CITY OF HOUSTON

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION DIVISION

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

WBS NO. XXXXXX-XXXX-X

MAYOR
SYLVESTER TURNER

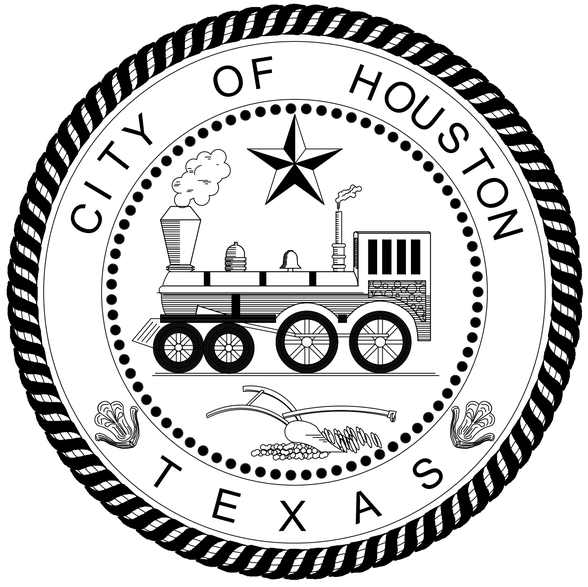
CONTROLLER
CHRIS BROWN

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GENERAL	
NO.	TITLE
–	COVER SHEET
Z0E01	ELECTRICAL SYMBOLS LEGENDS, LIGHTING FIXTURE SCHEDULES & ABBREVIATIONS
LIFT STATION ELECTRICAL PLANS	
NO.	TITLE
N1E01	CONDUIT LAYOUT FOR LIFT STATION 4 WET & 2 DRY WEATHER PUMPS ALTERNATE HIGH PROFILE CONFIGURATION
N2E01	CONDUIT LAYOUT FOR LIFT STATION 4 WET & 2 DRY WEATHER PUMPS PREFERRED LOW PROFILE CONFIGURATION
N2E02	CONDUIT LAYOUT FOR LIFT STATION 4 WET & 2 DRY WEATHER PUMPS PREFERRED CONFIGURATION
N3E01	CONDUIT LAYOUT FOR LIFT STATION 4 WET & 2 DRY WEATHER PUMPS ALTERNATE LOW PROFILE CONFIGURATION
N3E02	CONDUIT LAYOUT FOR LIFT STATION 4 WET & 2 DRY WEATHER PUMPS ALTERNATE LOW PROFILE CONFIGURATION
INDOOR CONFIGURATION	
NO.	TITLE
Y0E21	4 WET & 2 DRY WEATHER PUMPS CONTROL CABINET EQUIPMENT LAYOUT & SCHEDULE
Y0E22	4 WET & 2 DRY WEATHER PUMPS CONTROL CABINET BACK DOOR ELEVATION
Y0E23	4 WET & 2 DRY WEATHER PUMPS CONTROL CABINET EQUIPMENT LAYOUT
Y0E25	4 WET & 2 DRY WEATHER PUMPS MCC INCOMING POWER SCHEMATIC & CONTROL POWER & COMMUNICATIONS WIRING DIAGRAM
Y0E26	4 WET & 2 DRY WEATHER PUMPS MCC POWER SCHEMATIC & CONTROL POWER & COMMUNICATIONS WIRING DIAGRAM
Y0E31	4 WET & 2 DRY WEATHER PUMPS SINGLE LINE DIAGRAM
Y0E40	4 WET & 2 DRY WEATHER PUMPS PROCESS & INSTRUMENTATION DIAGRAM
Y0E41	4 WET & 2 DRY WEATHER PUMPS PROCESS & INSTRUMENTATION DIAGRAM
Y0E50	4 WET & 2 DRY WEATHER PUMPS CONTROL PANEL CONTROL WIRING DIAGRAM
Y0E51	4 WET & 2 DRY WEATHER PUMPS CONTROL PANEL CONTROL WIRING DIAGRAM
Y0E52	4 WET & 2 DRY WEATHER PUMPS CONTROL PANEL CONTROL WIRING DIAGRAM
Y0E53	4 WET & 2 DRY WEATHER PUMPS CONTROL PANEL CONTROL WIRING DIAGRAM
Y0E58	4 WET & 2 DRY WEATHER PUMPS PUMP W101 CONTROL WIRING DIAGRAM
Y0E59	4 WET & 2 DRY WEATHER PUMPS PUMP W102 CONTROL WIRING DIAGRAM
Y0E60	4 WET & 2 DRY WEATHER PUMPS PUMP W103 CONTROL WIRING DIAGRAM
Y0E61	4 WET & 2 DRY WEATHER PUMPS PUMP W104 CONTROL WIRING DIAGRAM
Y0E62	4 WET & 2 DRY WEATHER PUMPS PUMP D105 CONTROL WIRING DIAGRAM
Y0E63	4 WET & 2 DRY WEATHER PUMPS PUMP D106 CONTROL WIRING DIAGRAM

TYPICAL INSTALLATION DETAILS	
NO.	TITLE
Z0C01	SUBMERSIBLE TRANSDUCER WELL LEVEL GAUGING SYSTEM INSTALLATION & DETAILS
Z0E02	4 WET & 2 DRY WEATHER PUMPS TYPICAL JUNCTION BOX DETAILS
Z0E03	4 WET & 2 DRY WEATHER PUMPS TYPICAL ELECTRICAL DETAILS
Z0E04	4 WET & 2 DRY WEATHER PUMPS TYPICAL ELECTRICAL DETAILS
Z0E05	4 WET & 2 DRY WEATHER PUMPS CONTROL BUILDING – ELECTRICAL
Z0E06	– EXAMPLE – ELECTRICAL SITE PLAN ALTERNATE HIGH PROFILE CONFIGURATION
Z0E07	4 WET & 2 DRY WEATHER PUMPS TYPICAL ELECTRICAL DETAILS
Z0E08	4 WET & 2 DRY WEATHER PUMPS TYPICAL ELECTRICAL DETAILS
Z0E13	4 WET & 2 DRY WEATHER PUMPS MCC ELEVATIONS
Z0E21	4 WET & 2 DRY WEATHER PUMPS CONDUIT SCHEDULE FOR 480 VOLT
Z0E22	4 WET & 2 DRY WEATHER PUMPS CONDUIT SCHEDULE FOR 480 VOLT
Z0E45	4 WET & 2 DRY WEATHER PUMPS DEVICE RATING SCHEDULE TYPICAL ELECTRICAL DETAILS
Z0E46	4 WET & 2 DRY WEATHER PUMPS DEVICE RATING SCHEDULE TYPICAL ELECTRICAL DETAILS
Z0E47	4 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
PXS	PROXIMITY LIMIT SWITCH
VS	VACUUM SWITCH

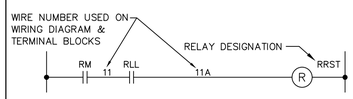
SYMBOL	DESCRIPTION
FS	FLOAT SWITCH
EP	ELECTRO–PNEUMATIC VALVE
S	SOLENOID VALVE
T	ELECTRIC THERMOSTAT
T	TEMPERATURE ACTUATED DEVICE
$	SINGLE POLE TOGGLE SWITCH
$ 2	DOUBLE POLE TOGGLE SWITCH
$ 3	3 – WAY SWITCH
$ T	MANUAL MOTOR STARTER WITH THERMAL ELEMENT
$ M	MOTOR RATED SWITCH WITH THERMAL ELEMENT IN 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 EQ	CONCRETE ENCASED DUCTBANK (SECTION INDICATES CONDUIT CONFIGURATION & DESIGNATIONS)
A EQ	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
OLS 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



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
OL	SOLID STATE OVERLOAD
	FUSED DISCONNECT SWITCH
	SURGE ARRESTOR
VFD	VARIBLE FREQUENCY DRIVE

ABBREVIATIONS

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

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–L24–200LM–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

TYPE	MFG & CATALOG NO.	LAMP SIZE	MOUNTING	REMARKS
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
E	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 ZOC0X

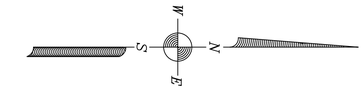
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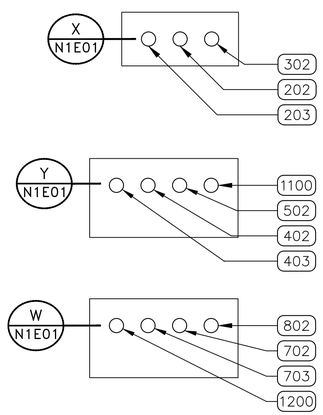
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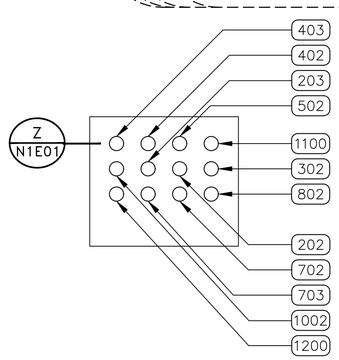
0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

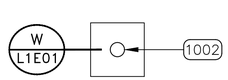


DESIGN ENGINEER SHALL ORIENT NORTH ARROW ACCORDING TO SPECIFIC SITE PLAN

LIFT STATION PLAN







DUCTBANK SECTIONS
SCALE: N.T.S.

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NOTES:

1. GUARD RAIL 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.

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

PROJECT NO. R-000265-0XXX-X

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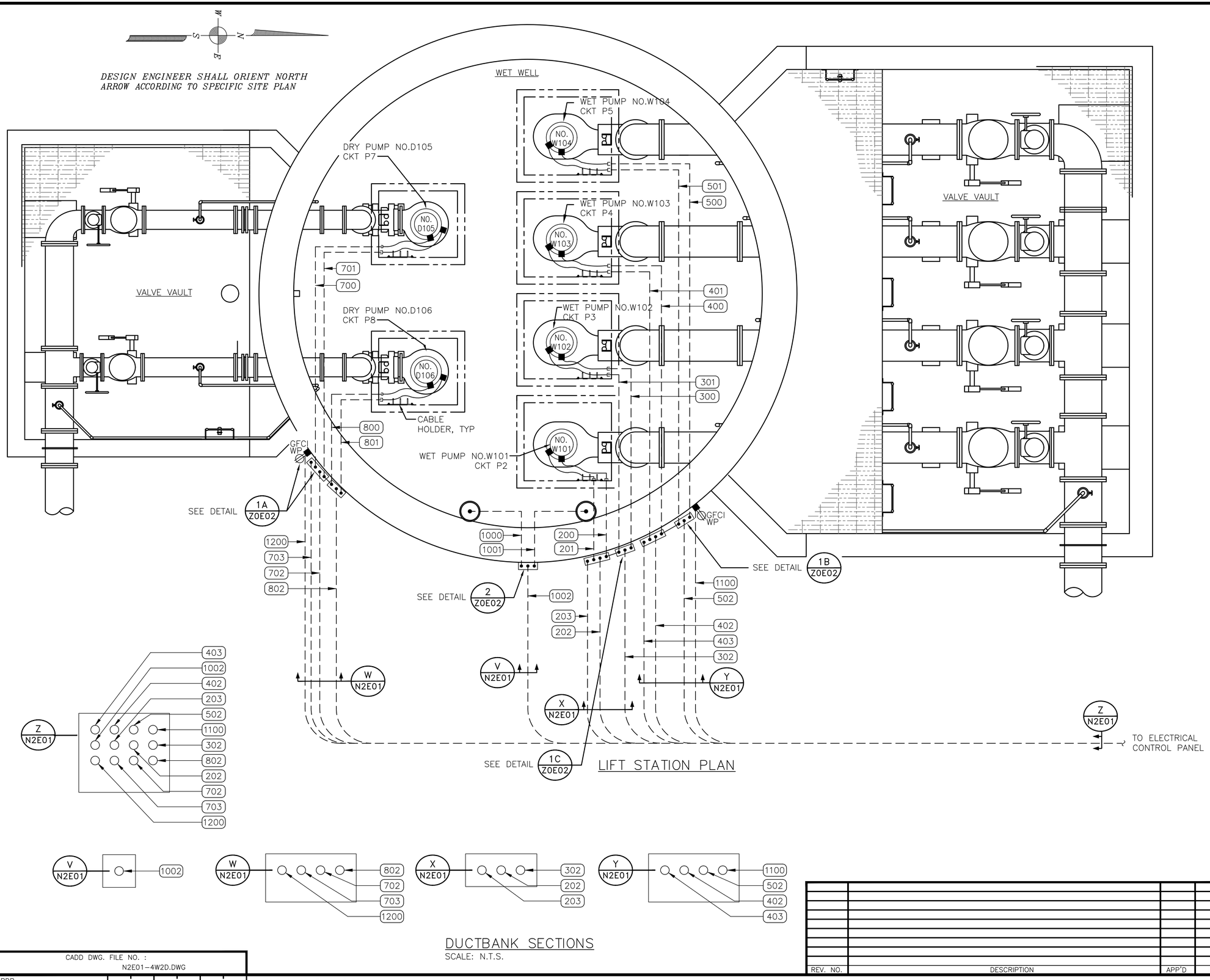
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DRAWN BY:
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DWG. NO. N1E01-0516

CADD DWG. FILE NO. : N1E01-4W2D.DWG

COHSTD.BDR

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



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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. 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.
2. INSTALL CONDUIT SEALS VERTICALLY WITHIN 18 INCHES OF WALL PENITRATION OR JUNCTION BOX. 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
3. ENTRANCE AND EXPLOSION PROOF SEAL IN CONDUITS TO CONTROL BUILDING OR PANEL.
4. 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.
5. 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.
6. 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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8. SPLICE AIR TUBING IN MANHOLE WITH STAINLESS STEEL UNIONS. SEE DETAILS, SHEET Z0C01.

CONDUIT LAYOUT FOR LIFT STATION
4 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

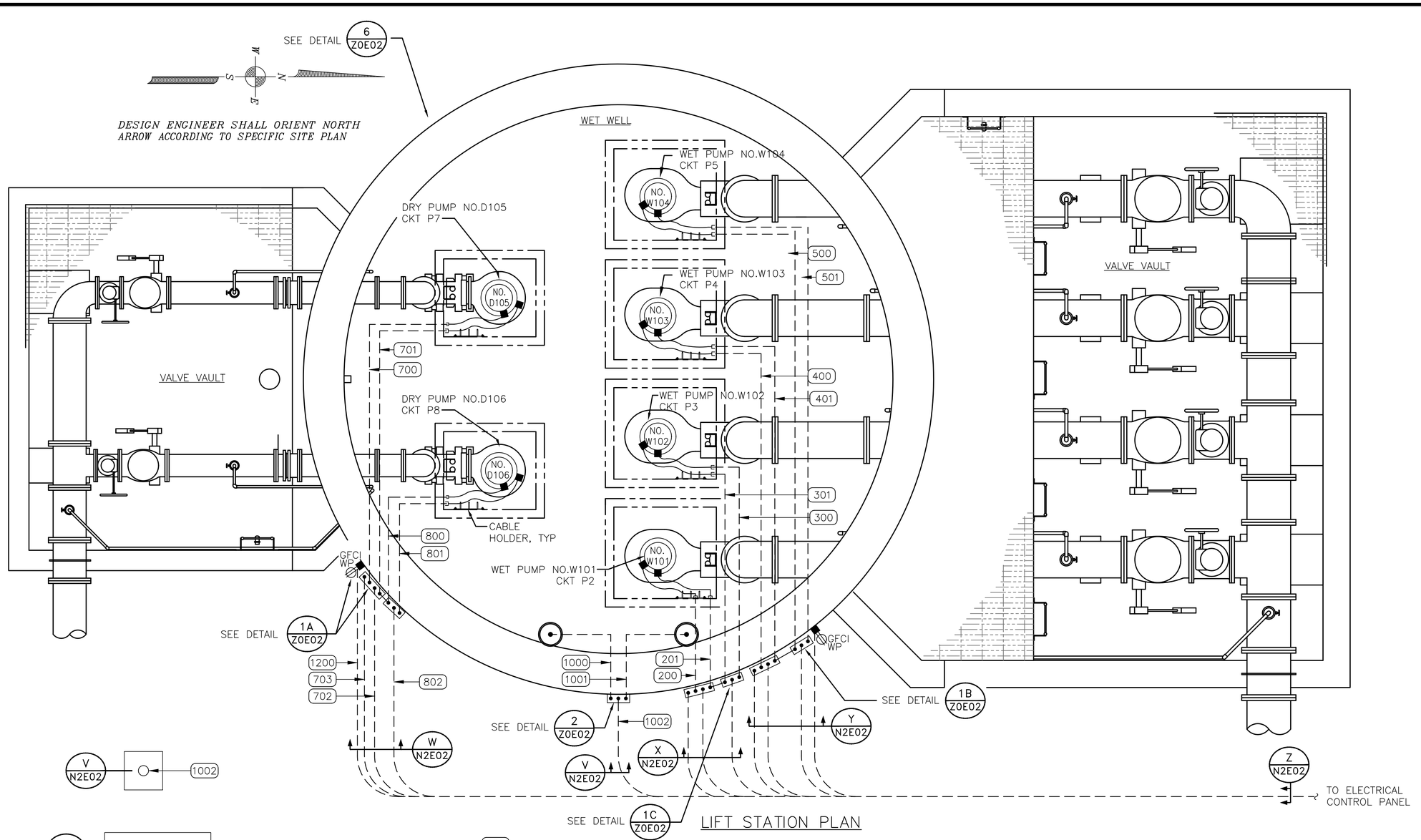
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

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

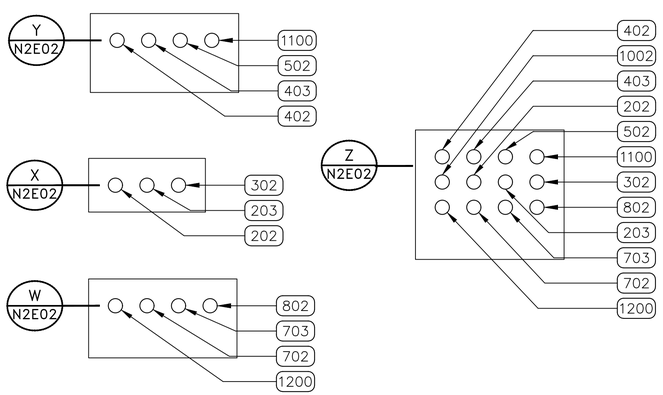
REV. NO.	DESCRIPTION	APP'D	DATE

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SURVEY BY:
FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO. N2E01-0516

CADD DWG. FILE NO. : N2E01-4W2D.DWG
COHSTD.BDR
0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



LIFT STATION PLAN



DUCTBANK SECTIONS
SCALE: N.T.S.

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 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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8. SPLICE AIR TUBING IN MANHOLE WITH STAINLESS STEEL UNIONS. SEE DETAILS, SHEET Z0C01.

CONDUIT LAYOUT FOR LIFT STATION
4 WET & 2 DRY WEATHER PUMPS
PREFERRED CONFIGURATION

PROJECT NO. R-000265-0XXX-X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

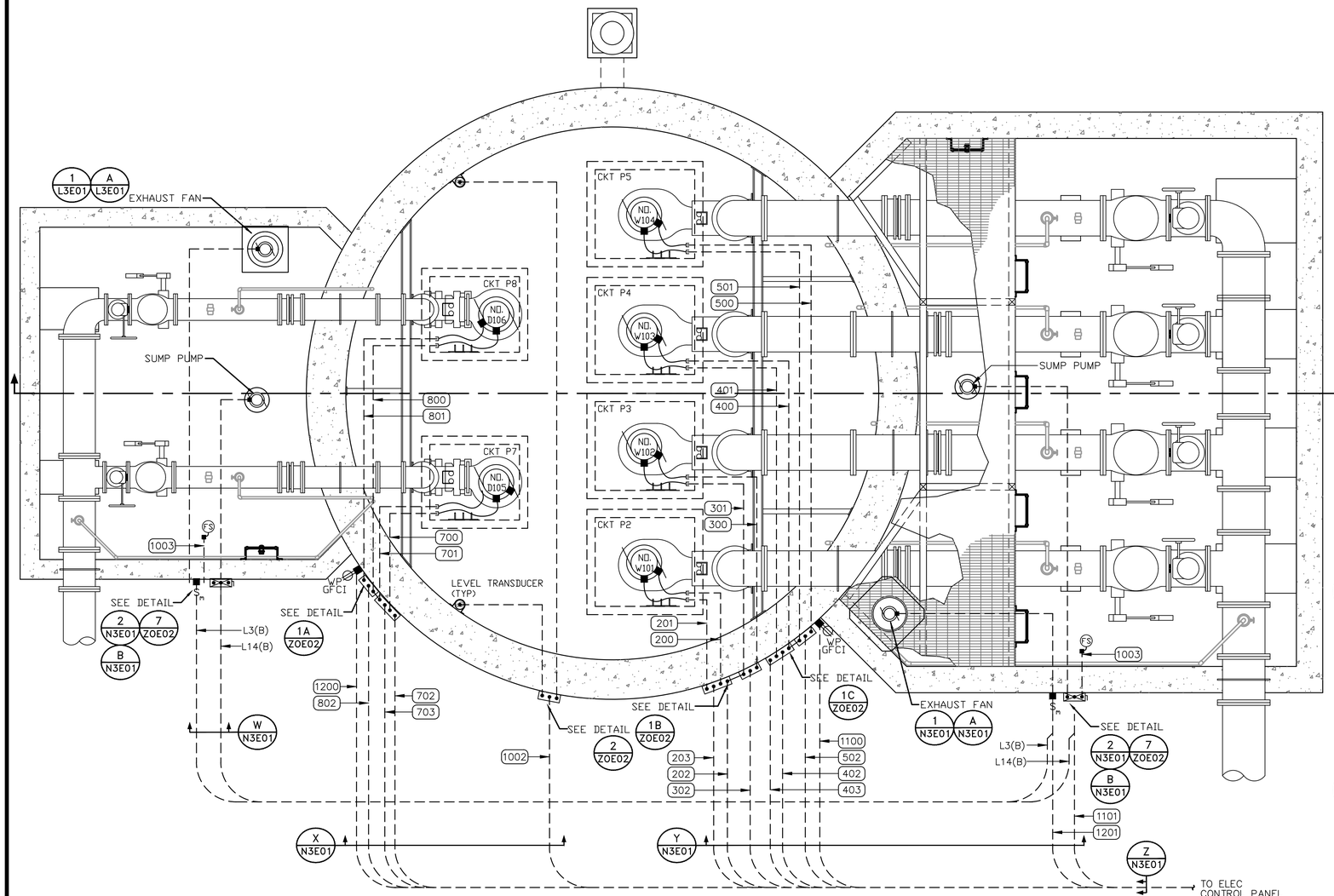
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

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

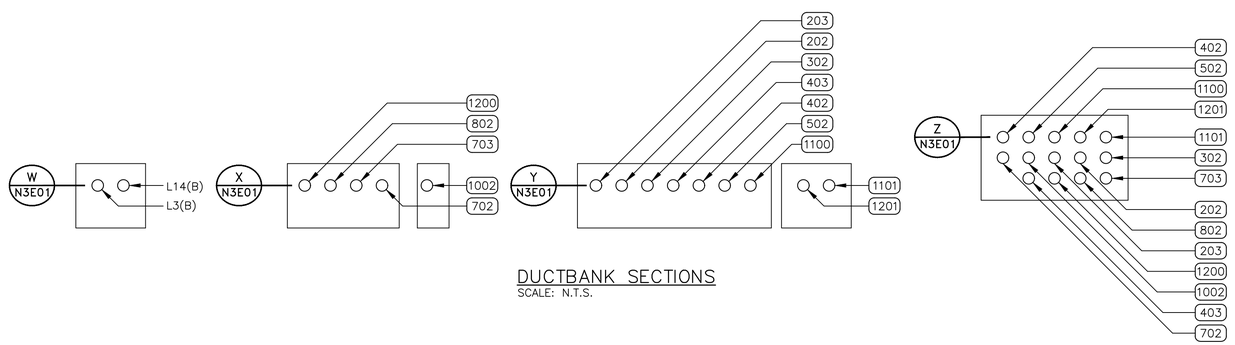
REV. NO.	DESCRIPTION	APP'D	DATE

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DRAWN BY:
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DWG. NO. N2E02-0516

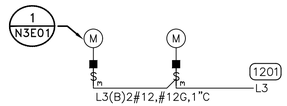
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COHSTD.BDR
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ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



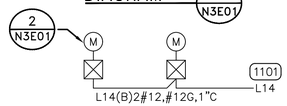
LIFT STATION PLAN



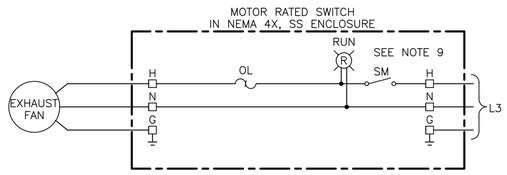
DUCTBANK SECTIONS
SCALE: N.T.S.



EXHAUST FAN ONE-LINE DIAGRAM A N3E01

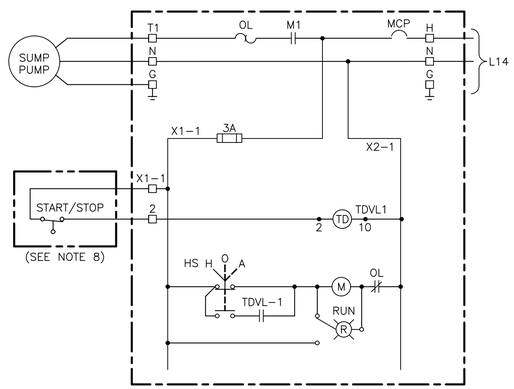


SUMP PUMP ONE-LINE DIAGRAM B N3E01



EXHAUST FAN

SCHEMATIC 1 N3E01 (SEE NOTE 9)



SUMP PUMP

SCHEMATIC 2 N3E01

NOTES TO DESIGN ENGINEER:

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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.
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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.
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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 CONTINUOUS RUN TO MOTOR STARTER.
9. MOTOR RATED SWITCH SIZE SHALL BE PER NAMEPLATE RATING OF MOTOR.

CONDUIT LAYOUT FOR LIFT STATION
4 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 Z0COX

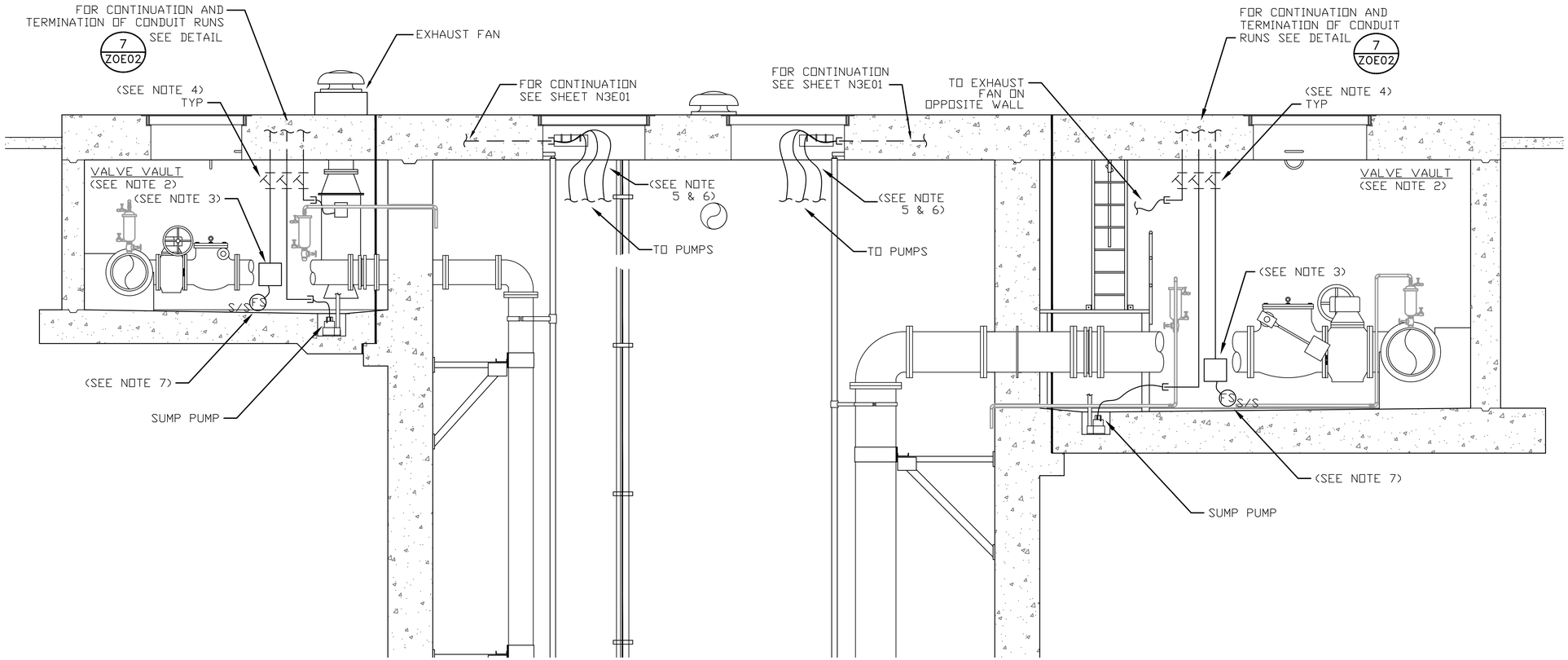
REV. NO.	DESCRIPTION	APP'D	DATE

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FIELD BOOK NO.
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DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO. N3E01-0516

CADD DWG. FILE NO. : N3E01-4W2D.DWG

COHSTD.BDR

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



SECTION A N3E01

NOTES TO DESIGN ENGINEER:

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9. MOTOR RATED SWITCH SIZE SHALL BE PER NAMEPLATE RATING OF MOTOR.

ELEVATION SECTION 4 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 Z0C0X

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: XX" = 1'-0"
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO. N3E02-0516

CADD DWG. FILE NO. : N3E02-4W2D.DWG

COHSTD.BDR

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

EQUIPMENT & DEVICE SCHEDULE

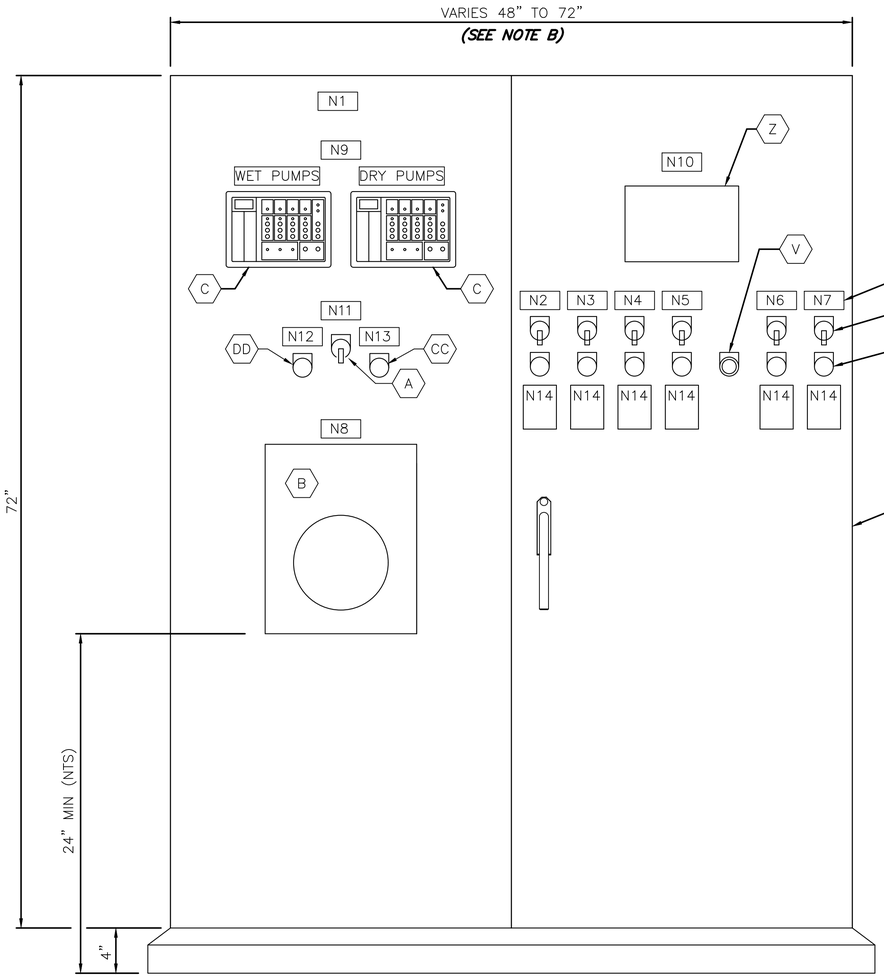
ITEM	QUANTITY	DESCRIPTION
A	1	PRIMARY – BACKUP PLC MODE SECTOR SWITCH
B	1	WELL LEVEL RECORDER – 4–20mA INPUT, FOXBORO DUAL CHANNEL
C	2	PUMP CONTROLLER – DIGITAL CONTROL CORP. MODEL 11436 OR EQUAL
D	*	NOT USED
E	6	HAND–OFF–AUTO SWITCH, 3 POSITION, HEAVY DUTY, OILTIGHT WITH 2 SETS OF CONTACT BLOCKS (PUMP CONTROL)
F	6	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	–	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	1	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.W104	N12	PRIMARY
N6	PUMP NO.D105	N13	BACKUP
N7	PUMP NO.D106	N14	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:

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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.

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NOTES:

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

REV. NO.	DESCRIPTION	APP'D	DATE

4 WET & 2 DRY WEATHER PUMPS
INDOOR CONTROL CABINET
EQUIPMENT LAYOUT & SCHEDULE

PROJECT NO.
R-000265-0XXX-X

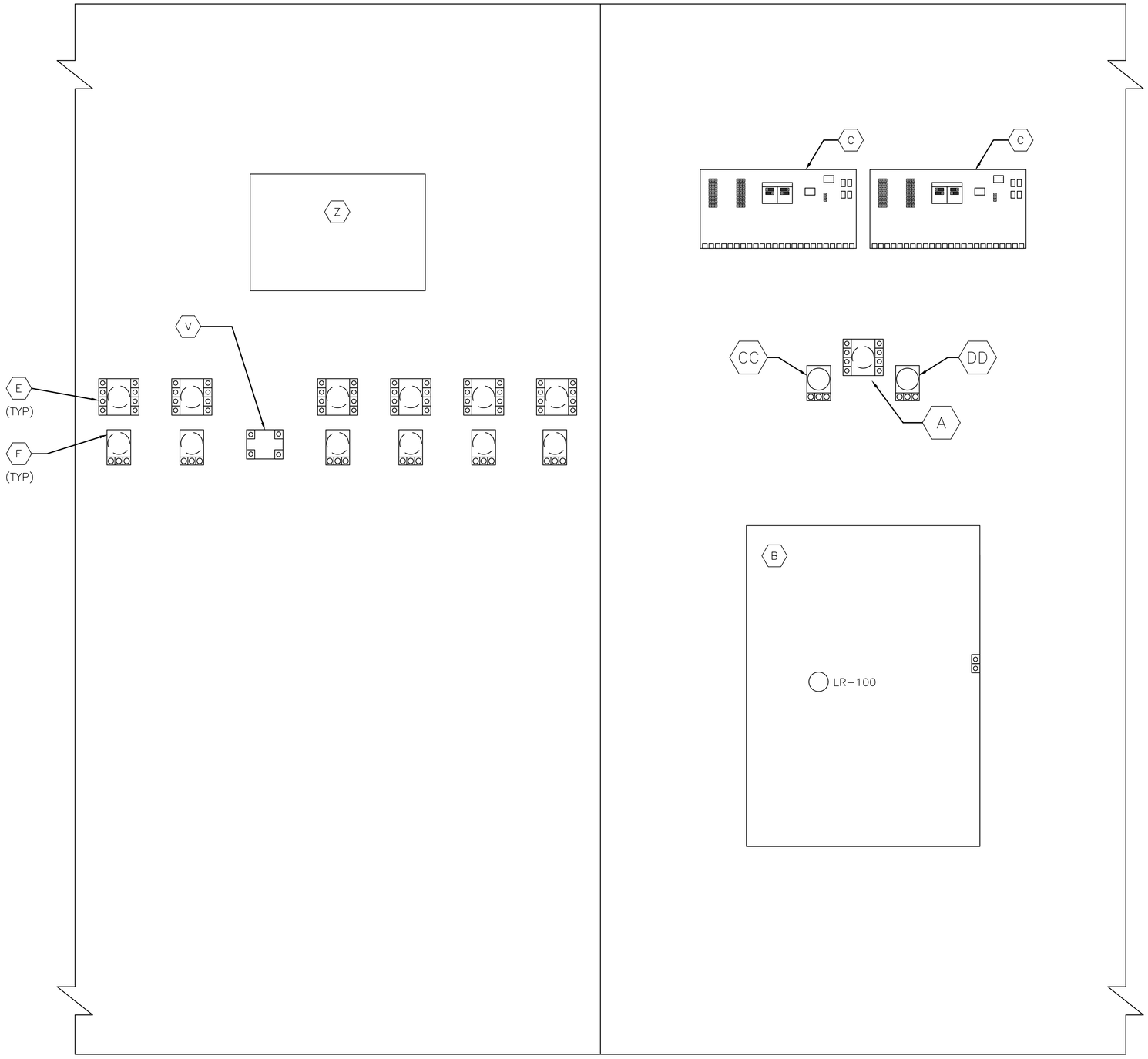
TITLE
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CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

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

SCALE: 1 1/2" = 1'-0"
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FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO.
YOE21-0516

CADD DWG. FILE NO. :
YOE21-4W2D.DWG
COHSTD.BDR
0 1 2 3
ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS



CONTROL CABINET

BACK DOOR ELEVATION

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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. SEE SHEET YOE21 FOR EQUIPMENT SCHEDULE.

4 WET & 2 DRY WEATHER PUMPS
INDOOR 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: 3" = 1'-0"
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.

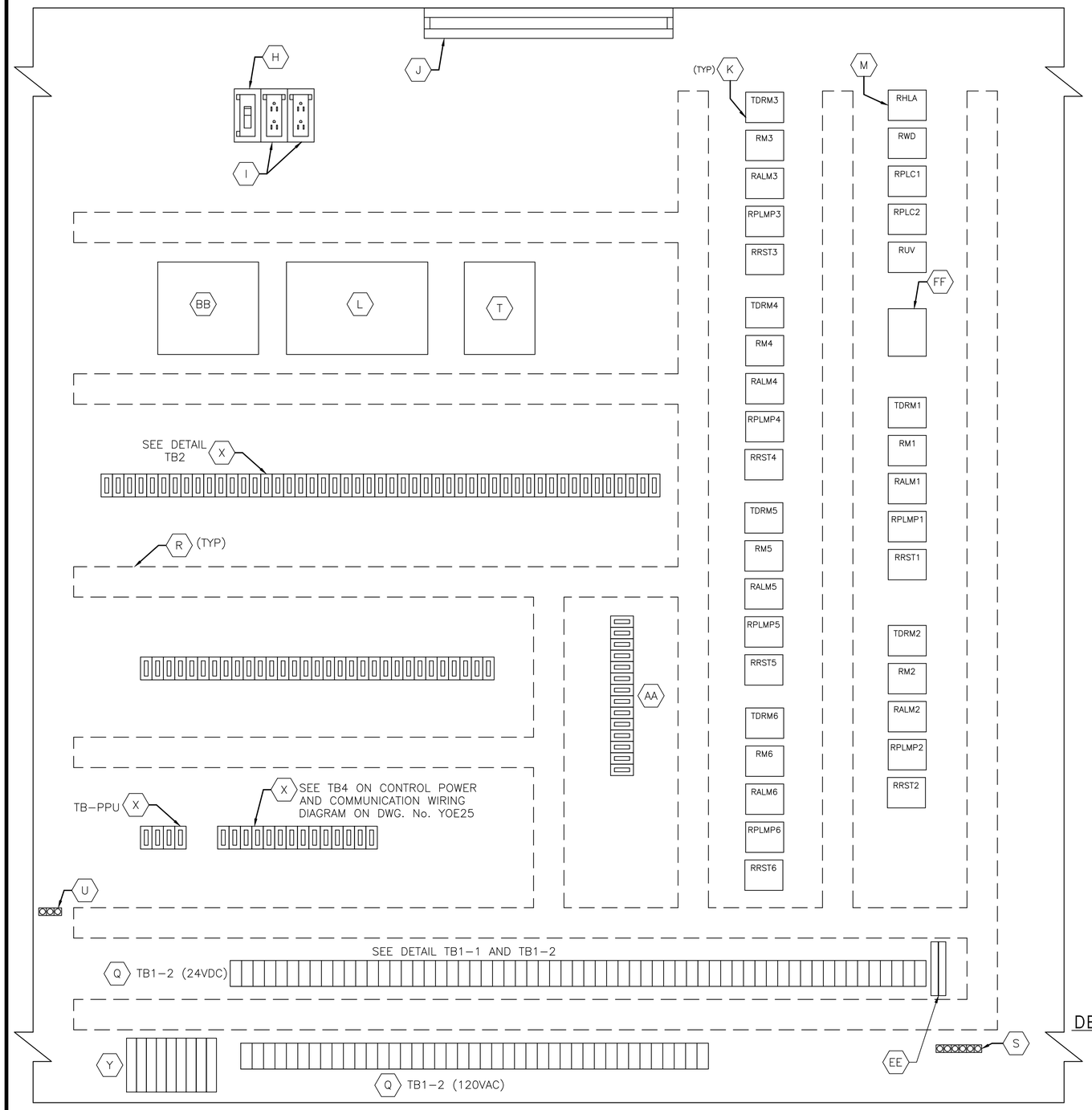
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DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO.
YOE22-0516

CADD DWG. FILE NO. :
YOE22-4W2D.DWG

COHSTD.BDR

0 1 2 3

ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS



CONTROL PANEL ELEVATION

DETAIL TB1-1
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
609
610
X1-6
611
X2-6
SPARE

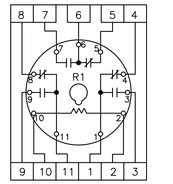
DETAIL TB1-2
TB1-2 CONT'D
11
1001

DETAIL TB1-2
TB1-2 CONT'D
1001A
12
1003
1003A
102
103
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
517
524
525
526
527
SPARE
602
603

DETAIL TB2
TB1-2 CONT'D
3P6
612
616
617
624
625
626
627
3
3N
13
13A
13G
14
14A
14G
27
28
29
30
31
32
33
34
35
36
SPARE
38
41
45
47
49
50
51
52
53
54
SPARE
100
108
113
117
118
119
SPARE
200
208
213

DETAIL TB2
TB2 CONT'D
217
218
219
SPARE
300
308
313
317
318
319
SPARE
400
408
413
417
418
419
SPARE
500
508
513
517
518
519
SPARE
600
608
613
617
618
619
SPARE

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
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.*

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. SEE SHEET YOE21 FOR EQUIPMENT SCHEDULE.

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

4 WET & 2 DRY WEATHER PUMPS
INDOOR CONTROL CABINET
EQUIPMENT LAYOUT

PROJECT NO. R-000265-0XXX-X

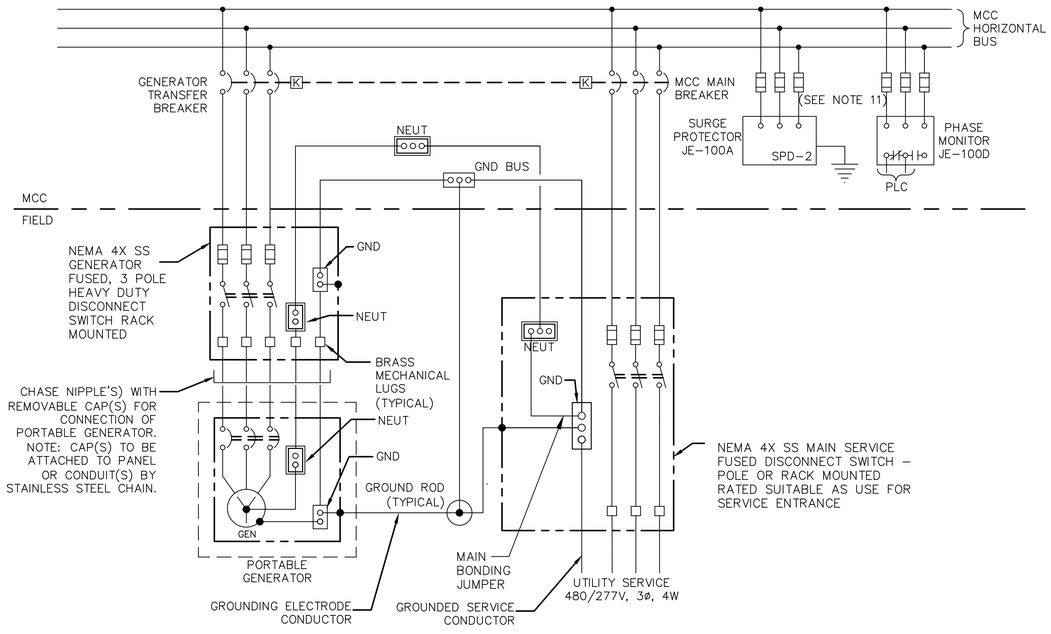
TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

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

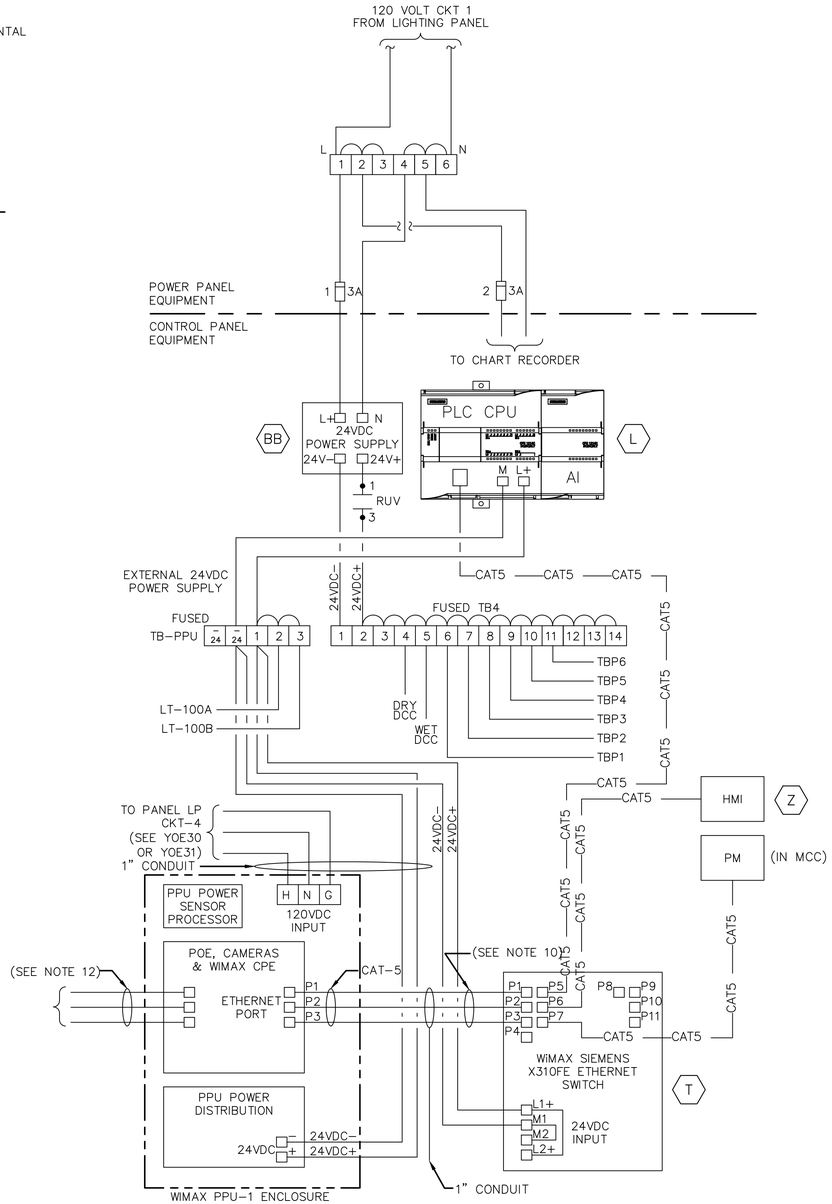
REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: 3" = 1'-0"
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO. YOE23-0516

CADD DWG. FILE NO. : YOE23-4W2D.DWG
COHSTD.BDR
0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



POWER WIRING DIAGRAM **(REFER TO NOTE 7)**



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, 105 OR 106.
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 YOE31.
8. NOT USED.
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.

4 WET & 2 DRY WEATHER PUMPS INDOOR 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

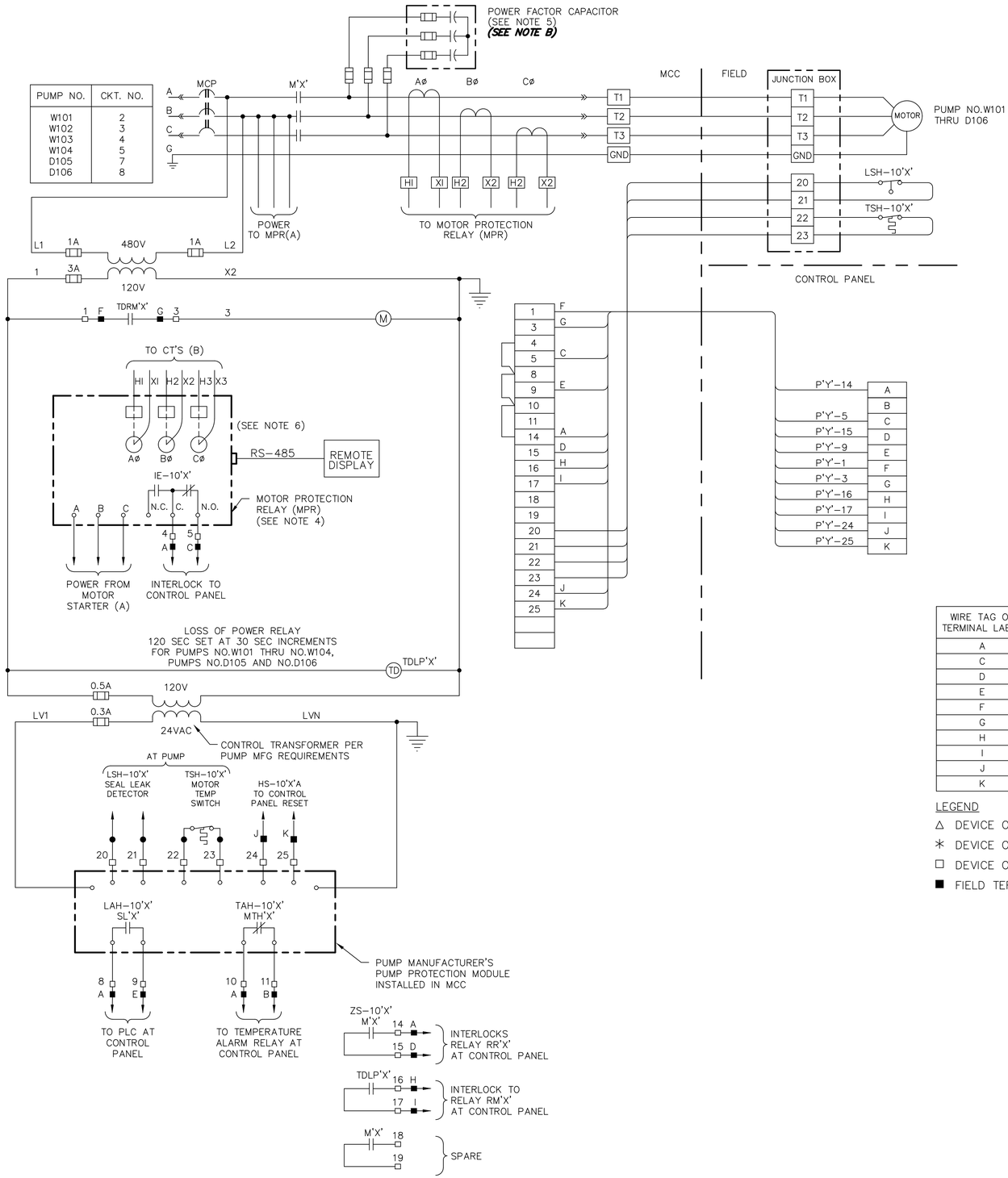
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET ZOC0X

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. YOE25-0516

CADD DWG. FILE NO. : YOE25-4W2D.DWG
COHSTD.BDR
0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



MCC POWER SCHEMATIC

PUMP NO.	CKT. NO.
W101	2
W102	3
W103	4
W104	5
D105	7
D106	8

WIRE TAG OR TERMINAL LABEL	WET PUMP NO.W101	WET PUMP NO.W102	WET PUMP NO.W103	WET PUMP NO.W104	DRY PUMP NO.D105	DRY PUMP NO.D106	FUNCTION
A	3P1	3P2	3P3	3P4	3P5	3P6	24VDC CONTROL
C	116	216	316	416	516	616	PUMP ALARM
D	112	212	312	412	512	612	M CONTACT
E	117	217	317	417	517	617	SEAL LEAK
F	109	209	309	409	509	609	RUN INTERLOCK
G	110	210	310	410	510	610	RUN INTERLOCK
H	102	202	302	402	502	602	LOSS OF POWER TIMER
I	103	203	303	403	503	603	LOSS OF POWER TIMER
J	124	224	324	424	524	602	RESET
K	125	225	325	425	525	603	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, W104, D105 OR D106.
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.

4 WET & 2 DRY WEATHER PUMPS
INDOOR 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

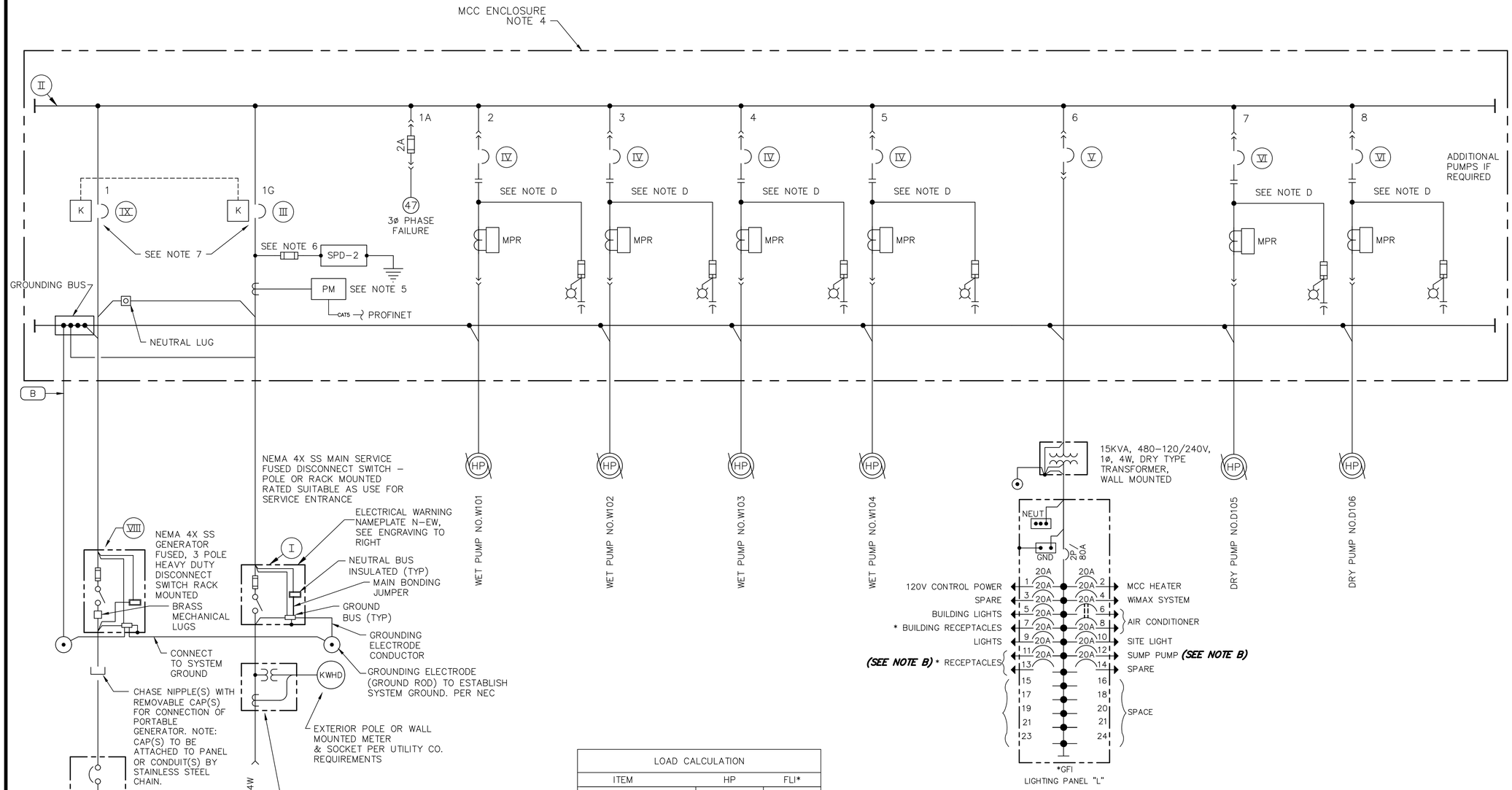
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

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

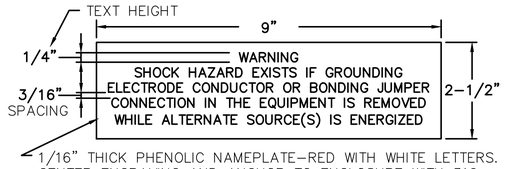
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DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO.
YOE26–0516

CADD DWG. FILE NO. :
YOE26–4W2D.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. W104	___ HP	___A
PUMP NO. D105	___ HP	___A
PUMP NO. D106	___ 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 LOW PROFILE, EXPOSED SITE CONFIGURATION, ONLY. PROVIDE VALVE VAULT LIGHTING, RECEPTACLES, SUMP PUMP AND EXHAUST FAN FOR CLOSED TOP VALVE VAULTS ONLY (CONCRETE 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 YOE52.

4 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 ZOC0X

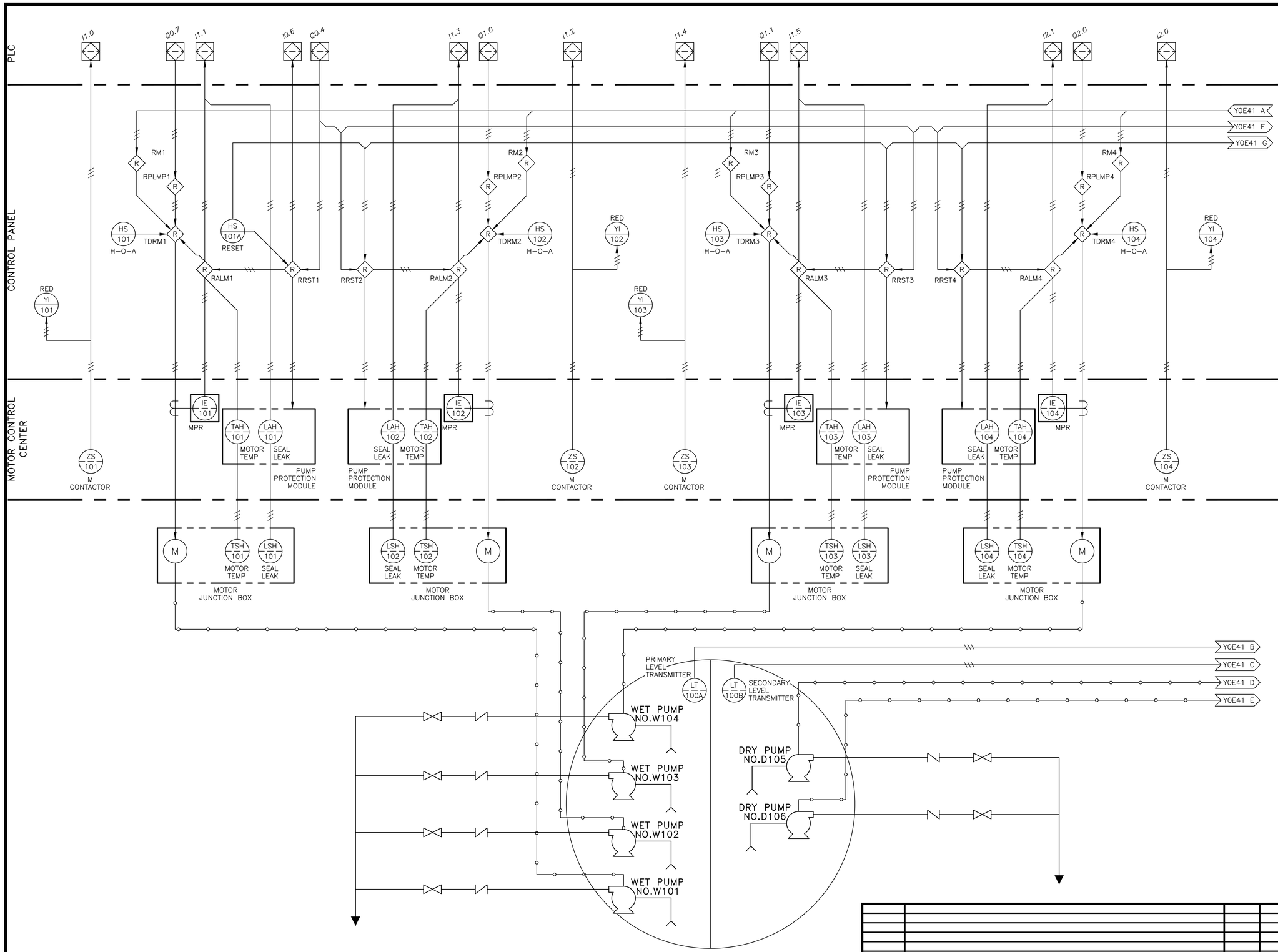
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DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO. Y0E31-0516

CADD DWG. FILE NO. : Y0E31-4W2D.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.*

4 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

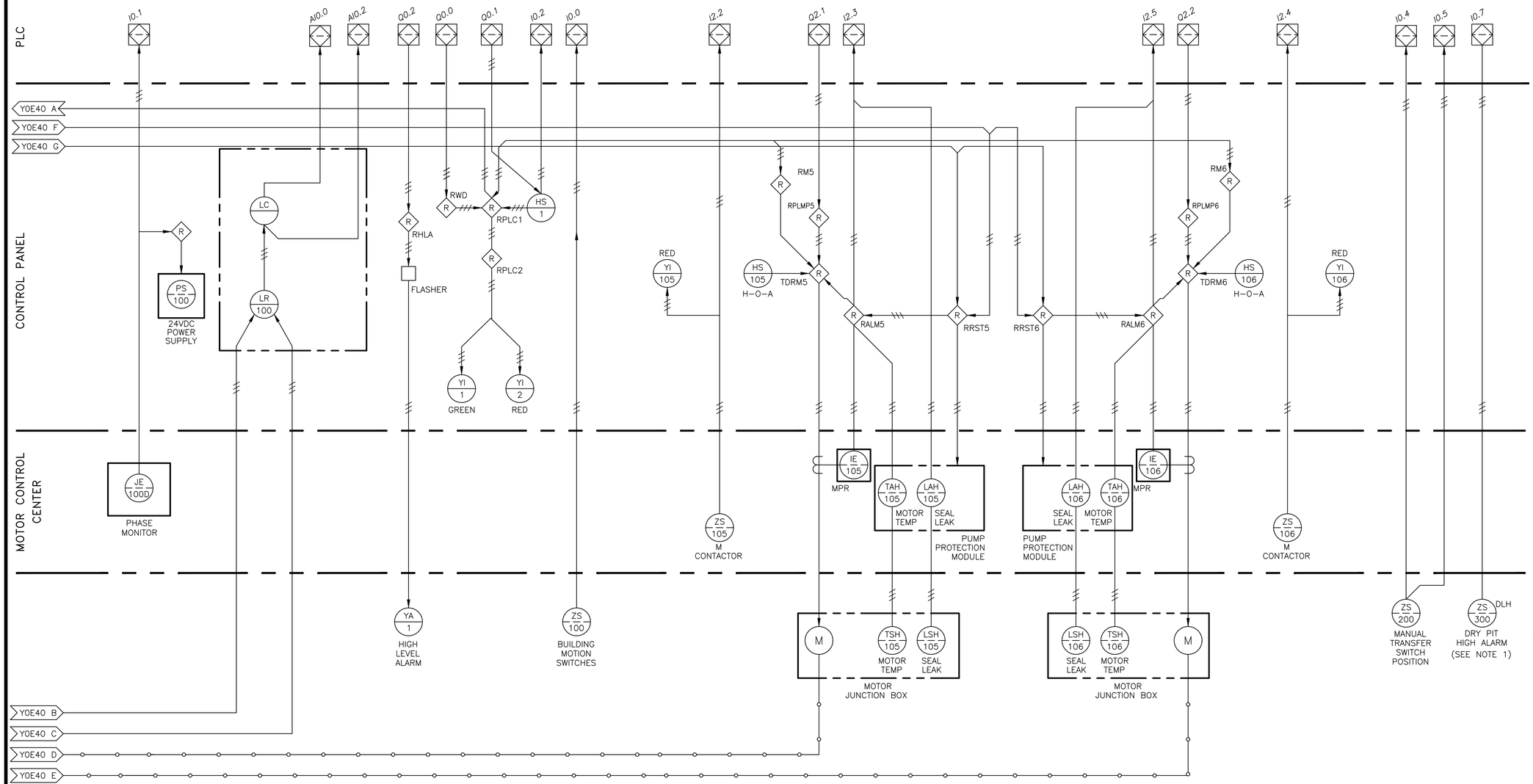
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET 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. Y0E40-0516

CADD DWG. FILE NO. : Y0E40-4W2D.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. 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. DRY/WET PIT APPLICATION ONLY.

REV. NO.	DESCRIPTION	APP'D	DATE

4 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 Z0C0X

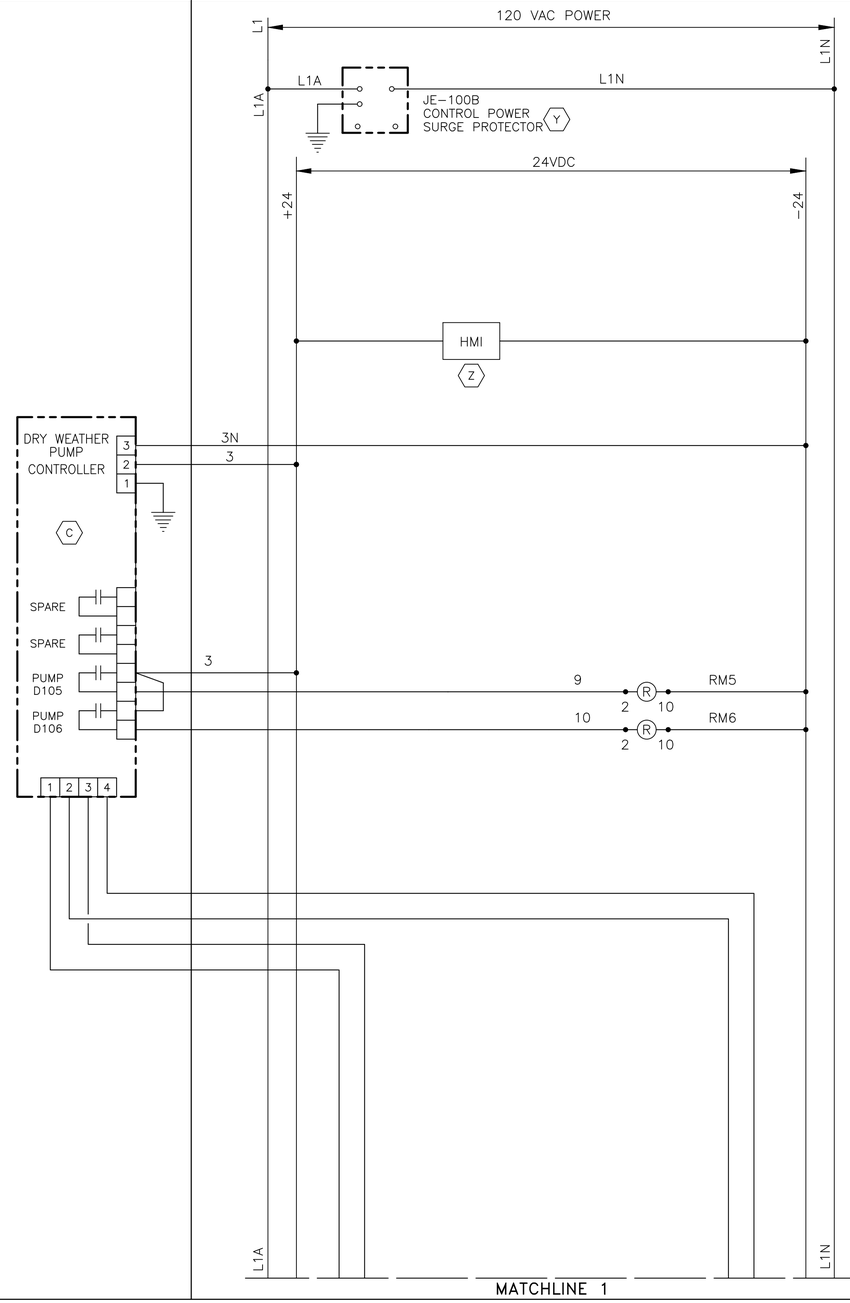
SCALE: NONE
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO.
Y0E41-0516

CADD DWG. FILE NO. :
Y0E41-4W2D.DWG

COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS

FIELD	MOTOR CONTROL CENTER (INDOOR)	CONTROL PANEL		
		DOOR	INTERIOR PANEL	PLC



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.*

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4 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 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.
Y0E50-0516

CADD DWG. FILE NO. :
Y0E50-4W2D.DWG

COHSTD.BDR

0 1 2 3
ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS

FIELD

CONTROL PANEL

DOOR

INTERIOR PANEL

PLC

MATCHLINE 1

120 VAC POWER

24VDC

L1A

+24

-24

L1N

WET WEATHER PUMP CONTROLLER

3N

3

C

PUMP W104

PUMP W103

PUMP W102

PUMP W101

8 RM4

7 RM3

6 RM2

5 RM1

2 10

14

13

120V POWER SEE CIRCUIT 120V CKT-1 ON CONTROL POWER AND COMMUNICATION DIAGRAM ON DWG. Y0E30/Y0E31

LR-100 CHART RECORDER

(+) (-) INPUT

1002

1004

B

1

24V-

2

11

1001

1001A

12

1003

1003A

ANALOG I/O SURGE SUPPRESSOR

EE

24V+

1001B

1003B

TB-PPU

24V-

13

13A

13G

50mA

AI0.0 WET WELL LEVEL TRANSMITTER

L+

CPU POWER

M

CPU COMMON

14

14A

14G

AI0.2 WET WELL LEVEL TRANSMITTER

PRESSURE LEVEL TRANSDUCER JUNCTION BOX

MFG. CABLE

LT-100A

LT-100B

MATCHLINE 2

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

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4 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 Z0C0X

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.

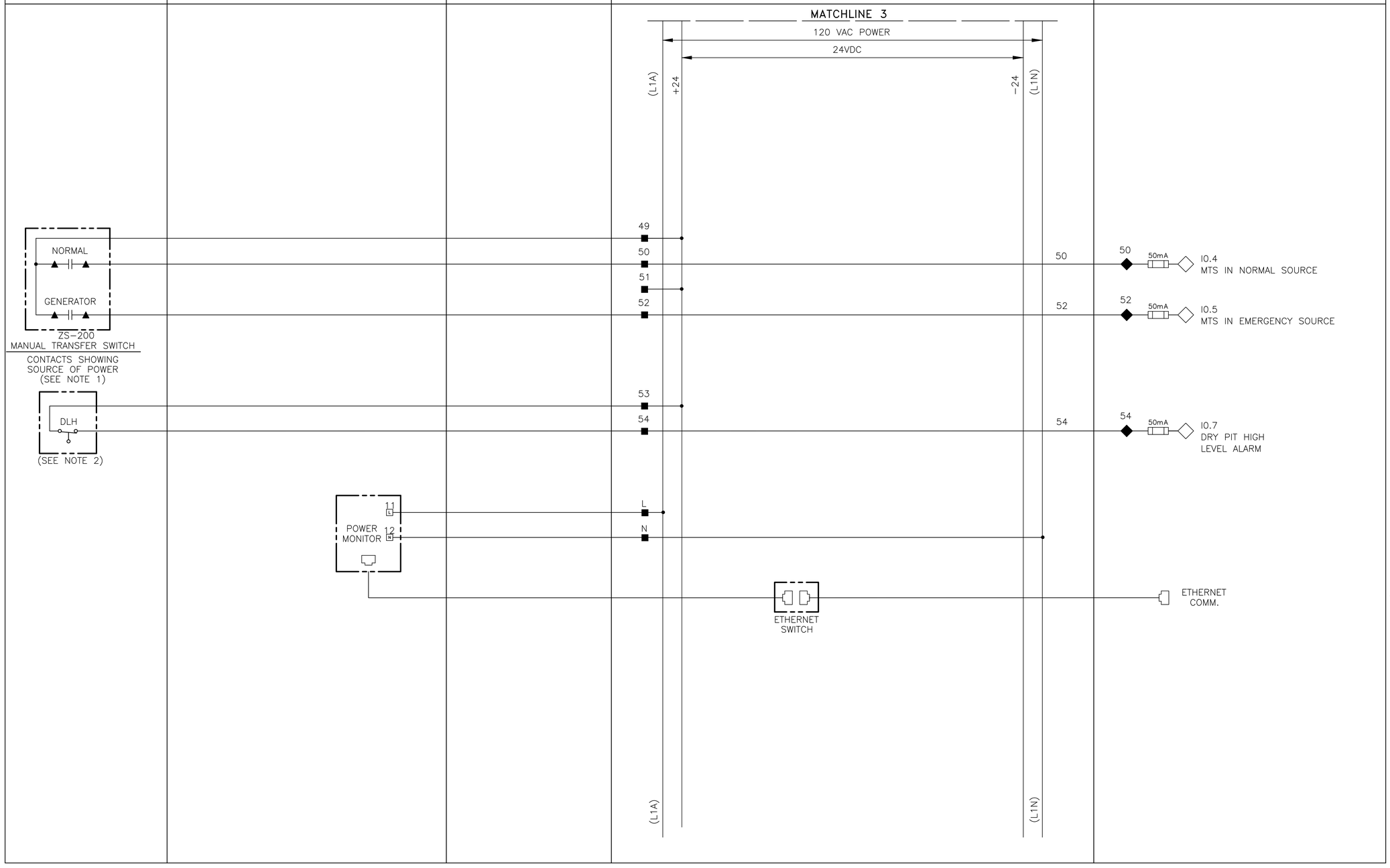
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO. Y0E51-0516

CADD DWG. FILE NO. : Y0E51-4W2D.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

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

REV. NO.	DESCRIPTION	APP'D	DATE

4 WET & 2 DRY WEATHER PUMPS
CONTROL WIRING DIAGRAM

PROJECT NO.
R-000265-0XXX-X

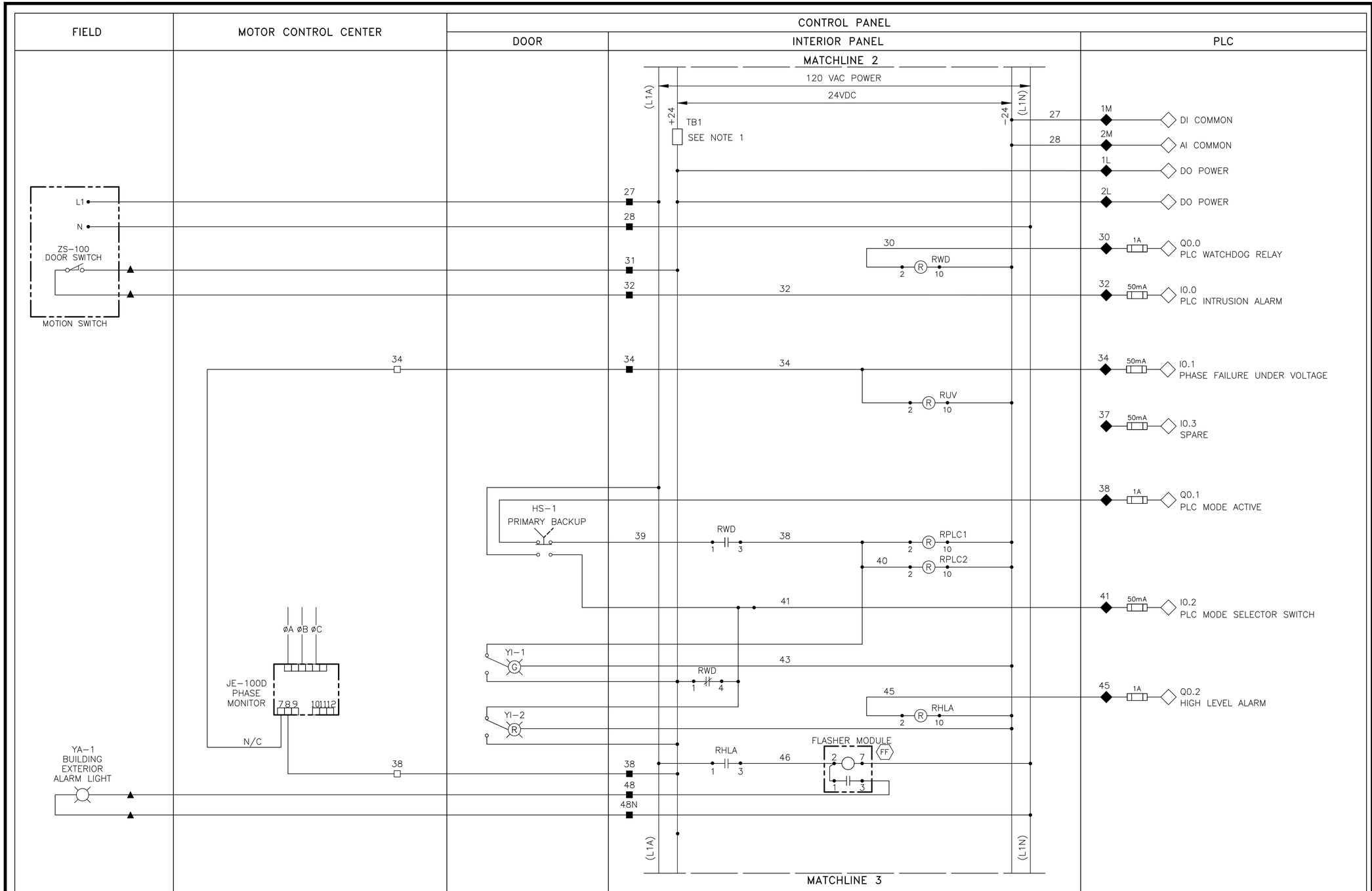
TITLE
CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

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

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

CADD DWG. FILE NO. :
Y0E52-4W2D.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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NOTES:

1. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM.

REV. NO.	DESCRIPTION	APP'D	DATE

4 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 Z0C0X

SCALE: NONE
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.

DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS

DWG. NO.
Y0E53-0516

CADD DWG. FILE NO. :
Y0E52-4W2D.DWG

COHSTD.BDR

0 1 2 3

ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS

FIELD | MOTOR CONTROL CENTER | CONTROL PANEL (DOOR | INTERIOR PANEL | PLC)

PUMP NO. 101
T1 T2 T3 G
A B C
T1 T2 T3
Aø Bø Cø
M1
MCP
MCC CKT 2
1A 1A
CPT – 480–120VAC 1PH, 250VA MIN
X1–1 3A X2–1
TDLP1 (TD) 2 10
TDLP1 1 3
16 17 18 19
M1
X1–1 1 3
ZS–101 (M)
M1
14 15
IE–101
MOTOR PROTECTION RELAY (MPR) (SEE NOTE 1)
A B C MPR1
4 5
RS–485
REMOTE DISPLAY (SEE NOTE 3)
A B C
M1
20 21
0.5A 0.3A
CPT – 120–24VAC 1PH, 50VA
LSH–101 △ SEAL LEAK DETECTOR
TSH–101 △ MOTOR TEMP SWITCH
120 121 122 123
20 21 22 23
120 121 122 123
LAH–101 SL1
TAH–101 MTH1
8 9 10 11
RESET
24 25
TERMINAL JUNCTION BOX
PUMP PROTECTION MODULE

24 VDC POWER
24+ 24–
TBP1 SEE NOTE 2
6 3P1
101 RALM1 102
1 4
3N1
102 103
HS–101 H O A
100 R RPLMP1 2 10
100 1A Q0.7 PUMP NO. 101 CALL TO RUN
104 R TDRM1 2 10
ON DELAY 3 SEC.
105 RPLC1 106 RM1
1 4 1 3
RPLC1 107 RPLMP1
1 3 1 3
109 TDRM1 1 3
110
3P1
112
113 113 50mA I1.0 PUMP NO. 101 ON/OFF
YI–101 (R)
3N1
3P1
114 RRST1 115 RALM1
1 4 6 7
116 R RALM1 2 10
116
3P1 RALM1 1 3
117 117 50mA I1.1 PUMP NO. 101 ALARM
126
127
3P1
3P1 RRST1 1 3
118 118 50mA I0.6 ALARMS RESET
119 R RRST1 2 10
119 119 1A Q0.4 ALARMS RESET
HS–101A RESET
TO SHEET YOE59
TO 219 ON SHEET YOE59
117
124 RRST1 6 7
125

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 PROVIDED IN MCC CUBICLE, AND SET TO DISPLAY CURRENT READING.

4 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
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO. YOE58–0516

CADD DWG. FILE NO. : YOE58–4W2D.DWG
COHSTD.BDR
0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

FIELD | MOTOR CONTROL CENTER | CONTROL PANEL (DOOR | INTERIOR PANEL | PLC)

PUMP NO. 102
T1 T2 T3 G
A B C
MCP
MCC CKT 3
Aø Bø Cø
M2
1A 1A
CPT – 480–120VAC 1PH, 250VA MIN
X1–2 3A X2–2
TDLP2
0.5A 0.3A
CPT – 120–24VAC 1PH, 50VA

IE–102
MOTOR PROTECTION RELAY (MPR) (SEE NOTE 1)
MPR2
RS–485
REMOTE DISPLAY (SEE NOTE 3)
RESET
PUMP PROTECTION MODULE

LSH–102 SEAL LEAK DETECTOR
TSH–102 MOTOR TEMP SWITCH
TERMINAL JUNCTION BOX
LAH–102 SL2
TAH–102 MTH2

24 VDC POWER
24+ 24–
TBP2 SEE NOTE 2
RALM2
3P2 3N2

HS–102 H O A
RPLC1 RM2 RPLMP2 TDRM2 RRST2
ON DELAY 6 SEC.

YI–102

FROM SHEET YOE58
HS–101A RESET
TO SHEET YOE60
FROM 119 ON SHEET YOE58
TO 319 ON SHEET YOE60

Q1.0 PUMP NO. 102 CALL TO RUN
I1.2 PUMP NO. 102 ON/OFF
I1.3 PUMP NO. 102 ALARM

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. : YOE59–4W2D.DWG
COHSTD.BDR
0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

REV. NO.	DESCRIPTION	APP'D	DATE

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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.

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

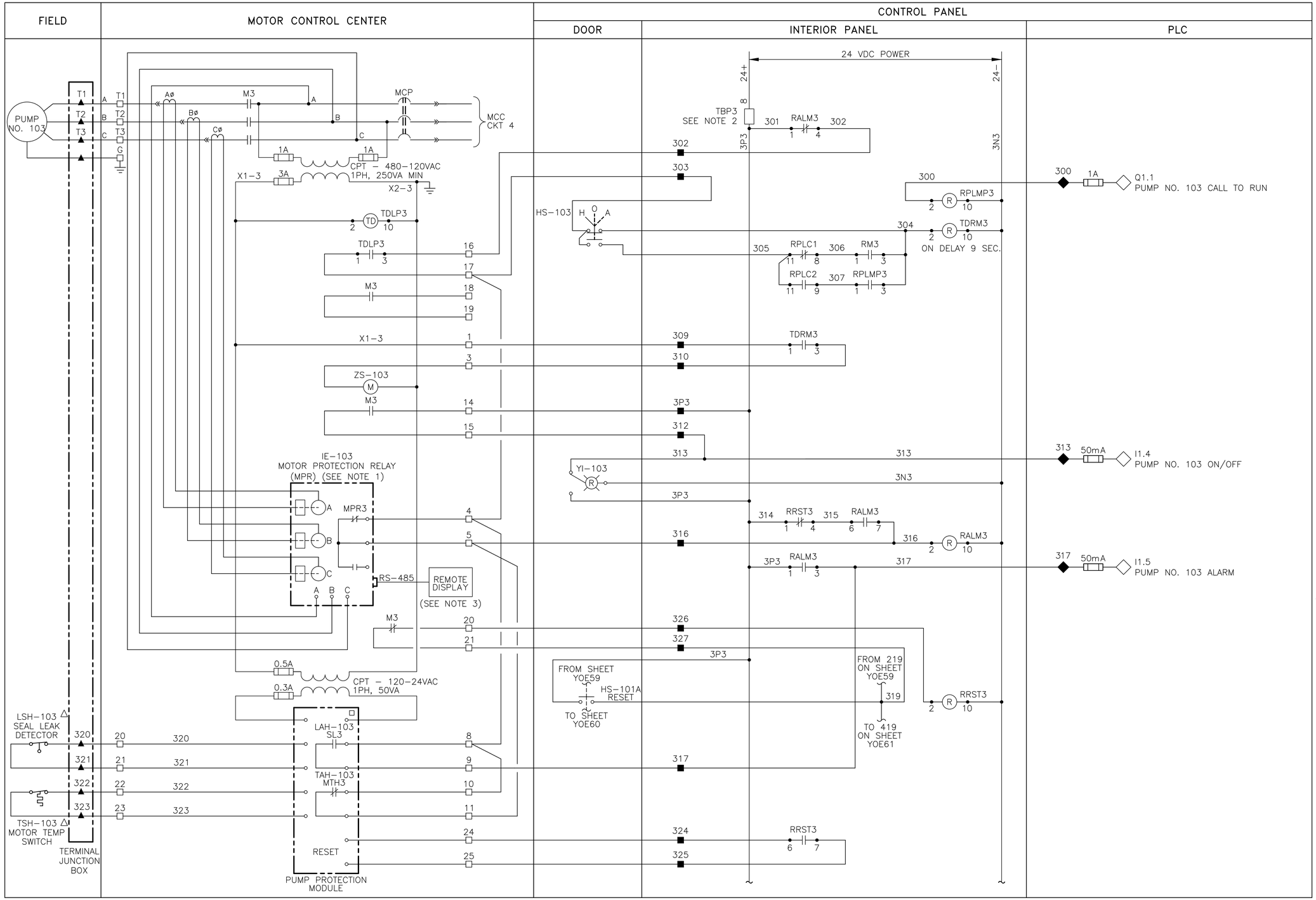
PROJECT NO. R–000265–0XXX–X

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 Z0C0X

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

CADD DWG. FILE NO. : YOE22–4W2D.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. 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 TO DISPLAY CURRENT READING.

REV. NO.	DESCRIPTION	APP'D	DATE

4 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 Z0C0X

SCALE: 3" = 1'-0"	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE:	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO. YOE60-0516
FIELD BOOK NO.	

FIELD | MOTOR CONTROL CENTER | CONTROL PANEL — DOOR | INTERIOR PANEL | PLC

PUMP NO. 104
T1 T2 T3 G
A B C
MCP
MCC CKT 5
Aø Bø Cø
M4
1A 1A
CPT – 480–120VAC 1PH, 250VA MIN
X1–4 3A X2–4
TDLP4 (TD) 2 10
TDLP4 1 3
16 17 18 19
M4
X1–4 1 3
ZS–104 (M)
M4 14 15
IE–104
MOTOR PROTECTION RELAY (MPR) (SEE NOTE 1)
A B C MPR4 4 5
RS–485
REMOTE DISPLAY (SEE NOTE 3)
A B C
M4 20 21
0.5A 0.3A
CPT – 120–24VAC 1PH, 50VA
LSH–104 SEAL LEAK DETECTOR 420 421
TSH–104 MOTOR TEMP SWITCH 422 423
TERMINAL JUNCTION BOX
20 21 22 23
420 421 422 423
LAH–104 SL4
TAH–104 MTH4
8 9 10 11
RESET
24 25
PUMP PROTECTION MODULE

24 VDC POWER
24+ 24–
TBP4 SEE NOTE 2
10 3P4
401 RALM4 402
1 4
402 403
HS–104 H O A
400 R RPLMP4 2 10
404 R TDRM4 2 10
405 RPLC2 1 4 406 RM4 1 3 ON DELAY 12 SEC.
RPLC2 1 3 407 RPLMP4 1 3
409 TDRM4 1 3
410
3P4 412
413 413
YI–104 (R)
3N4
3P4
414 RRST4 1 4 415 RALM4 6 7
416 416 R RALM4 2 10
3P4 RALM4 1 3 417
426
427 3P4
FROM SHEET YOE60 HS–101A RESET TO SHEET YOE62
FROM 319 ON SHEET YOE60 419 TO 519 ON SHEET YOE62
R RRST4 2 10
417
424 RRST4 6 7
425

400 1A Q2.0 PUMP NO. 104 CALL TO RUN
413 50mA I2.0 PUMP NO. 104 ON/OFF
417 50mA I2.1 PUMP NO. 104 ALARM

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. : Y0E61–4W2D.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. *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 TO DISPLAY CURRENT READING.

REV. NO.	DESCRIPTION	APP'D	DATE

4 WET & 2 DRY WEATHER PUMPS
PUMP W104
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

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

FIELD | MOTOR CONTROL CENTER | CONTROL PANEL (DOOR | INTERIOR PANEL | PLC)

PUMP NO. 105
T1 T2 T3 G
A B C
MCC CKT 7
MCP
M5
Aø Bø Cø
1A 1A
CPT – 480–120VAC 1PH, 250VA MIN
X1–5 3A X2–5
TDLP5
TD 2 10
TDLP5 1 3
M5
X1–5
ZS–105
M
M5
IE–105
MOTOR PROTECTION RELAY (MPR) (SEE NOTE 1)
A B C
MPR5
RS–485
REMOTE DISPLAY (SEE NOTE 3)
M5
0.5A 0.3A
CPT – 120–24VAC 1PH, 50VA
LSH–105 SEAL LEAK DETECTOR
TSH–105 MOTOR TEMP SWITCH
TERMINAL JUNCTION BOX
LAH–105 SL5
TAH–105 MTH5
RESET
PUMP PROTECTION MODULE

24 VDC POWER
24+ 24–
TBP5 SEE NOTE 2
11 3P5
501 RALM5 502
3N5
HS–105 H O A
504 TDRM5 2 R 10
505 RPLC2 6 5 506 RM5 1 3
ON DELAY 15 SEC.
RPLC2 6 7 507 RPLMP5 1 3
RPLMP5 2 R 10
TDRM5 1 3
YI–105 R
514 RRST5 1 4 515 RALM5 6 7
RALM5 2 R 10
3P5 RALM5 1 3
RRST5 6 7
FROM SHEET YOE61
HS–101A RESET
TO SHEET YOE63
FROM 419 ON SHEET YOE61
519
TO 619 ON SHEET YOE63
RRST5 2 R 10

500 1A Q2.1 PUMP NO. 105 CALL TO RUN
513 50mA I2.2 PUMP NO. 105 ON/OFF
517 50mA I2.3 PUMP NO. 105 ALARM

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. : YOE62–4W2D.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. 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 TO DISPLAY CURRENT READING.

REV. NO.	DESCRIPTION	APP'D	DATE

4 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

SCALE: NONE
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO. YOE62–0516

FIELD | MOTOR CONTROL CENTER | CONTROL PANEL (DOOR | INTERIOR PANEL | PLC)

PUMP NO. 106
T1 T2 T3 G
A B C
MCC CKT 8
Aø Bø Cø
M6
MCP
1A 1A
CPT – 480–120VAC 1PH, 250VA MIN
X1–6 3A X2–6
TDLP6 2 TD 10
TDLP6 1 3
M6
X1–6 1
ZS–106 M
M6
IE–106 MOTOR PROTECTION RELAY (MPR) (SEE NOTE 1)
MPR6
A B C
RS–485
REMOTE DISPLAY (SEE NOTE 3)
M6
0.5A 0.3A
CPT – 120–24VAC 1PH, 50VA
LSH–106 SEAL LEAK DETECTOR
TSH–106 MOTOR TEMP SWITCH
TERMINAL JUNCTION BOX
LAH–106 SL6
TAH–106 MTH6
RESET
PUMP PROTECTION MODULE

24 VDC POWER
24+ 24–
;TBP6 SEE NOTE 2
3P6 12
RALM6 601 1 4 602
3N6
HS–106 H O A
TDRM6 604 2 R 10
RPLMP6 600 2 R 10
RPLC2 605 11 8
RM6 606 1 3
RPLC2 11 9
RPLMP6 607 1 3
ON DELAY 18 SEC.
TDRM6 609 1 3
610
3P6 612
YI–106 R
3N6
3P6
RRST6 614 1 4
RALM6 615 6 7
RALM6 616 2 R 10
3P6 RALM6 1 3 617
FROM SHEET YOE62 HS–101A RESET
FROM 519 ON SHEET YOE62 619
RRST6 2 R 10
RRST6 624 6 7
625

600 1A Q2.2 PUMP NO. 106 CALL TO RUN
613 50mA I2.4 PUMP NO. 106 ON/OFF
617 50mA I2.5 PUMP NO. 106 ALARM

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. : YOE22–4W2D.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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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 TO DISPLAY CURRENT READING.

4 WET & 2 DRY WEATHER PUMPS
PUMP D106
CONTROL WIRING DIAGRAM

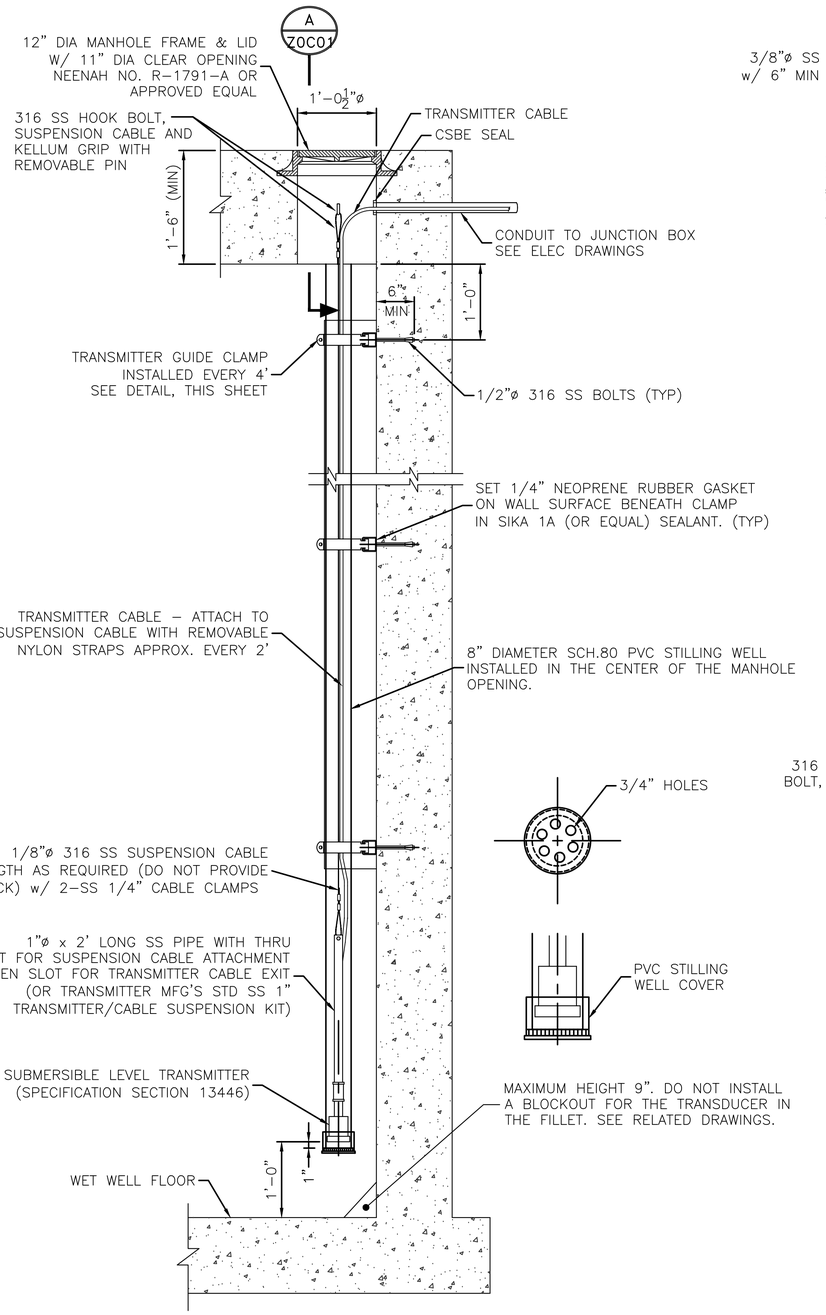
PROJECT NO. R–000265–0XXX–X

TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

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

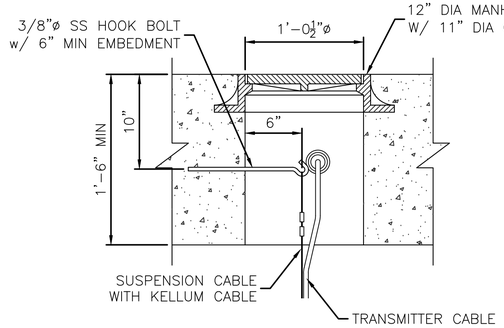
DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET Z0C0X

SCALE: 3" = 1'–0"
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO. YOE63–0516



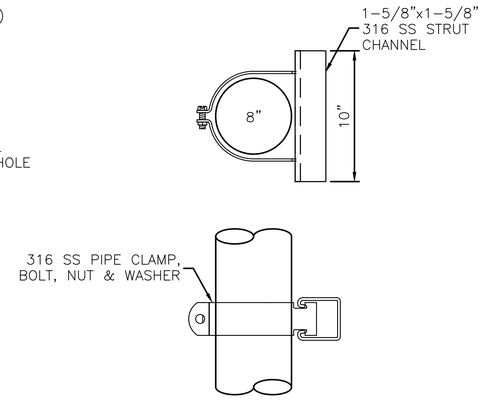
SUBMERSIBLE TRANSDUCER WELL LEVEL GAUGING SYSTEM TYP INSTALLATION DETAIL

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.

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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

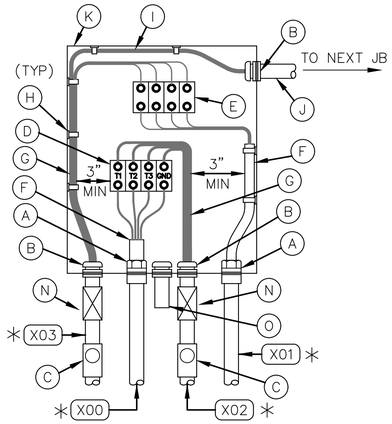
SCALE: AS NOTED
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO. Z0C01-0516

CADD DWG. FILE NO. : Z0C01.DWG

COHSTD.BDR

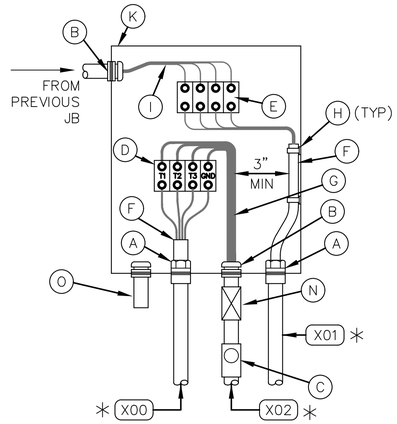
0 1 2 3

ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS



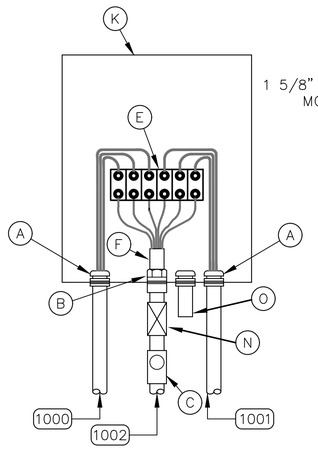
BEGINNING JUNCTION BOX
FOR PUMP NOS.
(SEE NOTES E)

DETAIL 3 / Z0E02
(SEE NOTE 7)



END JUNCTION BOX
FOR PUMP NOS.
(SEE NOTES E)

DETAIL 5 / Z0E02
(SEE NOTE 7)



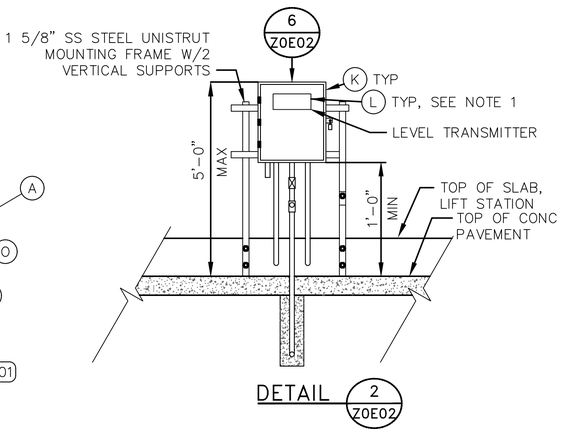
LEVEL TRANSMITTER
JUNCTION BOX
(SEE NOTE E)

DETAIL 6 / Z0E02
(SEE NOTE 7)

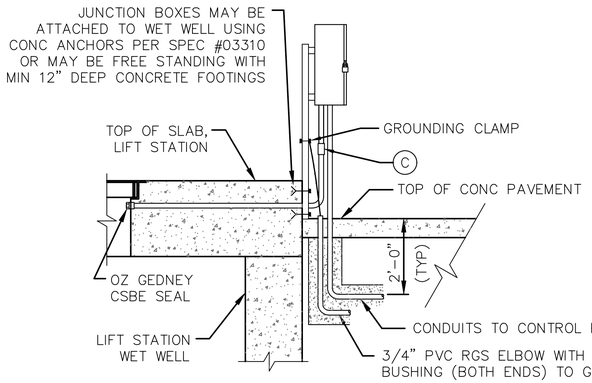
∗ REPLACE 'X' PER NOTATION SCHEDULE

NOTATION SCHEDULE

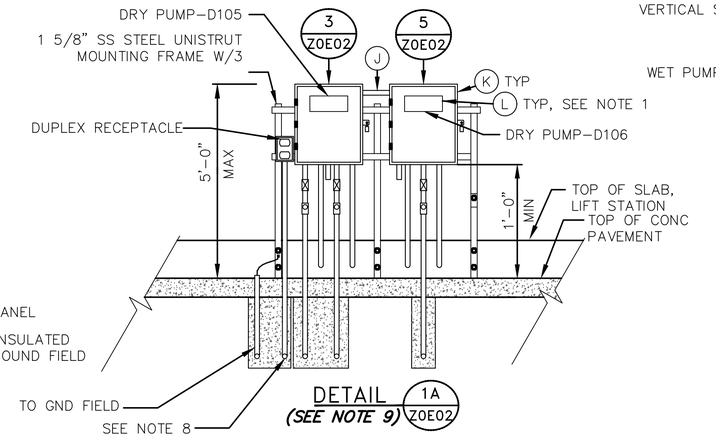
'X'	PUMP NO.
2	W101
3	W102
4	W103
5	W104
7	D105
8	D106



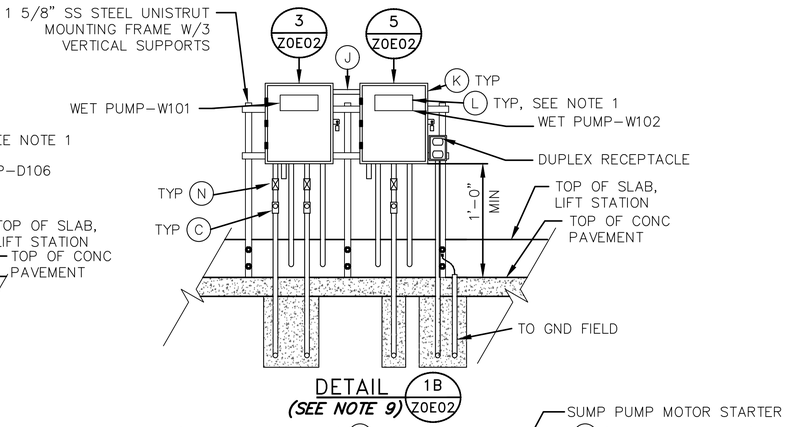
DETAIL 2 / Z0E02



TYP SIDE VIEW FOR DETAIL 1, 1A & 2



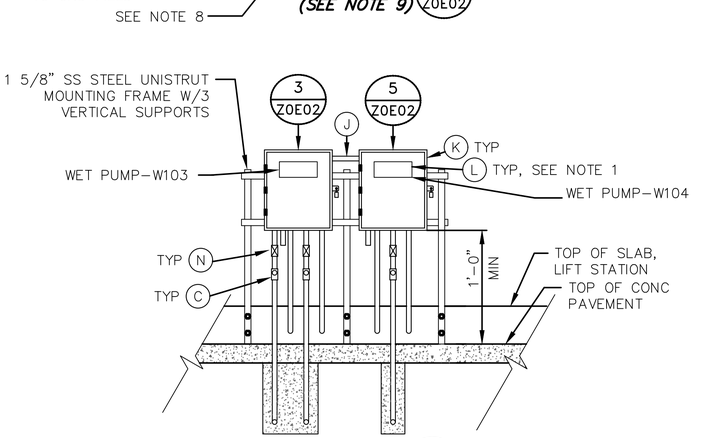
DETAIL 1A / Z0E02
(SEE NOTE 9)



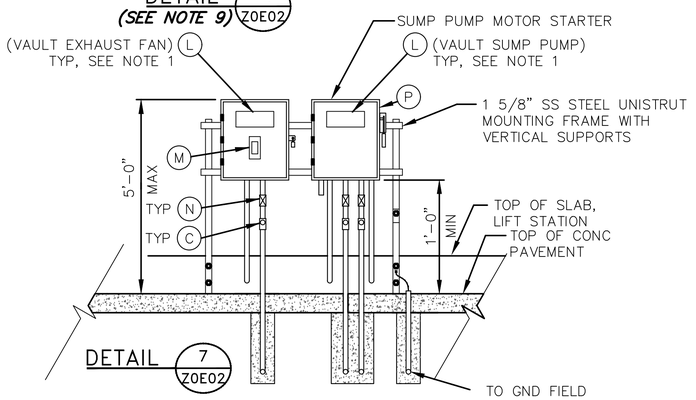
DETAIL 1B / Z0E02
(SEE NOTE 9)

JUNCTION BOX EQUIPMENT SCHEDULE

- A – OZ GEDNEY CSBE SEAL
- B – WATERTIGHT CONDUIT HUB WITH INSULATED BUSHING
- C – CLASS I, DIV 1, EXPLOSION 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 SPECIFICATIONS (SEE NAMEPLATE SCHEDULE)
- M – NOT USED
- N – EXPANSION FITTING
- O – DRAIN VENT



DETAIL 1C / Z0E02
(SEE NOTE 9)



DETAIL 7 / Z0E02

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. 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.

4 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

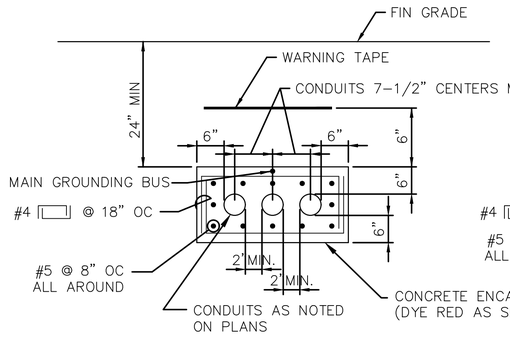
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

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

REV. NO.	DESCRIPTION	APP'D	DATE

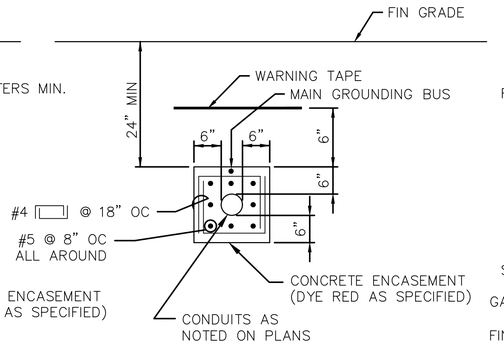
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SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
SHEET NO. OF SHEETS
DWG. NO. Z0E02–0516

CADD DWG. FILE NO. : Z0E02.DWG
COHSTD.BDR
0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



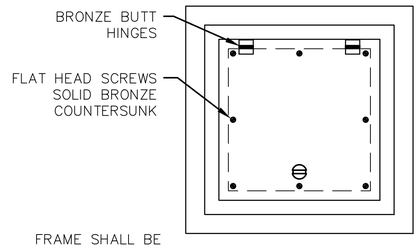
TYP MULTI-CONDUIT DUCTBANK SECTION

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

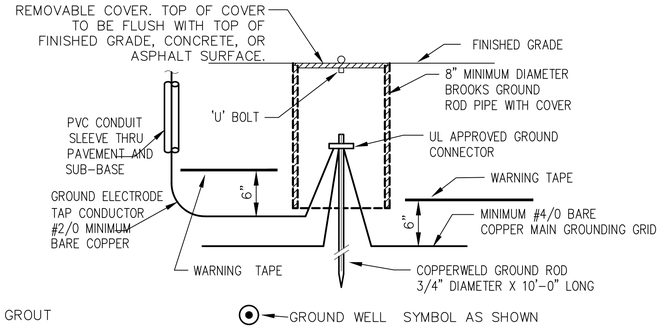


TYP SINGLE-CONDUIT DUCTBANK SECTION

DETAIL 7 Z0E03

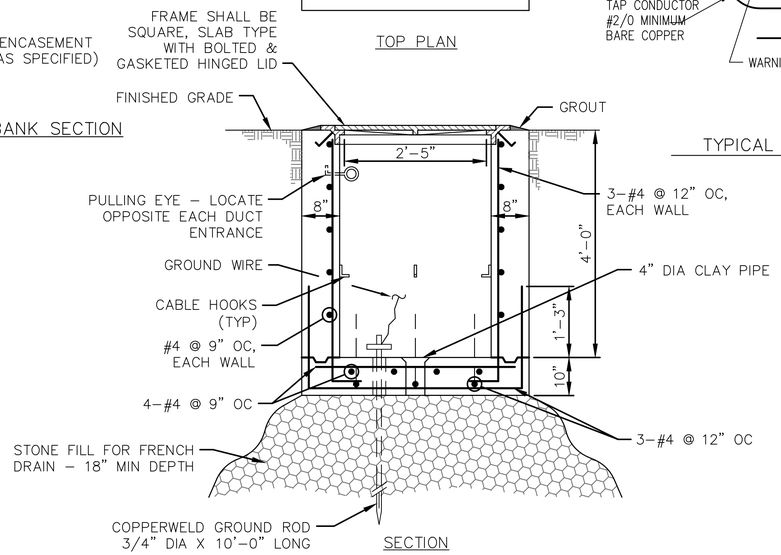


TOP PLAN



TYPICAL GROUND ROD AND WELL INSTALLATION

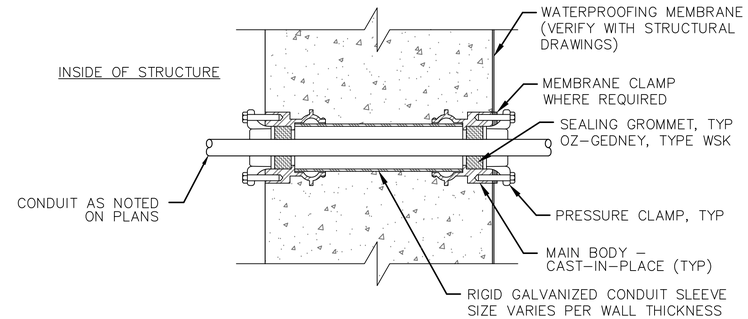
DETAIL 9 NOT TO SCALE Z0E03



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

TYPICAL ELECTRICAL HANDHOLE CONSTRUCTION

DETAIL 8 Z0E03



NOTE:

WALL SEAL SHOWN IS TYPICAL FOR EACH CONDUIT IN DUCTBANK.

SINGLE ENDED TYPE

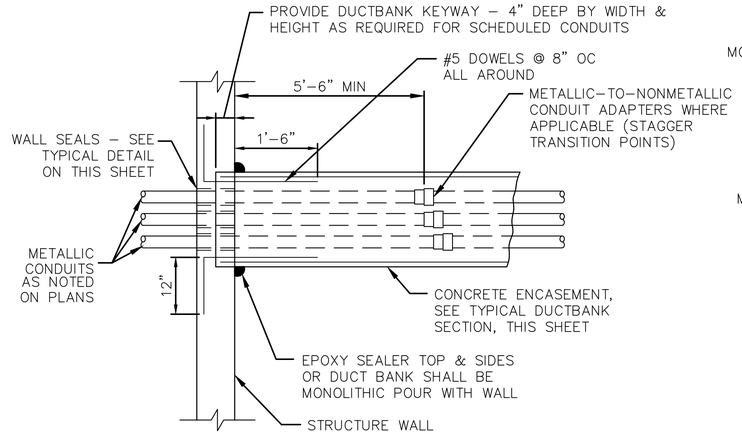
FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS ENCASED IN CONCRETE

DOUBLE ENDED TYPE WITH MEMBRANE

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

TYPICAL CONDUIT SEALS

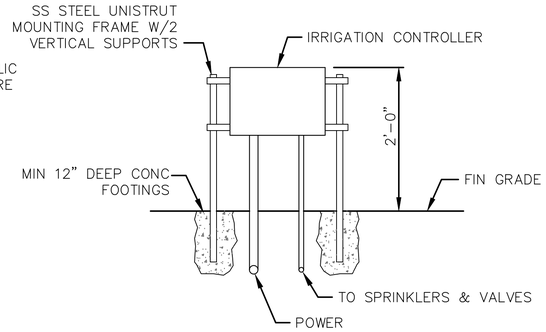
DETAIL 10 Z0E03



PLAN

TYP DUCTBANK ENTRANCE AT STRUCTURE WALL

DETAIL 11 Z0E03



OUTDOOR IRRIGATION CONTROLLER DETAIL

DETAIL 12 Z0E03

REV. NO.	DESCRIPTION	APP'D	DATE

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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.

4 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

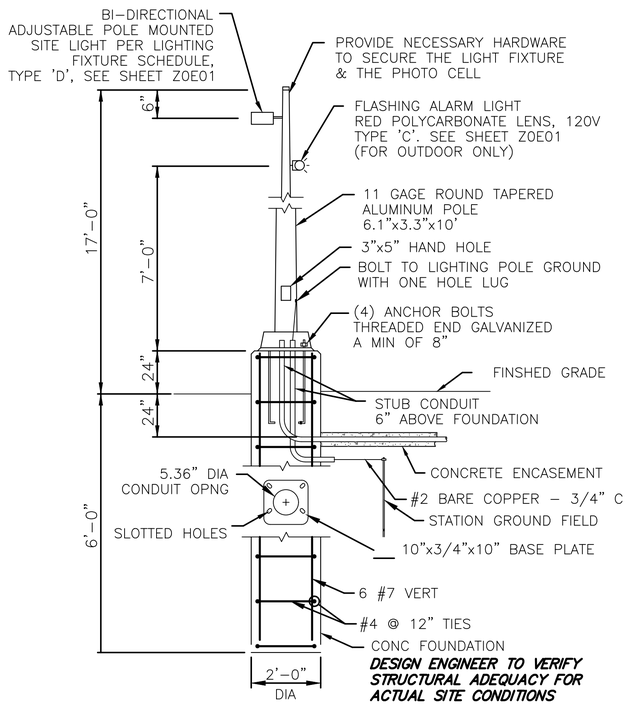
DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET Z0C0X

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

CADD DWG. FILE NO. : Z0E03.DWG

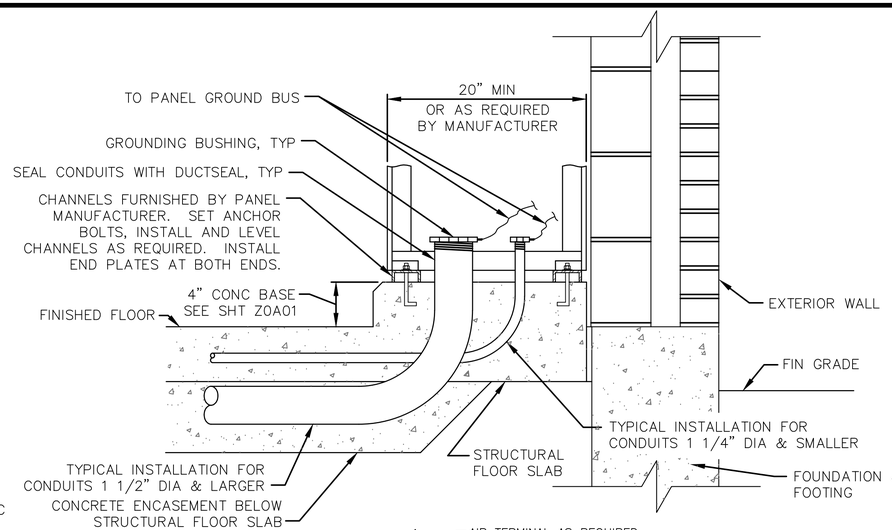
COHSTD.BDR

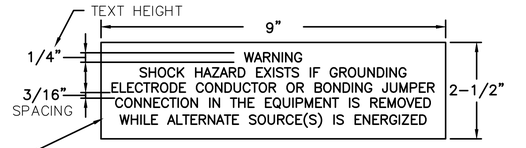
0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



TYPICAL YARD LIGHT

DETAIL 13 / Z0E04



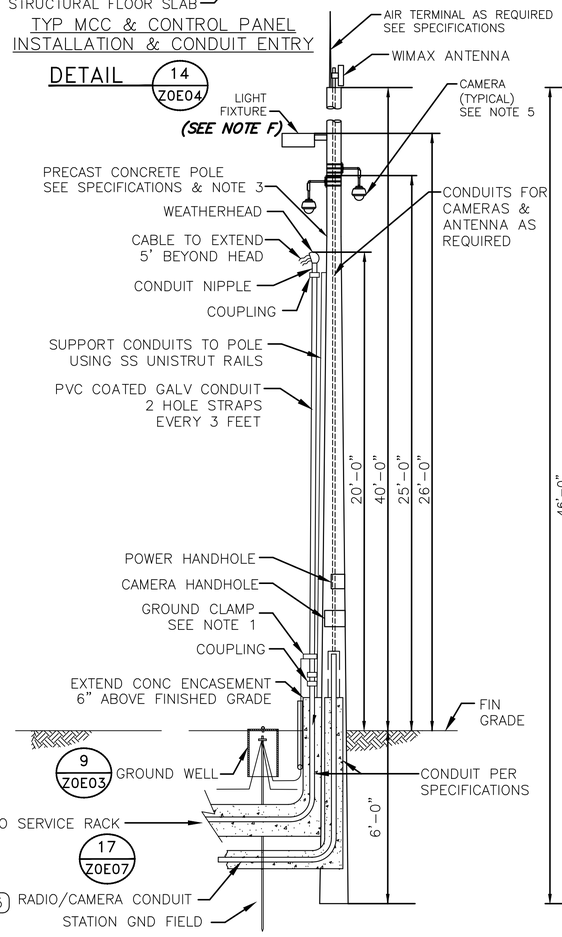


1/16" THICK PHENOLIC NAMEPLATE-RED WITH WHITE LETTERS. CENTER ENGRAVING AND ANCHOR TO ENCLOSURE WITH 316 SS SELF TAPPING SCREWS. APPLY SILICON SEALER INSIDE DOOR AT SCREW PENETRATION TO SEAL SCREWS.

ELECTRICAL WARNING NAMEPLATE N-EW ENGRAVING

TYP MCC & CONTROL PANEL INSTALLATION & CONDUIT ENTRY

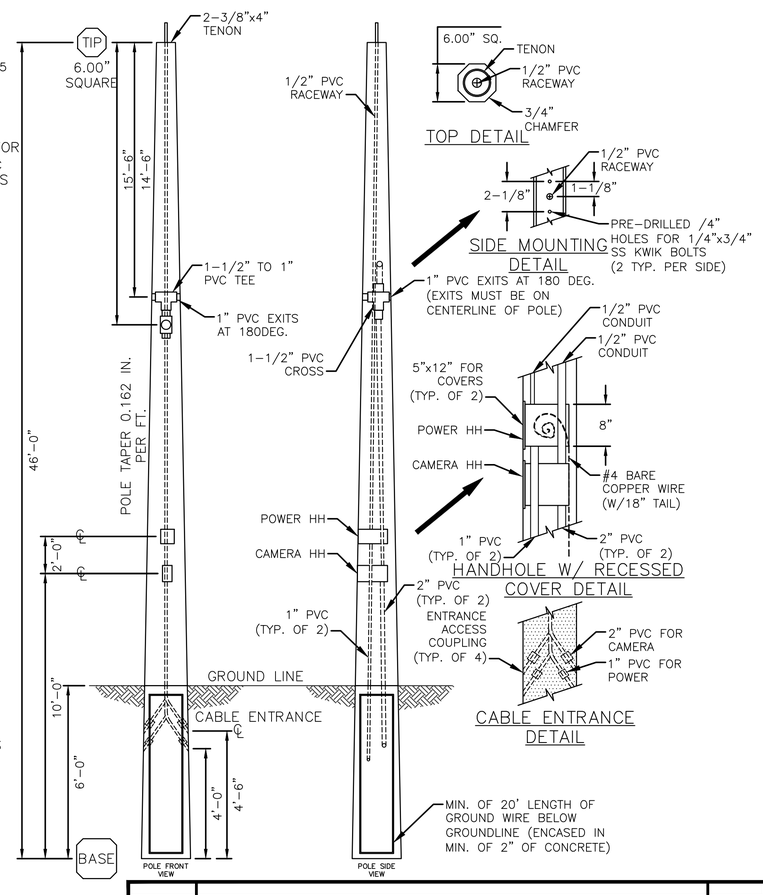
DETAIL 14 / Z0E04



TYP ELECTRIC & COMMUNICATION SERVICE RACK MOUNTED DETAIL

(SEE NOTE B)

DETAIL 15 / Z0E04



NOTES TO DESIGN ENGINEER:

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B. NOT USED

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.

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.

REV. NO.	DESCRIPTION	APP'D	DATE

4 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

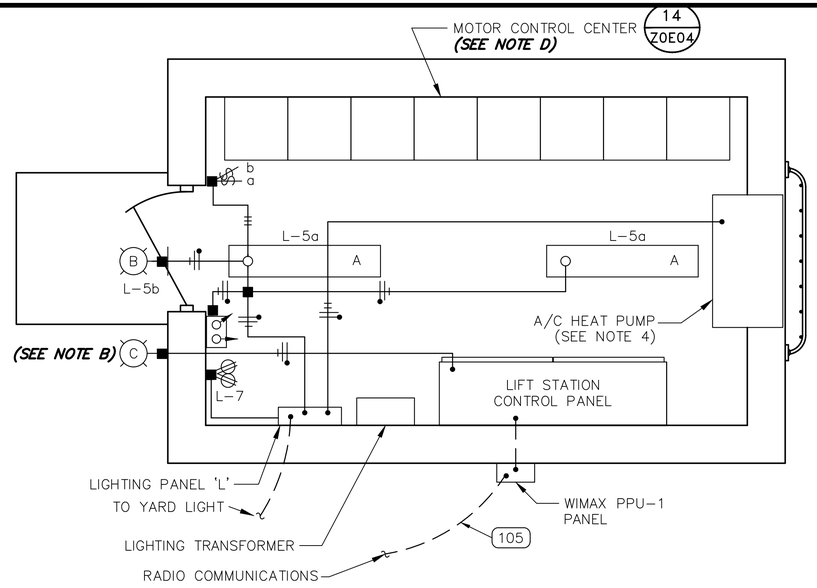
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SCALE: NONE	DESIGNED BY:
SUBMITTED:	DRAWN BY:
DATE:	SHEET NO. OF SHEETS
SURVEY BY:	DWG. NO. Z0E04-0516
FIELD BOOK NO.	

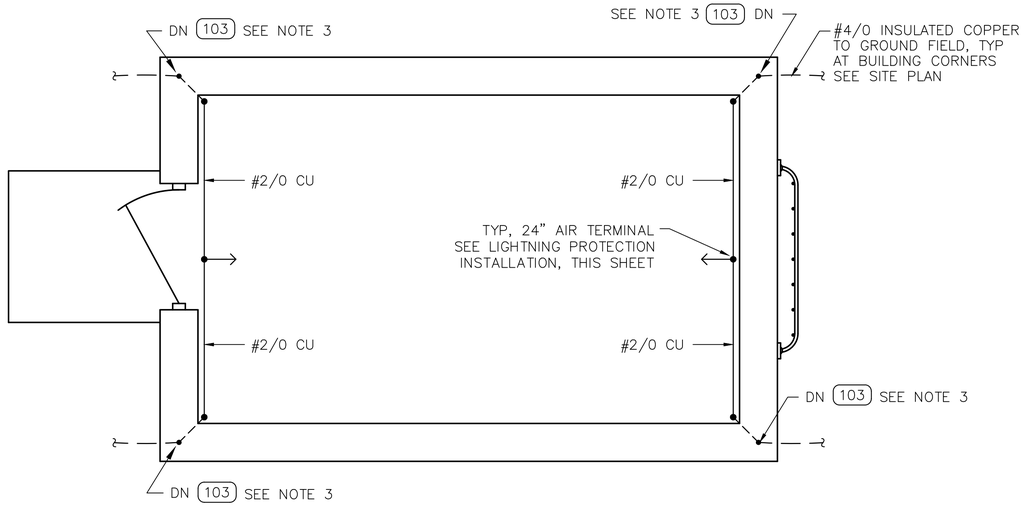
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COHSTD.BDR

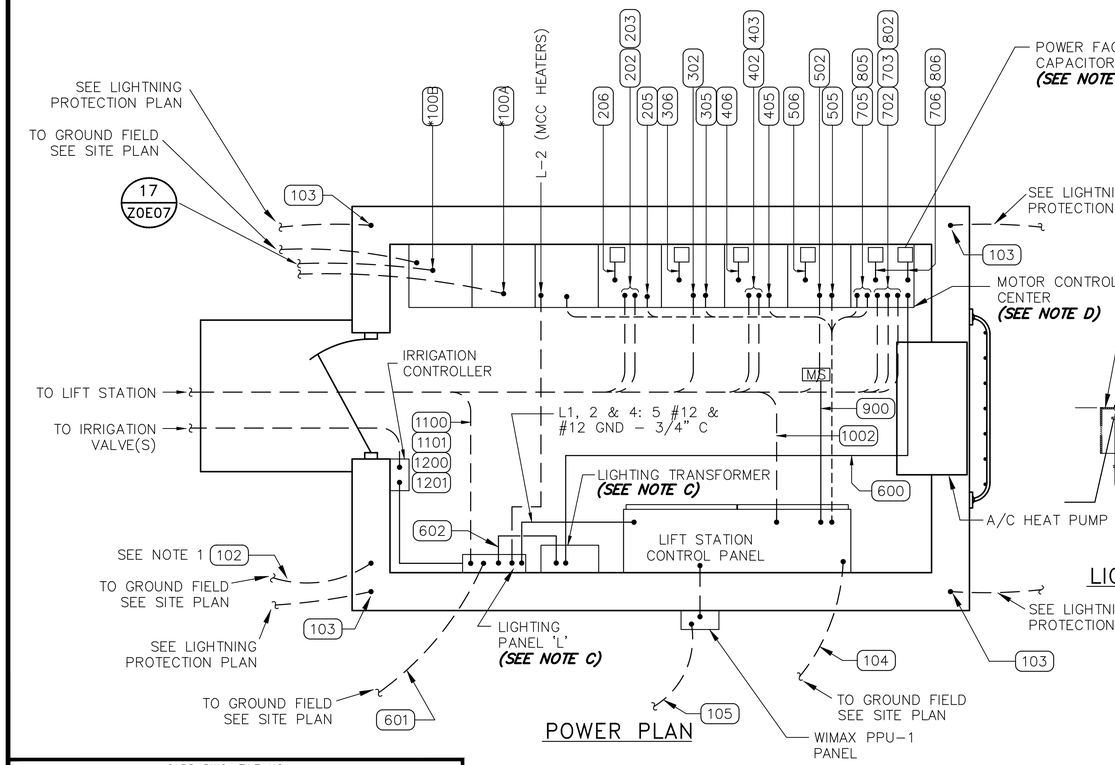
0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



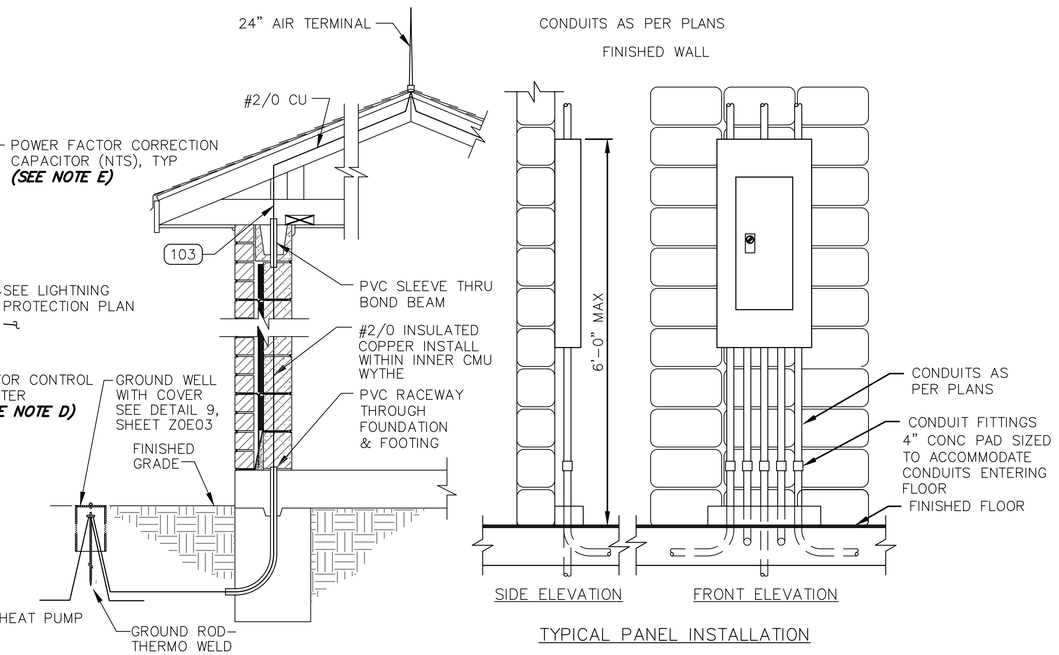
LIGHTING & WIMAX SYSTEM PLAN



LIGHTNING PROTECTION PLAN



POWER PLAN



LIGHTNING PROTECTION INSTALLATION

TYPICAL PANEL INSTALLATION

DETAIL 1 Z0E05

NOTES TO DESIGN ENGINEER:

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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. ANOTHER ENTRANCE DOOR SHALL BE REQUIRED PER NEC CODE IF MCC RATING IS 1200A OR ABOVE A/C UNIT WILL BE RELOCATED ACCORDINGLY.

4 WET & 2 DRY WET WEATHER PUMPS
CONTROL BUILDING - ELECTRICAL

PROJECT NO.
R-000265-0XXX-X

TITLE
CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

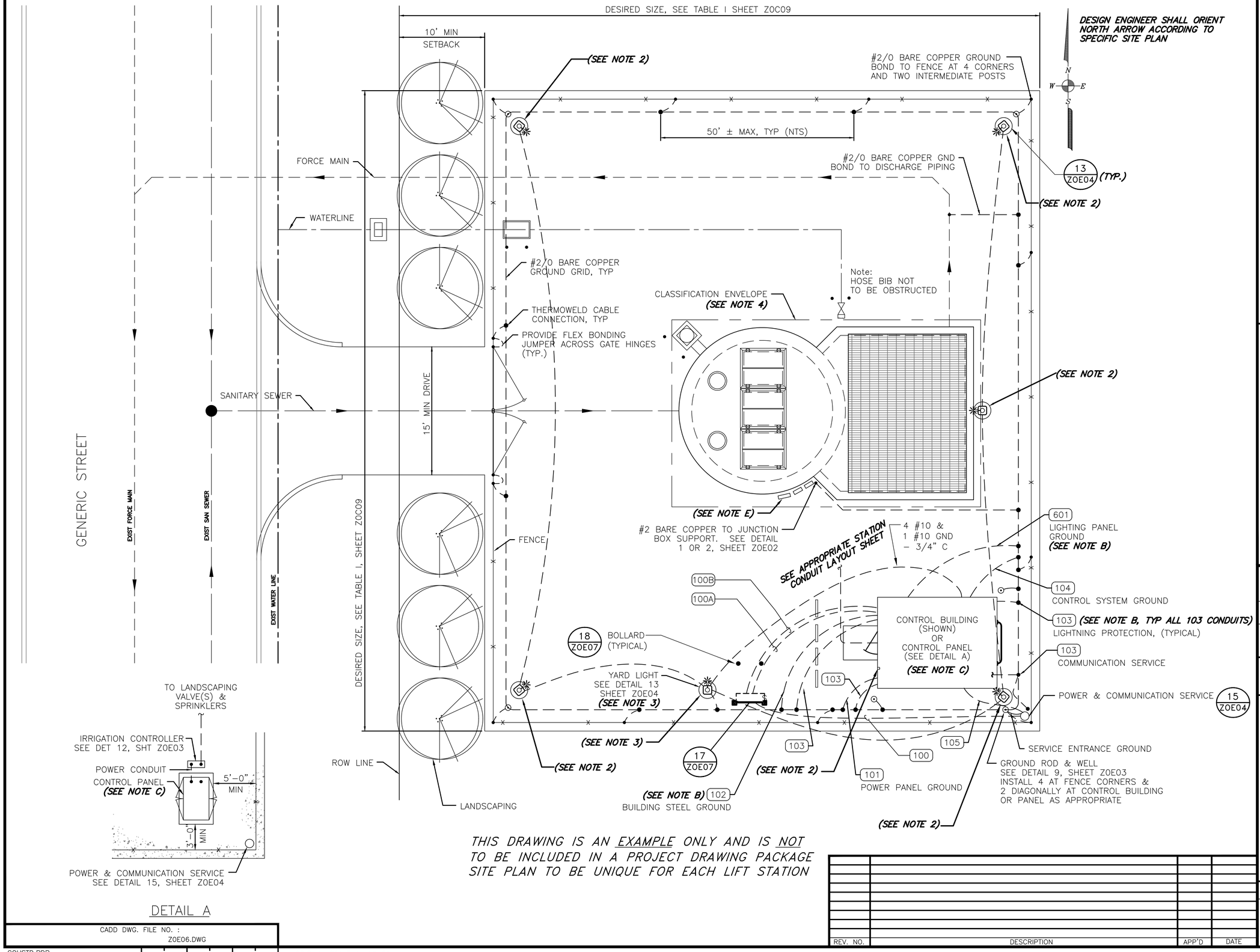
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

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"
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
DESIGNED BY:
DRAWN BY:
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



DETAIL A

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

CADD DWG. FILE NO. : Z0E06.DWG

COHSTD.BDR

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

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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 POSSIBLE. 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

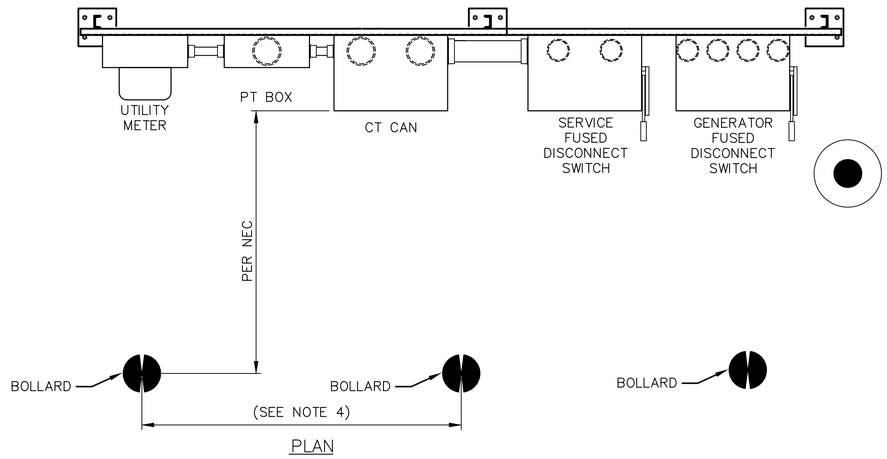
TITLE CITY OF HOUSTON
DESIGN GUIDELINE DRAWINGS
FOR SUBMERSIBLE LIFT STATIONS

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

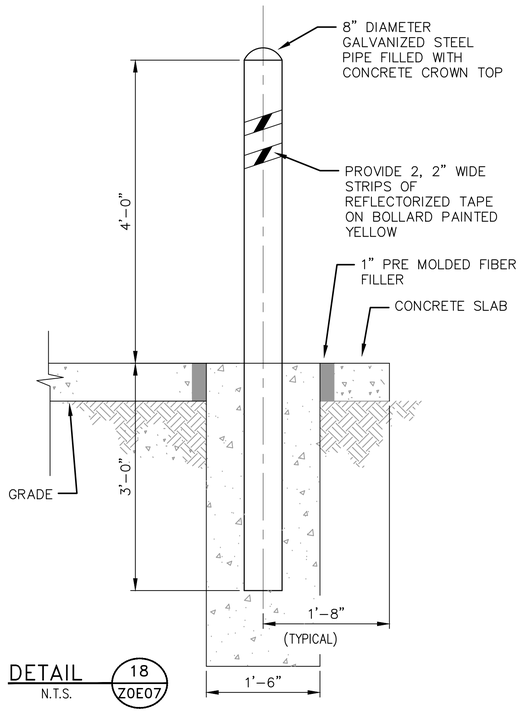
DESIGN ENGINEER TO INCLUDE COH STANDARD TITLE BLOCK ON ALL DRAWINGS, SEE STANDARD TITLE BLOCK DETAIL ON SHEET Z0C0X

REV. NO.	DESCRIPTION	APP'D	DATE

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

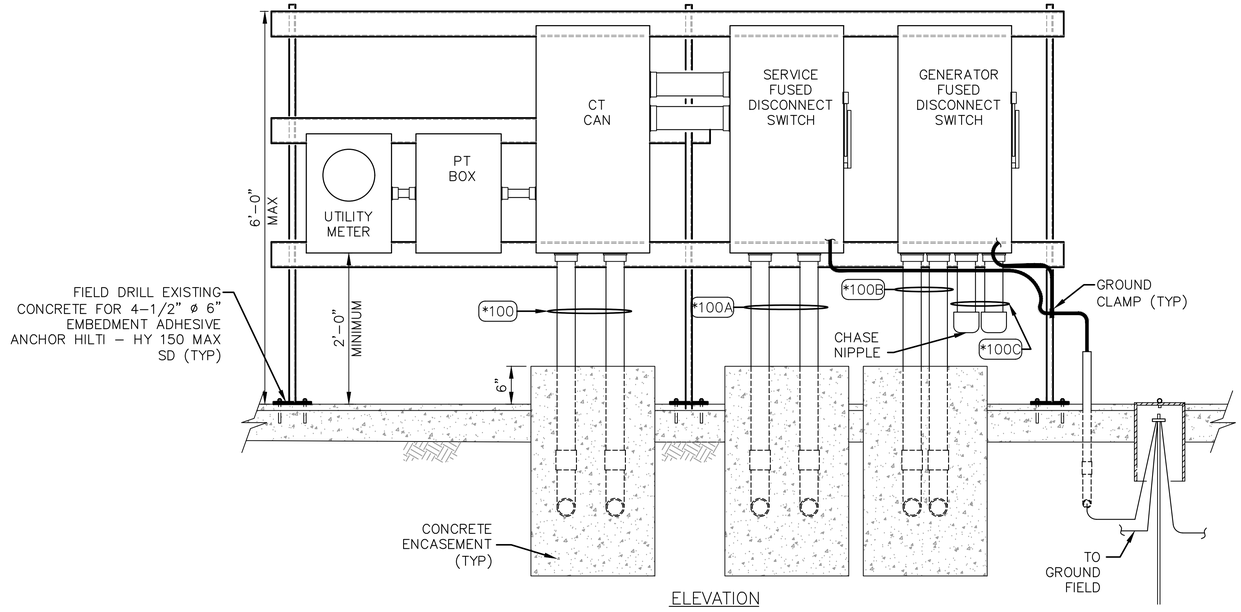


PLAN



DETAIL 18 / Z0E07 N.T.S.

BOLLARD DETAIL



ELEVATION

500A AND GREATER SERVICE MOUNTING RACK

DETAIL 17 / Z0E07

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. "*" CONDUIT QUANTITY SHALL BE DEPENDANT ON THE SERVICE SIZE.

4 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

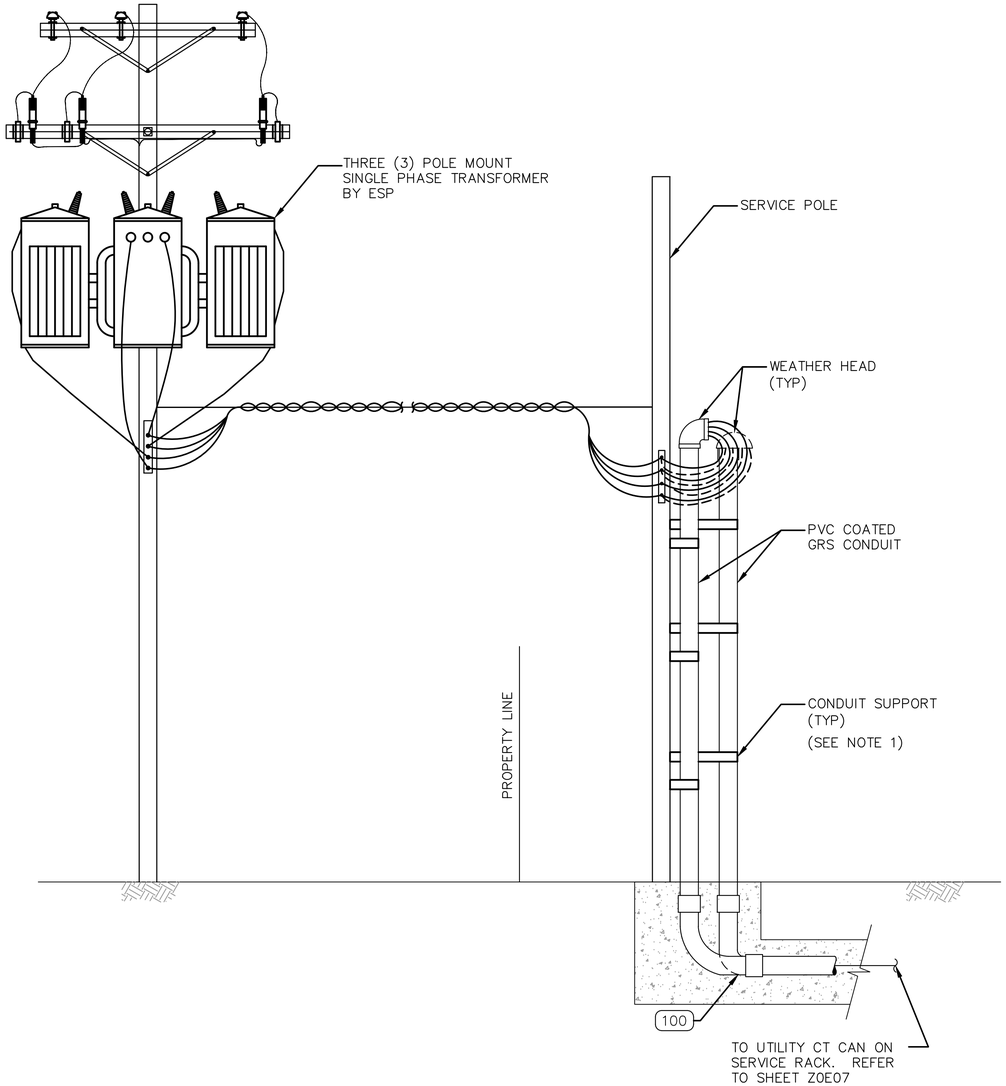
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING AND CONSTRUCTION

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

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

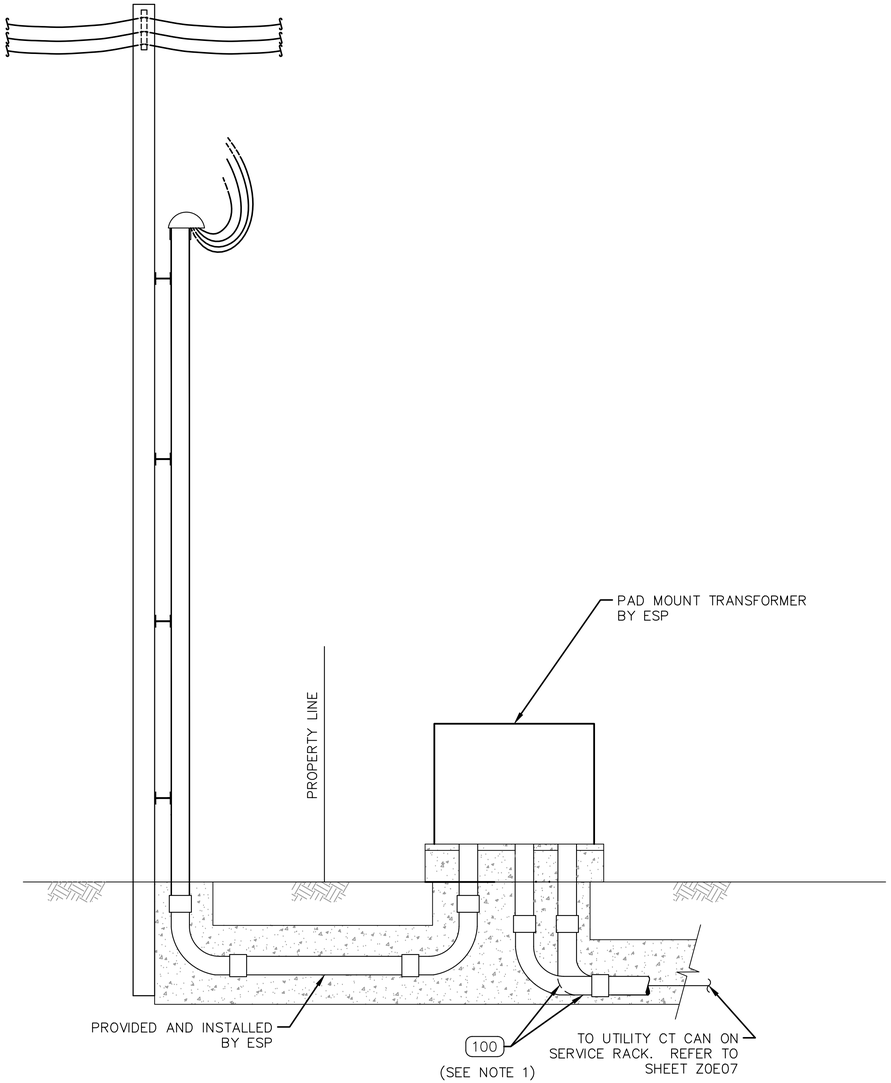
CADD DWG. FILE NO. : Z0E07.DWG
COHSTD.BDR
0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



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:

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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 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.

4 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

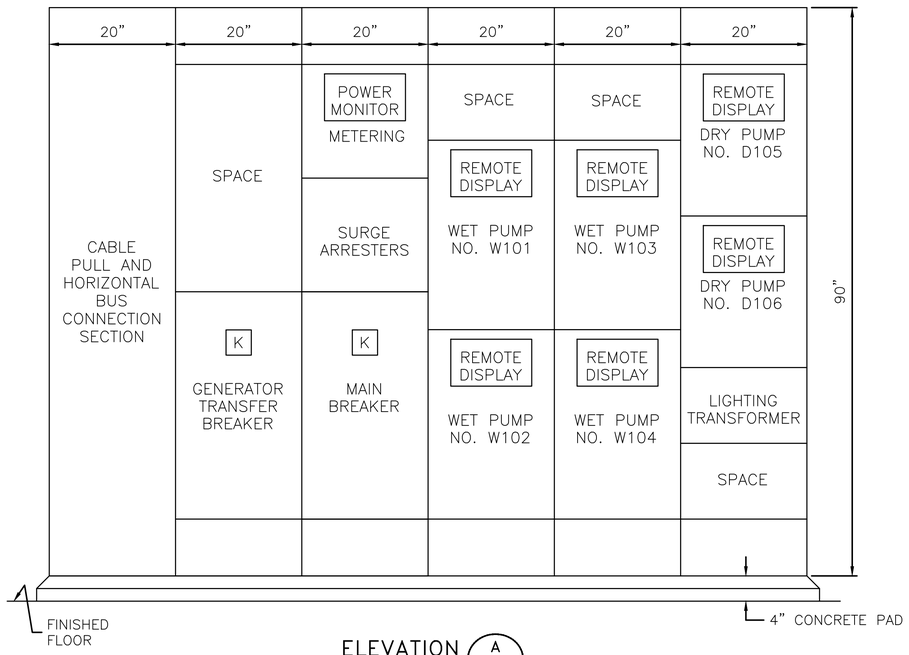
REV. NO.	DESCRIPTION	APP'D	DATE

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

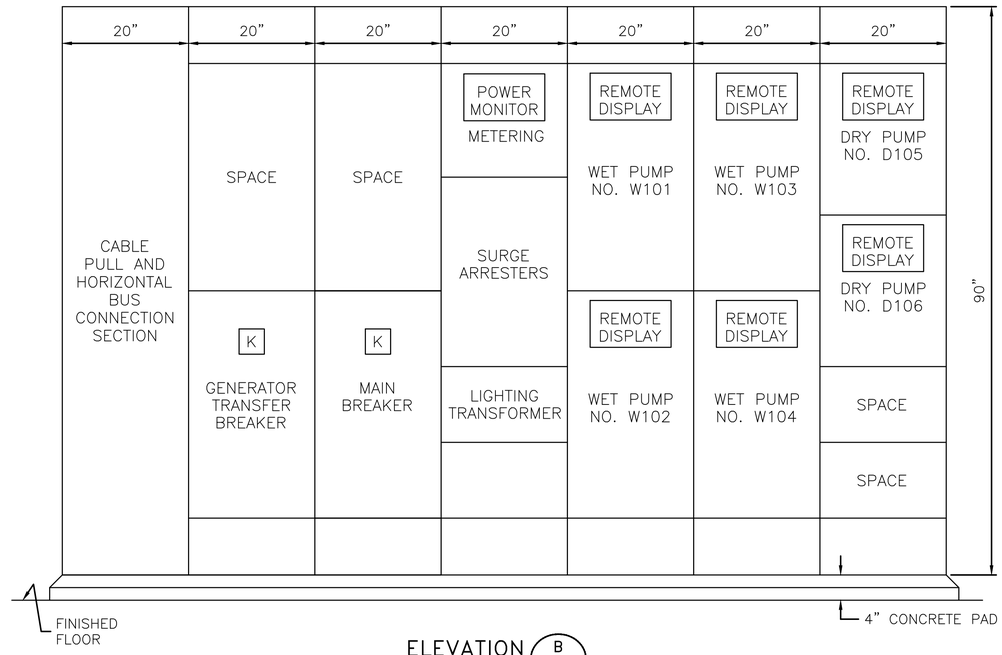
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COHSTD.BDR

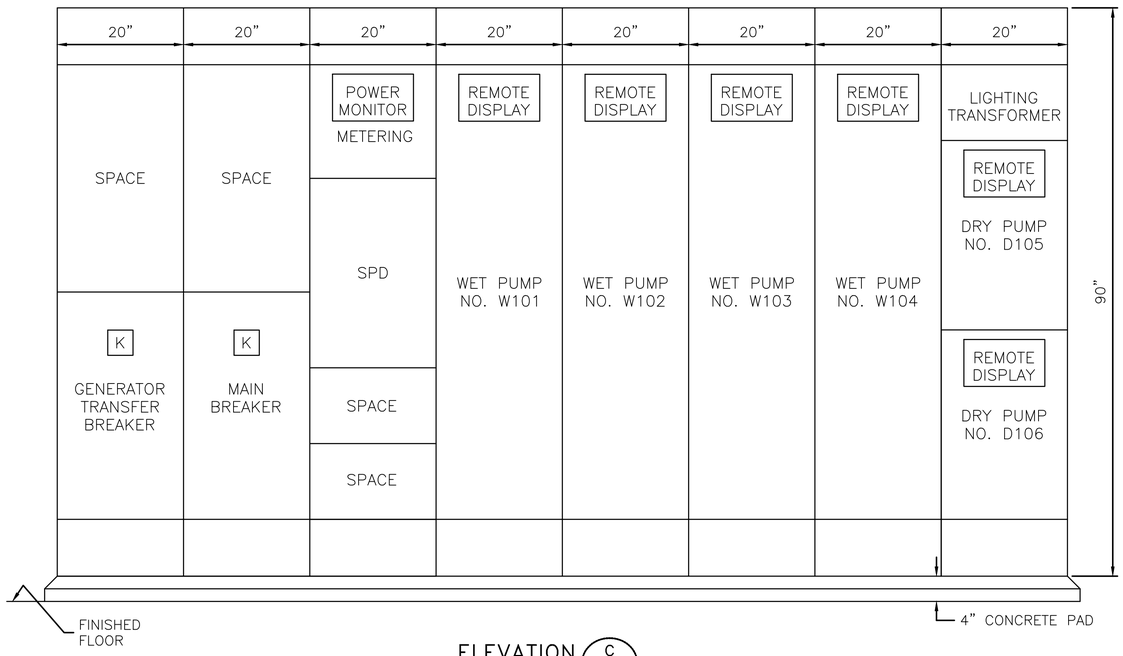
0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



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 PACE 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.*

REV. NO.	DESCRIPTION	APP'D	DATE

4 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

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

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	--	--	PANEL NEUTRAL	PANEL GROUND	--	
B	EQUIPMENT BONDING JUMPER	--	--	PANEL GROUND	PANEL ENCLOSURE	--	
C	GROUNDED SERVICE CONDUCTOR	--	--	GROUNDING ELECTRODE NS SERVICE	MAIN SERVICE FUSED DISCONNECT	--	
*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	GROUND FIELD	--	
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	--	--	UTILITY SERVICE	PANEL PPU	--	***INCLUDES MODBUS CABLES***
200	PUMP NO. W101 POWER	480V	***HP AS NOTED***	PUMP NO. 101	PUMP NO. 101 JUNCTION BOX	--	***SEE NOTE E***
201	PUMP NO. W101 CONTROLS	120V	--	PUMP NO. 101	PUMP NO. 101 JUNCTION BOX	--	***SEE NOTE E***
202	PUMP NO. W101 POWER	480V	***HP AS NOTED***	PUMP NO. 101 JUNCTION BOX	PUMP STARTER	--	
203	COMBINED PUMP CONTROLS	120V	--	PUMP NO. 101 JUNCTION BOX	PUMP STARTER	--	
205	PUMP NO. W101 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	
206	PUMP NO. W101 CAPACITOR	480V	***TBD***	PUMP NO. 101 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	
300	PUMP NO. W102 POWER	480V	***HP AS NOTED***	PUMP NO. 102	PUMP NO. 102 JUNCTION BOX	--	***SEE NOTE E***
301	PUMP NO. W102 CONTROLS	120V	--	PUMP NO. 102	PUMP NO. 102 JUNCTION BOX	--	***SEE NOTE E***
302	PUMP NO. W102 POWER	480V	***HP AS NOTED***	PUMP NO. 102 JUNCTION BOX	PUMP STARTER	--	
305	PUMP NO. W102 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	
306	PUMP NO. W102 CAPACITOR	480V	***TBD***	PUMP NO. 102 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	
400	PUMP NO. W103 POWER	480V	***HP AS NOTED***	PUMP NO. 103	PUMP NO. 103 JUNCTION BOX	--	***SEE NOTE E***
401	PUMP NO. W103 CONTROLS	120V	--	PUMP NO. 103	PUMP NO. 103 JUNCTION BOX	--	***SEE NOTE E***
402	PUMP NO. W103 POWER	480V	***HP AS NOTED***	PUMP NO. 103 JUNCTION BOX	PUMP STARTER	--	
403	COMBINED PUMP CONTROLS	120V	--	PUMP NO. 103 JUNCTION BOX	PUMP STARTER	--	
405	PUMP NO. W103 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	
406	PUMP NO. W103 CAPACITOR	480V	***TBD***	PUMP NO. 103 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	
500	PUMP NO. W104 POWER	480V	***HP AS NOTED***	PUMP NO. 104	PUMP NO. 104 JUNCTION BOX	--	***SEE NOTE E***
501	PUMP NO. W104 CONTROLS	120V	--	PUMP NO. 104	PUMP NO. 104 JUNCTION BOX	--	***SEE NOTE E***
502	PUMP NO. W104 POWER	480V	--	PUMP NO. 104 JUNCTION BOX	PUMP STARTER	--	
505	PUMP NO. W104 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	
506	PUMP NO. W104 CAPACITOR	480V	***TBD***	PUMP NO. 104 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. D105 POWER	480V	***HP AS NOTED***	DRY PUMP NO. 101	DRY PUMP NO. 101 JUNCTION BOX	--	
701	DRY PUMP NO. D105 CONTROLS	120V	--	DRY PUMP NO. 101	DRY PUMP NO. 101 JUNCTION BOX	--	
702	DRY PUMP NO. D105 POWER	480V	***HP AS NOTED***	DRY PUMP NO. 101 JUNCTION BOX	PUMP STARTER	--	
703	COMBINED DRY PUMP CONTROLS	120V	--	DRY PUMP NO. 101 JUNCTION BOX	PUMP STARTER	--	
705	DRY PUMP NO. D105 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	
706	DRY PUMP NO. D105 CAPACITOR	480V	***TBD***	PUMP NO. 5 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	
800	DRY PUMP NO. D106 POWER	480V	***HP AS NOTED***	DRY PUMP NO. 102	DRY PUMP NO. 102 JUNCTION BOX	--	
801	DRY PUMP NO. D106 CONTROLS	120V	--	DRY PUMP NO. 102	DRY PUMP NO. 102 JUNCTION BOX	--	
802	DRY PUMP NO. D106 POWER	480V	***HP AS NOTED***	DRY PUMP NO. 102 JUNCTION BOX	PUMP STARTER	--	
805	DRY PUMP NO. D106 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	
806	DRY PUMP NO. D106 CAPACITOR	480V	***TBD***	PUMP NO. 6 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 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 Z0C0X

REV. NO.	DESCRIPTION	APP'D	DATE

SCALE: NONE
DESIGNED BY:
DRAWN BY:
SUBMITTED:
DATE:
SURVEY BY:
FIELD BOOK NO.
SHEET NO. OF SHEETS
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	CONTROL PANEL	--	2#12 #12G, 1"C
1100	120VAC FOR RECEPTACLE	--	--	LIGHTING PANEL	RECEPTACLE NEXT TO PUMP NO. W104 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. D105 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.

4 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.
ZOE22-0516

CADD DWG. FILE NO. :
ZOE21.DWG
COHSTD.BDR
0 1 2 3
ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS

ITEM	CIRCUIT	DESCRIPTION	RATINGS FOR PUMP SIZES INDICATED: 4 @ 60HP & 2 @ 15, 20 OR 25HP	4 @ 60HP & 2 @ 30HP	4 @ 60HP & 2 @ 40HP	4 @ 60HP & 2 @ 50HP	4 @ 75HP & 2 @ 15, 20 OR 25HP	4 @ 75HP & 2 @ 30HP	4 @ 75HP & 2 @ 40HP	4 @ 75HP & 2 @ 50HP	4 @ 100HP & 2 @ 15, 20 OR 25HP
(I)	--	MAIN DISCONNECT SWITCH									
		OPERATING VOLTAGE	600V	600V	600V	600V	600V	600V	600V	600V	600V
		CURRENT RATING	600A	600A	600A	600A	600A	800A	800A	800A	800A
		CURRENT LIMITING FUSES TYPE & SIZE	CLASS J 500A	CLASS J 600A	CLASS J 600A	CLASS J 600A	CLASS J 600A	CLASS L 700A	CLASS L 700A	CLASS L 700A	CLASS L 800A
(II)	--	MOTOR CONTROL CENTER MAIN BUS – 3/C COPPER									
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V	480V	480V
		CURRENT RATING	600A	600A	600A	600A	600A	800A	800A	800A	800A
		NEUTRAL SIZE & TYPE	300A LUG	300A LUG	300A LUG	300A LUG	300A LUG	400A LUG	400A LUG	400A LUG	400A LUG
		BUS BRACING	65KA SYM	65KA SYM	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	MOLDED CASE	MOLDED CASE	INSULATED CASE
		MOUNTING	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V	480V	480V
		FRAME SIZE	600A	600A	600A	600A	600A	800A	800A	800A	800A
		TRIP SETTING	500A	600A	600A	600A	600A	700A	700A	700A	800A
		INTERRUPT CAPACITY	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM
		OPTIONS	GND FAULT	GND FAULT	GND FAULT	GND FAULT	GND FAULT	GND FAULT	GND FAULT	GND FAULT	GND FAULT
(IV)	2 3 4 5	WET PUMP MOTOR STARTERS									
		QUANTITY	4	4	4	4	4	4	4	4	4
		MOUNTING	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED
		SHORT CIRCUIT PROTECTION									
		3 POLE – TYPE	MCP	MCP	MCP	MCP	MCP	MCP	MCP	MCP	MCP
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V	480V	480V
		FRAME SIZE	150A	150A	150A	150A	150A	150A	150A	150A	150A
		TRIP SETTING	FIELD ADJ	FIELD ADJ	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	65KA SYM	65KA SYM
		MOTOR STARTING CONTACTOR									
		3 POLE – TYPE	AIR	AIR	AIR	AIR	AIR	AIR	AIR	AIR	AIR
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V	480V	480V
		SIZE/CURRENT RATING	NEMA 4	NEMA 4	NEMA 4	NEMA 4	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	SOLID STATE MPR	SOLID STATE MPR
(V)	6	LIGHTING TRANSFORMER FEEDER BREAKER									
		NO. OF POLES	2	2	2	2	2	2	2	2	2
		TYPE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V	480V	480V
		FRAME SIZE	150A	150A	150A	150A	150A	150A	150A	150A	150A
		TRIP SETTING	50A	50A	50A	50A	50A	50A	50A	50A	50A
		INTERRUPT CAPACITY	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM
(VI)	7 8	DRY PUMP MOTOR STARTER									
		QUANTITY	2	2	2	2	2	2	2	2	2
		MOUNTING	DRAWOUT	DRAWOUT	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED
		SHORT CIRCUIT PROTECTION									
		3 POLE – TYPE	MCP	MCP	MCP	MCP	MCP	MCP	MCP	MCP	MCP
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V	480V	480V
		FRAME SIZE	50A	100A	100A	150A	50A	100A	100A	150A	50A
		TRIP SETTING	FIELD ADJ	FIELD ADJ	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	65KA SYM	65KA SYM
		MOTOR STARTING CONTACTOR									
		3 POLE – TYPE	AIR	AIR	AIR	AIR	AIR	AIR	AIR	AIR	AIR
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V	480V	480V
		SIZE/CURRENT RATING	NEMA 2	NEMA 3	NEMA 3	NEMA 3	NEMA 2	NEMA 3	NEMA 3	NEMA 3	NEMA 2
		OVERLOAD PROTECTION TYPE	SOLID STATE MPR	SOLID STATE MPR	SOLID STATE MPR	SOLID STATE MPR	SOLID STATE MPR	SOLID STATE MPR	SOLID STATE MPR	SOLID STATE MPR	SOLID STATE MPR

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. 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.

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

4 WET & 2 DRY WEATHER PUMPS
DEVICE RATINGS SCHEDULES

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:
SURVEY BY:
FIELD BOOK NO.
SHEET NO. OF SHEETS
DWG. NO. Z0E45-0516

CADD DWG. FILE NO. : Z0E45.DWG
COHSTD.BDR
0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

ITEM	CIRCUIT	DESCRIPTION	RATINGS FOR PUMP SIZES INDICATED								
			4 @ 60HP & 2 @ 15, 20 OR 25HP	4 @ 60HP & 2 @ 30HP	4 @ 60HP & 2 @ 40HP	4 @ 60HP & 2 @ 50HP	4 @ 75HP & 2 @ 15, 20 OR 25HP	4 @ 75HP & 2 @ 30HP	4 @ 75HP & 2 @ 40HP	4 @ 75HP & 2 @ 50HP	4 @ 100HP & 2 @ 15, 20 OR 25HP
(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	3P, 4W SN	3P, 4W SN
		OPERATING VOLTAGE	600V	600V	600V	600V	600V	600V	600V	600V	600V
		CURRENT RATING	600A	600A	600A	600A	600A	800A	800A	800A	800A
		CURRENT LIMITING FUSES TYPE & SIZE	CLASS J 500A	CLASS J 600A	CLASS J 600A	CLASS J 600A	CLASS J 600A	CLASS L 700A	CLASS L 700A	CLASS L 700A	CLASS L 800A
(IX)	(SEE NOTE 1, 3)	GENERATOR TRANSFER BREAKER									
		3 POLE – TYPE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	INSULATED CASE
		MOUNTING	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V	480V	480V
		FRAME SIZE	600A	600A	600A	600A	600A	800A	800A	800A	800A
		TRIP SETTING	500A	600A	600A	600A	600A	700A	700A	700A	800A
		INTERRUPT CAPACITY	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM
		OPTIONS	GND FAULT	GND FAULT	GND FAULT	GND FAULT	GND FAULT	GND FAULT	GND FAULT	GND FAULT	GND FAULT
MOTOR CONTROL CENTER ELEVATION LETTER			A/B	A/B	A/B	A/B	B	B	B	B	C
INDOOR CONTROL PANEL WIDTH (MIN)			60"	60"	60"	60"	60"	60"	60"	60"	60"
MINIMUM CONTROL BUILDING DIMENSIONS		INSIDE LENGTH	13'-6"	13'-6"	13'-6"	13'-6"	13'-6"	13'-6"	13'-6"	13'-6"	15'-6"
		OUTSIDE LENGTH	15'-6"	15'-6"	15'-6"	15'-6"	15'-6"	15'-6"	15'-6"	15'-6"	17'-6"

SEE NOTE B

* 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.

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. 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.

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. 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.

4 WET & 2 DRY WEATHER PUMPS
DEVICE RATINGS SCHEDULES

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.
ZOE46-0516

CADD DWG. FILE NO. :
ZOE46.DWG
COHSTD.BDR
0 1 2 3
ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS

SEE NOTE 3

SEE NOTE B

RATINGS FOR PUMP SIZES INDICATED

ITEM	CIRCUIT	DESCRIPTION	4 @ 100HP & 2 @ 30HP	4 @ 100HP & 2 @ 40HP	4 @ 125HP & 2 @ 50HP	4 @ 125HP & 2 @ 15, 20 OR 25HP	4 @ 125HP & 2 @ 30HP	4 @ 125HP & 2 @ 40HP	4 @ 125HP & 2 @ 50HP
I	--	MAIN DISCONNECT SWITCH							
		OPERATING VOLTAGE	600V	600V	600V	600V	600V	600V	600V
		CURRENT RATING	800A	1200A	1200A	1200A	1200A	1200A	1200A
		CURRENT LIMITING FUSES TYPE & SIZE	CLASS L 800A	CLASS L 1000A	CLASS L 1000A	CLASS L 1000A	CLASS L 1000A	CLASS L 1000A	CLASS L 1200A
II	--	MOTOR CONTROL CENTER MAIN BUS - 3/C COPPER							
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V
		CURRENT RATING	800A	1200A	1200A	1200A	1200A	1200A	1200A
		NEUTRAL SIZE & TYPE	400A LUG	400A LUG	600A LUG	600A LUG	600A LUG	600A LUG	600A 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	INSULATED CASE	INSULATED CASE	INSULATED CASE	INSULATED CASE	INSULATED CASE	INSULATED CASE	INSULATED CASE
		MOUNTING	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V
		FRAME SIZE	800A	1200A	1200A	1200A	1200A	1200A	1200A
		TRIP SETTING	800A	1000A	1000A	1000A	1000A	1000A	1200A
		INTERRUPT CAPACITY	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM
		OPTIONS	NONE	GND FAULT	GND FAULT	GND FAULT	GND FAULT	GND FAULT	GND FAULT
IV	2 3 4 5	WET PUMP MOTOR STARTERS							
		QUANTITY	4	4	4	4	4	4	4
		MOUNTING	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED
		SHORT CIRCUIT PROTECTION							
		3 POLE - TYPE	MCP	MCP	MCP	MCP	MCP	MCP	MCP
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V
		FRAME SIZE	150A	150A	150A	150A	150A	150A	150A
		TRIP SETTING	FIELD ADJ	FIELD ADJ	FIELD ADJ	FIELD ADJ	FIELD ADJ	FIELD ADJ	FIELD ADJ
		INTERRUPT CAPACITY	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM
		MOTOR STARTING CONTACTOR							
		3 POLE - TYPE	AIR	AIR	VACUUM	VACUUM	VACUUM	VACUUM	VACUUM
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V
		SIZE/CURRENT RATING	NEMA 4	NEMA 4	320A	320A	320A	320A	320A
		OVERLOAD PROTECTION TYPE	SOLID STATE MOR	SOLID STATE MOR	SOLID STATE MOR	SOLID STATE MOR	SOLID STATE MOR	SOLID STATE MOR	SOLID STATE MOR
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	7 8	DRY PUMP MOTOR STARTER							
		QUANTITY	2	2	2	2	2	2	2
		MOUNTING	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED
		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	150A	50A	100A	100A	100A	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 2	NEMA 3	NEMA 3	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	--	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	800A	1200A	1200A	1200A	1200A	1200A	1200A
		CURRENT LIMITING FUSES TYPE & SIZE	CLASS L 800A	CLASS L 1000A	CLASS L 1000A	CLASS L 1000A	CLASS L 1000A	CLASS L 1000A	CLASS L 1200A
VIII	1 (SEE NOTE 1, 4)	GENERATOR TRANSFER SWITCH							
		3 POLE - TYPE	INSULATED CASE	INSULATED CASE	INSULATED CASE	INSULATED CASE	INSULATED CASE	INSULATED CASE	INSULATED CASE
		MOUNTING	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED
		OPERATING VOLTAGE	480V	480V	480V	480V	480V	480V	480V
		FRAME SIZE	800A	1200A	1200A	1200A	1200A	1200A	1200A
		TRIP SETTING	800A	1000A	1000A	1000A	1000A	1000A	1200A
		INTERRUPT CAPACITY	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM	42KA SYM
		OPTIONS	GND FAULT	GND FAULT	GND FAULT	GND FAULT	GND FAULT	GND FAULT	GND FAULT
MOTOR CONTROL CENTER ELEVATION LETTER			C	C	C	C	C	C	C
INDOOR CONTROL PANEL WIDTH (MIN)			60"	60"	60"	60"	60"	60"	60"
MINIMUM CONTROL BUILDING DIMENSIONS		INSIDE LENGTH	15'-6"	15'-6"	15'-6"	15'-6"	15'-6"	15'-6"	15'-6"
		OUTSIDE LENGTH	17'-6"	17'-6"	17'-6"	17'-6"	17'-6"	17'-6"	17'-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.

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. 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.

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. PROVIDE BREAKER WITH KIRK KEY INTER-CONNECTED WITH GENERATOR/TRANSFER BREAKER.
2. PROVIDE TRIP SIZE BASED ON GENERATOR SIZE. SIZES SHOWN ARE MAXIMUM.
3. ALL MOTOR STARTERS 125 HP AND ABOVE SHALL HAVE VACUUM BREAKERS.
4. SWITCH UNIT IN MCC.

4 WET & 2 DRY WEATHER PUMPS
DEVICE RATINGS SCHEDULES

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 ZOC0X

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.
Z0E47-0516

CADD DWG. FILE NO. :
Z0E47.DWG

COHSTD.BDR

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS