN

SHEET NUMBER
M-1
22 OF 132

Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: M-2 EXISTING TRENCH PIPING PLAN March 19, 2021 11:36:37am K:\WEB_Civil\044572100 - South RO WTP Design\CAD\PlanSheets\EXISTING TRENCH PIPING PLAN.dwg
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0 4 8
SCALE FEET

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11x17 SHEET SIZE: $\frac{3}{32}" = 1'-0"$

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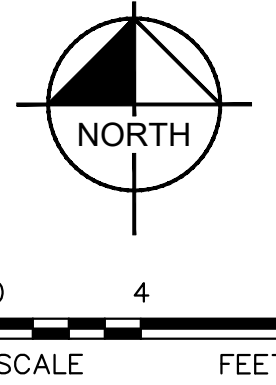
- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4

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	DATE MAR 2021		NICHOLAS P.O. BLACK		
	SCALE AS SHOWN		FLORIDA LICENSE NUMBER 84908		
	DESIGNED BY NPOB				
	DRAWN BY SS				
CHECKED BY MDM			DATE: _____		

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11x17 SHEET SIZE: $\frac{3}{32}" = 1'-0"$

LEGEND*:

- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4

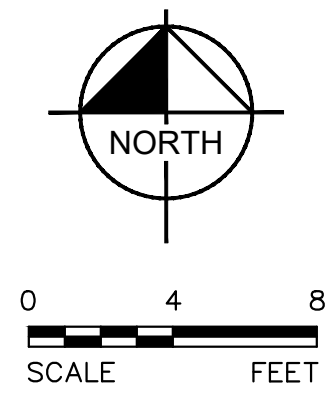
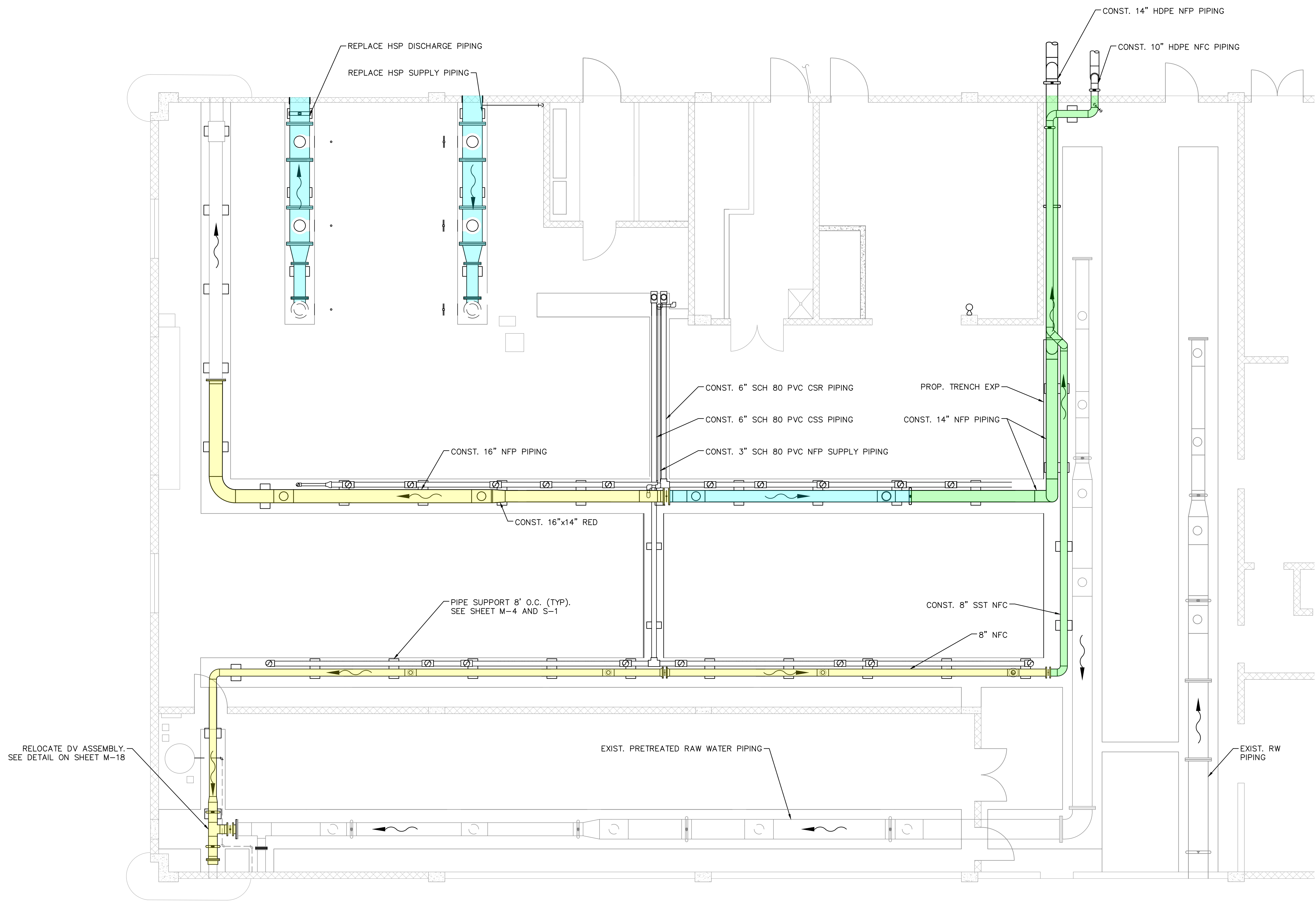
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11x17 SHEET SIZE: $\frac{3}{32}$ " = 1'-0"

- LEGEND*:
- PHASE 1
 - PHASE 3
 - PHASE 4
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KHA PROJECT
044572100
DATE
MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY SS
CHECKED BY MDM

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PREPARED FOR
INDIAN RIVER COUNTY UTILITIES
DEPARTMENT

INDIAN RIVER
COUNTY,
FLORIDA

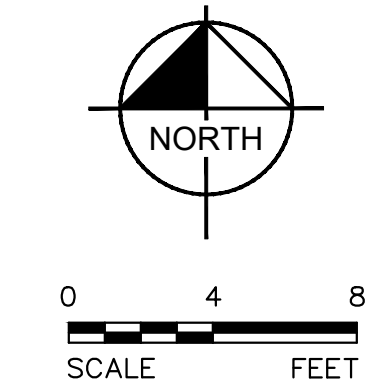
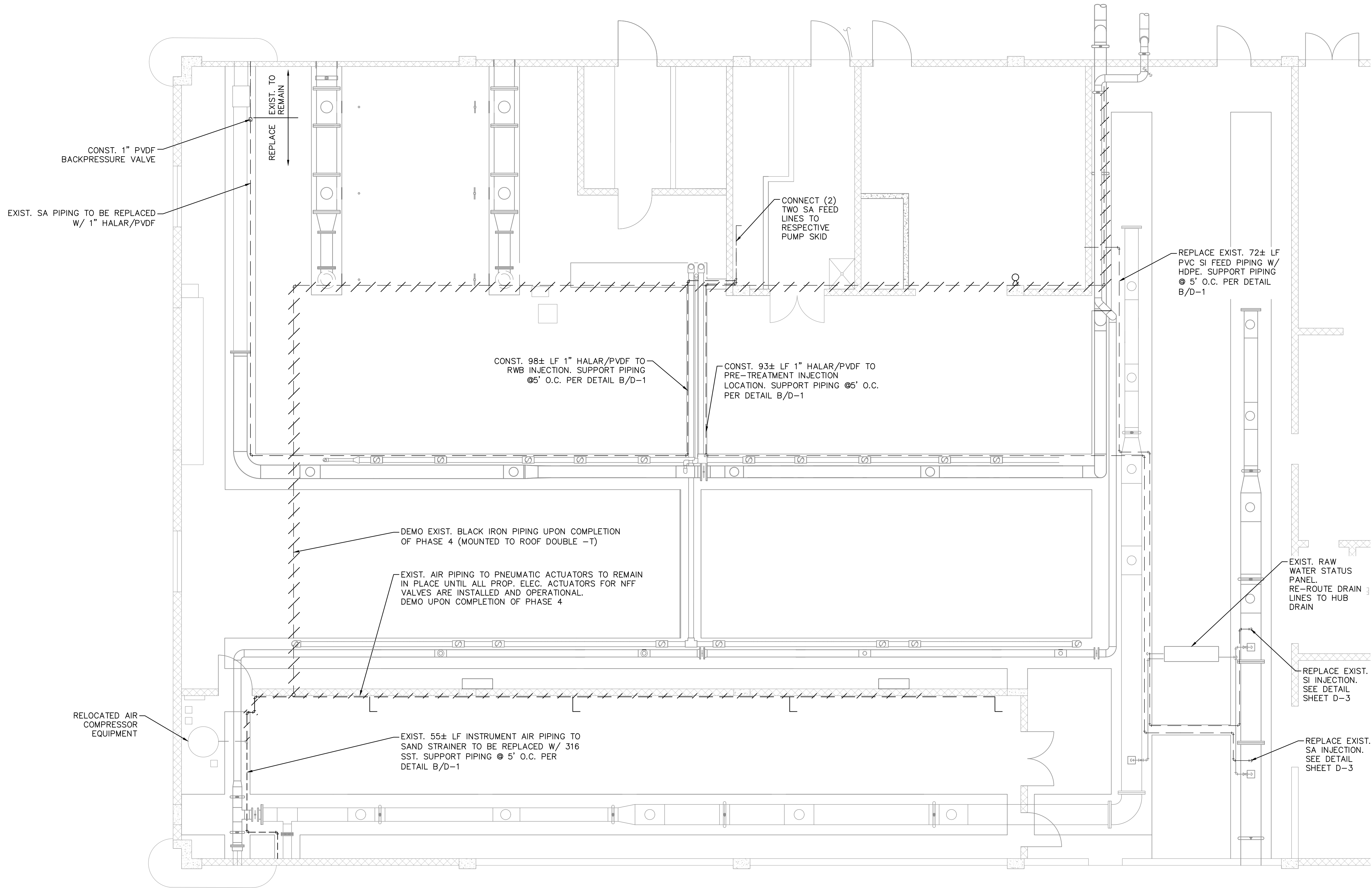
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DATE: _____

PROPOSED TRENCH PIPING
PLAN

SHEET NUMBER
M-4
25 OF 132

Plot: C:\Users\bertrand\OneDrive\Documents\South Oslo Road WTP Improvements\Small Diameter Process Piping Improvements Plan.dwg
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K:\WEB_Civil\044572100 - South Os Road WTP Design\CAD\PlanSheets\SMALL DIAMETER PROCESS PIPING IMPROVEMENTS PLAN.dwg
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24x36 SHEET SIZE: $\frac{3}{16}$ " = 1'-0"
11x17 SHEET SIZE: $\frac{3}{32}$ " = 1'-0"

CONST. 1" PVDF
BACKPRESSURE VALVE

EXIST. SA PIPING TO BE REPLACED
W/ 1" HALAR/PVDF

EXIST. TO
REPLACE

CONNECT (2)
TWO SA FEED
LINES TO
RESPECTIVE
PUMP SKID

REPLACE EXIST. 72± LF
PVC SI FEED PIPING W/
HDPE. SUPPORT PIPING
@ 5' O.C. PER DETAIL
B/D-1

CONST. 98± LF 1" HALAR/PVDF TO
RWB INJECTION. SUPPORT PIPING
@ 5' O.C. PER DETAIL B/D-1

CONST. 93± LF 1" HALAR/PVDF TO
PRE-TREATMENT INJECTION
LOCATION. SUPPORT PIPING @ 5' O.C.
PER DETAIL B/D-1

DEMO EXIST. BLACK IRON PIPING UPON COMPLETION
OF PHASE 4 (MOUNTED TO ROOF DOUBLE -T)

EXIST. AIR PIPING TO PNEUMATIC ACTUATORS TO REMAIN
IN PLACE UNTIL ALL PROP. ELEC. ACTUATORS FOR NFF
VALVES ARE INSTALLED AND OPERATIONAL.
DEMO UPON COMPLETION OF PHASE 4

RELOCATED AIR
COMPRESSOR
EQUIPMENT

EXIST. 55± LF INSTRUMENT AIR PIPING TO
SAND STRAINER TO BE REPLACED W/ 316
SST. SUPPORT PIPING @ 5' O.C. PER
DETAIL B/D-1

EXIST. RAW
WATER STATUS
PANEL
RE-ROUTE DRAIN
LINES TO HUB
DRAIN

REPLACE EXIST.
SI INJECTION.
SEE DETAIL
SHEET D-3

REPLACE EXIST.
SA INJECTION.
SEE DETAIL
SHEET D-3

NOTES:
1. SMALL DIAMETER PROCESS PIPING
SHALL BE SUPPORTED @ 5' O.C.
PER DETAIL B/D-1

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PHONE: 561-845-0665 FAX: 561-863-8175
WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT
044572100
DATE
MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY BSK
CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
**INDIAN RIVER COUNTY UTILITIES
DEPARTMENT**

INDIAN RIVER
COUNTY,

FLORIDA

LICENSED PROFESSIONAL

NICHOLAS P.O. BLACK

FLORIDA LICENSE NUMBER
84908

DATE: _____

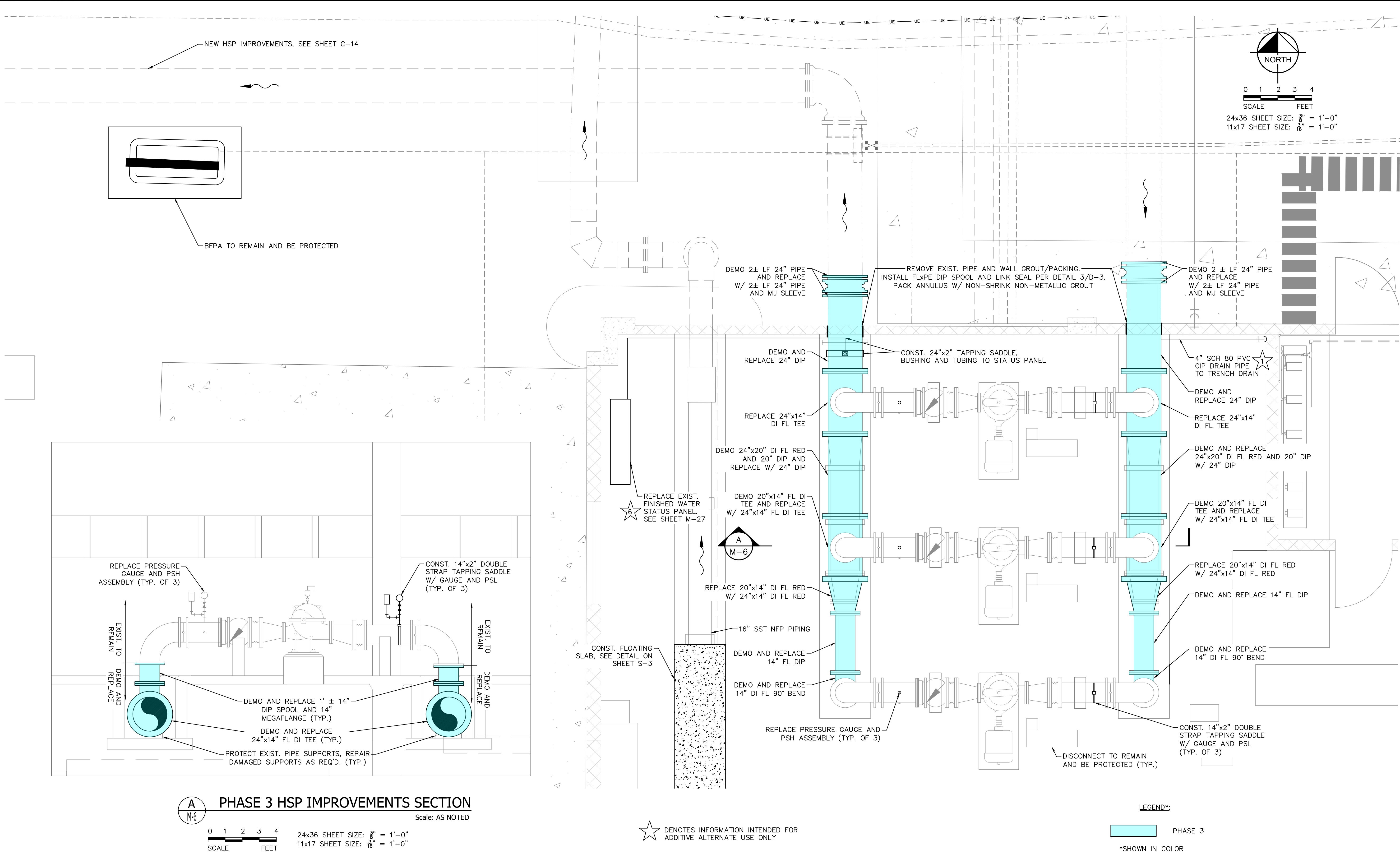
**SMALL DIAMETER PROCESS
PIPING IMPROVEMENTS PLAN**

SHEET NUMBER

M-5

26 OF 132

Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS, LAYOUT-HIGH SERVICE PUMP PIPING IMPROVEMENTS, March 19, 2021 11:37:19pm. K:\WPB_Civil\044572100 - South Oslo Road WTP Design\CAD\PlanSheets\HIGH SERVICE PUMP PIPING IMPROVEMENTS.dwg
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KHA PROJECT
044572100
DATE
MAR 2021
SCALE AS SHOWN
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CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS
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DEPARTMENT**

INDIAN RIVER
COUNTY,
FLORIDA

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NICHOLAS P.O. BLACK

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DATE: _____

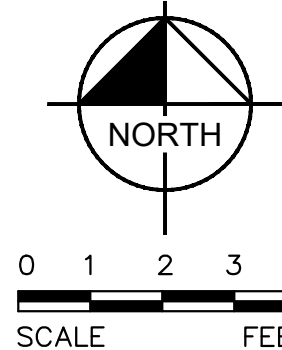
**HIGH SERVICE PUMP PIPING
IMPROVEMENTS**

SHEET NUMBER

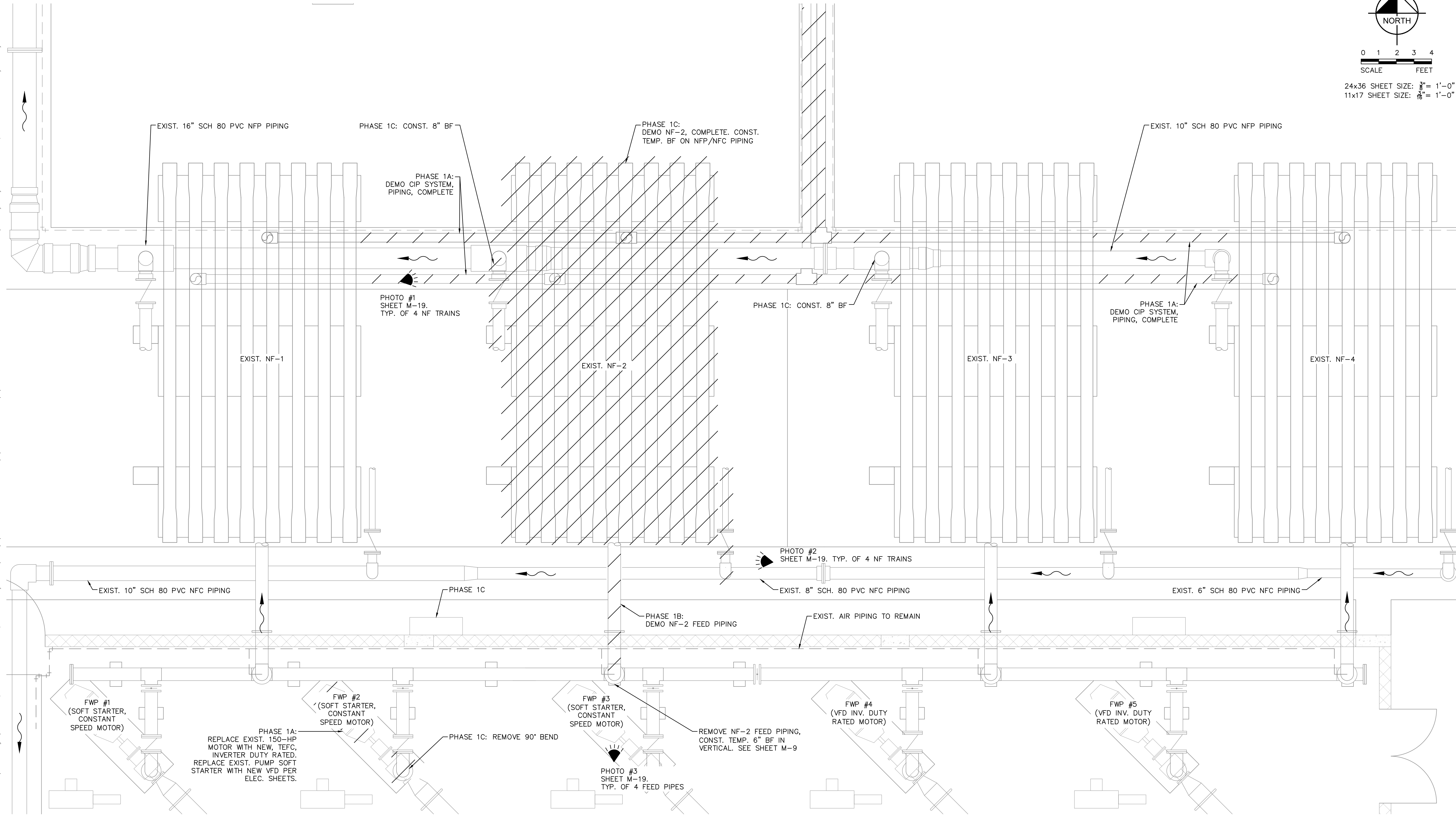
M-6

27 OF 132

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Plotted By: King, Bertrand
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24x36 SHEET SIZE: $\frac{3}{8}$ " = 1'-0"
11x17 SHEET SIZE: $\frac{3}{16}$ " = 1'-0"

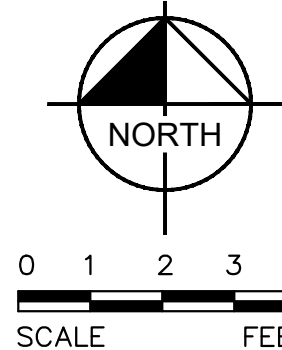


NOTE:
AIR PIPING TO ALL TRAINS TO BE REMOVED 1 TRAIN AT A TIME

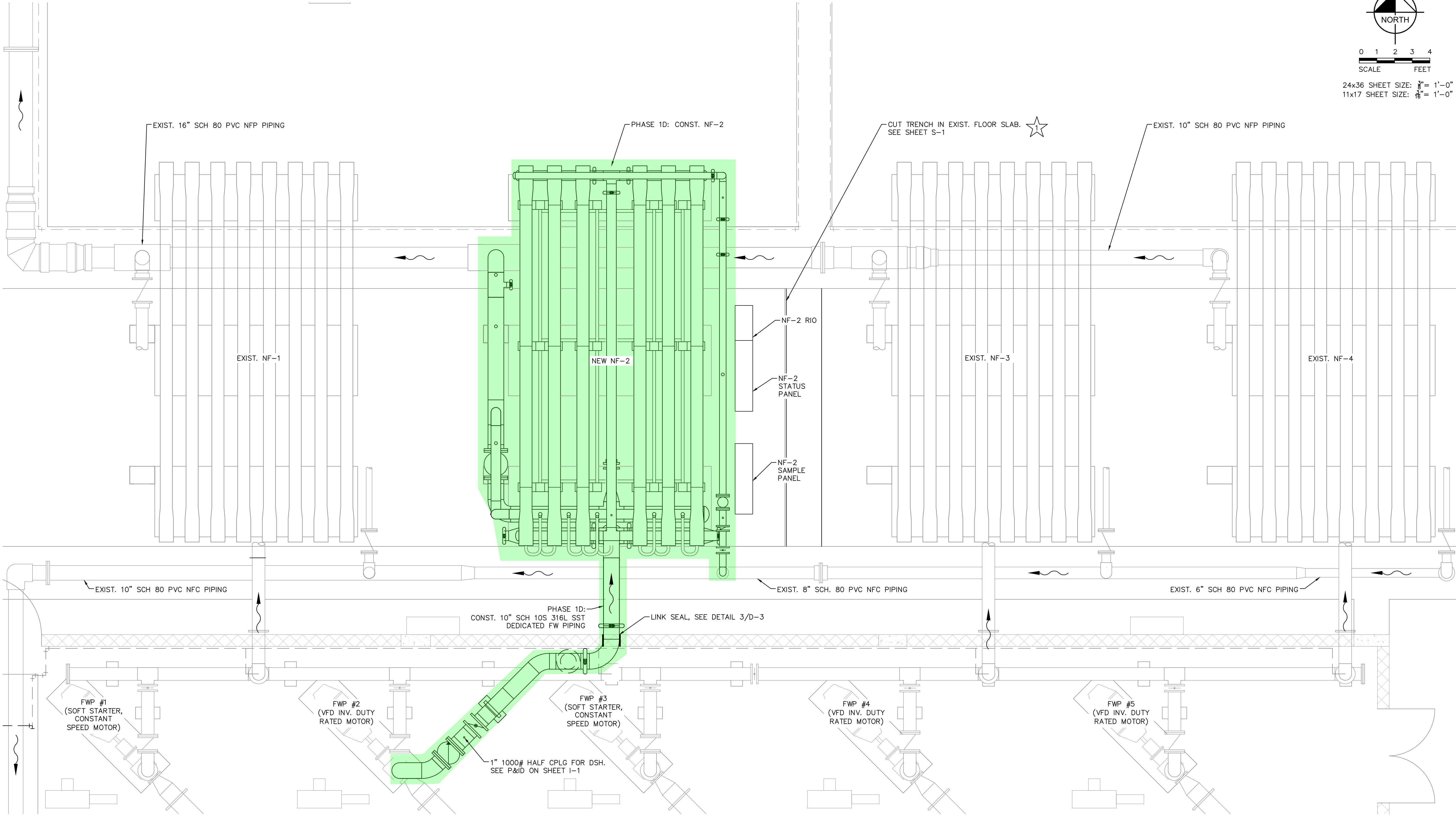
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Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS, Layout-PHASE 1 - N.F. TRAIN 2 LAYOUT PLAN March 19, 2021, 11:37:37am K:\WEB_Civil\044572100 - South OSLO WTP Design\CAD\PlanSheets\PHASE 1 - N.F. TRAIN 2 LAYOUT PLAN.dwg
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★ DENOTES INFORMATION INTENDED FOR ADDITIVE ALTERNATE ITEMS ONLY

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DATE MAR 2021	
SCALE AS SHOWN	
DESIGNED BY NPOB	
DRAWN BY SS	
CHECKED BY MDM	

LICENSED PROFESSIONAL
NICHOLAS P.O. BLACK
FLORIDA LICENSE NUMBER 84908
DATE: _____

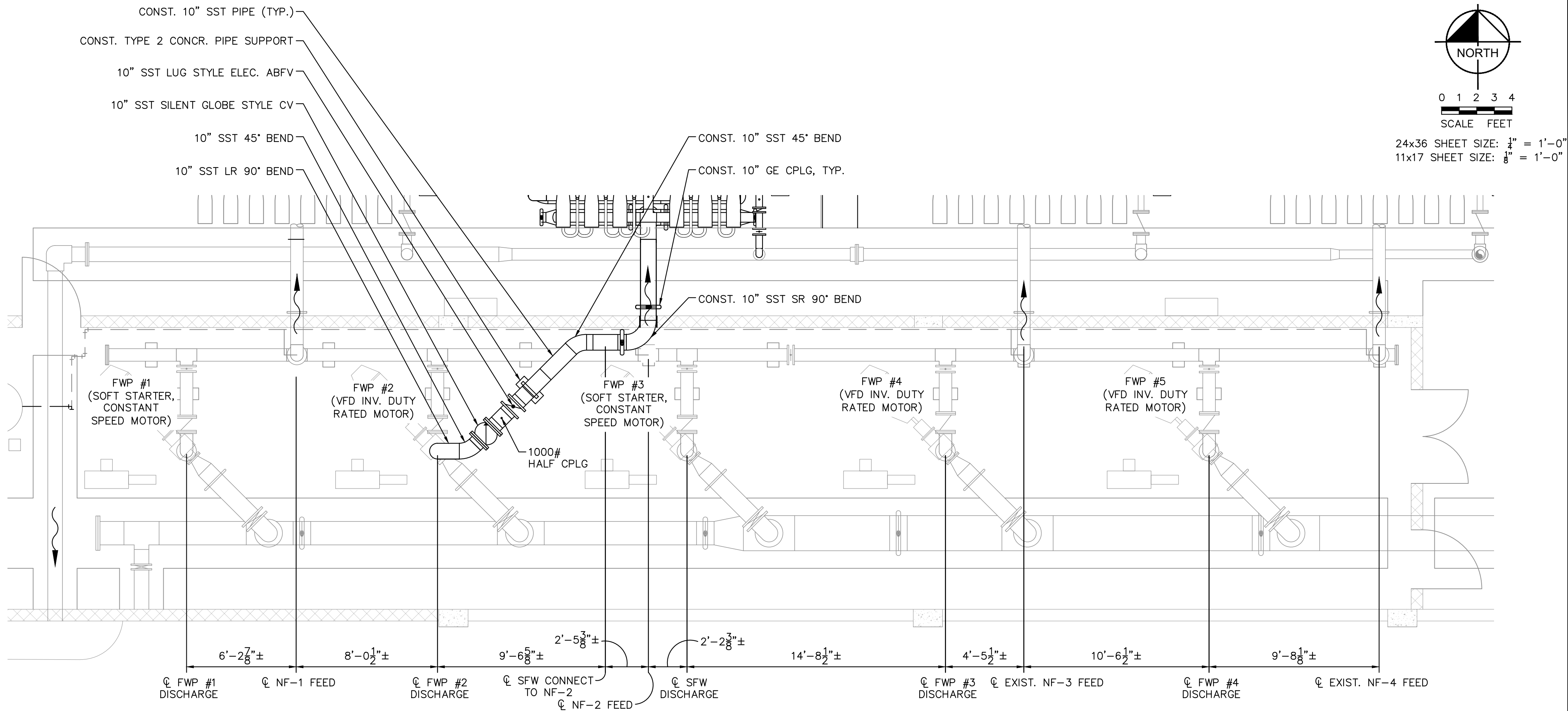
PHASE 1 - N.F. TRAIN 2 LAYOUT
PLAN

SHEET NUMBER

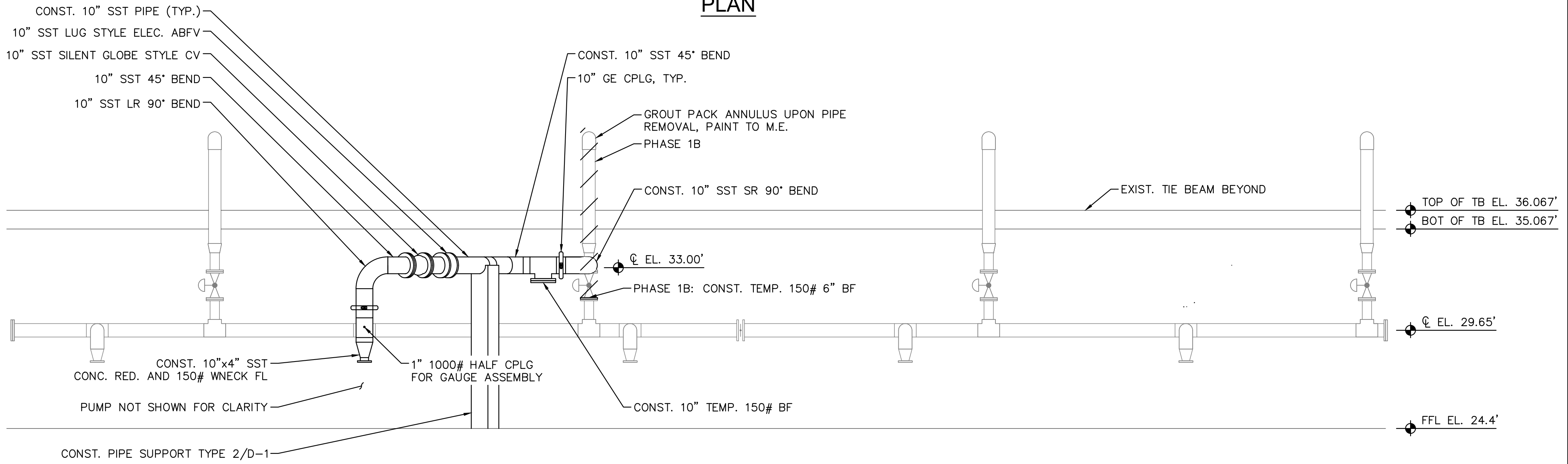
M-8

29 OF 132

Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: PHASE 1 - N.F. FEED WATER PUMP AND PIPING PLAN March 19, 2021, 11:37:52am K:\WPB_Civil\044572100 - South OSLO ROAD WTP IMPROVEMENTS\CAD\Plan\Sheet\PHASE 1 - N.F. FEED WATER PUMP AND PIPING PLAN.dwg
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PLAN

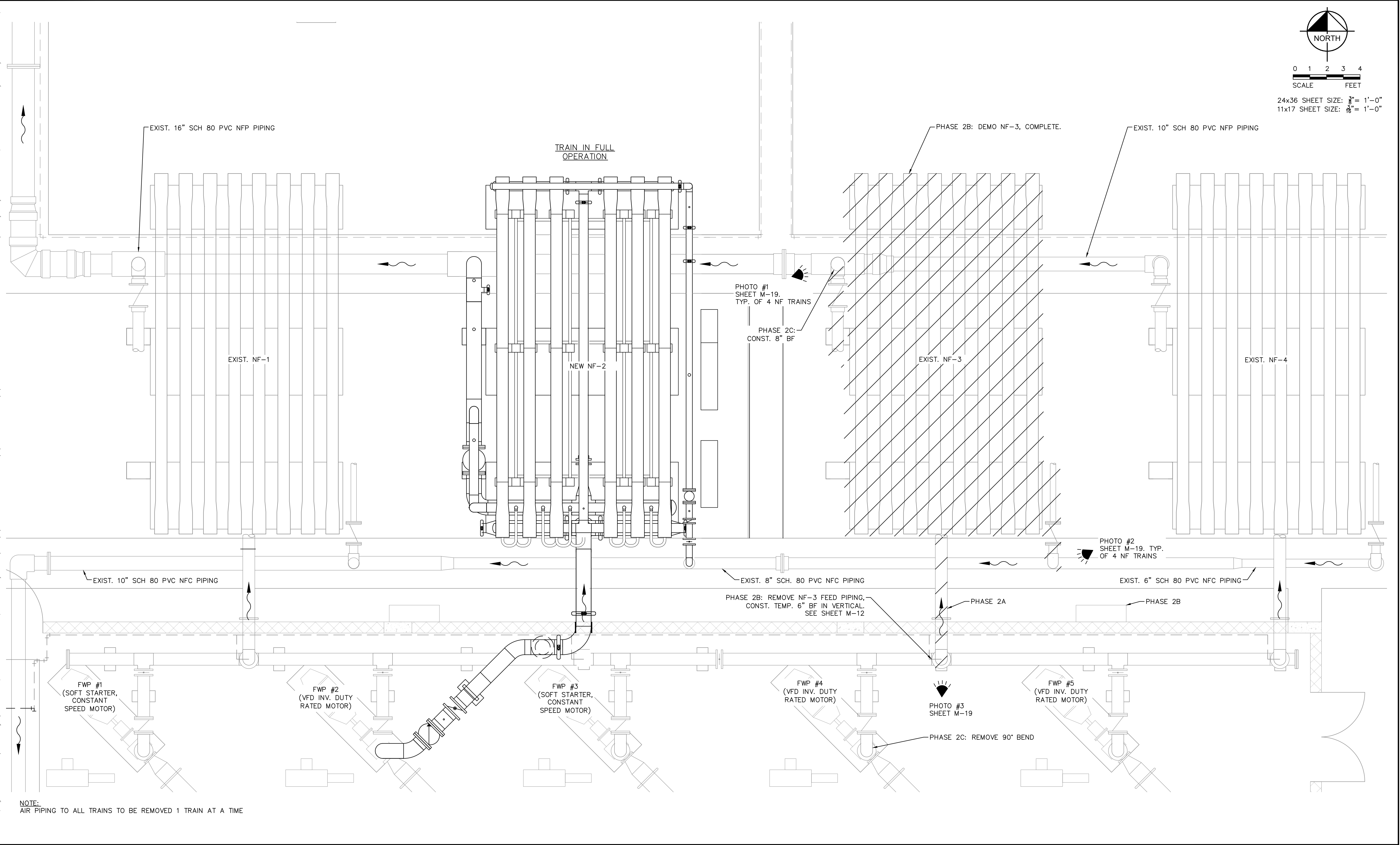


SECTION

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KHA PROJECT
044572100
DATE
MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY SS
CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS

PREPARED FOR
INDIAN RIVER COUNTY UTILITIES
DEPARTMENT

INDIAN RIVER
COUNTY,
FLORIDA

LICENSED PROFESSIONAL

NICHOLAS P.O. BLACK

FLORIDA LICENSE NUMBER
84908

DATE: _____

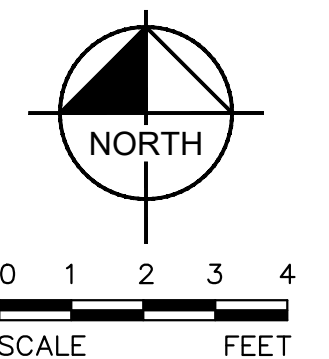
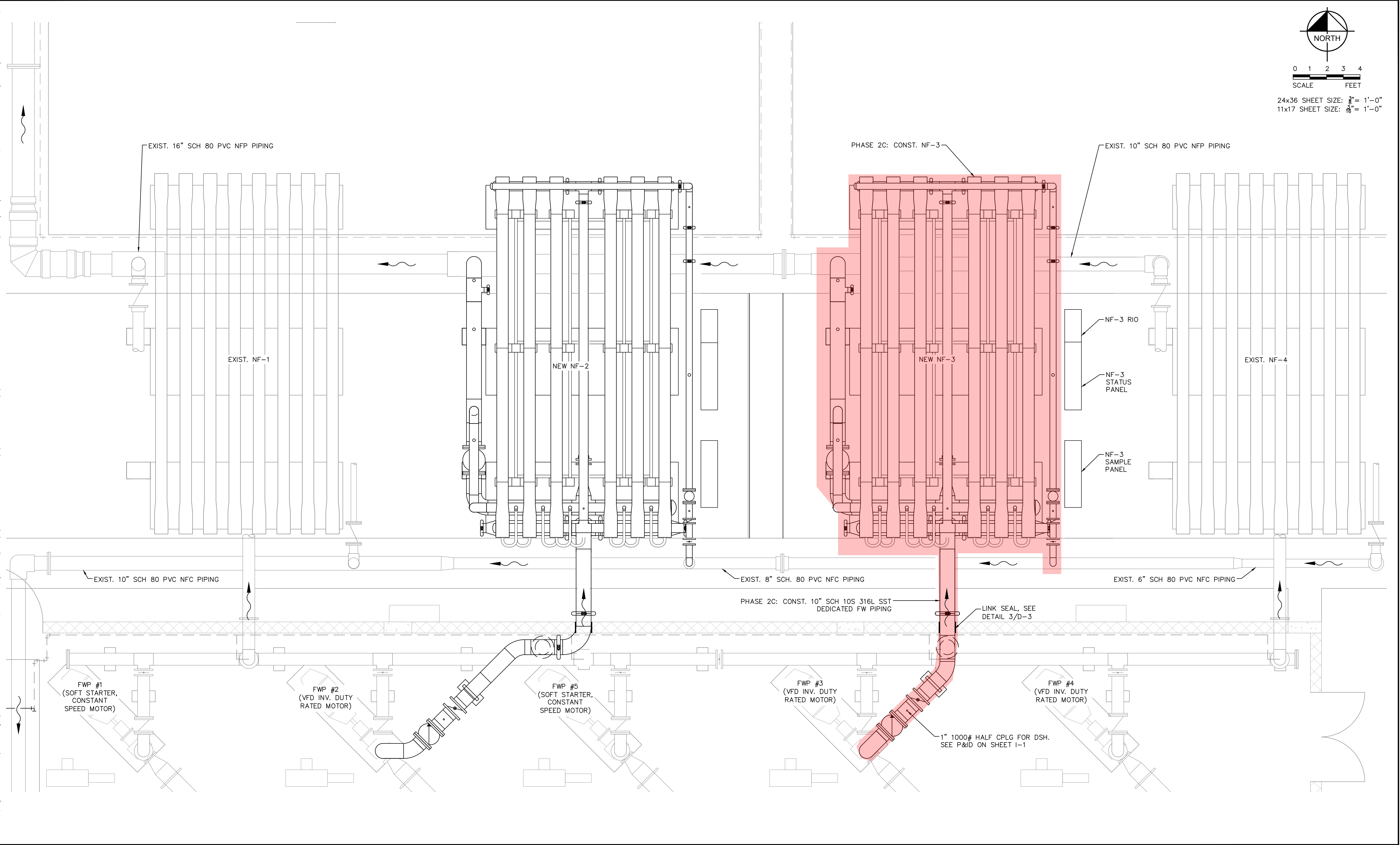
PHASE 2 - N.F. TRAIN 3 DEMOLITION PHASING PLAN

SHEET NUMBER

M-10

31 OF 132


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KHA PROJECT
044572100
DATE
MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY SS
CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
**INDIAN RIVER COUNTY UTILITIES
DEPARTMENT**

INDIAN RIVER
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FLORIDA

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DATE: _____

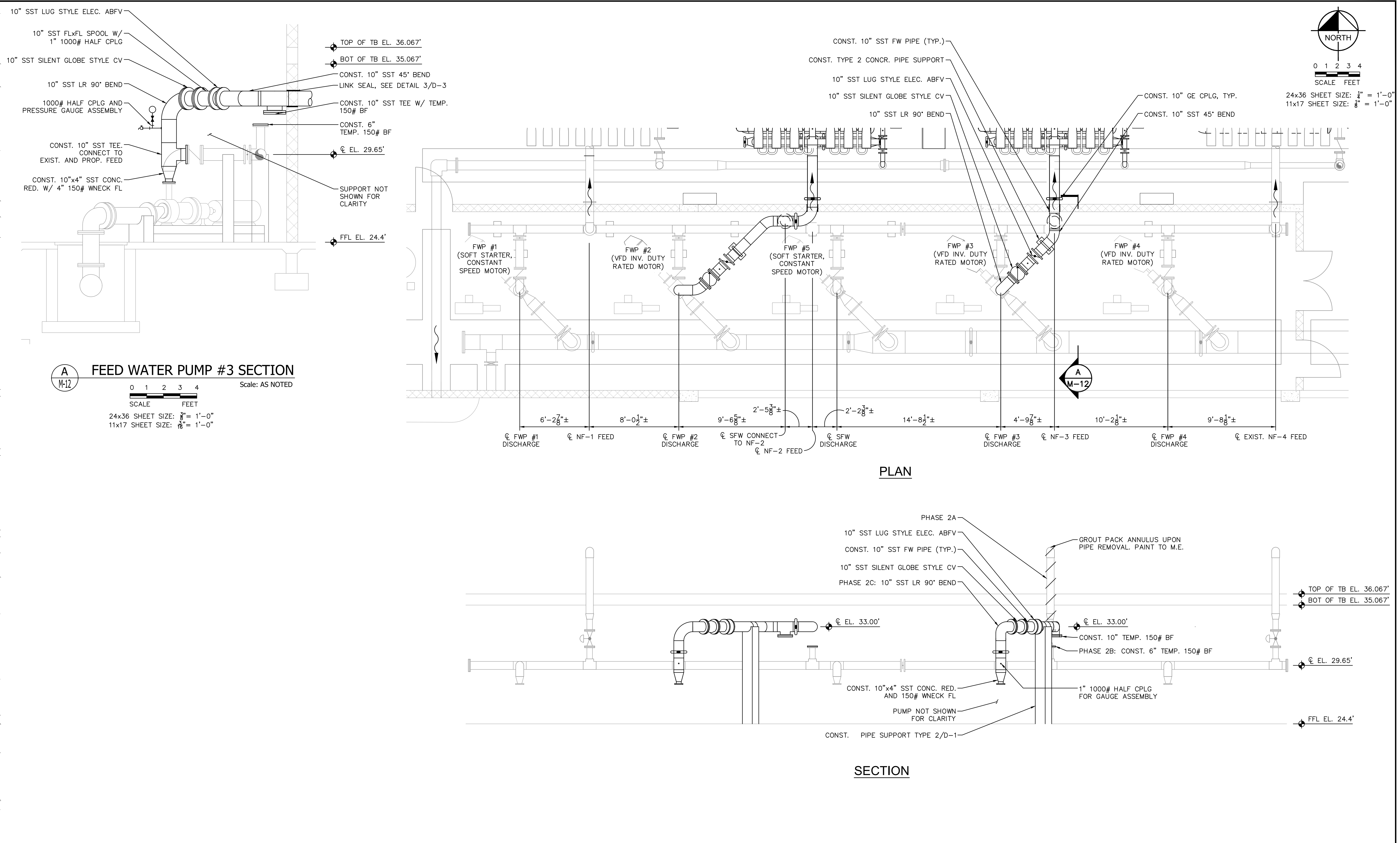
**PHASE 2 - N.F. TRAIN 3 LAYOUT
PLAN**

SHEET NUMBER


M-11

32 OF 132

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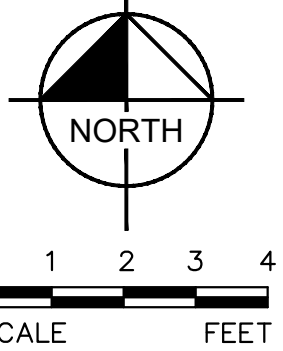
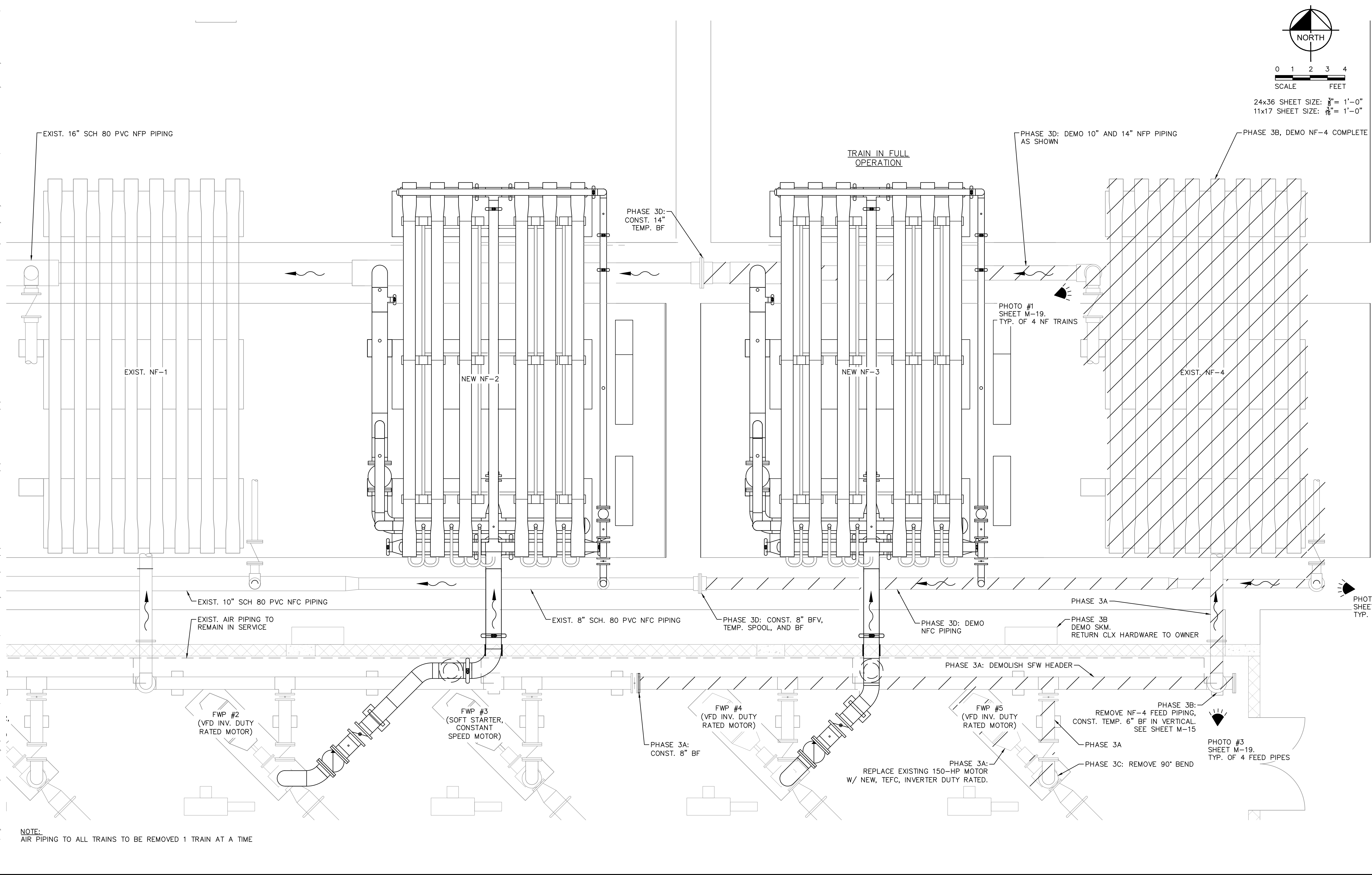
KHA PROJECT 044572100	SOUTH OSLO ROAD WTP IMPROVEMENTS PREPARED FOR INDIAN RIVER COUNTY UTILITIES DEPARTMENT INDIAN RIVER COUNTY, FLORIDA
DATE MAR 2021	
SCALE AS SHOWN	
DESIGNED BY NPOB	
DRAWN BY SS	
CHECKED BY MDM	

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NICHOLAS P.O. BLACK
FLORIDA LICENSE NUMBER 84908
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PHASE 2 - N.F. FEED WATER
PUMP AND PIPING PLAN

SHEET NUMBER
M-12
33 OF 132


Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS, Layout: PHASE 3 - N.F. TRAIN 4, DEMOLITION PHASING PLAN, March 19, 2021, 11:38:43am, K:\WEB_Gid\044572100 - South OSLO WTP Design\CAD\PlanSheets\PHASE 3 - N.F. TRAIN 4 DEMOLITION PHASING PLAN.dwg, Plotted By: King, Bertrand



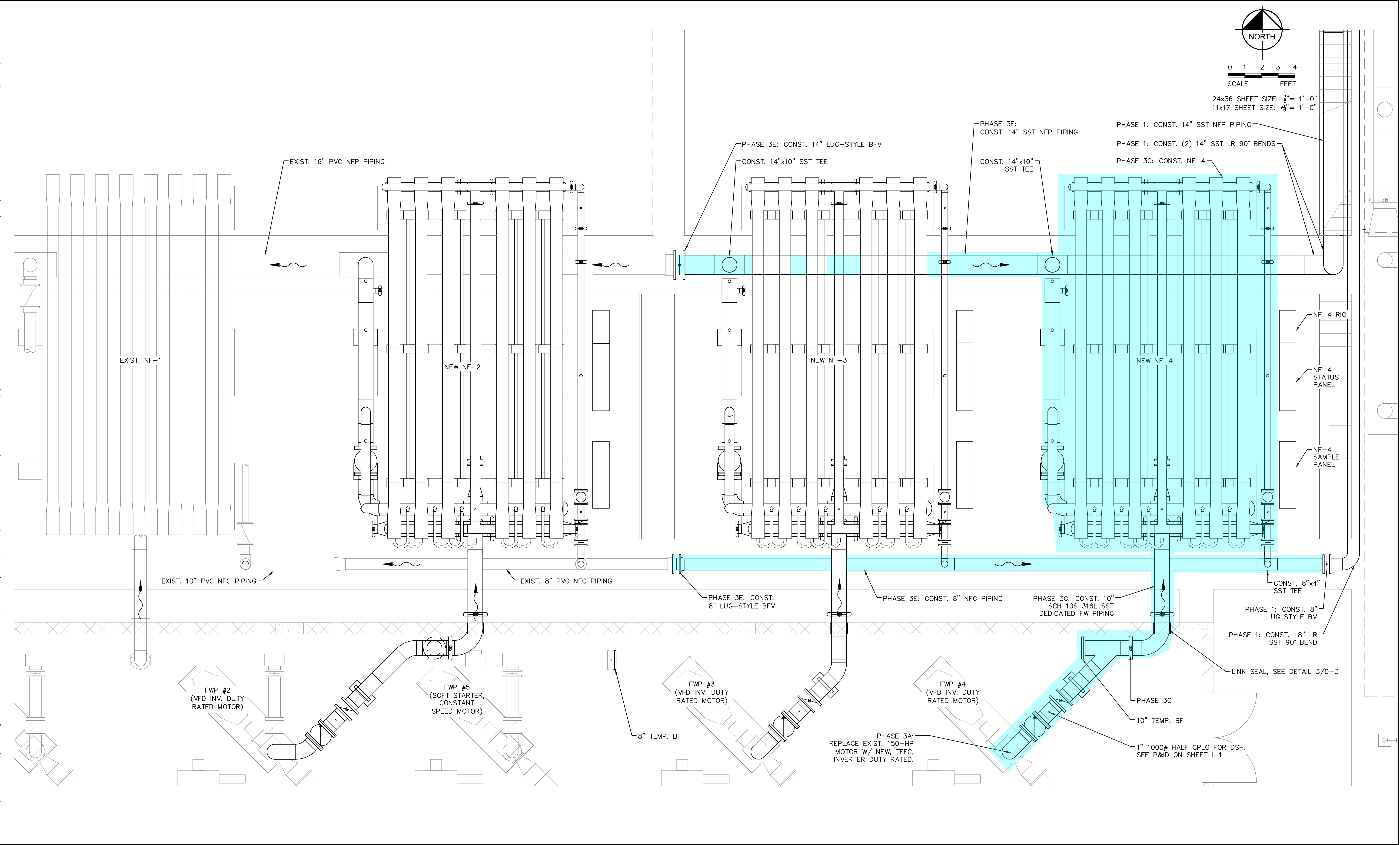
24x36 SHEET SIZE: $\frac{3}{8}$ " = 1'-0"
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Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: PHASE 3 - N.F. TRAIN 4 LAYOUT PLAN March 19, 2021 11:35:55am K:\WPB_Civil\044572100 - South OSLO WTP Design\CAD\PlanSheets\PHASE 3 - N.F. TRAIN 4 LAYOUT PLAN.dwg
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DATE
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PREPARED FOR
**INDIAN RIVER COUNTY UTILITIES
DEPARTMENT**

INDIAN RIVER
COUNTY,
FLORIDA

LICENSED PROFESSIONAL

NICHOLAS P.O. BLACK

FLORIDA LICENSE NUMBER
84908

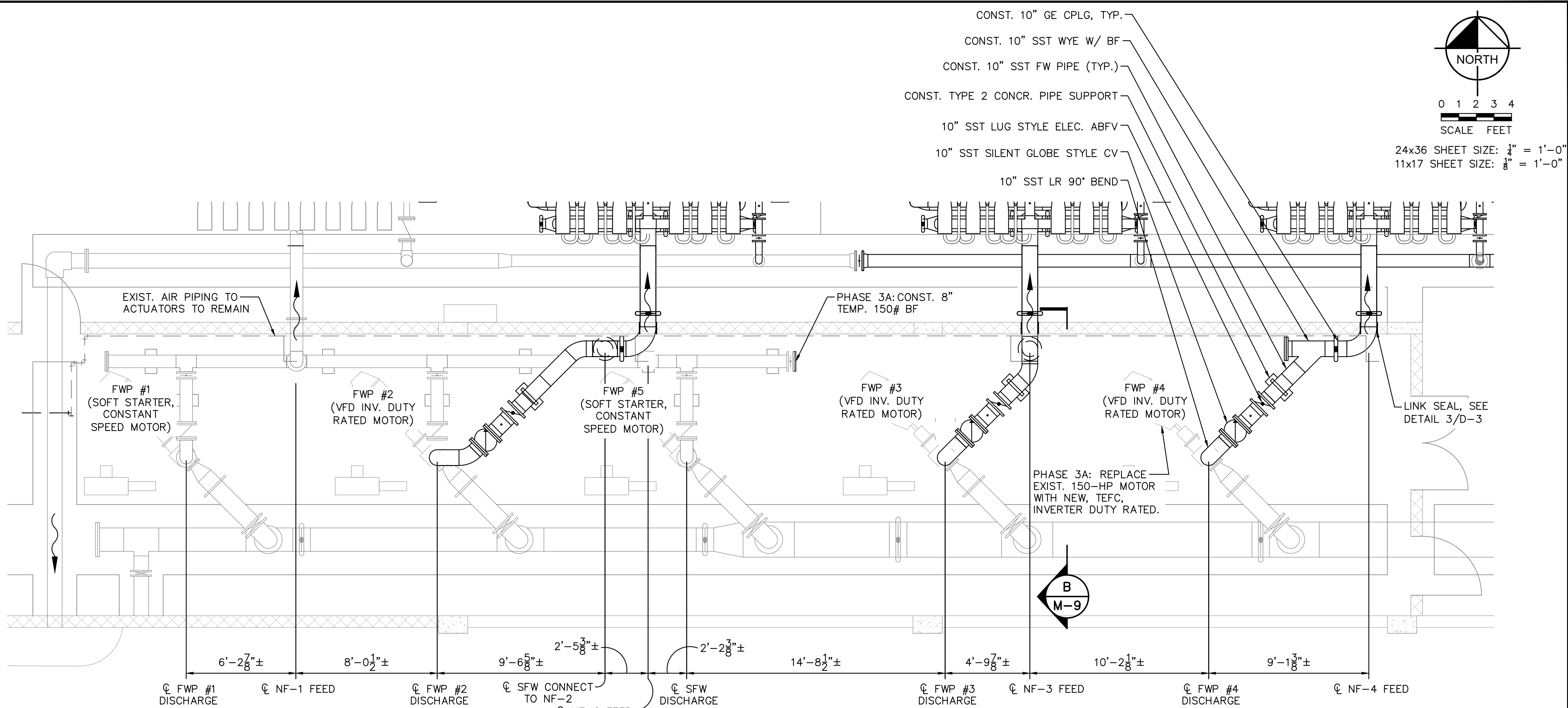
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PLAN**

SHEET NUMBER

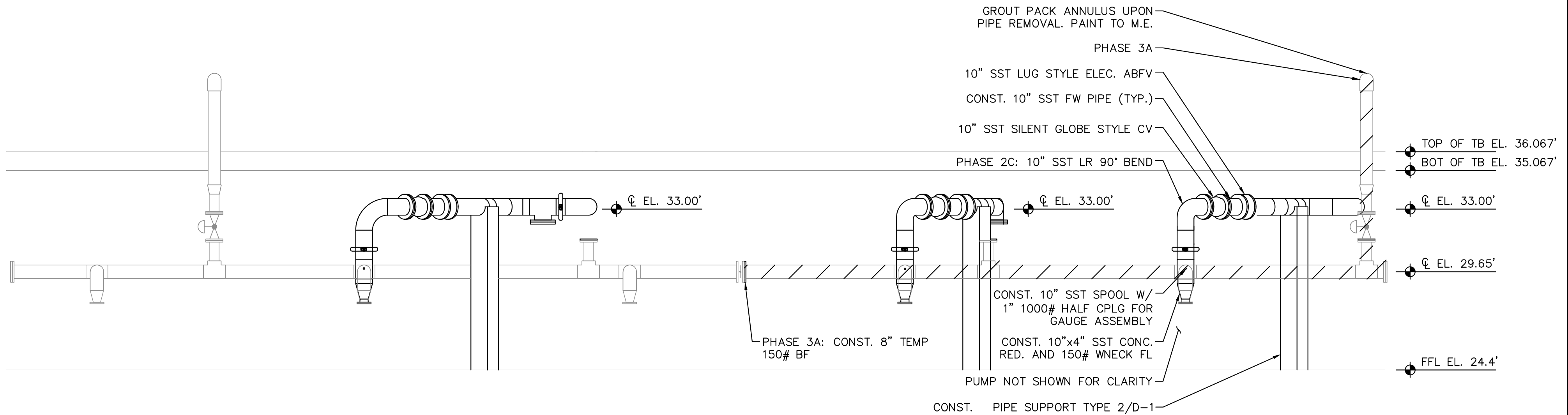
M-14

35 OF 132

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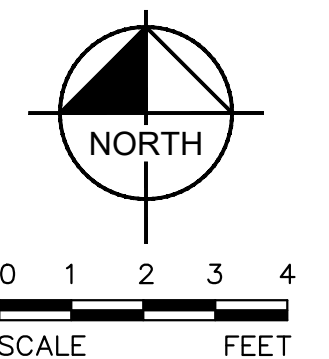
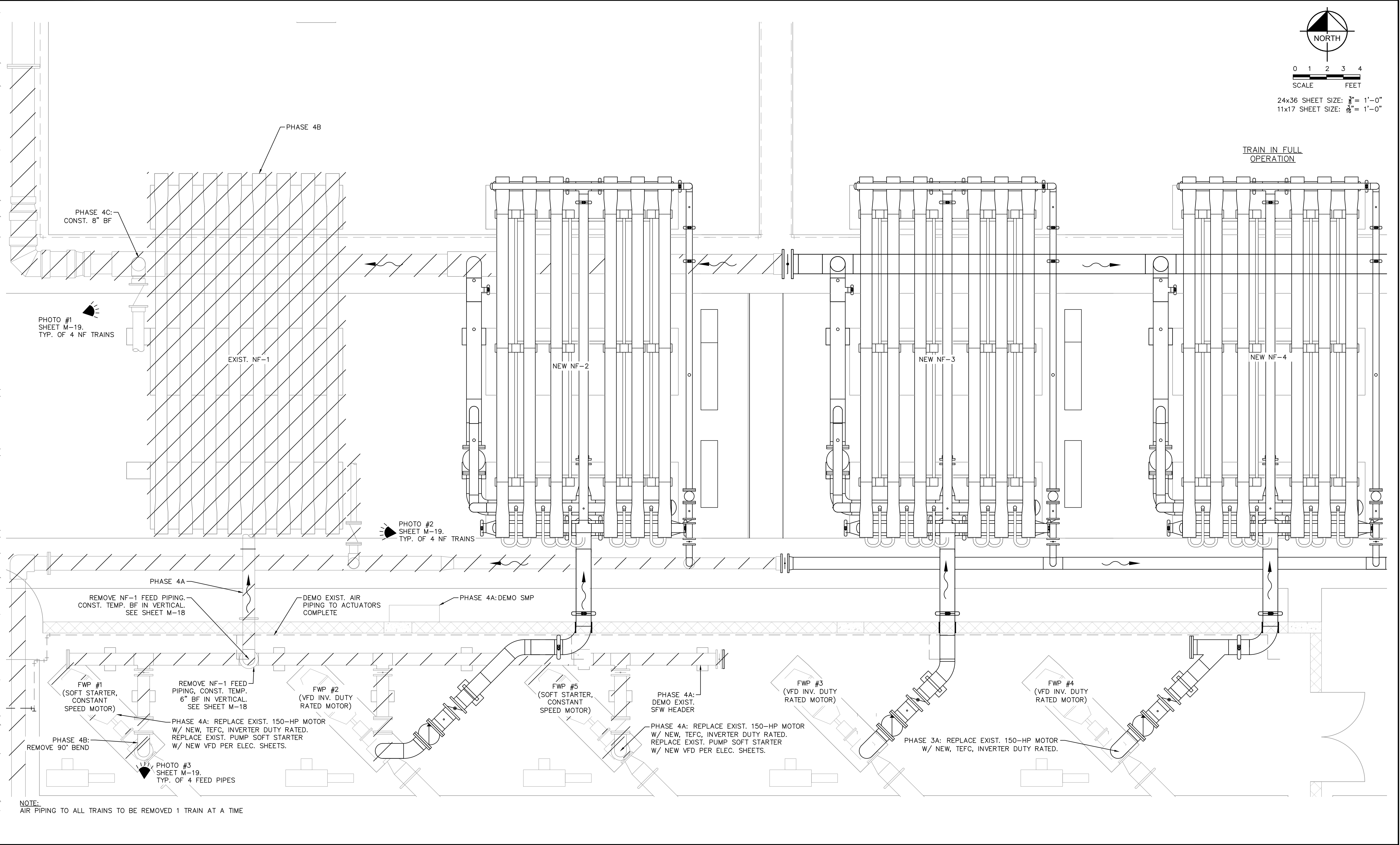


SECTION

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Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS, LAYOUT-PHASE 4 - N.F. TRAIN 1 DEMOLITION PHASING PLAN, March 19, 2021, 11:39:22am, K:\WPB_Civil\044572100 - South Oslo WTP Design\CAD\PlanSheets\PHASE 4 - N.F. TRAIN 1 DEMOLITION PHASING PLAN.dwg
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SOUTH OSLO ROAD WTP IMPROVEMENTS

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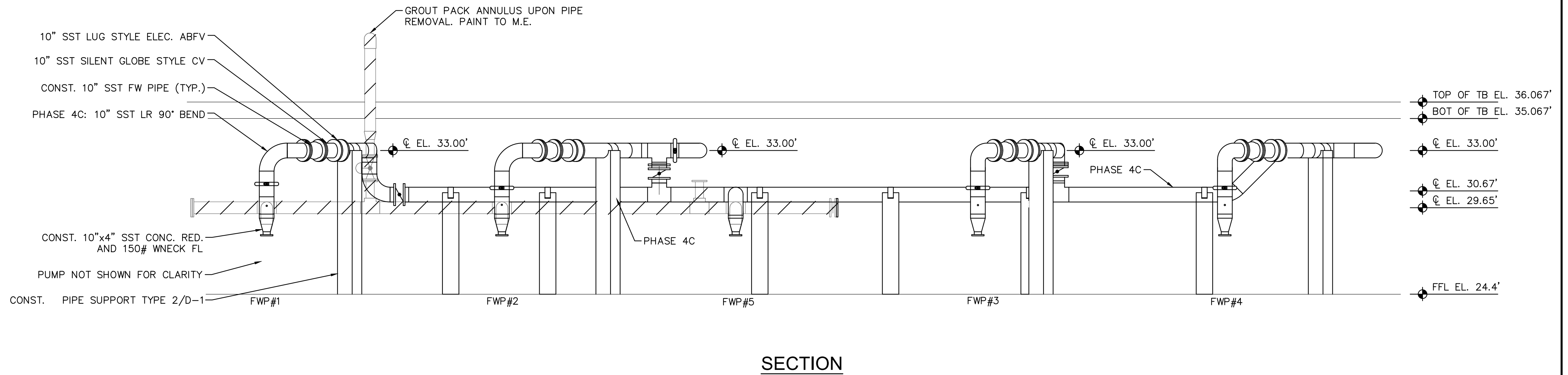
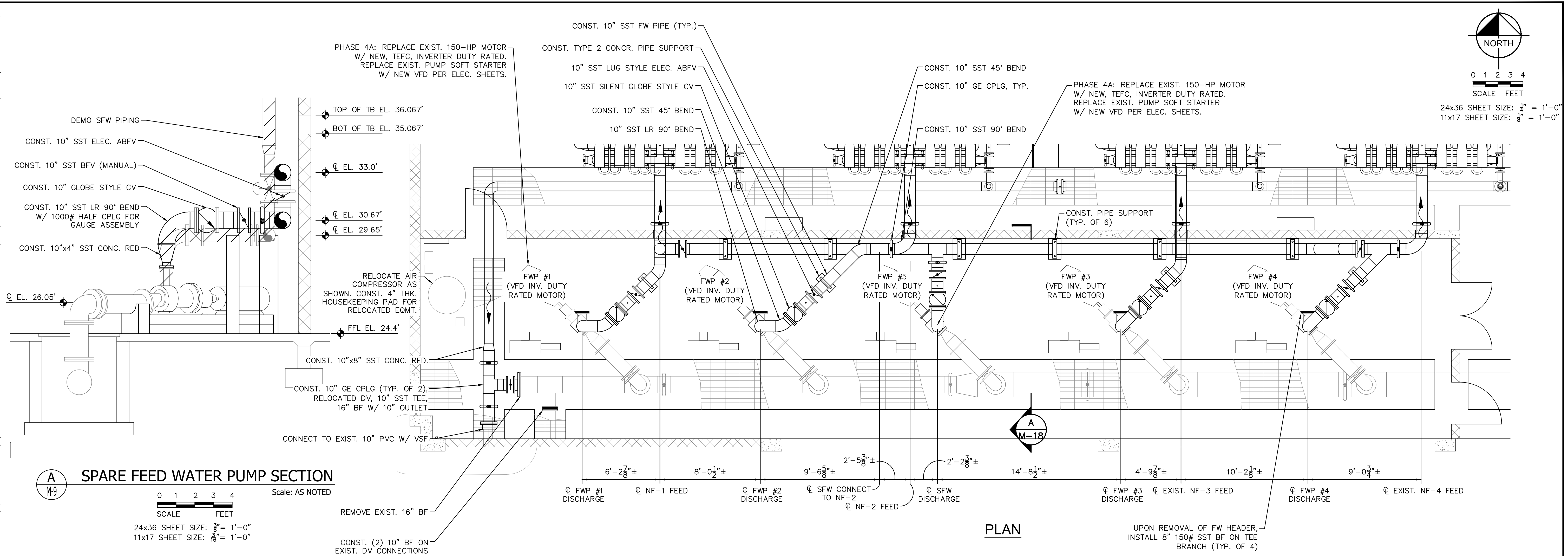
PHASE 4 - N.F. TRAIN 1 DEMOLITION PHASING PLAN

SHEET NUMBER


M-16

37 OF 132

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Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS, Layout-DEMOLITION PHOTOS, March 19, 2021, 11:39:59pm, K:\WPB_Civil\044572100 - South OSLO WTP Design\CAD\PlanSheets\DEMOLITION PHOTOS.dwg
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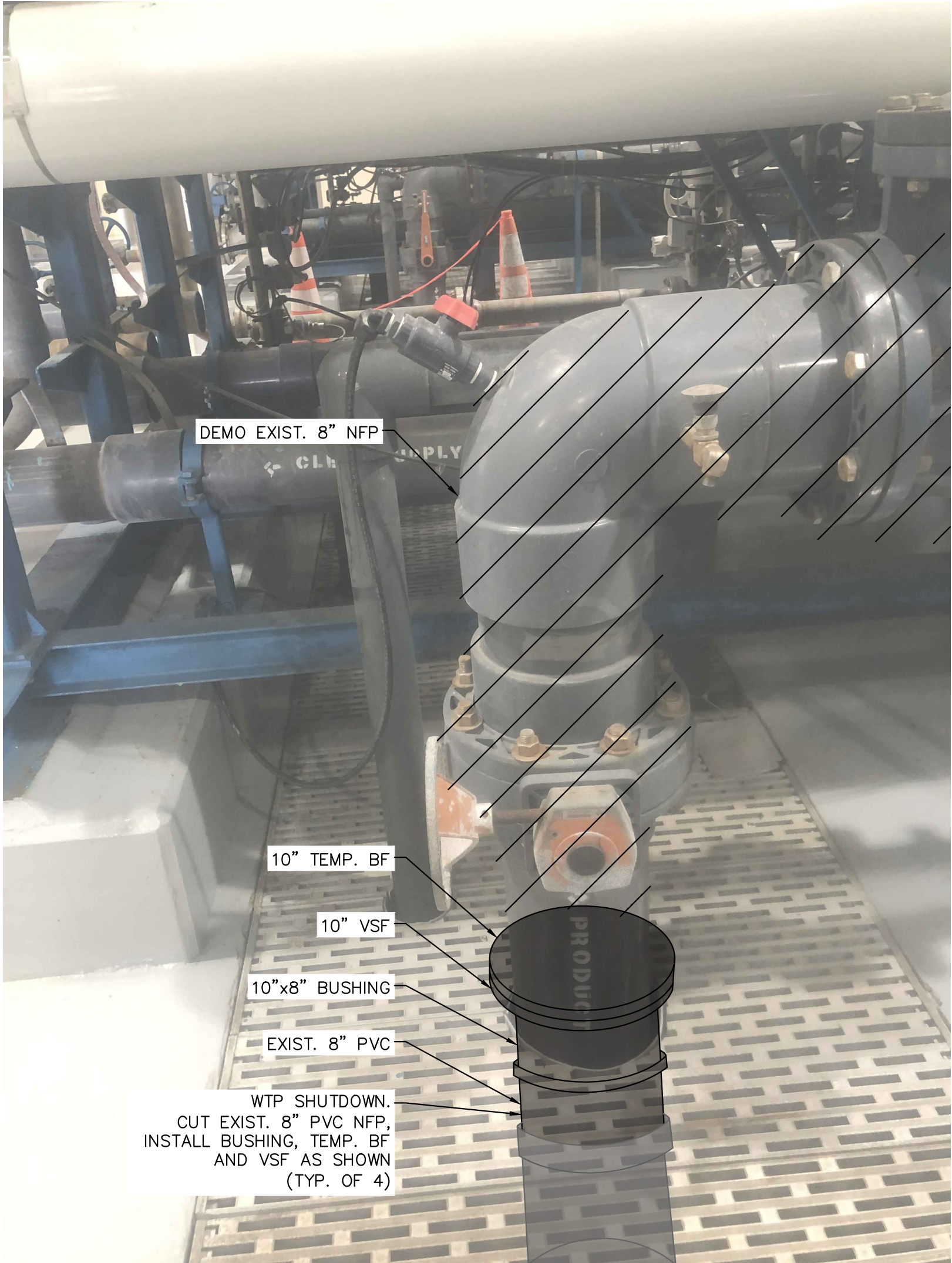


PHOTO #1
NTS



PHOTO #2
NTS

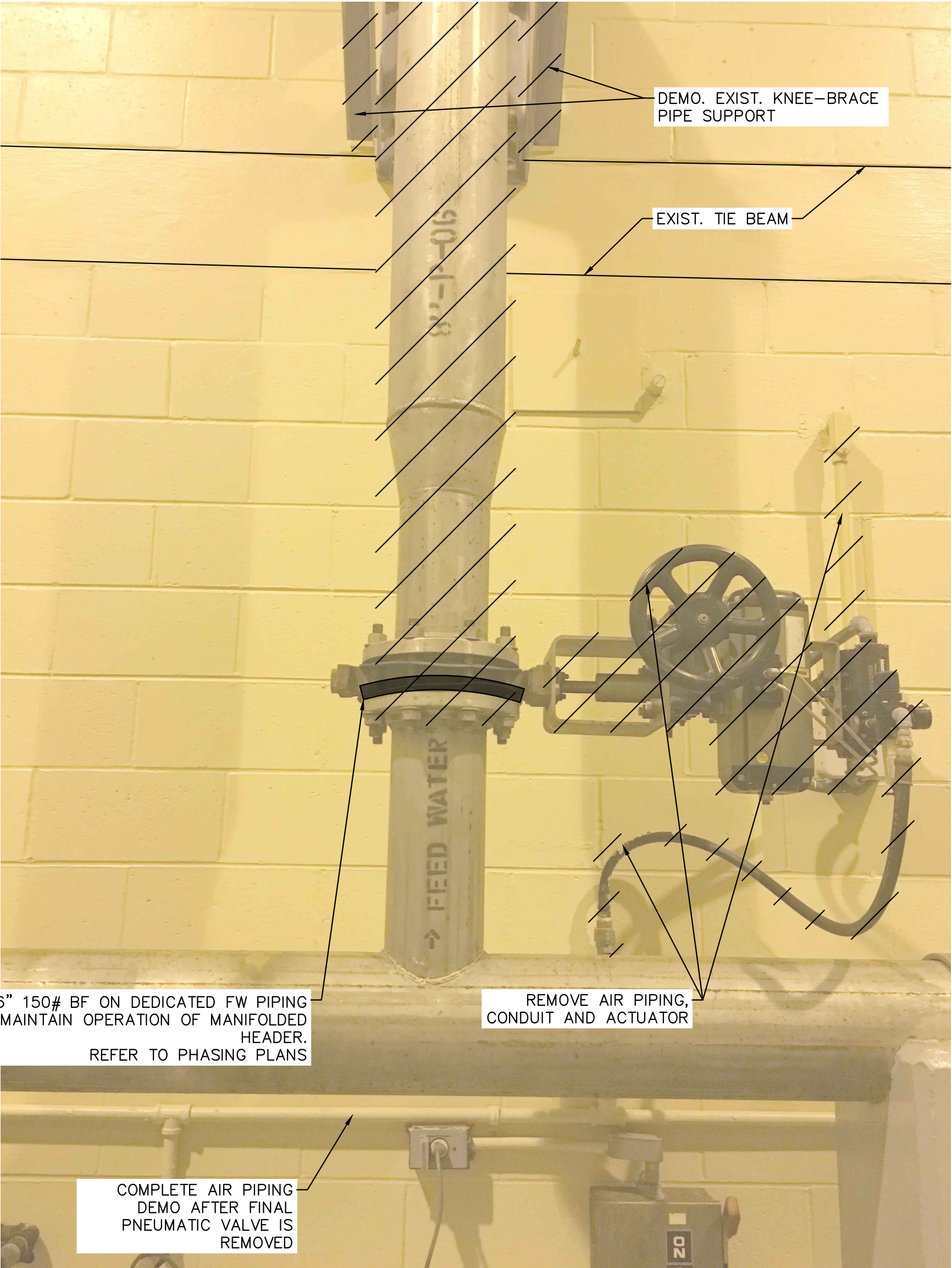


PHOTO #3
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DATE MAR 2021
SCALE AS SHOWN
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SOUTH OSLO ROAD WTP IMPROVEMENTS

PREPARED FOR
**INDIAN RIVER COUNTY UTILITIES
DEPARTMENT**

INDIAN RIVER
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LICENSED PROFESSIONAL

NICHOLAS P.O. BLACK

FLORIDA LICENSE NUMBER
84908

DATE: _____

DEMOLITION PHOTOS

SHEET NUMBER

M-19

40 OF 132

Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: DEMOLITION PHOTOS AND DETAILS March 19, 2021 11:40:04am K:\WPB_Civil\044572100 - South RO WTP Design\CAD\PlotSheets\DEMOLITION PHOTOS AND DETAILS.dwg
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PHOTO #4
NTS

CONTRACTOR SHALL TEMP RELOCATE
CONDUITS AND WIRING AS REQ'D TO
MAINTAIN OPERATION OF NF TRAINS.
REFER TO PHASING PLANS

COORDINATE SMP DEMO
W/ PHASING PLANS.
RETURN PLC HARDWARE TO OWNER

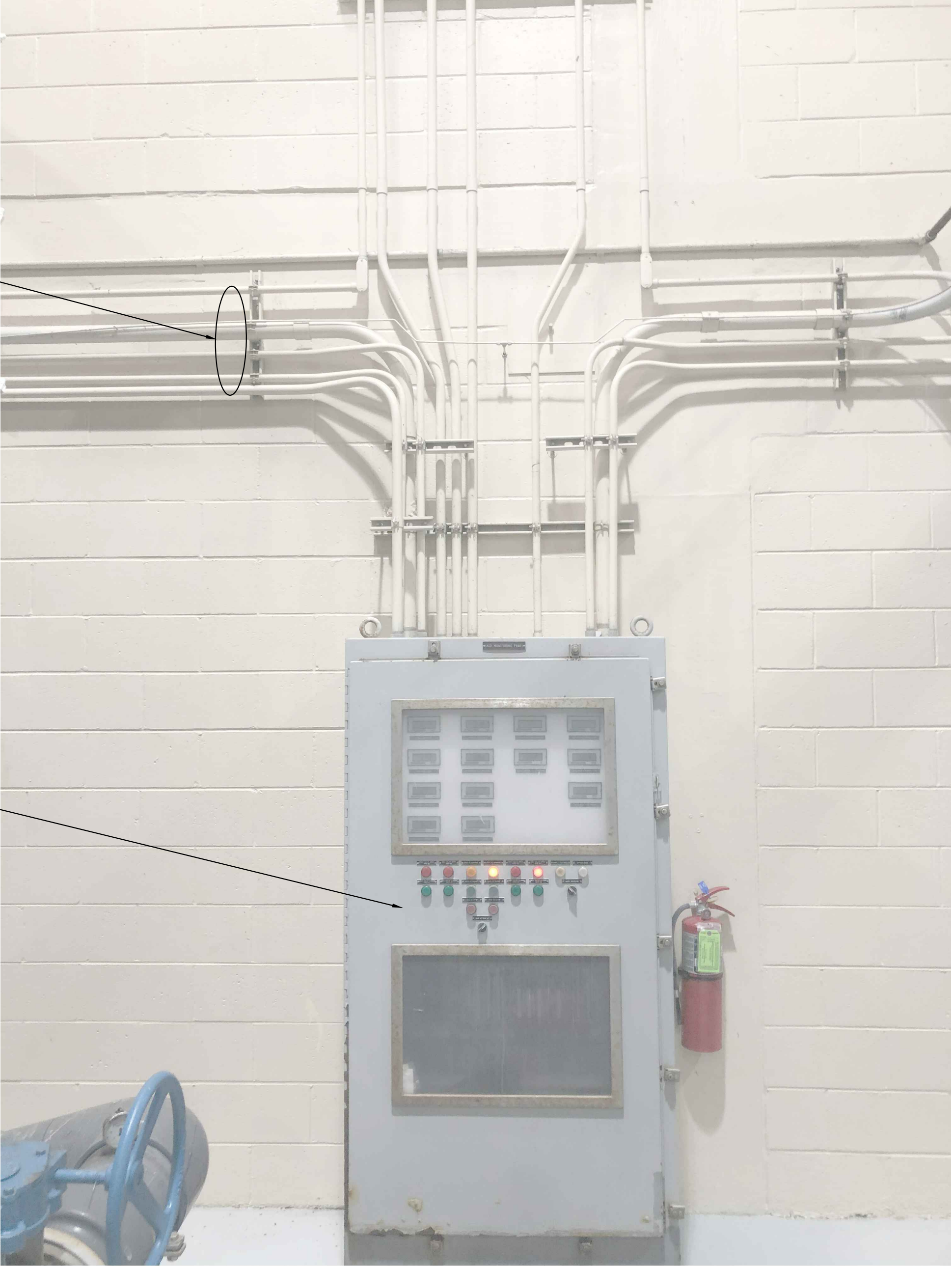


PHOTO #5
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WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT	044572100
DATE	MAR 2021
SCALE	AS SHOWN
DESIGNED BY	NPOB
DRAWN BY	SS
CHECKED BY	MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS

PREPARED FOR

INDIAN RIVER COUNTY UTILITIES DEPARTMENT

INDIAN RIVER COUNTY, FLORIDA

LICENSED PROFESSIONAL

NICHOLAS P.O. BLACK

FLORIDA LICENSE NUMBER 84908

DATE: _____

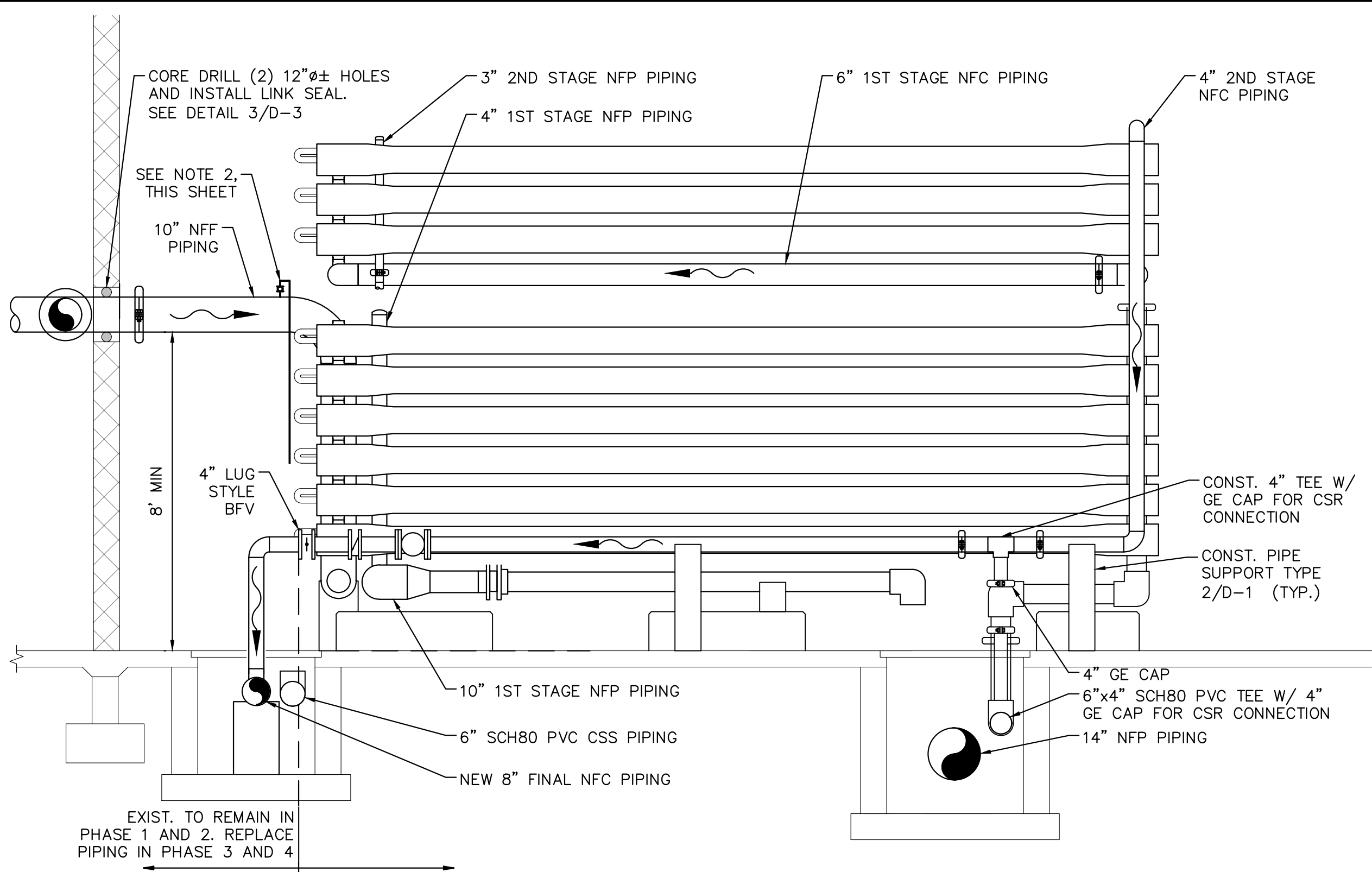
DEMOLITION PHOTOS AND DETAILS

SHEET NUMBER

M-20

41 OF 132

Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: M-23 TYPICAL N.F. TRAIN EAST AND WEST ELEVATIONS March 19, 2021 11:40:46am K:\WPB_Civil\044572100 - South OSLO WTP Design\CAD\PlanSheets\TYPICAL N.F. TRAIN EAST AND WEST ELEVATIONS.dwg This document, together with the concepts and designs presented herein, is intended only for the specific purpose and client for which it was prepared. Reuse of any information contained herein without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

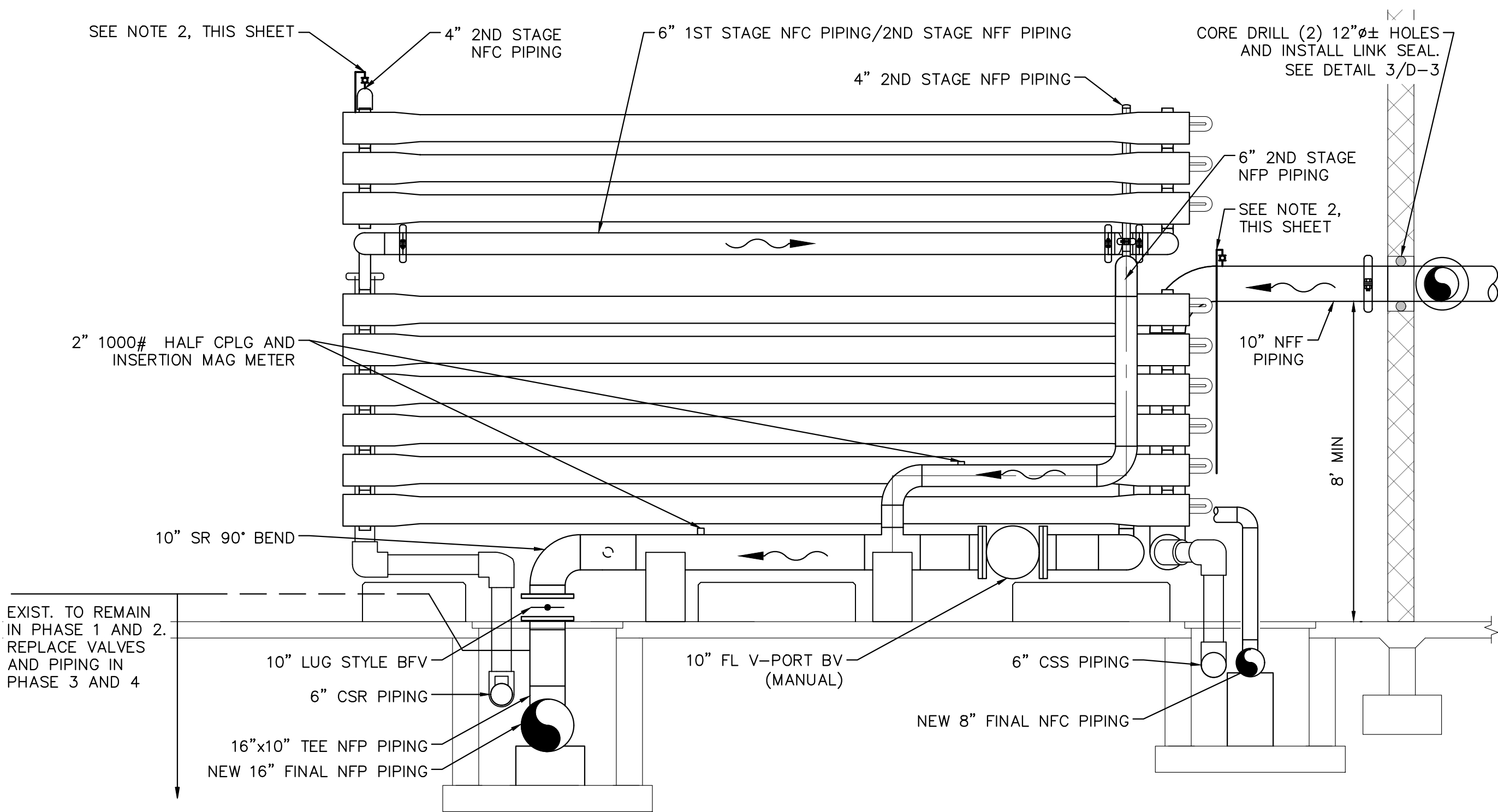
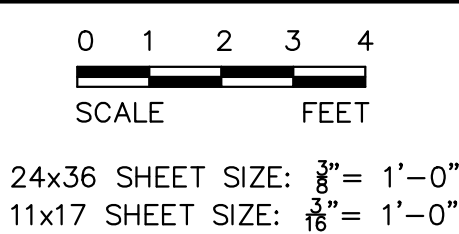


D
M-21

TYPICAL EAST ELEVATION

Scale: AS NOTED

NOTE:
ALL PIPING AND FITTINGS TO BE
SCH 10S 316L SST U.O.N.



D
M-21

TYPICAL WEST ELEVATION

Scale: AS NOTED

NOTE:
ALL PIPING AND FITTINGS TO BE
SCH 10S 316L SST U.O.N.

- GENERAL NOTES:
1. REFER TO P&ID's FOR INSTRUMENT LOCATIONS.
 2. PROVIDE 1/2" SST VALVES AND TUBING FOR MANUAL AIR RELEASE AT TRAIN HIGH POINTS.

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KHA PROJECT 044572100
DATE MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY BSK
CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
INDIAN RIVER COUNTY UTILITIES
DEPARTMENT

INDIAN RIVER
COUNTY,
FLORIDA

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DATE: _____

TYPICAL N.F. TRAIN EAST AND
WEST ELEVATIONS

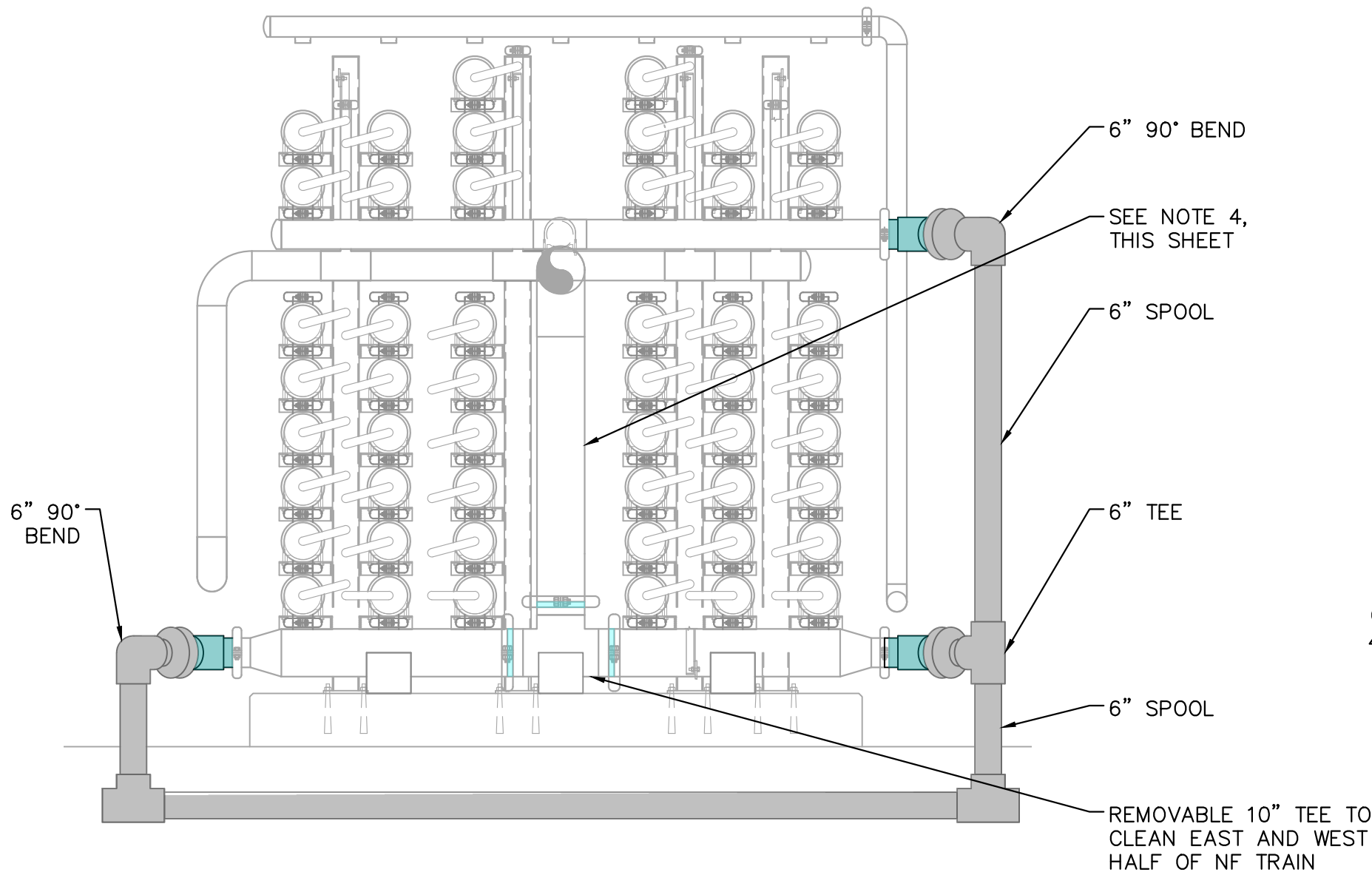
SHEET NUMBER
M-23
44 OF 132

Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS, Layout: M-24, PROPOSED N.F. TRAIN CIP SYSTEM CONNECTIONS, March 19, 2021, 11:41:18am, K:\WEB_Civil\044572100 - South OSLO WTP Design\CAD\PlanSheets\PROPOSED N.F. TRAIN CIP SYSTEM CONNECTIONS.dwg, Plotted By: King, Bertrand, This document, together with the concepts and designs presented herein, is an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of said instrument of service without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

LEGEND:

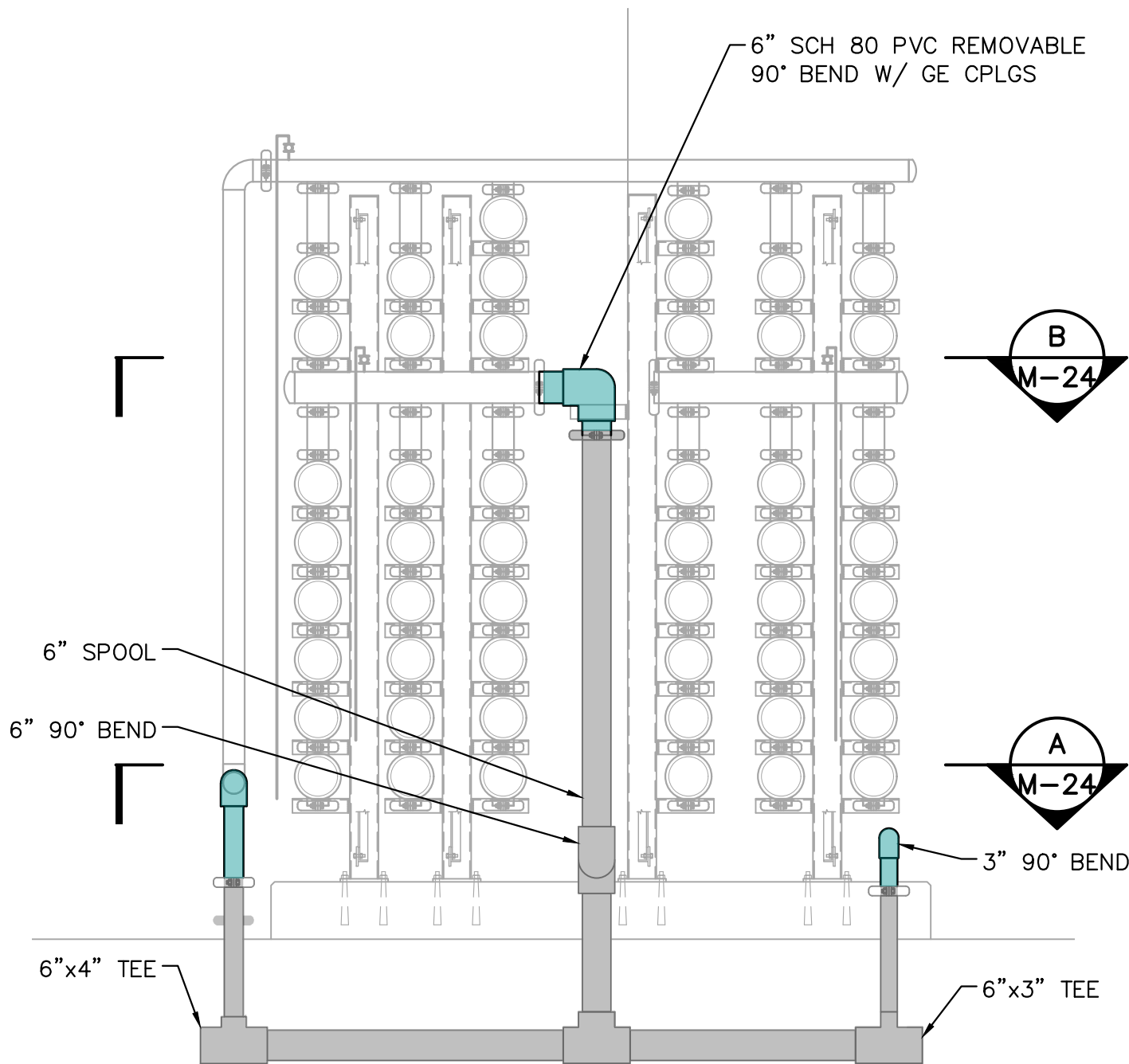
PERMANENT CIP PIPING

TEMPORARY CIP CONNECTION



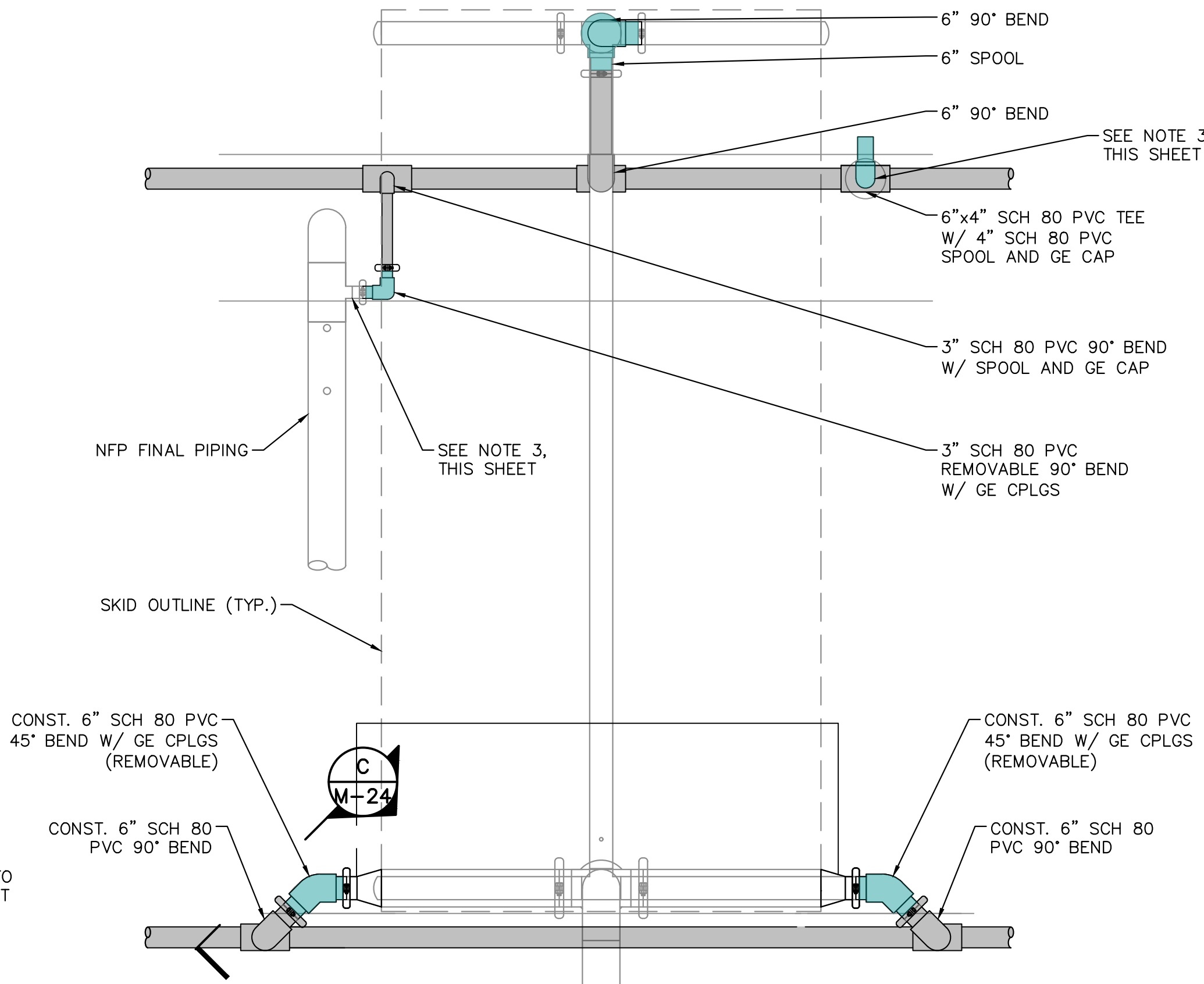
CIP SYSTEM NF TRAIN CONNECTION - SOUTH ELEVATION

AS NOTED



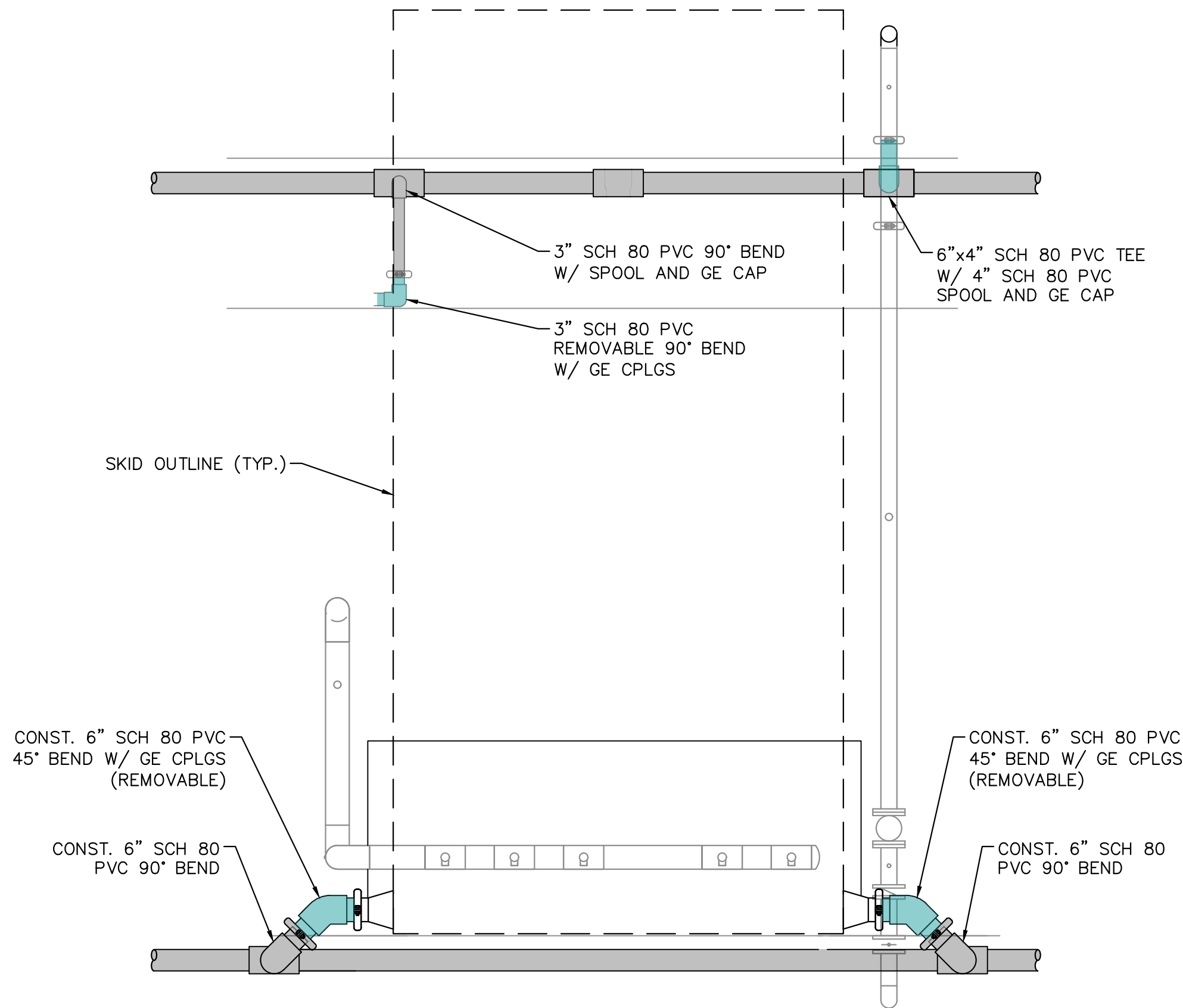
CIP SYSTEM NF TRAIN CONNECTION - NORTH ELEVATION

AS NOTED



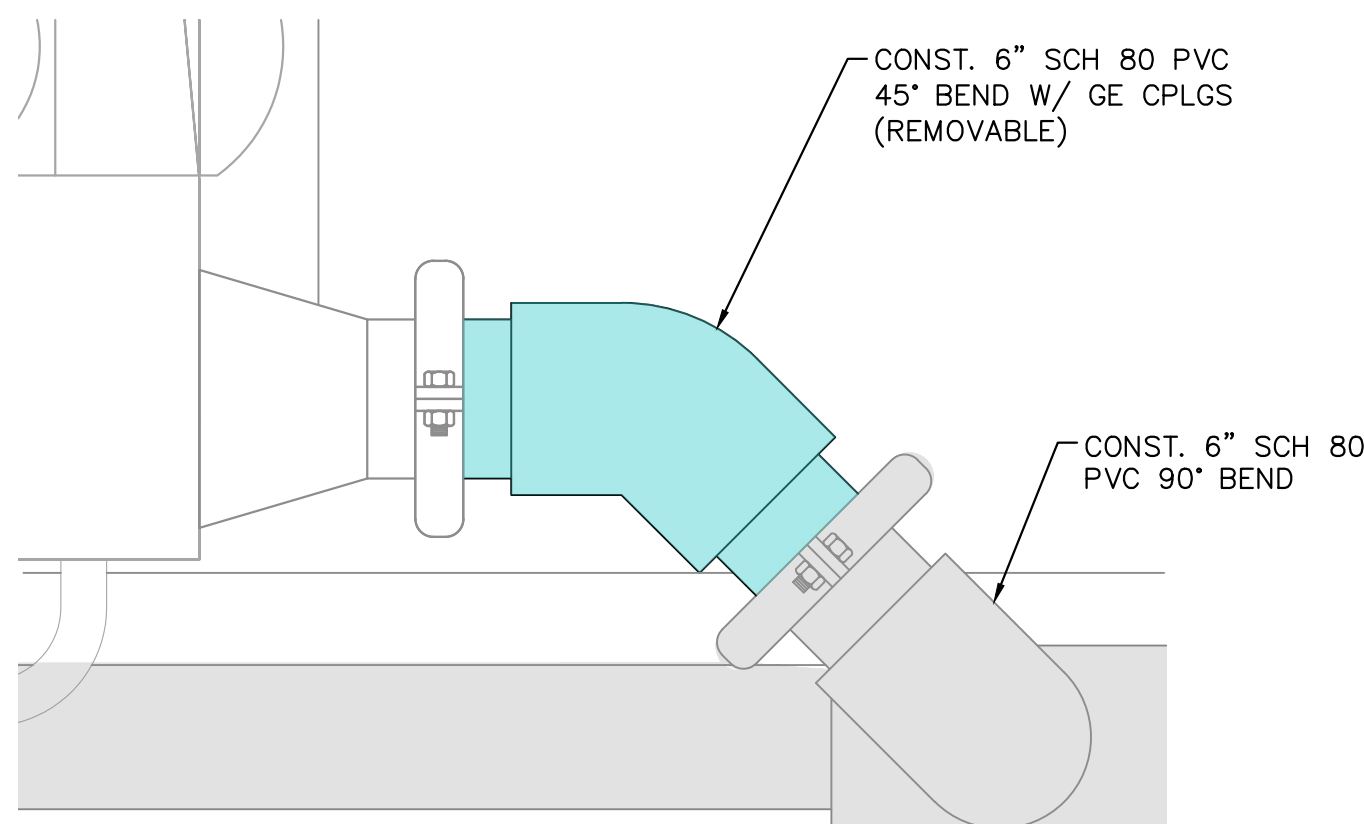
TYPICAL NF TRAIN CIP SYSTEM CONNECTION PLAN

Scale: AS NOTED



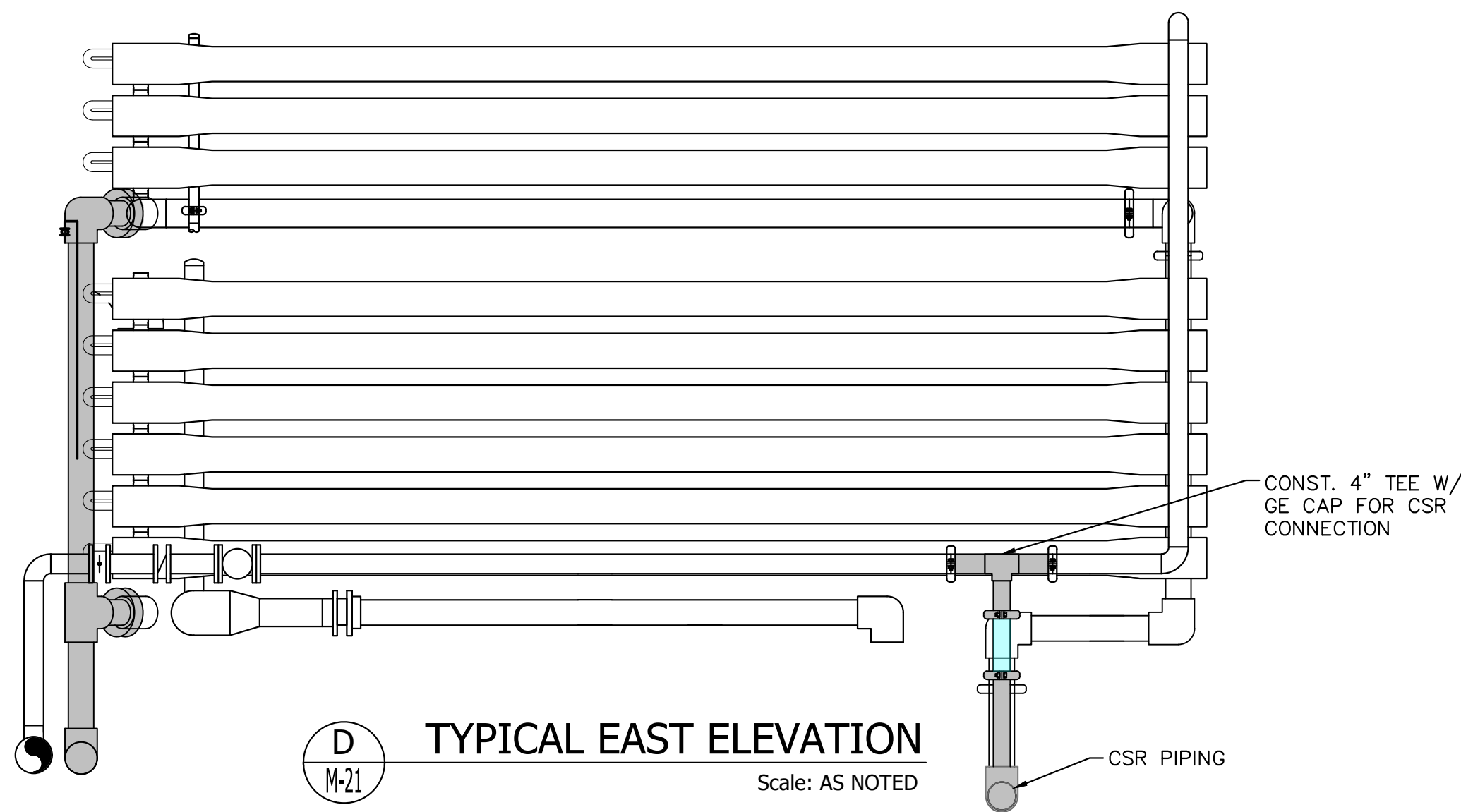
TYPICAL NF TRAIN CIP SYSTEM CONNECTION PLAN

Scale: AS NOTED



TEMPORARY CIP CONNECTION DETAIL

Scale: AS NOTED



TYPICAL EAST ELEVATION

Scale: AS NOTED

- GENERAL NOTES:
1. REFER TO P&ID's FOR INSTRUMENT LOCATIONS.
 2. PROVIDE 1/2" SST VALVES AND TUBING FOR MANUAL AIR RELEASE AT TRAIN HIGH POINTS.
 3. CONTRACTOR SHALL PROVIDE FLEXIBLE HOSE W/ GE CPLGS FOR NF TRAIN FLUSH. HOSE SHALL CONNECT FROM FINAL NFP CLEANING CONNECTION TO FINAL NFC CLEANING CONNECTION.
 4. CONTRACTOR SHALL PROVIDE PERMANENT SUPPORTS INTEGRAL TO TRAIN FRAME TO SUPPORT 10" NFP PIPING DURING CLEANING OPERATIONS WHEN 10" TEE REMOVED.

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KHA PROJECT
044572100
DATE
MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY SS
CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
INDIAN RIVER COUNTY UTILITIES
DEPARTMENT

INDIAN RIVER
COUNTY,

FLORIDA

LICENSED PROFESSIONAL

NICHOLAS P.O. BLACK

FLORIDA LICENSE NUMBER
84908

DATE: _____

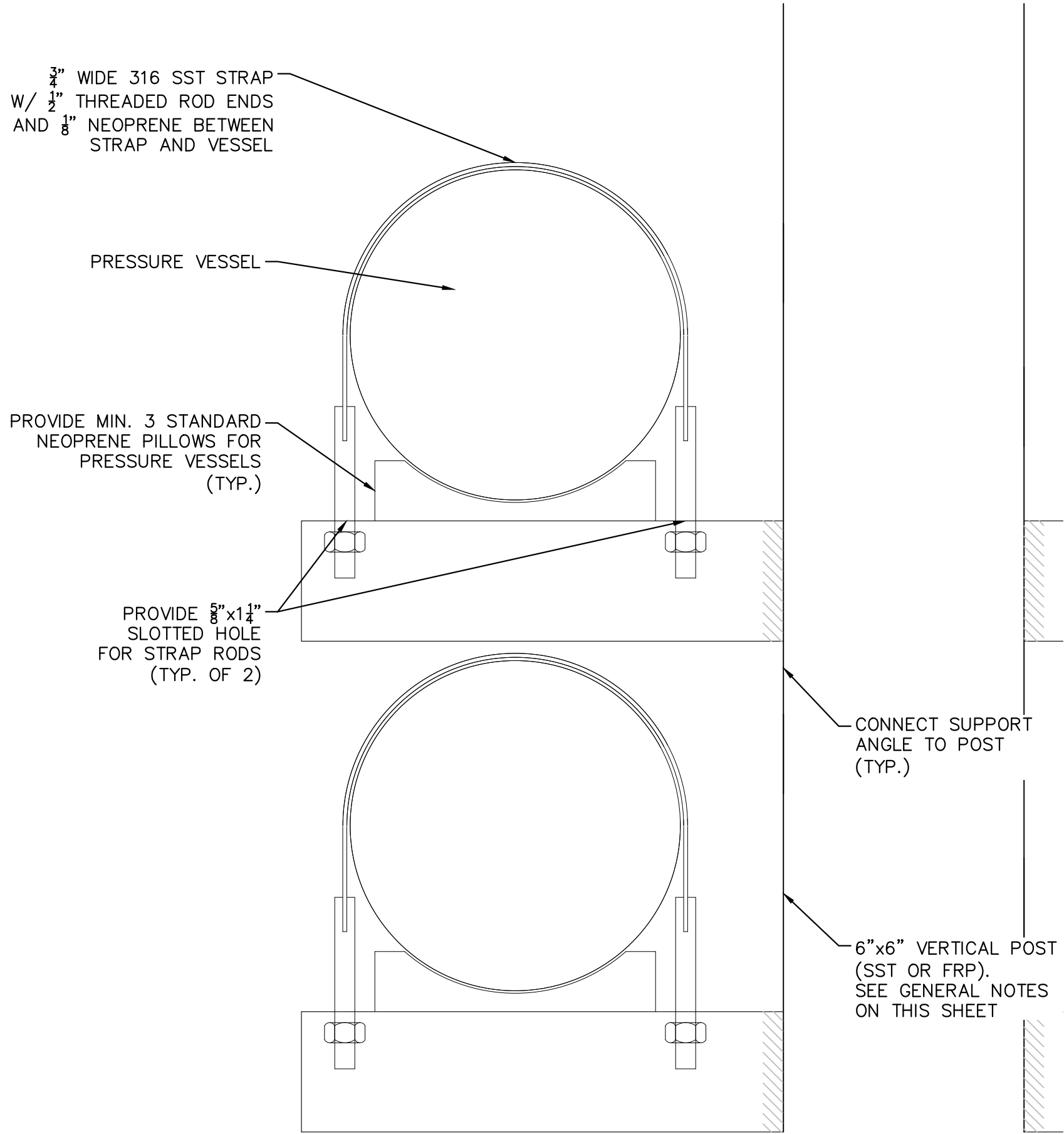
PROPOSED N.F. TRAIN CIP
SYSTEM CONNECTIONS

SHEET NUMBER

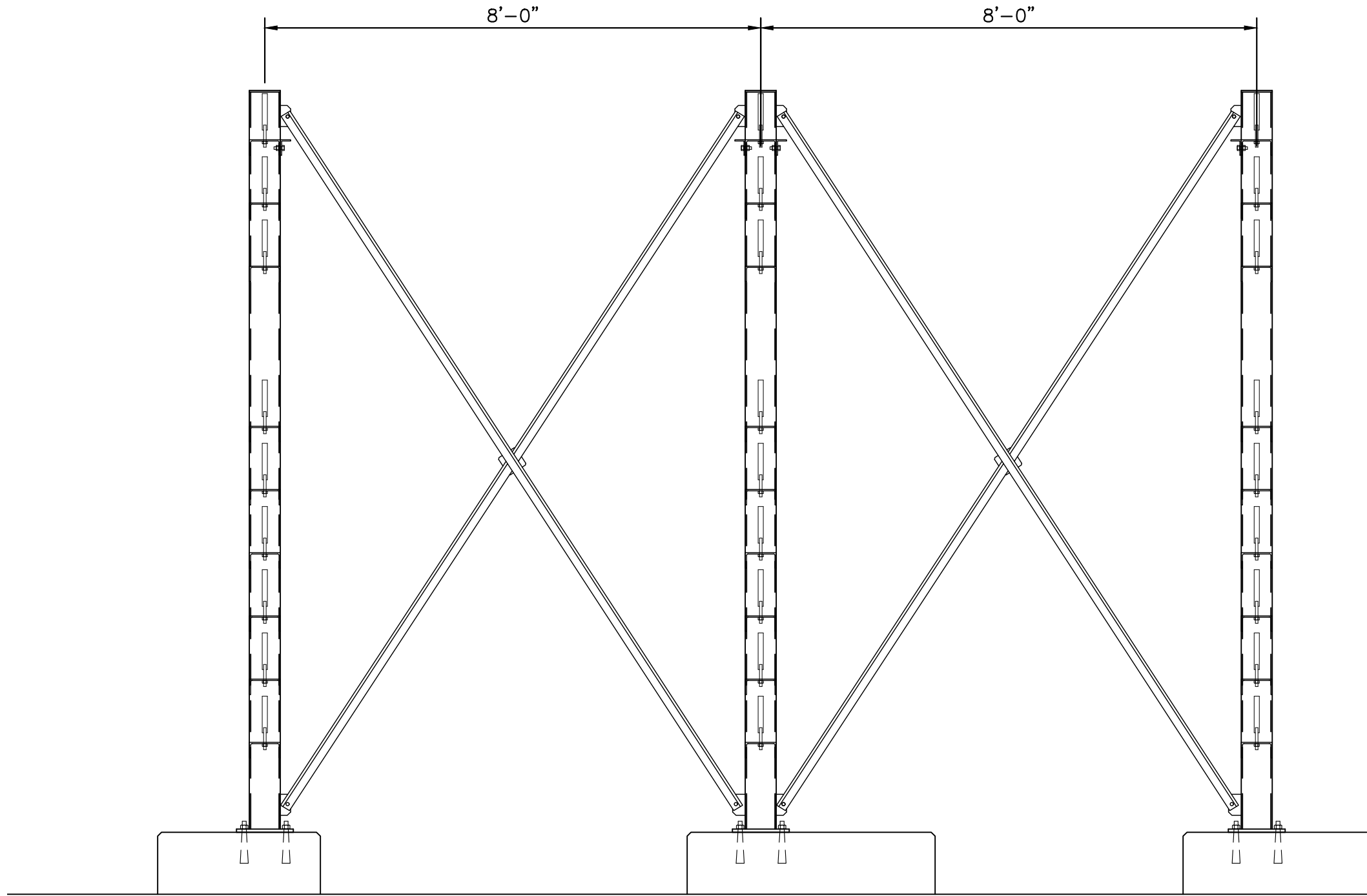
M-24

45 OF 132

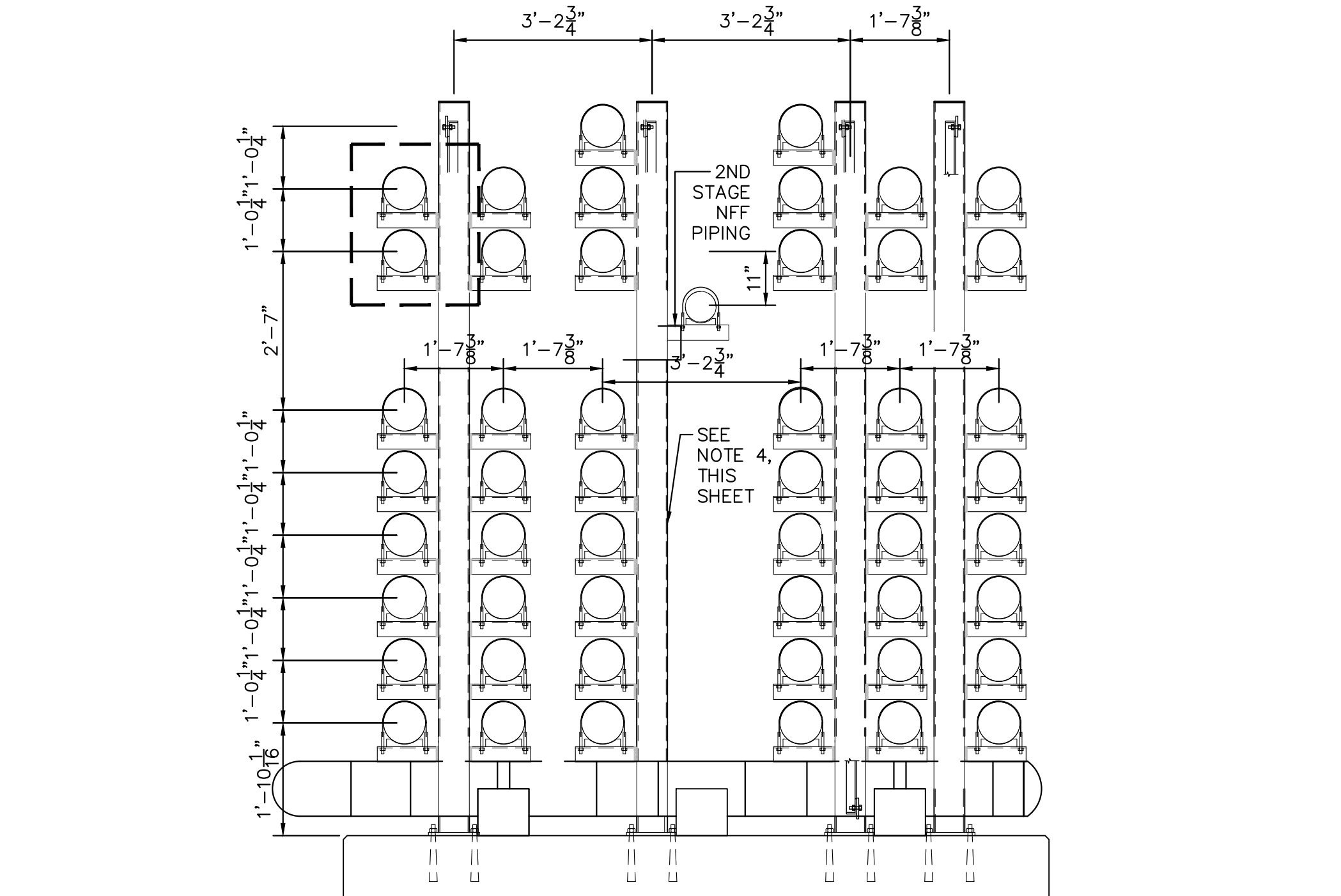
Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS - Layout: M-25 TYPICAL TRAIN RACK PLAN AND DETAILS - March 19, 2021 11:41:45am - K:\WEB_Civil\044572100 - South OSLO ROAD WTP Design\CAD\PlanSheets\TYPICAL TRAIN RACK PLAN AND DETAILS.dwg
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DETAIL - VESSEL/PIPE SUPPORT
N.T.S.



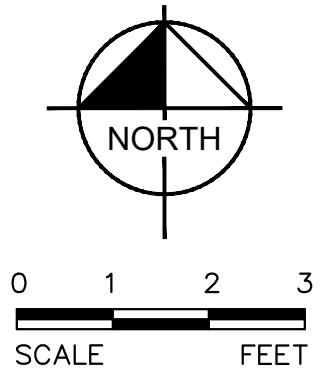
ELEVATION - TYPICAL SUPPORT RACK
AS NOTED



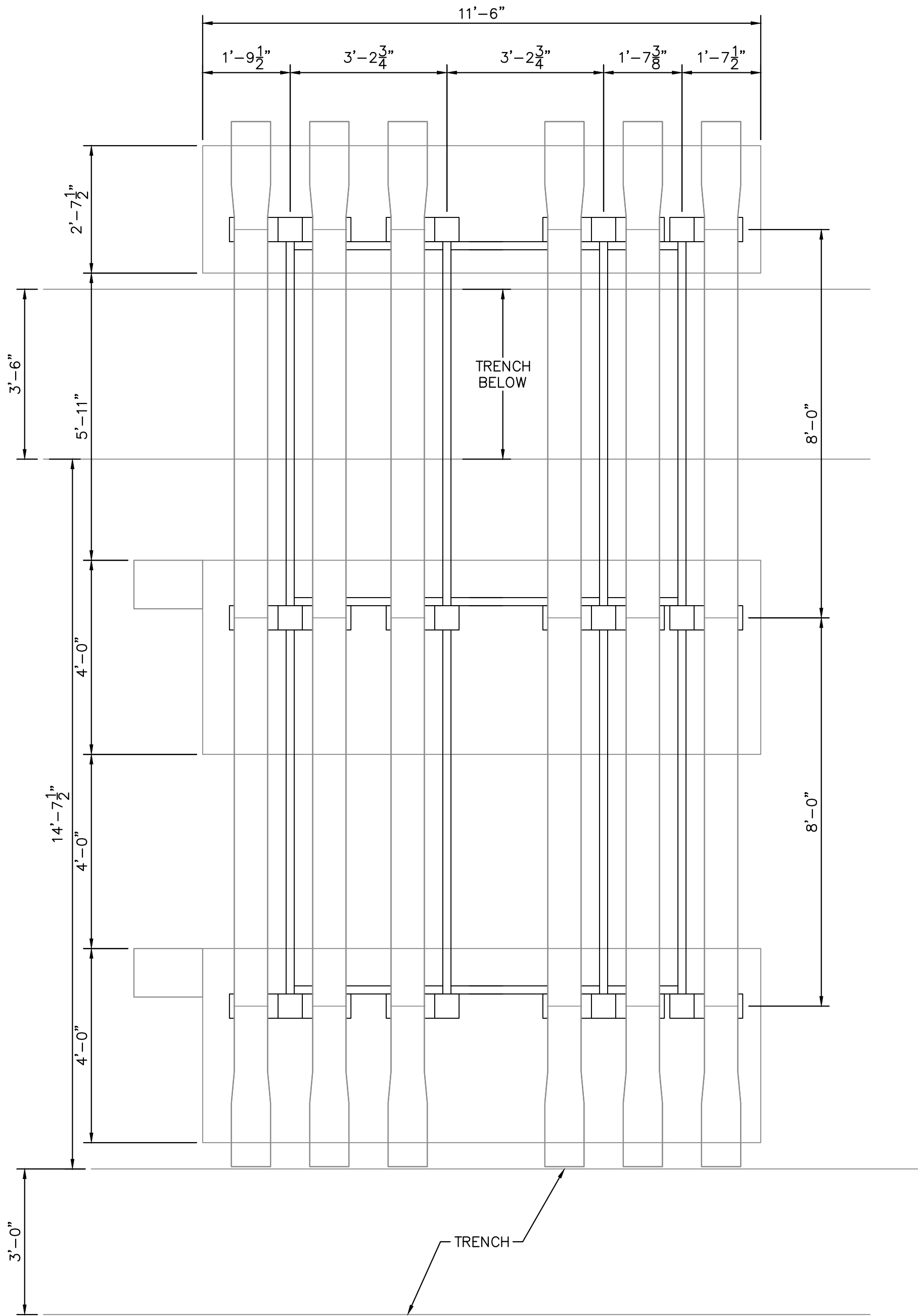
SECTION - TYPICAL SUPPORT RACK
AS NOTED

NOTES:

1. RACK ASSEMBLY TO BE 304 OR 316 SST. SEE SPECS.
2. SUBMIT SHOP DRAWINGS W/ FLORIDA P.E. SIGNED/SEALED DRAWINGS AND CALCULATIONS FOR APPROVAL. THIS DWG IS INTENDED TO BE FOR CONCEPTUAL DESIGN.
3. PROVIDE LATERAL BRACING BETWEEN SUPPORT POSTS (NOT SHOWN). CROSS BRACING SHOWN.
4. CONTRACTOR SHALL PROVIDE PERMANENT SUPPORTS INTEGRAL TO TRAIN FRAME TO SUPPORT 10" NFF PIPING DURING CLEANING OPERATIONS WHEN 10" TEE REMOVED.



24x36 SHEET SIZE: 1/2" = 1'-0"
11x17 SHEET SIZE: 1/4" = 1'-0"



PLAN - TYPICAL SUPPORT RACK
AS NOTED

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KHA PROJECT
044572100
DATE
MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY BSK
CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
**INDIAN RIVER COUNTY UTILITIES
DEPARTMENT**

INDIAN RIVER
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FLORIDA

LICENSED PROFESSIONAL

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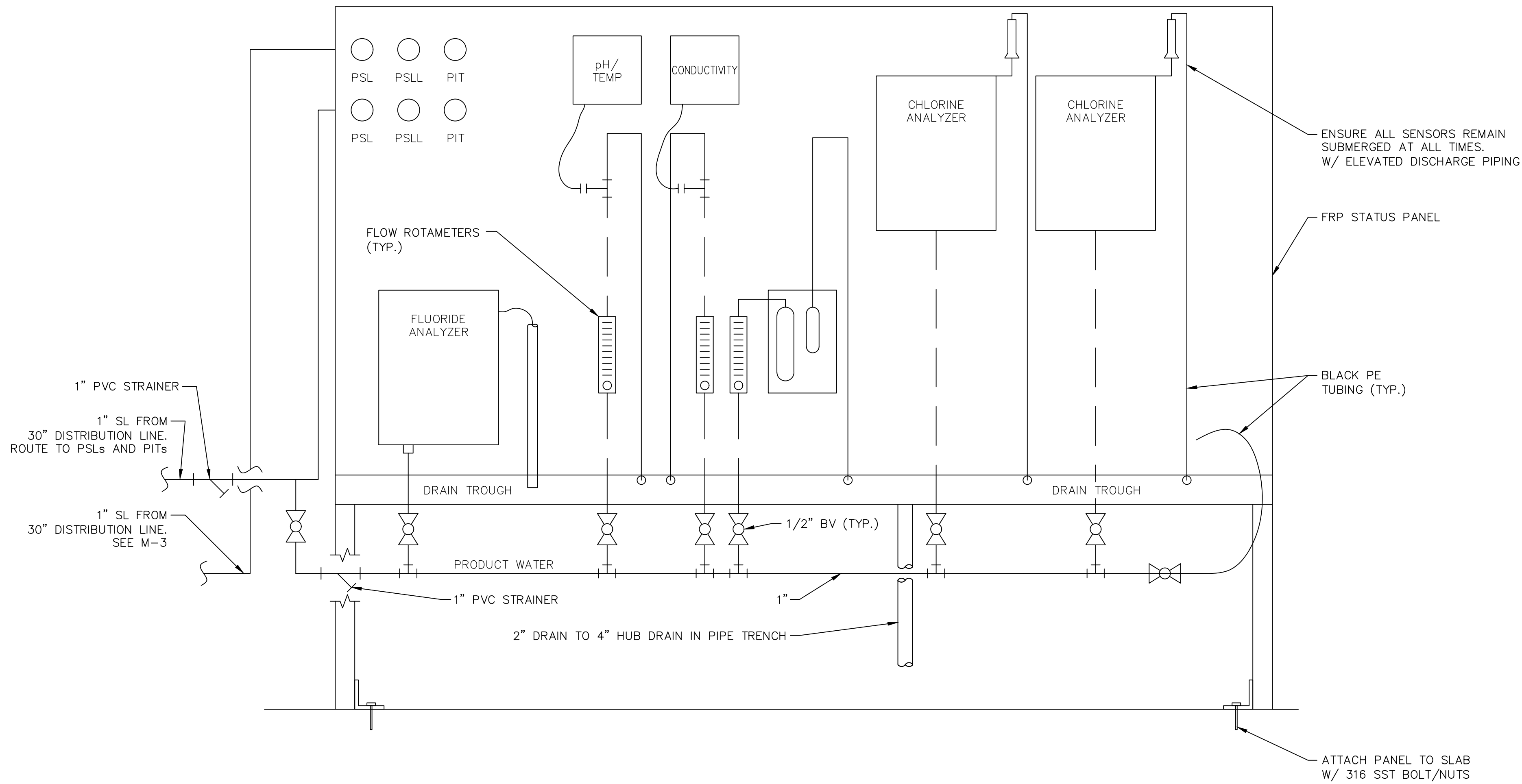
**TYPICAL TRAIN RACK PLAN AND
DETAILS**

SHEET NUMBER

M-25

46 OF 132


Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: M-27 FINISHED WATER STATUS PANEL March 19, 2021 11:41:54am K:\WPB_Civil\044572100 - South RO WTP Design\CAD\PlanSheets\PRODUCT WATER AND PERMEATE STATUS PANELS.dwg This document, together with the concepts and designs presented herein, is intended only for the specific purpose and client for which it was prepared. Reuse of any information contained in this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



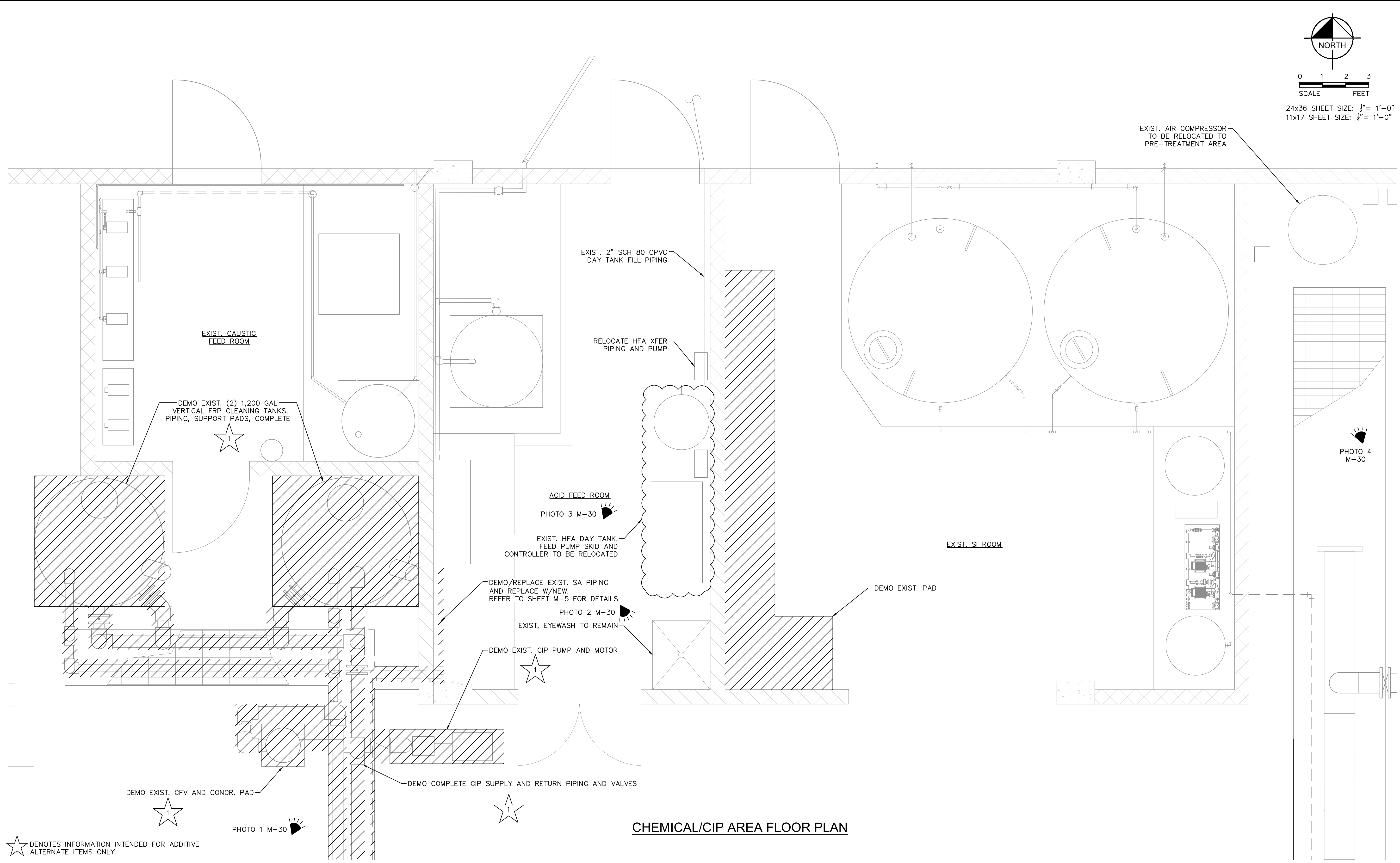
FINISHED WATER PANEL
AS NOTED

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Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: M-28 CIP SYSTEM DEMOLITION March 19, 2021 11:42:04am K:\WPB_Civil\044572100 - South OSLO WTP Design\CAD\PlanSheets\CHEMICAL SYSTEM IMPROVEMENTS.dwg
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044572100
DATE
MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY BSK
CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS

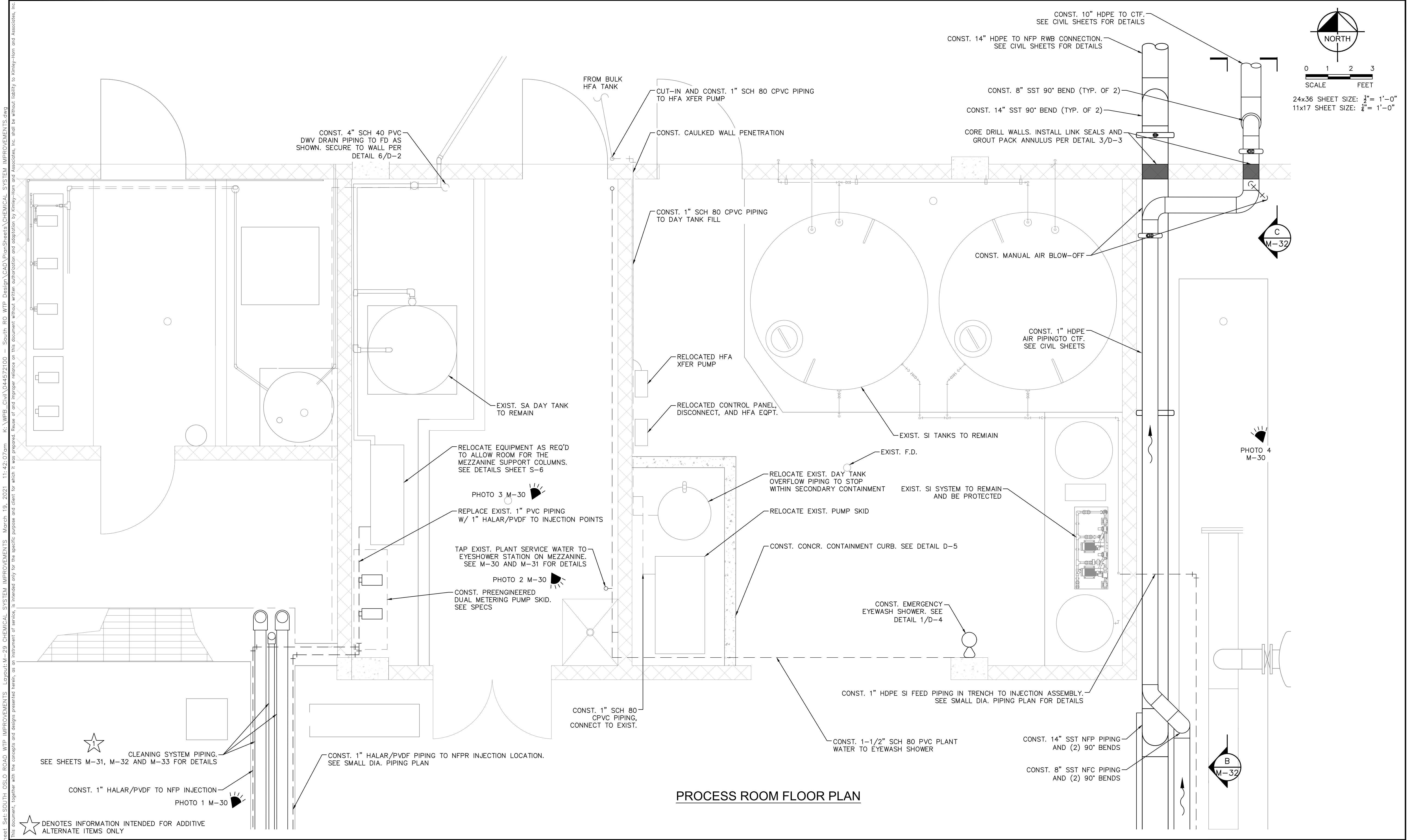
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DEPARTMENT

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FLORIDA

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NICHOLAS P.O. BLACK
FLORIDA LICENSE NUMBER
84908
DATE: _____

CIP SYSTEM DEMOLITION

SHEET NUMBER
M-28
49 OF 132

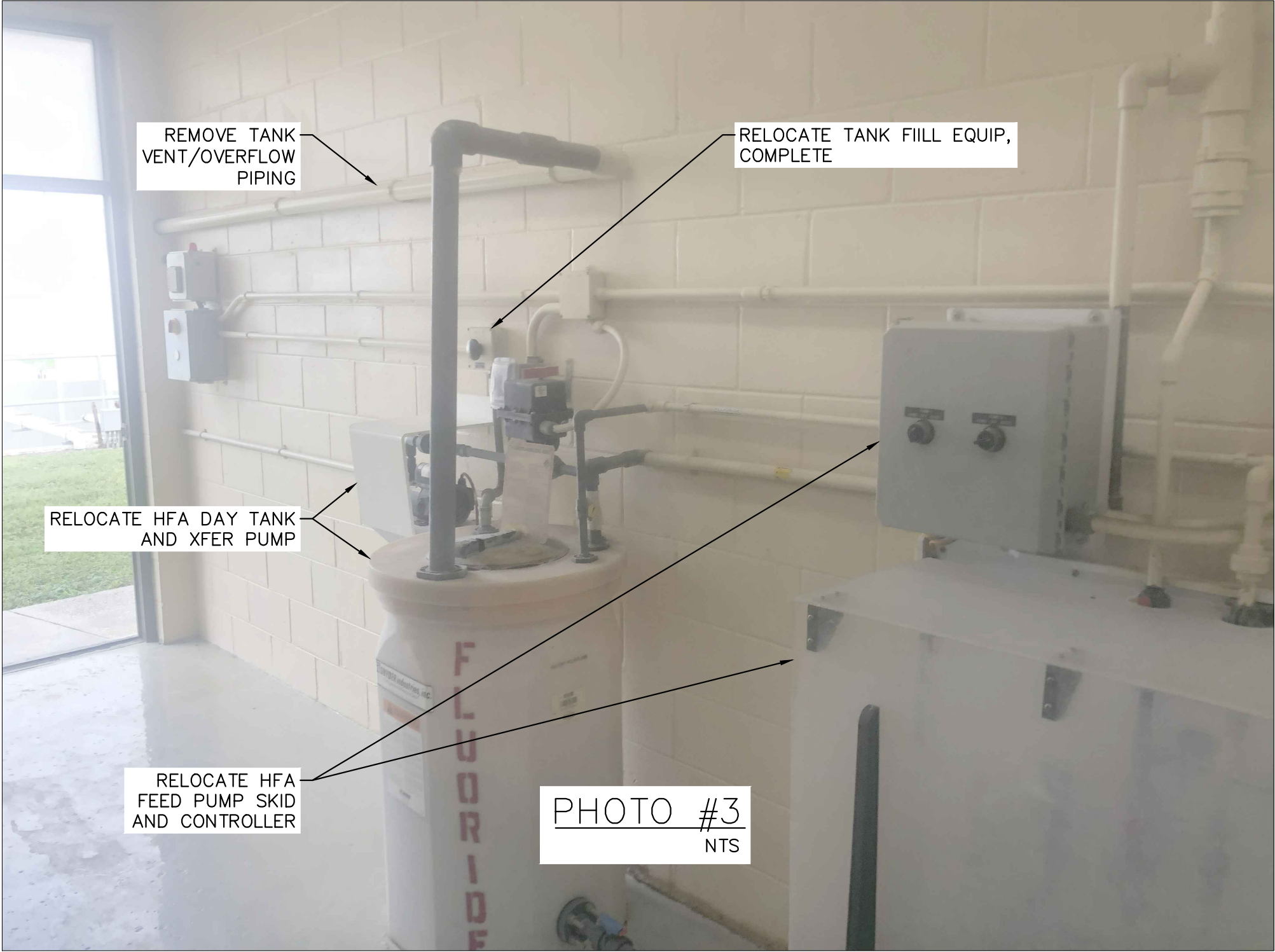
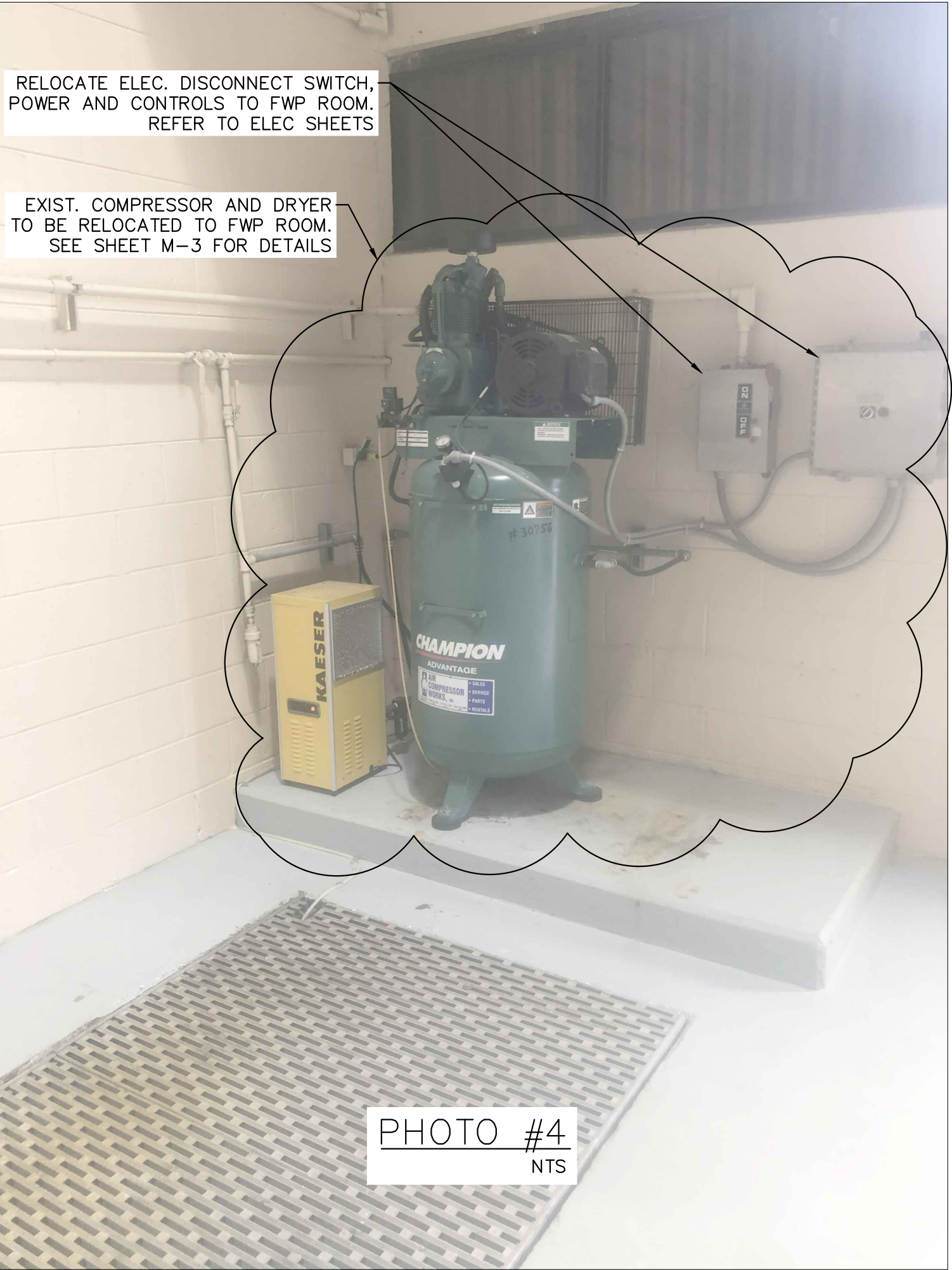
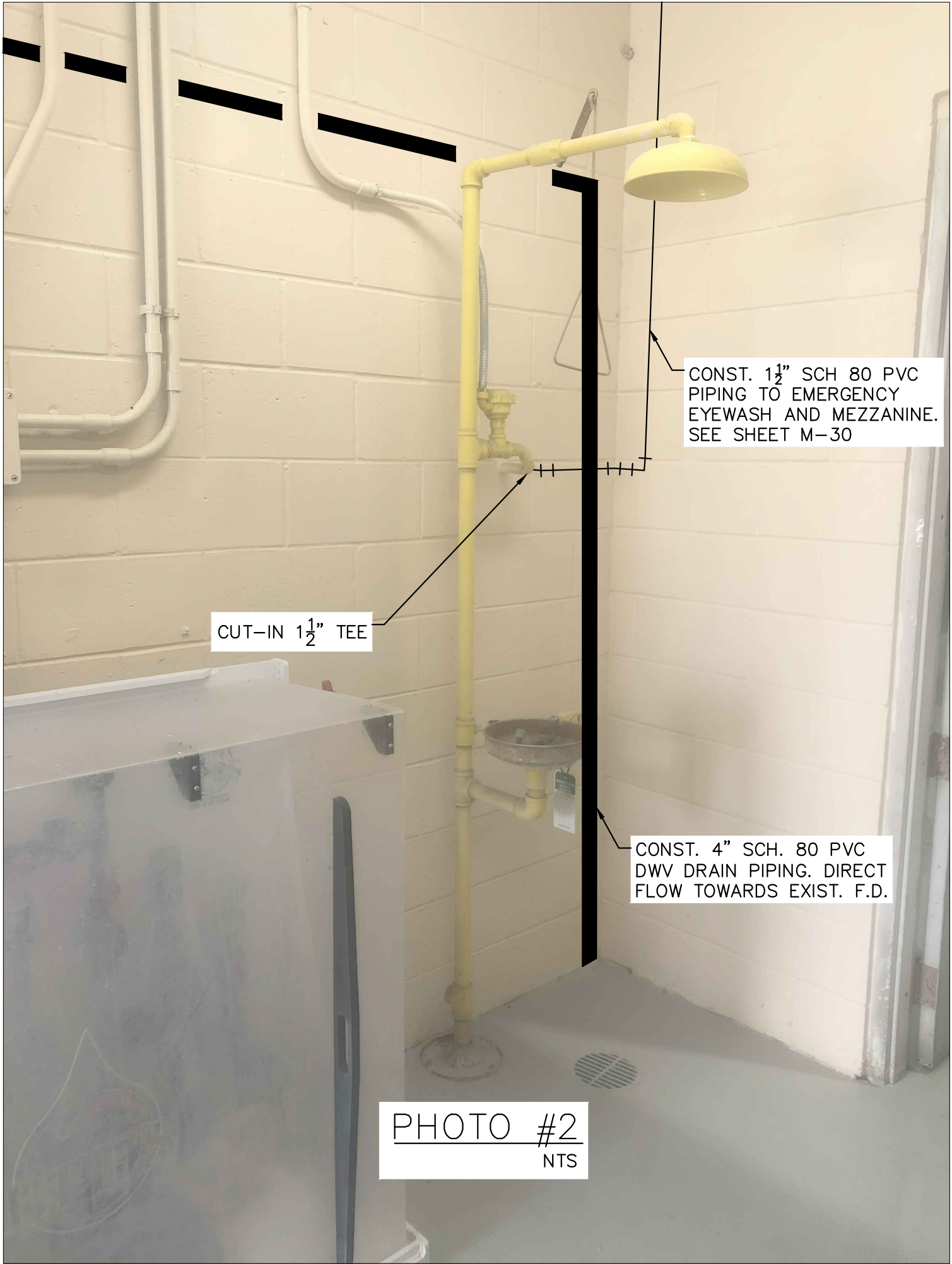


PROCESS ROOM FLOOR PLAN

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	DATE MAR 2021				M-29
	SCALE AS SHOWN				50 OF 132
	DESIGNED BY NPOB				
	DRAWN BY SS				
CHECKED BY MDM			DATE: _____		

Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS - Layout: M-30, CIP DEMOLITION AND CHEMICAL IMPROVEMENT PHOTO DETAILS - March 19, 2021 - 11:42:14am - K:\WPB_Civil\044572100 - South OSLO WTP Design\CAD\PlanSheets\M-29_CIP_SYSTEM_DEMOLITION_PHOTOS.dwg
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KHA PROJECT
044572100

DATE
MAR 2021

SCALE AS SHOWN

DESIGNED BY NPOB

DRAWN BY JTV

CHECKED BY MDM

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INDIAN RIVER COUNTY,

FLORIDA

LICENSED PROFESSIONAL

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FLORIDA LICENSE NUMBER
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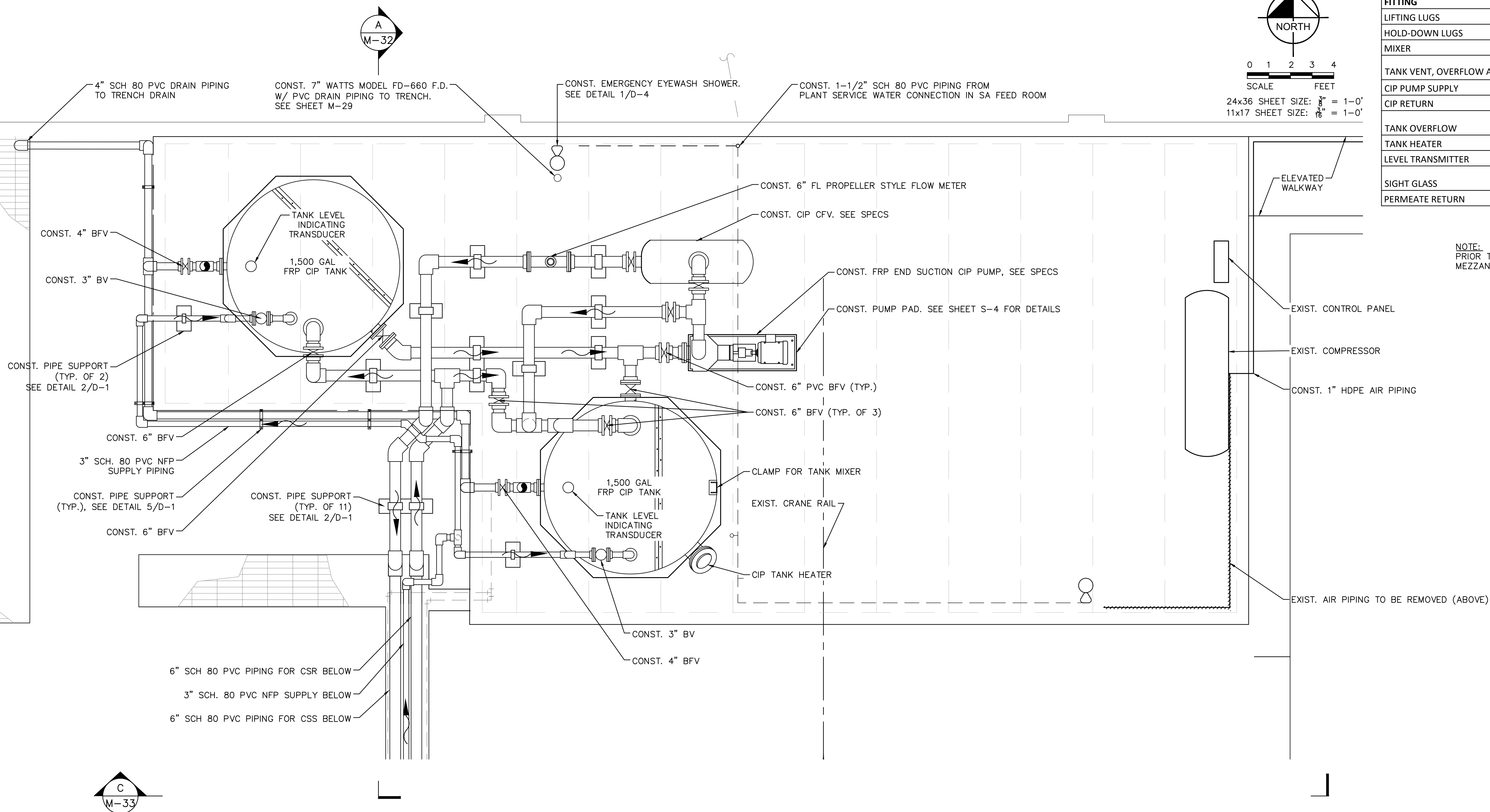
DATE: _____

CIP DEMOLITION AND CHEMICAL IMPROVEMENT PHOTO DETAILS

SHEET NUMBER

M-30

51 OF 132

[illegible]

1,500 GAL FRP CIP TANK SCHEDULE (x2)			
FITTING	SIZE (IN)	LOCATION	QTY.
LIFTING LUGS	N/A	SEE SPECS	4
HOLD-DOWN LUGS	N/A	B.O. TANK	4
MIXER	18	T.O. TANK	1
TANK VENT, OVERFLOW AND DRAIN	4	TOP & BOT. SIDEWALL	2
CIP PUMP SUPPLY	6	BOT. SIDEWALL	1
CIP RETURN	6	T.O. TANK	1
TANK OVERFLOW	4	TOP & BOT. SIDEWALL	2
TANK HEATER	6	SIDEWALL	1
LEVEL TRANSMITTER	4	T.O. TANK	1
SIGHT GLASS	2	TOP & BOT. SIDEWALL	2
PERMEATE RETURN	3	T.O. TANK	1

NOTE:
PRIOR TO ANY CIP CONSTRUCTION, REINFORCE
MEZZANINE FLOOR PER SHEET S-6

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Submitted By: King, Bertrand			
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	DATE MAR 2021
	SCALE AS SHOWN
	DESIGNED BY NPOB
	DRAWN BY LPP
CHECKED BY MDM	

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FLORIDA LICENSE NUMBER
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TE: _____

PROPOSED MEZZANINE PLAN

SHEET NUMBER

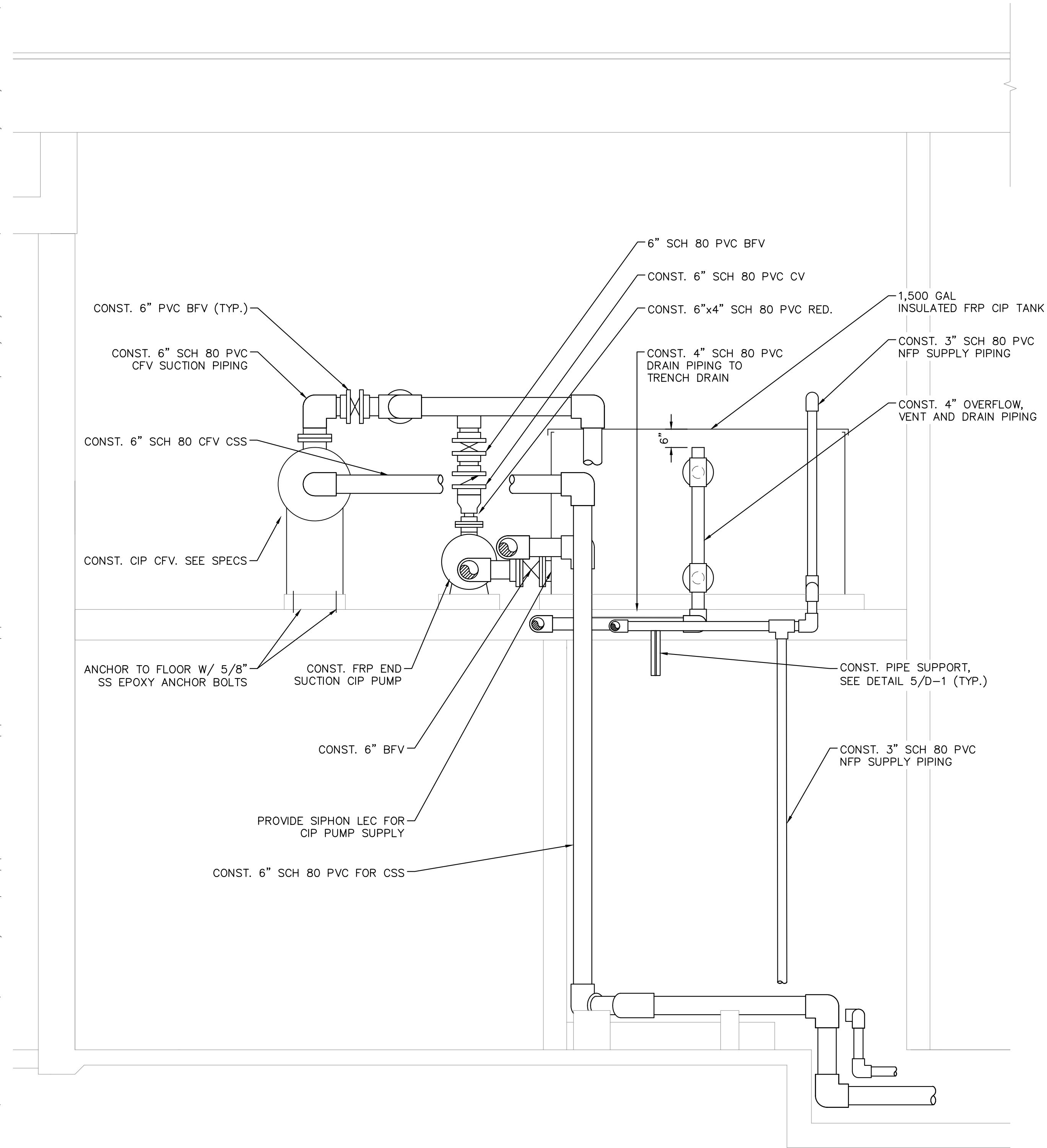
M-31

52 OF 132

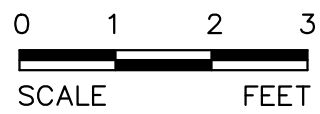


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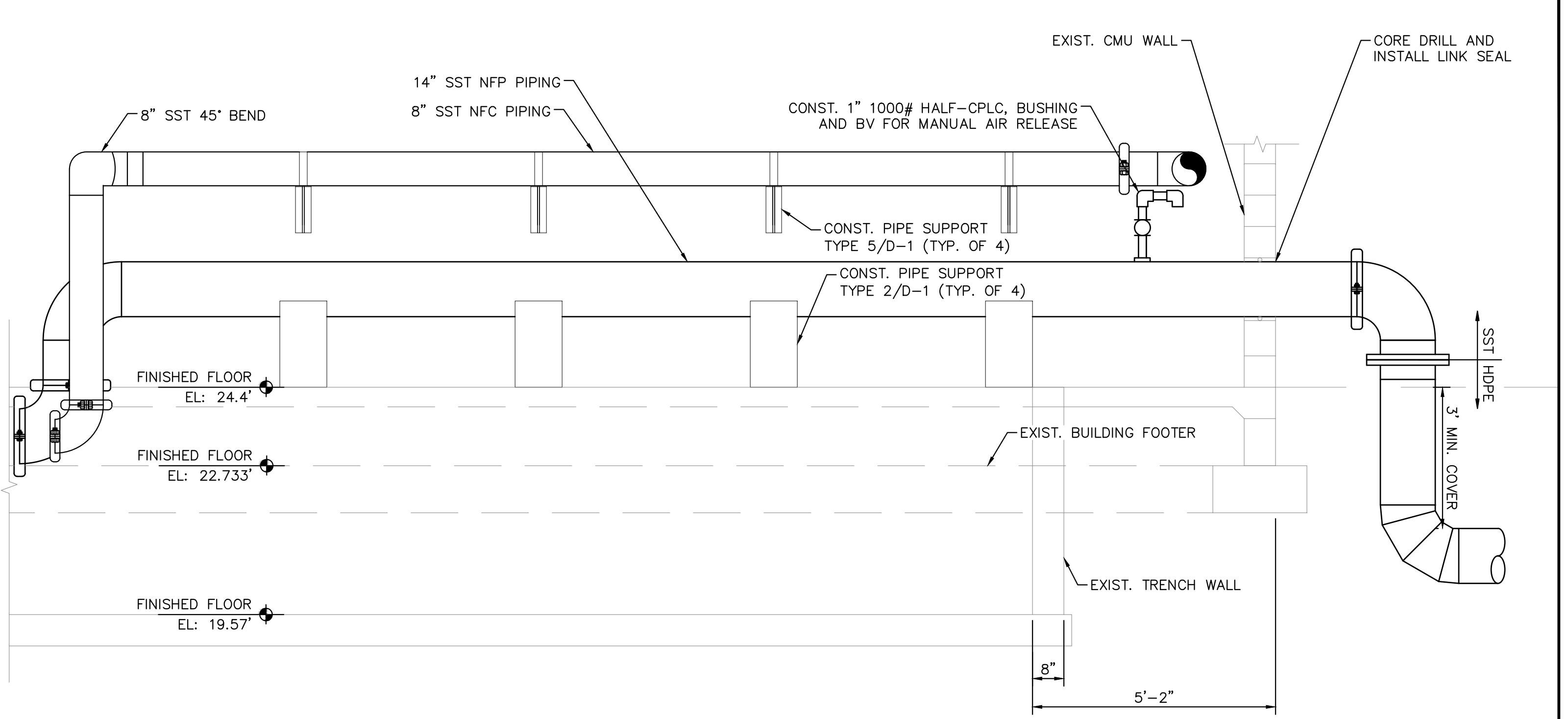
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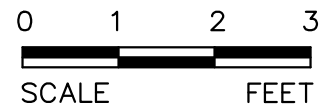
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Scale: AS NOTED



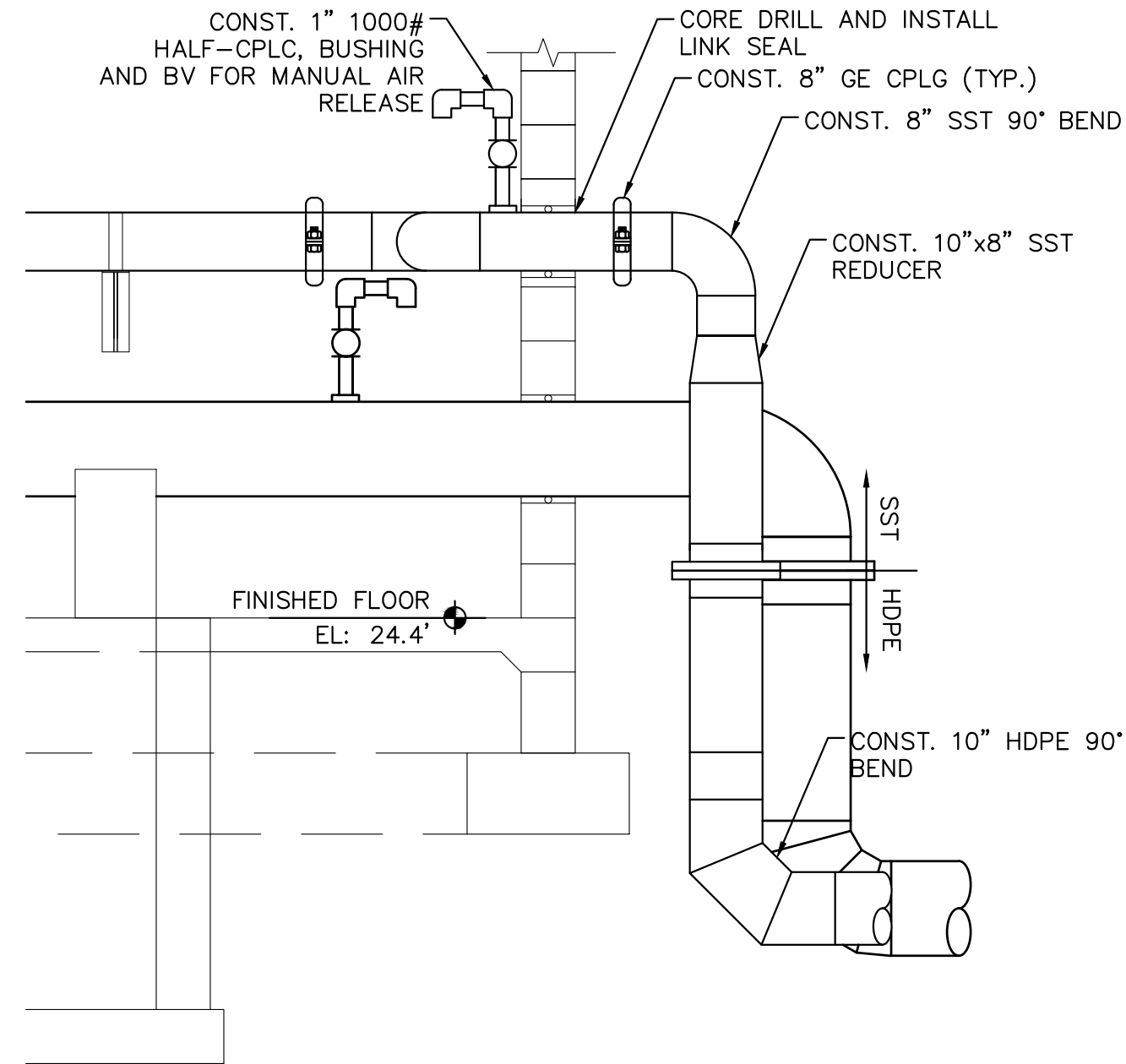
24x36 SHEET SIZE: 1/2" = 1'-0"
11x17 SHEET SIZE: 3/4" = 1'-0"



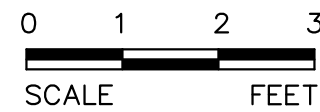
B TRENCH SECTION
Scale: AS NOTED



24x36 SHEET SIZE: 1/2" = 1'-0"
11x17 SHEET SIZE: 3/4" = 1'-0"



C TRENCH SECTION
Scale: AS NOTED



24x36 SHEET SIZE: 1/2" = 1'-0"
11x17 SHEET SIZE: 3/4" = 1'-0"

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KHA PROJECT
044572100
DATE
MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY LPP
CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
**INDIAN RIVER COUNTY UTILITIES
DEPARTMENT**

INDIAN RIVER
COUNTY,

FLORIDA

LICENSED PROFESSIONAL

NICHOLAS P.O. BLACK

FLORIDA LICENSE NUMBER
84908

DATE: _____

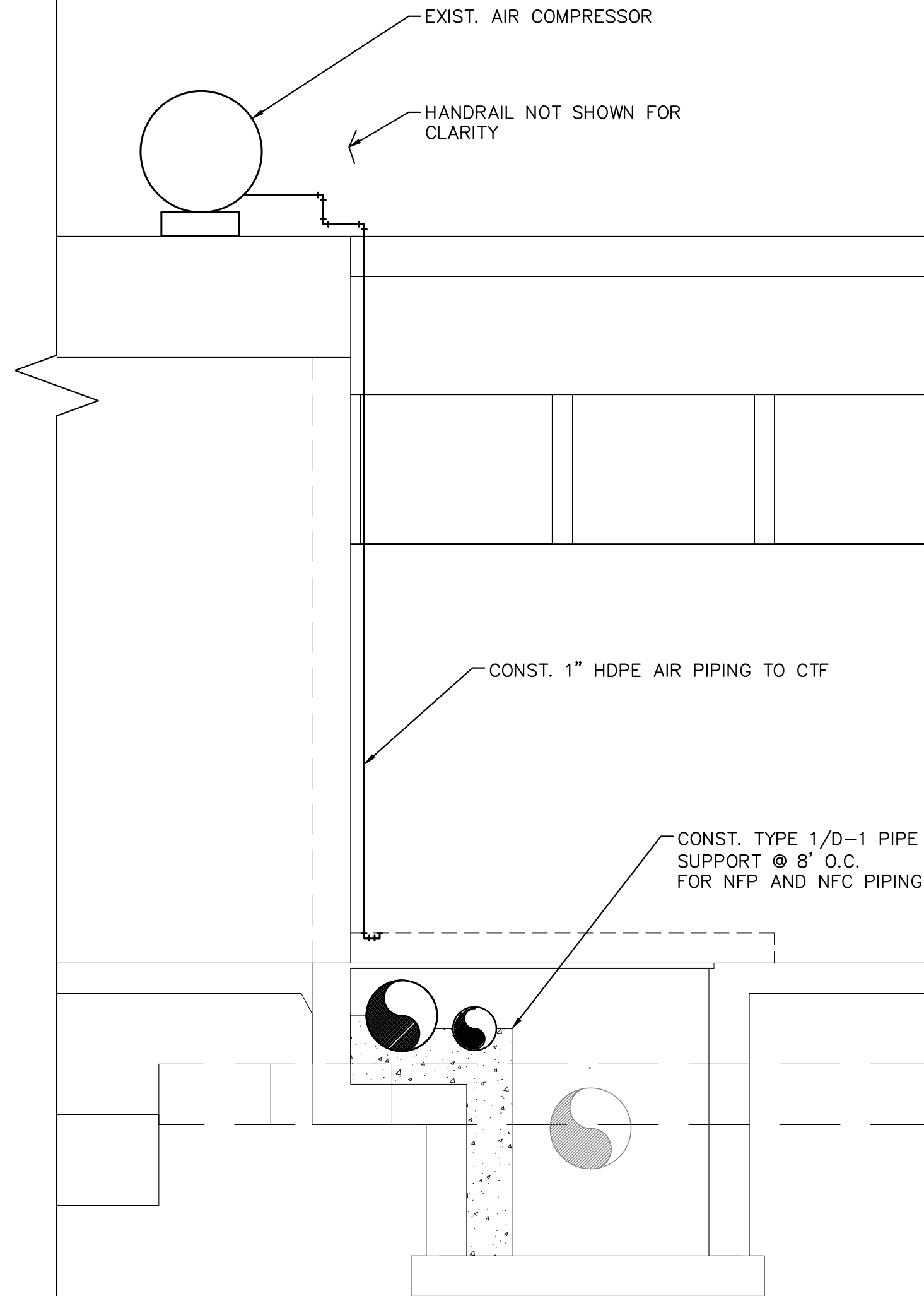
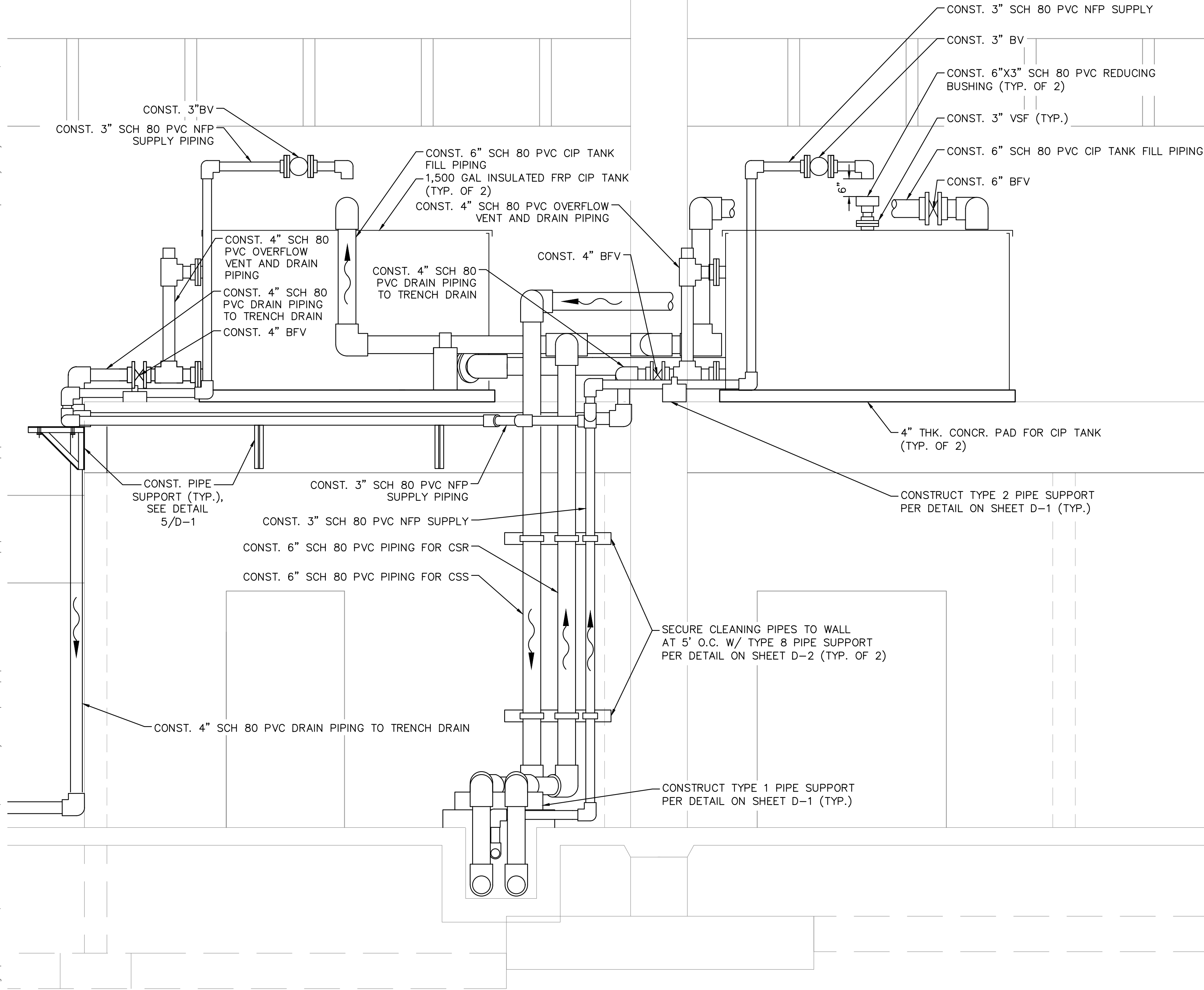
**CIP SYSTEM IMPROVEMENTS
SECTION**

SHEET NUMBER

M-32

53 OF 132

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★ ALL ITEMS ON THIS SHEET TO BE INCLUDED UNDER ADDITIVE ALTERNATE

C SECTION
Scale: AS NOTED

0 1 2 3
SCALE FEET

24x36 SHEET SIZE: $\frac{1}{2}$ " = 1'-0"
11x17 SHEET SIZE: $\frac{1}{4}$ " = 1'-0"

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FLORIDA

LICENSED PROFESSIONAL

NICHOLAS P.O. BLACK

FLORIDA LICENSE NUMBER
84908

DATE: _____

**PROPOSED CIP SYSTEM
SECTION** ★

SHEET NUMBER

M-33

54 OF 132

Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS, Layout: S-1 PIPE TRENCH IMPROVEMENTS, SUPPORTS AND DRAINAGE PLAN, March 19, 2021, 11:42:56am, K:\WEB_Civil\044572100 - South OSLO WTP Design\CAD\PlanSheets\PIPE TRENCH IMPROVEMENTS, SUPPORTS AND DRAINAGE PLAN.dwg, Plotted By: King, Bertrand

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SCALE	AS SHOWN
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DRAWN BY	BSK
CHECKED BY	CM

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**INDIAN RIVER COUNTY UTILITIES
DEPARTMENT**

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COUNTY,

FLORIDA

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CHELSEA MARAJH

FLORIDA LICENSE NUMBER
84300

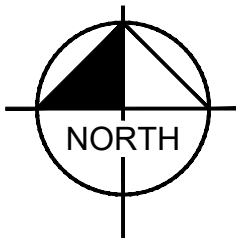
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**PIPE TRENCH IMPROVEMENTS,
SUPPORTS AND DRAINAGE PLAN**

SHEET NUMBER

S-1

55 OF 132

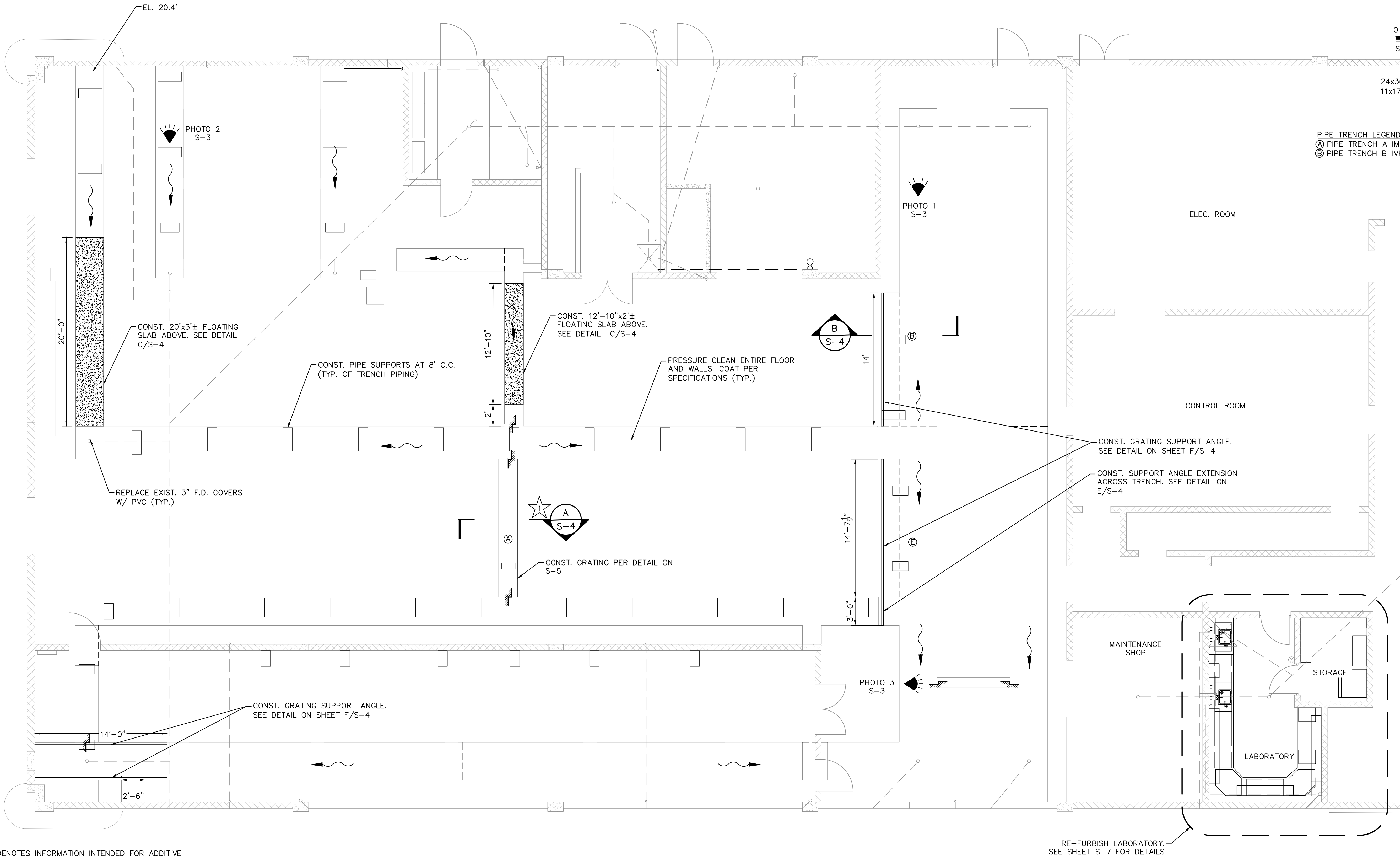


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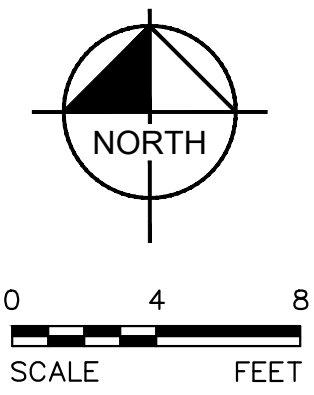
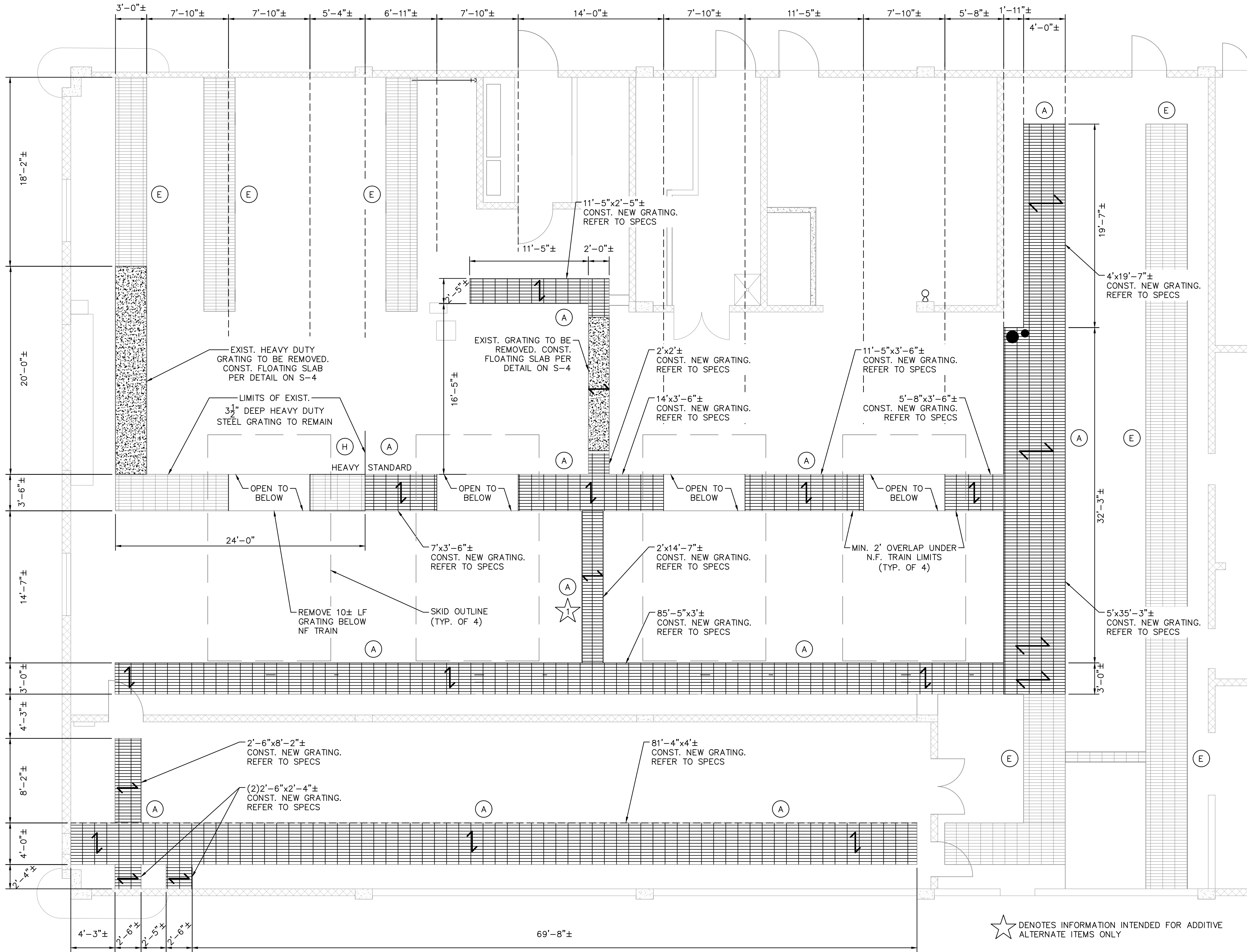
24x36 SHEET SIZE: $\frac{3}{16}$ " = 1'-0"
11x17 SHEET SIZE: $\frac{3}{32}$ " = 1'-0"

PIPE TRENCH LEGEND:

- Ⓐ PIPE TRENCH A IMPROVEMENTS SEE A/S-4
Ⓑ PIPE TRENCH B IMPROVEMENTS SEE B/S-4



Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: S-2 GRATING PLAN March 19, 2021 11:43:05am K:\WEB_Civil\044572100 - South OSLO ROAD WTP Design\CAD\PlanSheets\GRATING PLAN.dwg
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24x36 SHEET SIZE: $\frac{3}{16}$ " = 1'-0"
11x17 SHEET SIZE: $\frac{1}{32}$ " = 1'-0"

GENERAL NOTES:

1. PERIMETER OF ALL PROP. GRATING SHALL BE FULLY BANDED.
2. PERIMETER OF PROP. PIPE PENETRATIONS THROUGH GRATING SHALL BE FULLY BANDED.
3. CONTRACTOR SHALL COORDINATE DIM. OF GRATING PENETRATIONS W/ SIZES OF PROP. EQUIP.

LEGEND:

- (E) EXIST. GRATING TO REMAIN
- (H) EXIST. $3\frac{1}{2}$ " DEEP HEAVY DUTY STEEL GRATING TO REMAIN
- (A) PROP. 1-1/2" ALUMINUM BAR GRATING

BEARING BAR DIRECTION

DENOTES INFORMATION INTENDED FOR ADDITIVE ALTERNATE ITEMS ONLY

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Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: S-3 N.F. PIPE TRENCH REHABILITATION PHOTO DETAILS March 19, 2021 11:43:10am K:\WEB_Civil\044572100 - South OSLO WTP Design\CAD\PlanSheets\S-3 N.F. PIPE TRENCH REHABILITATION PHOTO DETAILS.dwg
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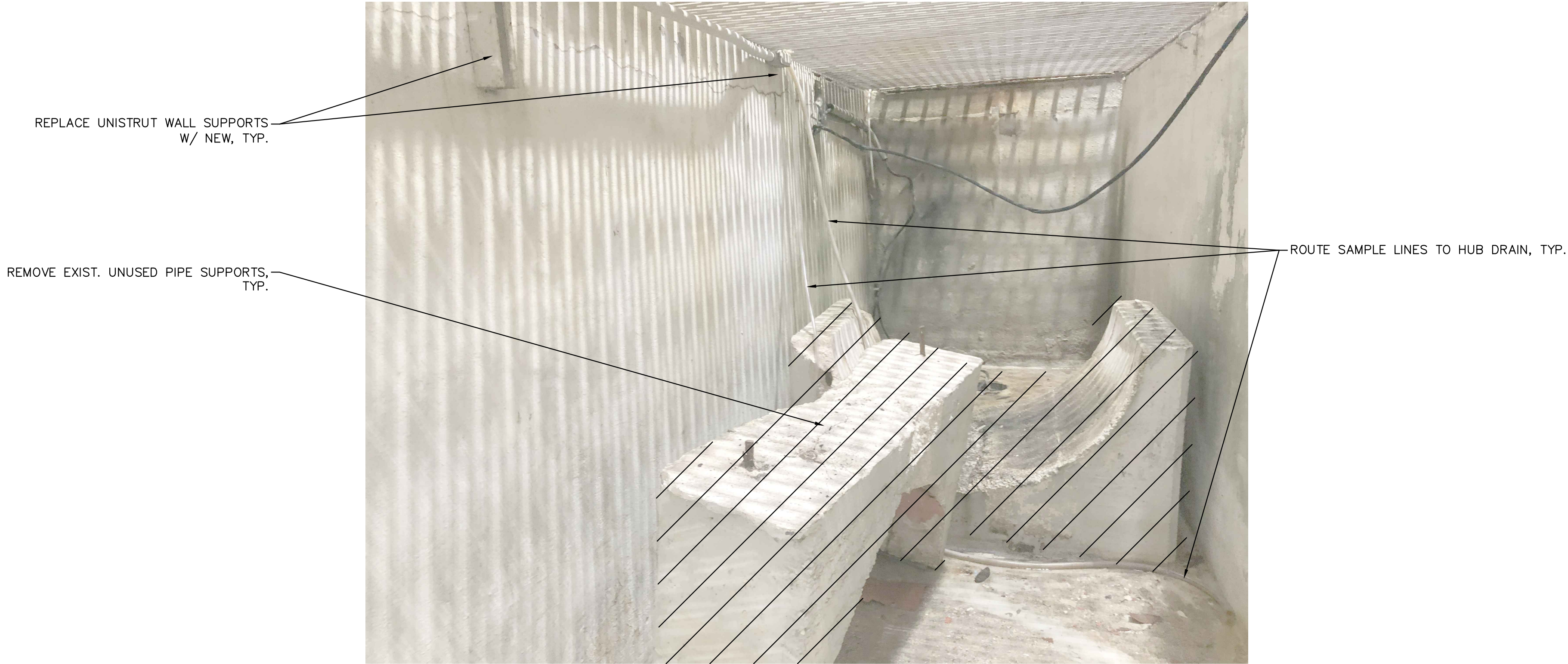


PHOTO 1
NTS



PHOTO 2
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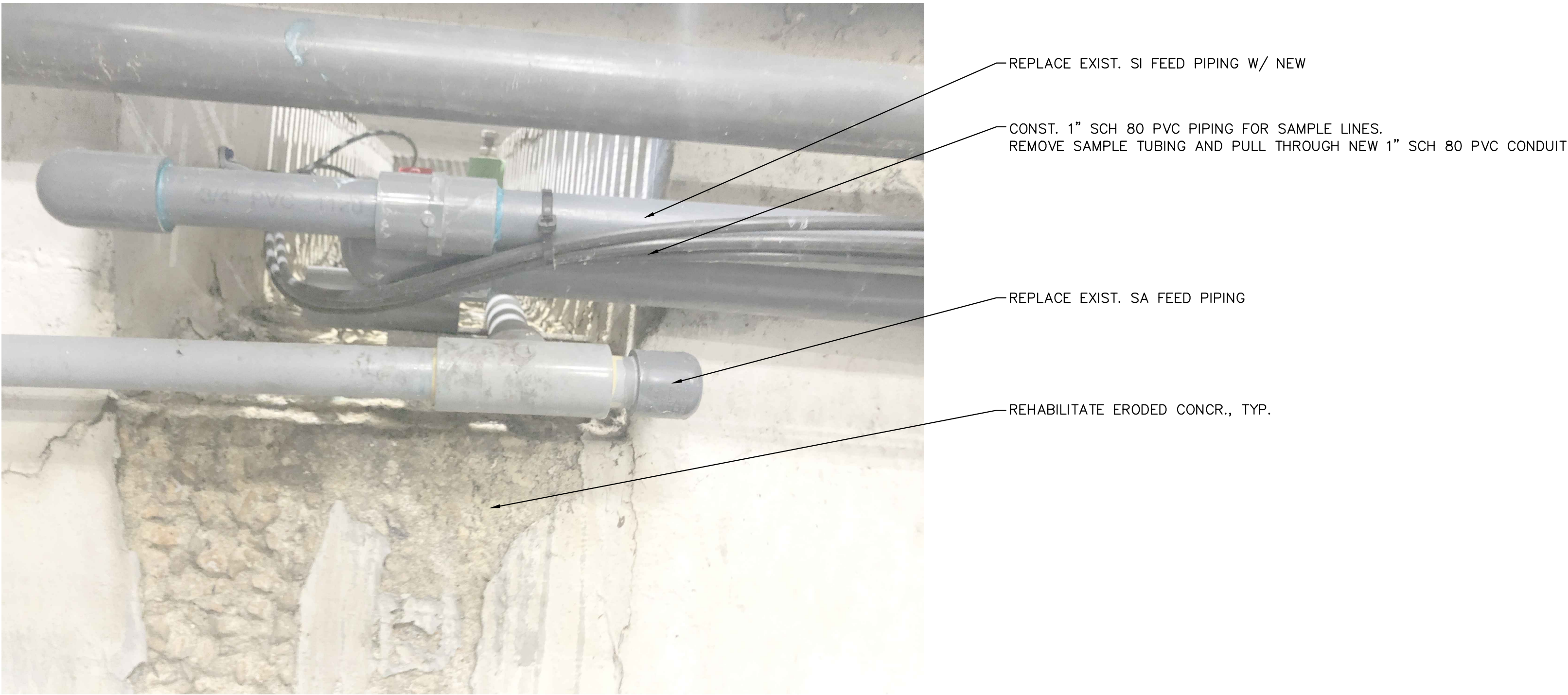

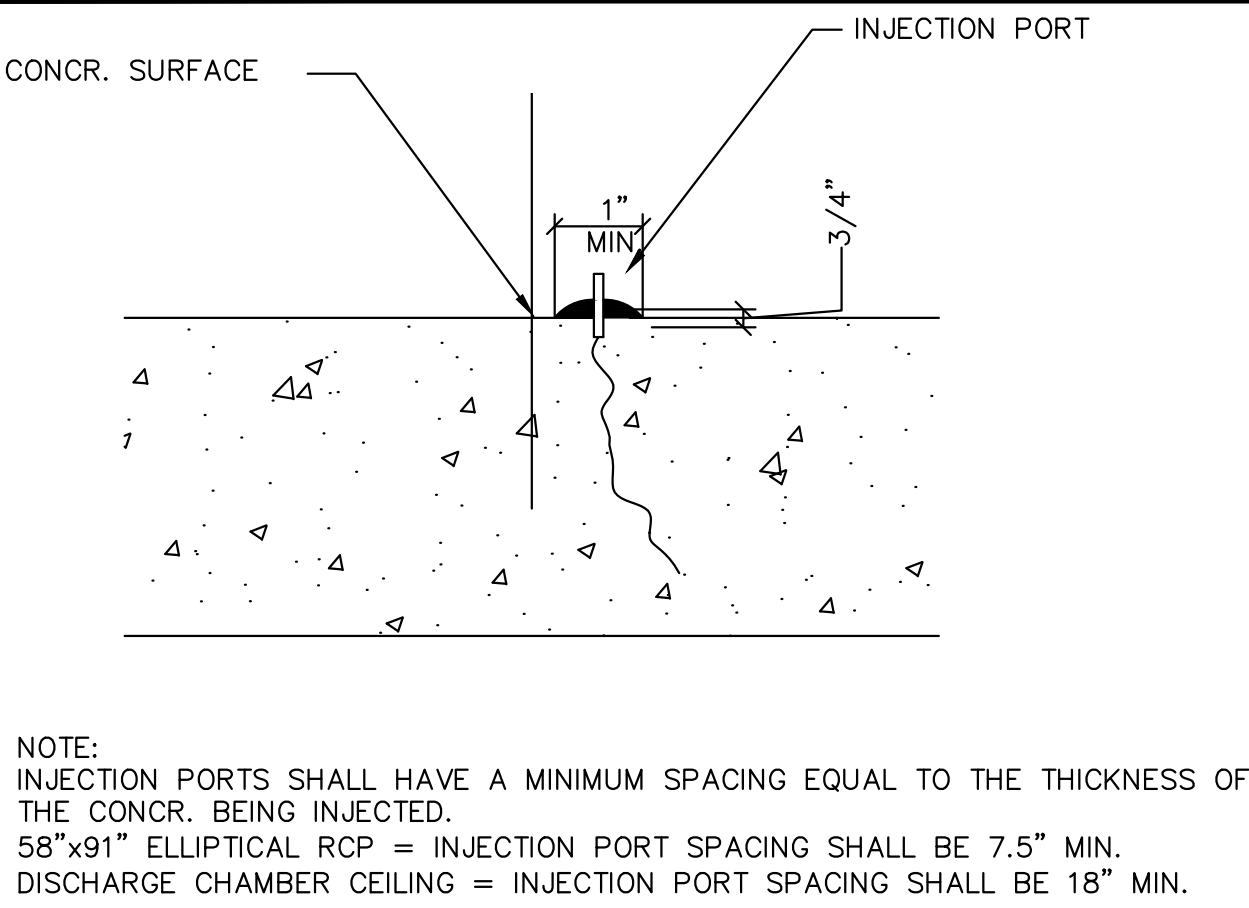


PHOTO 3
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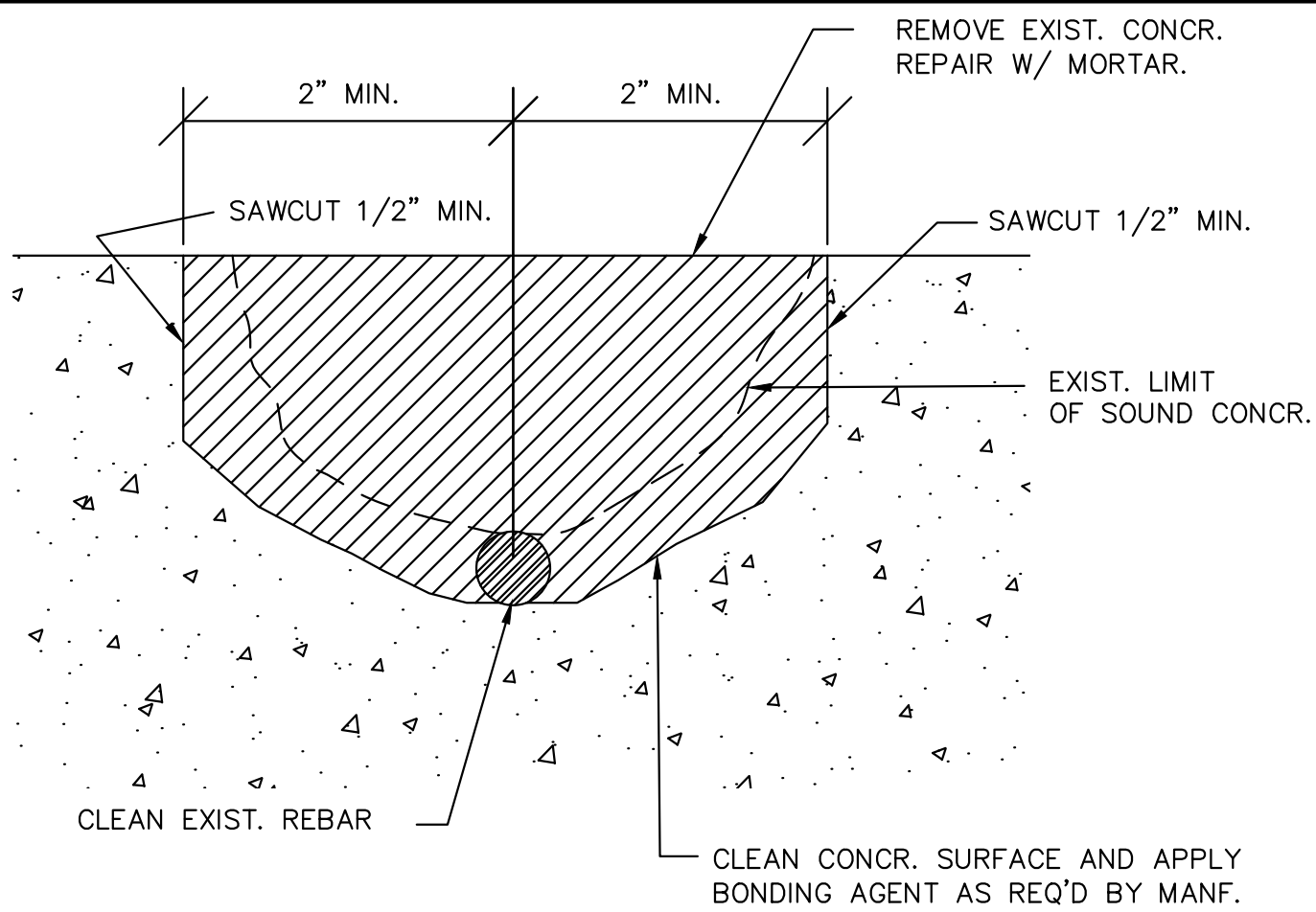
No.	REVISIONS	DATE	BY

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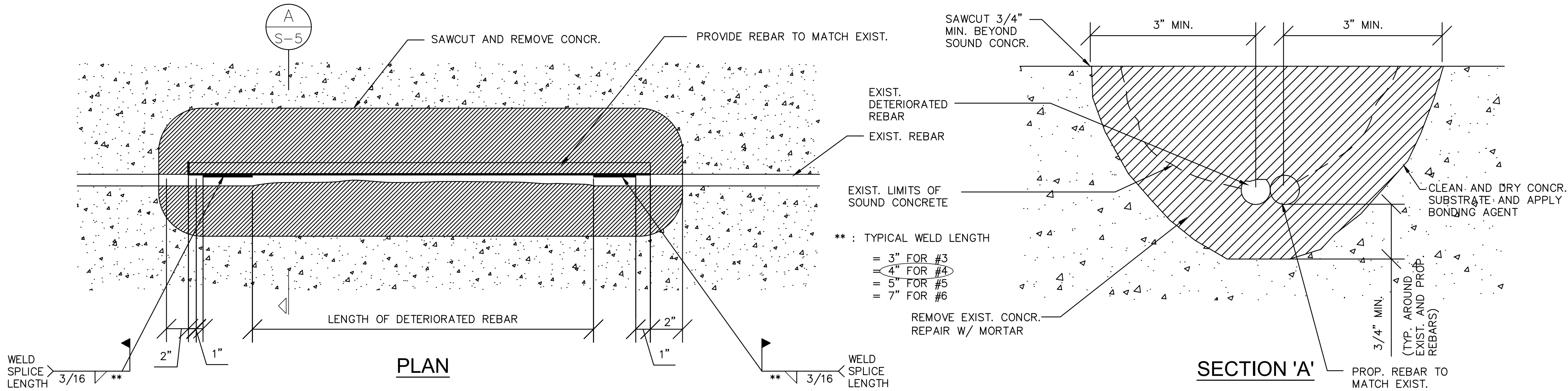
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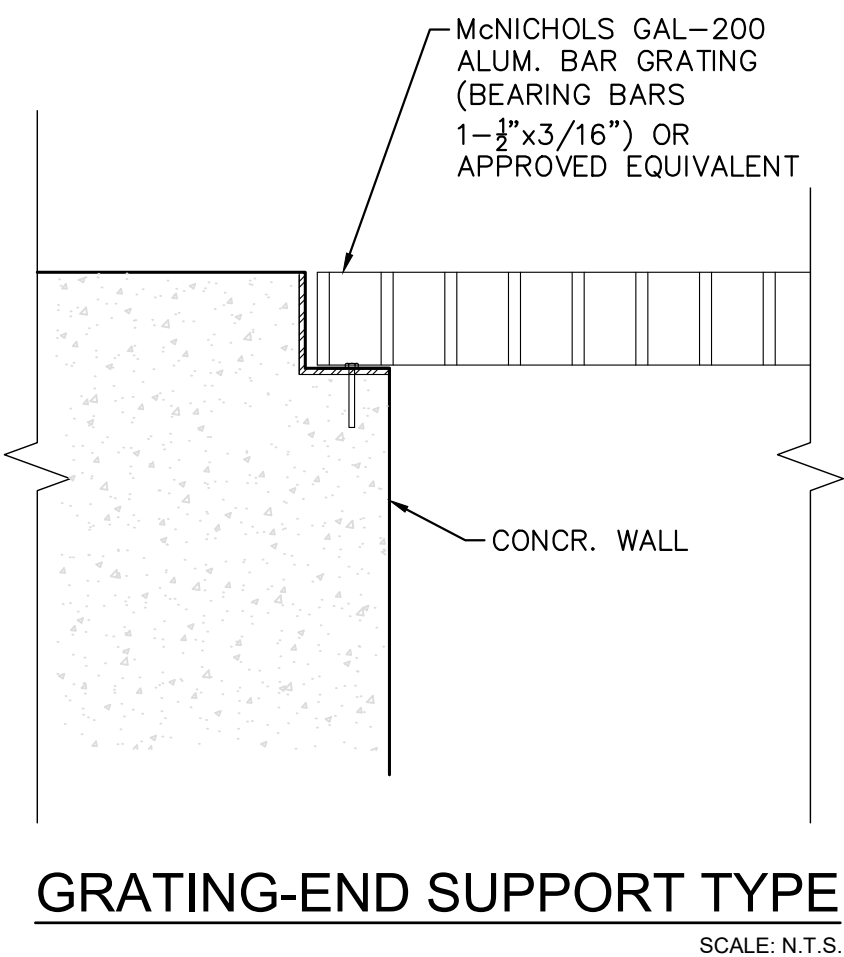
CRACK REPAIR DETAIL (DETAIL 1)
N.T.S.



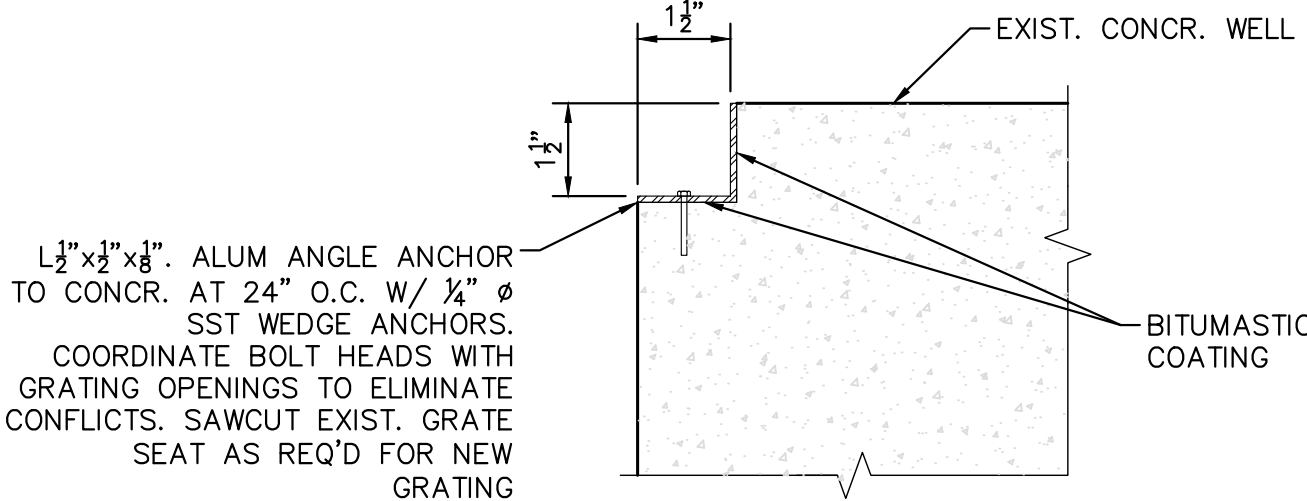
SPALL/DELAMINATION REPAIR DETAIL (DETAIL 2)
N.T.S.



REINFORCEMENT REPAIR DETAIL (DETAIL 3)
N.T.S.



GRATING-END SUPPORT TYPE
SCALE: N.T.S.



GRATING SEAT DETAIL
SCALE: N.T.S.

ALUMINUM COMPONENTS NOTES

- DESIGN, FABRICATE AND ERECT ALUMINUM COMPONENTS IN CONFORMANCE WITH THE ALUMINUM ASSOCIATION, INC. "ALUMINUM DESIGN MANUAL - 2005."
- VERIFY ALL DIMENSIONS AS REQUIRED PRIOR TO FABRICATION OF ANY ALUMINUM COMPONENTS.
- ALUMINUM COMPONENTS SHALL BE FABRICATED USING 6061-T6 MATERIAL.
- ALL WELDING SHALL BE IN ACCORDANCE WITH AWS D1.2.
- USE ALUMINUM MATERIAL THAT IS FULLY WELDABLE WITHIN GRADES AND FROM ANY GRADE TO ANY OTHER GRADE. WELD ALL SHOP CONNECTIONS, U.O.N.
- ALL WELDING SHALL BE DONE BY AN AWS CERTIFIED WELDER AND IN COMPLIANCE WITH AWS D1.2. ALL WELD SIZES SHALL BE THE MAXIMUM ALLOWED BY THE MATERIAL BEING WELDED.
- AT THE CONTRACTOR'S OPTION, SUBSTITUTION OF SHOP WELDS FOR FIELD WELDS MAY BE REQUESTED. ALL SUCH SUBSTITUTIONS SHALL BE CLEARLY NOTED ON THE SHOP DRAWINGS AND SUBMITTED TO THE ENGINEER FOR REVIEW.
- AT THE CONTRACTOR'S OPTION, FIELD SPLICES MAY BE REQUESTED FOR ERECTION PURPOSES. ALL SUCH SPLICES SHALL BE CLEARLY NOTED ON THE SHOP DRAWINGS AND SUBMITTED TO THE ENGINEER FOR REVIEW. FOR EACH PROPOSED SPlice LOCATION, SUBMIT STRUCTURAL DESIGN CALCULATIONS AND DETAILS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF FLORIDA.
- CONNECTIONS NOT DETAILED IN THE STRUCTURAL DRAWINGS AT THE TIME DRAWINGS ARE ISSUED FOR CONSTRUCTION SHALL BE DESIGNED AND DETAILED BY FABRICATOR ACCORDING TO AISC SPECIFICATIONS.
- ALL ALUMINUM COMPONENTS SHALL BE FABRICATED TO FIT AT BOLTED CONNECTIONS WITHIN 1/16 INCH TOLERANCE. MISSING OR MISALIGNED BOLT HOLES SHALL BE CORRECTED BY DRILLING OR PUNCHING. FLAME CUTTING OF BOLT HOLES WILL NOT BE PERMITTED.
- ALUMINUM SURFACES IN CONTACT WITH CONCRETE OR MASONRY SHALL HAVE CONTACT AREA COATED WITH BITUMASTIC.
- SUBMIT SHOP DRAWINGS FOR ALUMINUM COMPONENTS TO ENGINEER FOR REVIEW PRIOR TO FABRICATION. DO NOT REPRODUCE THE STRUCTURAL DRAWINGS FOR USE AS SHOP DRAWINGS.
- ALL BOLT, NUTS, AND WASHERS SHALL BE STAINLESS STEEL 316 SERIES UNLESS OTHERWISE NOTED.
- SHOP DRAWINGS SHALL BE SUBMITTED TO THE OWNER/ENGINEER FOR ALL PREFABRICATED COMPONENTS.
- ALUMINUM GRATING TO BE SUPPLIED IN APPROXIMATELY 80 LB SECTIONS. EACH SECTION TO BE FULLY BANDED AROUND PERIMETER AND ALL PENETRATIONS.

CONCRETE REPAIR NOTES:

GENERAL:

- DETAILS ON THIS SHEET ARE INTENDED FOR USE IN THOSE AREAS CONCRETE RESTORATION IS REQUIRED PRIOR TO COATING INSTALLATION.
- ALL WORK IS TO BE DONE IN THE DRY.
- PERFORM RESTORATION AND REPAIRS ON THE DETERIORATED COMPONENTS OF THE INTERIOR AREAS PER THE DETAILS ON THIS SHEET AND PER THE PROJECT INSTRUCTIONS.
- WELDING: PERFORMED BY AN AWS CERTIFIED WELDER AND IN COMPLIANCE WITH AWS D1.1. ALL WELD SIZES SHALL BE THE MAXIMUM ALLOWED BY MATERIAL BEING WELDED WITH E 70XX ELECTRODE.
- PRESSURE WASH AND CLEAN TRENCH IN STRICT ACCORDANCE WITH THE LINER MANUFACTURERS SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS. PREPARE CONCRETE SURFACES AND COAT IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. REFER TO THE PROJECT SPECIFICATIONS FOR THE APPROVED LIST OF COATINGS.
- FORM WORK: FORM WORK IS TO BE DRY AND FREE FROM DEBRIS PRIOR TO INSTALLATION OF REPAIR MATERIALS. FORMS TO BE PLASTIC COATED OR LINED WITH PLASTIC TO PREVENT REPAIR MATERIALS BONDING TO FORMS.

CONCRETE REPAIR NOTES:

- CONCRETE CRACK REPAIR: CONTRACTOR TO CLEAN AND DRY AREAS AND INSPECT SURFACES FOR CRACKS. WHERE CRACKS ARE OBSERVED THE CONTRACTOR SHALL DO THE FOLLOWING:
 - WATER BLAST CLEAN AND DRY ALL SUBSTRATE
 - SET INJECTION PORTS OVER CRACKS AS SHOWN IN DETAIL
 - PLACE EPOXY ADHESIVE MATERIAL OVER CRACKS AND AROUND INJECTION PORTS MINIMUM 1" WIDE BY 1/4" THICK
 - INJECT RESIN INTO CRACK WITH STEADY PRESSURE FILLING ALL VOIDS
 - REMOVE PORTS AND EXCESS EPOXY
- CONCRETE SPALL AND EROSION REPAIR. CONTRACTOR TO CLEAN AND DRY AREAS AND INSPECT SURFACES FOR SPALLING AND/OR EROSION IN THE EXIST. CONCRETE. WHERE DAMAGED CONCRETE IS OBSERVED THE CONTRACTOR SHALL DO THE FOLLOWING:
 - REMOVE ALL DETERIORATED CONCRETE 1" MINIMUM BEYOND THE LIMIT OF DAMAGED CONCRETE. SEE DETAIL 2.
 - CLEAN AND DRY SUBSTRATE SURFACE.
 - WHEN GREATER THAN 1/2" DIAMETER OF REINFORCING BAR IS EXPOSED, REMOVE CONCRETE FROM UNDERNEATH REBAR TO EXPOSE AT LEAST 1/2" ANNULAR SPACE SURROUNDING REINFORCEMENT. CLEAN EXPOSED REBAR.
 - PLACE NEW MORTAR.
 - FOR APPLICATIONS GREATER THAN THE MAXIMUM LIFT THICKNESS RECOMMENDED BY THE MANUFACTURER, APPLY MORTAR IN LIFTS. SCOUR TOP SURFACE OF EACH INTERMEDIATE LIFT.
- CONCRETE SPALL, EROSION, AND REINFORCEMENT REPAIR: CONTRACTOR TO CLEAN AND DRY AREAS AND INSPECT SURFACES FOR SPALLING AND/OR EROSION IN THE EXIST. CONCRETE. WHERE DAMAGED CONCRETE AND DETERIORATED REBAR IS OBSERVED THE CONTRACTOR SHALL DO THE FOLLOWING:
 - REMOVE ALL DETERIORATED CONCRETE 1/2" MINIMUM BEYOND THE LIMIT OF DAMAGED CONCRETE.
 - REMOVE SUFFICIENT AMOUNT OF CONCRETE BEYOND THE LIMIT OF DETERIORATED REBAR TO OBTAIN REQUIRED SPlice LENGTH OF REBAR. SEE DETAIL 3.
 - REMOVE ANY DAMAGED REBAR 2" BEYOND DAMAGED SECTION. CLEAN AND DRY REBAR AND SURROUNDING CONCRETE.
 - PROVIDE REBAR TO MATCH EXIST. DAMAGED REBAR.
 - WELD NEW SECTION OF REBAR TO EXPOSED SOUND REBAR.
 - CLEAN AND DRY SUBSTRATE SURFACE.
 - PLACE NEW MORTAR.
 - FOR APPLICATIONS GREATER THAN THE MAXIMUM LIFT THICKNESS RECOMMENDED BY THE MANUFACTURER, APPLY MORTAR IN LIFTS. SCOUR TOP SURFACE OF EACH INTERMEDIATE LIFT.
- REBAR TO BE GRADE 60 STEEL.
- BONDING AGENT SHALL BE USED PRIOR TO INSTALLATION OF REPAIR MORTAR. BONDING AGENT SHALL BE EUCLID DURALPREP A.C. OR EQUAL.
- REPAIR MORTAR SHALL BE EUCLID DURALTOP GEL OR EQUAL.
- CRACK REPAIR: RESINS, INJECTED OR GRAVITY FEED: EUCLID DURAL FAST SET LV OR EQUAL. INSTALL IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

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KHA PROJECT
044572100
DATE
MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY BSK
CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS

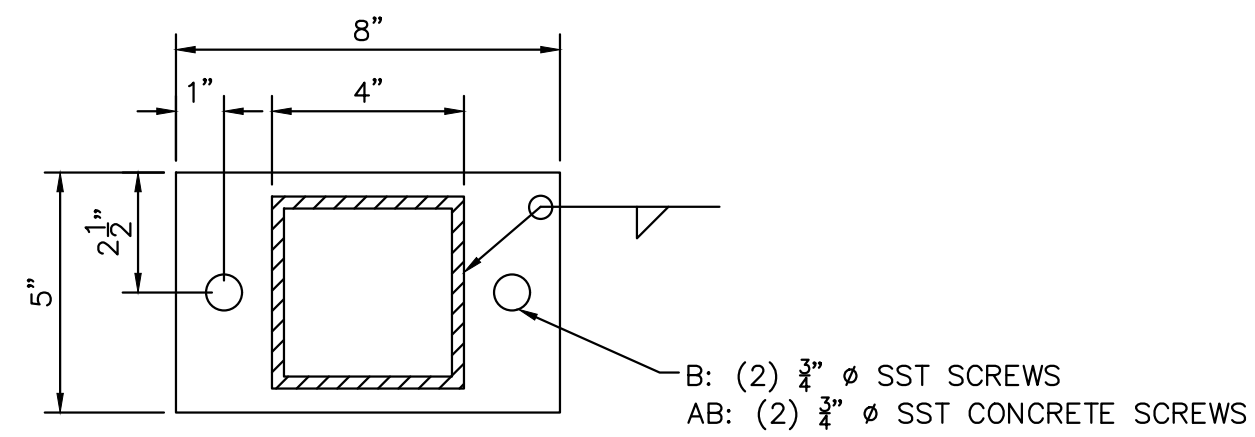
PREPARED FOR
INDIAN RIVER COUNTY UTILITIES
DEPARTMENT

INDIAN RIVER
COUNTY,
FLORIDA

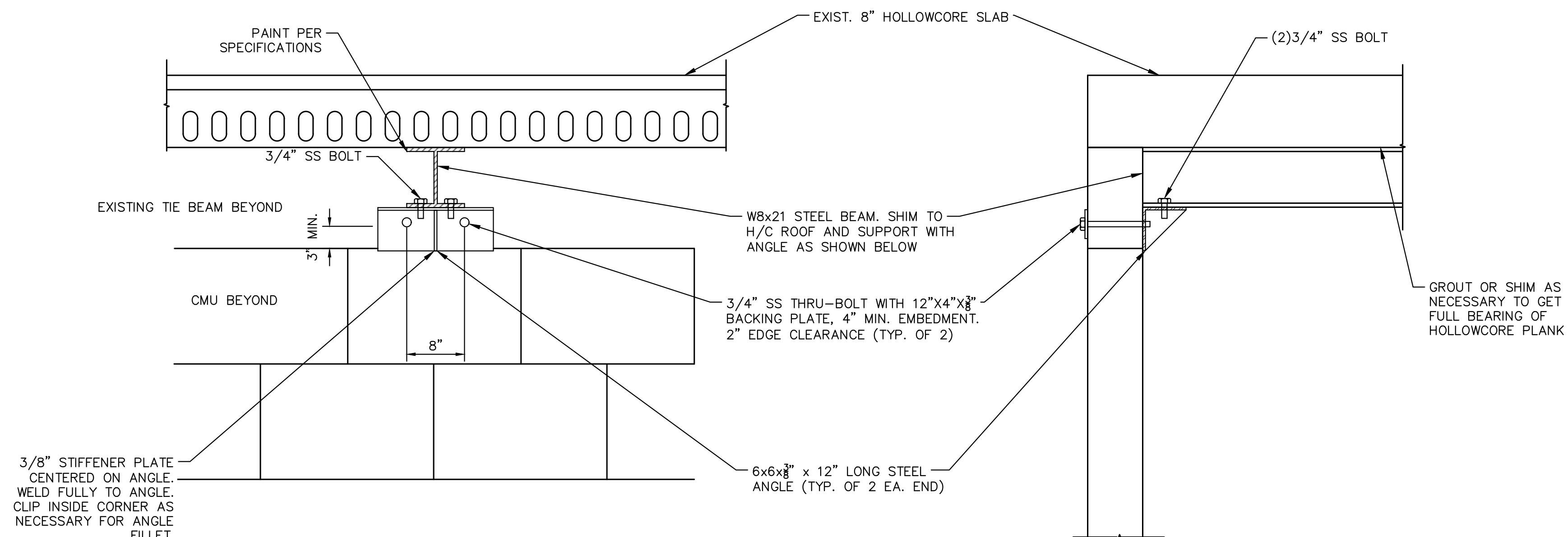
LICENSED PROFESSIONAL
CHELSEA MARAJH
FLORIDA LICENSE NUMBER
84300
DATE: _____

TRENCH REHABILITATION DETAILS

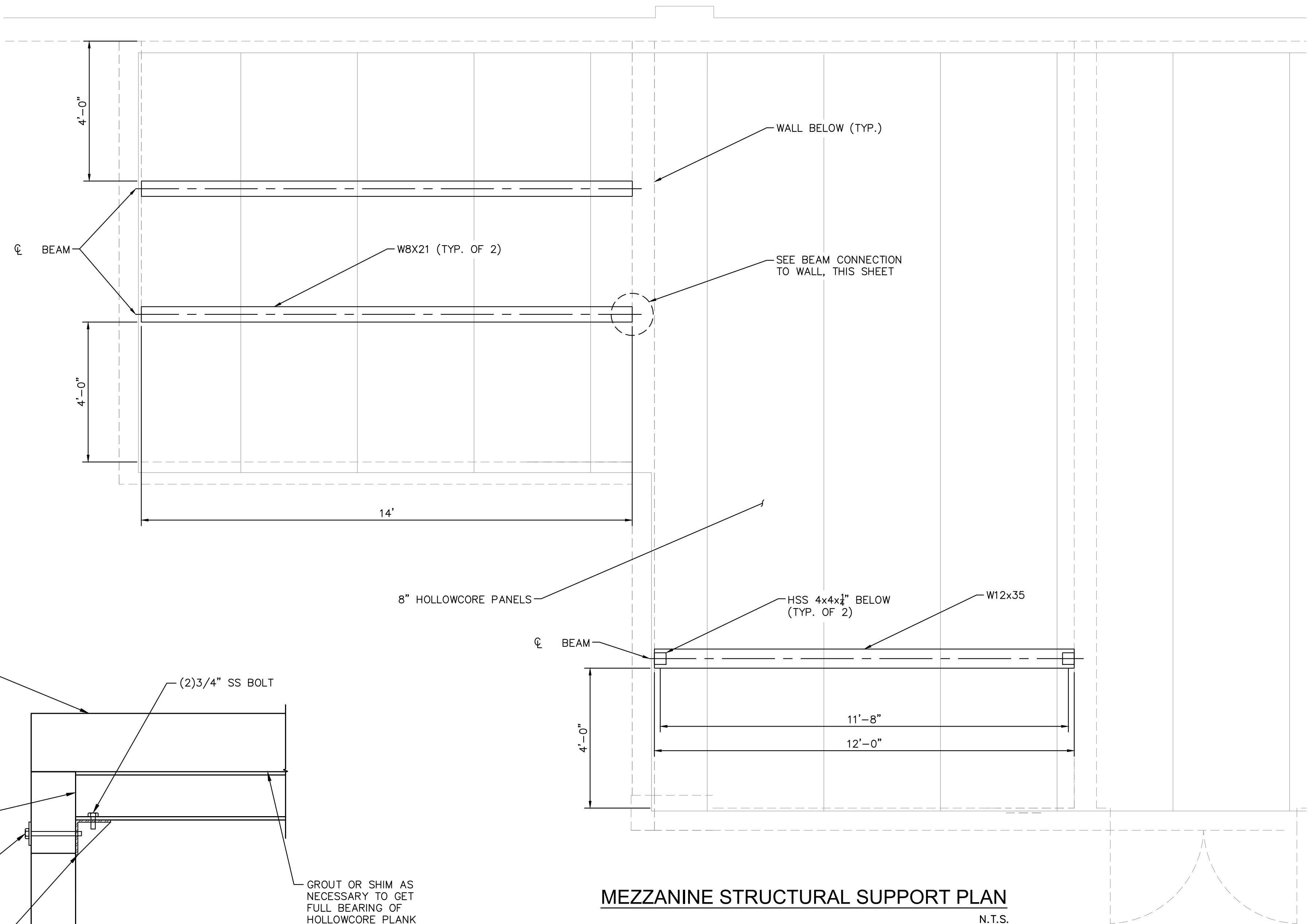
SHEET NUMBER
S-5
59 OF 132



MEZZANINE SUPPORT DETAIL
N.T.S.




MEZZANINE STRUCTURAL SUPPORT DETAIL



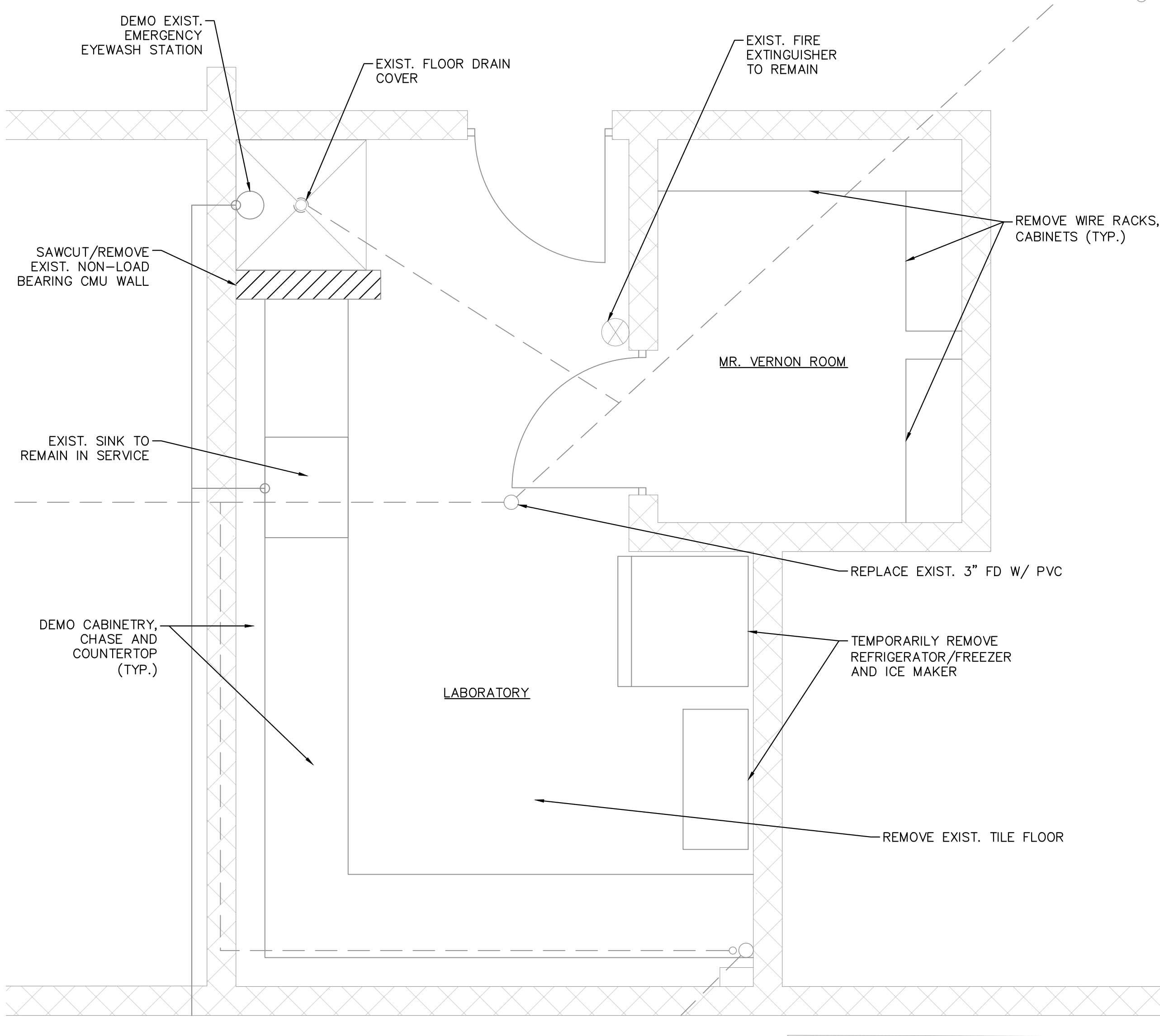
MEZZANINE STRUCTURAL SUPPORT PLAN
N.T.S.

- GENERAL NOTES:
1. CONTRACTOR SHALL CONSTRUCT ALL PROPOSED STRUCTURAL SUPPORT IMPROVEMENTS PRIOR TO CONSTRUCTION OF CLEANING SYSTEM
 2. ALL PROPOSED STRUCTURAL STEEL SHALL BE COATED PER SPECIFICATION 09900

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					DATE MAR 2021		CHELSEA MARAJH		
					SCALE AS SHOWN		FLORIDA LICENSE NUMBER 84300		
					DESIGNED BY NPOB				
					DRAWN BY BSK				
					CHECKED BY MDM		DATE: _____		
No.	REVISIONS			DATE	BY				

Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: S-7 LABORATORY IMPROVEMENTS PLAN March 19, 2021 11:43:35am K:\WPB_Civil\044572100 - South OSLO WTP Design\CAD\PlanSheets\S-9 LABORATORY IMPROVEMENT SECTIONS.dwg This document, together with the concepts and designs presented herein, is an instrument of service and shall be without liability to Kimley-Horn and Associates, Inc. should be without liability to Kimley-Horn and Associates, Inc.

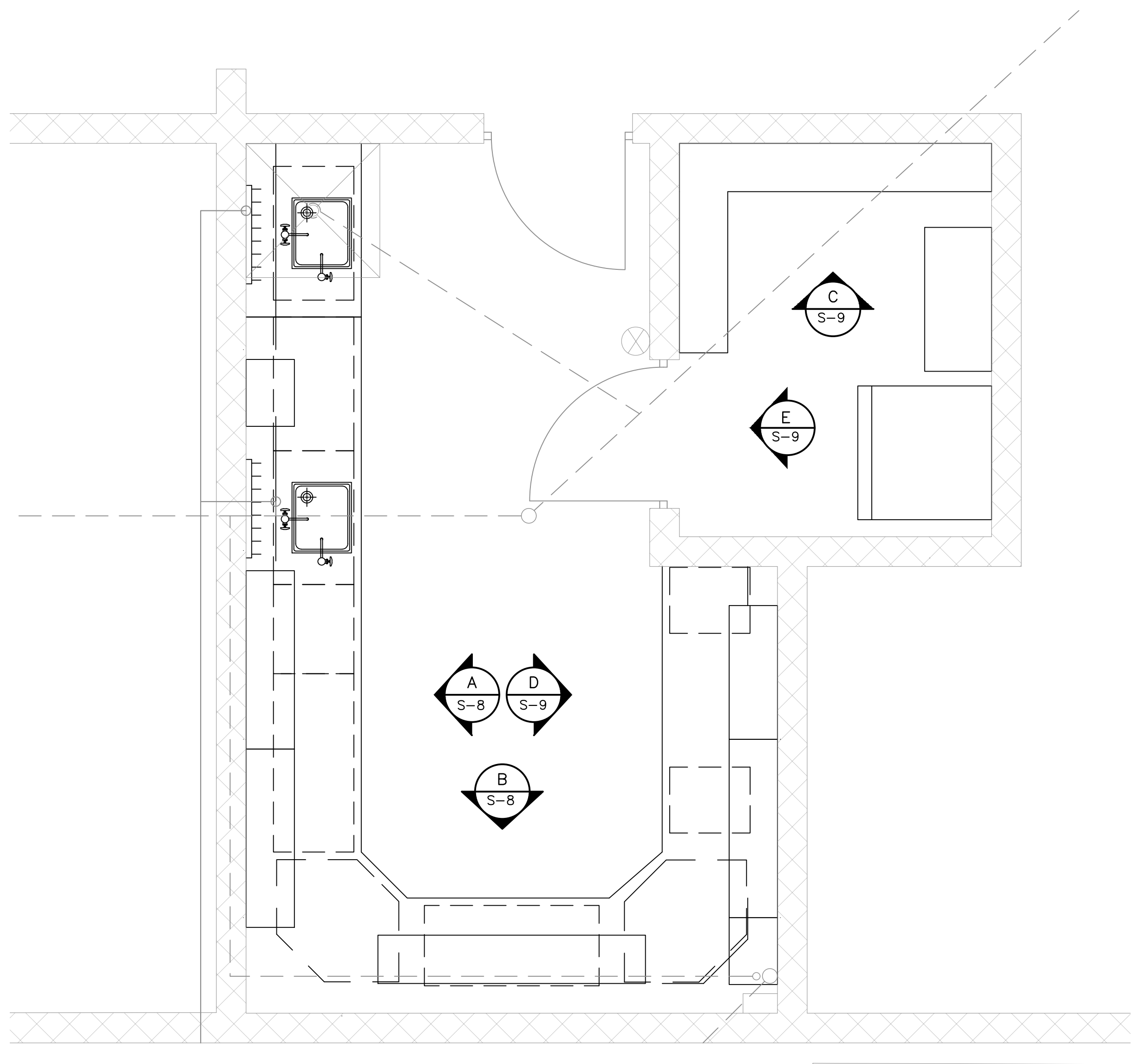


DEMO PLAN
AS NOTED
0 1 2 3
SCALE FEET
24x36 SHEET SIZE: 1/2" = 1'-0"
11x17 SHEET SIZE: 1/4" = 1'-0"
NORTH

ROOM FINISH SCHEDULE NOTES:

1. AREAS TO BE COATED OR PAINTED ARE DESIGNATED. THE DESIGNATION OF 'PAINT' OR 'COATED' DESCRIBES THE SURFACE APPEARANCE WHEN COMPLETED. FOR REQUIRED SURFACE PREPARATION, BLOCK FILLERS, PRIMERS, ETC. REFER TO SPECIFICATION.
2. PROVIDE IMITATION MARBLE THRESHOLD WHERE TILE TRANSITIONS TO OTHER FLOOR COVERING.
3. CONTRACTOR SHALL REMOVE ALL EXIST. AC TILES AND SUPPORT GRIDS FROM ALL EXIST. AREAS THAT HAVE SUSPENDED CEILINGS. INSTALL NEW AC TILES AND SUPPORT GRID IN ALL NEW AND EXIST. AREAS OR AS INDICATED.
4. UNLESS OTHERWISE NOTED, THE CONTRACTOR SHALL PROVIDE SURFACE PREPARATION PER SPECIFICATION AND PAINT ALL EXIST. PAINTED SURFACES AND NEW SURFACES. THIS SHALL INCLUDE WALLS, CEILINGS, AND FLOORS (CONCRETE, DRYWALL, CMU).
5. ITEMS INSTALLED ON SURFACES TO BE PAINTED, SHALL BE REMOVED PRIOR TO SURFACE PREP. AND COATING OPERATIONS. THIS WILL INCLUDE ITEMS SUCH AS PICTURES, SIGNAGE, DRAWINGS, DIAGRAMS AND SIMILAR. REMOVED ITEMS SHALL BE RE-INSTALLED UPON COMPLETION OF WORK.
6. PATCH ALL HOLES IN EXIST. SURFACES PRIOR TO COATING.
7. SEE SPECIFICATIONS FOR EXTERIOR COATING REQUIREMENTS.
8. MASK AND PROTECT ALL EXIST. EQUIPMENT AND FACILITIES FROM DRIPS AND OVER SPRAY.
9. IN ANY LOCATION WHERE THE FLOORING IS DESIGNATED FOR REMOVAL, NEW FLOORING SHALL BE INSTALLED PER THE ROOM FINISH SCHEDULE.

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IMPROVEMENTS PLAN
AS NOTED
0 1 2 3
SCALE FEET
24x36 SHEET SIZE: 1/2" = 1'-0"
11x17 SHEET SIZE: 1/4" = 1'-0"
NORTH

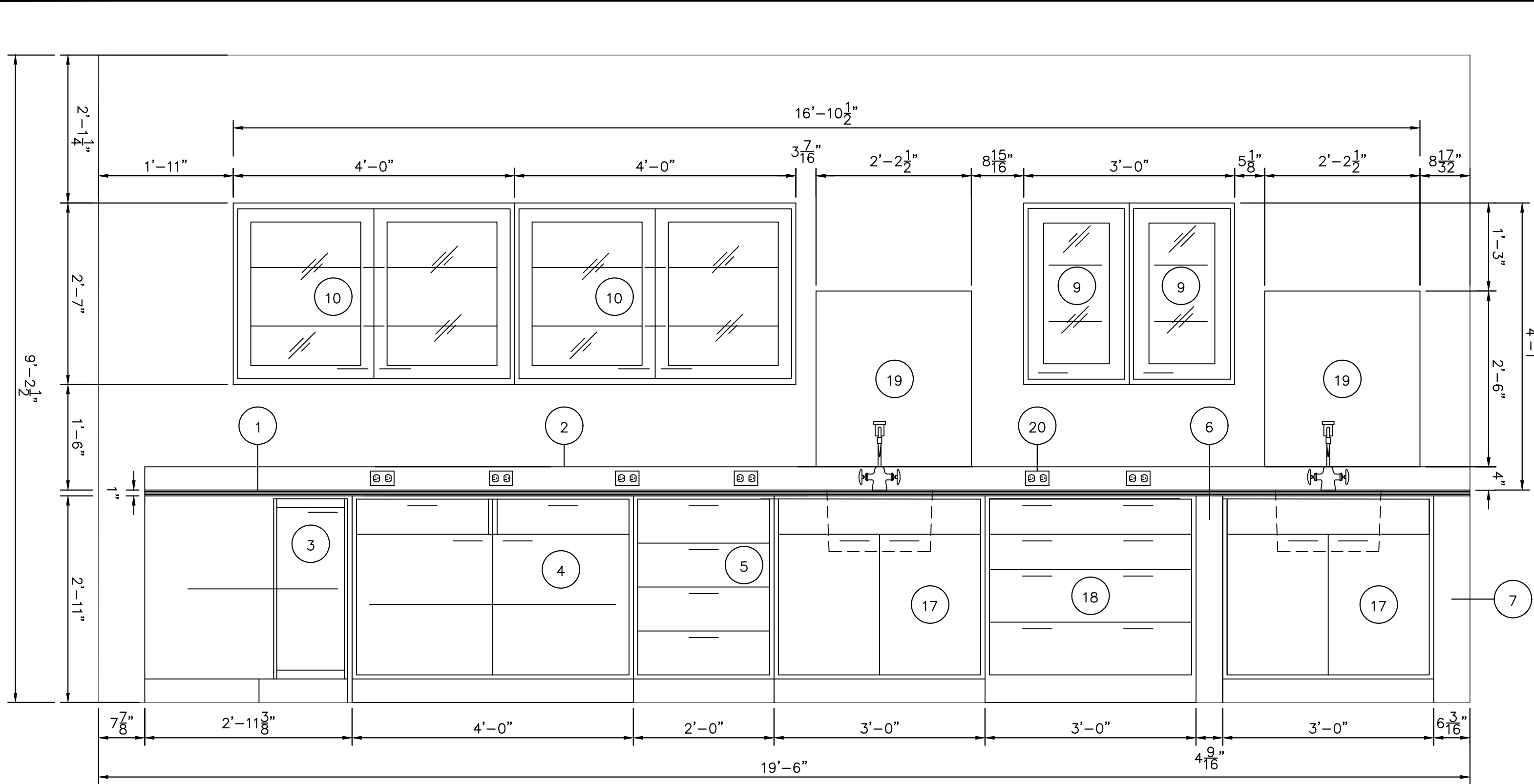
ROOM FINISH SCHEDULE													
ROOM	FLOOR	BASE	WALLS								CEILING	CLG HT	REMARKS
			NORTH		EAST		SOUTH		WEST	PTD			
NAME			MATERIAL	FINISH	MATERIAL	FINISH	MATERIAL	FINISH	MATERIAL	FINISH			
LABORATORY	C.T.	4" C.T.	CMU	PTD	CMU	PTD	CMU	PTD	CMU	PTD	SAT	9'-2 1/2"	PREPARE AND RE-PAINT EXIST.
STORAGE	C.T.	4" C.T.	CMU	PTD	CMU	PTD	CMU	PTD	CMU	PTD	SAT	9'-2 1/2"	PREPARE AND RE-PAINT EXIST.

ABBREVIATIONS

C.T.	CERAMIC TILE	FRP	FIBER REINFORCED PLASTIC	VOL	VOLUME
GYP.BD.	GYPSUM BOARD	VCT	VINYL COMPOSITION TILE	SAT	SUSPENDED ACOUSTICAL TILE
CPT	CARPET	SC	SEALED CONCRETE	MRSAT	MOISTURE RESISTANT SUSPENDED ACOUSTICAL TILE
CONCR.	CONCRETE	VWC	VINYL WALL COVERING	RUB	RUBBER
MRGB	MOISTURE RESISTANT GYPSUM BOARD	PTD	PAINT	SPC	SPECIAL COATINGS

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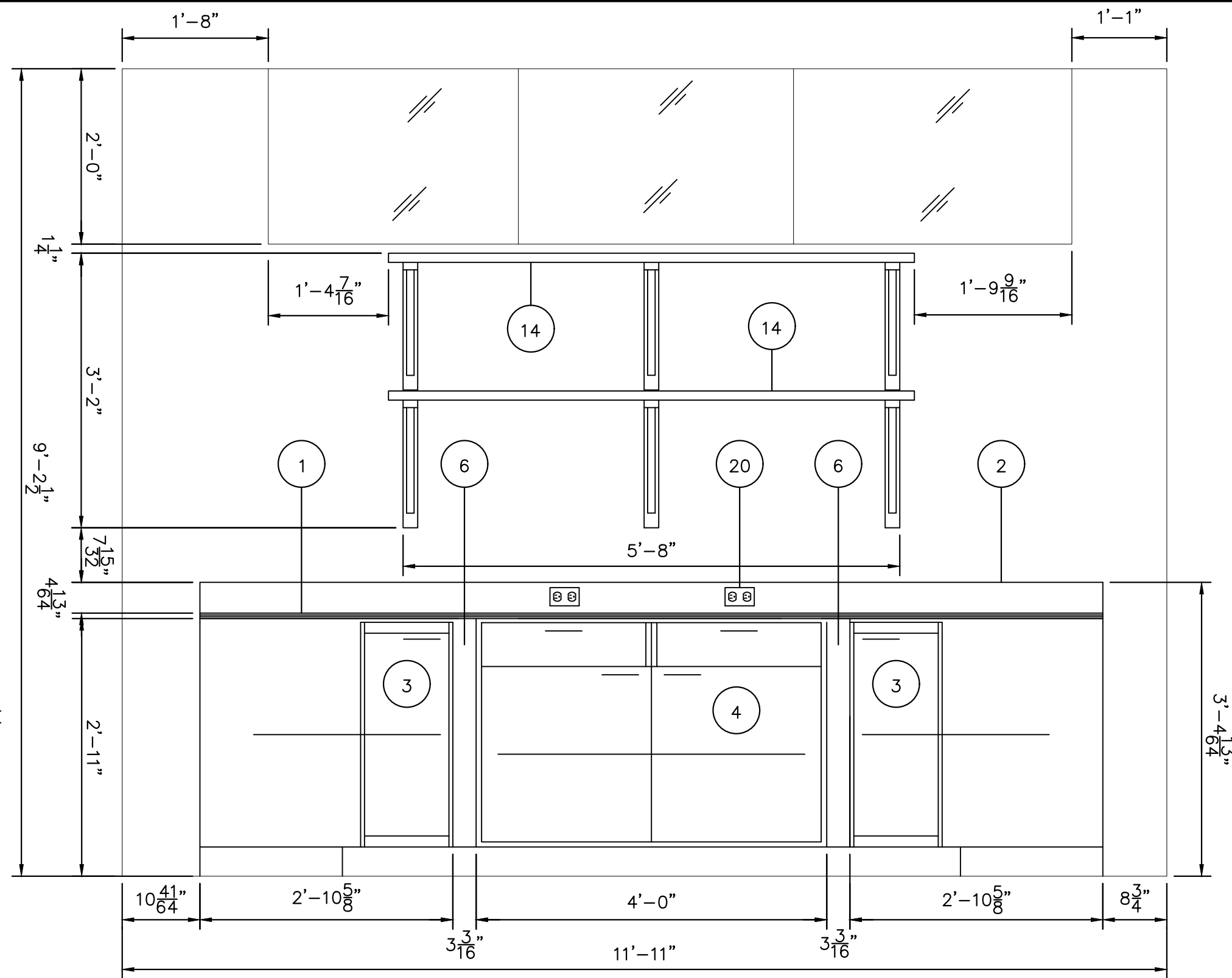
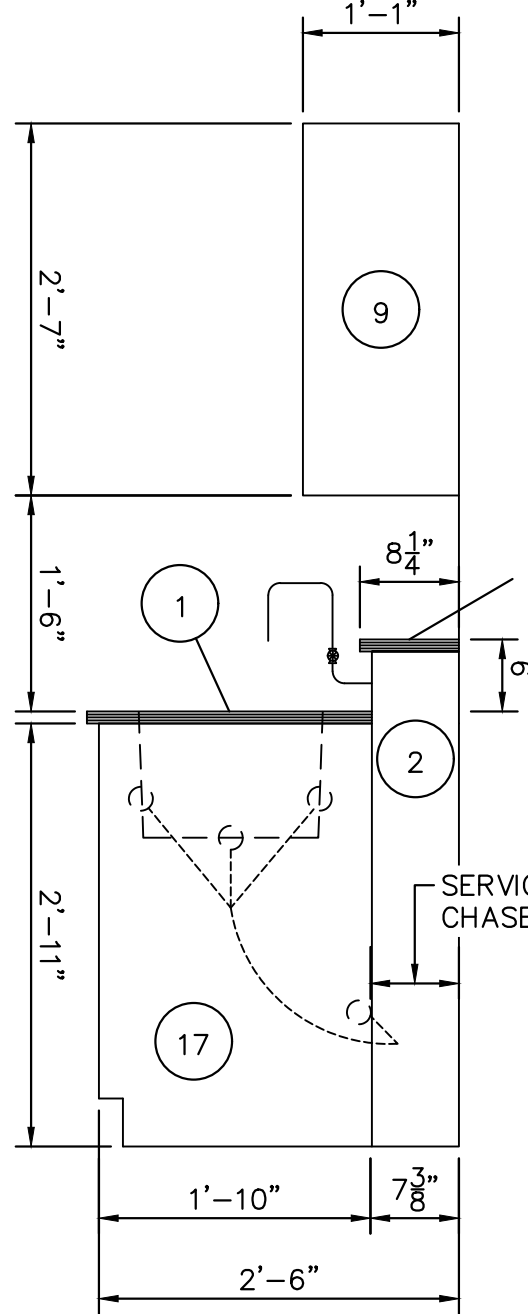


A
S-8
ELEVATION A
Scale: AS NOTED

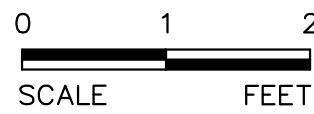
LABORATORY FURNITURE EQUIPMENT SCHEDULE

- 1" EPOXY RESIN TOP.
- CURB AND SHELF WITH 1" EPOXY RESIN TOP.
- CORNER CUPBOARD CABINET WITH ADJUSTABLE SHELF.
- 48" X 35" X 22" COMBINATION DRAWER/CUPBOARD BASE CABINET WITH ADJUSTABLE FULL WIDTH SHELVES.
- 24" X 35" X 22" FOUR EQUAL SIZE DRAWER CABINET.
- FILLER PANEL - SIZE AS REQUIRED.
- END FILLER PANEL - SIZE AS REQUIRED.
- 12" X 35" X 22" FOUR EQUAL SIZE DRAWER CABINET.
- 36" X 31" X 13" WALL CASE WITH ADJUSTABLE SHELVES AND GLAZED DOUBLE SWING DOORS.
- 48" X 31" X 13" WALL CASE WITH ADJUSTABLE SHELVES AND GLAZED DOUBLE SWING DOORS.
- 18" X 31" X 13" CORNER WALL CASE WITH ADJUSTABLE SHELVES AND GLAZED SWING DOORS.
- 18" X 30" X 30" 3-DRAWER FILE CABINET WITH PULL OUT SLIDE.
- 56 3/8" X 18" WALL SHELVES ON 3 SUPPORTS WITH 1" THICK BLACK LAMINATE.
- 68" X 18" WALL SHELVES ON 3 SUPPORTS WITH 1" THICK BLACK LAMINATE.
- 60" X 18" WALL SHELVES ON 3 SUPPORTS WITH 1" THICK BLACK LAMINATE.
- 36" X 30" X 22" KNEE SPACE PANEL WITH APPROXIMATE WIDTH DRAWER AND FRAME.
- 36" X 35" X 22" MODIFIED BLACK EPOXY SINK BASE UNIT WITH SINK SUPPORTS. UNIT SHALL COME COMPLETE WITH SINK, PLUG, SUPPORTS, BROAN H/C MIXING. GOOSENECK FAUCET WITH WHITE COLOR TECH COATING.
- 36" X 35" X 22" FULL WIDTH DRAWER BASE UNIT.
- 26 1/2" X 30" MODIFIED EPOXY RESIN DRYING BOARD WITH PEGS.
- GFI ELECTRICAL RECEPTACLE, FLUSH MOUNT WITH STAINLESS STEEL COVER PLATE - SEE ELECTRICAL DRAWING FOR SIZE.
- FREE STANDING GFI ELECTRICAL RECEPTACLE WITH ALUMINUM BOX AND COVER PLATE - SEE ELECTRICAL DRAWING FOR SIZE.

NOTE:
ALL DOOR HARDWARE TO BE SST AND BE SIMILAR STYLE THROUGHOUT



B
S-8
ELEVATION B
Scale: AS NOTED



24x36 SHEET SIZE: 3/4" = 1'-0"
11x17 SHEET SIZE: 5/8" = 1'-0"

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DATE MAR 2021
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DESIGNED BY NPOB
DRAWN BY SS
CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
**INDIAN RIVER COUNTY UTILITIES
DEPARTMENT**

INDIAN RIVER
COUNTY,

FLORIDA

LICENSED PROFESSIONAL

CHELSEA MARAJH

FLORIDA LICENSE NUMBER
84300

DATE: _____

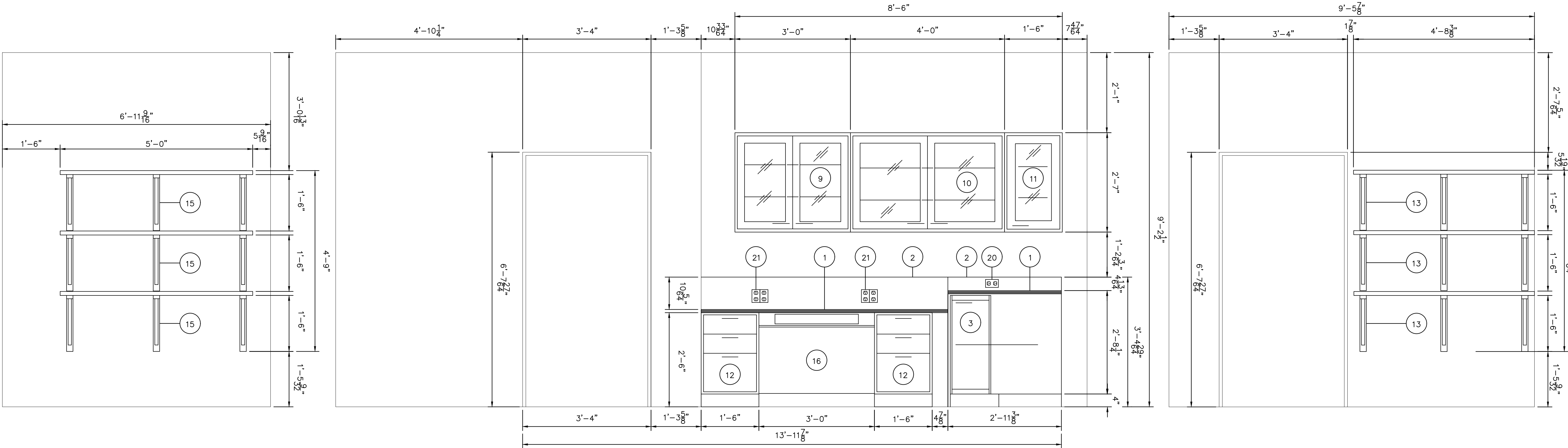
**LABORATORY IMPROVEMENT
SECTIONS** ★

SHEET NUMBER

S-8

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C
S-9
ELEVATION C
Scale: AS NOTED

D
S-9
ELEVATION D
Scale: AS NOTED

E
S-9
ELEVATION E
Scale: AS NOTED

LABORATORY FURNITURE EQUIPMENT SCHEDULE

- 1" EPOXY RESIN TOP.
- CURB AND SHELF WITH 1" EPOXY RESIN TOP.
- CORNER CUPBOARD CABINET WITH ADJUSTABLE SHELF.
- 48" X 35" X 22" COMBINATION DRAWER/CUPBOARD BASE CABINET WITH ADJUSTABLE FULL WIDTH SHELVES.
- 24" X 35" X 22" FOUR EQUAL SIZE DRAWER CABINET.
- FILLER PANEL – SIZE AS REQUIRED.
- END FILLER PANEL – SIZE AS REQUIRED.
- 12" X 35" X 22" FOUR EQUAL SIZE DRAWER CABINET.
- 36" X 31" X 13" WALL CASE WITH ADJUSTABLE SHELVES AND GLAZED DOUBLE SWING DOORS.
- 48" X 31" X 13" WALL CASE WITH ADJUSTABLE SHELVES AND GLAZED DOUBLE SWING DOORS.
- 18" X 31" X 13" CORNER WALL CASE WITH ADJUSTABLE SHELVES AND GLAZED SWING DOORS.
- 18" X 30" X 30" 3–DRAWER FILE CABINET WITH PULL OUT SLIDE.
- 56 3/8" X 18" WALL SHELVES ON 3 SUPPORTS WITH 1" THICK BLACK LAMINATE.
- 68" X 18" WALL SHELVES ON 3 SUPPORTS WITH 1" THICK BLACK LAMINATE.
- 60" X 18" WALL SHELVES ON 3 SUPPORTS WITH 1" THICK BLACK LAMINATE.
- 36" X 30" X 22" KNEE SPACE PANEL WITH APPROXIMATE WIDTH DRAWER AND FRAME.
- 36" X 35" X 22" MODIFIED BLACK EPOXY SINK BASE UNIT WITH SINK SUPPORTS. UNIT SHALL COME COMPLETE WITH SINK, PLUG, SUPPORTS, BROAN H/C MIXING. GOOSENECK FAUCET WITH WHITE COLOR TECH COATING.
- 36" X 35" X 22" FULL WIDTH DRAWER BASE UNIT.
- 26 1/2" X 30" MODIFIED EPOXY RESIN DRYING BOARD WITH PEGS.
- GFI ELECTRICAL RECEPTACLE, FLUSH MOUNT WITH STAINLESS STEEL COVER PLATE – SEE ELECTRICAL DRAWING FOR SIZE.
- FREE STANDING GFI ELECTRICAL RECEPTACLE WITH ALUMINUM BOX AND COVER PLATE – SEE ELECTRICAL DRAWING FOR SIZE.

NOTE:
ALL DOOR HARDWARE TO BE SST AND BE SIMILAR STYLE THROUGHOUT

★ DENOTES INFORMATION INTENDED FOR ADDITIVE
ALTERNATE ITEMS ONLY

No.	REVISIONS	DATE	BY

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KHA PROJECT 044572100
DATE MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY JTV
CHECKED BY MDM

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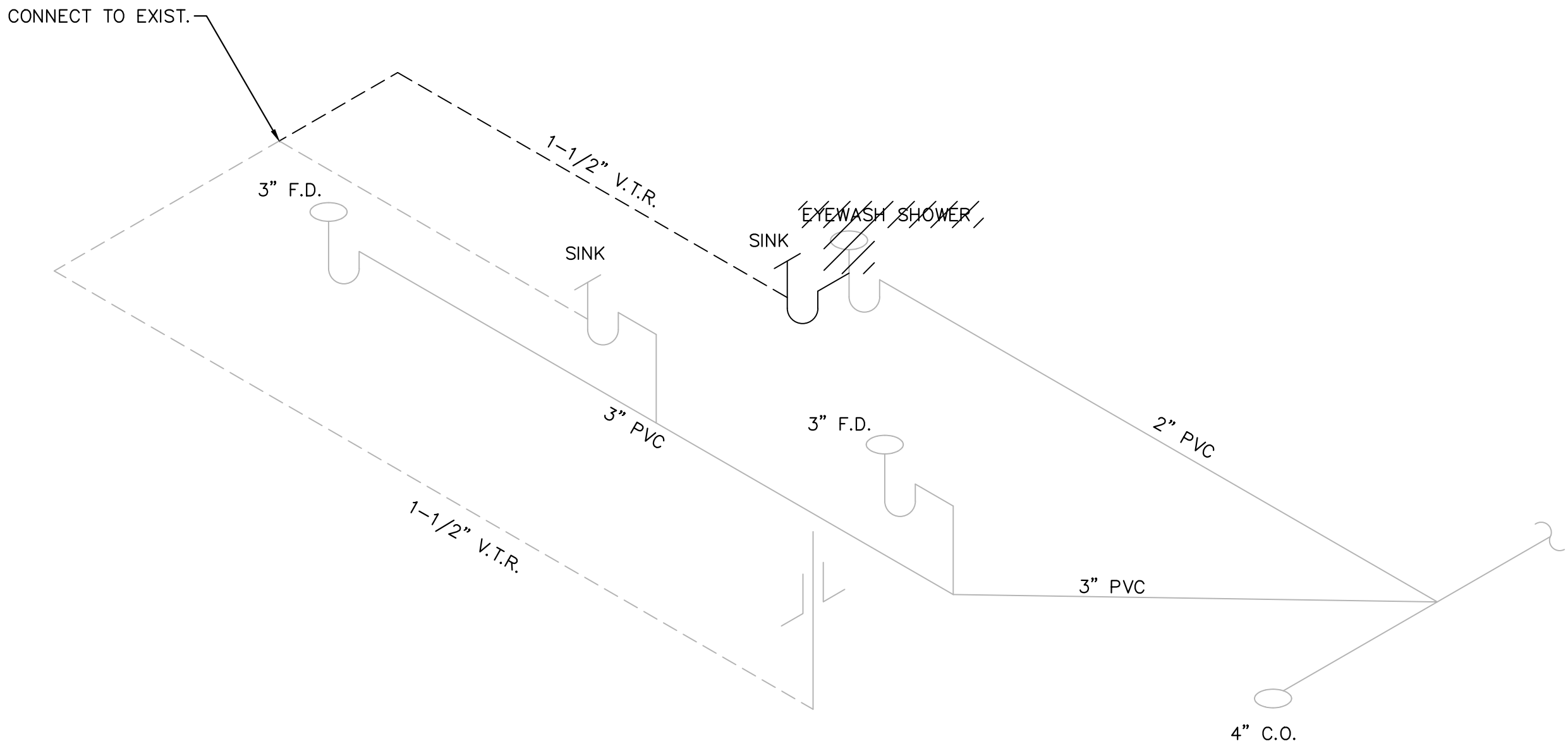
**LABORATORY IMPROVEMENT
SECTIONS** ★

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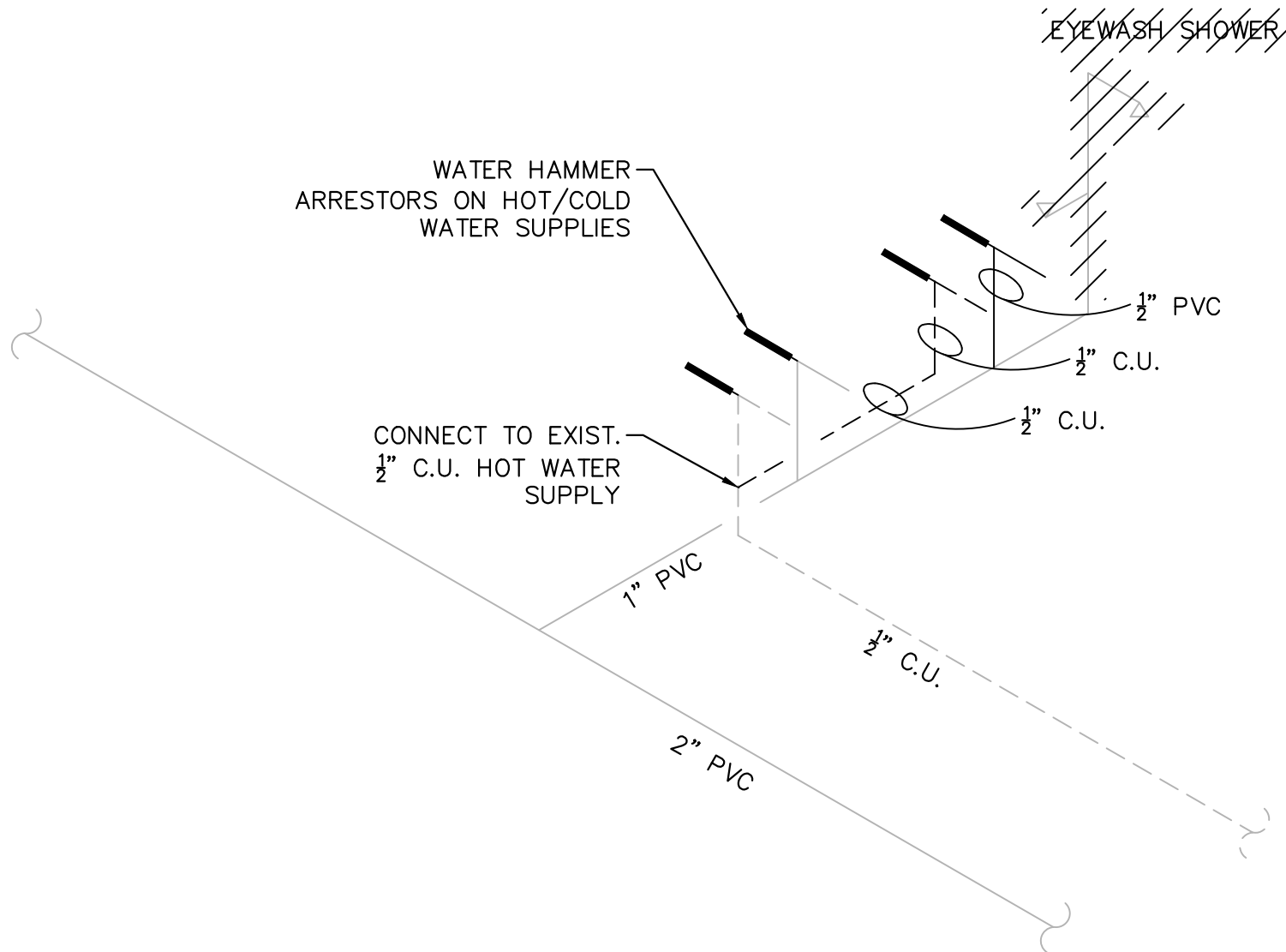
S-9

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SANITARY RISER DIAGRAM
N.T.S.



WATER RISER DIAGRAM
N.T.S.

LEGEND AND SYMBOLS

—	SANITARY PIPES
—	VENT PIPES
—	COLD WATER PIPES
—	HOT WATER PIPES
⊗	GATE VALVE
BT	BATH TUB
CO	CLEAN OUT PLUG
CU	HOT WATER COPPER PIPES
DBL.SK	DOUBLE COMPART.SINK
DF	DRINKING FOUNTAIN
DN	DOWN
FD	FLOOR DRAIN
FU	FIXTURE UNIT
HB	HOSEBIBB
HCLAV	HANDICAPPED LAVATORY
HCWC	HANDICAPPED WTR.CLOSET
HW	HOT WATER
JS	JANITOR (MOP) SINK
LAV	LAVATORY
PVC	COLD WATER PVC PIPES
REF	REFRIGERATOR
SAN	SANITARY
SH	SHOWER
SK	SINGLE COMPART.SINK
UTG	UP TO GRADE
V	VENT
VTR	VENT THROUGH ROOF
WC	WATER CLOSET, FLUSH V.
WH	WATER HEATER

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DEPARTMENT

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FLORIDA

LICENSED PROFESSIONAL

NICHOLAS P.O. BLACK

FLORIDA LICENSE NUMBER
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DATE: _____

PLUMBING RISER DIAGRAMS ★

SHEET NUMBER

P-1

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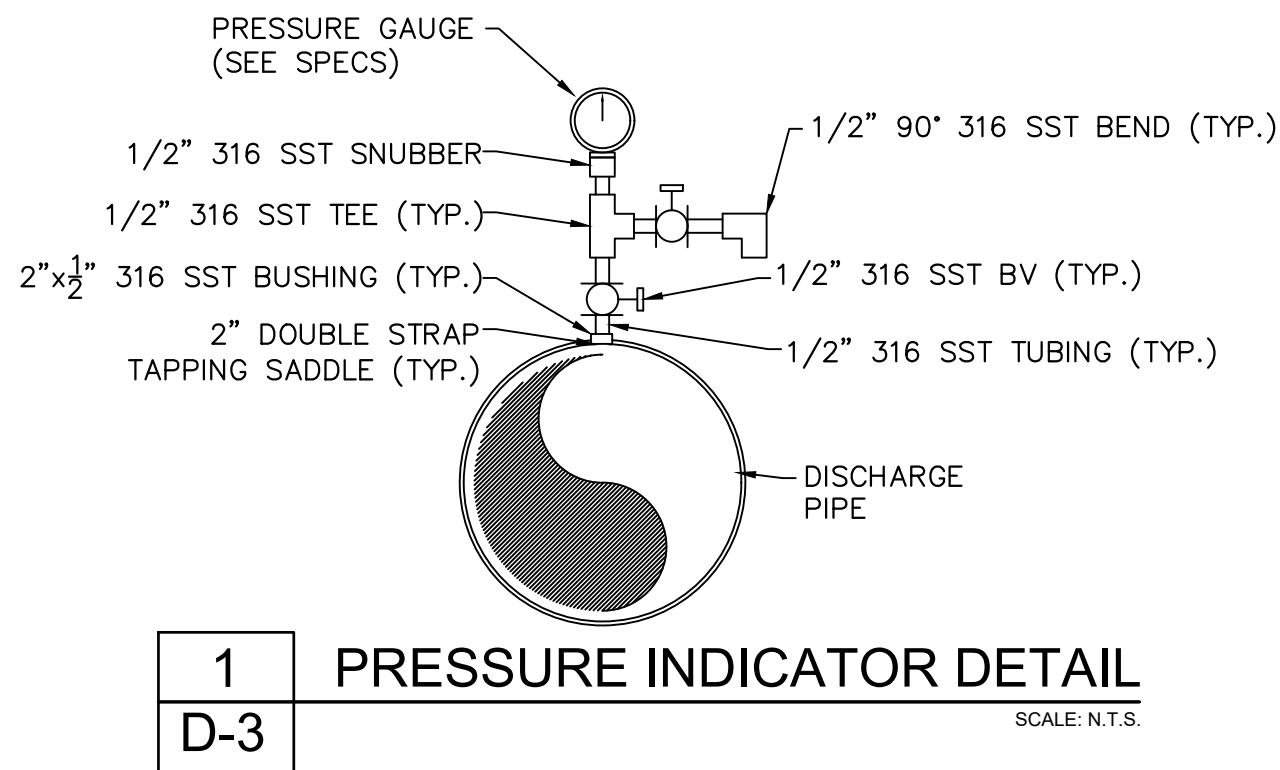
PIPE SUPPORTS

SHEET NUMBER

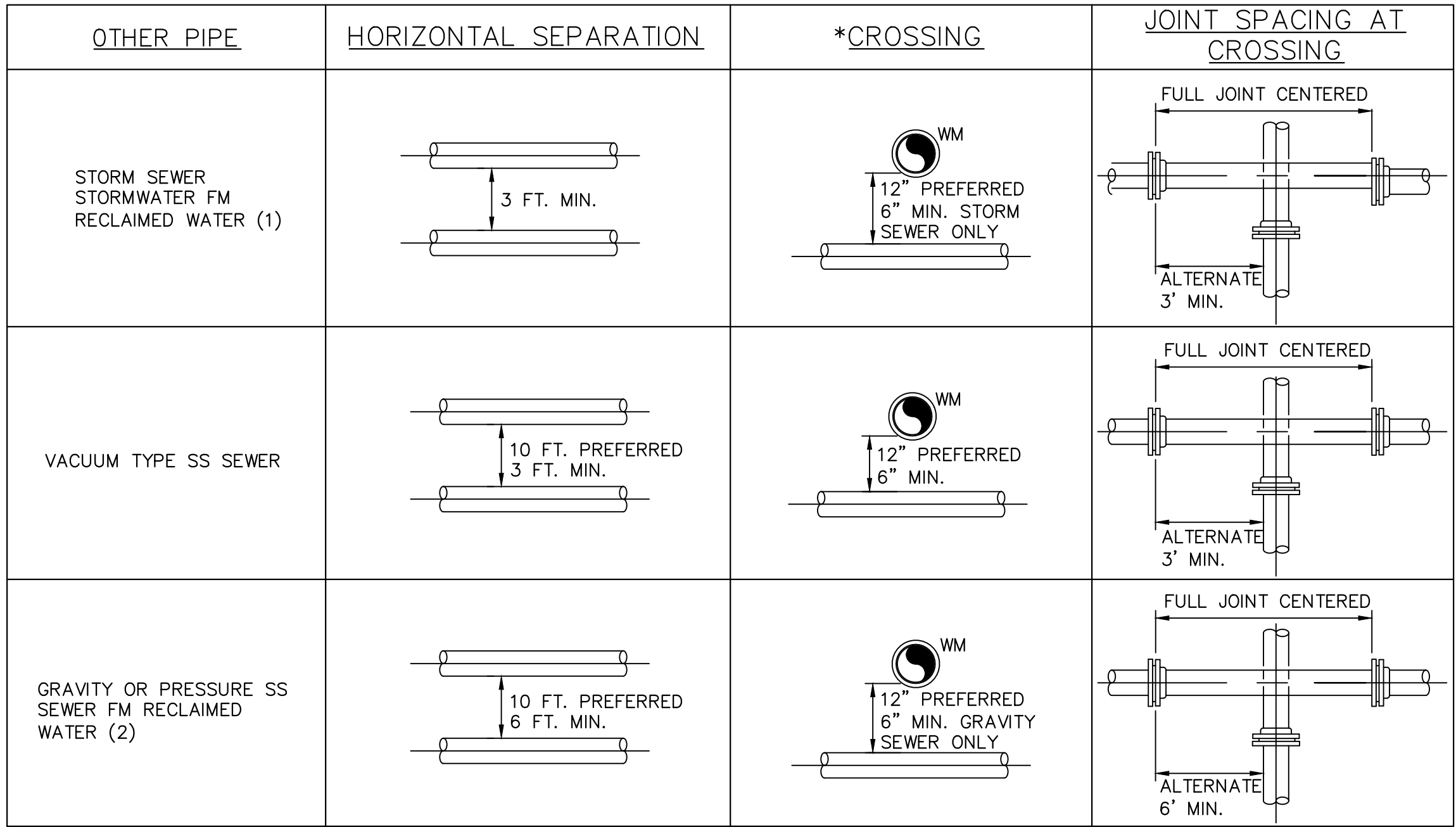
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66 OF 132

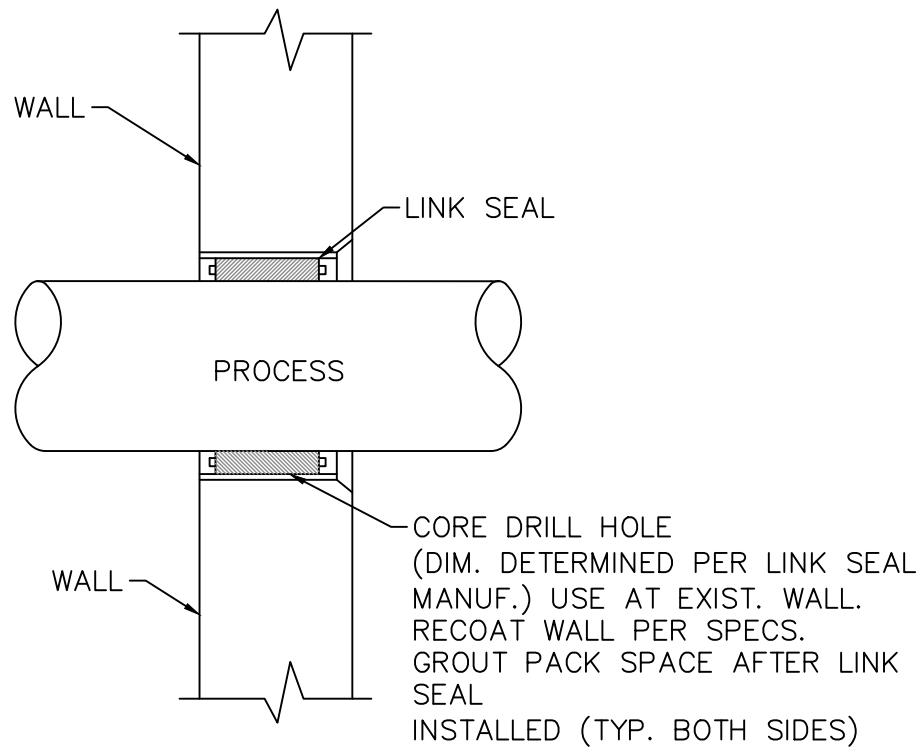
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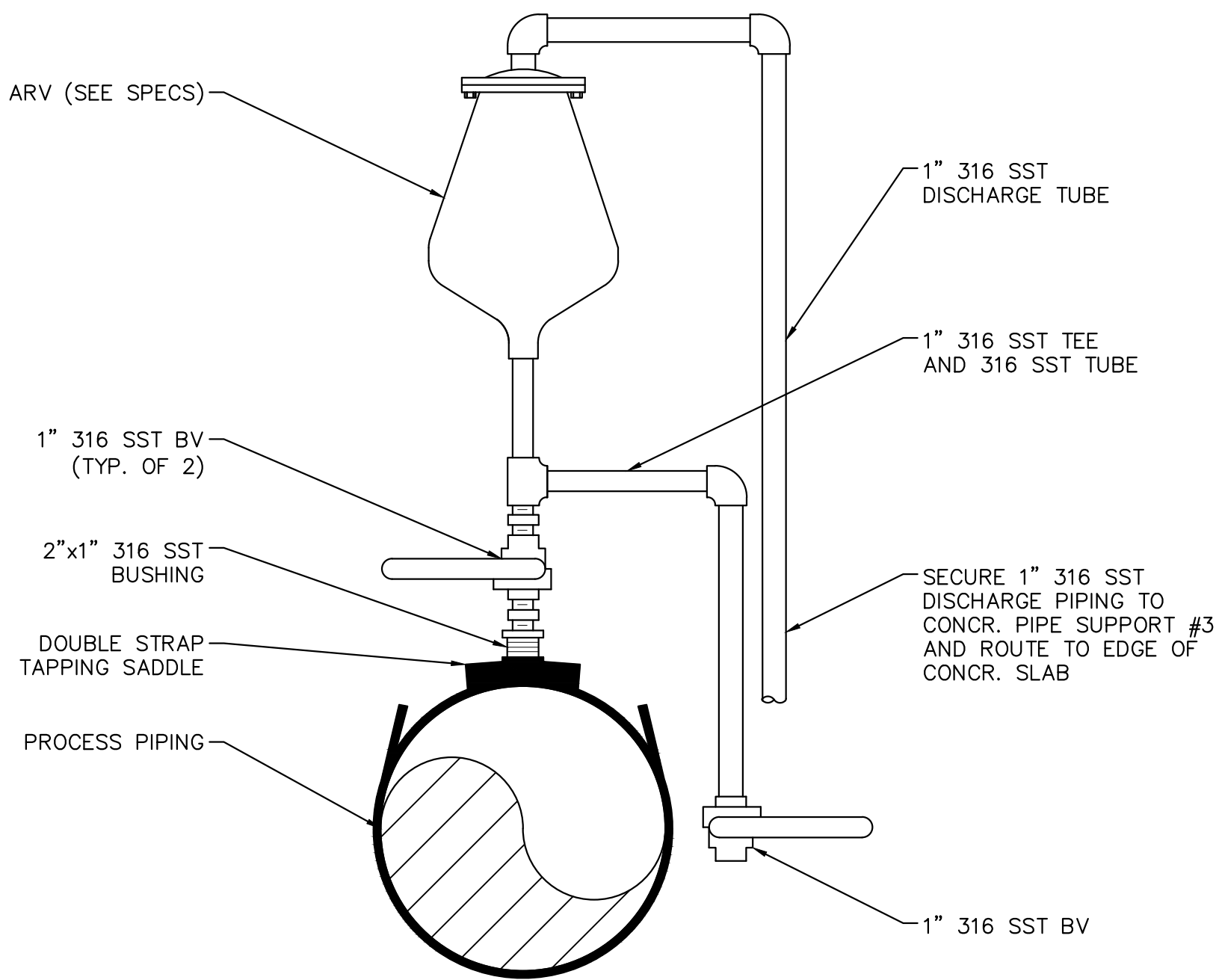
1 PRESSURE INDICATOR DETAIL
D-3 SCALE: N.T.S.



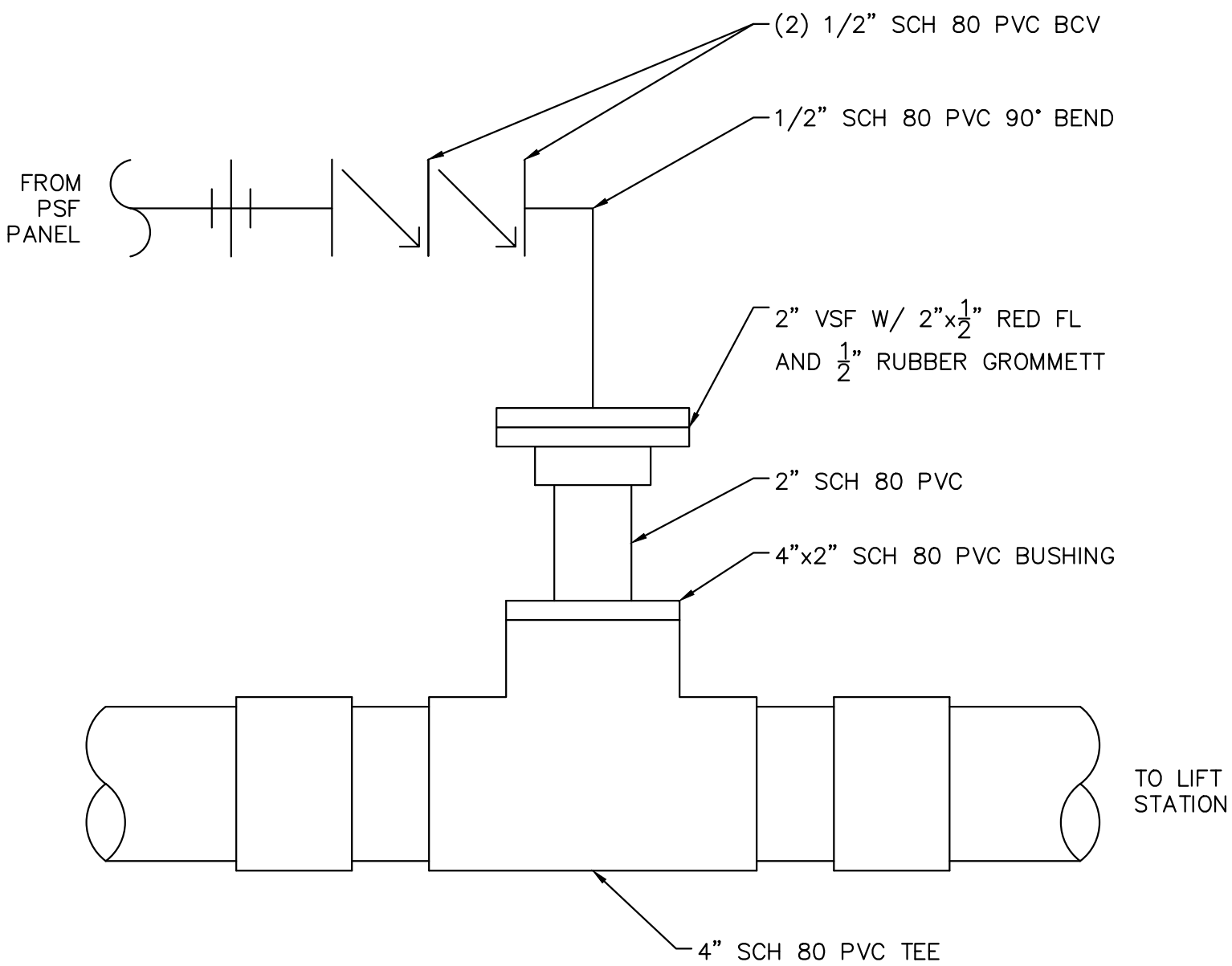
2 WATERMAIN CROSSING / SEPARATION DETAIL
D-3 SCALE: N.T.S.



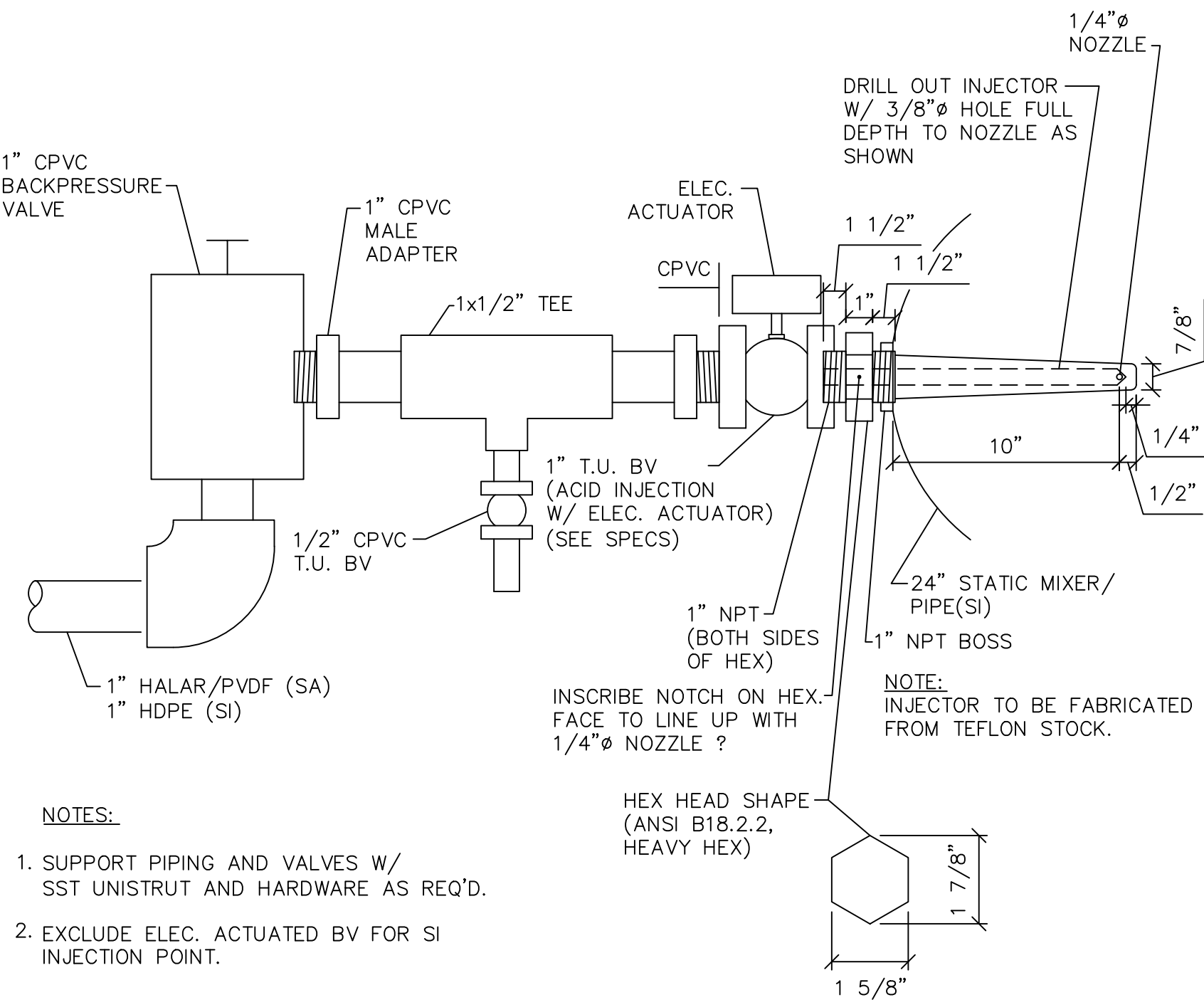
3 WALL SLEEVE / LINK SEAL DETAIL
D-3 SCALE: N.T.S.



4 AIR RELEASE VALVE AND SAMPLE TAP
D-3 SCALE: N.T.S.



5 BLOWDOWN CONNECTION
D-3 SCALE: N.T.S.



- NOTES:
1. SUPPORT PIPING AND VALVES W/ SST UNISTRUT AND HARDWARE AS REQ'D.
 2. EXCLUDE ELEC. ACTUATED BV FOR SI INJECTION POINT.

6 INJECTOR DETAIL
D-3 SCALE: N.T.S.

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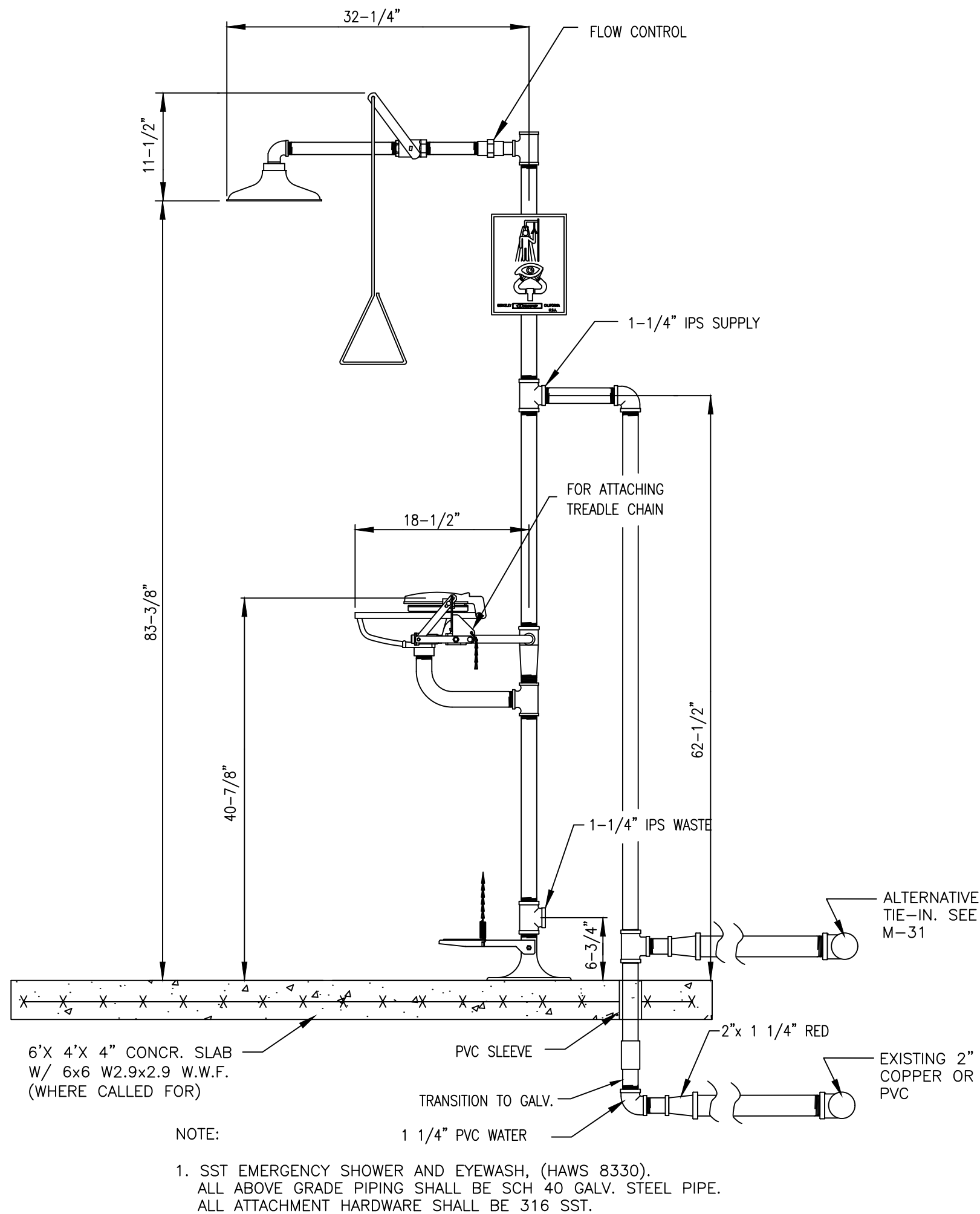
MECHANICAL DETAILS

SHEET NUMBER

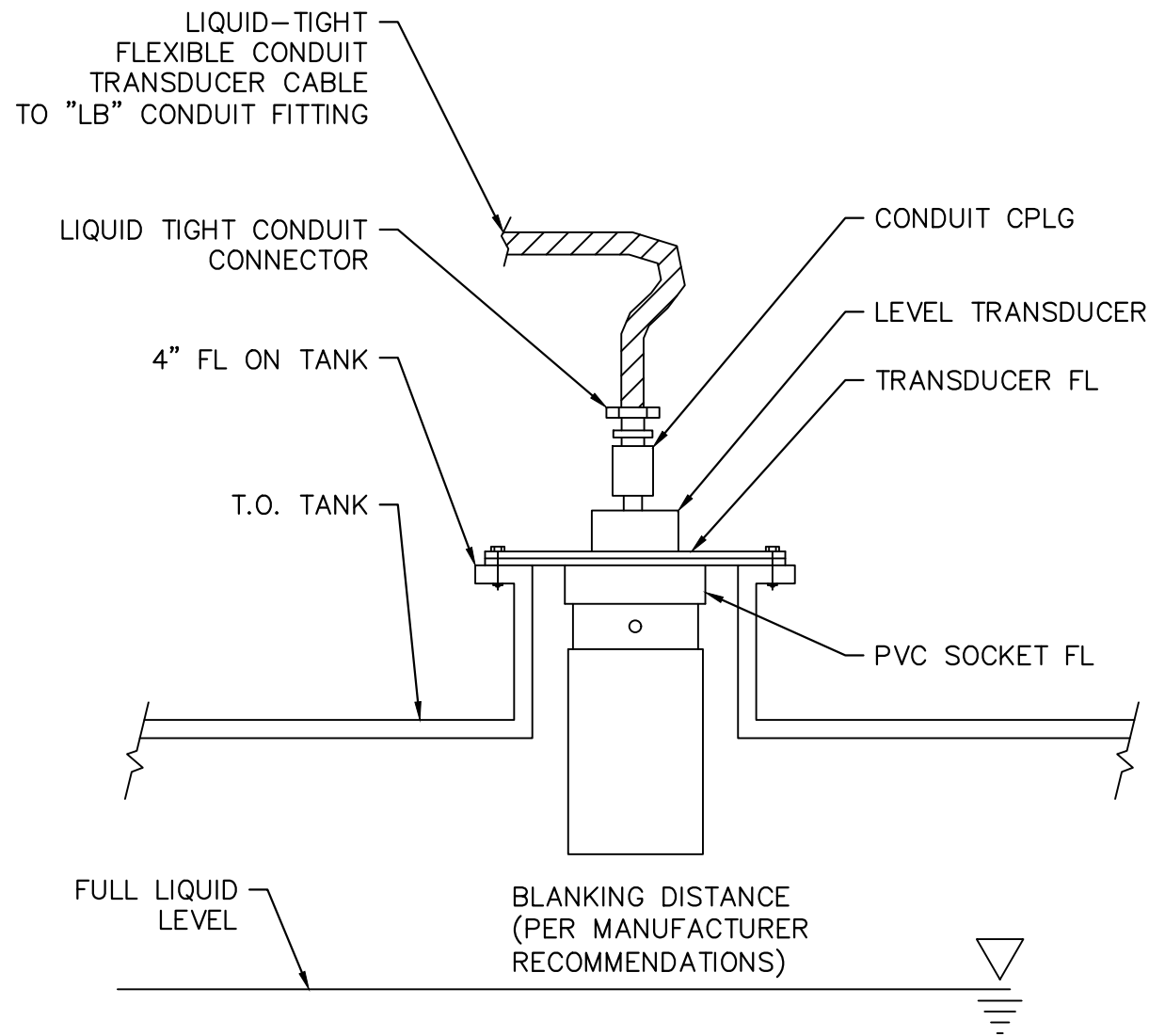
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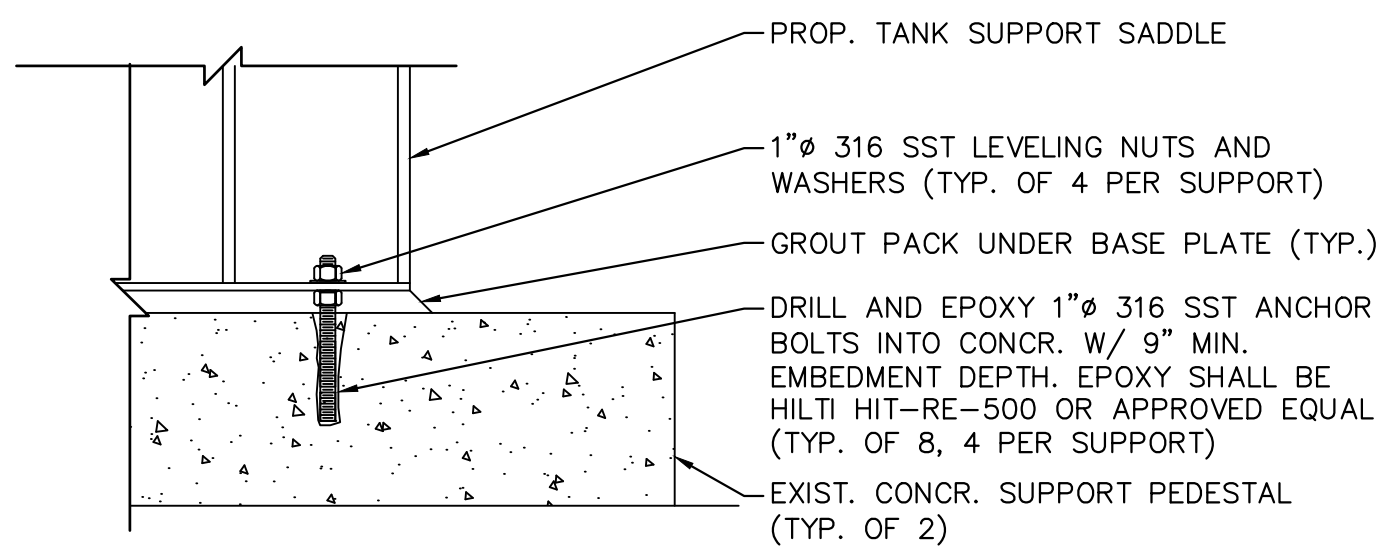
Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS - Layout-D-4 MECHANICAL DETAILS - March 19, 2021 11:44:00pm - K:\WPB_Civil\044572100 - South RO WTP Design\CAD_PlanSheets\D-1 PIPE SUPPORT DETAILS.dwg
Plotted By: King, Bertrand
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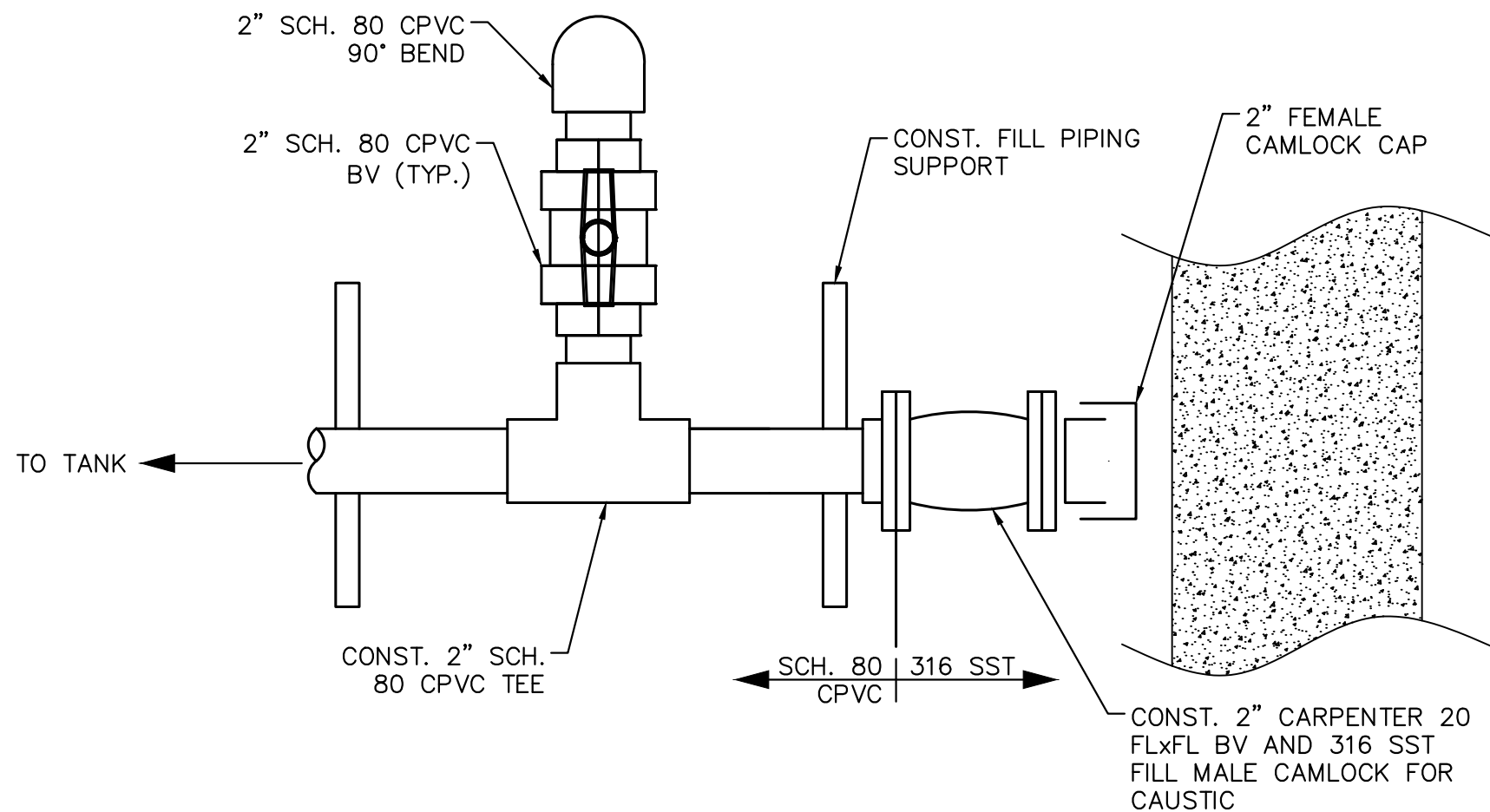
1 EMERGENCY EYEWASH DETAIL
D-4 SCALE: N.T.S.



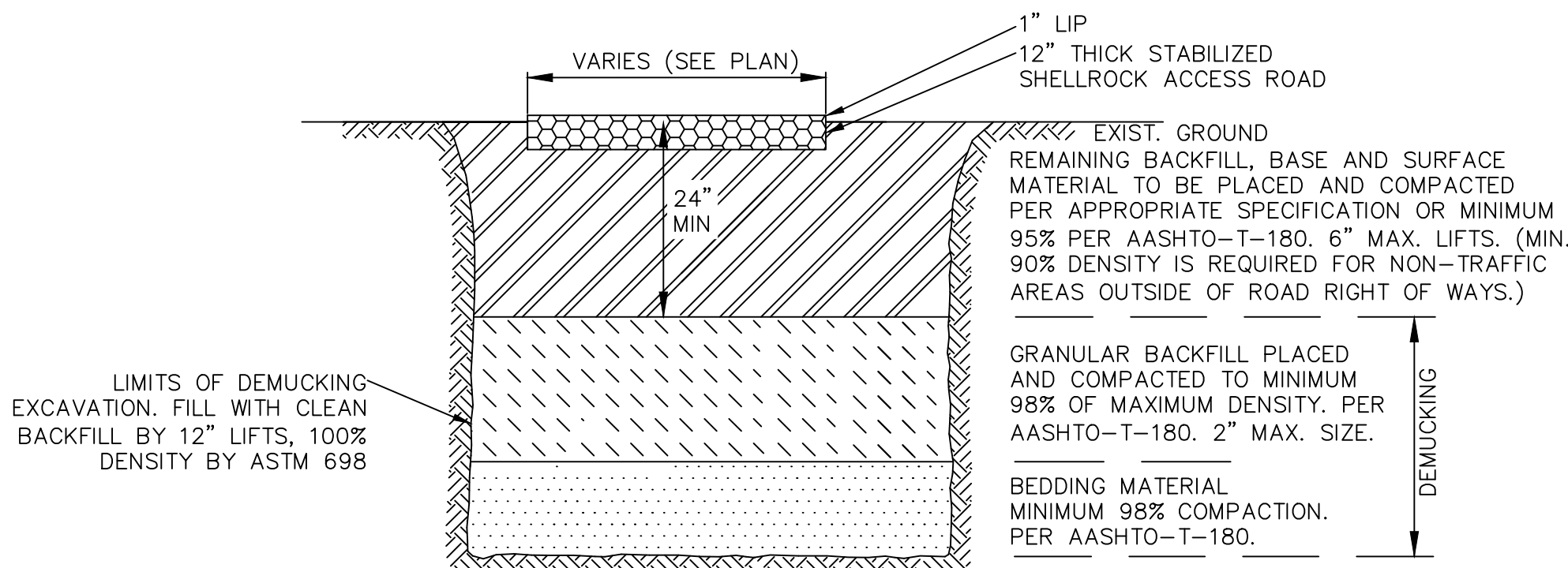
2 ULTRASONIC LEVEL TRANSDUCER
D-4 SCALE: N.T.S.



4 TANK ANCHOR BOLT
D-4 SCALE: N.T.S.



3 CAUSTIC BLOCK AND BLEED
D-4 SCALE: N.T.S.



- NOTES:
- BEDDING SHALL CONSIST OF IN-SITU GRANULAR MATERIAL OR WASHED AND GRADED LIMEROCK 3/8" - 7/8" SIZING. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED.
 - BACKFILL SHALL BE FREE OF UNSUITABLE MATERIAL SUCH AS LARGE ROCK, MUCK AND DEBRIS.
 - DENSITY TESTS ARE REQUIRED IN 1 FOOT LIFTS ABOVE THE PIPE AT INTERVALS OF 400' MAXIMUM, MINIMUM 1 SET OF TESTS FOR EACH WASTEWATER GRAVITY MAIN RUN, OR AS DIRECTED BY THE INSPECTOR.
 - THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL TRENCH SAFETY LAWS AND REGULATIONS.
 - THE AFFECTED AREA SHALL BE RESTORED TO EQUAL OR BETTER CONDITION OR AS SPECIFIED IN PERMIT/CONTRACT DOCUMENTS.
 - REMOVE UNSUITABLE MUCK MATERIAL (SEE SOILS REPORT) AND PROVIDE SUITABLE IMPORTED BACKFILL.

5 SHELL ROCK AND DEMUCKING
D-4 SCALE: N.T.S.

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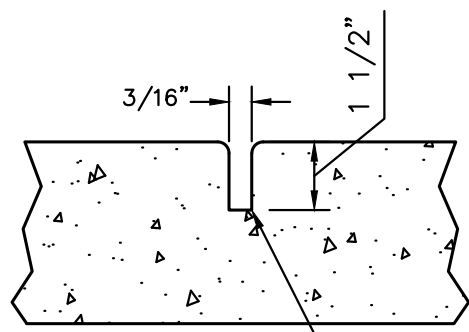
MECHANICAL DETAILS

SHEET NUMBER

D-4

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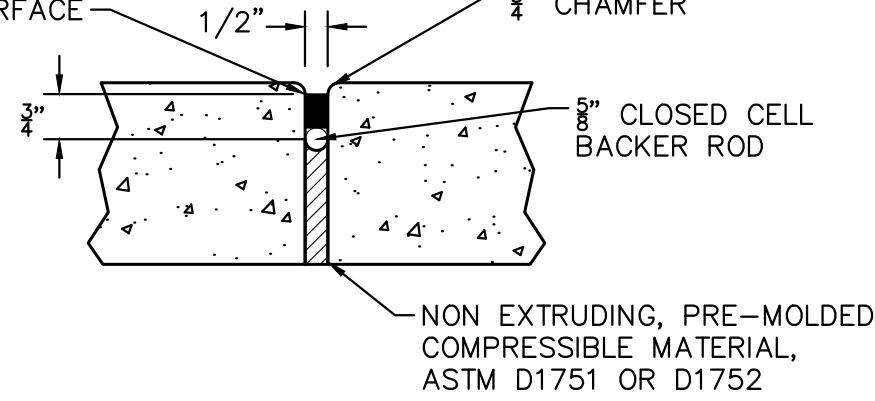
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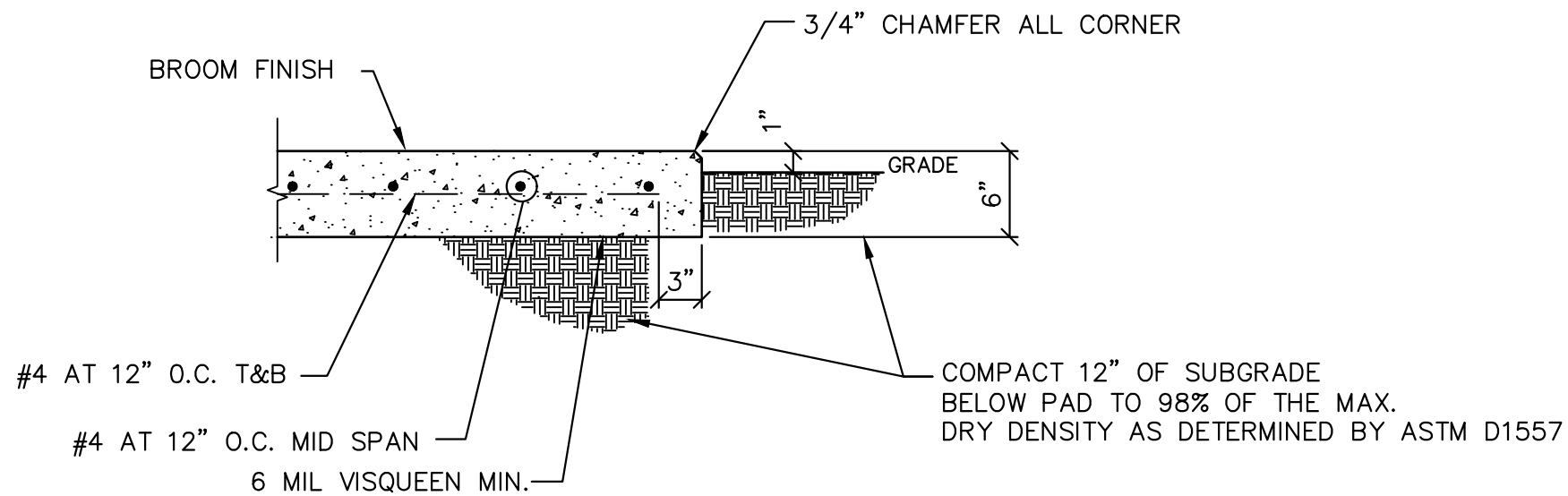
3/16" SAWED JOINT MAY BE SUBSTITUTED IF NOT MORE THAN 30-FT INTERVALS WITHIN 12 HRS. ADDITIONAL JOINTS MAY BE CUT WITHIN 96 HRS AT 5 FT. INTERVALS.

1 CONTROL JOINT
D-5 SCALE: N.T.S.

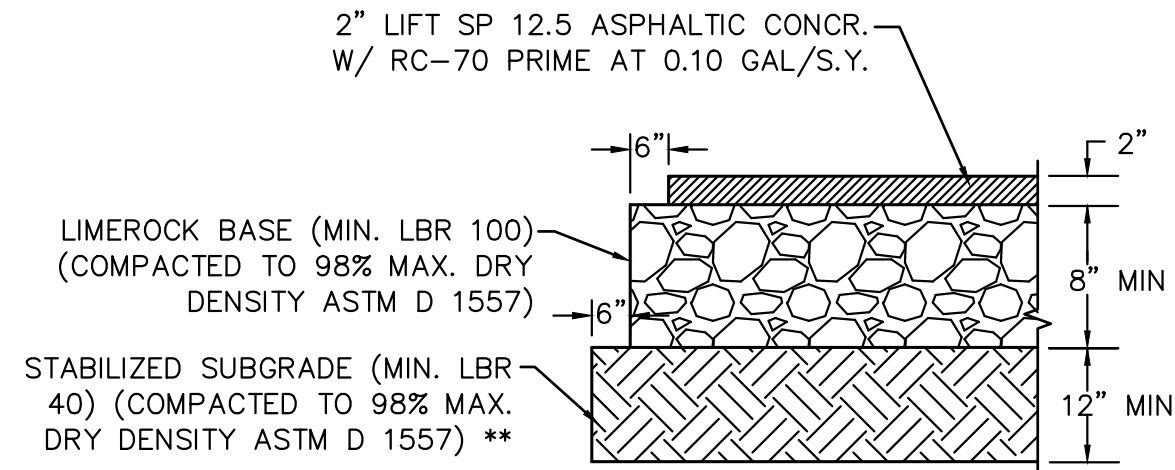
DOW CORNING 888 SEALANT OR APPROVED EQUAL, MIN. 3/4" THK AND 1/4" BELOW TOP OF SURFACE



2 EXPANSION JOINT
D-5 SCALE: N.T.S.

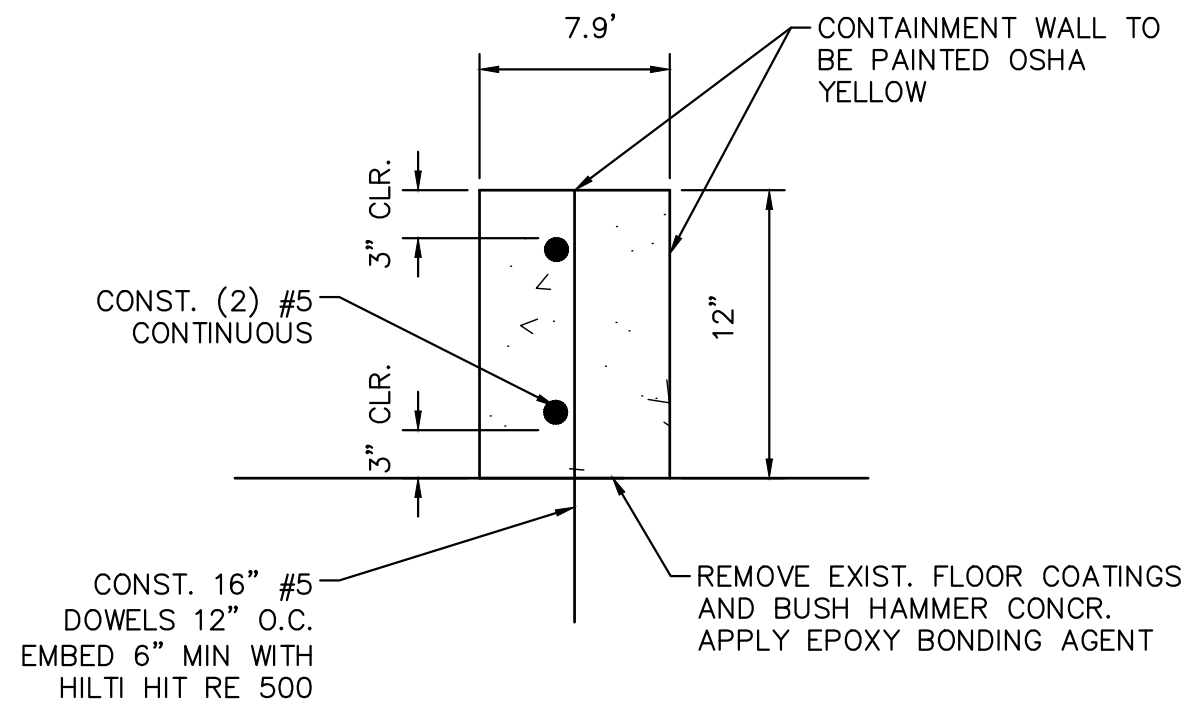


3 SIDEWALK DETAIL
D-5 SCALE: N.T.S.

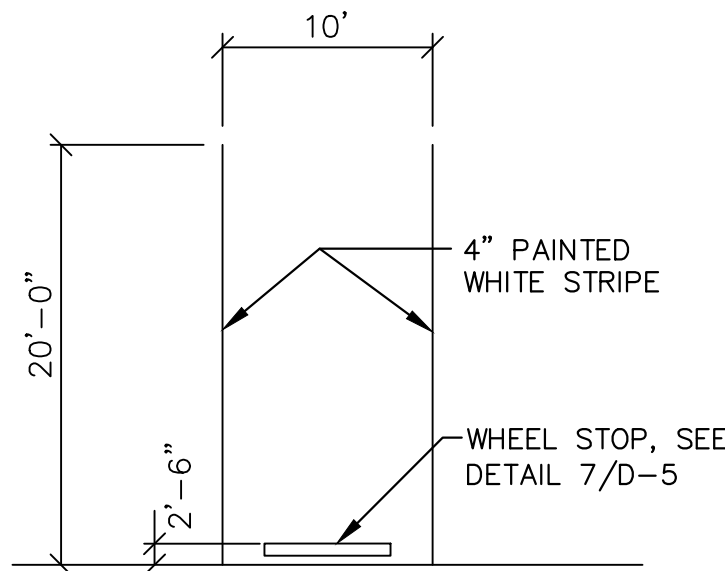


** ALTERNATE PAVEMENT SECTION: IN LIEU OF 12" STABILIZED SUBGRADE, 5" ADDITIONAL LIMEROCK BASE IS REQ'D

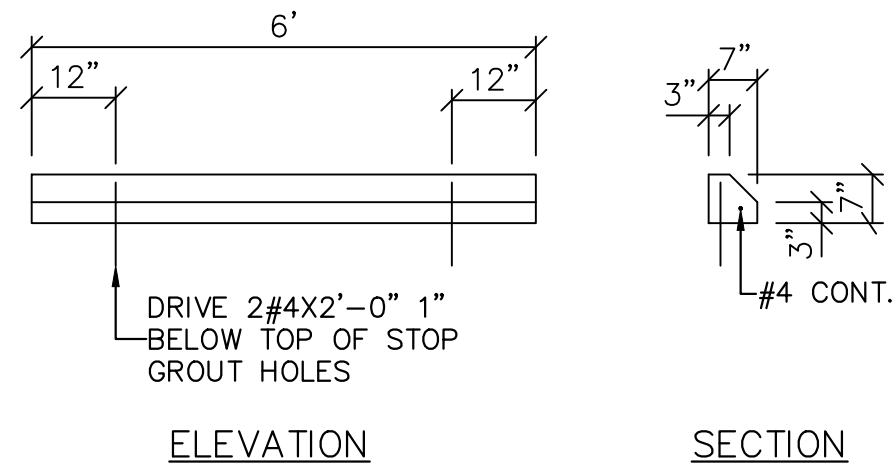
4 HEAVY DUTY ASPHALTIC CONCRETE PAVEMENT SECTION
D-5 SCALE: N.T.S.



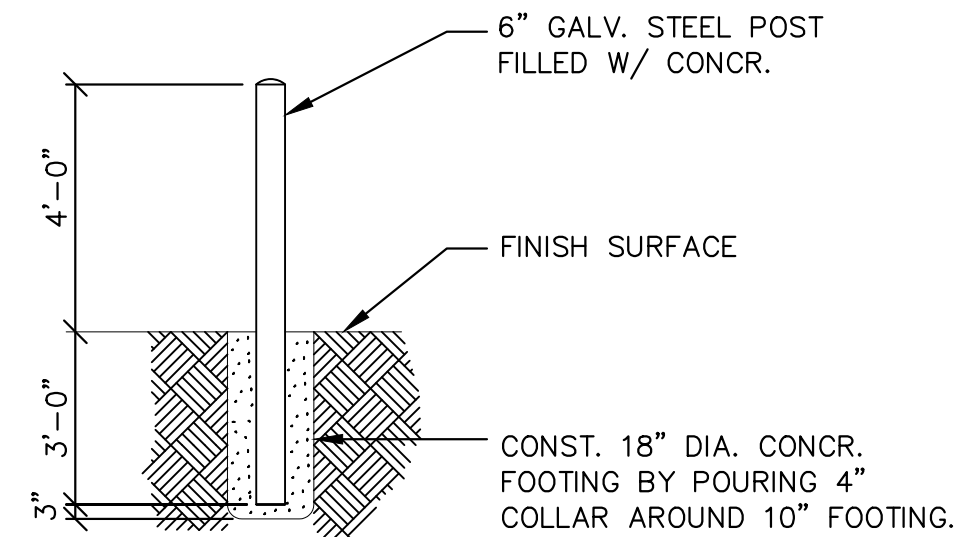
5 CONCRETE CONTAINMENT WALL DETAIL
D-5 SCALE: N.T.S.



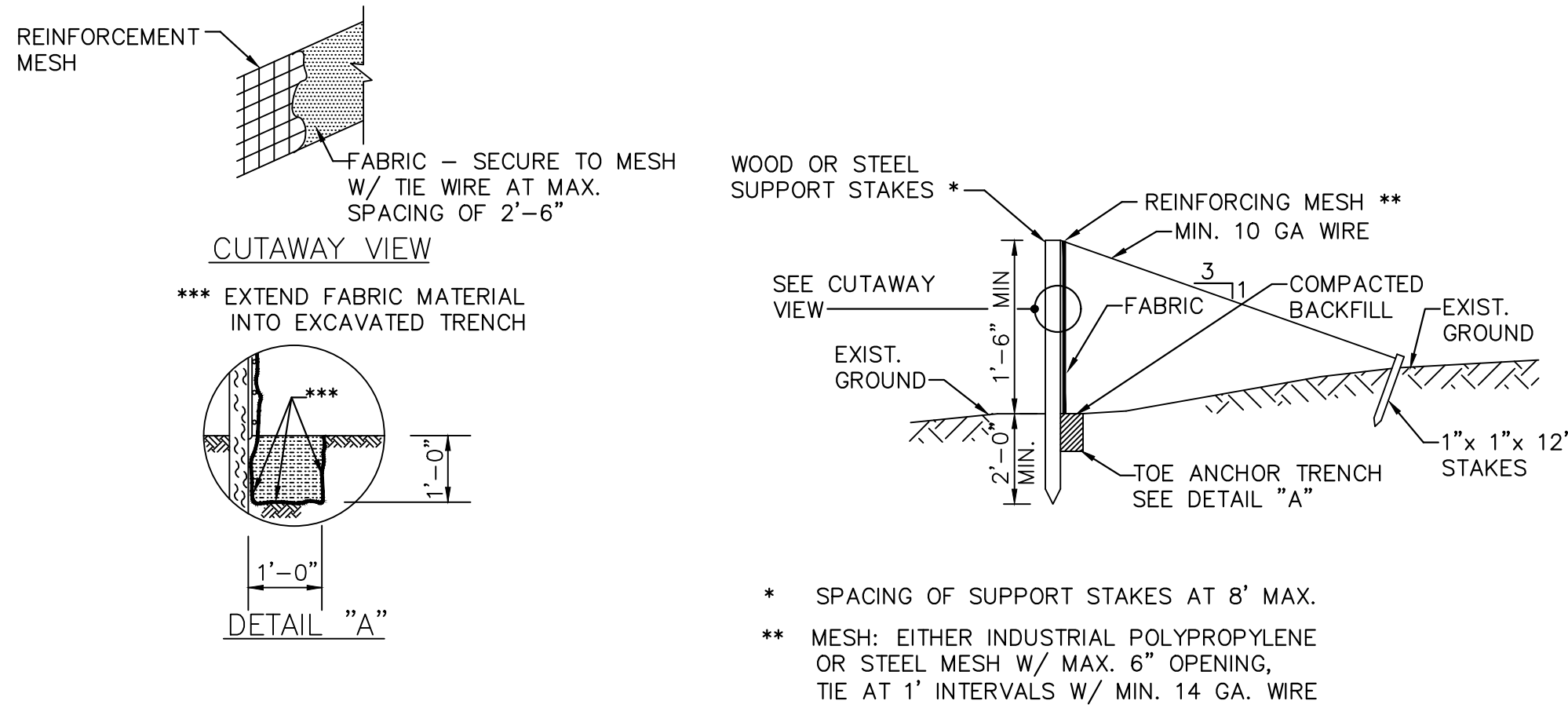
6 STANDARD PARKING DETAIL
D-5 SCALE: N.T.S.



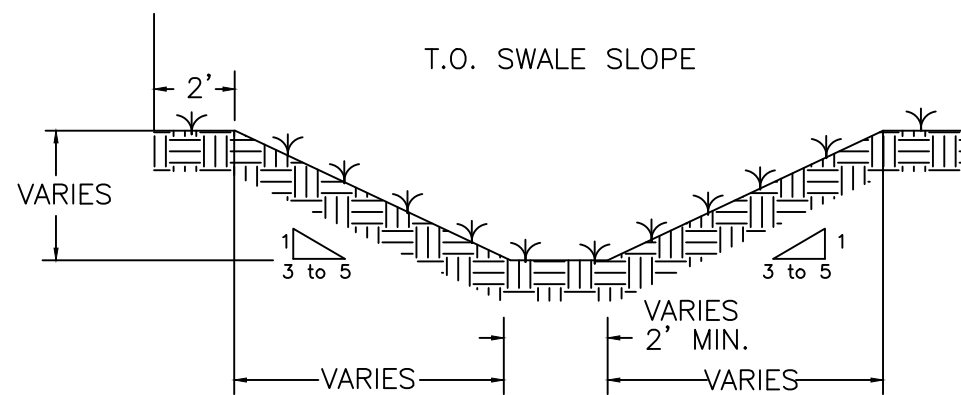
7 WHEEL STOP DETAIL
D-5 SCALE: N.T.S.



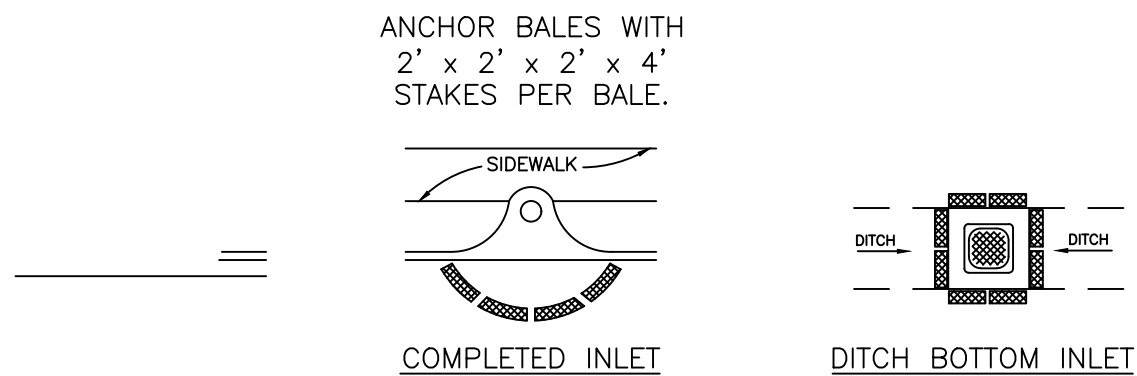
8 BOLLARD DETAIL
D-5 SCALE: N.T.S.



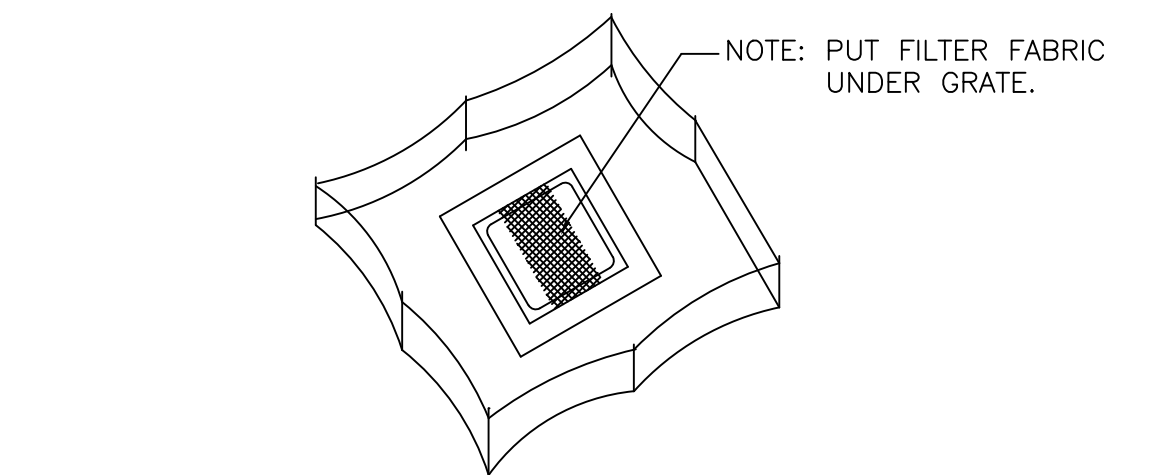
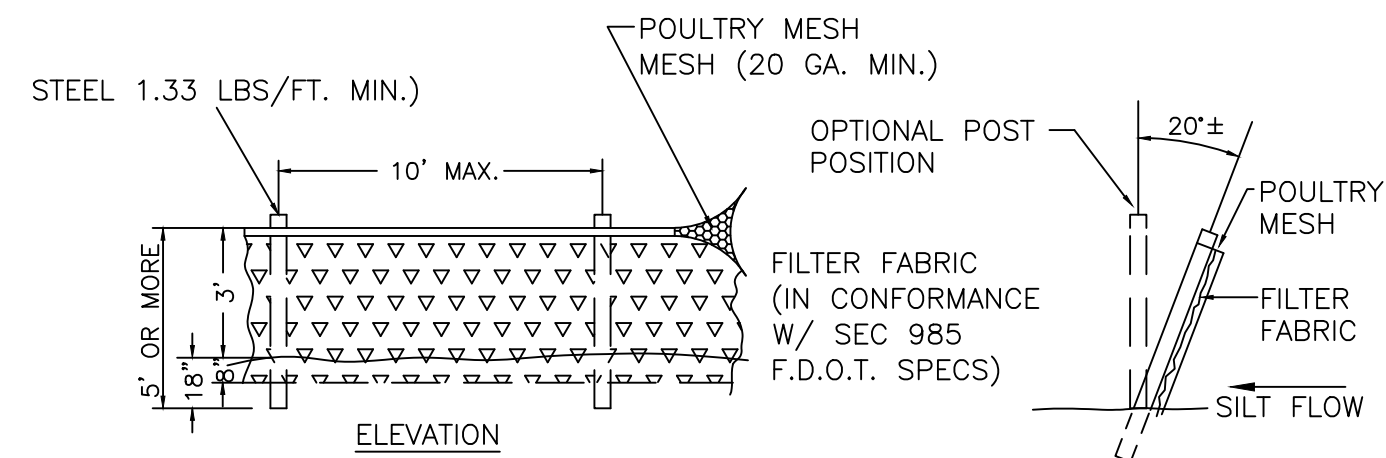
9 TYPICAL FILTER FABRIC FENCE
D-5 SCALE: N.T.S.



10 TYP. SWALE SECTION
D-5 SCALE: N.T.S.



11 PROTECTION AROUND INLETS OR SIM. STRUCTURES
D-5 SCALE: N.T.S.



12 TYPICAL SILT FENCE AROUND INLET
D-5 SCALE: N.T.S.

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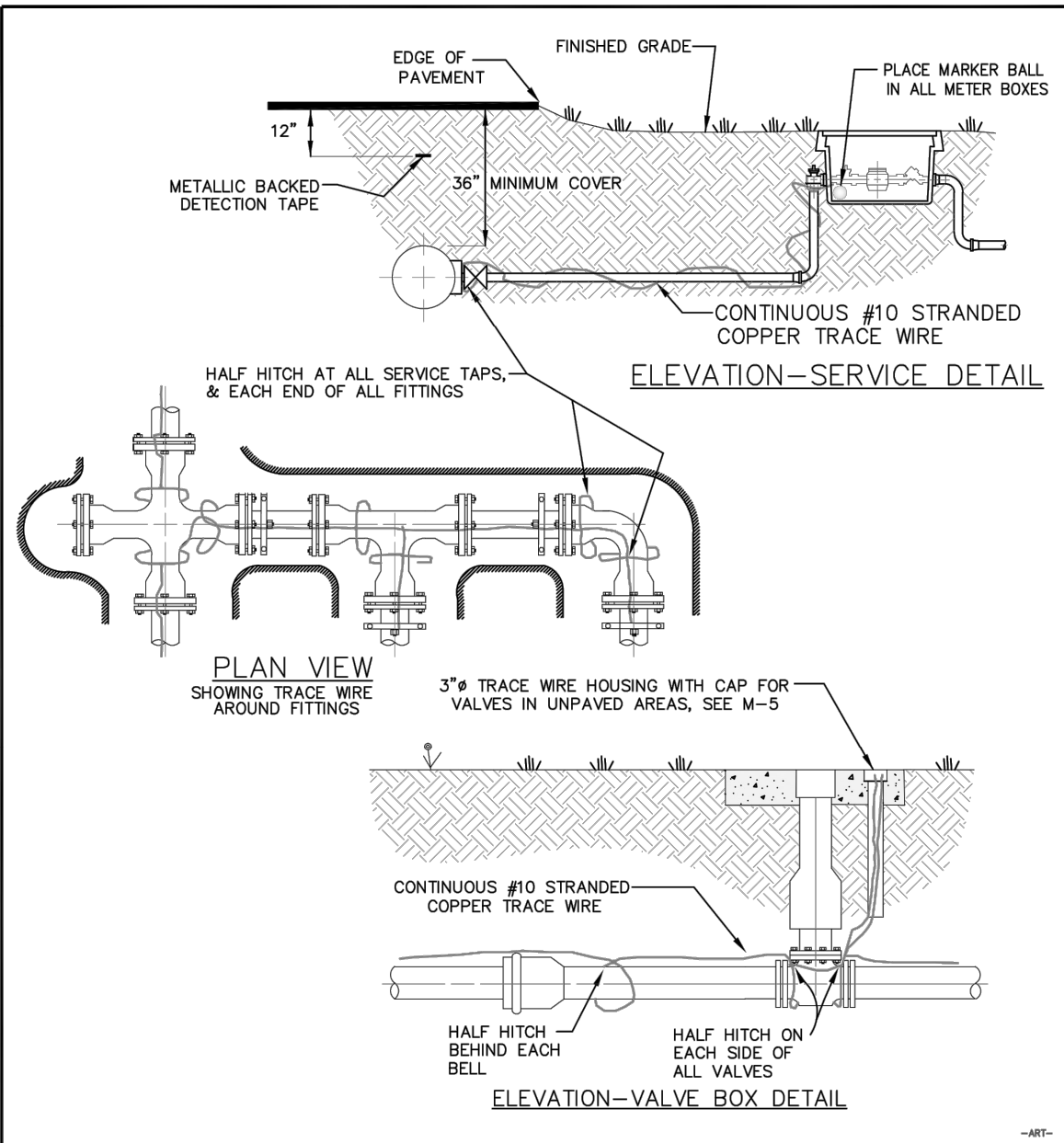
CONSTRUCTION DETAILS

SHEET NUMBER


D-5

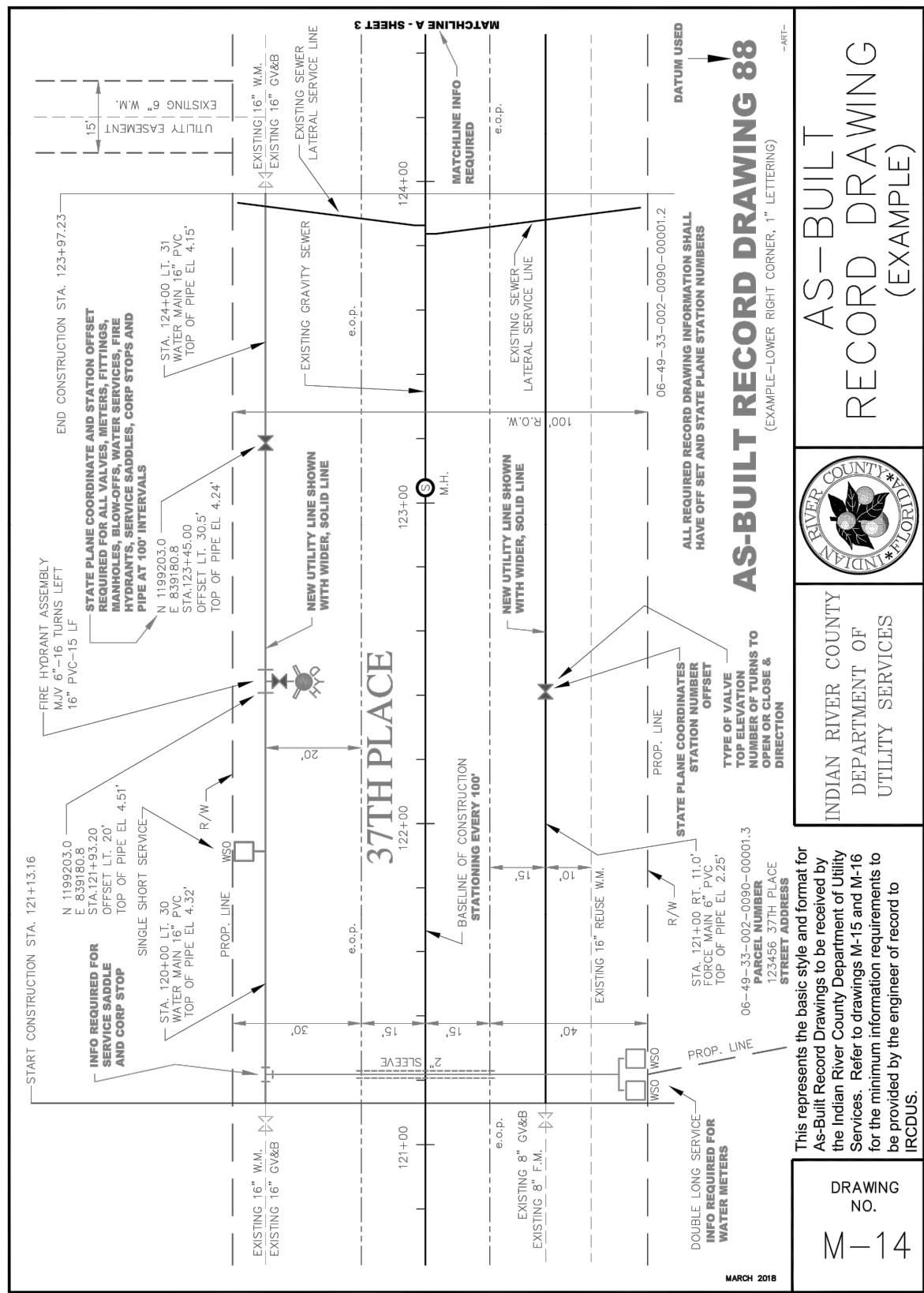
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- NOTES**
1. TRACE WIRE IS REQUIRED ON ALL PIPES REGARDLESS OF MATERIAL.
 2. INCLUDE ALL COST OF MATERIAL AND LABOR TO INSTALL TRACE WIRE IN PRICE OF PIPE.
 3. CONTRACTOR IS RESPONSIBLE FOR CONTINUITY THROUGHOUT ENTIRE PROJECT OF ALL TRACE WIRE.
 4. ALL CONNECTIONS SHALL BE MADE WITH DIRECT BURY CONNECTORS.
 5. ALL MATERIALS ARE TO BE PER IRCDS APPROVED MANUFACTURERS' PRODUCT LIST.

INDIAN RIVER COUNTY DEPARTMENT OF UTILITY SERVICES		TRACE WIRE DETAILS	DRAWING NO. M-13
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GENERAL NOTES

1. All As-Built Record Drawings shall meet the minimum requirements of the Chapter AJ-17, Florida Administration Code Pursuant to Section 472 of the Florida Statutes
2. All As-Built Record Drawings shall be in State Plane Coordinates. State Plane Coordinates shall be based on the Florida State Plane Horizontal data (East Zone); or Florida High Precision Geodetic Network (superstation) and NAD 83/1999 - final adjustment, or the most current datum adopted by Indian River County.
3. Florida State Plane Horizontal data and station off-set shall be tied to valves, meters, fittings, manholes, blow-offs, water services, fire hydrants, service saddles, corp stops and pipe (pipe at 200' intervals).
4. All elevations shown shall be based on 1988 NAVD (North American Vertical Datum).
5. All As-Built Record Drawings shall be tied to a minimum of one (1) permanent reference monument (P.R.M.) at the end of each project. One P.R.M. shall be tied to a minimum of one (1) section corner or one-quarter (1/4) section corner whichever is closest to the project. State plane coordinates shall be physically shown on the drawing next to the P.R.M. used.
6. Horizontal Control Monumentation for utility lines shall be a minimum of two (2) points at a maximum of 1,400 feet between points and shown on all plans.
7. Vertical Control (when required) for linear utility lines, such as water and sewer, shall have a maximum of 1,100 feet between existing construction or established benchmarks.
8. All incoming As-Built Record Drawings (24"x36") shall state in 1" lettering "RECORD DRAWING" and the datum used in 1" lettering in the lower right hand side of the drawing original and/or copies along with as-built date. All incoming Record Drawings shall be received on a CD as an electronic copy, AutoCad 2015 format, or latest version, with a tie to a minimum of two (2) state plane coordinates. (NOTE: Prior to submitting the electronic copy, one (1) copy of each as-built shall be submitted for review and approval. After all approvals, (3) three (24"x36") signed and sealed copies of each as-built shall be submitted. All Record Drawings shall be in a minimum scale of 1"=40'.
9. A minimum text size of 1/8" is required on all construction/route survey and Record Drawings.
10. All As-Built Record Drawings shall be certified by the project engineer or contracting surveyor.

INDIAN RIVER COUNTY DEPARTMENT OF UTILITY SERVICES		AS-BUILT RECORD DRAWING GENERAL NOTES	DRAWING NO. M-15
--	---	---	------------------------

GENERAL INFORMATION REQUIREMENTS FOR ALL CONSTRUCTION/ROUTE SURVEY AND AS-BUILT RECORD DRAWINGS

1. Existing right-of-way limits and/or easements within the limits of construction.
2. Survey baseline stationing every 100', control points set every 500', and at angle change of direction.
3. Show cross section elevations at grade every 100' for gravity sewer line construction and 500' for water line and force main construction. Elevations that reflect any significant change in grade between the previously stated footage shall be shown on plans.
4. Existing parcels, tracts, and lot corner locations shown with front footage dimensions per plat when platted. If construction project is along back of lots, then show back lot dimensions.
5. Existing roadway edge of pavement or edge of dirt road.
6. Existing utilities as located in field (water, sewer, telephone, electric, cable TV, etc.) (NOTE: Sunshine One to be contacted by surveying firm prior to survey locate; with the intent of county excavation.)
7. Existing utilities as associated with number 5 above (example: valves, meters, manholes, etc.)
8. Existing curbs, driveway widths and types.
9. Existing drainage pipe crossings and driveway culverts (type, sizes and invert elevations.)
10. Existing swales and/or ditches and elevations every 100' at top and bottom if within area of construction.
11. Existing fences.
12. Existing trees and/or shrubbery.
13. All other non-movable items such as mailboxes, flag poles, etc.
14. All street names.
15. All commercial and single/multi family residence must have parcel I.D. indicated on the plan.

INDIAN RIVER COUNTY DEPARTMENT OF UTILITIES SERVICES		GENERAL INFORMATION REQUIREMENTS	DRAWING NO. M-16 (A)
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INFORMATION REQUIREMENTS FOR ALL AS-BUILT RECORD DRAWINGS

In addition to the requirements specified in Drawings M-16 and M-16(A), the following shall be included on all As-Built Record Drawings before acceptance by the Indian River County Department of Utility Services.

1. All as-built drawings (24"x36") shall state in 1" lettering "AS-BUILT" located in the bottom right hand side of the drawing original and/or copies, along with the as-built date.
2. All utility as-built construction located within the rights-of-way, easements and alike shall be tied to the respective rights-of way, easements, etc., every 1,000 feet and change of direction.
3. All as-builts shall clearly depict as-built utility lines that were constructed along with their respective easement (if required). As-builts will not be accepted unless the verbiage "Proposed" and/or "To Be constructed" have been revised to read "AS-Built". As-built Construction drawings with, to be constructed terminology, will not be accepted.
4. All as-builts shall be certified by the project engineer or contracting surveyor.
5. All projects, which utilize lift stations, shall specify on plans as to whether or not subject lift stations are to remain private or are to be dedicated to the county.
6. All fire hydrants and valves shall be located with state plane coordinates, station number and off-set and shall be clearly identified on the as-built drawing.
7. All valves shall be clearly identified by size, type, top elevation and direction/number of turns to open or close each valve.
8. Horizontal directional bores shall have a profile or cross section drawing and include the bore log.
9. The contractor is to provide the name of business or residence, street address and tax I.D. number for all properties adjacent to line extensions.
10. Shown with a thin dashed line, top elevations of As-Built utility lines and existing utility lines shall be shown for all utility crossings.
11. Baseline of construction and station of items to be on the centerline of the roadway.
12. As-Built utility lines shall be shown with a wider solid line.
13. Top of pipe elevations & stationing to be typed, listed, sealed & submitted for the engineer to locate the air release valves as construction proceeds.
14. All as-builts shall be complete and approved before commencement of field test.

INDIAN RIVER COUNTY DEPARTMENT OF UTILITIES SERVICES		AS-BUILT REQUIREMENTS	DRAWING NO. M-16 (B)
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ROUTE SURVEY REQUIREMENTS

1. All surveys that are required for engineering design use, and are located within a distance of one (1) mile from any Indian River County Global Positioning System (G.P.S.) control project monuments, shall be tied into the GPS monument from one (1) permanent reference point or the subdivision corner that is along the survey route and shall then be tied to the survey base line.
2. Existing right-of-way limits and/or easements within the limits of construction.
3. Survey baseline stationing every 100', control points set every 500', and at angle change of direction.
4. Show cross section spot elevations at grade every 100' for gravity sewer line construction and 100' for water line and force main construction. Elevations that reflect any significant change in grade between the previously stated footage shall be shown on plans.
5. Existing parcels, tracts, and lot corner locations shown with front footage dimensions per plat when platted. If construction project is along back of lots, then show back lot dimensions.
6. Existing roadway edge of pavement or edge of dirt road.
7. Existing utilities as located in field (water, sewer, telephone, electric, cable TV, street lights, etc.) (NOTE: Sunshine One to be contacted by surveying firm prior to survey locate; with the intent of county excavation.)
8. Existing utilities as associated with Note 6 above (example: valves, meters, manholes, etc.)
9. Existing curbs, sidewalks, driveway widths and types.
10. Existing drainage pipe crossings, catch basins, manholes, and driveway culverts (type, sizes and invert elevations.)
11. Existing swales and/or ditches. Take cross section spot elevations every 100' at top and bottom if within area of construction.
12. Existing fences.
13. Existing trees and/or shrubbery.
14. All other non-movable items such as mailboxes, flag poles, etc.
15. All street names. Street names shall appear on every printable sheet.
16. All commercial and single/multi family residence must have parcel I.D. and street address indicated on the plan.
17. All fire hydrants and fire hydrant valves shall be clearly identified.
18. All utility valves shall be clearly identified.
19. Route surveys performed for water assessment projects may require residential well locations.

INDIAN RIVER COUNTY DEPARTMENT OF UTILITY SERVICES		ROUTE SURVEY REQUIREMENTS	DRAWING NO. M-17
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GENERAL NOTES

(continued)

11. All As-Built Record Drawings shall clearly depict utility lines that were constructed along with their respective easement (if required). As-Built Record Drawings will not be accepted unless the verbiage "PROPOSED" and/or "TO BE CONSTRUCTED" have been deleted on the drawing. As-Built Record Drawings with "PROPOSED" or "TO BE CONSTRUCTED" terminology will not be accepted.
12. All new utility construction located within the rights-of-way, easements and alike shall be tied to the respective rights-of-way, easement, etc. every 1,000 feet and change of direction.
13. All As-Built Record Drawings shall be complete and approved before commencement of field test.
14. Baseline of construction and station of items to be located on the center of the roadway, unless conditions warrant and approved by IRCDS. Baseline stationing shall be every 100', control points set at every 500' and at angle change of direction.
15. All new utility construction lines on all As-Built Record Drawings shall be shown with a wider, solid line. Existing utility lines shall be shown with a thinner, dashed line.
16. Top of pipe elevations & stationing to be typed, listed, sealed & submitted by the engineer for locating the air release valves as construction proceeds.
17. Show top elevation of the utility lines that were constructed and show existing utility lines for all utility crossings.
18. Pump station power supply from FP&L or COVB electric power pole or transformer to the pump station electric panel shall be included on the As-Built Record Drawing.
19. All fire hydrants and fire hydrant valves shall be located by state plane coordinates, station number and offset and shall be clearly identified on the As-Built Record Drawing.
20. All newly constructed valves shall be clearly identified by size, type, top elevation and direction/number of turns to open or close valve.

INDIAN RIVER COUNTY DEPARTMENT OF UTILITIES SERVICES		AS-BUILT RECORD DRAWING GENERAL NOTES (CONTINUED)	DRAWING NO. M-16
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KHA PROJECT
044572100
DATE
MAR 2021
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SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
INDIAN RIVER COUNTY UTILITIES
DEPARTMENT

INDIAN RIVER
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FLORIDA

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FLORIDA LICENSE NUMBER

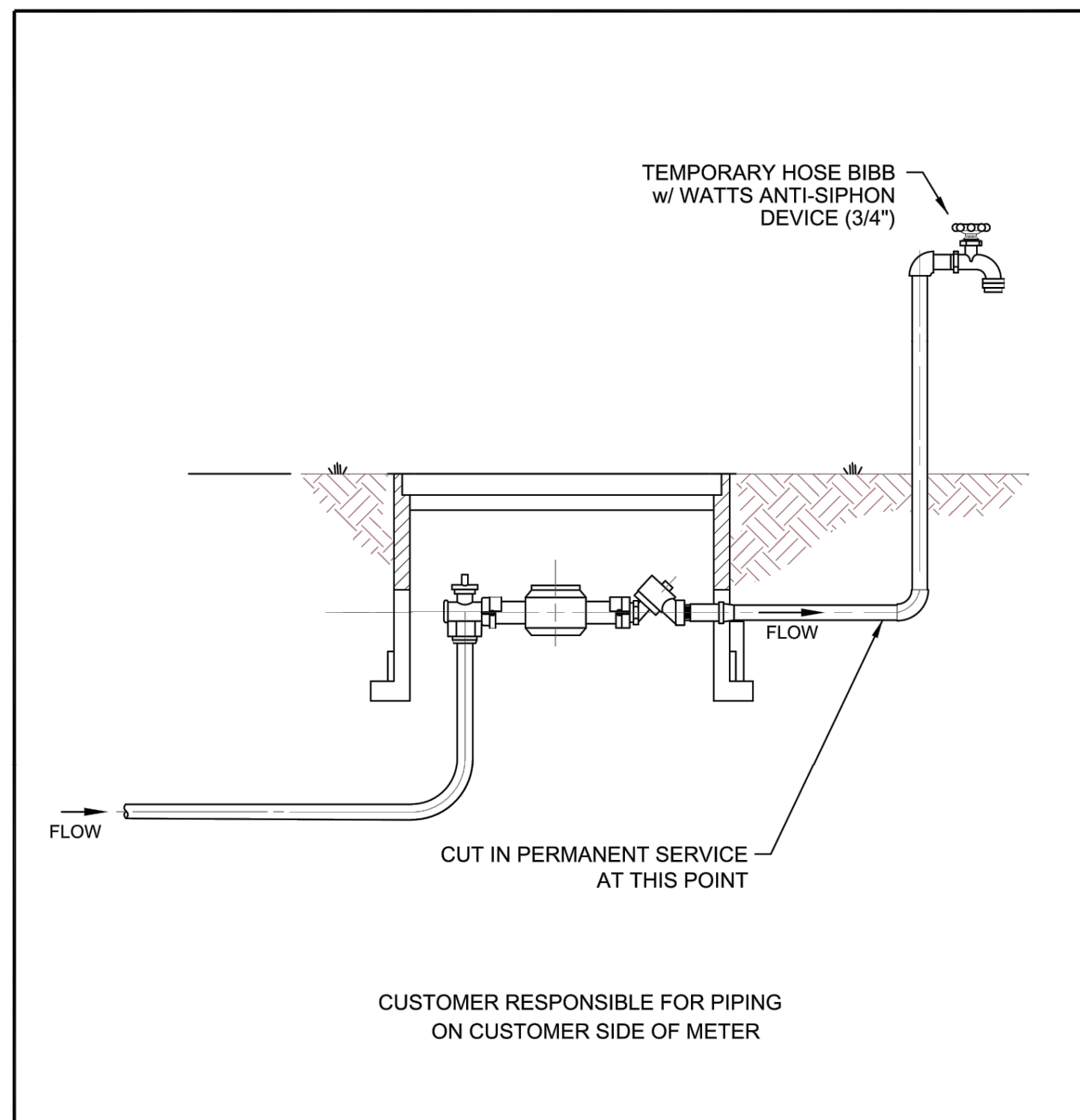
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IRCU STANDARD DETAILS

SHEET NUMBER

D-7

71 OF 132



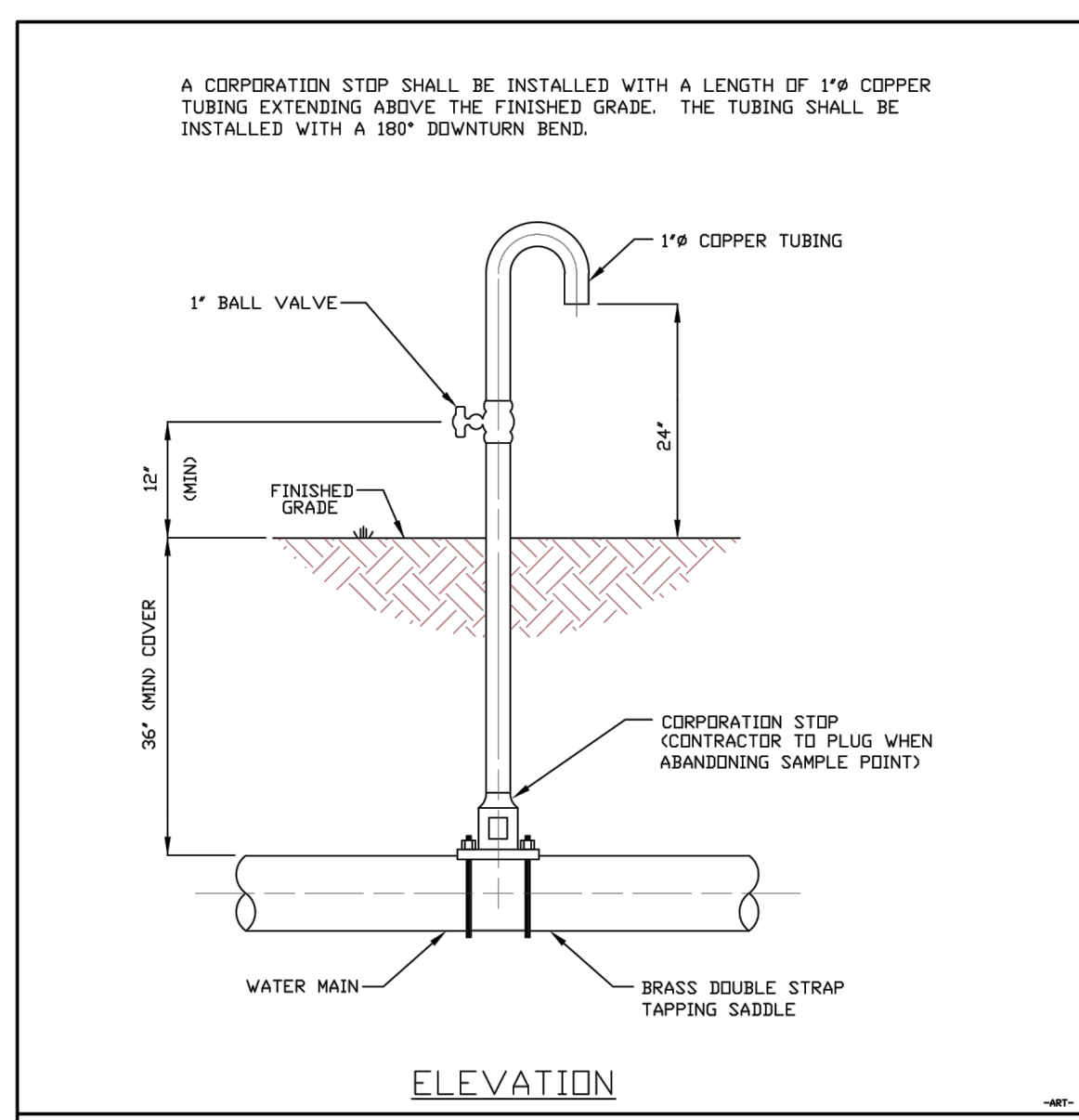
- ## NOTES
1. PER RESOLUTION No. _____, IRCDUS TO INSTALL A TEMPORARY HOSE BIBB TO SUPPLY METERED WATER FOR CONSTRUCTION.
 2. PRIOR TO FINAL IRCDUS INSPECTION, THE CONTRACTOR SHALL REMOVE THE TEMPORARY HOSE BIBB AND MAKE WATER CONNECTION TO THE BUILDING PER CURRENT IRCDUS CONSTRUCTION STANDARDS.
 3. CONTRACTOR SHALL NOT DISTURB FITTINGS AT METER BOX.
 4. CONTRACTOR SHALL REMOVE BIBB RISER AND CONNECT PERMANENT SERVICE AT LOCATION INDICATED

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TEMPORARY HOSE BIBB
(FOR CONSTRUCTION)

DRAWING
NO.
W-6
A



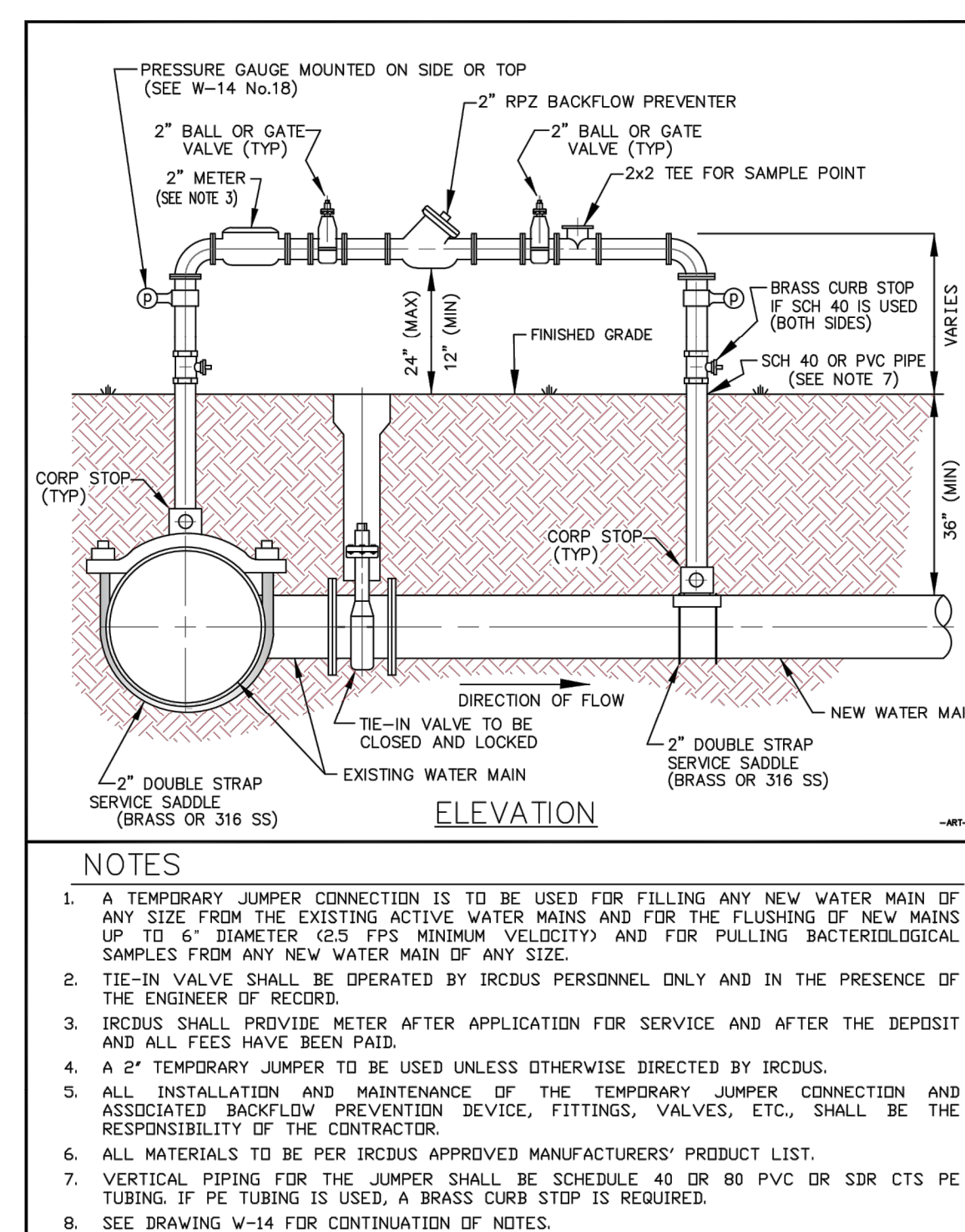
- ## NOTES

INDIAN RIVER COUNTY
DEPARTMENT OF
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TEMPORARY SAMPLING POINT
(BACTERIOLOGICAL)

DRAWING NO.	W-8
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- ## NOTES
1. A TEMPORARY JUMPER CONNECTION IS TO BE USED FOR FILLING ANY NEW WATER MAIN OF ANY SIZE FROM THE EXISTING ACTIVE WATER MAINS AND FOR THE FLUSHING OF NEW MAINS UP TO 6" DIAMETER (2.5 FPS MINIMUM VELOCITY) AND FOR PULLING BACTERIOLOGICAL SAMPLES FROM ANY NEW WATER MAIN OF ANY SIZE.
 2. THE JUMPER SHALL BE OPERATED BY IRCDSU PERSONNEL ONLY AND IN THE PRESENCE OF THE ENGINEER OF RECORD.
 3. IRCDSU SHALL PROVIDE MATER AFTER APPLICATION FOR SERVICE AND AFTER THE DEPOSIT AND ALL FEES HAVE BEEN PAID.
 4. A 2" TEMPORARY JUMPER TO BE MAXIMALLY OTHERWISE DIRECTED BY IRCDSU.
 5. THE INSTALLATION AND MAINTENANCE OF THE TEMPORARY JUMPER CONNECTION AND ASSOCIATED BACKFLOW PREVENTION DEVICE, FITTINGS, VALVES, ETC., SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 6. ALL MATERIALS TO BE PER IRCDSU APPROVED MANUFACTURERS' PRODUCT LIST.
 7. VERTICAL PIPING FOR THE JUMPER SHALL BE SCHEDULE 40 OR 80 PVC OR SDR CTS PE TUBING. PE TUBING IS REQUIRED, A BRASS CURB STOP IS REQUIRED.
 - SEE DRAWING W-14 FOR CONTINUATION OF NOTES.

INDIAN RIVER COUNTY
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TEMPORARY JUMPER DETAIL

	DRAWING NO. W-1
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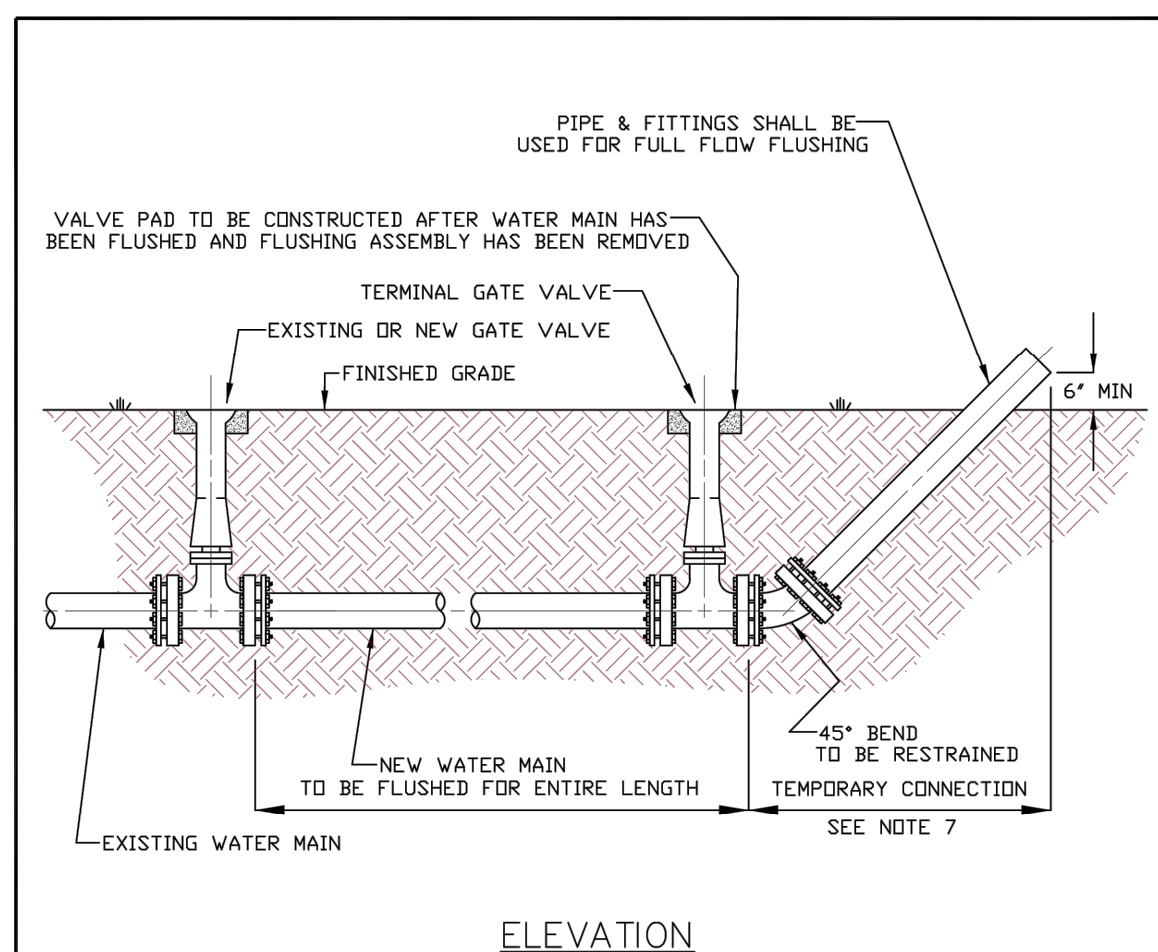
- ## TEMPORARY JUMPER DETAIL NOTES
- CONTINUED FROM W-13
9. Pipe and fittings used for connecting the new pipe to the existing pipe shall be disinfected with liquid chlorine prior to installation in accordance with AWWA C651, LATEST EDITION. The tapping sleeve and exterior of the main to be tapped shall be disinfected by spraying or swabbing per AWWA C651 Section Two. The use of chlorine tablets is strictly prohibited.
 10. The jumper connection shall also be used to maintain a minimum pressure of 20 PSI in the new mains continuously after disinfection and until FDEP clearance letter is obtained.
 11. The Contractor shall provide documentation demonstrating that the Reduced Pressure Zone Backflow Preventer (RPZ) is in good working order at the time of installation, and provide documentation that the RPZ has been tested by a qualified backflow technician as approved by IRCUDS. The Contractor shall have each RPZ tested prior to use on each project.
 12. Except as required to flush lines greater than 6" diameter, the tie-in valve shall remain closed and shall be locked in the closed position by the utility company. The tie-in valve shall remain locked closed until the new system has been cleared for use by the FDEP.
 13. If the water main to be flushed is greater than 6" diameter or such length that a 2.5 FPS velocity cannot be accomplished by flow through the temporary jumper, the following procedure shall be utilized:
 - a. Install pressure gauges as indicated on Temporary Jumper Detail (W-13).
 - b. Open all downstream valves in the new system prior to flush.
 - c. IRCUDS personnel in the presence of the Engineer of Record shall operate tie-in valve to insure that the required upstream pressure is maintained.
 - d. Flush new water main thru tie-in valve maintaining a minimum 20 PSI pressure in the upstream main.
 14. The jumper connection shall be maintained until after the filling, flushing, testing and disinfection of the new main has been successfully completed and clearance for use from the Florida Department of Environmental Protection (FDEP) and other pertinent agencies has been received. Adequate restraints shall be provided, as required.
 15. Upon receipt of clearance for use by FDEP, the Contractor shall remove the temporary jumper connection. The corporation stops are to be closed and plugged with 2" brass or PVC plugs.

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TEMPORARY JUMPER
DETAIL NOTES
(CONTINUED FROM W-13)

DRAWING
NO.
W-1



- ## NOTES
1. A FULL BORE FLUSH IS THE ONLY FLUSHING METHOD APPROVED FOR MAINS. ALL FIRE HYDRANTS AND DETECTOR CHECK VALVES SHALL BE INSPECTED AND TESTED TO ENSURE THAT NO FOREIGN OBJECTS IMPEDE THE FLOW OF WATER. FOR DETAILS ON LINE FILLING, SEE W-14.
 2. A PRESSURE GAUGE SHALL BE INSTALLED UPSTREAM OF THE FLUSHING POINT. PRESSURE UPSTREAM SHALL NOT FALL BELOW 20 P.S.I.
 3. PROVIDE ALL NECESSARY JOINT RESTRAINTS SUCH AS MEGALUGS, RESTRAINED JOINT HARNESS, OR APPROVED EQUAL IN ACCORDANCE WITH IRCUS STANDARDS. SEE M-3
 4. IRCUS PERSONNEL, AFTER A MINIMUM OF A 48 HOUR NOTICE BY THE CONTRACTOR, SHALL BE PRESENT FOR ALL FLUSHING ACTIVITIES AND SHALL OPERATE ALL EXISTING VALVES.
 5. FOR TRANSMISSION MAINS 12" DIAMETER OR LARGER, "PIGGING" IS REQUIRED.
 6. TEMPORARY CONNECTION FOR FLUSHING SHALL BE SAME DIAMETER PIPE AS THE NEW MAIN AND VALVE.
 7. CONTRACTOR SHALL PROVIDE ADEQUATE PROTECTION OF EXISTING MAINS DOWNSTREAM OF EXIT PIPE DURING FLUSHING OF MAIN TO MEET THE APPROVAL OF IRCUS.
 8. WHEN FLUSHING IS COMPLETE, THE TEMPORARY FLUSHING ASSEMBLY SHALL BE REMOVED AND THE GATE VALVE SHALL BE FLUSHED.
 9. FIELD INSPECTION BY IRCUS IS REQUIRED BEFORE UTILITARS ARE ACCEPTED.

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FULL BORE
FLUSHING CONNECTION

DRAWING NO. W-C

No.	REVISIONS	DATE	BY

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INDIAN RIVER COUNTY UTILITIES
DEPARTMENT

K INDIAN RIVER
M COUNTY,

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FLORIDA LICENSE NUMBER _____

DATE: _____

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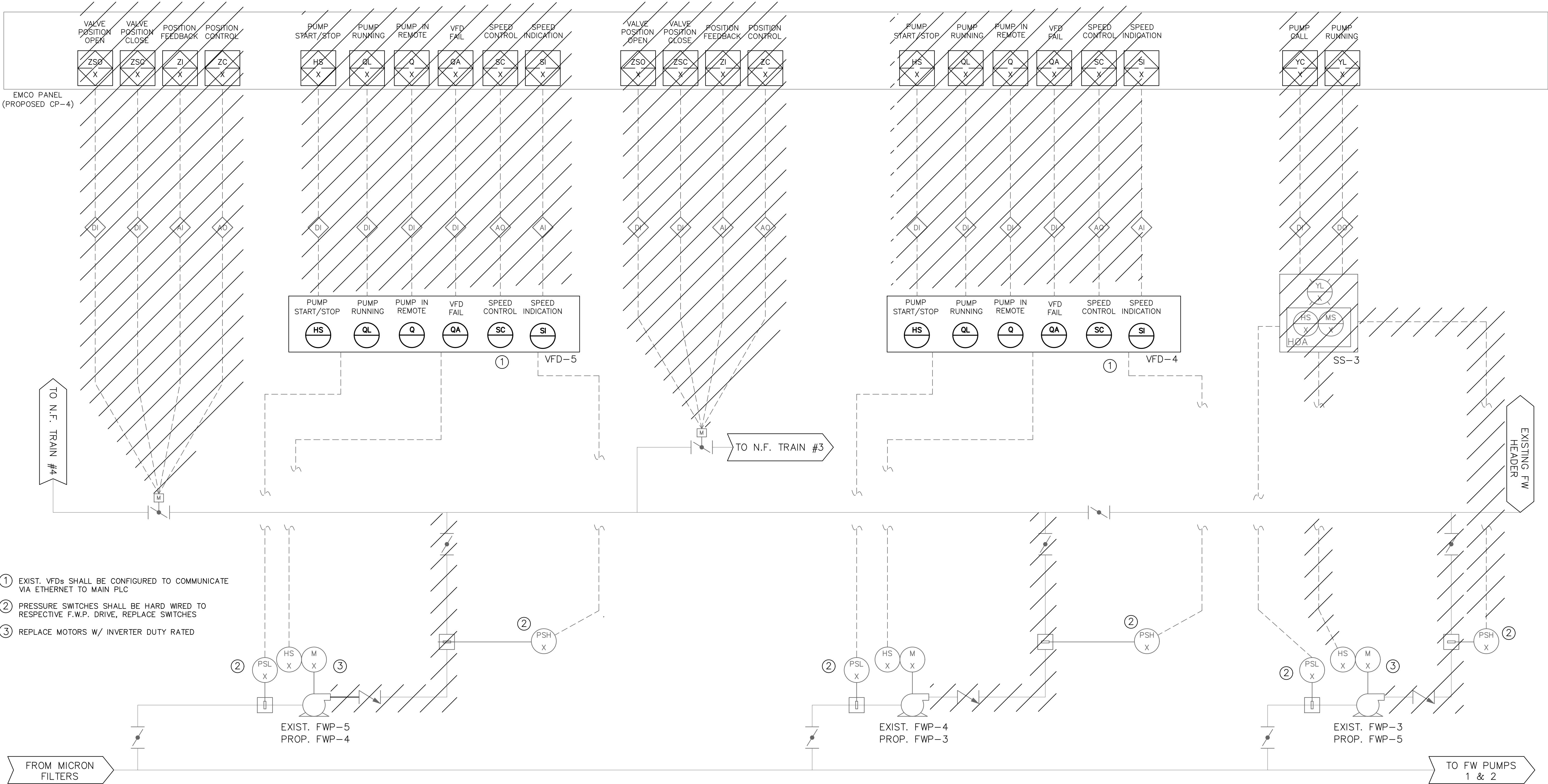
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D-8

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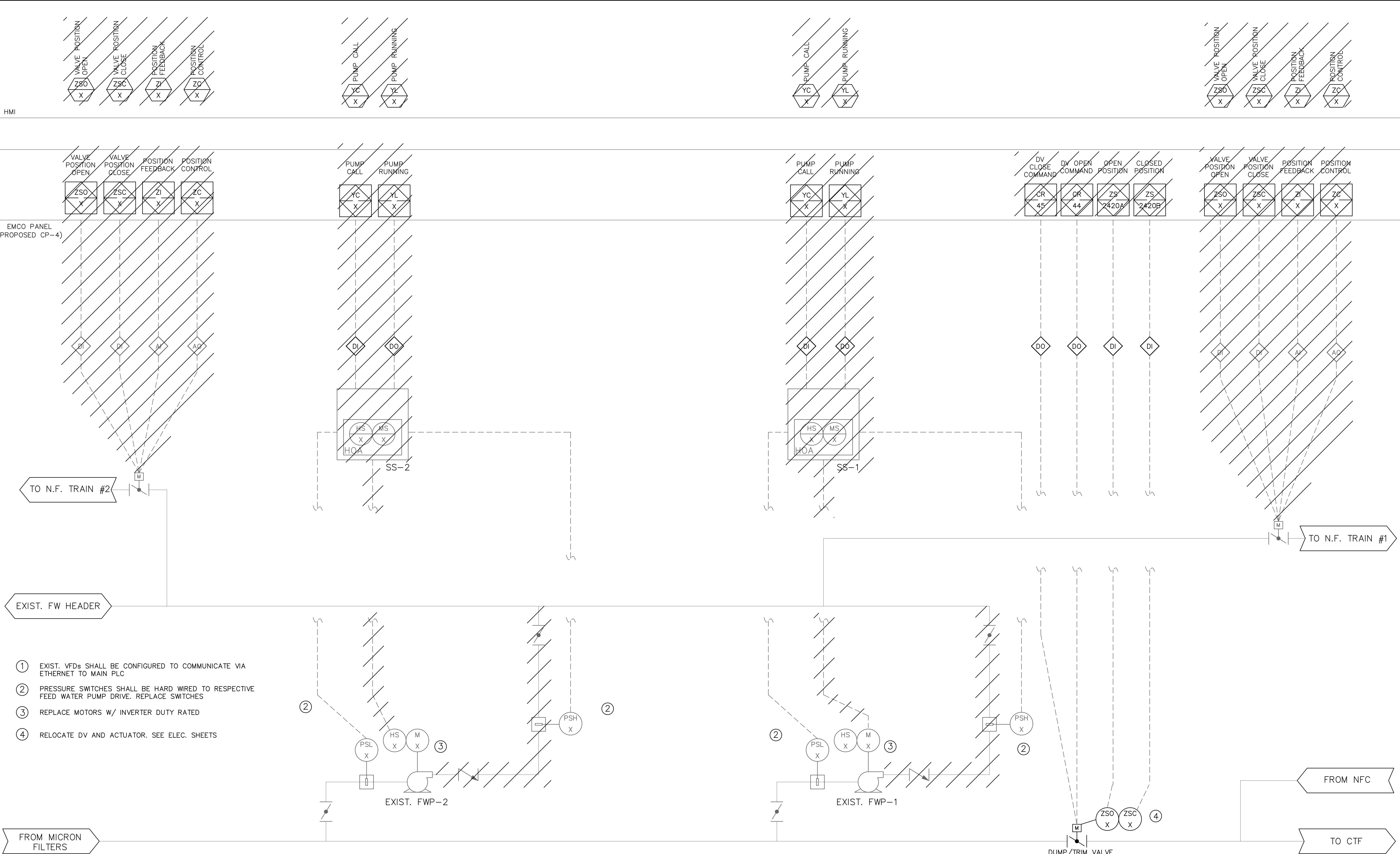
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SHEET NUMBER
I-2
74 OF 132

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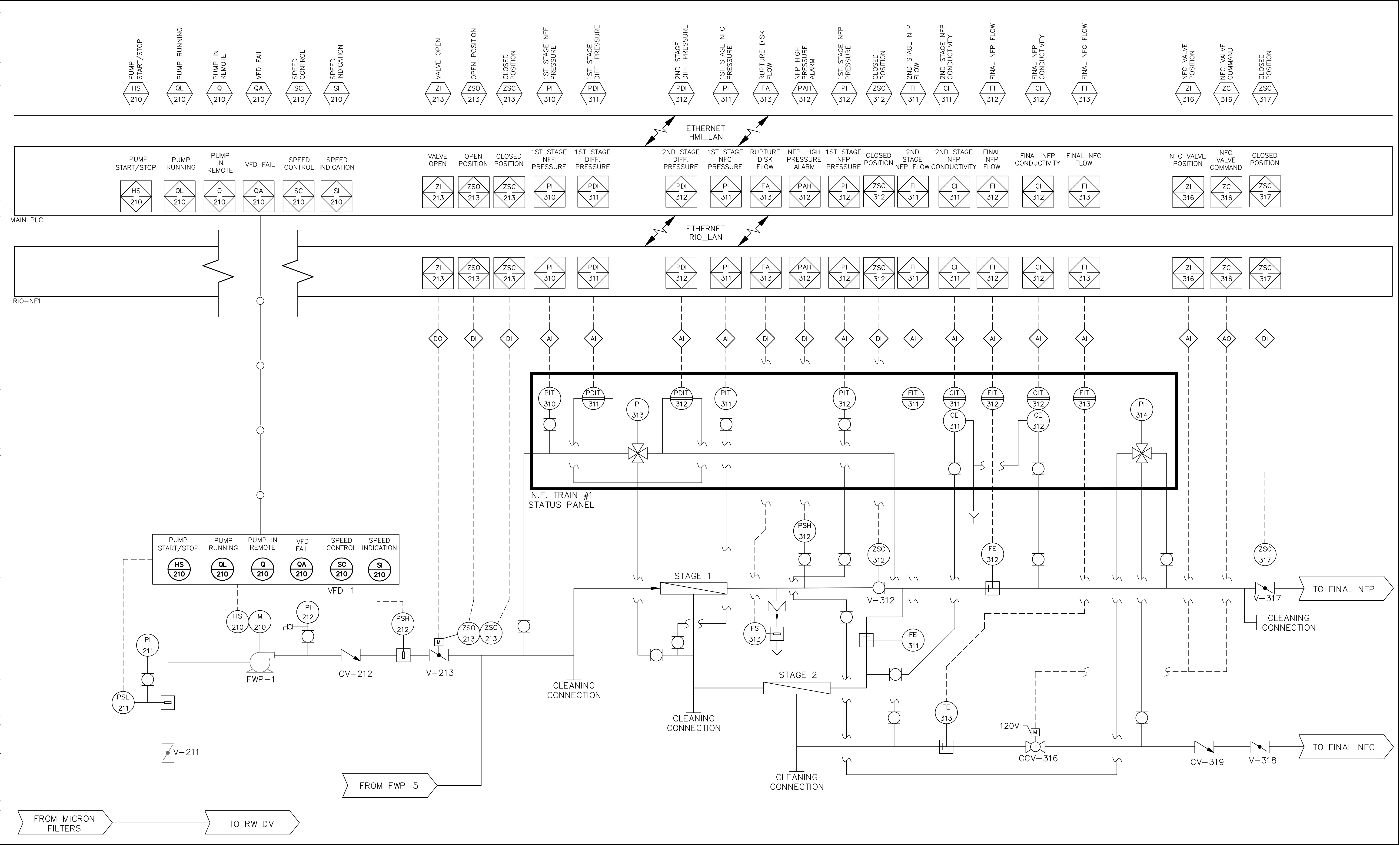
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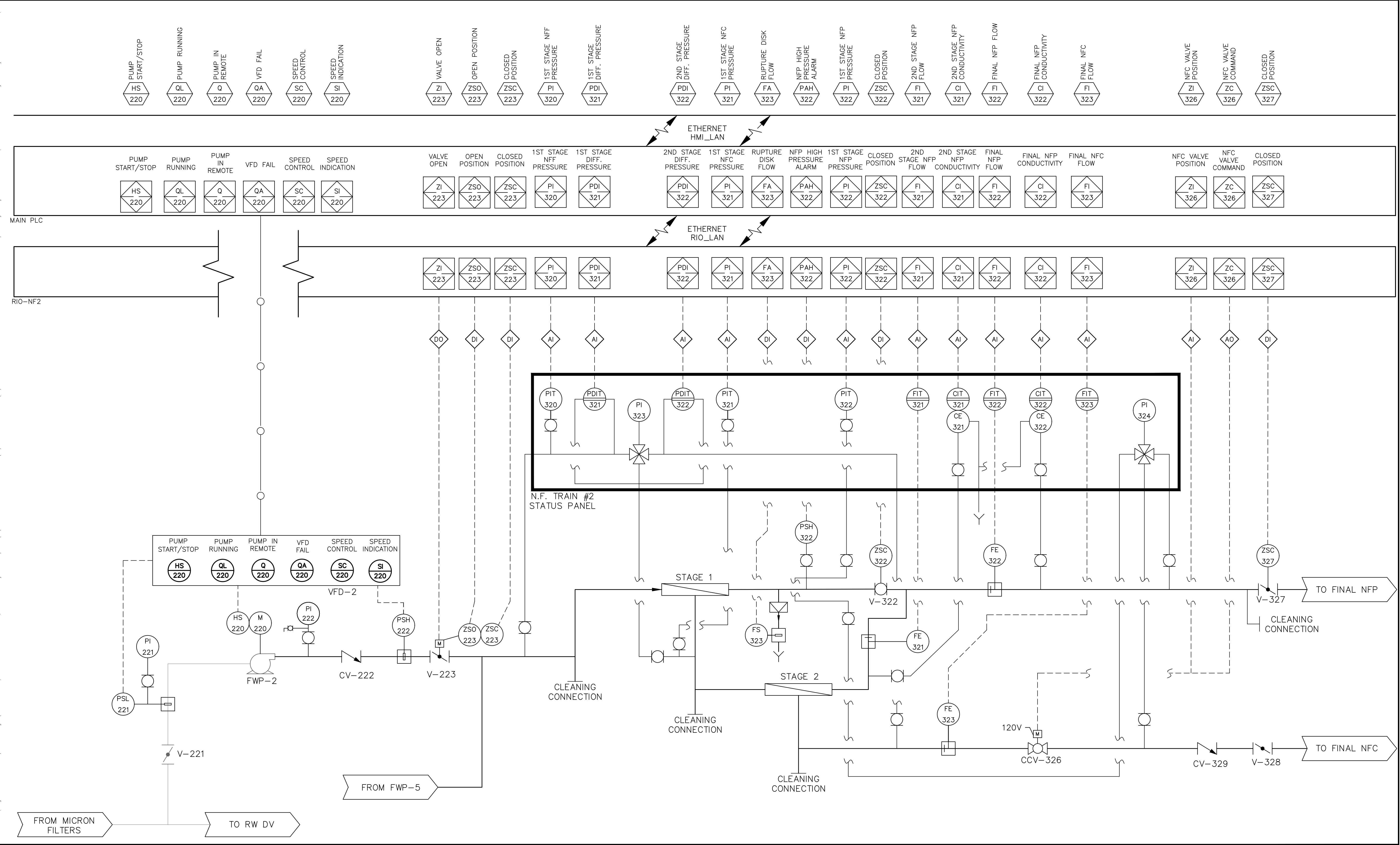
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INDIAN RIVER COUNTY, FLORIDA

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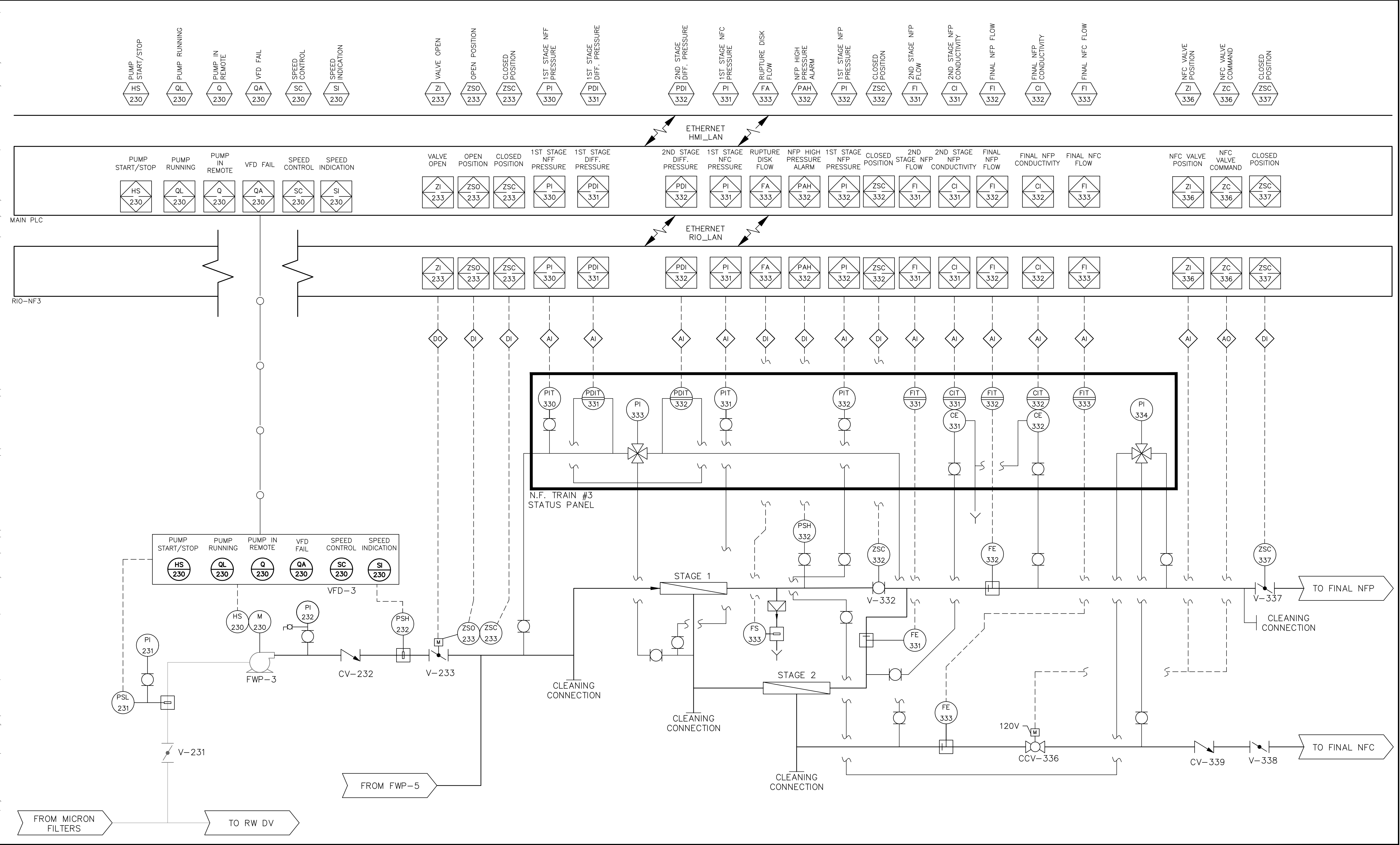
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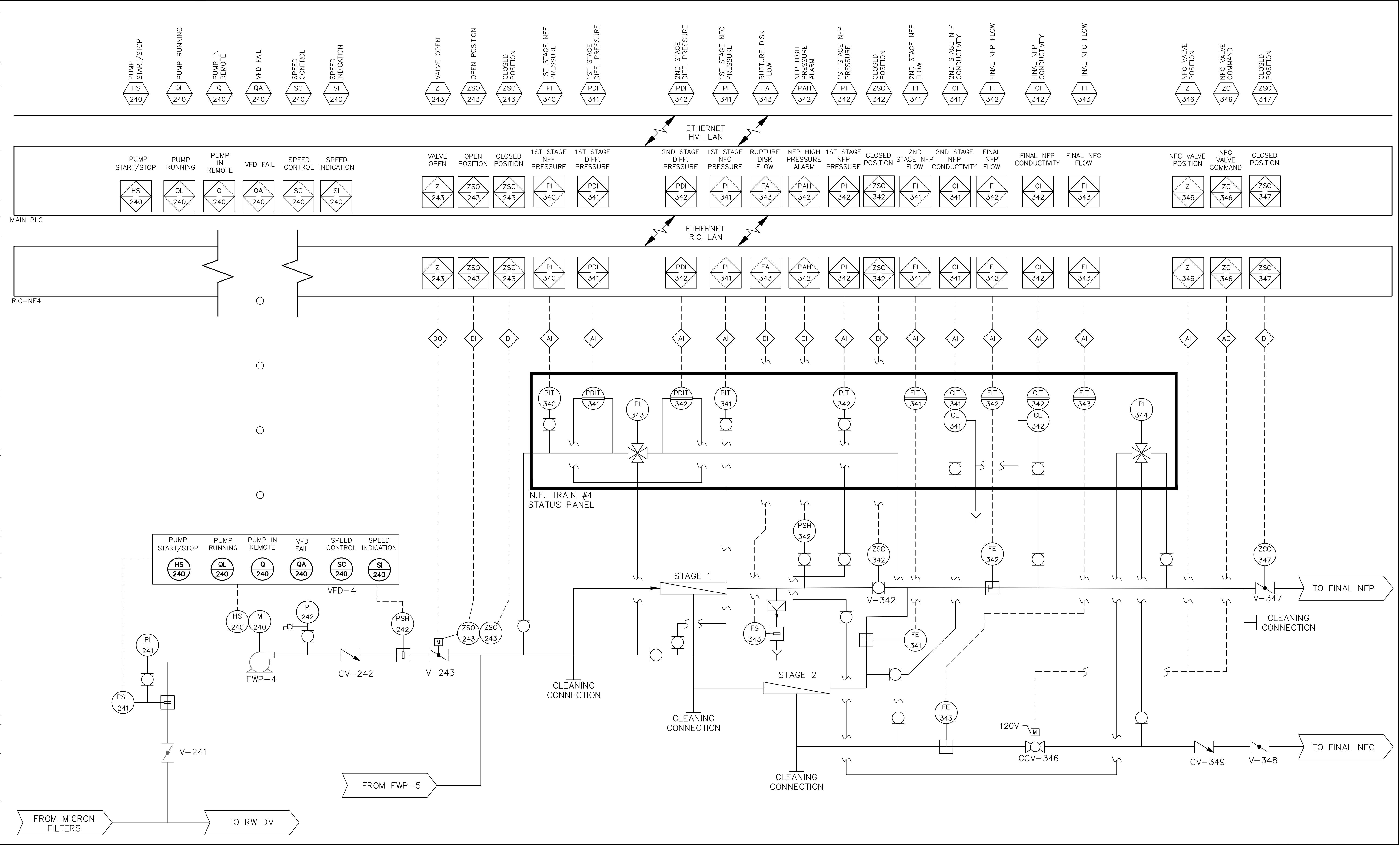
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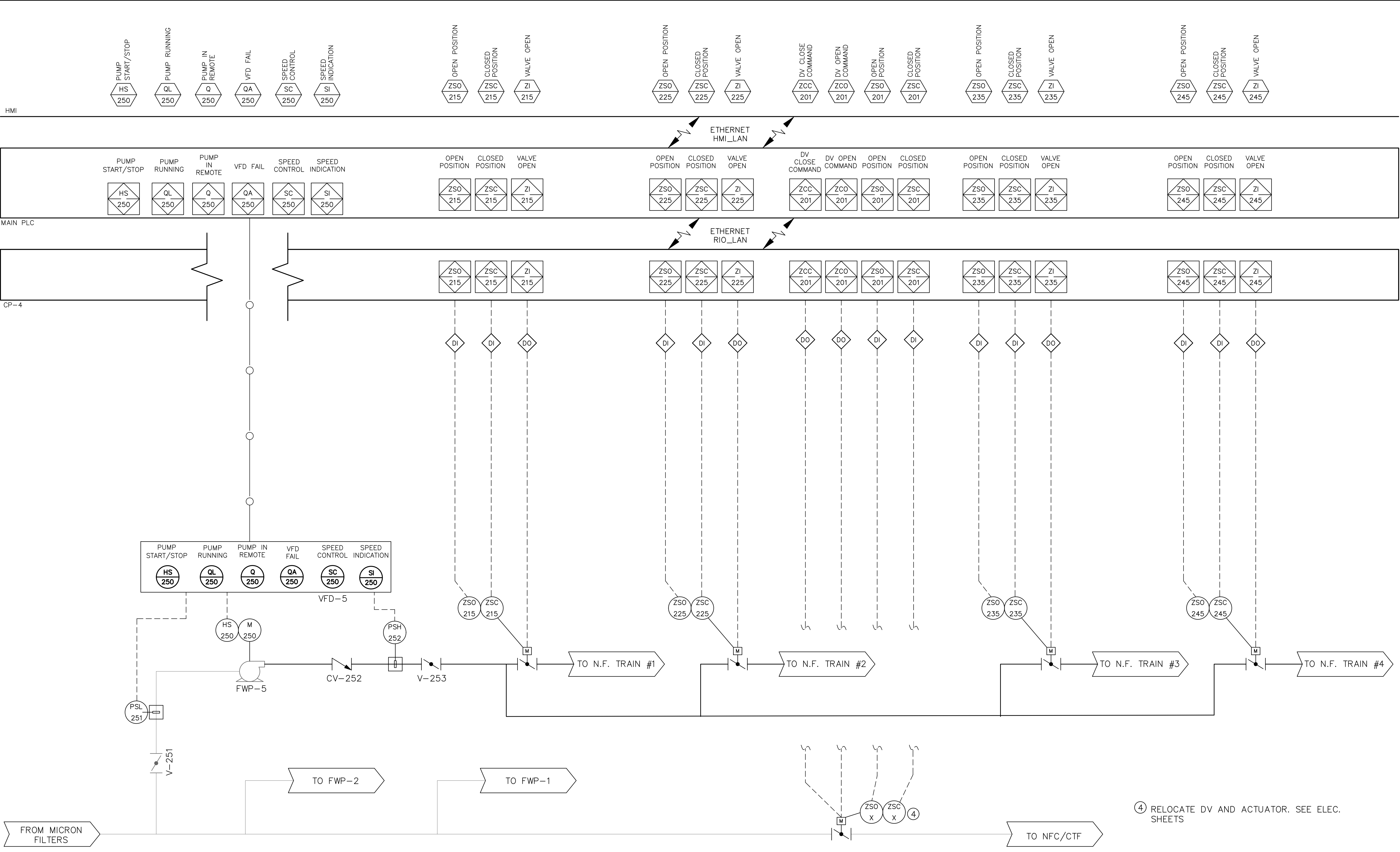
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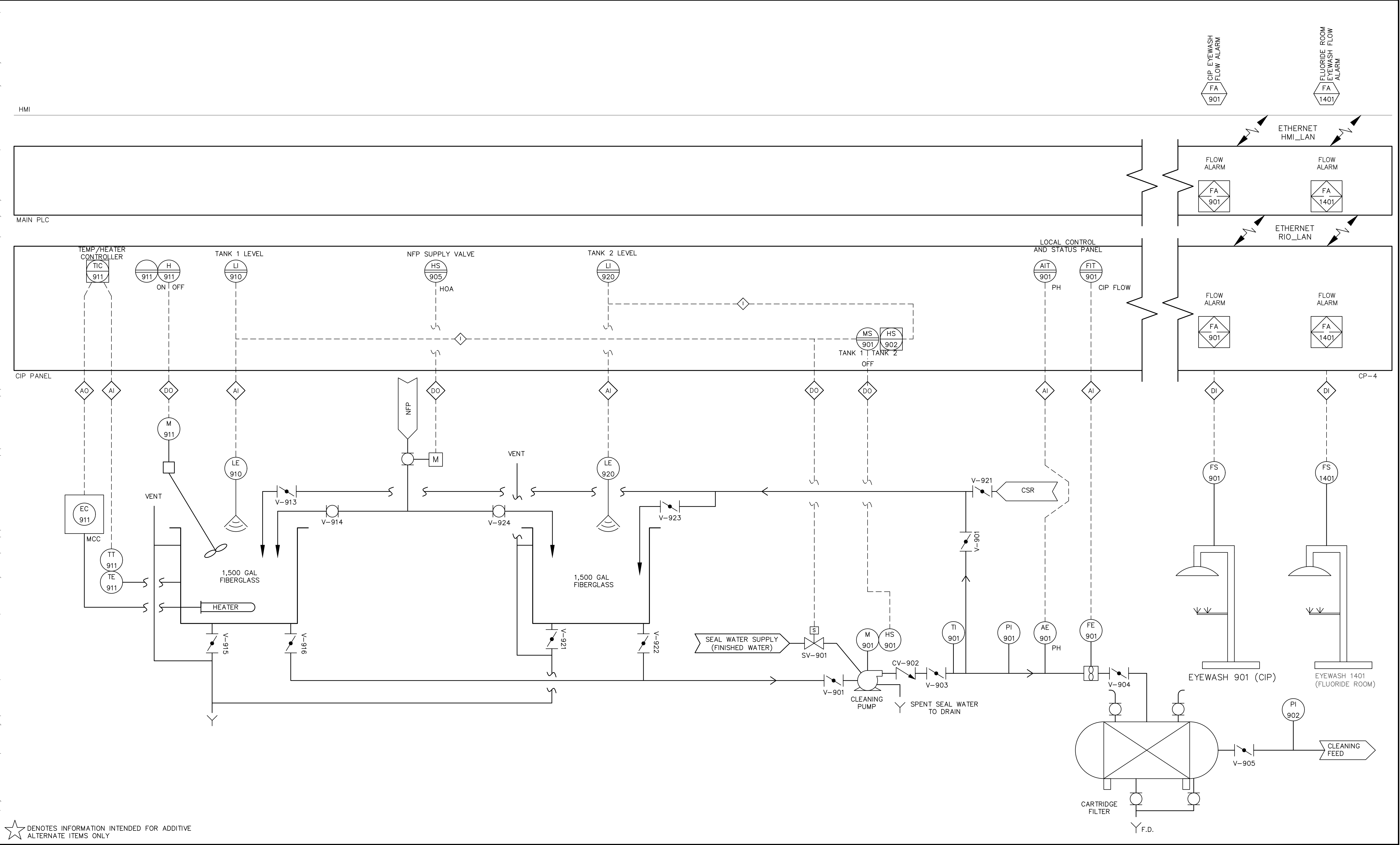
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KHA PROJECT 044572100	SOUTH OSLO ROAD WTP IMPROVEMENTS PREPARED FOR INDIAN RIVER COUNTY UTILITIES DEPARTMENT INDIAN RIVER COUNTY, FLORIDA
DATE MAR 2021	
SCALE AS SHOWN	
DESIGNED BY NPOB	
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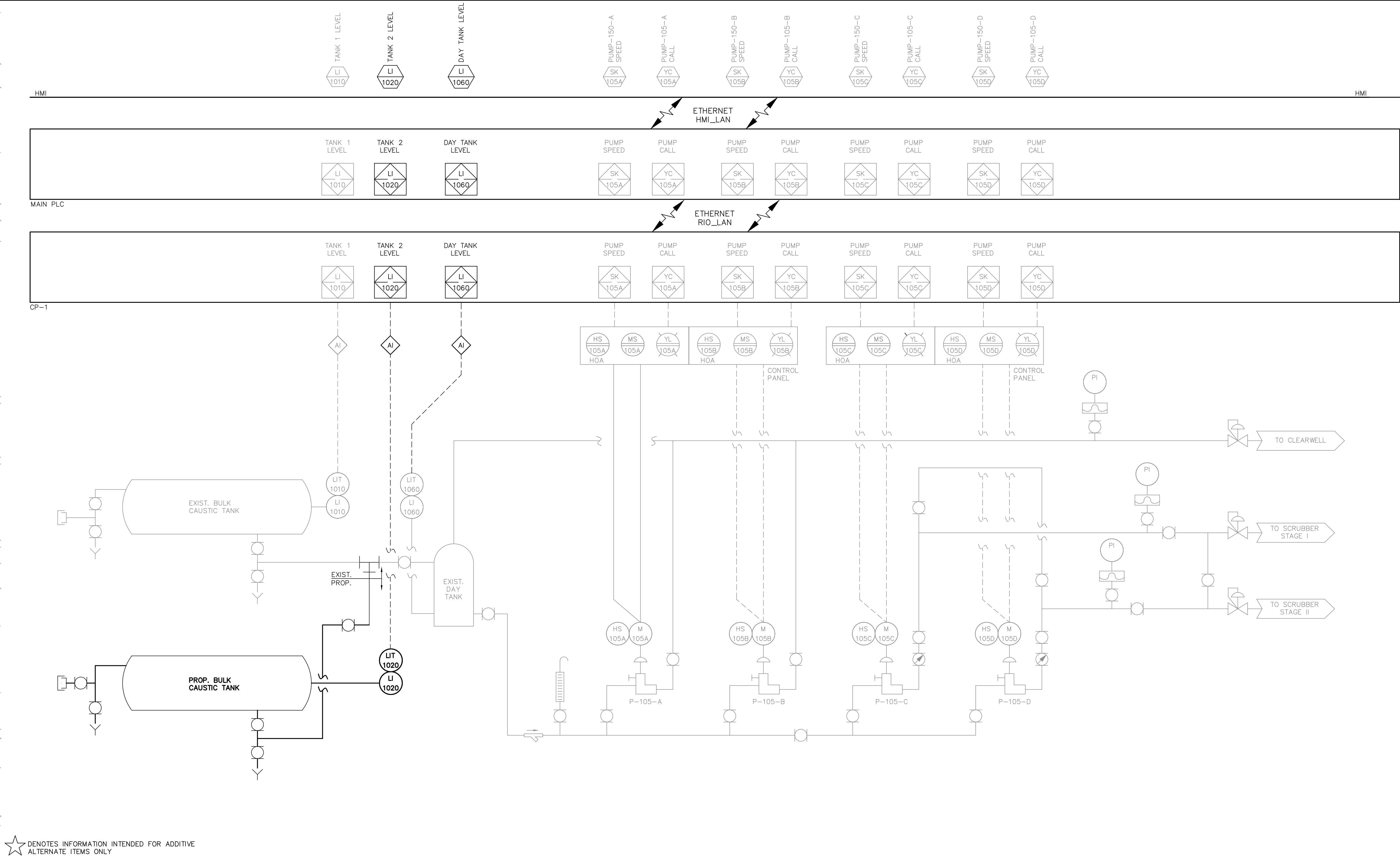
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I-11
83 OF 132

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KHA PROJECT 044572100
DATE MAR 2021
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SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
**INDIAN RIVER COUNTY UTILITIES
DEPARTMENT**

INDIAN RIVER
COUNTY,

FLORIDA

LICENSED PROFESSIONAL

NICHOLAS P.O. BLACK

FLORIDA LICENSE NUMBER
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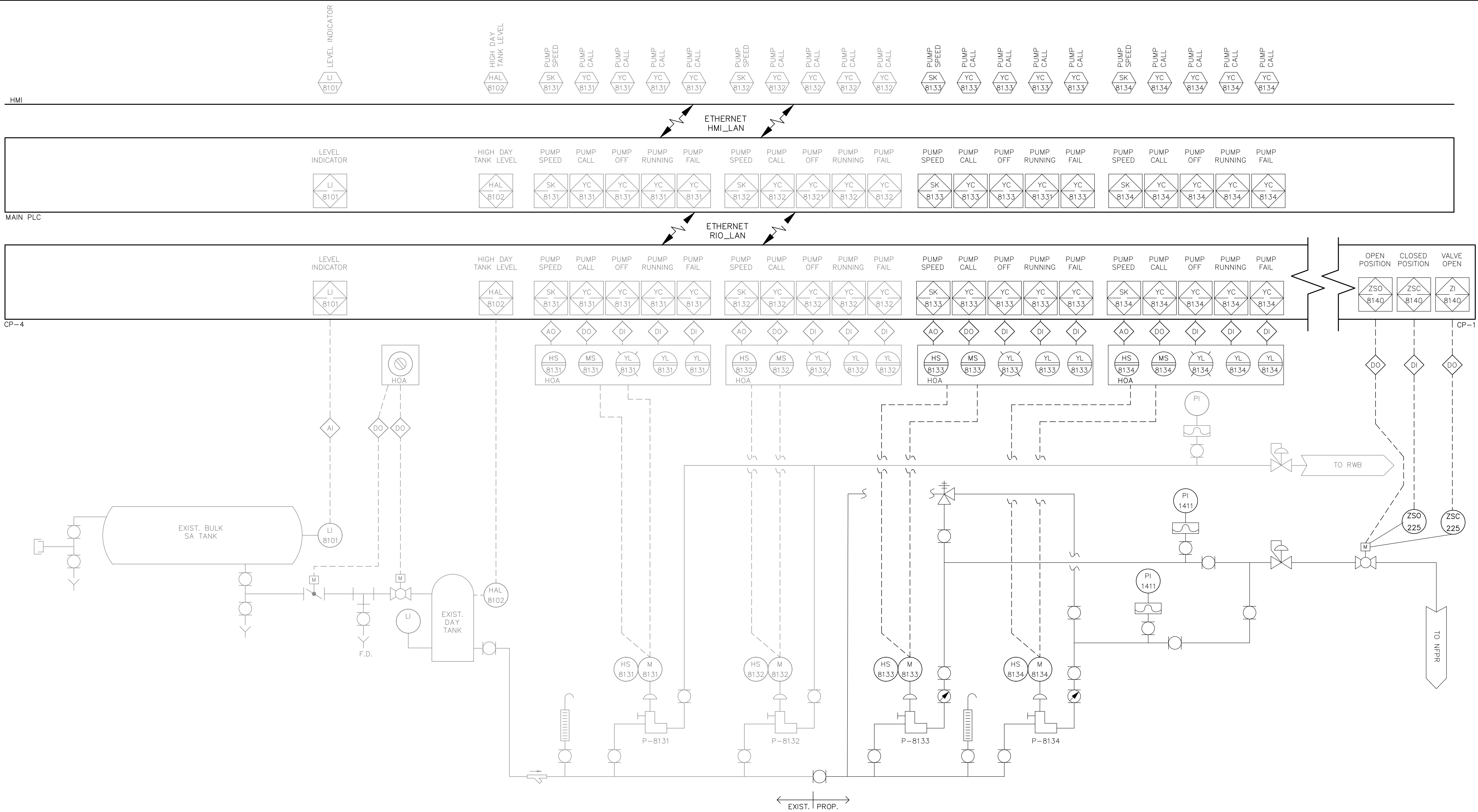
CAUSTIC FEED ★

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SOUTH OSLO ROAD WTP IMPROVEMENTS
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FLORIDA

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I-14

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Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: E-1 ELECTRICAL NOTES & LEGENDS March 19, 2021 12:18:04pm K:\WEB_Civil\044572100 - South PO WTP Design\CAD\Outside\c&w\South OSLO ROAD WTP IMPROVEMENTS - Standard\01_Electrical_Site_Plans.dwg This document, together with the concepts and designs presented herein, is an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of any information contained herein without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

GENERAL ELECTRICAL NOTES

- 1. READ THE SPECIFICATIONS**
REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. THERE ARE REQUIREMENTS NOTED IN THE SPECIFICATIONS WHICH ARE NOT INDICATED ON THE DRAWINGS.
- 2. SCHEMATIC NATURE**
PLAN VIEWS ARE SCHEMATIC IN NATURE AND MEANT TO SHOW THE SCHEMATIC ARRANGEMENT OF EQUIPMENT AND CONDUIT.
- 3. APPROVED SHOP DRAWINGS**
USE APPROVED SHOP DRAWINGS FOR LAY OUT OF EQUIPMENT. THE CONTRACT DOCUMENTS WILL VARY FROM THE SHOP DRAWINGS. INFORM THE ENGINEER IMMEDIATELY IF THERE ARE LAY OUT ISSUES OR INADEQUATE SPACE FOR EQUIPMENT OR CLEARANCES. LAND CONDUITS IN OPENINGS OF ENCLOSURES PER THE APPROVED SHOP DRAWINGS, DO NOT USE THE CONTRACT DRAWINGS.
- 4. CLEARANCES**
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MEET N.E.C. CLEARANCES ABOUT EQUIPMENT.
- 5. ROUTING**
CONDUIT ROUTING IS SCHEMATIC IN NATURE. CONDUIT ROUTING IS SHOWN FOR CLARITY ON THE CONTRACT DRAWINGS. ROUTE CONDUITS AS MAY BE REQUIRED.
- 6. FUTURES FACILITIES**
WHERE FUTURE FACILITIES ARE INDICATED. CONDUIT ROUTING SHALL ACCOUNT FOR SUCH FACILITIES.
- 7. RESPONSIBILITIES**
BIDDERS, SUPPLIERS, EQUIPMENT VENDORS, GENERAL CONTRACTOR, SUB CONTRACTORS AND OTHER SIMILAR ENTITIES ARE REQUIRED TO READ ALL THE CONTRACT DOCUMENTS INCLUDING DRAWINGS AND SPECIFICATIONS.
- 8. HOMERUNS**
CONTRACTOR SHALL COORDINATE HOME RUNS BETWEEN PLAN VIEWS. WHERE ANY CONDUIT IS SHOWN IN ANY PLAN VIEW IT SHALL BE INSTALLED THE ENTIRE LENGTH AS MAY BE REQUIRED.

ELECTRICAL ABBREVIATIONS

37C	37 CONDUCTOR CABLE	OHC	OPEN-HOLD-CLOSE
ATB	ANALOG TERMINAL BOX	OHU	OVER HEAD ELEC UTILITIES
AXS	AUTO TRANSFORMER STARTER	OL	OVER LOAD RELAY
CR	CONTROL RELAY	PB	PUSH BUTTON
CP	CONTROL PANEL	PDP	POWER DIST. PANEL
CPB	CONTROL PULL BOX	PM	POWER MONITOR
CS	CONTROL STATION	PNLBD	PANELBOARD
CTB	CONTROL TERM. BOX	PPB	POWER PULL BOX
DISC	DISCONNECT SWITCH	PSA	PANEL SURGE ARRESTOR
DMM	DIGITAL MULTIMETER	PSCP	PUMP STATION CONTROL PANEL
DS	DOOR SWITCH	PTB	POWER TERMINAL BOX
DTB	DISCRETE TERMINAL BOX	R-1/O CBL	REMOTE I/O CABLE
EN	ETHERNET	R,G,A	RED, GREEN, AMBER PILOT LIGHT
ETM	ELAPSED TIME METER	RGS	RIGID GALV. STEEL
F	FUSE	RO	READ OUT
FCP	FLYGT CONTROL PANEL	SA	SURGE ARRESTER
FO	FIBER OPTIC	SS	SELECTOR SWITCH OR 316 STAINLESS STEEL
FO-E-CBL	FIBER OPTIC ETHERNET CABLE	SWBD	SWITCH BOARD
FSA	FIELD SURGE ARRESTOR	STB	SIGNAL TERMINAL BOX
FWP	FEED WATER PUMP	TC	TIME CLOCK
GFI	GROUND FAULT INTERRUPTER	TOT	TOTALIZER
HOA	HAND-OFF-AUTO	TS	TEST SWITCH
HOR	HAND-OFF-REMOTE	VCP	VENDOR CP
IPB	INST. PULL BOX	VFD	VARIABLE FREQUENCY DRIVE
ITB	INST. TERMINAL BOX	WP	WEATHER PROOF
LA	LIGHTNING ARRESTER	WW	WIRE WAY
LOR	LOCAL-OFF-REMOTE	WWCP	WET WELL CONTROL PANEL
M	MOTOR STARTER	ZSL	POSITION SWITCH CLOSED
MB+	MODBUS PLUS	ZSO	POSITION SWITCH OPEN
MCC	MOTOR CONTROL CENTER		
MLO	MAIN LUG ONLY		
NF	NON FUSED OR NANO FILTRATION		

★ DENOTES ADD ALTERNATE BID ITEM, #=1 THRU 7.

ELECTRICAL LEGEND

	RACEWAY EXPOSED		LEVEL SWITCH, FLOAT SWITCH		SWITCH 48\" AFF,
	LIGHTING RACEWAY CONCEALED		PRESSURE SWITCH		SWITCH 48\" AFF, 3-WAY
	RACEWAY TURNED UP/DOWN		LIMIT SWITCH		ENCLOSED COMBINATION STARTER
	MOTOR		THERMAL SWITCH		JUNCTION BOX
	TRANSFORMER		HEATER		PANELBOARD, ELECTRICAL EQUIP. ENCL
	FUSE		PILOT LIGHT		CROSS HATCH DENOTES DELETION
	CIRCUIT BREAKER		DENOTES SEPARATE CONDUITS WITH SEPARATE WIRE		MANUAL MOTOR STARTER
	CAPACITOR		DENOTES PANELBOARD A, CIRCUIT 3		RED, MAINTAINED PUSH BUTTON
	LIGHTNING ARRESTER		ELAPSED TIME METER		TIMING CONTACT
	SAFETY DISCONNECT SWITCH, HP RATED		SELECTOR SWITCH		FLOW SWITCH
	GROUND		PUSH BUTTON ON-OFF SWITCH		CONTROL RELAY, MOTOR STARTER, ETC.
	DUPLEX, 14\" AFF		DENOTES CONDUIT TAG 01		
	SIMPLEX, 14\" AFF				
	NORMALLY OPEN CONTACT				
	NORMALLY CLOSED CONTACT				

MATERIAL SCHEDULE

LOCATION	CONDUIT	ENCLOSURE MATERIALS	ENCLOSURE NEMA RATING	FASTENERS, STRUT, THREADED ROD, ETC.	REMARKS
INTERIOR					
EXPOSED IN AIR CONDITIONED EQUIPMENT ROOMS	PVC SCHED 80	PAINTED STEEL	1	316 SS	NOT APPLICABLE
EXPOSED IN PUMP ROOMS, EQUIPMENT ROOMS, ETC. (NOT AIR CONDITIONED)	PVC SCHED 80	316 SS	1A GASKETED	316 SS	NOT APPLICABLE
EXPOSED IN CHEMICAL ROOMS ETC.	PVC SCHED. 80	316 SS	4X	316 SS	
CONCEALED IN BLOCK WALLS, POURED CONCRETE WALLS, ETC.	PVC SCHED. 40	N/A	N/A	316 SS	
EXTERIOR					
BELOW GRADE	PVC SCHED. 40	CONCRETE BOXES	N/A	316 SS	
ABOVE GRADE	PVC SCHED. 80	316 SS	4X	316 SS	

GENERAL NOTES

1. THE FOLLOWING SHALL ESTABLISH THE MINIMUM LEVEL OF QUALITY FOR MATERIALS.
2. THE FOLLOWING SHALL APPLY UNLESS OTHERWISE INDICATED BY DRAWINGS
3. THE FOLLOWING SHALL NOT APPLY TO POWER TRANSFORMERS, LIGHT FIXTURES AND LIGHT POLES, THOSE ELEMENTS ARE NOTED OR INDICATED ELSEWHERE

LEGEND

N/A	NOT APPLICABLE
316 SS	316 STAINLESS STEEL
EMT	ELECTRICAL METALLIC TUBING, GALV. STEEL
ALUMINUM	ALUMINUM RIGID CONDUIT 6063 ALLOY, NOT ALUMINUM EMT

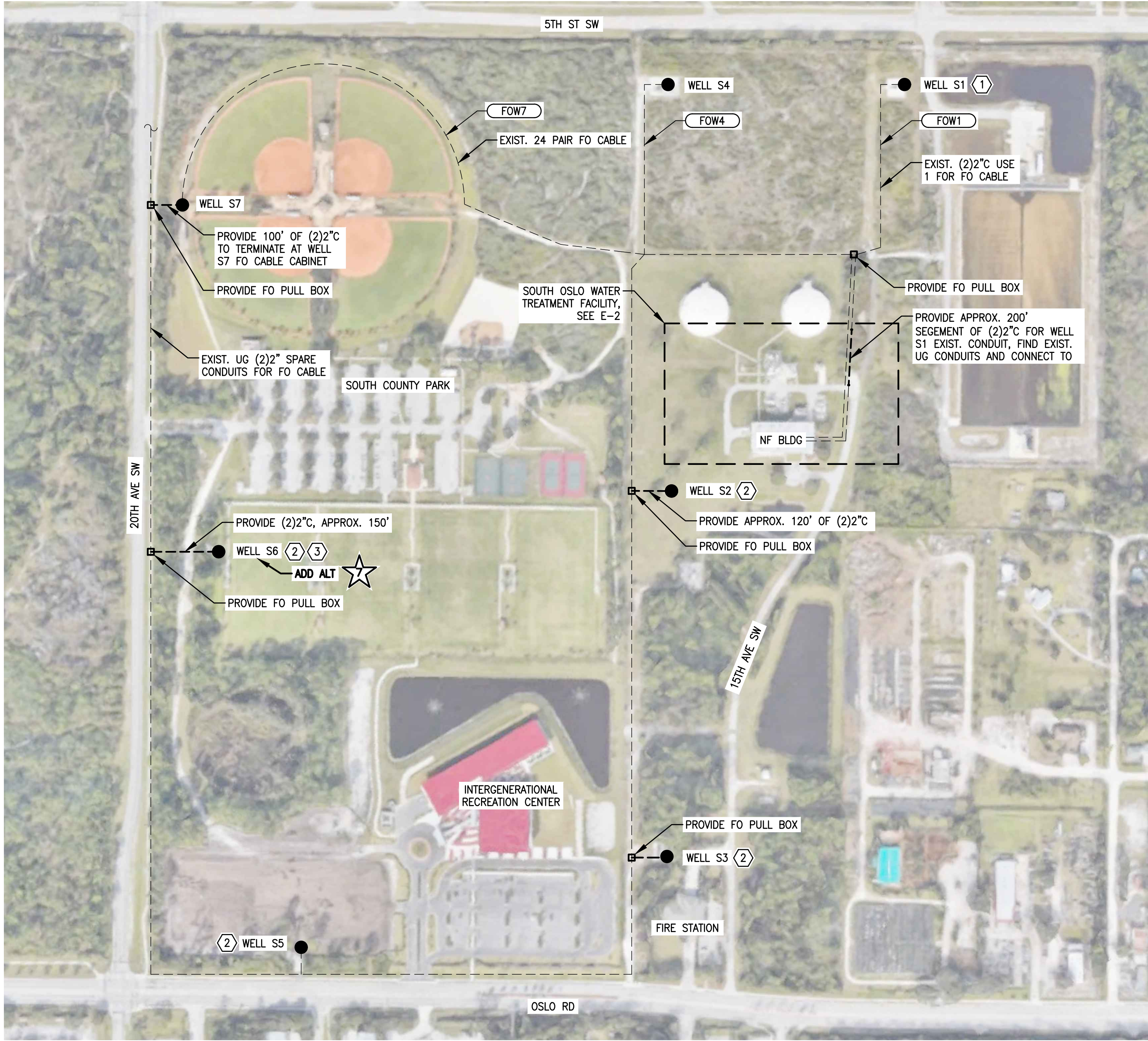
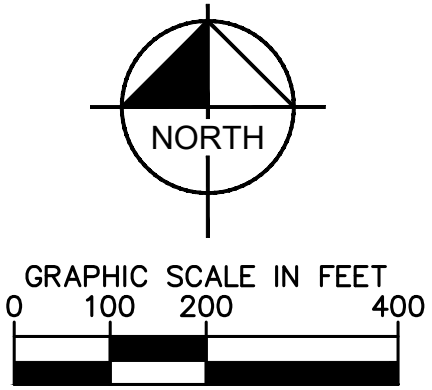
SPECIFIC ELECTRICAL NOTES

- ① WELL SITE W/(2) 2" SPARE CONDUITS AT EXISTING RTU ENCLOSURE FOR FUTURE FO CABLE.
- ② PROVIDE AND INSTALL (2) 2" 6-PAIR FO CABLE.
- ③ AT EXISTING WELL S6 PROVIDE SOFT STARTER ENCLOSURE & FIELD REPLACE INSTRUMENT, SEE DRAWINGS AND SPECS.

GENERAL ELECTRICAL NOTES

1. FO PULL BOXES SHALL BE PRECAST 30"x48"x30" W/GALVANIZED DROP IN BOLT COVER (H=20 RATED).
2. AT S1, S2, S3, S4, S5, AND S6 WELL SITES REPLACE EXISTING RTU ENCLOSURE WITH PLC PANEL. PROVIDE NEW MOUNTING HARDWARE AS REQUIRED.
3. PROVIDE NEW FO CABLE (6 FIBER PAIR) FROM WTP TO EACH WELL SITE.
4. REFER TO SPECS FOR BASE BID AND ADD ALTERNATE BID.

24x36 SHEET SIZE: 1"= 200'
11x17 SHEET SIZE: 1"= 400'



OVERALL ELECTRICAL SITE PLAN

NTS

C&W engineering
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REGISTRATION NUMBERS
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MICHAEL A. GUIDA, P.E. 60755

No.	REVISIONS	DATE	BY

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KHA PROJECT
044572100
DATE
MAR 2021
SCALE AS SHOWN
DESIGNED BY JLR
DRAWN BY AOD
CHECKED BY MAG

SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
INDIAN RIVER COUNTY UTILITIES DEPARTMENT
INDIAN RIVER COUNTY, FLORIDA

LICENSED PROFESSIONAL

MICHAEL A. GUIDA

FLORIDA LICENSE NUMBER
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ELECTRICAL NOTES & LEGENDS

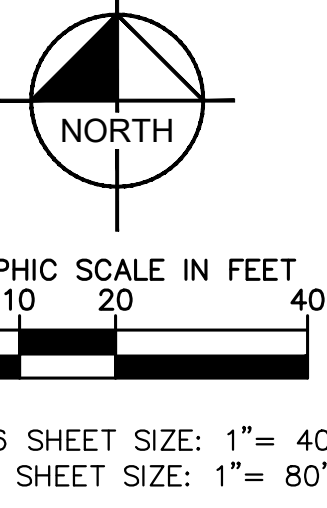
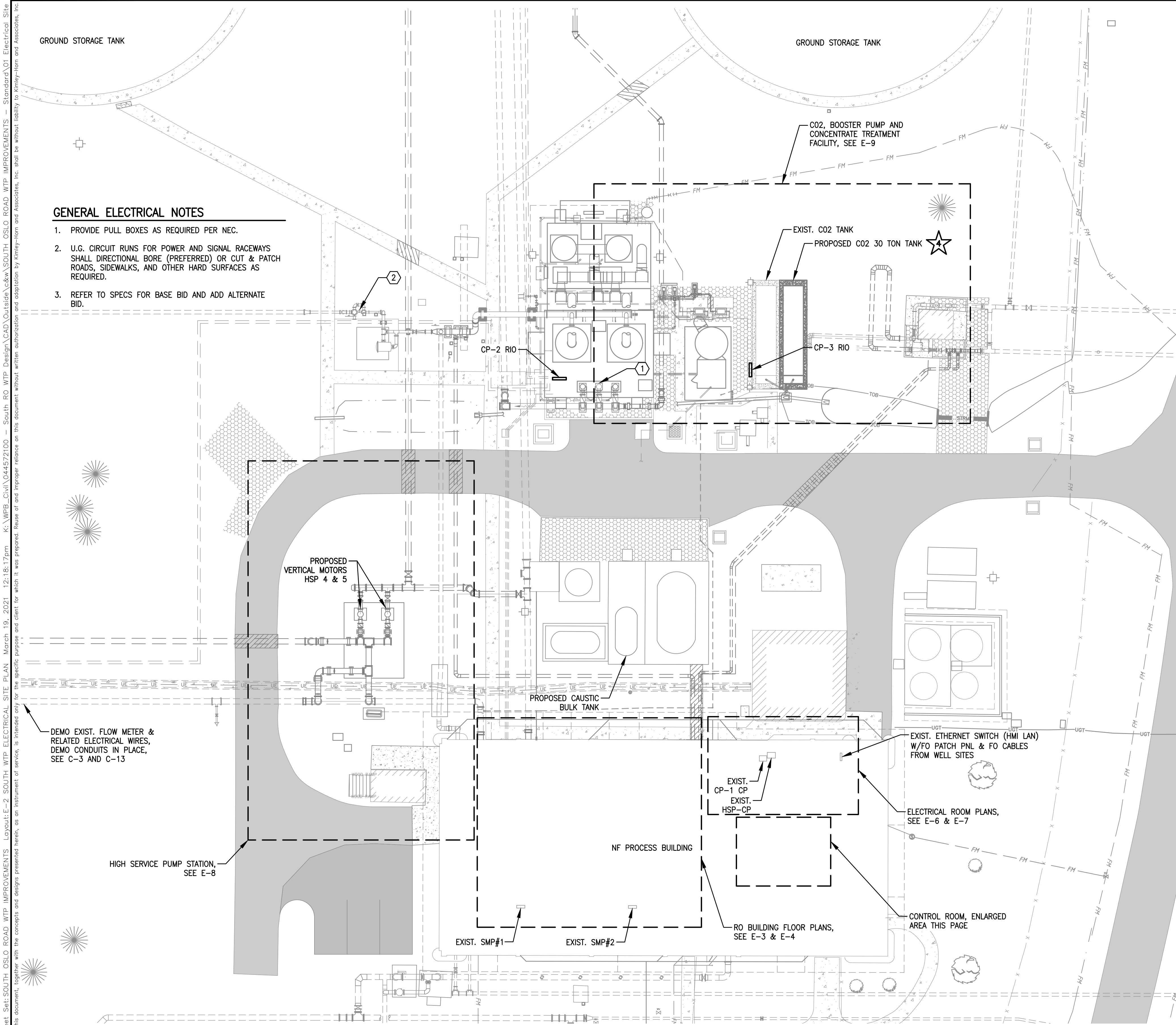
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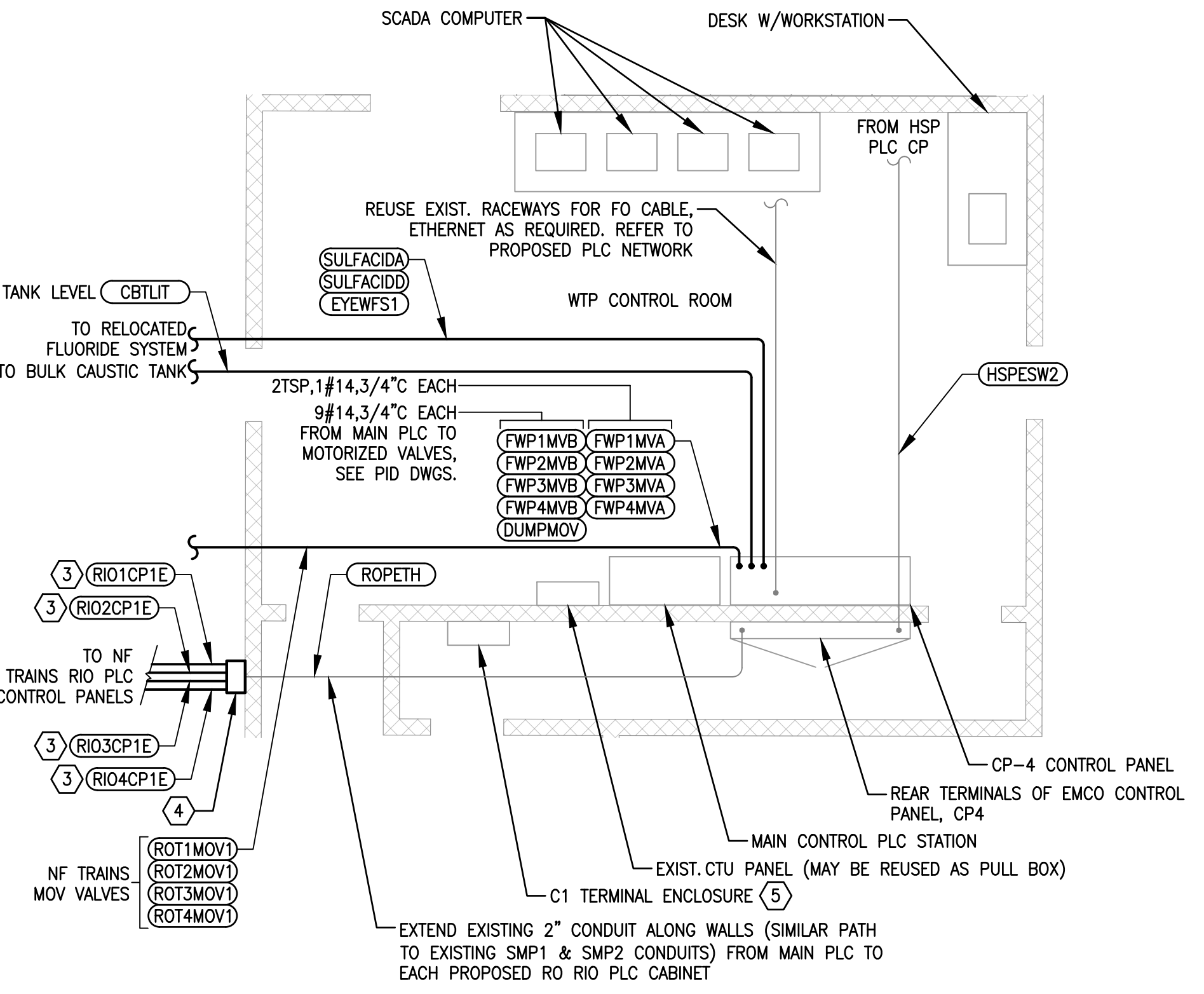
87 OF 132

Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS, Lovelock-E-2 SOUTH WTP ELECTRICAL SITE PLAN, March 19, 2021 12:18:17pm, K:\WEB_Civil\044572100 - South OSLO Road WTP Improvements - Standard\01 Electrical Site Plans

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- SPECIFIC ELECTRICAL NOTES**
- 1. REPLACE EXIST. TRANSFER PUMP MOTORS, RECONNECT HEATERS (MOTOR PROTECTIVE WIRES).
 - 2. REPLACE EXISTING MOTOR OPERATED VALVE AND REUSE EXISTING WIRES & CABLE FOR POWER & CONTROL.
 - 3. CAT7a ETHERNET CABLE IN 1" FROM RIO PLC CP TO MCP, ROUTE SIMILAR TO SMP CONDUITS BACK TO CONTROL ROOM MCP, USE PORTION OF EXISTING RACEWAYS, PORTION VIA ROPETH EXISTING CONDUIT.
 - 4. PROVIDE A 24"x30"x12" MIN JBOX WALLMOUNTED.
 - 5. DEMO EXIST. CTU RADIO & RELATED COMPONENTS AFTER ALL WELLS ARE CONVERTED TO F.O. COMMUNICATIONS.



CONTROL ROOM EQUIPMENT PLAN
SCALE: 1" = 5'

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PREPARED FOR
**INDIAN RIVER COUNTY UTILITIES
DEPARTMENT**

INDIAN RIVER COUNTY,
FLORIDA

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FLORIDA LICENSE NUMBER
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**SOUTH WTP ELECTRICAL SITE
PLAN**

SHEET NUMBER

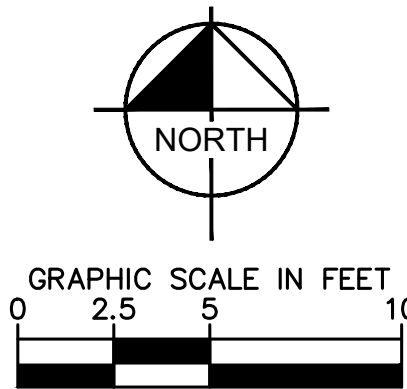
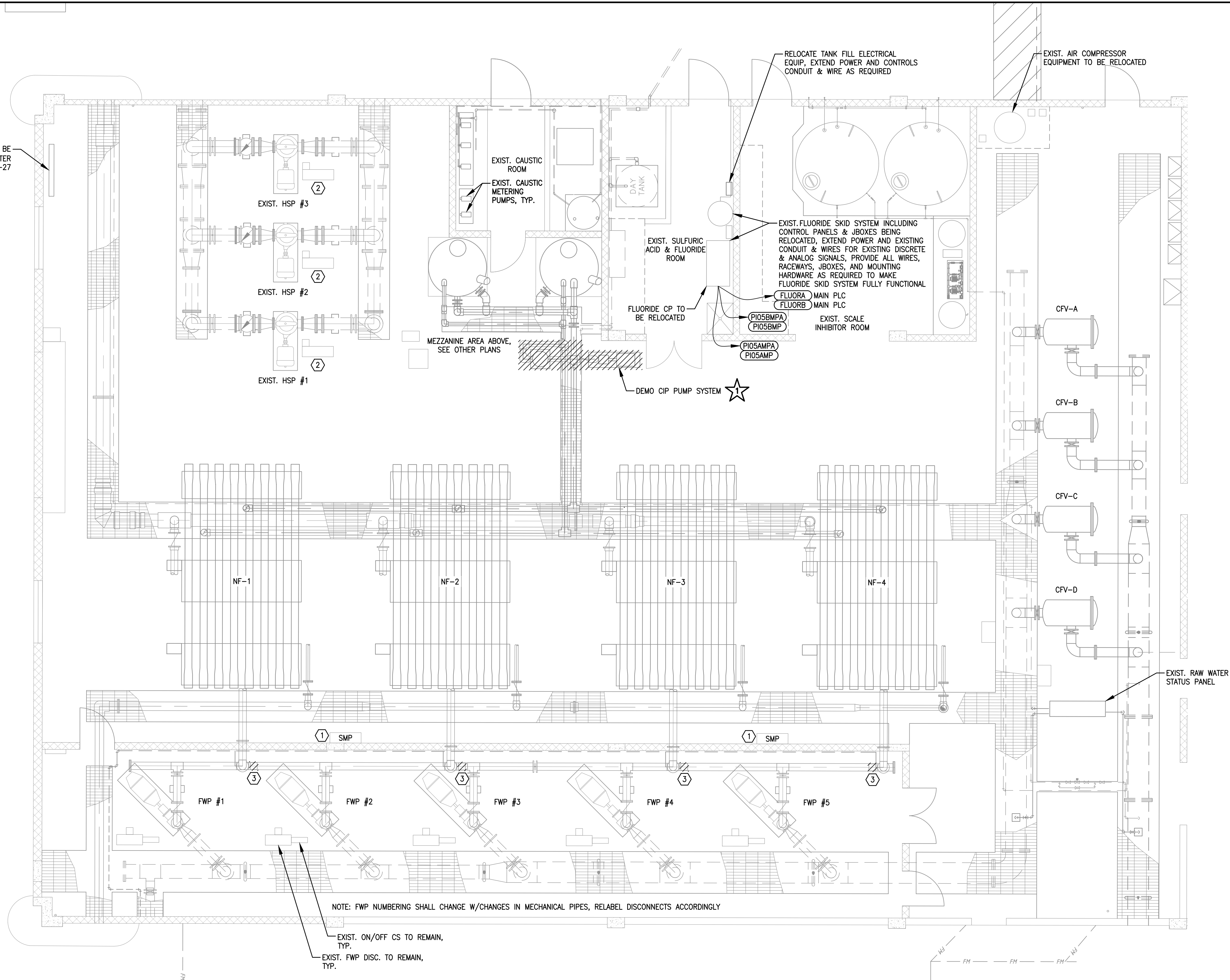
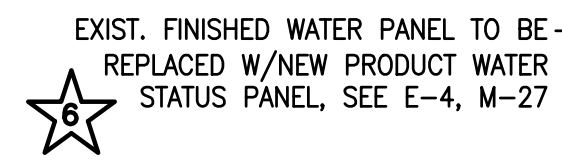
E-2

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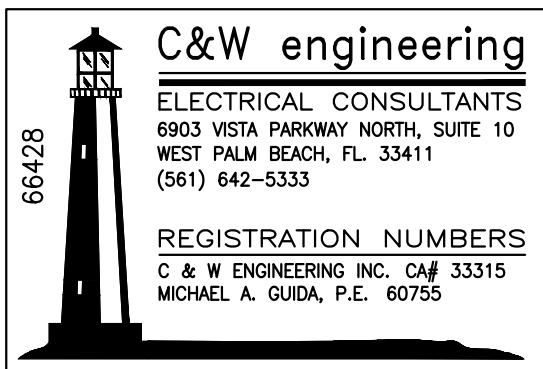
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MICHAEL A. GUIDA, P.E. 60755



24x36 SHEET SIZE: 1"= 40'
11x17 SHEET SIZE: 1"= 80'

SPECIFIC ELECTRICAL NOTES

- ① CONTRACTOR SHALL PROVIDE POWER AND MAINTAIN ADJACENT TRAIN SIGNALS WORKING WHILE ONE TRAIN IS DOWN BEING REPLACED (REFER TO PHASING NOTES AND OTHER DRAWINGS).
- ② EXISTING HSP 1, 2, & 3, SHALL REMAIN AND BE REUSED INCLUDING POWER FEEDERS, FLOW SWITCH SIGNALS AND MOTOR THERMAL PROTECTION CIRCUITS TO EXISTING VFD EQUIPMENT.
- ③ DEMO EXISTING AIR OPERATED MOTORIZED VALVES, FOLLOW PHASING, AND PROPOSED SEQUENCE OF EQUIPMENT DEMOLITION AND REPLACEMENT. SEE E-4.



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CHECKED BY	MAG

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INDIAN RIVER COUNTY UTILITIES
DEPARTMENT

INDIAN RIVER COUNTY,

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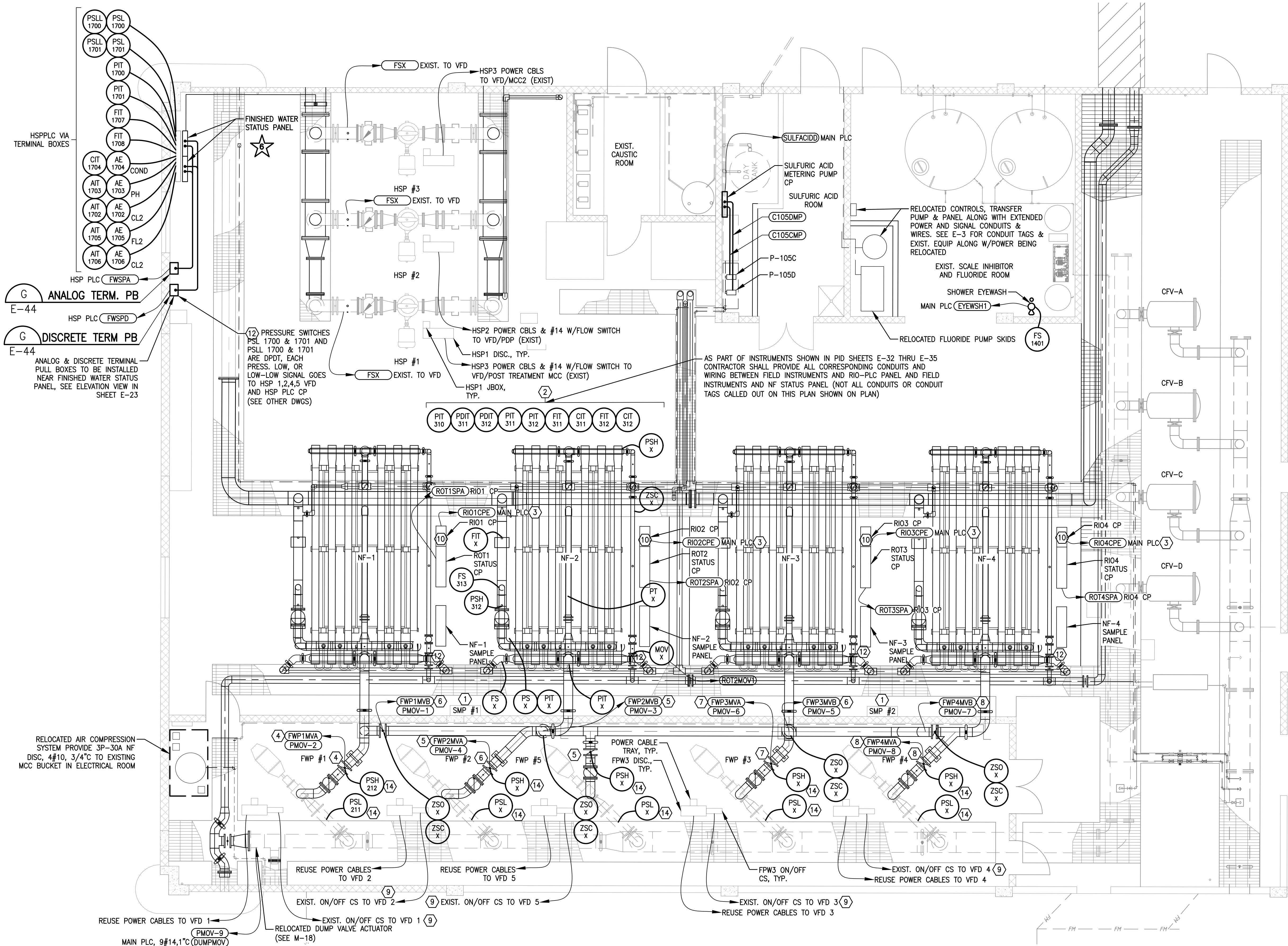
EXISTING R.O. BUILDING
ELECTRICAL PROCESS FLOOR
PLAN

SHEET NUMBER

E-3

89 OF 132

Plotted By: King, Bertrand
Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS - LOVUW-E-4
PROPOSED R.O. BUILDING ELECTRICAL FLOOR PLAN - March 19, 2021 - 12:18:33pm - K:\WEB-Civil\044572100 - South OSLO ROAD WTP Design\CAD\Outside\c&w SOUTH OSLO ROAD WTP IMPROVEMENTS - Standard\01 Electrical\LOVUW-E-4.dwg
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SPECIFIC ELECTRICAL NOTES

- COORDINATE W/CSD PERSONNEL DURING TRAIN EQUIPMENT REPLACEMENT TO MAINTAIN SMP#1 & SMP#2 CP INTERNAL COMPONENTS & PLC EQUIPMENT TEMPORARILY OPERATIONAL. DEMOLITION OF EXISTING SMP#1 AND SMP#2 PANELS SHALL ONLY BE CONSIDERED AFTER ALL NF TRAINS HAVE BEEN CONVERTED.
- NF SKID INSTRUMENTS SHOWN ON NF-2 TRAIN ARE TYPICAL FOR EACH NF-X TRAIN. SEE PID SHEETS FOR EACH NF-X TRAIN. TERMINATE AT APPROPRIATE RIO-NFX PLC PANEL.
- INSTALL 1" CONDUIT FROM EACH N.F. TRAIN RIO PLC PANEL TO MAIN PLC EXPOSED ALONG WALLS AND CEILING. PROVIDE CONDUIT SUPPORTS & J-BOXES (NEMA 4X) AS REQUIRED TO REACH MAIN CONTROL PANEL. USE PORTION OF INSTALLED 2" CONDUIT ABOVE MAIN CP4, SEE E-2.
- MOV213 TO RIO-NF1 PLC PANEL.
- MOV253 TO CP-4 PLC PANEL.
- MOV223 TO RIO-NF-2 PLC PANEL.
- MOV233 TO RIO-NF-3 PLC PANEL.
- MOV243 TO RIO-NF-4 PLC PANEL.
- REUSE PORTION OF EXISTING CONTROL WIRES FROM EXISTING ON/OFF CONTROL STATIONS TO EACH FWP VFD. EXTEND EXISTING WIRES & 3/4" AS REQUIRED IN ELECTRICAL ROOM AS LOCATIONS OF NEW FWP VFDs 1, 2, & 3 ARE DIFFERENT FROM FORMER SOFT STARTERS.
- RIOX-NF PLC CP, WERE:
X=1 FOR RIO-NF1
X=2 FOR RIO-NF2
X=3 FOR RIO-NF3
X=4 FOR RIO-NF4
- MOTOR ACTUATED VALVE BY FWP.
- NF TRAIN MOV VALVE, PROVIDE 120V FROM NF RIOX CP.
- PROVIDE 3/14, 3/4" FROM EACH OF THE PSL OR PSL SWITCHES TO A CORRESPONDING HSP VFD DRIVE. ALL VFD DRIVES (HSP1, HSP2, HSP4, HSP5) SHALL GET ONE PSL OR PSL SWITCH SIGNAL EXCEPT HSP3 VFD.
- TO CORRESPONDING VFD EQUIP. CONTROLS, SEE OTHER DRAWINGS

GENERAL ELECTRICAL NOTES

- REFER TO SPECS FOR BASE BID AND ADD ALTERNATE BID.
- REUSE EXIST POWER AND CONTROL CABLES TO FWP; PROVIDE ADDITIONAL #14 WIRES PER THE DRAWINGS TO EXIST. AND NEW VFD EQUIP. AND PLC EQUIPMENT AS REQUIRED.
- REUSE EXIST. POWER AND CONTROL CABLES TO HSP; PROVIDE ADDITIONAL #14 WIRES PER DRAWINGS TO EXISTING VFD EQUIP. AS REQUIRED.

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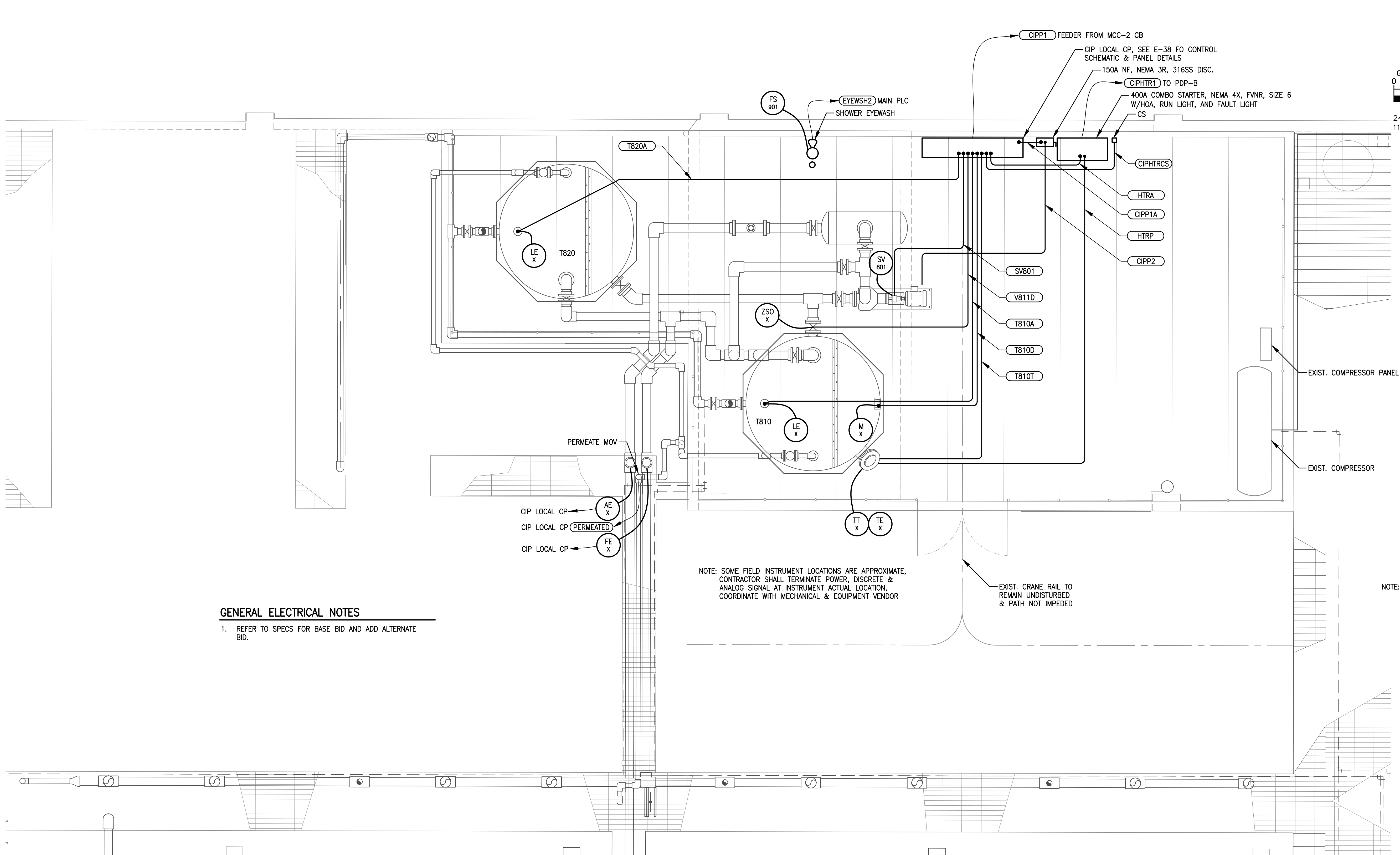
PROPOSED R.O. BUILDING
ELECTRICAL FLOOR PLAN

SHEET NUMBER

E-4

90 OF 132

Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: E-5 PROPOSED MEZZANINE CIP ELECTRICAL PLAN March 19, 2021 12:18:39pm K:\WEB_Civil\CAD\Outside\c&w\South OSLO ROAD WTP IMPROVEMENTS - Standard\01 Electrical
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GENERAL ELECTRICAL NOTES

1. REFER TO SPECS FOR BASE BID AND ADD ALTERNATE BID.

NOTE: CIP SYSTEM IS ADD ALTERNATE ★

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DEPARTMENT

INDIAN RIVER COUNTY, FLORIDA

LICENSED PROFESSIONAL

MICHAEL A. GUIDA

FLORIDA LICENSE NUMBER
60755

DATE: _____

PROPOSED MEZZANINE CIP ELECTRICAL PLAN

SHEET NUMBER

E-5

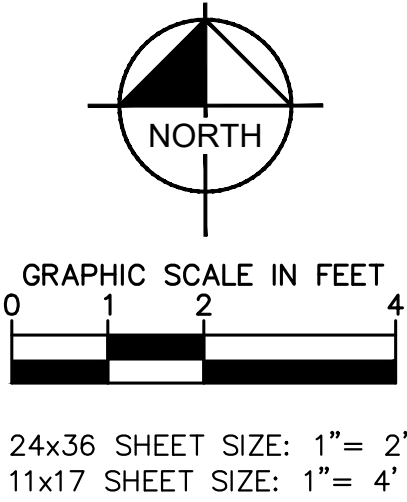
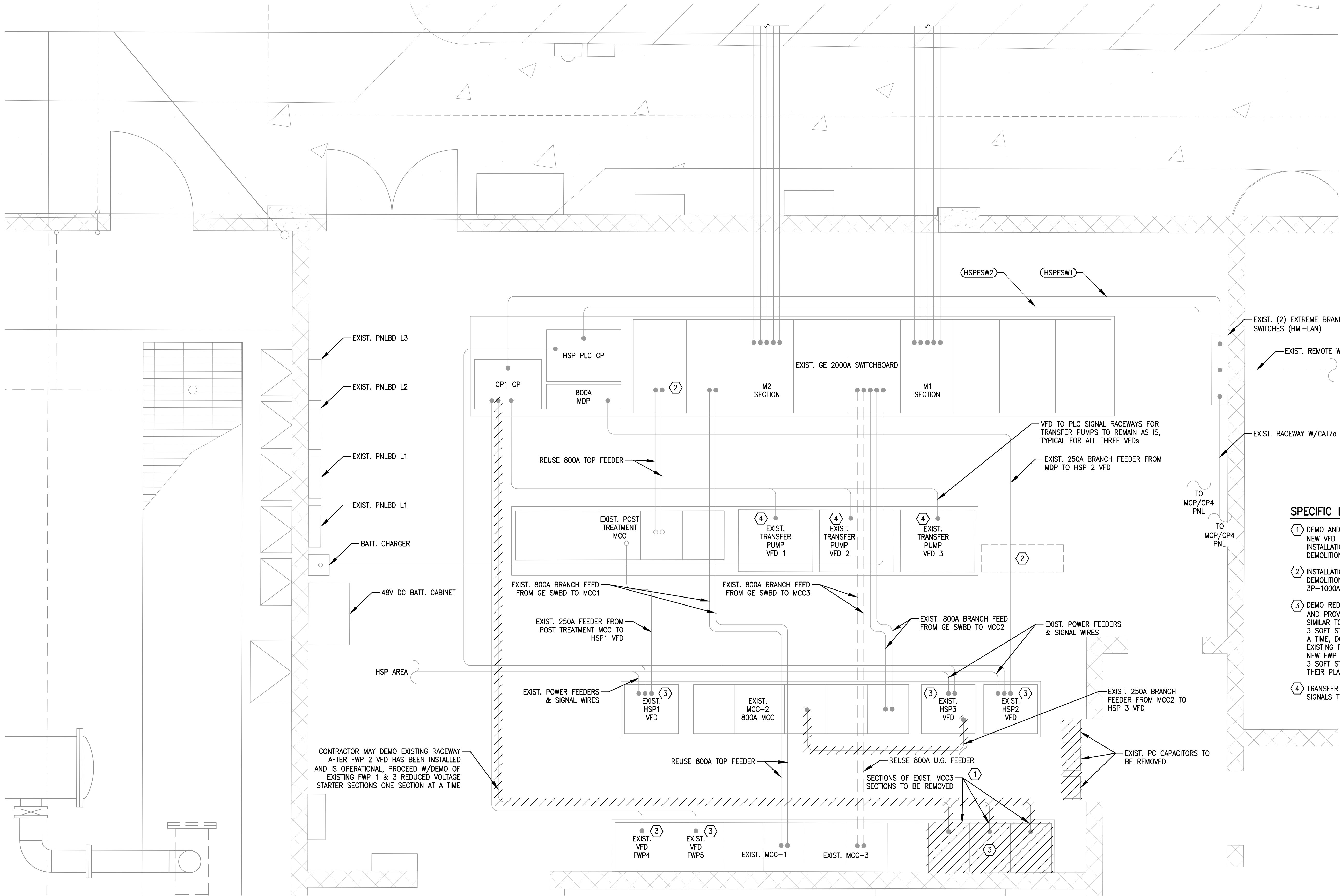
91 OF 132

66428

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ELECTRICAL CONSULTANTS
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WEST PALM BEACH, FL 33411
(561) 642-5333

REGISTRATION NUMBERS
C & W ENGINEERING INC. CA# 33315
MICHAEL A. GUIDA, P.E. 60755

Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS, Lovelock-E-6 ELECTRICAL ROOM DEMO PLAN, March 19, 2021, 12:18:46pm, K:\WPB_Guid\044572100 - South OSLO Road WTP Design\CAD\Outside\c&w SOUTH OSLO Road WTP IMPROVEMENTS - Standard\01 Electrical_Site_Plan.dwg
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SPECIFIC ELECTRICAL NOTES

- 1 DEMO AND REPLACE SECTIONS OF EXISTING MCC3 WITH NEW VFD EQUIPMENT. COORDINATE DEMO W/PHASING. INSTALLATION OF NEW FWP2 VFD MUST OCCUR BEFORE DEMOLITION OF EXISTING SECTIONS.
- 2 INSTALLATION OF NEW PDP-B MUST OCCUR BEFORE DEMOLITION OF MCC3 SECTIONS SEE E-7. USE SPARE 3P-1000A BREAKER IN GE SWITCHGEAR.
- 3 DEMO REDUCED VOLTAGE STARTERS FOR FWP 1, 2, & 3 AND PROVIDE NEW VFD EQUIPMENT W/ETHERNET COMM. SIMILAR TO EXISTING VFD FOR FWP 4 & 5. FWP 1, 2, & 3 SOFT STARTERS SHALL BE REPLACED WITH VFD ONE AT A TIME. DO NOT DEMO UNTIL REPLACEMENT VFD IS READY. EXISTING FWP 4 & 5 MUST BE OPERATIONAL ALONG WITH NEW FWP 2 VFD IN ORDER FOR DEMOLITION OF FWP 1 & 3 SOFT STARTERS AND INSTALLATION OF NEW VFDs IN THEIR PLACE.
- 4 TRANSFER PUMP VFD EQUIPMENT POWER AND HARDWIRED SIGNALS TO REMAIN AS IS.

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KHA PROJECT
044572100
DATE
MAR 2021
SCALE AS SHOWN
DESIGNED BY JLR
DRAWN BY AOD
CHECKED BY MAG

SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
INDIAN RIVER COUNTY UTILITIES DEPARTMENT
INDIAN RIVER COUNTY, FLORIDA

LICENSED PROFESSIONAL
MICHAEL A. GUIDA
FLORIDA LICENSE NUMBER
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DATE: _____

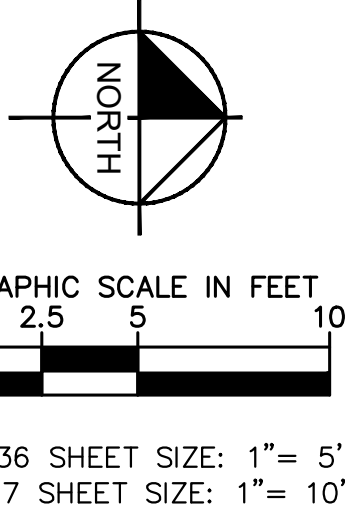
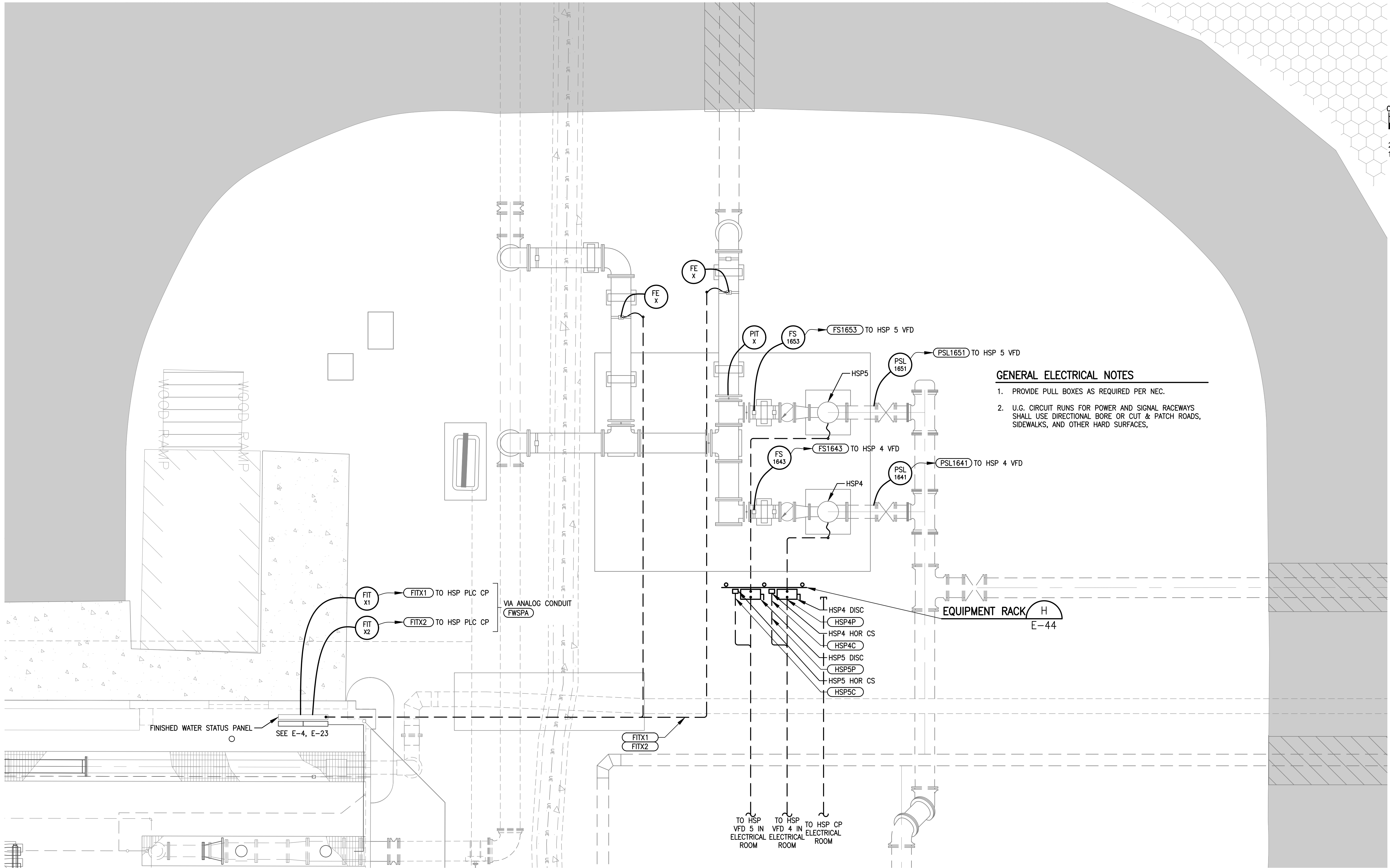
ELECTRICAL ROOM DEMO PLAN

SHEET NUMBER
E-6
92 OF 132



Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Lovett-E-8 HIGH SERVICE PUMP STATION ELECTRICAL PLAN March 19, 2021 12:19:01pm K:\WEB_Civil\CAD\Outside\c&w\South OSLO ROAD WTP IMPROVEMENTS - Standard\01 Electrical

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GENERAL ELECTRICAL NOTES

1. PROVIDE PULL BOXES AS REQUIRED PER NEC.
2. U.G. CIRCUIT RUNS FOR POWER AND SIGNAL RACEWAYS SHALL USE DIRECTIONAL BORE OR CUT & PATCH ROADS, SIDEWALKS, AND OTHER HARD SURFACES.

EQUIPMENT RACK (H)
E-44

TO HSP
VFD 5 IN
ELECTRICAL
ROOM

TO HSP
VFD 4 IN
ELECTRICAL
ROOM

TO HSP CP
ELECTRICAL
ROOM

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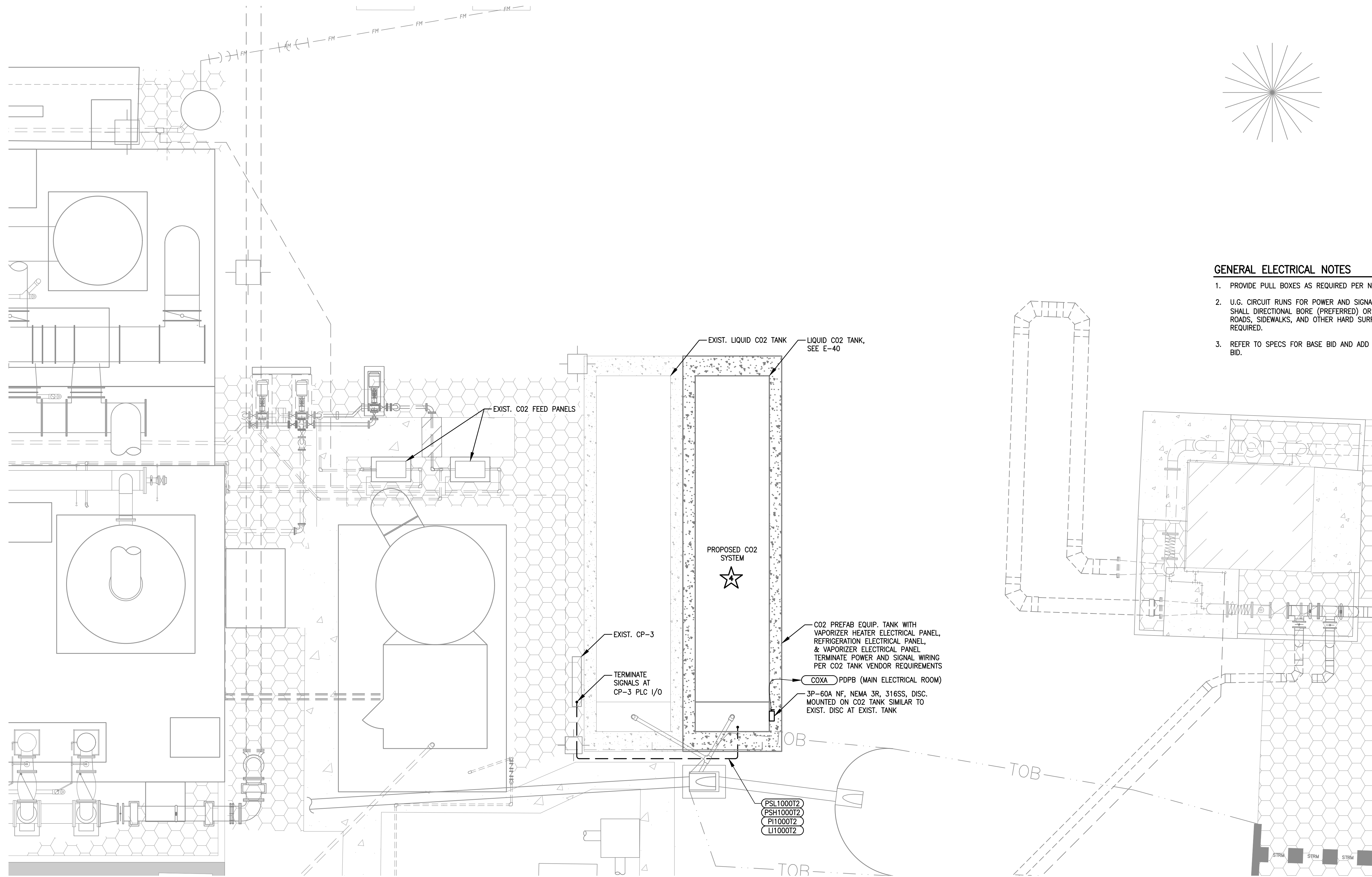
DATE: _____

**HIGH SERVICE PUMP STATION
ELECTRICAL PLAN**

SHEET NUMBER

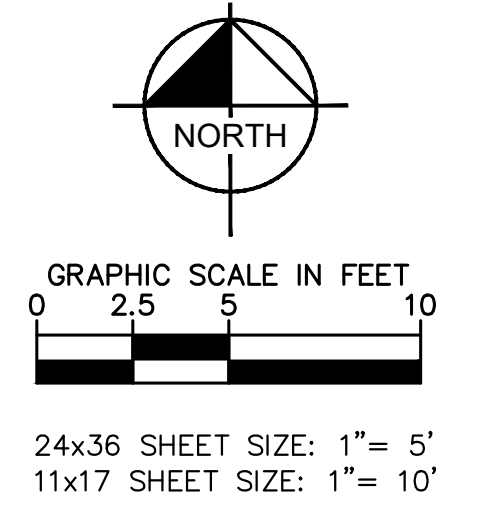
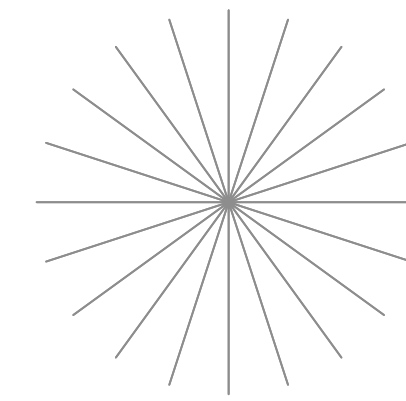
E-8

94 OF 132




GENERAL ELECTRICAL NOTES

1. PROVIDE PULL BOXES AS REQUIRED PER NEC.
2. U.G. CIRCUIT RUNS FOR POWER AND SIGNAL RACEWAYS SHALL DIRECTIONAL BORE (PREFERRED) OR CUT & PATCH ROADS, SIDEWALKS, AND OTHER HARD SURFACES AS REQUIRED.
3. REFER TO SPECS FOR BASE BID AND ADD ALTERNATE BID.



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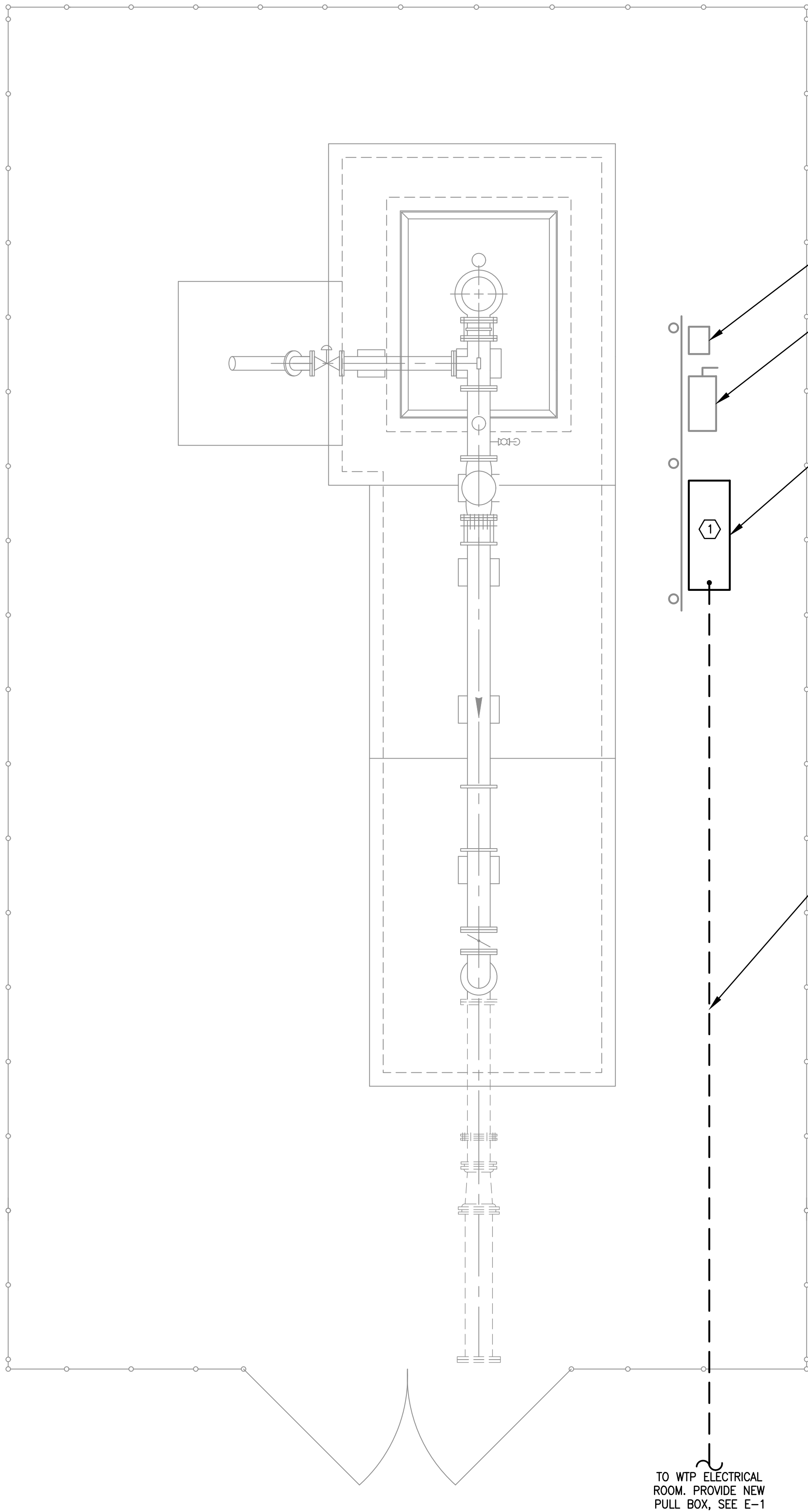
CO2 BOOSTER PUMP AND CONCENTRATE TREATMENT FACILITY PLAN

SHEET NUMBER

E-9

95 OF 132

P:\WEB_Civil\044572100 - South OSLO ROAD WTP IMPROVEMENTS - Standard\01_Electrical_Site Plans.dwg
Plotted By: King, Bertrand
Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS - Layout: E-11 WELL S1 ELECTRICAL SITE PLAN - March 19, 2021 - 12:19:10pm
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EXIST REMOTE HOA
SW 4 JBOX BELOW

EXIST 480V DISC

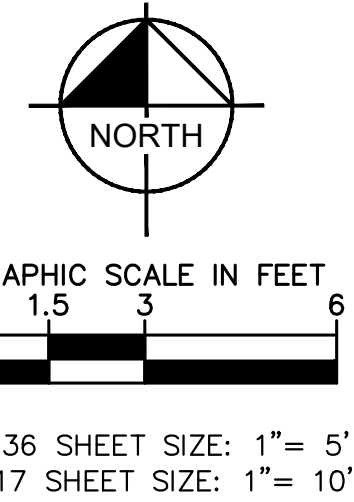
REPLACE EXIST RTU WITH PLC WS1
ENCLOSURE, PROVIDE NEW 316SS
MOUNTING HARDWARE AS REQUIRED

PROVIDE FO CABLE IN EXIST SPARE
2" CONDUIT. TERMINATE AT PATCH
PANEL INSIDE WELL S1 PLC
ENCLOSURE.

TO WTP ELECTRICAL
ROOM. PROVIDE NEW
PULL BOX, SEE E-1

SPECIFIC ELECTRICAL NOTES

- 1 REPLACE EXISTING RTU CP WITH NEW WELL S1 PLC AT SAME LOCATION. TERMINATE WELL DRAWDOWN LEVEL, FLOW METER EXISTING SIGNALS. USE EXIST. SIGNAL CABLES, 120V WIRES FROM FORMER RTU TO POWER NEW WELL PLC CP.



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DATE MAR 2021
SCALE AS SHOWN
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MICHAEL A. GUIDA
FLORIDA LICENSE NUMBER 60755
DATE: _____

WELL S1 ELECTRICAL SITE PLAN

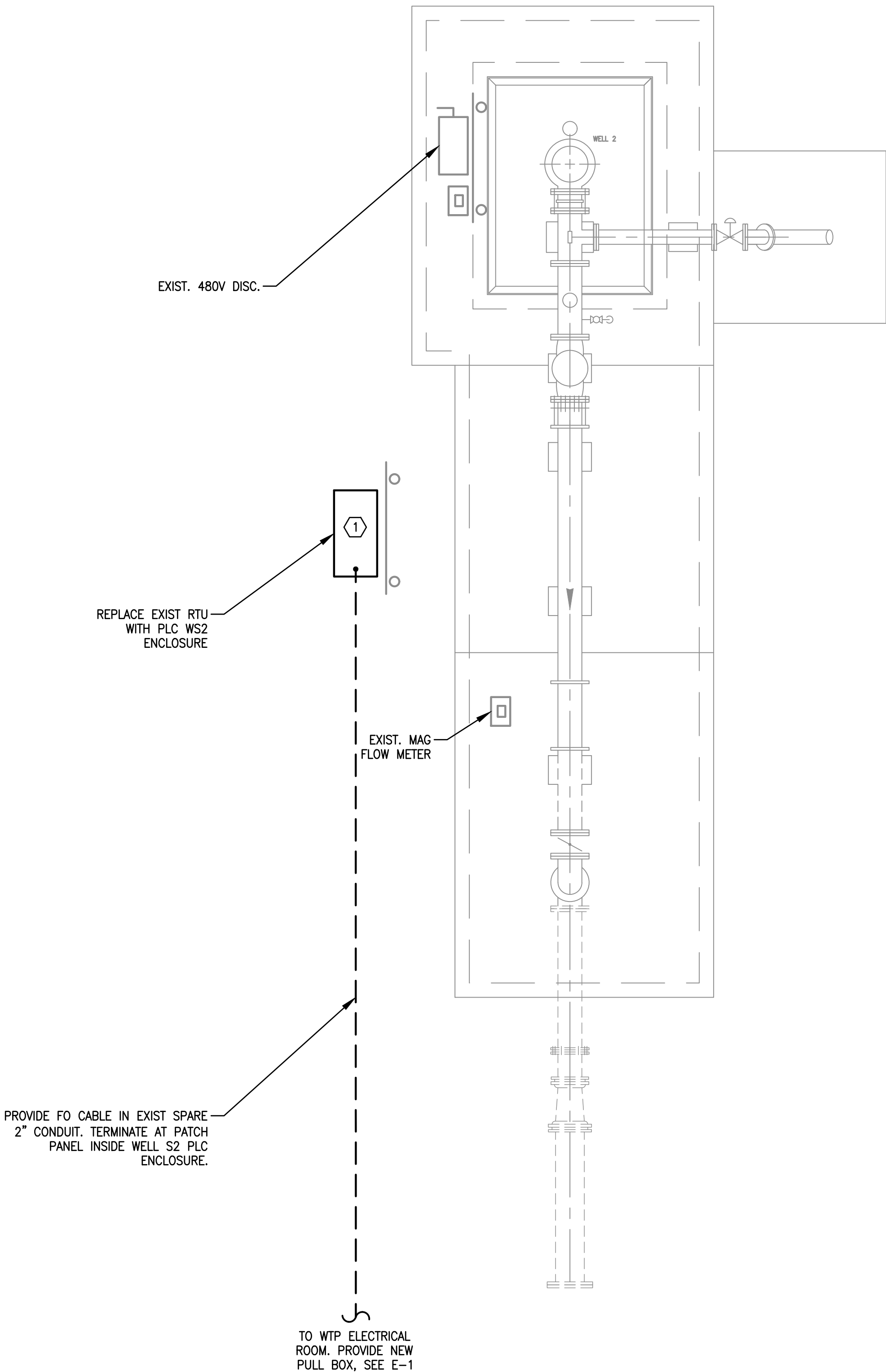
SHEET NUMBER

E-11

97 OF 132

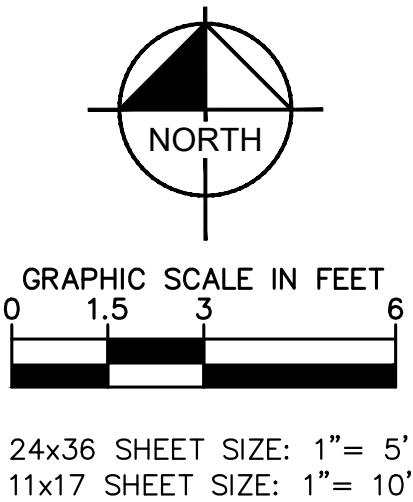
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SPECIFIC ELECTRICAL NOTES

- 1 REPLACE EXISTING RTU CP WITH NEW WELL S2 PLC AT SAME LOCATION. TERMINATE WELL DRAWDOWN LEVEL, FLOW METER EXISTING SIGNALS. USE EXIST. SIGNAL CABLES, 120V WIRES FROM FORMER RTU TO POWER NEW WELL PLC CP.



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KHA PROJECT
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DATE
MAR 2021
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SOUTH OSLO ROAD WTP IMPROVEMENTS
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WELL S2 ELECTRICAL SITE PLAN

SHEET NUMBER

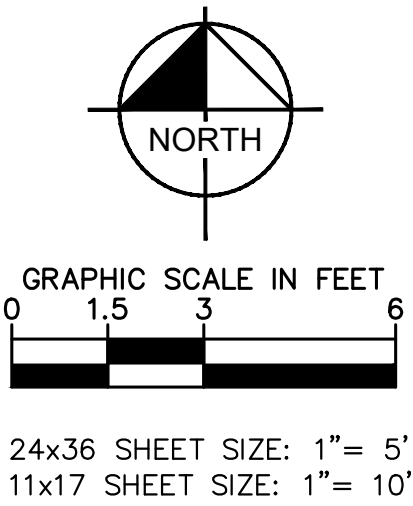
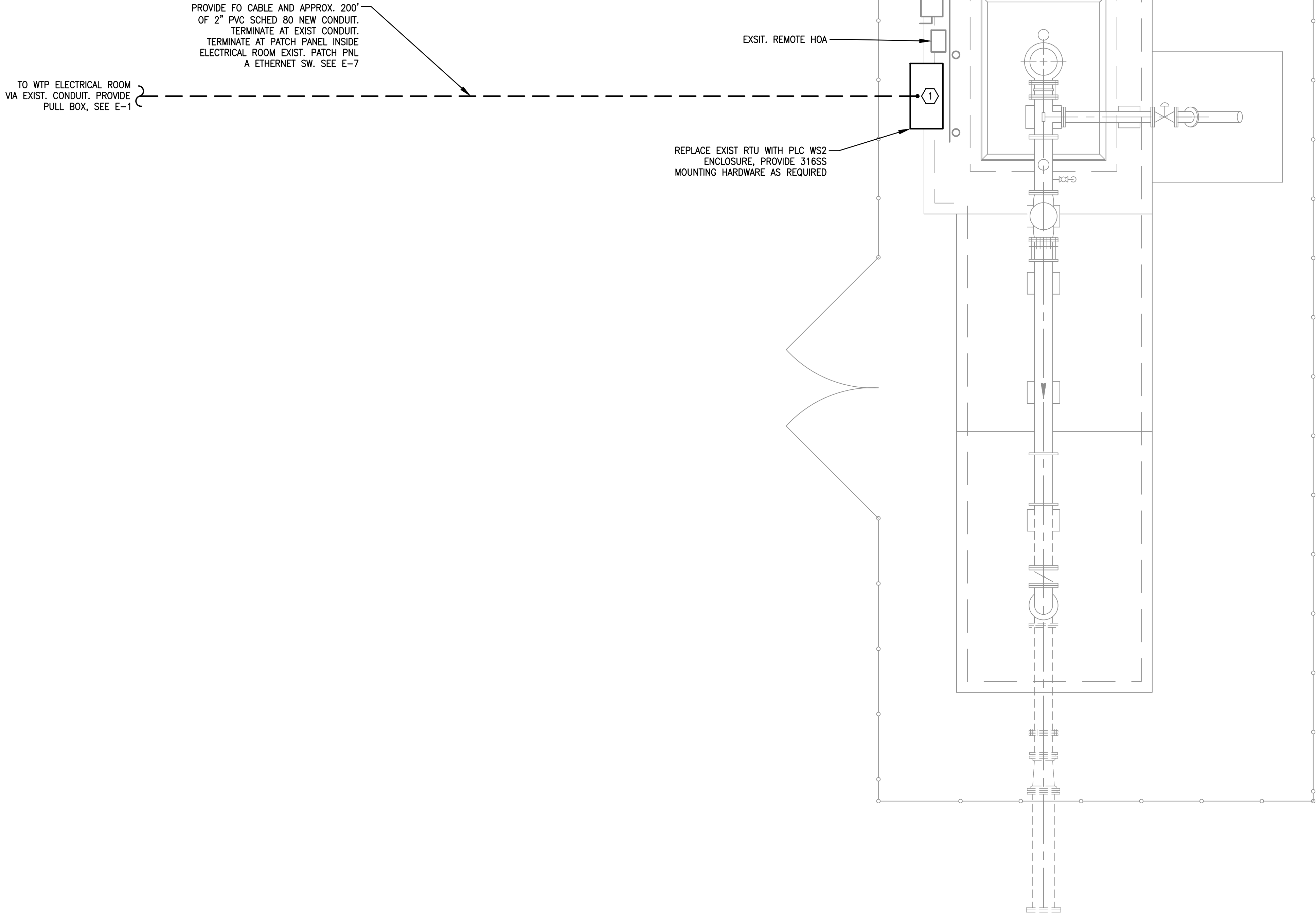
E-12

98 OF 132




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- SPECIFIC ELECTRICAL NOTES**
- ① REPLACE EXISTING RTU CP WITH NEW WELL S3 PLC AT SAME LOCATION. TERMINATE WELL DRAWDOWN LEVEL, FLOW METER EXISTING SIGNALS. USE EXIST. SIGNAL CABLES, 120V WIRES FROM FORMER RTU TO POWER NEW WELL PLC CP.

66428



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SOUTH OSLO ROAD WTP IMPROVEMENTS

PREPARED FOR

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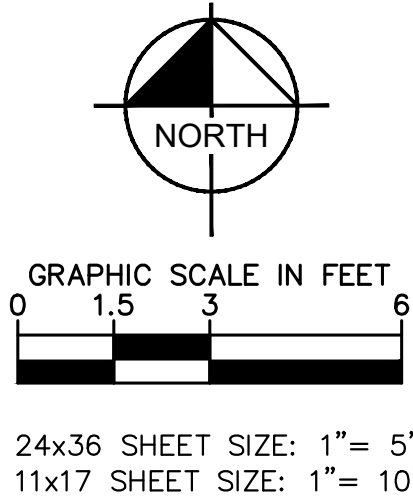
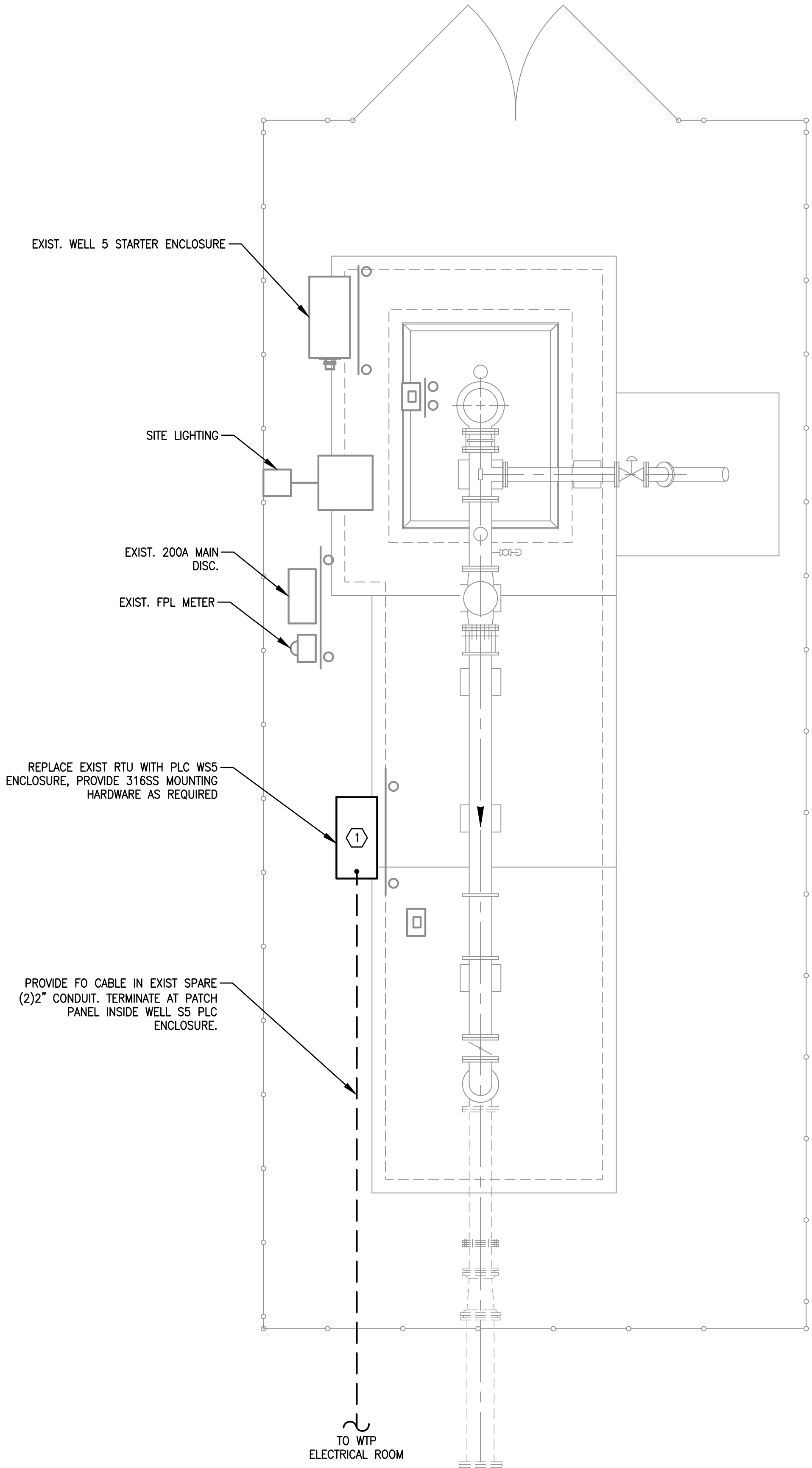
FLORIDA LICENSE NUMBER
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DATE: _____

WELL S3 ELECTRICAL SITE PLAN

SHEET NUMBER
E-13
99 OF 132

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SPECIFIC ELECTRICAL NOTES

- ① REPLACE EXISTING RTU CP WITH NEW WELL S5 PLC AT SAME LOCATION. TERMINATE WELL DRAWDOWN LEVEL, FLOW METER EXISTING SIGNALS. USE EXIST. SIGNAL CABLES, 120V WIRES FROM FORMER RTU TO POWER NEW WELL PLC CP.

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FLORIDA LICENSE NUMBER
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WELL S5 ELECTRICAL SITE PLAN

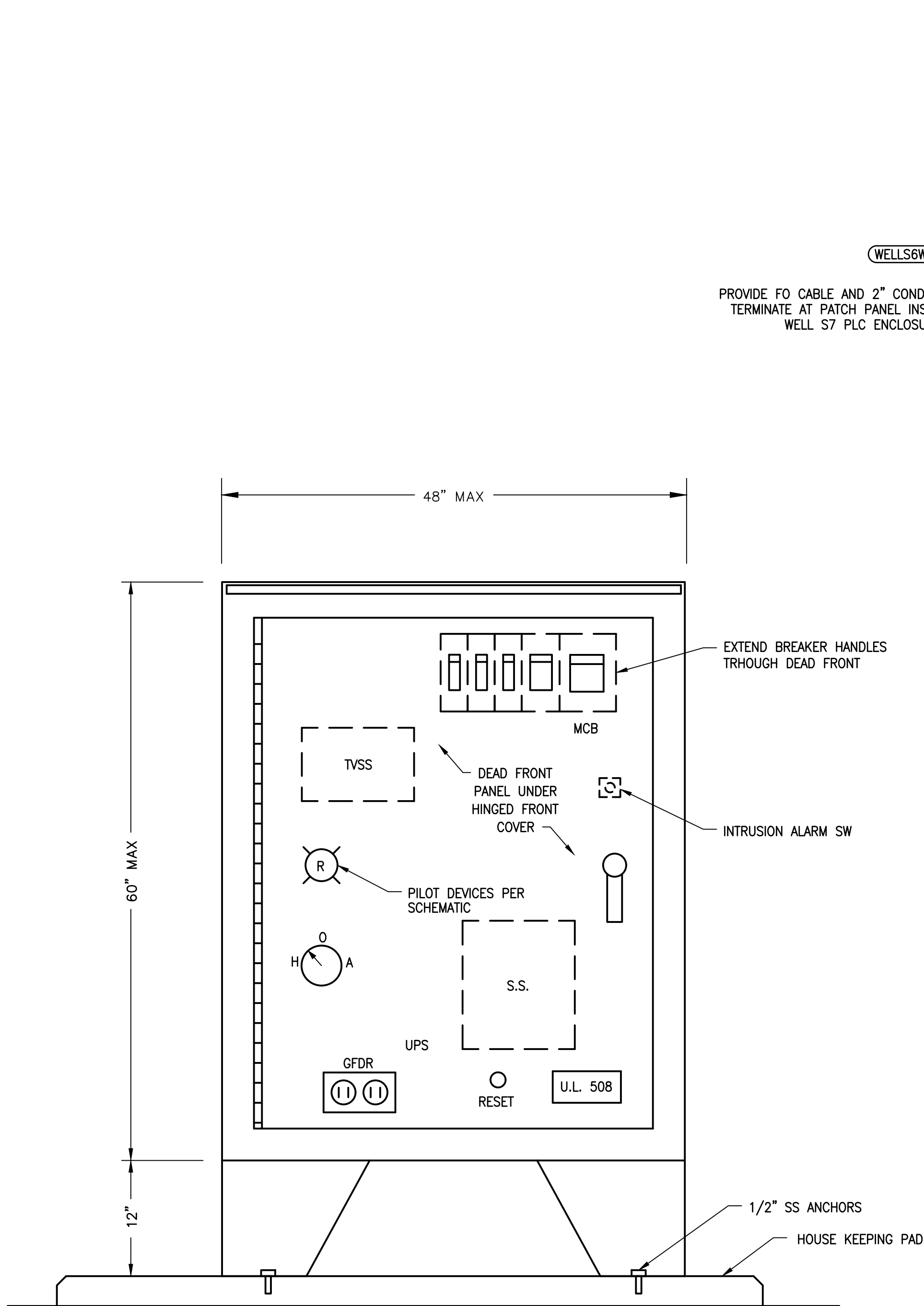
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SHEET NUMBER

E-14

100 OF 132

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ENCL: MODIFIED 3R, ALL MATERIALS 316 SS, EXCEPT ALUM. SUBPLATE; DIMENSIONS SHOWN ARE MINIMUM, PROVIDE BLANK OUTER DOOR GASKETED WITH 3FT. PADLOCKABLE HANDLE, PROVIDE DOOR STOP KIT, PROVIDE DRIPSHEILD.

WELL STARTER ENCLOSURE

NTS

C

TO WTP VIA EXIST. FO RACEWAY PROVIDE PULL BOX, SEE E-1

TO EXIST. FPL AERIAL SERVICE, APPROX 80'

3-4/0,1#2,2-1/2"C C01

WELL STARTER ENCL. E-15

WELLS6WTP

PROVIDE FO CABLE AND 2" CONDUIT. TERMINATE AT PATCH PANEL INSIDE WELL S7 PLC ENCLOSURE.

3#15#14,1"C FOR STARTER STATUS

2TSP,3/4"C

LPS6

EXIST. LIGHTING

3-4/0,1#2,2-1/2"C

TVSS

MAIN DISC.

FPL METER

3#14,3/4"C PSWS6

2TSP,1#14,3/4"C PITWS6

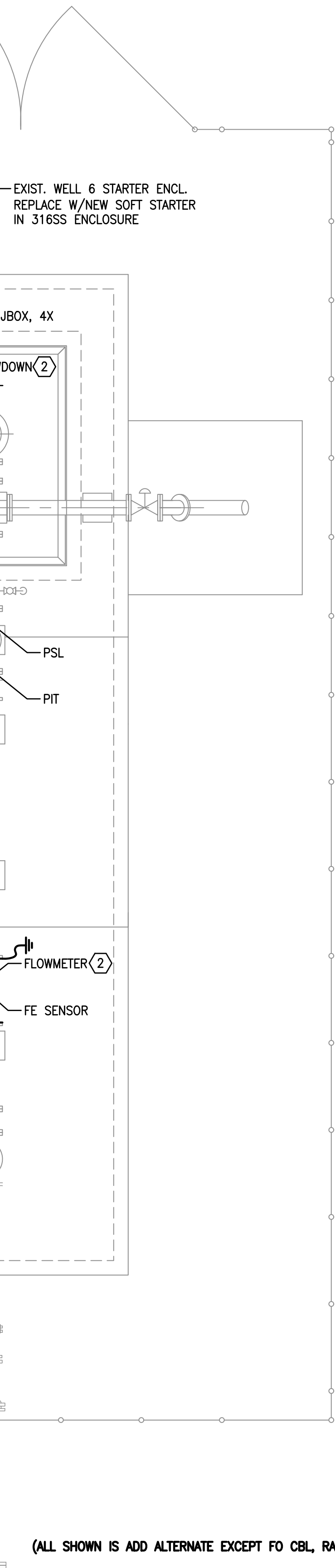
REPLACE EXIST RTU WITH PLC WS6 ENCLOSURE

FITS6A

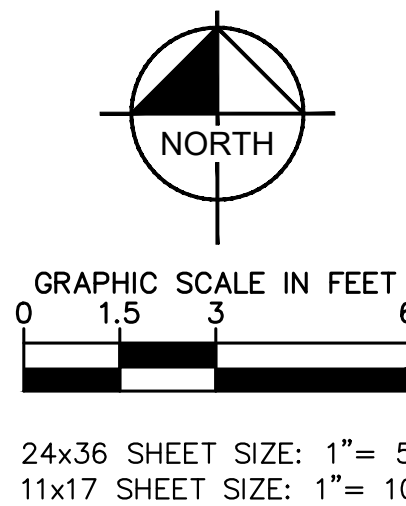
FITS6P

SENSOR CBL,3/4"C

FIT

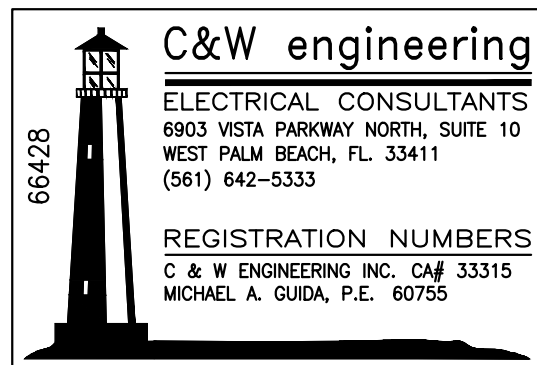


(ALL SHOWN IS ADD ALTERNATE EXCEPT FO CBL, RACEWAY & PLC WS6 CP) ADD ALT



SPECIFIC ELECTRICAL NOTES

- 1 REPLACE EXISTING RTU CP WITH NEW WELL S6 PLC. TERMINATE WELL DRAW DOWN LEVEL, PRESSURE, PRESS SW, FLOW METER EXISTING SIGNALS. USE EXIST. SIGNAL CABLES, 120V WIRES FROM FORMER RTU TO POWER NEW WELL PLC CP.
- 2 AT THIS WELL REPLACE THE FOLLOWING INSTRUMENTS (REPLACEMENT INSTRUMENTS OF SAME TYPE AND MODEL AS INSTRUMENTS AT WELLS S4, S7):
FLOW METER
DRAW DOWN PRESSURE TRANSMITTER
PRESSURE SWITCH
- 3 PROVIDE SOFT STARTER RUNNING, FAULT, OL, HOA IN AUTO, MOTOR OVERTEMP.



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SCALE AS SHOWN
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LICENSED PROFESSIONAL
MICHAEL A. GUIDA
FLORIDA LICENSE NUMBER 60755

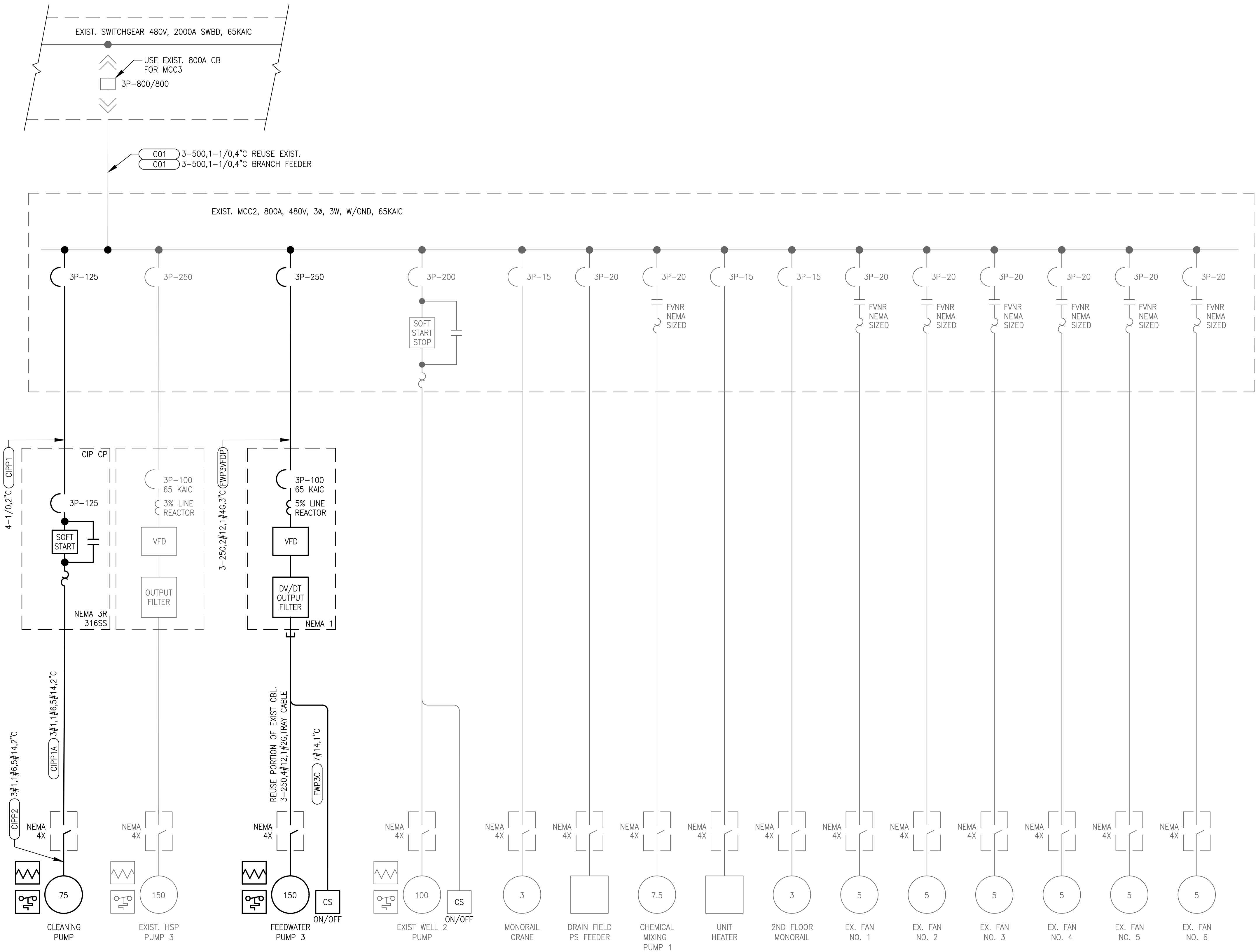
WELL S6 ELECTRICAL SITE PLAN

SHEET NUMBER

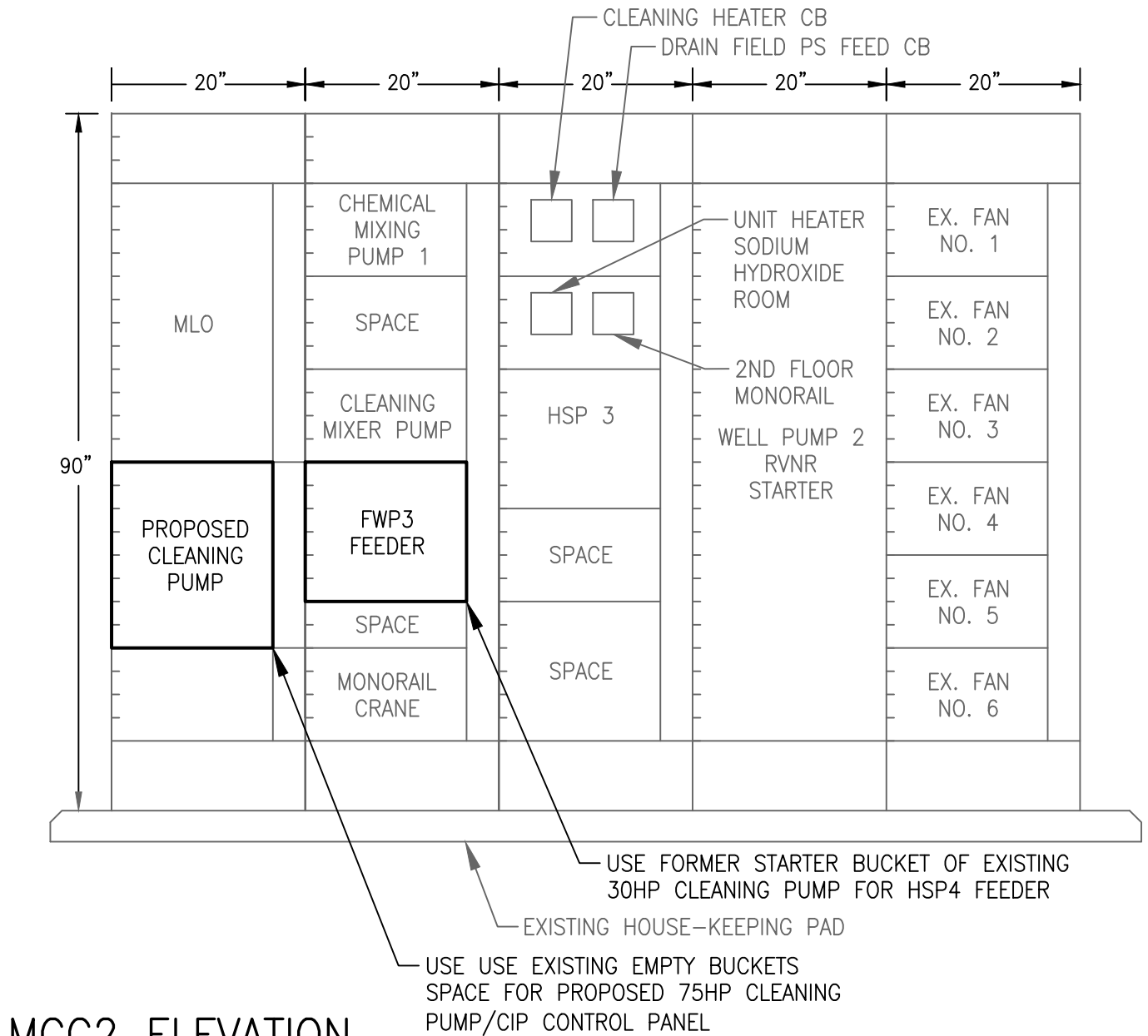
E-15

101 OF 132

Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: E-17 EXISTING MCC2 POWER ONELINE DIAGRAM March 19, 2021 12:19:21pm K:\WPB\Civil\044572100 - South OSLO ROAD WTP IMPROVEMENTS - Standard\E-35 N.E. TRIN This document, together with the concepts and designs presented herein, is an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and approval by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



480V 3Ø MCC2 LOAD CALC	
DESCRIPTION	AMPS
FEEDWATER PUMP 3 VFD	180A
HIGH SERVICE PUMP 3 VFD	180A
WELL 2 PUMP	124A
CIP CLEANING PUMP	96A
CLEANING HEATER	11A
CLEANING MIXER	11A
IN FIELD PS	22A
SODIUM HYDROXIDE ROOM UNIT HEATER	15A
2ND FLOOR MONORAIL	4.8A
ROOF EX. FAN 1	4.8A
ROOF EX. FAN 2	4.8A
ROOF EX. FAN 3	4.8A
ROOF EX. FAN 4	4.8A
ROOF EX. FAN 5	4.8A
ROOF EX. FAN 6	4.8A
TOTAL	672.5A
-EXIST. 30HP CLEANING PUMP	-50.0A
TOTAL	622.5A
EXISTING 800A SERVICE FROM 2000A SWBD	



NOTE: PRESS. SWITCHES #14 WIRES/RACEWAY TO VFD NOT SHOWN HERE, SEE OTHER DWGS.

No.	REVISIONS	DATE	BY

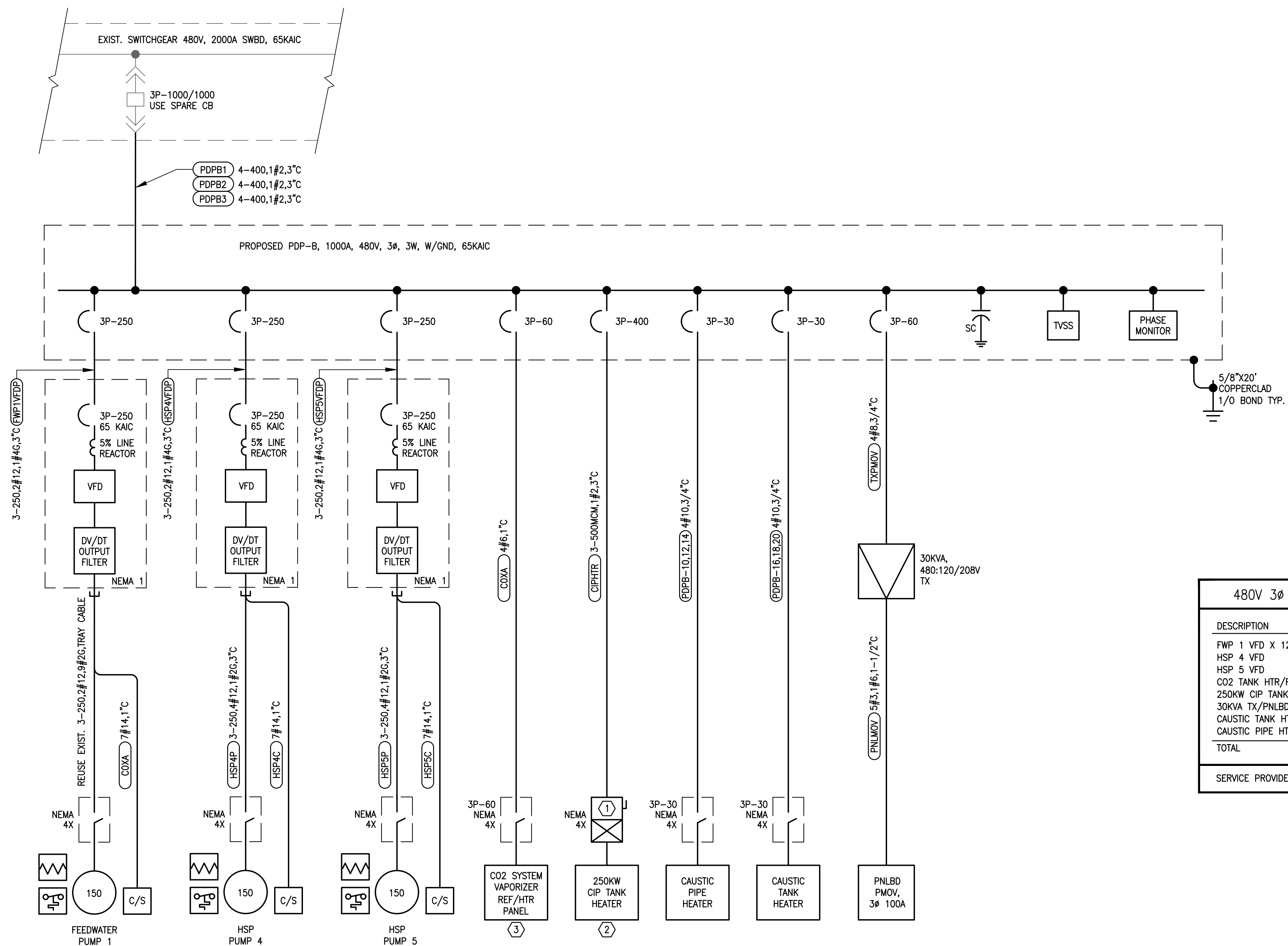
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INDIAN RIVER COUNTY, FLORIDA

LICENSED PROFESSIONAL
NICHOLAS P.O. BLACK
FLORIDA LICENSE NUMBER 84908

EXISTING MCC2 POWER ONELINE DIAGRAM

SHEET NUMBER
E-17
103 OF 132



SPECIFIC ELECTRICAL NOTES

- ① PROVIDE A SIZE 6 FVNR STARTER IN NEMA 4X COMBO STARTER W/O/N LIGHT, RESET. PROVIDE LABEL "CIP 250KW TANK HEATER", SEE E-5.
- ② PROVIDE #14,3/4" C FOR SIGNAL TO CIP CONTROL PANEL WHEN HEATER IS ON.
- ③ PROVIDE #14, 3/4" C FROM REF/HTR PANELS FOR STATUS SIGNALS TO PLC CP3, SEE E-9.

480V 3Ø PDPB LOAD CALC	
DESCRIPTION	AMPS
FWP 1 VFD X 125%	225A
HSP 4 VFD	180A
HSP 5 VFD	20A
CO2 TANK HTR/REF/VAP	20A
250KW CIP TANK HTR	25A
30KVA TX/PNLBDR PMOV	15A
CAUSTIC TANK HTR	21A
CAUSTIC PIPE HTR	10A
TOTAL	529A
SERVICE PROVIDED 1000A FROM 2000A SWBD	

NOTE: PRESS. SWITCHES #14 WIRES/RACEWAY TO VFD NOT SHOWN HERE, SEE OTHER DWGS.

Plotted By: King, Bertrand			
No.	REVISIONS	DATE	BY

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	DATE MAR 2021
	SCALE AS SHOWN
	DESIGNED BY JLR
	DRAWN BY AOD
CHECKED BY MAG	

SOUTH OSLO ROAD WTP IMPROVEMENTS

PREPARED FOR

INDIAN RIVER COUNTY UTILITIES DEPARTMENT

INDIAN RIVER COUNTY, FLORIDA

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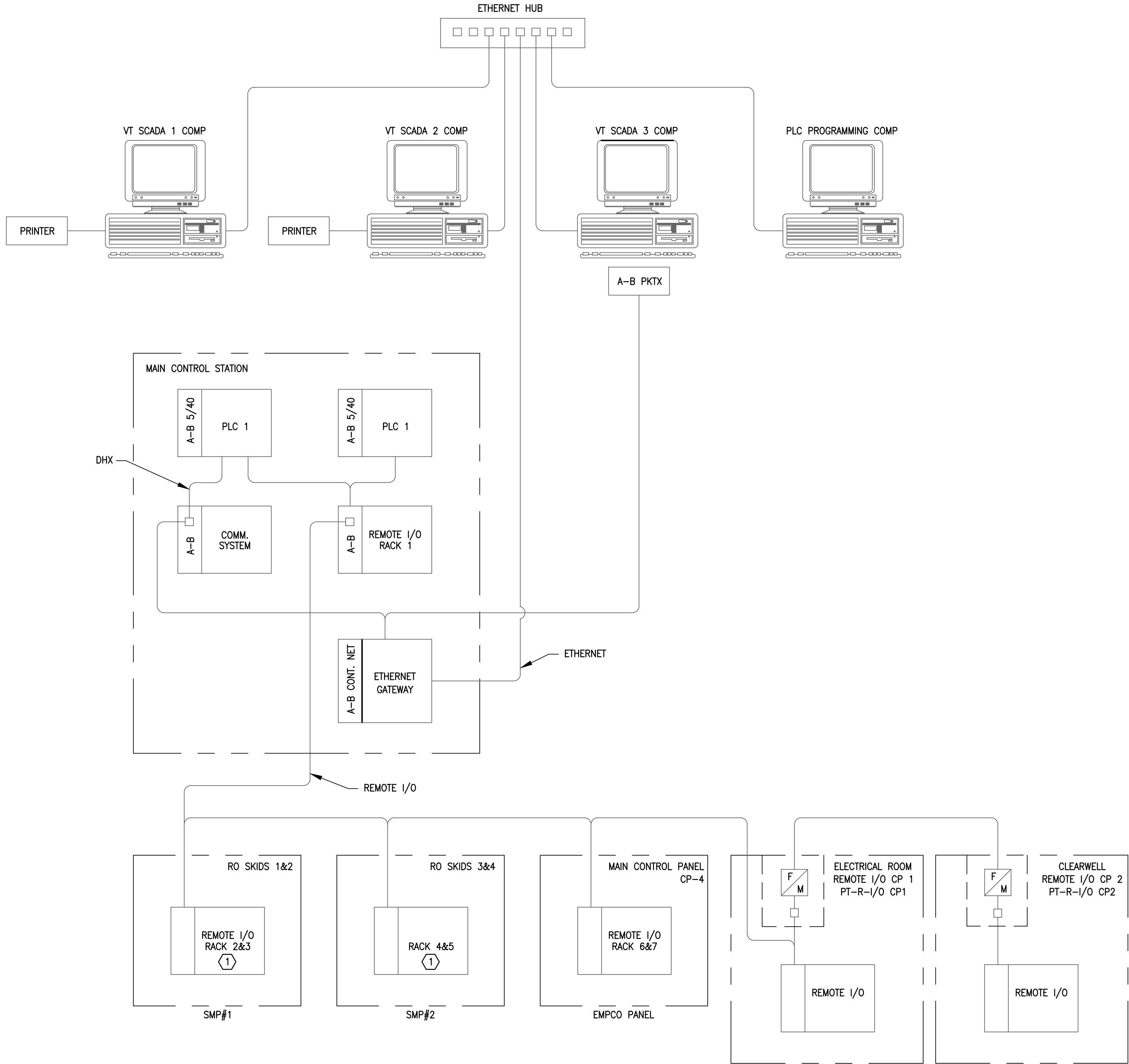
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DATE: _____

PDP-B POWER ONLINE DIAGRAM

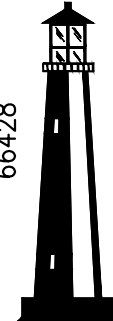
Plotted By: King, Bertrand Sheet: Set-SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: E-19 EXISTING SCADA AND MAIN PLC NETWORK March 19, 2021 12:19:28pm K:\WPB_Civil\CAD\Outside\c&w\SOUTH OSLO ROAD WTP IMPROVEMENTS - Standard\E-19 N.F. PLAN



SPECIFIC ELECTRICAL NOTES

- ① SMP1 & SMP2 CP REUSE PLC5 EQUIP TO REMAIN UNTIL RO SKIDS AND NEW RO RIO CP ARE REPLACED
CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL TO PERFORM INTERNAL UPGRADES AS DIRECTED PER CSD PERSONNEL.

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(561) 642-5333

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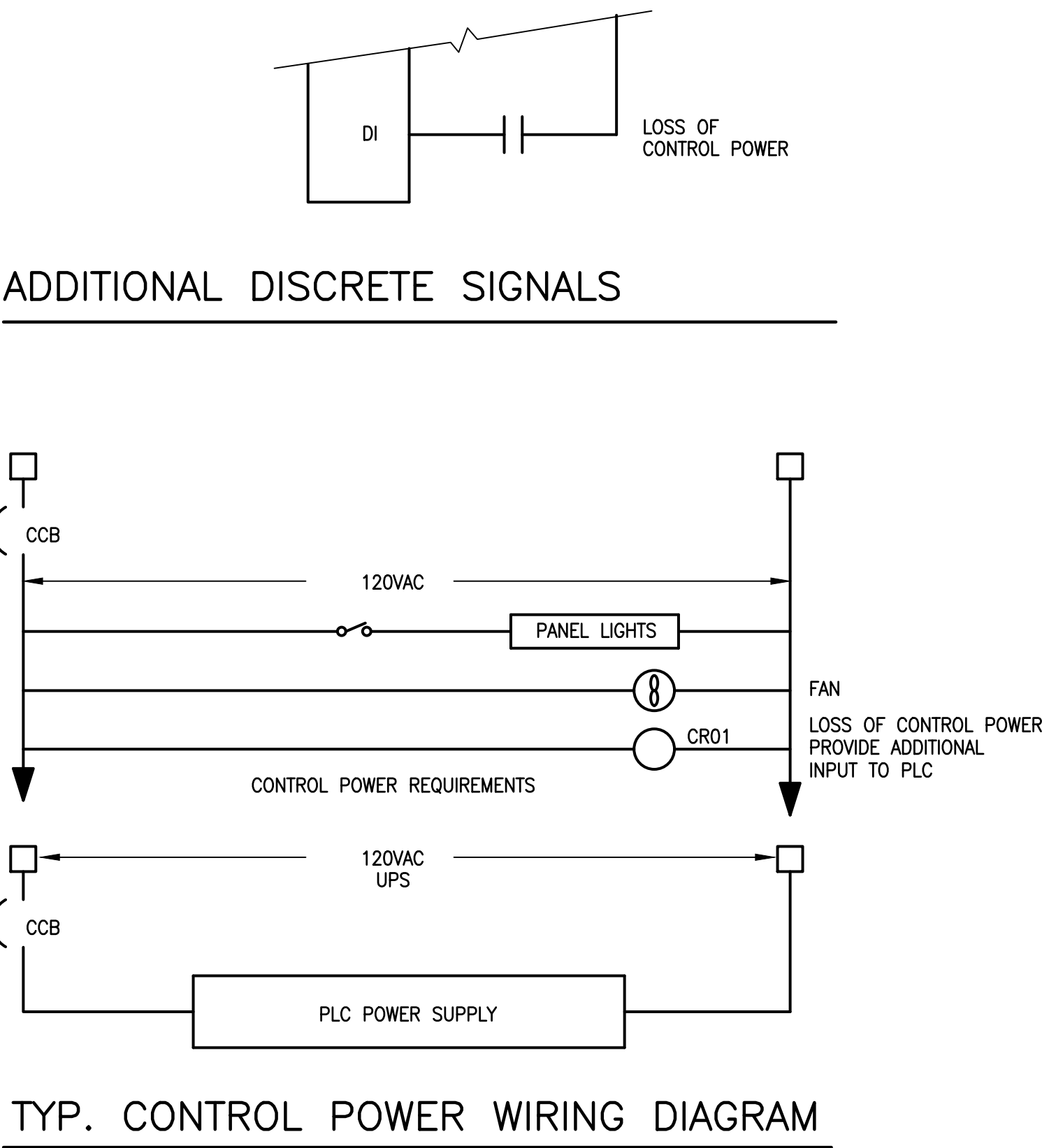
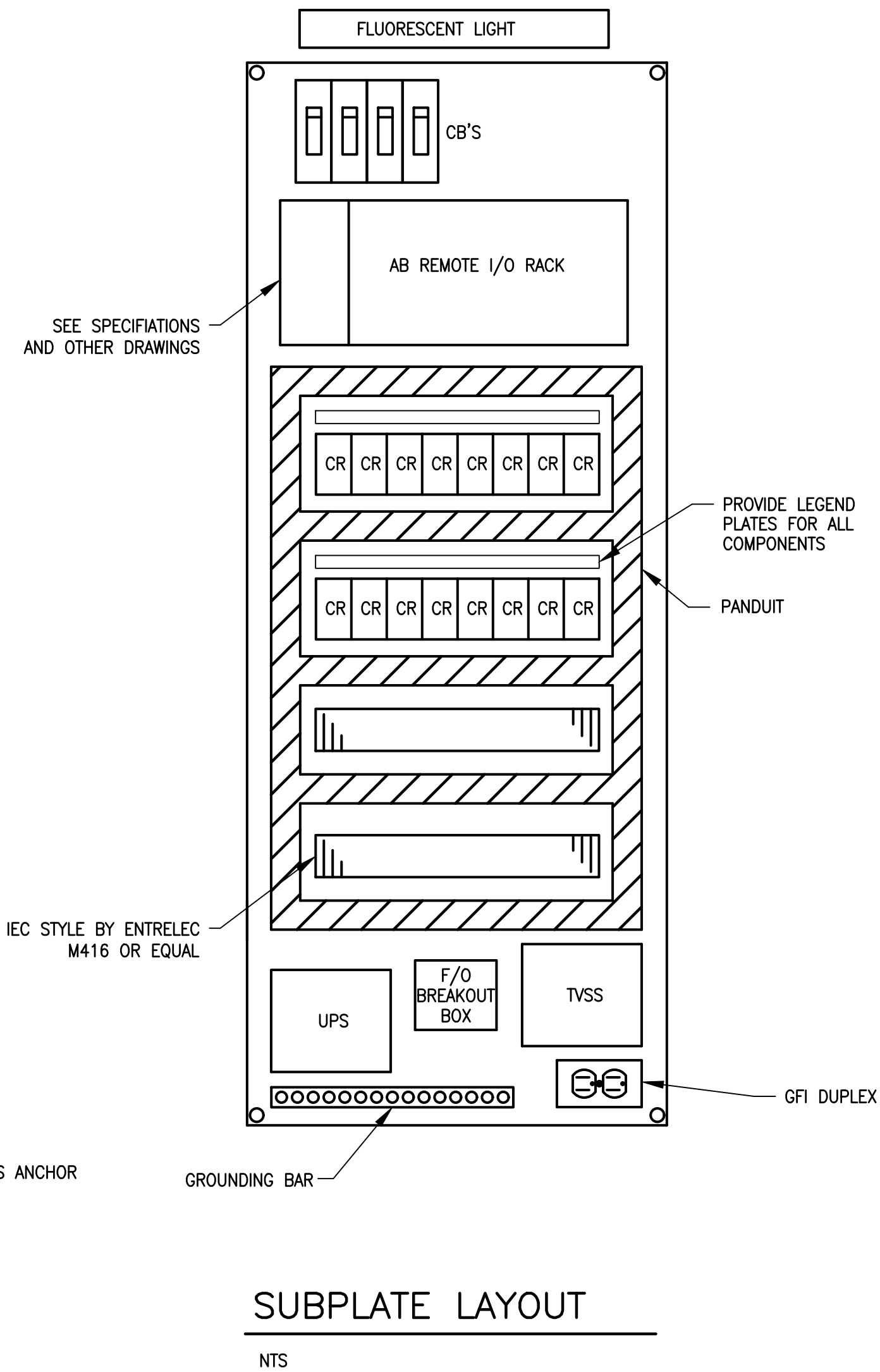
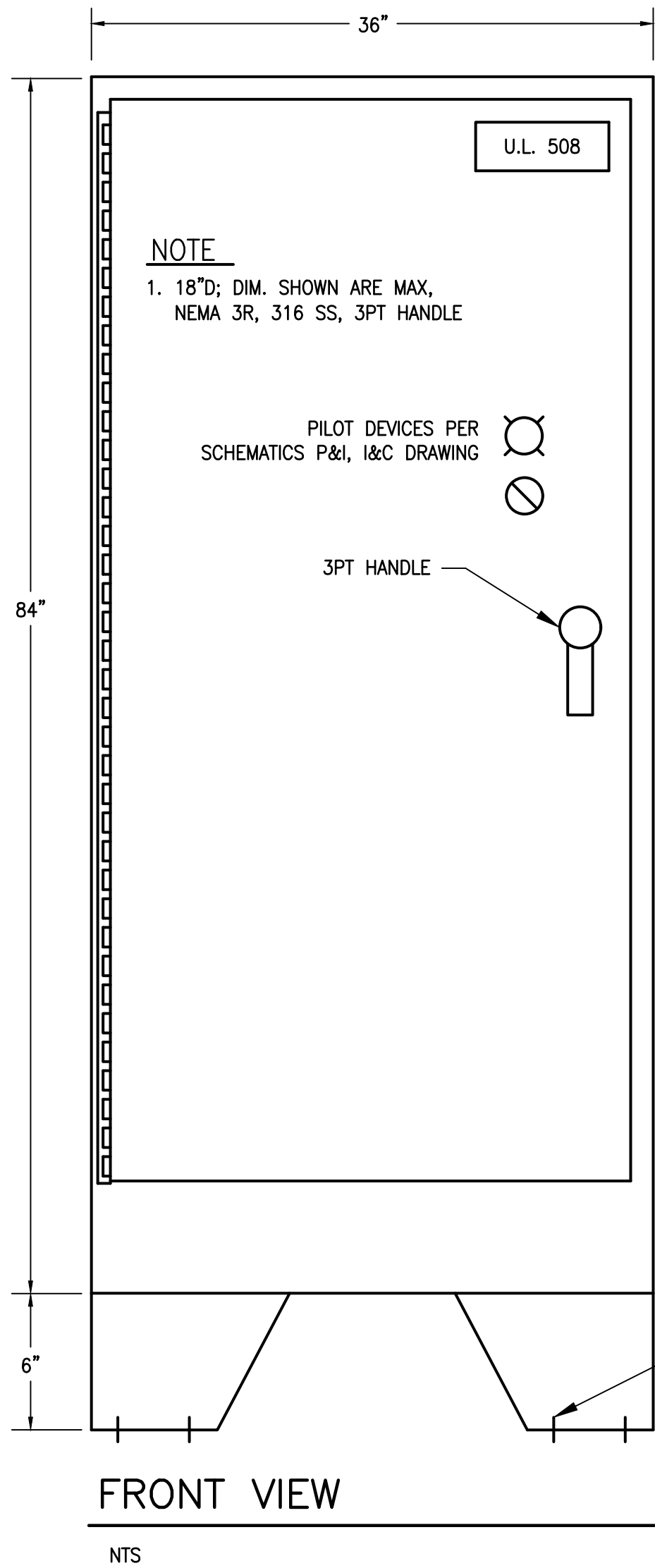
EXISTING SCADA AND MAIN PLC
NETWORK

SHEET NUMBER

E-19

105 OF 132

Plotted By: King, Bertrond Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: E-21 RIO CONTROL PANEL DETAILS March 19, 2021 12:19:45pm K:\WEB_Civil\044572100 - South RO WTP Design\CAD\Outside\c&w SOUTH OSLO ROAD WTP IMPROVEMENTS - Standard\E-35 N.F. TRAIN 4 CONDUIT This document, together with the concepts and designs presented herein, is an instrument of service, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



GENERAL ELECTRICAL NOTES

1. REFER TO PLC TYPICAL WIRING DIAGRAMS FOR PLC REQUIREMENTS.
2. CONTROL PANEL RECEIVES UPS AND NON-UPS POWER.
3. CONTRACTOR SHALL COORDINATE DURING SHOP DRAWING SUBMITTAL W/CSD PERSONNEL FOR THE ARRANGEMENT OF PLC AND OTHER NETWORK CONTROL PANEL COMPONENTS.

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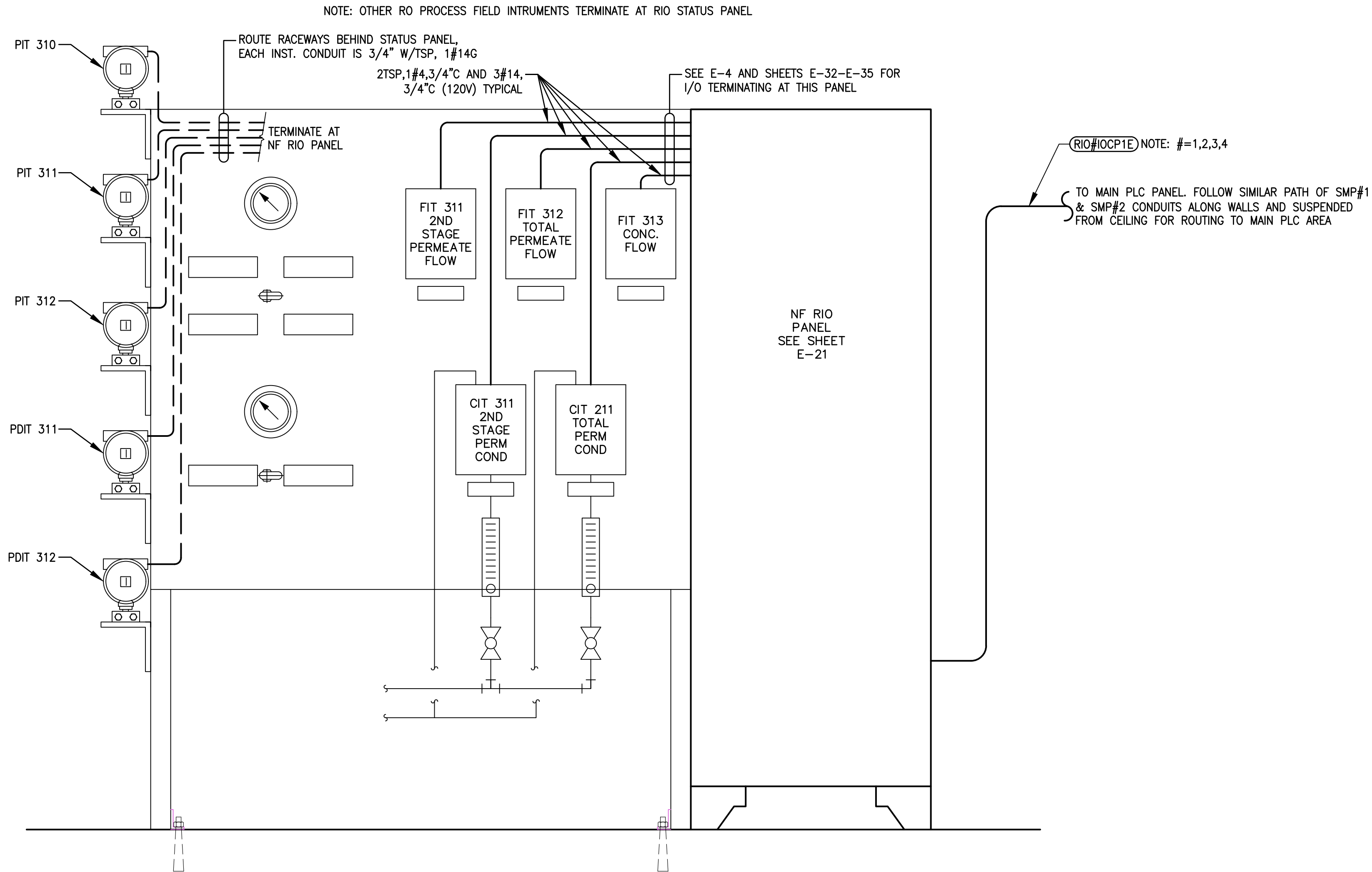
RIO CONTROL PANEL DETAILS

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E-21

107 OF 132

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NOTE: REFER TO PID AND ELECTRICAL CONDUITS IN SHEETS I-4-I-7, AND E-32-E-35

ABOVE NF RIO STATUS PANEL IS FOR NF 1 TRAIN.

ALL INSTRUMENTS FOR NF 2 TRAIN ARE 32X.


ALL INSTRUMENTS FOR NF 2 TRAIN ARE 33X.

ALL INSTRUMENTS FOR NF 2 TRAIN ARE 34X.

NF RIO STATUS PANEL

NTS, TYP FOR EACH NF TRAIN

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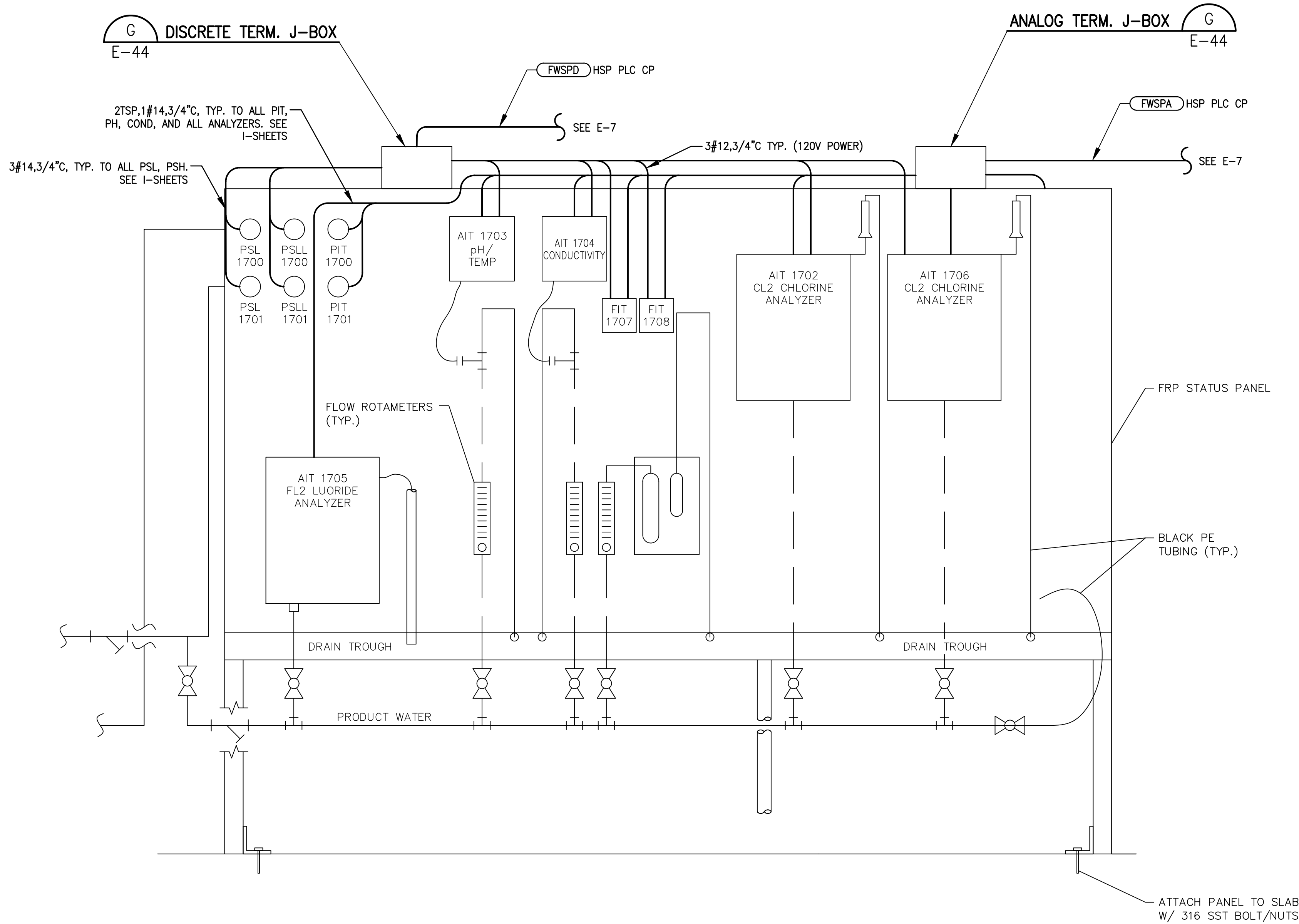
RIO STATUS PANEL DETAILS

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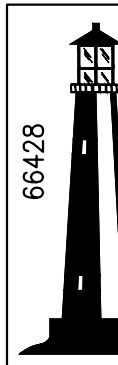
E-22

108 OF 132

Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: E-23 FINISHED WATER STATUS PANEL DETAIL March 19, 2021 12:19:59pm K:\WPB_Civil\044572100 - South RO WTP Design\CAD\Outside\c&w\South Oslo Road WTP IMPROVEMENTS - Standard\E-35_N.F._TRAIN This document, together with the concepts and designs presented herein, is an instrument of service, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



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FINISHED WATER STATUS PANEL

DETAIL

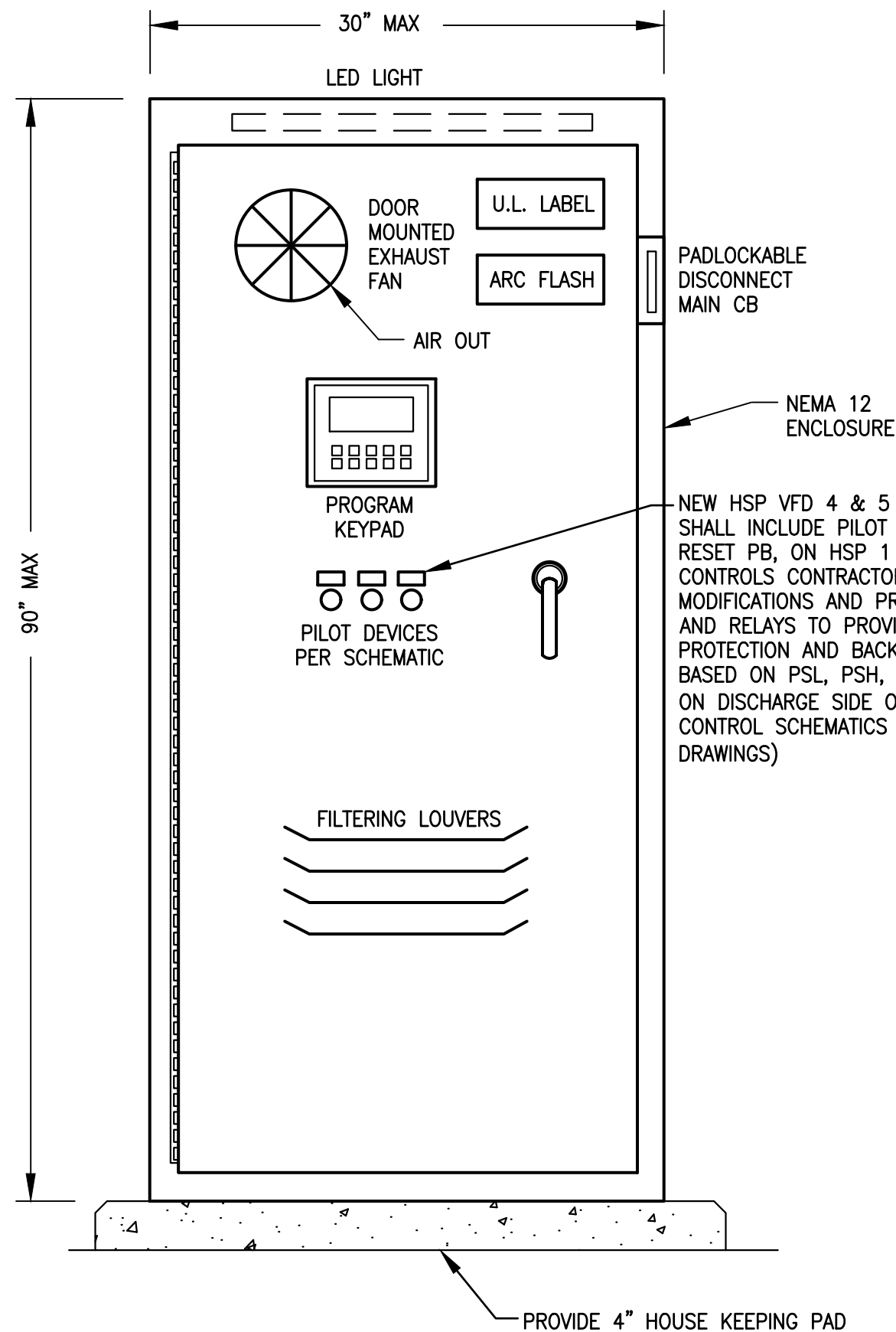
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109 OF 132

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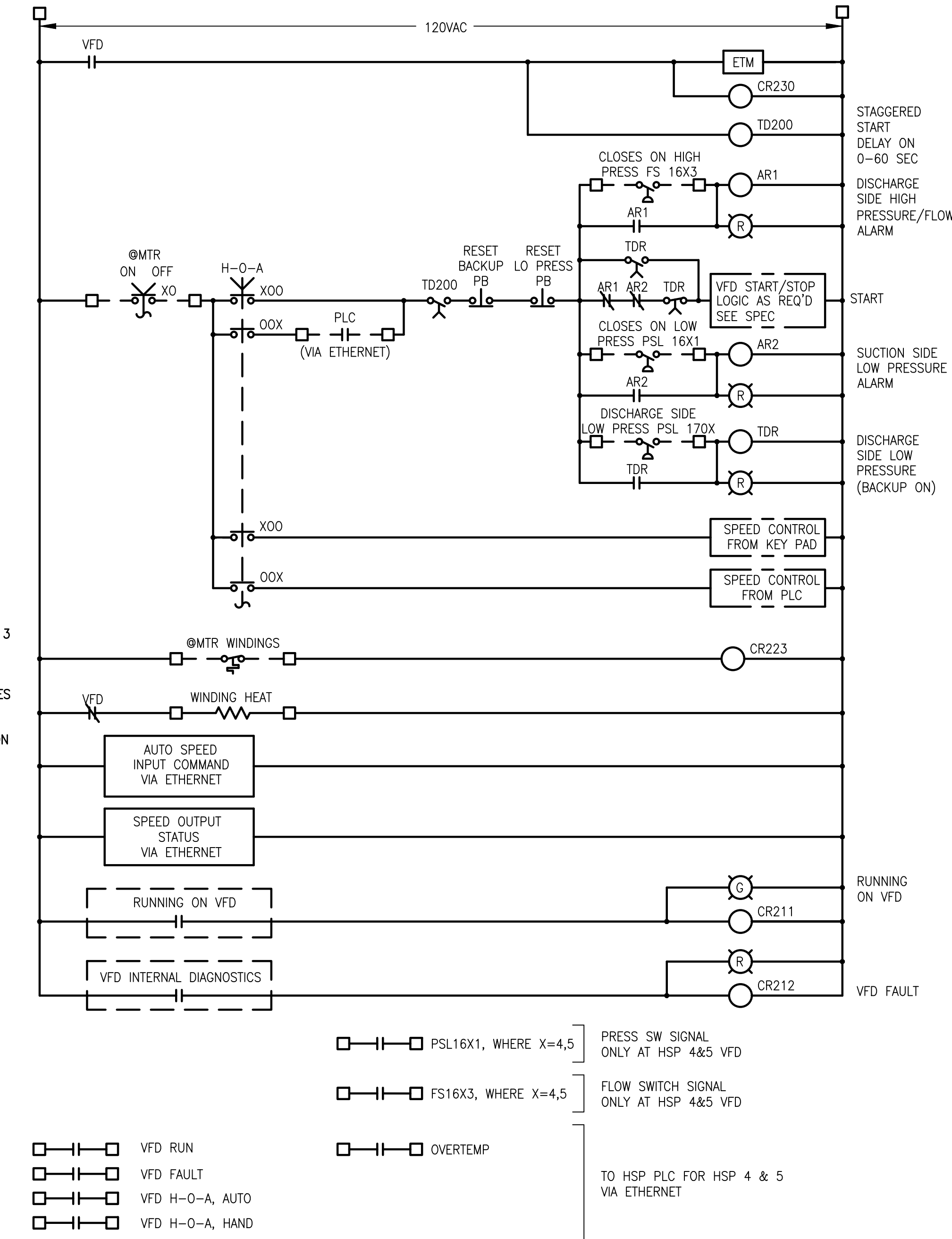
NOTE: THE VFD SCHEMATICS ARE REPRESENTATIVE OF THE I/O AND BASIC FUNCTIONALITY ONLY. THIS DRIVE IS TO BE CONTROLLED STRICTLY BY AN ETHERNET CONNECTION WITH MINIMUM PANEL HARD WIRED CONNECTIONS. THE VENDOR SHALL PROVIDE A SCHEMATIC FOR REVIEW BY THE ENGINEER PRIOR TO FIRST SUBMITTAL.



NOTE: MAX DEPTH OF VFD SHALL BE 24"

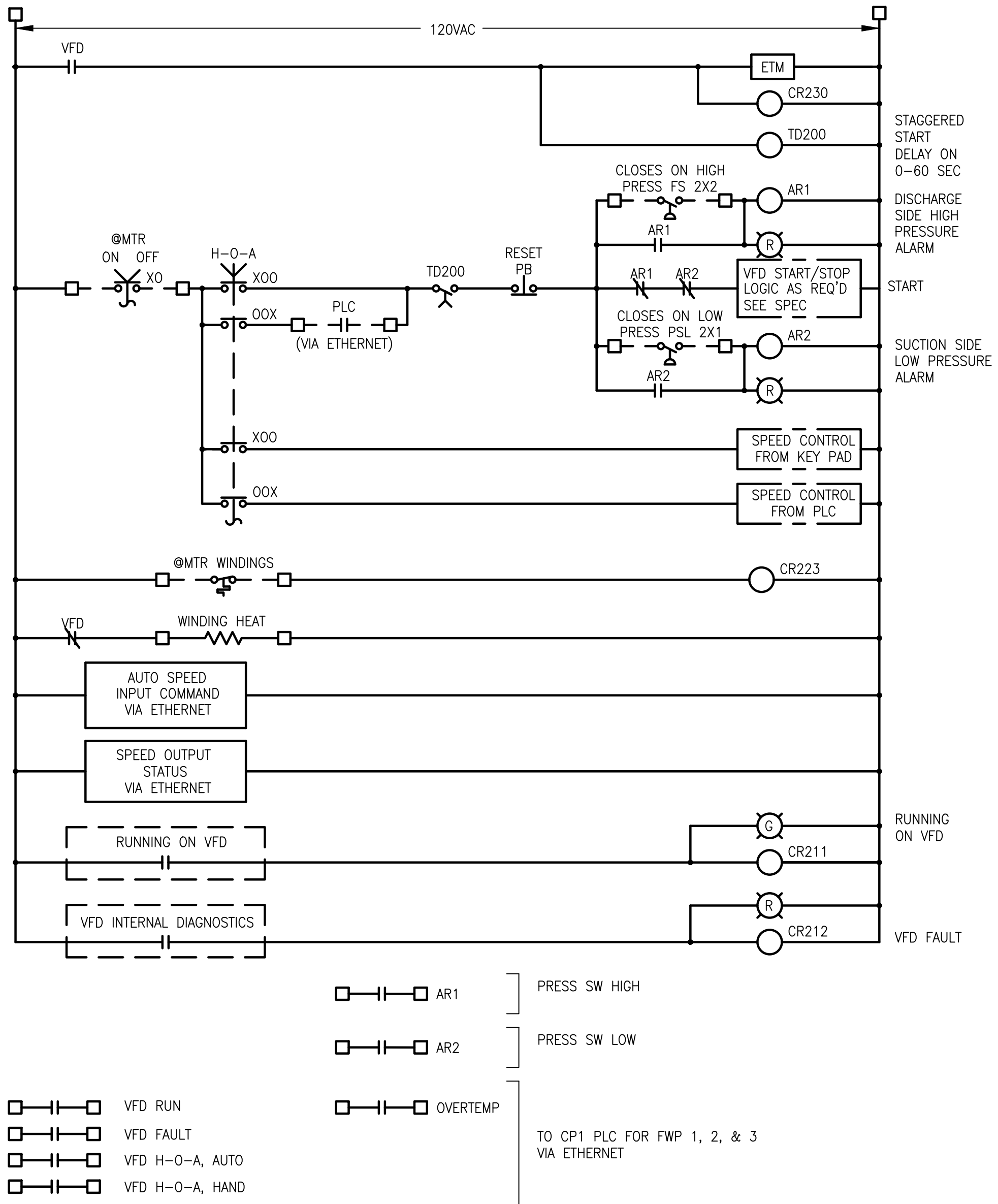
VFD DETAIL

NTS



HSP 4 & 5, VFD SCHEMATIC

NOTE: CONTRACTOR SHALL ADD PSL 16X1 PSH 16X1, AND PSL 170X CONTACTS AND MAKE NECESSARY MODIFICATIONS TO EXISTING CONTROLS AT EXIST VFD 1 & 2 TO ADD THIS SAFETY FEATURES (SEE OTHER DRAWINGS)



FEEDWATER PUMPS 1, 2, 3 VFD SCHEMATIC

NOTE: CONFIRM PSL 241 & 251 AND PSH 242, 252 SWITCHES ARE BEING USED IN EXISTING FWP4 & 5 VFD CONTROLS.

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KHA PROJECT 044572100	SOUTH OSLO ROAD WTP IMPROVEMENTS PREPARED FOR INDIAN RIVER COUNTY UTILITIES DEPARTMENT INDIAN RIVER COUNTY, FLORIDA
DATE MAR 2021	
SCALE AS SHOWN	
DESIGNED BY JLR	
DRAWN BY AOD	
CHECKED BY MAG	LICENSED PROFESSIONAL MICHAEL A. GUIDA FLORIDA LICENSE NUMBER 60755

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E-26

112 OF 132

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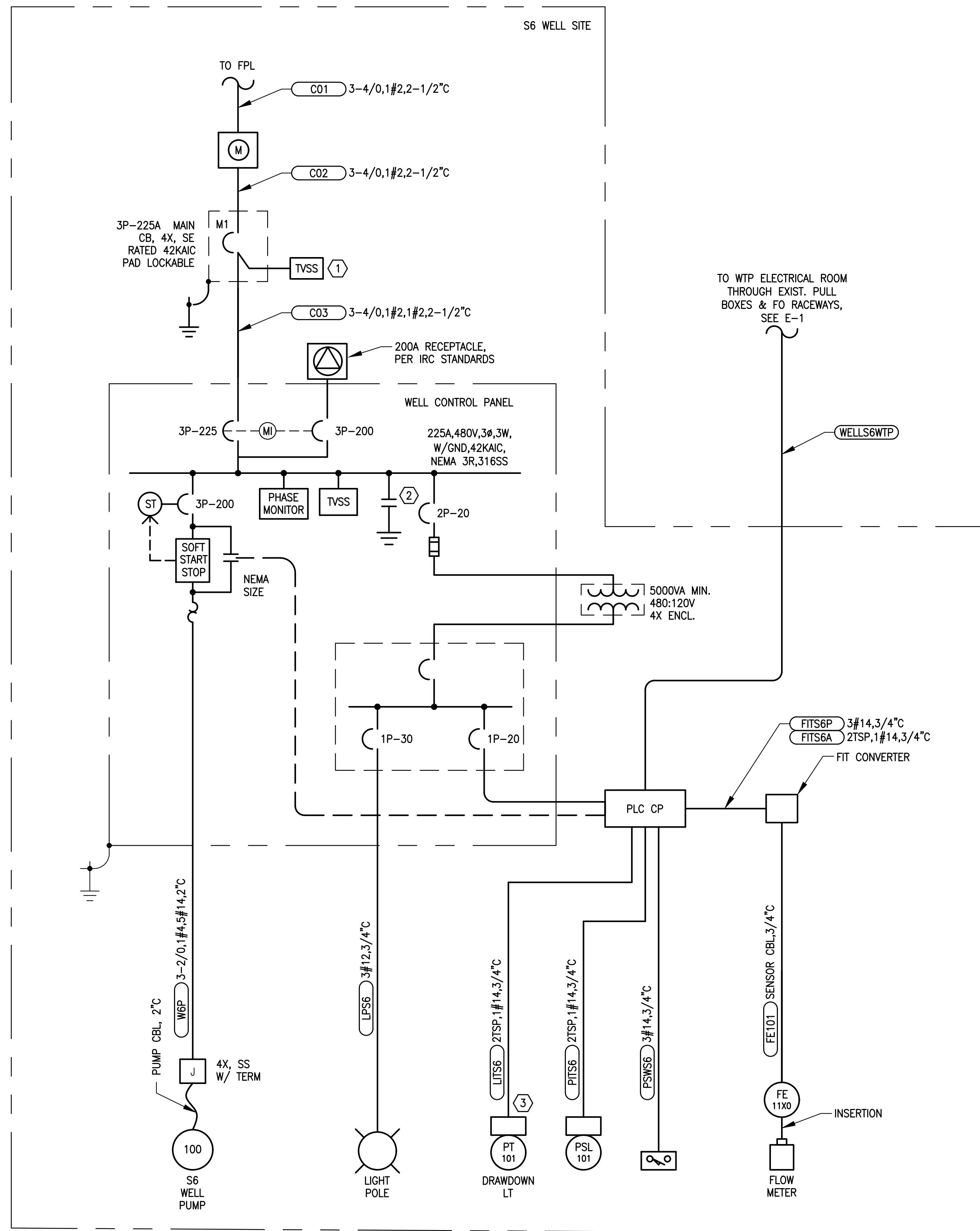
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VFD CONTROL SCHEMATIC
DETAILS

SHEET NUMBER

E-26

112 OF 132

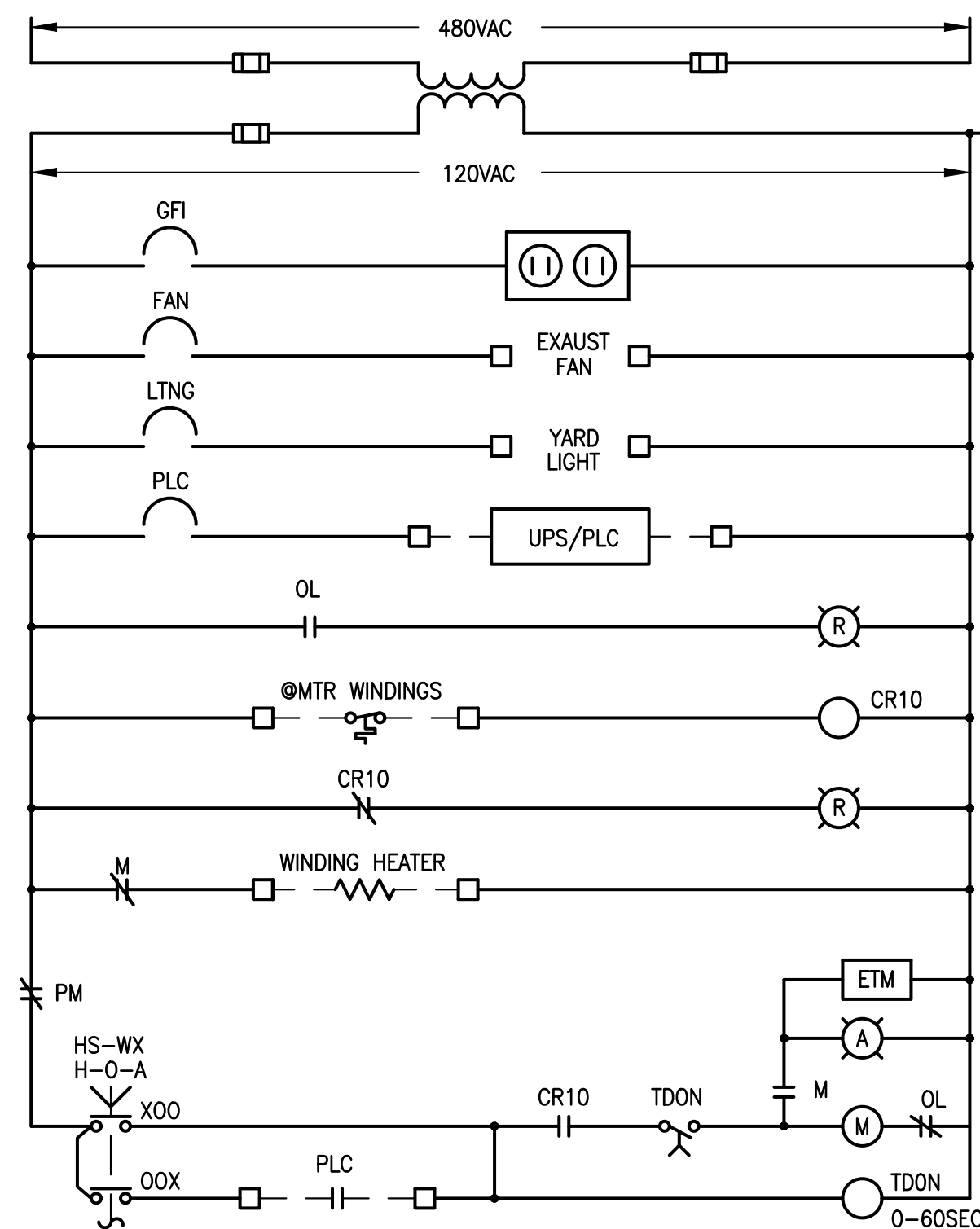


LOAD CALCULATIONS	
480V, 3ø, 4W	
DESCRIPTION	AMPS
100HP PUMP FLA	124
25% OF THE LARGEST MOTOR	31
CONTROLS	5
TOTAL	160

SERVICE WIRES SIZED FOR LESS THAN 2% VOLTAGE DROP

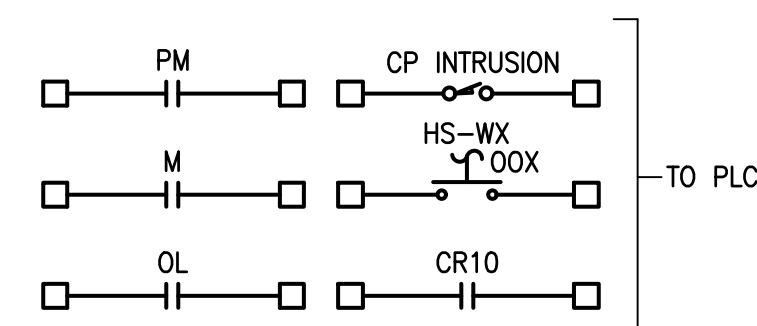
SPECIFIC ELECTRICAL NOTES

- 1 RAYCAP TVSS W/ INTEGRAL DISCONNECT OR EQUAL, NEMA 4X.
- 2 GE TRANQUIL SURGE CAPACITOR, NEMA 4X.
- 3 PROVIDE DRAWDOWN LEVEL TRANSDUCER WITH CABLE LENGTH TO REACH PLC.



NOTE: REFER TO SPECS FOR BASE & ADD
ALTERNATE BIDS. ON WELL S6 BASE
BID INCLUDES NEW FO CABLE &
RACEWAY AND REPLACEMENT OF RTU
FOR WELL PLC CONTROL PANEL,

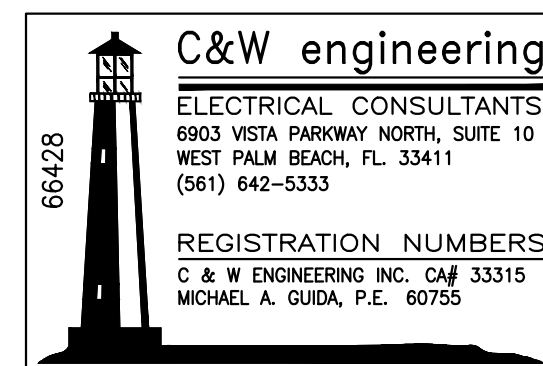
PROVIDE ADDITIONAL EQUIPMENT AND
LOGIC FOR SOFT STARTS AS REQ'D



WELL CP SCHEMATIC

NTS

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DATE MAR 2021	
SCALE	AS SHOWN
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DRAWN BY	SS
CHECKED BY	MDM

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DEPARTMENT

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WELL S6 ONELINE DIAGRAM

SHEET NUMBER

E-27

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Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: E-28 PANELBOARD SCHEDULES March 19, 2021 12:20:26pm K:\WPB_Civil\044572100 - South RO WTP Design\CAD\Outside\C&W\ SOUTH OSLO ROAD WTP IMPROVEMENTS - Standard\ E-35 N.F. TRAIN 4 CONDUIITS.dwg
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PANELBOARD SCHEDULE PMOV

WIRE SIZE	COND SIZE	BUS AMPS			LOAD	POLES	AMPS	BUS A B C	AMPS	POLES	LOAD	BUS AMPS			WIRE SIZE	COND SIZE
		A	B	C								A	B	C		
3#12	3/4	12			MOV 1	1	20	1	20	1	MOV 2	13			3#12	3/4
3#12	3/4		12		MOV 3	1	20	3	20	1	MOV 4		13		3#12	3/4
3#12	3/4			12	MOV 5	1	20	5	20	1	MOV 6			13	3#12	3/4
3#12	3/4	12			MOV 7	1	20	7	20	1	MOV 8	13			3#12	3/4
3#12	3/4		12		DUMP VALVE MOV	1	20	9	20	1	CAUSTIC TANK LIT		1		3#12	3/4
					SPARE	3	30	11		1	SPARE					
								13		1	SPARE					
								15		3	SPARE					
								17								
								19								
								21								
								23								
								25								
								27								
								29								

RATED VOLTAGE: <input checked="" type="checkbox"/> 120/208 <input type="checkbox"/> 277/480				3Ø, 4 WIRE		BRANCH POLES: <input type="checkbox"/> 12 <input type="checkbox"/> 20 <input checked="" type="checkbox"/> 30 <input type="checkbox"/> 42				APP. MF'RS. CUTLER HAMMER OR SQD ONLY					
RATED AMPS: <input type="checkbox"/> 100 <input checked="" type="checkbox"/> 225 <input type="checkbox"/> 400 <input type="checkbox"/> 150						CABINET: <input checked="" type="checkbox"/> SURFACE <input type="checkbox"/> FLUSH				NEMA <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 3R <input type="checkbox"/> 4X					
<input type="checkbox"/> MAIN LUGS ONLY		MAIN 100 AMPS		<input checked="" type="checkbox"/> BREAKER <input type="checkbox"/> FUSED SWITCH		<input checked="" type="checkbox"/> HINGED DOOR				<input checked="" type="checkbox"/> KEYED DOOR LATCH					
<input type="checkbox"/> FUSED		<input checked="" type="checkbox"/> CIRCUIT BREAKER (BOLT-IN) BRANCH DEVICES				<input type="checkbox"/> _____ TO BE GFI BREAKERS				FULL NEUTRAL BUS		GROUND BUS			
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 22,000 AMPS SYMMETRICAL.															

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DATE
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DRAWN BY SS

CHECKED BY MDM

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PREPARED FOR

INDIAN RIVER COUNTY UTILITIES

DEPARTMENT

INDIAN RIVER COUNTY,

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FLORIDA LICENSE NUMBER
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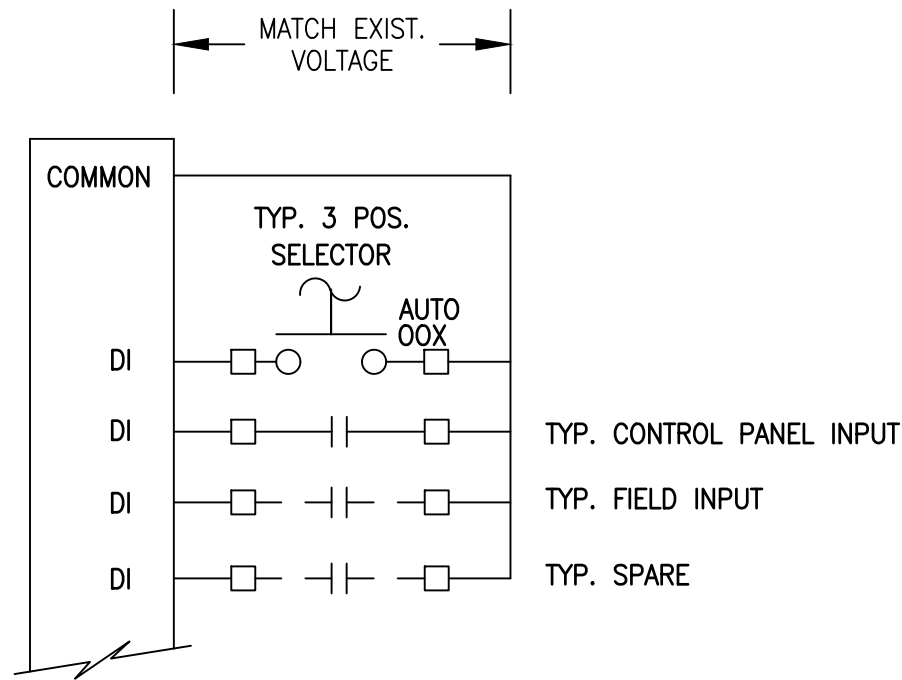
PANELBOARD SCHEDULES

SHEET NUMBER

E-28

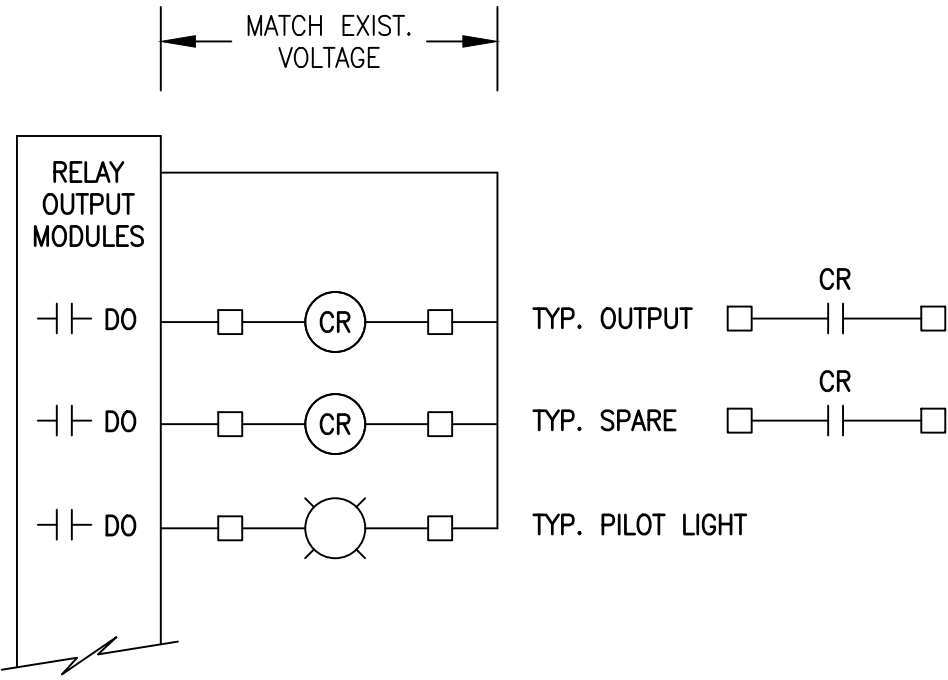
114 OF 132

Plotted By: King, Bertrond Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: E-29 LOOP DIAGRAMS March 19, 2021 12:20:32pm K:\WPB_Civil\044572100 - South RD WTP Design\CAD\Outside\c&w SOUTH OSLO ROAD WTP IMPROVEMENTS - Standard\E-35 N.F. TRAIN 4 CONDUITS.dwg
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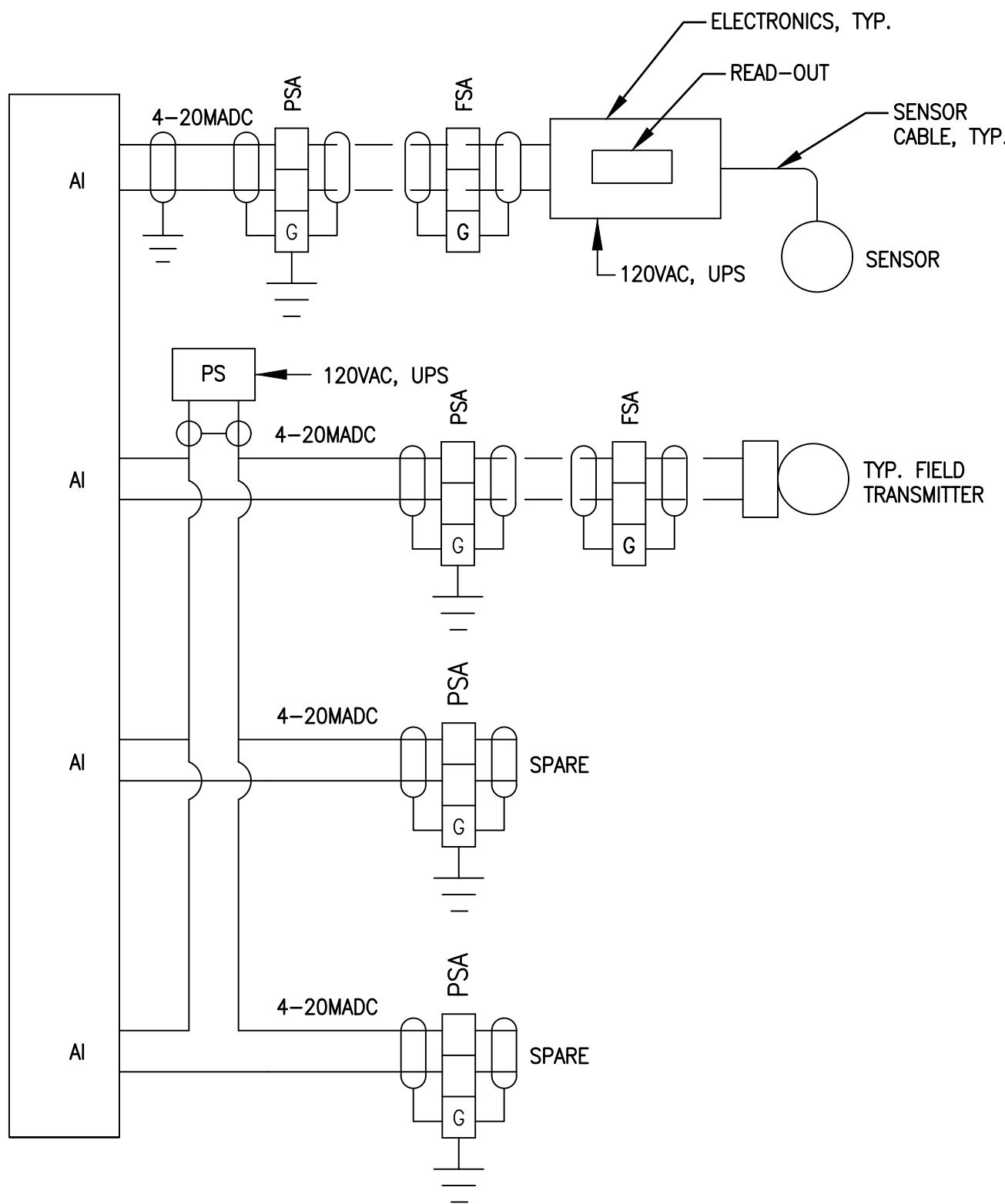
TYPICAL DI DIAGRAM

NTS



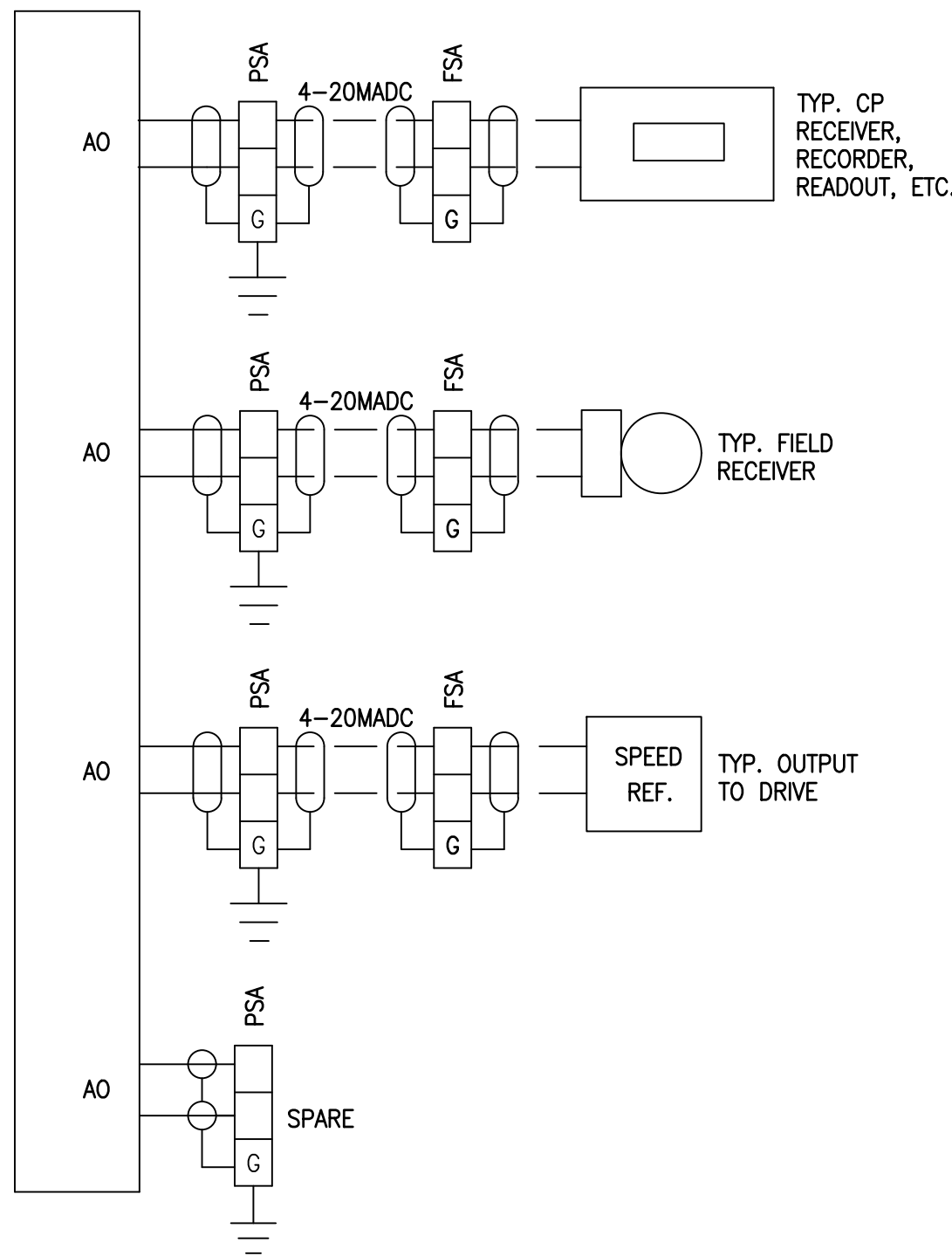
TYPICAL DO DIAGRAM

NTS



TYPICAL AI LOOP DIAGRAM


NTS



TYPICAL AO LOOP DIAGRAM

NTS

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MAR 2021

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DRAWN BY AOD

CHECKED BY MAG

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LOOP DIAGRAMS

E-29

115 OF 132

SHEET NUMBER

E-29

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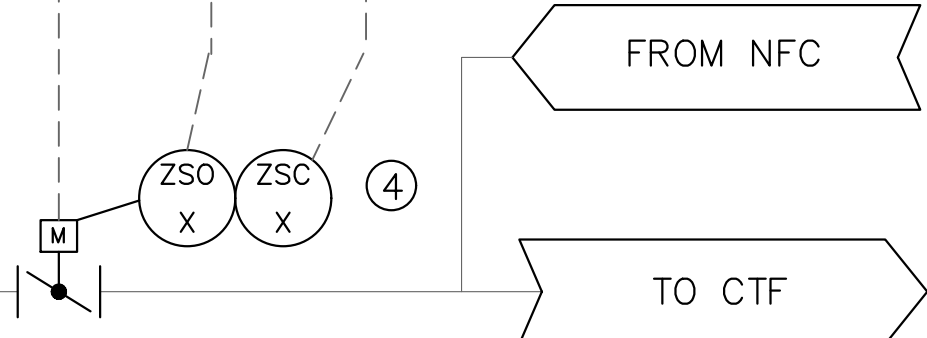
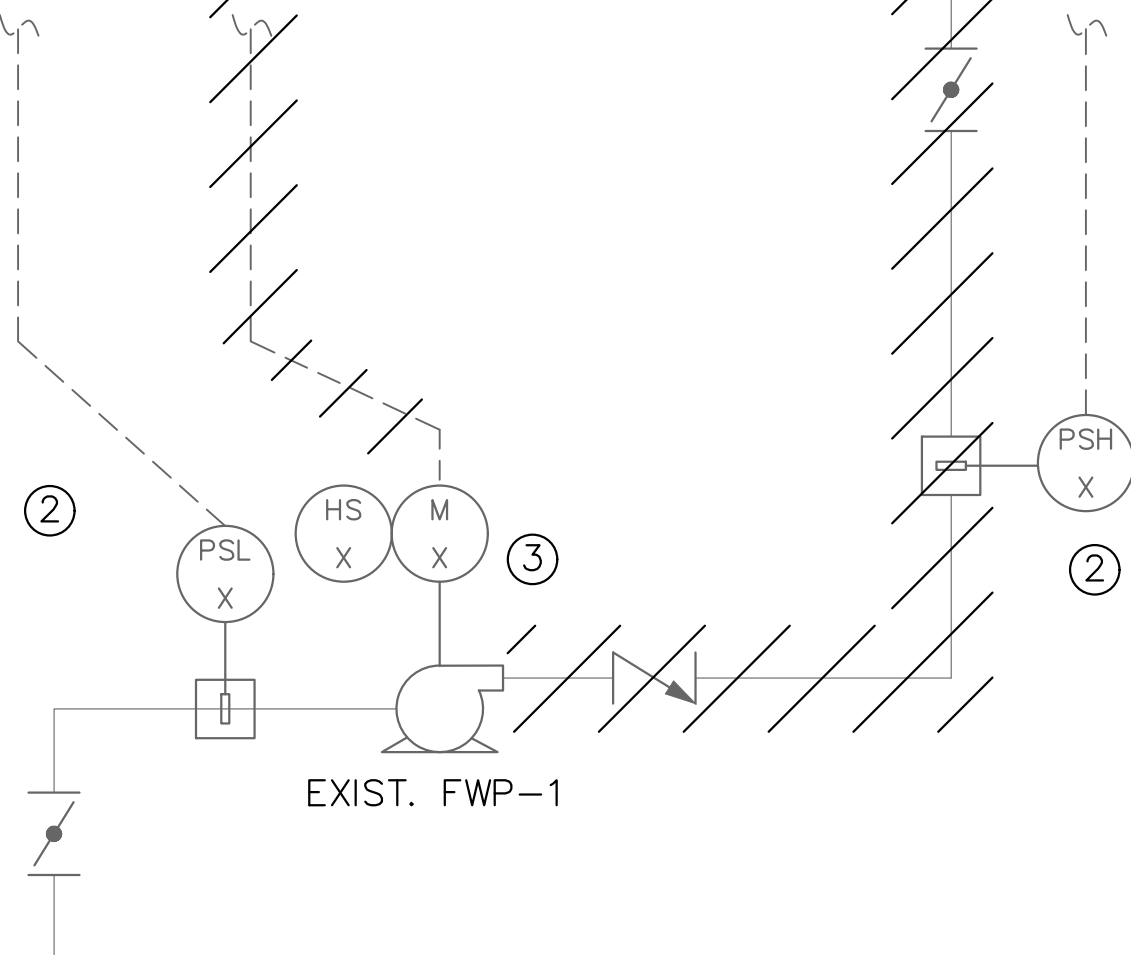
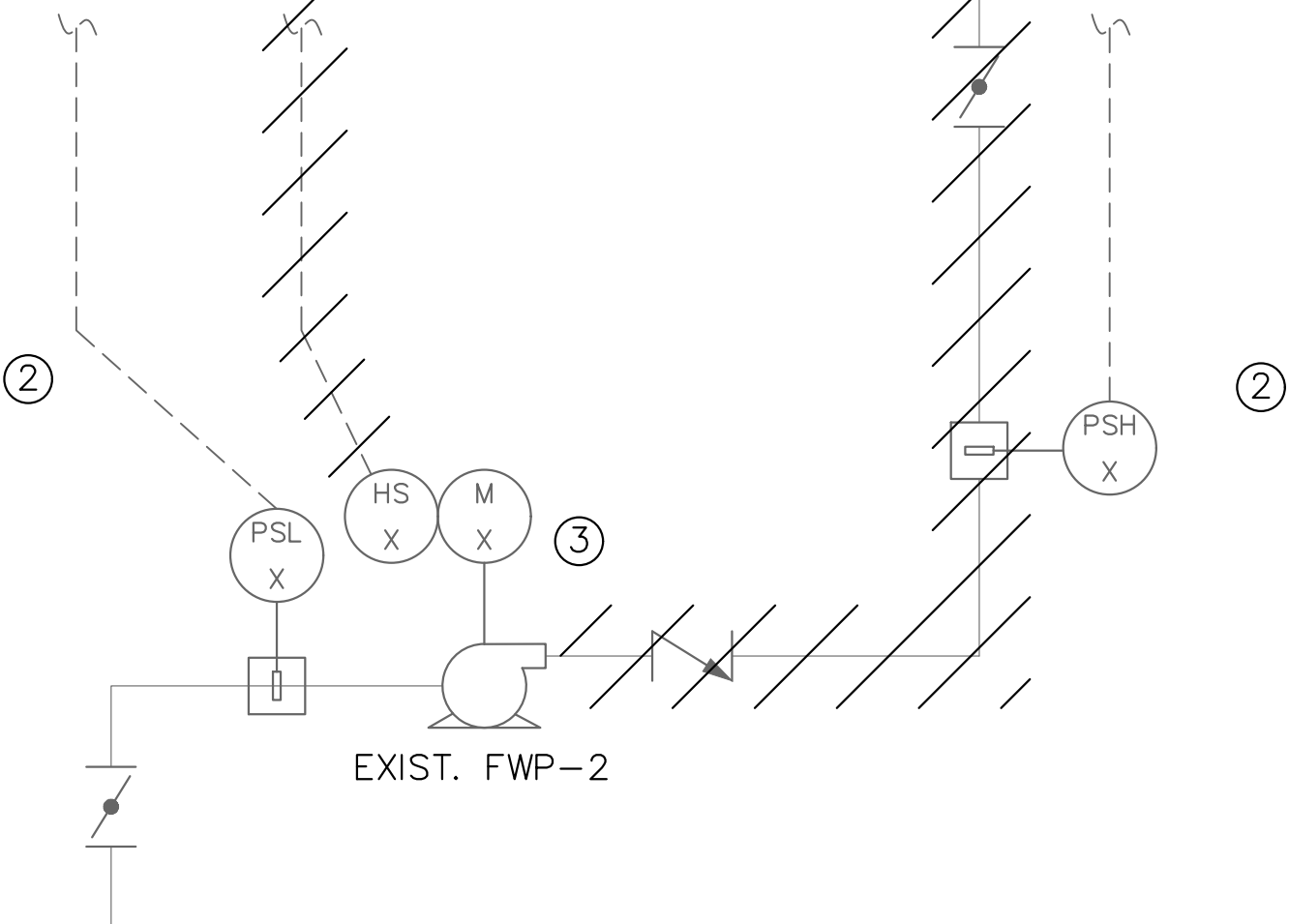
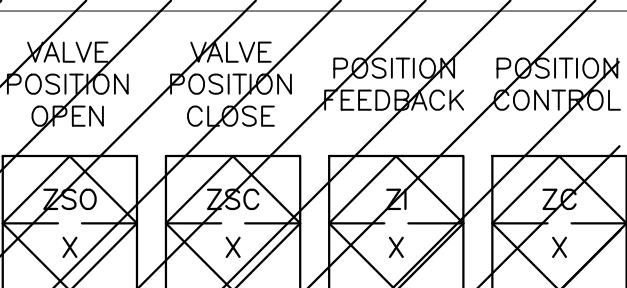
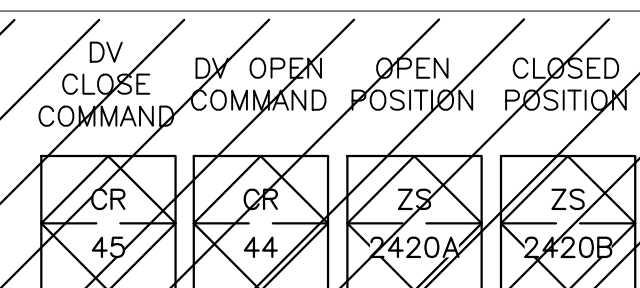
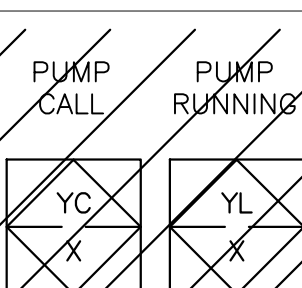
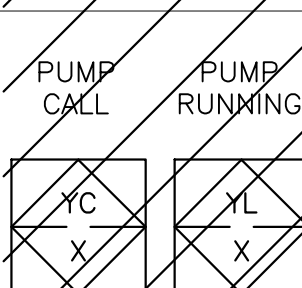
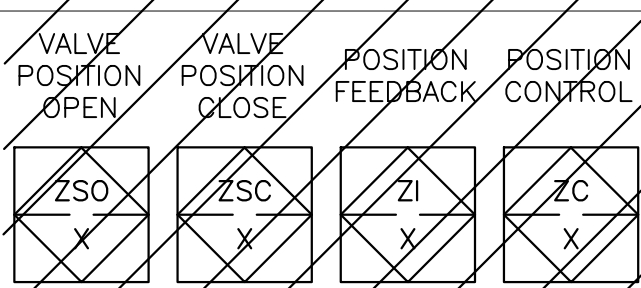
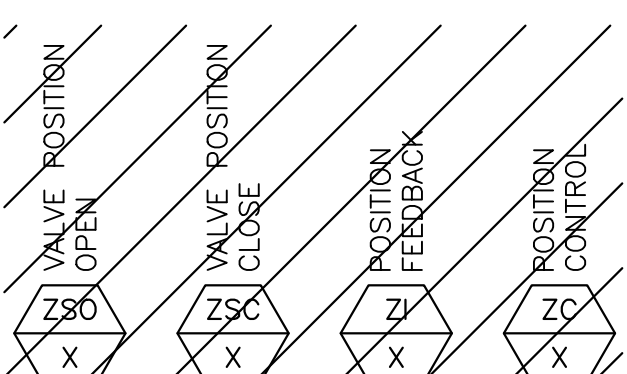
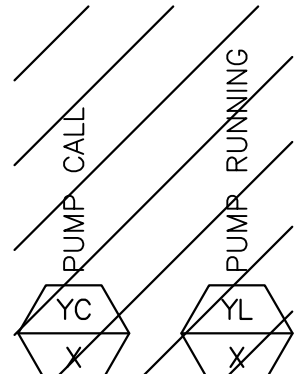
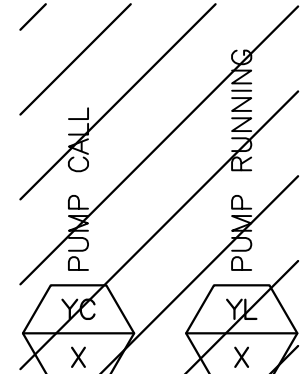
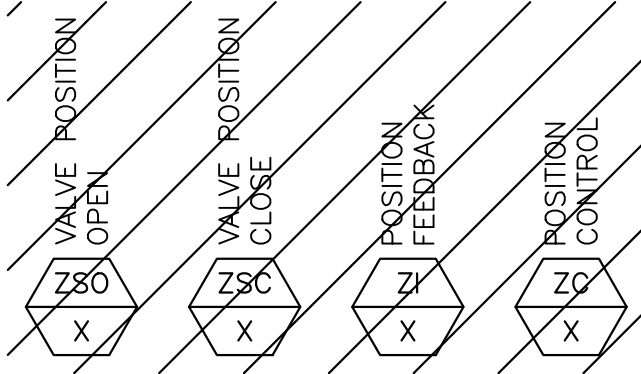
EMCO PANEL
(PROPOSED CP-4)

TO N.F. TRAIN #2

EXIST. FW HEADER

- ①
②
③
④

FROM MICRON
FILTERS



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KHA PROJECT
044572100
DATE
MAR 2021
SCALE AS SHOWN
DESIGNED BY JLR
DRAWN BY AOD
CHECKED BY MAG

SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
**INDIAN RIVER COUNTY UTILITIES
DEPARTMENT**

INDIAN RIVER COUNTY,

FLORIDA

LICENSED PROFESSIONAL

MICHAEL A. GUIDA

FLORIDA LICENSE NUMBER
60755

DATE: _____

**N.F. FEEDWATER PUMPS 1-2
CONDUITS**

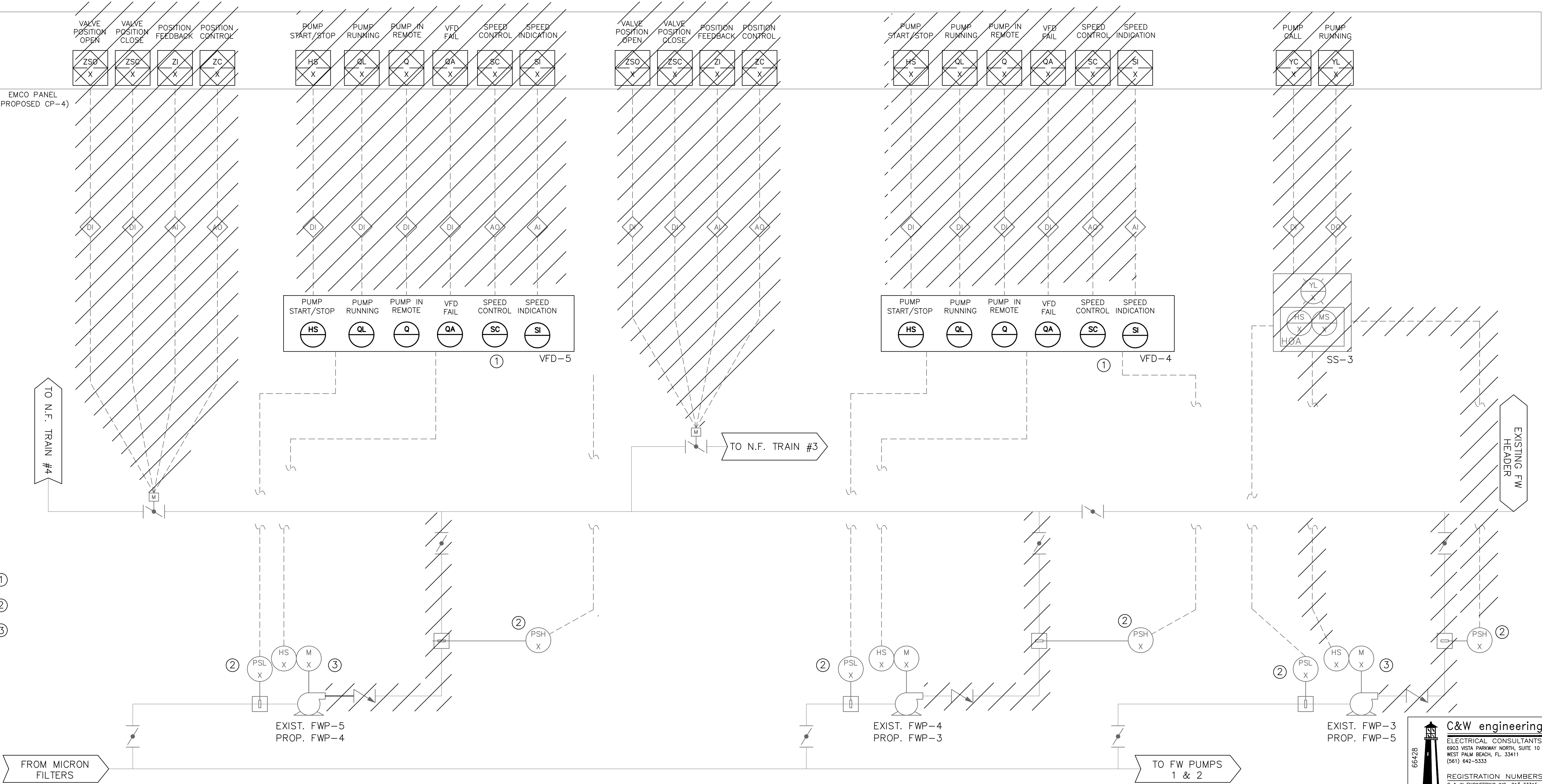
SHEET NUMBER

E-30

116 OF 132

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HMI



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KHA PROJECT
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DATE
MAR 2021
SCALE AS SHOWN
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FLORIDA LICENSE NUMBER
60755

N.F. FEEDWATER PUMPS 3-5 CONDUITS

SHEET NUMBER

E-31

117 OF 132

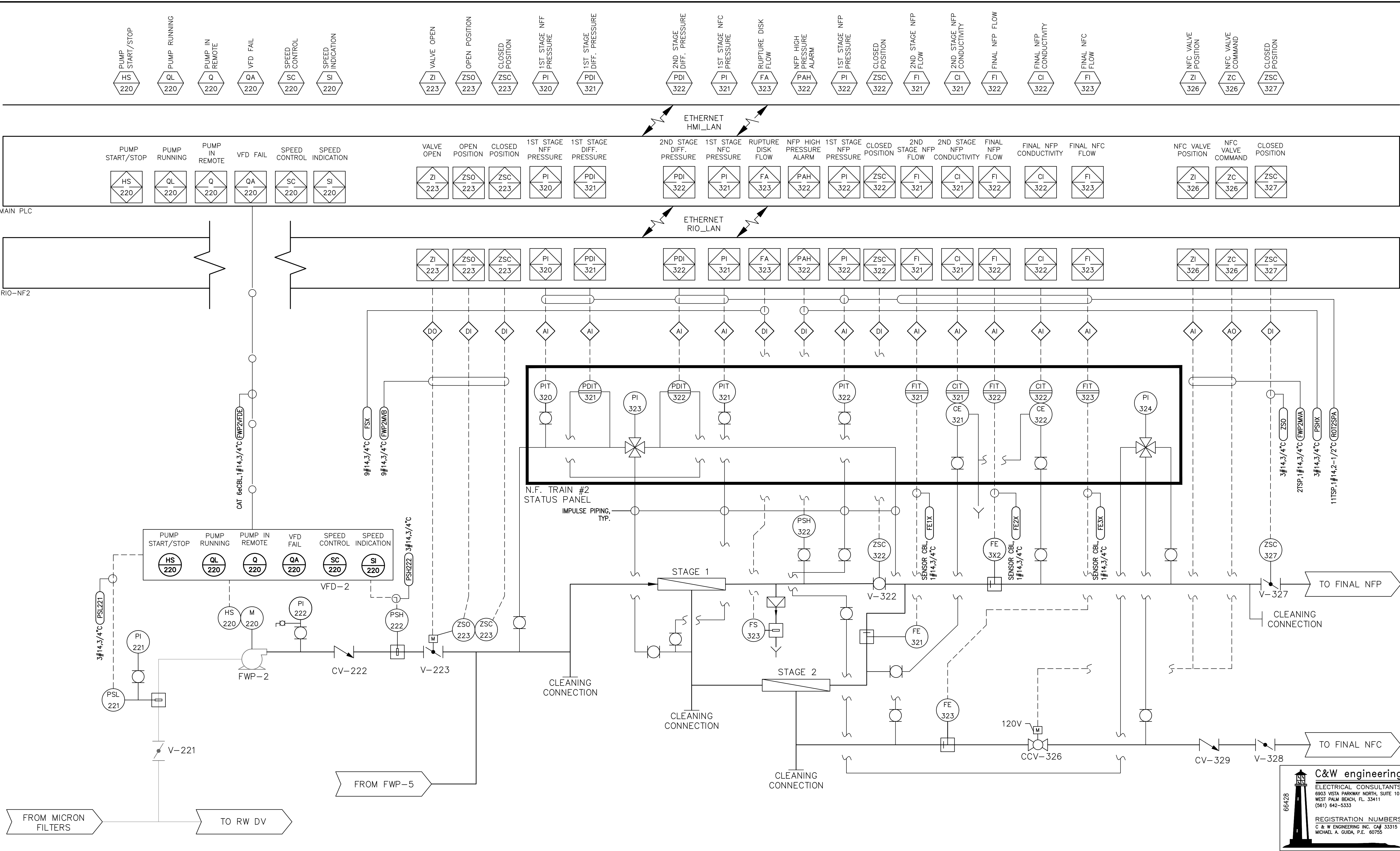
66428

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Plotted By: King, Bertrond Sheet: Set: SOUTH OSLO ROAD WTP IMPROVEMENTS Layout: E-33 N.F. TRAIN 2 CONDUITS March 19, 2021 12:20:56pm K:\WEB_Civil\044572100 - South OSLO ROAD WTP IMPROVEMENTS\CAD\Outside\c&w SOUTH OSLO ROAD WTP IMPROVEMENTS - Standard\E-33 N.F. TRAIN 4 CONDUITS.dwg
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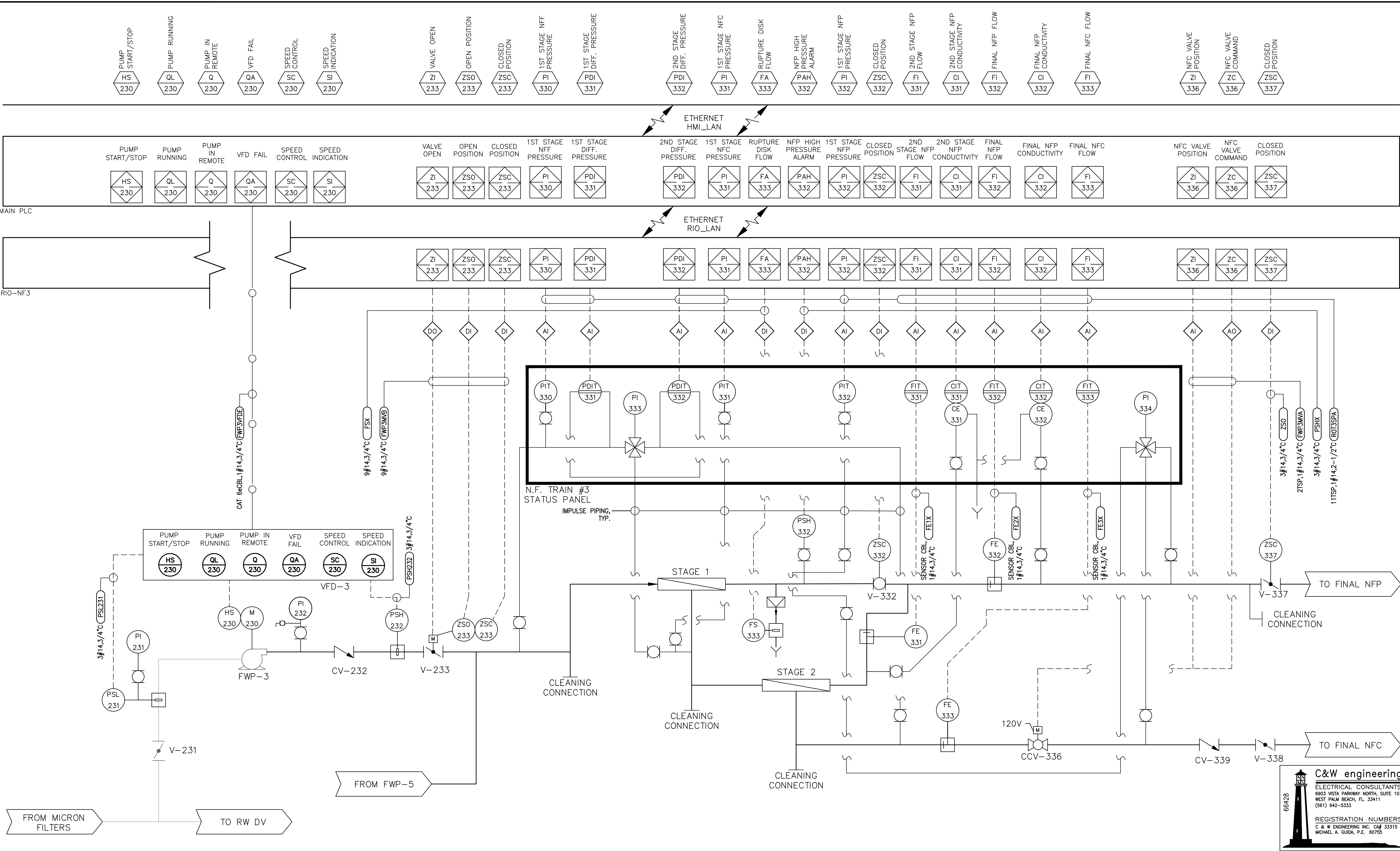
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FLORIDA LICENSE NUMBER
60755

N.F. TRAIN 2 CONDUITS

SHEET NUMBER
E-33
119 OF 132

Plotted By: King, Bertrond
Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS - LAYOUT E-34 N.F. TRAIN 3 CONDUITS
South OSLO ROAD WTP IMPROVEMENTS - LAYOUT E-34 N.F. TRAIN 3 CONDUITS
K:\WEB-GAD\Outside\South OSLO ROAD WTP IMPROVEMENTS - LAYOUT E-34 N.F. TRAIN 3 CONDUITS.dwg
Standard: E-34 N.F. TRAIN 3 CONDUITS
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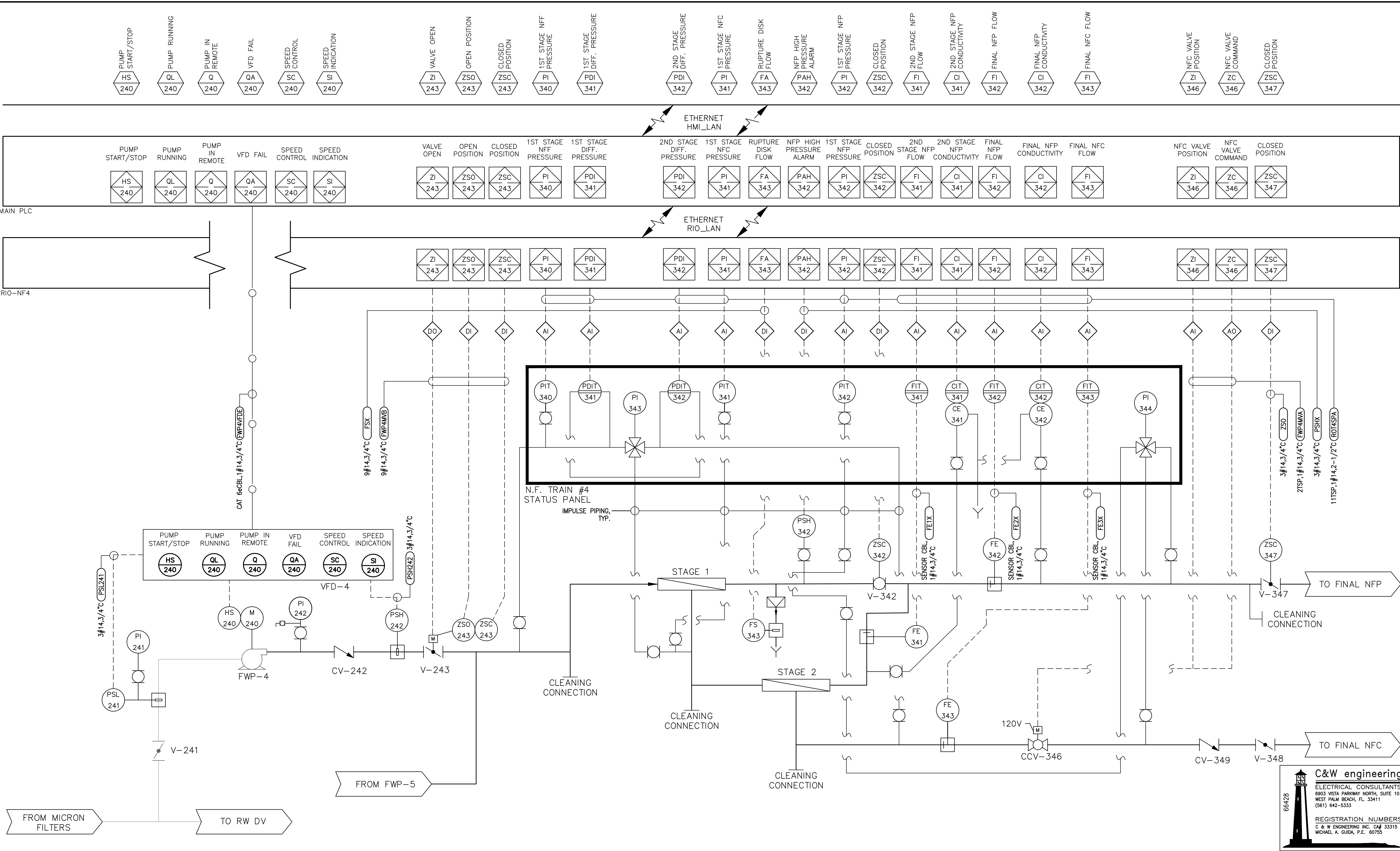
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INDIAN RIVER COUNTY, FLORIDA

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SHEET NUMBER
E-34
120 OF 132

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MAR 2021
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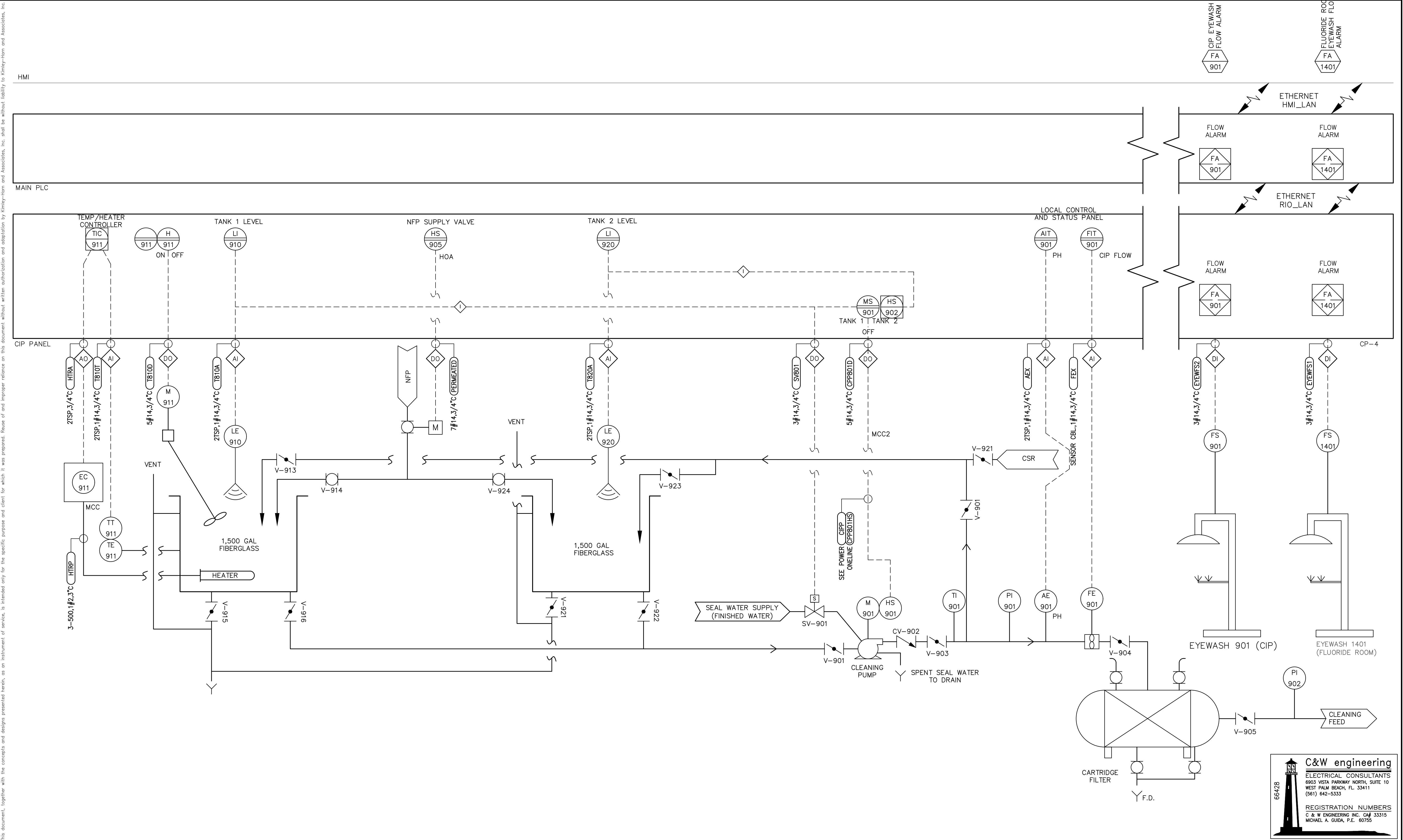
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N.F. TRAIN 4 CONDUITS

SHEET NUMBER
E-35
121 OF 132

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DATE	MAR 2021
SCALE	AS SHOWN
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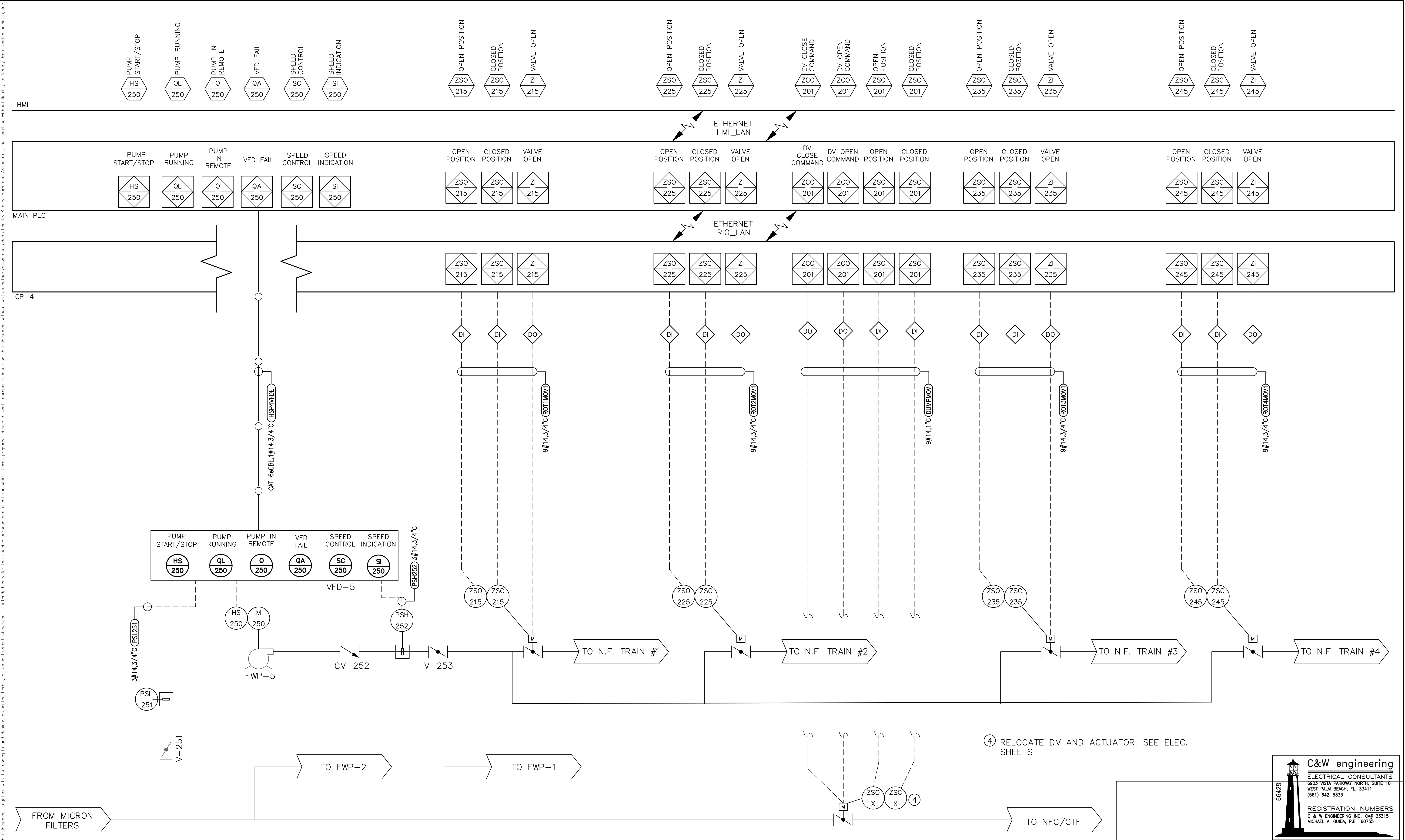
CLEANING SYSTEM CONDUITS

E-38

124 OF 132

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MAR 2021
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FLORIDA LICENSE NUMBER
60755

SWING N.F. FEEDWATER PUMP 5 CONDUITS

SHEET NUMBER

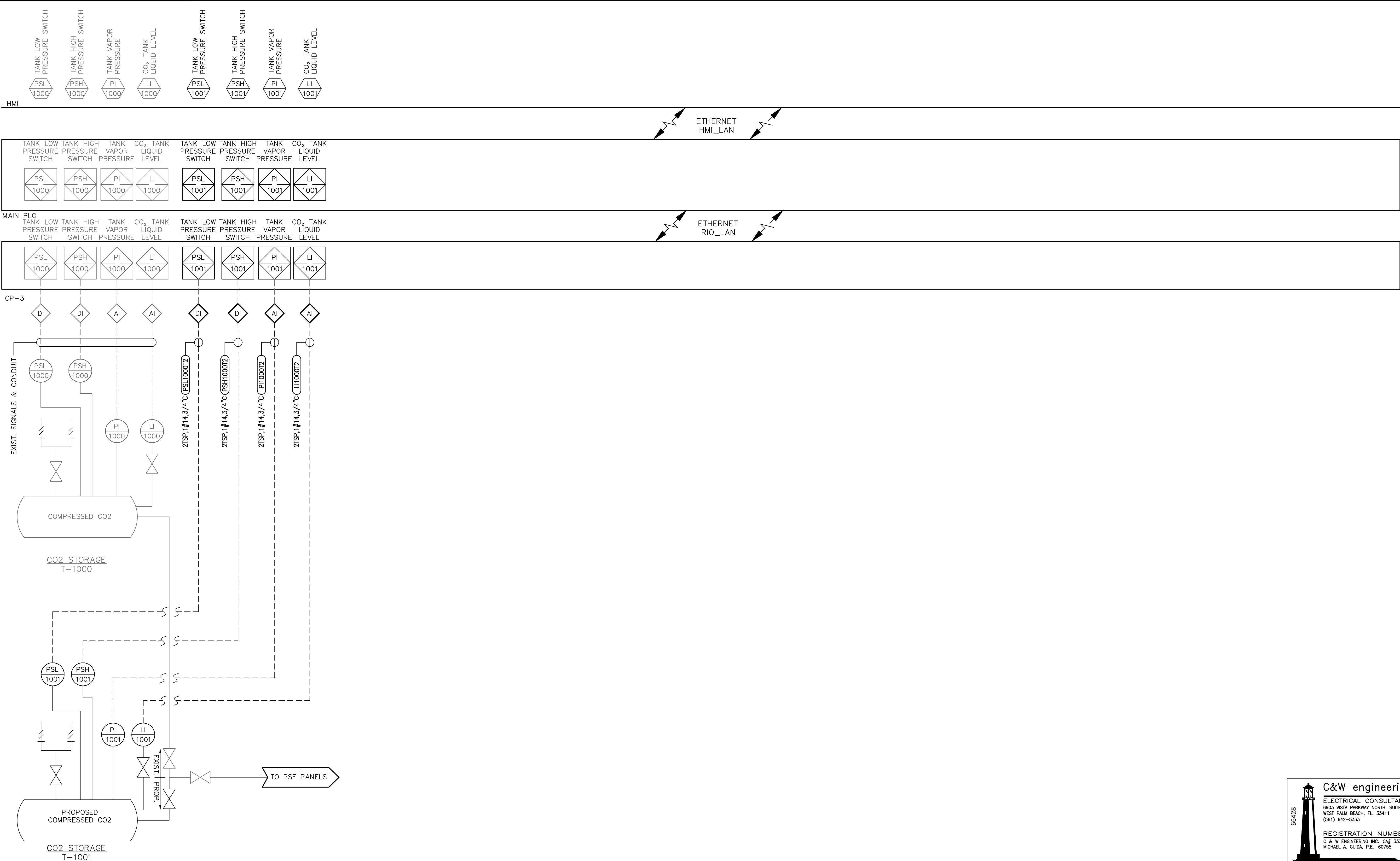
E-39

125 OF 132

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KHA PROJECT	044572100
DATE	MAR 2021
SCALE	AS SHOWN
DESIGNED BY	JLR
DRAWN BY	AOD
CHECKED BY	MAG

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DATE: _____

CARBON DIOXIDE FEED CONDUITS

SHEET NUMBER

E-40

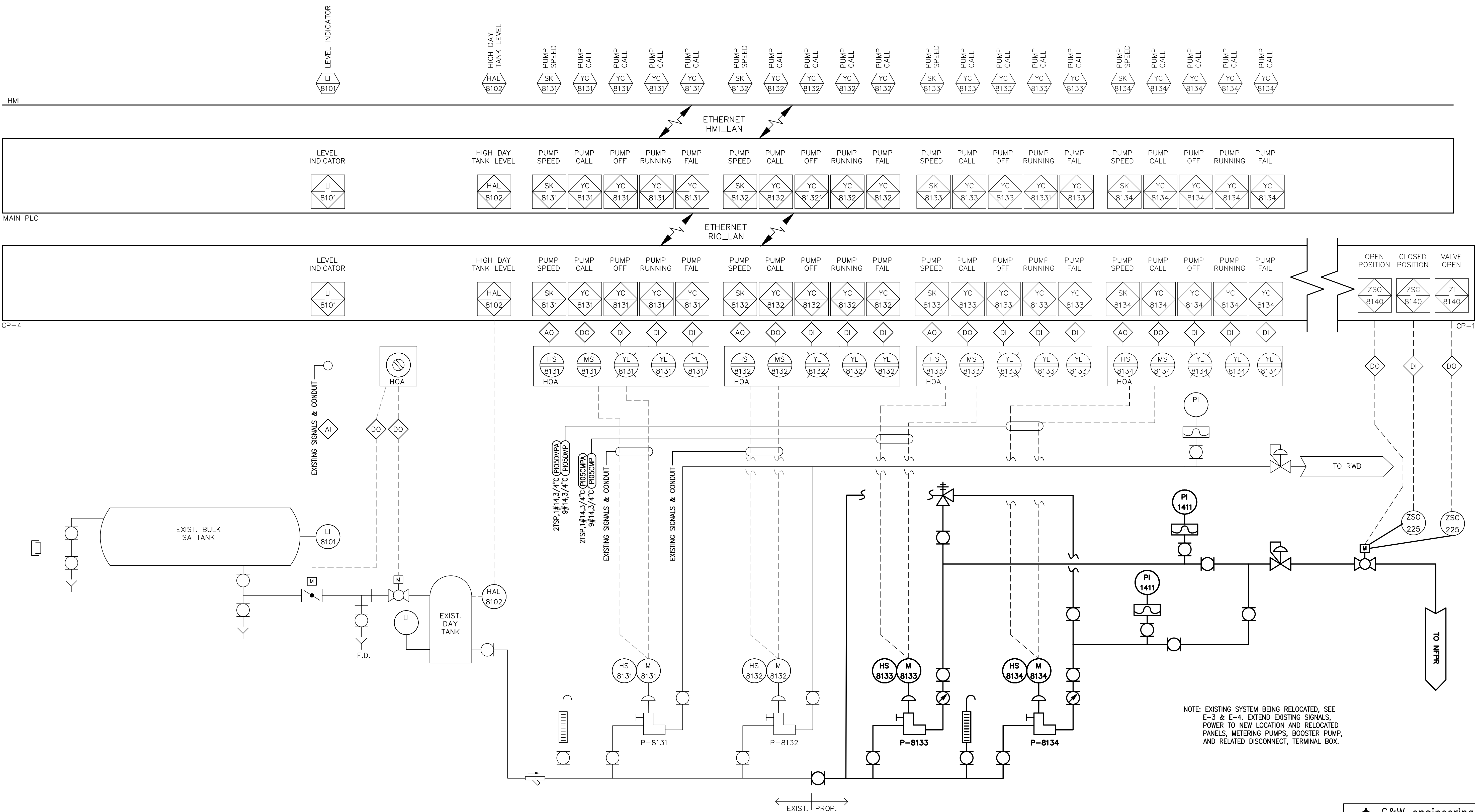
126 OF 132

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Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS - Loyola-E-41 Sulfuric Acid Feed Conduits - March 19, 2021 12:21:45pm - K:\WEB_Civil\044572100 - South OSLO Road WTP Design\CAD\Outside\c&w\South OSLO Road WTP IMPROVEMENTS - Standard\E-35 N.F. TRAIN 4 COND

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SULFURIC ACID FEED CONDUITS

SHEET NUMBER

E-41

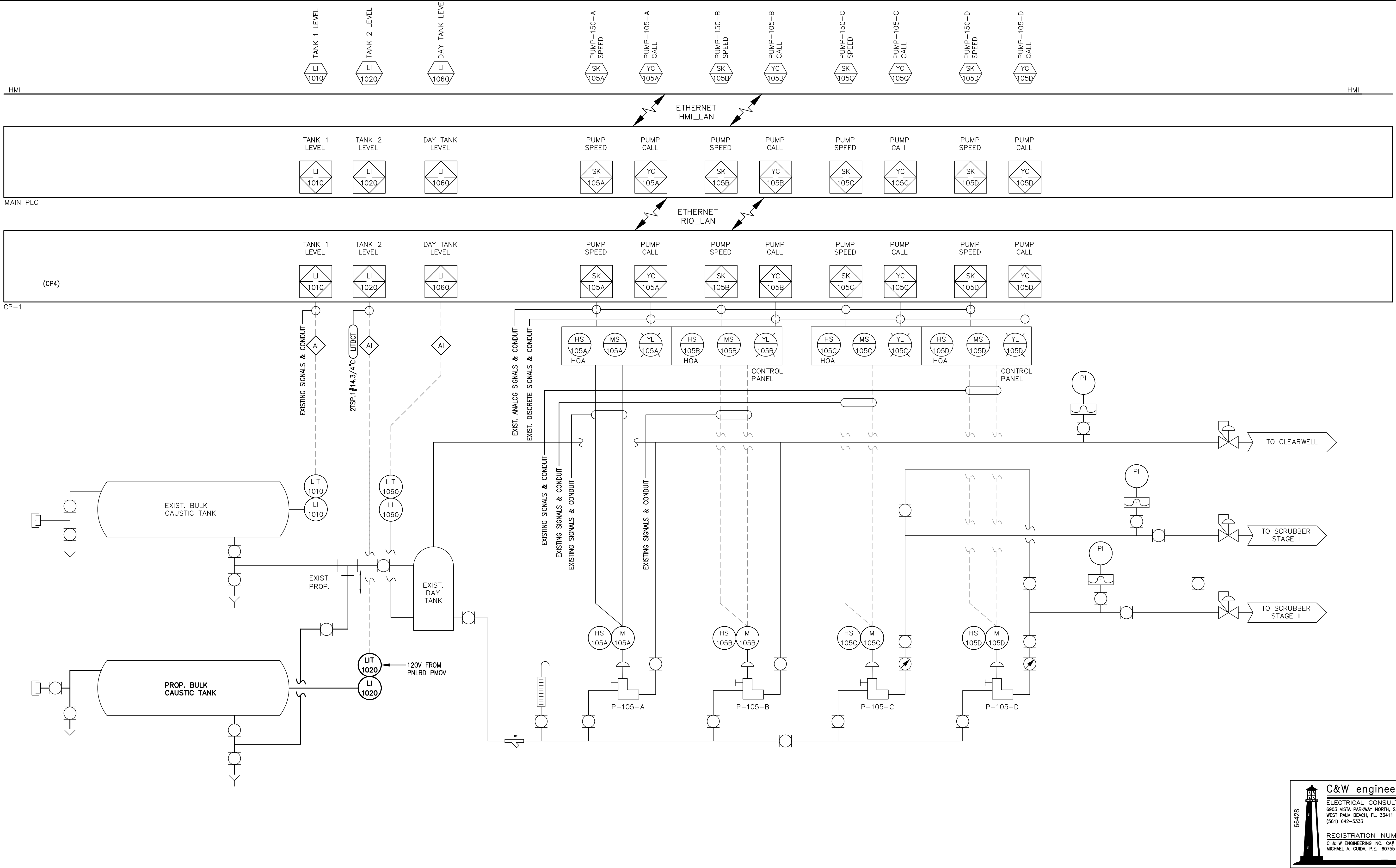
127 OF 132

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REGISTRATION NUMBERS

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MICHAEL A. GUIDA, P.E. 60755

CAUSTIC FEED CONDUITS

E-42

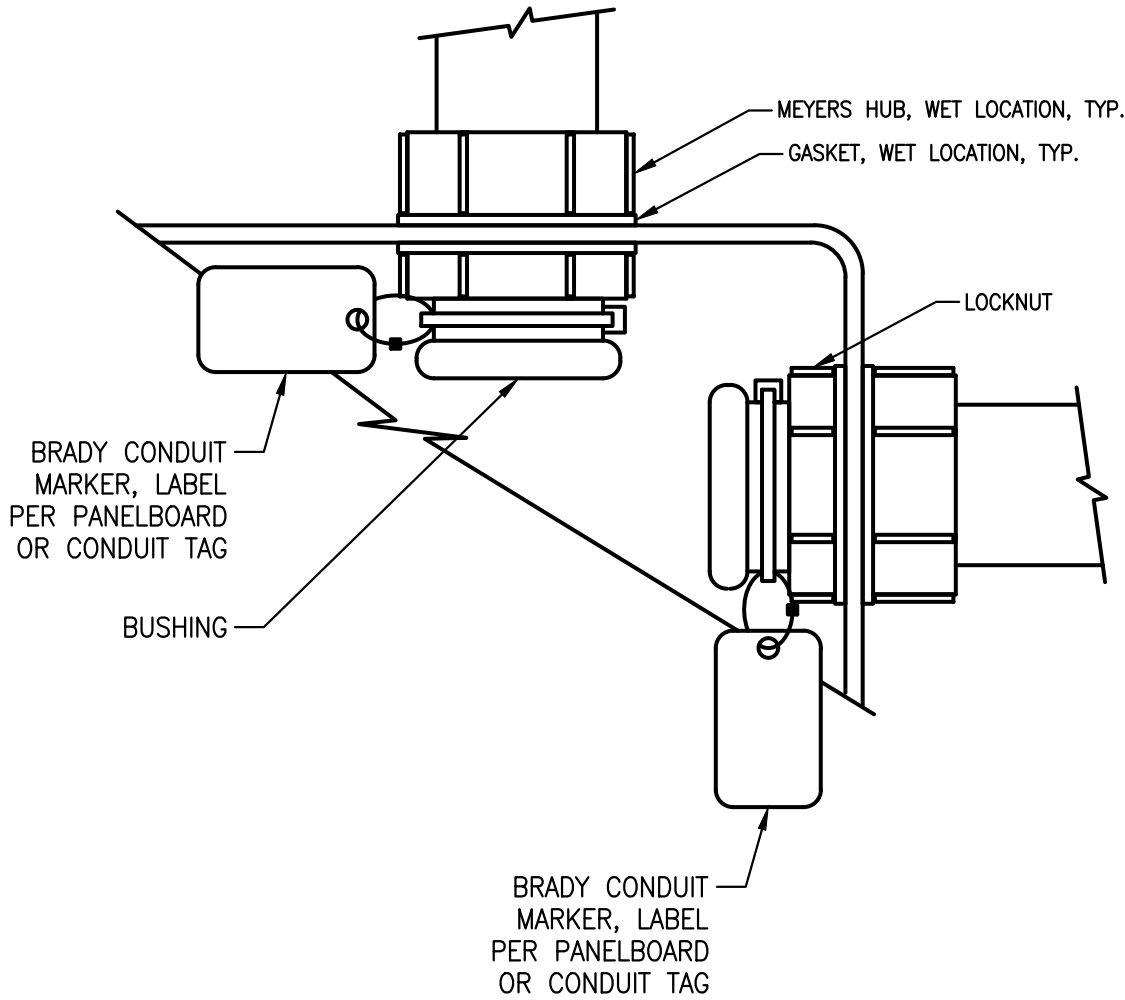
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SHEET NUMBER

E-42

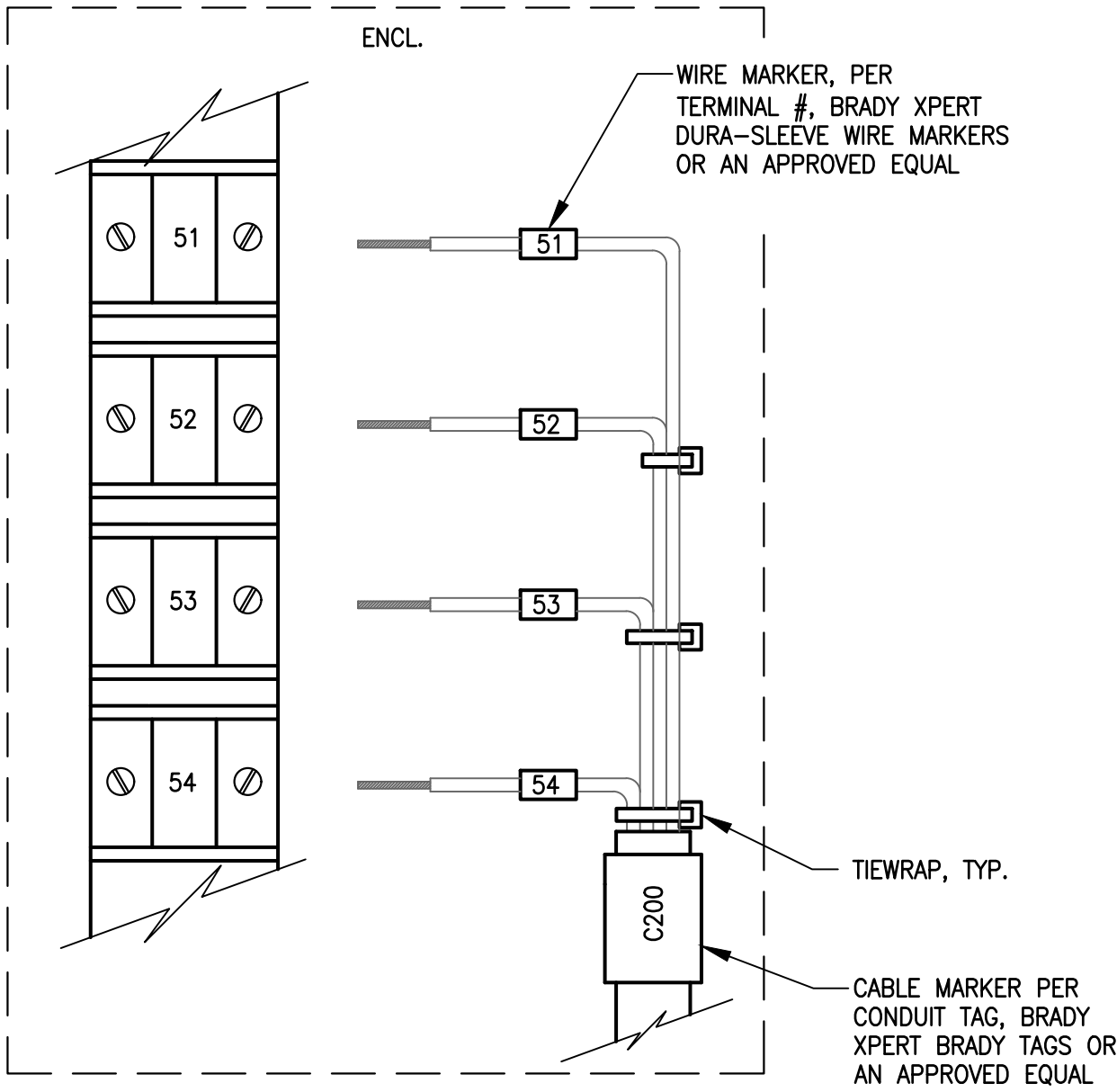
128 OF 132

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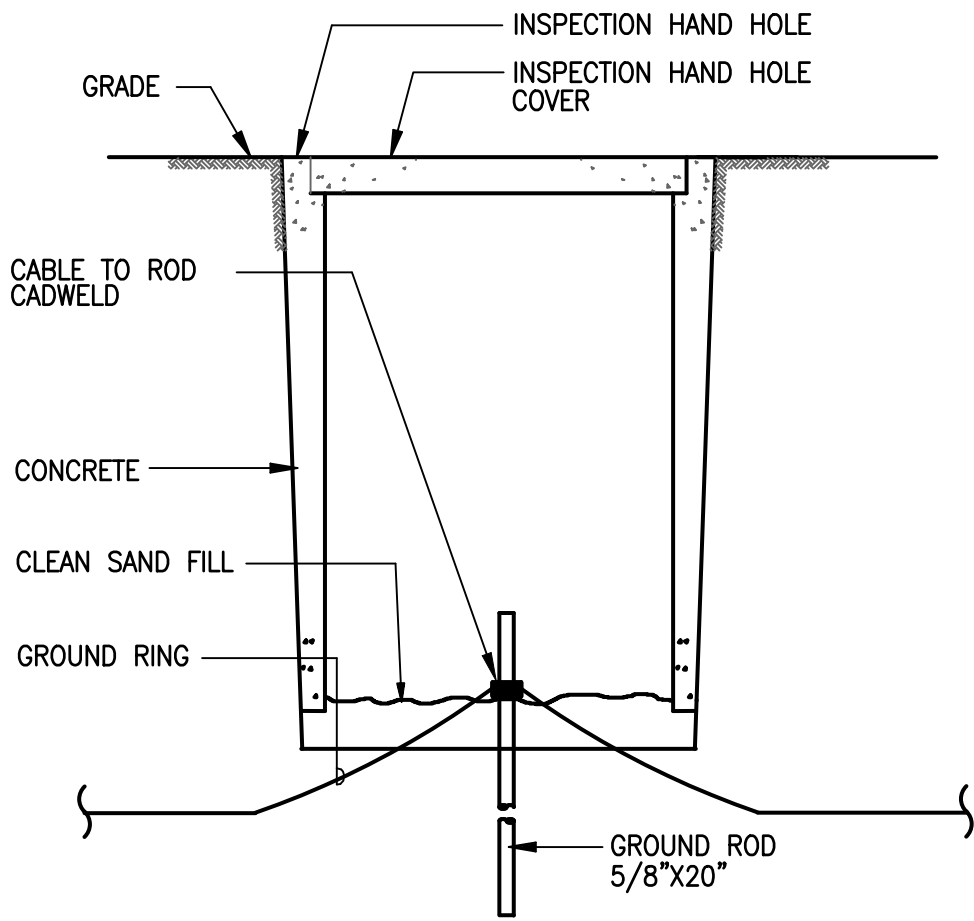
CONDUIT TERMINATION DETAIL

NTS



TERMINATION EXAMPLE DETAIL

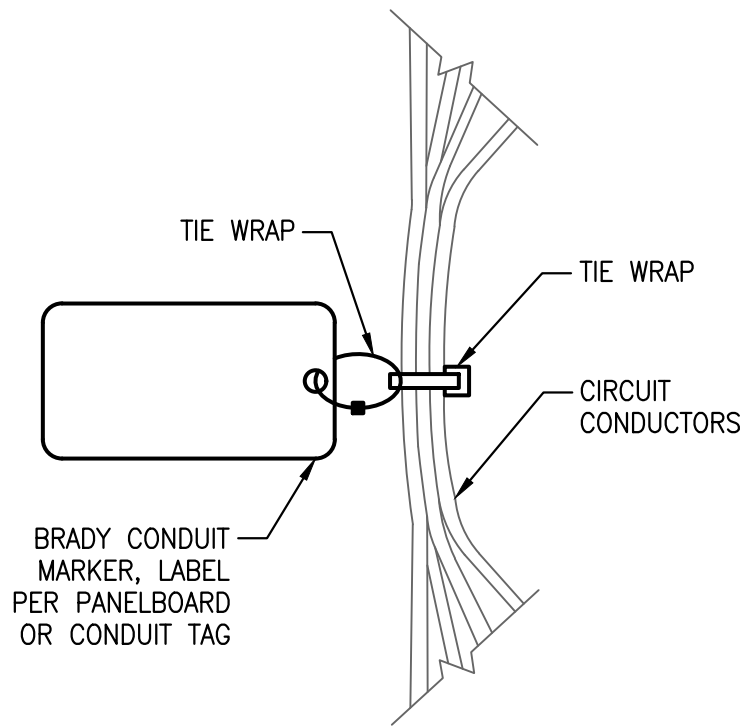
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GROUND WELL DETAIL

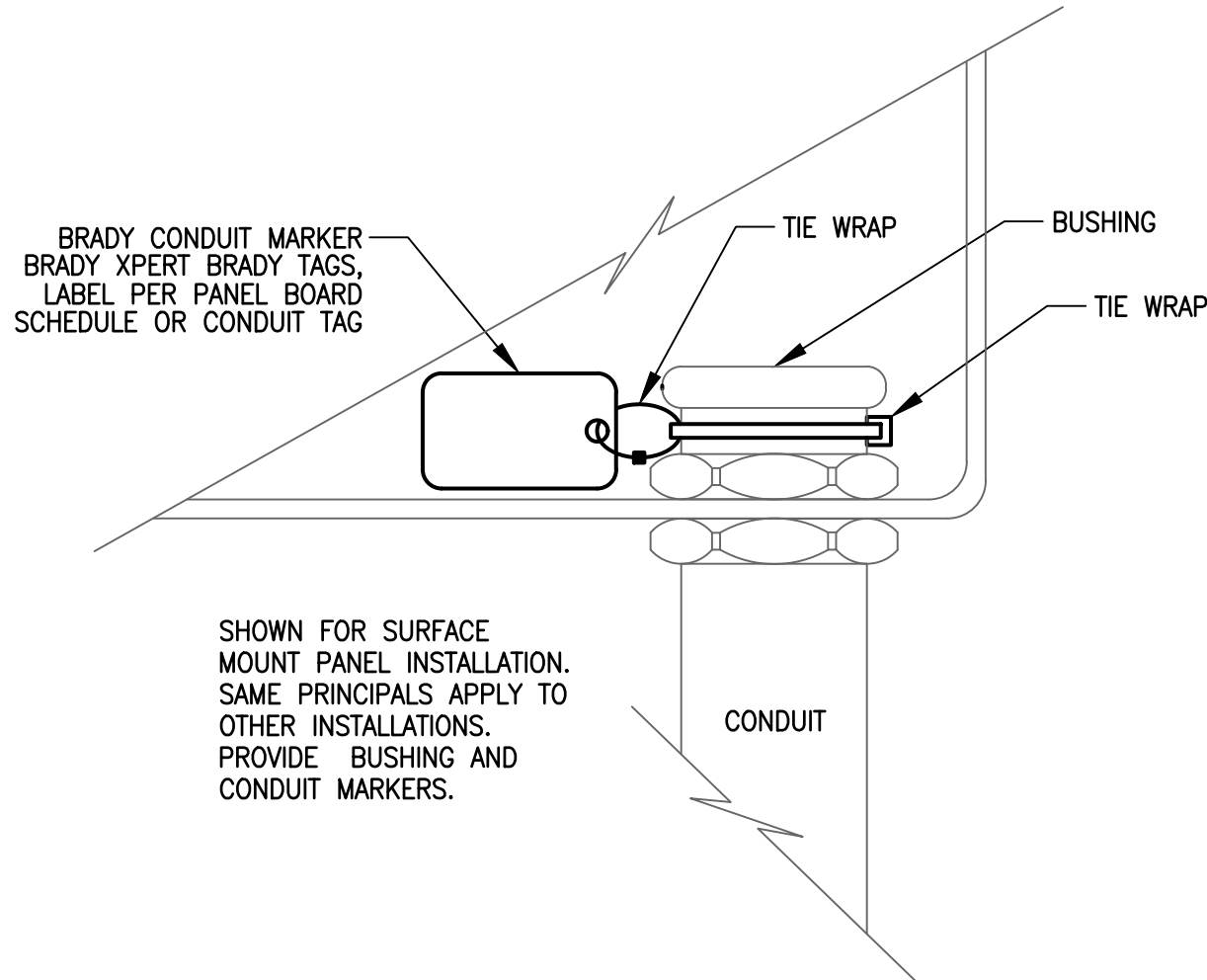
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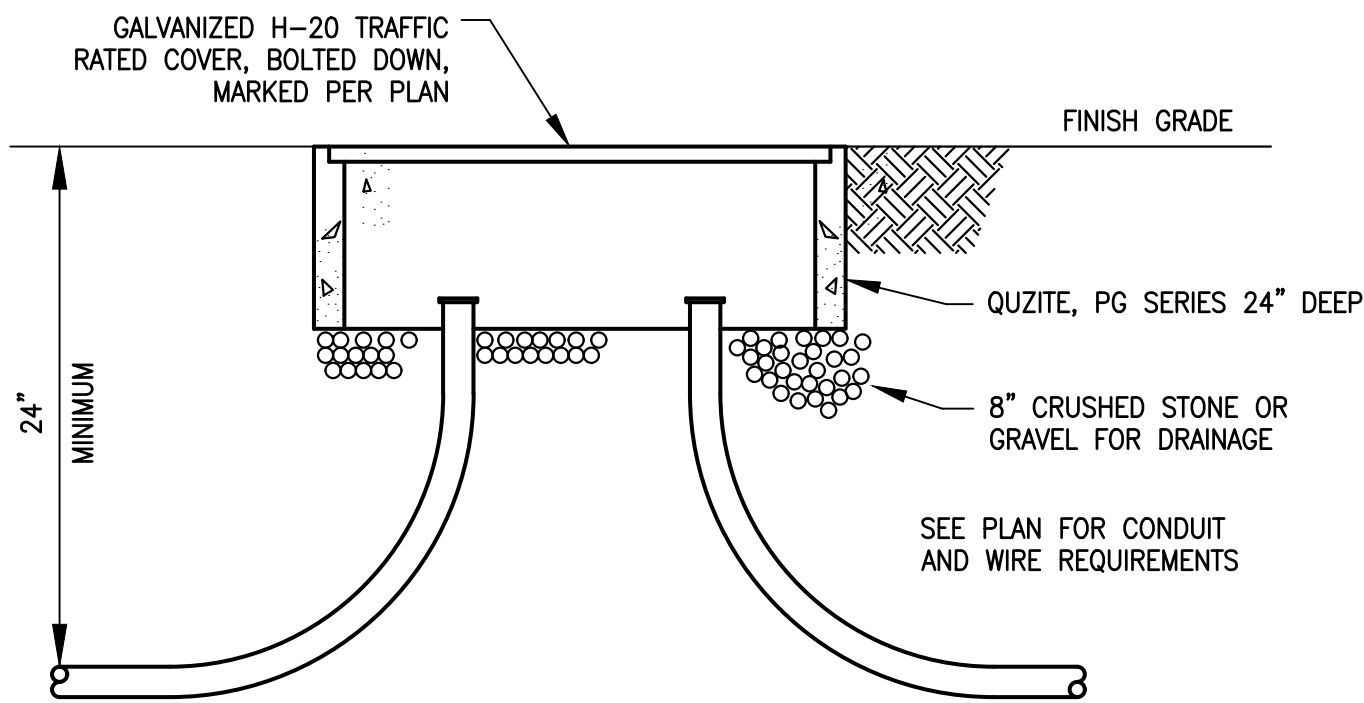
CIRCUIT MARKER DETAIL

NTS



CONDUIT DETAIL

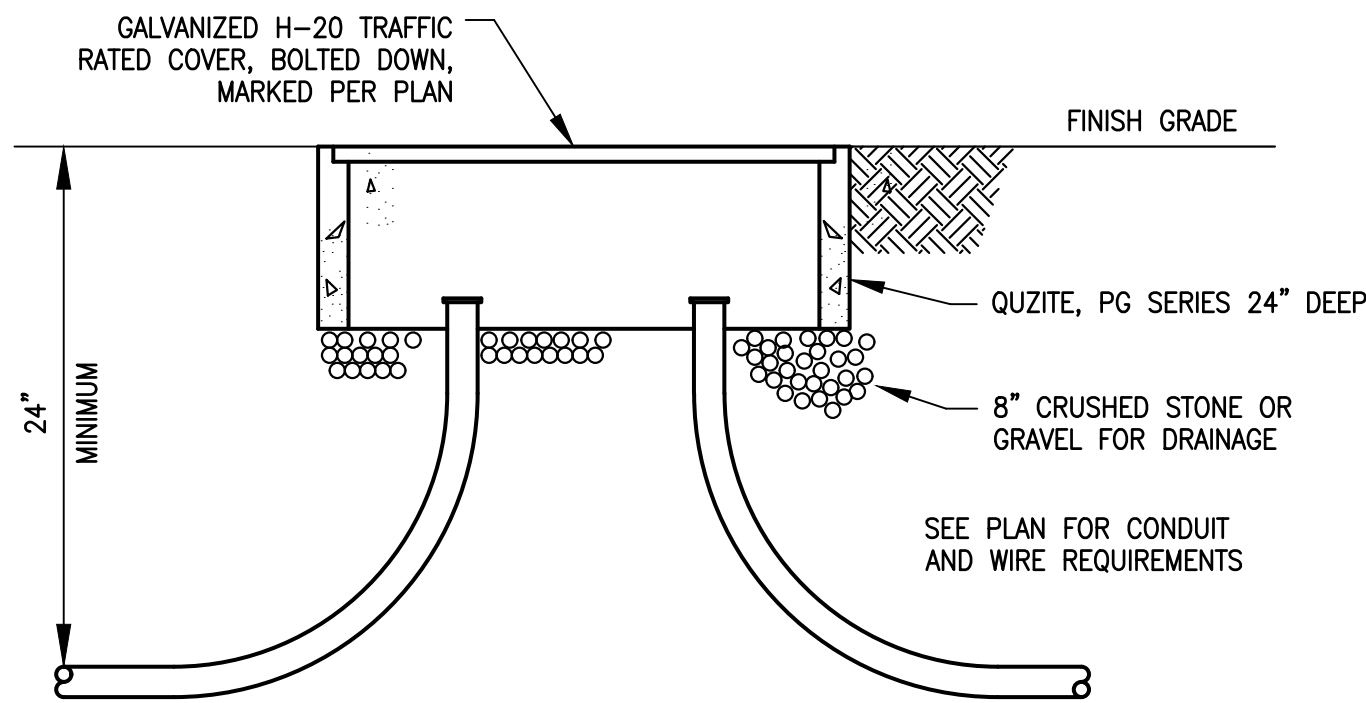
NTS



F.O. PULL BOX

NTS

C



HAND HOLE

NTS

D

66428

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KHA PROJECT

044572100

DATE

MAR 2021

SCALE

AS SHOWN

DESIGNED BY

JLR

DRAWN BY

AOD

CHECKED BY

MAG

SOUTH OSLO ROAD WTP IMPROVEMENTS

PREPARED FOR

INDIAN RIVER COUNTY UTILITIES

DEPARTMENT

INDIAN RIVER COUNTY,

FLORIDA

LICENSED PROFESSIONAL

MICHAEL A. GUIDA

FLORIDA LICENSE NUMBER

60755

DATE:

ELECTRICAL DETAILS

SHEET NUMBER

E-43

129 OF 132

1. I&C SHALL IDENTIFY TERMINALS IN SHOP DRAWINGS.



EQUIPMENT VARIES PER LOCATION



1. QUANTITY, TYPE OF INSTRUMENT VARIES PER LOCATION.
2. ALL ENCLOSURES, FASTENERS, IMULSE PIPING, FITTINGS SHALL BE 316 SS.



NTS, TYP. FOR TERMINAL BOXES



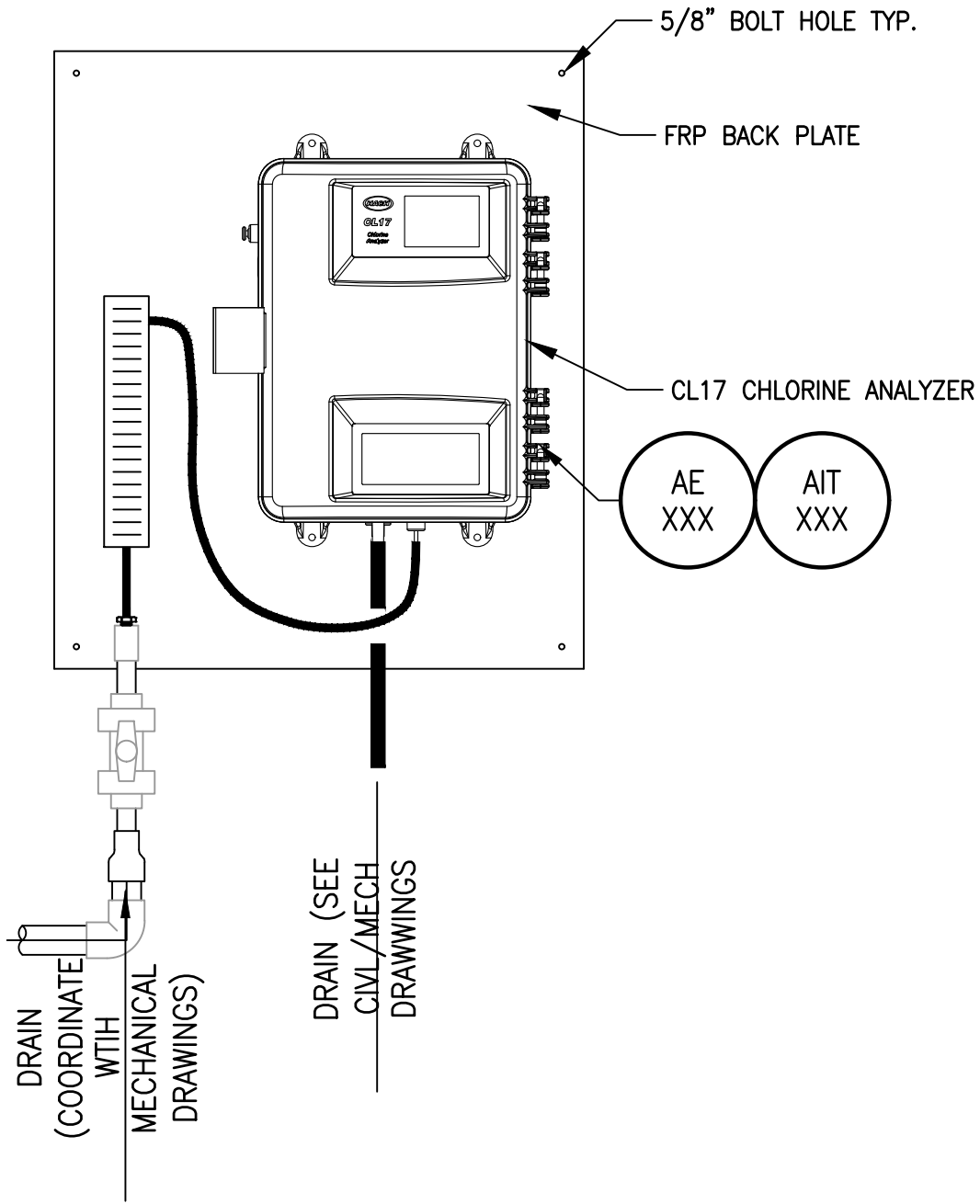
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Plotted By: King, Bertrand Sheet Set: SOUTH OSLO ROAD WTP IMPROVEMENTS - Loyout E-45 ELECTRICAL DETAILS - March 19, 2021 12:27:36pm K:\WPB\Civil\044572100 - South OSLO ROAD WTP IMPROVEMENTS - Standard E-35 N.E. TRAIN 4 CONDUITS.dwg
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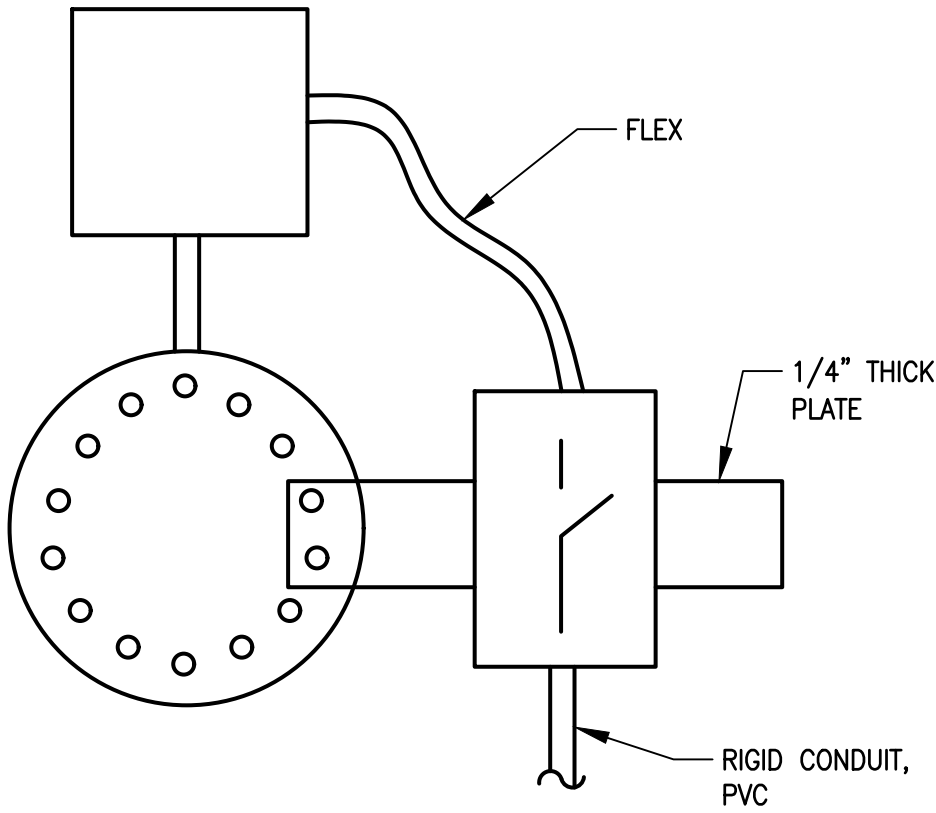
NOTES:

- 1) ALL WALL MOUNTING HARDWARE SHALL BE 316 SST
- 2) BACKPLATE AND COMPONENTS SHALL BE PER SPECIFICATIONS BY I&C CONTRACTOR



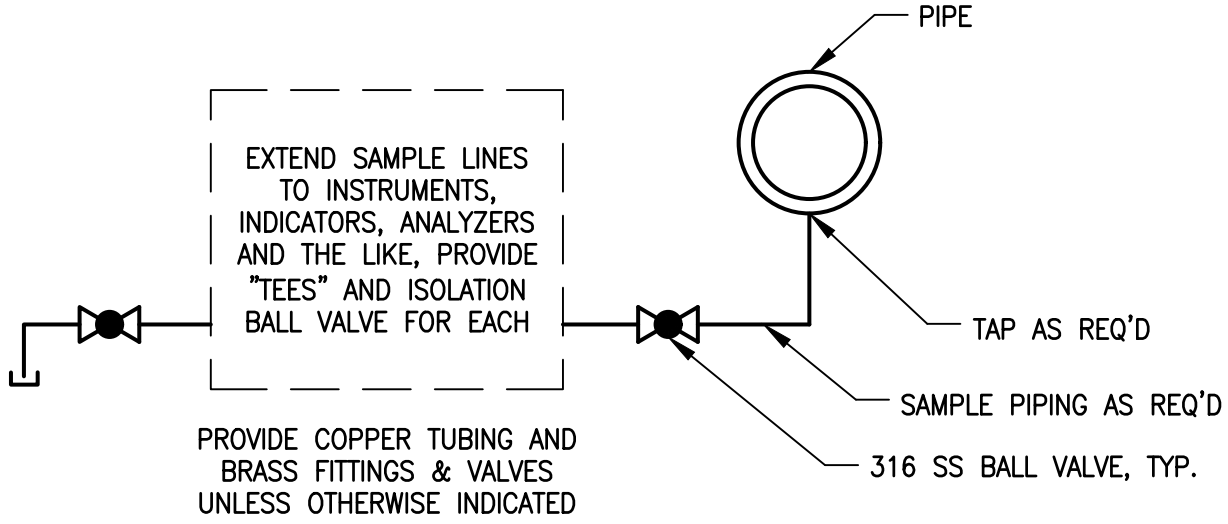
CHLORINE ANALYZER BACKPLATE

NTS, TYP.



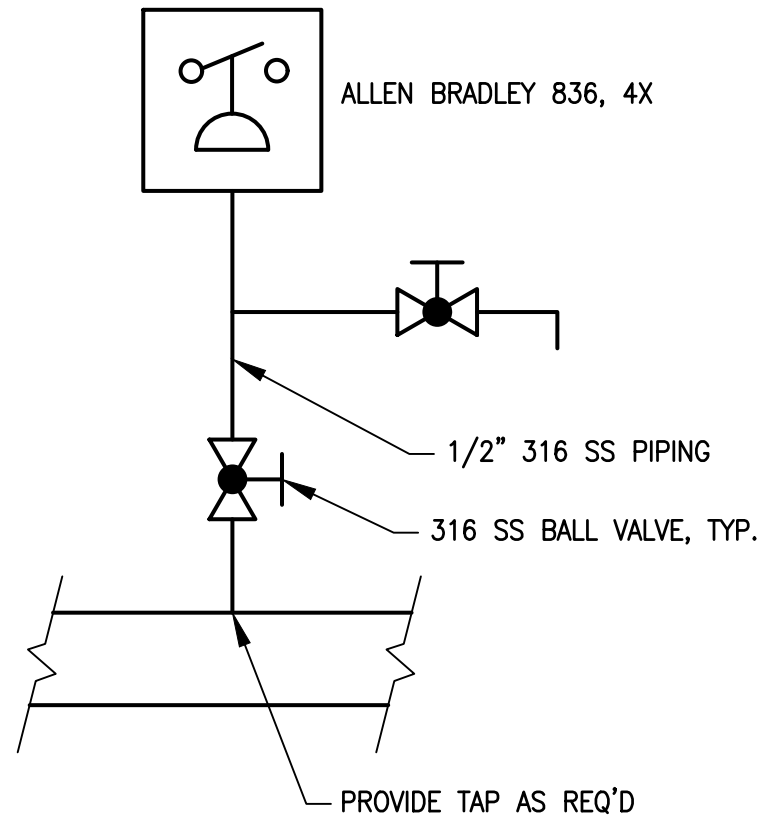
VALVE MOTOR OPERATOR

NTS, TYP.

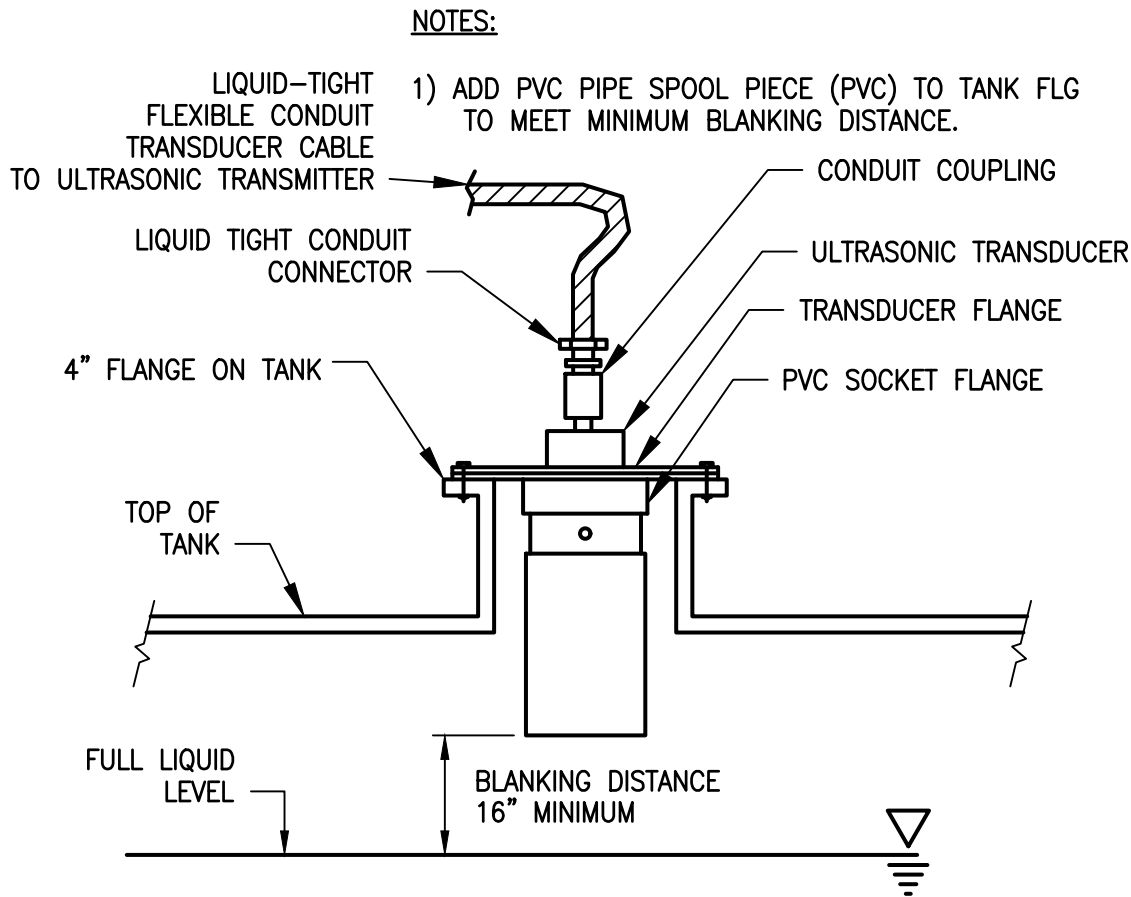


TYPICAL INSTRUMENT TAP DETAIL

NTS

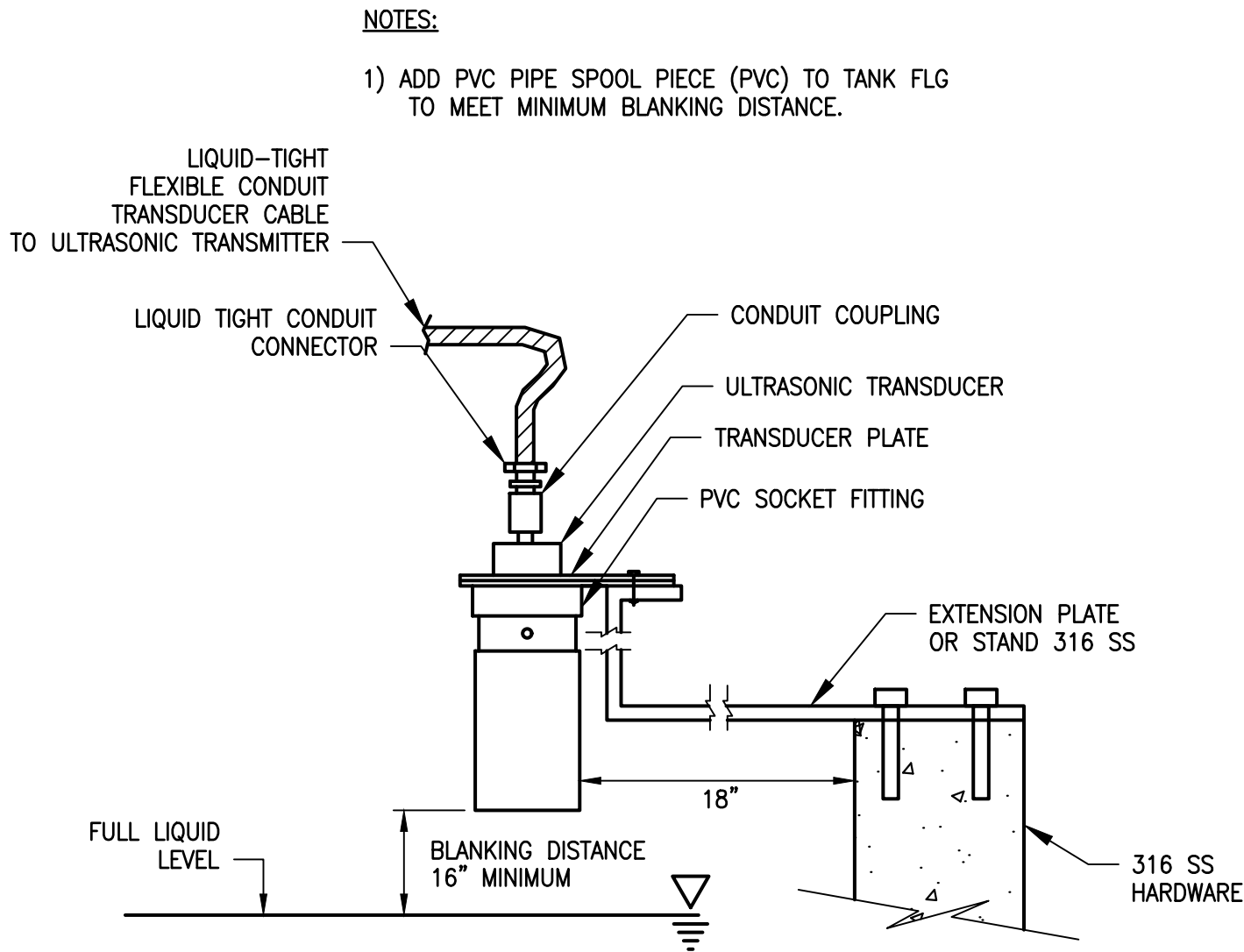


PRESSURE SWITCH DETAIL



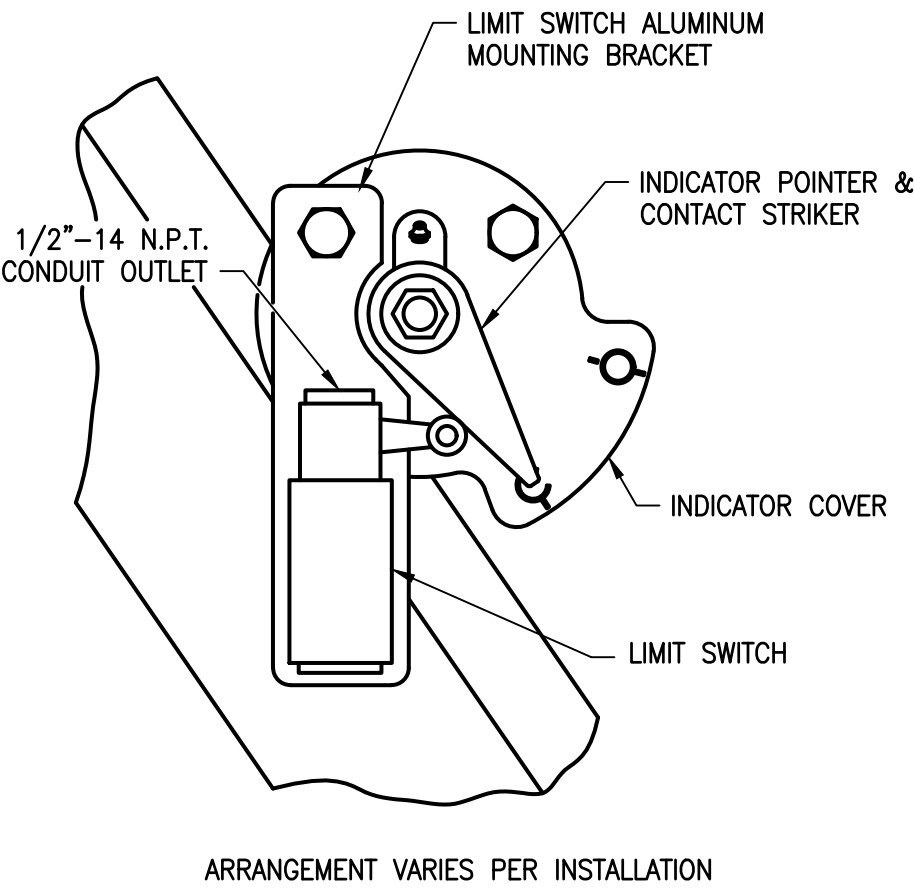
ULTRASONIC OR RADAR ON TANK

NTS



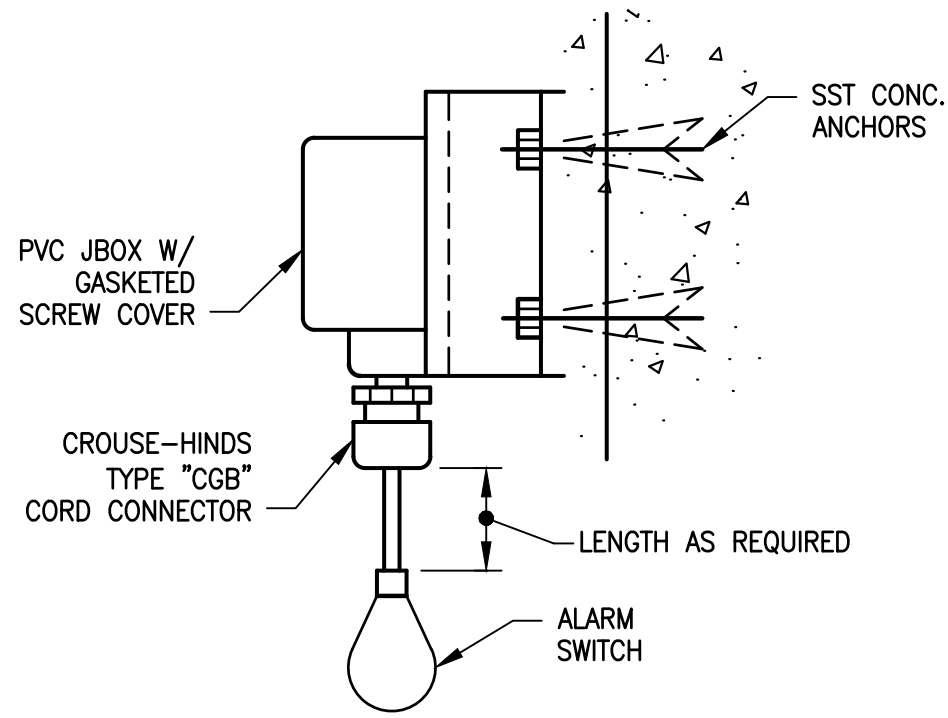
ULTRASONIC OR RADAR ON BASIN

NTS



LIMIT SWITCH INSTALLATION

NTS



FLOAT SWITCH

NTS

Kimley»Horn

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WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT
044572100
DATE
MAR 2021
SCALE AS SHOWN
DESIGNED BY NPOB
DRAWN BY SS
CHECKED BY MDM

SOUTH OSLO ROAD WTP IMPROVEMENTS
PREPARED FOR
INDIAN RIVER COUNTY UTILITIES
DEPARTMENT

INDIAN RIVER COUNTY,

FLORIDA

LICENSED PROFESSIONAL

MICHAEL A. GUIDA

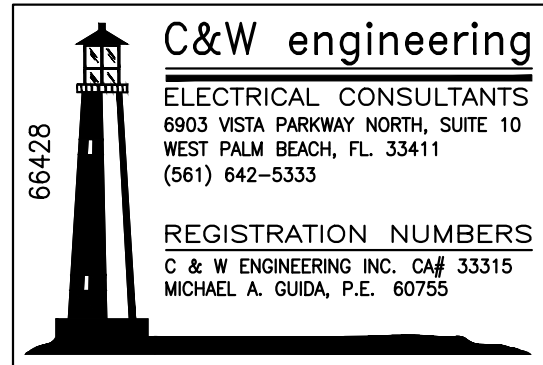
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DATE: _____

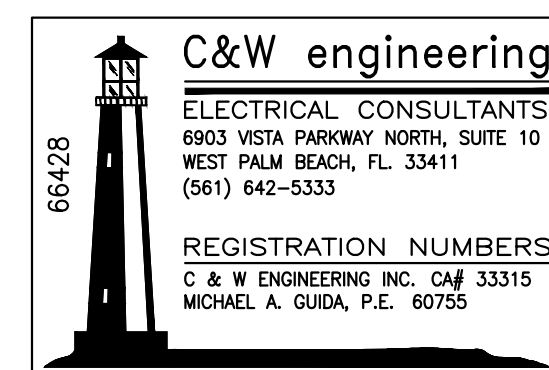
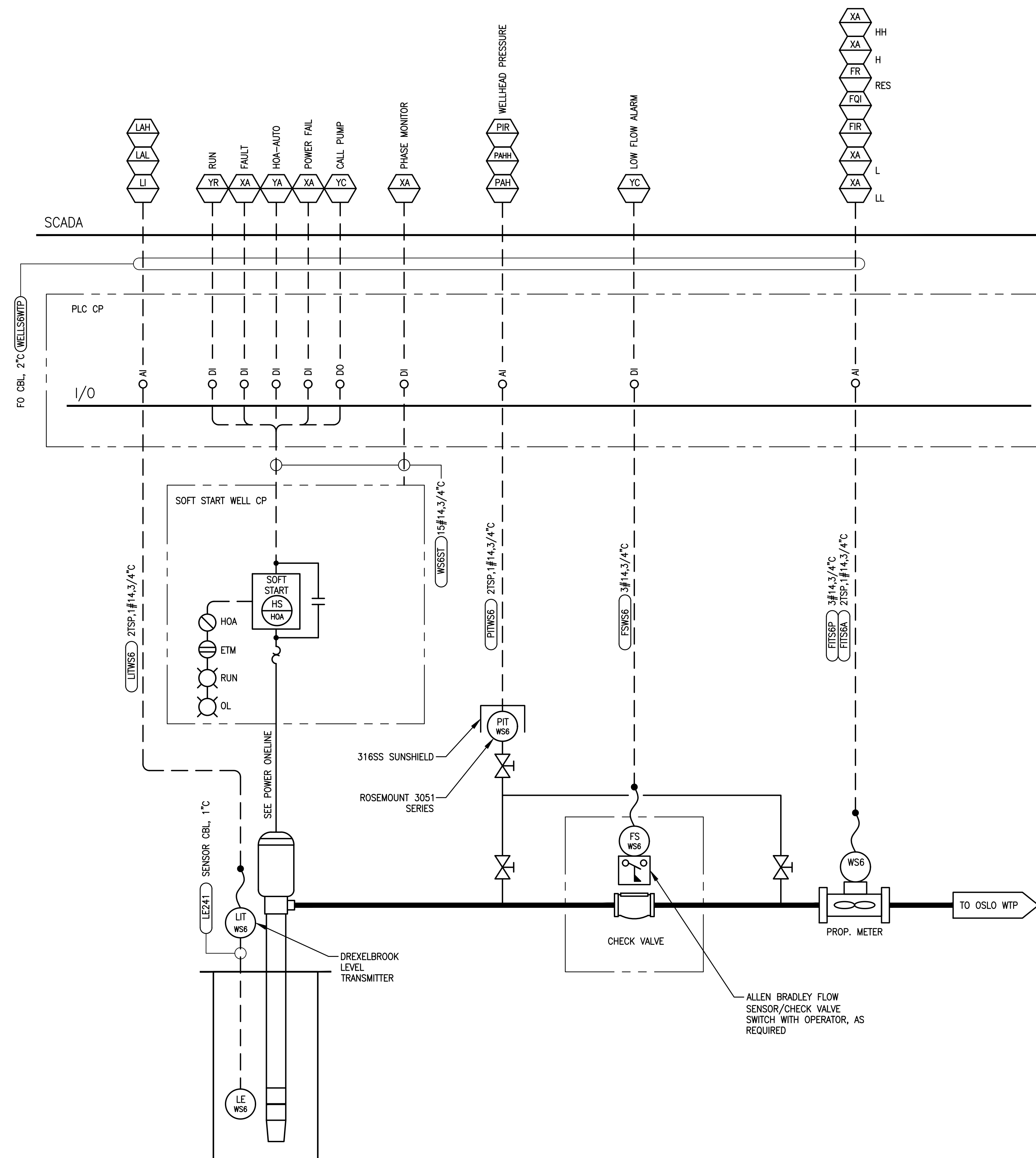
ELECTRICAL DETAILS

SHEET NUMBER

E-45

131 OF 132



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