CITY OF HOUSTON

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION DIVISION

DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATION
3 WET & 2 DRY WEATHER PUMP SYSTEM

WBS NO. XXXXXX-XXXX-X

MAYOR
SYLVESTER TURNER

CONTROLLER
CHRIS BROWN

DISTRICT
COUNCIL MEMBERS

BRENDA STARDIG
DISTRICT A

JERRY DAVIS
DISTRICT B

ELLEN R. COHEN
DISTRICT C

DWIGHT BOYKINS
DISTRICT D

DAVID MARTIN
DISTRICT E

STEVE LE
DISTRICT F

GREG TRAVIS
DISTRICT G

KARLA CISNEROS
DISTRICT H

ROBERT GALLEGOS
DISTRICT I

MIKE LASTER
DISTRICT J

LARRY V. GREEN
DISTRICT K

COUNCIL MEMBERS
AT-LARGE

MIKE KNOX
POSITION 1

DAVID ROBINSON
POSITION 2

MICHAEL KUBOSH
POSITION 3

AMANDA EDWARDS
POSITION 4

JACK CHRISTIE
POSITION 5

GENERAL

NO.	TITLE
-	COVER SHEET
Z0E01	ELECTRICAL SYMBOLS LEGENDS, LIGHTING FIXTURE SCHEDULES & ABBREVIATIONS

LIFT STATION ELECTRICAL PLANS

NO.	TITLE
L1E01	CONDUIT LAYOUT FOR LIFT STATION 3 WET & 2 DRY WEATHER PUMPS ALTERNATE HIGH PROFILE CONFIGURATION
L2E01	CONDUIT LAYOUT FOR LIFT STATION 3 WET & 2 DRY WEATHER PUMPS PREFERRED LOW PROFILE CONFIGURATION
L3E01	CONDUIT LAYOUT FOR LIFT STATION 3 WET & 2 DRY WEATHER PUMPS ALTERNATE LOW PROFILE CONFIGURATION
L3E02	CONDUIT LAYOUT FOR LIFT STATION 3 WET & 2 DRY WEATHER PUMPS ALTERNATE LOW PROFILE CONFIGURATION

INDOOR CONFIGURATION

NO.	TITLE
Y0E21	3 WET & 2 DRY WEATHER PUMPS CONTROL CABINET EQUIPMENT LAYOUT & SCHEDULE
Y0E22	3 WET & 2 DRY WEATHER PUMPS CONTROL CABINET BACK DOOR ELEVATION
Y0E23	3 WET & 2 DRY WEATHER PUMPS CONTROL CABINET EQUIPMENT LAYOUT
Y0E25	3 WET & 2 DRY WEATHER PUMPS MCC INCOMING POWER SCHEMATIC & CONTROL POWER & COMMUNICATIONS WIRING DIAGRAM
Y0E26	3 WET & 2 DRY WEATHER PUMPS MCC POWER SCHEMATIC & CONTROL POWER & COMMUNICATIONS WIRING DIAGRAM
Y0E30	3 WET & 2 DRY WEATHER PUMPS SINGLE LINE DIAGRAM
Y0E31	3 WET & 2 DRY WEATHER PUMPS SINGLE LINE DIAGRAM
Y0E40	3 WET & 2 DRY WEATHER PUMPS PROCESS & INSTRUMENTATION DIAGRAM
Y0E41	3 WET & 2 DRY WEATHER PUMPS PROCESS & INSTRUMENTATION DIAGRAM
Y0E50	3 WET & 2 DRY WEATHER PUMPS CONTROL PANEL CONTROL WIRING DIAGRAM
Y0E51	3 WET & 2 DRY WEATHER PUMPS CONTROL PANEL CONTROL WIRING DIAGRAM
Y0E52	3 WET & 2 DRY WEATHER PUMPS CONTROL PANEL CONTROL WIRING DIAGRAM
Y0E58	3 WET & 2 DRY WEATHER PUMPS PUMP W101 CONTROL WIRING DIAGRAM
Y0E59	3 WET & 2 DRY WEATHER PUMPS PUMP W102 CONTROL WIRING DIAGRAM
Y0E60	3 WET & 2 DRY WEATHER PUMPS PUMP W103 CONTROL WIRING DIAGRAM
Y0E61	3 WET & 2 DRY WEATHER PUMPS PUMP D104 CONTROL WIRING DIAGRAM
Y0E62	3 WET & 2 DRY WEATHER PUMPS PUMP D105 CONTROL WIRING DIAGRAM

TYPICAL INSTALLATION DETAILS

NO.	TITLE
Z0C01	SUBMERSIBLE TRANSDUCER WELL LEVEL GAUGING SYSTEM INSTALLATION & DETAILS
Z0E02	3 WET & 2 DRY WEATHER PUMPS TYPICAL JUNCTION BOX DETAILS
Z0E03	3 WET & 2 DRY WEATHER PUMPS TYPICAL ELECTRICAL DETAILS
Z0E04	3 WET & 2 DRY WEATHER PUMPS TYPICAL ELECTRICAL DETAILS
Z0E05	3 WET & 2 DRY WEATHER PUMPS CONTROL BUILDING - ELECTRICAL
Z0E06	- EXAMPLE - ELECTRICAL SITE PLAN ALTERNATE HIGH PROFILE CONFIGURATION
Z0E07	3 WET & 2 DRY WEATHER PUMPS TYPICAL ELECTRICAL DETAILS
Z0E08	3 WET & 2 DRY WEATHER PUMPS TYPICAL ELECTRICAL DETAILS
Z0E13	3 WET & 2 DRY WEATHER PUMPS MCC ELEVATIONS
Z0E21	3 WET & 2 DRY WEATHER PUMPS CONDUIT SCHEDULE FOR 480 VOLT
Z0E22	3 WET & 2 DRY WEATHER PUMPS CONDUIT SCHEDULE FOR 480 VOLT
Z0E42	3 WET & 2 DRY WEATHER PUMPS DEVICE RATING SCHEDULE TYPICAL ELECTRICAL DETAILS
Z0E43	3 WET & 2 DRY WEATHER PUMPS DEVICE RATING SCHEDULE TYPICAL ELECTRICAL DETAILS

ELECTRICAL PLAN SHEET SYMBOLS

SYMBOL	DESCRIPTION
A	LIGHTING FIXTURE
A 3	BRACKET MOUNTED LIGHTING FIXTURE OR HIGH (NUMBER INDICATES LIGHTING PANEL CIRCUIT NUMBER – TYPICAL FOR ALL LIGHTING & RECEPTACLE CIRCUITS)
	SINGLE CONVENIENCE RECEPTACLE
WP	DUPLEX CONVENIENCE RECEPTACLE (WP INDICATES CAST WEATHER PROOF OUTLET BOX & COVER)
A	SINGLE SPECIAL PURPOSE RECEPTACLE (LETTER INDICATES TYPE PER SCHEDULE)
	TELEPHONE UTILITY SYSTEM OUTLET
	LIGHTING PANEL
	UTILITY METERING CABINET
	TELEPHONE UTILITY SYSTEM BACKBOARD
	DISTRIBUTION PANEL
	CABINET OR PULL BOX
	UNFUSED SAFETY SWITCH – 3P, 30A, 600V UNLESS OTHERWISE INDICATED.
30	FUSED SAFETY SWITCH – 3P, 600V, 30A MINIMUM OR AS REQUIRED TO ACCOMODATE FUSE SIZE INDICATED
	OUTLET OR JUNCTION BOX
	COMBINATION PROTECTIVE DEVICE & MAGNETIC STARTER
	SINGLE UNIT PUSHBUTTON STATION
	2–UNIT PUSHBUTTON STATION
	3–UNIT PUSHBUTTON STATION
5	ELECTRIC MOTOR – NUMBER INDICATES HORSEPOWER
FS	FLOW SWITCH
SS	"HAND–OFF–AUTOMATIC" SELECTOR SWITCH
LS	LIMIT SWITCH
DS	MAGNETIC REED DOOR SWITCH
MS	MOTION SWITCH
PS	PRESSURE SWITCH
TS	TORQUE SWITCH
PE	PNUEMATIC/ELECTRIC SWITCH
PLS	PROXIMITY LIMIT SWITCH
VS	VACUUM SWITCH
FS	FLOAT SWITCH
EP	ELECTRO–PNEUMATIC VALVE
S	SOLENOID VALVE
T	ELECTRIC THERMOSTAT
T	TEMPERATURE ACTUATED DEVICE
$	SINGLE POLE TOGGLE SWITCH
$2	DOUBLE POLE TOGGLE SWITCH
$3	3 – WAY SWITCH
$T	MANUAL MOTOR STARTER WITH THERMAL ELEMENT
$M	MOTOR RATED SWITCH WITH THERMAL ELEMENT IN NEMA 4X SS ENCLOSURE
	BATTERY POWERED EMERGENCY LIGHTING FIXTURE
	UNIT HEATER
	CLASS 1, DIV I, CONDUIT SEAL
	EXPOSED CONDUIT
	EXPOSED PUMP CABLE
	FIELD/GROUND LOOP CONDUCTORS
	CONDUIT CONCEALED IN FLOOR SLAB OR UNDER FLOOR SLAB. (CONDUITS 1–1/2" OR LARGER SHALL BE INSTALLED UNDER FLOOR SLAB). CONDUITS RUN UNDER FLOOR SLAB SHALL BE ENCASED IN CONCRETE. SEE NOTE 2
	HOMERUN TO PANEL OR MCC AS NOTED
A E0	CONCRETE ENCASED DUCTBANK (SECTION INDICATES CONDUIT CONFIGURATION & DESIGNATIONS)
A E0	EXPOSED CONDUIT BANK
	AIR TERMINAL
	GROUND ROD & WELL
K	KIRK KEY

CONDUIT SYSTEM NOTES

1. ANY CONDUIT WITHOUT FURTHER DESIGNATION INDICATES 2 #12 IN 3/4" CONDUIT. GREATER NUMBER OF WIRES ARE INDICATED AS FOLLOWS. (3 WIRES) (4 WIRES) ETC. LONGER HASHMARK INDICATES NEUTRAL CONDUCTOR, LONGER HASHMARK WITH DOT INDICATES GROUND CONDUCTOR. NO. INDICATES WIRE SIZE WHEN OTHER THAN #12 AWG.
2. CONDUITS IMBEDDED IN STRUCTURAL CONCRETE (FLOOR SLABS, ETC.) SHALL BE SO LOCATED AS NOT TO UNDULY IMPAIR THE STRENGTH OF THE CONSTRUCTION AND SHALL BE SPACED NOT LESS THAN TWO TIMES THE CONDUIT OD BETWEEN ADJACENT CONDUITS EXCEPT WHERE CROSSING OR OTHERWISE APPROVED BY THE ENGINEER.
3. WIRING FOR LIGHTING, RECEPTACLES AND OTHER MISCELLANEOUS CIRCUITS SHALL CONFORM TO THE CIRCUITING INDICATED ON THE DRAWINGS WITH ARRANGEMENT AND ROUTING AS REQUIRED. THE WIRING SHALL BE SO ARRANGED THAT NO MORE THAN 6 CURRENT CARRYING CONDUCTORS SHALL BE INSTALLED PER CONDUIT AND CIRCUITS OF DIFFERENT PANELS SHALL BE INSTALLED IN SEPARATE RACEWAYS.

WIRING DIAGRAM SYMBOLS

SYMBOL	DESCRIPTION
	CONTACT, NORMALLY OPEN
	CONTACT, NORMALLY CLOSED
	PUSHBUTTON, NORMALLY CLOSED
	PUSHBUTTON, NORMALLY OPEN
	SELECTOR SWITCH
OL'S X2	OVERLOADS
	FUSE
G	PILOT LIGHT, PUSH TO TEST
M	AUXILIARY STARTER CONTACTS
	PRESSURE SWITCH, OPENS ON RISE
	PRESSURE SWITCH, CLOSES ON RISE
	LEVEL OR LEAK DETECTION SWITCH
	LIMIT SWITCH, NORMALLY CLOSED
	LIMIT SWITCH, NORMALLY OPEN
	LIMIT SWITCH, NORMALLY OPEN, HELD CLOSED
	LIMIT SWITCH, NORMALLY CLOSED, HELD OPEN
	TEMPERATURE ACTUATED SWITCH, OPENS ON RISE
	TEMPERATURE ACTUATED SWITCH, CLOSES ON RISE
	VACUUM SWITCH, OPENS ON RISE
	VACUUM SWITCH, CLOSES ON RISE
	THERMAL OVERLOAD
	SOLID STATE MOTOR PROTECTION RELAY (MPR)
	SPACE HEATER
	GROUND CONNECTION
	SOLENOID
G M	MOTORIZED TIME DELAY RELAY
TD	TIME DELAY RELAY
TD O–O–X	TIME DELAY CONTACT (O=OPEN, X=CLOSED, DESIGNATION INDICATES CONTACT POSITION WHEN RELAY IS RESET–TIMING–TIMED OUT)
R	AUXILIARY RELAY
	CONTROL POWER TRANSFORMER
M	MOTOR STARTER OPERATING COIL

WIRE NUMBER USED ON WIRING DIAGRAM & TERMINAL BLOCKS

RELAY DESIGNATION

RM 11 RLL 11A R RRST

INSTRUMENTATION SYSTEM SYMBOLS

SYMBOL	DESCRIPTION
	MECHANICAL/ELECTRICAL LINK
	ELECTRICAL SIGNAL
	CONNECTION TO PIPING
	DISCRETE FIELD MOUNTED INSTRUMENT
	INTERNAL OR INACCESSIBLE DISCRETE DEVICE
	PANEL MOUNTED DISCRETE DEVICE
	PLC INPUT/OUTPUT
	CHECK VALVE
	ISOLATION VALVE
	SERIAL INPUT
R	RELAY

IDENTIFICATION LETTERS

	FIRST LETTER	SECCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	NOT USED	ALARM		
E	NOT USED	SENSOR (PRIMARY ELEMENT)		
H	HAND			HIGH
I	CURRENT (ELEC)	INDICATE		
J	POWER			
L	LEVEL			LOW
R	NOT USED	RECORD		
S	NOT USED		SWITCH	
Y	EVENT, STATE OR PRESENCE		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION			

SINGLE LINE DIAGRAM SYMBOLS

SYMBOL	DESCRIPTION
	SEPARABLE CONTACTS
	CIRCUIT BREAKER
	COMBINATION MOTOR STARTER
V	VOLTMETER
VS	VOLTMETER SWITCH
300:5 3	CURRENT TRANSFORMER (CT) DESIGNATION INDICATES QUANTITY & RATIO
	POTENTIAL TRANSFORMER
	LIGHTING TRANSFORMER
	POWER FACTOR CORRECTION CAPACITOR
47	PHASE FAILURE/UNDERVOLTAGE MONITOR RELAY
	FUSE
	MOTOR OVERLOAD
	SOLID STATE OVERLOAD
	FUSED DISCONNECT SWITCH
	SURGE ARRESTOR
VFD	VARIBLE FREQUENCY DRIVE

ABBREVIATIONS

A ----------- AMP
ADJ ----------- ADJUSTABLE
AFF ----------- ABOVE FINISHED FLOOR
AI ----------- ANALOG INPUT
ALT ----------- ALTERNATOR
AO ----------- ANALOG OUTPUT
AT&T ----------- AT&T TELEPHONE
C ----------- CONDUIT
CA ----------- CABLE
CAB ----------- CABINET
CAT. ----------- CATALOG
CB ----------- CIRCUIT BREAKER
CKT ----------- CIRCUIT
COMM ----------- COMMUNICATIONS
CONT ----------- CONTINUED
CPT–N----------- CONTROL POWER TRANSFORMER NEUTRAL
CPU ----------- CENTRAL PROCESSING UNIT
CT ----------- CURRENT TRANSFORMER
CU ----------- COPPER
CW ----------- COOL WHITE
DI ----------- DISCRETE INPUT
DIREC ----------- DIRECTIONAL
DIV ----------- DIVISION
DN ----------- DOWN
DO ----------- DISCRETE OUTPUT
ETM ----------- ELAPSED TIME METER
G.E. ----------- GENERAL ELECTRIC
GFI ----------- GROUND FAULT INTERRUPT
GND ----------- GROUND
H–O–A ----------- HAND OFF AUTO
INC ----------- INCANDESCENT
JB ----------- JUNCTION BOX
KA SYM ----------- THOUSAND AMPS SYMMETRICAL
KS ----------- KEY SWITCH
KVA ----------- KILO–VOLT–AMPS
L ----------- LINE
LED ----------- LIGHT EMITTING DIODE
LOS ----------- LOCK OUT STOP
LS ----------- LIMIT SWITCH
LV ----------- LOW VOLTAGE
LVN ----------- LOW VOLTAGE NEUTRAL
M ----------- MOTOR RUN CONTACT
mA ----------- MILLIAMPERE
MA ----------- MILLIAMPERE
MADC ----------- MILLIAMPERE DIRECT CURRENT
MCC ----------- MOTOR CONTROL CENTER
MCP ----------- MOTOR CIRCUIT PROTECTOR
MIN. ----------- MINUTES
MOR ----------- MOTOR OVERLOAD RELAY
MPR ----------- MOTOR PROTECTION RELAY
MS ----------- MOTION SWITCH
mS ----------- MILLISECOND
MTH ----------- MOTOR TEMPERATURE SWITCH
MTS ----------- MANUAL TRANSFER SWITCH
N ----------- NEUTRAL
nA ----------- NANOAMPERE
N.C. ----------- NORMALLY CLOSED
NEC ----------- NATIONAL ELECTRICAL CODE
NEUT ----------- NEUTRAL
N.O. ----------- NORMALLY OPEN
OL ----------- OVERLOAD
P ----------- POLE
PLC ----------- PROGRAMMABLE LOGIC CONTROLLER
POS ----------- POSITION
PS ----------- PRESSURE SWITCH
PVC ----------- POLYVINYL CHLORIDE
PVC RGS --------- PVC COATED RIGID GALV CONDUIT
PWR ----------- POWER
R ----------- RELAY
RALM ----------- PUMP ALARM RELAY
RGS ----------- RIGID GALVANIZED CONDUIT
RHLA ----------- HIGH LEVEL ALARM RELAY
RM ----------- PUMP RUN AUX RELAY
RMOR ----------- MOTOR OVERLOAD AUX RELAY
RMTH ----------- MOTOR TEMPERATURE RELAY
RPLC ----------- PLC MODE AUX RELAY
RPLCOR ----------- PLC OVERRIDE
RPLM ----------- PLC PUMP RUN RELAY
RPLMP----------- BACKUP SYSTEM RUN RELAY
RR ----------- RUN RELAY
RRST ----------- PUMP RESET AUX RELAY
RRST5----------- MODEM RESET RELAY
RTAH ----------- TEMPERATURE ALARM AUX RELAY
RWD ----------- WATCHDOG RELAY
SEC ----------- SECONDS
SL ----------- SEAL LEAK SWITCH
SN ----------- SOLID NEUTRAL
SSOL ----------- SOLID STATE OVERLOAD
SP ----------- SURGE PROTECTOR
SPD ----------- SURGE PROTECTION DEVICE
SPST ----------- SINGLE POLE SINGLE THROW
SS ----------- STAINLESS STEEL
S.S. ----------- SELECTOR SWITCH
SW ----------- SWITCH
TEMP ----------- TEMPERATURE
TD ----------- TIME DELAY RELAY
TDLP ----------- LOSS OF POWER TIME DELAY RELAY
TDRM ----------- PUMP TIME DELAY RELAY
UPS ----------- UNINTERRUPTIBLE POWER SUPPLY
V ----------- VOLTS
VA ----------- VOLT–AMP
VAC ----------- VOLTS ALTERNATING CURRENT
VDC ----------- VOLTS DIRECT CURRENT
W ----------- WATT OR WIRE
WM ----------- WATT MISER (HIGH EFFICIENCY LAMP)

LIGHTING FIXTURE SCHEDULE

TYPE	MFG & CATALOG NO.	LAMP SIZE	MOUNTING	REMARKS
LED A	LITHONIA ZL2N–L48–5000LM–MDD–MVOLT–50K–8CR1WH OR APPROVED EQUAL	4' LED	PENDANT MOUNT 9'–6" AFF	4' PENDENT OR SURFACE MOUNTED
LED B	LITHONIA ZL2N–L24–2000LM–MDD–MVOLT–40K–8CR1WH 120V OR EQUAL	2' LED	SURFACE	FIXTURE MOUNTED IN CONTROL PANEL
B	LITHONIA D5XW1 530MA DRIVER 120V OR EQUAL	36W LED	WALL MOUNT 12" ABOVE DOOR FRAME	VANDAL RESISTANT LEXAN REFRACTOR & PHOTOCELL
C	EDWARDS SIGNAL ALARM BEACON	13W LED	STEM MOUNTED	RED POLYCARBONATE LENS SUITABLE FOR WET LOCATIONS – 120V, SERIES 105 XBR
D	LITHONIA C5X1FT 530MA DRIVER 120V OR EQUAL	51W COATED LED	POLE MOUNT	WITH 120 VOLT DRIVER AND PHOTOCELL TYPE III FORWARD THRO

EMERGENCY LIGHTING FIXTURE SCHEDULE

TYPE	MFG & CATALOG NO.	DESCRIPTION
	KENALL HL SERIES OR APPROVED EQUAL	TWO 4.5W LED LAMPS. 8W NICKEL CADIUM BATTERY, 120V OPERATION RATED TO SUPPORT 4 LAMPS FOR 1 1/2 HOURS. PROVIDE MOUNTING HARDWARE AS REQ'D.
	KENALL HL SERIES OR APPROVED EQUAL	REMOTE SINGLE LAMP 4.5W LED LAMP IN THERMOPLASTIC HOUSING COMPLETE WITH SWIVEL MOUNT, MOUNTING BOX AND HARDWARE

NOTES TO DESIGN ENGINEER:

A. *THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.*

IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. *THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.*

C. *THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.*

D. *THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.*

ELECTRICAL SYMBOLS LEGENDS, LIGHTING FIXTURE SCHEDULES & ABBREVIATIONS

PROJECT NO. R–000265–0XXX–X

TITLE CITY OF HOUSTON DESIGN GUIDELINE DRAWINGS FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

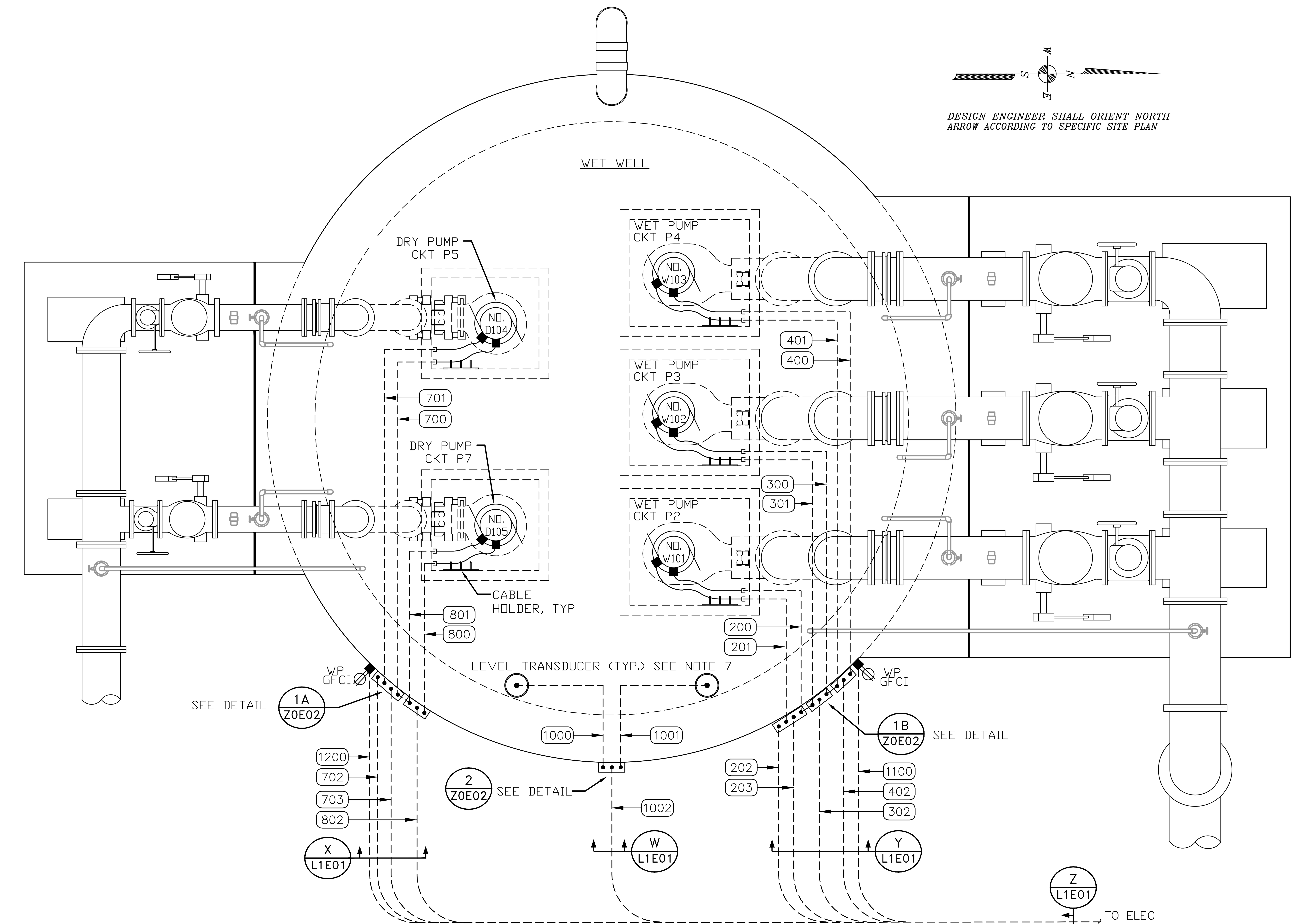
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO. ZOE01–0516

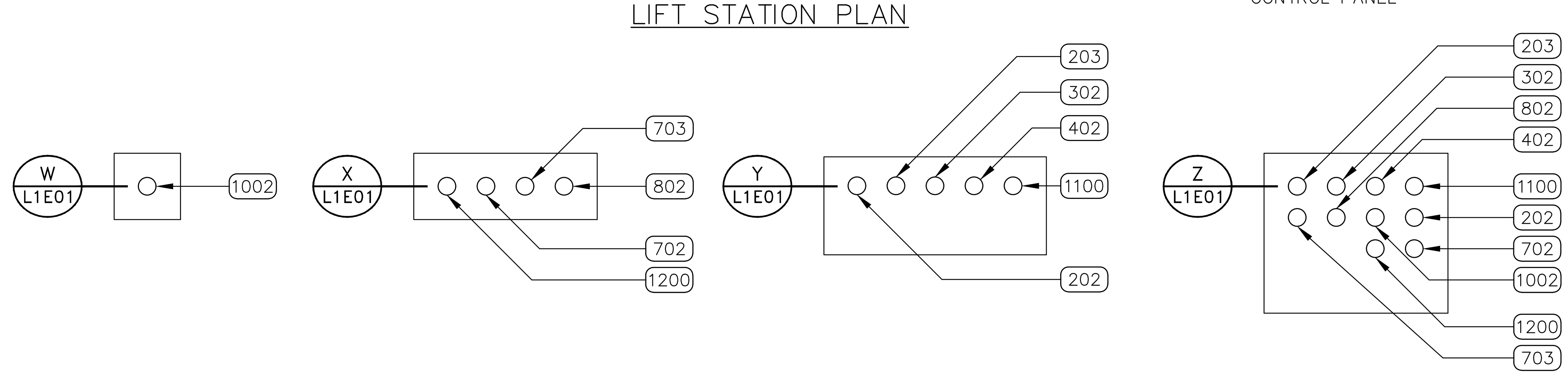
CADD DWG. FILE NO. : ZOE01.DWG

COHSTD.BDR

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



LIFT STATION PLAN



DUCTBANK SECTIONS

NOT TO SCALE

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D. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

1. GROUNDING SHALL BE PER N.E.C. MINIMUM REQUIREMENTS.
2. THE ELECTRICAL INSTALLATION WITHIN THE WET WELL SHALL BE EXPLOSION PROOF IN ACCORDANCE WITH ARTICLE 510 OF THE NEC FOR CLASS I, DIVISION 1, GROUP C & D.
3. WHERE JUNCTION BOXES ARE SHOWN, THEY SHALL BE USED FOR PULLING OR TERMINATION PURPOSES ONLY. SPLICES WILL NOT BE ALLOWED EXCEPT AS PROVIDED BY NOTE 4 AND AT LIGHTING AND RECEPTACLE TERMINATIONS.
4. FOR MOTOR FEEDER AND CONTROL CABLES, INSTALL TYPE CSBE CABLE SEALING FITTING AT JUNCTION BOX ENTRANCE AND EXPLOSION PROOF SEAL IN CONDUITS TO CONTROL BUILDING OR PANEL.
5. TERMINATE PUMP POWER & CONTROL CONDUITS WITH CSBE SEAL. ATTACH STAINLESS STEEL SPLIT SLEEVE CABLE SUPPORT ON EACH POWER AND CONTROL CABLE.
6. ALL PUMP POWER AND CONTROL CABLE LEADS MUST BE THE SAME LENGTH REGARDLESS OF PUMP LOCATION FROM TERMINAL/JUNCTION BOX.
7. LEVEL TRANSMITTERS SHOWN IN APPROXIMATE LOCATION. ACTUAL LOCATION SHALL BE OPPOSITE SIDE OF INLET PIPE.

CONDUIT LAYOUT FOR LIFT STATION
3 WET & 2 DRY WEATHER PUMPS
ALTERNATE HIGH PROFILE CONFIGURATION

PROJECT NO. R-000265-0XXX-X

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DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET Z0C0X

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: XX" = 1'-0"
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO. L1E01-0516

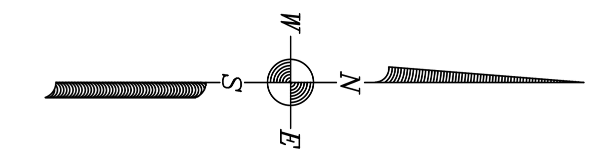
CADD DWG. FILE NO. : L1E01-3W2D.DWG

COHSTD.BDR

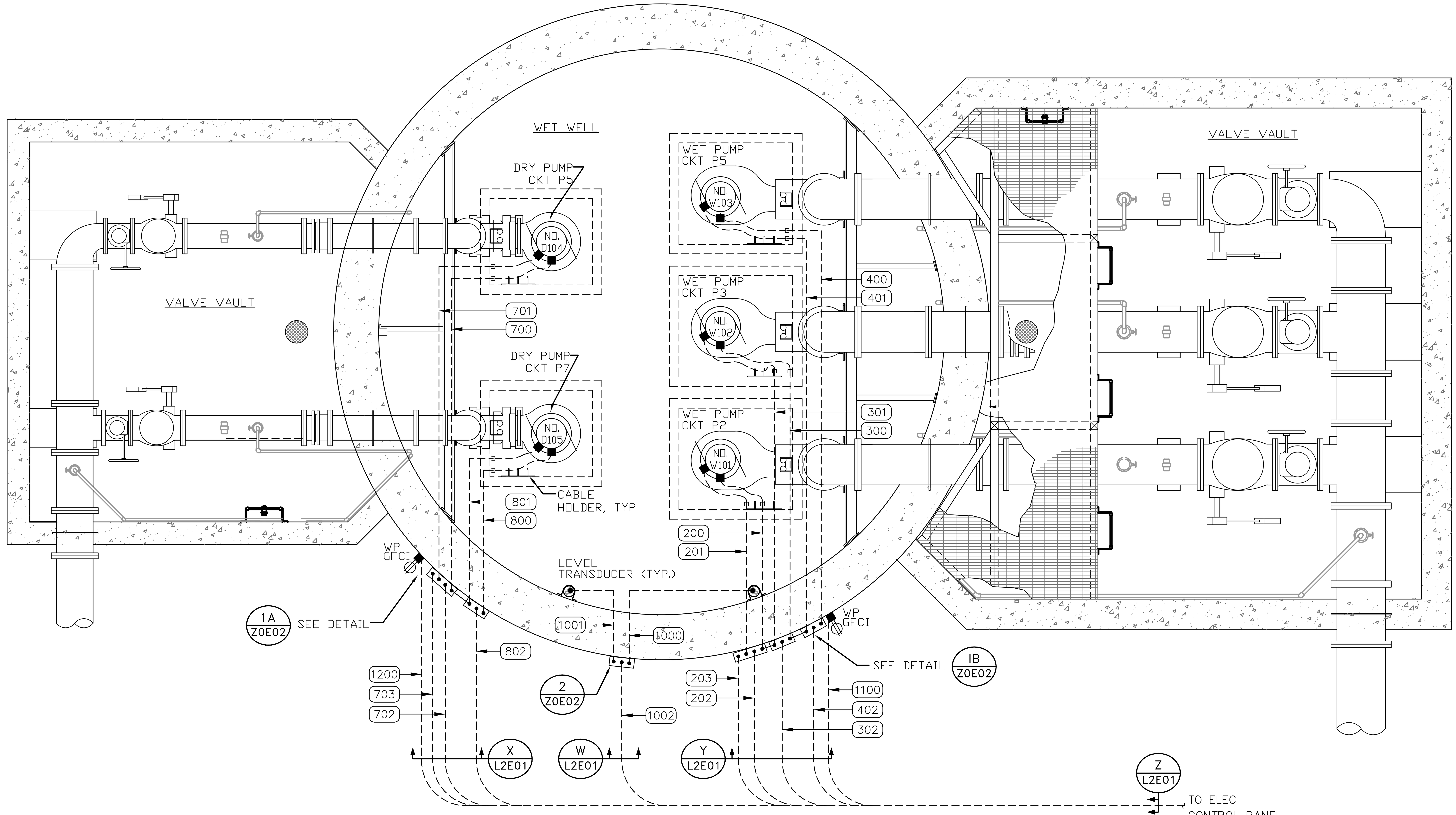
0 1 2 3

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

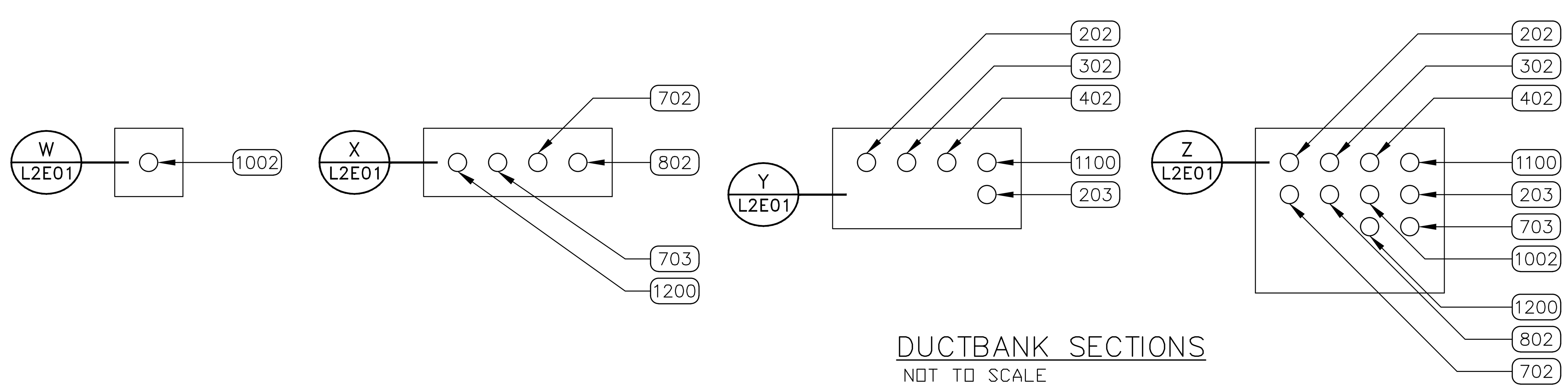
DESIGN ENGINEER TO UPDATE BAR SCALE TO REFLECT ACTUAL SCALE ON THE DRAWING.



DESIGN ENGINEER SHALL ORIENT NORTH ARROW ACCORDING TO SPECIFIC SITE PLAN



LIFT STATION PLAN



DUCTBANK SECTIONS

NOT TO SCALE

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NOTES:

1. GROUNDING SHALL BE PER N.E.C. MINIMUM REQUIREMENTS.
2. THE ELECTRICAL INSTALLATION WITHIN THE WET WELL SHALL BE EXPLOSION PROOF IN ACCORDANCE WITH ARTICLE 510 OF THE NEC FOR CLASS I, DIVISION 1, GROUP C & D.
3. INSTALL CONDUIT SEALS VERTICALLY WITHIN 18 INCHES OF WALL PENITRATION OR JUNCTION BOX.
4. DO NOT INSTALL ANY CONDUIT FITTINGS WITHIN VALVE VAULT PRIOR TO SEALING FITTING. FOR MOTOR FEEDER AND CONTROL CABLES, INSTALL TYPE CSBE CABLE SEALING FITTING AT JUNCTION BOX
5. ENTRANCE AND EXPLOSION PROOF SEAL IN CONDUITS TO CONTROL BUILDING OR PANEL.
6. WHERE JUNCTION BOXES ARE SHOWN, THEY SHALL BE USED FOR PULLING OR TERMINATION PURPOSES ONLY. SPLICES WILL NOT BE ALLOWED EXCEPT AS PROVIDED BY NOTE 2 AND AT LIGHTING AND RECEPTACLE TERMINATIONS.
7. FOR MOTOR FEEDER AND CONTROL CABLES, INSTALL TYPE CSBE CABLE SEALING FITTING AT JUNCTION BOX ENTRANCE AND EXPLOSION PROOF SEAL IN CONDUITS TO CONTROL BUILDING OR PANEL.
8. TERMINATE PUMP POWER & CONTROL CONDUITS WITH CSBE SEAL. ATTACH STAINLESS STEEL SPLIT SLEEVE CABLE SUPPORT ON EACH POWER AND CONTROL CABLE.
9. ALL PUMP POWER AND CONTROL CABLE LEADS MUST BE THE SAME LENGTH REGARDLESS OF PUMP LOCATION FROM TERMINAL/JUNCTION BOX.

CONDUIT LAYOUT FOR LIFT STATION
3 WET & 2 DRY WEATHER PUMPS
PREFERRED LOW PROFILE CONFIGURATION

PROJECT NO. R-000265-0XXX-X

TITLE: CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET Z0C0X

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: XX" = 1'-0"
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO. L2E01-0516

CADD DWG. FILE NO. : L2E01-3W2D.DWG

COHSTD.BDR

0 1 2 3

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

DESIGN ENGINEER TO UPDATE BAR SCALE TO REFLECT ACTUAL SCALE ON THE DRAWING.

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

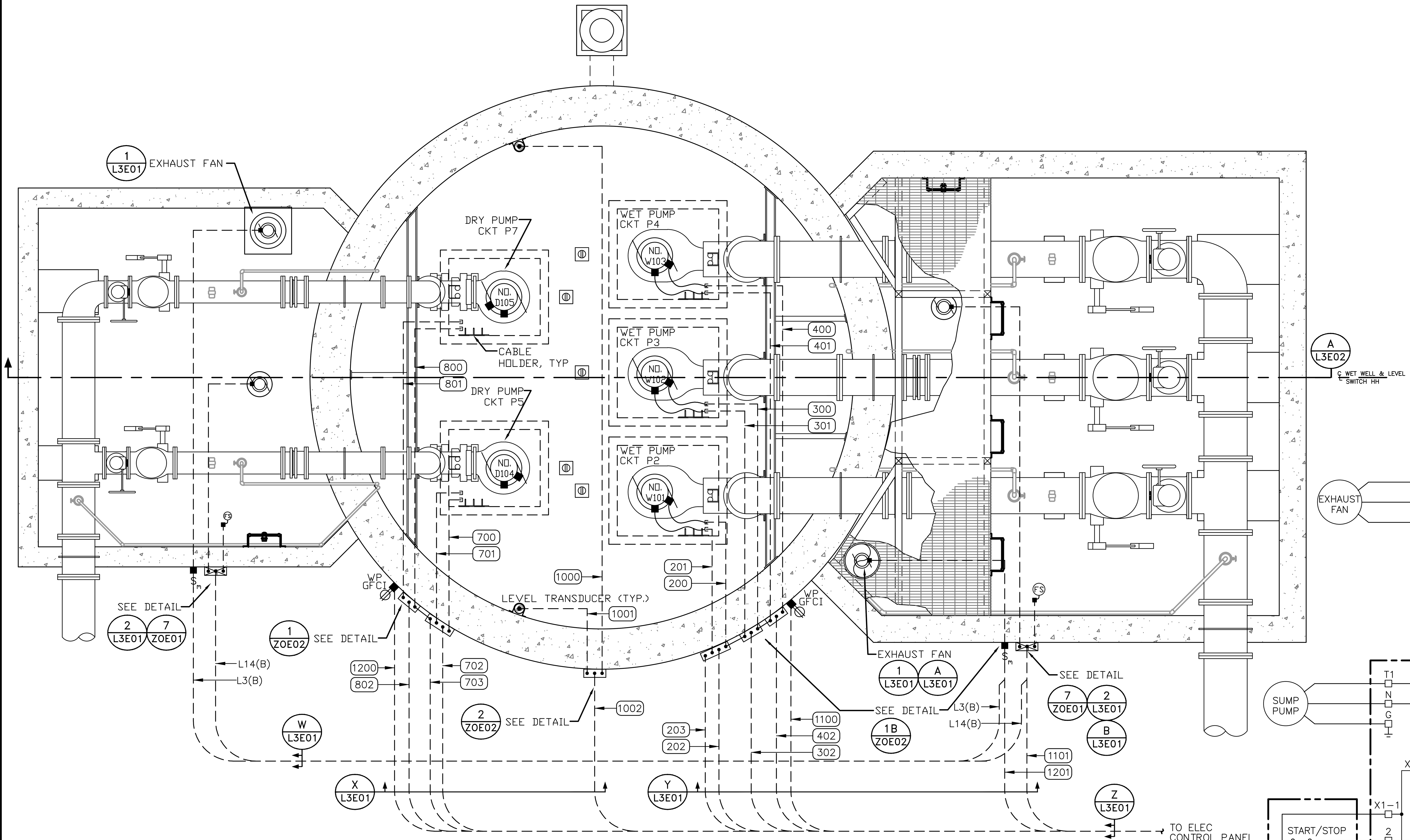
B. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

C. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

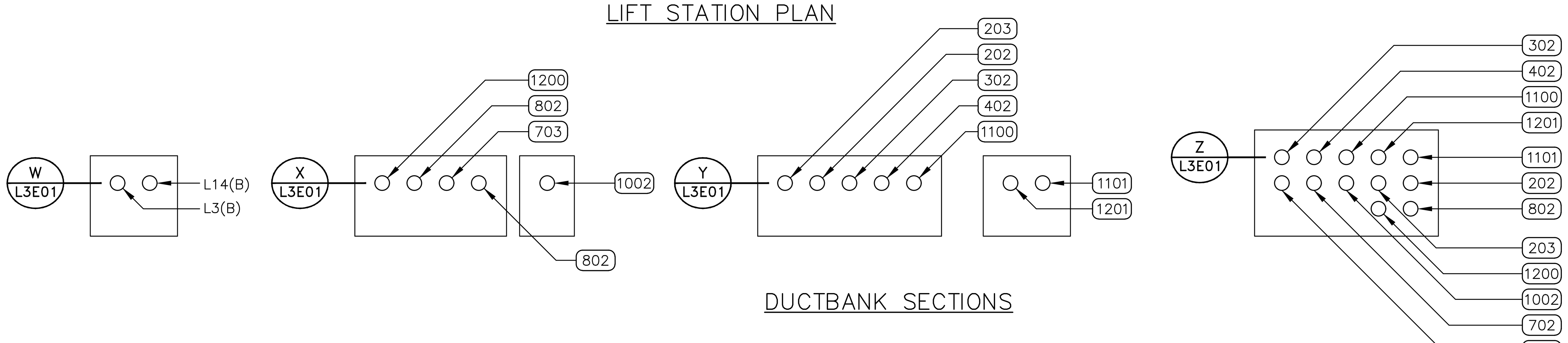
D. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

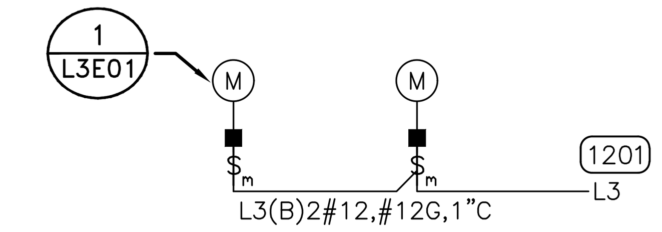
1. GROUNDING SHALL BE PER N.E.C. MINIMUM REQUIREMENTS.
2. THE ELECTRICAL INSTALLATION WITHIN THE WET WELL SHALL BE EXPLOSION PROOF IN ACCORDANCE WITH ARTICLE 510 OF THE NEC FOR CLASS I, DIVISION 1, GROUP C & D.
3. WHERE JUNCTION BOXES ARE SHOWN, THEY SHALL BE USED FOR PULLING OR TERMINATION PURPOSES ONLY. SPLICES WILL NOT BE ALLOWED EXCEPT AS PROVIDED BY NOTE 4 AND AT LIGHTING AND RECEPTACLE TERMINATIONS.
4. FOR MOTOR FEEDER AND CONTROL CABLES, INSTALL TYPE CSBE CABLE SEALING FITTING AT JUNCTION BOX ENTRANCE AND EXPLOSION PROOF SEAL IN CONDUITS TO CONTROL BUILDING OR PANEL.
5. TERMINATE PUMP POWER & CONTROL CONDUITS WITH CSBE SEAL. ATTACH STAINLESS STEEL SPLIT SLEEVE CABLE SUPPORT ON EACH POWER AND CONTROL CABLE.
6. ALL PUMP POWER AND CONTROL CABLE LEADS MUST BE THE SAME LENGTH REGARDLESS OF PUMP LOCATION FROM TERMINAL/JUNCTION BOX.
7. LEVEL TRANSMITTERS SHOWN IN APPROXIMATE LOCATION ACTUAL LOCATION SHALL BE OPPOSITE SIDE OF INLET PIPE.
8. FLOAT SWITCH WITH CABLE LENGTH SHALL BE AS REQUIREDTO PROVIDE CONTINUIOUS RUN TO MOTOR STARTER.
9. MOTOR RATED SWITCH SIZE SHALL BE PER NAMEPLATE RATING OF MOTOR.



LIFT STATION PLAN

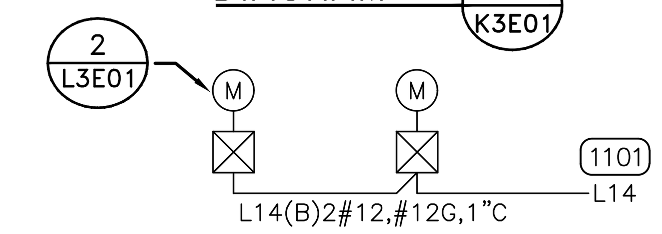


DUCTBANK SECTIONS



EXHAUST FAN ONE-LINE

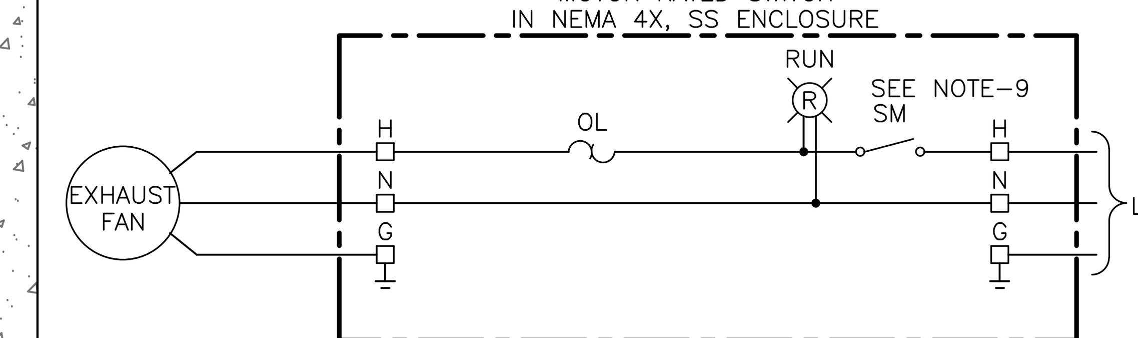
DIAGRAM A K3E01



SUMP PUMP ONE-LINE

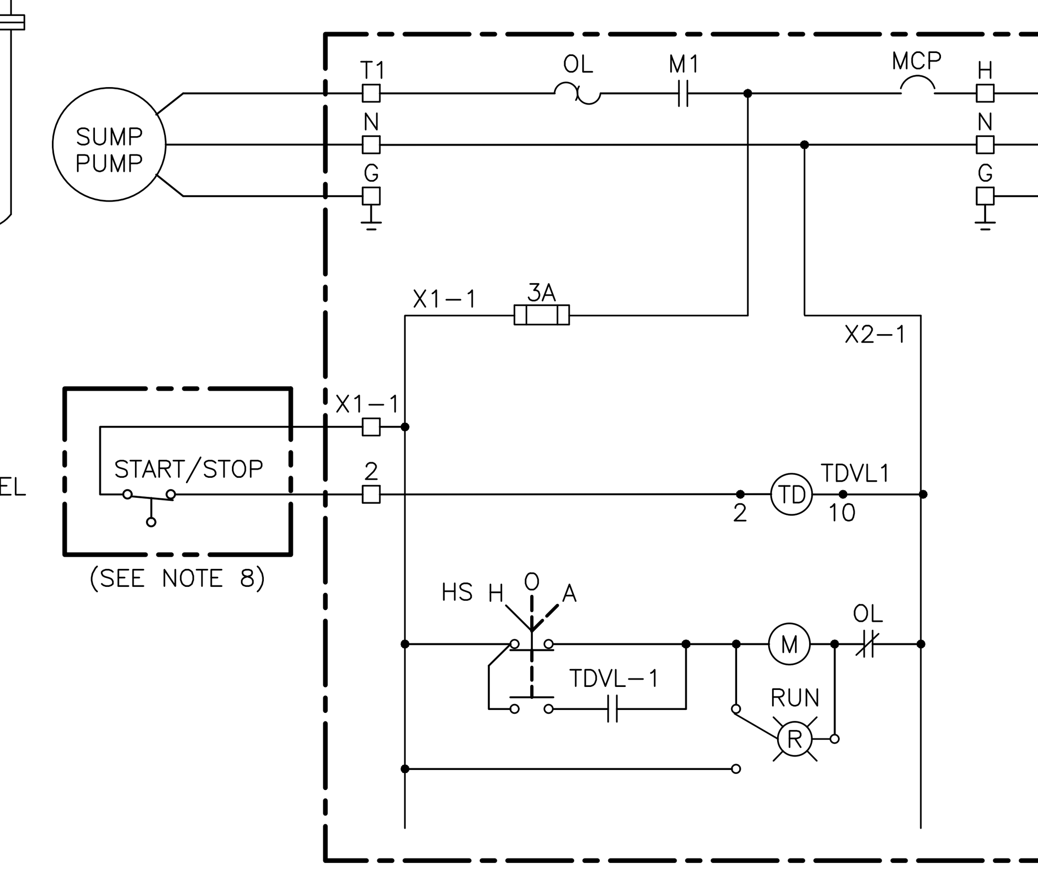
DIAGRAM B K3E01

MOTOR RATED SWITCH IN NEMA 4X, SS ENCLOSURE



EXHAUST FAN

SCHEMATIC 1 L3E01 (SEE NOTE 9)



NEMA 4X SS COMBINATION MOTOR STARTER SIZE 1, 120V, 1PH-3W

SUMP PUMP

SCHEMATIC 2 L3E01

CONDUIT LAYOUT FOR LIFT STATION
3 WET & 2 DRY WEATHER PUMPS
ALTERNATE LOW PROFILE CONFIGURATION

PROJECT NO. R-000265-0XXX-X

TITLE CITY OF HOUSTON DESIGN GUIDELINE DRAWINGS FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

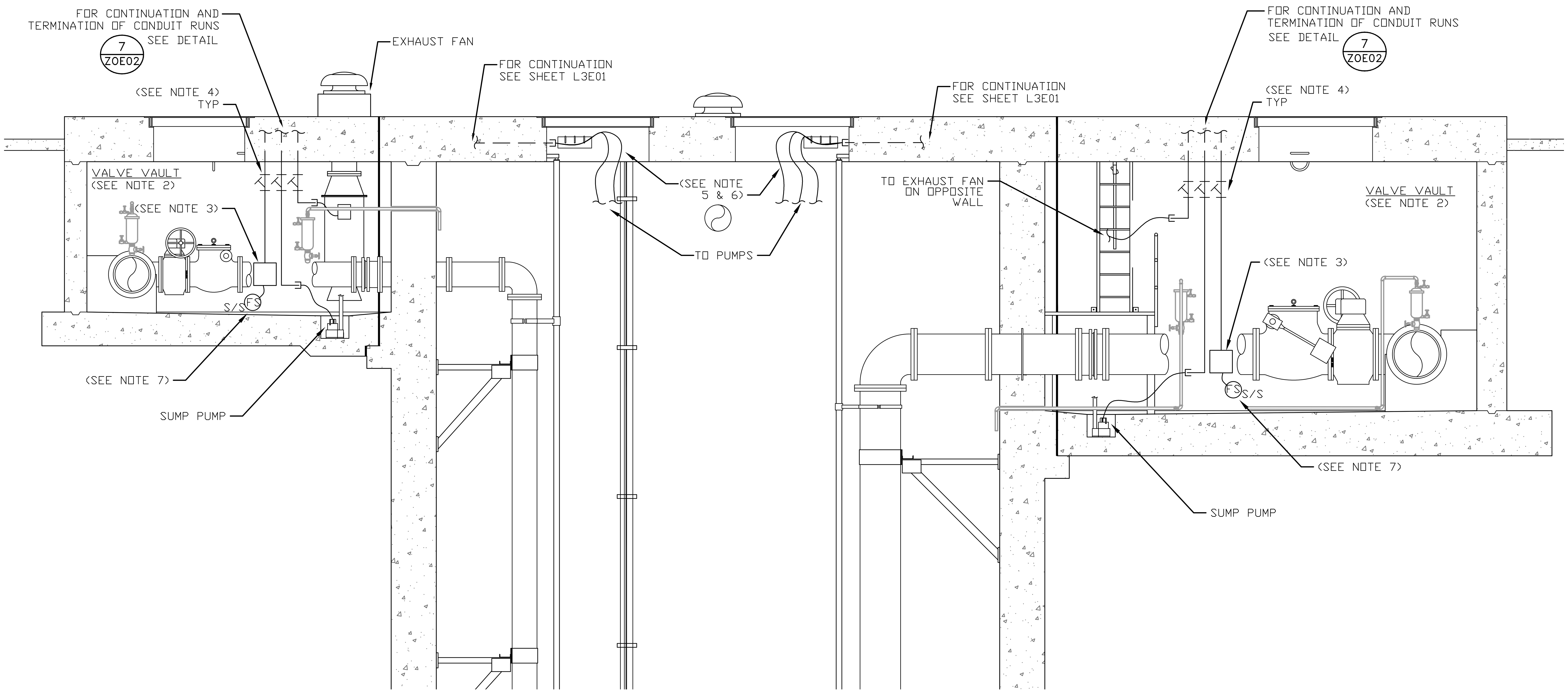
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: XX" = 1'-0"
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO. L3E01-0516

CADD DWG. FILE NO.: L3E01-3W2D.DWG

COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



SECTION A L3E01

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

C. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

D. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

1. GROUNDING SHALL BE PER N.E.C. MINIMUM REQUIREMENTS.
2. THE ELECTRICAL INSTALLATION WITHIN THE WET WELL SHALL BE EXPLOSION PROOF IN ACCORDANCE WITH ARTICLE 510 OF THE NEC FOR CLASS I, DIVISION 1, GROUP C & D.
3. WHERE JUNCTION BOXES ARE SHOWN, THEY SHALL BE USED FOR PULLING PURPOSES ONLY. SPLICES WILL NOT BE ALLOWED EXCEPT AS
4. FOR MOTOR FEEDER AND CONTROL CABLES, INSTALL TYPE CSBE CABLE SEALING FITTING AT JUNCTION BOX ENTRANCE AND EXPLOSION PROOF SEAL IN CONDUITS TO CONTROL BUILDING OR PANEL.
5. TERMINATE PUMP POWER & CONTROL CONDUITS WITH CSBE SEAL. ATTACH STAINLESS STEEL SPLIT SLEEVE CABLE SUPPORT ON EACH POWER AND CONTROL CABLE.
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7. LEVEL TRANSMITTERS SHOWN IN APPROXIMATE LOCATION ACTUAL LOCATION SHALL BE OPPOSITE SIDE OF INLET PIPE.
8. FLOAT SWITCH WITH CABLE LENGTH SHALL BE AS REQUIREDTO PROVIDE CONTINUIOUS RUN TO MOTOR STARTER.
9. MOTOR RATED SWITCH SIZE SHALL BE PER NAMEPLATE RATING OF MOTOR.

ELEVATION SECTION 3 WET & 2 DRY WEATHER PUMPS CONDUIT ROUTING ALTERNATE LOW PROFILE CONFIGURATION

PROJECT NO. R-000265-0XXX-X

TITLE CITY OF HOUSTON DESIGN GUIDELINE DRAWINGS FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: XX" = 1'-0"	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE:	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO. L3E02-0516
FIELD BOOK NO.	

CADD DWG. FILE NO. : L3E02-3W2D.DWG

COHSTD.BDR

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

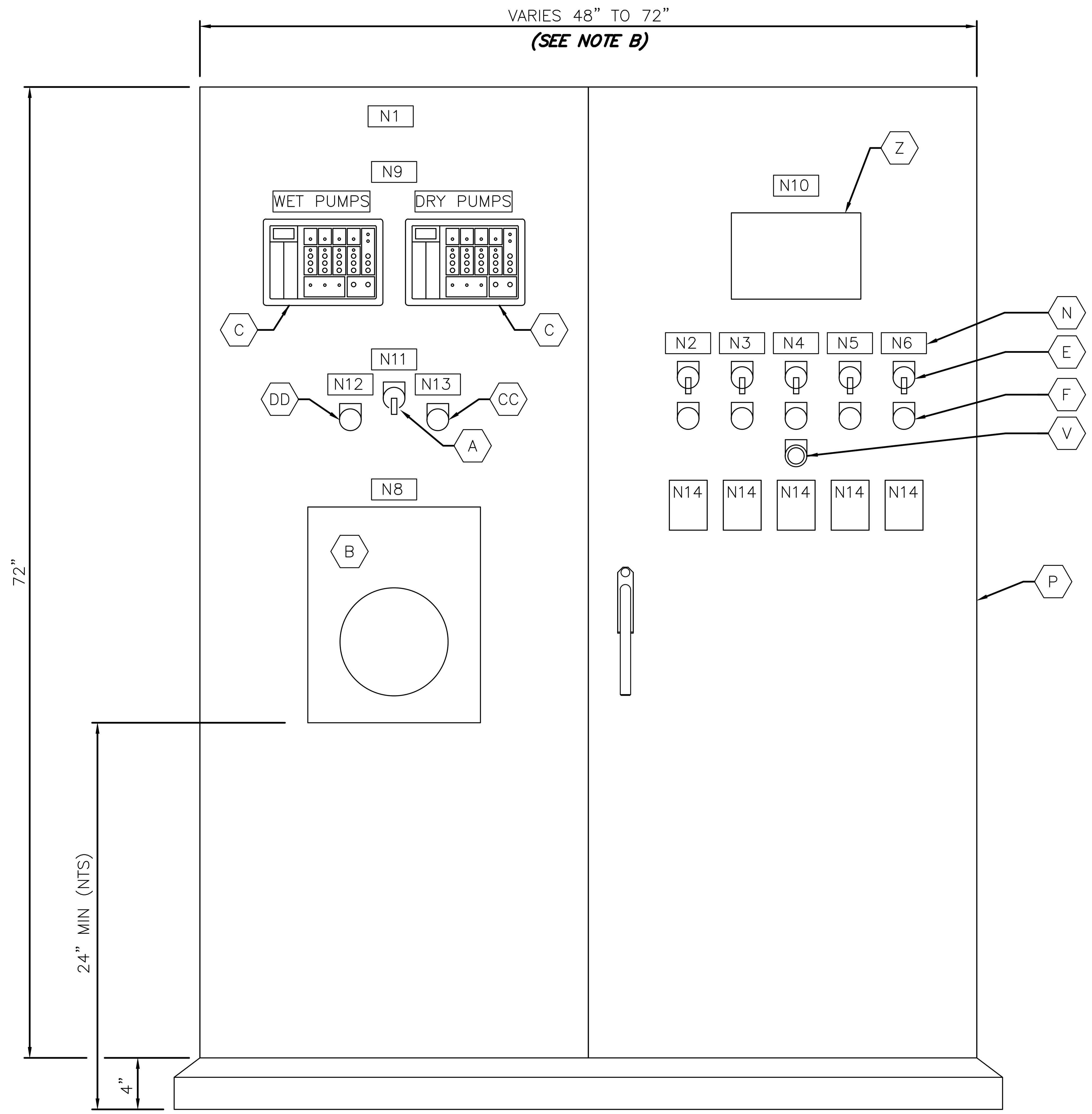
EQUIPMENT & DEVICE SCHEDULE		
ITEM	QUANTITY	DESCRIPTION
A	–	PRIMARY – BACKUP PLC MODE SECTOR SWITCH
B	1	WELL LEVEL RECORDER – 4–20mA INPUT, FOXBORO DUAL CHANNEL
C	1	PUMP CONTROLLER – DIGITAL CONTROL CORP. MODEL 11436OR EQUAL
D	*	NOT USED
E	*	HAND–OFF–AUTO SWITCH, 3 POSITION, HEAVY DUTY, OILTIGHT WITH 2 SETS OF CONTACT BLOCKS (PUMP CONTROL)
F	*	INDICATING LIGHT, HEAVY DUTY, OILTIGHT, RED, 24 VDC, LED, WITH "RUN" LEGEND
G	*	NOT USED
H	1	SWITCH FOR CABINET LIGHT, 120V, 20A, SPST
I	2	DUPLEX RECEPTACLE, 120V, 20A, 2 WIRE, GROUNDED, GFCI TYPE
J	1	24" LED STRIP LIGHT 120V SUITABLE FOR ZERO DEGREE OPERATION ("SEE FIXTURE B" ON Z0E01)
K	*	TIME DELAY RELAY WITH THREE FORM C CONTACTS, 24 VDC COIL AND 11 PIN SOCKET BASE
L	*	PROGRAMMABLE LOGIC CONTROLLER WITH EXPANSION UNIT
M	*	CONTROL RELAY, 24 VDC RELAY WITH THREE FORM C CONTACTS AND 11 PIN SOCKET BASE
N	*	NAMEPLATES, SEE SPECIFICATIONS (SEE NAMEPLATE SCHEDULE) (SEE NOTE 1)
O	1	NOT USED
P	1	NEMA 12 GASKETED STEEL ENCLOSURE WITHOUT VENTS 72"H x 20"D x WIDTH AS REQUIRED
Q	*	TERMINAL BLOCK
R	1	WIRE DUCT 2" WIDE X 2" DEEP MINIMUM
S	1	GROUND BUS
T	1	WIMAX ETHERNET SWITCH
U	9	CARTRIDGE FUSES AND FUSEHOLDER
V	*	PUSHBUTTON, BLACK WITH "RESET" LEGEND
W	–	NOT USED.
X	*	FUSED TERMINAL BLOCKS
Y	1	POWER SURGE PROTECTOR – CONTROL POWER
Z	1	PROGRAMMING SCREEN (HMI)
AA	*	120VAC SYSTEM FUSES
BB	1	120 VAC – 24 VDC POWER SUPPLY, 5A
CC	1	INDICATING LIGHT, HEAVY DUTY, OILTIGHT, RED, 24 VDC, LED WITH "BACKUP" LEGEND
DD	1	INDICATING LIGHT, HEAVY DUTY, OILTIGHT, GREEN, 24 VDC, LED WITH "PLC" LEGEND
EE	2	ANALOG I/O SURGE SUPPRESSOR
FF	1	FLASHER MODULE

* – AS SCHEDULED

NAMEPLATE SCHEDULE

DESIGNATION	ENGRAVED	DESIGNATION	ENGRAVED
N1	PUMP STATION DESIGNATION	N8	LEVEL RECORDER
N2	PUMP NO. W101	N9	PUMP CONTROLLER
N3	PUMP NO. W102	N10	PROGRAMMING SCREEN
N4	PUMP NO. W103	N11	CONTROL MODE
N5	PUMP NO. D104	N12	PRIMARY
N6	PUMP NO. D105	N13	BACKUP
		N14	MOTOR DATA

MOTOR DATA:
HORSEPOWER (OUTPUT) __________
RPM AT FULL LOAD __________
TIME RATING __________
FREQUENCY __________
NUMBER OF PHASES __________
MODEL NUMBER __________
RATED VOLTAGE __________
SERVICE FACTOR __________
FULL LOAD AMPS __________
INSULATION CLASS __________
NEMA DESIGN LETTER __________
TEMPERATURE RISE __________
NEMA FRAME SIZE __________
DATE OF MANUFACTURE __________
THERMO PROTECTION (IF REQUIRED) __________
MOISTURE DETECTION (IF REQUIRED) __________



CONTROL CABINET
FRONT DOOR ELEVATION

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. DESIGN ENGINEER SHALL SELECT THE APPROPRIATE CONTROL PANEL WIDTH (SEE DEVICE RATINGS SCHEDULE ON SHEET Z0E42).

C. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

D. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

E. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:
1. NAMEPLATES SHALL BE MOUNTED TO PANELS USING STAINLESS STEEL HARDWARE.

3 WET & 2 DRY WEATHER PUMPS
EQUIPMENT LAYOUT & SCHEDULE

PROJECT NO.
R-000265-0XXX-X

TITLE
CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET Z0C0X

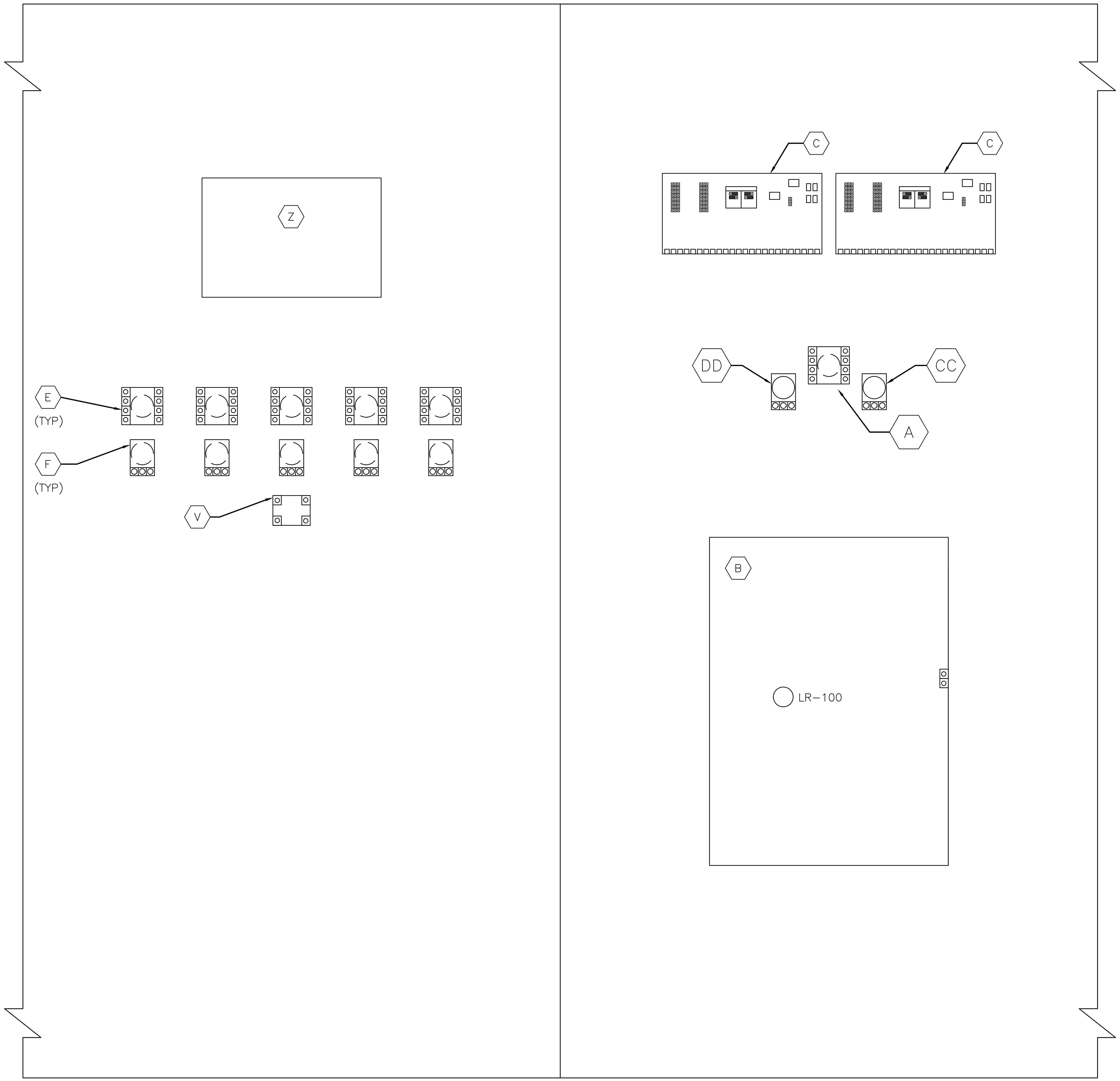
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO.
Y0E21-0516

CADD DWG. FILE NO. :
Y0E21-3W2D.DWG

COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS



CONTROL CABINET
BACK DOOR ELEVATION

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

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NOTES:

1. SEE SHEET Y0E21 FOR EQUIPMENT SCHEDULE.

3 WET & 2 DRY WEATHER PUMPS
CONTROL CABINET
BACK DOOR ELEVATION

PROJECT NO.
R-000265-0XXX-X

TITLE
CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

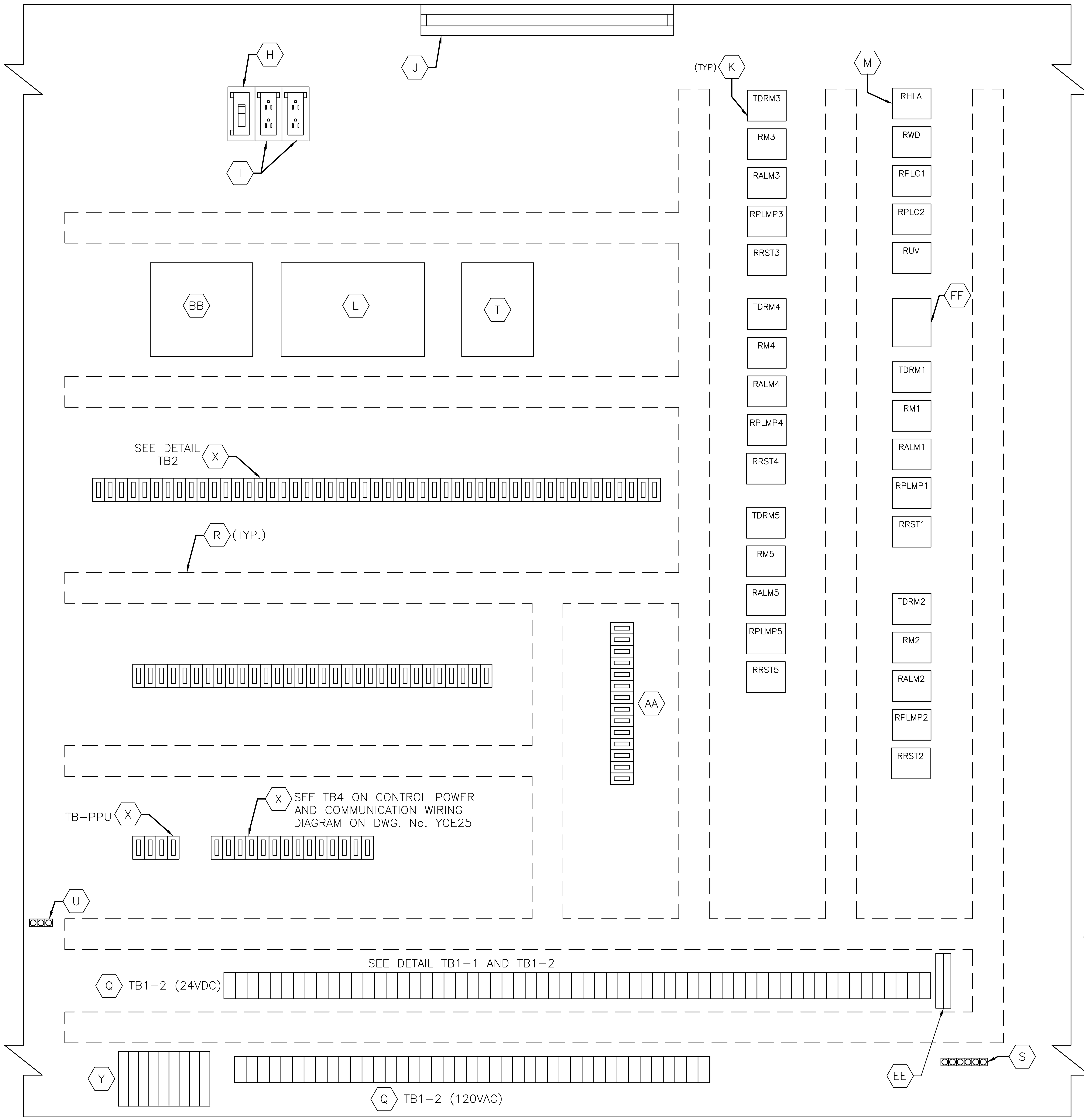
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO.
Y0E22-0516

CADD DWG. FILE NO. :
Y0E22-3W2D.DWG

COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS



CONTROL PANEL ELEVATION

L1A
L1N
27
28
31
32
34
38
48
48N
49
50
51
52
53
54
L
N
1
24V–
24V–
2
SPARE
109
110
X1–1
111
X2–1
SPARE
209
210
X1–2
211
X2–2
SPARE
309
310
X1–3
311
X2–3
SPARE
409
410
X1–4
411
X2–4
SPARE
509
510
X1–5
511
X2–5
SPARE

DETAIL TB1–1

SPARE
11
1001
1001A
12
1003
1003A
102
103

TB1–2 CONT'D

3P1
112
116
117
124
125
126
127
SPARE
202
203
3P2
212
216
217
224
225
226
227
SPARE
302
303
3P3
312
316
317
324
325
326
327
SPARE
402
403
3P4
412
416
417
424
425
426
427
SPARE
502
503
3P5
512
516
SPARE
SPARE
517
524
525
526
527
SPARE
3
3N
13
13A
13G
14
14A
14G
27
28

DETAIL TB1–2

29
30
31
32
33
34
35
SPARES
SPARES
38
41
45
47
48
49
50
52
53
54
SPARE
100
108
113
117
118
119
SPARE
200
208
213
217
218
219
SPARE
300
308
313
317
318
319
SPARE
500
508
513
517
518
519

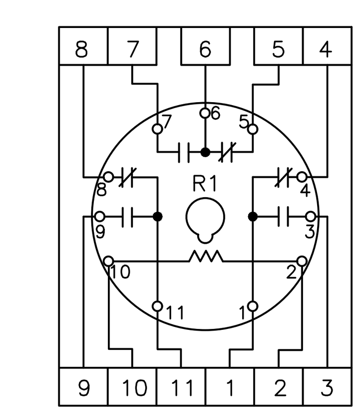
TB2 CONT'D

TB2 CONT'D

SPARE
400
408
413
417
418
419
SPARE

DETAIL TB2

LEGEND	
TAG	DESCRIPTION
RALM	PUMP ALARM RELAY
RHLA	HIGH LEVEL RELAY ALARM
RPLMP	BACKUP SYSTEM RUN RELAY
RRST	PUMP RESET AUX RELAY
RPLC	PLC MODE AUX RELAY
RRSTM	PUMP RESET AUX RELAY
RM	PUMP RUN AUX RELAY
RWD	WATCHDOG RELAY
RUV	UNDER VOLTAGE RELAY



RELAY DETAIL
ITEM K & M

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

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D. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:
1. SEE SHEET YOE21 FOR EQUIPMENT SCHEDULE.

3 WET & 2 DRY WEATHER PUMPS
CONTROL CABINET
EQUIPMENT LAYOUT

PROJECT NO.
R-000265-0XXX-X

TITLE
CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

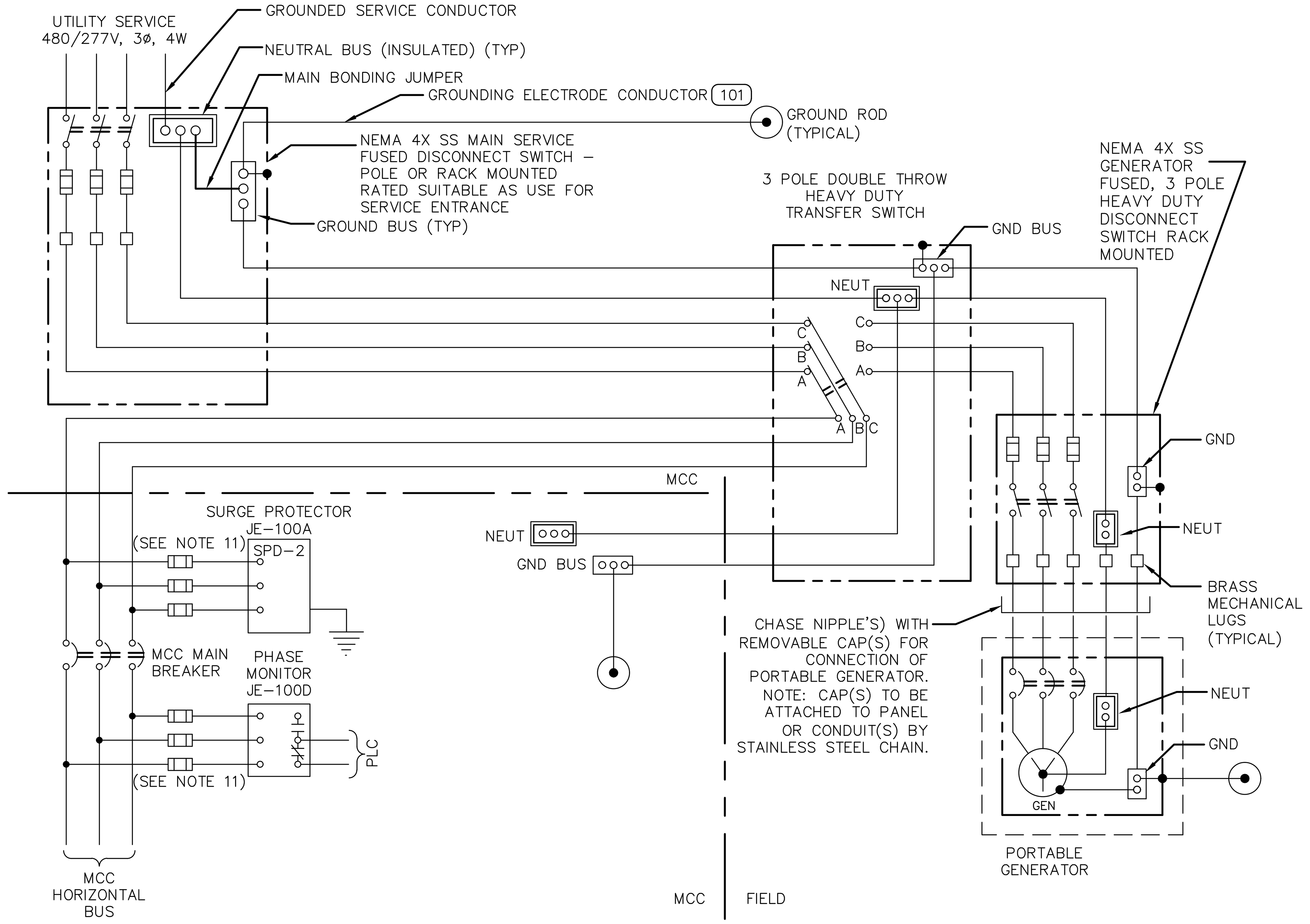
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO.
Y0E23-0516

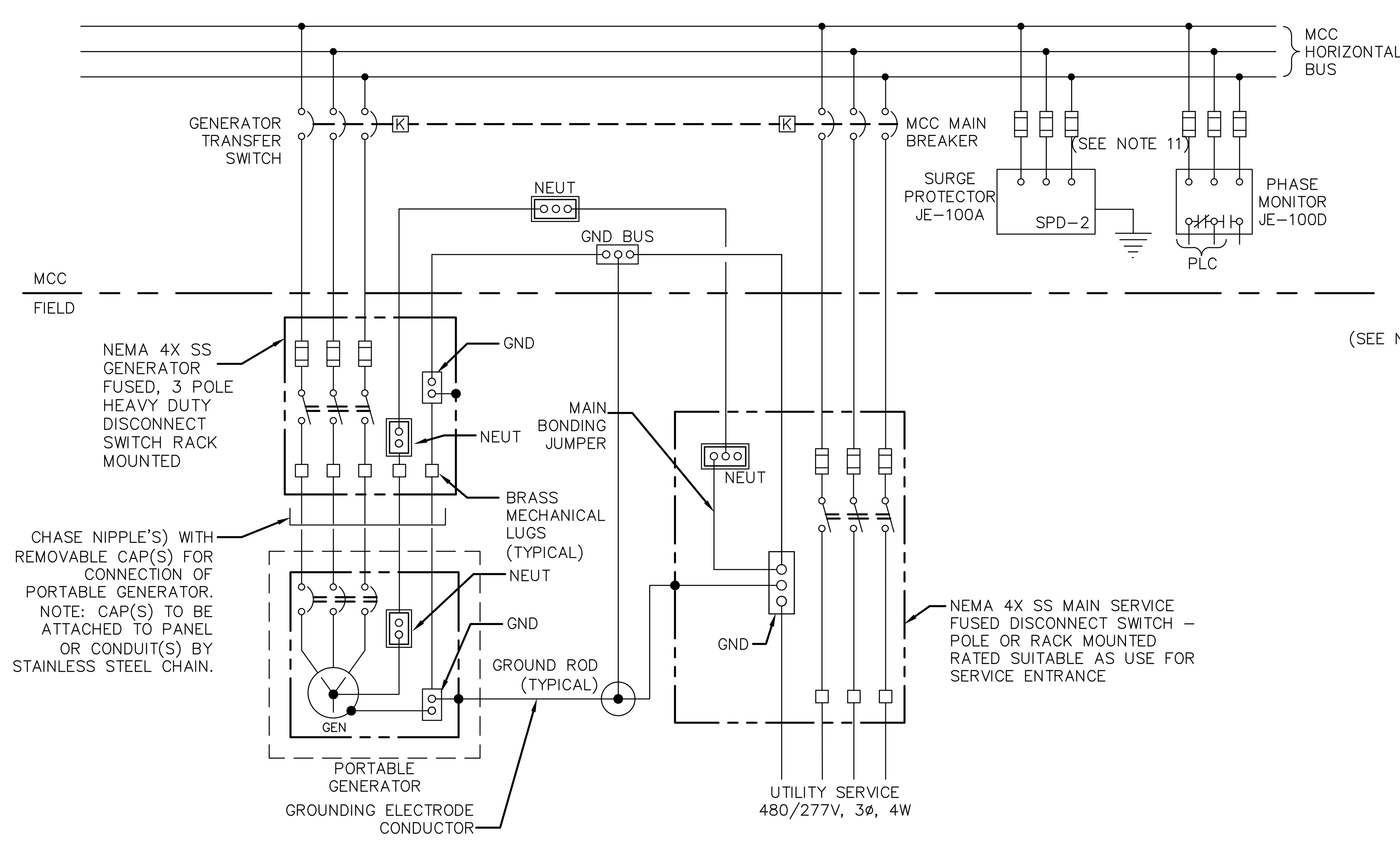
CADD DWG. FILE NO. :
Y0E23-3W2D.DWG

COHSTD.BDR

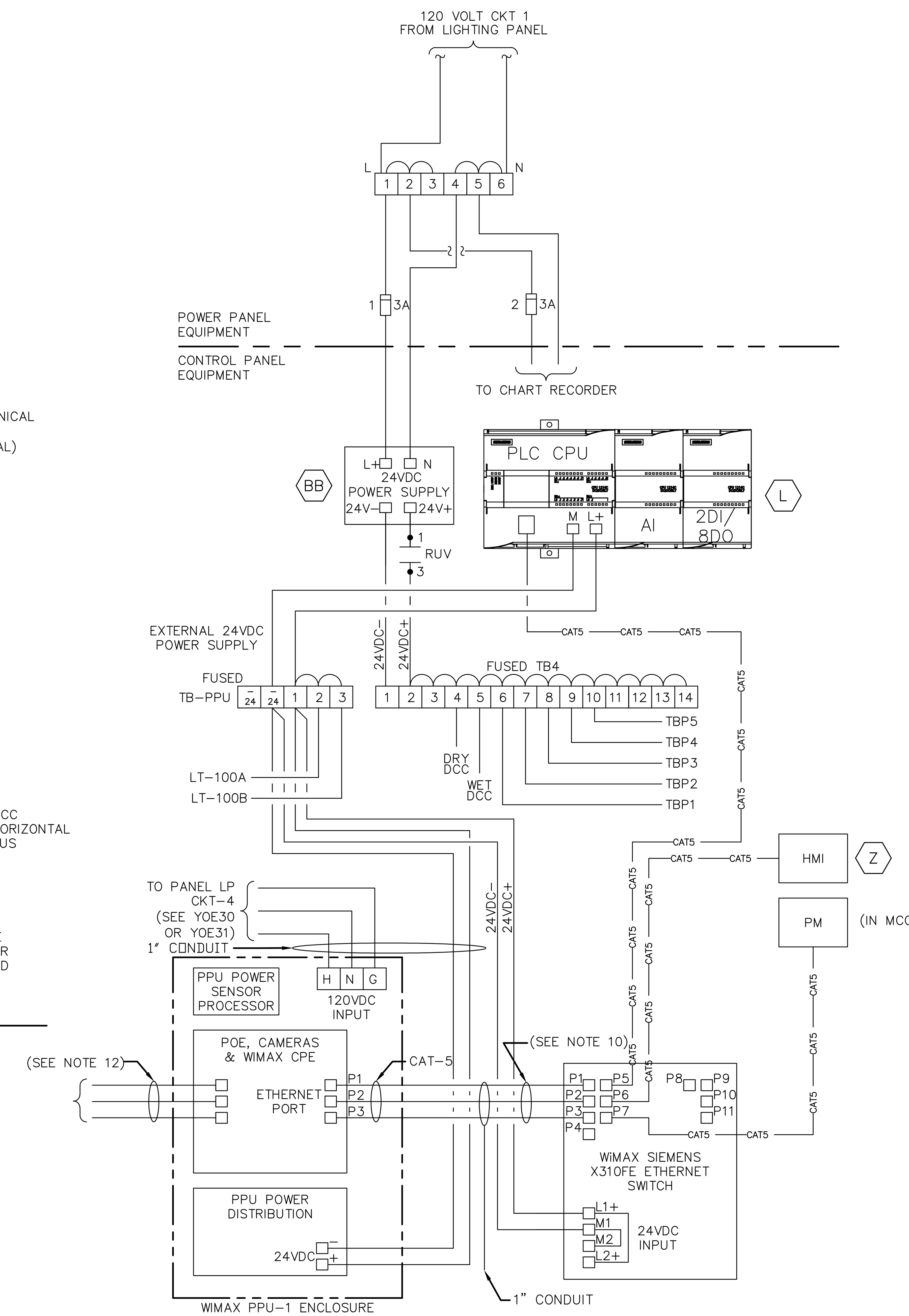
0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



POWER WIRING DIAGRAM (SEE NOTE 7)



POWER WIRING DIAGRAM (SEE NOTE 8)



CONTROL POWER & COMMUNICATIONS WIRING DIAGRAM

(SEE NOTE 9)

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. POWER FACTOR CORRECTION CAPACITOR IS REQUIRED FOR EACH PUMP RATED AT 20 HP OR GREATER. MOUNT CAPACITORS EXTERNAL TO MCC WITHIN THE CONTROL BUILDING.

C. UNLESS OTHERWISE INDICATED, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE MOTOR CONTROL CENTER (MCC).

D. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

E. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

F. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

1. THE 'X' NOTATION IN SCHEMATIC DESIGNATIONS REPRESENTS APPLICABLE PUMP NO. 101, 102, 103, 104.
2. THE 'Y' NOTATION INDICATES MCC CIRCUIT NUMBER.
3. UNLESS OTHERWISE INDICATED, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE MOTOR CONTROL CENTER (MCC).
4. REFER TO SPEC SECTION 16120 FOR CONDUCTOR COLOR CODE.
5. THE POWER SUPPLY SHALL FEED THE 24VDC I/O.
6. NOT USED.
7. REFER TO YOE30.
8. REFER TO YOE31.
9. WIMAX PPU-1 & SCADA WILL BE PROVIDED BY CONTRACTOR TO RUN CONDUITS & WIRES.
10. THREE ETHERNET CABLES FOR RADIO (P3), CAMERA 1 (P1), CAMERA 2 (P2).
11. PROVIDE FUSE SIZE ACCORDING TO MANUFACTURER'S REQUIREMENTS.
12. POE CABLES TO RADIO AND CAMERAS.

3 WET & 2 DRY WEATHER PUMPS
MCC INCOMING POWER SCHEMATIC & CONTROL POWER & COMMUNICATIONS WIRING DIAGRAM

PROJECT NO.
R-000265-0XXX-X

TITLE
CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

REV. NO.	DESCRIPTION	APP'D	DATE

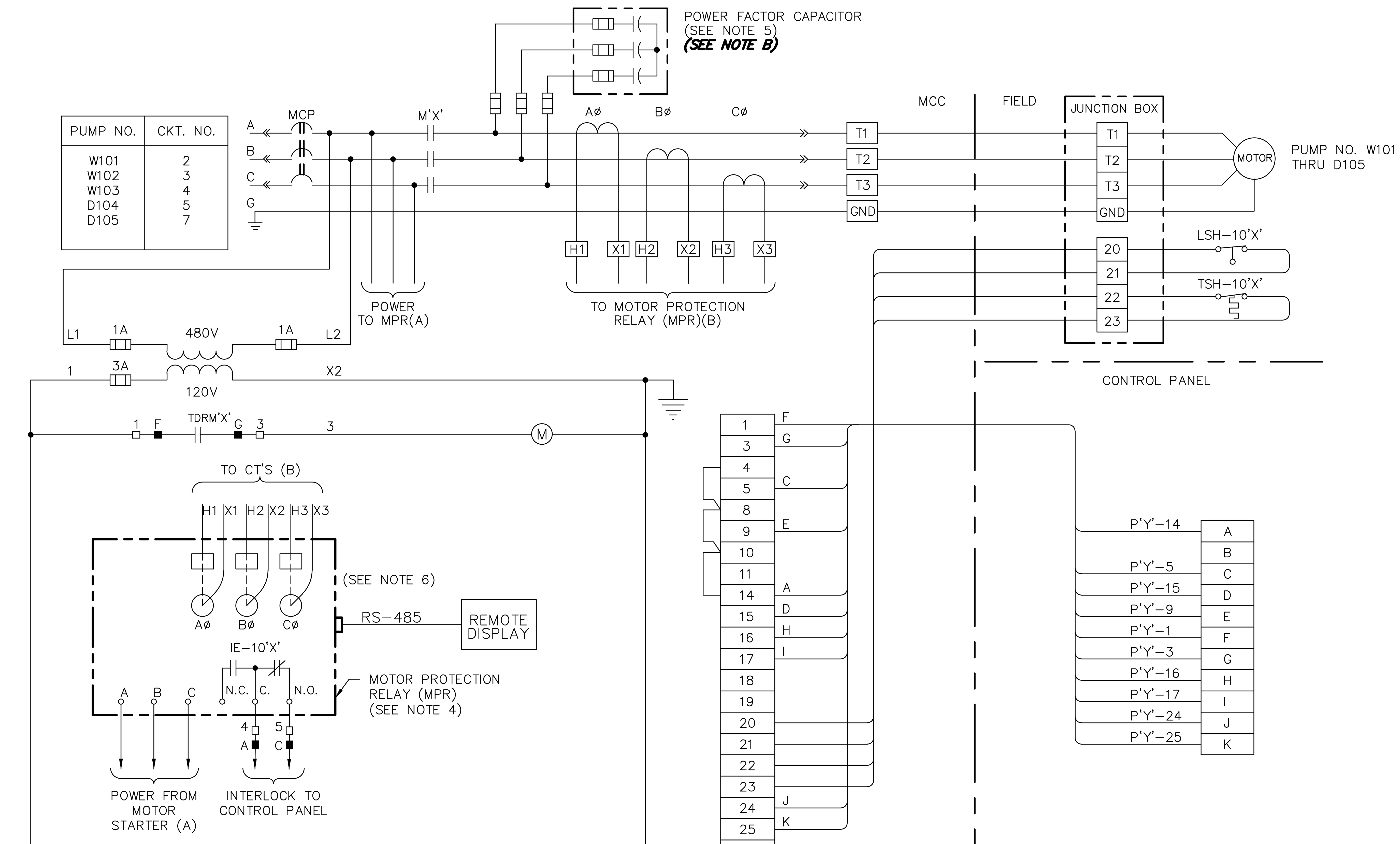
SCALE: NONE	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE:	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO.
FIELD BOOK NO.	Y0E25-0516

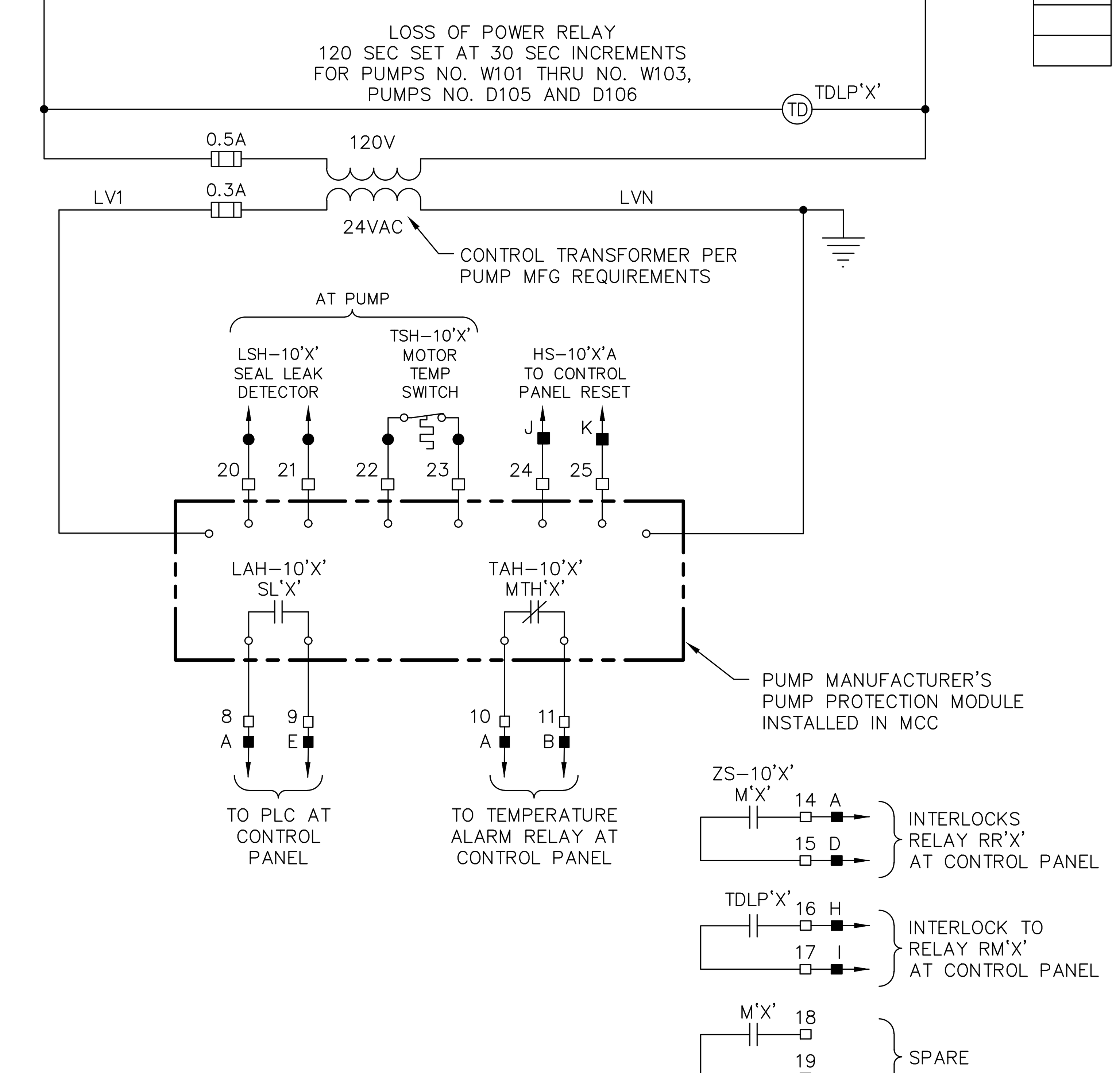
CADD DWG. FILE NO. :
Y0E25-3W2D.DWG

COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS

PUMP NO.	CKT. NO.
W101	2
W102	3
W103	4
D104	5
D105	7





MCC POWER SCHEMATIC

WIRE TAG OR TERMINAL LABEL	PUMP NO.W101	PUMP NO.W102	PUMP NO.W103	PUMP NO.D104	PUMP NO.D105	FUNCTION
A	3P1	3P2	3P3	3P4	3P5	24VDC CONTROL
C	116	216	316	416	516	PUMP ALARM
D	112	212	312	412	512	M CONTACT
E	117	217	317	417	517	SEAL LEAK
F	109	209	309	409	509	RUN INTERLOCK
G	110	210	310	410	510	RUN INTERLOCK
H	102	202	302	402	502	LOSS OF POWER TIMER
I	103	203	303	403	503	LOSS OF POWER TIMER
J	124	224	324	424	524	RESET
K	125	225	325	425	525	RESET

LEGEND

△ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
* DEVICE OR FIELD TERMINAL LOCATED REMOTE
□ DEVICE OR FIELD TERMINAL LOCATED AT MCC
■ FIELD TERMINAL LOCATED AT CONTROL PANEL
▲ REMOTE TERMINAL
● DEVICE TERMINAL NO.
◆ PLC INTERFACE TERMINAL

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. POWER FACTOR CORRECTION CAPACITOR IS REQUIRED FOR EACH PUMP RATED AT 20 HP OR GREATER. MOUNT CAPACITORS EXTERNAL TO MCC WITHIN THE CONTROL BUILDING.

C. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

D. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

E. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT

NOTES:

1. THE 'X' NOTATION IN SCHEMATIC DESIGNATIONS REPRESENTS APPLICABLE PUMP NO. W101, W102, W103, D104, D105.
2. THE 'Y' NOTATION INDICATES MCC CIRCUIT NUMBER.
3. UNLESS OTHERWISE INDICATED, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE MOTOR CONTROL CENTER (MCC).
4. MOTOR PROTECTION RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. (VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.)
5. CONTRACTOR TO COORDINATE POWER FACTOR CORRECTION CAPACITOR SIZE WITH PUMP MANUFACTURER.
6. PROVIDE CT SIZING AND TERMINATIONS PER MANUFACTURER'S REQUIREMENTS.

3 WET & 2 DRY WEATHER PUMPS
MCC POWER SCHEMATIC & CONTROL
POWER & COMMUNICATIONS WIRING DIAGRAM

PROJECT NO.
R-000265-0XXX-X

TITLE
CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

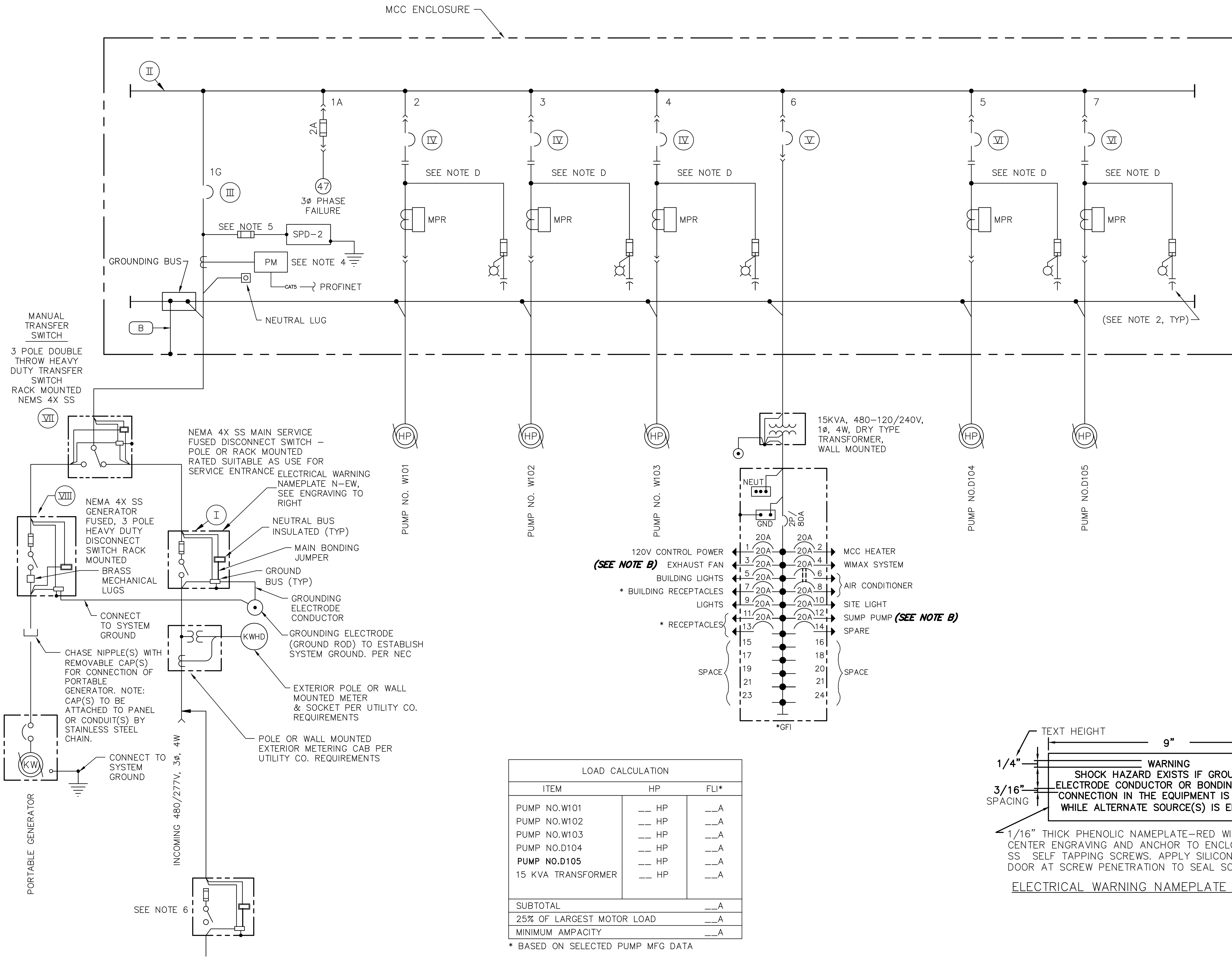
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO.
Y0E26-0516

CADD DWG. FILE NO. :
Y0E26-3W2D.DWG

COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS



LOAD CALCULATION		
ITEM	HP	FLI*
PUMP NO.W101	__ HP	__A
PUMP NO.W102	__ HP	__A
PUMP NO.W103	__ HP	__A
PUMP NO.D104	__ HP	__A
PUMP NO.D105	__ HP	__A
15 KVA TRANSFORMER	__ HP	__A
SUBTOTAL		__A
25% OF LARGEST MOTOR LOAD		__A
MINIMUM AMPACITY		__A

* BASED ON SELECTED PUMP MFG DATA

TEXT HEIGHT
9"
1/4"
3/16" SPACING
2-1/2"
WARNING
SHOCK HAZARD EXISTS IF GROUNDING ELECTRODE CONDUCTOR OR BONDING JUMPER CONNECTION IN THE EQUIPMENT IS REMOVED WHILE ALTERNATE SOURCE(S) IS ENERGIZED

1/16" THICK PHENOLIC NAMEPLATE–RED WITH WHITE LETTERS. CENTER ENGRAVING AND ANCHOR TO ENCLOSURE WITH 316 SS SELF TAPPING SCREWS. APPLY SILICON SEALER INSIDE DOOR AT SCREW PENETRATION TO SEAL SCREWS.

ELECTRICAL WARNING NAMEPLATE N–EW ENGRAVING

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. PROVIDE NOTED ITEMS FOR STATIONS WITH VALVE VAULT DESIGNATED AS ALTERNATE LOW PROFILE, CONFIGURATION, ONLY. PROVIDE VALVE VAULT SUMP PUMP AND EXHAUST FAN FOR CLOSED TOP VALVE VAULTS ONLY (CONCRETE TOP SLAB WITH HATCHES). DELETE THESE ITEMS FOR VALVE VAULTS WITH OPEN GRATING TOPS.

C. FOR DESCRIPTION AND RATINGS OF ITEMS INDICATED ROMAN NUMERAL FLAGS, SEE DEVICE RATINGS SCHEDULES.

D. POWER FACTOR CORRECTION CAPACITOR IS REQUIRED FOR EACH PUMP RATED AT 20 HP OR GREATER. MOUNT CAPACITORS EXTERNAL TO MCC WITHIN THE CONTROL BUILDING.

E. PROVIDE SEPARATE 120/24 VAC CONTROL TRANSFORMER FOR PUMP PROTECTION MODULE POWER.

F. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

G. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

H. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

1. FOR DESCRIPTION AND RATINGS OF ITEMS INDICATED WITH ROMAN NUMERAL FLAGS, SEE DEVICE RATINGS SCHEDULE.
2. CONTRACTOR TO COORDINATE POWER FACTOR CORRECTION CAPACITOR SIZE WITH PUMP MANUFACTURER. MINIMUM 95% POWER FACTOR CORRECTION AT FULL LOAD.
3. CONTRACTOR SHALL VERIFY ACTUAL AMPERAGES OF MOTORS AND SIZE STARTERS, MOTOR CIRCUIT PROTECTORS, ETC. ACCORDINGLY.
4. POWER MONITOR SEE SPECS. 13446.
5. PROVIDE FUSE SIZE ACCORDING TO MANUFACTURER'S REQUIREMENTS.

3 WET & 2 DRY WEATHER PUMPS
SINGLE LINE DIAGRAM

PROJECT NO. R-000265-0XXX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

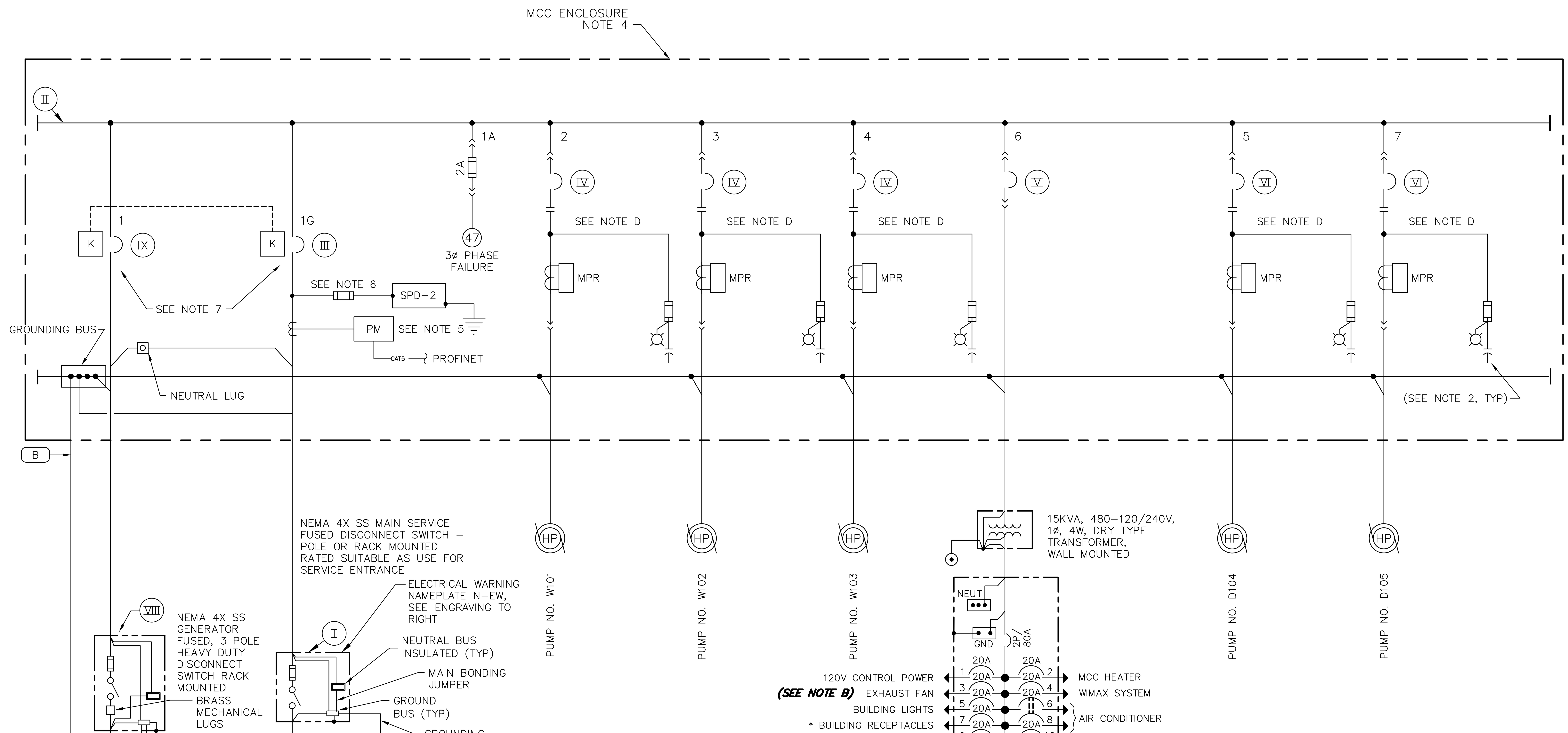
REV. NO.	DESCRIPTION	APP'D	DATE

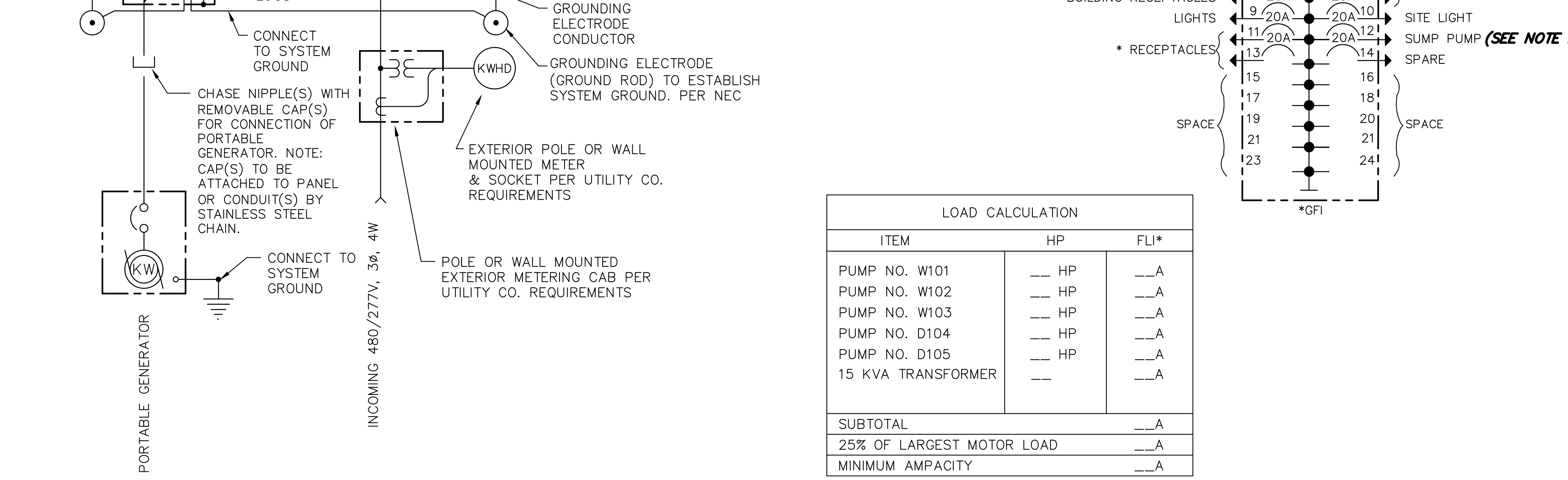
SCALE: NONE
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO. Y0E30-0516

CADD DWG. FILE NO. : Y0E30-3W2D.DWG

COHSTD.BDR

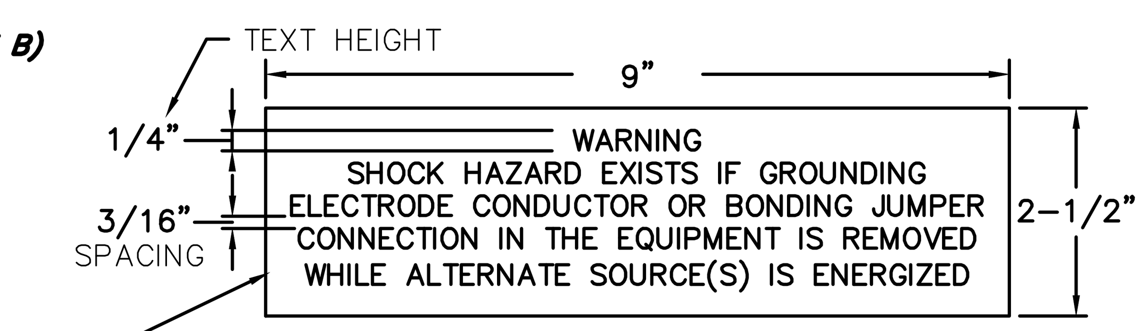
0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS





LOAD CALCULATION		
ITEM	HP	FLI*
PUMP NO. W101	__ HP	__A
PUMP NO. W102	__ HP	__A
PUMP NO. W103	__ HP	__A
PUMP NO. D104	__ HP	__A
PUMP NO. D105	__ HP	__A
15 KVA TRANSFORMER	__	__A
SUBTOTAL		__A
25% OF LARGEST MOTOR LOAD		__A
MINIMUM AMPACITY		__A

* BASED ON SELECTED PUMP MFG DATA



1/16" THICK PHENOLIC NAMEPLATE-RED WITH WHITE LETTERS. CENTER ENGRAVING AND ANCHOR TO ENCLOSURE WITH 316 SS SELF TAPPING SCREWS. APPLY SILICON SEALER INSIDE DOOR AT SCREW PENETRATION TO SEAL SCREWS.

ELECTRICAL WARNING NAMEPLATE N-EW ENGRAVING

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. PROVIDE NOTED ITEMS FOR STATIONS WITH VALVE VAULT DESIGNATED AS ALTERNATE LOW PROFILE CONFIGURATION, ONLY. PROVIDE VALVE VAULT SUMP PUMP AND EXHAUST FAN FOR CLOSED TOP VALVE VAULTS ONLY (CONCRETE TOP SLAB WITH HATCHES). DELETE THESE ITEMS FOR VALVE VAULTS WITH OPEN GRATING TOPS.

C. FOR DESCRIPTION AND RATINGS OF ITEMS INDICATED ROMAN NUMERAL FLAGS, SEE DEVICE RATINGS SCHEDULES.

D. POWER FACTOR CORRECTION CAPACITOR IS REQUIRED FOR EACH PUMP RATED AT 20 HP OR GREATER. MOUNT CAPACITORS EXTERNAL TO MCC WITHIN THE CONTROL BUILDING.

E. PROVIDE SEPARATE 120/24 VAC CONTROL TRANSFORMER FOR PUMP PROTECTION MODULE POWER.

F. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

G. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

H. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

1. FOR DESCRIPTION AND RATINGS OF ITEMS INDICATED WITH ROMAN NUMERAL FLAGS, SEE DEVICE RATINGS SCHEDULE.
2. CONTRACTOR TO COORDINATE POWER FACTOR CORRECTION CAPACITOR SIZE WITH PUMP MANUFACTURER. MINIMUM 95% POWER FACTOR CORRECTION AT FULL LOAD.
3. CONTRACTOR SHALL VERIFY ACTUAL AMPERAGES OF MOTORS AND SIZE STARTERS, MOTOR CIRCUIT PROTECTORS, ETC. ACCORDINGLY.
4. MCC RATED SUITABLE FOR USE AS SERVICE ENTRANCE.
5. POWER MONITOR SEE SPECS. 13446.
6. PROVIDE FUSE SIZE ACCORDING TO MANUFACTURER'S REQUIREMENTS.
7. PROVIDE "NO" AUXILIARY CONTACT TO INDICATE CIRCUIT BREAKER STATUS WITCH WILL SEND TO PLC REFER TO SHEET Y0E50.

3 WET & 2 DRY WEATHER PUMPS
SINGLE LINE DIAGRAM

PROJECT NO. R-000265-0XXX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET Z0C0X

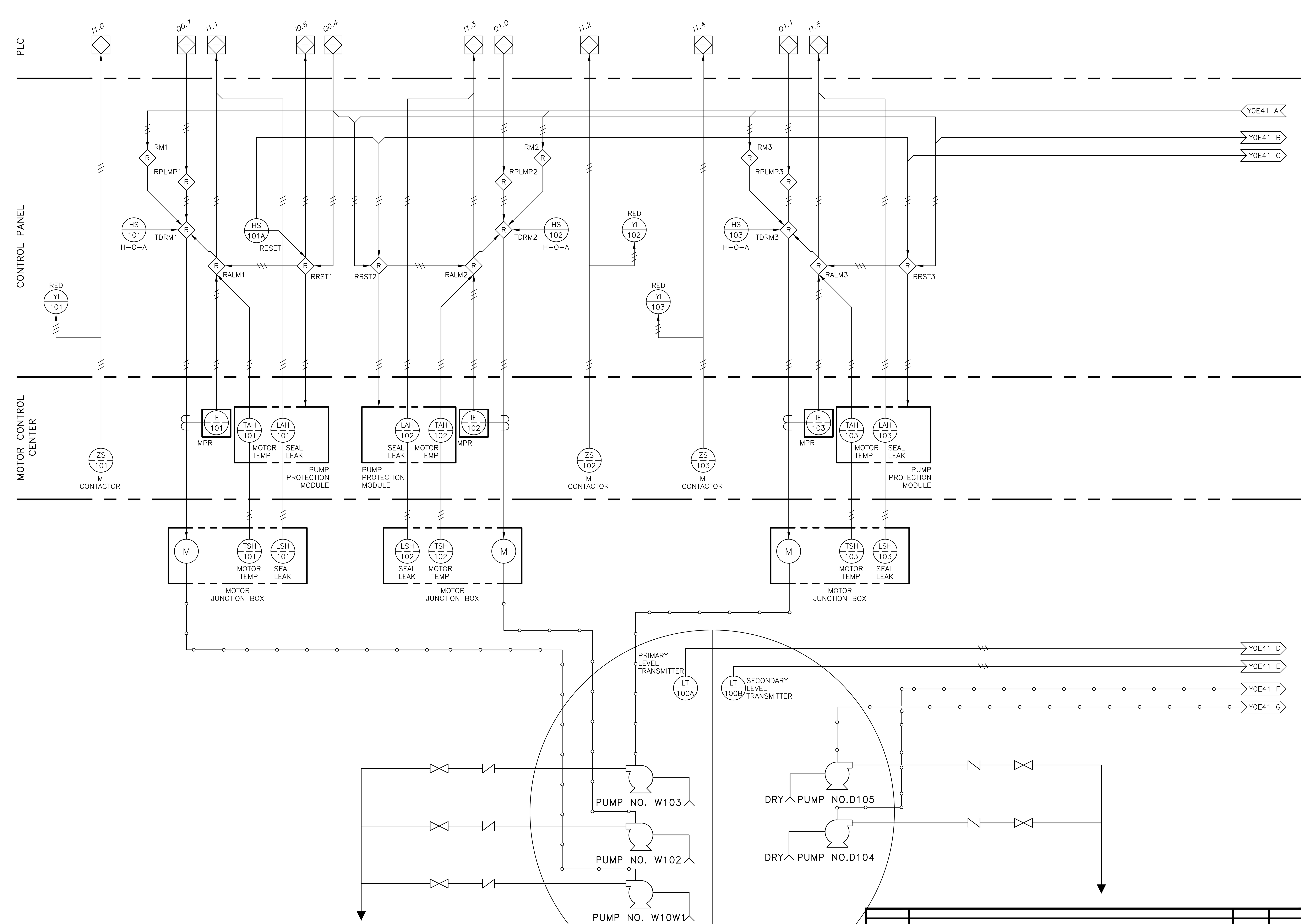
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO. Y0E31-0516

CADD DWG. FILE NO. : Y0E31-3W2D.DWG

COHSTD.BDR

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



NOTES TO DESIGN ENGINEER:

A. *THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.*

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B. *THE DESIGN ENGINEER SHALL DELETE TERMINAL DESIGNATION AND INTERCONNECTING WIRING BETWEEN WHEN BOTH PANELS ARE HOUSED IN A COMMON, FACTORY PRE-WIRED ENCLOSURE.*

C. *THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.*

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3 WET & 2 DRY WEATHER PUMPS
PROCESS & INSTRUMENTATION
DIAGRAM

PROJECT NO.
R-000265-0XXX-X

TITLE
CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

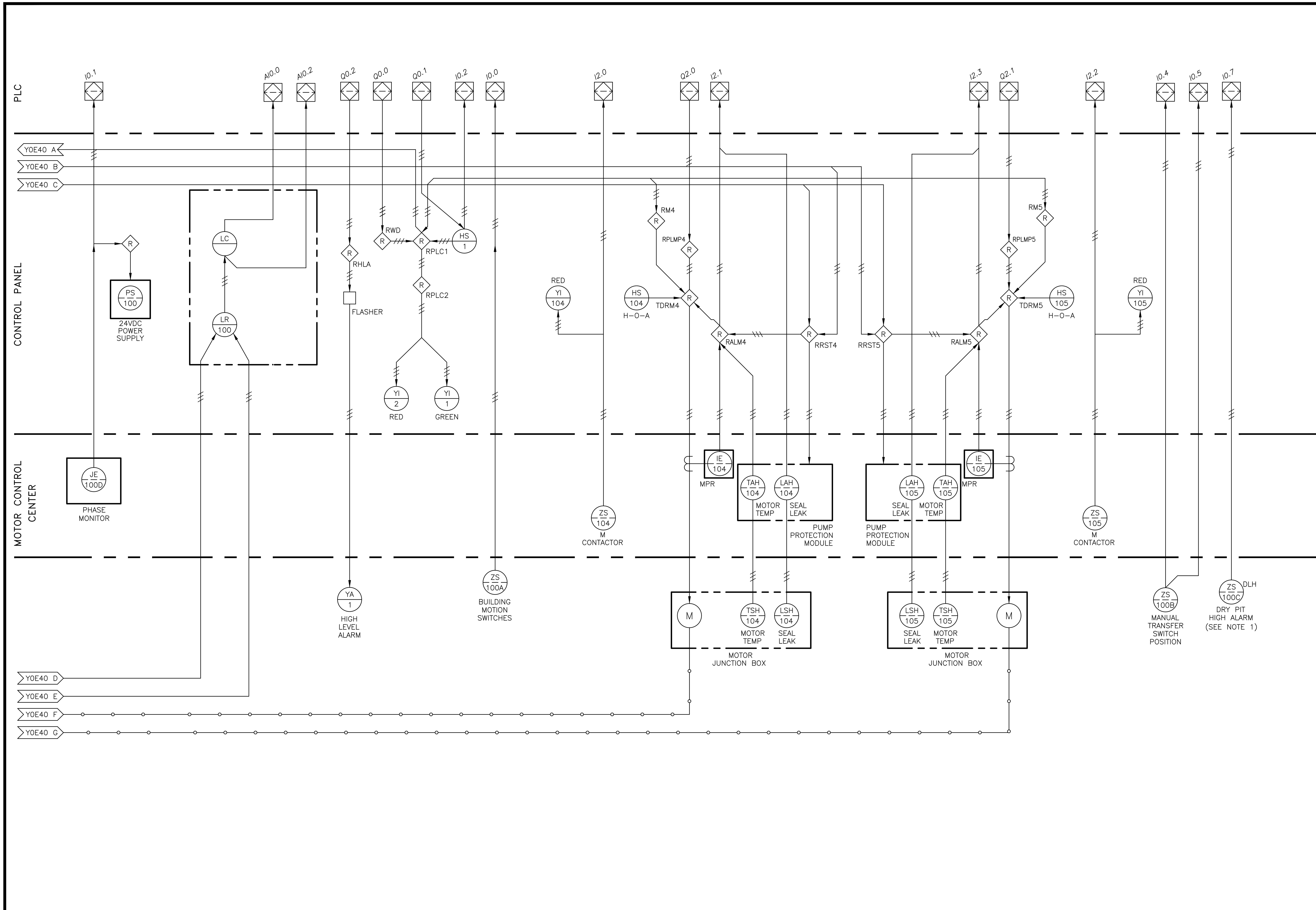
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO.
Y0E40-0516

CADD DWG. FILE NO. :
Y0E40-3W2D.DWG

COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS



NOTES TO DESIGN ENGINEER:

A. *THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.*

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B. *THE DESIGN ENGINEER SHALL DELETE TERMINAL DESIGNATION AND INTERCONNECTING WIRING BETWEEN WHEN BOTH PANELS ARE HOUSED IN A COMMON, FACTORY PRE-WIRED ENCLOSURE.*

C. *THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.*

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NOTES:

1. DRY/WET PIT APPLICATION ONLY.

3 WET & 2 DRY WEATHER PUMPS
PROCESS & INSTRUMENTATION
DIAGRAM

PROJECT NO.
R-000265-0XXX-X

TITLE
CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

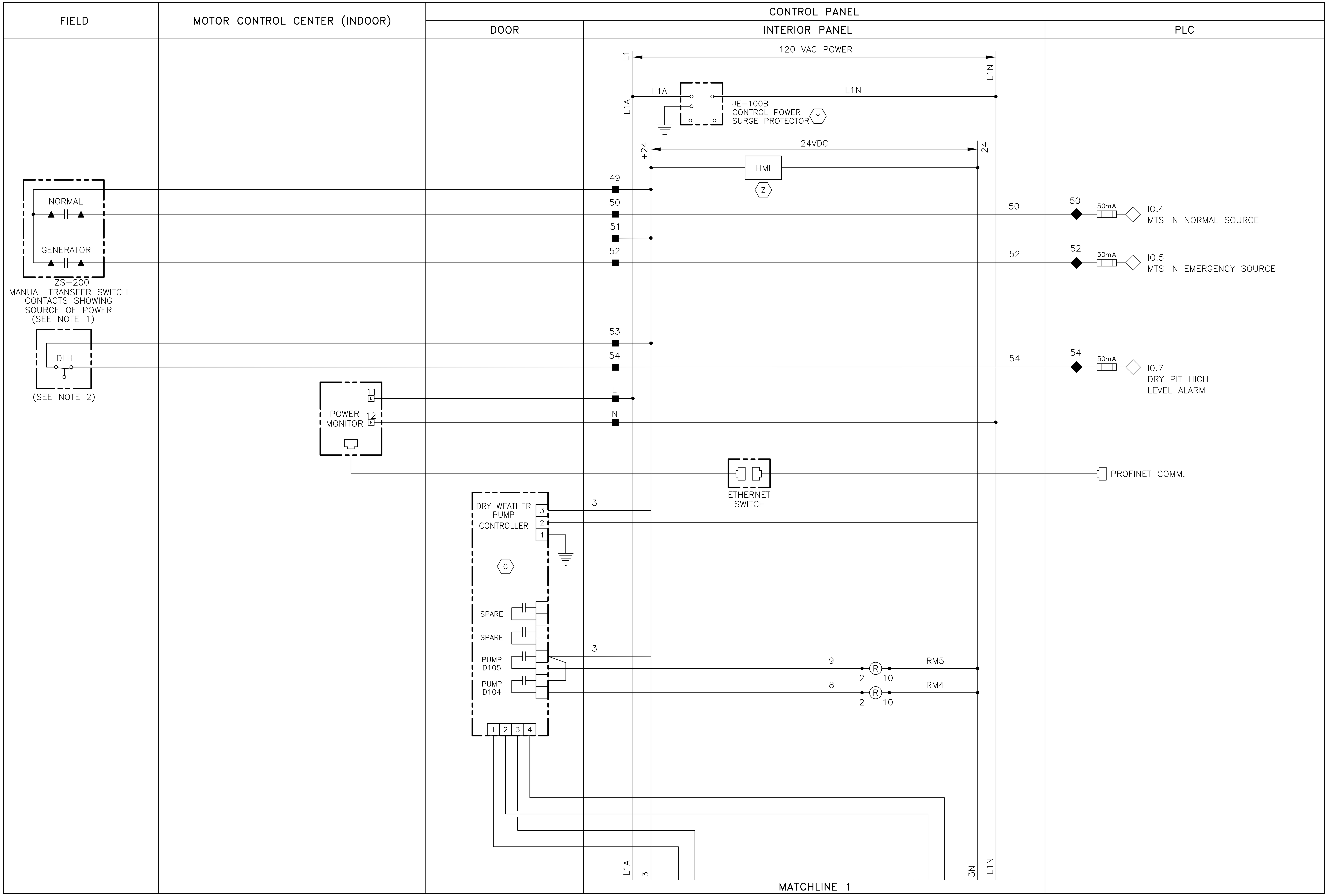
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE:	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO.
FIELD BOOK NO.	Y0E41-0516

CADD DWG. FILE NO. :
Y0E41-3W2D.DWG

COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✱ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.
IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. THE DESIGN ENGINEER SHALL DELETE TERMINAL DESIGNATION AND INTERCONNECTING WIRING BETWEEN WHEN BOTH PANELS ARE HOUSED IN A COMMON, FACTORY PRE-WIRED ENCLOSURE.

C. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

D. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

E. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:
1. PROVIDE MANUAL TRANSFER SWITCH DRY CONTACT.
2. DRY/WET PIT APPLICATION ONLY.

3 WET & 2 DRY WEATHER PUMPS
CONTROL WIRING DIAGRAM

PROJECT NO. R-000265-0XXX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

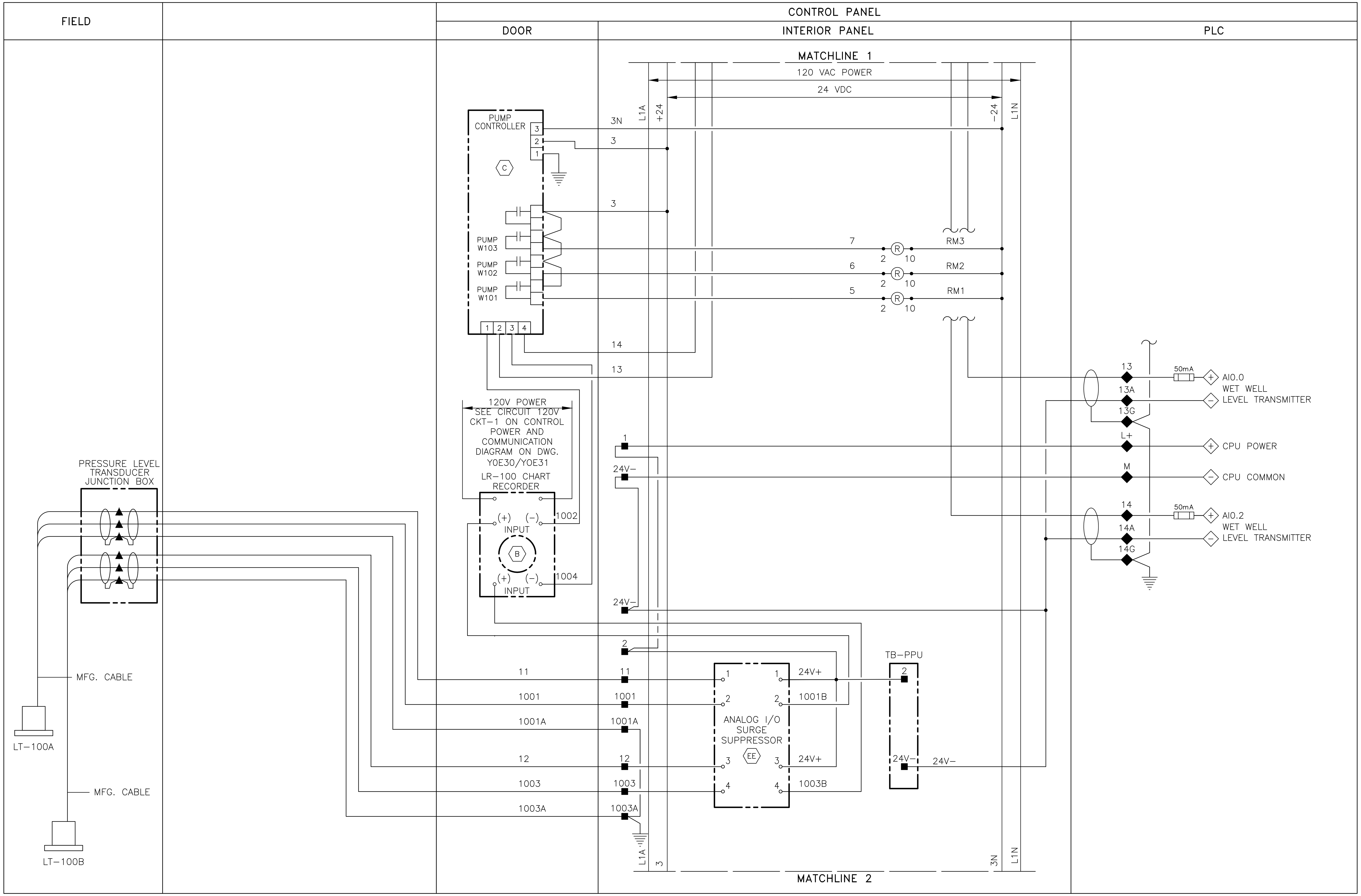
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO. Y0E50-0516

CADD DWG. FILE NO. : Y0E50-3W2D.DWG

COHSTD.BDR

ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS
0 1 2 3



LEGEND

△ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
∗ DEVICE OR FIELD TERMINAL LOCATED REMOTE
□ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
■ FIELD TERMINAL LOCATED AT CONTROL PANEL
▲ REMOTE TERMINAL
● DEVICE TERMINAL NO.
◆ PLC INTERFACE TERMINAL

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. THE DESIGN ENGINEER SHALL DELETE TERMINAL DESIGNATION AND INTERCONNECTING WIRING BETWEEN WHEN BOTH PANELS ARE HOUSED IN A COMMON, FACTORY PRE-WIRED ENCLOSURE.

C. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

D. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

E. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

3 WET & 2 DRY WEATHER PUMPS
CONTROL WIRING DIAGRAM

PROJECT NO.
R-000265-0XXX-X

TITLE
CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

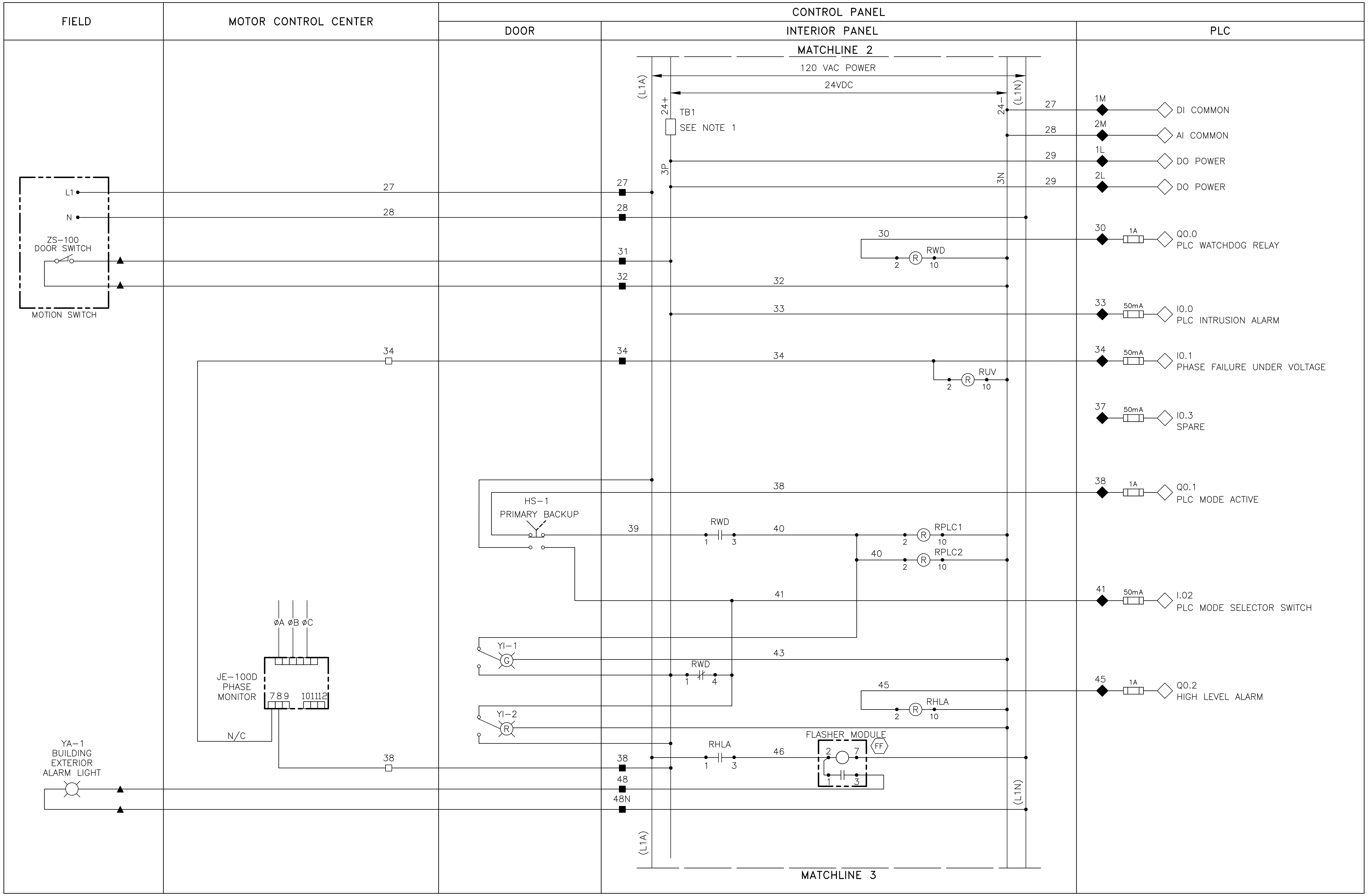
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO.
Y0E51-0516

CADD DWG. FILE NO. :
Y0E51-3W2D.DWG

COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS



LEGEND

△ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
□ DEVICE OR FIELD TERMINAL LOCATED AT MCC
■ FIELD TERMINAL LOCATED AT CONTROL PANEL
▲ REMOTE TERMINAL
● DEVICE TERMINAL NO.
◆ PLC INTERFACE TERMINAL

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.
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B. THE DESIGN ENGINEER SHALL DELETE TERMINAL DESIGNATION AND INTERCONNECTING WIRING BETWEEN WHEN BOTH PANELS ARE HOUSED IN A COMMON, FACTORY PRE-WIRED ENCLOSURE.
C. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.
D. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.
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NOTES:
1. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM.

3 WET & 2 DRY WEATHER PUMPS
CONTROL WIRING DIAGRAM

PROJECT NO. R-000265-0XXX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

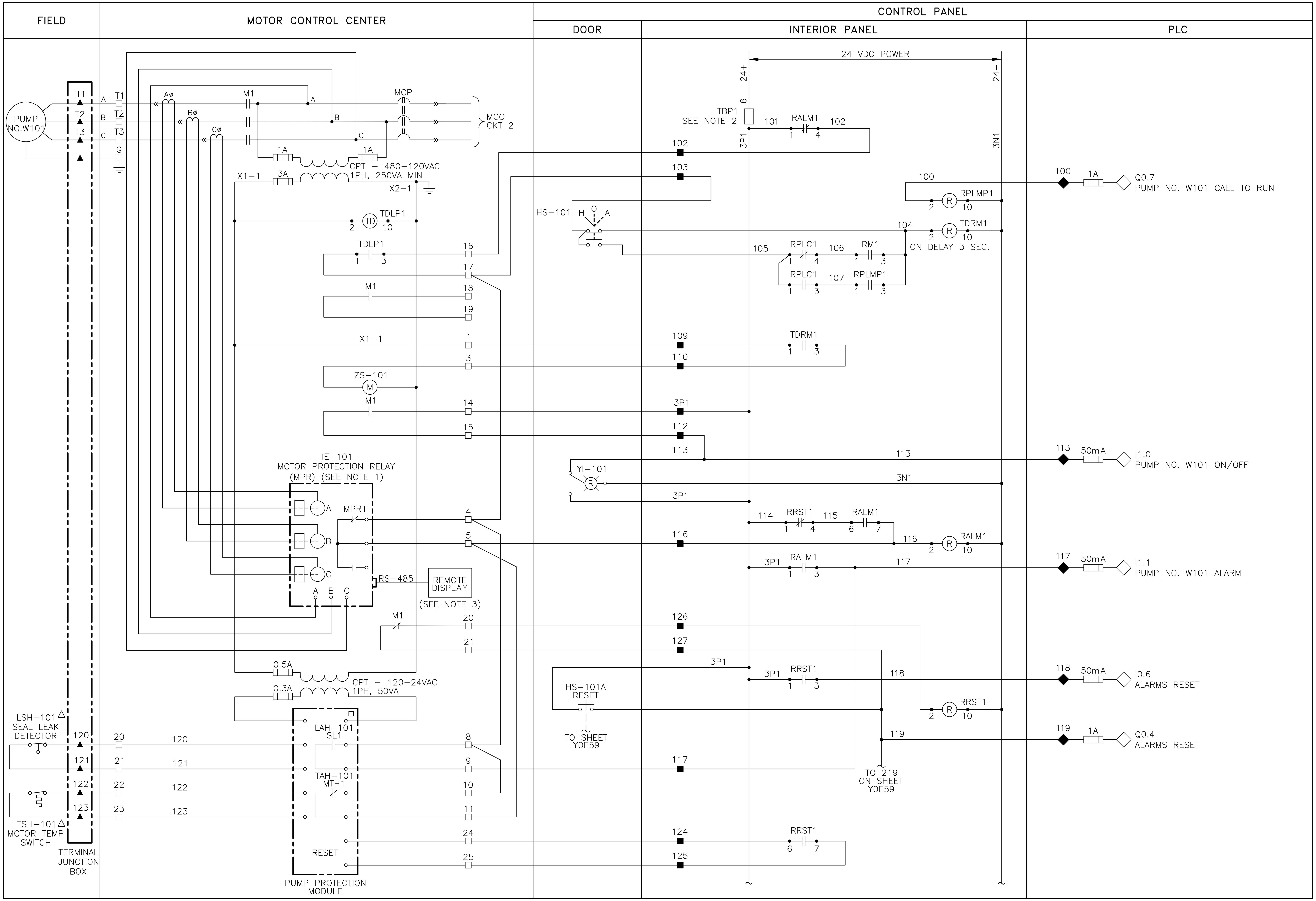
REV. NO.	DESCRIPTION	APP'D	DATE	

SCALE: NONE	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE:	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO. Y0E52-0516
FIELD BOOK NO.	

CADD DWG. FILE NO. : Y0E52-3W2D.DWG

COHSTD.BDR

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ∗ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

CADD DWG. FILE NO. : Y0E58−3W2D.DWG

COHSTD.BDR

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

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B. THE DESIGN ENGINEER SHALL DELETE TERMINAL DESIGNATION AND INTERCONNECTING WIRING BETWEEN WHEN BOTH PANELS ARE HOUSED IN A COMMON, FACTORY PRE−WIRED ENCLOSURE.

C. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

D. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

E. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE−ENGERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM.
3. REMOTE DISPLAY SHALL BE MOUNTED IN MCC CUBICLE, AND SET DISPLAY CURRENT RATING.

3 WET & 2 DRY WEATHER PUMPS
PUMP W101
CONTROL WIRING DIAGRAM

PROJECT NO. R−000265−0XXX−X

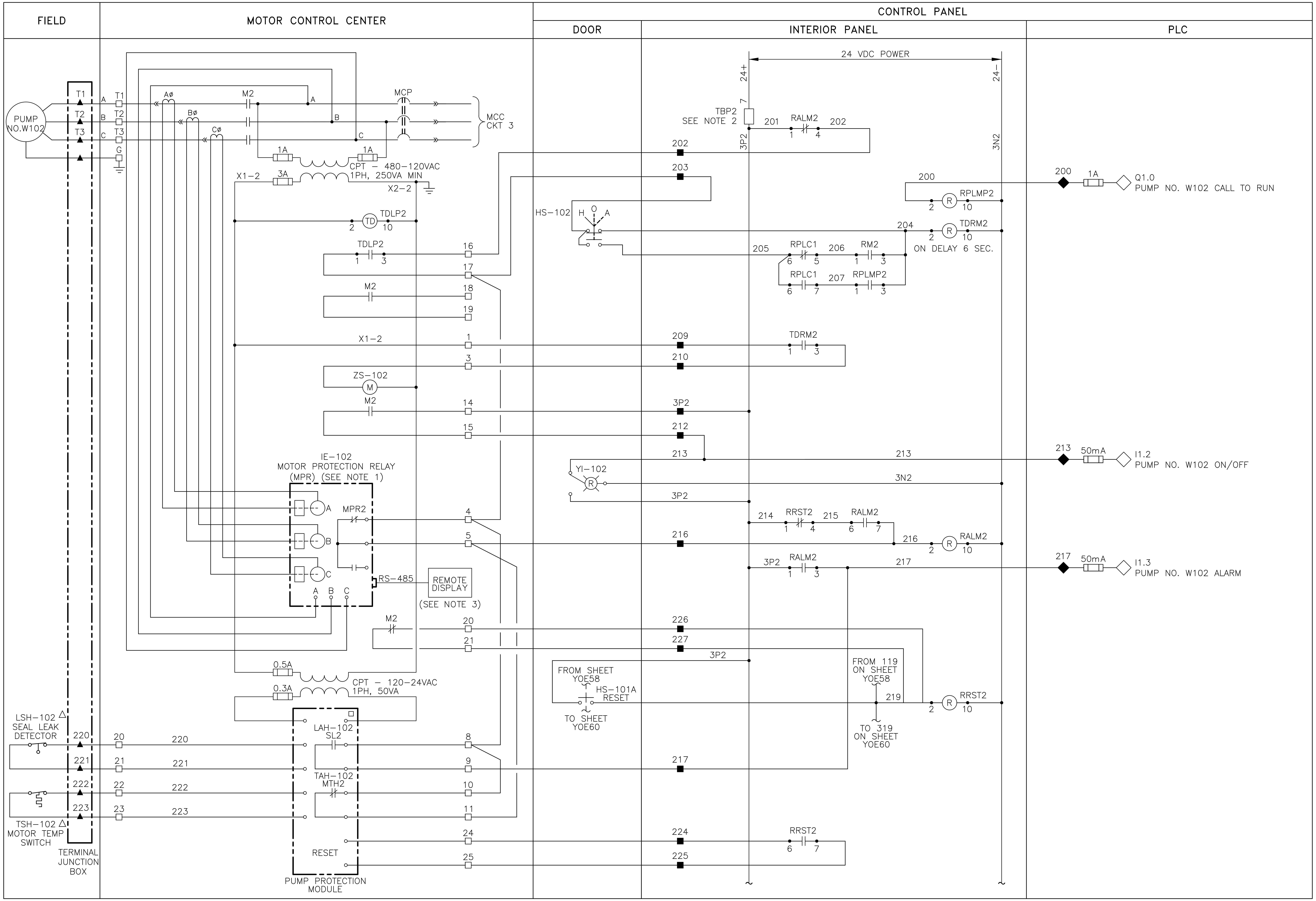
TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET Z0C0X

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO. Y0E58−0516



LEGEND

△ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR

∗ DEVICE OR FIELD TERMINAL LOCATED REMOTE

☐ DEVICE OR FIELD TERMINAL LOCATED AT MCC

■ FIELD TERMINAL LOCATED AT CONTROL PANEL

▲ REMOTE TERMINAL

● DEVICE TERMINAL NO.

◆ PLC INTERFACE TERMINAL

CADD DWG. FILE NO. : YOE59-3W2D.DWG

COHSTD.BDR

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

REV. NO.	DESCRIPTION	APP'D	DATE

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

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C. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

D. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

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NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM.
3. REMOTE DISPLAY SHALL BE MOUNTED IN MCC CUBICLE, AND SET TO DISPLAY CURRENT READING.

3 WET & 2 DRY WEATHER PUMPS
PUMP W102
CONTROL WIRING DIAGRAM

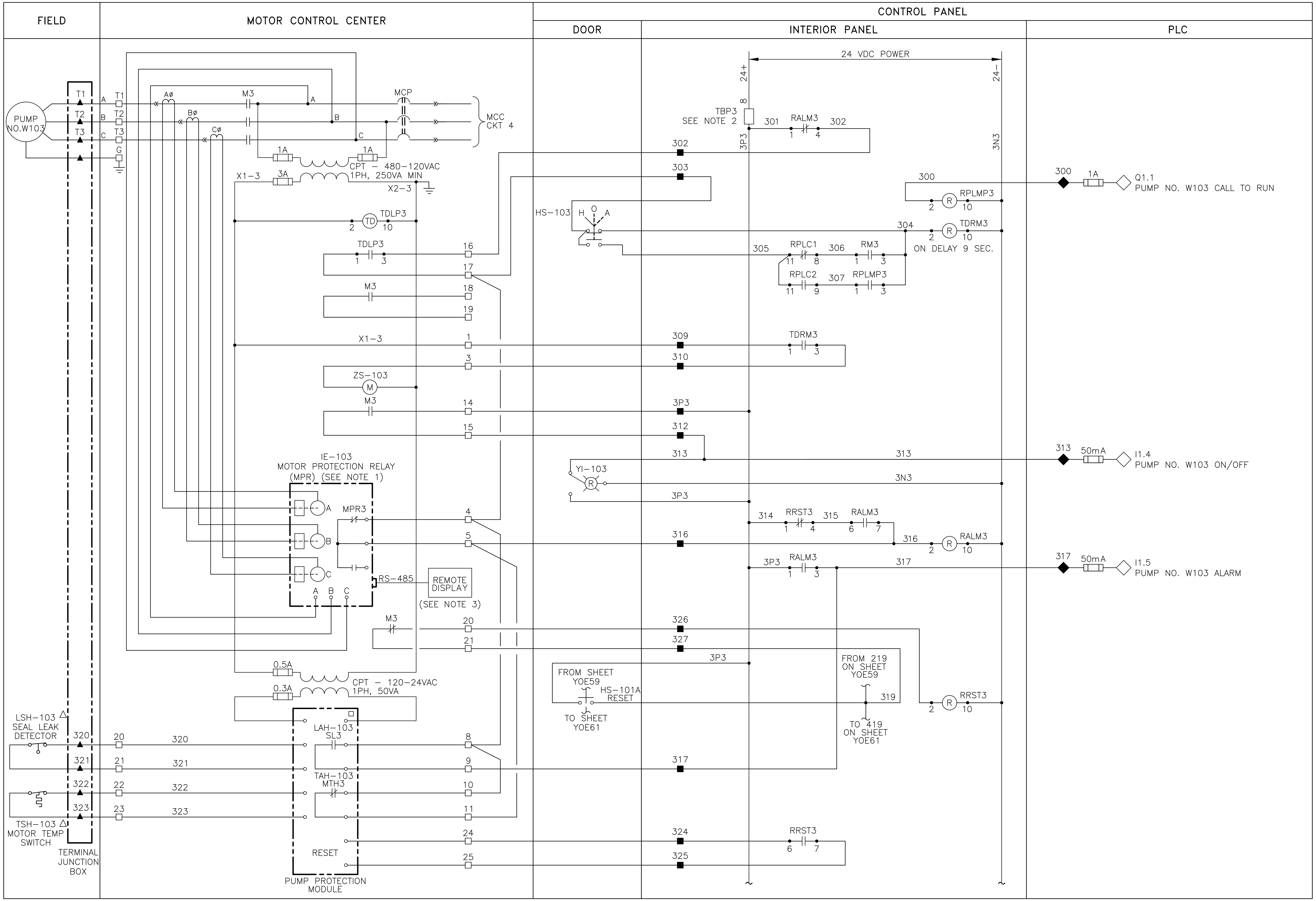
PROJECT NO. R-000265-0XXX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

SCALE: NONE
DESIGNED BY:
SUBMITTED:
DRAWN BY:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
DWG. NO. YOE59-0516
FIELD BOOK NO.



LEGEND

△ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR

✱ DEVICE OR FIELD TERMINAL LOCATED REMOTE

□ DEVICE OR FIELD TERMINAL LOCATED AT MCC

■ FIELD TERMINAL LOCATED AT CONTROL PANEL

▲ REMOTE TERMINAL

● DEVICE TERMINAL NO.

◆ PLC INTERFACE TERMINAL

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

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B. THE DESIGN ENGINEER SHALL DELETE TERMINAL DESIGNATION AND INTERCONNECTING WIRING BETWEEN WHEN BOTH PANELS ARE HOUSED IN A COMMON, FACTORY PRE-WIRED ENCLOSURE.

C. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

D. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

E. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENGERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM.
3. REMOTE DISPLAY SHALL BE MOUNTED IN MCC CUBICLE, AND SET DISPLAY CURRENT RATING.

3 WET & 2 DRY WEATHER PUMPS
PUMP W103
CONTROL WIRING DIAGRAM

PROJECT NO. R-000265-0XXX-X

TITLE: CITY OF HOUSTON DESIGN GUIDELINE DRAWINGS FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

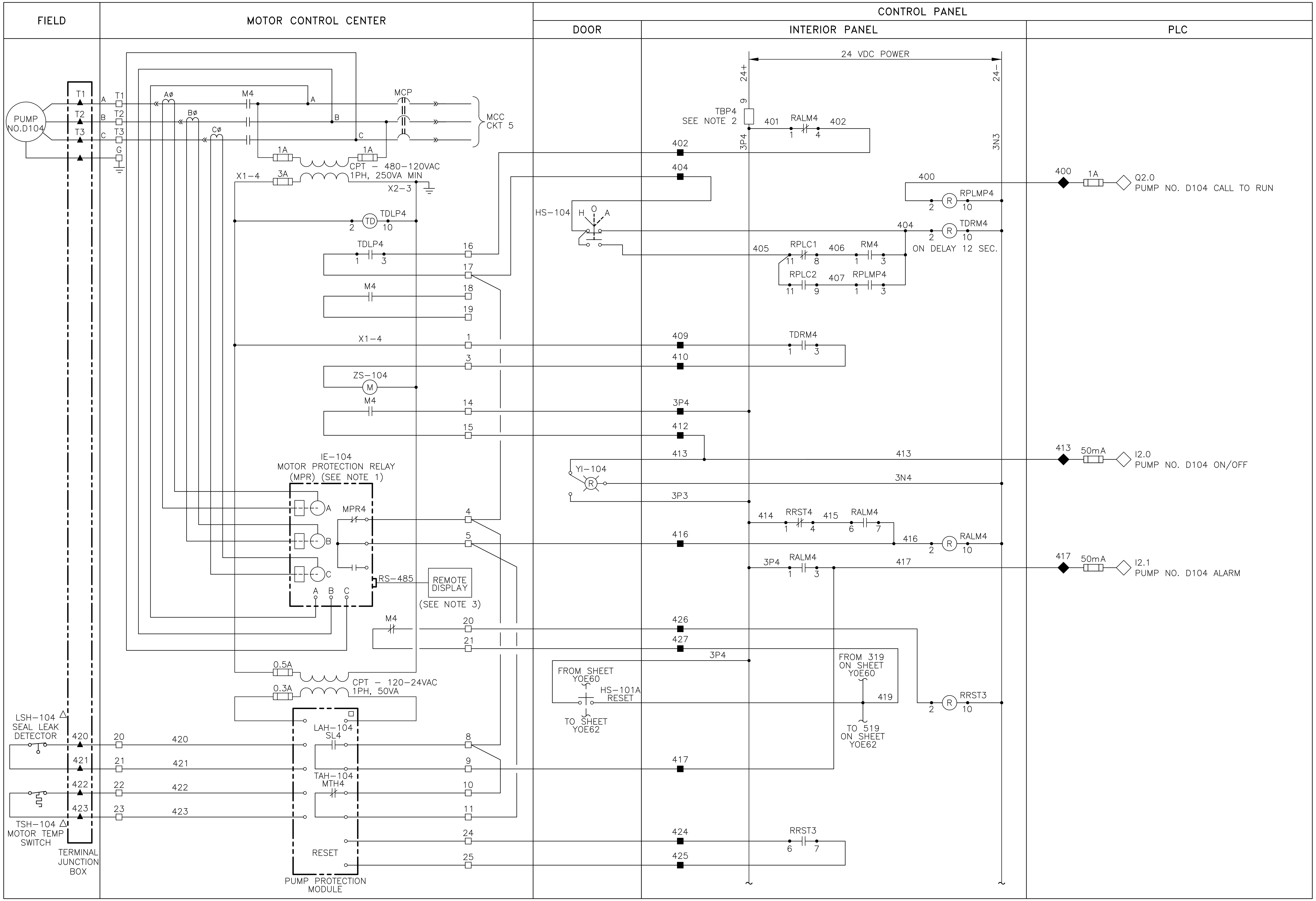
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE:	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO.
FIELD BOOK NO.	Y0E60–0516

CADD DWG. FILE NO. : Y0E60–3W2D.DWG

COHSTD.BDR

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✱ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

CADD DWG. FILE NO. : Y0E61-3W2D.DWG

COHSTD.BDR

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 1 2 3

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

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NOTES:

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3. REMOTE DISPLAY SHALL BE MOUNTED IN MCC CUBICLE, AND SET DISPLAY CURRENT RATING.

3 WET & 2 DRY WEATHER PUMPS
PUMP D104
CONTROL WIRING DIAGRAM

PROJECT NO. R-000265-0XXX-X

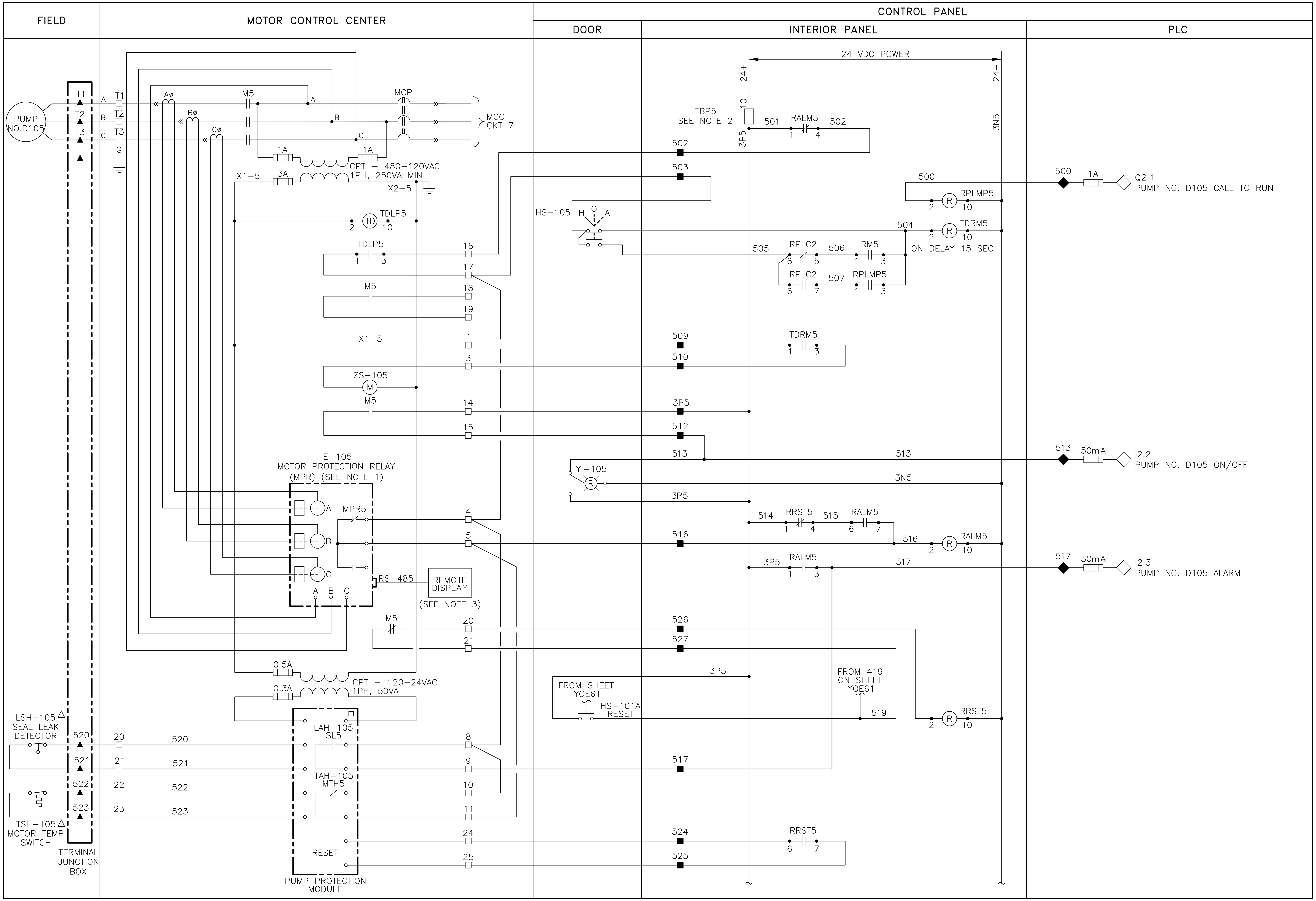
TITLE CITY OF HOUSTON DESIGN GUIDELINE DRAWINGS FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO. Y0E61-0516



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ∗ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

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NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENGERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM.
3. REMOTE DISPLAY SHALL BE MOUNTED IN MCC CUBICLE, AND SET DISPLAY CURRENT RATING.

3 WET & 2 DRY WEATHER PUMPS
PUMP D105
CONTROL WIRING DIAGRAM

PROJECT NO. R-000265-0XXX-X

TITLE CITY OF HOUSTON DESIGN GUIDELINE DRAWINGS FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

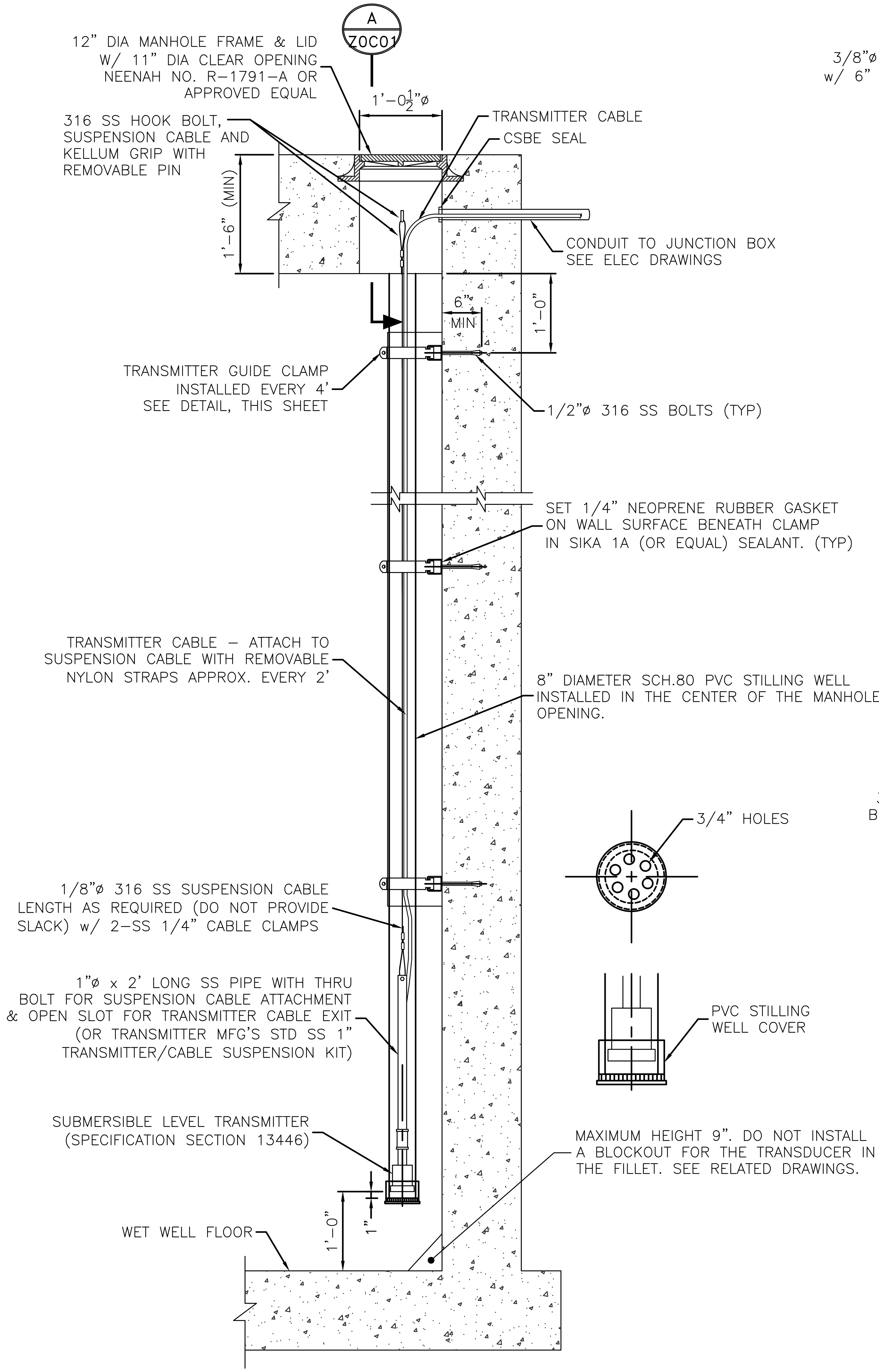
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
DESIGNED BY:
SUBMITTED:
DRAWN BY:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO. Y0E62–0516

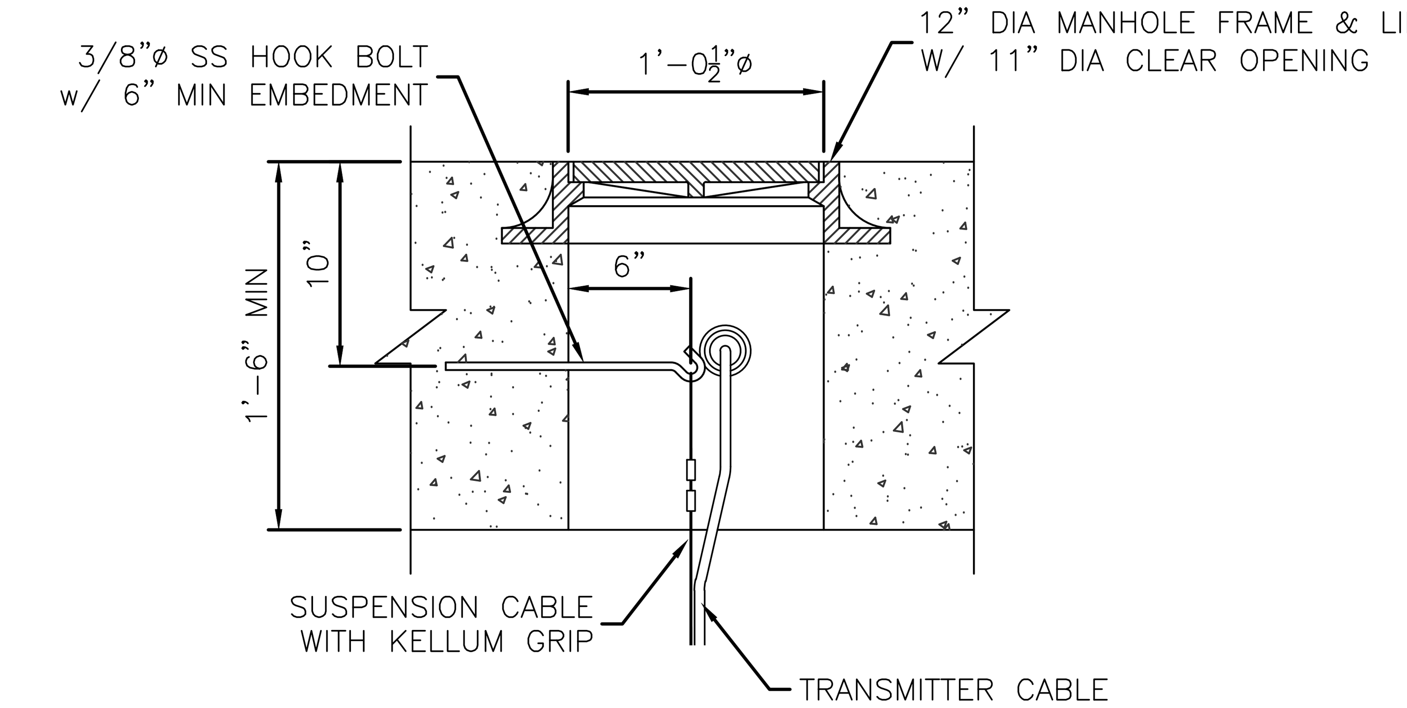
CADD DWG. FILE NO. : Y0E61–3W2D.DWG

COHSTD.BDR

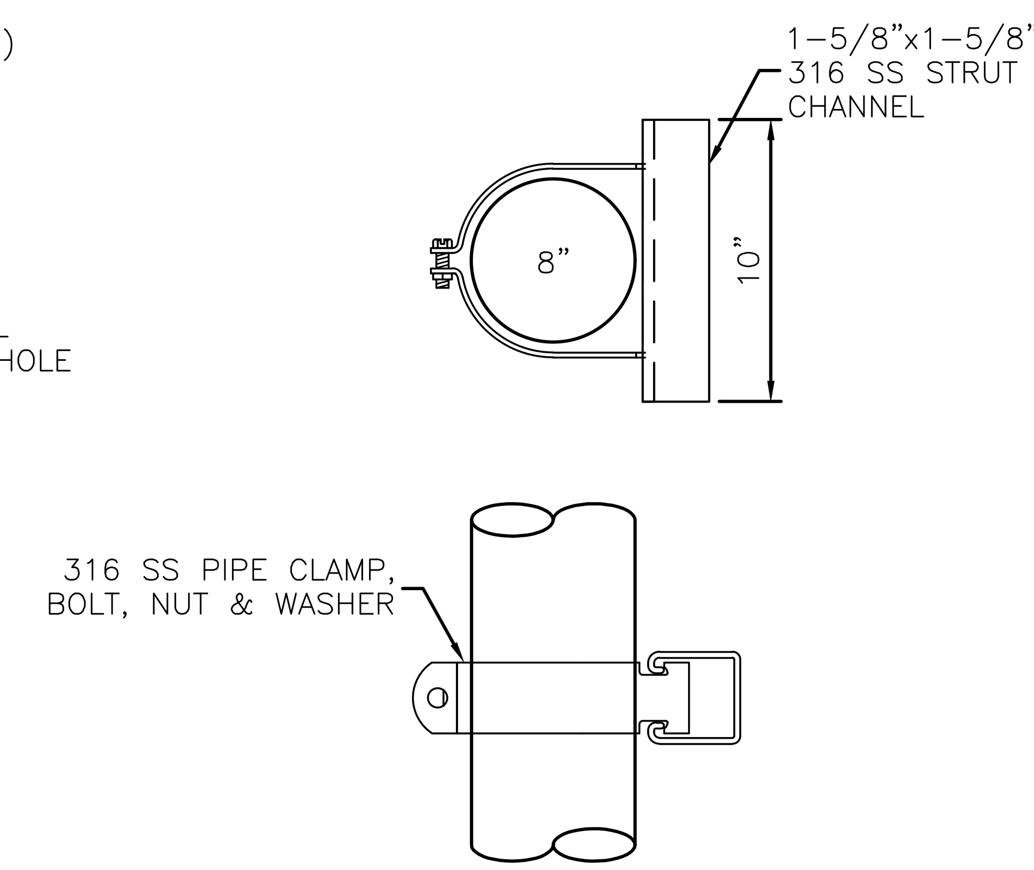
0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



SUBMERSIBLE TRANSDUCER WELL LEVEL GAUGING SYSTEM
TYP INSTALLATION DETAIL
SCALE: 1" = 1'-0"



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



TRANSMITTER GUIDE CLAMP DETAIL
SCALE: NOT TO SCALE

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

C. TRANSMITTER CABLE MUST BE THE SAME LENGTH REGARDLESS OF ITS LOCATION FROM TERMINAL/ JUNCTION BOX.

D. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

E. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

SUBMERSIBLE TRANSDUCER
WELL LEVEL GAUGING SYSTEM
INSTALLATION & DETAILS

PROJECT NO.
R-000265-0XXX-X

TITLE
CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET Z0C0X

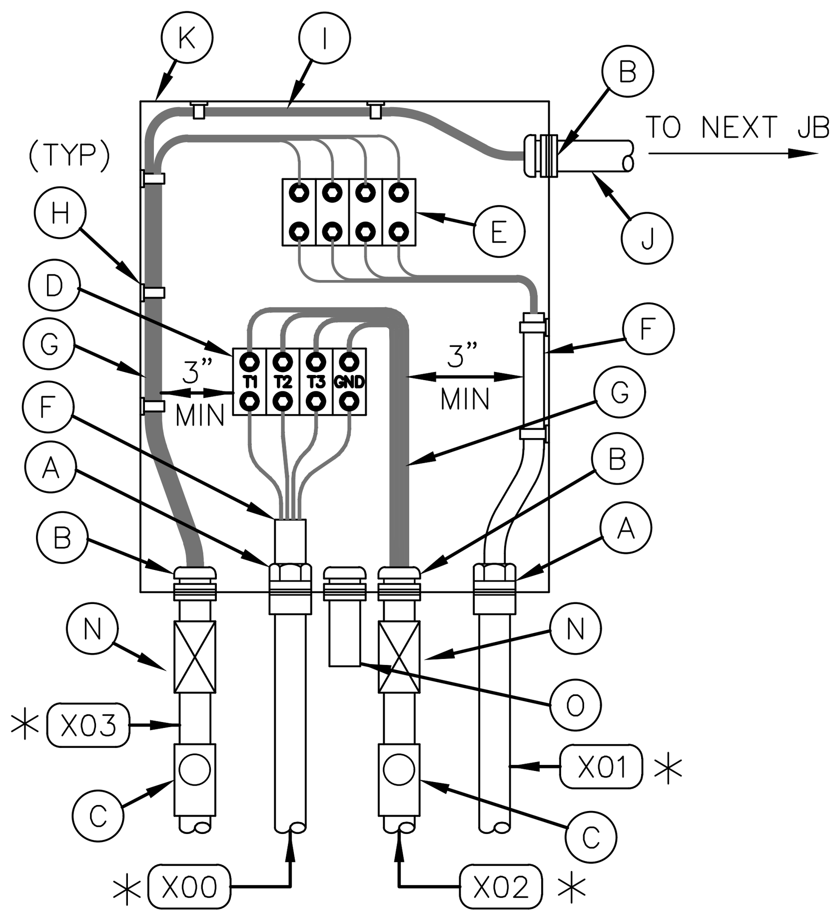
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: AS NOTED	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE:	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO.
FIELD BOOK NO.	Z0C01-0516

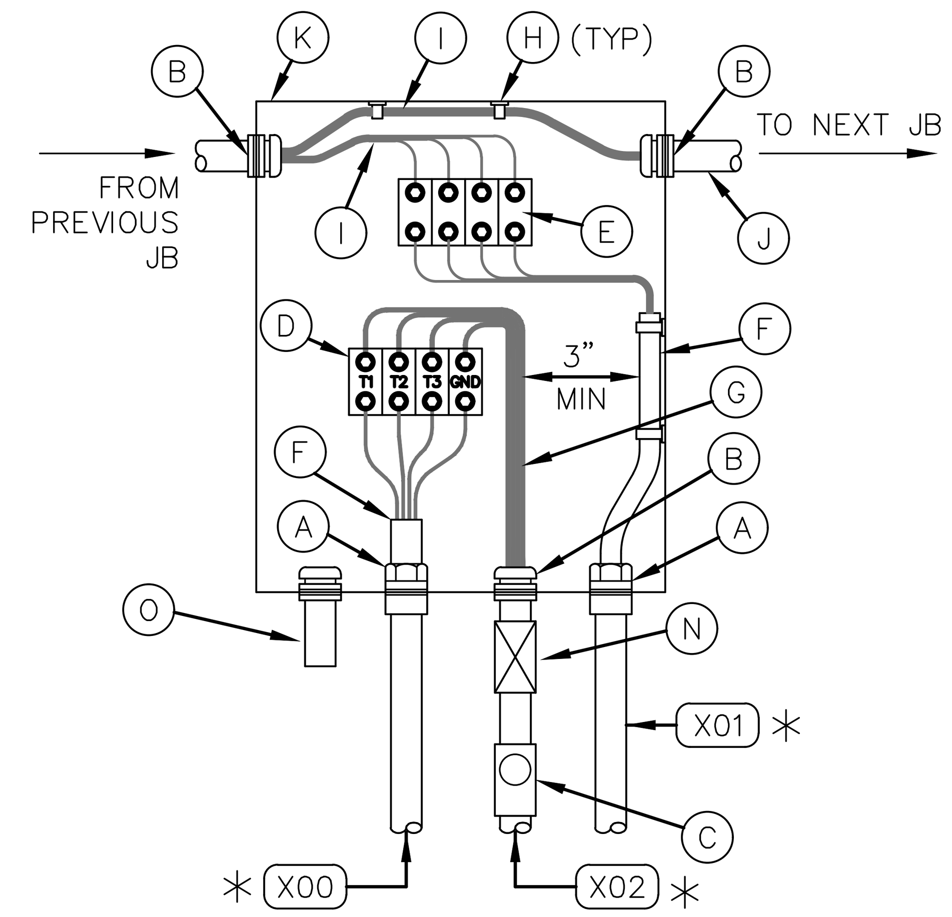
CADD DWG. FILE NO. :
Z0C01.DWG

COHSTD.BDR

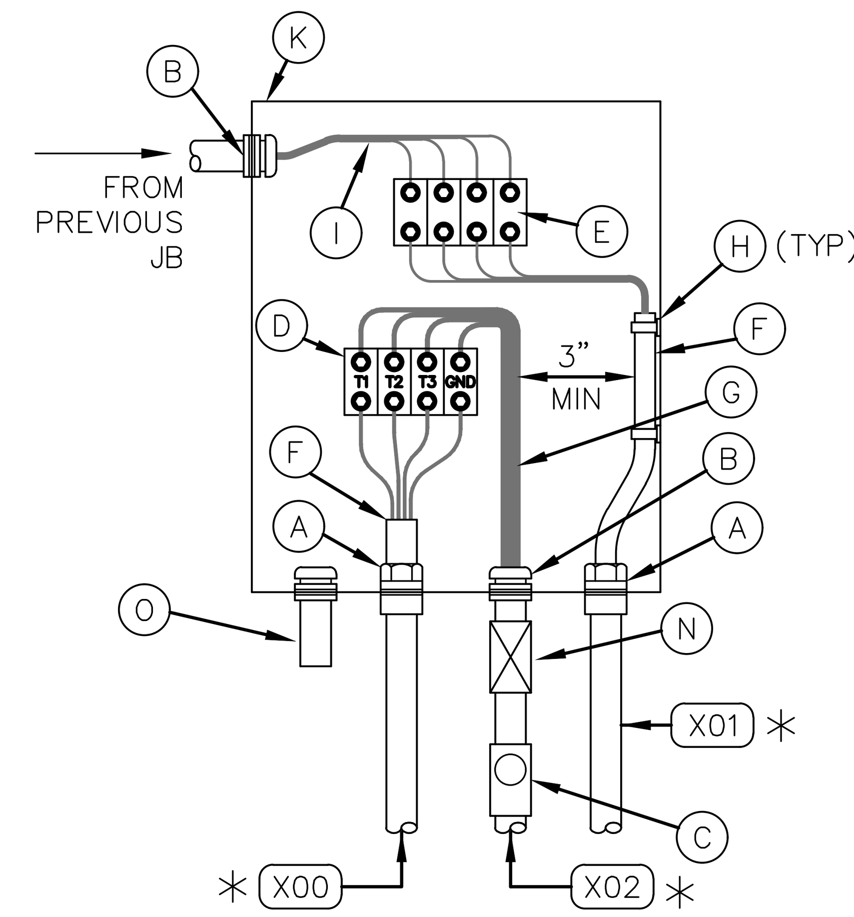
0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



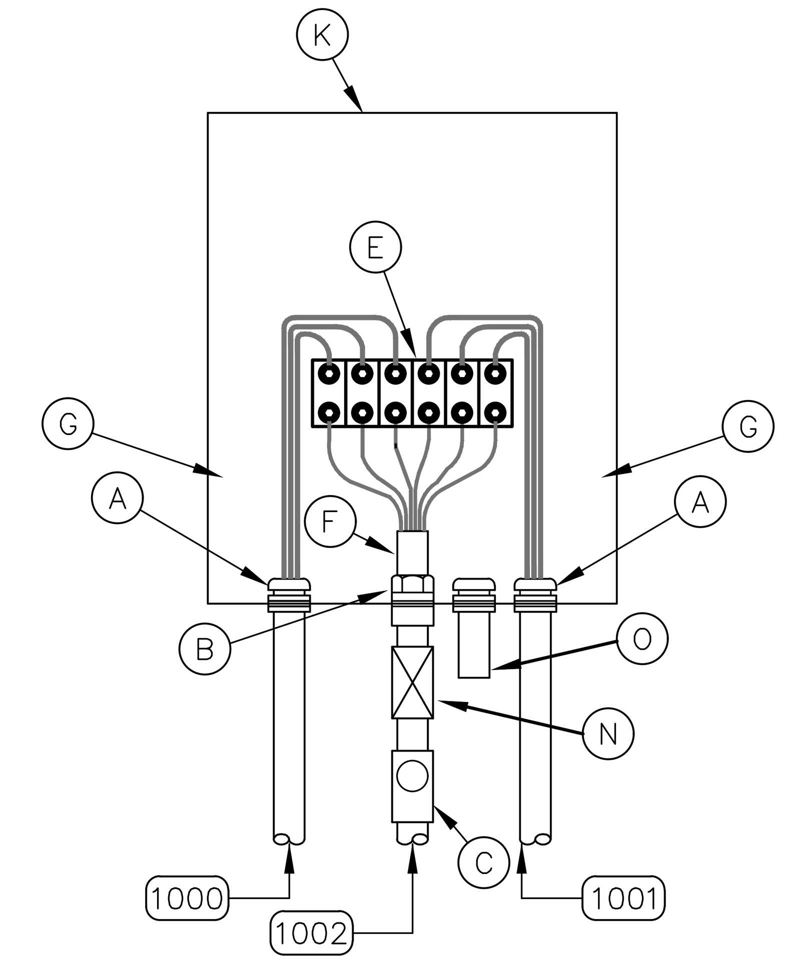
BEGINNING JUNCTION BOX
(SEE NOTE E)
DETAIL 3 Z0E02
(SEE NOTE 7)



INTERMEDIATE JUNCTION BOX
(SEE NOTE E)
DETAIL 4 Z0E02
(SEE NOTE 7)



END JUNCTION BOX
(SEE NOTE E)
DETAIL 5 Z0E02
(SEE NOTE 7)

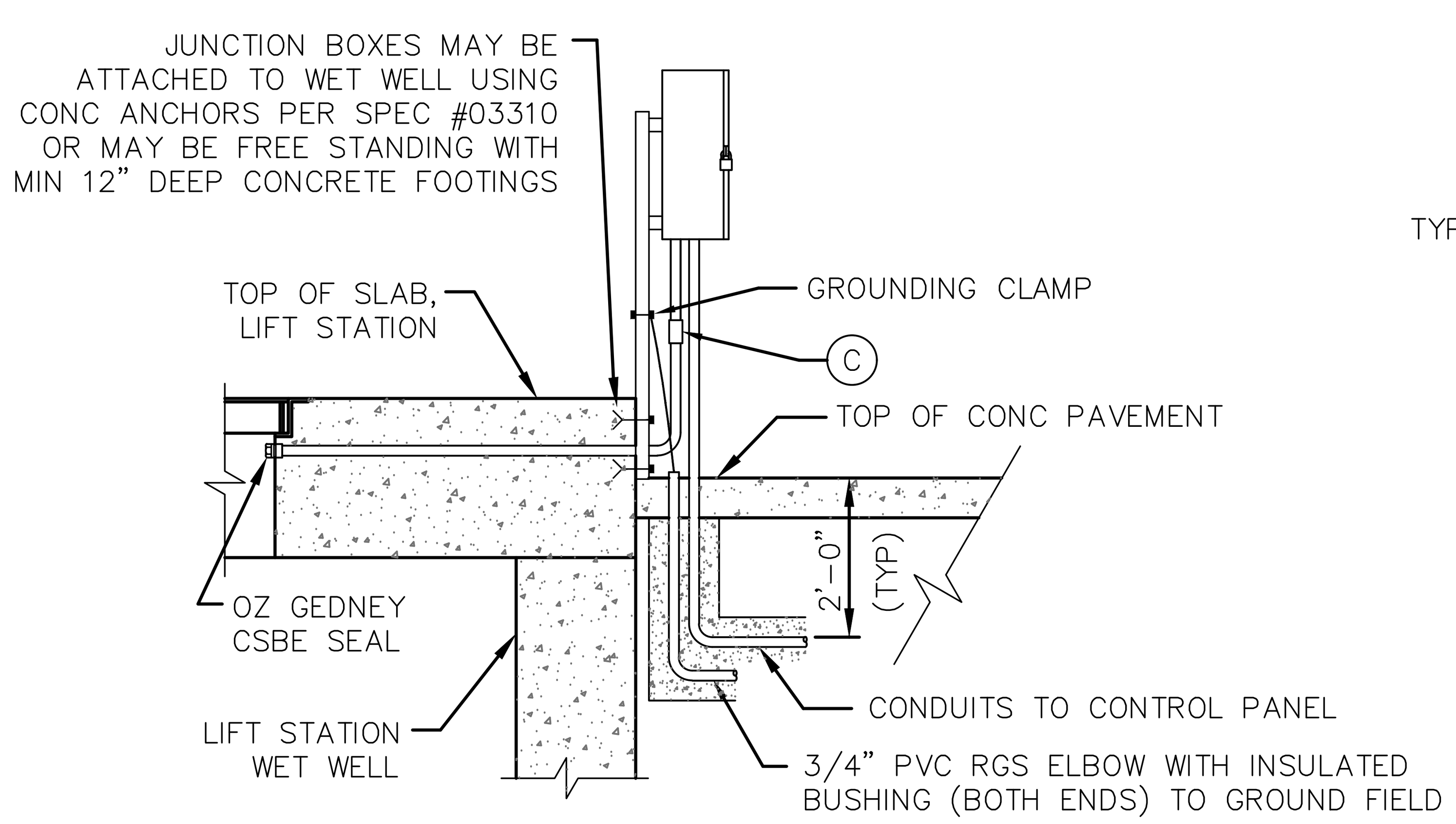


LEVEL TRANSMITTER JUNCTION BOX
(SEE NOTE E)
DETAIL 6 Z0E02
(SEE NOTE 7)

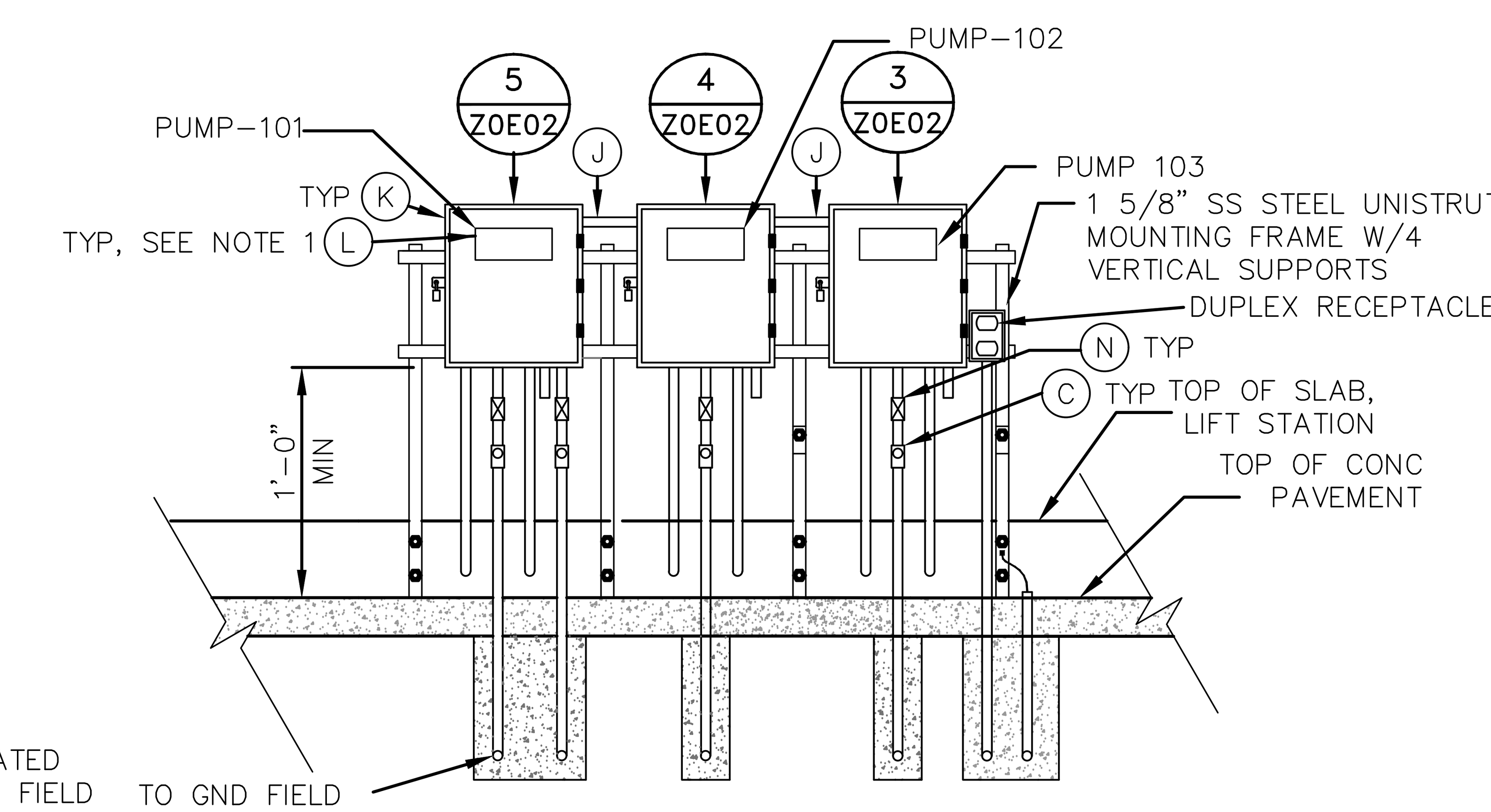
* REPLACE 'X' PER NOTATION SCHEDULE

NOTATION SCHEDULE

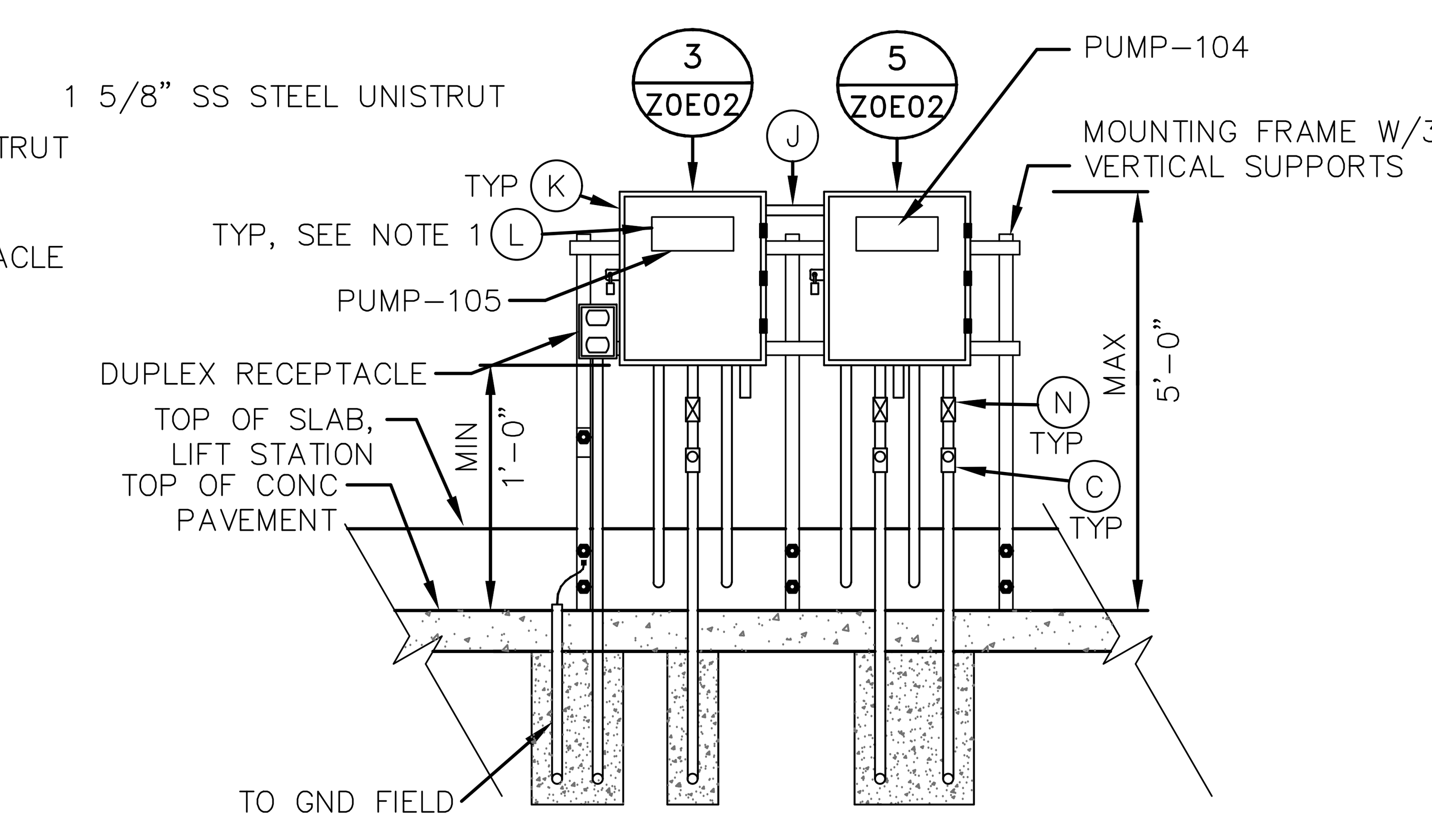
'X'	PUMP NO.
2	W101
3	W102
4	W103
7	D104
8	D105



TYP SIDE VIEW FOR DETAIL 1A, 1B & 2



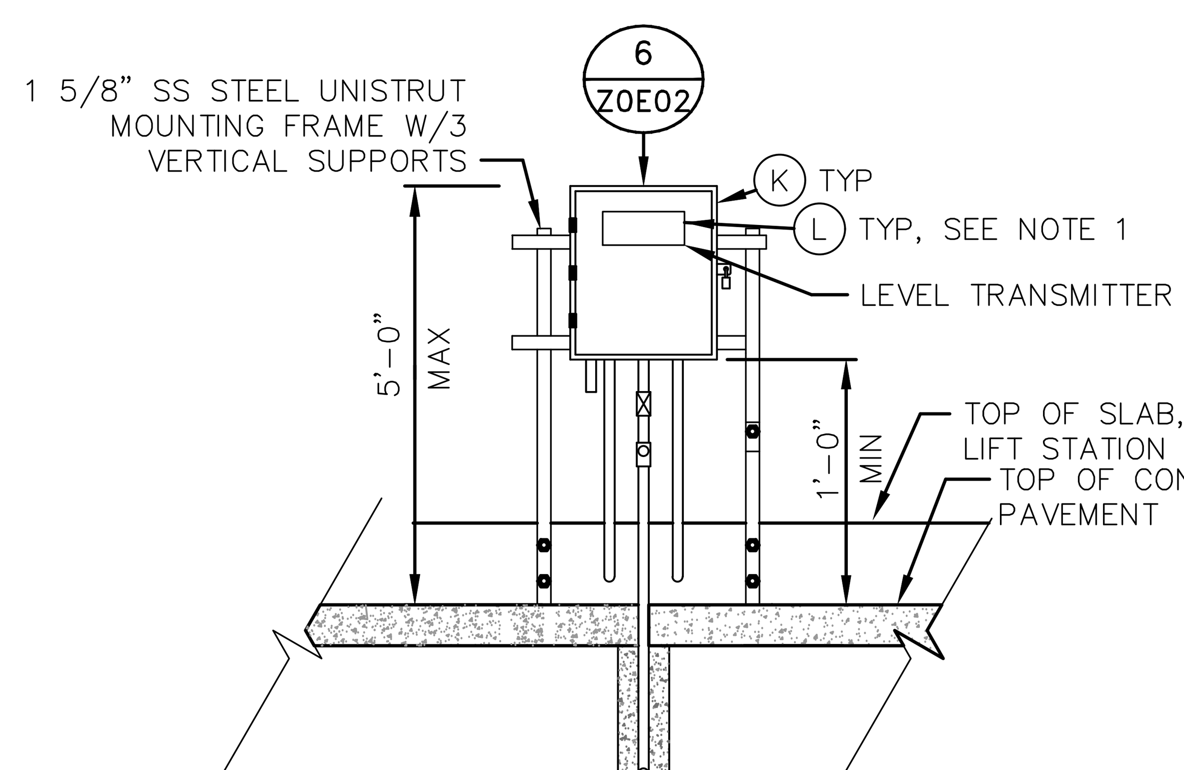
DETAIL 1B Z0E02



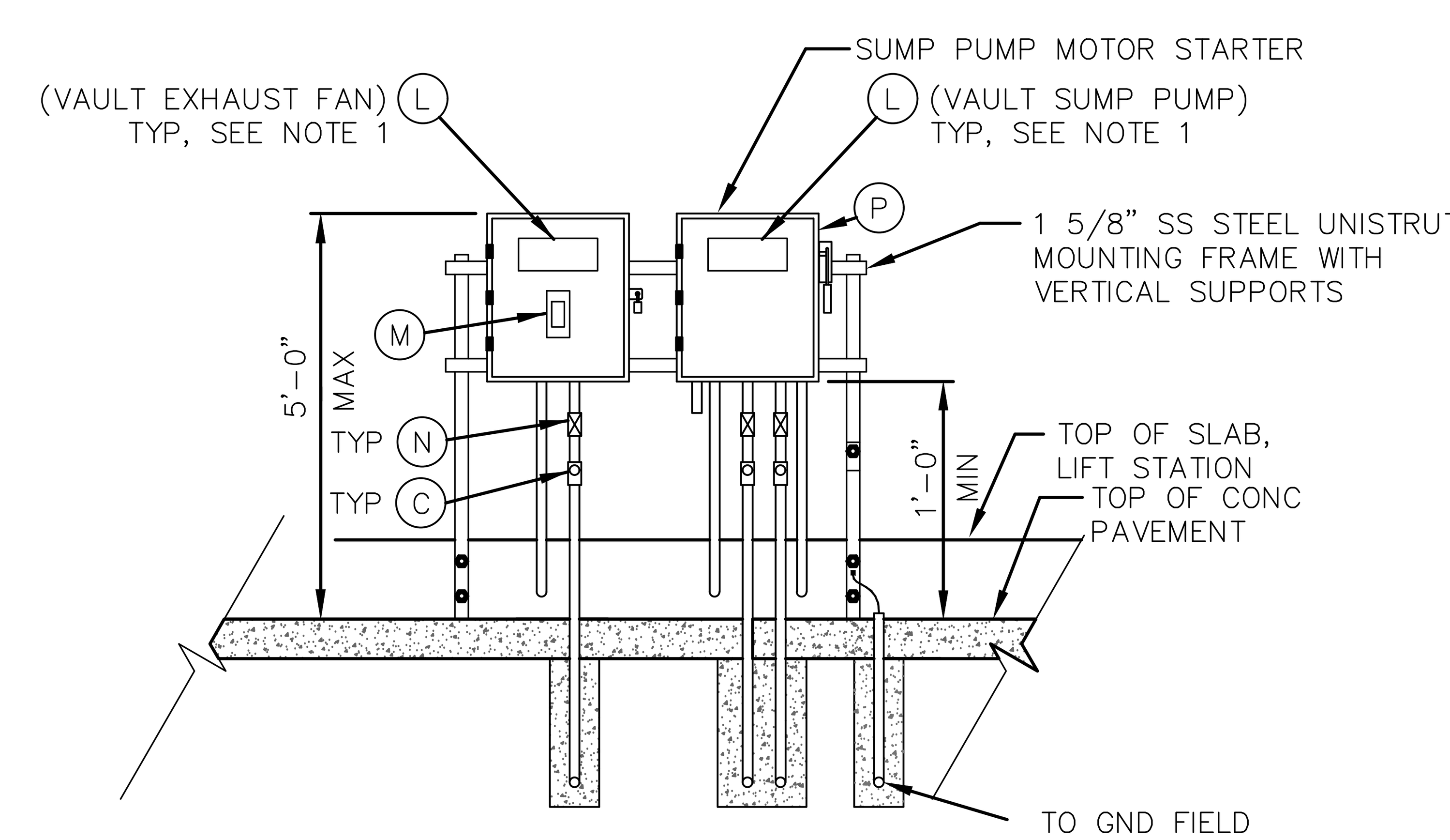
DETAIL 1A Z0E02
(SEE NOTE 9)

JUNCTION BOX EQUIPMENT SCHEDULE

A – OZ GEDNEY CSBE SEAL
B – WATERTIGHT CONDUIT HUB WITH INSULATED BUSHING
C – CLASS I, DIV 1, EXLOSION PROOF SEAL INSTALLED PER NEC DIV 501
D – POWER TERMINAL BLOCK W/SCREW DOWN BOX LUGS
E – CONTROL TERM BLOCK W/SCREW DOWN BOX LUGS
F – MULTI-CONDUCTOR CABLE, REMOVE OUTER JACKET AS SHOWN
G – WIRING AS SCHEDULED
H – WIRING HARNESS PERMANENTLY AFFIXED
I – PUMP CONTROL WIRING FROM PUMPS 2; 2 & 3; 4; OR D2, AS APPLICABLE
J – 1 1/2" PVC COATED CONDUIT NIPPLE
K – NEMA 4X STAINLESS STEEL JUNCTION BOX WITH GASKETED FRONT COVER, SINGLE QUARTER TURN, OIL-TIGHT LATCH AND PADLOCKING PROVISIONS, HOFFMAN D-3L16H1206 SS LF OR EQUAL. MINIMUM SIZE: 12"W X 16"H X 6"D
L – NAMEPLATE, SEE SPECIFICATIONES (SEE NAMEPLATE SCHEDULE)
M – MOTOR RATED SWITCH
N – EXPANSION FITTING
O – DRAIN VENT



DETAIL 2 Z0E02



DETAIL 7 Z0E02

NOTES TO DESIGN ENGINEER:

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C. TRANSMITTER CABLE MUST BE THE SAME LENGTH REGARDLESS OF ITS LOCATION FROM TERMINAL/ JUNCTION BOX.

D. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

E. FOR ALL TERMINAL/JUNCTION BOXES AROUND VALVE VAULTS AND WETWELLS SHOW EXPANSION AND LOOP. ENGINEERING DESIGN MANUAL, AND THE MASTER

F. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

1. NAMEPLATES SHALL BE MOUNTED TO JUNCTION BOXES USING 316 STAINLESS STEEL HARDWARE.
2. MAINTAIN MINIMUM SEPARATION REQUIRED UNDER NEC ARTICLE 504, BETWEEN INTRINSICALLY SAFE CONTROL WIRING AND NONINTRINSICALLY SAFE MOTOR FEEDER WIRING.
3. UNLESS OTHERWISE NOTED, ALL EXPOSED CONDUITS SHALL BE PVC COATED RIGID GALVANIZED STEEL.
4. UNLESS OTHERWISE NOTED, ALL NUTS, BOLTS, SCREWS WASHERS, ETC SHALL BE TYPE 316 STAINLESS STEEL.
5. ALL UNDERGROUND CONDUITS TO BE ENCASED IN REINFORCED CONCRETE DUCTBANK.
6. PROVIDE ANTI-CORROSIVE SPRAY ON ANY BARE METAL PARTS OR EXPOSED WIRE.
7. SEE WIRING SCHEMATICS FOR TERMINALS AND WIRE NUMBERS.
8. ANY CONDUIT REQUIRING A CSBE SEAL, SHALL BE A MINIMUM SIZE OF 2 1/2" PER CABLE.
9. DETAIL SHOWN MAY BE MODIFIED PER SITE SITUATION.

3 WET & 2 DRY WEATHER PUMPS
TYPICAL JUNCTION BOX DETAILS

PROJECT NO.
R-000265-0XXX-X

TITLE
CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

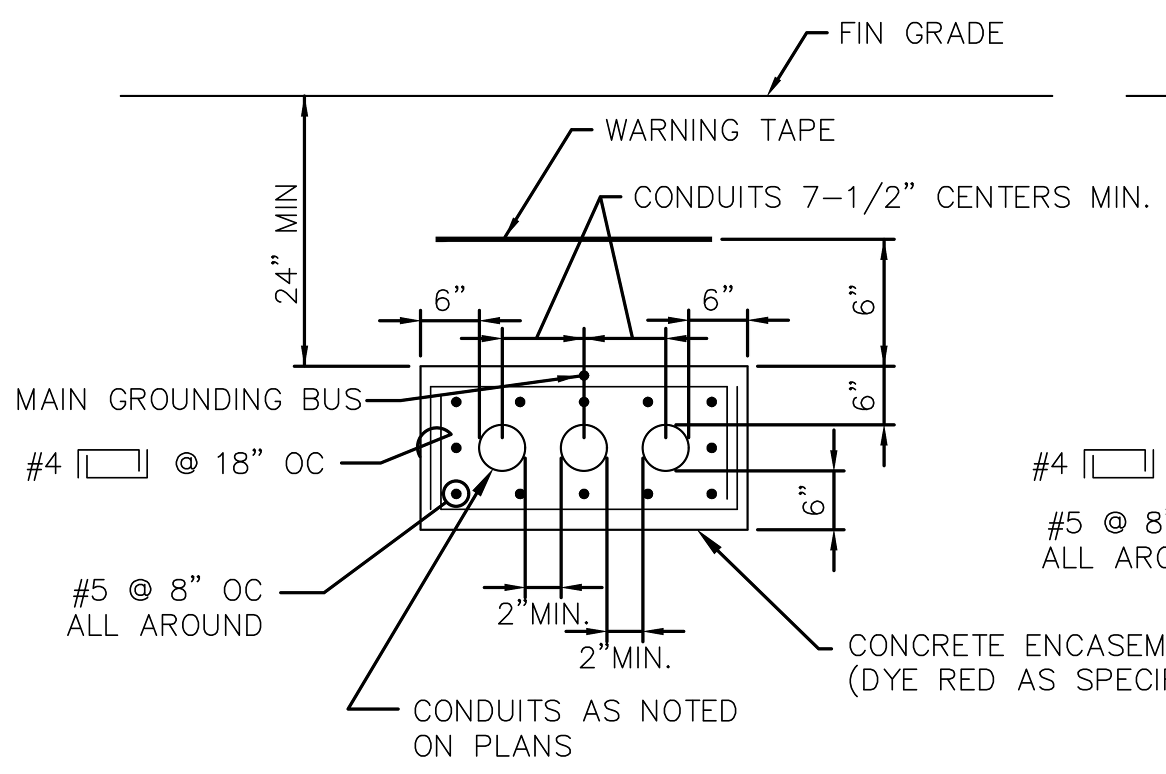
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO.
Z0E02-0516

CADD DWG. FILE NO. :
Z0E02.DWG

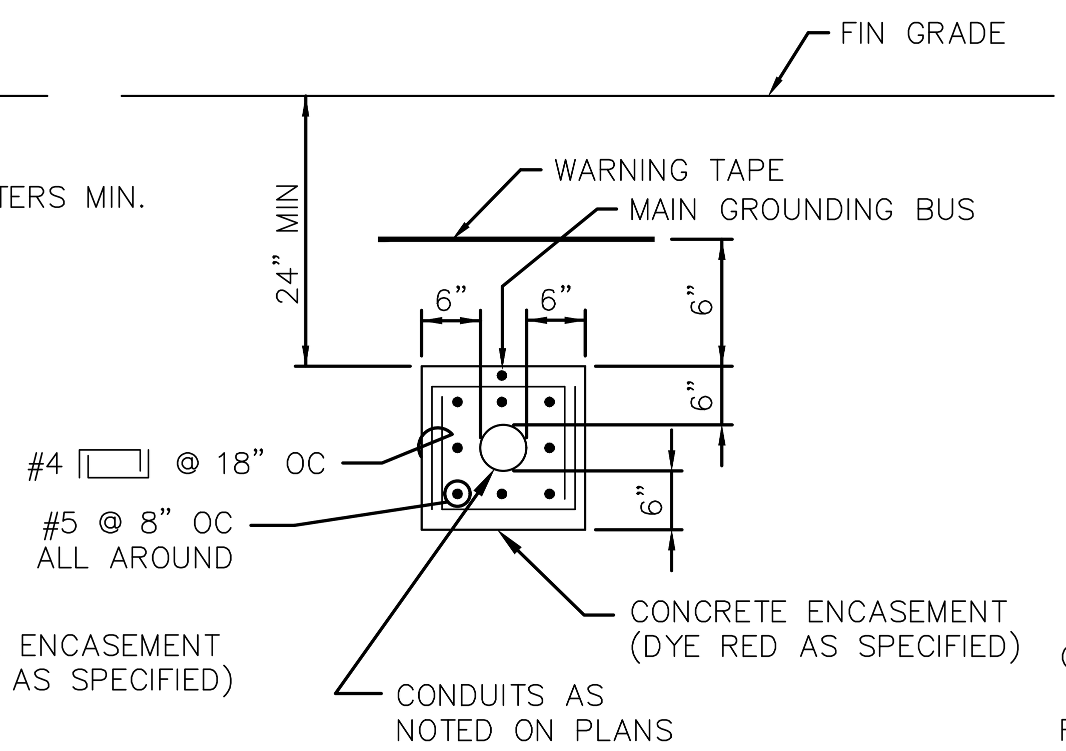
COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



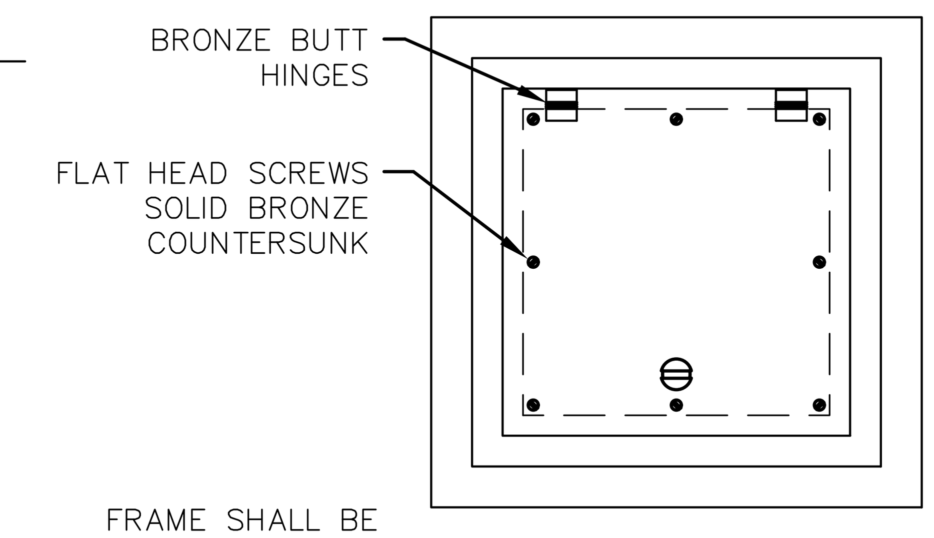
TYP MULTI-CONDUIT DUCTBANK SECTION

NOTE: TIE MAIN GROUNDING BUS TO REBAR AT A MAXIMUM INTERVAL OF EVERY 20 FEET.

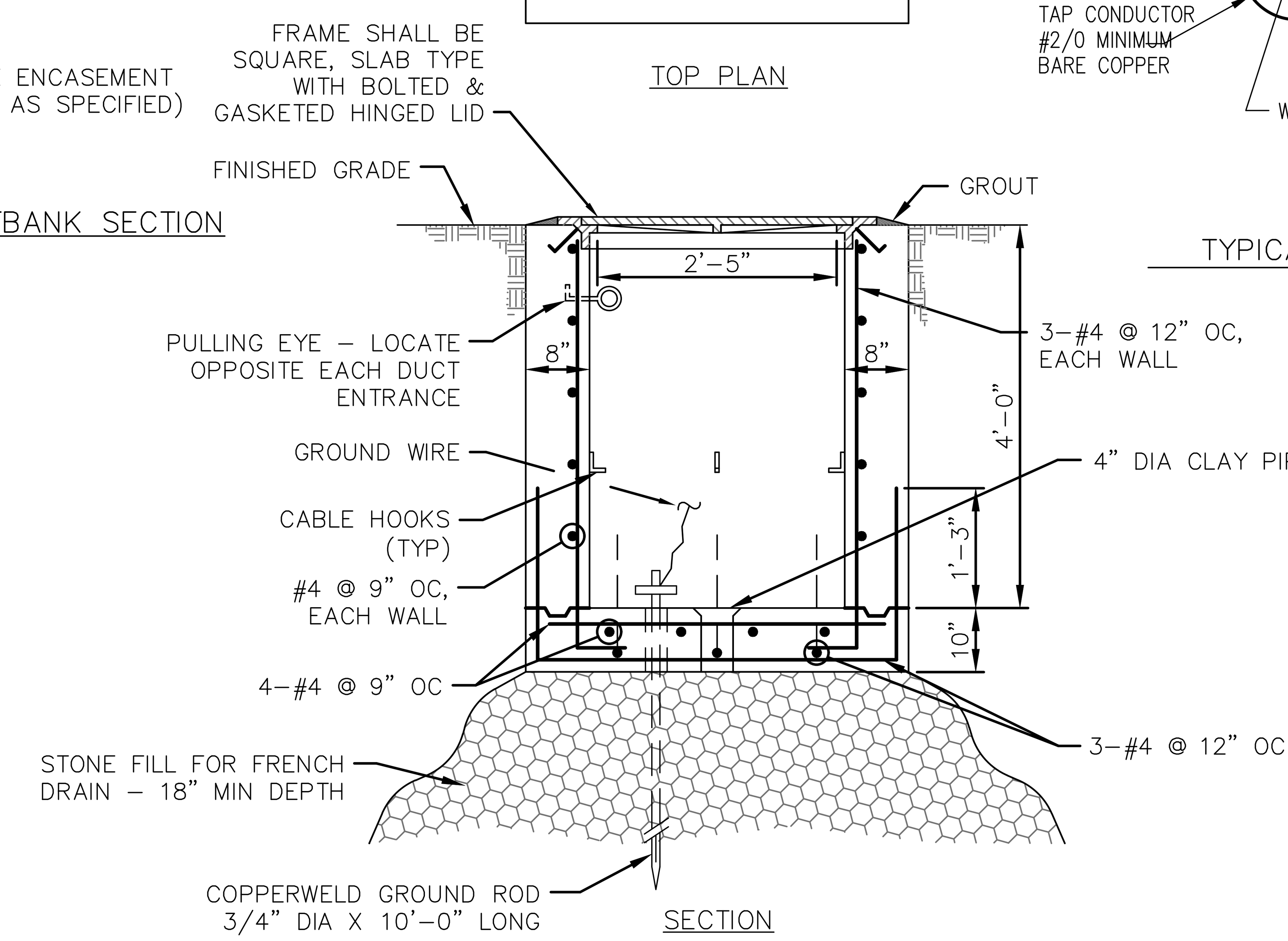


TYP SINGLE-CONDUIT DUCTBANK SECTION

DETAIL 7 / Z0E03



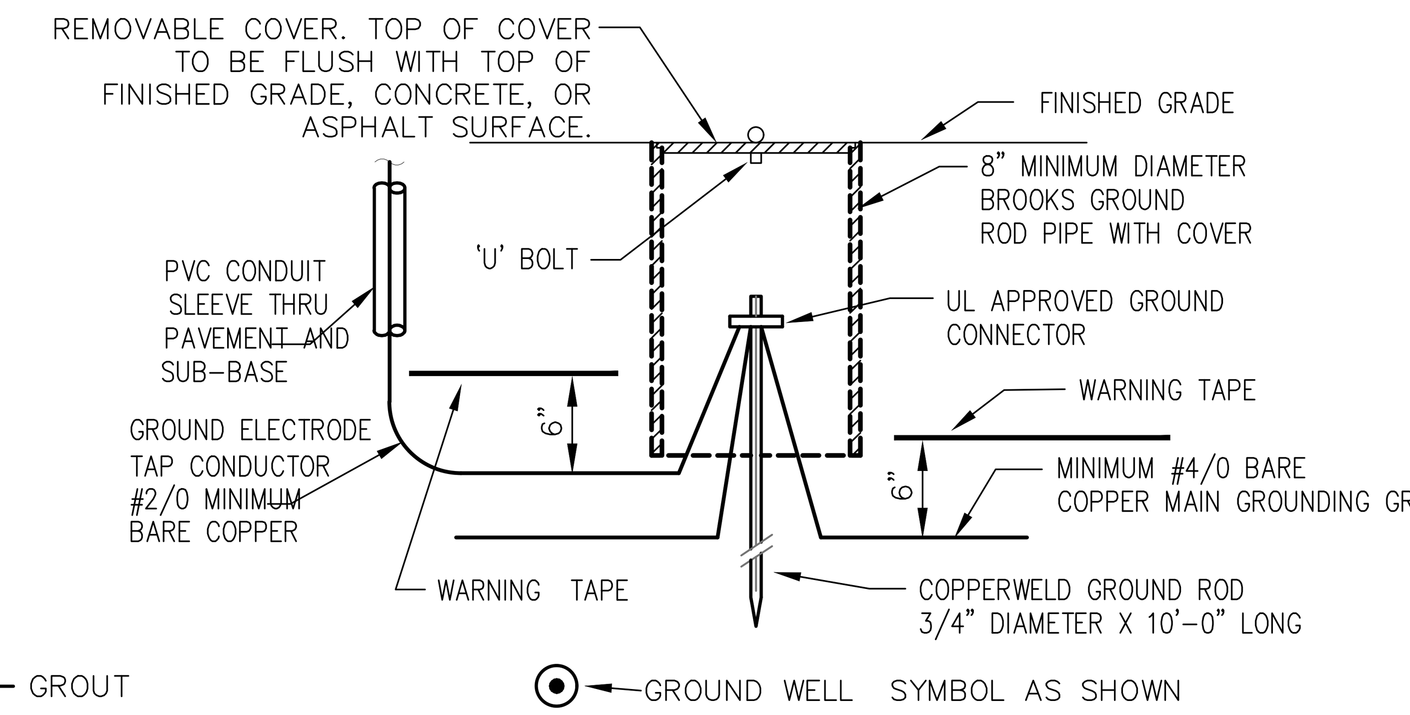
TOP PLAN



SECTION

TYPICAL ELECTRICAL HANDHOLE CONSTRUCTION

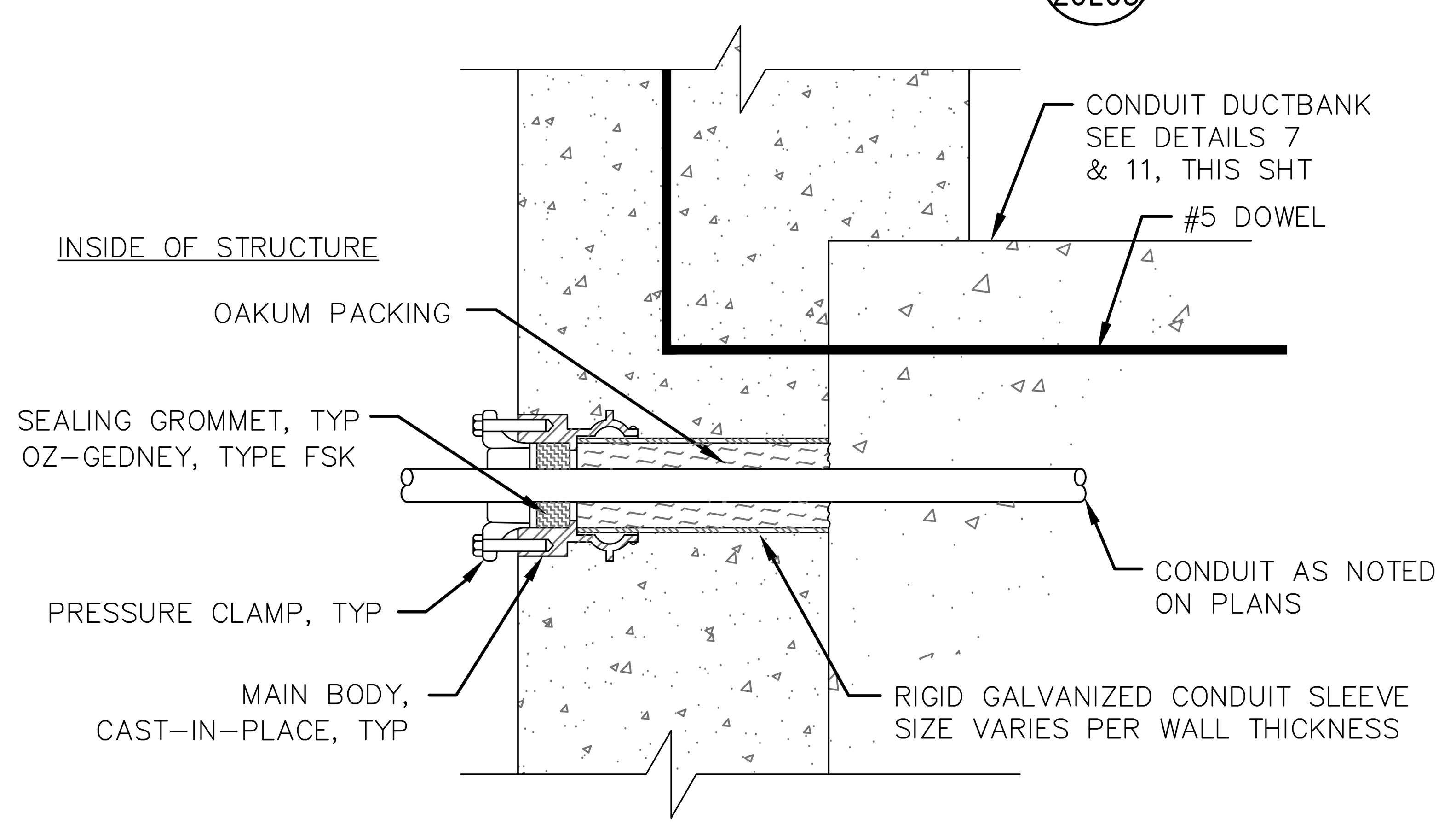
DETAIL 8 / Z0E03



TYPICAL GROUND ROD AND WELL INSTALLATION

DETAIL 9 / Z0E03
NOT TO SCALE

GROUND CONNECTOR SCHEDULE	
WIRE SIZE	BURNDY
#2 AWG	GAR 6426
#2/0 AWG	GAR 6426
#4/0 AWG	GAR 6429
500 kcmil	GAR 6434

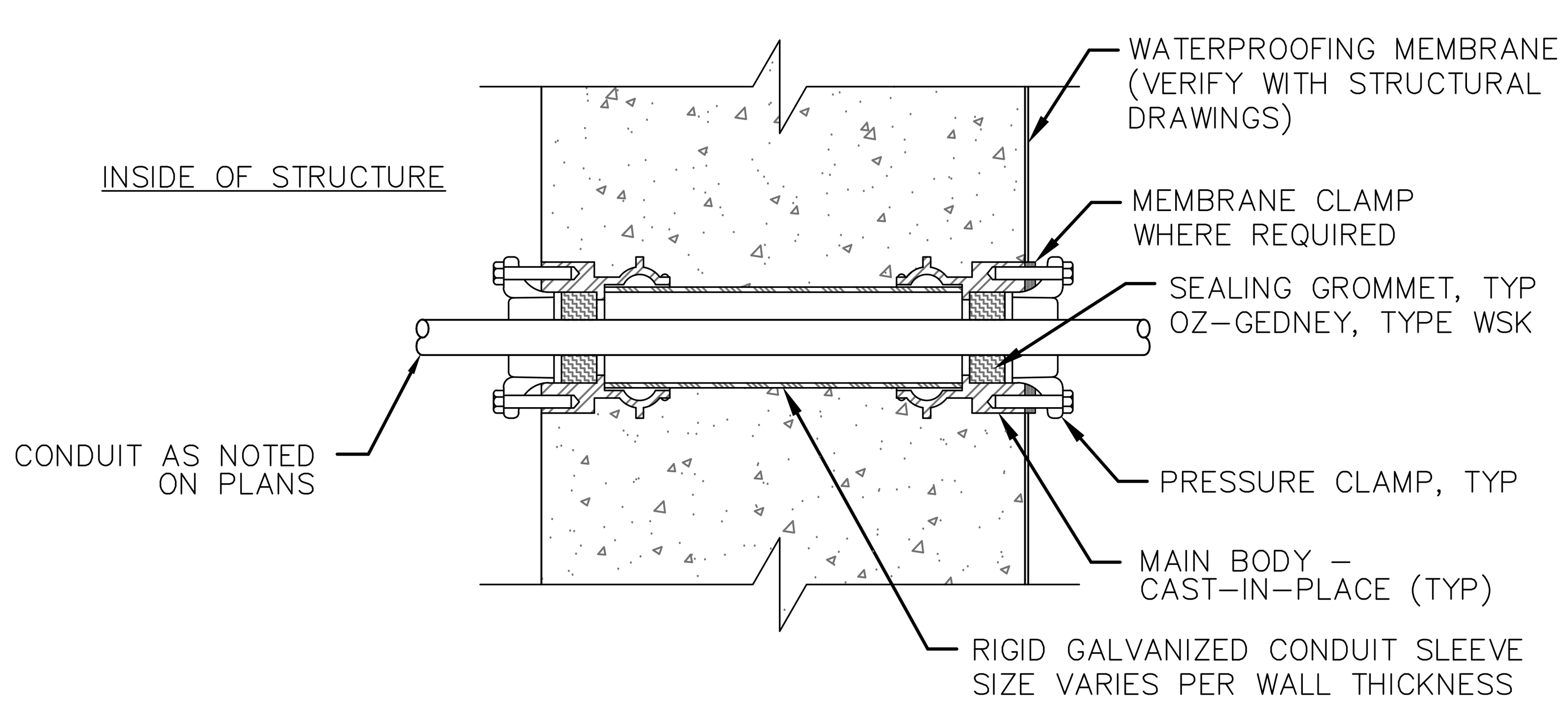


NOTE:

WALL SEAL SHOWN IS TYPICAL FOR EACH CONDUIT IN DUCTBANK.

SINGLE ENDED TYPE

FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS ENCASED IN CONCRETE

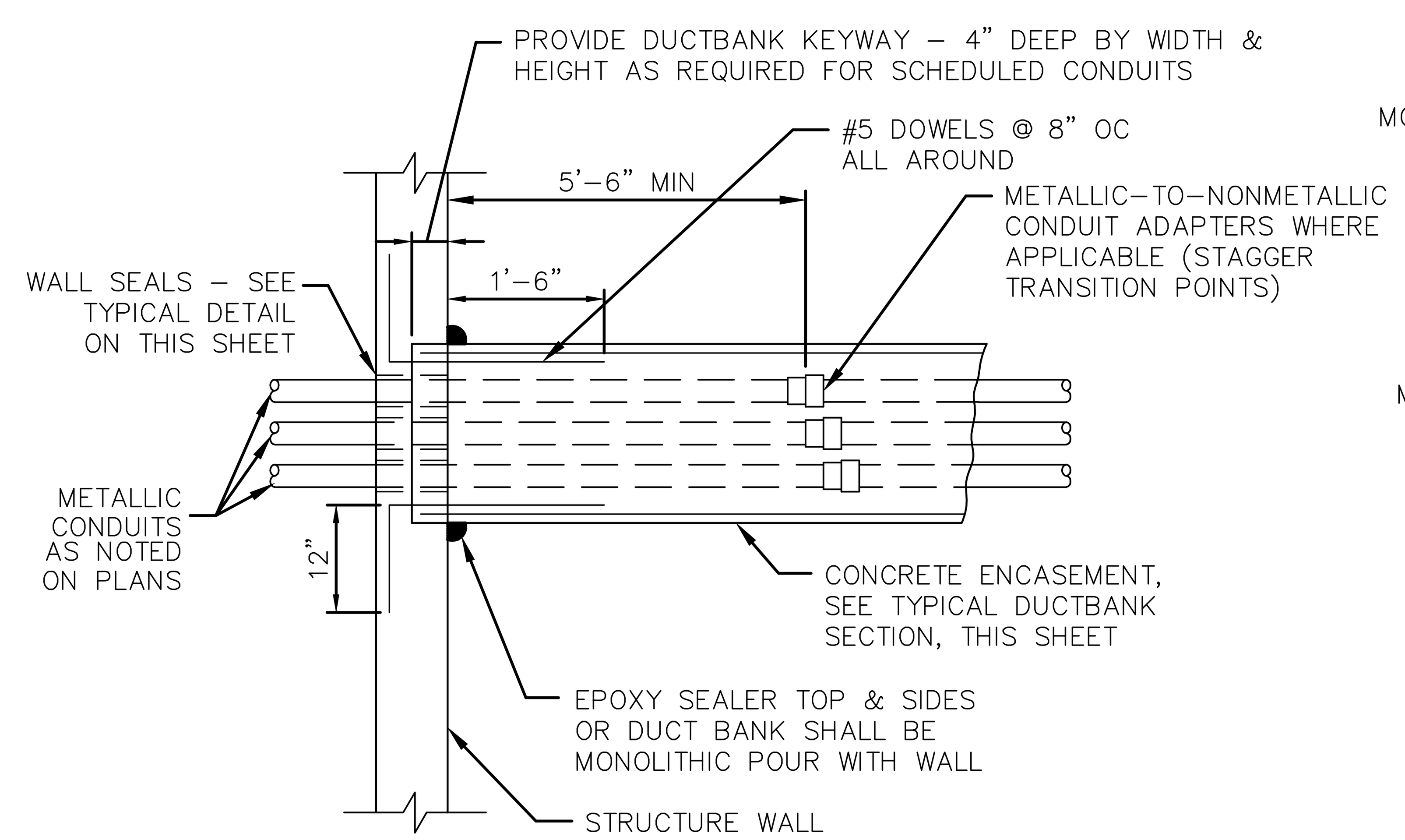


DOUBLE ENDED TYPE WITH MEMBRANE

FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS NOT ENCASED IN CONCRETE

TYPICAL CONDUIT SEALS

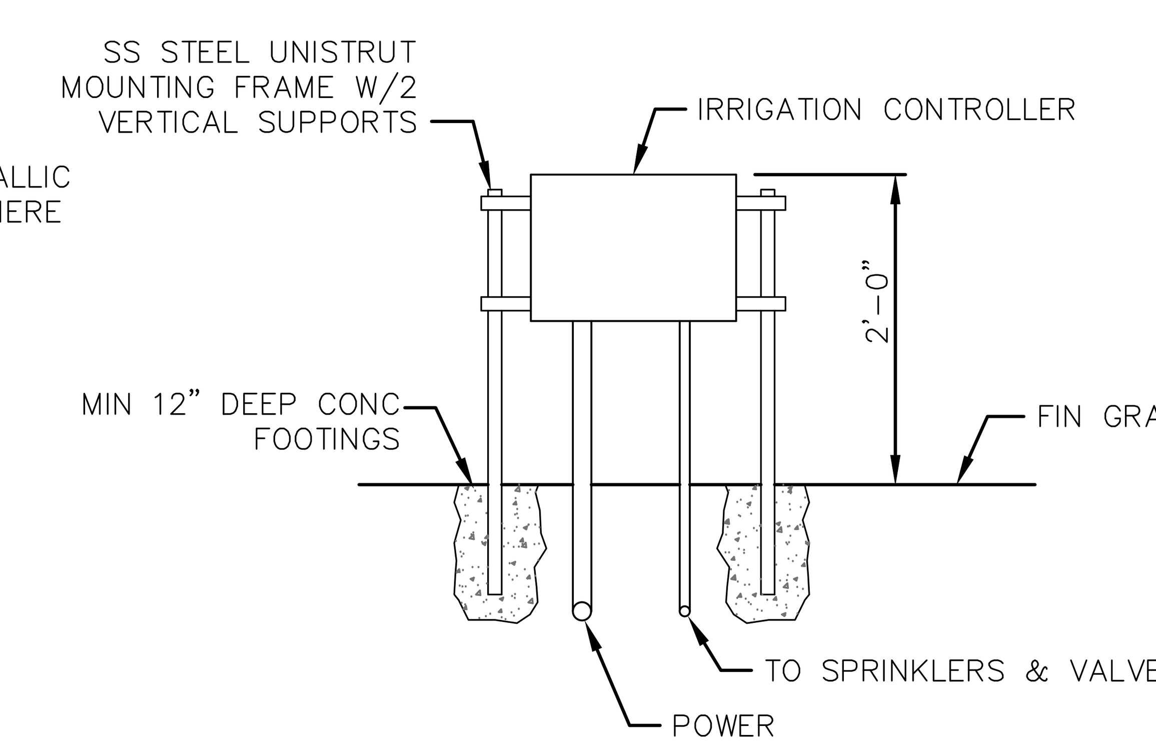
DETAIL 10 / Z0E03



PLAN

TYP DUCTBANK ENTRANCE AT STRUCTURE WALL

DETAIL 11 / Z0E03



OUTDOOR IRRIGATION CONTROLLER DETAIL

DETAIL 12 / Z0E03

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3 WET & 2 DRY WEATHER PUMPS
TYPICAL ELECTRICAL DETAILS

PROJECT NO.
R-000265-0XXX-X

TITLE
CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET Z0C0X

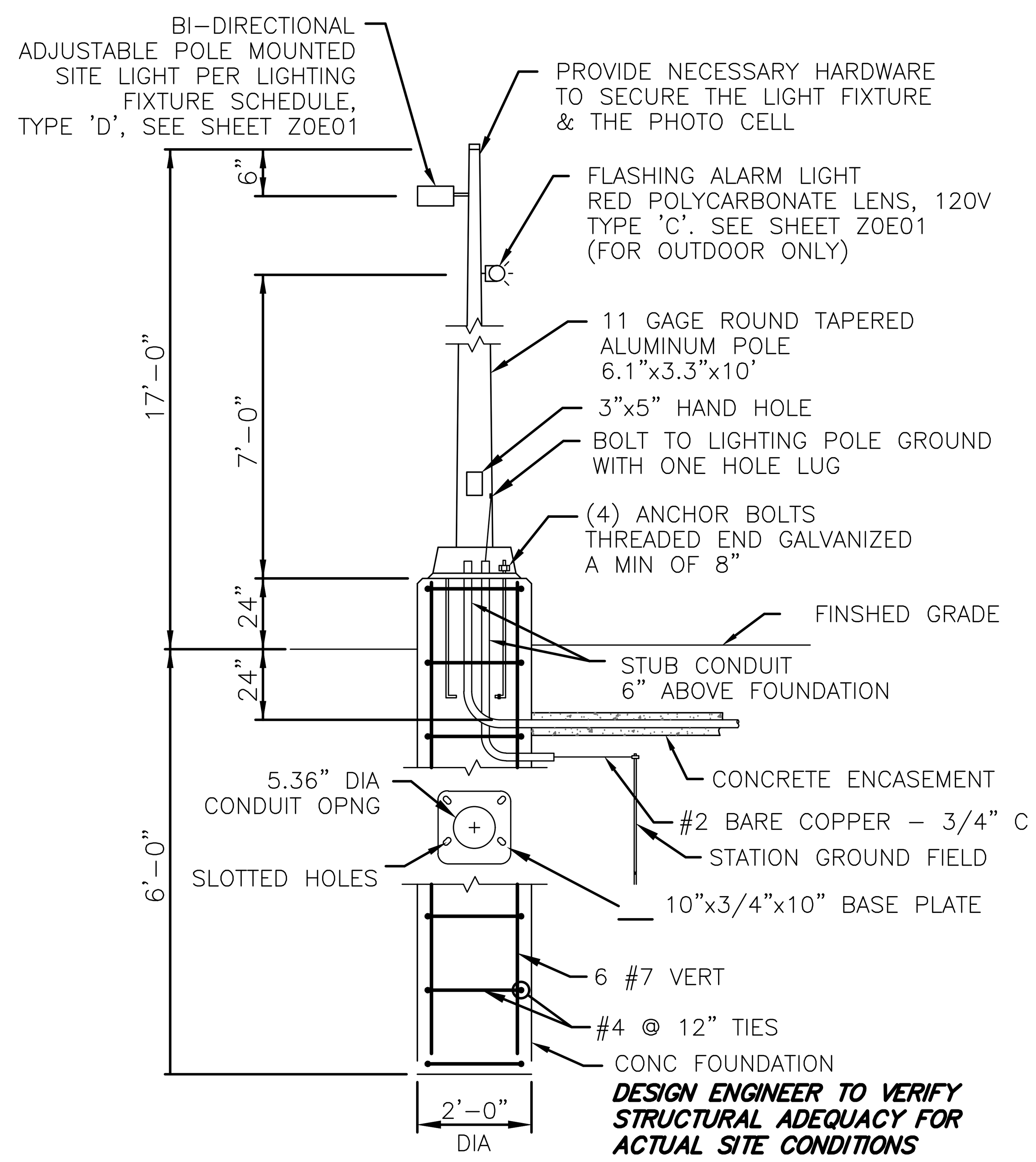
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO.
Z0E03-0516

CADD DWG. FILE NO. :
Z0E03.DWG

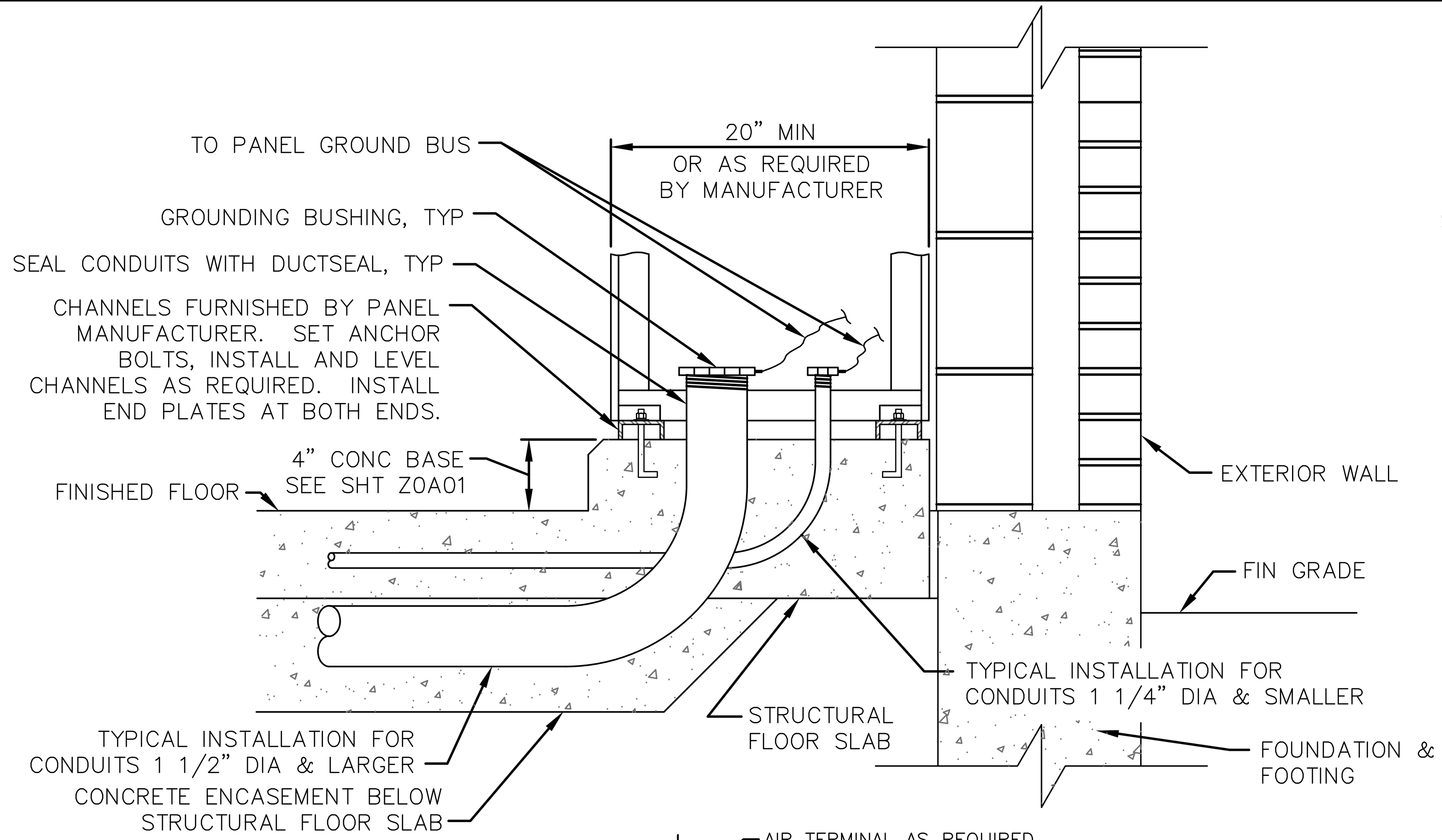
COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS



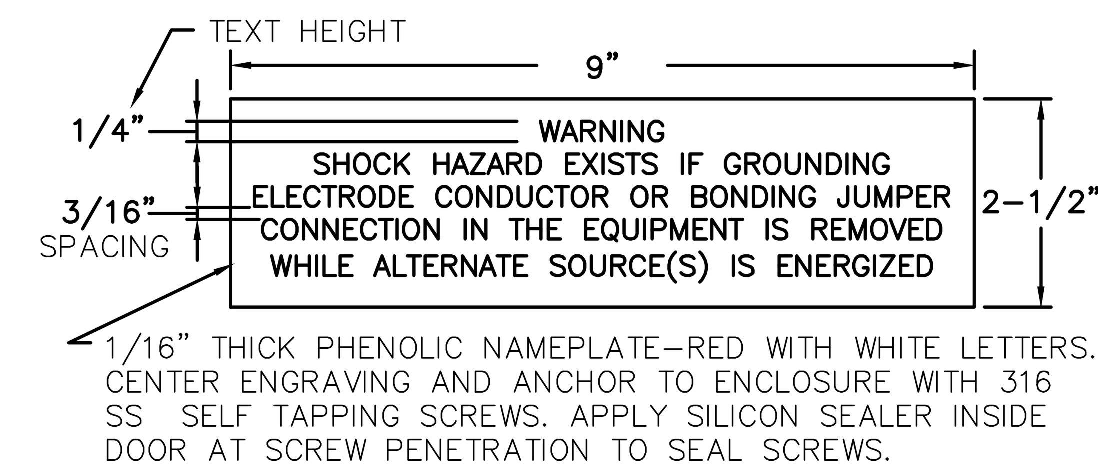
TYPICAL YARD LIGHT

DETAIL 13 Z0E04

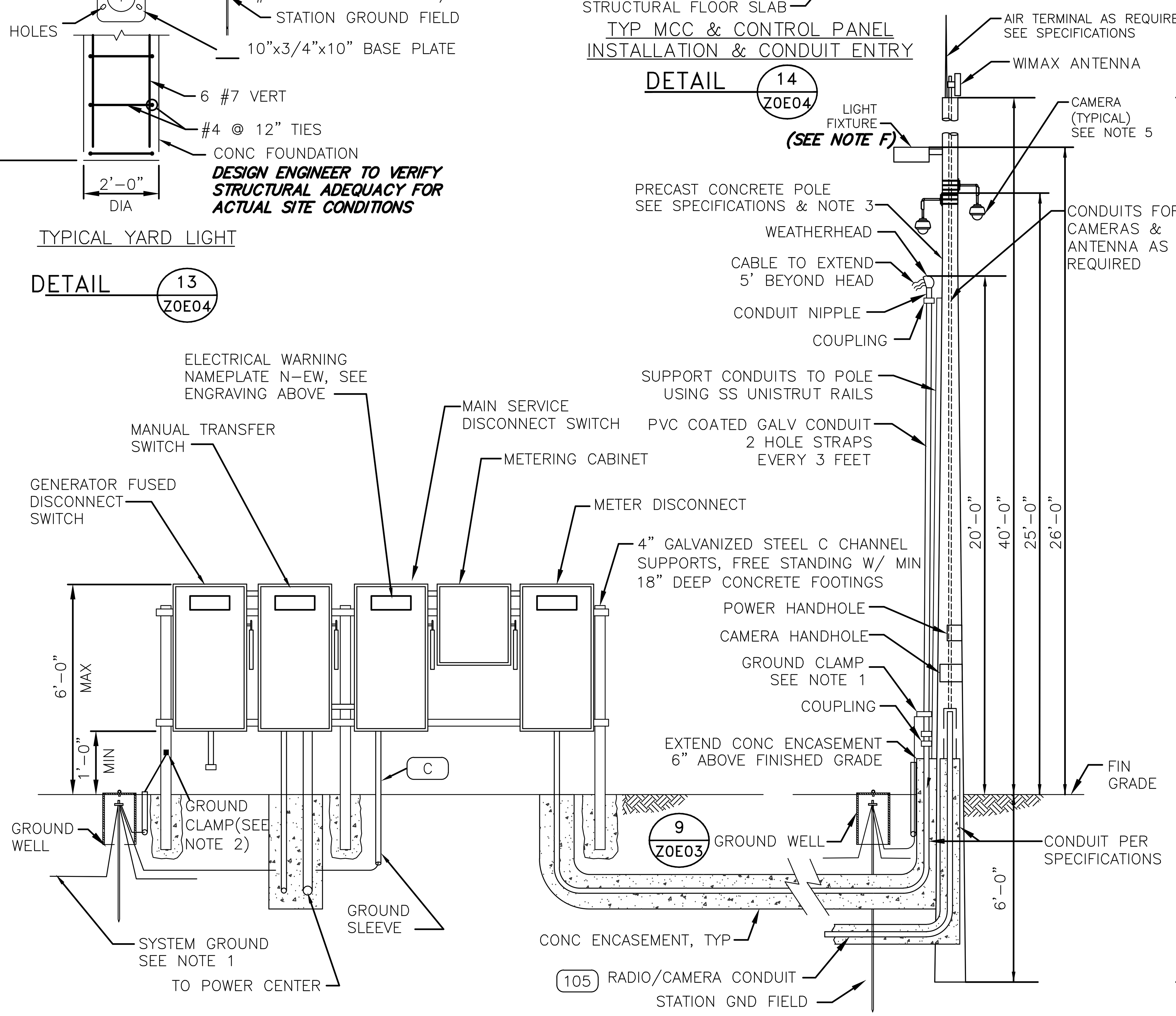


TYP MCC & CONTROL PANEL INSTALLATION & CONDUIT ENTRY

DETAIL 14 Z0E04



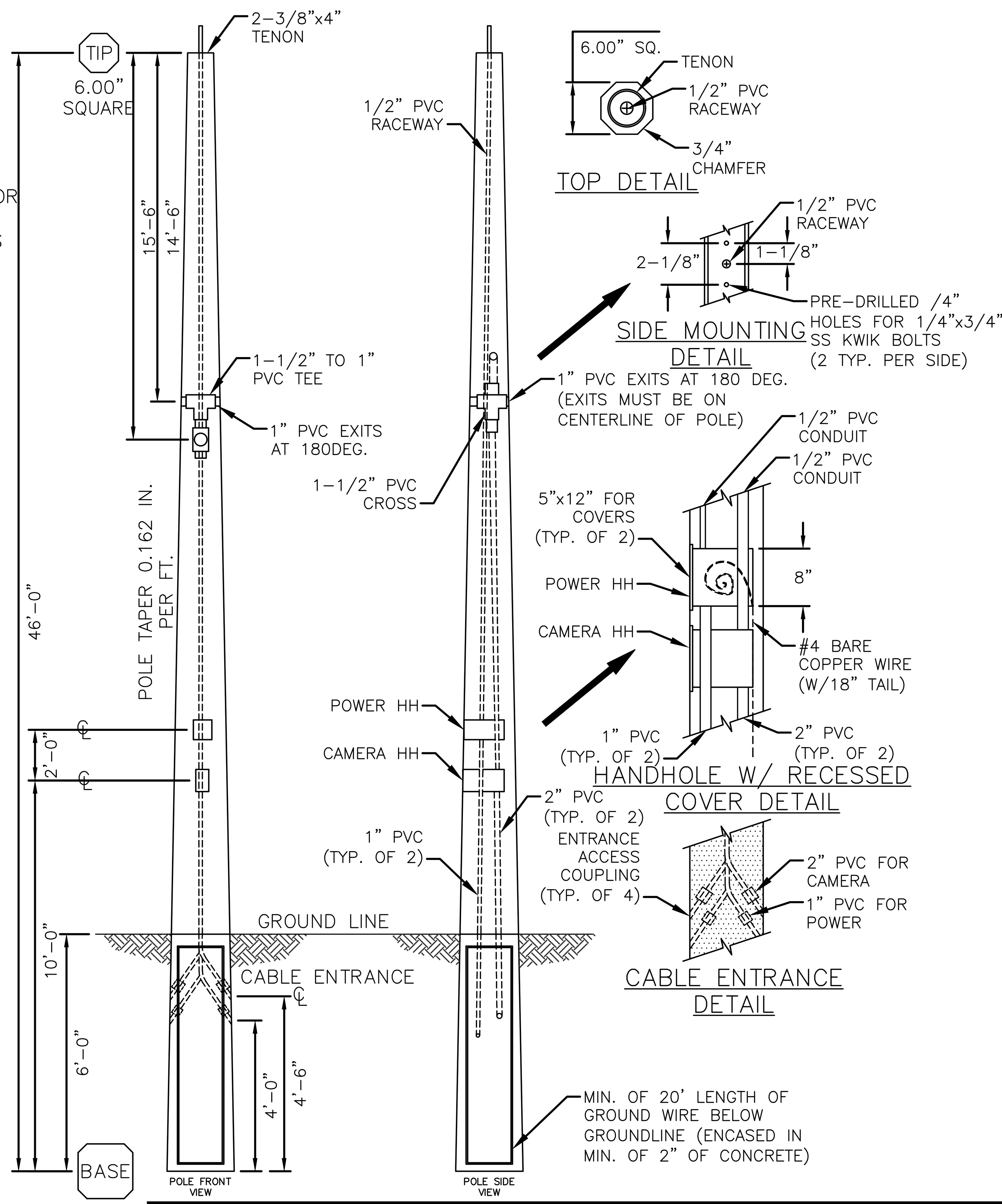
ELECTRICAL WARNING NAMEPLATE N–EW ENGRAVING



TYP ELECTRIC & COMMUNICATION SERVICE RACK MOUNTED DETAIL

(SEE NOTE B)

DETAIL 15 Z0E04



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B. SERVICE SHOULD BE CONSTRUCTED ACCORDING TO UTILITY SERVICE STANDARDS BOOK. 200A, 3 PHASE, 480V AND ALL 400A AND ABOVE SERVICE SHOULD BE CONSTRUCTED USING THE STUB POLE AND UNISTRUT RACK ASSEMBLY DETAIL.

C. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

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F. THE DESIGN ENGINEER SHALL VERIFY THE APPLICATION FOR LIGHT FIXTURE WHERE NEEDED PER SITE PLAN AND USE POWER AND CONDUIT DETAILS.

NOTES:

1. DENOTES SYSTEM GROUNDING CONDUCTOR SHALL BE CONNECTED TO ALL GROUNDING ELECTRODE CONDUCTORS, GROUND MATS, GROUND LOOPS ETC.., TO FORM A COMMON GROUND PLANE.
2. ON GROUND WIRE TERMINATION'S, ALL PAINTED OR COATED METAL SURFACES SHALL BE REMOVED AND CLEANED TO BARE METAL, TO OBTAIN A SOUND GROUND CONNETION. ONCE INSTALLED APPLY PROTECTIVE COATING ON BARE METAL AREAS PER MANUFACTURER REQUIREMENTS.
3. PRECAST CONCRETE POLE TO MOUNT THE RADIO RECEIVER AND CAMERAS.
4. 1" CONDUIT TO EXTEND TO THE TOP OF POLE FOR FOR ETHERNET CABLES FOR RADIO AND CAMERAS.
5. CAMERA LOCATIONS AS SPECIFIED PER WASTEWATER INSTRUCTIONS.

3 WET & 2 DRY WEATHER PUMPS
TYPICAL ELECTRICAL DETAILS

PROJECT NO. R–000265–0XXX–X

TITLE: CITY OF HOUSTON DESIGN GUIDELINE DRAWINGS FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET Z0C0X

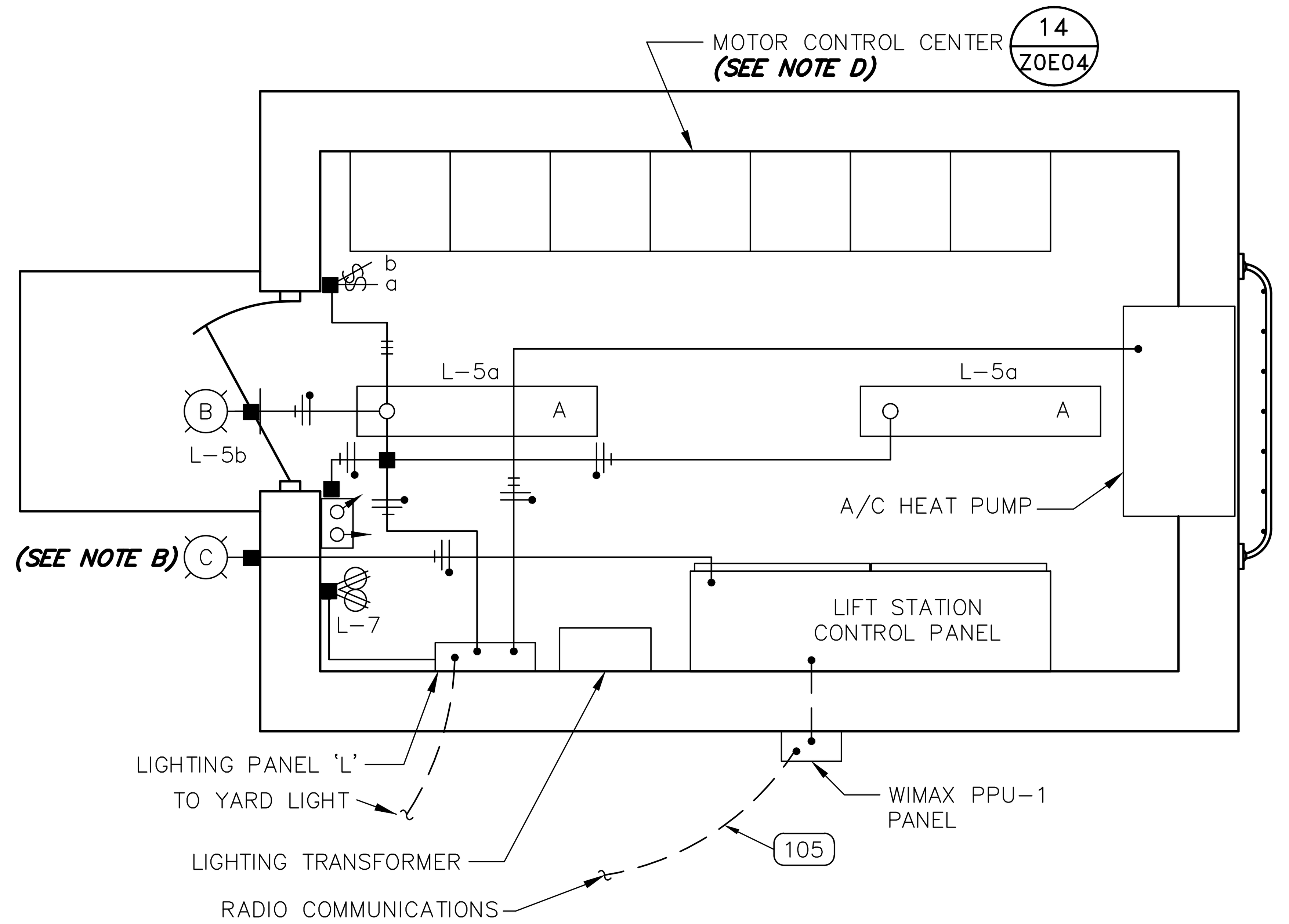
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE:	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO.
FIELD BOOK NO.	Z0E04–0516

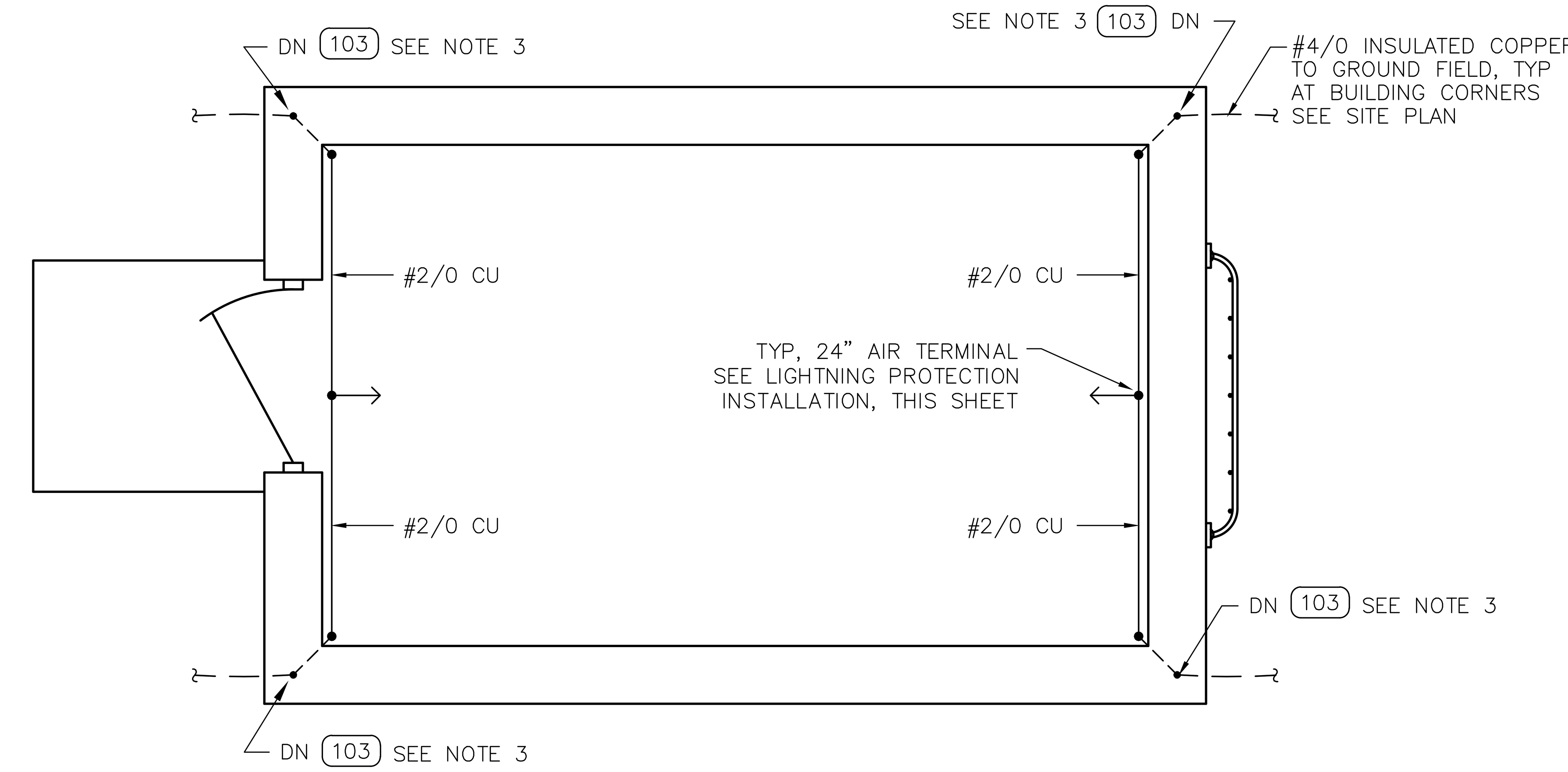
CADD DWG. FILE NO. : Z0E04.DWG

COHSTD.BDR

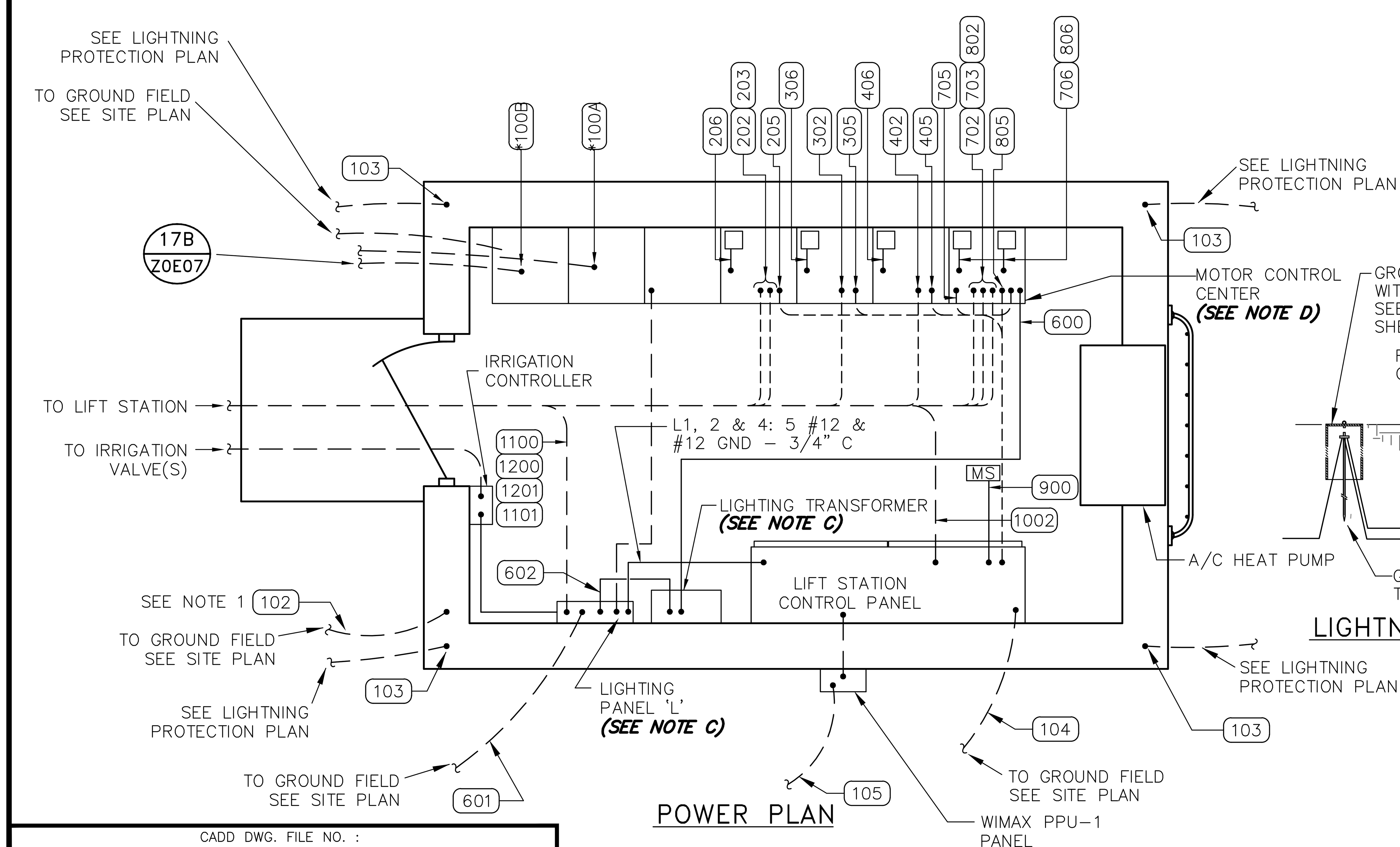
0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



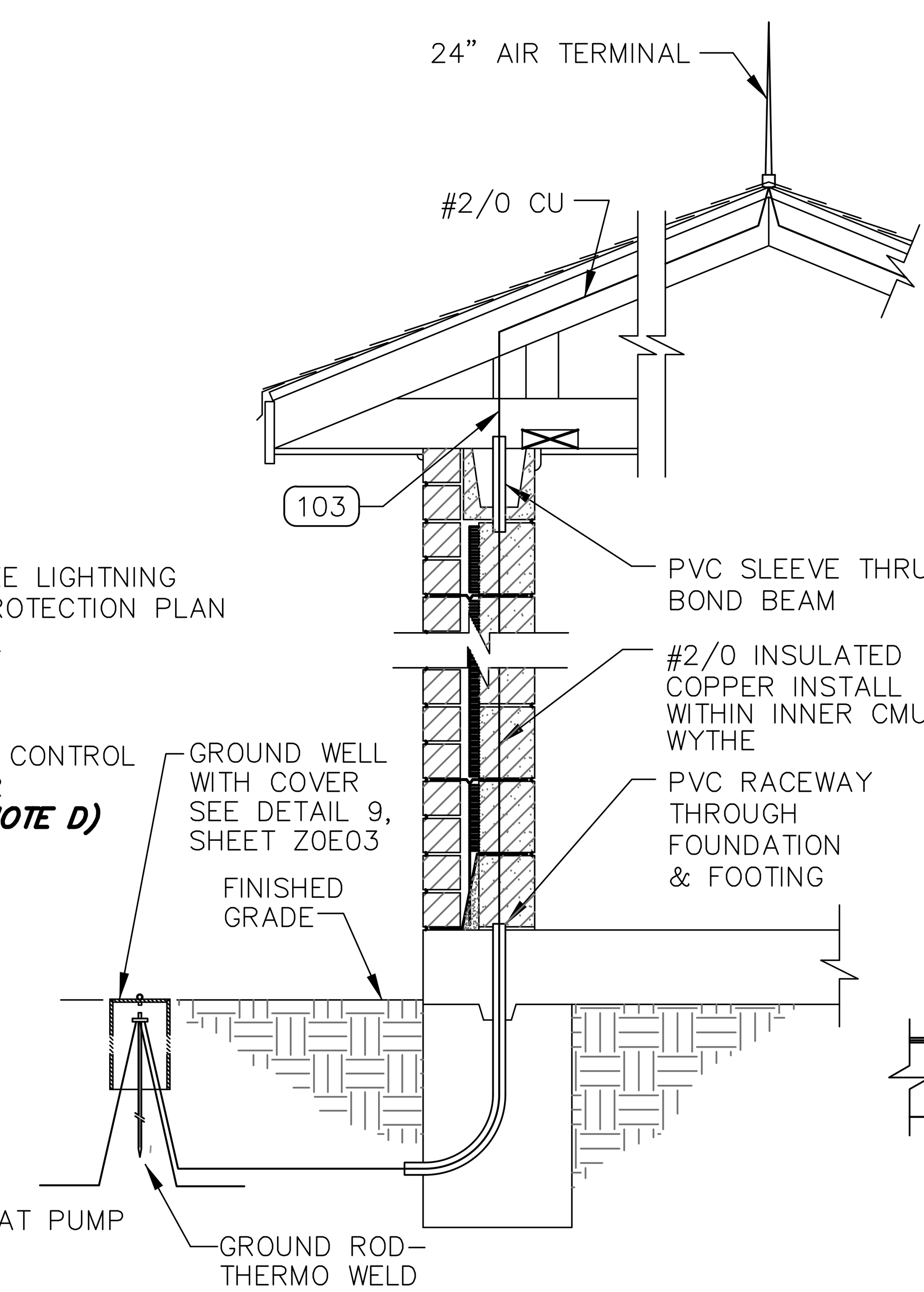
LIGHTING & WIMAX SYSTEM PLAN



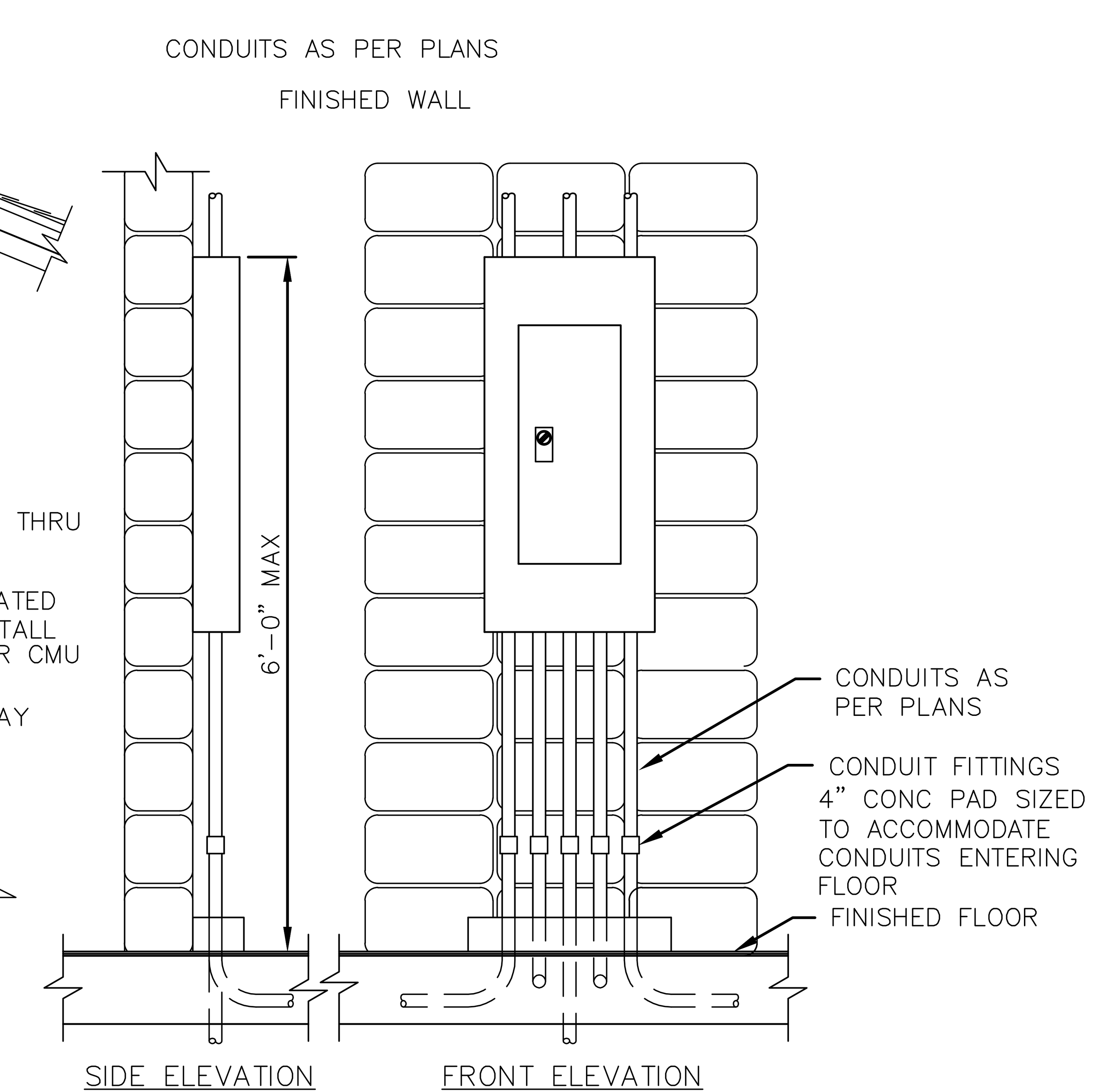
LIGHTNING PROTECTION PLAN



POWER PLAN



LIGHTNING PROTECTION INSTALLATION



TYPICAL PANEL INSTALLATION

DETAIL 1 / Z0E05

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. STEM MOUNT ALARM LIGHT 1'-6" BELOW LEAVE LINE.

C. THE TRANSFORMER AND LIGHTING PANEL IS MOUNTED ADJACENT TO THE CONTROL PANEL.

D. MOTOR CONTROL CENTER FOOTPRINT IS SHOWN FOR THE MAXIMUM MCC LINEUP LENGTH ANTICIPATED. INDIVIDUAL LIFT STATION CONTROL BUILDING SHALL BE ADJUSTED BASED ON THE ACTUAL FOOTPRINT USED AND THE CONDUITS REQUIRED. SEE DEVICE SCHEDULES AND CONTROL BUILDING ARCHITECTURAL DRAWING FOR ADDITIONAL INFORMATION.

E. POWER FACTOR CORRECTION CAPACITOR IS REQUIRED FOR ALL PUMPS RATED AT 20 HP OR GREATER. CONDUIT NUMBERS 206, 306, 406, 506, 706 & 806 ARE USED WHEN POWER FACTOR CORRECTION CAPACITOR IS REQUIRED.

F. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

G. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

H. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

1. THERMO WELD BUILDING GROUND CONDUCTOR TO BUILDING REINFORCING STEEL.
2. ALL CONDUITS DESIGNATED AS UP ARE CONTINUED ON THE ROOF PLAN. ALL CONDUITS DESIGNATED AS DOWN (DN) ARE CONTINUED ON THE FLOOR PLAN.
3. INSTALL LIGHTNING DOWN LEADS WITHIN MASONRY BLOCK WALL. PROVIDE PVC SLEEVE AND ELBOW THROUGH SLAB AND FOUNDATION. SEE LIGHTNING PROTECTION INSTALLATION DETAIL, THIS SHEET.
4. 17A IS REFERRED TO OUTDOOR MTS.
   17B IS REFERRED TO INDOOR MTS.

3 WET & 2 DRY WEATHER PUMPS
CONTROL BUILDING - ELECTRICAL

PROJECT NO. R-000265-0XXX-X

TITLE: CITY OF HOUSTON DESIGN GUIDELINE DRAWINGS FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET Z0C0X

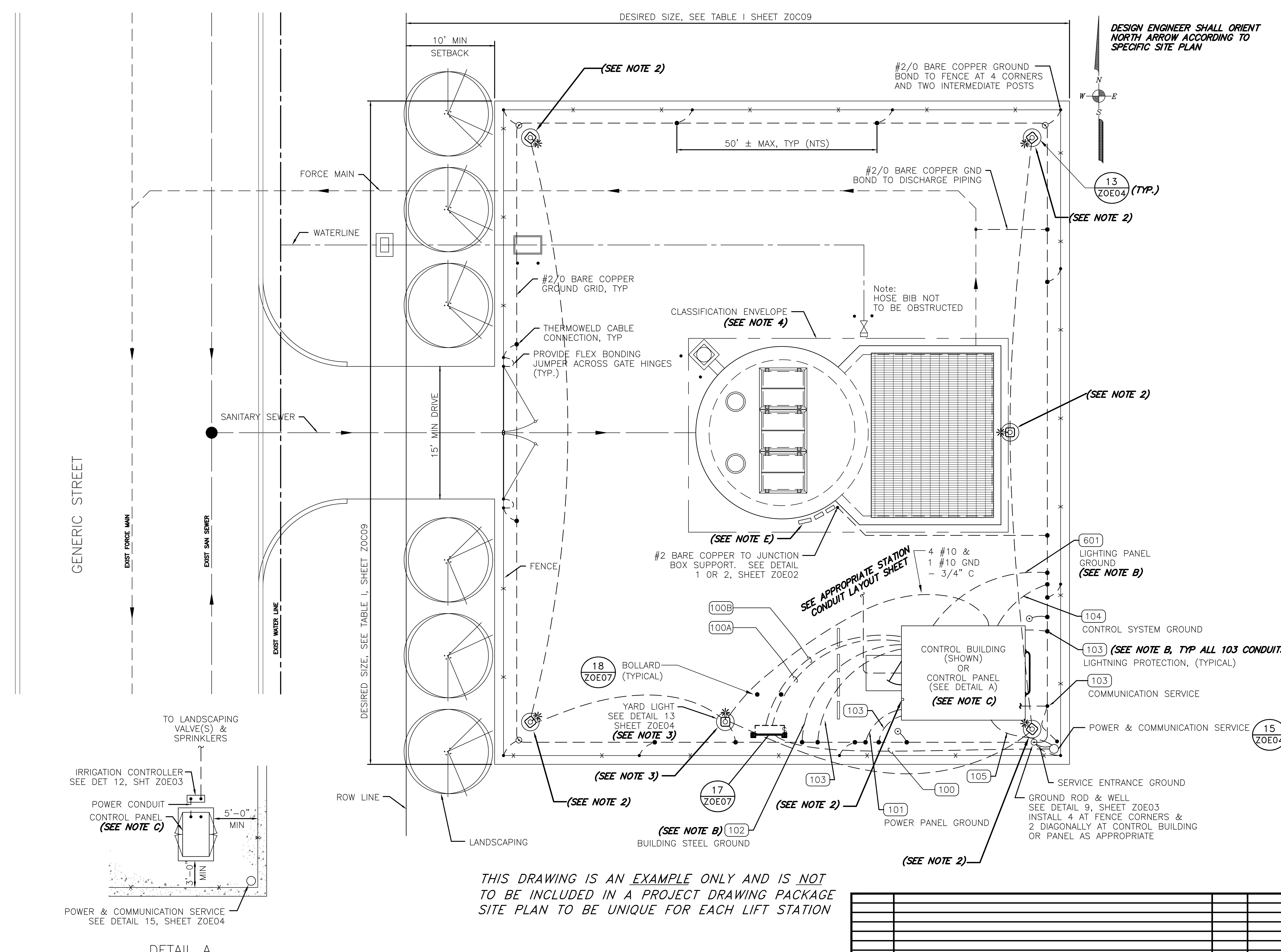
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: 1/2" = 1'-0"
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
SHEET NO. OF SHEETS
DWG. NO. Z0E05-0516

CADD DWG. FILE NO. : Z0E05.DWG

COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



THIS DRAWING IS AN EXAMPLE ONLY AND IS NOT TO BE INCLUDED IN A PROJECT DRAWING PACKAGE SITE PLAN TO BE UNIQUE FOR EACH LIFT STATION

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. CONDUITS NOTED ARE NOT USED FOR SITES WHERE AN OUTDOOR CONTROL PANEL IS USED.

C. LOCATE THE CONTROL BUILDING OR PANEL IN THE SOUTH-EAST CORNER OF THE STATION SITE, WHERE POSSILE. MAINTAIN CLEARANCES AROUND CONTROL PANEL AND OTHER ELECTRICAL EQUIPMENT IN ACCORDANCE WITH NEC 93 (110-16).

D. SEE TYPICAL CIVIL SITE PLAN (SHEET Z0C09) FOR ADDITIONAL INFORMATION.

E. LOCATE ELECTRICAL JUNCTION BOXES AWAY FROM WET WELL VENT IN A SOUTHEASTERLY DIRECTION. POSITION JUNCTION BOXES TO AVOID CONFLICT WITH HOIST FOR PUMP REMOVAL.

F. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

G. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

H. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

1. THE ELECTRICAL INSTALLATION IN THE WET WELL SHALL BE EXPLOSION PROOF, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE FOR CLASS I, DIVISION 1. LOCATIONS
2. MANUAL SWITCH INSIDE CONTROL ROOM SHALL OPERATE PERIMETER LIGHT.
3. LIGHT FIXTURE AT SERVICE INSTALLATION SHALL OPERATE VIA DUSK-TO-DAWN PHOTOCELL CONTROL.
4. INSIDE WETWELL RATED NEMA CLASS 1, DIV. 1. OUSIDE ABOVE GROUND, AROUND WETWELL RATED CLASS 1, DIV. 2 ACCORDING TO NFPA 820.

- EXAMPLE -
ELECTRICAL SITE PLAN
ALTERNATE HIGH PROFILE CONFIGURATION

PROJECT NO. R-000265-0XXX-X

TITLE CITY OF HOUSTON DESIGN GUIDELINE DRAWINGS FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET Z0C0X

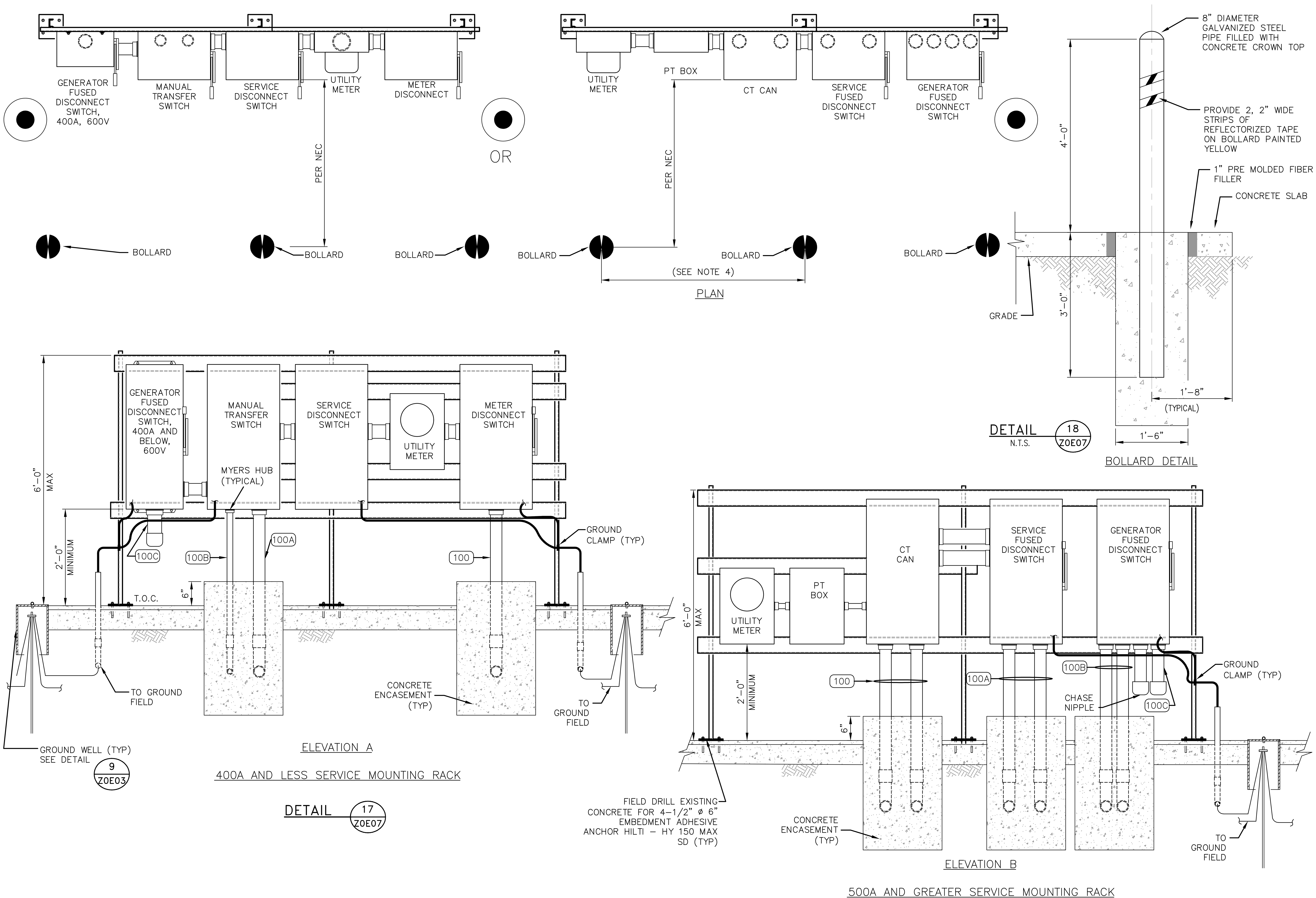
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: 3/16" = 1'-0"
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO. Z0E06-0516

CADD DWG. FILE NO. : Z0E06.DWG

COHSTD.BDR

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.
IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. DESIGN ENGINEER TO PROVIDE NOT LESS THAN 1'-0" FROM TOP OF FINISHED GRADE TO TOP OF CONCRETE PEDESTAL. FINAL DIMENSION SHALL LOCATE TOP OF CONCRETE PEDESTAL AT NOT LESS THAN 1'-0" ABOVE 100 YEAR FLOOD PLAIN ELEVATION. WHEN THE TOP OF THE CONCRETE PEDESTAL IS GREATER THAN 1'-0" ABOVE FINISHED GRADE, THE DESIGN ENGINEER SHALL PROVIDE A WORK PLATFORM.

C. SERVICE SHOULD BE CONSTRUCTED ACCORDING TO UTILITY SERVICE STANDARDS BOOK. 200A, 3 PHASE, 480V AND ALL 400A AND ABOVE SERVICE SHOULD BE CONSTRUCTED USING THE STUB POLE AND UNISTRUT RACK ASSEMBLY DETAIL.

D. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

E. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

F. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

1. CHASE NIPPLE(S) WITH REMOVABLE CAP(S) FOR CONNECTION OF PORTABLE GENERATOR. NOTE: CAP(S) TO BE ATTACHED TO PANEL OR CONDUIT(S) BY STAINLESS STEEL CHAIN.
2. T.O.C DEFINED AS TOP OF PAVEMENT OR TOP OF PANEL ENCLOSURE PEDESTAL WHICHEVER IS HIGHER. (SEE NOTE B)
3. CONTRACTOR SHALL COIL A MINIMUM OF 2 FT. AND TAPE THE END OF THE CONDUCTOR.
4. PROVIDE CENTER BOLLARD WHEN SPACE BETWEEN OUTSIDE BOLLARDS IS GREATER THEN 4'-0".

3 WET & 2 DRY WET WEATHER PUMPS
TYPICAL ELECTRICAL DETAILS

PROJECT NO. R-000265-0XXX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

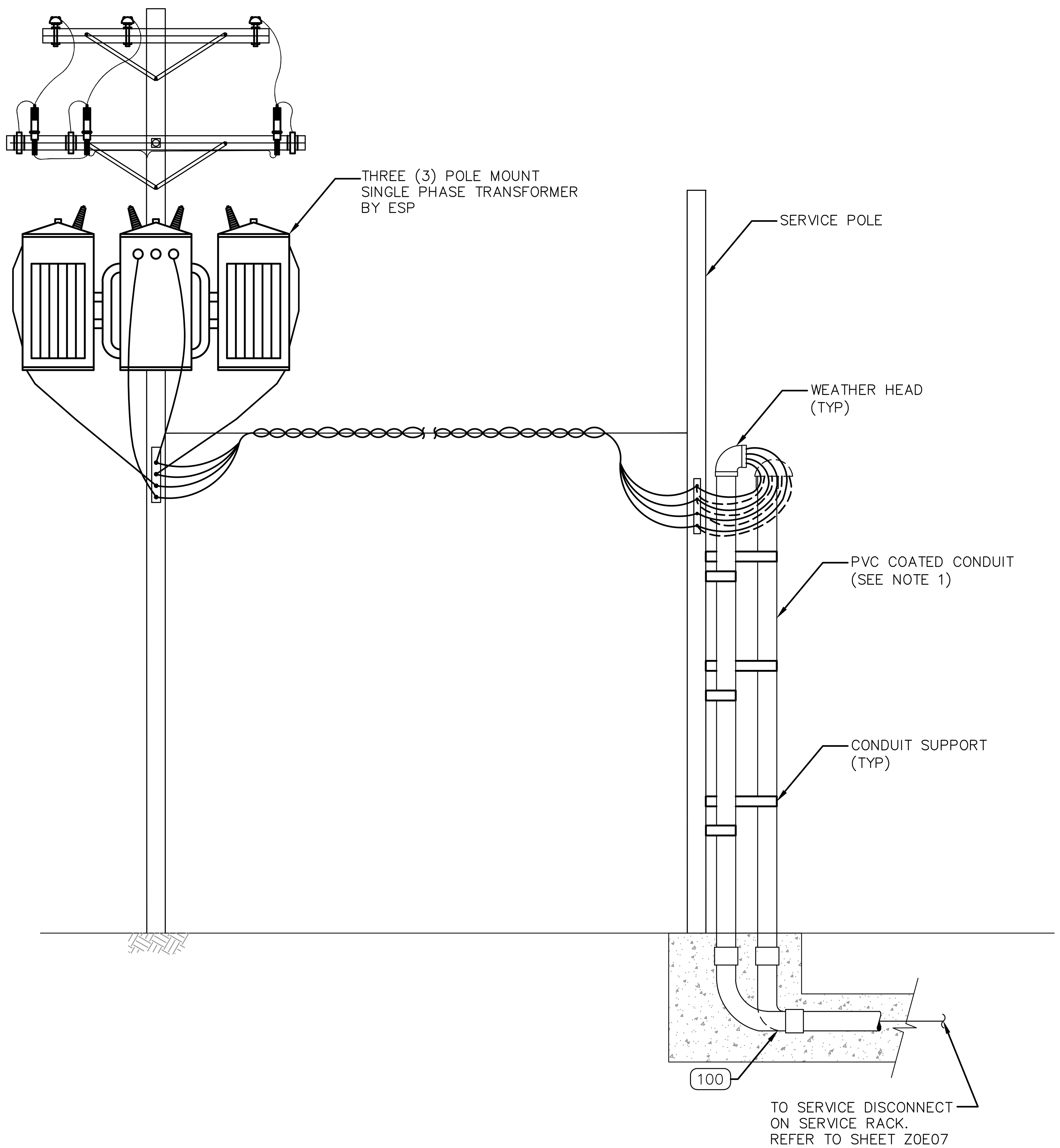
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO. Z0E07-0516

CADD DWG. FILE NO. : Z0E07.DWG

COHSTD.BDR

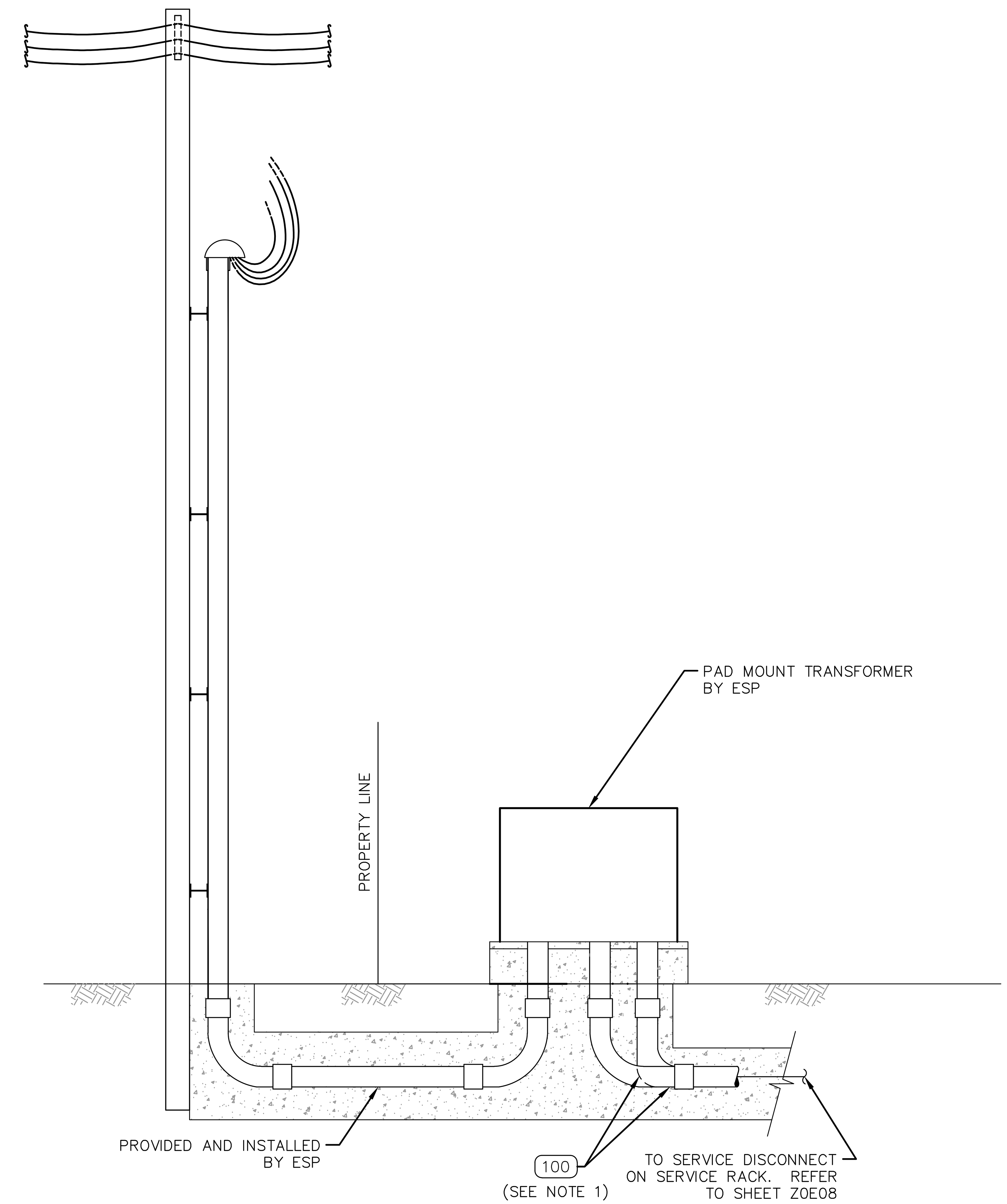
0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



TYPICAL ELECTRICAL SERVICE ENTRANCE

FOR POWER SUPPLY BELOW 500KVA

DETAIL 19 / Z0E08



TYPICAL ELECTRICAL SERVICE ENTRANCE

FOR POWER SUPPLY 500KVA AND GREATER

DETAIL 20 / Z0E08

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

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B. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

C. THE DESIGN ENGINEER SHALL CONSULT THE SERVICE STANDARD OF ELECTRICAL SERVICE PROVIDER (ESP). PRIOR TO DESIGNING SERVICE ENTRANCE.

NOTES:

1. THE QUANTITY OF SERVICE/FEEDER CONDUITS SHALL BE DEPENDANT ON THE SERVICE SIZE.

3 WET & 2 DRY WET WEATHER PUMPS
TYPICAL ELECTRICAL DETAILS

PROJECT NO. R-000265-0XXX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET Z0C0X

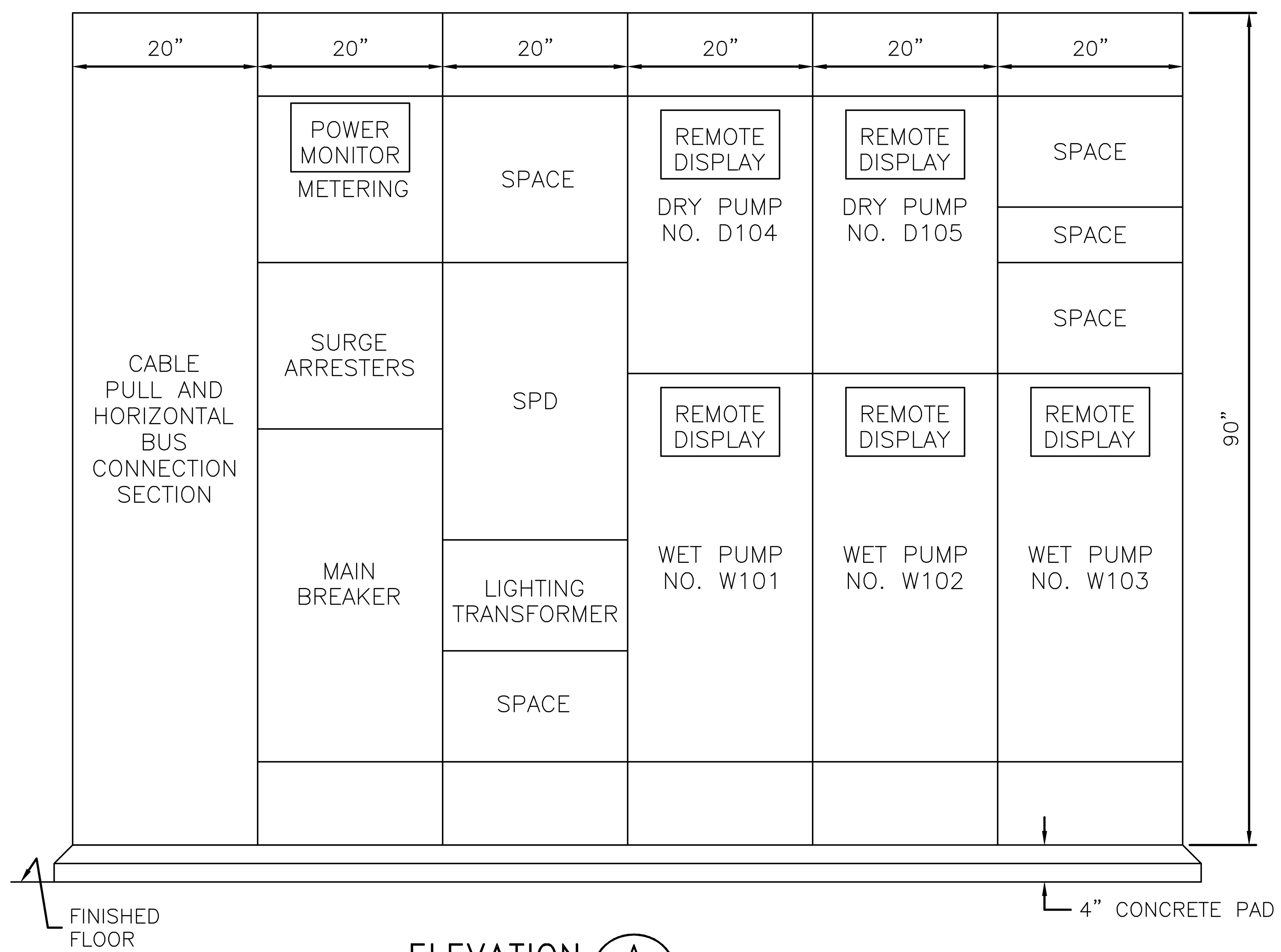
SCALE: NONE	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE:	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO.
FIELD BOOK NO.	Z0E08-0516

REV. NO.	DESCRIPTION	APP'D	DATE

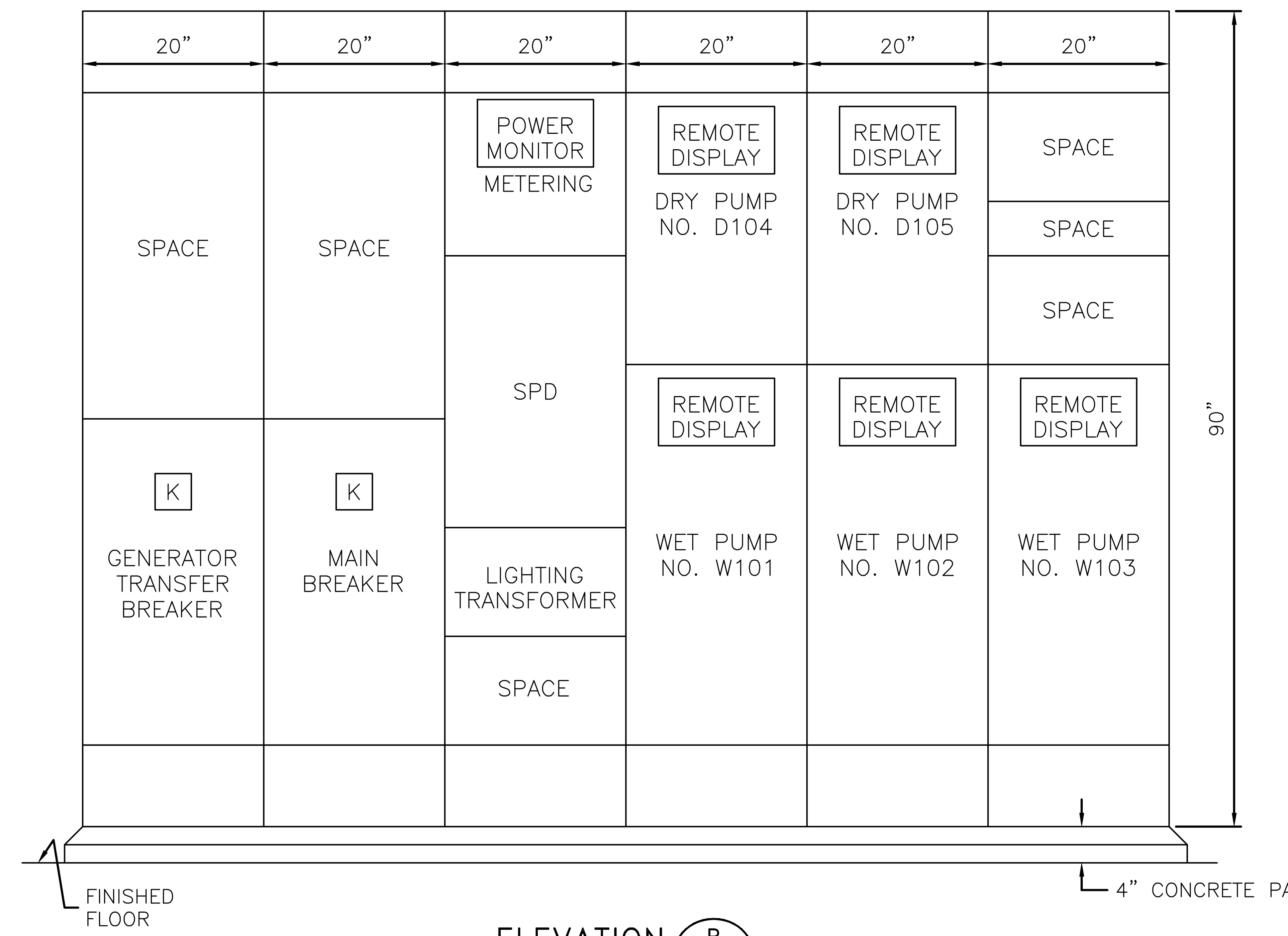
CADD DWG. FILE NO. : Z0E08.DWG

COHSTD.BDR

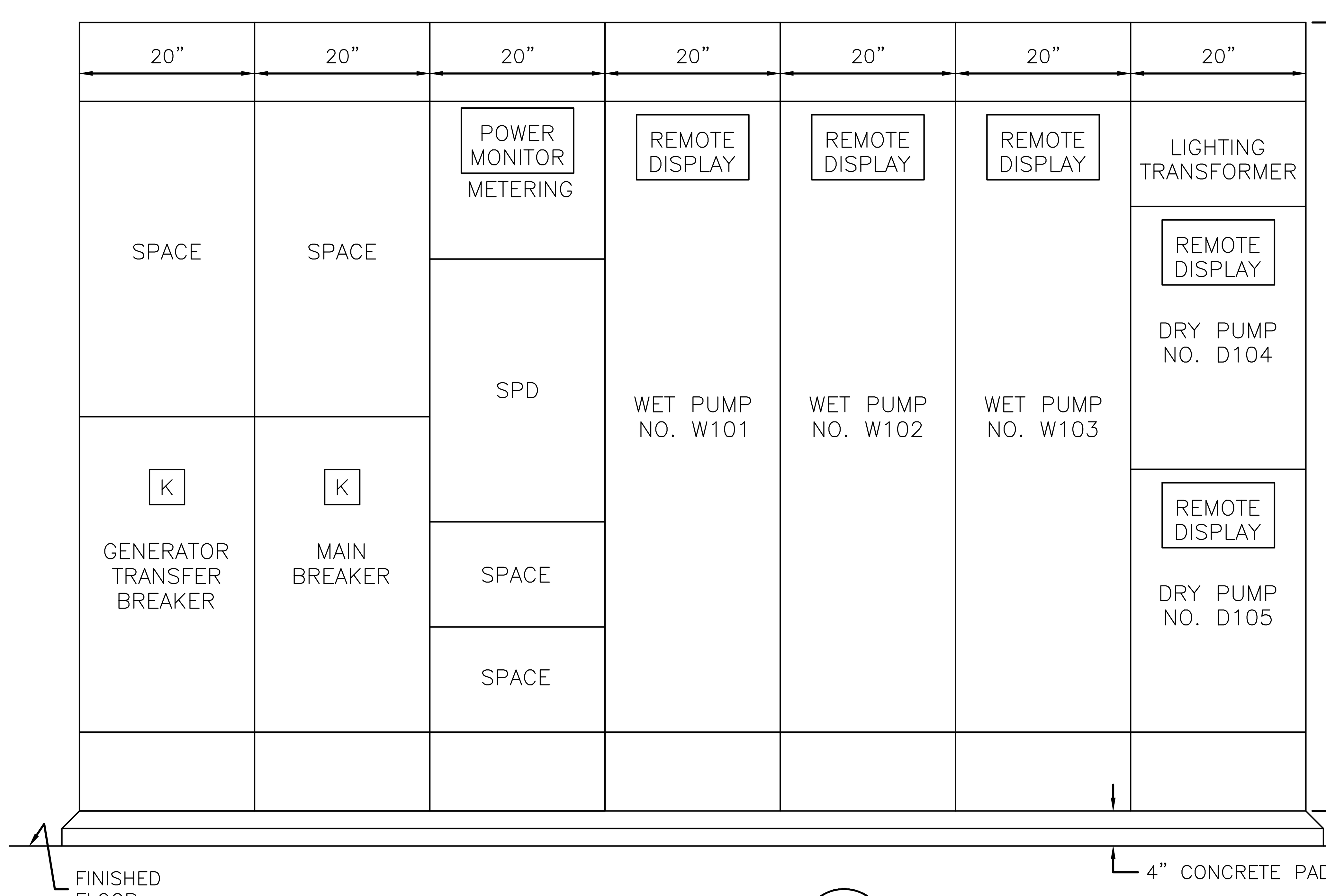
0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



ELEVATION (A / Z0E13)
(SEE NOTE B)



ELEVATION (B / Z0E13)
(SEE NOTE B)



ELEVATION (C / Z0E13)
(SEE NOTE B)

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.
IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. ELEVATIONS FOR SERVICES 400A AND ABOVE.

C. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

D. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

E. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

3 WET & 2 DRY WEATHER PUMPS
MCC ELEVATIONS

PROJECT NO. R-000265-0XXX-X

TITLE: CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET Z0C0X

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO. Z0E13-0516

CADD DWG. FILE NO. : Z0E13.DWG

COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

	DESCRIPTION	SERVICE		ROUTING			CONDUIT & WIRE SIZE
		VOLTAGE	AMPS OR HP	FROM	TO	VIA	
A	MAIN BONDING JUMPER	--	--	MAIN FUSED DISCONNECT NEUTRAL	MAIN FUSED DISCONNECT GROUND	--	
B	EQUIPMENT BONDING JUMPER	--	--	MAIN FUSED DISCONNECT GROUND	MCC PANEL & EQUIPMENT	--	
C	GROUNDED SERVICE CONDUCTOR	--	--	GROUNDING ELECTRODE	MAIN SERVICE FUSED DISCONNECT	--	
100	SERVICE ENTRANCE	480V	VARIES	UTILITY SERVICE	CONTROL MOTOR CONTROL CENTER	METERING & MAIN DISCONNECT	
100A	MCC SERVICE POWER	480V	VARIES	MANUAL TRANSFER SWITCH	MCC OR POWER PANEL	--	***SEE NOTE G***
100B	NORMAL/EMERGENCY POWER STATUS	24VDC	--	MANUAL TRANSFER SWITCH	CONTROL PANEL	--	***SEE NOTE G***
100C	EMERGENCY POWER	480V	VARIES	GENERATOR DISCONNECT	PORTABLE GENERATOR	CAPPED CONDUITS	***SEE NOTE G***
*100	SERVICE ENTRANCE	480V	VARIES	SERVICE	CT CAN	--	***SEE NOTE G***
*100A	SERVICE POWER	480V	VARIES	SERVICE DISCONNECT	MAIN BREAKER IN MCC	--	***SEE NOTE G***
*100B	EMERGENCY POWER	480V	VARIES	GENERATOR DISCONNECT	GENERATOR TRANSFER SWITCH	--	***SEE NOTE G***
*100C	EMERGENCY POWER	480V	VARIES	GENERATOR DISCONNECT	PORTABLE GENERATOR	CAPPED CONDUITS	***SEE NOTE G***
101	GROUNDING ELECTRODE CONDUCTOR	--	--	MAIN SERVICE DISCONNECT	GROUNDING ELECTRODE	--	
102	BUILDING CONDUCTOR	--	--	BUILDING STEEL	GROUND FIELD	--	
103	LIGHTNING DOWN LEAD	--	--	LIGHTNING ARRESTOR	LIGHTNING GROUND FIELD	--	
104	BUILDING CONDUCTOR	--	--	MOTOR CONTROL CENTER	GROUND FIELD	--	
105	COMMUNICATION SERVICE	--	--	UTILITY SERVICE	PANEL PPU	--	
200	WET PUMP NO. W101 POWER	480V	***HP AS NOTED***	WET PUMP NO.W101	WET PUMP NO.W101 JUNCTION BOX	--	***SEE NOTE E***
201	WET PUMP NO. W101 CONTROLS	120V	--	WET PUMP NO.W101	WET PUMP NO.W101 JUNCTION BOX	--	***SEE NOTE E***
202	WET PUMP NO. W101 POWER	480V	***HP AS NOTED***	WET PUMP NO.W101 JUNCTION BOX	PUMP STARTER	--	
203	COMBINED PUMP CONTROLS	120V	--	WET PUMP NO.W101 JUNCTION BOX	PUMP STARTER	--	
205	WET PUMP NO. W101 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	
206	WET PUMP NO. W101 CAPACITOR	480V	***TBD***	WET PUMP NO.W101 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	
207	COMBINED CURRENT TRANSMITTERS	24VDC	4-20mA	MOTOR CONTROL CENTER	CONTROL PANEL	--	
300	WET PUMP NO. W102 POWER	480V	***HP AS NOTED***	WET PUMP NO.W102	WET PUMP NO.W102 JUNCTION BOX	--	***SEE NOTE E***
301	WET PUMP NO. W102 CONTROLS	120V	--	WET PUMP NO.W102	WET PUMP NO.W102 JUNCTION BOX	--	***SEE NOTE E***
302	WET PUMP NO. W102 POWER	480V	***HP AS NOTED***	WET PUMP NO.W102 JUNCTION BOX	PUMP STARTER	--	
305	WET PUMP NO. W102 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	
306	WET PUMP NO. W102 CAPACITOR	480V	***TBD***	WET PUMP NO.W102 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	
400	WET PUMP NO. W103 POWER	480V	***HP AS NOTED***	WET PUMP NO.W103	WET PUMP NO.W103 JUNCTION BOX	--	***SEE NOTE E***
401	WET PUMP NO. W103 CONTROLS	120V	--	WET PUMP NO.W103	WET PUMP NO.W103 JUNCTION BOX	--	***SEE NOTE E***
402	WET PUMP NO. W103 POWER	480V	***HP AS NOTED***	WET PUMP NO.W103 JUNCTION BOX	PUMP STARTER	--	
405	WET PUMP NO. W103 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	
406	WET PUMP NO. W103 CAPACITOR	480V	***TBD***	WET PUMP NO.W103 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	
600	LIGHTING PANEL FEEDER	480V	--	MOTOR CONTROL CENTER	LIGHTING TRANSFORMER	--	
601	LIGHTING PANEL GROUND	--	--	LIGHTING PANEL	GROUND FIELD	--	
602	LIGHTING PANEL FEEDER	120/240V	--	LIGHTING TRANSFORMER	LIGHTING PANEL	--	
700	DRY PUMP NO. D104 POWER	480V	***HP AS NOTED***	DRY PUMP NO. D104	DRY PUMP NO. D104 JUNCTION BOX	--	
701	DRY PUMP NO. D104 CONTROLS	120V	--	DRY PUMP NO. D104	DRY PUMP NO. D104 JUNCTION BOX	--	
702	DRY PUMP NO. D104 POWER	480V	***HP AS NOTED***	DRY PUMP NO. D104 JUNCTION BOX	PUMP STARTER	--	
703	COMBINED DRY PUMP CONTROLS	120V	--	DRY PUMP NO. D104 JUNCTION BOX	PUMP STARTER	--	
705	DRY PUMP NO. D104 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	
706	DRY PUMP NO. D104 CAPACITOR	480V	***TBD***	DRY PUMP NO. D104 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	
800	DRY PUMP NO. D105 POWER	480V	***HP AS NOTED***	DRY PUMP NO. D105	DRY PUMP NO. D105 JUNCTION BOX	--	
801	DRY PUMP NO. D105 CONTROLS	120V	--	DRY PUMP NO. D105	DRY PUMP NO. D105 JUNCTION BOX	--	
802	DRY PUMP NO. D105 POWER	480V	***HP AS NOTED***	DRY PUMP NO. D105 JUNCTION BOX	PUMP STARTER	--	
805	DRY PUMP NO. D105 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	
806	DRY PUMP NO. D105 CAPACITOR	480V	***TBD***	DRY PUMP NO. D105 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	***SEE NOTE 4***

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. CONDUIT NUMBERS 102, 103, 206, 306, 406, 600, 601, 900, 1101 & 1201 ARE FOR USE AT LIFT STATIONS EQUIPPED WITH A CONTROL BUILDING.

C. WIRE, CABLE AND CONDUIT SIZES AND QUANTITIES ARE TO BE DETERMINED BY THE DESIGN ENGINEER PER SPECIFIC SITE REQUIREMENTS.

D. CONDUITS LABELED "FUTURE SPACE" ARE THOSE TO BE INSTALLED AND CAPPED IN FIELD.

E. THE DESIGN ENGINEER SHALL SIZE ANY CONDUIT REQUIRING A CSBE TYPE SEAL AT NO SMALLER THAN 2 1/2". CSBE SEALS ARE NOT MANUFACTURED SMALLER THAN 2 1/2".

F. NOT USED.

G. GENERATOR CONDUIT SHALL BE A MINIMUM OF 3" CONDUIT.

H. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

I. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

J. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:
1. CONDUITS LABELED "FUTURE SPACE" ARE TO BE INSTALLED AND CAPPED IN FIELD.
2. ANY CONDUIT REQUIRING A CSBE SEAL, SHALL BE A MINIMUM SIZE OF 2 1/2".
3. ALL UNDERGROUND CONDUITS (SINGLE AND MULTI-RUN) TO BE ENCASED IN REINFORCED CONCRETE DUCTBANK.
4. MOUNT IN CEILING AND CONNECT ACCORDING TO MANUFACTURER'S REQUIREMENTS.
4. "*" FOR 500AMP AND ABOVE ELECTRIC SERVICE.

3 WET & 2 DRY WEATHER PUMPS
CONDUIT SCHEDULE
FOR 480 VOLT

PROJECT NO.
R-000265-0XXX-X

TITLE
CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO.
Z0E21-0516

CADD DWG. FILE NO. :
Z0E21.DWG

COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS

	DESCRIPTION	SERVICE		ROUTING			CONDUIT & WIRE SIZE
		VOLTAGE	AMPS OR HP	FROM	TO	VIA	
900	INTRUSION ALARM	24V	--	MOTION SWITCH	CONTROL PANEL	--	
1000	LEVEL TRANSMITTER	24V	--	TRANSMITTER JUNCTION BOX	LEVEL TRANSMITTER	--	***SEE NOTE E***
1001	LEVEL TRANSMITTER	24V	--	TRANSMITTER JUNCTION BOX	LEVEL TRANSMITTER	--	***SEE NOTE E***
1002	COMBINED LEVEL TRANSMITTERS	24V	--	CONTROL PANEL	TRANSMITTER JUNCTION BOX	--	
1003	FLOAT SWITCH	120V	--	SUMP PUMP MOTOR STARTER	FLOAT SWITCH	--	2#12, #12G, 1"C
1100	120VAC FOR RECEPTACLE	--	--	LIGHTING PANEL	RECEPTACLE NEXT TO PUMP NO. D104 J-BOX	--	L11, 2#12 #12G, 1"C
1101	SUMP PUMP POWER	120V	--	MOTOR STARTER	LIGHTING PANEL	--	L12, 2#12 #12G, 1"C
1200	120VAC FOR RECEPTACLE	--	--	LIGHTING PANEL	RECEPTACLE NEXT TO PUMP NO. W103 J-BOX	--	L13, 2#12 #12G, 1"C
1201	EXHAUST FAN	120V	--	MOTOR RATED SWITCH	LIGHTING PANEL	--	L3, 2#12 #12G, 1"C

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

IT IS THE RESPONSIBILITY OF THE CONTRACTED DESIGN ENGINEER TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION HEREIN CONTAINED AND TO ADJUST ACCORDING TO PROJECT SPECIFIC REQUIREMENTS.

B. CONDUIT NUMBERS 102, 103, 206, 306, 406, 600, 601, 900, 1101 & 1201 ARE FOR USE AT LIFT STATIONS EQUIPPED WITH A CONTROL BUILDING.

C. WIRE, CABLE AND CONDUIT SIZES AND QUANTITIES ARE TO BE DETERMINED BY THE DESIGN ENGINEER PER SPECIFIC SITE REQUIREMENTS.

D. CONDUITS LABELED "FUTURE SPACE" ARE THOSE TO BE INSTALLED AND CAPPED IN FIELD.

E. THE DESIGN ENGINEER SHALL SIZE ANY CONDUIT REQUIRING A CSBE TYPE SEAL AT NO SMALLER THAN 2 1/2". CSBE SEALS ARE NOT MANUFACTURED SMALLER THAN 2 1/2".

F. NOT USED.

G. GENERATOR CONDUIT SHALL BE A MINIMUM OF 3" CONDUIT.

H. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

I. THE DESIGN ENGINEER SHALL CONSULT THE CITY OF HOUSTON DESIGN GUIDELINES MANUAL, THE ENGINEERING DESIGN MANUAL, AND THE MASTER SPECIFICATIONS FOR FURTHER INSTRUCTIONS AND INFORMATION PERTINENT TO THESE STANDARD DESIGN GUIDELINE DRAWINGS.

J. THE DESIGN ENGINEER SHALL REMOVE THESE NOTES, ALL REFERENCES TO THESE NOTES, AND ANY OTHER EXTRANEOUS INFORMATION FROM THE DESIGN GUIDELINE DRAWINGS. DESIGN ENGINEER SHALL PROVIDE ANY NOTES OR OTHER APPROPRIATE INFORMATION NECESSARY TO COMPLETE THE LIFT STATION DESIGN.

NOTES:

1. CONDUITS LABELED "FUTURE SPACE" ARE TO BE INSTALLED AND CAPPED IN FIELD.
2. ANY CONDUIT REQUIRING A CSBE SEAL, SHALL BE A MINIMUM SIZE OF 2 1/2".
3. ALL UNDERGROUND CONDUITS (SINGLE AND MULTI-RUN) TO BE ENCASED IN REINFORCED CONCRETE DUCTBANK.
4. MOUNT IN CEILING AND CONNECT ACCORDING TO MANUFACTURER'S REQUIREMENTS.

3 WET & 2 DRY WEATHER PUMPS
CONDUIT SCHEDULE
FOR 480 VOLT

PROJECT NO.
R-000265-0XXX-X

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ENGINEERING AND CONSTRUCTION

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DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO.
Z0E22-0516

CADD DWG. FILE NO. :
Z0E22.DWG

COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS

RATINGS FOR PUMP SIZES INDICATED

ITEM	CIRCUIT	DESCRIPTION	3 @ 50HP & 2 @ 15, 20 OR 25HP	3 @ 50HP & 2 @ 30HP	3 @ 60HP & 2 @ 15, 20 OR 25HP	3 @ 60HP & 2 @ 30HP	3 @ 75HP & 2 @ 15, 20 OR 25HP	3 @ 75HP & 2 @ 30HP	3 @ 75HP & 2 @ 40HP
I	--	MAIN FUSED DISCONNECT SWITCH							
		OPERATING VOLTAGE	600V	600V	600V	600V	600V	600V	600V
		CURRENT RATING	400A	400A	600A	600A	600A	600A	600A
		CURRENT LIMITING FUSES TYPE & SIZE	CLASS J 400A	CLASS J 400A	CLASS J 450A	CLASS J 500A	CLASS J 500A	CLASS J 600A	CLASS J 600A
II	--	MOTOR CONTROL CENTER MAIN BUS - 3/C COPPER							
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V
		CURRENT RATING	600A	600A	600A	600A	600A	600A	600A
		NEUTRAL SIZE & TYPE	300A LUG	300A LUG	300A LUG	300A LUG	300A LUG	300A LUG	300A LUG
		BUS BRACING	65KA SYM	65KA SYM	65KA SYM	65KA SYM	65KA SYM	65KA SYM	65KA SYM
III	1G (SEE NOTE 1)	MAIN BREAKER							
		3 POLE - TYPE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	INSULATED CASE
		MOUNTING	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V
		FRAME SIZE	400A	400A	500A	600A	600A	600A	600A
		TRIP SETTING	400A	400A	450A	500A	500A	600A	600A
		INTERRUPT CAPACITY	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM
		OPTIONS	NONE	NONE	NONE	NONE	NONE	NONE	NONE
IV	2 3 4	WET PUMP MOTOR STARTERS							
		QUANTITY	3	3	3	3	3	3	3
		MOUNTING	DRAWOUT	DRAWOUT	DRAWOUT	DRAWOUT	DRAWOUT	DRAWOUT	DRAWOUT
		SHORT CIRCUIT PROTECTION							
		3 POLE - TYPE	MCP	MCP	MCP	MCP	MCP	MCP	MCP
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V
		FRAME SIZE	100A	100A	150A	150A	150A	150A	150A
		TRIP SETTING	FIELD ADJ	FIELD ADJ	FIELD ADJ	FIELD ADJ	FIELD ADJ	FIELD ADJ	FIELD ADJ
		INTERRUPT CAPACITY	65KA SYM	65KA SYM	65KA SYM	65KA SYM	65KA SYM	65KA SYM	65KA SYM
		MOTOR STARTING CONTACTOR							
		3 POLE - TYPE	AIR	AIR	AIR	AIR	AIR	AIR	AIR
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V
		SIZE/CURRENT RATING	NEMA 3	NEMA 3	NEMA 4	NEMA 4	NEMA 4	NEMA 4	NEMA 4
		OVERLOAD PROTECTION TYPE	SOLID STATE MPR	SOLID STATE MPR	SOLID STATE MPR	SOLID STATE MPR	SOLID STATE MPR	SOLID STATE MPR	SOLID STATE MPR
V	6	LIGHTING TRANSFORMER FEEDER BREAKER							
		NO. OF POLES	2	2	2	2	2	2	2
		TYPE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V
		FRAME SIZE	150A	150A	150A	150A	150A	150A	150A
		TRIP SETTING	50A	50A	50A	50A	50A	50A	50A
		INTERRUPT CAPACITY	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM
VI	5 7	DRY PUMP MOTOR STARTER							
		QUANTITY	2	2	2	2	2	2	2
		MOUNTING	DRAWOUT	DRAWOUT	DRAWOUT	DRAWOUT	DRAWOUT	DRAWOUT	DRAWOUT
		SHORT CIRCUIT PROTECTION							
		3 POLE - TYPE	MCP	MCP	MCP	MCP	MCP	MCP	MCP
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V
		FRAME SIZE	50A	70A	50A	70A	50A	70A	100A
		TRIP SETTING	FIELD ADJ	FIELD ADJ	FIELD ADJ	FIELD ADJ	FIELD ADJ	FIELD ADJ	FIELD ADJ
		INTERRUPT CAPACITY	65KA SYM	65KA SYM	65KA SYM	65KA SYM	65KA SYM	65KA SYM	65KA SYM
		MOTOR STARTING CONTACTOR							
		3 POLE - TYPE	AIR	AIR	AIR	AIR	AIR	AIR	AIR
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V
		SIZE/CURRENT RATING	NEMA 2	NEMA 3	NEMA 2	NEMA 3	NEMA 2	NEMA 3	NEMA 3
		OVERLOAD PROTECTION TYPE	SOLID STATE MOR	SOLID STATE MOR	SOLID STATE MOR	SOLID STATE MOR	SOLID STATE MOR	SOLID STATE MOR	SOLID STATE MOR
VII	--	MANUAL TRANSFER SWITCH	3P, 4W SN	3P, 4W SN	3P, 4W SN	3P, 4W SN	3P, 4W SN	3P, 4W SN	3P, 4W SN
		OPERATING VOLTAGE	600V	600V	600V	600V	600V	600V	600V
		CURRENT RATING	400A	400A	600A	600A	600A	600A	600A
VIII	--	GENERATOR FUSED DISCONNECT SWITCH	3P, 4W SN	3P, 4W SN	3P, 4W SN	3P, 4W SN	3P, 4W SN	3P, 4W SN	3P, 4W SN
		OPERATING VOLTAGE	600V	600V	600V	600V	600V	600V	600V
		CURRENT RATING	400A	400A	600A	600A	600A	600A	600A
		CURRENT LIMITING FUSES TYPE & SIZE	CLASS J 400A	CLASS J 400A	CLASS J 450A	CLASS J 500A	CLASS J 500A	CLASS J 600A	CLASS L 600A
IX	1 (SEE NOTE 2, 3)	GENERATOR TRANSFER SWITCH							
		3 POLE - TYPE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	INSULATED CASE
		MOUNTING	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V
		FRAME SIZE	400A	400A	600A	600A	600A	600A	600A
		TRIP SETTING	400A	400A	450A	500A	500A	600A	600A
		INTERRUPT CAPACITY	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM
		OPTIONS	NONE	NONE	NONE	NONE	NONE	NONE	NONE

SEE NOTE B

		3 @ 50HP & 2 @ 15, 20 OR 25HP	3 @ 50HP & 2 @ 30HP	3 @ 60HP & 2 @ 15, 20 OR 25HP	3 @ 60HP & 2 @ 30HP	3 @ 75HP & 2 @ 15, 20 OR 25HP	3 @ 75HP & 2 @ 30HP	3 @ 75HP & 2 @ 40HP
MOTOR CONTROL CENTER ELEVATION LETTER		A	A	A	A	B	B	B
INDOOR CONTROL PANEL WIDTH (MIN)		60"	60"	60"	60"	60"	60"	60"
MINIMUM CONTROL BUILDING DIMENSIONS	INSIDE LENGTH	* 12'-6"	* 12'-6"	* 12'-6"	12'-6"	* 12'-6"	12'-6"	12'-6"
	OUTSIDE LENGTH	* 14'-6"	* 14'-6"	* 14'-6"	14'-6"	* 14'-6"	14'-6"	14'-6"

* SEE NOTE C

NOTES TO DESIGN ENGINEER:

A. THESE LIFT STATION DRAWINGS ARE CONSIDERED TO BE DESIGN GUIDELINES FOR THE CONSTRUCTION OF CITY OF HOUSTON WASTEWATER SUBMERSIBLE LIFT STATIONS. THEIR INTENDED USE IS AS A FRAMEWORK FOR THE CONTRACTED DESIGN ENGINEER IN DEVELOPING SPECIFIC LIFT STATION DESIGNS.

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B. TABLES NOTED ARE FOR USE WITH CONTROL BUILDING ONLY. DESIGN ENGINEER SHALL SELECT APPROPRIATE DIMENSIONS, REVISE THE CONTROL BUILDING AND CONTROL PANEL DRAWINGS AND DELETE THIS INFORMATION FROM THE DEVICE SCHEDULE.

C. TO MAINTAIN INDICATED CONTROL BUILDING SIZE, DESIGN ENGINEER MUST LOCATE THE TRANSFORMER AND LIGHTING PANEL ON BUILDING WALL ADJACENT TO THE MCC; OR BUILDING SIZE MUST BE INCREASED TO ACCOMMODATE TYPICAL AND ALTERNATE LOCATIONS OF TRANSFORMER AND LIGHTING PANEL.

D. THE DESIGN ENGINEER SHALL INCORPORATE ONLY THE NECESSARY STANDARD GUIDELINE DRAWINGS AND DETAILS INTO HIS PROJECT CONTRACT DOCUMENTATION PACKAGE, AND SHALL ADJUST PAGE NUMBERS AND CROSS REFERENCING ACCORDINGLY.

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NOTES:

1. PROVIDE BREAKER WITH KIRK KEY INTER-CONNECTED WITH GENERATOR/TRANSFER BREAKER.
2. PROVIDE TRIP SIZE BASED ON GENERATOR SIZE. SIZES SHOWN ARE MAXIMUM.

3 WET & 2 DRY WEATHER PUMPS
DEVICE RATING SCHEDULE

PROJECT NO. R-000265-0XXX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SHEET NO. OF SHEETS
SURVEY BY:
FIELD BOOK NO.
DWG. NO. Z0E42-0516

CADD DWG. FILE NO. : Z0E42.DWG

COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

ITEM	CIRCUIT	DESCRIPTION	3 @ 100HP & 2 @ 30HP	3 @ 100HP & 2 @ 40HP	3 @ 125HP & 2 @ 30HP	3 @ 125HP & 2 @ 40HP
I	--	MAIN DISCONNECT SWITCH				
		OPERATING VOLTAGE	600V	600V	600V	600V
		CURRENT RATING	800A	800A	800A	800A
		CURRENT LIMITING FUSES TYPE & SIZE	CLASS L 700A	CLASS L 700A	CLASS L 800A	CLASS L 800A
II	--	MOTOR CONTROL CENTER MAIN BUS - 3/C COPPER				
		OPERATING VOLTAGE	480V	480V	480V	480V
		CURRENT RATING	800A	800A	800A	800A
		NEUTRAL SIZE & TYPE	400A LUG	400A LUG	400A LUG	400A LUG
		BUS BRACING	65KA SYM	65KA SYM	65KA SYM	65KA SYM
III	1G (SEE NOTE 1)	MAIN BREAKER				
		3 POLE - TYPE	INSULATED CASE	INSULATED CASE	INSULATED CASE	INSULATED CASE
		MOUNTING	FIXED	FIXED	FIXED	FIXED
		OPERATING VOLTAGE	480V	480V	480V	480V
		FRAME SIZE	800A	1000A	800A	800A
		TRIP SETTING	700A	700A	800A	800A
		INTERRUPT CAPACITY	42KA SYM	42KA SYM	42KA SYM	42KA SYM
		OPTIONS	NONE	NONE	NONE	NONE
IV	2 3 4	WET PUMP MOTOR STARTERS				
		QUANTITY	3	3	3	3
		MOUNTING	FIXED	FIXED	FIXED	FIXED
		SHORT CIRCUIT PROTECTION				
		3 POLE - TYPE	MCP	MCP	MCP	MCP
		OPERATING VOLTAGE	480V	480V	480V	480V
		FRAME SIZE	150A	150A	150A	150A
		TRIP SETTING	FIELD ADJ	FIELD ADJ	FIELD ADJ	FIELD ADJ
		INTERRUPT CAPACITY	65KA SYM	65KA SYM	65KA SYM	65KA SYM
		MOTOR STARTING CONTACTOR				
		3 POLE - TYPE	AIR	AIR	VACUUM	VACUUM
		OPERATING VOLTAGE	480V	480V	480V	480V
		SIZE/CURRENT RATING	NEMA 3	NEMA 4	320A	320A
		OVERLOAD PROTECTION				
		TYPE	SOLID STATE MPR	SOLID STATE MPR	SOLID STATE MPR	SOLID STATE MPR
V	6	LIGHTING TRANSFORMER FEEDER BREAKER				
		NO. OF POLES	2	2	2	2
		TYPE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE
		OPERATING VOLTAGE	480V	480V	480V	480V
		FRAME SIZE	150A	150A	150A	150A
		TRIP SETTING	50A	50A	50A	50A
		INTERRUPT CAPACITY	42KA SYM	42KA SYM	42KA SYM	42KA SYM
VI	5 7	DRY PUMP MOTOR STARTER				
		QUANTITY	2	2	2	2
		MOUNTING	FIXED	FIXED	FIXED	FIXED
		SHORT CIRCUIT PROTECTION				
		3 POLE - TYPE	MCP	MCP	MCP	MCP
		OPERATING VOLTAGE	480V	480V	480V	480V
		FRAME SIZE	70A	100A	70A	100A
		TRIP SETTING	FIELD ADJ	FIELD ADJ	FIELD ADJ	FIELD ADJ
		INTERRUPT CAPACITY	65KA SYM	65KA SYM	65KA SYM	65KA SYM
		MOTOR STARTING CONTACTOR				
		3 POLE - TYPE	AIR	AIR	VACUUM	VACUUM
		OPERATING VOLTAGE	480V	480V	480V	480V
		SIZE/CURRENT RATING	NEMA 3	NEMA 3	NEMA 3	NEMA 3
		OVERLOAD PROTECTION				
		TYPE	SOLID STATE MOR	SOLID STATE MOR	SOLID STATE MOR	SOLID STATE MOR
VII	--	MANUAL TRANSFER SWITCH	3P, 4W SN	3P, 4W SN	3P, 4W SN	3P, 4W SN
		OPERATING VOLTAGE	600V	600V	600V	600V
		CURRENT RATING	800A	800A	800A	800A
VIII	--	GENERATOR FUSED DISCONNECT SWITCH	3P, 4W SN	3P, 4W SN	3P, 4W SN	3P, 4W SN
		OPERATING VOLTAGE	600V	600V	600V	600V
		CURRENT RATING	800A	800A	800A	800A
		CURRENT LIMITING FUSES TYPE & SIZE	CLASS L 700A	CLASS L 700A	CLASS L 800A	CLASS L 800A
IX	1 (SEE NOTE 2, 3)	GENERATOR TRANSFER SWITCH				
		3 POLE - TYPE	INSULATED CASE	INSULATED CASE	INSULATED CASE	INSULATED CASE
		MOUNTING	FIXED	FIXED	FIXED	FIXED
		OPERATING VOLTAGE	480V	480V	480V	480V
		FRAME SIZE	800A	800A	800A	800A
		TRIP SETTING	700A	700A	800A	800A
		INTERRUPT CAPACITY	42KA SYM	42KA SYM	42KA SYM	42KA SYM
		OPTIONS	NONE	NONE	NONE	NONE

SEE NOTE B

MOTOR CONTROL CENTER ELEVATION LETTER		C	C	C	C
INDOOR CONTROL PANEL WIDTH (MIN)		60"	60"	60"	60"
MINIMUM CONTROL BUILDING DIMENSIONS	INSIDE LENGTH	13'-6"	13'-6"	13'-6"	13'-6"
	OUTSIDE LENGTH	15'-6"	15'-6"	15'-6"	15'-6"

NOTES TO DESIGN ENGINEER:

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C. TO MAINTAIN INDICATED CONTROL BUILDING SIZE, DESIGN ENGINEER MUST LOCATE THE TRANSFORMER AND LIGHTING PANEL ON BUILDING WALL ADJACENT TO THE MCC; OR BUILDING SIZE MUST BE INCREASED TO ACCOMMODATE TYPICAL AND ALTERNATE LOCATIONS OF TRANSFORMER AND LIGHTING PANEL.

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NOTES:

1. PROVIDE BREAKER WITH KIRK KEY INTER-CONNECTED WITH GENERATOR/TRANSFER BREAKER.
2. PROVIDE TRIP SIZE BASED ON GENERATOR SIZE. SIZES SHOWN ARE MAXIMUM.
3. SWITCH UNIT IN MCC.

3 WET & 2 DRY WEATHER PUMPS
DEVICE RATINGS SCHEDULE

PROJECT NO. R-000265-0XXX-X

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DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOCOX

REV. NO.	DESCRIPTION	APP'D	DATE

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SUBMITTED:
DRAWN BY:
DATE:
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SURVEY BY:
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DWG. NO. Z0E43-0516

CADD DWG. FILE NO. : Z0E42.DWG

COHSTD.BDR

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS