NWRF BELT FILTER PRESS IMPROVEMENTS

BID SET

APRIL 2020

PROJECT NO. 6010881

VICINITY MAP
MANATEE COUNTY

VICINITY MAP
NWRF SITE
8500 69TH STREET EAST, PALMETTO, FL

COUNTY BOARD

COUNTY ADMINISTRATOR - CHERI CORYEA

COMMISSIONERS:
DISTRICT 1 - PRISCILLA TRACE
DISTRICT 2 - REGGIE BELLAMY
DISTRICT 3 - STEPHEN R. JONSSON
DISTRICT 4 - MISTY SERVIA
DISTRICT 5 - VANESSA BAUGH
AT LARGE - CAROL WHITMORE
AT-LARGE - BETSY BENAC

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ANAND JAYESH MODY
LICENSE
No. 68379
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Brown AND Caldwell

CERTIFICATE OF AUTHORIZATION NO. 2602
6151 LAKE OSPREY DRIVE, 3RD FLOOR
SARASOTA, FL 34240

ManateeCo-Logo.png
NWRF - Vicinity map Site.JPG

bsilliman
Apr 13, 2020 - 9:14am
\\bcsunfp01\Projects\Manatee County\NWRF BFP Improvements\05-AutoCAD\02-Sheets\153586-G-00-001.dwg

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BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: T. HULL
CHECKED:
APPROVED: A. MODY

FILENAME
153586-G-00-002.DWG

BC PROJECT NUMBER
153586

CLIENT PROJECT NUMBER
6010881

GENERAL

INDEX OF DRAWINGS

DRAWING NUMBER
G-00-002

SHEET NUMBER 2 OF 63

Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-G-00-002.DWG PLOT DATE: 4/10/2020 7:10 PM CAD USER: BRETT SILLMAN

GENERAL NOTES

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PIPING SYSTEM ABBREVIATIONS

FLOW STREAM ABBREVIATIONS

BFPF	BELT FILTER PRESS FILTRATE
D	DRAIN
DS	DIGESTED SLUDGE
OA	OUTSIDE AIR
ODO	ODORANT
OF	OVERFLOW
PD	GRAVITY PROCESS DRAIN
PLW	CHLORINATED PLANT WATER
POL	POLYMER
PW	POTABLE WATER
SLW	SEAL WATER
W	WATER

PIPING TYPE ABBREVIATIONS

DI	DUCTILE IRON
PVC	POLYVINYL CHLORIDE

EQUIPMENT ABBREVIATIONS

ACC	AIR CONDITION COIL
ACU	AIR CONDITIONING UNIT
AHC W/COIL	AIR HANDLING UNIT
AHU	AIR HANDLING UNIT
APU	AIR PURIFICATION UNIT
ASC CONTROL	ADJUSTABLE SPEED
ASD	ADJUSTABLE SPEED DRIVE
ARV VALVE	AUTOMATIC AIR RELEASE
B	BLOWER
BFP	BELT FILTER PRESS
C	COIL
CDR	CONDENSER
CHR	CHILLER
CON	CONVEYOR
CP	COMPRESSOR
CU	CONDENSING UNIT
CV	CONTROL VALVE
DIS	DISTRIBUTOR
DPR	DAMPER
DS	DISCONNECT SWITCH
DU	DRIVE UNIT
ED	EQUIPMENT DRAIN
EF	EXHAUST FAN
EPR	EVAPORATOR
F	FAN
HV	HAND OPERATED VALVE
LCP	LOCAL CONTROL PANEL
LVR	LOUVER
M	MOTOR
MME EQUIPMENT	MISC. MECHANICAL
MOP	MOTOR OPERATOR
MSP	MOTOR STARTER PANEL
MZ	MULTIZONE UNIT
P	PUMP
PLC	PROGRAMMABLE LOGIC CONTROLLER
PRV	PRESSURE/VACUUM RELIEF VALVE OR PRESSURE REGULATING VALVE
SF	SUPPLY FAN
SFP	SLUDGE FEED PUMP
SLG	SLIDE GATE
SLR	SILENCER
SUB	SUBSTATION
SWBD	SWITCHBOARD
T	TANK
TCV VALVE	TEMPERATURE CONTROL
TFR	TRANSFORMER
TM	TIMER
TRS	TRANSFER SWITCH

GENERAL ABBREVIATIONS

A	AMPERE OR AERATOR
ABAND	ABANDONED
ACC	AIR CONDITION COIL
ACU	AIR CONDITIONING UNIT
AD	AIR DRYER
ADJ	ADJUSTABLE
AF	AIR FILTER
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHC	AIR HANDLING UNIT W/COIL
AHU	AIR HANDLING UNIT
AL	ALUMINUM
APPROX	APPROXIMATE
ASC	ADJUSTABLE SPEED CONTROL
ASD	ADJUSTABLE SPEED DRIVE
ASPH	ASPHALT
ASSOC	ASSOCIATION
ASTM	AMERICAN SOCIETY OF TESTING MATERIALS
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AVG	AVERAGE
AWG	AMERICAN WIRE GAGE
BC	BOTTOM OF CURB
BEL	BELOW
BF	BLIND FLANGE
BFPF	BELT FILTER PRESS FILTRATE
BFPV	BACKFLOW PREVENTER
BFV	BUTTERFLY VALVE
BHP	BRAKE HORSEPOWER
BK	BACK
BL	BASE LINE
BLDG	BUILDING
BM	BENCH MARK
BNR	BURNER
BOT	BOTTOM
BRG	BEARING
BRK	BRICK
BV	BALL VALVE
C	CELSIUS OR COIL
CAB	CABINET
CB	CATCH BASIN
CC	CENTER TO CENTER
CDR	CONDENSER
CE	CONSTRUCTION EASEMENT
CF	CUBIC FOOT
CFM	CUBIC FEET PER MINUTE
CFR	CHEMICAL FEEDER
C&G	CURB AND GUTTER
CHAN	CHANNEL
CI	CAST IRON
CIR	CIRCLE
CIRCUM	CIRCUMFERANCE
CJ	CONSTRUCTION JOINT
CL	CENTERLINE OR CLASS
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNITS
CO	CLEANOUT
COL	COLUMN OR COLLECTOR
COMB	COMBINED
CON	CONVEYOR
CONC	CONCRETE / CONCENTRIC
CP POINT	COMPRESSOR OR COMPUTED
CPLG	COUPLING
CR	CRANE
CT	CURRENT TRANSFORMER
CTF	CENTRIFUGE
CTG	COATING
CULV	CULVERT
CYL	CYLINDER
DB	DUCT BANK
DC	DIRECT CURRENT
DEMO	DEMOLITION / DEMOLISH
DEPT	DEPARTMENT
DI	DROP INLET
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIS	DISTRIBUTOR
DPR	DAMPER
DS	DISCONNECT SWITCH
DU	DRIVE UNIT
DWG	DRAWING
DWL	DOWEL
DWY	DRIVEWAY
E	EAST OR ENGINE
EA	EACH
EB	ENGINE BLOWER MODULE
ECC	ECCENTRIC
ECF FITTING	EQUIPMENT CONNECTION
ED	EQUIPMENT DRAIN
EF	EACH FACE
EL	ELEVATION
ELEC	ELECTRICAL / ELECTRIC
ELEV	ELEVATION
EMH	ELECTRICAL MANHOLE
ENGR	ENGINEER
EOP	EDGE OF PAVEMENT
EPR	EVAPORATOR
EPS	EFFLUENT PUMP STATION
EQ	EQUAL
EQUIP	EQUIPMENT
ES	ELECTRICAL SERVICE
ESMT	EASEMENT
EW	EACH WAY
EST	ESTIMATE / ESTIMATED
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
EXIST	EXISTING
F	FAHRENHEIT OR FAN
FBW	FILTER BACKWASH
FC	FAIL CLOSED
FCO	FLOOR CLEANOUT
FCPS STATION	FERRIC CHLORIDE PUMP
FCT	FERRIC CHLORIDE TANK
FD	FLOOR DRAIN
F-F	FACE TO FACE
FFE	FINISH FLOOR ELEVATION
FG	FINISHED GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FLEX	FLEXIBLE
FLR	FLOOR
FLT	FILTER
FM	FORCEMAIN
FO	FAIL OPEN
FP&L	FLORIDA POWER & LIGHT
FPM	FEET PER MINUTE
FPS STATION	FOG DISCHARGE PUMP
FPU	FLUID POWER UNIT
FR/FPS STATION	FOG RECYCLE FEED PUMP
FSPS STATION	FOAM SUPPRESSION PUMP
FT	FEET / FOOT OR FOG TANK
FTP	FLAME TRAP
FUR	FURNACE
FURN	FURNISHED
G	GAS
GC	GRANITE CURB
GBFT FILTRATE	GRAVITY BELT THICKENER
GBV	GLOBE VALVE
GDR	GRINDER
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GM	GAS METER
GPD	GALLONS PER DAY
GPM	GALLONS PER MINUTE
GR	GRADE
GRT	GROUT OR GRATE
GSKT	GASKET
GT	GATE
GV	GATE VALVE OR GAS VALVE
H	HIGH OR HOIST
HC	HEADER CURB
HGL	HYDRAULIC GRADE LINE
HGR	HANGER
HOA	HAND-OFF-AUTO
HOP	HYDRAULIC OPERATOR
HOR	HORIZONTAL
HP	HEAT PUMP OR HIGH POINT
HPU	HYDRAULIC POWER UNIT
HV	HAND OPERATED VALVE
HZ	HERTZ
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCH
INSUL	INSULATION
INV	INVERT
IPS	INFLUENT PUMP STATION
IW	INJECTION WELL
JB	JUNCTION BOX
JT	JOINT
JT FLR	JOINT FILLER
KW	KILOWATT
L	LENGTH
LB	POUND
LCP	LOCAL CONTROL PANEL
LF	LINEAR FEET
LOC	LOCATION
LP PANEL	LIGHT POLE / LIGHTING
LPNG	OPENING
LS	LIMIT SWITCH OR LIFT STATION
L/S	LANDSCAPE STRIP
LT	LEFT
M	MOTOR
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM / MINUTE
MISC	MISCELLANEOUS
MON	MONUMENT
MOP	MOTOR OPERATOR
MSL	MEAN SEA LEVEL
MSP	MOTOR STARTER PANEL
MUX	MULTIPLEXER
MZ	MULTIZONE UNIT
N	NORTH
N/A	NOT APPLICABLE
NAVD	NATIONAL AMERICAN VERTICAL DATUM
N.C.	NORMALY CLOSED
NE	NORTHEAST
NEC	NATIONAL ELECTRICAL CODE
NEG	NEGATIVE
NEUT	NEUTRAL
NGVD	NATIONAL GEODETIC VERTICAL DATUM
NO	NUMBER
N.O.	NORMALLY OPEN
NOM	NOMINAL
NTS	NOT TO SCALE
NW	NORTHWEST
OA	OUTSIDE AIR
OD	OUTSIDE DIAMETER
OH	OVERHEAD
OHP	OVERHEAD POWER
OPER	OPERATOR
OPNG	OPENING
P	POWER
PAR	PARALLEL
PC	PROCESS OR PERSONAL COMPUTER
PH	PHASE
PL	PROPERTY LINE
PLC CONTROLLER	PROGRAMMABLE LOGIC
PLT	PLANT
PLYWD	PLYWOOD
PNL	PANEL
POI	POINT OF INTERSECTION
POL	POLYMER
POP	PNEUMATIC OPERATOR
POT	POINT OF TANGENCY
PP	POWER POLE
PROP	PROPOSED
PRPS	PUBLIC REUSE PUMP STATION
PS	PUMP STATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT
PTS STRUCTURE	PRELIMINARY TREATMENT
PV	PLUG VALVE
PVL	PRESSURE VESSEL
PVMT	PAVEMENT
Q	FLOW
QTY	QUANTITY
R	RADIUS
R/W	RIGHT OF WAY
RA	RETURN AIR
RC	REINFORCED CONCRETE
RD	ROOF DRAIN
RE	RIM ELEVATION
REC	RECEIVER
REF	REFERENCE
REINF	REINFORCE / REINFORCING
RP	REFERENCE POINT
REQD	REQUIRED
REV	REVISED OR REVISION
RPM	REVOLUTIONS PER MINUTE
RT	RIGHT
R/W	RIGHT OF WAY
S	SOUTH
SA	SUPPLY AIR
SAN	SANITARY
SB	SOIL BORING
SCD	SCUPPER DRAIN
SCH	SCHEDULE
SCPS	SCUM PUMP STATION
SD	STORM DRAIN OR SANITARY DRAIN
SE	SOUTHEAST OR SECONDARY EFFLUENT
SEC	SECTION
SEP	SEPARATOR
SHT	SHEET
SLR	SILENCER
SMP	SAMPLER
SPEC	SPECIFICATION
SSC	SECONDARY SCUM
SSK	SERVICE SINK
ST	STEAM TRAP OR STREET
STA	STATION
STD	STANDARD
STL	STEEL
STM	STEAM
STRUC	STRUCTURE / STRUCTURAL
STRW	STORAGE REJECT WATER
SUB	SUBSTATION
SV	SOLENOID VALVE
SW	SOUTHWEST OR SIDEWALK
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SWK	SIDEWALK
SYM	SYMMETRICAL
T	TELEPHONE
TBN	TURBINE
TC	TOP OF CURB
TCV VALVE	TEMPERATURE CONTROL
TEL	TELEPHONE
TEMP	TEMPORARY / TEMPERATURE
TFR	TRANSFORMER
TM	TIMER
T.O.	TOP OF
TP	TRAP PRIMER
TPS	TRANSFER PUMP STATION
TRS	TRANSFER SWITCH
TS	TEMPERATURE SWITCH
TYP	TYPICAL
TW	TOP OF WALL
UG	UNDERGROUND
UH	UNIT HEATER
US	UTILITY STATION
V	VOLTS OR VENT
VAC	VACUUM OR VOLT ALTERNATING CURRENT
VAR	VARIABLE / VARIES
VCP	VENDOR CONTROL PANEL
VE	VESSEL
VEL	VELOCITY
VEN	VENTILATOR
VERT	VERTICAL
VOL	VOLUME
VP	VACUUM PUMP
VTR	VENT THROUGH ROOF
W	WEST OR WIDTH
w.c.	WATER COLUMN
WCO	WALL CLEANOUT
W/	WITH
WM	WATER METER
W/O	WITHOUT
WB	WET BULB
WH	WATER HEATER
WHR	WASHER
WL	WATER LEVEL
WT	WATER TABLE
WV	WATER VALVE
XFMR	TRANSFORMER
XP	EXPLOSION PROOF
YCO	YARD CLEANOUT
YR	YEAR
ZS	POSITION SWITCH

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REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: T. HULL
CHECKED:
APPROVED: A. MODY

FILENAME 153586-G-00-004.DWG
BC PROJECT NUMBER 153586
CLIENT PROJECT NUMBER 6010881

GENERAL

ABBREVIATIONS

DRAWING NUMBER
G-00-004

SHEET NUMBER 3 OF 63

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SHEET NUMBERING STRATEGY

X - XX - XX
- SHEET NUMBER DESIGNATION
- AREA DESIGNATION
- DISCIPLINE DESIGNATION

DISCIPLINE DESIGNATION (SINGLE CHARACTER)
- G - GENERAL
- C - CIVIL
- S STRUCTURAL
- I - INSTRUMENTATION
- M - PROCESS/MECHANICAL
- MD - PROCESS/MECHANICAL DEMOLITION
- E - ELECTRICAL
- ED - ELECTRICAL DEMOLITION

AREA DESIGNATION
- 90 - BELT FILTER PRESS FEED PUMP AND POLYMER MIX SYSTEM
- 91 - BELT FILTER PRESS

CIVIL DESIGNATIONS
- 00 - GENERAL INFORMATION, NOTES, ABBREVIATIONS, SYMBOLS, LEGENDS AND STANDARD DETAILS
- 01 - SITE
- 08 - PAVING AND GRADING
- 09 - EROSION AND CONTROL

G, C, M, A, S, H, P SHEET NUMBER DESIGNATORS
- 0X - GENERAL NOTES, ABBREVIATIONS, SYMBOLS
- 0X - PLANS - EXISTING AND DEMOLITION
- 1X - PLANS - NEW
- 2X - PARTIAL AND ENLARGED PLANS
- 3X - SECTIONS, ELEVATIONS AND PROFILES
- 4X - SCHEMATICS, ISOMETRICS AND SCHEDULES
- 5X - DETAILS

PLAN SHEET DESIGNATORS

EXISTING	NEW	
00	10	SUBSURFACE AND FOUNDATION PLANS
01	11	LOWER, 1ST FLOOR AND FLOOR PLANS
02	12	UPPER, TOP AND 2ND FLOOR PLANS
03	13	ROOF PLAN

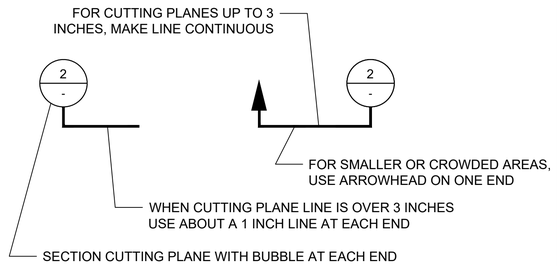
ELECTRICAL DESIGNATORS
- 00 - GENERAL INFORMATION, NOTES, ABBREVIATIONS, SYMBOLS, LEGENDS AND STANDARD DETAILS
- 01 - SITE
- 02 - SCHEMATICS AND SCHEDULES

PIPE CALL OUT SYSTEM

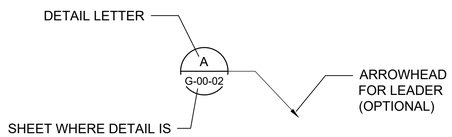
X" - XXX - XXX
- PIPE TYPE
- FLOW STREAM
- PIPE SIZE

REFERENCE SHEET G-00-04 FOR FLOW STREAM AND PIPE TYPE ABBREVIATIONS

SECTION CUT SYMBOLS



DETAIL CALL OUT SYMBOLS



LINETYPE LEGEND

- NEW
- DEMOLITION
- EXISTING
- ROAD RECONSTRUCTION
- RELOCATE OR REMOVE AND KEEP
- LAYDOWN AREA

EQUIPMENT CALL OUT SYSTEM

XXX-XXXX
- SEQUENTIAL NUMBER
- AREA RELATED NUMBER (ALSO DIRECTLY RELATED TO EXACT I SHEET)
- EQUIPMENT ABBREVIATION

HEX-8201
- SEQUENTIAL NUMBER
- AREA 82
- ABBREVIATION FOR HEAT EXCHANGER

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GENERAL

SYMBOLS AND LEGENDS 1

DRAWING NUMBER
G-00-005
4 SHEET NUMBER OF 63

Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-G-00-005.DWG PLOT DATE: 4/10/2020 7:21 PM CAD USER: BRETT SILLMAN

PIPE FITTING SYMBOLS

DOUBLE LINE	SINGLE LINE
	EXISTING PIPE
	EXISTING PIPING TO BE ABANDONED OR REMOVED UNDER THIS CONTRACT. ABANDONED WHEN NOT IN CONFLICT WITH NEW CONSTRUCTION WORK.
	NEW PIPE
	BLIND FLANGE
	CAP OR PLUG
	TEE
	TEE CROSS
	TEE UP
	TEE DOWN
	ELBOW DOWN OR UP AT 45°
	ELBOW CONTINUATION
	ELBOW UP
	ELBOW DOWN
	ELBOW CONTINUATION
	22.5° ELBOW
	45° ELBOW
	90° ELBOW
	ECCENTRIC REDUCER
	CONCENTRIC REDUCER

(NOTE THAT ON I SHEETS THE CONCENTRIC REDUCER SYMBOL IS USED GENERICALLY FOR ALL REDUCERS. THE M SHEETS AND THE SPECIFICATIONS DELINEATE WHETHER THE REDUCER SHALL BE CONCENTRIC, ECCENTRIC - FLAT BOTTOM OR ECCENTRIC FLAT TOP.)

	LATERAL
	LATERAL UP
	LATERAL DOWN

MAJOR PIPE DEVICES

	MAGNETIC FLOW METER
DM	DENSITY METER
	ROTAMETER
	STATIC MIXER

PIPE JOINTS AND COUPLINGS

DOUBLE LINE	SINGLE LINE
	FLANGED JOINT
	MECHANICAL JOINT
	VICTAULIC JOINT
	SOCKET JOINT
	PVC-SOLVENT WELD JOINT
	WELDED JOINT
	PUSH ON JOINT
	UNION
	EXPANSION JOINT (SEE SPECS FOR TYPE)
	ELASTOMER AND FABRIC EXPANSION JOINT
	BRAIDED FLEXIBLE JOINT
	FLEXIBLE HOSE
	SLEEVE TYPE MECHANICAL COUPLING
	FLANGED COUPLING ADAPTER
	EQUIPMENT CONNECTION FITTING
	DISMANTLING JOINT

PIPE VALVE SYMBOLS

DOUBLE LINE	3D SYMBOLS	SINGLE LINE
		THREE WAY VALVE
		GATE VALVE (FLANGED)
		GATE VALVE (THREADED)
		PLUG VALVE (GEAR OPERATOR)
		PLUG VALVE (LEVER HANDLE)
		BALL VALVE (THREADED)
		BALL VALVE (FLANGED)
		BUTTERFLY VALVE (LUGGED/WAFER)
		BUTTERFLY VALVE (AWWA W/ HANDWHEEL ACTUATOR)
		GLOBE VALVE (FLANGED)
		GLOBE VALVE (THREADED)
		DIAPHRAGM VALVE (FLANGED)
		DIAPHRAGM VALVE (THREADED)
		CHECK VALVE
		TRIPLE DUTY VALVE
		DOUBLE LEAF CHECK VALVE
		BALL CHECK VALVE
		KNIFE GATE VALVE
		SPECTACLE FLANGE

NOTE:

1. SOLID FILLED VALVES INDICATE NORMALLY CLOSED (NC) POSITION.

2. SINGLE LINE PIPE SHOWN DOES NOT DEPICT FITTING TYPES. SEE SPECIFICATIONS FOR MATERIALS AND FITTINGS TO BE USED.

3. ALL PIPING LESS THAN 4 INCHES IS DEPICTED WITH A SINGLE LINE ON DRAWINGS HAVING A SCALE OF 1/4"=1'-0". FOR PIPING DRAWN AT OTHER SCALES WITH A SINGLE LINE, REFER TO THE TABLE:

SCALE	PIPE SIZE
1/8" = 1'-0"	LESS THAN 8"
3/16" = 1'-0"	" " 6"
1/4" = 1'-0"	" " 4"
3/8" = 1'-0"	" " 3"
1/2" = 1'-0"	" " 2"
3/4" = 1'-0"	" " 1 1/2"
1" = 1'-0"	" " 1"

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Sarasota, FL 34240

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ANAND JAYESH MODY
LICENSED
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A. MODY, PE 68379
No. 68379
STATE OF
FLORIDA
PROFESSIONAL ENGINEER
BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: T. HULL
CHECKED:
APPROVED: A. MODY
FILENAME 153586-G-00-006.DWG
BC PROJECT NUMBER 153586
CLIENT PROJECT NUMBER 6010881

GENERAL

SYMBOLS AND LEGENDS 2

DRAWING NUMBER
G-00-006

SHEET NUMBER 5 OF 63

Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-G-00-006.DWG PLOT DATE: 4/10/2020 8:57 PM CAD USER: BRETT SILLMAN

NORTH

MAINTENANCE BUILDING

CONCRETE

OPEN AIR

ASPHALT

SHELL

CONSTRUCTION LAYDOWN

PROJECT AREA

BM # 12

RIM 27.48'
N 12" 18.92'
W 8" 18.57'
E 15" 18.53'

BM # 13

RIM 27.09'
W 3" PVC 21.03'
N 6" PVC 20.94'
S 6" PVC 20.21'
E 8" 20.17'

RIM 27.19'
W 8" 19.68'
N 6" 19.66'
E 8" 19.51'

6" PVC 26.41'

6" PVC 25.91'

PUMP

6" PVC 25.95'

6" PVC 26.02'

29"x45" RCP 23.26'

PRESS BUILDING FFE 27.41'

DEWATERING AND CHEMICAL FEED BUILDING

CHEMICAL BUILDING FFE 27.47'

BM # 14

18" CMP 25.34'

8" PVC 25.00'

18" CMP 24.23'

VEGETATION LIMIT

MAINTENANCE BUILDING

CONCRETE

OPEN AIR

ASPHALT

NOTE:
1. SURVEY OBTAINED FROM HYATT SURVEY SERVICES, DATED 08/2019.
2. BACKGROUND PLAN OBTAINED FROM NORTH SUBREG WWF IMPROVEMENTS-PROJECT NUMBER 1402 AND NWWTP MAINTENANCE BUILDING-PROJECT NUMBER 4987.001.

NWRF
NWRF CONSTRUCTION LAYDOWN, ACCESS, AND CONTRACTOR FACILITIES
SCALE: 1 = 15

FACILITY ADDRESS:
8500 69TH STREET EAST, PALMETTO, FL

NWRF
FACILITY LAYOUT

GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE CONTINUOUS ACCESS TO COUNTY FOR TYPICAL FACILITY OPERATIONS AND MAINTENANCE AT ALL TIMES.
2. CONTRACTOR SHALL COORDINATE WITH THE COUNTY ON A WEEKLY BASIS TO PLAN FOR DELIVERY AND HAULING SCHEDULES.
3. CONTRACTOR SHALL FIELD LOCATE POTENTIAL HAZARDS AND PROTECT EXISTING FACILITIES AND INFRASTRUCTURE PRIOR TO USE OF LAY DOWN AREA.
4. CONSTRUCTION LAY DOWN AREA INCLUDES SPACE ALLOCATED FOR STAGING, STORAGE DELIVERY, HAULING, AND FIELD OFFICE.
5. AFTER CONSTRUCTION, CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RESTORATION REQUIRED FROM USE OF LAY DOWN AREA. AREA SHALL BE RESTORED TO A CONDITION EQUAL TO OR BETTER THAN PRE-EXISTING CONDITIONS.
6. CONTRACTOR SHALL FIELD VERIFY CONDITION SHOWN PRIOR TO BID.

KEYNOTES:

1. SLUDGE FEED PUMPS

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ANAND JAYESH MODY
LICENSED
ENGINEER'S RECORD
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No. 68379
STATE OF
FLORIDA
PROFESSIONAL ENGINEER
BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: T. HULL
CHECKED:
APPROVED: A. MODY

FILENAME
153586-G-00-081.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

GENERAL

NWRF CONSTRUCTION LAYDOWN, ACCESS, AND CONTRACTOR FACILITIES

DRAWING NUMBER
G-00-081

SHEET NUMBER 6 OF 63

CIVIL SYMBOLS AND LEGEND

- EXISTING FACILITIES
- EXISTING FACILITIES TO BE REHABILITATED
- EXISTING FACILITIES TO BE PARTIALLY DEMOLISHED AND RECONSTRUCTED.
- EXISTING FACILITIES TO BE COMPLETELY DEMOLISHED AND RECONSTRUCTED
- NEW FACILITIES
- REHABILITATED FACILITY
- RECONSTRUCTED FACILITY
- STAGING AREA
- LIMITS OF PROPOSED RECONSTRUCTED ROADWAY
- PAVEMENT (BY OTHERS)
- GRAVEL APRON AT STRUCTURES SEE DETAIL F/C-00-03
- CONCRETE SIDEWALK
- AREAS TO BE SODDED
- TRAFFIC PATTERN FLOW ARROW
- INLET PROTECTION
- FILTER FABRIC PROTECTED INLET REFER TO SPEC 02270
- EXISTING SPOT ELEVATIONS
- STORMWATER FLOW

- BOLLARD / GUARD POST
- CATCH BASIN
- CLEANOUT
- MONITORING WELL
- DOUBLE LIGHT POLE
- SINGLE LIGHT POLE
- STORM DRAINAGE MANHOLE
- WATER METER
- SANITARY SEWER VALVE
- WATER VALVE
- ELECTRIC WIRE PULL BOX
- FIRE HYDRANT
- FITTING (TEE)
- FITTING (ELBOW)
- UTILITY POLE
- SANITARY SEWER MANHOLE
- DRAINAGE CATCH BASIN
- STORM DRAIN MANHOLE
- ELECTRICAL GUY WIRE
- COMMUNICATION MANHOLE
- ELECTRICAL MANHOLE

LINE AND UTILITY DESIGNATIONS

- D — DRAIN
- DI — DUCTILE IRON PIPE
- E — ELECTRIC (DUCTBANK)
- ELECTRIC (CONDUIT)
- FM — FORCEMAIN
- G — GAS (NATURAL)
- HG — HIGH PRESSURE GAS
- LPG — LOW PRESSURE GAS
- MG — MEDIUM PRESSURE GAS
- PW — POTABLE WATER
- PROPERTY LINE
- RCP — REINFORCED CONCRETE PIPE
- ROW
- SS — SANITARY SEWER
- SILT FENCE
- SD — STORM DRAIN
- W — WATER
- XXUX — UNDERGROUND ELECTRIC (TYP)
- XXOX — OVERHEAD ELECTRIC (TYP)

GENERAL NOTES

1. THE INFORMATION PROVIDED IN THESE DRAWINGS IS SOLELY TO ASSIST THE CONTRACTOR IN ASSESSING THE NATURE AND EXTENT OF CONDITIONS WHICH MAY BE ENCOUNTERED DURING THE COURSE OF THE WORK. THE CONTRACTORS ARE DIRECTED, PRIOR TO BIDDING, TO CONDUCT WHATEVER INVESTIGATIONS THEY DEEM NECESSARY TO ARRIVE AT THEIR OWN CONCLUSIONS REGARDING THE ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED, AND UPON WHICH BIDS WILL BE BASED.
2. ELEVATIONS REFERENCED IN THE DRAWINSS ARE BASED ON MANATEE COUNTY DATUM. BENCHMARKS AND/OR STRUCTURE ELEVATIONS FROM EXISTING SURVEYS OR REFERENCE DRAWNGS MAY RESULT IN VARIANCES WITH ELEVATIONS INDICATED ON THE DRAWINGS FOR EXISTING FACILITIES.
3. THE WATER TABLE MAY VARY DEPENDING 0N RAINS AND THE SEASON. THE CONTRACTOR SHALL ACCOUNT FOR THESE SEASONAL VARIATIONS IN THEIR BID.
4. ALL GRADES SHOWN IN PLAN ARE FINISHED GRADES.
5. ANY CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF MANATEE COUNTY AND ANY OTHER LOCAL, STATE OR FEDERAL AGENCY WITH JURISDICTION. IT IS THE INTENT OF THESE PLANS TO BE IN ACCORDANCE WITH APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION. ANY DISCREPANCIES BETWEEN THESE PLANS AND APPLICABLE CODES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
6. THE CONTRACTOR IS TO USE CAUTION WHEN WORKING IN OR AROUND AREAS OF OVERHEAD AND UNDERGROUND UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SUBSURFACE UTILITY INVESTIGATIONS AND VISUAL VERIFICATION OF IDENTIFIED UTILITIES PRIOR TO EXCAVATION.
7. MANATEE COUNTY REQUIRES THAT THE ACCESS TO ALL WATER AND SEWER VALVES, SANITARY MANHOLES, AND OTHER CONTROL MECHANISM BE MAINTAINED THROUGHOUT CONSTRUCTION IN THE EVENT OF AN EMERGENCY. COVERING VALVE BOXES OR MANHOLES CAN BE CONSIDERED OBSTRUCTION AND TAMPERING WITH DEPARTMENT UTILITIES.
8. ALL GRASS AREAS AFFECTED SHALL BE RE-SODDED WITH BAHIA.
9. THE CONTRACTOR SHALL RESTRICT PERSONNEL, THE USE OF EQUIPMENT, AND THE STORAGE OF MATERIALS TO AREAS WITHIN THE LIMITS OF CONSTRUCTION AND DESIGNATED STAGING AREAS, SHOWN ON G-00-081.
10. ALL EXCESS MATERIAL, AS DESIGNATED BY THE ENGINEER, IS TO BE DISPOSED BY THE CONTRACTOR WITHIN 72 HOURS OF BEING DEPOSITED IN THE CONSTRUCTION AREA AND AT THE CONTRACTOR'S EXPENSE.
11. ALL DISPOSAL OF MATERIALS, RUBBISH AND DEBRIS SHALL BE MADE AT A LEGAL DISPOSAL SITE OR BY OTHER PRIOR APPROVED MANNER. MATERIAL CLEARED FROM THE SITE AND DEPOSITED ON ADJACENT AREAS WILL NOT BE CONSIDERED AS HAVING BEEN DISPOSED PROPERLY. OWNERSHIP OF DEMOLISHED MATERIAL SHALL BE SPECIFIED AND A CHAIN OF CUSTODY PROVIDED TO THE OWNER.
12. ANY KNOWN OR SUSPECTED HAZARDOUS MATERIAL FOUND IN OR ON THE PROJECT BY THE CONTRACTOR SHALL BE IMMEDIATELY REPORTED TO THE COUNTY, WHO SHALL DIRECT THE CONTRACTOR TO PROTECT THE AREA OF KNOWN OR SUSPECTED CONTAMINATION FROM FURTHER ACCESS. THE COUNTY WILL ARRANGE FOR INVESTIGATION, IDENTIFICATION, AND REMEDIATION OF THE HAZARDOUS MATERIAL. THE CONTRACTOR WILL NOT RETURN TO THE AREA OF CONTAMINATIONUNTIL APPROVAL IS PROVIDED BY THE COUNTY.
13. EXISTING ABOVE GROUND FEATURES ARE SHOWN ACCORDING TO THE BEST AVAILABLE DATA AND MAY NOT BE ACCURATELY REFLECT PRESENT CONDITIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH CURRENT CONDITIONS, AND SHALL REPORT DISCREPANCIES TO THE ENGINEER PRIOR TO STARTING WORK.
14. CONTRACTOR IS TO VERIFY THE EXACT LOCATION OF ALL EXISTING TREES, STRUCTURES, AND UTILITIES SHOWN AND NOT SHOWN ON THE PLANS. ANY STRUCTURE, PAVEMENT, TREES OR OTHER EXISTING IMPROVEMENT NOT SPECIFIED FOR REMOVAL WHICH IS DAMAGED, EXPOSED OR ANY WAY DISTURBED SHALL BE REPAIRED, PATCHED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.
15. CONTRACTOR SHALL AVOID THE REMOVALAND ANY DAMAGE TO ANY EXISTING TRESS UNLESS OTHERWISE DIRECTED BY THE CONTRACT DOCUMENTS.

BURIED UTILITY NOTES

1. EXISTING UTILITIES ARE CONSIDERED TO BE SHOWN IN THE HORIZONTAL PLAN WITH REASONABLE ACCURACY. HOWEVER, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE WHATEVER FURTHER INVESTIGATIONS ARE NECESSARY TO ESTABLISH THE EXACT LOCATION OF THE EXISTING UTILITY AND ADJUST ROUTINS OF NEW UTILITY FACILITIES PRIOR TO LAYING THE NEW UTILITIES TO MEET THE INTENT OF THE DESIGN.
2. THE ENGINEER DOES NOT ASSUME RESPONSIBILITY THAT DURING CONSTRUCTION UNDERGROUND PIPING AND UTILITIES OTHER THAN THAT SHOWN MAY BE ENCOUNTERED. ANY DAMAGE TO EXISTING PIPING AND UTILITIES MUST BE REPAIRED IMMEDIATELY AT THE EXPENSE OF THE CONTRACTOR.

EROSION AND SEDIMENT CONTROL GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL ON THIS PROJECT. CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION AND SEDIMENT CONTROL ACCORDING TO SECTION 02270 TO PREVENT RUNOFF, TRACKING, OR LOSS OF SEDIMENT FROM DISTURBED AREAS. ADDITIONAL EROSION AND SEDIMENT CONTROL SHALL BE INSTALLED AT NO ADDITIONAL COST TO OWNER IF DEEMED NECESSARY BY ENGINEER.
2. EROSION AND SEDIMENT CONTROL SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES, EXCEPT THOSE NEEDED TO INSTALL SUCH CONTROL.
3. PROTECT MATERIAL STOCKPILES FROM CONTRIBUTING TO SEDIMENT RUNOFF.
4. CONTRACTOR SHALL INSTALL AN EROSION MAT/SLOPE BLANKET ON ALL PERMANENT SLOPES STEEPER THAN 3:1. EROSION MAT/SLOPE BLANKET SHALL BE ORGANIC MATERIAL FIBER AND BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
5. ANY SOIL, MUD, OR DEBRIS WASHED, TRACKED, OR DEPOSITED ONTO PAVED SURFACES SHALL BE REMOVED PRIOR TO END OF EACH WORK DAY.
6. CONSTRUCTION ENTRANCE SHALL BE REMOVED AND AREA RESTORED PRIOR TO END OF PROJECT.
7. CONTRACTOR SHALL MAINTAIN EROSION AND SEDIMENT CONTROL UNTIL SITE IS STABILIZED.

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TODD BOSSO
LICENSE
ENGINEERING BOARD
T. BOSSO, PE 60018
No. 60018
STATE OF
4/10/2020
FLORIDA
PROFESSIONAL ENGINEER
BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: T. BOSSO
CHECKED:
APPROVED: T. BOSSO

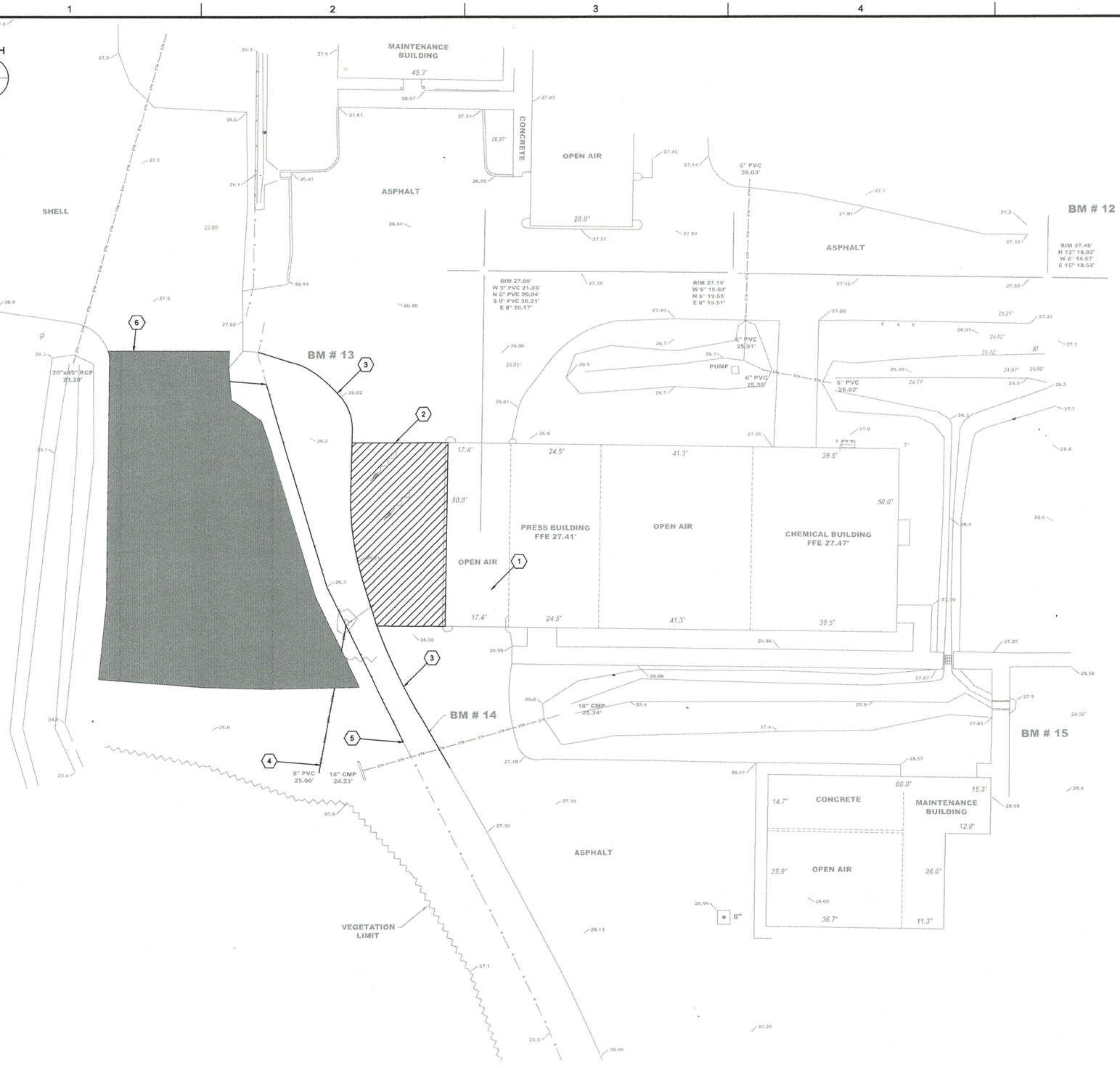
FILENAME
153586-C-00-001.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

CIVIL

CIVIL SYMBOLS, LEGENDS AND NOTES

DRAWING NUMBER
C-00-001

7 SHEET NUMBER OF 63



NWRF

CIVIL DEMOLITION PLAN

SCALE: 1 = 15

0 15' 30'

SCALE IN FEET

KEYNOTES:

1. EXISTING SLUDGE LOADING BAY (OPEN AIR)
2. REMOVE EXISTING ASPHALT AND ROADBASE
3. SAWCUT AND REMOVE EXISTING ASPHALT FOR DETAIL A, C-01-00 (40 LF)
4. REMOVE EXISTING 8" PVC
5. RELOCATE FENCE IN BETWEEN RELOCATED STORMWATER DITCH AND PAVEMENT IMPROVEMENTS. ADDITIONAL FENCE TO BE INSTALLED PER C-01-00.
6. REMOVE EXISTING SHELL IN PREPARATION FOR SOD (4560 SF)

Brown AND Caldwell

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TODD BOSSO
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No. 60018
STATE OF
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FLORIDA
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Manatee County FLORIDA

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REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: T. BOSSO
CHECKED:
APPROVED: T. BOSSO

FILENAME
153586-CD-01-001.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

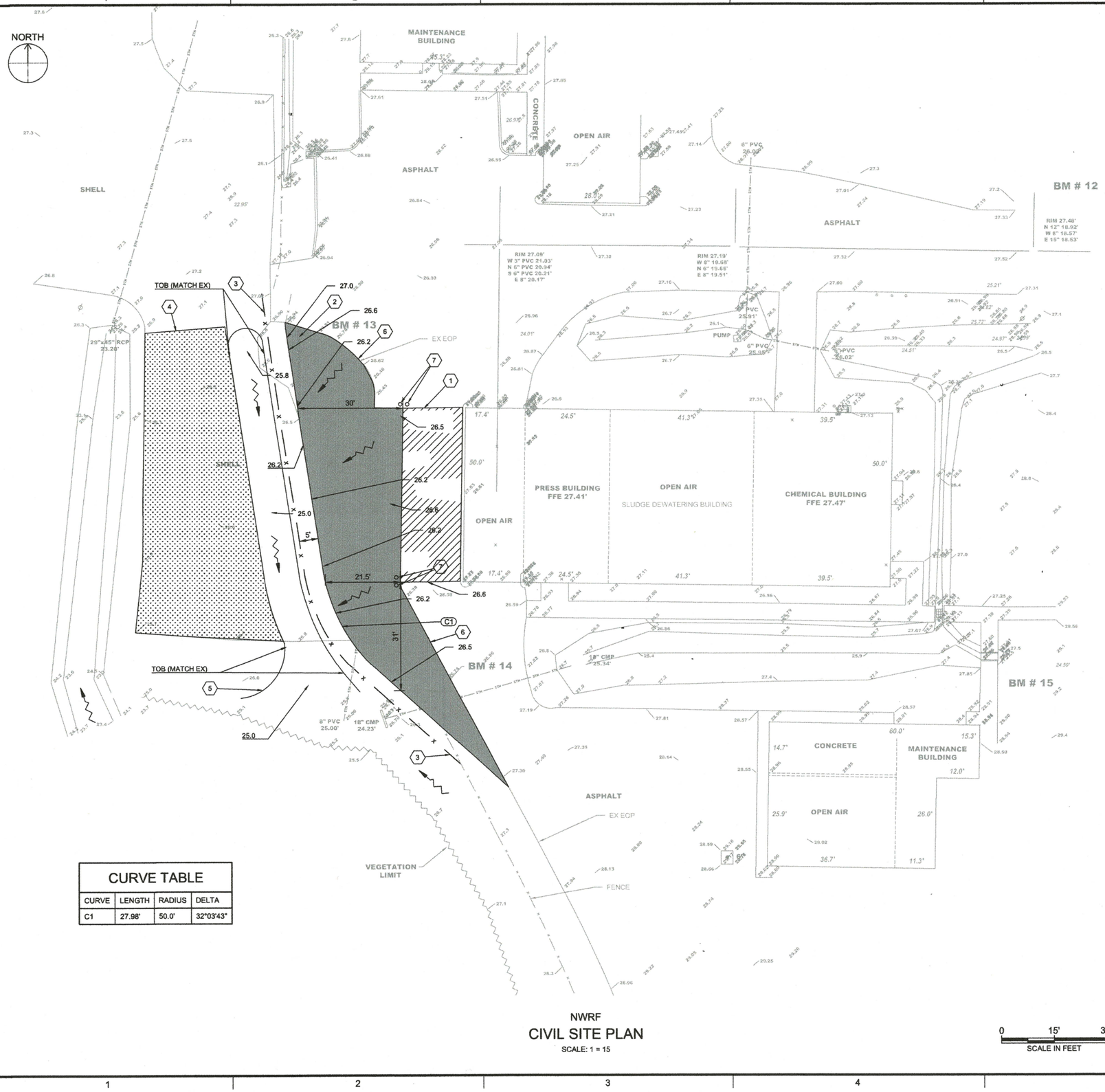
CIVIL

CIVIL DEMOLITION KEY PLAN

DRAWING NUMBER
CD-01-001

SHEET NUMBER 8 OF 63

Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-CD-01-001.DWG PLOT DATE: 4/10/2020 6:37 PM CAD USER: BRETT SILLMAN



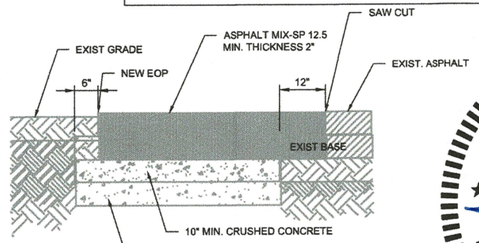
CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C1	27.98'	50.0'	32°03'43"

NWRF
CIVIL SITE PLAN
SCALE: 1 = 15

0 15' 30'
SCALE IN FEET

KEYNOTES:

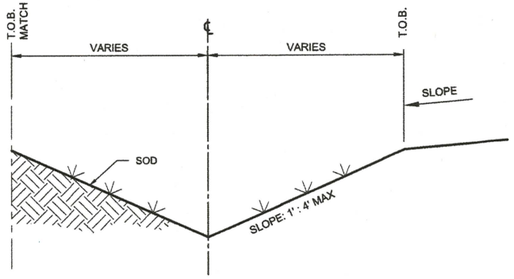
1. PROPOSED TRUCK LOADING BAY
2. PROPOSED ASPHALT ROAD (2630 SF TO BE INSTALLED)
3. PROPOSED RELOCATED FENCE (136 LF OF EXISTING TO BE RELOCATED AND 17 LF OF NEW FENCE TO BE INSTALLED).
4. CONSTRUCTION LAY DOWN AREA. SHALL BE RESTORED WITH SOD (2750 SF).
5. PROPOSED SWALE, SEE DETAIL B, C-01-00
6. MATCH EXISTING GRADE
7. BOLLARD, SEE DETAIL C, C-01-00



ASPHALT DETAIL

DETAIL A / C-01-00

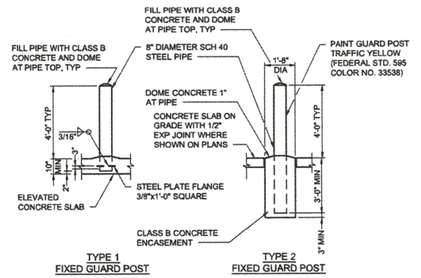
NOT TO SCALE



TYPICAL DITCH / SWALE CROSS SECTION

DETAIL B / C-01-00

SCALE: NONE



ACCESS RESTRICTION FIXED BOLLARD

DETAIL C / C-01-00

SCALE: NONE

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PROFESSIONAL ENGINEER
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Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS		
REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

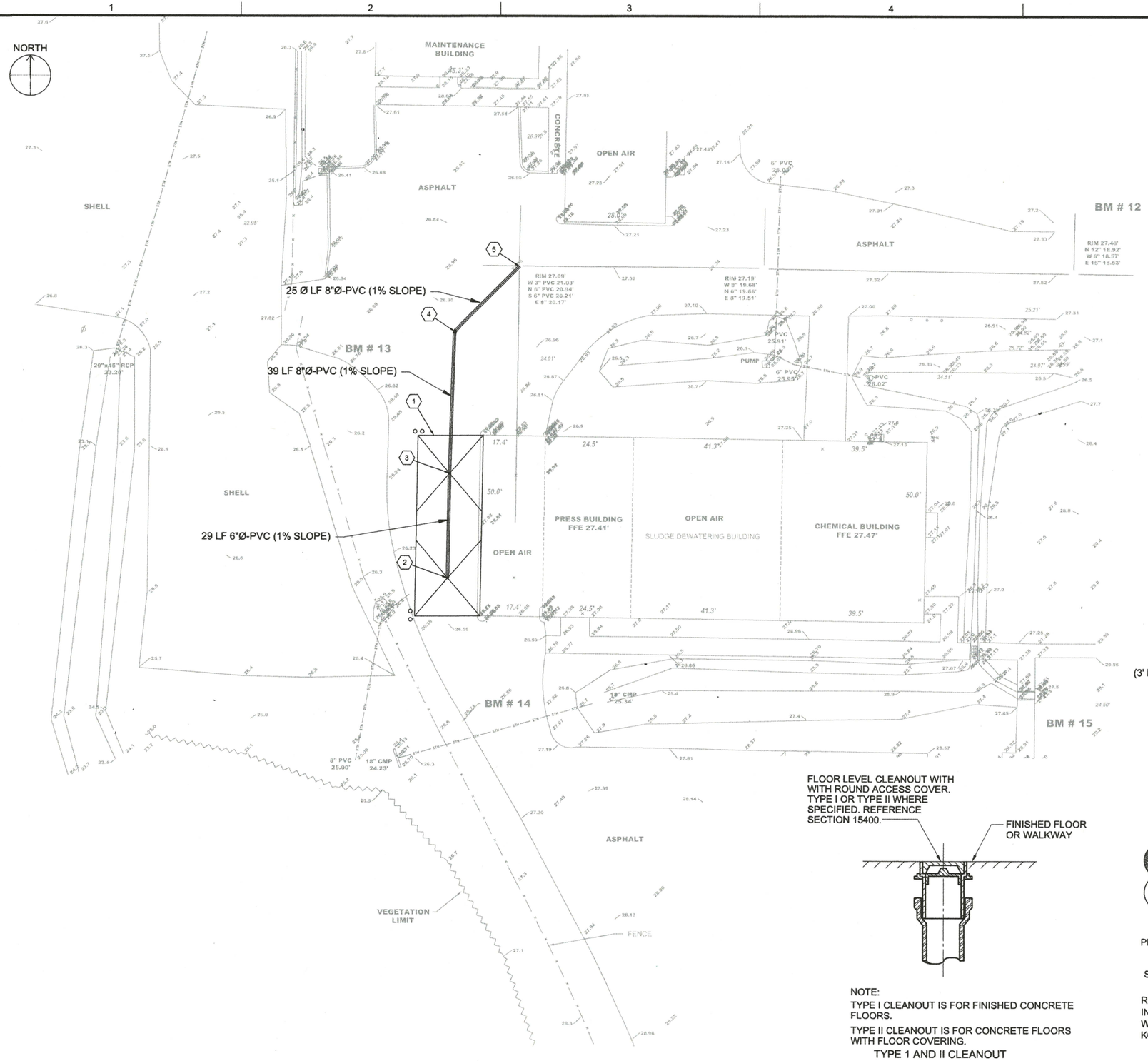
DESIGNED:	A. BROWN
DRAWN:	M. CORNELISON
CHECKED:	T. BOSSO
CHECKED:	
APPROVED:	T. BOSSO
FILENAME	153586-C-01-00.DWG
BC PROJECT NUMBER	153586
CLIENT PROJECT NUMBER	6010881
CIVIL	

CIVIL SITE GRADING & PAVING KEY PLAN

DRAWING NUMBER
C-01-00

SHEET NUMBER 9 OF 63

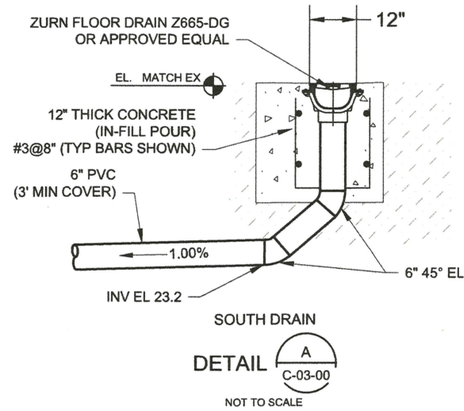
Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-C-01-00.DWG PLOT DATE: 4/10/2020 6:41 PM CAD USER: BRETT SILLMAN



NWRF
CIVIL SITE PLAN
SCALE: 1 = 15

KEYNOTES:

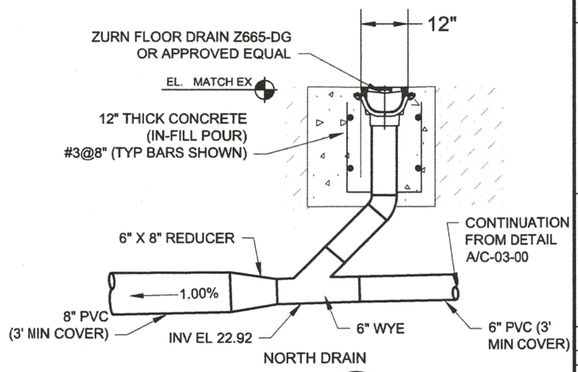
1. PROPOSED TRUCK LOADING BAY
2. PROPOSED FLOOR DRAIN. REFER TO DETAIL A/C-03-00.
3. PROPOSED FLOOR DRAIN. REFER TO DETAIL B/C-03-00.
4. PROPOSED CLEAN OUT. REFER TO DETAIL C/C-03-00.
5. CORE DRILL AND CONNECT TO EXISTING MANHOLE INV EL 22.28.



SOUTH DRAIN

DETAIL A / C-03-00

NOT TO SCALE



NORTH DRAIN

DETAIL B / C-03-00

NOT TO SCALE

NOTE:

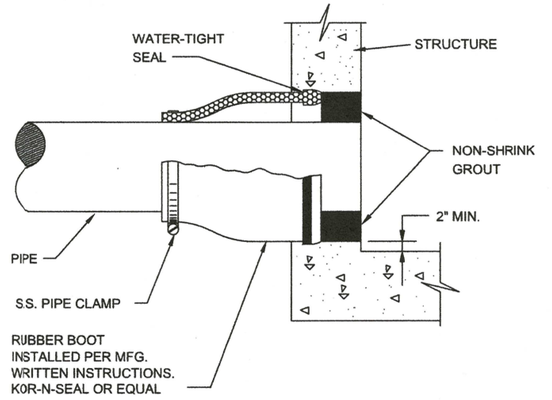
TYPE I CLEANOUT IS FOR FINISHED CONCRETE FLOORS.

TYPE II CLEANOUT IS FOR CONCRETE FLOORS WITH FLOOR COVERING.

TYPE 1 AND II CLEANOUT

DETAIL C / C-03-00

NOT TO SCALE



PIPE PENETRATION

DETAIL D / C-03-00

NOT TO SCALE

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LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	B. SILLMAN
DRAWN:	B. SILLMAN
CHECKED:	T. BOSSO
CHECKED:	
APPROVED:	T. BOSSO
FILENAME	153586-C-03-00.DWG
BC PROJECT NUMBER	153586
CLIENT PROJECT NUMBER	6010881

CIVIL

TRUCK BAY DRAINAGE PLAN

DRAWING NUMBER
C-03-00

SHEET NUMBER 10 OF 63

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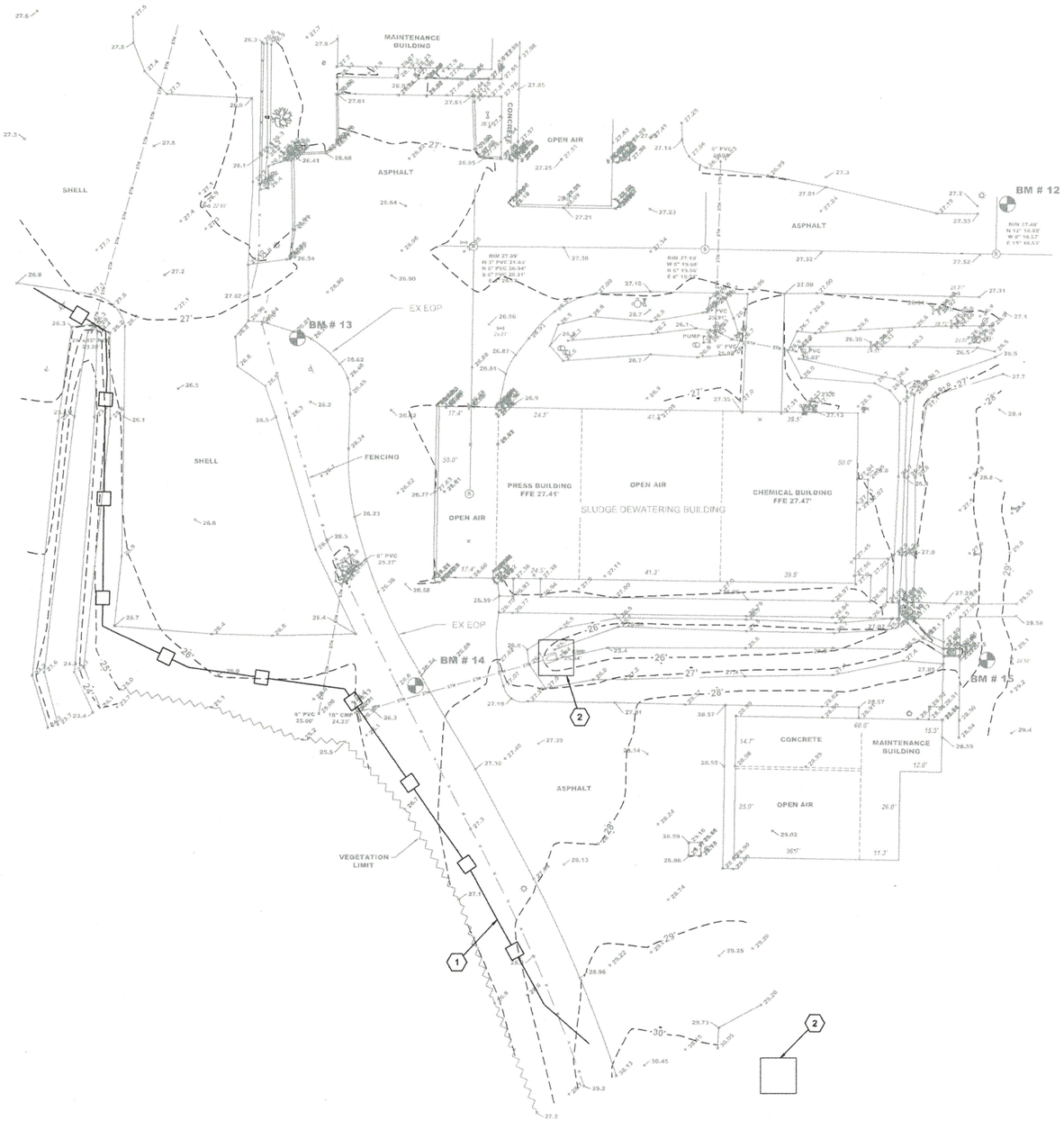
NORTH



NWRF

EROSION CONTROL AND SEDIMENTATION CONTROL PLAN

SCALE: 1 = 30

KEYNOTES:

1. SILT FENCE SHALL BE PLACED ON THE TOP OF SLOPE OF THE EXISTING STORMWATER DITCH
2. PROTECT EXISTING MITERED END SECTION

LEGEND:

SILT FENCE
SEE DETAILS E, F & G ON C-09-51

PROTECT INLET
SEE DETAILS A & C ON C-09-051

0 20' 40'
SCALE IN FEET

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Certificate of Authorization No. 2602
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Sarasota, FL 34240

TODD BOSSO LICENSE
ENGINEER: TODD T. BOSSO, PE 60018
No. 60018
STATE OF FLORIDA
PROFESSIONAL ENGINEER
4/10/2020
BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: T. BOSSO
CHECKED:
APPROVED: T. BOSSO

FILENAME
153586-C-09-11.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

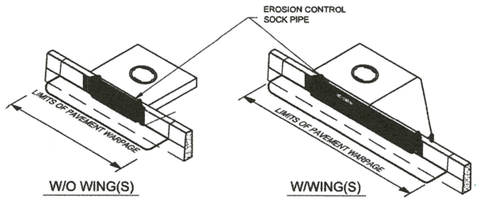
CIVIL

EROSION AND SEDIMENTATION CONTROL PLAN

DRAWING NUMBER
C-09-11

SHEET NUMBER 11 OF 63

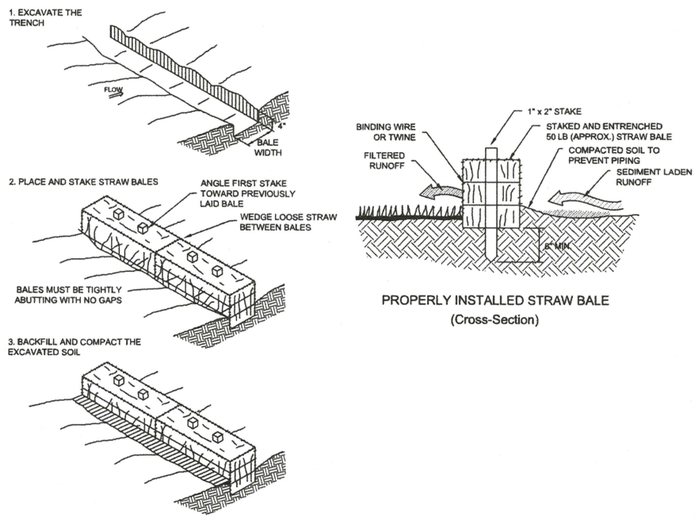
Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-C-09-11.DWG PLOT DATE: 4/10/2020 6:54 PM CAD USER: BRETT SILLMAN



CURB INLET FILTER SHOCK SEDIMENTATION CONTROL

DETAIL A/VAR

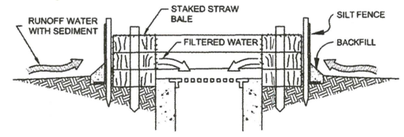
SCALE: NONE



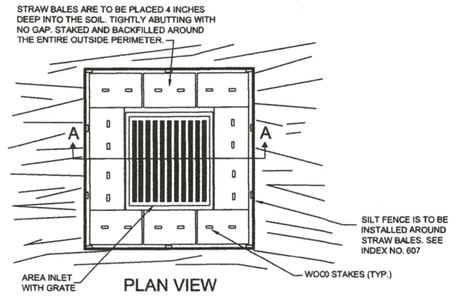
TEMPORARY STRAW BALE SEDIMENT BARRIER

DETAIL B/VAR

SCALE: NONE



SECTION A-A



PLAN VIEW

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPES NO GREATER THAN 5%) WHERE SHEET OR OVERLAND FLOWS (NOT EXCEEDING 0.5 CFS) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS, SUCH AS STREET OR HIGHWAY MEDIANS.

TEMPORARY STRAW BALE SEDIMENT BARRIER AT STORM DRAIN DROP INLET

DETAIL C/VAR

SCALE: NONE

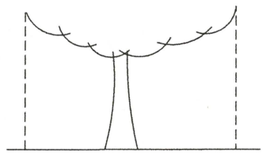


FIGURE A

THE DRIPLINE OF A TREE IS THE IMAGINARY, VERTICAL LINE THAT EXTENDS DOWNWARD FROM THE OUTERMOST TIPS OF THE TREE'S BRANCHES TO THE GROUND (FIG. A)

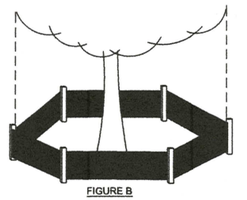


FIGURE B

FOUR CORNER UPRIGHT STAKES OF NO LESS THAN 2"x2" LUMBER CONNECTED BY HORIZONTAL MEMBERS OF NO LESS THAN 1"x4" LUMBER; OR UPRIGHT STAKES SPACED AT 5' INTERVALS OF NO LESS THAN 2"x2" LUMBER CONNECTED BY SILT SCREEN FABRIC OR MATERIAL OF COMPARABLE DURABILITY.

NOTE:
DURING LAND ALTERATION AND CONSTRUCTION ACTIVITIES, IT SHALL BE UNLAWFUL TO REMOVE VEGETATION BY GRUBBING OR TO PLACE SOIL DEPOSITS, DEBRIS, SOLVENTS, CONSTRUCTION MATERIAL, MACHINERY OR OTHER EQUIPMENT OF ANY KIND WITHIN THE DRIPLINE OF A TREE TO REMAIN ON THE SITE.

TREE BARRICADE

DETAIL D/VAR

SCALE: NONE

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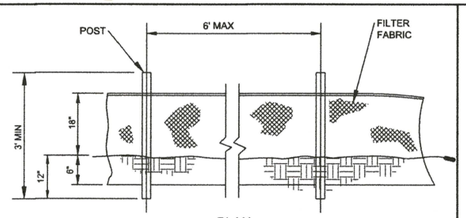
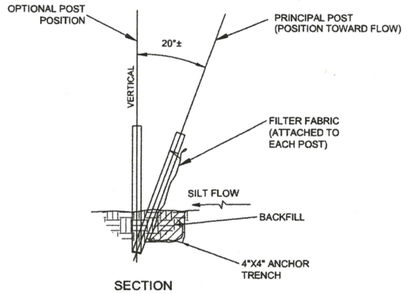


PLAN



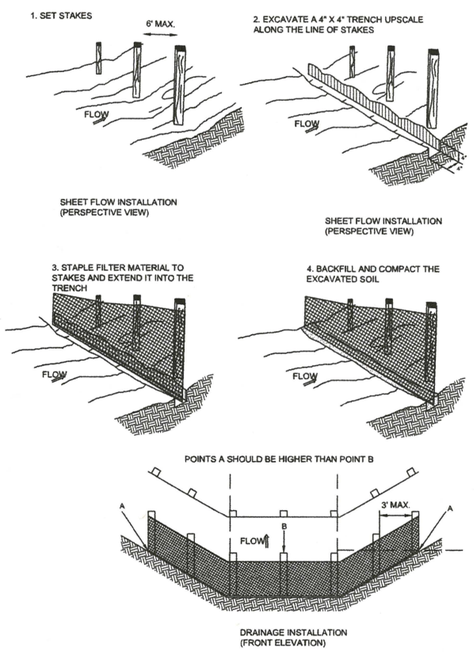
SECTION

STEEL 1.33 LBS/FT MIN.) POST OPTIONS:
WOOD 2"X4" OR 2 1/2" DIA.

SILT FENCE

DETAIL E/VAR

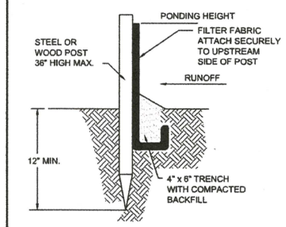
SCALE: NONE



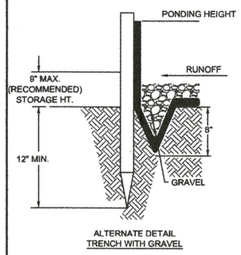
INSTALLING A FILTER FABRIC SILT FENCE (1 OF 2)

DETAIL F/VAR

SCALE: NONE

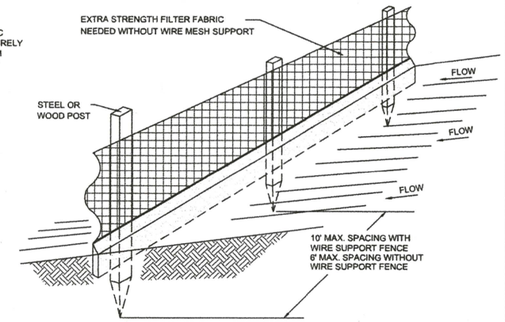


STANDARD DETAIL
TRENCH WITH NATIVE BACKFILL

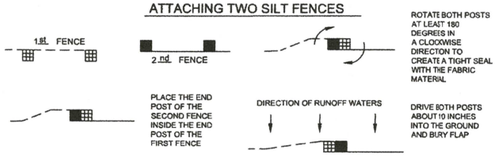


ALTERNATE DETAIL
TRENCH WITH GRAVEL

NOTES:
1. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
2. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
3. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.



ATTACHING TWO SILT FENCES

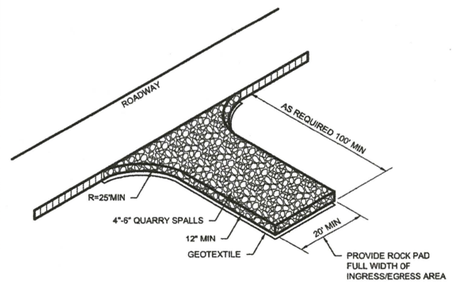


INSTALLING A FILTER FABRIC SILT FENCE (2 OF 2)

DETAIL G/VAR

SCALE: NONE

NOTES:
1. CONTRACTOR SHALL INSTALL AND MAINTAIN STABILIZED CONSTRUCTION ENTRANCES AT ALL LOCATIONS WHERE VEHICLES TRAVERSE DIRT SURFACES PRIOR TO ENTERING PAVED PUBLIC ROADS.
2. THE ROCK PAD SHALL BE AT LEAST 12" THICK AND 100' LONG. MATERIAL SHALL BE 4" TO 6" QUARRY SPALLS AND MAY BE TOP-DRESSED WITH 1" TO 3" ROCK. WIDTH SHALL BE THE FULL WIDTH OF THE VEHICLE INGRESS AND EGRESS AREA.
3. ADDITIONAL ROCK SHALL BE ADDED PERIODICALLY TO MAINTAIN PROPER FUNCTION OF THE PAD.
4. IF THE PAD DOES NOT ADEQUATELY REMOVE THE MUD FROM THE WHEELS, THE WHEELS SHALL BE HOSED OFF BEFORE THE VEHICLE ENTERS A PAVED STREET. THE WASHING SHALL BE DONE ON AN AREA COVERED WITH CRUSHED ROCK AND WASH WATER SHALL DRAIN THROUGH A SILT FENCE TO SILT DRAINAGE.
5. IF SEDIMENT IS TRACKED OFFSITE. IT SHALL BE SWEPT OR SHOVELED FROM THE PAVED SURFACE BEFORE WASHING.



CONSTRUCTION ENTRANCE

DETAIL H/VAR

SCALE: NONE

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: T. BOSSO
CHECKED:
APPROVED: T. BOSSO
FILENAME 153586-C-09-051.DWG
BC PROJECT NUMBER 153586
CLIENT PROJECT NUMBER 6010881
CIVIL

EROSION AND SEDIMENTATION CONTROL DETAILS

DRAWING NUMBER
C-09-051
SHEET NUMBER 12 OF 63

Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-C-09-051.DWG PLOT DATE: 4/10/2020 7:00 PM CAD USER: BRETT SILLIMAN

GENERAL

G 1 SCOPE
THE GENERAL NOTES AND TYPICAL DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY.

G 2 PRECEDENCE
IF THERE IS A CONFLICT BETWEEN PROJECT SPECIFICATIONS AND STRUCTURAL DRAWINGS, INCLUDING STRUCTURAL NOTES, CONTACT THE STRUCTURAL ENGINEER OF RECORD FOR CLARIFICATION. SPECIFIC NOTES AND DETAILS ON DRAWINGS TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.

G 3 DIMENSIONS
STRUCTURAL DIMENSIONS CONTROLLED BY OR RELATED TO THE MECHANICAL OR ELECTRICAL EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL CONSTRUCTION DIMENSIONS AND NOTIFYING CONSTRUCTION MANAGER OF DISCREPANCIES IN A TIMELY FASHION.

G 4 PROVISIONS FOR EQUIPMENT
MECHANICAL AND ELECTRICAL EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND EMBEDMENTS NOT SPECIFIED ON THE STRUCTURAL DRAWINGS, BUT SPECIFIED ON OTHER CONTRACT DRAWINGS, SHALL BE PROVIDED PRIOR TO CASTING CONCRETE.

G 5 MEANS, METHODS & CONSTRUCTION LOADS
CONTRACT DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. CONTRACTOR IS RESPONSIBLE FOR MEANS, METHODS AND SEQUENCE OF CONSTRUCTION, AND SHALL MAKE ADEQUATE PROVISION TO MAINTAIN THE INTEGRITY OF ALL STRUCTURES AT ALL STAGES OF CONSTRUCTION. DETERMINATION OF AND PROVISIONS FOR CONSTRUCTION LOADING SHALL BE PROVIDED BY THE CONTRACTOR.

G 6 SAFETY
CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS TO ENSURE THE SAFETY OF WORKERS AND VISITORS TO THE SITE, INCLUDING BUT NOT LIMITED TO SHORING, BRACING AND ACCESS RESTRICTION. COMPLY WITH ALL FEDERAL, STATE AND LOCAL SAFETY CODES AND STANDARDS.

G 7 DRAINAGE SURFACES
SLOPE DRAINAGE SURFACES UNIFORMLY TO DRAIN. SLOPE SHALL BE 1/8" TO 1/4" PER FOOT EXCEPT WHERE NOTED OTHERWISE ON THE PLANS.

G 8 OPENINGS
OPENINGS THROUGH NEW AND EXISTING WALLS AND SLABS FOR PIPES, DUCTS, CONDUITS, ETC., ARE NOT ALL SHOWN ON THE STRUCTURAL DRAWINGS. THE CONTRACTOR SHALL COORDINATE WITH OTHER DISCIPLINES AND PROVIDE THESE OPENINGS IN ACCORDANCE WITH THE OTHER CONTRACT DOCUMENTS.

DESIGN CRITERIA

D 1 GOVERNING BUILDING CODE
CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE 2017 FLORIDA BUILDING CODE. THIS CODE SHALL GOVERN EXCEPT WHERE OTHER APPLICABLE CODES OR CONTRACT PROVISIONS ARE MORE RESTRICTIVE.

D 2 LIVE LOADS

1. ALUMINUM COVERS ..... 50 PSF, UON
2. EQUIPMENT CONCRETE SLAB-ON-GRADE ..... 250 PSF, UON
3. STAIRS, LANDINGS AND ENTRY AREAS ..... 100 PSF, UON
4. GRATING ..... 100 PSF, UON
6. ROOF LIVE LOAD ..... 30 PSF, UON

D 3 RISK CATEGORY OF BUILDING ..... III (FBC 1604.5)

D 4 WIND
ULTIMATE WIND SPEED ..... 155 MPH
EXPOSURE CATEGORY C
TOPOGRAPHIC FACTOR ..... K_{ZT}= 1.0
FACILITY IS IN A WIND-BORNE DEBRIS REGION
ENCLOSURE CLASSIFICATION: OPEN

FOUNDATION

F 1 DESIGN BASIS
FOUNDATION DESIGN IS BASED ON RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL REPORT, HC185075 BY TERRACON. CONTRACTOR SHALL FOLLOW THE PROJECT SPECIFICATIONS AND TAKE INTO CONSIDERATION RECOMMENDATIONS CONTAINED IN THE REPORT. NOTIFY THE CONSTRUCTION MANAGER OF CONFLICTS BETWEEN SPECIFICATIONS AND THE REPORT RECOMMENDATIONS FOR RESOLUTION.

F 2 ALLOWABLE BEARING PRESSURE
SHALLOW FOUNDATIONS SHALL BEAR ON AT LEAST 1 FOOT OF COMPACTED AND CONDITIONED NATIVE SOIL AND HAVE BEEN DESIGNED FOR AN ALLOWABLE BEARING PRESSURE OF **2,500** PSF.

F 3 MINIMUM FOUNDATION PREPARATION
ALL NEW FOUNDATIONS AND SLAB ON GRADE FLOORS SHALL BE SUPPORTED ON A MINIMUM OF 1 FOOT OF PROPERLY PLACED AND COMPACTED NATIVE SOIL, (SEE GEOTECHNICAL REPORT).

F 4 DIFFERING CONDITIONS
FOUNDATION CONDITIONS NOTED DURING CONSTRUCTION WHICH DIFFER FROM THOSE INDICATED IN THE REPORT SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER. CONTRACTOR IS RESPONSIBLE FOR REPLACING WORK CONDUCTED AFTER SUCH NOTIFICATION BUT BEFORE CONSTRUCTION MANAGER PROVIDES ADDITIONAL DIRECTIONS.

F 5 EXCAVATION, DE-WATERING & SAFETY
CONTRACTOR SHALL PROVIDE FOR ALL DE-WATERING OF EXCAVATIONS, AND DESIGN / PROVIDE ALL CRIBBING, SHORING AND BRACING REQUIRED FOR SAFETY AND TO ALLOW CONSTRUCTION OF THE WORK PRESENTED HEREIN.

F6 STRUCTURAL BACKFILL
UNLESS OTHERWISE NOTED, STRUCTURAL BACKFILL SHALL BE PLACED IN UNIFORM LAYERS AND SHALL BE BROUGHT UP UNIFORMLY AROUND THE STRUCTURE. ADDITIONALLY, BACKFILL SHALL BE BROUGHT UP UNIFORMLY ON BOTH SIDES OF FOUNDATION WALLS. SEE SPECIFICATION 02200 FOR ADDITIONAL INFORMATION.

CONCRETE

C 1 APPLICABLE CODES
CONCRETE CONSTRUCTION SHALL CONFORM TO ACI 301-10 "SPECIFICATIONS FOR STRUCTURAL CONCRETE", AND THE FOLLOWING CODES: ACI 318-14 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"

C 2 REINFORCING STEEL DETAILS
ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH ACI DETAILING MANUAL (ACI SP-66), LATEST EDITION.

C 3 DESIGN STRENGTH
1. STRUCTURAL CAST-IN-PLACE CONCRETE ..... f'c = 4,500 PSI
2. REINFORCED STEEL ..... ASTM A615, GRADE 60 DEFORMED BARS UNLESS OTHERWISE NOTED

C 4 CONCRETE COVER
CONCRETE COVER FOR REINFORCING BARS SHALL CONFORM TO ACI AND AS FOLLOWS WITH MINIMUM COVER OF ONE BAR DIAMETER:
1. CONCRETE CAST AGAINST EARTH ..... 3"
2. CONCRETE EXPOSED TO EARTH, WASTEWATER, CHEMICALS OR WEATHER ..... 2"
3. CONCRETE NOT EXPOSED TO EARTH, WASTEWATER, CHEMICALS OR WEATHER ..... 1 1/2"

C 5 BAR DEVELOPMENT AND LAP SPLICE LENGTH
SEE TABLE ON S-00-002. IN SLABS, BEAMS, GIRDERS AND HORIZONTAL REINFORCING AT WALLS, SPLICES OF ADJACENT REINFORCING STEEL BARS SHALL BE STAGGERED AT LEAST ONE SPLICE LENGTH, UNLESS OTHERWISE SPECIFIED.

C 6 WELDING REINFORCING BARS
WELDING OF REINFORCING BARS NOT PERMITTED.

CONCRETE (continued)

C 7 STANDARD HOOKS
BARS ENDING IN RIGHT ANGLE BENDS OR HOOKS SHALL CONFORM TO THE REQUIREMENTS OF ACI-318. PROVIDE STANDARD HOOK IN BARS WHICH TERMINATE AT WALL OR SLAB INTERSECTIONS THAT PROVIDE LESS THAN THE SPECIFIED DEVELOPMENT LENGTH.

C 8 CHAMFERS
EXCEPT AS OTHERWISE REQUIRED, EXPOSED CONCRETE CORNERS AND EDGES SHALL HAVE 3/4" CHAMFERS. RE-ENTRANT CORNERS SHALL NOT HAVE FILLETS.

C 9 ANCHOR BOLTS
ANCHOR BOLTS SHALL BE STAINLESS STEEL TYPE 316 MATERIAL UNLESS OTHERWISE NOTED (SEE SPECIFICATIONS).

C 10 INSERTS
PROVIDE ANCHORAGE INSERTS ON CONCRETE WALLS AND CONCRETE CEILINGS IN GALLERIES, PIPE CHASES, TUNNELS AS REQUIRED BY MECHANICAL AND ELECTRICAL INSTALLATIONS. USE UNISTRUT P3200 SERIES HOT DIP GALVANIZED OR EQUAL UNLESS OTHERWISE SPECIFIED.

C 11 COMPATIBLE FINISHES
CURING COMPOUNDS AND OTHER SURFACE TREATMENTS, CONCRETE ADMIXTURES AND SUB-SLAB DRAINAGE SHALL BE REVIEWED BY CONTRACTOR AND CERTIFIED COMPATIBLE WITH FINISHES TO BE APPLIED LATER IN THE CONSTRUCTION SEQUENCE.

GROUT

GR 1 EQUIPMENT GROUTING
SEE MECHANICAL SPECIFICATIONS AND SPECIFICATION SECTION 03300, GROUT.

GR 2 EPOXY ADHESIVE GROUT AT ANCHORS INTO CONCRETE: HILTI HIT-RE 500-V3 EPOXY ADHESIVE ANCHOR SYSTEM BY HILTI INC. OR EQUAL APPROVED BY ENGINEER OF RECORD. INSTALLERS OF HORIZONTAL OR UPWARDLY INCLINED ADHESIVE ANCHORS SHALL BE CERTIFIED IN ACCORDANCE WITH THE ACI / CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM.

DOWELS

DL 1 LOCATE HOLES IN EXISTING CONCRETE TO MISS MAIN REINFORCING BARS, STIRRUPS AND EMBEDMENTS. THIS MAY INVOLVE RELOCATING DOWELS FROM POSITIONS SHOWN. NOTIFY THE OWNER OF ANY DOWEL RELOCATIONS. PRIOR TO DRILLING HOLES, FIELD VERIFY AND MARK THE LOCATION OF NEARBY EXISTING REINFORCING BARS, STIRRUPS AND EMBEDMENTS USING A PACHOMETER. IF THEY ARE HIT DURING DRILLING, NOTIFY THE OWNER.

DL 2 CLEAN AND PREPARE HOLES IN ACCORDANCE WITH THE EPOXY MANUFACTURER'S RECOMMENDATIONS. AS A MINIMUM, BLOW COMPRESSED OIL-FREE AIR FROM THE BOTTOM OF HOLE TOWARDS THE SURFACE. DRY AND CLEAN HOLE OF CONTAMINANTS.

DL 3 FILL EACH HOLE WITH A SUFFICIENT AMOUNT OF EPOXY TO COMPLETELY SURROUND THE DOWEL. INSERT THE DOWEL AFTER THE EPOXY IS PLACED IN THE HOLE.

STEEL

ST 1 ALL STRUCTURAL STEEL WORK SHALL BE IN ACCORDANCE WITH THE AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" (AISC 360-10).

ST 2 MATERIALS
1. STEEL WIDE FLANGE SHAPES SHALL CONFORM TO ASTM A992. OTHER STEEL SHAPES AND PLATES SHALL CONFORM TO ASTM A36.
2. STRUCTURAL STEEL PIPE SHALL CONFORM TO ASTM A53 TYPES E OR S, GRADE B. STRUCTURAL STEEL TUBING SHALL CONFORM TO ASTM A500 GRADE B (Fy = 46 KSI).
3. ALL STAINLESS STEEL SHALL BE TYPE 316 MEETING ASTM A276 FOR BARS AND SHAPES, AND ASTM A240 FOR PLATES, UNLESS OTHERWISE SPECIFIED. ALL STAINLESS STEEL SHALL BE PASSIVATED PER ASTM A380.

ST 3 WELDING
1. WELDING SHALL CONFORM TO AWS D1.1-1 AND AISC 341-10.
2. ELECTRODES FOR SHOP AND FIELD WELDS SHALL CONFORM TO AWS A5.1 OR A5.5, CLASS E70XX.
3. STAINLESS STEEL WELDING SHALL CONFORM TO AWS D1.6 WITH A5.4 OR A5.9 ELECTRODES.

ST 4 BOLTS
STRUCTURAL BOLTS AT STEEL FRAMING SHALL BE GALVANIZED AND CONFORM TO ASTM A325N (TYPE 1) FOR CONNECTION OF GALVANIZED OR PAINTED FRAMING. HIGH STRENGTH BOLTS SHALL BE FULLY TENSIONED UNLESS CONNECTING HSS SHAPES OR OTHERWISE NOTED. STAINLESS STEEL TYPE 316 BOLTS SHALL BE USED FOR CONNECTION OF STAINLESS STEEL AND ALUMINUM FRAMING.

ST 5 ENCASED STEEL
STEEL COMPLETELY ENCASED IN CONCRETE SHALL NOT BE GALVANIZED OR PAINTED AND SHALL HAVE A CLEAN SURFACE FOR BONDING TO CONCRETE UNLESS OTHERWISE NOTED ON THE DRAWINGS.

ST 6 PAINTING
STRUCTURAL STEEL SHALL BE PAINTED IN ACCORDANCE WITH SPECIFICATION. SHOP PRIMER SHALL BE COMPATIBLE WITH FINISH COATINGS.

Brown AND Caldwell
Certificate of Authorization No. 2602
6151 Lake Osprey Drive, 3rd Floor
Sarasota, FL 34240

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY ADARSH B. SHAH ON 04/10/2020 USING A DIGITAL SIGNATURE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

ADARSH B. SHAH
LICENSED
ENGINEER OF RECORD
A. SHAH, PE 79948
No. 79948
STATE OF
FLORIDA
PROFESSIONAL ENGINEER
BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

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DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: C. DIXON
CHECKED: D. MINADEO
APPROVED: A. SHAH

FILENAME
153586-S-00-001.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

STRUCTURAL

GENERAL STRUCTURAL NOTES 1

DRAWING NUMBER
S-00-001

13 SHEET NUMBER OF 63

PRECAST CONCRETE

PC 1 STANDARD AND QUALITY CONTROL
PRECAST UNITS AND THEIR INSTALLATION SHALL CONFORM TO PCI DESIGN HANDBOOK, LATEST EDITION, MINIMUM. MANUFACTURER SHALL DESIGN ALL UNITS. SUBMIT CALCULATIONS AND SHOP DRAWINGS SEALED BY A FLORIDA LICENSED PROFESSIONAL ENGINEER FOR REVIEW.

PC 2 MATERIAL STRENGTHS
1. PRECAST CONCRETE..... f'c = 5,000 PSI
2. PRESTRESS STANDS..... 7-WIRE STRAND fpu = 270 KSI
PRESTRESSING WIRE fpu > 235 KSI
3. MILD REINFORCING STEEL .....ASTM A615, GRADE 60
DEFORMED BARS UNLESS OTHERWISE NOTED

PC 3 DESIGN LOADING AND STRESSES
CONFORM TO DESIGN LOADS AND CODES INDICATED ON THE STRUCTURAL DRAWINGS.
IN ADDITION, MANUFACTURER SHALL PROVIDE FOR LIFTING, TRANSPORTING, AND ERECTION STRESSES AND MAXIMUM TENSILE STRESS AT TRANSFER SHALL NOT EXCEED 150 PSI.

PC 4 CAMBER AND SERVICE LOAD TENSION
1. PROVIDE SUFFICIENT CAMBER TO OFFSET ALL DEAD LOADS.
FOR UNITS ABOVE MOIST ENVIRONMENTS, PROVIDE 100 PSI MINIMUM SERVICE DEAD PLUS LIVE LOAD COMPRESSION.
2. ABOVE DRY ENVIRONMENTS, LIMIT SERVICE DEAD PLUS LIVE LOAD TENSION TO 300 PSI.
3. SERVICE LOAD CONDITIONS INCLUDE EFFECTS OF PRESTRESS LOSSES, TOPPING SLAB, IF ANY, AND CONSTRUCTION INDUCED STRESSES WHETHER SHORED OR NOT.

PC 5 TOPPING SLAB AND CLOSURE GROUT
WHERE A TOPPING SLAB IS INDICATED, PROVIDE A ROUGH , RAKED SURFACE FREE OF MATERIALS WHICH WOULD INHIBIT BOND. CLOSURE GROUTING SHALL UTILIZE NON-SHRINK, CEMENTITIOUS GROUT UNLESS OTHERWISE NOTED.

PC 6 FIELD MODIFICATIONS
PRECAST UNITS, THEIR BEARING AND OTHER CONNECTIONS MAY NOT BE ALTERED IN THE FIELD OR DEVIATE FROM REVIEWED SHOP DRAWINGS WITHOUT THE WRITTEN ACCEPTANCE OF THE ENGINEER OF RECORD.

MODIFICATION OF EXISTING STRUCTURES

M 1 NEW CONCRETE TO EXISTING
EXISTING CONCRETE SURFACES TO BE JOINED WITH NEW CONCRETE SHALL HAVE SURFACE PREPARATION PER SPECIFICATION SECTION 09900.

M 2 CUTS ON EXPOSED SURFACE
SURFACES TO BE SAWCUT SHALL BE NEATLY SAW CUT TO A DEPTH OF ±0.25" TO 1.0" DEPENDING ON THE DEPTH OF THE FILLER/SURFACER OR PATCH. SAWCUT SHALL BE INSTALLED PRIOR TO REMOVING THE EXISTING CONCRETE. STOP ALL SAWCUTS AT CORNERS, DO NOT CUT PAST THE PATCHED AREA (USE NEAT CHIPPING).

M 3 DOWELED REINFORCING STEEL
DOWELS SHALL BE INSTALLED USING ADHESIVE PER DETAIL S6001. WHEN ADHESIVE HOLES ARE HORIZONTAL, THE HOLES SHALL BE DRILLED SLIGHTLY DOWNWARD (APPROX 15 DEGREE). WHEN OVERHEAD HOLES ARE REQUIRED, CAPSULE ANCHOR ADHESIVE IS PREFERRED.

M 4 WATERSTOPS IN EXISTING CONCRETE
CONTRACTOR SHALL INSTALL RETROFIT WATERSTOPS AS NOTED ON THE CONTRACT DOCUMENTS.

M 5 NEW OPENINGS IN EXISTING CONCRETE
NEW OPENINGS IN EXISTING CONCRETE SHALL BE CUT 2" OVERSIZE, COATED WITH EPOXY BONDING COMPOUND AND FINISHED TO THE REQUIRED OPENING SIZE WITH PROFILING MORTAR UNLESS NOTED OTHERWISE ON THE CONTRACT DRAWINGS.

M 6 CONCRETE SURFACE PATCHING (NON-WATER BEARING)
WHERE EXISTING CONCRETE OR MASONRY IS REMOVED FROM SLABS AND WALLS TO REMAIN, PATCH SURFACE WHERE EXPOSED AS FOLLOWS: CHIP DOWN 3/8 INCH MINIMUM BELOW ADJACENT SURFACE AND LEAVE ROUGH. CLEAN SURFACE, APPLY BONDING AGENT AND FINISH SURFACE TO MATCH ADJACENT WITH POLYMER CONCRETE. SEE SPECIFICATION SECTION 03300 FOR APPROPRIATE BONDING AGENTS AND SECTION 03600 FOR POLYMER CONCRETE. STUCCO WILL ALSO BE REPAIRED IN AND AROUND REFURBISHED AREAS OF THE PRELIMINARY TREATMENT STRUCTURE.

M 7 REINFORCING STEEL
NO REINFORCING STEEL SHALL BE CUT UNLESS APPROVED BY THE ENGINEER OF RECORD. PROTECT AND BEND REBAR AS NOTED.

STRUCTURAL OBSERVATION

COORDINATE STRUCTURES TO RECEIVE STRUCTURAL OBSERVATION WITH ENGINEER. NOTIFY ENGINEER AT LEAST 48 HOURS BEFORE A DESIGNATED WORK IS TO BE COVERED.

ITEM	DESCRIPTION	TYPE
1. CONCRETE	- STRUCTURAL CONCRETE PLACEMENT	CONTINUOUS
2. BOLTS INSTALLED IN CONCRETE	- WEDGE AND ADHESIVE ANCHORS INSTALLATION - ALL ANCHOR BOLTS	PERIODIC
3. REINFORCING STEEL	- REINFORCING STEEL PLACEMENT IN FOUNDATION, SLABS AND WALLS	PERIODIC
4. WELDING	- ALL FIELD WELDING - ALL SHOP WELDING	PERIODIC
5. HIGH-STRENGTH BOLTS	- STRUCTURAL STEEL BOLTED CONNECTIONS	PERIODIC
6. STRUCTURE FILL	- SUBGRADE AND FILL	PERIODIC
7. FINAL INSPECTION	- SUBSTANTIAL COMPLETION FINAL WALK-THRU	PERIODIC

STRUCTURAL DEFERRED SUBMITTALS

CONTRACTOR TO SUBMIT DRAWINGS AND CALCULATIONS BEARING THE SEAL OF A PROFESSIONAL ENGINEER CURRENTLY LICENSED IN FLORIDA TO ENGINEER BEFORE SUBMITTING TO JURISDICTION FOR REVIEW AND PERMITTING.

ITEM
1. ATTACHMENT OF MECHANICAL UNIT TO SUPPORT
2. ATTACHMENT OF PROCESS UNIT/EQUIPMENT TO SUPPORT
3. PRECAST PRESTRESSED CONCRETE HOLLOW CORE SLABS
4. SPECIALTY CONSTRUCTION OF PIPE SUPPORTS
5. ANCHOR BOLTS FOR ALL EQUIPMENT ANCHORAGE

TENSION DEVELOPMENT AND LAP SPLICE LENGTHS (IN INCHES) FOR UNCOATED BARS IN NORMAL-WEIGHT CONCRETE WITH f_c' = 4,000 PSI OR HIGHER

ALL STEEL REINFORCING LAP SPLICES, UNLESS INDICATED OTHERWISE, SHALL SATISFY THE FOLLOWING:

LAP SPLICE SCHEDULE									
BAR SIZE	#3	#4	#5	#6	#7	#8	#9	#10	#11
TOP BAR *	2'-0"	2'-6"	3'-2"	4'-0"	5'-6"	6'-6"	7'-2"	8'-0"	8'-11"
OTHER	1'-6"	2'-0"	2'-6"	3'-0"	4'-6"	5'-0"	5'-6"	6'-2"	6'-10"

ALL STEEL REINFORCING BAR DEVELOPMENT LENGTHS, UNLESS INDICATED OTHERWISE, SHALL SATISFY THE FOLLOWING:

DEVELOPMENT LENGTH SCHEDULE									
BAR SIZE	#3	#4	#5	#6	#7	#8	#9	#10	#11
TOP BAR *	1'-8"	2'-0"	2'-6"	3'-0"	4'-4"	5'-0"	5'-6"	6'-2"	6'-8"
OTHER	1'-2"	1'-6"	2'-0"	2'-4"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"

* TOP BAR IS DEFINED ANY HORIZONTAL BAR PLACED SUCH MORE THAN 12 INCHES OF CONCRETE IS PLACED BELOW THE BAR IN ANY SINGLE CONCRETE PLACEMENT. CONCRETE WALL HORIZONTAL STEEL REINFORCING BARS ARE CONSIDERED TOP BARS.

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No. 79948
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FLORIDA
PROFESSIONAL ENGINEER
BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: C. DIXON
CHECKED: J. MINADEO
APPROVED: A. SHAH

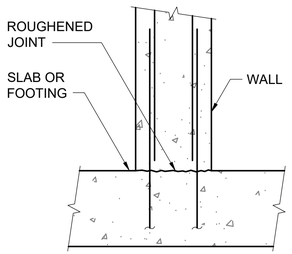
FILENAME
153586-S-00-002.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

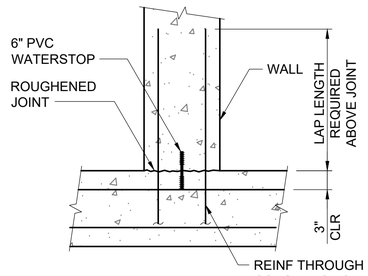
STRUCTURAL

GENERAL STRUCTURAL NOTES 2

DRAWING NUMBER
S-00-002

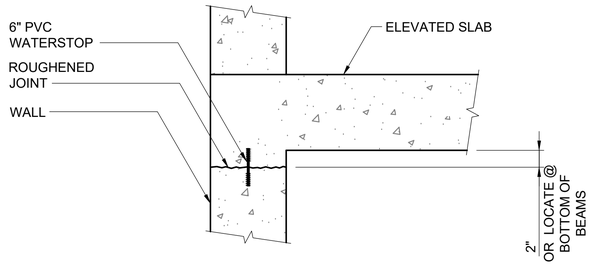
14 SHEET NUMBER OF 63





TYPICAL JOINT WITHOUT WATERSTOP

JOINT WITH PVC WATERSTOP



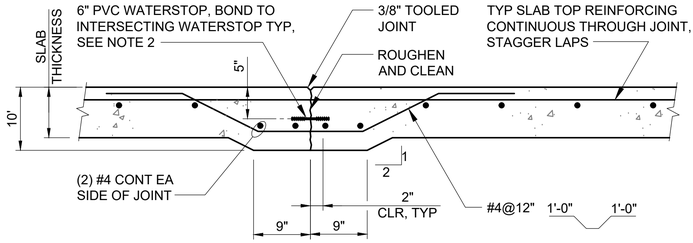
WALL/ELEVATED SLAB JOINT WITH PVC WATERSTOP

NOTES:
1. ALL REINFORCING SHALL BE CONTINUOUS THROUGH JOINT.
2. SEE SECTIONS AND DETAILS FOR TYPE OF JOINT REQUIRED.

TYPICAL HORIZONTAL CONSTRUCTION JOINT

DETAIL A VAR

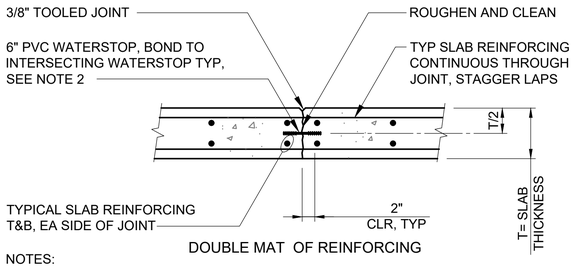
SCALE: NONE



NOTES:

1. 10" THICKENED SLAB AND ADDITIONAL #4 REQUIRED ONLY AT JOINTS WITH WATERSTOPS.
2. FOR SLABS 10" THICK OR GREATER, NO THICKENING REQUIRED.

ONE LAYER OF REINFORCING



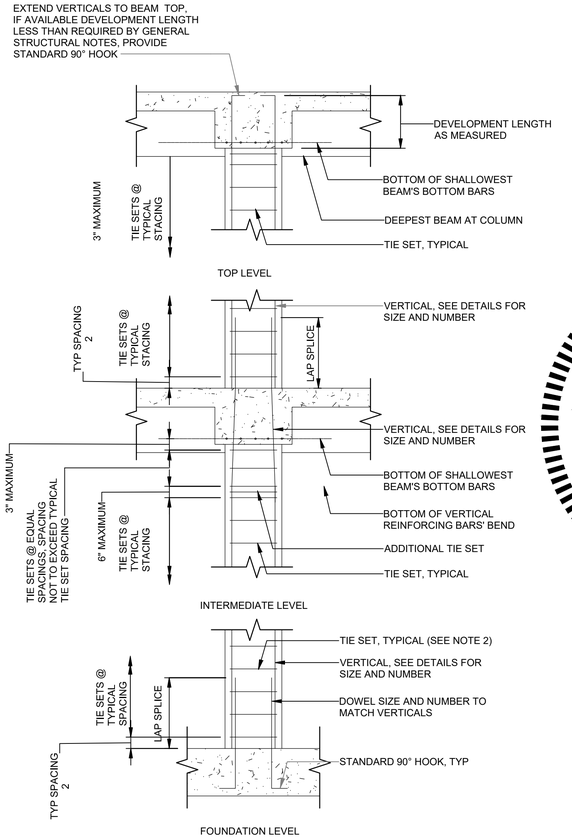
DOUBLE MAT OF REINFORCING

NOTES:
1. ALL REINFORCING SHALL BE CONTINUOUS THROUGH JOINT.
2. WATERSTOP REQUIRED AT LIQUID HOLDING BASINS AND TANKS, AND BELOW GRADE SLABS.

TYPICAL SLAB CONSTRUCTION JOINT

DETAIL B VAR

SCALE: NONE

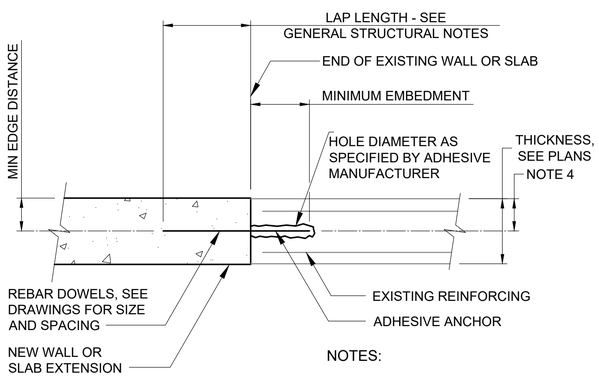


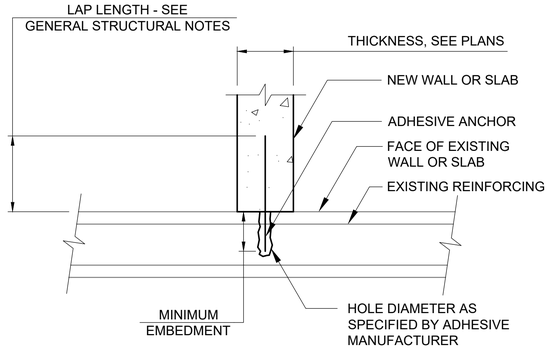
NOTES:
1. WHERE FACE OF A COLUMN/PILASTER IS INSET 3" OR MORE THAN FACE OF COLUMN/PILASTER BELOW, TERMINATE VERTICAL BARS OF LOWER COLUMN/PILASTER SECTION AT FLOOR LEVEL AND PROVIDE DOWELS LAP SPLICED TO VERTICAL BARS OF UPPER COLUMN/PILASTER SECTION.
2. POSITION TIES SUCH THAT TIE HOOK LOCATIONS ARE STAGGERED.
3. IF CONCRETE BEAMS OR CONCRETE SLABS DO NOT FRAME INTO COLUMN FROM FOUR DIRECTIONS, SEE EXTERIOR CONCRETE COLUMN.

TYPICAL CONCRETE PILASTER/COLUMN REINFORCING

DETAIL D VAR

SCALE: NONE





DOWEL SIZE	MINIMUM EMBEDMENT
#3	5"
#4	7"
#5	8"
#6	10"
#7	12"
#8	14"
#9	16"

NOTES:

1. EMBEDMENT LENGTHS IN TABLE ARE BASED ON DOWELS SET WITH HILTI HIT-RE 500-SD ADHESIVE ANCHOR SYSTEM. PROVIDE EMBEDMENT LENGTH PER TABLE UNLESS NOTED OTHERWISE ON DRAWINGS. SUBMIT ICC EVALUATION SERVICE REPORT (ES REPORT) IF ALTERNATE SPECIFIED PRODUCT IS USED.
2. DOWELS SHALL BE SET IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS AND ICC ES REPORT ESR-2322.
3. SPECIAL INSPECTION IS REQUIRED FOR ALL DOWELS SET WITH ADHESIVE. SPECIAL INSPECTION SHALL BE IN ACCORDANCE WITH ICC ES REPORT ESR-2322 AND IBC 2009.
4. LOCATE DOWELS CENTERED IN WALL OR SLAB UNLESS NOTED OTHERWISE ON DRAWINGS. WHERE (2) ROWS OF DOWELS ARE INDICATED, STAGGER SPACING AND LOCATE ALTERNATING DOWELS AT MINIMUM EDGE DISTANCE FROM OPPOSITE FACES.

REBAR DOWELS SET WITH ADHESIVE

DETAIL C VAR

SCALE: NONE

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REVISIONS

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DRAWN: M. CORNELISON
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CHECKED: J. MINADEO
APPROVED: A. SHAH

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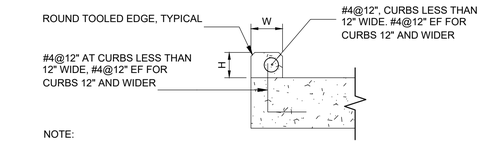
STRUCTURAL

STANDARD DETAILS 1

DRAWING NUMBER
S-00-501

15 SHEET NUMBER OF 63



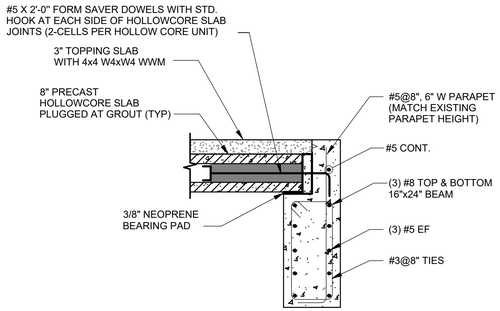
NOTE:

1. CURB HEIGHT,H, TO BE 6" AND WIDTH, W, TO BE 10" IF GUARDRAIL MOUNTED ON TOP OF CURB, 6" IF NOT. DIMENSIONS TYPICAL UNLESS SPECIFICALLY INDICATED, OTHERWISE ON DRAWINGS.
2. WATERSTOP IN CONSTRUCTION JOINT BETWEEN CONCRETE CURB AND CONCRETE SLAB/BEAM IS NOT SHOWN, BUT MAY BE REQUIRED IF SPECIFICALLY INDICATED.

TYPICAL CURB DETAIL

DETAIL A VAR

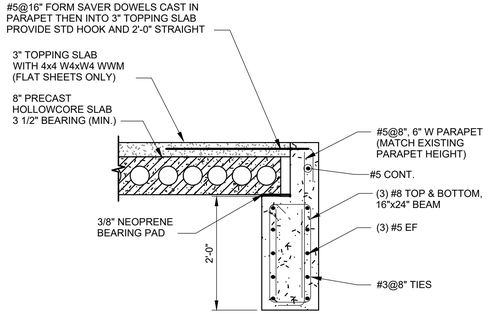
SCALE: NONE



HOLLOW CORE END AT BEAM

DETAIL B VAR

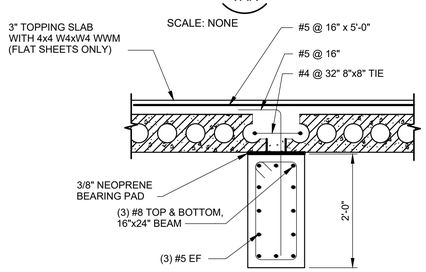
SCALE: NONE



HOLLOW CORE EDGE AT BEAM

DETAIL C VAR

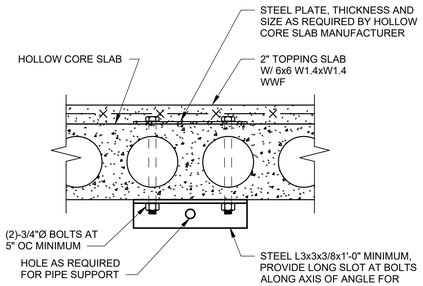
SCALE: NONE



HOLLOW CORE EDGE AT BEAM

DETAIL D VAR

SCALE: NONE



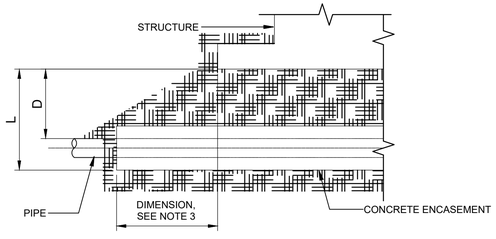
NOTES:

1. COORDINATE LOCATION AND LOAD REQUIREMENT WITH HOLLOW CORE MANUFACTURER. BOLTS TO BE POSITIONED TO NOT INTERFERE WITH PRESTRESSING STRANDS.
2. PROVIDE CLEVISE/PIN TO CONNECT HANGER ROD TO STEEL ANGLE.

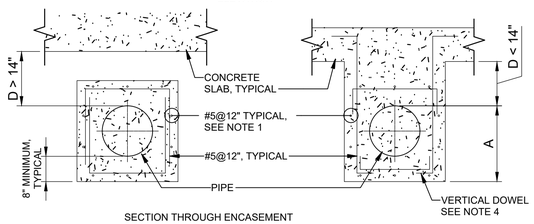
STRUCTURAL HANGERS IN HOLLOW CORE SLAB

DETAIL E VAR

SCALE: NONE



ELEVATION



SECTION THROUGH ENCASEMENT

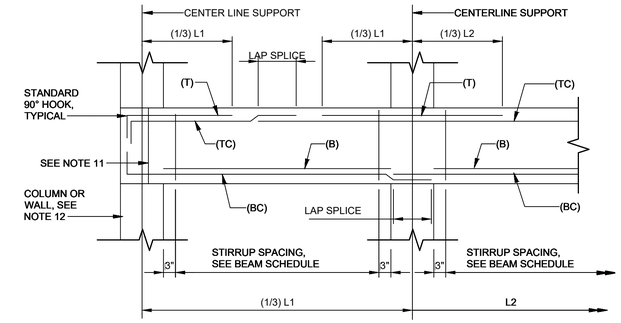
NOTES:

1. WHERE PIPE ENCASEMENT BEGINS OR TERMINATES AT STRUCTURE, EXTEND REINFORCING A MINIMUM OF 1'-0" INTO STRUCTURE.
2. CONCRETE ENCASE ALL PIPES UNDER STRUCTURES UNLESS SPECIFICALLY INDICATED OTHERWISE.
3. DIMENSION SHALL BE AS INDICATED ON DRAWINGS, IF NOT INDICATED, DIMENSION SHALL BE 6'-0".
4. WHEN DIMENSION "A" IS GREATER THAN 3'-8" THE STANDARD HOOK MAY BE OMITTED FROM THE BOTTOM END OF THE VERTICAL DOWELS.

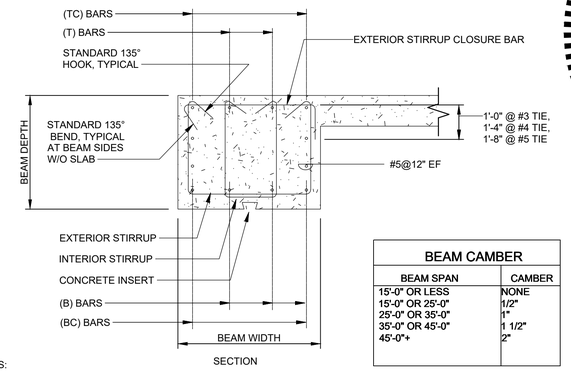
CONCRETE PIPE ENCASEMENT DETAIL

DETAIL F VAR

SCALE: NONE



ELEVATION



SECTION

BEAM CAMBER	
BEAM SPAN	CAMBER
15'-0" OR LESS	NONE
15'-0" OR 25'-0"	1/2"
25'-0" OR 35'-0"	1"
35'-0" OR 45'-0"	1 1/2"
45'-0"+	2"

NOTES:

1. LAP SPLICE LENGTH SHALL BE BASED ON SMALLER BAR SPLICED. WHEN BARS BEING SPLICED ARE INDENTICAL SIZES, LAP SPLICES ARE OPTIONAL.
2. UNLESS NOTED OTHERWISE, LEFT SUPPORT IS DESIGNATED AS THE SUPPORT CLOSEST TO THE LEFT SIDE OR BOTTOM OF THE SHEET ON WHICH THE FRAMING PLAN IS LOCATED.
3. LAP SPLICES ARE TO CONFORM TO GENERAL STRUCTURAL NOTES.
4. UNLESS NOTED OTHERWISE, WHERE BEAM DEPTH CHANGES AT A SUPPORT, (BC) BARS OF BEAMS ON BOTH SIDE OF THE SUPPORT SHALL BE EXTENDED TO THE FAR FACE OF THE SUPPORT AND TERMINATED WITH A STANDARD 90° HOOK.
5. WHERE BEAM DOES NOT SUPPORT OR WHERE BEAM PROJECTS ABOVE SLAB, PROVIDE ONE PIECE CLOSED STIRRUP.
6. NO CONDUIT OR PIPING SHALL PASS THROUGH A CONCRETE BEAM ALONG IT'S AXIS EXCEPT WHERE SPECIFICALLY INDICATED ON THE STRUCTURAL DRAWINGS. FOR CONDUITS OR PIPING PASSING PERPENDICULAR TO THE BEAM'S AXIS, SEE GENERAL STRUCTURAL NOTES.
7. WHERE ONLY ONE STIRRUP IS INDICATED, PROVIDE AN EXTERIOR STIRRUP. WHERE TWO STIRRUPS ARE INDICATED, PROVIDE BOTH AN INTERIOR AND EXTERIOR STIRRUP.
8. PROVIDE EXTERIOR STIRRUP CLOSURE BAR FOR EACH EXTERIOR STIRRUP;SIZE AND SPACING TO MATCH EXTERIOR STIRRUP.
9. PROVIDE CONTINUOUS CONCRETE INSERT ALONG BOTTOM OF BEAM WHERE INDICATED.
10. AT BEAMS CAST ON SOIL, FORM SIDES OF BEAM WITH AMICO STAY-FORM EXCEPT SIDES THAT ARE EXPOSED TO VIEW. PROVIDE 3" CLEARANCE FROM STAY-FORM TO BEAMS REINFORCING.
11. WHERE BEAM END IS EXPOSED TO VIEW, POCKET WALL (1/2 xWALL THICKNESS) OR 6", WHICHEVER IS GREATER.
12. WHERE NO COLUMN OR WALL EXISTS (CANTILEVER BEAM), EXTEND BOTH STIRRUPS AND (B) BARS TO BEAM'S END.

TYPICAL CONCRETE BEAM

DETAIL G VAR

SCALE: NONE

Brown AND Caldwell

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REVISIONS

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LINE IS 2 INCHES AT FULL SIZE

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DRAWN: M. CORNELISON
CHECKED: C. DIXON
CHECKED: J. MINADEO
APPROVED: A. SHAH

FILENAME
153586-S-00-502.DWG
BC PROJECT NUMBER
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CLIENT PROJECT NUMBER
6010881

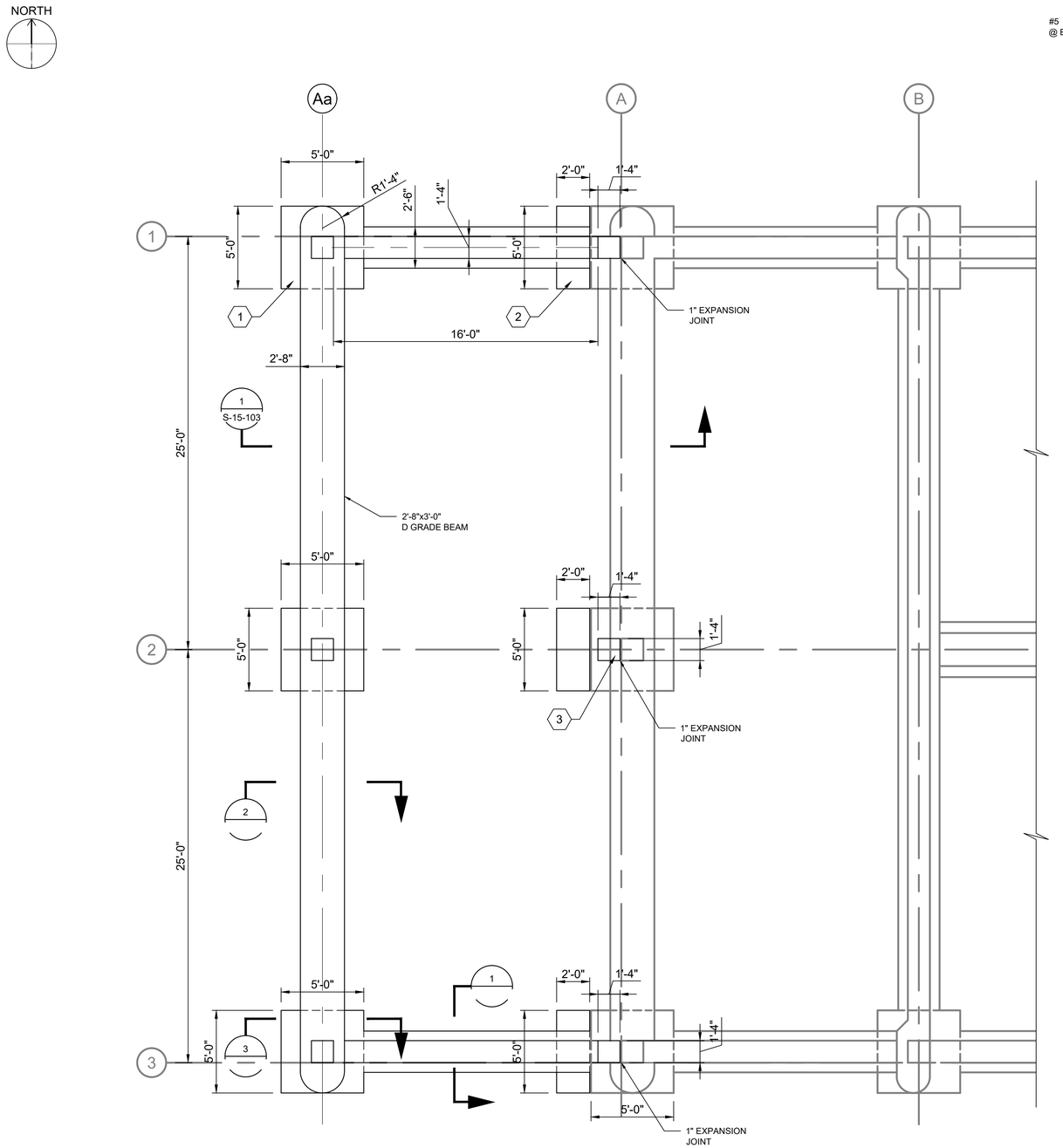
STRUCTURAL

STANDARD DETAILS 2

DRAWING NUMBER
S-00-502

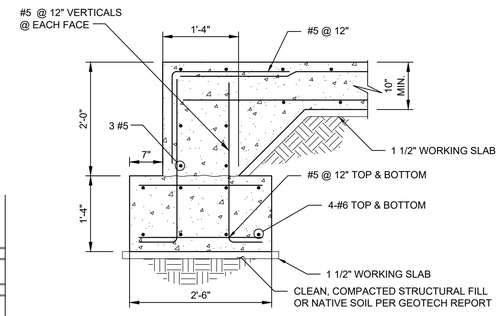
SHEET NUMBER 16 OF 63

PLOT DATE: 4/10/2020 5:49 PM CAD USER: BRETT SILLMAN FILENAME: 153586-S-00-502.DWG Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS



DEWATERING BUILDING TRUCK BAY EXPANSION FOUNDATION PLAN

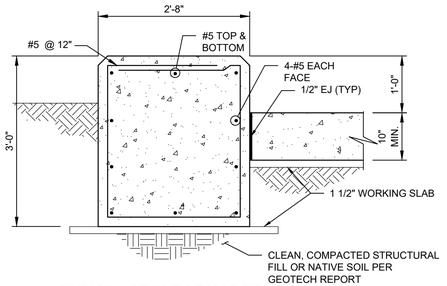
SCALE: 1/4" = 1'-0"



TYPICAL FOOTING DETAIL

DETAIL 1

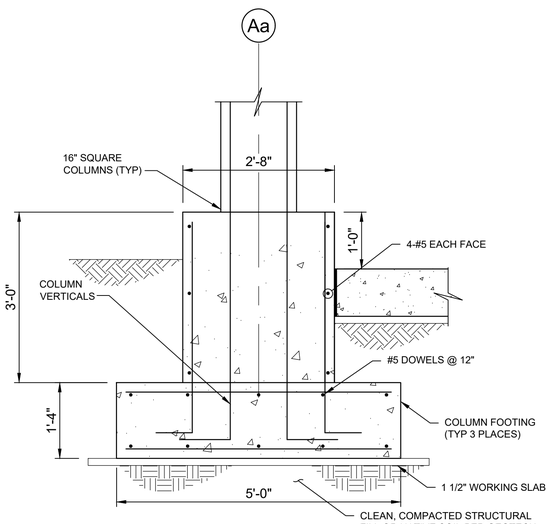
SCALE: 3/4" = 1'-0"



TYPICAL GRADE BEAM DETAIL

DETAIL 2

SCALE: 3/4" = 1'-0"



DETAIL 3 S-15-101

SCALE: 3/4"=1'-0"

GENERAL NOTES:

1. SEE STRUCTURAL NOTES AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
2. SEE CIVIL DRAWINGS FOR FINAL GRADE ELEVATIONS.
3. ALL PIPE RUNS AND CONDUIT RUNS UNDER THE TRUCK BAY FOOT PRINT SHALL BE CONCRETE ENCASED.

KEYNOTES:

1. 5'-0" SQUARE COLUMN FOOTING WITH (6) # 6 EQ. SPACED EACH WAY TOP & BOTTOM (TYP. AT 3 LOCATIONS AT COLUMN LINE Aa)
2. 2'-0" x 5'-0" x 1'-4" DEEP FOUNDATION EXTENSION TO EXISTING COLUMN FOOTING WITH # 6 @ 12"o.c. EACH WAY TOP & BOTTOM. DRILL AND EPOXY # 5 x 1'-4" DOWELS INTO EXISTING FOOTING @ 12" O.C. TOP AND BOTTOM. CLEAN EXISTING FOOTING SURFACE OF DEBRIS AND APPLY CHEMICAL BONDING AGENT PRIOR TO POUR. (TYP. AT 3 LOCATIONS AT COLUMN LINE A)
3. DEMO PORTION OF EXISTING CONCRETE GRADE BEAM AROUND EXISTING COLUMN FOR NEW COLUMN POUR. KEEP EXISTING REINFORCING FOR GRADE BEAM AS IT IS. REMOVE CONCRETE FROM EXISTING REINFORCING. CLEAN AND APPLY BONDING AGENT PRIOR TO NEW POUR. (TYP. AT 3 LOCATIONS AT COLUMN LINE A).

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ADARSH B. SHAH
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A. SHAH, PE 79948
No. 79948
STATE OF
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PROFESSIONAL ENGINEER

BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	A. BROWN
DRAWN:	M. CORNELISON
CHECKED:	C. DIXON
CHECKED:	J. MINADEO
APPROVED:	A. SHAH
FILENAME	153586-S-15-101.DWG
BC PROJECT NUMBER	153586
CLIENT PROJECT NUMBER	6010881

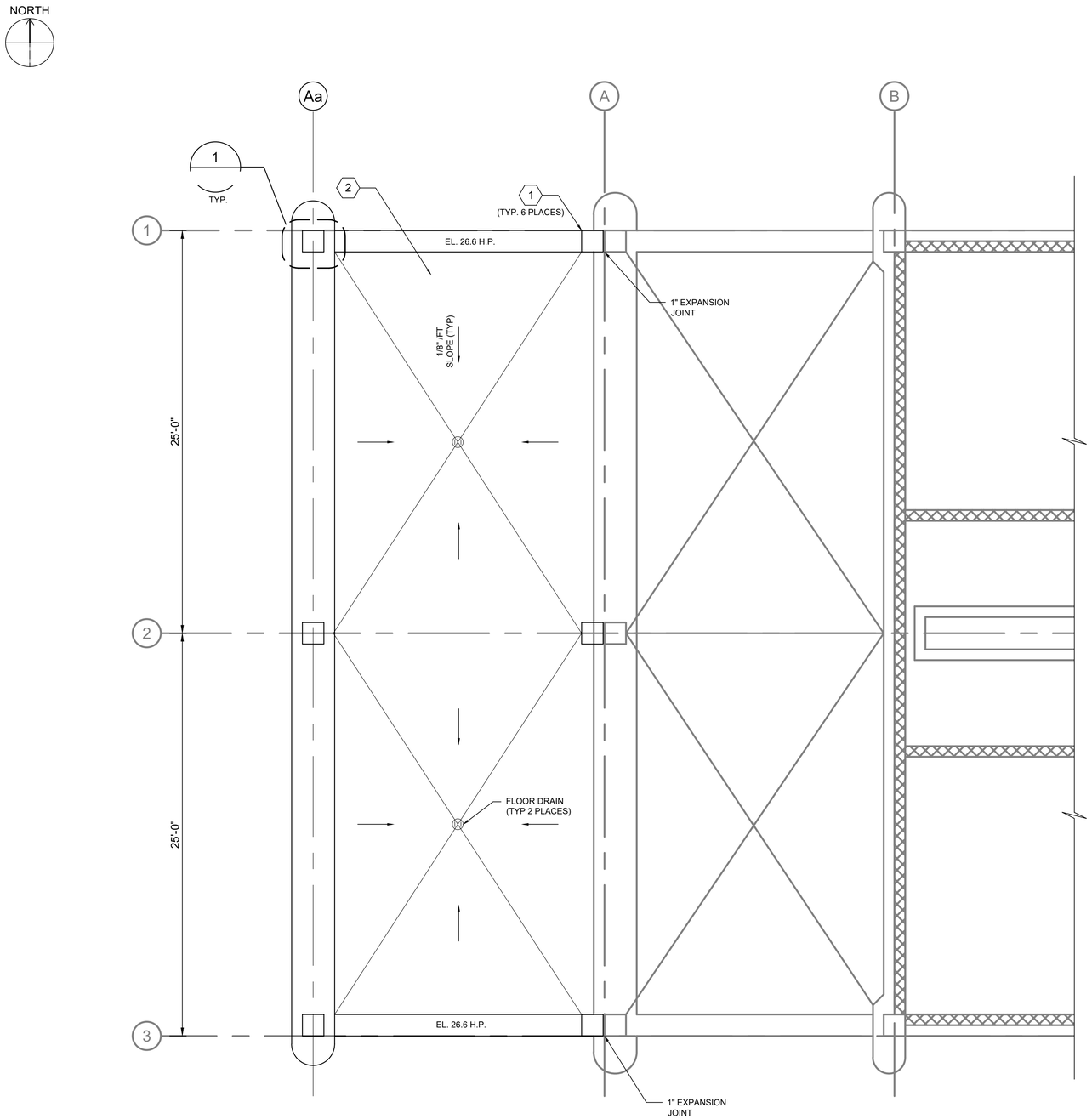
STRUCTURAL

TRUCK LOADING BAY FOUNDATION PLAN

DRAWING NUMBER
S-15-101

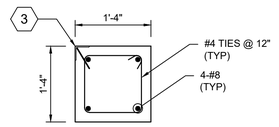
17 SHEET NUMBER OF 63

Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-S-15-101.DWG PLOT DATE: 4/10/2020 5:57 PM CAD USER: BRETT SILLMAN



DEWATERING BUILDING TRUCK BAY EXPANSION FLOOR PLAN

SCALE: 1/4" = 1'-0"



COLUMN DETAIL

DETAIL 1 S-15-102

SCALE: 3/4"=1'-0"

GENERAL NOTES:

1. SEE STRUCTURAL NOTES AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
2. SEE CIVIL DRAWINGS FOR FINAL GRADE ELEVATIONS.
3. ALL PIPE RUNS AND CONDUIT RUNS UNDER THE TRUCK BAY FOOT PRINT SHALL BE CONCRETE ENCASED.

KEYNOTES:

1. 16" SQUARE CONCRETE COLUMN. SEE TYPICAL COLUMN DETAIL SHOWN ON THIS SHEET FOR REINFORCING. REFER TO TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
2. TRUCK BAY BOTTOM SLAB SHALL BE MIN. 10" THICK WITH # 5 @ 12" EACH WAY TOP AND BOTTOM.
3. 10'-0" HIGH 3" x 3" x 1/4" HOT DIPPED GALVANIZD ANGLE W/ 3/4" DIA. X 6" LUGS AT 24" O.C. WELDED TO ANGLE AND CAST IN PLACE FLUSH WITH COLUMN SURFACE (TYPE @ ALL CORNERS). AVOID INTERFERENCE OF LUGS WITH REINFORCING.

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BID SET

Manatee County FLORIDA

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REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
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CHECKED: J. MINADEO
APPROVED: A. SHAH

FILENAME 153586-S-15-102.DWG
BC PROJECT NUMBER 153586
CLIENT PROJECT NUMBER 6010881

STRUCTURAL

TRUCK LOADING BAY FLOOR PLAN

DRAWING NUMBER S-15-102

SHEET NUMBER 18 OF 63

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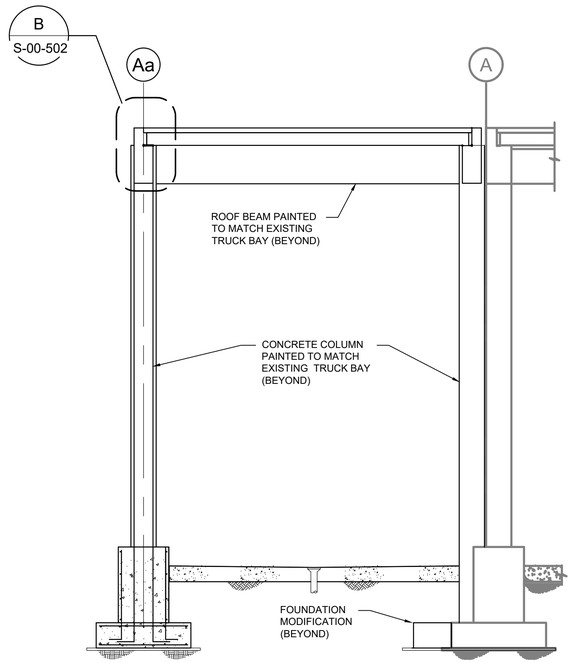
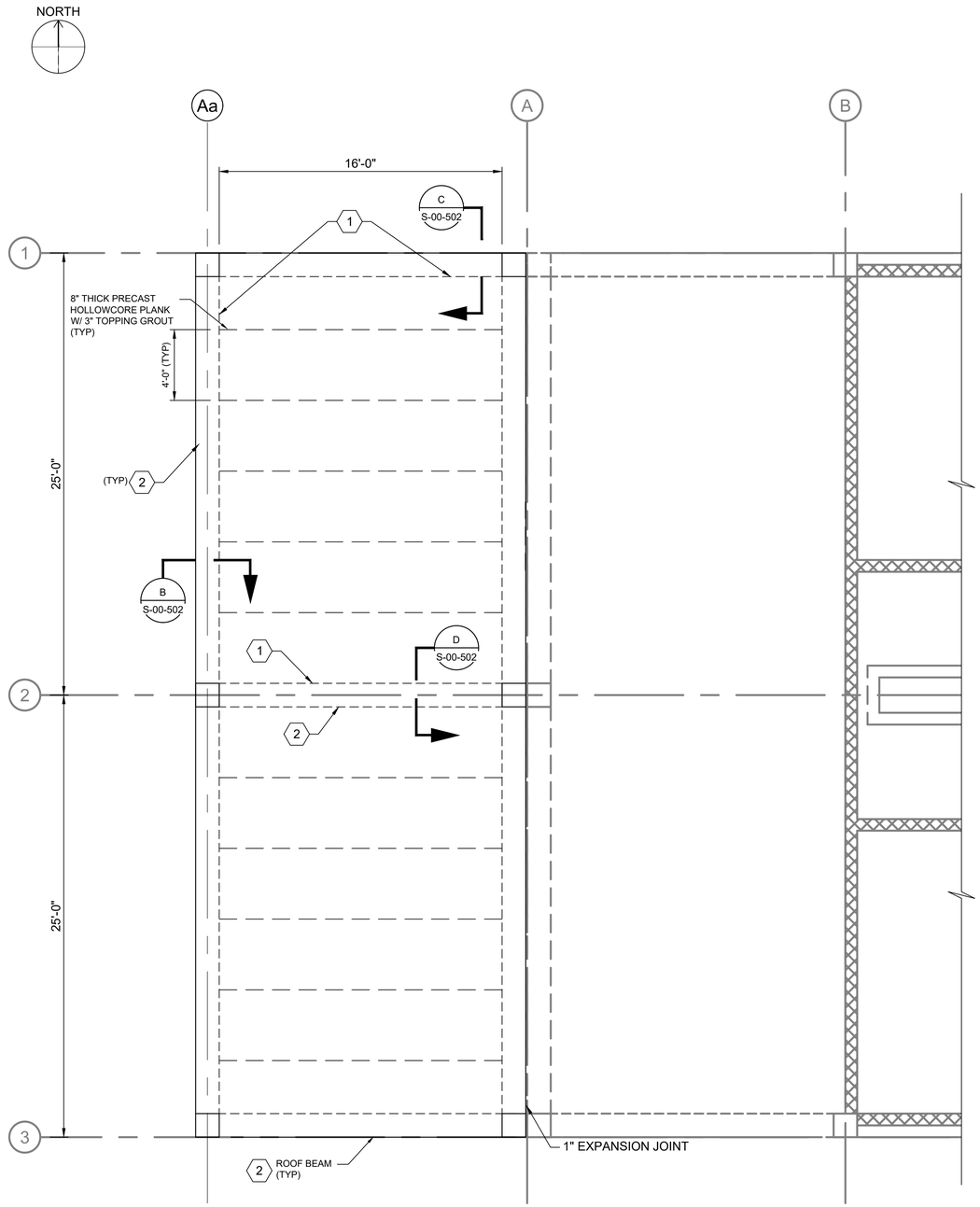


TRUCK BAY SECTION

SECTION 1 / S-15-101

SCALE: 1/4"=1'-0"



DEWATERING BUILDING TRUCK BAY EXPANSION ROOF FRAMING PLAN

SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. SEE STRUCTURAL GENERAL NOTES FOR ADDITIONAL INFORMATION.
2. ALL NEW CAST IN PLACE CONCRETE AND PRECAST HOLLOWCORE PLANK (EXPOSED TO VIEW) SHALL BE PAINTED TO MATCH EXISTING TRUCK BAY. REFER TO SPEC 09900 FOR MORE INFORMATION.
3. SEE SHEET S-15-104 FOR ROOF SLOPES AND ROOF DRAINAGE PLAN.

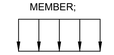
KEYNOTES:

1. PRECAST HOLLOWCORE PLANK CONNECTIONS, REFER TO SHEET S-00-502.
2. 24" DEEP x 1'-4" WIDE ROOF BEAM WITH (3) #8 TOP & BOTTOM AND #3 @ 8" o.c. STIRRUPS (TYP.) REFER TO SHEET S-00-502 FOR MORE DETAILS.

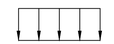
PRECAST MEMBER NOTES:

NOTES:

1. THE VENDOR OF PRECAST MEMBER SHALL DESIGN AND PROVIDE DRAWINGS AND CALCULATIONS STAMPED BY A PROFESSIONAL ENGINEER IN THE STATE OF FLORIDA FOR APPROVAL. REFER TO GENERAL NOTES AND SPECIFICATION SECTIONS 03410 FOR ADD'L INFO.
2. PRECAST MEMBER MANUFACTURER SHALL COORDINATE AND VERIFY ALL OPENINGS IN PRECAST MEMBER WITH ARCHITECTURAL AND HVAC DRAWINGS AND EQUIPMENT VENDOR'S SHOP DRAWINGS.
3. MINIMUM UNFACTORED DESIGN LOADS FOR PRECAST MEMBER;

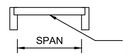


SELF-WEIGHT = 56 PSF (HOLLOWCORE PLANK) SUPERIMPOSED DEAD LOAD = 40 PSF, (3" TOPPING AND MISC) ROOF LIVE LOAD = 30 PSF (TOP & BOT)



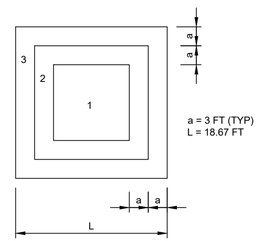
WIND LOAD (DOWNWARD) REFER TO BELOW WIND LOADS

WIND LOAD (UPWARD) REFER TO BELOW WIND LOADS



PRECAST DOUBLE TEE OR PRECAST HOLLOWCORE PLANK

4. ALL ITEMS EMBEDDED IN PRECAST MEMBER SHALL BE GALV. AND SUPPLIED BY THE PRECAST MEMBER MANUFACTURER.
5. ALL PRECAST MEMBER TO REST ON BEARING PADS SHALL BE DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF SPECIFICATION.
6. DESIGN OF PRECAST MEMBER FOR COMBINATIONS OF THESE LOADS IN ACCORDANCE WITH FBC SHALL BE THE RESPONSIBILITY OF THE PRECAST MEMBER MANUFACTURER.
7. ALL PRECAST ITEMS AND CONNECTION NOT SPECIFICALLY DETAILED SHALL BE PROVIDED BY THE PRECAST MEMBER MANUFACTURER.
8. COORDINATE LOCATION OF ITEMS TO BE EMBEDDED IN CAST-IN-PLACE BEAMS FOR CONNECTION TO ROOF TEES WITH PRECAST MEMBER MANUFACTURER.



COMPONENT & CLADDING WIND PRESSURE TABLE				
AREA	ZONE DESCRIPTION	EFFECTIVE WIND AREA (SF)	PRESSURE (PSF) POSITIVE	PRESSURE (PSF) NEGATIVE
ROOF	3	9	96.2	-132.3
		>9, <36	72.1	-68.1
		>36	48.1	-44.1
	2	9	72.1	-68.1
		>9, <36	75.1	-68.1
		>36	48.1	-44.1
	1	9	48.1	-44.1
		>9, <36		
		>36		

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PROFESSIONAL ENGINEER

BID SET

Manatee County FLORIDA

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REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	A. BROWN
DRAWN:	M. CORNELISON
CHECKED:	C. DIXON
CHECKED:	J. MINADEO
APPROVED:	A. SHAH
FILENAME	153586-S-15-103.DWG
BC PROJECT NUMBER	153586
CLIENT PROJECT NUMBER	6010881

STRUCTURAL

TRUCK LOADING BAY ROOF FRAMING PLAN

DRAWING NUMBER
S-15-103

SHEET NUMBER 19 OF 63

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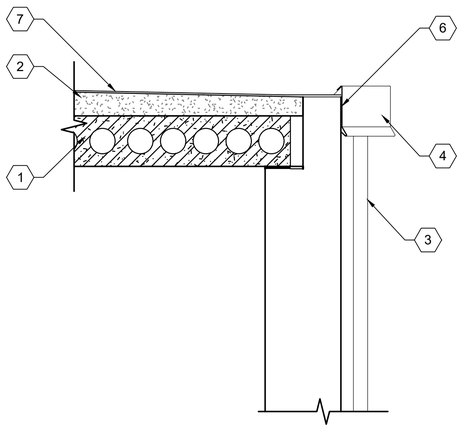
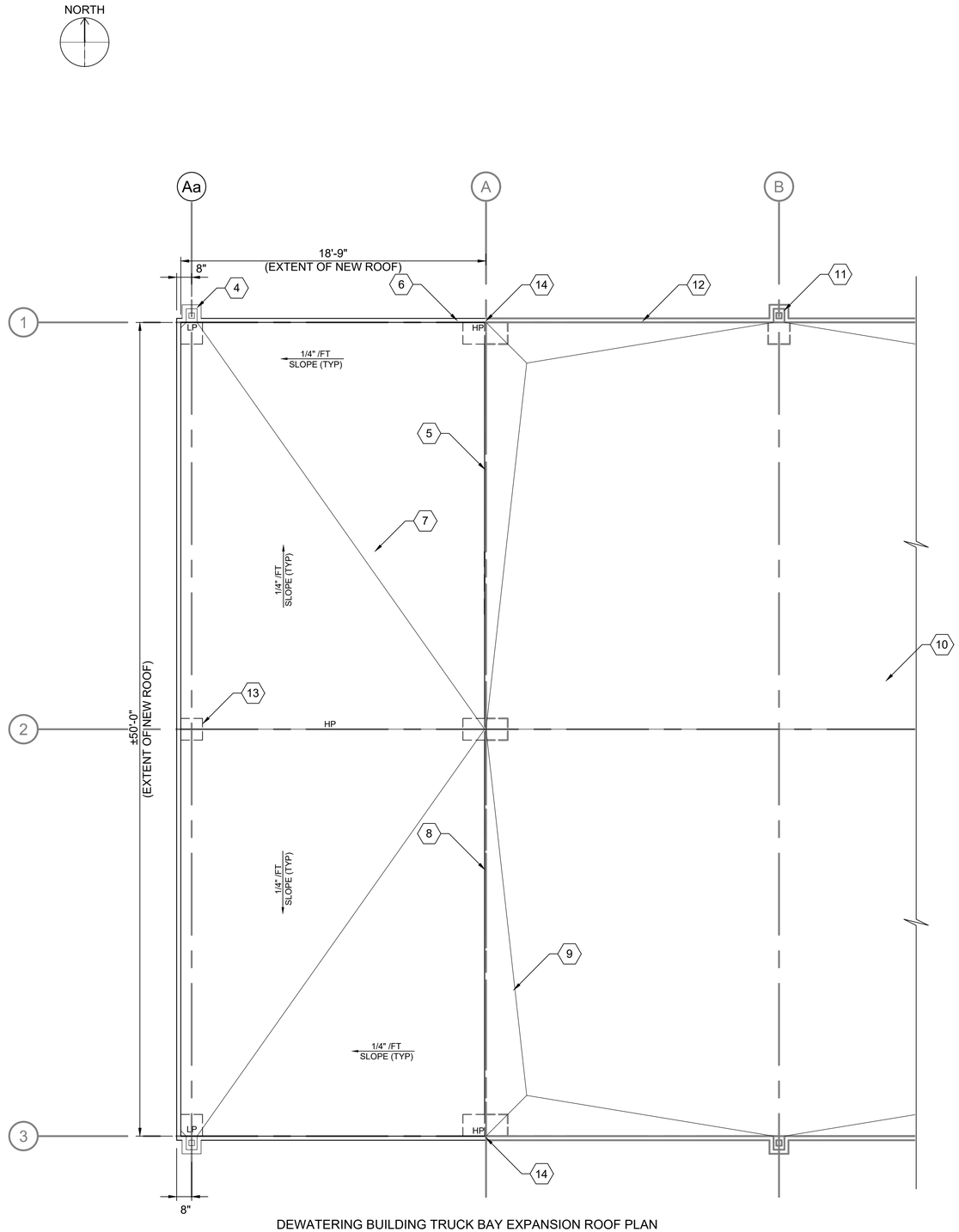


ROOF DRAIN DETAIL

SCALE: 1" = 1'-0"



DEWATERING BUILDING TRUCK BAY EXPANSION ROOF PLAN

SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. SEE STRUCTURAL GENERAL NOTES FOR ADDITIONAL INFORMATION.

ROOFING NOTES:

1. FIELD VERIFY THE SLOPE OF THE EXISTING ROOF AND CONFIRM THE TRANSITION WITH THE PROPOSED ROOF SLOPE.
2. PRIOR TO THE MODIFICATIONS TO THE EXISTING ROOFING SYSTEM AND ASSOCIATED WORK, THE CONTRACTOR SHALL SCHEDULE AND MEET AT THE SITE WITH THE ROOFING INSTALLER.
3. CONTRACTOR SHALL SUBMIT ALL DETAILS REQUIRING CONSIDERATION AND THE PERFORMANCE OF THE DETAILS SHALL BE APPROVED BY THE ROOFING MANUFACTURER FOR GUARANTEED CONSTRUCTION.
4. AT THE COMPLETION OF THE WORK, THE CONTRACTOR SHALL PROVIDE A MODIFIED ROOFING WARRANTY THAT INCLUDES ALL OF THE MODIFICATIONS UNDER THIS CONTRACT.

KEYNOTES:

1. 8" PRECAST HOLLOWCORE PLANKS, REFER TO SHEET S-00-501
2. 3" MIN SLOPED TOPPING TO MATCH EXISTING
3. DOWNSPOUT TO MATCH EXISTING IN SIZE, COLOR AND MATERIAL (TYP OF 2)
4. SUMP TO MATCH EXISTING IN SIZE, COLOR AND MATERIAL
5. PROVIDE TRANSITION FLASHING BETWEEN NEW AND EXISTING ROOF SYSTEMS
6. METAL COPING FASCIA TO MATCH EXISTING IN COLOR, SIZE AND MATERIAL
7. MEMBRANE ROOF SYSTEM TO MATCH EXISTING IN COLOR, THICKNESS AND TYPE OF INSTALLATION
8. REMOVE EXISTING METAL COPING
9. EXISTING SLOPE
10. EXISTING MEMBRANE ROOF
11. EXISTING, SUMP AND DOWNSPOUT
12. EXISTING METAL COPING FASCIA
13. COLUMN BELOW
14. PROVIDE TRANSITION COPING FASCIA FLASHING BETWEEN THE PROPOSED AND EXISTING COPING FASCIA

ABBREVIATIONS:

LP - INDICATES LOW POINT

HP - INDICATES HIGH POINT

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PROFESSIONAL ENGINEER

BID SET

Manatee County FLORIDA

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REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: C. DIXON
CHECKED: J. MINADEO
APPROVED: A. SHAH
FILENAME 153586-S-15-104.DWG
BC PROJECT NUMBER 153586
CLIENT PROJECT NUMBER 6010881

STRUCTURAL

TRUCK LOADING BAY ROOF PLAN

DRAWING NUMBER
S-15-104

SHEET NUMBER 20 OF 63

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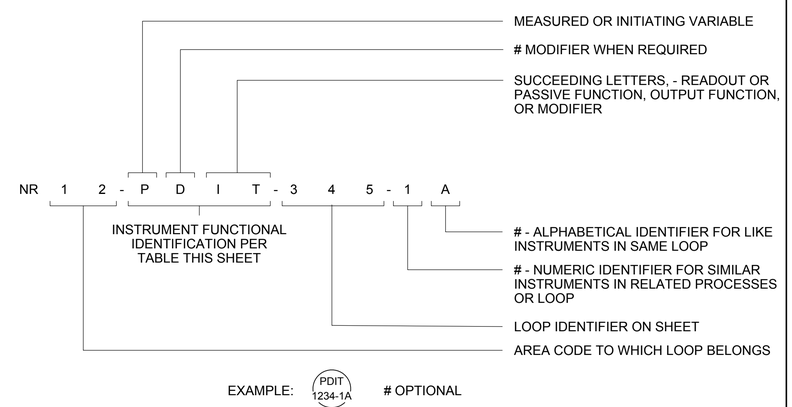
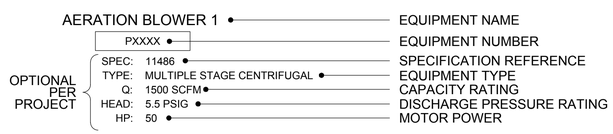
FUNCTIONAL IDENTIFICATION

VARIABLE	MEASURED OR INITIATING VARIABLE DESCRIPTION	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION				
C	CONDUCTIVITY			CONTROL	CLOSE
D	DENSITY, SPECIFIC GRAVITY	DIFFERENTIAL			DEVIATION
E	VOLTAGE, SOLENOID		PRIMARY ELEMENT		
F	FLOW, FLOW RATE	RATIO			
G	FIRE, SMOKE		GLASS		
H	HAND				HIGH
I	CURRENT		INDICATE		
J	POWER		SCAN		
K	TIME, SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOISTURE, HUMIDITY, MOTION	MOMENTARY			MIDDLE, INTERMEDIATE
N	EQUIPMENT STATUS				
O	DISSOLVED OXYGEN		ORIFICE		OPEN
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		RUN
S	SPEED, FREQUENCY	SAFETY		SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE, TORQUE		WELL, PROBE		
X	UNCLASSIFIED	X AXIS			
Y	EVENT, STATE OR PRESENCE	Y AXIS		AUXILIARY DEVICES	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, FINAL CONTROL ELEMENT	

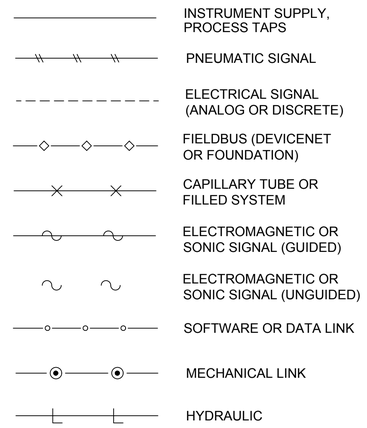
INSTRUMENT TAG AND LOOP IDENTIFICATION



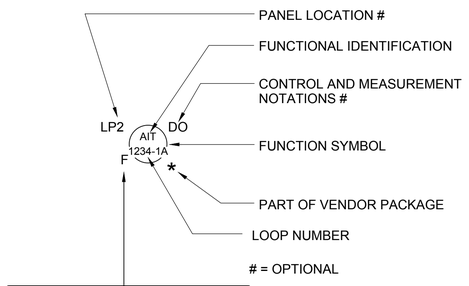
EQUIPMENT IDENTIFICATION SYSTEM



INSTRUMENT SIGNAL LINES



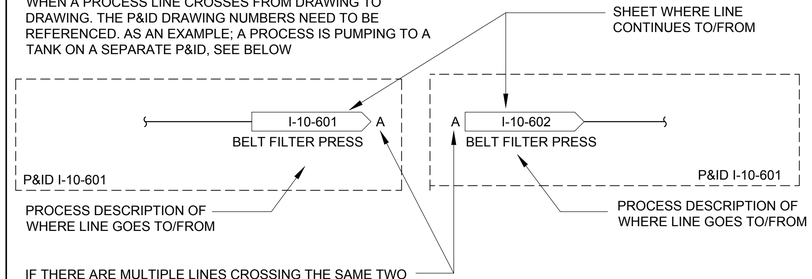
TYPICAL INSTRUMENT IDENTIFICATION



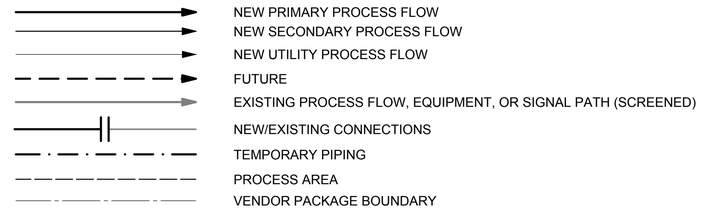
NETWORK TYPE	
F	FOUNDATION FIELDBUS
D	DEVICENET
E	ETHERNET
P	PROFIBUS
PN	PROFINET
M-RTU	MODBUS RTU
M-TCP	MODBUS TCP
CIP	CONTROL INDUSTRIAL PROTOCOL
E-SNMP	SIMPLE NETWORK MANAGEMENT PROTOCOL

PROCESS AND SIGNAL CROSS REFERENCE SYSTEM

WHEN A PROCESS LINE CROSSES FROM DRAWING TO DRAWING. THE P&ID DRAWING NUMBERS NEED TO BE REFERENCED. AS AN EXAMPLE; A PROCESS IS PUMPING TO A TANK ON A SEPARATE P&ID, SEE BELOW



PROCESS LINES



CONTROL AND MEASUREMENT NOTATIONS

ACK	ACKNOWLEDGE
AM	AUTO/MAN
BYP	BYPASS
CL	CLOSE
CL2	CHLORINE
CMAT	COMPUTER/MANUAL/AUTO/TRACKING
COMB	COMBUSTIBLE GAS
CP	CONTROL POWER
COND	CONDUCTIVITY
DEC	DECREASE
DO	DISSOLVED OXYGEN
ESP	EMERGENCY STOP
FORA	FORWARD/OFF/REVERSE/AUTO
FWD	FORWARD
F/R	FORWARD/REVERSE
F/S	FAST/SLOW
HLOA	HIGH/LOW/OFF/AUTO
HOA	HAND/OFF/AUTO
HOAL	HAND/OFF/AUTO/LOCAL
HOR	HAND/OFF/REMOTE
INC	INCREASE
JOA	JOG/OFF/AUTO
LL	LEAD/LAG
LOR	LOCAL/OFF/REMOTE
LOS	LOCKOUT STOP
L/R	LOCAL/REMOTE
M/A LS	MAN/AUTO LOADING STATION
OCA	OPEN/CLOSE/AUTO
OCP	PURGE VALVE OP/CL/PC
OL	OVERLOAD
OP	OPEN
OSC/LP	OPEN/STOP/CLOSE WITH LOCAL/REMOTE SELECT
PA	PAUSE
PAL	LOW PRESSURE
PB	PUSH BUTTON
pH	pH
POT	POTENTIOMETER
RDY	READY
REV	REVERSE
RNG	RUNNING
ROF	REVERSE/OFF/FORWARD
RST	RESET
SO2	SULFUR DIOXIDE
SP	STOP
ST	START
SS	START/STOP
TCP	TEST/CLOSE/PC
T/S	TEST/NORMAL/SILENCE
TBL	TROUBLE

GENERAL NOTES:

1. THIS DRAWING IS GENERAL IN NATURE. SOME SYMBOLS AND IDENTIFICATIONS SHOWN HEREON MAY NOT BE USED ON THE CONTRACT DRAWINGS.
2. SYMBOLS ARE ARRANGED ON SPECIFIC DRAWINGS AND IN CATEGORIES FOR CONVENIENCE ONLY; SYMBOLS MAY BE USED ON ANY OF THE CONTRACT DRAWINGS.

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RYAN A. ABRAHIEM LICENSE No. 73843 STATE OF FLORIDA PROFESSIONAL ENGINEER

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REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

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CHECKED: H. SERRANO
CHECKED: A. MODY
APPROVED: R. ABRAHIEM

FILENAME
I-00-001.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

INSTRUMENTATION

LEGEND AND SYMBOLS - 1

DRAWING NUMBER
I-00-001

21 SHEET NUMBER OF 63

MISCELLANEOUS SYMBOLS

- MCC (MOTOR CONTROL/STARTER)
- PURGE OR FLUSHING DEVICE
- RESET FOR LATCH-TYPE OPERATOR
- SEAL WATER CONTROL UNIT
- INTERLOCKING OR CONTROL FUNCTION
- INTRINSIC SAFETY BARRIER
- DISCRETE INPUT
- DISCRETE OUTPUT
- ANALOG INPUT
- ANALOG OUTPUT
- CAMERA (CCTV)
- VFD — VARIABLE FREQUENCY DRIVE
- VSD — VARIABLE SPEED DRIVE

ACTUATORS/MOTORS/POWER

- ASD — ADJUSTABLE SPEED DRIVE (MECHANICAL)
- ROTARY PISTON ACTUATORS, VALVE OR GATE
- LINEAR PISTON ACTUATORS, VALVE OR GATE
- SOLENOID ACTUATOR, VALVE
- MANUAL OR HAND ACTUATOR, VALVE OR GATE (OR BLANK)
- MOTOR (ACTUATOR, VALVE , GATE OR EQUIPMENT)
- ENGINE
- EJECTOR, PNEUMATIC
- GENERATOR

PRIMARY ELEMENT SYMBOLS

- ORIFICE PLATE
- VENTURI OR FLOW TUBE
- NOZZLE FLOW
- PITOT TUBE
- PROPELLER OR TURBINE METER
- FLUME
- WEIR
- VARIABLE AREA FLOW INDICATOR (ROTAMETER) — OR — FI
- DIAPHRAGM SEAL
- IN-LINE ANNULAR SEAL
- MAGNETIC FLOWMETER
- SONIC FLOWMETER (DOPPLER OR TRANSIT TIME)
- POSITIVE DISPLACEMENT METER
- THERMAL FLOW ELEMENT
- VORTEX FLOW ELEMENT
- CORIOLIS FLOW ELEMENT
- FLOAT LEVEL ELEMENT
- ULTRASONIC LEVEL ELEMENT
- BUBBLER LEVEL TUBE
- SUBMERSIBLE LEVEL TRANSMITTER
- HYDROSTATIC LEVEL PROBE
- RADAR OR ULTRASONIC LEVEL ELEMENT
- ANNUBAR, PITOT TUBE
- AVERAGING PITOT TUBE

VALVES

NORMALLY OPEN		NORMALLY CLOSED
	GATE VALVE	
	PLUG VALVE	
	BALL VALVE	
	GLOBE VALVE	
	NEEDLE VALVE	
	KNIFE GATE VALVE	
	DIAPHRAGM VALVE	
	BUTTERFLY VALVE	
	ANGLE VALVE	
	THREE WAY VALVE	
	FOUR WAY VALVE	
	FLOAT VALVE	
	PINCH VALVE	
	BALANCING COCK	
	THERMOSTATICALLY CONTROLLED VALVE	

- DOUBLE LEAF CHECK VALVE
- CHECK VALVE
- BALL CHECK VALVE
- PUMP DISCHARGE VALVE
- GAUGE OR ROOT VALVE
- PRESSURE AND VACUUM RELIEF VALVE
- VACUUM RELIEF VALVE
- PRESSURE RELIEF VALVE
- IN-LINE SPRING LOADED RELIEF VALVE
- PRESSURE REGULATING VALVE (SELF-CONTAINED)
- BACK PRESSURE REGULATING VALVE (SELF-CONTAINED)
- FUSIBLE LINK

- SOLENOID VALVE
- DIAPHRAGM OPERATED VALVE
- PRESSURE BALANCE OPERATED VALVE
- MOTOR OPERATED VALVE
- MOTOR OPERATED VALVE, MODULATING

NOTE: USE VALVE BODY SYMBOL TO MATCH TYPE OF VALVE.

- PISTON OPERATED VALVE
- TELESCOPING VALVE
- MUD VALVE
- ANTI SIPHON VALVE
- LIFT CHECK VALVE
- BRAIDED FLEX CONNECTOR

FUNCTION SYMBOLS

- SHARED DISPLAY, PROCESS CONTROL SYSTEM
- SOFTWARE FUNCTIONALITY
- FIELD OR PANEL DEVICE

LOCATION AND ACCESSIBILITY MODIFIERS FOR FUNCTION SYMBOLS

- STAND ALONE DEVICE, OPERATOR ACCESSIBLE
- LOCATED ON FRONT OF PANEL OR CONSOLE, OPERATOR ACCESSIBLE
- LOCATED IN REAR OF PANEL OR CONSOLE, OPERATOR INACCESSIBLE

INSTRUMENTATION SYMBOLS

- INTEGRAL INSTRUMENT — PRIMARY ELEMENT SYMBOL
- CLOSE COUPLED INSTRUMENT — PRIMARY ELEMENT SYMBOL
- SEPARATE OR REMOTE MOUNTED INSTRUMENT — PRIMARY ELEMENT SYMBOL
- MULTI VARIABLE INSTRUMENT
- SEPARATE OR REMOTE MOUNTED INSTRUMENT — PRIMARY ELEMENT SYMBOL — FLANGE OR ELEMENT TAPS
- SEPARATE OR REMOTE MOUNTED INSTRUMENT — PRIMARY ELEMENT SYMBOL — PIPE TAPS
- SEPARATE OR REMOTE MOUNTED INSTRUMENT — PRIMARY ELEMENT SYMBOL — COMBINATION TAPS
- SINGLE VARIABLE INSTRUMENT

SLIDE AND SLUICE GATES

NORMALLY OPEN		NORMALLY CLOSED
	FLAP GATE	
NO	BUTTERFLY GATE	NC
	STOP GATE	
	SLIDE GATE	
	SLUICE GATE	

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Brown AND Caldwell
Certificate of Authorization No. 2602
6151 Lake Osprey Drive, 3rd Floor
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RYAN A. ABRAHIEM — LICENSE No. 73843 — STATE OF FLORIDA — PROFESSIONAL ENGINEER

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BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: R.ABRAHIEM
DRAWN: R.DESAI
CHECKED: H. SERRANO
CHECKED: A. MODY
APPROVED: R.ABRAHIEM
FILENAME: I-00-002.DWG
BC PROJECT NUMBER: 153586
CLIENT PROJECT NUMBER: 6010881

INSTRUMENTATION

LEGEND AND SYMBOLS - 2

DRAWING NUMBER: I-00-002

SHEET NUMBER 22 OF 63

PUMPS

- PUMP, CENTRIFUGAL
- PUMP, DIAGHRAGM
- PUMP, GEAR
- PUMP, METERING
- PUMP, PERISTALTIC
- PUMP, PROGRESSING CAVITY
- PUMP, ROTARY LOBE
- PUMP, SUBMERSIBLE
- PUMP, JET
- PUMP, VERTICAL

BLOWERS/COMPRESSORS

- BLOWER OR CENTRIFUGAL FAN
- BLOWER OR COMPRESSOR, LIQUID RING
- BLOWER OR COMPRESSOR, ROTARY LOBE
- COMPRESSOR, ROTARY SCREW
- COMPRESSOR, ROTARY SLIDING VANE
- COMPRESSOR, PISTON

PIPE LINE DEVICES

- TRAP (T)
- SEDIMENT TRAP
- GAS DRIP TRAP (DT)
- SEPARATOR/ DRYER
- PIPELINE FILTER
- RUPTURE DISK (VACUUM RELIEF)
- RUPTURE DISK (PRESSURE RELIEF)
- CONNECTION BETWEEN NEW AND EXISTING PIPING
- UNION
- QUICK CONNECTOR
- CAP OR PLUG
- BLIND FLANGE
- FLEX CONNECTOR
- FABRIC EXPANSION JOINT
- VENT TO ROOF
- VENT
- STEAM VENT
- AUTOMATIC VENT
- MANUAL VENT
- STRAINERS
- FOOT VALVE
- AIR SEPARATOR
- DRAIN (D)
- DRAIN VALVE (DV)
- CALIBRATION CHAMBER
- PULSATION DAMPENER
- INJECTOR
- FLAME TRAP
- FLAME TRAP WITH THERMO SHUTOFF ASSEMBLY
- FLAME CHECK
- SAMPLING AND FLUSHING CONNECTIONS
- SUCTION DIFFUSER
- TEMPERATURE WELL
- FLOW STRAIGHTENING VANES
- PRESSURE REDUCING ASSEMBLY (PRA)
- AMMONIA UNION
- DAMPER
- SIGHT GLASS
- PIG LAUNCHER/ RECEIVER
- REDUCER
- FLEX COUPLING

HVAC RELATED

- FAN, INLINE
- CHILLER
- FILTER OR FILTER-SILENCER INLET AIR
- BOILER
- CHILLER

MIXERS

- MIXER
- DRAFT TUBE MIXER
- MIXER, INLINE STATIC

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DRAWN:	R.DESAI
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CHECKED:	A. MODY
APPROVED:	R.ABRAHIEM
FILENAME	I-00-003.DWG
BC PROJECT NUMBER	153586
CLIENT PROJECT NUMBER	6010881

INSTRUMENTATION

LEGEND AND SYMBOLS - 3

DRAWING NUMBER
I-00-003

SHEET NUMBER 23 OF 63

SCREENINGS/CONVEYORS

- SCREEN, FINE OR BAR
- SCREEN, ROTARY OVERFLOW
- CLASSIFIER OR GRIT WASHER
- CONVEYOR
- HYDROCYCLONE
- SCREENINGS PRESS
- GRIT SEPARATOR
- GRIT CYCLONE
- VORTEX TYPE GRIT SEPARATOR

MISC. EQUIPMENT

- SILENCER
- REDUCED PRESSURE BACKFLOW PREVENTER
- BURNER, WASTE GAS
- HEAT TRACE
- DIFFUSER HEADER SPRAY NOZZLES
- MIST ELIMINATOR
- SAMPLER
- JET NOZZLE
- SPRAY NOZZLE
- RECEIVER OR PRESSURE VESSEL
- TANK, NON-PRESSURE TYPE
- TANK, DOUBLE-WALLED
- MOTORIZED STRAINER
- ULTRAVIOLET BANK
- TRUCK

SLUDGE, SCUM AND SOLIDS EQUIPMENT

- GRINDER — INLINE GRINDER
- OR — HOPPER
- SUBMERGED LAUNDER
- BAFFLE
- SUBMERGED ORIFICE WITH V-NOTCH WEIR
- LAUNDER AND WEIR
- M — SCUM TIPPING TROUGH
- HELICAL SKIMMER
- CENTRIFUGE
- SLUDGE SCRAPER
- CHAIN AND FLIGHT COLLECTOR (CROSS)
- CHAIN AND FLIGHT COLLECTOR (LONGITUDINAL)
- GRAVITY BELT THICKENER
- CIRCULAR CENTER FEED COLLECTOR MECHANISM
- M — SLUDGE DEWATERING SCREW PRESS
- BELT FILTER PRESS
- M, M — ROTATING DRUM THICKENER
- DISSOLVED AIR FLOTATION THICKENER (DAFT)

FEEDERS

- M — MICROSAND FEEDER
- M — DRY POLYMER FEEDER
- IA
- INJECTOR

HEAT EXCHANGERS

- SHELL AND TUBE HEAT EXCHANGER
- HEAT EXCHANGER PLATE TYPE
- HEAT EXCHANGER SPIRAL TYPE
- HEAT EXCHANGER STRAIGHT TUBE TYPE
- HEAT EXCHANGER U-TUBE TYPE

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CHECKED:	A. MODY
APPROVED:	R.ABRAHIEM

FILENAME
I-00-004.DWG

BC PROJECT NUMBER
153586

CLIENT PROJECT NUMBER
6010881

INSTRUMENTATION

LEGEND AND SYMBOLS - 4

DRAWING NUMBER
I-00-004

SHEET NUMBER 24 OF 63

Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS\INSTRUMENTATION FILENAME: I-00-004.DWG PLOT DATE: 3/31/2020 2:07 PM CAD USER: ALEX EASTON

PIPING SYSTEMS

ABBREVIATION	SERVICE
A	AERATION AIR
AA	AGITATION AIR
AFE	AIR FLOTATION EFFLUENT
AL	ALUM
AW	APPLIED WATER
B	BRINE
BA	BACKWASH AIR
BC	BIOFILTER CIRCULATION
BCTL	BOILER CHEMICAL TREATMENT, LOW PRESSURE
BCTM	BOILER CHEMICAL TREATMENT, MEDIUM PRESSURE
BDL	BOILER BLOWDOWN, LOW PRESSURE
BDM	BOILER BLOWDOWN, MEDIUM PRESSURE
BFE	BIOFILTER EFFLUENT
BFL	BIOFILTER FEEDWATER, LOW PRESSURE
BFM	BIOFILTER FEEDWATER, MEDIUM PRESSURE
BW	BACKWASH WATER
CCW	CONDENSER COOLING WATER
CD	CHEMICAL DRAIN
CEN	CENTRATE
CF	CENTRIFUGE FEED
CL	CONDENSATE, LOW PRESSURE
CLG	CHLORINE GAS
CLL	CHLORINE LIQUID
CLS	CHLORINE SOLUTION
CLV	CHLORINE VACUUM
CM	CONDENSATE, MEDIUM PRESSURE
CS	CIRCULATING SLUDGE
CSO	CAUSTIC SODA
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
D	DRAIN
DIW	DEIONIZED WATER
DS	DIGESTED SLUDGE
DSF	DIESEL FUEL
DSS	SCREENED DIGESTED SLUDGE
DW	DISTILLED WATER
EE	ENGINE EXHAUST
ES	EQUALIZED SLUDGE
F	FLOAT
FA	FOUL AIR
FC	FERRIC CHLORIDE
FLT	FILTRATE
FS	FLOTATION SLUDGE
FW	FILTERED WATER

ABBREVIATION	SERVICE
GAS	GASOLINE
GAV	GAS VAPOR RETURN
GC	GAS CIRCULATION
GR	GRIT
HOH	HIGH PRESSURE HYDRAULIC OIL
HRR	HEAT RESERVOIR RETURN
HRS	HEAT RESERVOIR SUPPLY
HRW	RECIRCULATING POTABLE HOT WATER
HSG	HIGH PRESSURE SLUDGE GAS
HW	POTABLE HOT WATER
HWR	LOW TEMPERATURE HEATING RETURN
HWS	LOW TEMPERATURE HEATING SUPPLY
IA	INSTRUMENT AIR
JWR	JACKET WATER RETURN
JWS	JACKET WATER SUPPLY
LOR	LUBE OIL RETURN
LOS	LUBE OIL SUPPLY
LOW	LUBE OIL WASTE
LSG	LOW PRESSURE SLUDGE GAS
MG	MIXED GAS
ML	MIXED LIQUOR
MS	MIXED SLUDGE
MSG	MEDIUM PRESSURE SLUDGE GAS
MTWR	MEDIUM TEMPERATURE HEATING RETURN
MTWS	MEDIUM TEMPERATURE HEATING SUPPLY
NG	NATURAL GAS
OF	OVERFLOW
OLP	OXYGEN LOW PRESSURE
PD	PUMPED DRAINAGE
PE	PRIMARY EFFLUENT
POL	POLYMER
PS	PRIMARY SLUDGE
PSC	PRIMARY SCUM
RAS	RETURN ACTIVATED SLUDGE
RS	RAW SEWAGE
RW	RAW WATER
RWP	RAINWATER PIPE
RWR	RECLAIMED WATER
SA	SERVICE AIR
SCR	STEAM CLEAN RINSE

ABBREVIATION	SERVICE
SCR	STEAM CLEAN RINSE
SCS	STEAM CLEAN SUPPLY
SD	SANITARY DRAIN
SDG	SULFUR DIOXIDE GAS
SDL	SULFUR DIOXIDE LIQUID
SDS	SULFUR DIOXIDE SOLUTION
SDV	SULPHUR DIOXIDE VACUUM
SE	SECONDARY EFFLUENT
SEP	SEPTAGE
SN	SUPERNATANT
SS	SECONDARY SLUDGE
SSC	SECONDARY SCUM
STA	STARTING AIR
STD	STORM DRAIN
STML	STEAM, LOW PRESSURE
STMM	STEAM, MEDIUM PRESSURE
TD	TANK DRAIN
TE	THICKENER EFFLUENT
THS	THICKENED SLUDGE
TO	THICKENER OVERFLOW
TS	TRANSFER SLUDGE
TSC	THICKENED SCUM
TWAS	THICKENED WASTE ACTIVATED SLUDGE
V	VENT
VA	VACUUM
VC	CHEMICAL VENT
VP	PETROLEUM VENT
VSL	STEAM VENT, LOW PRESSURE
VSM	STEAM VENT, MEDIUM PRESSURE
WAS	WASTE ACTIVATED SLUDGE
WML	WASTE MIXED LIQUOR
1W	POTABLE WATER (CITY WATER)
1WS	POTABLE SOFT WATER
2W	NONPOTABLE CITY WATER
2WHP	NO. 2 WATER HIGH PRESSURE
2WL	LANDSCAPE IRRIGATION
2WS	SOFTENED NONPOTABLE CITY WATER
3W	NO.3 WATER (SECONDARY EFFLUENT)
3WHP	NO. 3 WATER HIGH PRESSURE
3WLC	NO. 3 WATER LOW PRESSURE CHLORINATED
3WLP	NO. 3 WATER LOW PRESSURE
3WS	NO. 3 SPRAY WATER

EQUIPMENT PREFIXES

A	AERATOR	EB	ENGINE BLOWER MODULE		EQUIPMENT	TBN	TURBINE
ACC	AIR CONDITION COIL	EG	ENGINE GENERATOR MODULE	MOP	MOTOR OPERATOR	TCV	TEMPERATURE CONTROL VALVE
ACU	AIR CONDITIONING UNIT	EPR	EVAPORATOR	MSP	MOTOR STARTER PANEL	TFR	TRANSFORMER
AD	AIR DRYER			MUX	MULTIPLEXER	TM	TIMER
AF	AIR FILTER	F	FAN	MX	MIXER	TRS	TRANSFER SWITCH
AHC	AIR HANDLING UNIT W/COIL	FLC	FLOCCULATOR	MZ	MULTIZONE UNIT		
AHU	AIR HANDLING UNIT	FLT	FILTER			UH	UNIT HEATER
ASC	ADJUSTABLE SPEED CONTROL	FP	FILTER PRESS	OIU	OPERATOR INTERFACE UNIT	US	UTILITY STATION
ASD	ADJUSTABLE SPEED DRIVE	FPU	FLUID POWER UNIT	ORT	ODOR REMOVAL TOWER		
ATS	AUTOMATIC TRANSFER SWITCH	FUR	FURNACE			VCP	VENDOR CONTROL PANEL
				P	PUMP	VEN	VENTILATOR
B	BLOWER	GEN	GENERATOR	PBD	PANELBOARD, ELECTRICAL LIGHTING AND BRANCH CIRCUIT	VP	VACUUM PUMP
BFP	BELT FILTER PRESS	GDR	GRINDER				
BLR	BOILER	GT	GATE			WH	WATER HEATER
BNR	BURNER			PC	PROCESS OR PERSONAL COMPUTER	WHR	WASHER
BP	BACKFLOW PREVENTER	H	HOIST			WSR	WATER SOFTENER UNIT
BSN	BAR SCREEN	HEX	HEAT EXCHANGER	PEJ	PNEUMATIC EJECTOR		
		HOP	HYDRAULIC OPERATOR	PLC	PROGAMMABLE LOGIC CONTROLLER		
C	COIL	HP	HEAT PUMP				
CDR	CONDENSOR	HPU	HYDRAULIC POWER UNIT	PNL	PANEL		
CFR	CHEMICAL FEEDER	HTR	HEATER	POP	PNEUMATIC OPERATOR		
CHR	CHILLER	HTT	HEAT TRACER TAPE	PVL	PRESSURE VESSEL		
COL	COLLECTOR	HV	HAND OPERATED VALVE				
COM	COMMINUTOR			REC	RECEIVER		
CON	CONVEYOR	INJ	INJECTOR				
CP	COMPRESSOR			SCN	SCREEN (BAR, ETC.)		
CRN	CRANE	LCP	LOCAL CONTROL PANEL	SCR	SCRUBBER		
CTF	CENTRIFUGE	LVR	LOUVER	SEP	SEPARATOR		
CV	CONTROL VALVE			SLR	SILENCER		
CYL	CYLINDER	M	MOTOR	SMP	SAMPLER		
		MCC	MOTOR CONTROL CENTER	SS	SAND SEPARATOR		
DIS	DISTRIBUTOR	MCP	MAIN CONTROL PANEL	ST	STEAM TRAP		
DPR	DAMPER	MEE	MISCELLANEOUS ELECTRICAL EQUIPMENT	SUB	SUBSTATION		
DS	DISCONNECT SWITCH			SWBD	SWITCHBOARD		
DU	DRIVE UNIT	MIE	MISCELLANEOUS INSTRUMENTATION EQUIPMENT	SWGR	SWITCHGEAR		
E	ENGINE	MME	MISCELLANEOUS MECHANICAL	T	TANK		

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NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

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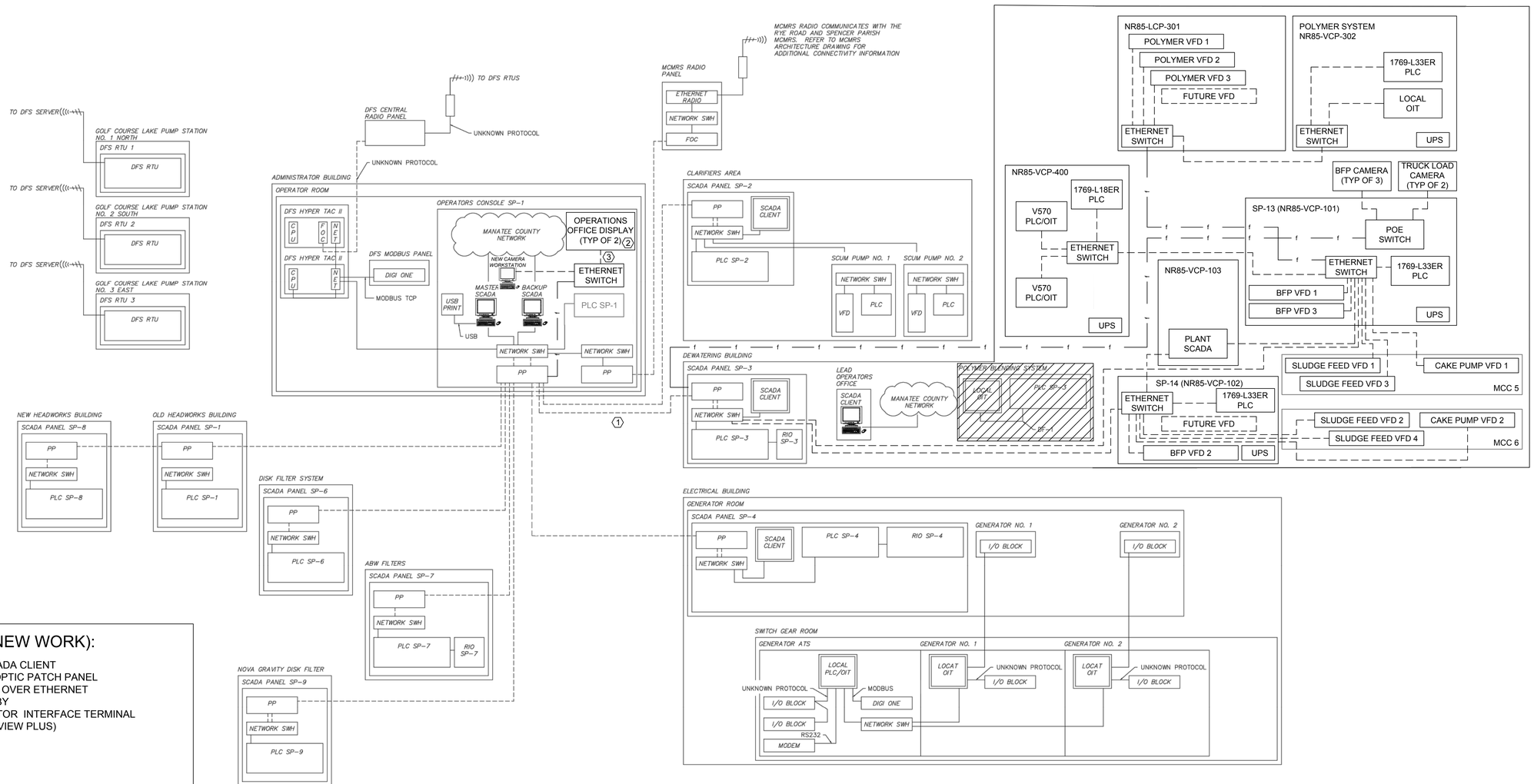
DRAWN:	R.DESAI
CHECKED:	H. SERRANO
CHECKED:	A.MODY
APPROVED:	R.ABRAHIEM
FILENAME	I-00-005.DWG
BC PROJECT NUMBER	153586
CLIENT PROJECT NUMBER	6010881

INSTRUMENTATION

ABBREVIATIONS

DRAWING NUMBER
I-00-005

25 SHEET NUMBER OF 63



DEFINITIONS (NEW WORK):

PLANT SCADA - SCADA CLIENT
FOPP - FIBER OPTIC PATCH PANEL
POE - POWER OVER ETHERNET
STBY - STANDBY
OIT - OPERATOR INTERFACE TERMINAL (PANELVIEW PLUS)

KEYNOTES:

1. UTILIZE SPARE EXISTING FIBER PAIR BETWEEN BUILDINGS TO DISPLAY THE NEW CAMERA IMAGES ON THE ADMIN BUILDING DISPLAYS.
2. COORDINATE WITH OPERATIONS REGARDING REQUIRED LOCATION OF NEW DISPLAYS.
3. HDMI TO ETHERNET CONVERTERS.

GENERAL NOTES (NEW WORK):

1. NETWORK PROTOCOL IS ETHERNET IP
2. ALL NETWORK SWITCHES ARE MANAGED.
3. POE SWITCH SUPPLIED BY SYSTEM INTEGRATOR TO VENDOR FOR INSTALLATION.
4. 6 PAIR FIBER TO MATCH EXISTING PLANT FIBER.

CABLE LEGEND (EXISTING)

CATEGORY 5/6 CABLE

FIBER OPTIC CABLE

CABLE LEGEND (NEW WORK)

CATEGORY 6 CABLE

FIBER OPTIC CABLE

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APPROVED: R.ABRAHIEM

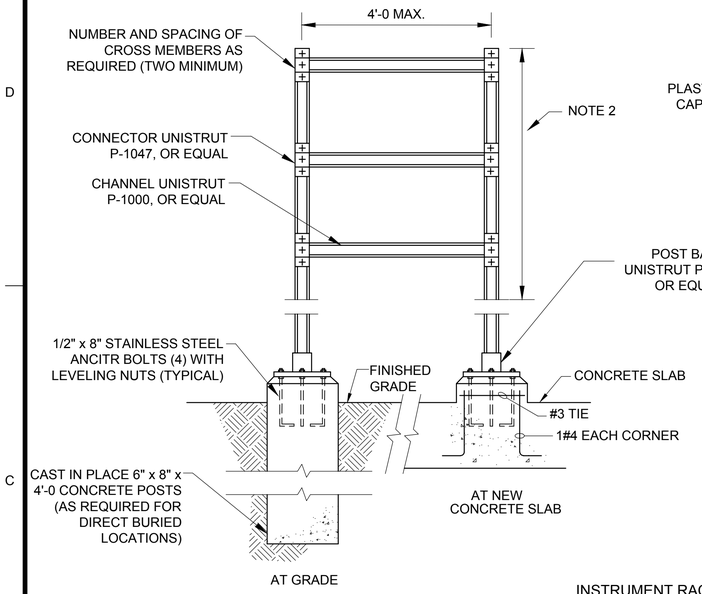
FILENAME
I-00-601.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

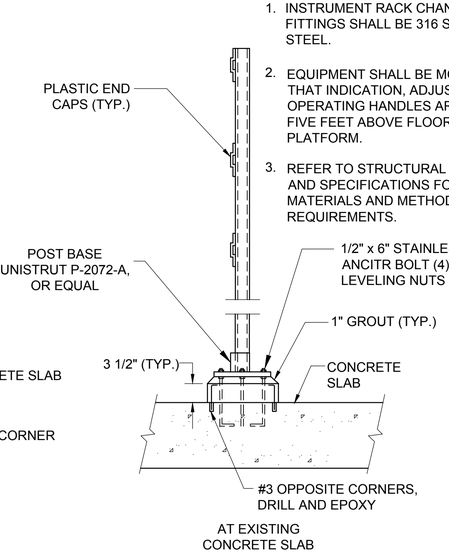
INSTRUMENTATION

NETWORK DIAGRAM

DRAWING NUMBER
I-00-601

SHEET NUMBER 26 OF 63

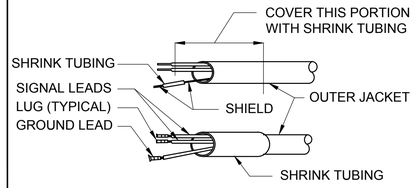




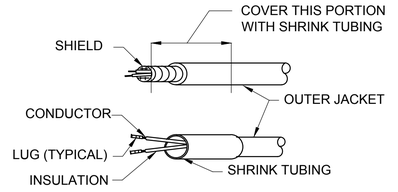
NOTES:

1. INSTRUMENT RACK CHANNELS AND FITTINGS SHALL BE 316 STAINLESS STEEL.
2. EQUIPMENT SHALL BE MOUNTED SO THAT INDICATION, ADJUSTMENTS, OR OPERATING HANDLES ARE FOUR TO FIVE FEET ABOVE FLOOR OR PLATFORM.
3. REFER TO STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR ANCITRAGE MATERIALS AND METHOD REQUIREMENTS.

INSTRUMENT RACK
DETAIL (I0010)
SCALE: NONE

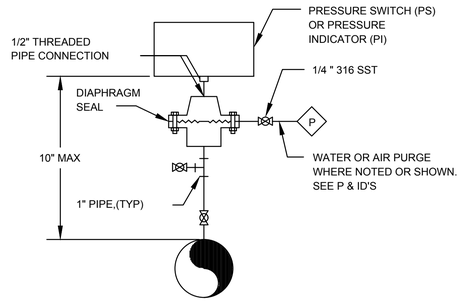


TERMINATION OF SHIELDED CONTROL CABLE SHIELD GROUNDED AT TERMINATION



TERMINATION OF SHIELDED CONTROL CABLE SHIELD NOT GROUNDED AT TERMINATION

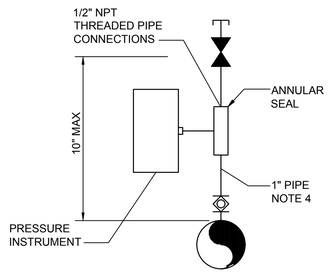
CONTROL CABLE GROUNDING METHODS
DETAIL (I0001)
SCALE: NONE



GENERAL NOTES:
- ISOLATION VALVE REQUIRE LOCK OPEN PROVISIONS.
- ALL MATERIAL TO BE COMPATIBLE WITH PROCESS FLUID.
- REFER TO SPECIFICATIONS FOR DIAPHRAGM SEAL.

DIRECT MOUNTING
W/DIAPHRAGM SEAL
LIQUID SERVICE

PRESSURE INSTRUMENT
DIRECT MOUNT WITH DIAPHRAGM SEAL
DETAIL (I2002)
SCALE: NONE



NOTES:

1. SHUT-OFF VALVE REQUIRE LOCK OPEN PROVISIONS.
2. SEE SECTION 40 90 00 FOR DIAPHRAGM SEAL.
3. 1/4" FULL FLOW QUICK DISCONNECT x 1/4" FEMALE NPT WITH PLUG. STAINLESS STEEL.
4. 1" NPT UNLESS OTHERWISE SPECIFIED IN INSTRUMENT INDEX.

PRESSURE INSTRUMENT DIRECT MOUNTING WITH ANNULAR SEAL
DETAIL (I2196)
SCALE: NONE

Brown AND Caldwell
Certificate of Authorization No. 2602
6151 Lake Osprey Drive, 3rd Floor
Sarasota, FL 34240

RYAN A. ABRAHIEM LICENSE No. 73843 STATE OF FLORIDA PROFESSIONAL ENGINEER

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Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	R.ABRAHIEM
DRAWN:	R.DESAI
CHECKED:	H. SERRANO
CHECKED:	A. MODY
APPROVED:	R.ABRAHIEM
FILENAME	I-10-501.DWG
BC PROJECT NUMBER	153586
CLIENT PROJECT NUMBER	6010881

INSTRUMENTATION

INSTALLATION DETAILS SHEET 1

DRAWING NUMBER
I-10-501

SHEET NUMBER 27 OF 63

Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS\INSTRUMENTATION FILENAME: I-10-501.DWG PLOT DATE: 3/31/2020 2:08 PM CAD USER: ALEX EASTON

EXISTING SCADA MONITORING AND CONTROLS SHALL BE INTEGRATED WITH NEW NR85-VCP-101

SCADA

BFP MAIN: AUTO STOP HS 101; AUTO START HS 101; UNATTENDED/ ATTENDED HS 101; HOA HS 101; KC 101; SPEED L/R HS 101

TO CAKE PUMP INTERLOCK I-10-602

TO CONVEYOR INTERLOCK I-10-605

CONTROL POWER ON NL 100

FROM INTERLOCK I-10-602

WATER PRESS LOW PAL 101; HYDRAULIC PRESS LOW PAL 101; NO CAKE UA 101

WASH WATER: PAH 101-1; OCA HS 101-1; CLOSE YL 101-1; OPEN YL 101-1

BOOSTER PUMP: HOA HS 201; RNG NL 201; UA 201

HYDRAULIC PUMP: HOA UA 101-2, HS 101-2, KC 101-2; RNG NL 101-2

BELT DRIVE: TOTAL HOURS KI 101-3; HOA HS 101-3, KC 101-3; BELT TENSION VA 101-3; BELT MISALIGN ZA 101-3; UA 101-3; SC 101-3; SI 101-3; HIGH TEMP TAH 101-3; RNG NL 101-3

TO SLUDGE PUMP INTERLOCK I-10-602

TO POLYMER PUMP INTERLOCK I-10-602

JY 201; JY 101-2; SKC 101-3

SP-13 (NR85-VCP-101)

NR85-P-201

PSH 101; NR85-CV-101; TSH 101; HS 101 ESP

NR85-BFP-101 BELT FILTER PRESS 1 (EXISTING)

TRIP - CORDS / E-STOP

TO INTERLOCK FOR LOCAL BFP PANEL I-10-602

LOOP NR85-P-203 TYPICAL OF NR85-P-201

LOOP 103 TYPICAL OF LOOP 101

NR85-P-203

PSH 103; NR85-CV-103; TSH 103; HS 103 ESP

NR85-BFP-103 BELT FILTER PRESS 3 (EXISTING)

FROM TRIP CORDS I-10-603

INTERLOCK NOTES

1. BFP MAIN HOA IN OFF, ANY ESTOP OR ACTIVATED TRIP CORD WILL SHUT DOWN ALL EQUIPMENT.

KEYNOTES

1. REQUIRES 120 VAC RELAY POWER.

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CHECKED: A.MODY
APPROVED: R.ABRAHIEM

FILENAME I-10-601.DWG
BC PROJECT NUMBER 153586
CLIENT PROJECT NUMBER 6010881

INSTRUMENTATION

NRF BELT FILTER PRESS P&ID 1 OF 4

DRAWING NUMBER
I-10-601

SHEET NUMBER 28 OF 63

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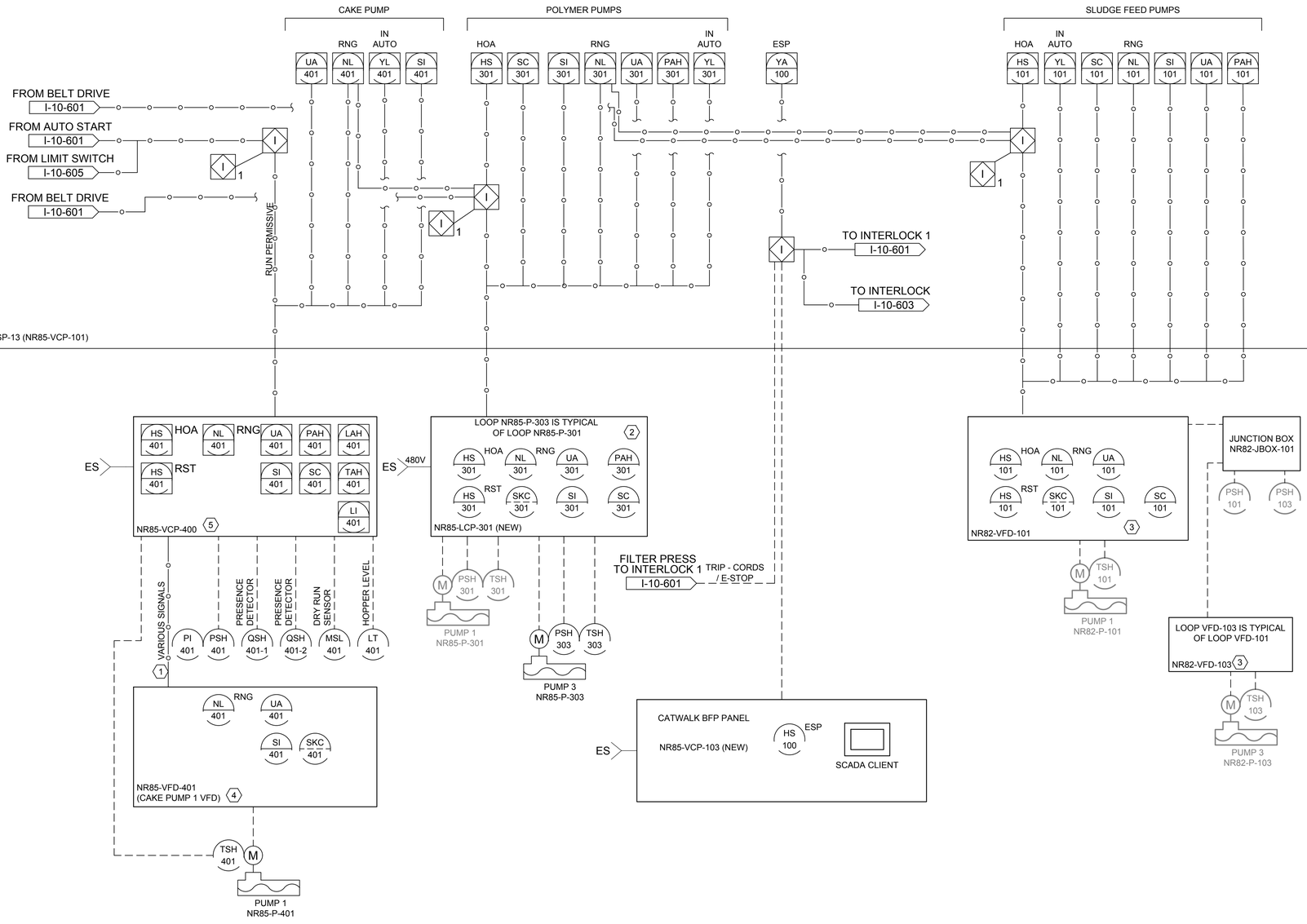
EXISTING SCADA MONITORING AND CONTROLS SHALL BE INTEGRATED WITH NEW NR85-VCP-101

SCADA

SP-13 (NR85-VCP-101)



INTERLOCK NOTES

1. BFP MAIN HOA IN OFF, ANY ESTOP OR ACTIVATED TRIP CORD WILL SHUT DOWN ALL EQUIPMENT.

KEYNOTES

1. NETWORKED SIGNALS INCLUDE START COMMAND, SPEED COMMAND, SPEED FEEDBACK, RUNNING, VFD FAULT, AND RESET COMMAND.
2. PROVIDE SPACE FOR FUTURE FOURTH POLYMER PUMP.
3. NR82-VFD-101 AND NR82-VFD-103 ARE LOCATED INSIDE MCC-5.
4. NR85-VFD-401 IS LOCATED INSIDE MCC-5.
5. MOUNT V570 OITS ON DEADFRONT INNER DOOR. OUTER DOOR SHALL HAVE A NEMA 4X WINDOW KIT(S).

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APPROVED: R.ABRAHIEM

FILENAME
I-10-602.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

INSTRUMENTATION

NRF BELT FILTER PRESS P&ID 2 OF 4

DRAWING NUMBER
I-10-602

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EXISTING SCADA MONITORING AND CONTROLS SHALL BE INTEGRATED WITH NEW NR85-VCP-102

SCADA

BFP MAIN: AUTO STOP HS 102; AUTO START HS 102; UNATTENDED/ ATTENDED HS 102; HOA HS 102; KC 102; SPEED L/R HS 102

TO CAKE PUMP INTERLOCK I-10-604

TO CONVEYOR INTERLOCK I-10-606

CONTROL POWER ON NL 100

FROM INTERLOCK I-10-602

WATER PRESS LOW PAL 102; HYDRAULIC PRESS LOW PAL 102; NO CAKE UA 102

WASH WATER: PAH 102-1; OCA HS 102-1; CLOSE YL 102-1; OPEN YL 102-1

BOOSTER PUMP: HOA HS 202; RNG NL 202; UA 202

HYDRAULIC PUMP: HOA UA 102-2, HS 102-2, KC 102-2; RNG NL 102-2

BELT DRIVE: TOTAL HOURS KI 102-3; HOA HS 102-3, KC 102-3; BELT TENSION VA 102-3; BELT MISALIGN ZA 102-3; UA 102-3; SC 102-3; SI 102-3; HIGH TEMP TAH 102-3; RNG NL 102-3

TO SLUDGE PUMP INTERLOCK I-10-604

TO POLYMER PUMP INTERLOCK I-10-604

JY 202

JY 102-2

SKC 102-3

M NR85-P-202

PSH 102

M 1 NR85-CV-102

M

M TSH 102

HS 102 ESP

TRIP - CORDS / E-STOP

TO TRIP CORDS 1 AND 3 I-10-601

NR85-BFP-102

BELT FILTER PRESS 2 (EXISTING)

SP-14 (NR85-VCP-102)

INTERLOCK NOTES

1. BFP MAIN HOA IN OFF, ANY ESTOP OR ACTIVATED TRIP CORD WILL SHUT DOWN ALL EQUIPMENT.

KEY NOTES

1. REQUIRES 120 VAC RELAY POWER.

Brown AND Caldwell

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Sarasota, FL 34240

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CHECKED:	H. SERRANO
CHECKED:	A. MODY
APPROVED:	R.ABRAHIEM
FILENAME	I-10-603.DWG
BC PROJECT NUMBER	153586
CLIENT PROJECT NUMBER	6010881

INSTRUMENTATION

NRF BELT FILTER PRESS P&ID 3 OF 4

DRAWING NUMBER

I-10-603

SHEET NUMBER 30 OF 63

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EXISTING SCADA MONITORING AND CONTROLS SHALL BE INTEGRATED WITH NEW NR85-VCP-102

SCADA

SP-14 (NR85-VCP-102)

CAKE PUMP

POLYMER PUMPS

SLUDGE FEED PUMPS

FROM BELT DRIVE I-10-603

FROM AUTO START I-10-603

FROM LIMIT SWITCH I-10-606

FROM BELT DRIVE I-10-601

RUN PERMISSIVE

TYPICAL OF 3

FIR 300 | PI 300 | LI 300 | YA 300 (ESP) | NL 301 (IN RNG) | YL 301 (IN AUTO) | HS 301 (IN HOA) | UA 301

NR85-VCP-400 (FROM I-10-602)

NR85-LCP-301 (FROM I-10-602)

NR82-VFD-102 (2)

JUNCTION BOX NR82-JBOX-101 (FROM I-10-602)

LOOP VFD-104 IS TYPICAL OF LOOP VFD-102

NR82-VFD-104 (2)

OIT

POLYMER SYSTEM CP NR85-VCP-302 (NEW)

VARIOUS SIGNALS (1)

PRESENCE DETECTOR

PRESENCE DETECTOR

DRY RUN SENSOR

HOPPER LEVEL

NR85-VFD-402 (CAKE PUMP 2 VFD) (3)

PUMP 2 NR85-P-402

PUMP 2 NR85-P-302

PUMP 2 NR82-P-102

PUMP 4 NR82-P-104

PUMP NR85-P-305

MIXER 1 NR85-MX-301

MIXER 2 NR85-MX-302

INTERLOCK NOTES

1. BFP MAIN HOA IN OFF, ANY ESTOP OR ACTIVATED TRIP CORD WILL SHUT DOWN ALL EQUIPMENT.

KEYNOTES

1. NETWORKED SIGNALS INCLUDE START COMMAND, SPEED COMMAND, SPEED FEEDBACK, RUNNING, VFD FAULT, AND RESET COMMAND.
2. NR82-VFD-102 AND NR82-VFD-104 ARE LOCATED INSIDE MCC-6.
3. NR85-VFD-402 IS LOCATED INSIDE MCC-6.

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CHECKED: A. MODY
APPROVED: R.ABRAHIEM

FILENAME I-10-604.DWG
BC PROJECT NUMBER 153586
CLIENT PROJECT NUMBER 6010881

INSTRUMENTATION

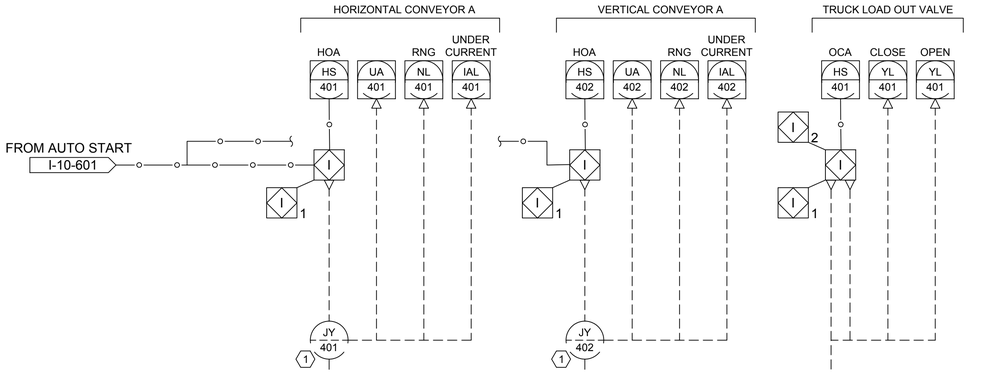
NRF BELT FILTER PRESS P&ID 4 OF 4

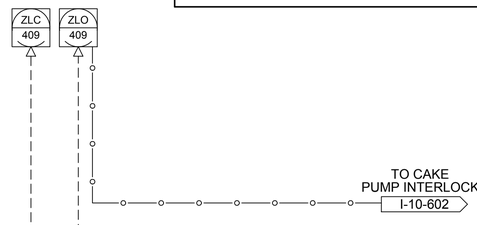
DRAWING NUMBER
I-10-604

SHEET NUMBER 31 OF 63

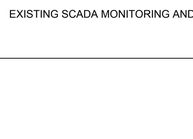
EXISTING SCADA MONITORING AND CONTROLS SHALL BE INTEGRATED WITH NEW NR85-VCP-101

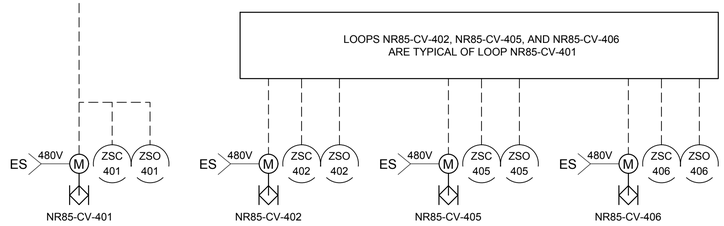
SCADA

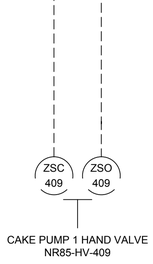




SP-13 (NR85-VCP-101)







INTERLOCK NOTES

1. BFP MAIN HOA IN OFF, ANY ESTOP OR ACTIVATED TRIP CORD WILL SHUT DOWN ALL EQUIPMENT.
2. AT LEAST ONE VALVE MUST BE OPEN AT ALL TIMES.

KEYNOTES

1. INSTALL UNDER CURRENT SENSING RELAYS FOR EACH CONVEYOR MOTOR STARTER.

Brown AND Caldwell

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CHECKED: A. MODY
APPROVED: R. ABRAHIEM

FILENAME
I-10-605.DWG

BC PROJECT NUMBER
153586

CLIENT PROJECT NUMBER
6010881

INSTRUMENTATION

NRF CONVEYORS P&ID 1 OF 2

DRAWING NUMBER
I-10-605

SHEET NUMBER 32 OF 63

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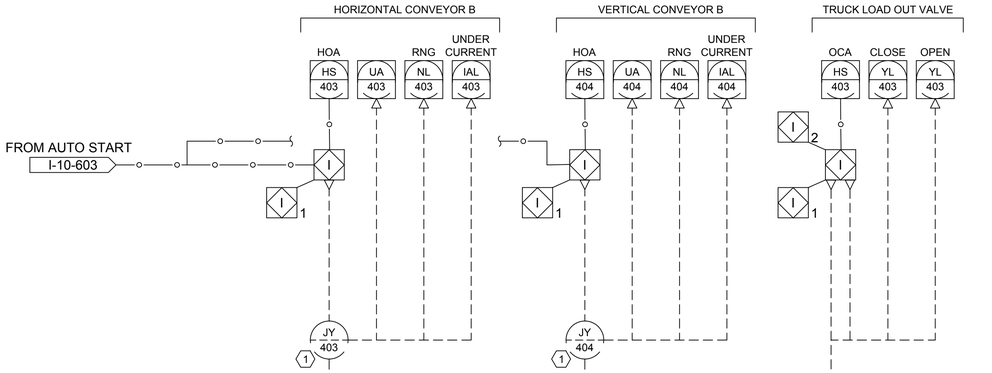
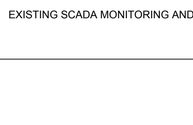
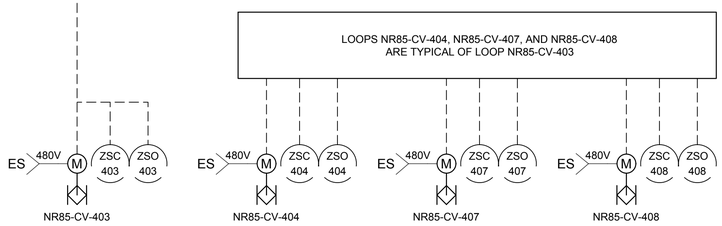
EXISTING SCADA MONITORING AND CONTROLS SHALL BE INTEGRATED WITH NEW NR85-VCP-102

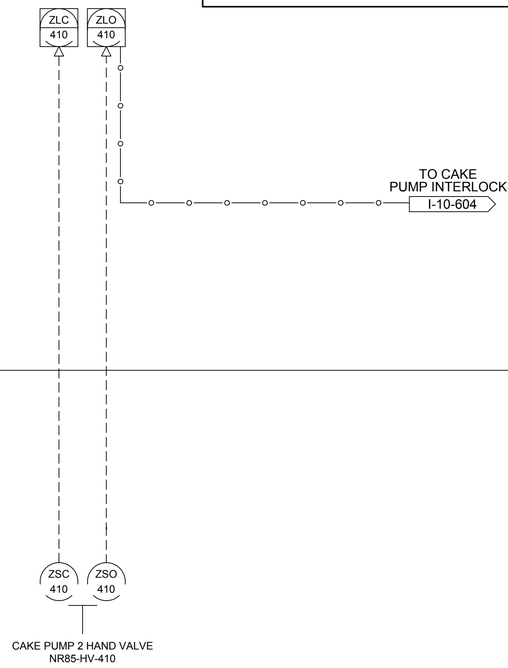
SCADA



SP-14 (NR85-VCP-102)







INTERLOCK NOTES

1. BFP MAIN HOA IN OFF, ANY ESTOP OR ACTIVATED TRIP CORD WILL SHUT DOWN ALL EQUIPMENT.
2. AT LEAST ONE VALVE MUST BE OPEN AT ALL TIMES.

KEYNOTES

1. INSTALL UNDER CURRENT SENSING RELAYS FOR EACH CONVEYOR MOTOR STARTER.

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DRAWN: R. DESAI
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CHECKED: A. MODY
APPROVED: R. ABRAHIEM

FILENAME
I-10-606.DWG

BC PROJECT NUMBER
153586

CLIENT PROJECT NUMBER
6010881

INSTRUMENTATION

NRF CONVEYORS P&ID 2 OF 2

DRAWING NUMBER
I-10-606

33 SHEET NUMBER OF 63

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MECHANICAL GENERAL NOTES

1. THE CONTRACTOR SHALL PROVIDE PIPE SUPPORTS IN ACCORDANCE WITH SECTION 15094 AND ALL PIPING SUPPORTED BY HANGERS AND/OR STRUCTURAL ATTACHMENTS SHALL BE BRACED AGAINST HORIZONTAL, VERTICAL, AXIAL AND LONGITUDINAL SWAY. WHERE PIPE CHANGE DIRECTION FROM HORIZONTAL TO VERTICAL, A WELDED OR CAST BASE ELBOW SUPPORT SHALL BE INSTALLED. UNLESS OTHERWISE SPECIFIED, PIPING PASSING FROM CONCRETE TO EARTH SHALL BE PROVIDED WITH FLEXIBILITY TO ACCOUNT FOR DIFFERENTIAL SETTLING AS SPECIFIED IN SECTION 15085 AND IN THE MECHANICAL DETAILS SHEETS.

2. SEE SPECIFICATION SECTION 15050 FOR GENERAL REQUIREMENTS FOR PIPING SYSTEMS. SEE SPECIFICATION SECTION 15094 FOR DESIGN OF PIPE HANGERS AND SUPPORTS.

3. THE ARRANGEMENT OF EQUIPMENT AND PIPING SHOWN IS NOT INTENDED TO SHOW DIMENSIONS PARTICULAR TO A SPECIFIC EQUIPMENT MANUFACTURER. THE DRAWINGS ARE IN PART DIAGRAMMATIC AND SOME FEATURES OF EQUIPMENT AND PIPING MAY REQUIRE REVISION TO MEET ACTUAL FIELD REQUIREMENTS. THE CONTRACTOR SHALL COORDINATE AND CONFIRM ALL CRITICAL DIMENSIONS FOR ACTUAL EQUIPMENT AND PIPING PROVIDED AND SHALL PROVIDE ALL REVISIONS NECESSARY TO THE EQUIPMENT, EQUIPMENT PADS AND PIPING LAYOUT AS REQUIRED. THESE REVISIONS SHALL BE SUBMITTED WITH THE PIPING LAYOUT DRAWINGS.

4. MECHANICAL DRAWINGS SHOW EXISTING EQUIPMENT, PIPING AND STRUCTURES IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION. HOWEVER CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING ALL EXISTING CONDITIONS PRIOR TO SUBMISSION OF PIPING LAYOUT DRAWINGS AND COMMENCEMENT OF WORK. CONTRACTOR SHALL PROVIDE ALL BENDS, OFFSETS, ADDITIONAL PIPING, WALL AND FLOOR PENETRATIONS, EXISTING PIPE REROUTING, ETC. AS REQUIRED TO CONFORM WITH EXISTING CONDITIONS.

5. THE DRAWINGS ARE IN PART DIAGRAMMATIC. PIPING LAYOUT DRAWINGS SHALL BE SUBMITTED IN ACCORDANCE WITH THE SPECIFICATIONS AND SHALL CLARIFY DETAILED CONNECTIONS TO AND AVOIDANCE OF NEW AND EXISTING EQUIPMENT, PIPING AND STRUCTURES. PIPING FITTING ANGLES AND VERTICAL AND HORIZONTAL LOCATION SHALL BE DETERMINED BY CONTRACTOR. CONTRACTOR SHALL INCLUDE FITTING ANGLES, AND VERTICAL AND HORIZONTAL PIPE LOCATIONS ON PIPING LAYOUT DRAWINGS AND SHALL PROVIDE ALL PIPING, FITTINGS, WALL AND FLOOR PENETRATION, AND ANCILLARY DEVICES AS SHOWN, SPECIFIED AND REQUIRED TO PROVIDE A FULLY FUNCTIONAL SYSTEM.

6. ALL PIPING CONNECTED TO EQUIPMENT SHALL BE PROVIDE WITH A FLANGED COUPLING ADAPTER, EQUIPMENT CONNECTION FITTING OR DISMANTLING JOINT.

7. HEADROOM CLEARANCE TO ANY EQUIPMENT OR PIPING OVERHEAD SHALL BE 7'-6" MINIMUM UNLESS SPECIFICALLY SHOWN OTHERWISE. THIS SHALL INCLUDE THE CLEARANCE TO THE LOWER PORTION OF ANY PIPE SUPPORT SYSTEM.

8. 1" GAUGE TAPS WITH CAPS SHALL BE PROVIDED IMMEDIATELY UPSTREAM AND DOWNSTREAM OF ALL PUMPS.

9. EXISTING PIPE MATERIAL TYPES MAY NOT BE THE SAME AS MATERIAL TYPES SPECIFIED FOR NEW PIPING. CONTRACTOR SHALL VERIFY PIPE MATERIAL AND JOINTS PRIOR TO COMMENCEMENT OF WORK. SEE DRAWING GENERAL DRAWINGS FOR PIPE SERVICE, ABBREVIATIONS AND PIPE LEGEND.

10. DUCT AND PIPING SYSTEMS ARE SHOWN ON ONE OR MORE OF THE DRAWING TYPES (G,C,A,S,P,M,H,E,I). ALL DRAWING TYPES MUST BE REFERENCED FOR A COMPLETE DESCRIPTION OF THESE SYSTEMS.

11. SIZES OF EQUIPMENT FOUNDATIONS AND EQUIPMENT PADS INDICATED ON THE DRAWINGS ARE APPROXIMATE. EXACT DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR FOR THE SPECIFIC EQUIPMENT FURNISHED. ALL FLOOR MOUNTED EQUIPMENT SHALL BE SET ON CONCRETE PADS CONFORMING TO DETAILS SHOWN ON THE STRUCTURAL AND MECHANICAL DRAWINGS.

12. AREA DRAINS ARE ALL PROCESS DRAINS OR CHEMICAL DRAINS AND THERE ARE NO SANITARY DRAINS.

13. PIPING SHALL BE INSTALLED SUCH THAT ADJACENT PIPING SYSTEMS DO NOT NEED TO BE DISTURBED IN ORDER TO TAKE APART PIPING.

14. UNLESS SPECIFICALLY NOTED OTHERWISE, ALL REDUCERS IN HORIZONTAL PIPING IN LIQUID CARRYING PIPING SHALL BE TOP-FLAT ECCENTRIC REDUCERS AND ALL REDUCERS IN HORIZONTAL PIPING IN GAS CARRYING PIPING SHALL BE BOTTOM-FLAT ECCENTRIC REDUCERS. REDUCERS LOCATED IN VERTICAL SECTIONS OF EITHER LIQUID CARRYING OR GAS CARRYING PIPING MAY BE CONCENTRIC.

Brown AND Caldwell
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ANAND JAYESH MODY
LICENSED
ENGINEER ANAND JAYESH MODY
A. MODY, PE 68379
No. 68379
STATE OF
FLORIDA
PROFESSIONAL ENGINEER
BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: T. HULL
CHECKED:
APPROVED: A. MODY

FILENAME
153586-M-00-001.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

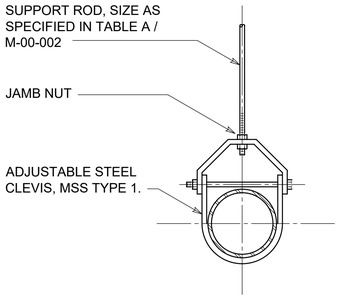
MECHANICAL

MECHANICAL DETAILS 1

DRAWING NUMBER
M-00-001

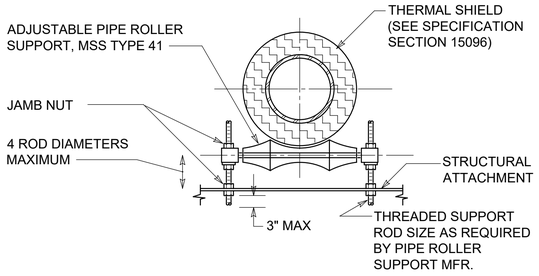
34 SHEET NUMBER OF 63

Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-M-00-001.DWG PLOT DATE: 4/10/2020 7:40 PM CAD USER: BRETT SILLMAN



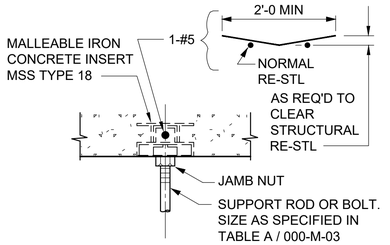
TYPE 1 PIPE HANGER

1/2" THROUGH 12" PIPE



TYPE 8 PIPE HANGER

1" THROUGH 16" PIPE

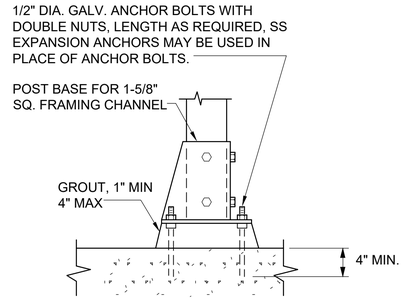


MAXIMUM ALLOWABLE LOAD:

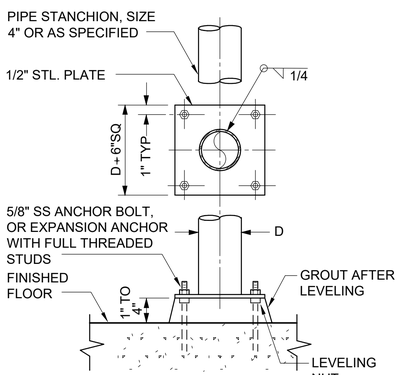
ROD SIZE	LOAD
3/8"	610 LBS
1/2"	1130 LBS
5/8" - 7/8"	1140 LBS

SPACING SHALL BE AS REQUIRED BUT SHALL NOT EXCEED THOSE SPANS SHOWN IN TABLE A / M-00-002

TYPE A STRUCTURAL ATTACHMENT

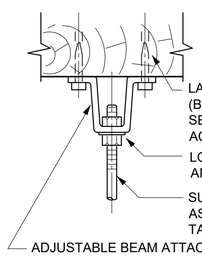


TYPE E STRUCTURAL ATTACHMENT



SPACING SHALL BE AS REQUIRED, BUT SHALL NOT EXCEED THOSE SPANS SHOWN IN TABLE A / M-00-002.

TYPE N STRUCTURAL ATTACHMENT



MAXIMUM ALLOWABLE LOAD:

ROD SIZE	LOAD WOOD	LOAD CONCRETE/STEEL
3/8"	425 LBS	610 LBS
1/2"	715 LBS	1130 LBS
5/8"	810 LBS	1810 LBS
3/4"	1500 LBS	2710 LBS
7/8"	1650 LBS	3770 LBS

SPACING SHALL BE AS REQUIRED, BUT SHALL NOT EXCEED SPANS SHOWN IN TABLE A / M-00-002

TYPE J STRUCTURAL ATTACHMENT

TABLE A

NOMINAL PIPE SIZE (INCHES)	SUPPORT ROD SIZE AND MAXIMUM LOAD PER ROD SEE NOTE 2				MAXIMUM PIPE SPAN (FEET) SEE NOTE 3			
	ROD SIZE (INCHES)	MAX LOAD (POUNDS)			STEEL	COPPER	PLASTIC SEE NOTE 4	CAST IRON SEE NOTE 5
3/8 TO 3/4	3/8	610			5	5	CONTINUOUS	---
1	3/8	610			5	5	5	---
1 1/4	3/8	610			5	5	5	---
1 1/2	3/8	610			5	5	5	---
2	3/8	610			10	5	5	12 FEET FOR PRESSURE PIPE 10 FEET FOR SOIL PIPE
2 1/2	3/8	610			10	10	5	
3	3/8	610			10	20	5	
4	1/2	1130			10	20	5	
6	5/8	1810			15	20	5	
8	3/4	2710			15	20	5	
10	3/4	2710(4960)			20	—	5	
12	7/8	3770(8000)			20	—	10	
14	1	4960			20	—	---	
16	1	4960			20	—	---	
18	1	4960			20	—	---	
20	1-1/4	8000			20	—	---	
24	1-1/4	8000			20	—	---	

TABLE A NOTES:

1. DESIGN WEIGHT SHALL BE TWICE THE WEIGHT OF THE PIPE FULL OF WATER PLUS THE WEIGHT OF VALVES. FITTINGS, INSULATING MATERIALS, AND SUSPENDED HANGER COMPONENTS ON THE RUN OF PIPE BEING SUPPORTED.
2. ROD SIZES SHOWN ARE FOR THE SUPPORT OF A SINGLE PIPE. WHEN SUPPORTING MORE THAN ONE PIPE, ROD SHALL BE SIZED USING THE DESIGN WEIGHTS (SEE NOTE 1) TO DETERMINE THE TOTAL DESIGN LOAD. THE TOTAL DESIGN LOAD SHALL NOT EXCEED THE MAXIMUM LOADS IN THE TABLE ABOVE.
3. PIPE SHALL NOT HAVE POCKETS FORMED IN THE SPAN DUE TO SAGGING OF THE PIPE BETWEEN SUPPORTS CAUSED BY THE WEIGHT OF THE PIPE, MEDIUM IN THE PIPE, INSULATION, VALVES AND FITTINGS.
4. SPAN SHOWN IS FOR SCHEDULE 80 PVC PIPE AT 100 DEGREES F. SPANS FOR OTHER PLASTICS, OTHER PVC PIPE SCHEDULES, AND PIPES AT HIGHER TEMPERATURES, SHALL BE SHORTENED IN ACCORDANCE WITH THE PIPE MANUFACTURER'S RECOMMENDATIONS. CONTINUOUS MEANS PIPE SHALL BE IN UNISTRUT OR SIMILAR CHANNEL.
5. PROVIDE A MINIMUM OF ONE PIPE HANGER PER PIPE LENGTH, WITHIN 4 INCHES OF THE BELL.
6. PIPE HANGER AND SUPPORT SELECTION SHALL BE IN ACCORDANCE WITH TABLE B AND SPECIFICATION SECTION.

TABLE B

X INDICATES PIPE HANGERS SUITABLE FOR CONDITIONS LISTED BELOW:		PIPE HANGER TYPE										
		1	2	3	4	5	6	7	8	9	10	11
SERVICE TEMPERATURE												
33° F - 59° F OR	INSULATED			X	X	X			X	X		X
120° F-450° F	UNINSULATED	X	X	X	X	X	X	X	X	X	X	X
60° F - 119° F		X	X	X			X	X		X	X	X
PIPING MATERIALS												
STEEL		X	X	X	X	X	X	X	X	X		X
COPPER			X		X		X	X	X			
PLASTIC		X	X		X	X	X	X	X			X
DUCTILE IRON		X	X		X	X	X	X	X		X	X

NOTE: FOR SERVICES OTHER THAN THOSE SHOWN IN TABLE "B", PIPE ATTACHMENTS

PIPE SUPPORT GENERAL NOTES

1. PIPE AND CONDUIT SUPPORT SYSTEMS SHALL BE UNISTRUT, ELCEN OR EQUAL AND SHALL BE DESIGNED BY THE CONTRACTOR TO MEET THE MINIMUM LOAD AND SPAN REQUIREMENTS AS SPECIFIED.
2. UNLESS OTHERWISE SPECIFIED, HANGERS AND SUPPORTS SHALL BE GALVANIZED STEEL.
3. UNLESS OTHERWISE SPECIFIED, EXPANSION ANCHORS SHALL NOT BE USED.
4. MSS REFERS TO THE MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY, STANDARD PRACTICE SP58 AND SP69.
5. HANGER BRACKETS AND SUPPORT COMPONENTS MAY BE INTERCHANGED.
6. CONCRETE INSERTS IN AREAS BELOW WATER SURFACE OR NORMALLY SUBJECT TO SUBMERGENCE SHALL BE EMBEDDED ANCHOR BOLTS OR EQUAL.
7. PROVIDE PLASTIC OR RUBBER CHANNEL END CAPS AT EXPOSED ENDS OF CHANNELS 7'-0" ABOVE FLOOR AND BELOW.
8. MAXIMUM DESIGN WEIGHTS AND LOADS SHALL BE AS SHOWN IN TABLE "A" DRAWING M-00-002, OR AS SHOWN IN THE DETAILS ON THIS DRAWING.
9. WHEN SUPPORTING PIPING REQUIRES HORIZONTAL FLEXIBILITY NORMAL TO A STEEL BEAMS AXIS, USE STRUCTURAL ATTACHMENTS C AND D.
10. ALL PIPING SUPPORTED BY HANGERS AND/ OR STRUCTURAL ATTACHMENTS SHALL BE BRACED AGAINST HORIZONTAL, VERTICAL, AXIAL, AND LONGITUDINAL SWAY. BRACING SHALL BE CALCULATED TO RESIST SEISMIC LOADINGS AS SPECIFIED BY SMACNA/ ASHRAE AND AS INDICATED IN THE SPECIFICATIONS.
11. FITTINGS SHALL NOT BE LESS THAN MSS CL B.
12. UNLESS OTHERWISE SPECIFIED, TRAPEZE AND PIPE RACK COMPONENTS SHALL HAVE MAXIMUM STEEL THICKNESS OF 12 GAGE WITH MAXIMUM DEFLECTION 1/240 OF THE SPAN. MINIMUM CHANNEL COMPONENT SIZE SHALL BE 1 5/8" SQUARE AS MANUFACTURED BY SUPER STRUT, UNISTRUT, ELCEN, OR EQUAL.

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ENGINEER'S NAME
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No. 68379
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BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

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DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: T. HULL
CHECKED:
APPROVED: A. MODY

FILENAME 153586-M-00-002.DWG
BC PROJECT NUMBER 153586
CLIENT PROJECT NUMBER 6010881

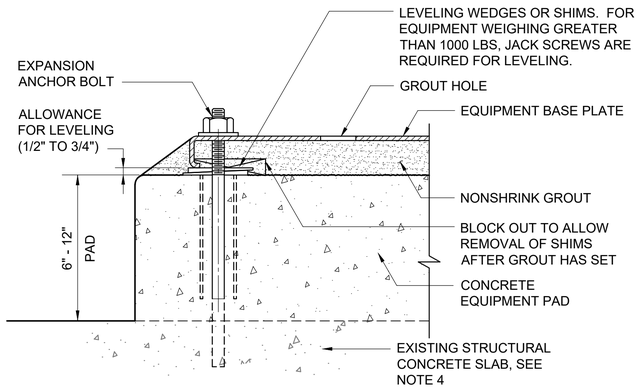
MECHANICAL

MECHANICAL DETAILS 2

DRAWING NUMBER
M-00-002

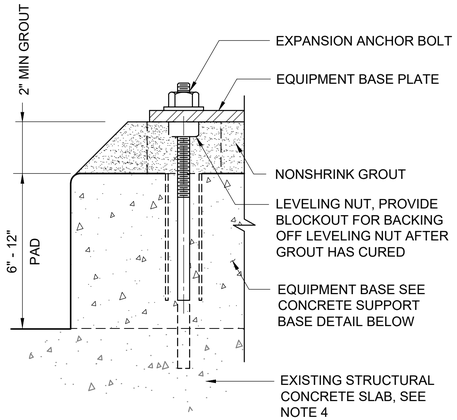
SHEET NUMBER 35 OF 63

Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-M-00-002.DWG PLOT DATE: 4/10/2020 7:54 PM CAD USER: BRETT SILLMAN



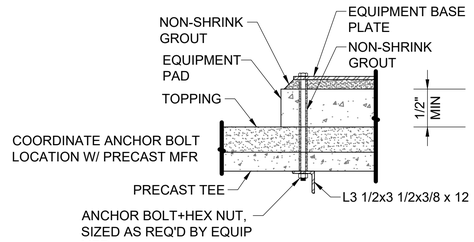
EQUIPMENT FURNISHED WITH ROLLED STEEL BASE MOUNTING

SCALE: NONE



EQUIPMENT LESS THAN 10 HP AND 500 POUNDS MOUNTING

SCALE: NONE



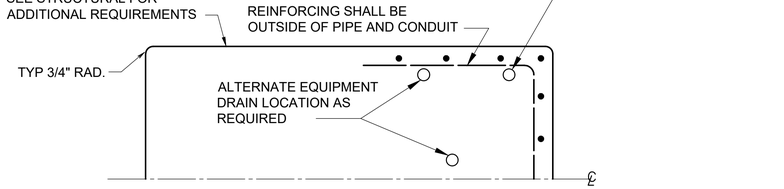
APPLIES TO T-8041, BLR-8050, BLR-8060 AND ANY EQUIPMENT THAT PLACES A NET UPLIFT ON ANCHOR BOLTS.

EQUIPMENT MOUNTING ON PRECAST DETAIL

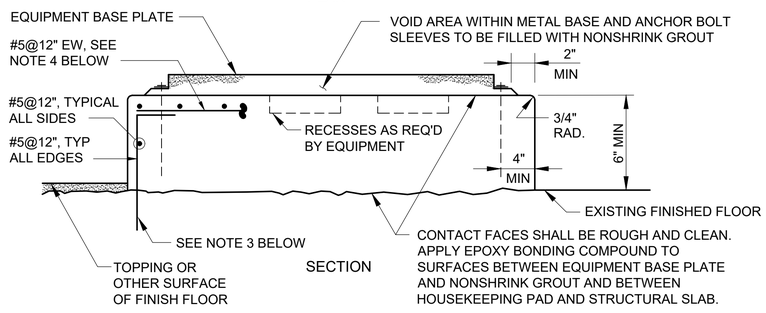
SCALE: NONE

EQUIPMENT MOUNTING NOTES:

1. ALL EQUIPMENT SHALL HAVE A CONCRETE EQUIPMENT PAD TO SUIT. WHERE PAD SIZE IS NOT SHOWN, DIMENSIONS SHALL BE DETERMINED BY EQUIPMENT MANUFACTURER. REFER TO SPEC SECTION 11002. THE ONLY EXCEPTION IS THE CAKE PUMPS WHICH SHALL BE ANCHORED TO A BASEPLATE THAT IS CONNECTED AND ANCHORED TO THE FLOOR VIA STEEL I BEAM.
2. ALL PENETRATIONS FOR CONDUIT AND PIPING SHALL BE WITHIN CONCRETE EQUIPMENT PAD. PAD TO BE CONFIGURED ACCORDINGLY. CONDUIT AND PIPING FOR FUTURE EQUIPMENT SHALL BE CAPPED.
3. ANCHOR BOLT EMBEDMENT SHALL BE MINIMUM LENGTH OR GREATER, AS REQUIRED BY EQUIPMENT MANUFACTURER.
4. ANCHOR BOLTS SHALL BE SET IN SLEEVES AS SHOWN. ANCHOR BOLTS SHALL PENETRATE STRUCTURAL SLAB AS REQUIRED TO MEET MINIMUM EMBEDMENT SPECIFIED.
5. ALL GROUT FOR EQUIPMENT WEIGHING 1000 OR LESS SHALL BE CEMENTITIOUS, NONSHRINK, NONMETALLIC. FOR ALL OTHERS, SEE SPEC SECTION 11002.
6. WHERE EPOXY NONSHRINK GROUT IS USED, THE EPOXY GROUT SHALL BE PREVENTED FROM ADHERING TO ANCHOR BOLTS AND JACK SCREWS. DRILLING INTO CONCRETE FOR INSTALLATION OF STEEL REINFORCING BARS, ANCHORS, ETC, SHALL BE ONLY WHERE SPECIFICALLY INDICATED/ALLOWED BY THE ENGINEER.
7. DRILLING LOCATIONS SHALL BE VERIFIED BY A NONDESTRUCTIVE METHOD TO MISS STEEL REINFORCING BARS AND CONDUITS/PIPES CAST IN THE CONCRETE ELEMENT.
8. LEVELING OF EQUIPMENT SOLE PLATE MAY BE DONE WITH SHIMS OR WEDGES. SHIMS AND WEDGES SHALL BE REMOVED AFTER GROUTING. PROVIDE GROUT POURING AND RELIEF HOLES, AND BLOCKOUTS FOR ACCESS TO LEVELING EQUIPMENT AFTER INITIAL GROUTING. NO WEIGHT SHALL BE TRANSFERRED TO THE ANCHOR BOLTS DURING EQUIPMENT SETTING, LEVELING AND GROUTING.



PLAN



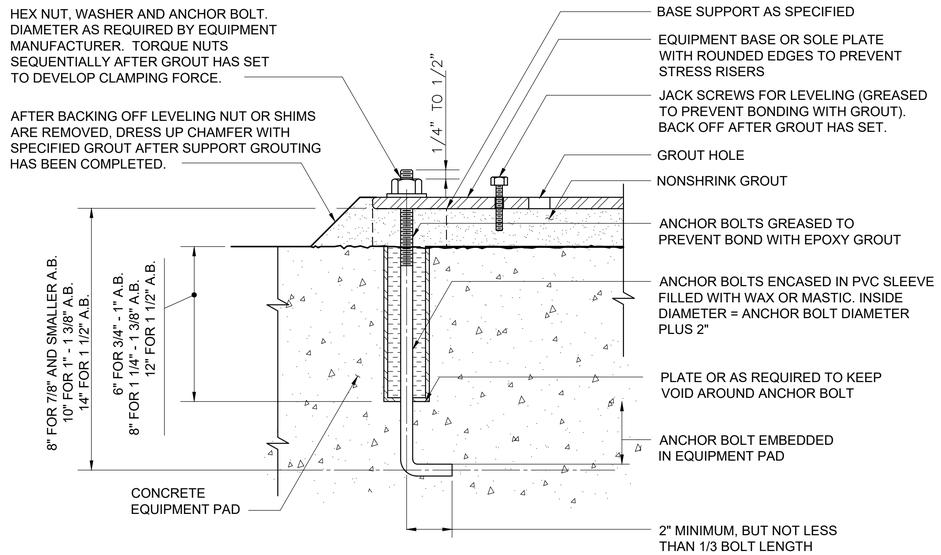
SECTION

NOTES:

1. ALL EQUIPMENT, INCLUDING TANKS, SHALL HAVE AN EQUIPMENT BASE.
2. ANCHOR BOLTS SHALL BE AS REQUIRED TO STABILIZE EQUIPMENT DUE TO OPERATING FORCES AND AS REQUIRED BY BUILDING CODE REQUIRED LOADINGS INCLUDING SEISMIC LOADING AND WIND LOADING. DESIGN SHALL BE BY CONTRACTOR'S ENGINEER REGISTERED IN THE STATE OF THE PROJECT.
3. AT EXISTING CONCRETE SLAB, EPOXY GROUT DOWELS 6" INTO EXISTING CONCRETE SLAB.
4. WHERE EQUIPMENT BASE THICKNESS EXCEEDS 1'-6", PROVIDE INTERMEDIATE REINFORCING LAYERS AT 1'-0" MAXIMUM ON CENTER.

CONCRETE SUPPORT BASE

SCALE: NONE



NOTE:
THIS DETAIL APPLIES TO EQUIPMENT PADS GREATER THAN 12" THICK

TYPICAL EQUIPMENT ANCHOR BOLT

SCALE: NONE

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BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: T. HULL
CHECKED:
APPROVED: A. MODY

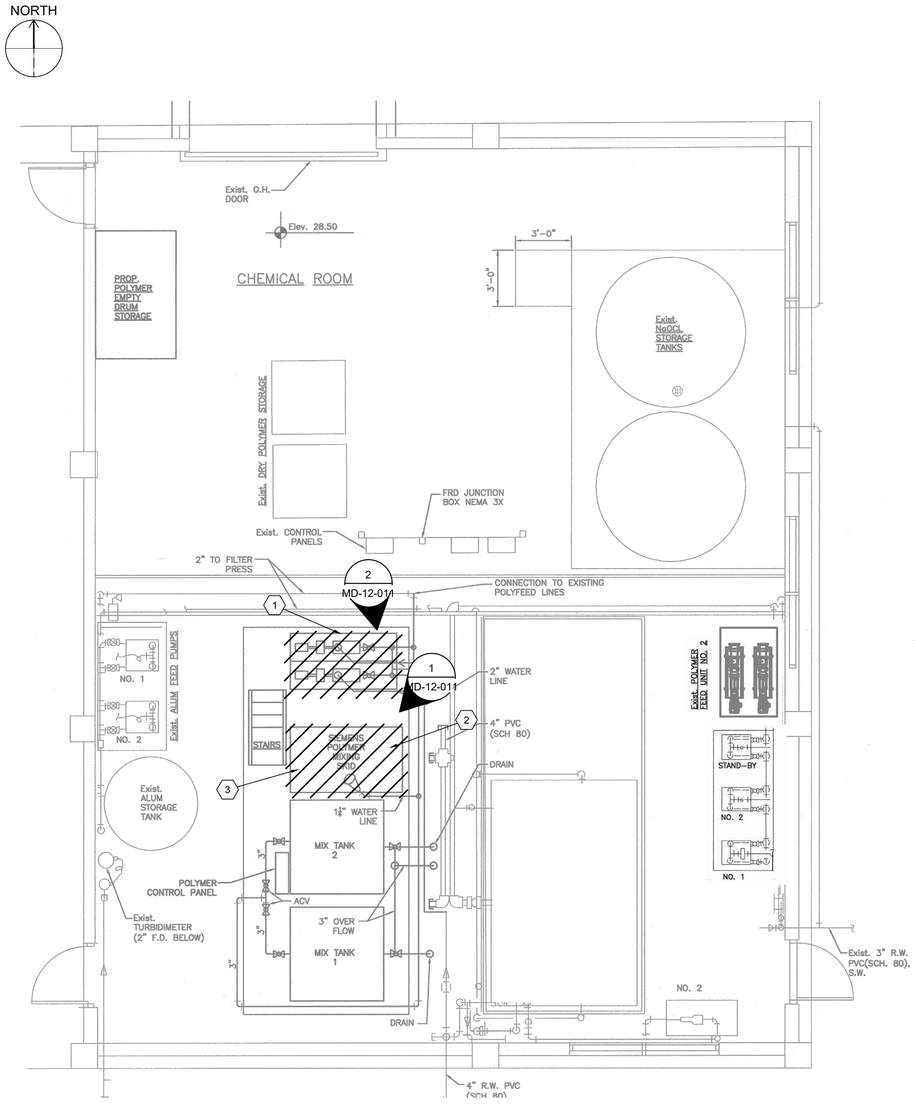
FILENAME 153586-M-00-003.DWG
BC PROJECT NUMBER 153586
CLIENT PROJECT NUMBER 6010881

MECHANICAL

MECHANICAL DETAILS 3

DRAWING NUMBER
M-00-003

SHEET NUMBER 36 OF 63



NWRF POLYMER ROOM DEMOLITION PLAN DEMOLITION 1

NOT TO SCALE

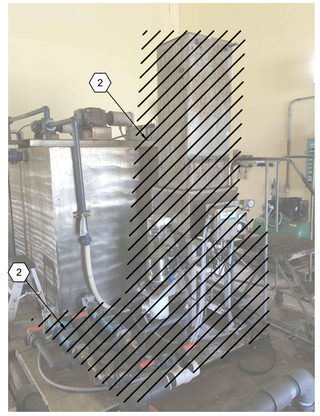


PHOTO 1 MD-12-011

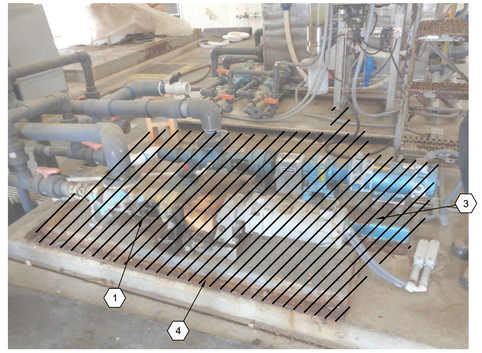


PHOTO 2 MD-12-011

GENERAL NOTES:

1. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO REMOVAL AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
2. CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING EQUIPMENT. ALL EXISTING EQUIPMENT DAMAGED BY THE CONTRACTOR SHALL BE EXPEDITIOUSLY REPAIRED OR REPLACED AT THE EXPENSE OF THE CONTRACTOR WITHOUT ADDITIONAL COMPENSATION. REFER TO SPECIFICATION SECTION 01530 TITLED "PROTECTION OF EXISTING FACILITIES" FOR ADDITIONAL DETAIL OF REQUIREMENTS.
3. CONTRACTOR TO COORDINATE WITH PUMP MANUFACTURER BEFORE DISCONNECTING PIPING, ANCHORING, SUPPORTS, BASEPLATE, ELECTRICAL AND CONTROLS.
4. CONSTRUCTION, DEMOLITION AND RENOVATION SHALL COMPLY WITH NFPA 241.
5. CONTRACTOR SHALL CLEAN, RECOAT, PAINT AND/OR GROUT EXISTING EQUIPMENT PADS THAT ARE DISTURBED AS PART OF THE WORK DETAILED IN THESE CONSTRUCTION DOCUMENTS TO MATCH EXISTING FINISH.
6. ONLY ONE(1) BFP SHALL BE TAKEN OFFLINE AT ANY GIVEN TIME.
7. THE CONTRACTED WORK INCLUDES DEMOLITION OF THE TWO (2) EXISTING POLYMER PUMPS. ONE (1) PROPOSED POLYMER PUMP WILL BE RELOCATED TO THE SOUTH WALL, ADJACENT TO THE POLYMER MIXING TANKS (DETAILED ON SHEET M-17-101). PIPING TO THE COMPLETELY REMOVED POLYMER PUMP SHALL BE COMPLETLY DEMOLITION. THE RELOCATED POLYMER PUMP #3 SHALL BE REPLUMBED WITHIN THE TRENCH AND UNNECESSARY PIPE REMAINING FROM THE ORIGINAL INSTALLATION SHALL BE REMOVED.

KEYNOTES:

1. DEMOLISH POLYMER FEED PUMPS (TYP OF 2)
2. DEMOLISH EXISTING POLYMER SYSTEM INCLUDING ASSOCIATIVE SKID PUMPS
3. DEMOLISH ASSOCIATIVE SKID PUMPS, PIPING AND APPURTENANCES
4. DEMOLISH EXISTING BASEPLATE

LEGEND

DEMOLISH

NOTE: BACKGROUND PLAN OBTAINED FROM BELT FILTER PRESSES S.W. WASTE WATER TREATMENT PLANT PROJECT #415-5857-537 AND #430-8528-537.

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ANAND JAYESH MODY LICENSE ENGINEERING RECORD A. MODY, PE 68379 No. 68379 STATE OF FLORIDA PROFESSIONAL ENGINEER BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

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APPROVED: A. MODY

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BC PROJECT NUMBER 153586
CLIENT PROJECT NUMBER 6010881

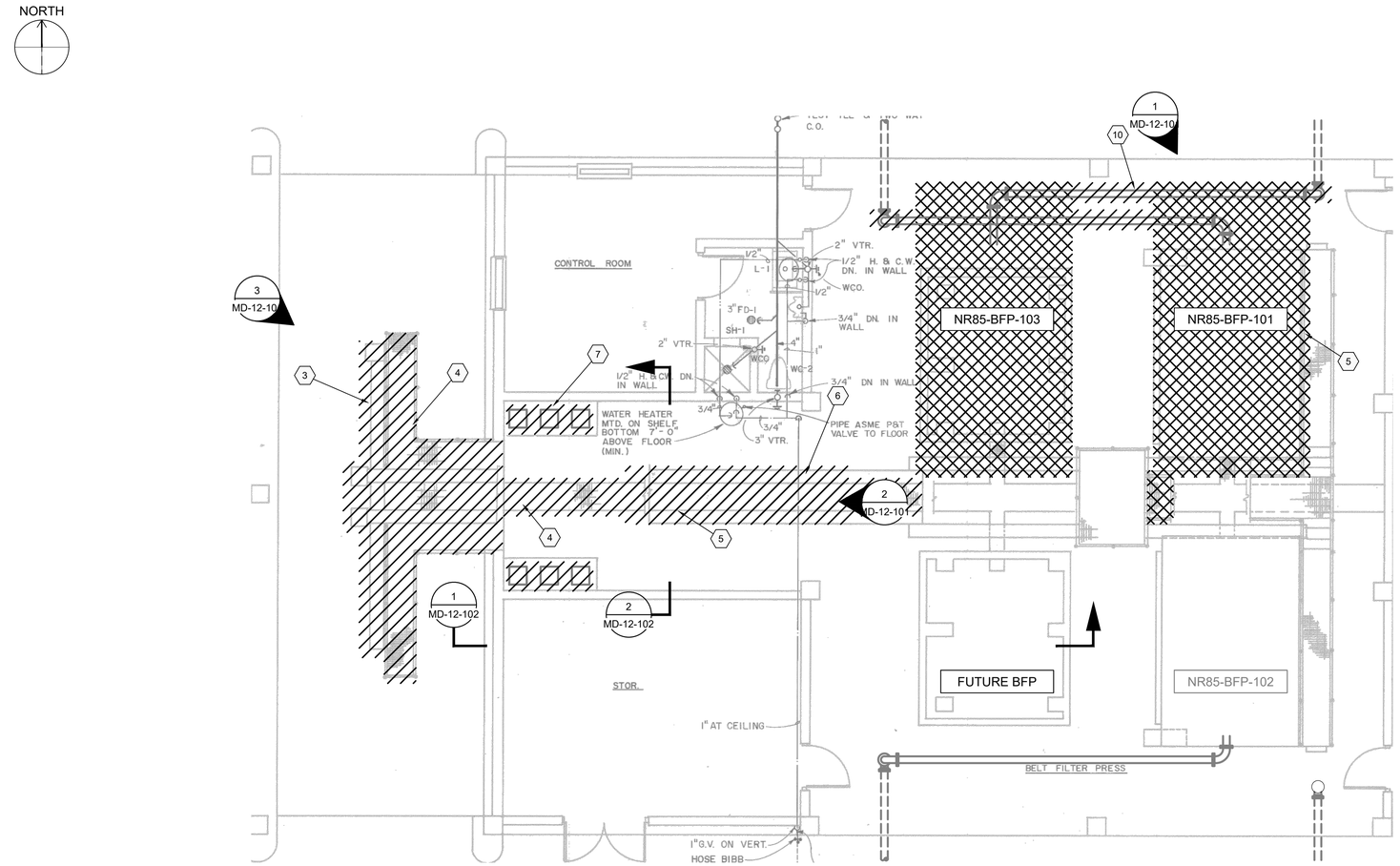
MECHANICAL

NWRF POLYMER ROOM DEMOLITION

DRAWING NUMBER
MD-12-011

SHEET NUMBER 37 OF 63

Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-MD-12-011.DWG PLOT DATE: 4/10/2020 8:03 PM CAD USER: BRETT SILLMAN



NWRF BFP DEMOLITION 1

NOT TO SCALE

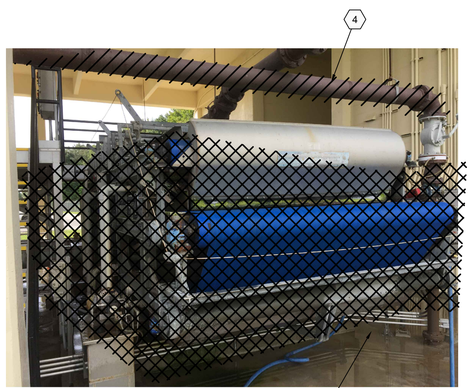


PHOTO 1 MD-12-101

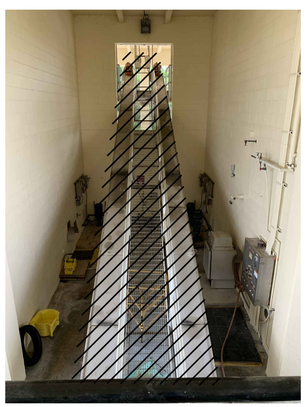


PHOTO 2 MD-12-101

PHOTO 3 MD-12-101

NOTE: BACKGROUND PLAN OBTAINED FROM SWWTP-BELT FILTER PRESS PROJECT NUMBER 2555 (2000).

GENERAL NOTES:

1. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO REMOVAL AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
2. CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING EQUIPMENT. ALL EXISTING EQUIPMENT DAMAGED BY THE CONTRACTOR SHALL BE EXPEDITIOUSLY REPAIRED OR REPLACED AT THE EXPENSE OF THE CONTRACTOR WITHOUT ADDITIONAL COMPENSATION. REFER TO SPECIFICATION SECTION 01530 TITLED "PROTECTION OF EXISTING FACILITIES" FOR ADDITIONAL DETAIL OF REQUIREMENTS.
3. CONTRACTOR TO COORDINATE WITH BELT FILTER PRESS MANUFACTURER AND OWNER BEFORE DISCONNECTING PIPING, HYDRAULIC PACK, ANCHORING, SUPPORTS, ELECTRICAL AND CONTROLS.
4. CONSTRUCTION, DEMOLITION AND RENOVATION SHALL COMPLY WITH NFPA 241.
5. CONTRACTOR SHALL CLEAN, RECOAT, PAINT AND/OR GROUT EXISTING EQUIPMENT PADS THAT ARE DISTURBED AS PART OF THE WORK DETAILED IN THESE CONSTRUCTION DOCUMENTS TO MATCH EXISTING FINISH.
6. DEMOLISH EQUIPMENT PAD AND GRIND TO MATCH EXISTING FLOOR GRADE. GROUT, COAT, AND REFINISH PAD ARE TO MATCH EXISTING FLOOR CONDITIONS.
7. THE CONTRACTED WORK INCLUDES DEMOLITION OF THE TWO (2) EXISTING POLYMER PUMPS. ONE (1) PROPOSED POLYMER PUMP WILL BE RELOCATED TO THE SOUTH WALL, ADJACENT TO THE POLYMER MIXING TANKS (DETAILED ON SHEET M-17-101). PIPING TO THE COMPLETELY REMOVED POLYMER PUMP SHALL BE COMPLETLY DEMOLITION. THE RELOCATED POLYMER PUMP #3 SHALL BE REPLUMBED WITHIN THE TRENCH AND UNNECESSARY PIPE REMAINING FROM THE ORIGINAL INSTALLATION SHALL BE REMOVED.

KEYNOTES:

1. DEMOLISH EXISTING ALUMINUM WALKWAY INCLUDING HANDRAILS, STRUCTURAL SUPPORT SYSTEM. REMOVE ANCHORS, CLEAN, GROUT, SEAL AND RECOAT ANY OPENINGS LEFT BY REMOVAL OF SUPPORT SYSTEM. MATCH EXISTING PLAN OF ROOF WHEN GROUTING OPENINGS OF STRUCTURAL SUPPORT SYSTEM.
2. DEMOLISH EXISTING INCLINED SCREW CONVEYOR, INCLUDING STRUCTURAL SUPPORT SYSTEM. REMOVE ANCHORS, CLEAN, GROUT, SEAL, AND RECOAT ANY OPENINGS LEFT BY REMOVAL OF SUPPORT SYSTEM. MATCH EXISTING GRADE OF FLOOR WHEN GROUTING OPENINGS OF STRUCTURAL SUPPORT SYSTEM.
3. DEMOLISH EXISTING LOADOUT SCREW CONVEYOR, INCLUDING SLIDE GATE SYSTEM, CONTROLS, AND STRUCTURAL SUPPORT SYSTEM.
4. DEMOLISH EXISTING INCLINED WALKWAY INCLUDING HANDRAIL SYSTEM.
5. REFURBISH BELT FILTER PRESS (TYP OF 2)
6. CUT AND REMOVE EXISTING PAD, AS SHOWN IN THE DRAWINGS AND PER DETAILS, TO ALLOW FOR INSTALLATION OF CAKE PUMP PAD.
7. DEMOLISH EXISTING WASHWATER BOOSTER PUMPS (TYP OF 3).
8. DEMOLISH LOADOUT SCREW CONVEYOR STRUCTURAL SUPPORT SYSTEM. REMOVE ANCHORS, CLEAN, GROUT, SEAL, AND RECOAT ANY OPENINGS LEFT BY REMOVAL OF SUPPORT SYSTEM.
9. DEMOLISH EXISTING CONTROL PANEL.
10. DEMOLISH 6" FEED PIPE ASSEMBLY

LEGEND

DEMOLISH

REFURBISHED

Brown AND Caldwell
Certificate of Authorization No. 2602
6151 Lake Osprey Drive, 3rd Floor
Sarasota, FL 34240

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ANAND JAYESH MODY LICENSED PROFESSIONAL ENGINEER
ENGINEERING RECORD A. MODY, PE 68379
No. 68379
STATE OF FLORIDA
BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: T. HULL
CHECKED:
APPROVED: A. MODY

FILENAME
153586-MD-12-101.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

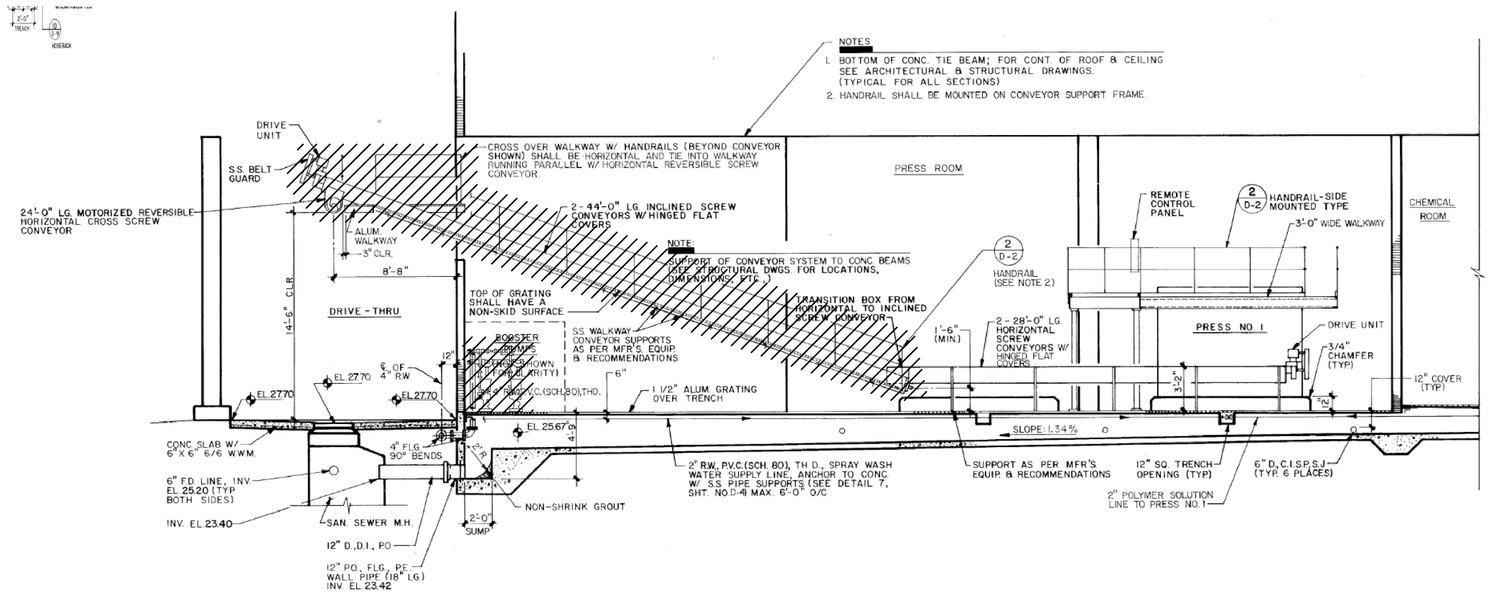
MECHANICAL

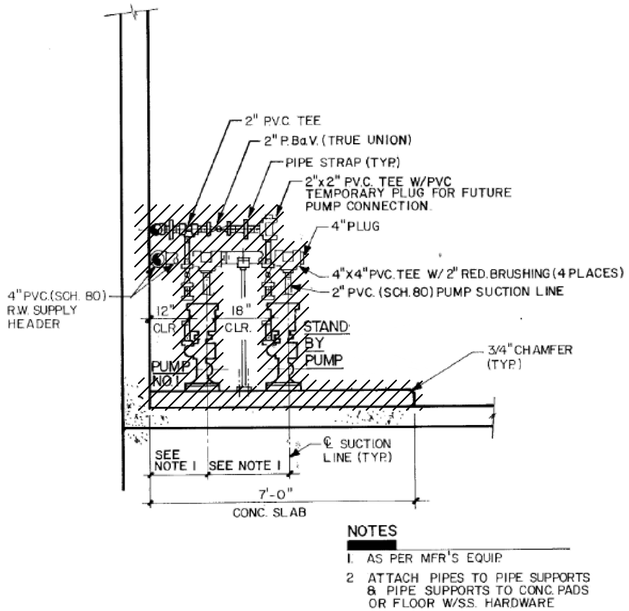
NWRF BFP AND TRUCK LOAD OUT DEMOLITION PLAN

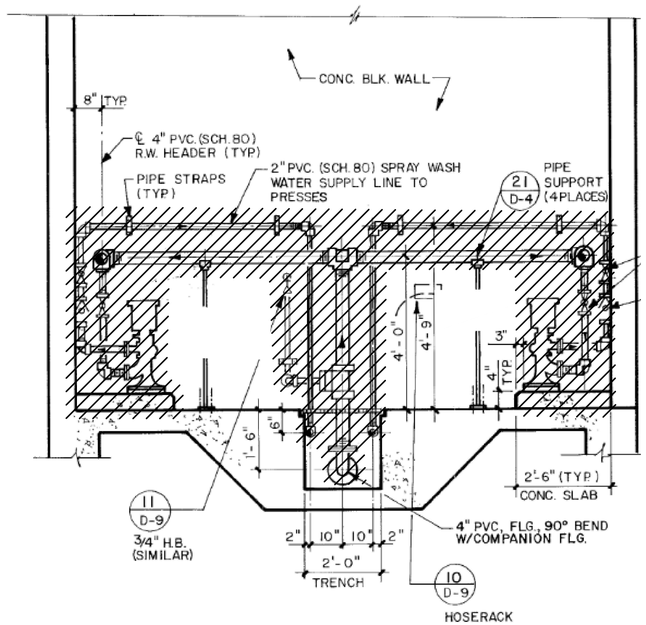
DRAWING NUMBER
MD-12-101

38 SHEET NUMBER OF 63

Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-MD-12-101.DWG PLOT DATE: 4/14/2020 4:00 PM CAD USER: BRETT SILLMAN







LEGEND

DEMOLISH

REFURBISHED

NOTE: BACKGROUND PLAN OBTAINED FROM SWWTP-BELT FILTER PRESS PROJECT NUMBER 2555 (2000).

GENERAL NOTES:

1. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO REMOVAL AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
2. CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING EQUIPMENT. ALL EXISTING EQUIPMENT DAMAGED BY THE CONTRACTOR SHALL BE EXPEDITIOUSLY REPAIRED OR REPLACED AT THE EXPENSE OF THE CONTRACTOR WITHOUT ADDITIONAL COMPENSATION. REFER TO SPECIFICATION SECTION 01530 TITLED "PROTECTION OF EXISTING FACILITIES" FOR ADDITIONAL DETAIL OF REQUIREMENTS.
3. CONTRACTOR TO COORDINATE WITH BELT FILTER PRESS MANUFACTURER AND OWNER BEFORE DISCONNECTING PIPING, HYDRAULIC PACK, ANCHORING, SUPPORTS, ELECTRICAL AND CONTROLS.
4. CONSTRUCTION, DEMOLITION AND RENOVATION SHALL COMPLY WITH NFPA 241.
5. CONTRACTOR SHALL CLEAN, RECOAT, PAINT AND/OR GROUT EXISTING EQUIPMENT PADS THAT ARE DISTURBED AS PART OF THE WORK DETAILED IN THESE CONSTRUCTION DOCUMENTS TO MATCH EXISTING FINISH.
6. ONLY ONE(1) BFP SHALL BE TAKEN OFFLINE AT ANY GIVEN TIME.

KEYNOTES:

1.

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ANAND JAYESH MODY LICENSE
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A. MODY, PE 68379
No. 68379
STATE OF FLORIDA
PROFESSIONAL ENGINEER
BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

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DRAWN: M. CORNELISON
CHECKED: T. HULL
CHECKED:
APPROVED: A. MODY

FILENAME 153586-MD-12-102.DWG
BC PROJECT NUMBER 153586
CLIENT PROJECT NUMBER 6010881

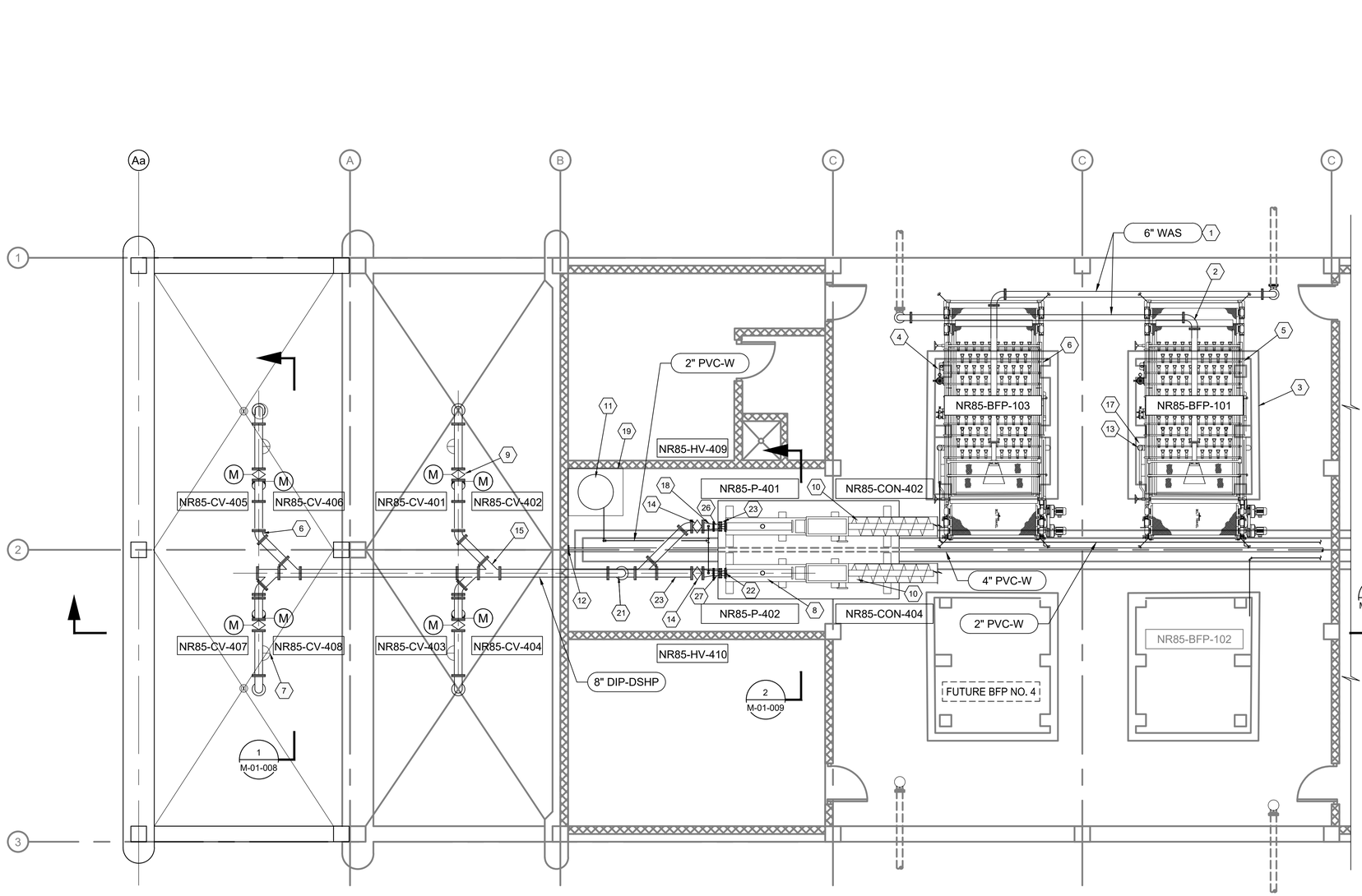
MECHANICAL

NWRF BFP AND TRUCK LOAD OUT DEMOLITION SECTIONS

DRAWING NUMBER
MD-12-102

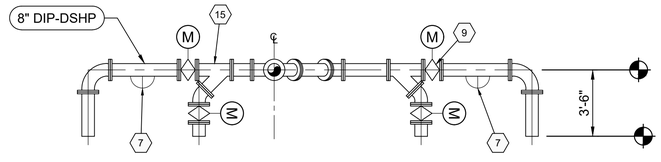
SHEET NUMBER 39 OF 63

Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-MD-12-102.DWG PLOT DATE: 4/10/2020 8:19 PM CAD USER: BRETT SILLMAN



NWRF BFP AND TRUCK LOADOUT PLAN

SCALE: 3/16" = 1'-0"



CAKE DISTRIBUTION

SECTION 1 / M-01-008

SCALE: 1/4"=1'-0"

NOTE: BACKGROUND PLAN OBTAINED FROM SWWTP BELT FILTER PRESS PROJECT NUMBER 2553 (2000).

GENERAL NOTES:

1. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO REMOVAL AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
2. NOT ALL EQUIPMENT , APPURTENANCES AND SUPPORTS SHOWN.
3. CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING EQUIPMENT. ALL EXISTING EQUIPMENT DAMAGED BY THE CONTRACTOR SHALL BE EXPEDITIOUSLY REPAIRED OR REPLACED AT THE EXPENSE OF THE CONTRACTOR WITHOUT ADDITIONAL COMPENSATION.
4. CONTRACTOR TO COORDINATE WITH BELT FILTER PRESS MANUFACTURER BEFORE DISCONNECTING PIPING, HYDRAULIC PACK, ANCHORING, SUPPORTS, ELECTRICAL AND CONTROLS.
5. CONSTRUCTION, DEMOLITION AND RENOVATION SHALL COMPLY WITH NFPA 241.
6. CONTRACTOR SHALL CLEAN, RECOAT, PAINT AND/OR GROUT EXISTING EQUIPMENT PADS THAT ARE DISTURBED AS PART OF THE WORK DETAILED IN THESE CONSTRUCTION DOCUMENTS TO MATCH EXISTING FINISH.
7. ONLY ONE (1) BFP SHALL BE TAKEN OFFLINE AT ANY GIVEN TIME.
8. REPLACE SLUDGE FEED PIPING FROM THE CONNECTION AT BFP IN CHEMICAL INJECTION FITTING.
9. CONTRACTOR SHALL MAKE ALL REQUIRED UTILITY CONNECTIONS TO PUMPS AND BFP.
10. CONTRACTOR SHALL SUPPLY COMPLETE SPARE CAKE PUMP AS PART OF THIS CONTRACT TO BE KEPT ON SHELF.
11. FOR REFURBISHMENT REQUIREMENTS, CONTRACTOR SHALL COORDINATE WITH BELT FILTER PRESS MANUFACTURER. FOR SPECIFIC DETAILS AND REQUIREMENTS SEE SPECIFICATION SECTION 11025 TITLED "BELT FILTER PRESS REHABILITATION.
12. THE PROPOSED CAKE PUMP PAD SHALL BE RAISED AND ANCHORED FROM THE FLOOR USING AN I-BEAM ATTACHED TO A BASE-PLATE. THE GRATING UNDER THE PROPOSED CAKE PUMP, BASEPLATE AND ANCHOR SHALL BE CUT PERPENDICULAR TO THE TRENCH TO ALLOW FOR EASY REMOVAL OF GRATING THAT IS NOT UNDER THE CAKE PUMPS. THE GRATING SHALL BE SMOOTHED AND WELDED TO FORM A FRAME AROUND THE GRATE TO PREVENT INJURY TO OPERATORS DURING GRATE REMOVAL.
13. THE BOOSTER PUMP, BELT FILTER PRESSES, AND POLYMER PUMPS SHALL HAVE MATCHING IDENTIFIERS. FOR EXAMPLE, BOOSTER PUMP NO. 1 AND POLYMER PUMP NO. 1 WILL SERVE BELT FILTER PRESS NO. 1.

KEYNOTES:

1. 6" FEED PIPE ASSEMBLY
2. 6" 90° BENDS
3. CLEAN REPAIR CONCRETE, PATCH, GROUT, RECOAT AND PAINT EXISTING CONCRETE CURB PER SECTION 09900 (TYP. OF 2)
4. JET CLEAN THE DRAIN PIPING AND VENTS PRIOR TO NEW BFP INSTALLATION AND CONNECTION. (TYP. OF 2)
5. REFURBISH EXISTING BFP 1 AND BFP 3
6. 8" PIPE 22.5° BEND
7. HALF DOME CONVEX SAFETY MIRROR (TYP. OF 4)
8. CAKE PUMPS (TYP OF 2)
9. 8" PLUG VALVE (MOTOR OPERATED)(TYP OF 8)
10. INCLINED SCREW CONVEYOR (25° INCLINE) (TYP OF 2)
11. AIR COMPRESSOR
12. CONNECT PROPOSED 4" RAW WATER TO EXISTING RAW WATER FEED
13. CONNECT 2" WASHWATER BOOSTER PIPING TO REFURBISHED BFP (TYP)
14. 8" PLUG VALVE (MANUAL OPERATED) (TYP OF 2)
15. 8" CAKE FEED PIPE WYE (TYP)
16. 5" DRESSER STYLE 128 FLEXIBLE COUPLING (TYP OF 2)
17. HYDRAULIC POWER PACK (TYP OF 2)
18. 8"x5"" CONCENTRIC DIP REDUCER AND BOUNDARY LAYER AIR INJECTION CONNECTION.
19. 6" CONCRETE EQUIPMENT PAD
20. 1/2" STEEL PLATE
21. 8" LONG RADIUS 90° BEND (TYP)
22. 2" PVC 90° BEND
23. VANE TYPE PRESSURE SWITCH (TYP OF 2)
24. BOUNDARY LAYER POLYMER INJECTION RING (FOR FUTURE USE - NO POLYMER SYSTEM CONNECTION REQUIRED
25. ALTERNATE REFURBISHMENT (SEE SHEET MD-12-101
26. PI 401, PSH 401, QSH 401-1, QSH 401-2, MSL 401, LT 401 (APPROX. LOCATION)
27. PI 402, PSH 402, QSH 402-1, QSH 402-2, MSL 402, LT 402 (APPROX. LOCATION)

Brown AND Caldwell
Certificate of Authorization No. 2602
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ANAND JAYESH MODY
LICENSED
ENGINEER'S STAMP
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No. 68379
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FLORIDA
PROFESSIONAL ENGINEER
BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: T. HULL
CHECKED:
APPROVED: A. MODY

FILENAME
153586-M-01-008.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

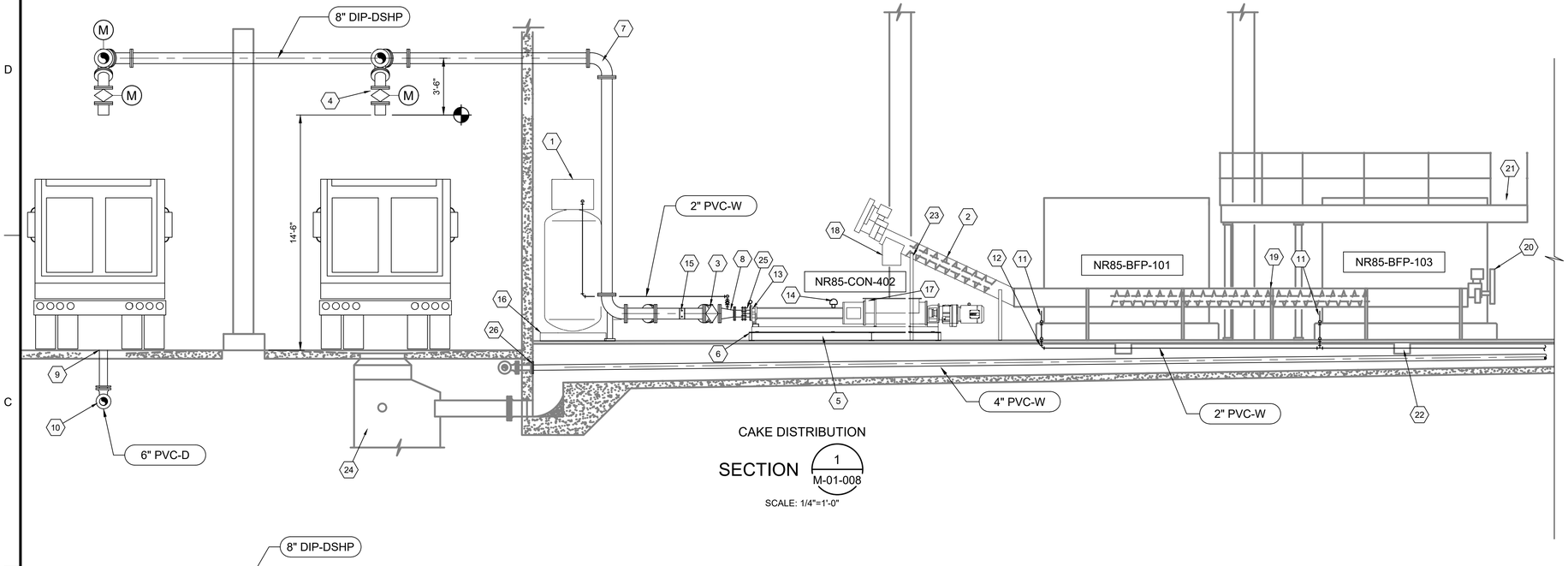
MECHANICAL

NWRF BFP AND TRUCK LOAD OUT PLAN

DRAWING NUMBER
M-01-008

40 SHEET NUMBER OF 63

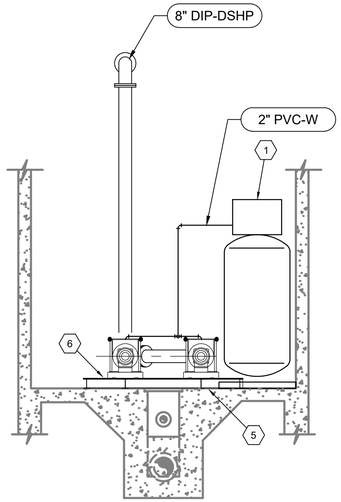
Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-M-01-008.DWG PLOT DATE: 4/10/2020 8:27 PM CAD USER: BRETT SILLMAN



CAKE DISTRIBUTION

SECTION 1 / M-01-008

SCALE: 1/4"=1'-0"



CAKE DISTRIBUTION

SECTION 2 / M-01-008

SCALE: 1/4"=1'-0"

NOTE: BACKGROUND PLAN OBTAINED FROM SWWTP BELT FILTER PRESS PROJECT NUMBER 2553 (2000).

KEYNOTES:

1. AIR COMPRESSOR
2. INCLINED SCREW CONVEYOR (25° INCLINE) (TYP OF 2)
3. 8" PLUG VALVE (MANUAL OPERATED) (TYP OF 2)
4. 8" PLUG VALVE (MOTOR OPERATED) (TYP OF 8)
5. 6" I-BEAM (TYP OF 3)
6. 1/2" STEEL PLATE
7. 8" LONG RADIUS 90° BEND (TYP)
8. 8"x5" CONCENTRIC DIP REDUCER AND BOUNDARY LAYER AIR INJECTION CONNECTION
9. 8" DRAIN COVER
10. 6" PVC DRAIN PIPE
11. CONNECT 2" WASHWATER BOOSTER PIPING TO REFURBISHED BFP (TYP)
12. 2" PVC 90 BEND (TYP)
13. VANE TYP PRESSURE SWITCH
14. DRY RUNNING PROTECTION DEVICE (TYP OF 2)
15. BOUNDARY LAYER POLYMER INJECTION RING (FOR FUTURE USE - NO POLYMER SYSTEM CONNECTION REQUIRED)
16. 6" CONCRETE EQUIPMENT PAD
17. CAKE PUMP (TYP OF 2)
18. DISCHARGE CHUTE (TYP OF 2)
19. EXISTING 2 - 28'-0" LONG HORIZONTAL SCREW CONVEYOR (TYP OF 2)
20. DRIVE UNIT (TYP)
21. 3'-0" WIDE WALKWAY
22. 12" SQUARE TRENCH OPENING (TYP)
23. EQUIPMENT SUPPORT AS PER MANUFACTURERS RECOMMENDATIONS (TYP)
24. SANITARY SEWER MANHOLE
25. 5" DRESSER STYLE 128 FLEXIBLE COUPLING (TYP 2 PLACES)
26. CONNECT PROPOSED 4" RAW WATER TO EXISTING RAW WATER FEED

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LICENSED
ENGINEER ANAND JAYESH MODY
A. MODY, PE 68379
No. 68379
STATE OF
FLORIDA
PROFESSIONAL ENGINEER
BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: T. HULL
CHECKED:
APPROVED: A. MODY

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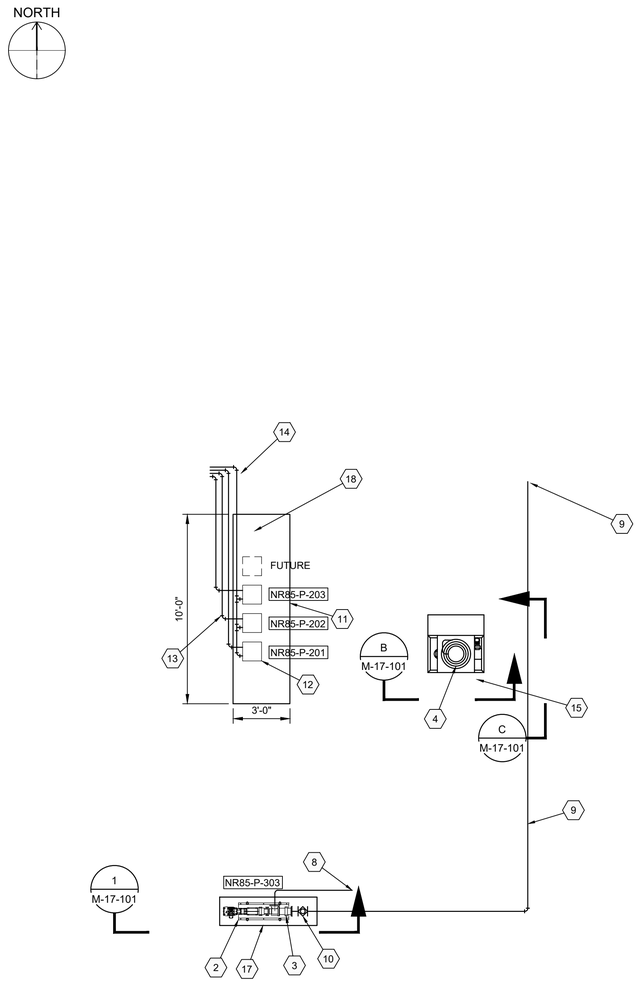
MECHANICAL

NWRF BFP AND TRUCK LOAD OUT SECTIONS

DRAWING NUMBER
M-01-009

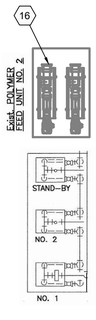
41 SHEET NUMBER OF 63

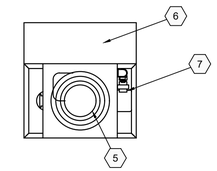
Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-M-01-009.DWG PLOT DATE: 4/10/2020 8:34 PM CAD USER: BRETT SILLMAN



NWRF POLYMER ROOM PLAN

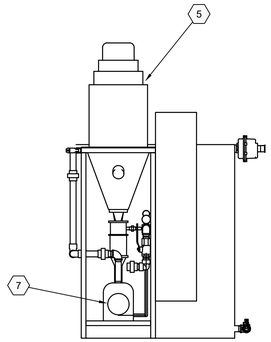
NOT TO SCALE





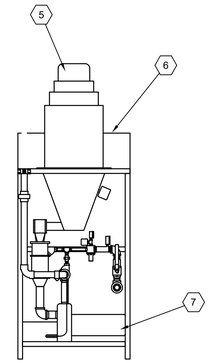
DETAIL A M-17-101

SCALE: 1/2"=1'-0"



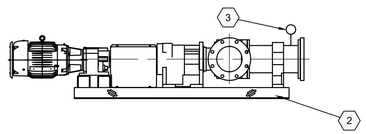
DETAIL C M-17-101

SCALE: 1/2"=1'-0"



DETAIL B M-17-101

SCALE: 1/2"=1'-0"



POLYMER FEED PUMP

SECTION 1 M-17-101

SCALE: 1/2"=1'-0"

GENERAL NOTES:

1. EXISTING PIPING AND APPURTENANCES THAT ARE PART OF THE POLYMER PUMPING SYSTEM SHALL REMAIN UNLESS SHOWN OTHERWISE.
2. NO PIPING OR APPURTENANCE TO BE REPLACED W/ PROPOSED POLYMER PUMPS UNLESS OTHERWISE SHOWN.
3. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO REMOVAL AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
4. NOT ALL EXISTING EQUIPMENT, APPURTENANCES, AND SUPPORTS SHOWN.
5. PUMP REPLACEMENT INCLUDES BASEPLATES AND MOTORS.
6. CONSTRUCTION, DEMOLITION, AND RENOVATION SHALL COMPLY WITH NFPA 241.
7. CONTRACTOR SHALL CLEAN, RECOAT, PAINT AND/OR GROUT EXISTING EQUIPMENT PADS THAT ARE DISTURBED AS PART OF THE WORK DETAILED IN THESE CONSTRUCTION DOCUMENTS TO MATCH THE EXISTING FINISH.
8. ONLY ONE (1) BFP SHALL BE TAKEN OFFLINE AT ANY GIVEN TIME.
9. POLYMER SYSTEM VACUUM LINE SHALL BE ROUTED TO THE LOCATION WITHIN 20-FT OF THE POLYMER SYSTEM AS DIRECTED BY THE COUNTY OPERATIONAL STAFF.
10. CONTRACTOR SHALL SUPPLY A COMPLETE SPARE POLYMER PUMP AS PART OF THIS CONTRACT TO BE KEPT ON SHELF BY OWNER.
11. CONTRACTOR SHALL MAKE ALL REQUIRED UTILITY CONNECTIONS TO PUMP AND BFP.
12. POLYMER PUMPS #1 AND #2 SHOWN IN THE PLAN VIEW ARE IN EXACT LOCATIONS AND THE INTENT IS FOR GENERAL REFERENCE ONLY. CONTRACTOR TO FIELD VERIFY ACTUAL LOCATIONS OF POLYMER PUMPS.
13. EACH BOOSTER PUMP SHALL BE CONNECTED TO THE CORRESPONDING BFP. FOR EXAMPLE, BOOSTER PUMP NO. 1 SHALL BE PLUMBED TO BFP NO. 1.
14. ALL PLUMBING TO WASHWATER BOOSTER PUMPS (2" FEEDLINE & 4" RAW WATER) SHALL BE INSTALLED IN THE TRENCH.

KEYNOTES:

1. INSTALL NEW POLYMER FEED PUMPS (TYP OF 2)
2. PUMP BASE PLATE (TYP OF 2)
3. PRESSURE GAUGE (PSH 303)
4. INSTALL POLYMER MIXING SYSTEM
5. POWDER VACUUM CONVEYOR
6. POLYMER CONTROL PANEL
7. POLYMER SYSTEM PUMP
8. INSTALL 3" PVC TEE.
9. CONNECT TO EXISTING 2" PVC PIPE TO BFP
10. 3" PVC BALL VALVE
11. CONCRETE EQUIPMENT PAD
12. WASHWATER BOOSTER PUMP
13. WASHWATER BOOSTER PUMP TO BFP
14. SEE SHEET M-01-009 FOR TRENCH SECTION SHOWING PIPE ORIENTATION.
15. RECONNECT RAW WATER LINE TO POLYMER MIXING SYSTEM
16. POLYMER PUMP #1 & #2
17. INSTALL POLYMER PUMP #3 ON EXISTING PAD IN THIS LOCATION. PRESSURE WASH EXISTING PAD AND RECOAT PRIOR TO INSTALLATION
18. DEMOLISH ALUM SYSTEM AND ASSOCIATED PUMPS, PIPING, ELECTRICAL COMPONENTS AND OTHER ASSOCIATED APPURTENANCES

NOTE: BACKGROUND PLAN OBTAINED FROM BELT FILTER PRESSES S.W. WASTE WATER TREATMENT PLANT PROJECT #415-5857-537 AND #430-8528-537.

Brown AND Caldwell

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ENGINEER OF RECORD
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BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

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153586-M-17-101.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

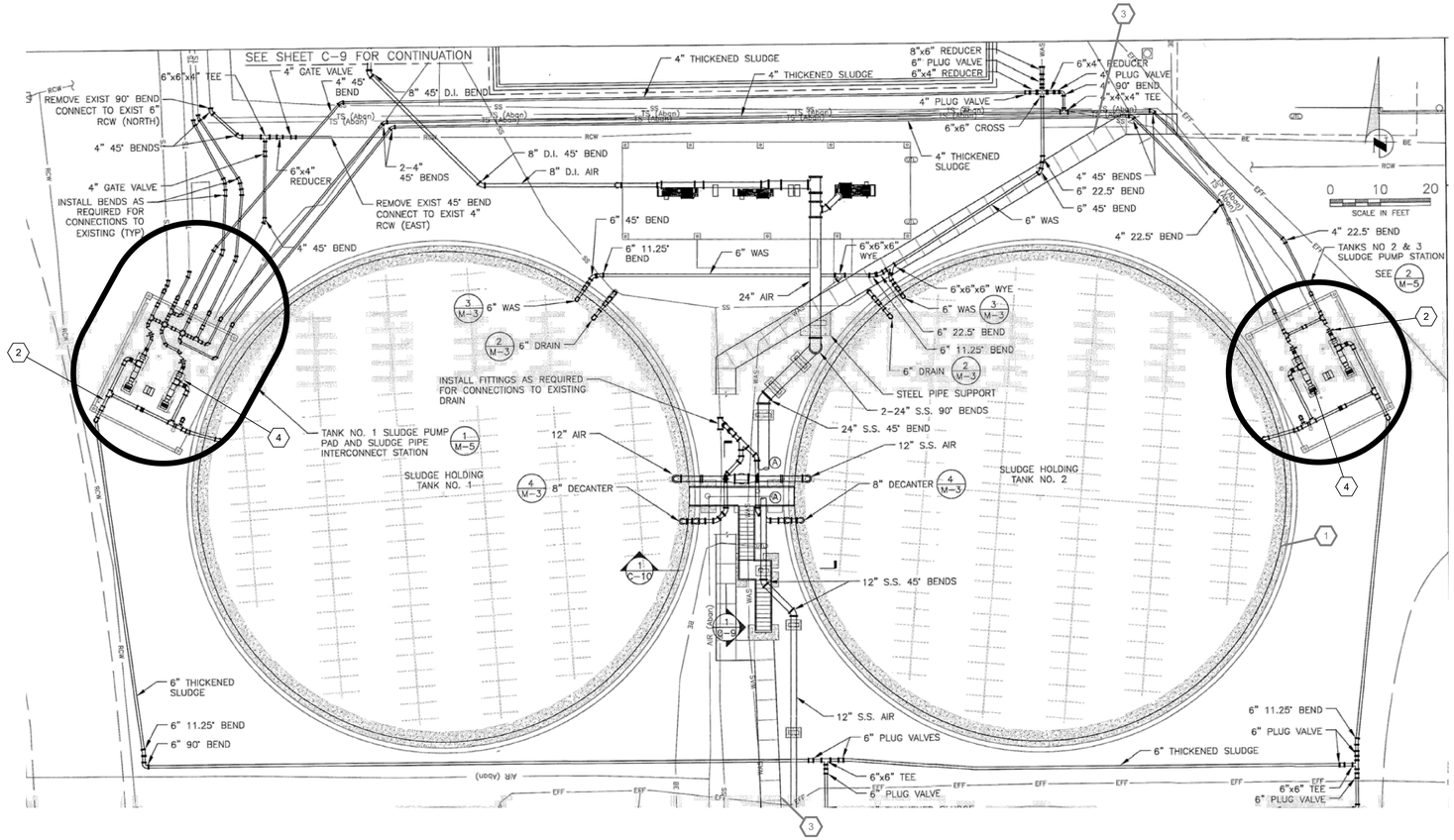
MECHANICAL

NWRF POLYMER ROOM PLAN AND SECTIONS

DRAWING NUMBER
M-17-101

SHEET NUMBER 42 OF 63

Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-M-17-101.DWG PLOT DATE: 4/10/2020 8:40 PM CAD USER: BRETT SILLMAN



NWRF SLUDGE TRANSFER PUMPS PLAN

(NO CONSTRUCTION OR DEMOLITION SHOWN - SPARE PUMPS TO BE SUPPLIED)
SCALE: 1/16" = 1'-0"

NOTE: BACKGROUND PLAN OBTAINED FROM BELT FILTER PRESSES S.W.
WASTE WATER TREATMENT PLANT PROJECT #415-5857-537 AND #430-8528-537.

GENERAL NOTES:

1. CONTRACTOR SHALL SUPPLY TWO COMPLETE SLUDGE FEED PUMPS AND MOTORS AS PART OF THIS CONTRACT TO BE KEPT ON SHELF TO BE USED AS SPARES. SEE APPROPRIATE SPECIFICATION FOR DETAILED INFORMATION.

KEYNOTES:

1. SLUDGE HOLDING TANK
2. SLUDGE FEED PUMP PIPING
3. CONCRETE WALKWAY
4. SLUDGE FEED PUMPS

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ANAND JAYESH MODY LICENSED ENGINEER ANAND JAYESH MODY No. 68379 STATE OF FLORIDA PROFESSIONAL ENGINEER

BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED: T. HULL
CHECKED:
APPROVED: A. MODY

FILENAME
153586-M-19-101.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

MECHANICAL

NWRF SLUDGE TRANSFER PUMPS PLAN

DRAWING NUMBER
M-19-101

43 SHEET NUMBER OF 63

Path: \\BCSUNFP01\PROJECTS\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-M-19-101.DWG PLOT DATE: 4/10/2020 8:47 PM CAD USER: BRETT SILLMAN

RACEWAYS

HH23 — MANHOLE (MH), HANDHOLE (HH), PULLBOX (PB)

JB1900 (J) — JUNCTION BOX. OPTIONAL IDENTIFIER

TB-1301 (T) — TERMINAL BOX. OPTIONAL IDENTIFIER

PBD-1900-1,3,5 — HOME RUN EXPOSED - SEE PANELBOARD, SWITCHBOARD, OR MCC SCHEDULE FOR CIRCUIT INFORMATION

EXAMPLE: HOME TO PANELBOARD PBD-1900, CIRCUITS 1, 3, AND 5

PBD-1900-1,3,5 — HOME RUN CONCEALED - SEE PANELBOARD, SWITCHBOARD, OR MCC SCHEDULE FOR CIRCUIT INFORMATION.

EXAMPLE: HOME TO PANELBOARD PBD-1900, CIRCUITS 1, 3, AND 5

CABLE TRAY MODIFIERS:
CTS - 24VDC OR LESS
CTC - 120V CONTROL CONDUCTORS
CTP - 600V POWER CONDUCTORS

CABLE #4/0 AND LARGER SHALL NOT BE STACKED VERTICALLY

WHEN TWO TRAY MODIFIERS IDENTIFY A SINGLE TRAY, THE CONTRACTOR MAY USE DIVIDER OR INSTALL SEPARATE TRAYS (CTC/CTS)

CABLE TRAY WITH COVER MODIFIER, AS ABOVE

P 05P1100 — RACEWAY IDENTIFIER

RACEWAY EXPOSED
MODIFIERS FOR RACEWAY TYPE:
H - POWER (ABOVE 600V)
P - POWER
C - CONTROL
S - SIGNAL
D - DATA
F - FIBER OPTIC
PC - POWER AND CONTROL
X - SPARE

RACEWAY CONCEALED

RACEWAY TURNED TOWARD THE THE VIEWER

RACEWAY TURNED DOWN

CONDUIT CAPPED

DB 05P1100 — DUCT BANK IDENTIFIER (OPTIONAL)

DB — DUCT BANK, DIRECT BURIED

CDB — DUCT BANK, CONCRETE ENCASED

RC — DUCTBANK, REINFORCED CONCRETE ENCASED

OHE — OVERHEAD POWER LINE

DISTRIBUTION EQUIPMENT

APPROXIMATE SHAPE AND SCALE REPRESENTED WHERE POSSIBLE. HOWEVER, EXACT SIZE AND NUMBER OF SECTIONS IS ESTIMATED

FLOOR-STANDING DISTRIBUTION ASSEMBLY, SUCH AS A SWITCHBOARD, TRANSFORMER, OR MOTOR CONTROL CENTER

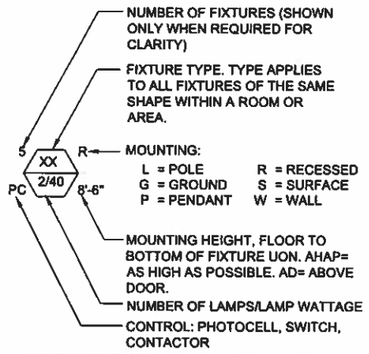
MCC-1200 — EQUIPMENT DESIGNATION (EXAMPLE)

WALL-MOUNTED DISTRIBUTION ASSEMBLY, SUCH AS PANELBOARD, MOTOR STARTER PANEL, OR TERMINAL CABINET

PBD-1900 — EQUIPMENT DESIGNATION (EXAMPLE)

LIGHTING

FIXTURE IDENTIFIER:



LIGHTING FIXTURE SHAPES AND SCALE ARE REPRESENTED WHERE POSSIBLE. THE EXAMPLES SHOWN BELOW ARE TYPICAL APPLICATIONS

RECESSED FLUORESCENT FIXTURE

SUSPEND PENDANT MOUNTED FIXTURE

SURFACE MOUNTED FIXTURE

NS — EMERGENCY LIGHTING FIXTURES, FIXTURES WITH EMERGENCY BALLAST'S, AND FIXTURES IDENTIFIED WITH AN 'NS' SHALL BE PROVIDED WITH NON-SWITCHED POWER SOURCE

E — FLUORESCENT FIXTURE WITH EMERGENCY BATTERY PACK

LIGHT FIXTURE

WALL MOUNTED FIXTURE

DIRECTIONAL LIGHT

POLE MOUNTED AREA LIGHT

EMERGENCY LIGHTING UNIT SELF CONTAINED

LIGHTING CONTINUED

EXIT LIGHTS:

SURFACE ON CEILING

WALL MOUNTED

WITH DIRECTIONAL ARROWS

3a — CIRCUIT IDENTIFIER. WHEN SHOWN ADJACENT TO FIXTURE IDENTIFIES CIRCUIT NUMBER AND SWITCH. EXAMPLE: CIRCUIT 3, CONTROLLED BY SWITCH a

PC — PHOTO CELL

OS — OCCUPANCY SENSOR

WIRING DEVICES

SWITCHES:

UNLESS OTHERWISE NOTED, ALL SWITCHES ARE WALL MOUNTED

$ — TOGGLE SWITCH, SINGLE POLE

$$ — GANGED SWITCHES IN COMMON BOX WITH COMMON WALL PLATE

$a,3 — SUPERSCRIPT INDICATES CIRCUIT CONTROLLED: a, b, c, ETC. MAY BE COMBINED WITH CIRCUIT NUMBER. EXAMPLE: 1a, 4b, ETC

SUBSCRIPT MODIFIER INDICATES:
2 = DOUBLE POLE
3 = THREE WAY
4 = FOUR WAY
K = KEY OPERATED
MC = MOMENTARY CONTACT, THREE POSITION
MS = MANUAL (MOTOR) STARTER OR SWITCH WITH OVERLOADS
R = RHEOSTAT (DIMMER, SPEED CONTROL)
O = OCCUPANCY SWITCH

D — DIMMER

RECEPTACLES:

DUPLEX RECEPTACLE

WP — RECEPTACLE MODIFIERS:
WP = WEATHER PROOF

GFI = GROUND FAULT CIRCUIT INTERRUPTER

H = HAZARDOUS AREA-EXPLOSION PROOF

EXPLOSION PROOF, CLASS 1, DEAD FRONT, 45° ANGLE, TWO GANG

RECESSED FLOOR RECEPTACLE-- ANY RECEPTACLE INSIDE A SQUARE

SURFACE FLOOR RECEPTACLE-- ANY RECEPTACLE INSIDE A TRIANGLE

GANGED RECEPTACLES--IN COMMON BOX, WITH COMMON WALL PLATE

RECEPTACLE, CLOCK HANGER

RECEPTACLE, DUPLEX ON EMERGENCY

480V RECEPTACLE

GROUNDING

GROUND ROD

GROUND ROD WITH GROUND WELL

GROUND CONNECTION, COMPRESSION TYPE, EXOTHERMIC. SEE SPECIFIC

G — GROUNDING CONDUCTOR

GROUND CONNECTION

GROUND CONNECTION TO STRUCTURAL REINFORCEMENT

LIGHTNING ROD/AIR TERMINAL

MOTORS AND EQUIPMENT

MOTOR STARTER, INDIVIDUAL. NOT LOCATED IN AN MCC OR SIMILAR GROUP ASSEMBLY

COMBINATION MOTOR STARTER. NOT LOCATED IN AN MCC OR SIMILAR GROUP ASSEMBLY

60 — DISCONNECT SWITCH, NON-FUSED EXAMPLE: 60 AMP

F 100/2/80 — DISCONNECT SWITCH, FUSED EXAMPLE: 100 AMP, 2P, 80 AMP FUSES

M — MOTOR

SV — SOLENOID VALVE

H — HEATER

T — THERMOSTAT

WH — WATER HEATER

FIELD INSTRUMENT

LOCAL CONTROL STATION

LCP-0001 — EQUIPMENT DESIGNATION

CONTROL PANEL, VFD, RVSS, APPROXIMATE SHAPE AND SCALE.

AREA IDENTIFICATION

CI-D1 — HAZARDOUS AREA CLASSIFICATION

CI-D2 — HAZARDOUS AREA CLASSIFICATION

TELEPHONE & COMMUNICATION SYSTEMS

UNLESS OTHERWISE NOTED, TELEPHONE OUTLETS SHALL BE MOUNTED AT SAME HEIGHT AS THE RECEPTACLES. VERIFY

A — EXTERNAL LINE OR PLANT PHONE SYSTEM OUTLET

OPTIONAL MODIFIERS:
A = ATTENDANT'S CONSOLE
F = FUTURE INSTRUMENT
J = JACK, PLUG-IN TYPE
W = WALL INSTRUMENT

BELL

D — OUTLET, DATA COMMUNICATION

SECURITY CAMERA

SPEAKER

H — AUDIBLE HORN

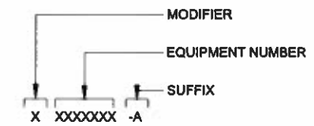
B — STROBE LIGHT (BLUE SHOWN)

CS — ELECTRONIC CARD SWIPE

SD — SMOKE DETECTOR

R — RATE-OF-RISE DETECTOR

CIRCUIT IDENTIFICATION



NOTE:

MODIFIERS FOR CABLE TYPE INCLUDE:
H - POWER (ABOVE 600V)
P - POWER
C - CONTROL
S - SIGNAL
D - DATA
F - FIBER OPTIC
PC - POWER AND CONTROL
X - SPARE

SUFFIX:
A - LETTER TO CREATE UNIQUE ID

EXAMPLE 1: P101-1: 3 #2/0, #6G, 2"C	FOR CIRCUIT P101: THREE NO, 2/0 CONDUCTORS, ONE NO. 6 AWG GROUND WIRE IN A 2" CONDUIT
EXAMPLE 2: SES-2: 2[3 #1/0, #6G, 1 1/2"C]	FOR SES-2: TWO PARALLEL RUNS OF THREE NO. 1/0 CONDUCTORS, ONE NO. 6 AWG GROUND IN 1 1/2" CONDUIT
EXAMPLE 3: C111: 2-1 PR #16S, 1"C	FOR CONTROL CIRCUIT: TWO SIGNAL CABLES OF #16 AWG TWISTED SHIELDED PAIR IN 1" C.
VND, 1"C	VENDOR CABLE, 1"C (CONDUIT BY CONTRACTOR) TYP

GENERAL NOTES:

1. SYMBOLS AND ABBREVIATION DRAWINGS ARE GENERAL IN NATURE. SOME SYMBOLS SHOWN HEREON MAY NOT BE USED ON THE CONTRACT DRAWINGS
2. SYMBOLS ARE ARRANGED ON SPECIFIC DRAWINGS AND IN CATEGORIES FOR CONVENIENCE ONLY; SYMBOLS MAY BE USED ON ANY OF THE CONTRACT DRAWINGS
3. IDENTIFICATIONS (ID), SIZES, RATINGS, LOCATIONS AND SIMILAR INFORMATION SHOWN ASSOCIATED WITH SYMBOLS ARE OPTIONAL; EXAMPLES OF SUCH INFORMATION ARE SHOWN WITH SOME SYMBOLS FOR CLARITY

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ENGINEER OF RECORD
ROBERT E. BORDO, PE 48946
ROBERT E. BORDO LICENSE No. 48946 STATE OF FLORIDA PROFESSIONAL ENGINEER
BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	V. TREHAN
DRAWN:	K. PALMER
CHECKED:	B. DICKERSON
CHECKED:	B. DICKERSON
APPROVED:	V. TREHAN
FILENAME	153586-E-00-001.DWG
BC PROJECT NUMBER	153586
CLIENT PROJECT NUMBER	6010881

ELECTRICAL

LEGEND AND SYMBOLS 1

DRAWING NUMBER
E-00-001

SHEET NUMBER 44 OF 63

Path: W:\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-E-00-001.DWG PLOT DATE: 4/6/2020 11:09 AM CAD USER: RITESH DESAI

CONTROL DIAGRAM SYMBOLS

GENERAL

- CONDUCTORS CONNECTED
- CONDUCTORS NOT CONNECTED
- TERMINAL POINT FOR EXTERNAL CONNECTIONS
- EXISTING EQUIPMENT (SCREENED)

INDICATING LIGHTS

INDICATING LIGHTS

L = LENS COLOR:
- A = AMBER
- B = BLUE
- G = GREEN
- R = RED
- W = WHITE

LINE — PUSH TO TEST. TEST VOLTAGE TERMINAL SHOWN

PUSHBUTTONS

- HS-XXXX — PUSHBUTTON, MOMENTARY CONTACT, NORMALLY OPEN
- HS-XXXX — PUSHBUTTON, MOMENTARY CONTACT, NORMALLY CLOSED
- HS-XXXX — PUSHBUTTON WITH MUSHROOM HEAD, EMERGENCY STOP,

SELECTOR SWITCHES

HS-XXXX (1, 2, OX) — 2 POSITION MAINTAINED CONTACT
X = CONTACTS CLOSED
O = CONTACTS OPEN

HS-XXXX (1, 2, XO, OX) — 2 POSITION SPRING RETURNED TO RIGHT
O = CONTACTS OPENED
X = CONTACTS CLOSED

HS-XXXX (H, O, A, OXO, XOO) — 3 POSITION MAINTAINED CONTACT
X = CONTACTS CLOSED
O = CONTACTS OPENED

CONTROL RELAYS

CR 2 — OPERATING COIL
FUNCTION
- CR = CONTROL RELAY
- U = UNLATCH
- L = LATCH

OL — OVERLOAD RELAY

CR2 CR2 (LINE) (LINE) — OUTPUT CONTACTS. LINE NUMBER OF RELAY COIL SHOWN (OPTIONAL)

INPUT SWITCHES

NORMALLY OPEN	NORMALLY CLOSED	INITIATING VARIABLE
SS	SS	SPEED
TS	TS	TEMPERATURE
WS	WS	FORCE OR TORQUE
ZS	ZS	POSITION (LIMIT)
FS	FS	FLOW
LS	LS	LEVEL
PS	PS	PRESSURE

TIMING RELAYS

TR 3 — OPERATING COIL
ON or OFF DELAY
RANGE:SEC/MIN
SET:SEC/MIN

NORMALLY OPEN	NORMALLY CLOSED	
TR3 OR TC (LINE)	TR3 OR TO (LINE)	DELAY ON COIL ENERGIZATION (ON DELAY)
TR3 OR TO (LINE)	TR3 OR TC (LINE)	DELAY ON COIL DE-ENERGIZATION (OFF DELAY)

CONTACTORS

ID — OPERATING COILS
- C = CONTACTOR, LIGHTING OR GENERAL USE
- F = FAST OR FORWARD
- M = MAIN OR LINE
- 1M = FIRST MAIN OR WYE
- 2M = SECOND MAIN OR DELTA
- R = RUN OR REVERSE
- S = SLOW OR START
- IC = ISOLATION CONTROL

ID SIZE X — MAIN CONTACTS
MAIN CONTACTS AIR BREAK, NEMA SIZE OPTIONAL

M SIZE 3 — VACUUM CONTACTOR, NEMA SIZE OPTIONAL.

MISCELLANEOUS

- FU 2B 15 AMP — FUSE WITH SIZE AND OPTIONAL IDENTIFICATION
- FU 3/15 AMP — FUSE WITH BLOWN FUSE INDICATOR
- 480V 250VA 120V — CONTROL TRANSFORMER PRIMARY AND SECONDARY SHOWN SIZE AS SHOWN OR AS SPECIFIED
- 50/5 (3) — CURRENT TRANSFORMER. PRIMARY TURNS RATIO SHOWN (OPTIONAL)
- 250 OHM RES — RESISTOR
- RECTIFIER
- SURGE OR ARC SUPPRESSOR
- KVAR — CAPACITOR
- CONNECTOR
- XX — INCOMING LINE POWER SUPPLY
- DRAWOUT MECHANISM
- SOLENOID VALVE
- BUS DUCT
- GROUND CONNECTION
- POTENTIOMETER
- H — METER WITH ALPHA IDENTIFIERS:
  - H = ELAPSED TIME
  - A = AMMETER
  - V = VOLTMETER
- BATTERY
- SHIELDED CABLE
- LOCATED IN FIELD
- AC TERMINAL BLOCK
- DC TERMINAL BLOCK
- PLC I/O POINTS
  - DO = DIGITAL OUT SIGNAL
  - DI = DIGITAL IN SIGNAL
  - AO = ANALOG OUT SIGNAL
  - AI = ANALOG IN SIGNAL

ONE LINE DIAGRAM SYMBOLS

- TRIP FRAME 52 — POWER CIRCUIT BREAKER (AIR, OIL, OR GAS) FRAME AND TRIP SETTING AND OPTIONAL I.D. SHOWN
- TRIP FRAME LSIG — CIRCUIT BREAKER WITH ADJUSTABLE ELECTRONIC TRIP OVER BREAKER FRAME SIZE. SOLID STATE TRIP FEATURES SHOWN:
  - L = LONG DELAY
  - S = SHORT DELAY
  - I = INSTANTANEOUS
  - G = GROUND FAULT
- SIZE TYPE — CIRCUIT BREAKER (TYPE: MCP = MOTOR CIRCUIT PROTECTOR OR 3P = 3-POLE THERMAL MAGNETIC TRIP
- 30A 3P CLF — FUSED SWITCH: FUSE RATING AND POLES SHOWN
  MODIFIERS:
  - CLF = CURRENT LIMITING FUSE
  - DE = DUAL ELEMENT
  - F = CLASS F
  - E = E RATED
- 100F — FUSE. 100 AMP CLASS "F" SHOWN
- ATS # 60A, 3P — POWER TRANSFER SWITCH. DESIGNATION, AMP RATING AND CONFIGURATION SHOWN
  - MTS = MANUAL TRANSFER SWITCH
  - ATS = AUTOMATIC TRANSFER SWITCH
  - SUSE= SUITABLE FOR USE AS SERVICE ENTRANCE
- AIR BREAK CONTACTOR, FVNR U.O.N. NEMA SIZE 1 INDICATED
  - FVR = FULL VOLTAGE, REVERSING STARTER
  - 2S2W = TWO SPEED, TWO WINDING STARTER
- METERING (ANSI/IEEE FUNCTIONS AS SPECIFIED)
  POWER MONITOR (PM) POWER QUALITY MONITOR (HARMONIC ANALYSIS) (PQM) MOTOR MONITOR AND PROTECTION RELAY (MPR) FEEDER PROTECTION RELAY (FPR)
- 5 KVA — PACKAGED EQUIPMENT OR NON-MOTOR LOAD. KVA, KW, AMPS AS NOTED.
- XXHP ##AMPS — VARIABLE FREQUENCY DRIVE, (VFD) NORMAL DUTY UON. HP IS INDICATED IF DIFFERENT THAN DRIVEN LOAD HP. ##AMPS=RATED CONTINUOUS AMPS
- RVSS — REDUCED VOLTAGE SOLID STATE STARTER
- SPD — SURGE PROTECTION DEVICE
- 64 N 3 — ANSI C37.2 DEVICE. QUANTITIES SHOWN.
- 600kW G 480V 60 Hz 3ph, 4w — GENERATOR WITH WINDING CONFIGURATION VOLTAGE, POWER, FREQUENCY SHOWN. POWER FACTOR OPTIONAL
- 5 — MOTOR, HORSEPOWER SHOWN
- 55 KVAR — POWER FACTOR CORRECTION CAPACITOR. KVAR RATING INDICATED
- POTHEAD
- STRESS CONE
- INDICATES THAT ALL OR PART OF CONDUIT MAYBE ROUTED IN DUCT BANK OR UNDERGROUND
- PORTABLE CABLE
- CABLE BUS
- BUS CONDUCTOR
- CABLE CONDUCTOR
- SURGE ARRESTOR
- LIGHTNING ARRESTOR AND GROUND
- TEST DEVICE
- 200A — DISCONNECT OR ISOLATING SWITCH. 200 AMP SHOWN
- 480 V 30KVA 5% Z 208/120V — POWER TRANSFORMER. VOLTAGES, SIZE, IMPEDANCE SHOWN
- 1.5 KVA 480 V 2.5% Z 480 V — ISOLATION TRANSFORMER. VOLTAGES, SIZE, IMPEDANCE SHOWN
- 3 480V - 120V — POTENTIAL TRANSFORMER. PT QUANTITY (3) AND VOLTAGES SHOWN
- 250/5 3 — CURRENT TRANSFORMER. CT QUANTITY AND 250:5 TURNS RATIO SHOWN

WINDING CONFIGURATIONS:
- DELTA
- WYE (GROUNDED)

- K — KIRK KEY INTERLOCK
- 50 AMP/ 10 SEC GDR — NEUTRAL GROUNDING RESISTOR. AMPS/TIME RATING SHOWN

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Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	V. TREHAN
DRAWN:	K. PALMER
CHECKED:	B. DICKERSON
CHECKED:	B. DICKERSON
APPROVED:	V. TREHAN
FILENAME	153586-E-00-002.DWG
BC PROJECT NUMBER	153586
CLIENT PROJECT NUMBER	6010861

ELECTRICAL

LEGEND AND SYMBOLS 2

DRAWING NUMBER E-00-002

ABBREVIATIONS

NOTES:
1. ABBREVIATIONS SHOWN ON ELECTRICAL DRAWINGS ARE IN ACCORDANCE WITH ASME STANDARD Y14.38A
2. ABBREVIATIONS ON THIS SHEET ARE IN ADDITION TO THE ABBREVIATIONS DEFINED ON OTHER DRAWINGS.
3. ABBREVIATIONS HERE IN SHALL TAKE PRECEDENCE IN CASE OF CONFLICT.
4. ABBREVIATIONS ARE NOT EQUIPMENT NUMBERING PREFIXES LISTED ON OTHER DRAWINGS.

A, AMP	AMP(S), AMPERE(S)
AC	ALTERNATING CURRENT
AFF	ABOVE FINISHED FLOOR
AHAP	AS HIGH AS POSSIBLE
AIC	AMPS INTERRUPTING CAPACITY, SYMM.
AL	ALUMINUM
ARCH	ARCHITECT(URAL)
ASYM	ASYMMETRICAL
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BC	BARE COPPER
BLDG	BUILDING
BOT	BOTTOM
C	CONDUCTOR, CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLG	CEILING
CM	CENTIMETERS
CND	CONDUIT
CNTL	CONTROL
C.O.	CONDUIT ONLY, SPARE
CONC	CONCRETE
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
CU	COPPER
DB	DUCT BANK, DIRECT BURIAL
DC	DIRECT CURRENT, DATA CABLE
DCU	DISTRIBUTED CONTROL UNIT
DET	DETAIL
DIAG	DIAGRAM
DISC	DISCONNECT
DWG	DRAWING
EA	EACH
EC	EMPTY CONDUIT
ECP	EQUIPMENT CONTROL PANEL
EDB	ELECTRICAL DUCTBANK
EG	ENGINE GENERATOR SET
EL	ELEVATION
ELEC	ELECTRIC(AL)
EMH	ELECTRICAL MANHOLE
EMER	EMERGENCY
ENCL	ENCLOSURE/ENCLOSED
EPB	ELECTRICAL PULLBOX
ETM	ELAPSED TIME METER
EP	EXPLOSION PROOF
EQUIP	EQUIPMENT
EX	EXISTING
FDR	FEEDER
FL	FLUORESCENT
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE CONDUIT
F.O.	FAIL OPEN
FO	FIBER OPTIC
FUT	FUTURE
GDR	GROUNDING RESISTOR
GEC	GROUND ELECTRODE CONDUCTOR
GF	GROUND FAULT
GFI	GROUND FAULT INTERRUPTER
GND, G	GROUND
GRS	GALVANIZED RIGID STEEL
H	HIGH
HGT	HEIGHT
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HMI	HUMAN MACHINE INTERFACE
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
HTR	HEATER
HV	HIGH VOLTAGE
HVAC	HEATING, VENTILATION, AND AIR CONDITIONING
HZ	HERTZ (CYCLES PER SECOND)
ICOM	NTERCOM
ID	INSIDE DIAMETER
IMC	INTERMEDIATE METAL CONDUIT
INCAND	INCANDESCENT
INTLK	INTERLOCK
INST	INSTANTANEOUS
I/O	INPUT-OUTPUT
IPB	INSTRUMENT PULLBOX
JB	JUNCTION BOX
KCMIL	1000 CIRCULAR MIL
KV	KILOVOLT
KVA	KILOVOLT-AMPERE
KVAR	KILOVOLT-AMPERE REACTIVE
KW	KILOWATT
KWH	KILOWATT-HOUR
L	LONG
LC	LIGHTING CONTACTOR
LCP	LOCAL CONTROL PANEL
LCS	LOCAL CONTROL STATION
LED	LIGHT EMITTING DIODE
LHH	LOW VOLTAGE HANDHOLE
LMH	LOW VOLTAGE MANHOLE
LP	LIGHTING PANEL
LT	LONG TIME
LTG	LIGHTING
LV	LOW VOLTAGE
M	METER
MA	MILLIAMPERE
MBS	MANUAL BYPASS SWITCH
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MPC	MINI POWER CENTER
MECH	MECHANICAL
MFR	MANUFACTURE(R)
MH	MANHOLE, METAL HALIDE
MIC	MICROPHONE
MIS	MANAGEMENT INFORMATION STATION
MISC	MISCELLANEOUS
MM	MILLIMETER
MMH	MEDIUM VOLTAGE MANHOLE
MOV	MOTOR OPERATED VALVES
MTS	MANUAL TRANSFER SWITCH
MV	MILLIVOLT, MEDIUM VOLTAGE
MVMC	MEDIUM VOLTAGE MOTOR CONTROL
N/A	NOT APPLICABLE
N.C.	NORMALLY CLOSED
NEUT, N	NEUTRAL NEUT,N
NF	NON-FUSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
NO.	NUMBER
NOM	NOMINAL
NP	NAMEPLATE
NTS	NOT TO SCALE
OC	ON CENTER
OCC	OPERATION CONTROL CENTER
OD	OUTSIDE DIAMETER
OH	OVERHEAD
OIS	OPERATOR INTERFACE STATION
OT	OIL TIGHT
OWS	OPERATOR WORKSTATION
P	POLE, PHASE
PBD	PANEL BOARD
PB	PUSHBUTTON, PULLBOX
PCP	PROCESS CONTROL PANEL
PF	POWER FACTOR
PH	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PMM	POWER METERING MODULE
PNL	PANEL
PP	POWER PANEL
PR	PAIR
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
PWR	POWER
QSB	QUARTZ STANDBY
RCPT	RECEPTACLE
REF	REFERENCE
REQD	REQUIRED
RE STL	REINFORCING STEEL
RMS	ROOT MEAN SQUARE
RTD	RESISTANCE TEMPERATURE DETECTOR
RTU	REMOTE TERMINAL UNIT
RVSS	REDUCED VOLTAGE SOLID STATE STARTER
SA	SURGE ARRESTOR
SCR	SILICON CONTROLLED RECTIFIER
SD	SMOKE DETECTOR
SEC	SECONDARY
SEL	SELECTOR
SHH	SIGNAL HANDHOLE
SMH	SIGNAL MANHOLE
SPEC	SPECIFICATION
SPD	SURGE PROTECTION DEVICE
SPKR	SPEAKER
ST	SHORT TIME
STP	SHIELDED TWISTED PAIR
SUB	SUBSTATION
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYMM	SYMMETRICAL
SYS	SYSTEM
TB	TERMINAL BOX
TEL	TELEPHONE
TEMP	TEMPERATURE
TFR	TRANSFORMER
TRI	TRIAD
TV	TELEVISION
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
U/G	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTABLE POWER SUPPLY
V	VOLT
VA	VOLTAMPERE
VAR	VOLTAMPERE REACTIVE
VC	VACUUM CONTACTOR
VCP	VENDOR CONTROL PANEL
VND	VENDOR
W	WATT, WIRE, WIDE
W/	WITH
W/O	WITHOUT
WW	WIREWAY
WG	WITH GROUND
WP	WEATHERPROOF
XFMR	TRANSFORMER
XMTR	TRANSMITTER
XP	EXPLOSION PROOF
Z	IMPEDANCE

GENERAL NOTES:

1. THE ELECTRICAL DRAWINGS USE THE ONE LINE DIAGRAMS AND RISER DIAGRAMS AND PANEL SCHEDULES IN CONJUNCTION WITH SHOWING THE LOCATION OF THE ELECTRICAL/INSTRUMENTATION SOURCES AND LOADS/DEVICES SHOWN ON THE PLAN DRAWINGS TO DEPICT THE WORK. THE CONTRACTOR SHALL USE THESE DOCUMENTS TO DETERMINE AND PROVIDE THE NECESSARY RACEWAY AND WIRING SYSTEM FOR EACH CIRCUIT. ALL INDOOR RACEWAY SHALL BE RUN EXPOSED AND ROUTED BY THE CONTRACTOR, UNLESS OTHERWISE NOTED.
2. IF EQUIPMENT SUPPLIED BY MANUFACTURER HAS A LARGER LOAD THAN INDICTED ON THE SINGLE LINE DIAGRAM, THE CONSTRUCTION MANAGER SHALL BE NOTIFIED. THE CABLE, CONDUIT AND ELECTRICAL EQUIPMENT SHALL BE SIZED AS REQUIRED, TO ACCOMMODATE THE HIGHER VALUE.
3. IN AREAS WHERE THERE ARE OVERHEAD BRIDGE CRANES, HOISTS, ETS., OR WHERE EQUIPMENT IS LIFTED AND MOVED FOR MAINTENANCE OR REPLACEMENT, NO CONDUITS SHALL BE RUN OVERHEAD THAT WILL INTERFERE WITH THE OPERATION OF THE EQUIPMENT OR ACCESS TO EQUIPMENT.
4. THE LOCATION OF THE CONTROL STATIONS SHOWN ON THE PLAN DRAWINGS ARE DIAGRAMMATIC ONLY. THE ACUTAL LOCATION SHALL BE COORDINATED IN THE FIELD WITH THE CONSTRUCTION MANAGER AND ADJACENT EQUIPMENT SUCH AS PIPING, PROCESS EQUIPMENT, ETC.
5. THE CONTRACTOR SHALL COORDINATE WITH THE STRUCTURAL AND MECHANICAL DRAWINGS FOR CONDUIT STUB UP AND TERMINATION LOCATIONS.

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Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: V. TREHAN
DRAWN: K. PALMER
CHECKED: B. DICKERSON
CHECKED: B. DICKERSON
APPROVED: V. TREHAN

FILENAME
153586-E-00-003.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010851

ELECTRICAL

ABBREVIATIONS AND GENERAL NOTES

DRAWING NUMBER
E-00-003

SHEET NUMBER 46 OF 63

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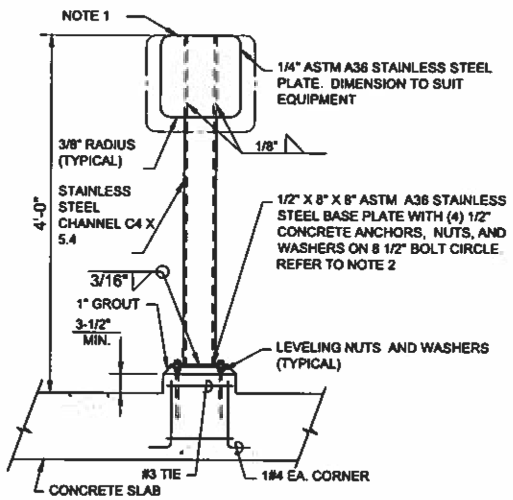
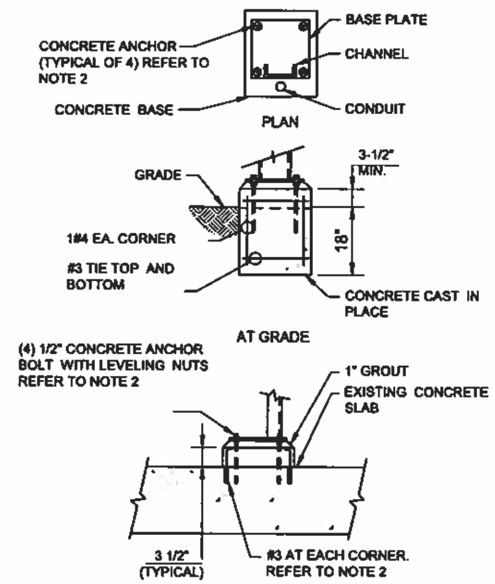


AT NEW CONCRETE SLAB



AT EXISTING CONCRETE SLAB

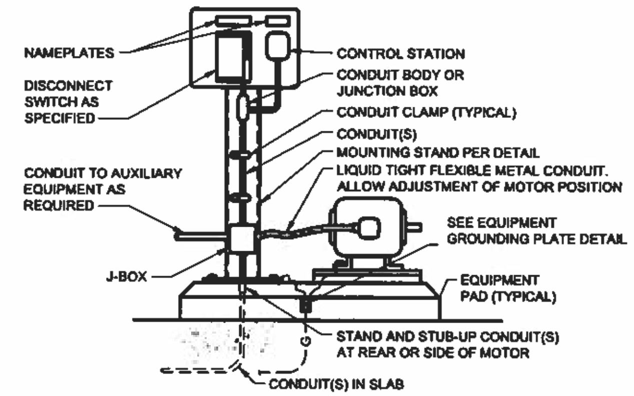
NOTES:

1. MOUNTING STAND PLATE: 2'X2' MAXIMUM
   A. DRILL PLATE FOR NUMBER OF HOLES REQUIRED.
   B. REMOVE ALL SHARP EDGES.
   C. CLEAN AND HOT DIP GALVANIZE AFTER FABRICATION.
2. SEE TYPICAL CONCRETE ANCHOR OR THREADED ROD DETAIL FOR CONCRETE ANCHOR REQUIREMENTS.
3. PROVIDE 316 STAINLESS STEEL ANCHOR BOLTS AND HARDWARE

CONTROL STATION OR INSTRUMENT STAND

DETAIL A / TYP

SCALE: NONE



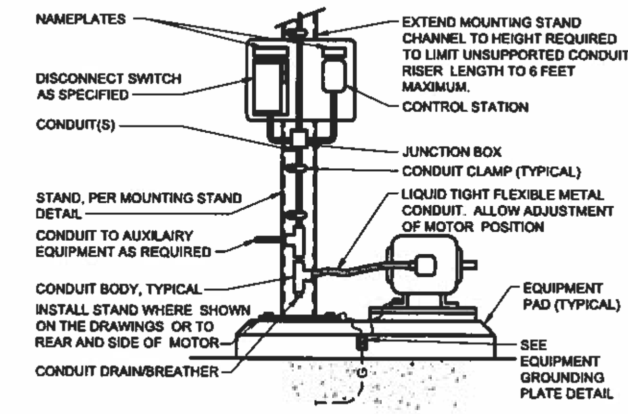
NOTES:

1. MOUNTING STAND REQUIREMENTS VARY WITH EQUIPMENT SIZE.
2. CONDUIT NUMBER, SIZE AND CONFIGURATION VARIES. REFER TO APPLICABLE ONE LINE DIAGRAMS OR SCHEDULES.
3. PROVIDE POWER DISCONNECT NAMEPLATE INDICATING POWER SOURCE.
4. PROVIDE CONTROL STATION NAMEPLATE INDICATING EQUIPMENT TAG NUMBER AND DESCRIPTION.
5. SEE DRAWINGS OR SCHEDULES FOR SEPARATE POWER, CONTROL AND INSTRUMENTATION RACEWAYS.

MOTOR FEED FROM BELOW

DETAIL B / TYP

SCALE: NONE



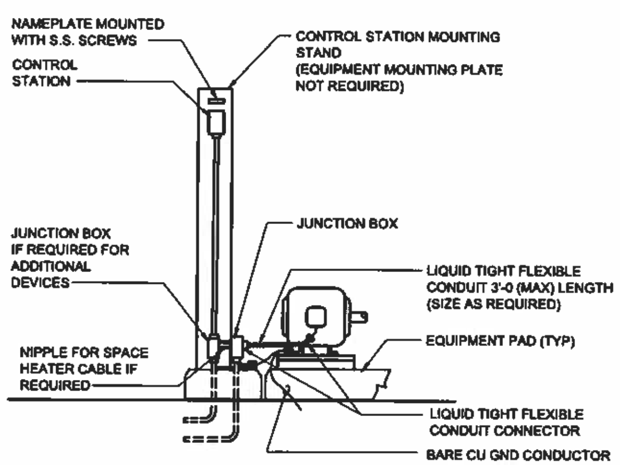
NOTES:

1. MOUNTING STAND REQUIREMENTS VARY WITH EQUIPMENT SIZE.
2. CONDUIT NUMBER, SIZE AND CONFIGURATION VARIES. REFER TO APPLICABLE ONE LINE DIAGRAMS OR SCHEDULES.
3. PROVIDE POWER DISCONNECT NAMEPLATE INDICATING POWER SOURCE.
4. PROVIDE CONTROL STATION NAMEPLATE INDICATING EQUIPMENT TAG NUMBER AND DESCRIPTION.
5. SEE DRAWINGS OR SCHEDULES FOR SEPARATE POWER, CONTROL AND INSTRUMENTATION RACEWAYS.

MOTOR FEED FROM OVER HEAD

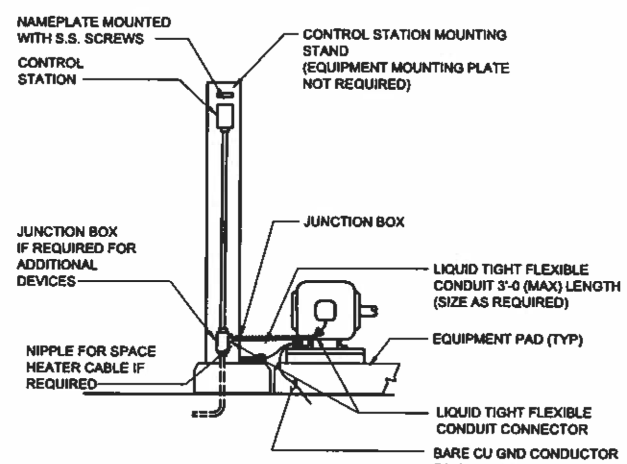
DETAIL C / TYP

SCALE: NONE



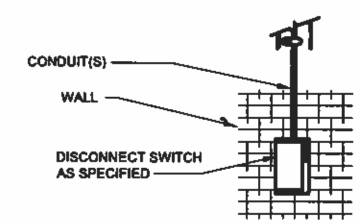
TYPICAL LOW VOLTAGE MOTOR FEED FROM BELOW SLAB POWER AND CONTROL IN SEPARATE CONDUITS

DETAIL D / VAR



TYPICAL LOW VOLTAGE MOTOR FEED FROM BELOW SLAB POWER AND CONTROL IN SAME CONDUITS

DETAIL E / VAR



NOTES:

1. CONDUIT NUMBER, SIZE AND CONFIGURATION VARIES. REFER TO APPLICABLE ONE LINE DIAGRAMS OR SCHEDULES.
2. PROVIDE POWER DISCONNECT NAMEPLATE INDICATING POWER SOURCE.
3. SEE DRAWINGS OR SCHEDULES FOR SEPARATE POWER, CONTROL AND INSTRUMENTATION RACEWAYS.

DISCONNECT SWITCH (NEMA-4X) - WALL MOUNTED

DETAIL F / TYP

SCALE: NONE

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Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: V. TREHAN
DRAWN: K. PALMER
CHECKED: B. DICKERSON
CHECKED: B. DICKERSON
APPROVED: V. TREHAN
FILENAME 153586-E-00-004.DWG
BC PROJECT NUMBER 153586
CLIENT PROJECT NUMBER 6010881

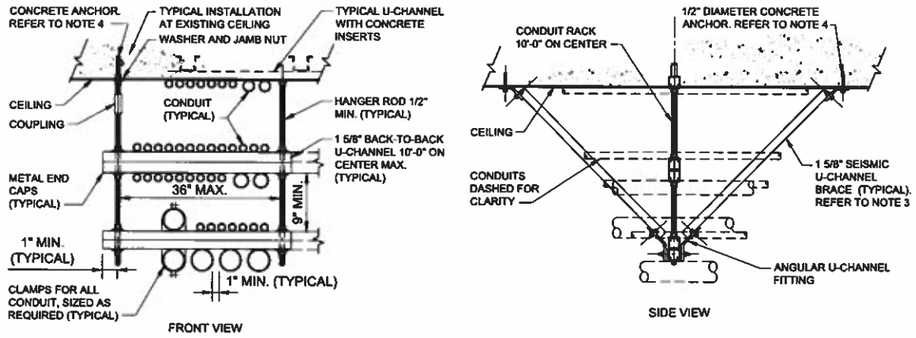
ELECTRICAL

INSTALLATION DETAILS SHEET 1

DRAWING NUMBER E-00-004

SHEET NUMBER 47 OF 63

Path: W:\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-E-00-004.DWG PLOT DATE: 4/9/2020 11:09 AM CAD USER: RITESH DESAI



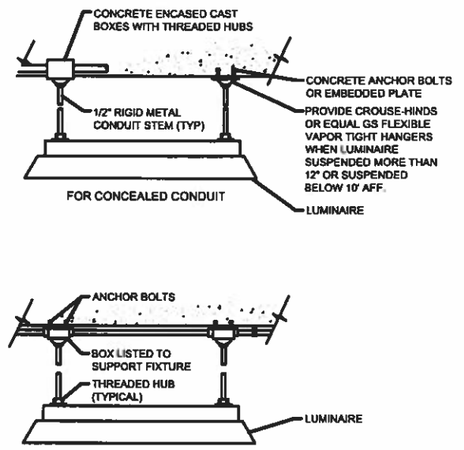
NOTES:

1. MATERIALS AND HARDWARE PER SPECIFICATION DIVISION 16 REQUIREMENTS.
2. HOLE SIZES ON FITTINGS SHALL BE 9/16" DIAMETER WITH 1/2" HEX HEAD CAP SCREW 15/16" LONG AND 1/2" CLAMP NUT WITH SPRING.
3. SEE SPECIFICATION DIVISION 16 FOR SEISMIC ZONE. SEISMIC CHANNEL BRACING REQUIRED AT INTERVALS OF 60'-0" MAX. FOR ZONE 3 AND 40'-0" MAX. FOR ZONE 4.
4. SEE TYPICAL CONCRETE ANCHOR OR THREADED ROD DETAIL FOR ANCHOR REQUIREMENTS.
5. MAX. UNIFORMLY DISTRIBUTED LOAD (CONDUIT AND FILL) PER UNIT TO BE 1000 LBS.

SUSPENDED CONDUIT AND/OR CABLE TRAY RACK

DETAIL A TYP

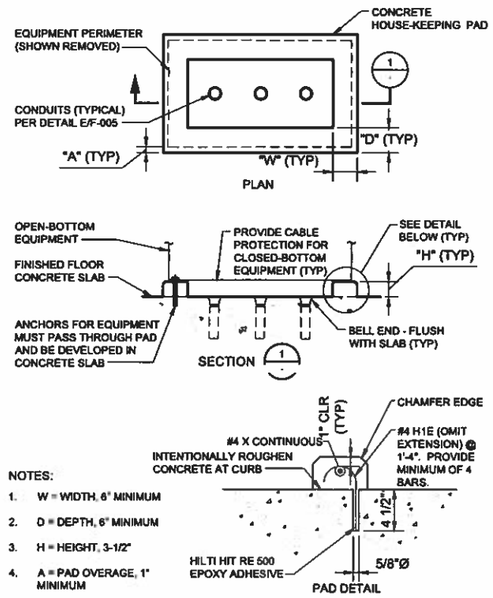
SCALE: NONE



PENDANT MOUNTING

DETAIL B TYP

SCALE: NONE



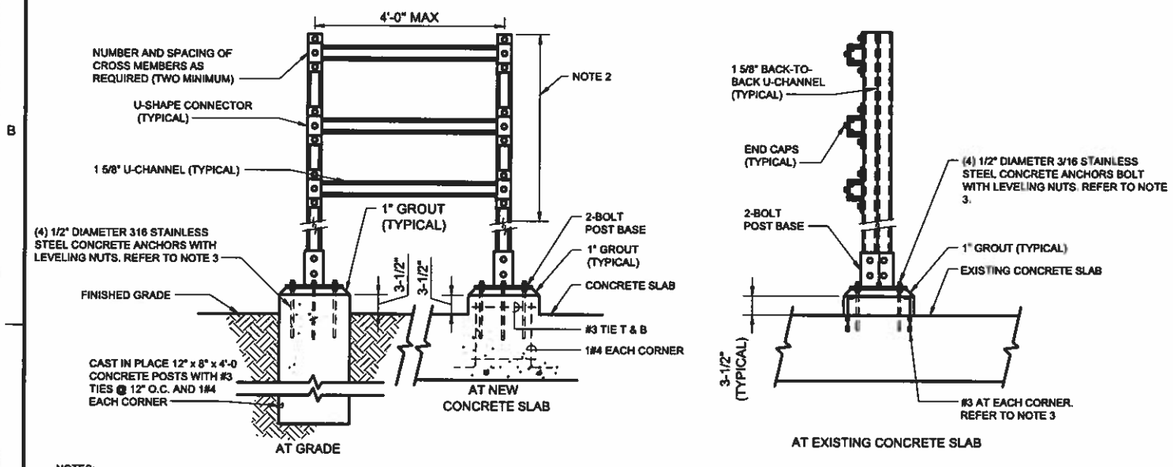
NOTES:

1. W = WIDTH, 6" MINIMUM
2. D = DEPTH, 6" MINIMUM
3. H = HEIGHT, 3-1/2"
4. A = PAD OVERAGE, 1" MINIMUM

HOUSE-KEEPING PAD UNDER FREE-STANDING EQUIPMENT

DETAIL C TYP

SCALE: NONE



NOTES:

1. EQUIPMENT RACK SIZING:
   - A. ONE ITEM GREATER THAN 150 SQUARE INCHES.
   - B. TWO EQUIPMENT ITEMS GREATER THAN 130 SQUARE INCHES.
   - C. THREE OR MORE EQUIPMENT ITEMS.
   - D. PROVIDE 316 STAINLESS STEEL CHANNEL END-CAPS, AND FITTINGS
   - E. PROVIDE 1/4" MINIMUM ALUMINUM PLATE FOR SMALL ITEMS
2. MOUNT INDICATORS OR EQUIPMENT OPERATING HANDLES FOUR FEET ABOVE FLOOR OR PLATFORM.
3. REFER TO STRUCTURAL DRAWINGS AND SPECIFICATION FOR ANCHORAGE MATERIAL AND METHOD REQUIREMENTS.
4. MATERIAL AND HARDWARE PER SPECIFICATION DIVISION 26.
5. BOND TO FACILITY GROUND.
6. ALL UNISTRUT CHANNELS TO BE MADE OF STAINLESS STEEL.

EQUIPMENT RACK

DETAIL D TYP

SCALE: NONE

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NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	V. TREHAN
DRAWN:	K. PALMER
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CHECKED:	B. DICKERSON
APPROVED:	V. TREHAN
FILENAME	153586-E-00-005.DWG
BC PROJECT NUMBER	153586
CLIENT PROJECT NUMBER	5010881

ELECTRICAL

INSTALLATION DETAILS SHEET 2

DRAWING NUMBER
E-00-005

SHEET NUMBER 48 OF 63

LIGHTING FIXTURE SCHEDULE

MARK	WATT	DESCRIPTION	MFR (OR APPROVED EQUAL)
A	61	2' X 4' RECESSED LUMINAIRE, WHITE REFLECTOR W/ PAT 12 ACRYLIC LENS IN DOOR, 120V LGLED68L4K24-9FARS	LUMAX LIGHTING
B	80	SIMILAR TO TYPE 'A' EXCEPT 2'X2' W/2-40W U-LAMP	"KEENE" MODULINE AR/HR DAYBRITE DESIGNER SERIES
C	90	4'-0" FLUORESCENT STRIP FIXTURE W/2-34W R.S LAMPS, BAKED WHITE ENAMAL FINISHED 120V ESB.	"KEENE" POWERSTRIP/SU
D	121	8' ENCLOSED/GASKETED LED LUMINARE WHITE REFLECTOR W/ FROSTED ACRYLIC RIBBED DROP LENS, 120V, VWBTLED128L4K96-9FAR	LUMAX LIGHTING
E	80	SIMILAR TO TYPE 'D' EXCEPT W/ WIRE GUARD	
F	17.8	WALLPACK - CENTER, 120V, TWS LED P1 50K MVOLT PE	LITHONIA LIGHTING
G	80	WALL MTD. 4'-0" FLUORESCENT RESTROOM FIXTURE W/2-40 W R.S. LAMPS, VIRGIN ACRYLIC LENS, FLAT BLACK ENAMEL FINISH, DOWN LIGHT ONLY, 120V BALLAST	"BENJAMIN" AZTEC
H	60	SIMILAR TO FIXTURE 'G' EXCEPT 3'-0" W/2-30 R.S. LAMPS	
J	150	RECESSED INCANDESCENT DOWN LIGHT W/150W PAR 38 LAMP, 6" DIA BLACK MILLIGROOVE OPEN BAFFLE, ALUM. HOUSING. THRU WIRING, 120 V	"KEENE" POINTLINE/OD SERIES
K	75	RECESSED INCANDESCENT DOWN LIGHT DROPPED OPALEX SHOWER LIGHT, GASKETED DIFFUSSER, A19, 75W LAMP, FRAME KIT, 120 V	"LIGHTOLIER" #02/#78
L	100	RECESSED MERCURY VAPOR DOWN LIGHT, SUITABLE FOR DAMP LOCATION, THRU WIRING, BLACK MILLIGROOVE 10" DIA. OPEN BAFFLE, CAST ALUM. SOCKET & HOUSING, 120 V	"KEENE" POINTLINE/OD SERIES
M	100	SEE POLE MTD FIXTURE DETAIL 'B' THIS SHEET FOR SPEC.	
N	250	SEE POLE MTD FIXTURE DETAIL 'A' THIS SHEET FOR SPEC.	
P	80	SIMILAR TO TYPE 'D' EXCEPT 4'-0" LONG W/2-40W RS LAMPS	
		EMERGENCY LIGHTING UNIT SELF CONTAINED AUTO-CHARGING BATTERY BACK-UP W/TEST SW., SEMI RECESSED NICKEL CADMIUM BATTERY, 7W HALOGEN LAMP EXPIPATION ALARM CAPABLE OF 3 REMOTES. 12V	"EMERGI-LITE" PS SERIES "DUAL-LITE" LITE SERIES
		REMOTE UNIT TO FIXTURE ABOVE	"EMERGI-LITE" PS SERIES "DUAL-LITE" LITE SERIES
		EXIT SIGN CAST ALUM. STENCIL FACE, BLACK ENAMEL FINISH, BATTERY BACK-UP, AND AUTO-CHARGING TEST SW., FLAT WALL OR CEILING MTD. AS SHOWN ON PLANS. 12V	"LITHONIA" ES SERIES "PRESCOLITE" EMERG. EXIT SERIES

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Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

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DESIGNED: V. TREHAN
DRAWN: K. PALMER
CHECKED: B. DICKERSON
CHECKED: B. DICKERSON
APPROVED: V. TREHAN
FILENAME 153586-E-00-006.DWG
BC PROJECT NUMBER 153586
CLIENT PROJECT NUMBER 6010881

ELECTRICAL

LIGHTING FIXTURE SCHEDULE

DRAWING NUMBER E-00-006

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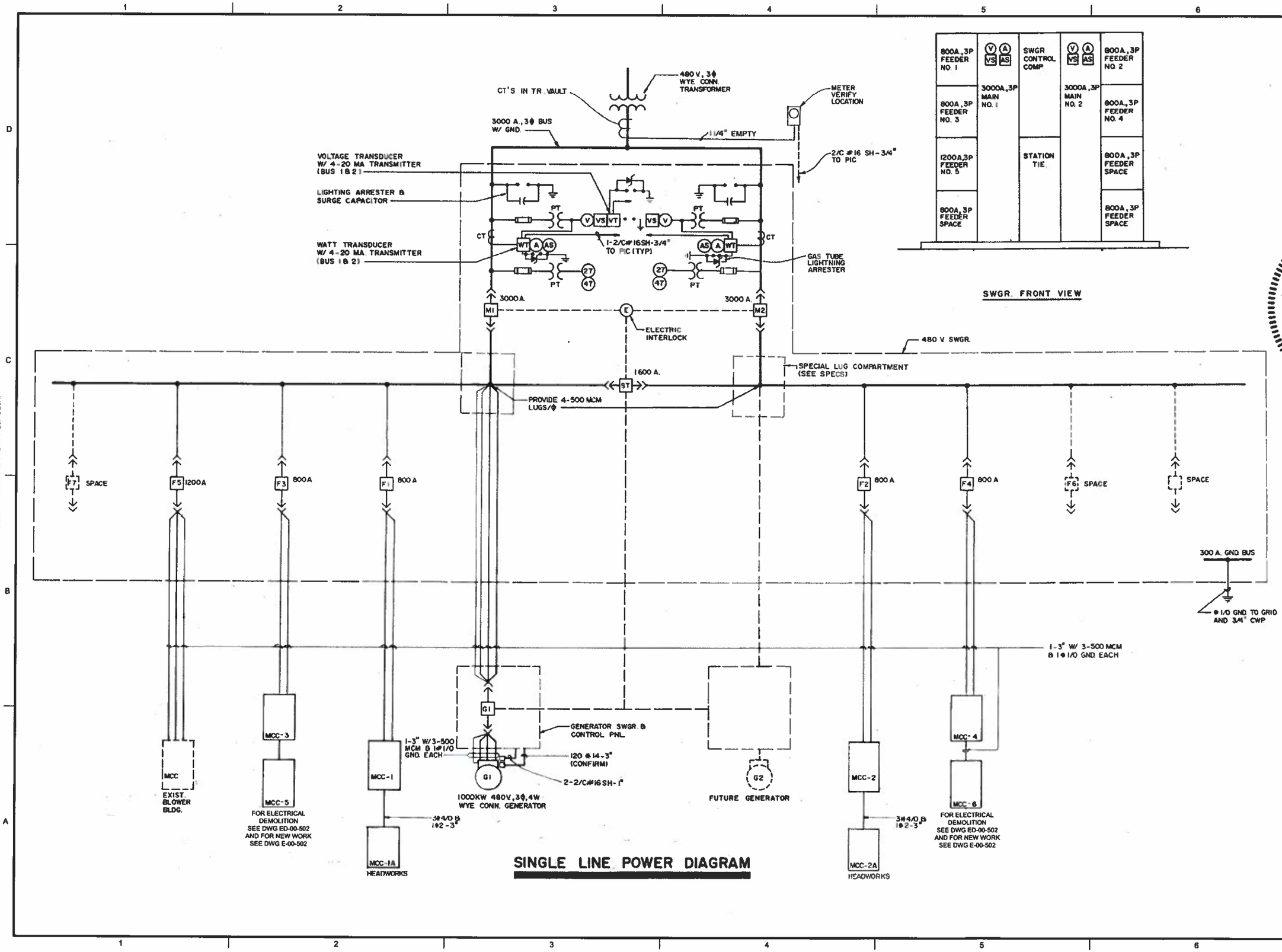

SINGLE LINE POWER DIAGRAM

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NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: V. TREHAN
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CHECKED: B. DICKERSON
APPROVED: V. TREHAN

FILENAME
153586-E-00-501.DWG

BC PROJECT NUMBER
153586

CLIENT PROJECT NUMBER
6010881

ELECTRICAL

OVERALL SINGLE LINE DIAGRAM

DRAWING NUMBER
E-00-501

SHEET NUMBER
50 OF 63

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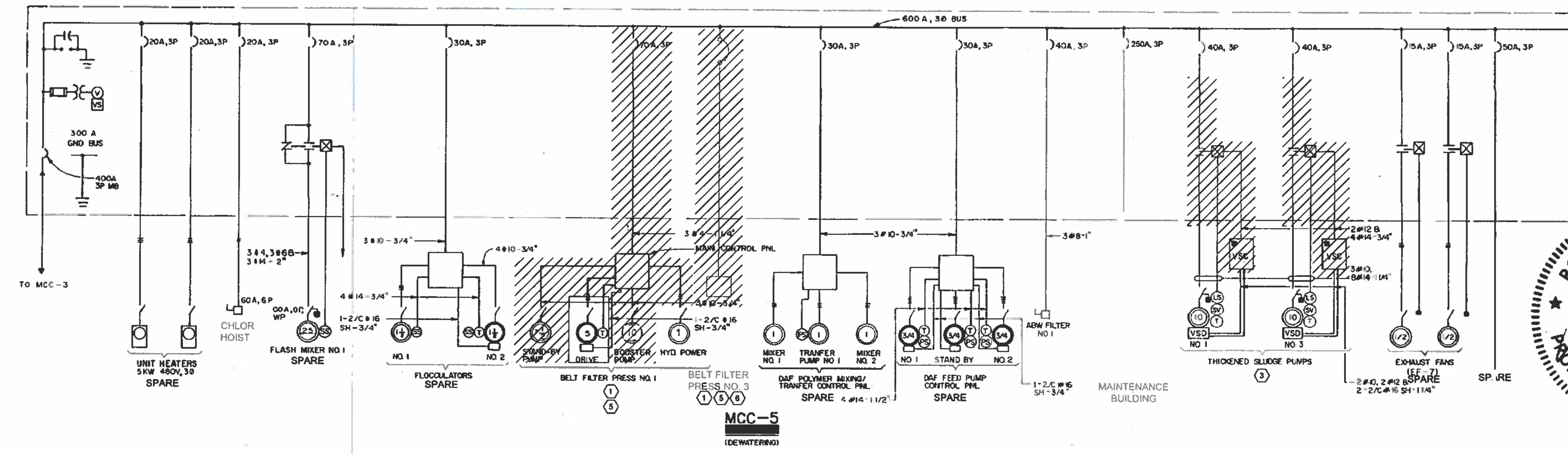

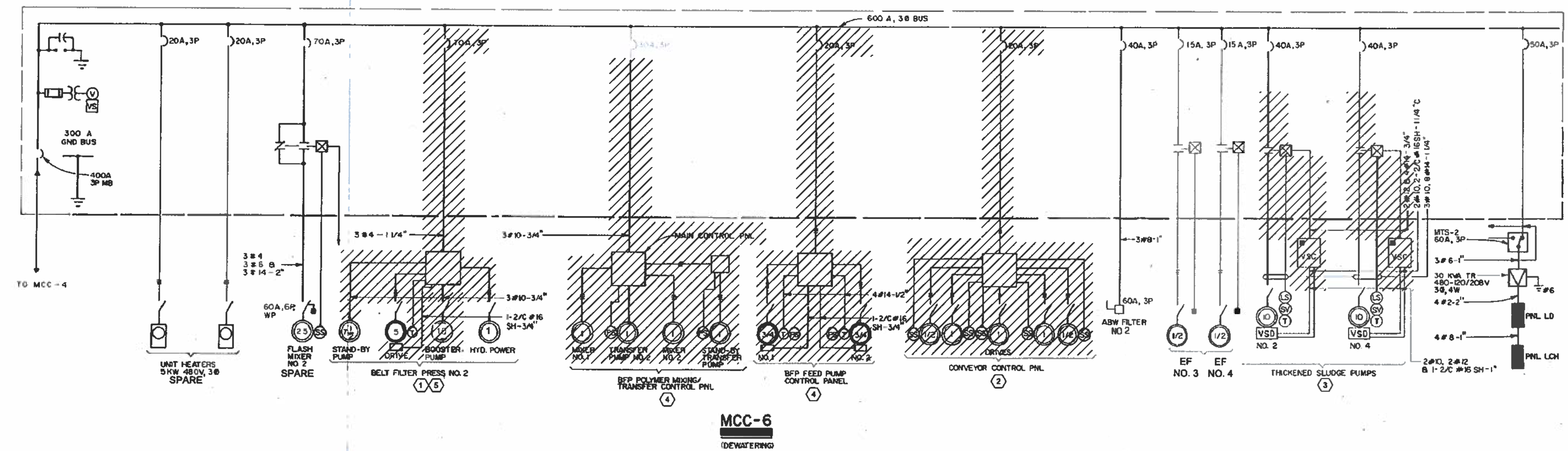

GENERAL NOTES:

1. REMOVE EXISTING EQUIPMENT, CONTROL PANELS, ASSOCIATED SURFACE CONDUITS, CABLES AND ACCESSORIES AS SHOWN, AND SPECIFIED. ABANDON EXISTING UNDERGROUND CONDUITS IN PLACE AND CAP. RECONNECT EXISTING EQUIPMENT NOT DEMOLISHED, UNLESS NOTED OTHERWISE. SEE DRAWING E-00-502
2. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION BETWEEN THE EXISTING SYSTEMS AND THE NEW SYSTEMS IN ORDER TO PROVIDE A FULLY FUNCTIONAL BELT FILTER PRESS SYSTEM. ALL EQUIPMENT MATERIAL AND LABOR SHALL BE PROVIDED AS REQUIRED.
3. ALL FEEDERS NOT SHOWN. SEE DRAWING E-00-503, MCC-5, AND MCC-6 ELEVATIONS FOR DETAILS.

⬡ KEY NOTES:

1. CONTROL PANELS FOR EXISTING BELT FILTER PRESS # 1, # 2 AND # 3 ARE BEING REPLACED WITH NEW AS SHOWN AND SPECIFIED. FIELD LOCATE AND REMOVE EXISTING CIRCUITS FROM EXISTING CONTROL PANELS TO ASSOCIATED EQUIPMENT. RECONNECT EXISTING BELT FILTER PRESS # 1, # 2 AND # 3 PRESSES AS SHOWN ON DRAWING E-00-502.
2. EXISTING CONVEYOR PANEL, AND CONVEYOR SYSTEM IS BEING REMOVED AND REPLACED WITH NEW CAKE PUMPS. FIELD LOCATE AND REMOVE EXISTING CONVEYOR PANEL, ASSOCIATED EQUIPMENT, CONDUITS AND WIRES. SEE DRAWING E-00-502 FOR NEW CAKE PUMPS.
3. REMOVE EXISTING VFD'S FOR THICKENED SLUDGE PUMPS, 2 LOCATED OUTSIDE AND 2 LOCATED INSIDE MCC-5 AND MCC-6 AND PROVIDE NEW VFD'S IN EXISTING MCC-5 AND MCC-6 AS SHOWN AND SPECIFIED. FIELD LOCATE AND REMOVE EXISTING CIRCUITS FROM PUMPS TO MCC'S, INCLUDING VFD'S AND ASSOCIATED EQUIPMENT AND RECONNECT THEM TO EXISTING PUMPS. SEE DRAWING E-00-502.
4. THREE EXISTING POLYMER FEED PUMP CONTROL PANELS, AND POLYMER MIXING SYSTEM CONTROL PANELS ARE BEING REPLACED WITH A NEW CONTROL PANEL IN THE POLYMER ROOM WHICH WILL HOUSE VFD'S, STARTERS FOR POLYMER PUMPS AND MIXING SYSTEM. SEE DRAWING E-00-502. RECONNECT EXISTING FEED PUMPS , POLYMER MIXING SYSTEM: TWO EXISTING POLYMER PUMPS ARE BEING REPLACED WITH NEW. FIELD LOCATE AND REMOVE EXISTING CIRCUITS FROM EXISTING CONTROL PANELS TO EXISTING POLYMER FEED PUMPS AND ASSOCIATED EQUIPMENT. CONNECT NEW POLYMER PUMPS AS SHOWN ON DRAWING E-00-503.
5. BOOSTER PUMPS ARE BEING REPLACE WITH NEW. FOR NEW LOCATION OF BOOSTER PUMPS. SEE DRAWINGS E-00-502, E-00-6XX, AND E-00-6116. CONNECTIONS TO CONTROL PANEL FROM EXISTING BFP NOT SHOWN SIMILAR TO BFP-1.
6. ALL CONNECTIONS TO BFP NO. 3 NOT SHOWN. FIELD LOCATE EXISTING. BFP NO. 1 AND BFP NO. 3 INSTATLLATIONS ARE SIMILAR.

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Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS		
REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: V. TREHAN
DRAWN: K. PALMER
CHECKED: B. DICKERSON
CHECKED: B. DICKERSON
APPROVED: V. TREHAN

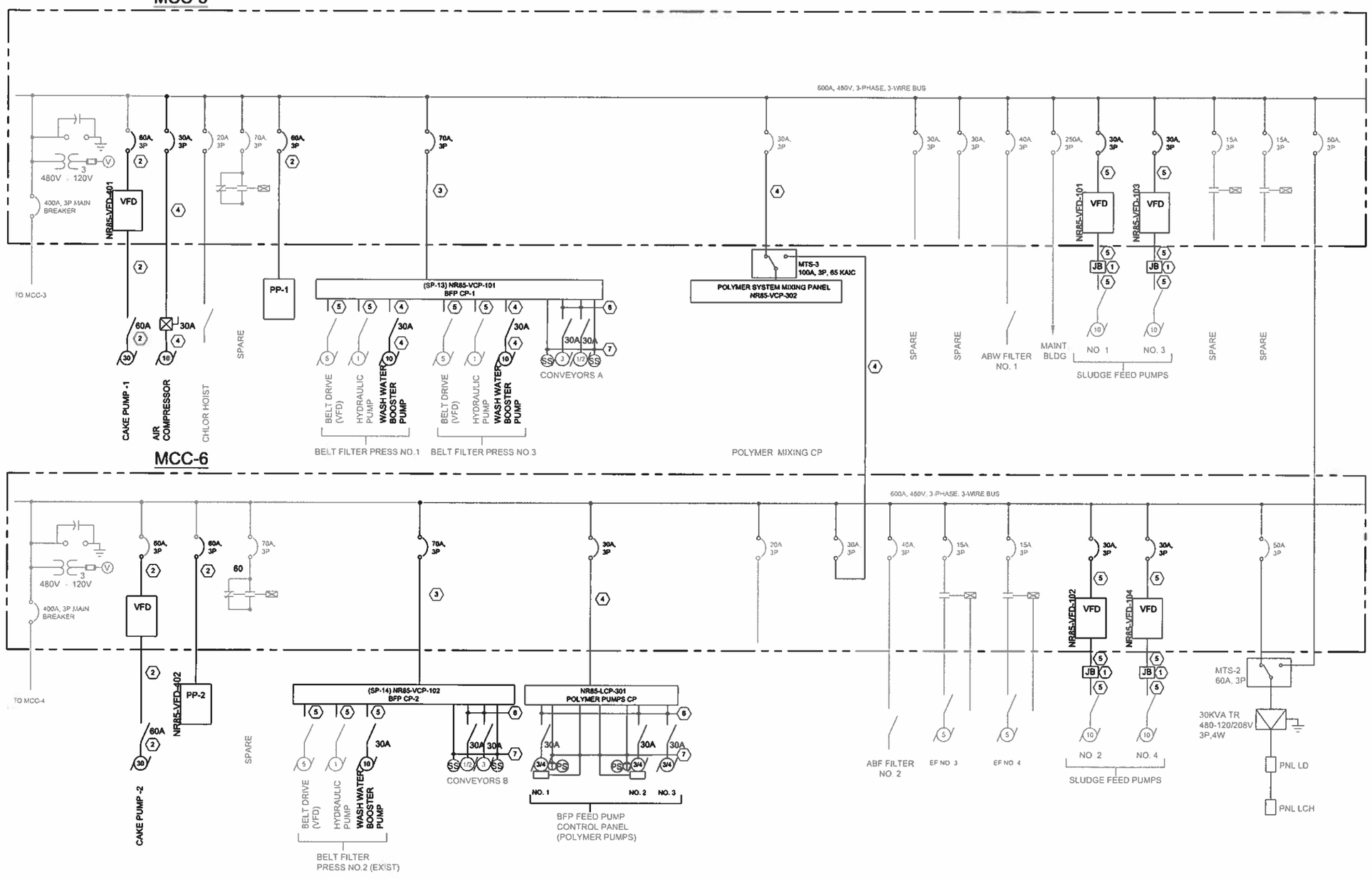
FILENAME: 153586-ED-00-502.DWG
BC PROJECT NUMBER: 153586
CLIENT PROJECT NUMBER: 6010881

ELECTRICAL

MCC-5, MCC-6 SINGLE LINE DIAGRAM DEMOLITION

DRAWING NUMBER: ED-00-502

Path: W:\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-ED-00-502.DWG PLOT DATE: 4/6/2020 11:10 AM CAD USER: RITESH DESAI



GENERAL NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION BETWEEN THE EXISTING SYSTEMS AND THE NEW SYSTEMS IN ORDER TO PROVIDE A FULLY FUNCTIONAL BELT FILTER PRESS SYSTEM. ALL EQUIPMENT MATERIAL AND LABOR SHALL BE PROVIDED AS REQUIRED.
2. SEE DRAWING ED-00-502 FOR EXISTING EQUIPMENT TO BE RECONNECTED AS SHOWN AND SPECIFIED.
3. ALL NEW MOTOR DISCONNECT SWITCHES SHALL BE IN NEMA 4X 316 SS ENCLOSURES, 65 KAIC AT 480 VOLT.
4. ALL EXISTING MOTOR DISCONNECT SWITCHES SHALL BE REPLACED WITH NEW NEMA 4X, 316 SS ENCLOSURES, 30A RATED MINIMUM MOUNT MOTOR DISCONNECT SWITCH PER DETAIL "A" SHEET E-00-004, NO EXCEPTION.

KEY NOTES:

1. INTERCEPT EXISTING CIRCUIT(S) FROM SLUDGE FEED PUMPS TO VFD'S/MCC'S (EXISTING) SPLICE IN JB'S ABOVE FALSE CEILING (ABOVE MCC'S) AND RECONNECT TO NEW VFD'S SHOWN. MATCH EXISTING CONDUITS AND WIRE SIZES.
2. 3#6, #6G IN 3/4"C
3. 3#4, #6G IN 1"C
4. 3#10, #10G IN 3/4"C
5. FIELD VERIFY AND MATCH EXISTING CONDUCTOR SIZE AND TYPE.
6. 3#12, #12G IN 3/4"C
7. 2#14, #14G, 3/4"C
8. ALL PANELS SHALL HAVE SHORT CIRCUIT RATING OF 65 KAIC AT 480 VOLT RMS SYMM.

Brown AND Caldwell
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Sarasota, FL 34240

ROBERT E. ABORDO — LICENSE No. 49046 — STATE OF FLORIDA — PROFESSIONAL ENGINEER
DATE SIGNED

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: V. TREHAN
DRAWN: K. PALMER
CHECKED: B. DICKERSON
CHECKED: B. DICKERSON
APPROVED: V. TREHAN

FILENAME 153586-E-00-502.DWG
BC PROJECT NUMBER 153586
CLIENT PROJECT NUMBER 6010881

ELECTRICAL

MCC-5 AND MCC-6 SINGLE LINE DIAGRAM NEW WORK

DRAWING NUMBER
E-00-502

SHEET NUMBER 52 OF 63

MCC-5 AND MCC-6 ELEVATIONS

MCC-5		
Section	BRIEF DESCRIPTION	
1A	MAINTENANCE BUILDING 250 A MAIN	
1B	SPACE	
1C	VOLTMETER, SELECTOR SWITCH	
1D	SPACE	
1E	400 A, 3 P, MAIN BREAKER	
2A	SPARE (6P, SIZE 1)	
2B	AC CONTROLS	
2C	ELR & LDR RELAYS	
2D	SPARE (3 P, SIZE 1)	
2E	SPARE (3 P, SIZE 1)	
2F	SPACE	
3A	SPARE (3 P, SIZE 1)	
3B	SPARE (3 P, SIZE 1)	
3C	SPARE (3 P, SIZE 1)	
3D	SPARE (3 P, SIZE 1)	
4A	MTS FOR PNL LT XFMR SW LTG	BFP CP-3 〈5〉
4B	70 A 3P BELT F.P. NO 1 〈6〉	30 A, 3P SPARE
4C	40 A , 3P ABW FILTER NO. 1	30 A, 3P SPARE 〈12〉
4D	30 A, 3P SPARE	30 A, 3 P CHLOR HOIST
4E	20 A, 3P 〈7〉	20 A, 3 P
4F	50 A, 3P SPARE	20 A , 3P DRAIN STATION

MCC-6		
Section	BRIEF DESCRIPTION	
1A	3 P, SIZE 1, EXH. FAN NO. 4	
1B	3 P, SIZE 1, SPARE	
1C	VOLTMETER, SELECTOR SWITCH	
1D	BLANK	
1E	400 A, 3P, MAIN BREALER	
2A	SPARE	
2B	SPARE	
2C	SPACE	
3A	ELR & LDR RELAYS	
3B	10.3 VFD	
3C	SLUDGE FEED PUMP NO.4 VFD	
4A	70 A, 3 P, BELT F.P. NO. 2 〈10〉	30 A, 3 P, BELT POLY MIX SYSTEM 〈12〉
4B	40 A, 3 P, ABW FILTER NO. 2	20 A, 3 P, SPARE
4C	20 A, 3 P, SPARE 〈11〉	20 A, 3P SPARE *
4D	40 A , 3P, CONVY CP	50 A MTS-2 TRANSFER SWITCH LIGHTS
4E	20 A, 3P, DISC FILTER PLC	*20 A, 3 P, SPARE 〈13〉
4F	3P, SIZE 1 EXH. FAN NO. 3	

⬡ KEYNOTES:

MCC-5 MODIFICATIONS

1. SLUDGE FEED PUMP NO. 1 & 2: FIELD VERIFY AND REMOVE EXISTING BUCKETS AND PROVIDE 2 - 10 HP VFD'S WITH 30 A, 480 V, 3-PHASE BREAKER (EACH IN 36" BUCKET) IN EXISTING SPACE - FOR SLUDGE PUMP NO. 1 AND SLUDGE PUMP NO. 2 IN THE SPACE MADE AVAILABLE. PROVIDE NEW BUCKETS, DOORS AND ASSOCIATED MATERIAL REQUIRED FOR COMPLETE INSTALLATION. PROVIDE REMAINING SPACE WITH REMOVABLE COVER. MATCH EXISTING BREAKERS TYPE, SHORT CIRCUIT RATING, AND COLOR OF MCC.
2. CAKE PUMP 1: FIELD VERIFY AND REMOVE EXISTING BUCKETS AND PROVIDE 30 HP VFD'S WITH 60 A, 480 V, 3-PHASE BREAKER IN 36" BUCKET IN EXISTING SPACE - FOR CAKE PUMP NO. 1. PROVIDE NEW BUCKETS, DOORS AND ASSOCIATED MATERIAL REQUIRED FOR COMPLETE INSTALLATION. PROVIDE REMAINING SPACE WITH REMOVABLE COVER. MATCH EXISTING BREAKERS TYPE AND SHORT CIRCUIT RATING.
3. REMOVE EXISTING ELR & LDR RELAYS, ASSOCIATED CONDUITS AND WIRING, INCLUDING ALL ACCESSORIES.
4. NOT USED
5. FIELD LOCATE AND REMOVE ALL SURFACE CONDUITS, WIRES, AND ASSOCIATED ACCESSORIES, FROM EXISTING BREAKER TO BFP CP-3. MARK EXISTING BREAKER 'SPARE'.
6. FIELD LOCATE AND REMOVE ALL SURFACE CONDUITS, WIRES, AND ASSOCIATED ACCESSORIES, FROM EXISTING BREAKER TO BELT F. P. NO. 1. PROVIDE 60 A, 3P, 65 KAIC CIRCUIT BREAKER (IN PLACE OF EXISTING 70 A, 3P CIRCUIT BREAKER) FOR PANEL PP-1.
7. BFP CP-1: FIELD LOCATE AND REMOVE EXISTING SPARE BREAKER, AND REPLACE IT WITH NEW 150 A, 480 V, 3-PHASE, BREAKER FOR NEW BELT F P NO. 1 AND 3.

MCC-6 MODIFICATIONS

8. SLUDGE FEED PUMP NO. 3 & 4: FIELD VERIFY AND REMOVE EXISTING BUCKETS AND PROVIDE 2 - 10 HP VFD'S WITH 30 A, 480 V, 3-PHASE BREAKER (EACH IN 36" BUCKET) IN EXISTING SPACE - FOR SLUDGE PUMP NO. 3 AND SLUDGE PUMP NO. 4 IN THE SPACE MADE AVAILABLE. PROVIDE NEW BUCKETS, DOORS AND ASSOCIATED MATERIAL REQUIRED FOR COMPLETE INSTALLATION. PROVIDE REMAINING SPACE WITH REMOVABLE COVER. MATCH EXISTING BREAKERS TYPE, SHORT CIRCUIT RATING, AND COLOR OF MCC.
9. CAKE PUMP 2: FIELD VERIFY AND REMOVE EXISTING BUCKETS AND PROVIDE 30 HP VFD'S WITH 60 A, 480 V, 3-PHASE BREAKER IN 36" BUCKET IN EXISTING SPACE - FOR CAKE PUMP NO. 2. PROVIDE NEW BUCKETS, DOORS AND ASSOCIATED MATERIAL REQUIRED FOR COMPLETE INSTALLATION. PROVIDE REMAINING SPACE WITH REMOVABLE COVER. MATCH EXISTING BREAKERS TYPE AND SHORT CIRCUIT RATING.
10. FIELD LOCATE AND REMOVE ALL SURFACE CONDUITS, WIRES, AND ASSOCIATED ACCESSORIES, FROM EXISTING BREAKER TO BELT F. P. NO. 2. PROVIDE 60 A, 3P, 65 KAIC CIRCUIT BREAKER (IN PLACE OF EXISTING 70 A, 3P CIRCUIT BREAKER) FOR PANEL PP-2.
11. BFP CP-2: FIELD LOCATE AND REMOVE EXISTING SPARE BREAKER, AND REPLACE IT WITH NEW 150 A, 480 V, 3-PHASE, BREAKER FOR NEW BELT F P NO. 2 AND 4 (FUTURE).
12. POLY MIX SYSTEM: FIELD LOCATE AND REMOVE ALL SURFACE CONDUITS, WIRES, AND ASSOCIATED ACCESSORIES, FROM EXISTING BELT POLY MIX SYSTEM PANELS AS SHOWN. REFEED NEW POLY MIX CONTROL PANEL FROM THE BREAKER AS SHOWN.
13. PROVIDE 30 A, 3P, 65 KAIC CIRCUIT BREAKER (IN PLACE OF EXISTING 20 A, 3P, SPARE BREAKER) FOR 'POLYMER PUMPS CP' (NR85-VCP-301).

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LICENSE
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PROFESSIONAL ENGINEER

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: V. TREHAN
DRAWN: K. PALMER
CHECKED: B. DICKERSON
CHECKED: B. DICKERSON
APPROVED: V. TREHAN

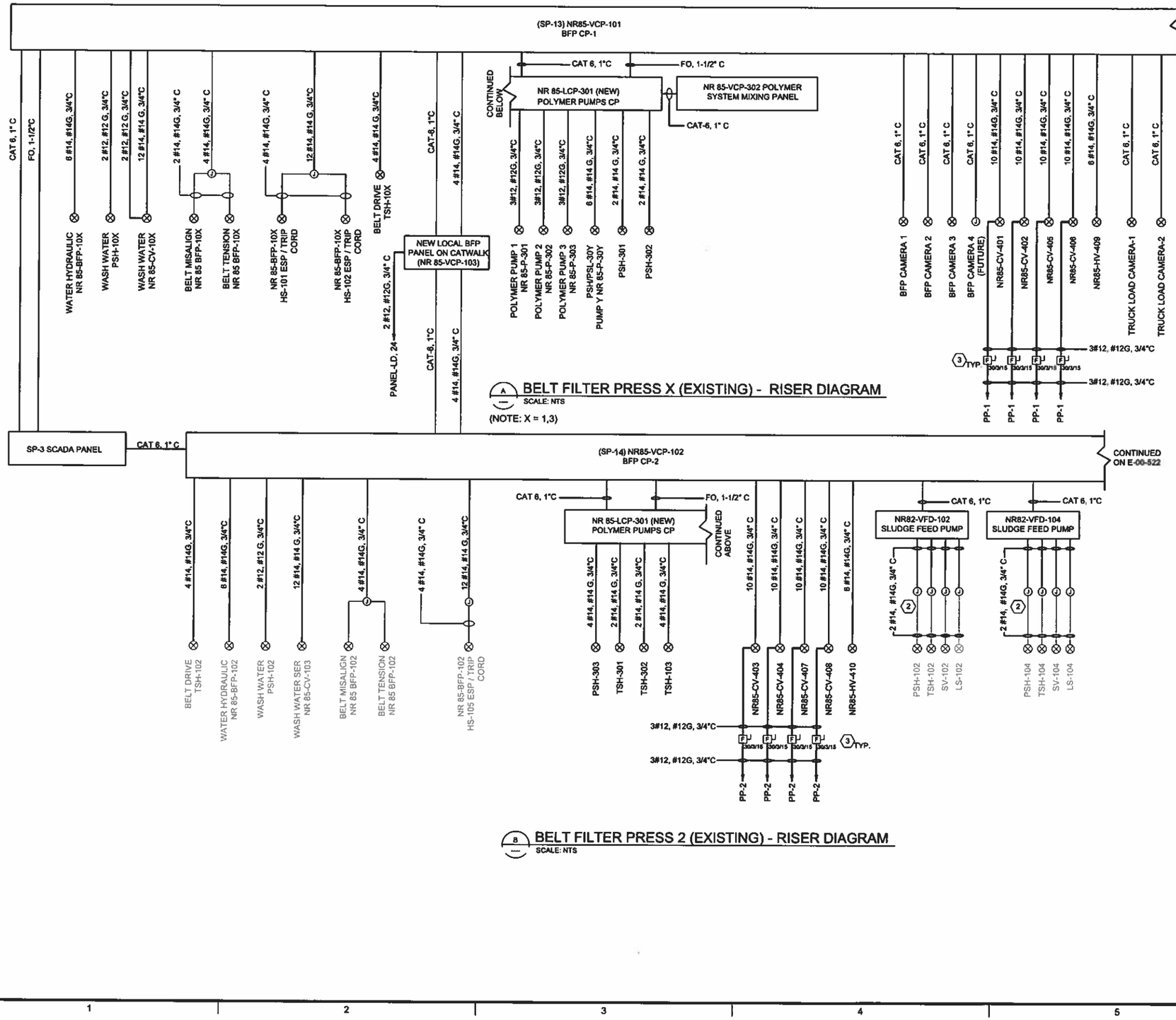
FILENAME
153586-E-00-503.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010681

ELECTRICAL

MCC-5 AND MCC-6 ELEVATION DEMO AND NEW WORK

DRAWING NUMBER
E-00-503

53 SHEET NUMBER OF 63



BELT FILTER PRESS X (EXISTING) - RISER DIAGRAM

SCALE: NTS

(NOTE: X = 1,3)

BELT FILTER PRESS 2 (EXISTING) - RISER DIAGRAM

SCALE: NTS

GENERAL NOTES:

1. COORDINATE WITH P&ID'S.

KEY NOTES:

1. EXISTING FIBER OPTIC CABLE.
2. INTERCEPT EXISTING CIRCUIT AND SPLICE ABOVE FALSE CEILING IN MCC ROOM. CONTRACTOR MAY CONSIDER COMBINING JB'S CONSIDERING FIELD CONDITIONS.
3. PROVIDE SQUARE-D KRYDON NEMA 4X (OR EQUAL) SAFETY SWITCHES MADE FROM FIBERGLASS REINFORCED POLYESTER MATERIAL IN SLUDGE AREAS.
4. SUFFICIENT SLACK IN THE PANEL AND JUNCTION BOX FOR FUTURE TERMINATIONS.

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Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: V. TREHAN
DRAWN: K. PALMER
CHECKED: B. DICKERSON
CHECKED: B. DICKERSON
APPROVED: V. TREHAN

FILENAME
153586-E-00-521.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

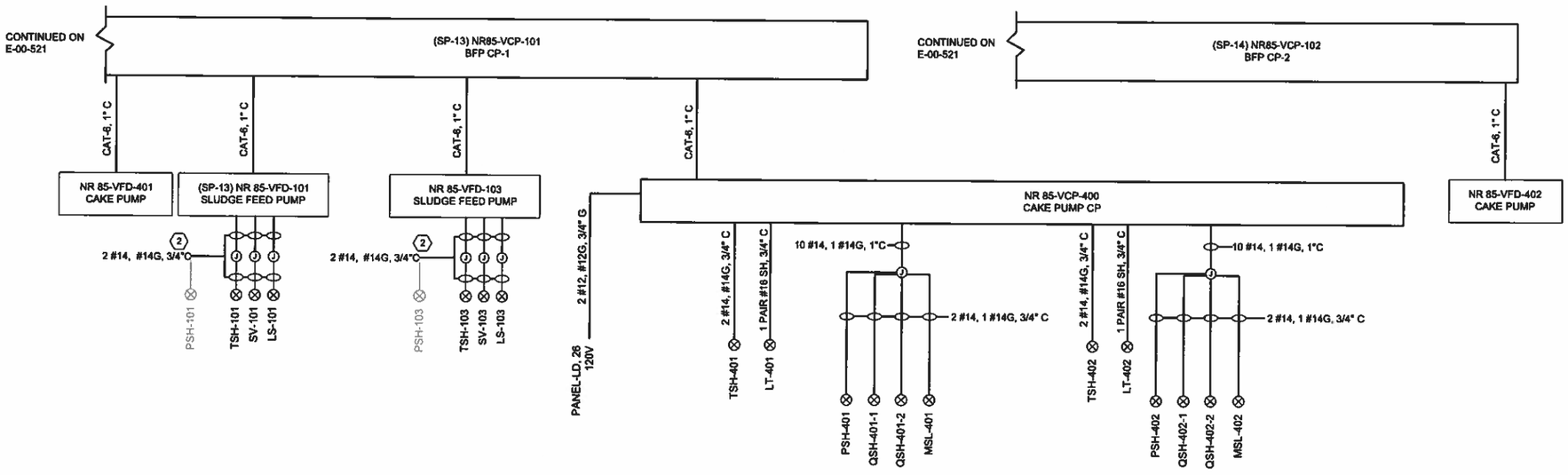
ELECTRICAL

RISER DIAGRAM

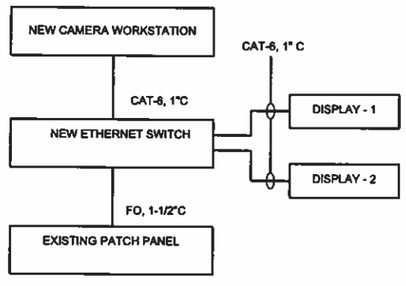
DRAWING NUMBER
E-00-521

54 SHEET NUMBER OF 63

Path: W:\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-E-00-521.DWG PLOT DATE: 4/8/2020 11:10 AM CAD USER: RITESH DESAI



A BELT FILTER PRESS 3 (EXISTING) - RISER DIAGRAM
SCALE: NTS



B ADMINISTRATION BUILDING - RISER DIAGRAM
SCALE: NTS

GENERAL NOTES:

1. COORDINATE WITH P&ID'S.

KEY NOTES:

1. EXISTING FIBER OPTIC CABLE.
2. INTERCEPT EXISTING CIRCUIT AND SPLICE ABOVE FALSE CEILING IN MCC ROOM.

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Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: V. TREHAN
DRAWN: K. PALMER
CHECKED: B. DICKERSON
CHECKED: B. DICKERSON
APPROVED: V. TREHAN
FILENAME 153586-E-00-522.DWG
BC PROJECT NUMBER 153586
CLIENT PROJECT NUMBER 6010881

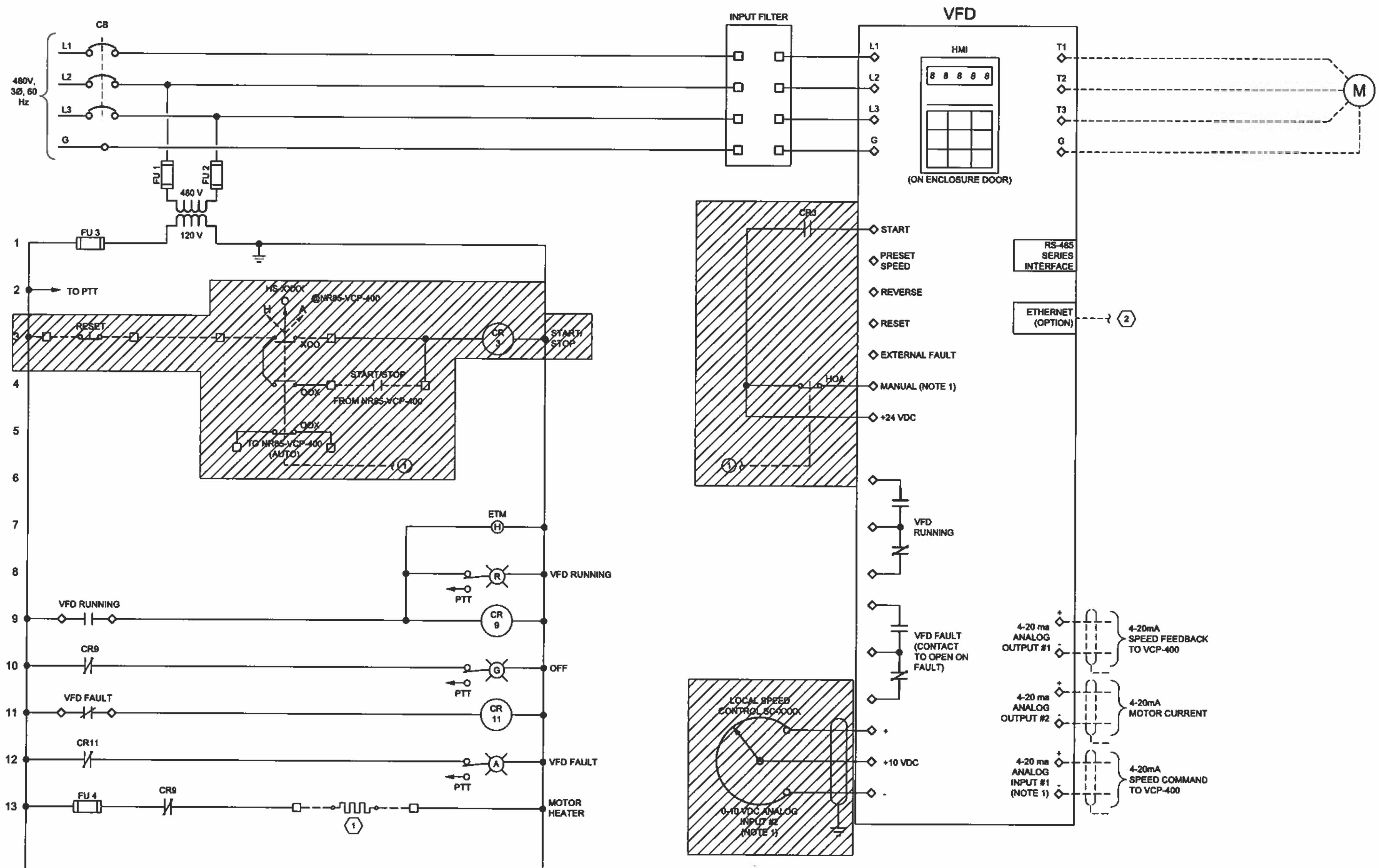
ELECTRICAL

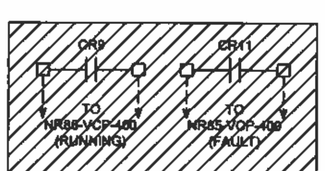
RISER DIAGRAM

DRAWING NUMBER
E-00-522

SHEET NUMBER 55 OF 63

Path: W:\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-E-00-522.DWG PLOT DATE: 4/6/2020 11:11 AM CAD USER: RITESH DESAI





SCHEDULE

MCC TAG NO.	EQUIPMENT TAG NO.	EQUIPMENT NAME
NR85-VFD-401	NR85-P-401	PUMP 1
NR85-VFD-402	NR85-P-402	PUMP 2

VFD SCHEMATIC - CAKE PUMPS

SCALE: NTS

GENERAL NOTES:

1. NETWORK CONTROLS AND MONITORING FFROM NR 85-VCP-400.
2. ALL EQUIPMENT WIRING IS TO INCLUDE WIRE NUMBERS PER DIV 16.

KEY NOTES:

1. TO MOTOR HEATER CIRCUIT.
2. CAT-6, 1"C FROM VFD TO MCC-5 (FOR PUMP-1), AND CAT-6, 1"C FROM VFD TO MCC-6 (FOR PUMP-2)

LEGEND

- □ TERMINAL LOCATED IN VFD CABINET
- ◇ TERMINAL LOCATED ON DRIVE
- ---- FIELD WIRING

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ENGINEER OF RECORD: ROBERT E. ABORDO, P.E. 48046
ROBERT E. ABORDO LICENSE No. 48046 STATE OF FLORIDA PROFESSIONAL ENGINEER
4/6/2020

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. BROWN
DRAWN: M. CORNELISON
CHECKED:
CHECKED: T. HULL
APPROVED: A. MODY

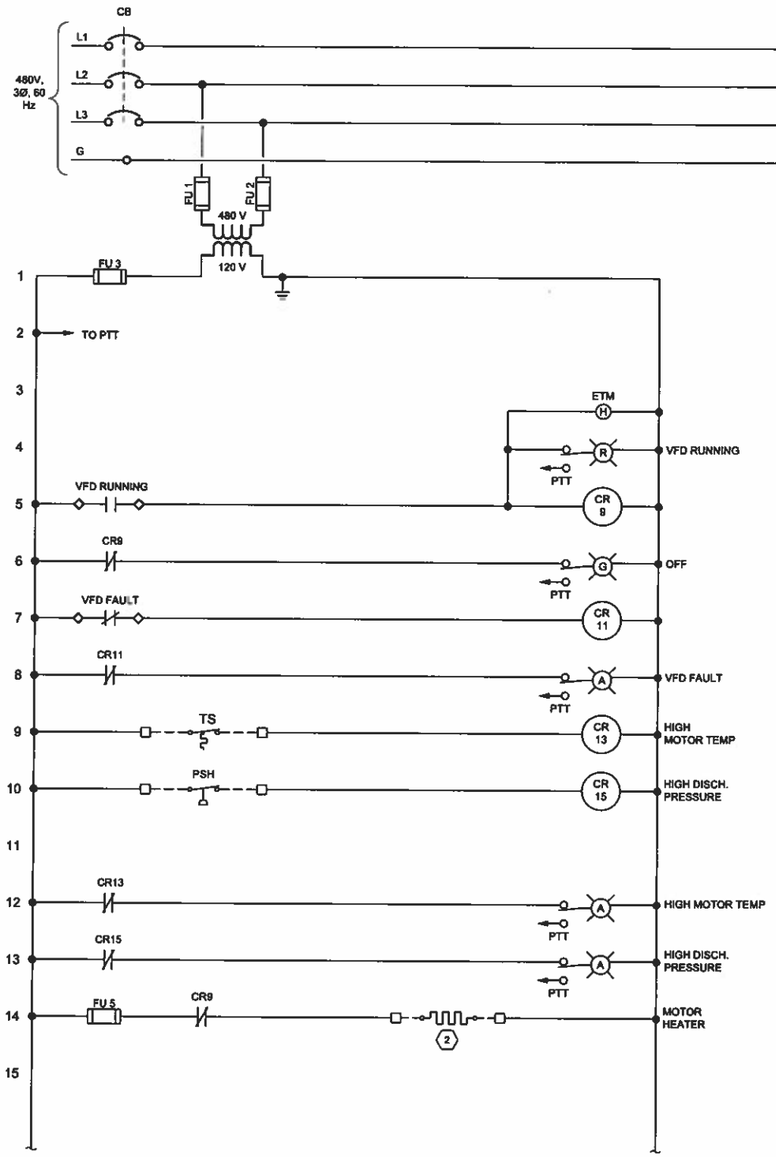
FILENAME 153588-E-00-523.DWG
BC PROJECT NUMBER 153588
CLIENT PROJECT NUMBER 6010881

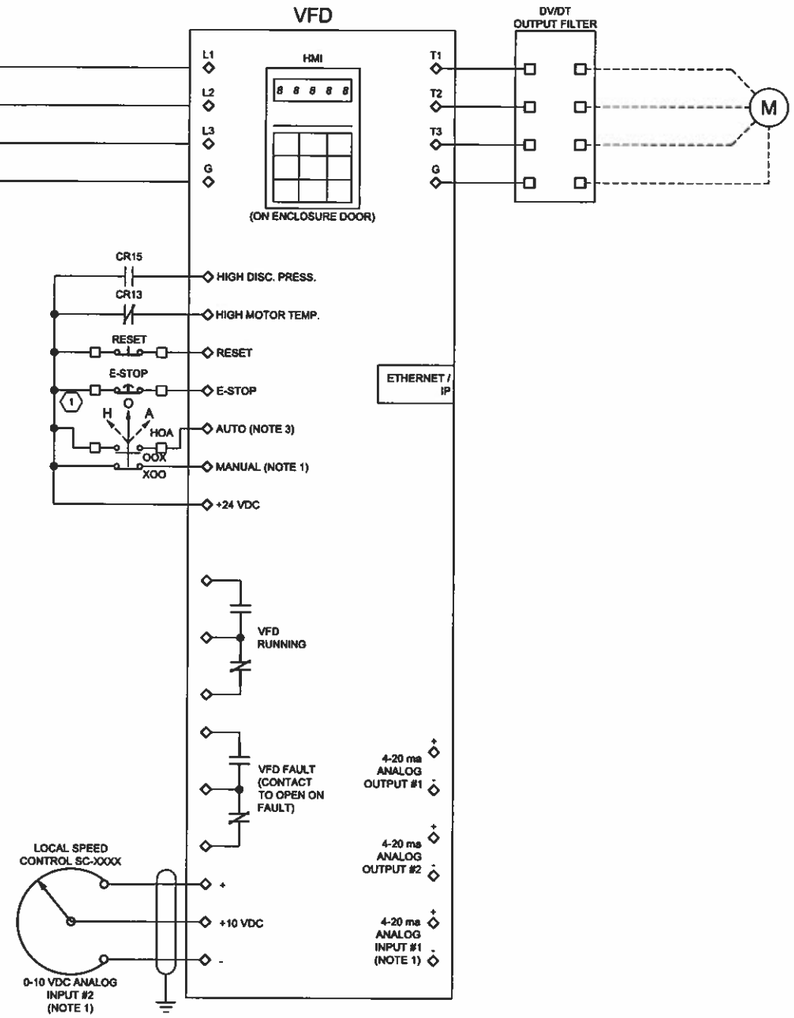
ELECTRICAL

CAKE PUMPS VFD SCHEMATIC

DRAWING NUMBER E-00-523

SHEET NUMBER 56 OF 63





GENERAL NOTES:

1. WITH HOA SWITCH IN HAND POSITION, LOCAL SPEED POT SIGNAL (ANALOG IN #2) IS SELECTED.
2. ALL EQUIPMENT WIRING IS TO INCLUDE WIRE NUMBERS PER DIV 16.
3. WITH HOA SWITCH IN AUTO POSITION, SCADA SPEED/START COMMANDS ARE OVER NETWORK.

KEY NOTES:

1. PROVIDE ESTOP WHERE SHOWN ON PLAN DRAWING. ADD JUMPER IF E-STOP IS NOT REQUIRED.
2. TO MOTOR HEATER CIRCUIT.

LEGEND

- TERMINAL LOCATED IN VFD CABINET
- TERMINAL LOCATED ON DRIVE
- FIELD WIRING

SCHEDULE		
PANEL OR MCC TAG NO.	EQUIPMENT TAG NO.	EQUIPMENT NAME
NR85-VFD-101	NR85-P-101	PUMP 1
NR85-VFD-102	NR85-P-102	PUMP 2
NR85-VFD-103	NR85-P-103	PUMP 3
NR85-VFD-104	NR85-P-104	PUMP 4

VFD SCHEMATIC - SLUDGE PUMPS

SCALE: NTS

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ENGINEER OF RECORD
ROBERT E. ABBOUD, PE 48046

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: V. TREHAN
DRAWN: M. CORNELISON
CHECKED:
CHECKED: T. HULL
APPROVED: A. MODY
FILENAME: 153586-E-00-524.DWG
BC PROJECT NUMBER: 153586
CLIENT PROJECT NUMBER: 5010881

ELECTRICAL

SLUDGE PUMPS VFD SCHEMATIC

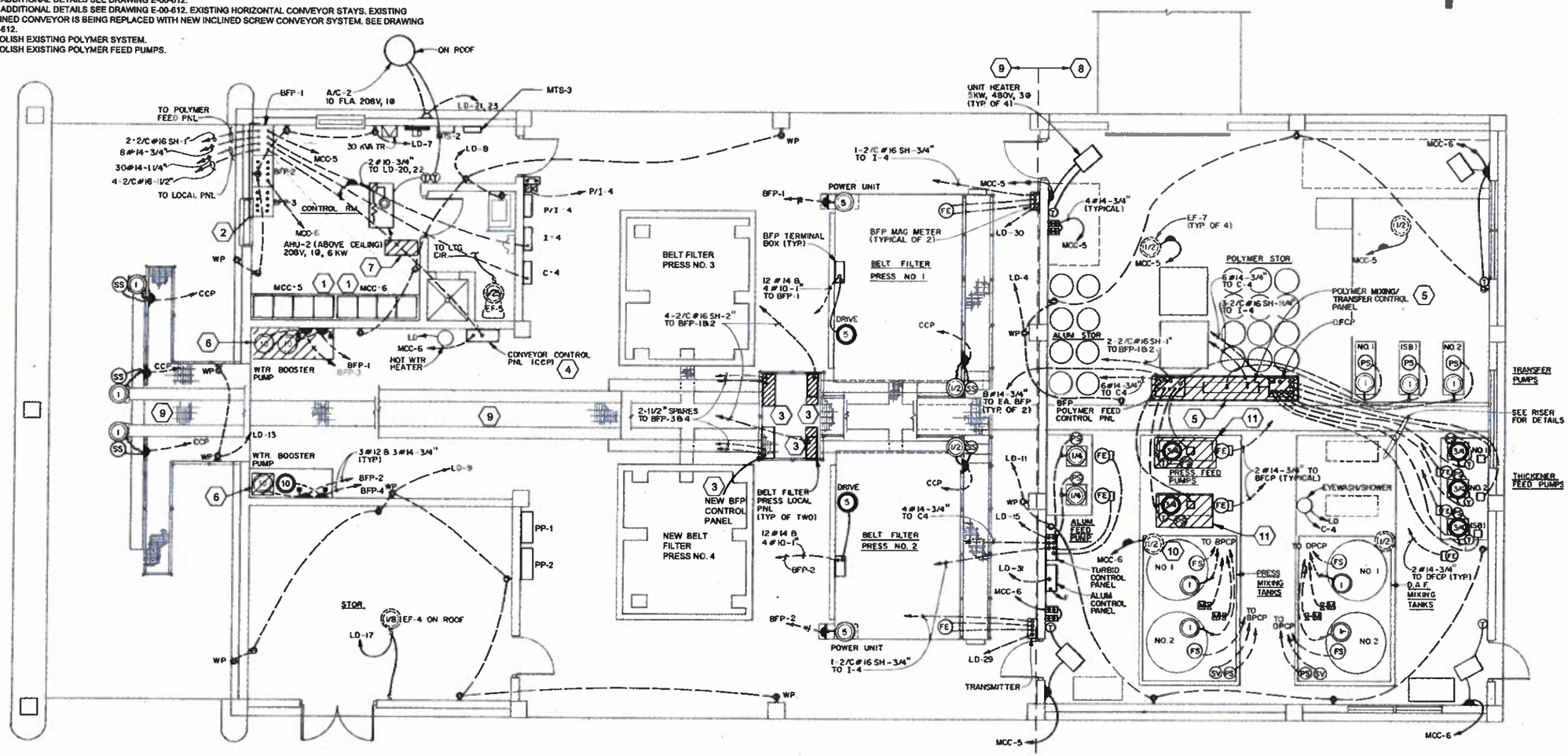
DRAWING NUMBER: E-00-524
SHEET NUMBER: 57 OF 63

GENERAL NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION BETWEEN THE EXISTING SYSTEMS AND THE NEW SYSTEMS IN ORDER TO PROVIDE A FULLY FUNCTIONAL BELT FILTER PRESS SYSTEM. ALL EQUIPMENT MATERIAL AND LABOR SHALL BE PROVIDED AS REQUIRED.
2. THERE ARE THREE EXISTING BELT FILTER PRESSES # 1, # 2 AND # 3. ONE NEW BELT FILTER PRESS #4 IS BEING PROVIDED.
3. BFP TRUCK LOADOUT AND POLYMER ROOM AREAS ARE "CORROSIVE AREAS".
4. CONTRACTOR TO FIELD LOCATE EXISTING GROUND GRID, GROUND STATIONS AND TEST THE WHOLE GROUNDING SYSTEM FOR BFP BUILDING AND SUBMIT COMPOSITE REPORT, INCLUDING DEFICIENCIES, IF ANY.

KEYNOTES:

1. DEMOLISHED EXISTING EQUIPMENT AND ASSOCIATED ACCESSORIES FROM EXISTING MCC-5 AND MCC-6 AND PROVIDE NEW AS SHOWN AND SPECIFIED. SEE DRAWING ED-00-502 AND E-00-502.
2. THREE EXISTING BELT FILTER PRESS (BFP) # 1, # 2 AND # 3 CONTROL PANELS ARE BEING REPLACED WITH TWO (2) CONTROL PANELS AT THE SAME LOCATION - ONE CONTROL PANEL FOR BFP NO. 1 AND NO.2, AND SECOND CONTROL PANEL WILL BE PROVIDED FOR BFP NO. 3. THESE CONTROL PANELS WILL HOUSE VFD'S, STARTERS FOR BELT FILTER PRESSES AS SHOWN AND SPECIFIED. SEE DRAWING ED-00-502 AND E-00-502. EXTEND THE EXISTING CONCRETE PAD AS REQUIRED.
3. REMOVE THREE EXISTING CONTROL PANELS ON "CAT WALK" FOR THREE EXISTING BELT FILTER PRESSES AND REPLACE THEM WITH A NEW CONTROL PANEL ON CATWALK FOR ALL FOUR BELT FILTER PRESSES (THREE EXISTING AND ONE NEW) AS SHOWN AND SPECIFIED.
4. FIELD VERIFY AND DEMOLISH EXISTING CONVEYOR PANEL, EXISTING SURFACE CONDUITS, WIRES, AND ASSOCIATED ACCESSORIES BACK TO SOURCE. ABANDON EXISTING CONCEALED CONDUITS IN PLACE AND CAP. RECONNECT EXISTING CONVEYORS TO BFP PANELS NR85-VCP-101 AND NR85-VCP-102 AS SHOW ON ONE LINE DIAGRAMS. SEE DRAWING ED-00-502 AND E-00-502.
5. REPLACE EXISTING POLYMER SYSTEM CONTROL PANELS WITH NEW CONTROL PANEL. SEE DRAWING E-00-613.
6. DEMOLISH EXISTING WTR BOOSTER PUMPS.
7. DEMOLISH EXISTING SLUDGE PUMP INTERFACE PANEL. CONTRACTOR TO FIELD VERIFY CIRCUITS TO EXISTING PSH-101, PSH-102, PSH-103, AND PSH-104. INTERCEPT IN THE ELECTRICAL ROOM AND RECONNECT AS SHOWN ON RISER DIAGRAMS. FIELD VERIFY AND DEMOLISH EXISTING SURFACE CONDUITS, WIRES, AND ASSOCIATED ACCESSORIES BACK TO SOURCE. ABANDON EXISTING CONCEALED CONDUITS IN PLACE AND CAP.
8. FOR ADDITIONAL DETAILS SEE DRAWING E-00-612.
9. FOR ADDITIONAL DETAILS SEE DRAWING E-00-612. EXISTING HORIZONTAL CONVEYOR STAYS. EXISTING INCLINED CONVEYOR IS BEING REPLACED WITH NEW INCLINED SCREW CONVEYOR SYSTEM. SEE DRAWING E-00-612.
10. DEMOLISH EXISTING POLYMER SYSTEM.
11. DEMOLISH EXISTING POLYMER FEED PUMPS.



POWER PLAN

Brown AND Caldwell
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ENGINEER OF RECORD
ROBERT L. ABORDO, PE# 48946
ROBERT L. ABORDO LICENSE No. 48946 STATE OF FLORIDA PROFESSIONAL ENGINEER
4/8/2020
BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: V. TRENAN
DRAWN: K. PALMER
CHECKED: B. DICKERSON
CHECKED: B. DICKERSON
APPROVED: V. TRENAN

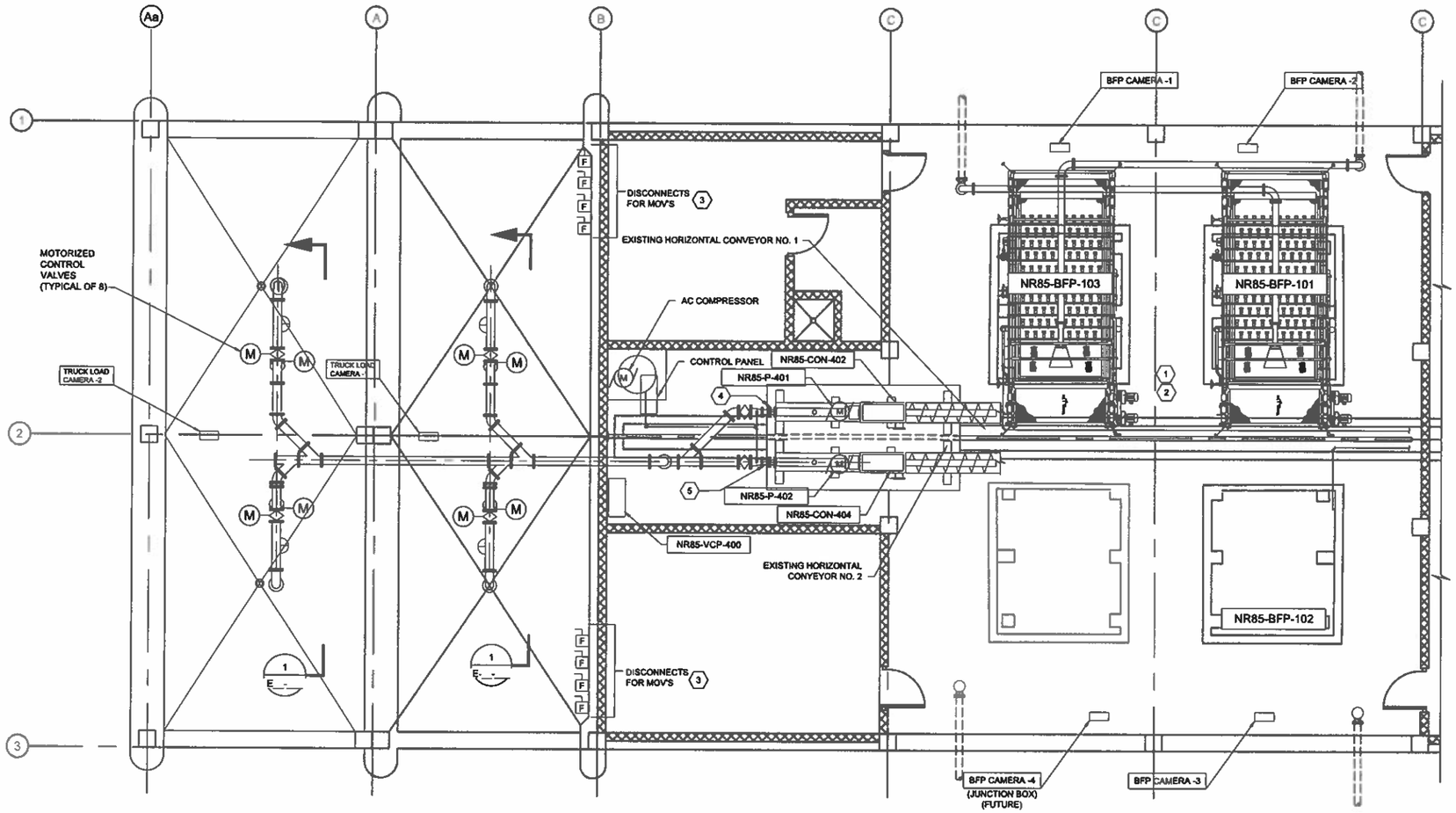
FILENAME
153586-E-00-611.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

ELECTRICAL

POWER PLAN DEWATERING BUILDING

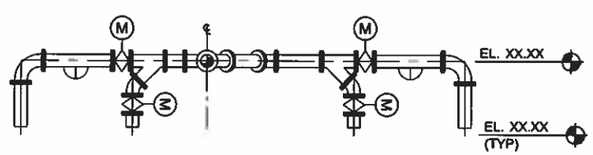
DRAWING NUMBER
E-00-611
SHEET NUMBER 58 OF 63

Path: W:\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-E-00-611.DWG PLOT DATE: 4/8/2020 11:11 AM CAD USER: RITESH DESAI



NWRF BFP AND TRUCK LOADOUT PARTIAL PLAN

SCALE: 3/16" = 1'-0"



CAKE DISTRIBUTION SECTION 1 E-__-

SCALE: 1/4"=1'-0"

NOTE: BACKGROUND PLAN OBTAINED FROM SWWTP BELT FILTER PRESS PROJECT NUMBER 2553 (2000).

GENERAL NOTES:

1. BFP AND TRUCK LOADOUT AREAS ARE "CORROSIVE AREAS".
2. GROUND NEW CONTROL PANELS AND MOTORS TO EXISTING GROUND GRID.

KEYNOTES:

1. EXISTING BFP1, BFP2, AND BFP3 ARE BEING REFURBISHED.
2. DISCONNECT EXISTING BFP'S (ONE AT A TIME) AND RECONNECT REFURBISHED BFP'S AS SHOWN.
3. PROVIDE SQUARE-D KRYDON NEMA 4X (OR EQUAL) SAFETY SWITCHES MADE FROM FIBERGLASS REINFORCED POLYESTER MATERIAL IN SLUDGE AREAS.
4. PI 401, PSH 401, QSH 401-1, QSH 401-2, MSL 401, LT 401 (APPROX. LOCATION).
5. PI 402, PSH 402, QSH 402-1, QSH 402-2, MSL 402, LT 402 (APPROX. LOCATION).

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PROFESSIONAL ENGINEER
BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

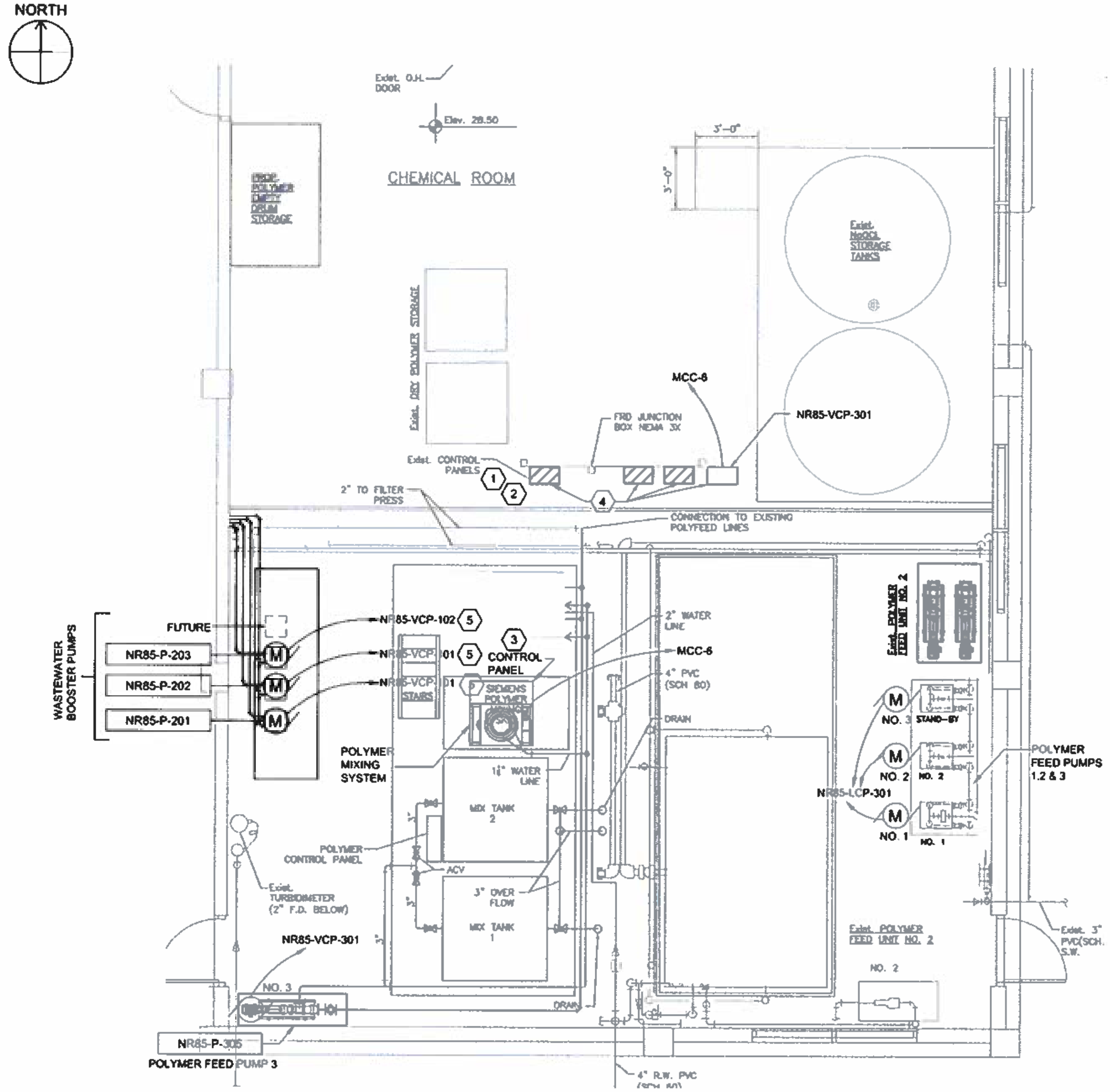
DESIGNED: V. TREHAN
DRAWN: G. CAILLIER
CHECKED:
CHECKED: T. HULL
APPROVED: V. TREHAN
FILENAME 153586-E-00-612.DWG
BC PROJECT NUMBER 153586
CLIENT PROJECT NUMBER 6010881

ELECTRICAL

BFP AND TRUCK LOADOUT PLAN

DRAWING NUMBER E-00-612

SHEET NUMBER 59 OF 63



NWRF POLYMER ROOM PLAN - NEW WORK

NOT TO SCALE

NOTE: BACKGROUND PLAN OBTAINED FROM BELT FILTER PRESSES S.W.
WASTE WATER TREATMENT PLANT PROJECT #415-5857-537 AND #430-8528-537.

GENERAL NOTES:

1. SEE ONE LINE DIAGRAMS AND RISER DIAGRAMS FOR DETAILS.
2. WHOLE OF THE POLYMER ROOM AREA IS "CORROSIVE AREA".
3. GROUND NEW CONTROL PANELS AND MOTORS TO EXISTING GROUND GRID.

KEYNOTES:

1. REPLACE EXISTING CONTROL PANELS WITH NEW AS SHOWN AND SPECIFIED.
2. REMOVE EXISTING SURFACE CONDUITS, WIRES, AND ACCESSORIES. ABANDON EXISTING CONCEALED CONDUITS AND CAP.
3. NR85-VCP-302 POLYMER SYSTEM MIXING PANEL
4. REPLACE EXISTING CONTROL PANELS WITH NEW POLYMER PUMPS CONTROL PANEL NR85-VCP-301.
5. LOCATED IN ELECTRICAL ROOM.

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ROBERT E. ABORDO LICENSE No. 48046 STATE OF FLORIDA PROFESSIONAL ENGINEER

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS		
REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: V. TREHAN
DRAWN: K. PALMER
CHECKED: B. DICKERSON
CHECKED: B. DICKERSON
APPROVED: V. TREHAN

FILENAME: 153586-E-00-613.DWG
BC PROJECT NUMBER: 153586
CLIENT PROJECT NUMBER: 6010881

ELECTRICAL

POLYMER ROOM PLAN - NEW WORK

DRAWING NUMBER E-00-613

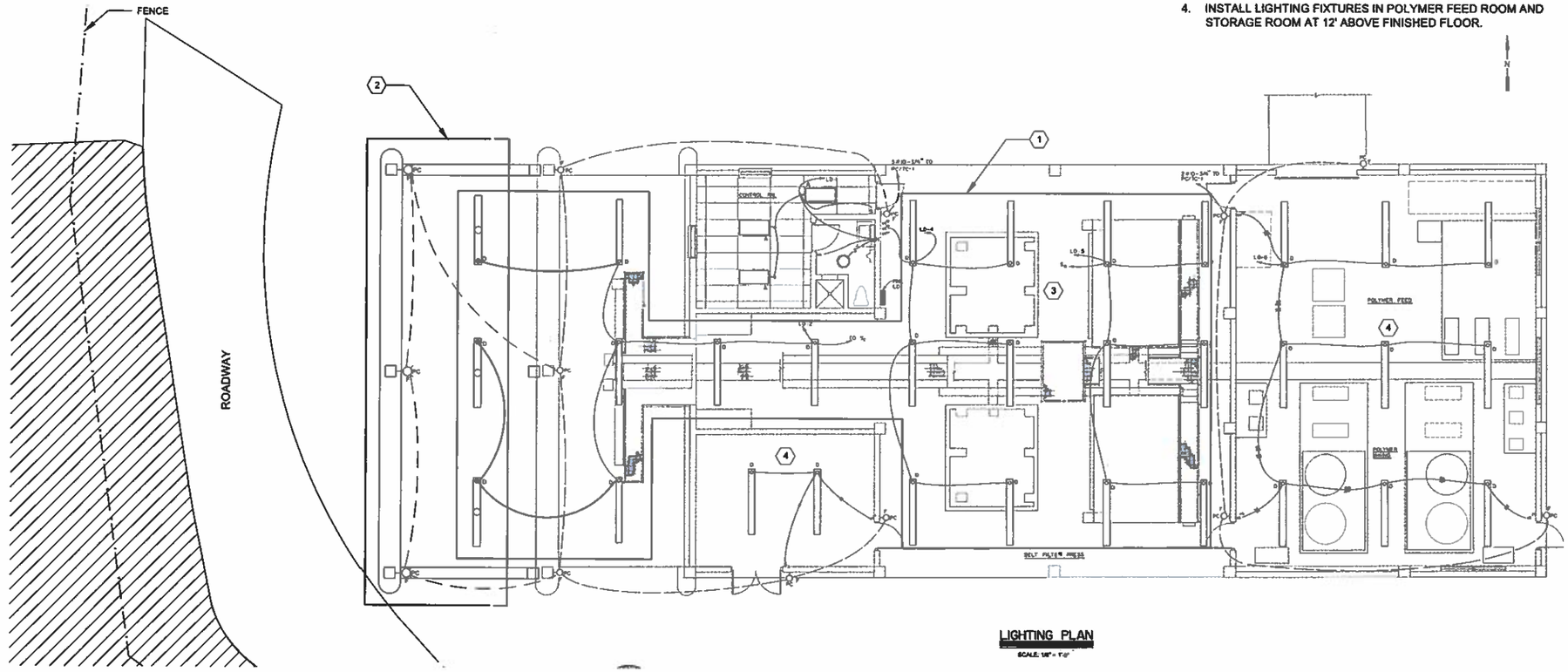
Path: W:\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-E-00-613.DWG PLOT DATE: 4/8/2020 4:28 PM CAD USER: RITESH DESAI

GENERAL NOTES:

1. LIGHTING PLAN BACKGROUND, EXISTING LIGHT FIXTURES, WIRING, AND CONDUIT UTILIZES EXISTING OWNERS RECORD DRAWING FOR NORTH SUBREGIONAL WASTEWATER TREATMENT FACILITY DEWATERING/CHEMICAL BUILDING SHEET E-22 OF 30. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION BETWEEN THE EXISTING SYSTEMS AND THE NEW SYSTEMS IN ORDER TO PROVIDE A FULLY OPERATIONAL LIGHTING SYSTEM. ALL EQUIPMENT, MATERIAL, AND LABOR SHALL BE PROVIDED AS REQUIRED.
2. NEW AND EXISTING LIGHTING FIXTURES ARE TO USE NEW WIRING AND CONDUIT FROM EXISTING LIGHTING CIRCUITS SHOWN ON PANEL SCHEDULE DRAWING E-00-613 WHEREVER POSSIBLE. REPLACE EXISTING NEW LIGHT SWITCHES WITH CORROSION RESISTANT HOUSING AND COVERS (NOT JUST THE WP ENCLOSURES).
3. EXISTING LIGHTING FIXTURES A, D & F SHOWN ARE TO BE REPLACED WITH NEW LED FIXTURES. REFERENCE LIGHTING FIXTURE SCHEDULE DRAWING E-00-006 FOR NEW FIXTURES.

⬡ KEYNOTES:

1. TYPE D FIXTURES ABOVE CATWALK AND INSIDE TRUCK BAYS TO BE CEILING MOUNTED.
2. NEW FIXTURES, WIRING, AND CONDUIT TO BE INSTALLED IN NEW TRUCK BAY AREA AND ADDED TO EXISTING CIRCUITS.
3. INSTALL LIGHTING FIXTURES AT 12' ABOVE BFP'S. CONSULT WITH THE COUNTY BEFORE FINAL LOCATE.
4. INSTALL LIGHTING FIXTURES IN POLYMER FEED ROOM AND STORAGE ROOM AT 12' ABOVE FINISHED FLOOR.



LIGHTING PLAN
SCALE: 1/8" = 1'-0"

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ROBERT E. ABORDO, PE 48046

ROBERT E. ABORDO
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PROFESSIONAL ENGINEER
4/7/2020

Manatee County
FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

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LINE IS 2 INCHES AT FULL SIZE

DESIGNED: V. TREHAN
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APPROVED: V. TREHAN

FILENAME
153586-E-00-614.DWG
BC PROJECT NUMBER
153586
CLIENT PROJECT NUMBER
6010881

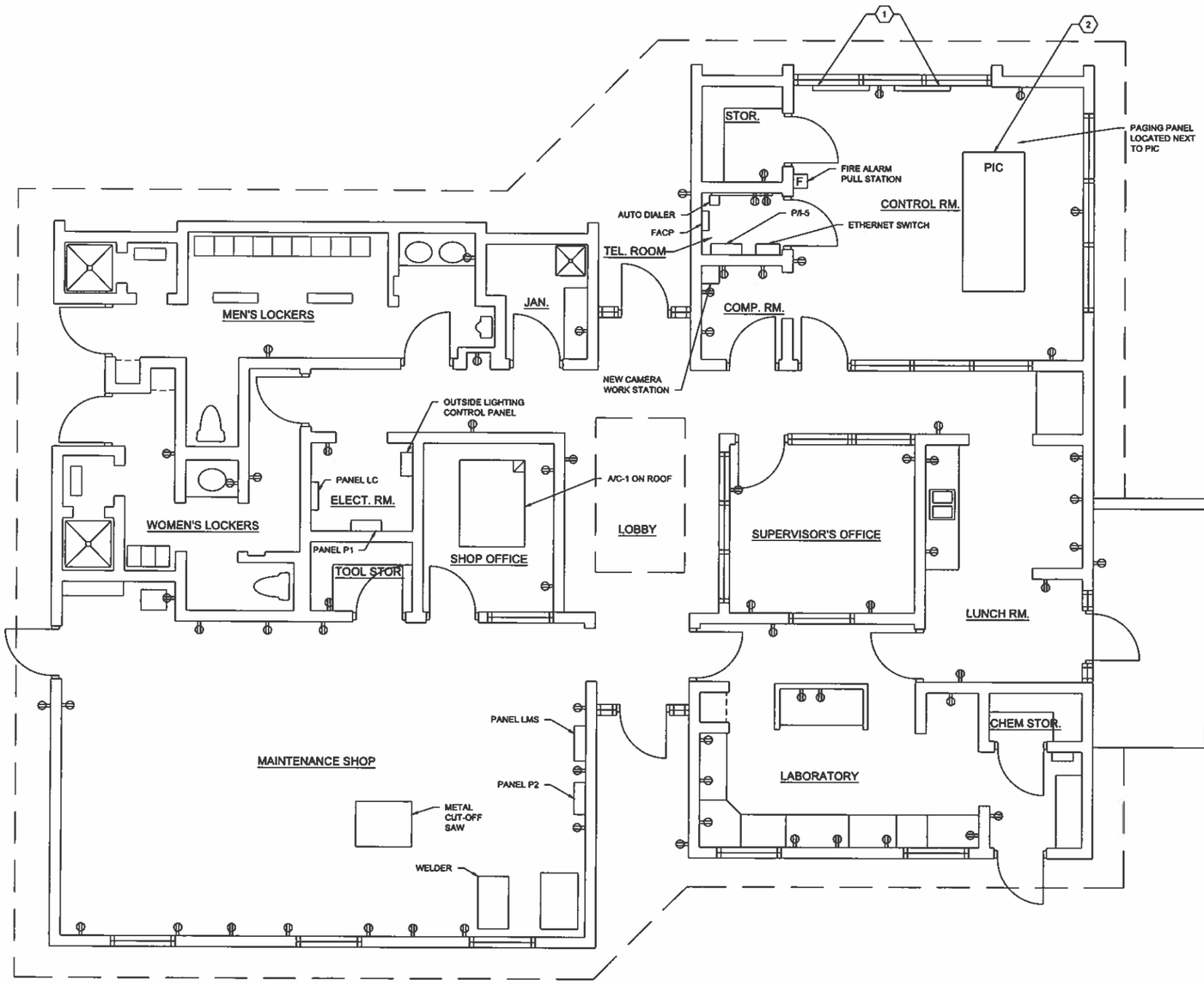
ELECTRICAL
SWWRF

LIGHTING PLAN DEWATERING BUILDING

DRAWING NUMBER
E-00-614

SHEET NUMBER 61 OF 63

Path: W:\MANATEE COUNTY\NWRF BFP IMPROVEMENTS\05-AUTOCAD\02-SHEETS FILENAME: 153586-E-00-614.DWG PLOT DATE: 4/6/2020 11:12 AM CAD USER: RITESH DESAI



CONTROL BUILDING - POWER PLAN
SCALE: 1/4" = 1'-0"

KEY NOTES:

1. PROVIDE TWO SAMSUNG 65" SMART TV'S PER SPECIFICATIONS SECTION 17715 IN EXISTING CONTROL ROOM. PROVIDE DUPLEX RECEPTACLES FOR EACH TV, FIELD LOCATE AND CONNECT TO THE NEAREST CIRCUIT AVAILABLE. PROVIDE CONDUITS, WIRES, AND CIRCUIT BREAKERS AS REQUIRED. FIELD COORDINATE LOCATION AND HEIGHT OF TV'S AND RECEPTACLES FOR BFP CAMERAS 1 TO 3 AND TRUCK LOAD CAMERAS 1 AND 2. SEE DRAWING E-00-521. PROVIDE ALL MATERIAL AND LABOR TO MAKE BFP BUILDING CAMERAS WORK.
2. FIELD LOCATE EXISTING PATCH PANEL LOCATED IN PIC (CONSOLE).

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9/18/2020
BID SET

Manatee County FLORIDA

NWRF BELT FILTER PRESS IMPROVEMENTS

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	V. TREHAN
DRAWN:	K. PALMER
CHECKED:	B. DICKERSON
CHECKED:	B. DICKERSON
APPROVED:	V. TREHAN
FILENAME	153586-E-00-615.DWG
BC PROJECT NUMBER	153586
CLIENT PROJECT NUMBER	6010881

ELECTRICAL

CONTROL BLDG. - POWER PLAN

DRAWING NUMBER
E-00-615

SHEET NUMBER 62 OF 63

PANEL: LD (DEWATERING)	BUS: 225A	VOLTAGE: 120/208V, 3Φ, 4W
LOAD: 72A	POLES: 42	
MOUNTING: SURFACE	REMARKS: 100A, 3P, MB	

CIR NO	DESCRIPTION	TRIP	POLES	KVA	REMARKS
1,2	LTG - CONTROL RM./LOADING AREA	20	1	1.3	
3	LTG - STORAGE RM.	20	1	0.3	
4	LTG - PRESS RM.	20	1	1.0	
5	LTG - PRESS RM.	20	1	1.0	
6	LTG - POLYMER FEED/MIXING	20	1	1.5	
7	RECEPT. - CONTROL RM.	20	1	1.0	
8	RECEPT. - CONTROL RM.	20	1	1.0	
9	RECEPT. - STORAGE RM.	20	1	1.6	
10	RECEPT. - PRESS RM.	20	1	0.8	
11	RECEPT. - POLYMER RM.	20	1	1.2	
12	RECEPT. - POLYMER RM.	20	1	1.0	
13	RECEPT. - OUTSIDE LOADING AREA	20	1	0.4	
14, 16, 18	PNL LCH	40	3	5.0	
15	ALUM FEED PUMP CONTROL PANEL	20	1	1.6	
20,22	AHU - 2	20	2	0.5	
21,23	AC - 2	20	2	2.0	(HACR)
17	EXHAUST FAN - 4	20	1	0.6	
					NOTE 1
25,27	WTR HTR	20	2	3.0	
29	METER	20	1	.1	
30	METER	20	1	.1	
31	ALUM. CP	20	1	.1	
24	CATWALK BFP PANEL	20	1	1.0	
25	NR 85-VCP-101				
26	CAKE PUMP CP	20	1	1.0	NOTE 1
27	NR 85-VCP-400				
28	SPARE	20	1		

NOTE:
1. REPLACING EXISTING 40A, 3P CIRCUIT BREAKER WITH 3-20A, 1P CIRCUIT BREAKERS. MATCH EXISTING, CONNECT NEW CIRCUIT BREAKERS AS SHOW.
2. UPDATE CIRCUIT LOADS AFTER CONNECTING NEW LED LIGHT FIXTURES.

PANEL SCHEDULE PP-1

LOCATION: BELT FILTER PRESS BUILDING
MOUNTING: WALL
NOTE: PROVIDE 100 A, NEMA 3X, 316 SS PANEL

AIC MAINS & CB'S: 65,000
MAINS: 60A/3P CIRCUIT BREAKER
VOLTS: 480 V, 3 PH, 3W

CKT	TRIP / POLE	LOAD DESCRIPTION	LOAD KVA	PHASE A	PHASE B	PHASE C	LOAD KVA	LOAD DESCRIPTION	TRIP / POLE	CKT
1			0.25	0.5			0.25			2
3	15/3	MOV NR85-CV-401	0.25		0.5		0.25	MOV NR85-CV-402	15/3	4
5			0.25			0.5	0.25			6
7			0.25	0.5			0.25			8
9	15/3	MOV NR85-CV-405	0.25		0.5		0.25	MOV NR85-CV-406	15/3	10
11			0.25			0.5	0.25			12
13										14
15	15/3	SPARE						SPARE	15/3	16
17										18
19										20
21	15/3	SPARE						SPARE	15/3	22
23										24
		TOTALS	1	1	1					

PANEL SCHEDULE PP-2

LOCATION: BELT FILTER PRESS BUILDING
MOUNTING: WALL
NOTE: PROVIDE 100 A, NEMA 3X, 316 SS PANEL

AIC MAINS & CB'S: 65,000
MAINS: 60A/3P CIRCUIT BREAKER
VOLTS: 480 V, 3 PH, 3W

CKT	TRIP / POLE	LOAD DESCRIPTION	LOAD KVA	PHASE A	PHASE B	PHASE C	LOAD KVA	LOAD DESCRIPTION	TRIP / POLE	CKT
1			0.25	0.5			0.25			2
3	15/3	MOV NR85-CV-403	0.25		0.5		0.25	MOV NR85-CV-404	15/3	4
5			0.25			0.5	0.25			6
7			0.25	0.5			0.25			8
9	15/3	MOV NR85-CV-407	0.25		0.5		0.25	MOV NR85-CV-408	15/3	10
11			0.25			0.5	0.25			12
13										14
15	15/3	SPARE						SPARE	15/3	16
17										18
19										20
21	15/3	SPARE						SPARE	15/3	22
23										24
		TOTALS	1	1	1					

GENERAL NOTES:

1. PANEL BOARDS SHOWN ARE EXISTING. CONTRACTOR TO FIELD VERIFY LIGHTING AND OTHER CIRCUITS BEING USED.

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PROFESSIONAL ENGINEER
4/8/2020

Manatee County FLORIDA

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FILENAME
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BC PROJECT NUMBER
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CLIENT PROJECT NUMBER
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ELECTRICAL

PANEL SCHEDULE

DRAWING NUMBER
E-00-621

SHEET NUMBER 63 OF 63