CITY OF HOUSTON

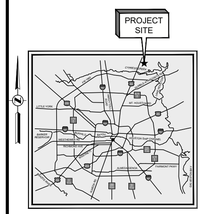
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION AND RECONSTRUCTION

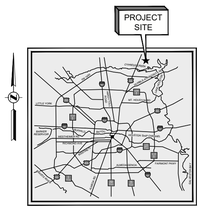
DESIGN CONSENT DECREE: LADBROOK, PINE PRAIRIE, STATELY OAKS, CHESTNUT RIDGE AND MAGNOLIA PARK

WBS NO. R-000267-0174-3

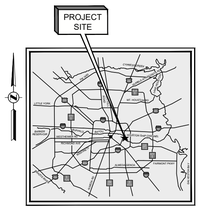
ISSUE DATE: JANUARY 2026



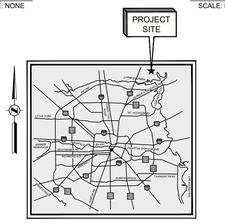
CHESTNUT RIDGE LIFT STATION
LOCATION MAP
SCALE: NONE



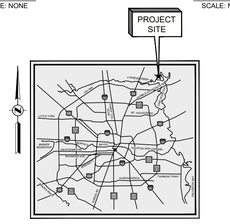
LADBROOK LIFT STATION
LOCATION MAP
SCALE: NONE



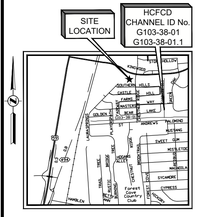
MAGNOLIA PARK LIFT STATION
LOCATION MAP
SCALE: NONE



PINE PRAIRIE LIFT STATION
LOCATION MAP
SCALE: NONE



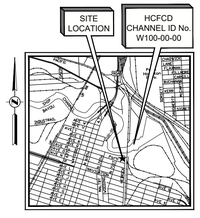
STATELY OAKS LIFT STATION
LOCATION MAP
SCALE: NONE



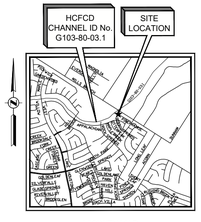
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SCALE: NONE
2511 CHESTNUT RIDGE RD, KINGWOOD, TX 77339
KEY MAP NO. 336A



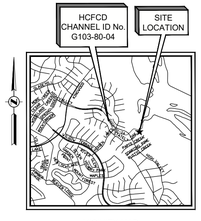
VICINITY MAP
SCALE: NONE
2307 LADBROOK DR, KINGWOOD, TX 77339
KEY MAP NO. 336B



VICINITY MAP
SCALE: NONE
1707 W HEDRICK ST, HOUSTON, TX 77011
KEY MAP NO. 495S



VICINITY MAP
SCALE: NONE
5014 PINE PRAIRIE LN, KINGWOOD, TX 77345
KEY MAP NO. 297P



VICINITY MAP
SCALE: NONE
2302 STATELY OAK ST, KINGWOOD, TX 77345
KEY MAP NO. 298W

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MARTHA CASTEX–TATUM
DISTRICT K

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AT–LARGE

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POSITION 1

WILLIE DAVIS
POSITION 2

TWILA CARTER
POSITION 3

LETITIA PLUMMER
POSITION 4

SALLIE ALCORN
POSITION 5

NO.	DATE	REVISION	APP.

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Craig Alexander Perry
116345
DECEMBER 19, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

PARKS–FORESTRY DEPT.

METRO

HOUSTON WATER

TRANSPORTATION & DRAINAGE OPERATIONS

CAPITOL PROJECTS

SURVEY

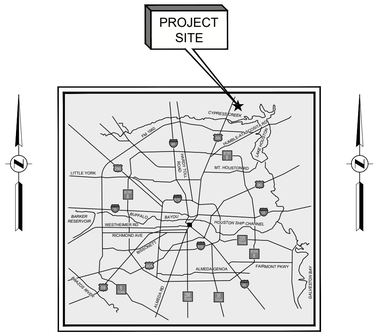
CITY ENGINEER DATE

DIRECTOR OF HOUSTON PUBLIC WORKS DATE

FOR CITY OF HOUSTON USE ONLY

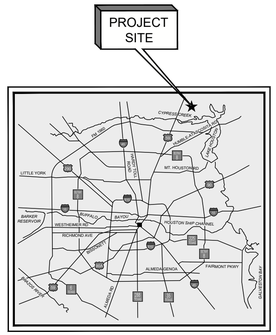
SHEET NO 1 OF 230 SHEETS

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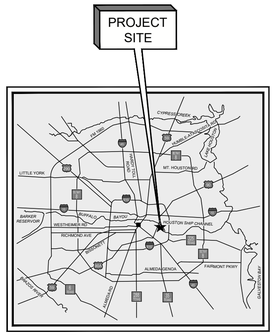
CHESTNUT RIDGE LIFT STATION
LOCATION MAP

SCALE: NONE



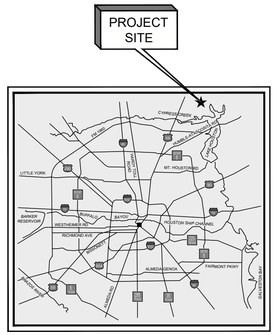
LADBROOK LIFT STATION
LOCATION MAP

SCALE: NONE



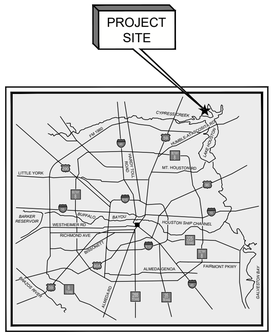
MAGNOLIA PARK LIFT STATION
LOCATION MAP

SCALE: NONE



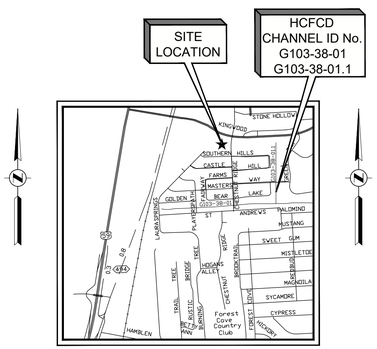
PINE PRAIRIE LIFT STATION
LOCATION MAP

SCALE: NONE



STATELY OAKS LIFT STATION
LOCATION MAP

SCALE: NONE

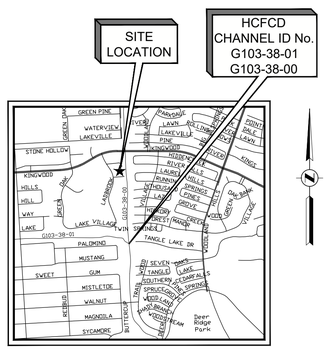


VICINITY MAP

SCALE: NONE

2511 CHESTNUT RIDGE RD, KINGWOOD, TX 77339

KEY MAP NO. 336A

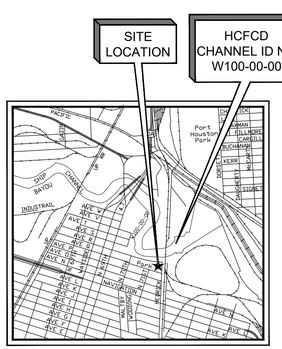


VICINITY MAP

SCALE: NONE

2307 LADBROOK DR, KINGWOOD, TX 77339

KEY MAP NO. 336B



SHEET NO.	DRAWING NO.	DRAWING SHEET TITLE
		G - GENERAL
1	G-001	COVER SHEET
2	G-002	LOCATION AND VICINITY MAPS (ENLARGED)
3	G-003	INDEX OF DRAWINGS SHEET 1 OF 2
4	G-004	INDEX OF DRAWINGS SHEET 2 OF 2
5	G-005	GENERAL CONSTRUCTION NOTES SHEET 1 OF 2
6	G-006	GENERAL CONSTRUCTION NOTES SHEET 2 OF 2
7	G-007	ABBREVIATIONS LEGEND AND SYMBOLOGY
8	G-008	CONSTRUCTION SIGN
9	G-100	HARRIS COUNTY FLOOD CONTROL DISTRICT REVIEW SHEET
		GC - GENERAL CIVIL STANDARD DETAILS
10	GC-001	CIVIL STANDARD DETAIL SITE FENCING AND ACCESS GATE DETAILS
11	GC-002	CIVIL STANDARD DETAIL BACK FLOW PREVENTOR DETAILS
12	GC-003	CIVIL STANDARD DETAIL MISCELLANEOUS LIFT STATION DETAILS
13	GC-004	CIVIL STANDARD DETAIL MISCELLANEOUS LIFT STATION DETAILS
14	GC-005	CIVIL STANDARD DETAIL MISCELLANEOUS LIFT STATION DETAILS
15	GC-006	CIVIL STANDARD DETAIL MISCELLANEOUS LIFT STATION DETAILS
16	GC-007	CIVIL STANDARD DETAIL MISCELLANEOUS LIFT STATION DETAILS
17	GC-008	CIVIL STANDARD DETAIL MISCELLANEOUS LIFT STATION DETAILS
18	GC-009	CIVIL STANDARD DETAIL SANITARY SEWER DETAILS
19	GC-010	CIVIL STANDARD DETAIL STORM SEWER DETAILS
20	GC-011	CIVIL STANDARD DETAIL STORM WATER POLLUTION PREVENTION PLAN DETAILS
		GE - GENERAL ELECTRIC
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22	GE-002	ELECTRICAL LEGENDS & SYMBOLS SHEET 2 OF 2
23	GE-003	ELECTRICAL LIGHTING FIXTURE SCHEDULE
24	GE-004	ELECTRICAL GENERAL NOTES
25	GE-005	ELECTRICAL YARD LIGHT/COMM. POLE DETAILS
26	GE-006	ELECTRICAL TYPICAL DETAILS
27	GE-007	ELECTRICAL RADAR LEVEL TRANSMITTER GAUGING SYSTEM INSTALLATION & DETAILS-I
28	GE-008	ELECTRICAL RADAR LEVEL TRANSMITTER GAUGING SYSTEM INSTALLATION & DETAILS-II
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36	C-105	CHESTNUT RIDGE LIFT STATION PROPOSED SECTION VIEW
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50	E-104	CHESTNUT RIDGE LIFT STATION JUNCTION BOX DETAILS
51	E-105	CHESTNUT RIDGE LIFT STATION SERVICE POLE DETAIL
52	E-106	CHESTNUT RIDGE LIFT STATION CONTROL PANEL DETAIL
53	E-107	CHESTNUT RIDGE LIFT STATION CONDUIT SCHEDULE
54	E-108	CHESTNUT RIDGE LIFT STATION THREE-WIRE DIAGRAM
55	E-109	CHESTNUT RIDGE LIFT STATION SERVICE RACK DETAILS
56	E-110	CHESTNUT RIDGE LIFT STATION ENLARGED SITE PLAN
		I - INSTRUMENTATION
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58	I-102	CHESTNUT RIDGE LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-II
59	I-103	CHESTNUT RIDGE LIFT STATION COMMUNICATIONS DIAGRAM
60	I-104	CHESTNUT RIDGE LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT & SCHEDULE
61	I-105	CHESTNUT RIDGE LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-I
62	I-106	CHESTNUT RIDGE LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-II
63	I-107	CHESTNUT RIDGE LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-III
64	I-108	CHESTNUT RIDGE LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-I
65	I-109	CHESTNUT RIDGE LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-II
66	I-110	CHESTNUT RIDGE LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-III
67	I-111	CHESTNUT RIDGE LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-IV
68	I-112	CHESTNUT RIDGE LIFT STATION PUMP NO.1 CONTROL WIRING DIAGRAM
69	I-113	CHESTNUT RIDGE LIFT STATION PUMP NO.2 CONTROL WIRING DIAGRAM
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72	C-202	LADBROOK LIFT STATION DEMOLITION SECTION VIEW
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74	SV-202	LADBROOK DRIVE GRAVITY ROUTE EXISTING SURVEY AND CONTROL POINTS TABLE
75	SV-203	LADBROOK DRIVE GRAVITY ROUTE EXISTING SURVEY AND CONTROL POINTS TABLE
76	SV-204	LADBROOK DRIVE GRAVITY ROUTE EXISTING SURVEY AND CONTROL POINTS TABLE
77	SV-205	LADBROOK DRIVE GRAVITY ROUTE EXISTING SURVEY AND CONTROL POINTS TABLE
78	SV-206	LADBROOK DRIVE GRAVITY ROUTE EXISTING SURVEY AND CONTROL POINTS TABLE
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80	Y-202	LADBROOK DRIVE PLAN AND PROFILE STA 1+00 TO 4+50 STA 16+50 TO END
81	Y-203	LADBROOK DRIVE PLAN AND PROFILE STA 4+50 TO 10+50
82	Y-204	LADBROOK DRIVE PLAN AND PROFILE STA 10+50 TO 16+50
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		TC - TRAFFIC CONTROL PLAN
84	TC-201	LADBROOK LIFT STATION TRAFFIC CONTROL PLAN OVERALL LAYOUT SHEET 1 OF 1
85	TC-202	LADBROOK LIFT STATION TRAFFIC CONTROL PLAN SHEET 1 OF 2
86	TC-203	LADBROOK LIFT STATION TRAFFIC CONTROL PLAN SHEET 2 OF 2
87	TC-204	LADBROOK LIFT STATION TCP NOTES, CHANNELIZING DEVICES, AND BARRICADES SHEET 1 OF 1
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89	SL-202	LADBROOK LIFT STATION STREET LIGHT OVERALL LAYOUT
90	SL-203	LADBROOK LIFT STATION STREET LIGHT PLAN
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92	TP-202	LADBROOK DRIVE STA 9+00 TO 14+00
93	TP-203	LADBROOK DRIVE STA 19+00 TO END
94	TP-204	LADBROOK DRIVE TREE TREATMENT SPECIFICATIONS AND DETAILS
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97	C-302	MAGNOLIA PARK LIFT STATION DEMOLITION SECTION VIEW
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106	S-303	MAGNOLIA PARK ODOR CONTROL PAD PLAN AND DETAILS
107	S-304	MAGNOLIA PARK PUMP STATION - PLAN AT GRADE
108	S-305	MAGNOLIA PARK PUMP STATION - CAISSON CONSTRUCTION AT WET WELL
109	S-306	MAGNOLIA PARK PUMP STATION - BASE SLAB PLAN
110	S-307	MAGNOLIA PARK ELECTRICAL PAD - PLAN
111	S-308	MAGNOLIA PARK ELECTRICAL PAD - SECTION AND DETAILS
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116	D-302	MAGNOLIA PARK LIFT STATION PROPOSED 18" STORM SEWER LINE
117	D-303	MAGNOLIA PARK LIFT STATION PROPOSED STORM WATER POLLUTION PREVENTION PLAN AND DETAILS
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119	E-302	MAGNOLIA PARK LIFT STATION PROPOSED SITE PLAN
120	E-303	MAGNOLIA PARK LIFT STATION ONE-LINE DIAGRAM
121	E-304	MAGNOLIA PARK LIFT STATION JUNCTION BOX DETAILS
122	E-305	MAGNOLIA PARK LIFT STATION SERVICE POLE DETAILS
123	E-306	MAGNOLIA PARK LIFT STATION CONTROL BUILDING PLAN
124	E-307	MAGNOLIA PARK LIFT STATION MCC ELEVATION
125	E-308	MAGNOLIA PARK LIFT STATION CONDUIT SCHEDULE I
126	E-309	MAGNOLIA PARK LIFT STATION CONDUIT SCHEDULE II
127	E-310	MAGNOLIA PARK LIFT STATION THREE LINE DIAGRAM
128	E-311	MAGNOLIA PARK LIFT STATION MCC SCHEMATIC & WIRING DIAGRAM
129	E-312	MAGNOLIA PARK LIFT STATION UTILITY POWER & GENERATOR POWER TRANSFER RISER DIAGRAM
130	E-313	MAGNOLIA PARK LIFT STATION ENLARGED PLAN VIEW
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132	I-302	MAGNOLIA PARK LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-II
133	I-303	MAGNOLIA PARK LIFT STATION COMMUNICATIONS DIAGRAM
134	I-304	MAGNOLIA PARK LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT & SCHEDULE
135	I-305	MAGNOLIA PARK LIFT STATION CONTROL CABINET BACK DOOR ELEVATION
136	I-306	MAGNOLIA PARK LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT
137	I-307	MAGNOLIA PARK LIFT STATION CONTROL WIRING DIAGRAM-I
138	I-308	MAGNOLIA PARK LIFT STATION CONTROL WIRING DIAGRAM-II
139	I-309	MAGNOLIA PARK LIFT STATION CONTROL WIRING DIAGRAM-III

NO.	DATE	REVISION	APP.

PLOTTED: 1/28/2026 5:11 PM PEN TABLE: ----

GANNETT FLEMING

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3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9070

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Crag Alexander Perry
Name
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JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

GENERAL

INDEX OF DRAWINGS
SHEET 1 OF 2

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. G-003

HORIZ: NONE
VERT: NONE

SHEET NO. 3 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\003 G-003.dwg

SHEET NO.	DRAWING NO.	DRAWING SHEET TITLE
140	I-310	MAGNOLIA PARK LIFT STATION PUMP NO.1 CONTROL WIRING DIAGRAM
141	I-311	MAGNOLIA PARK LIFT STATION PUMP NO.2 CONTROL WIRING DIAGRAM
142	I-312	MAGNOLIA PARK LIFT STATION PUMP NO.3 CONTROL WIRING DIAGRAM
143	I-313	MAGNOLIA PARK LIFT STATION PUMP NO.4 CONTROL WIRING DIAGRAM
144	I-314	MAGNOLIA PARK LIFT STATION PUMP NO.5 CONTROL WIRING DIAGRAM
145	I-315	MAGNOLIA PARK LIFT STATION PUMP NO.6 CONTROL WIRING DIAGRAM
		TC-TRAFFIC CONTROL PLAN
146	TC-301	MAGNOLIA PARK LIFT STATION DETOUR PLAN SHEET 1 OF 1
		PINE PRAIRIE LIFT STATION
		F - FIRMETTE
147	F-401	PINE PRAIRIE LIFT STATION NATIONAL FLOOD HAZARD LAYER FIRMETTE MAP
		C - CIVIL
148	C-401	PINE PRAIRIE LIFT STATION DEMOLITION SITE PLAN
149	C-402	PINE PRAIRIE LIFT STATION DEMOLITION SECTION VIEW
150	C-403	PINE PRAIRIE LIFT STATION PROPOSED SITE PLAN
151	C-404	PINE PRAIRIE LIFT STATION PROPOSED PLAN VIEW
152	C-405	PINE PRAIRIE LIFT STATION PROPOSED SECTION VIEW
153	C-406	PINE PRAIRIE LIFT STATION PUMP OPERATION AND SITE CONTROL POINTS TABLES
154	C-407	PINE PRAIRIE LIFT STATION PROPOSED BY-PASS MANHOLE DETAIL
		SV - SURVEY
155	SV-401	PINE PRAIRIE LIFT STATION EXISTING SITE SURVEY AND CONTROL POINTS TABLE
		S - STRUCTURAL
156	S-401	PINE PRAIRIE GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS
157	S-402	PINE PRAIRIE TYPICAL DETAILS
158	S-403	PINE PRAIRIE ODOR CONTROL AND ELECTRICAL PAD PLAN AND DETAILS
159	S-404	PINE PRAIRIE PUMP STATION - PLAN AT GRADE
160	S-405	PINE PRAIRIE CAISSON CONSTRUCTION AT WET WELL
161	S-406	PINE PRAIRIE BASE SLAB PLAN
		Y - YARD PIPING
162	Y-401	PINE PRAIRIE LIFT STATION PROPOSED YARD PIPING PLAN
163	Y-402	PINE PRAIRIE LIFT STATION PROPOSED SANITARY SEWER
		D - CIVIL DRAINAGE
164	D-401	PINE PRAIRIE LIFT STATION PROPOSED GRADING PLAN
165	D-402	PINE PRAIRIE LIFT STATION PROPOSED STORM WATER POLLUTION PREVENTION PLAN AND DETAILS
		E - ELECTRICAL
166	E-401	PINE PRAIRIE LIFT STATION DEMOLITION SITE PLAN
167	E-402	PINE PRAIRIE LIFT STATION PROPOSED SITE PLAN
168	E-403	PINE PRAIRIE LIFT STATION ONE-LINE DIAGRAM
169	E-404	PINE PRAIRIE LIFT STATION JUNCTION BOX DETAILS
170	E-405	PINE PRAIRIE LIFT STATION SERVICE POLE DETAIL
171	E-406	PINE PRAIRIE LIFT STATION CONTROL PANEL DETAIL
172	E-407	PINE PRAIRIE LIFT STATION CONDUIT SCHEDULE
173	E-408	PINE PRAIRIE LIFT STATION THREE-WIRE DIAGRAM
174	E-409	PINE PRAIRIE LIFT STATION SERVICE RACK DETAILS
175	E-410	PINE PRAIRIE LIFT STATION ENLARGED PLAN VIEW
		I - INSTRUMENTATION
176	I-401	PINE PRAIRIE LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-I
177	I-402	PINE PRAIRIE LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-II
178	I-403	PINE PRAIRIE LIFT STATION COMMUNICATIONS DIAGRAM
179	I-404	PINE PRAIRIE LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT & SCHEDULE
180	I-405	PINE PRAIRIE LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-I
181	I-406	PINE PRAIRIE LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-II
182	I-407	PINE PRAIRIE LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-III
183	I-408	PINE PRAIRIE LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-I
184	I-409	PINE PRAIRIE LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-II
185	I-410	PINE PRAIRIE LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-III
186	I-411	PINE PRAIRIE LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-IV
187	I-412	PINE PRAIRIE LIFT STATION PUMP NO.1 CONTROL WIRING DIAGRAM
188	I-413	PINE PRAIRIE LIFT STATION PUMP NO.2 CONTROL WIRING DIAGRAM
189	I-414	PINE PRAIRIE LIFT STATION PUMP NO.3 CONTROL WIRING DIAGRAM
		STATELY OAKS LIFT STATION
		F - FIRMETTE
190	F-501	STATELY OAKS LIFT STATION NATIONAL FLOOD HAZARD LAYER FIRMETTE MAP
		C - CIVIL
191	C-501	STATELY OAKS LIFT STATION DEMOLITION SITE PLAN
192	C-502	STATELY OAKS LIFT STATION DEMOLITION SECTION VIEW
193	C-503	STATELY OAKS LIFT STATION PROPOSED SITE PLAN
194	C-504	STATELY OAKS LIFT STATION PROPOSED PLAN VIEW
195	C-505	STATELY OAKS LIFT STATION PROPOSED SECTION VIEW
196	C-506	STATELY OAKS LIFT STATION PUMP OPERATION AND SITE CONTROL POINTS TABLES
197	C-507	STATELY OAKS LIFT STATION PROPOSED F.M. BY-PASS MANHOLE DETAIL
		SV - SURVEY
198	SV-501	STATELY OAKS LIFT STATION EXISTING SITE SURVEY AND CONTROL POINTS TABLE
		S - STRUCTURAL
199	S-501	STATELY OAKS GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS
200	S-502	STATELY OAKS TYPICAL DETAILS
201	S-503	STATELY OAKS ODOR CONTROL PAD PLAN AND DETAILS
202	S-504	STATELY OAKS ELECTRICAL PAD - PLAN, SECTION AND DETAILS
203	S-505	STATELY OAKS EXISTING LIFT STATION - PLAN AND SECTION
		Y - YARD PIPING
204	Y-501	STATELY OAKS LIFT STATION PROPOSED YARD PIPING PLAN
		D - CIVIL DRAINAGE
205	D-501	STATELY OAKS LIFT STATION PROPOSED GRADING PLAN
206	D-502	STATELY OAKS LIFT STATION PROPOSED STORM WATER POLLUTION PREVENTION PLAN AND DETAILS
		E - ELECTRICAL
207	E-501	STATELY OAKS LIFT STATION DEMOLITION SITE PLAN
208	E-502	STATELY OAKS LIFT STATION PROPOSED SITE PLAN
209	E-503	STATELY OAKS LIFT STATION ONE-LINE DIAGRAM
210	E-504	STATELY OAKS LIFT STATION JUNCTION BOX DETAIL
211	E-505	STATELY OAKS LIFT STATION SERVICE POLE DETAIL
212	E-506	STATELY OAKS LIFT STATION CONTROL PANEL DETAIL
213	E-507	STATELY OAKS LIFT STATION CONDUIT SCHEDULE
214	E-508	STATELY OAKS LIFT STATION THREE-WIRE DIAGRAM
215	E-509	STATELY OAKS LIFT STATION SERVICE RACK DETAILS
216	E-510	STATELY OAKS LIFT STATION ENLARGED PLAN VIEW
		I - INSTRUMENTATION
217	I-501	STATELY OAKS LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-I
218	I-502	STATELY OAKS LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-II
219	I-503	STATELY OAKS LIFT STATION COMMUNICATIONS DIAGRAM
220	I-504	STATELY OAKS LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT & SCHEDULE
221	I-505	STATELY OAKS LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-I
222	I-506	STATELY OAKS LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-II
223	I-507	STATELY OAKS LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-III
224	I-508	STATELY OAKS LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-I
225	I-509	STATELY OAKS LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-II
226	I-510	STATELY OAKS LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-III
227	I-511	STATELY OAKS LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-IV
228	I-512	STATELY OAKS LIFT STATION PUMP NO.1 CONTROL WIRING DIAGRAM
229	I-513	STATELY OAKS LIFT STATION PUMP NO.2 CONTROL WIRING DIAGRAM
230	I-514	STATELY OAKS LIFT STATION PUMP NO.3 CONTROL WIRING DIAGRAM

NO.	DATE	REVISION	APP.

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GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Crag Alexander Perry
Name

116345
License No.

JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

GENERAL

INDEX OF DRAWINGS
SHEET 2 OF 2

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. G-004	HORIZ: NONE VERT: NONE
SHEET NO. 4 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\004 G-004.dwg

GENERAL CONSTRUCTION NOTES

1. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING FACILITIES PRIOR TO CONSTRUCTION OF PROPOSED FACILITIES. ANY DAMAGE TO EXISTING FACILITIES INCURRED AS A RESULT OF CONSTRUCTION OPERATIONS WILL BE REPAIRED AT CONTRACTOR'S EXPENSE.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING PUBLIC AND PRIVATE UTILITY LINES, INCLUDING BUT NOT LIMITED TO WATER, WASTEWATER, STORM WATER LINES, TRAFFIC CONTROL DEVICES, PETROLEUM, OIL AND GAS PIPELINES, TELEPHONE, COMMUNICATIONS, FIBER OPTIC AND OTHERS DURING CONSTRUCTION. UTILITIES DAMAGED BY CONTRACTOR SHALL BE REPAIRED TO PRE-DAMAGED CONDITION OR BETTER, IN ACCORDANCE WITH THE UTILITY OWNER'S STANDARDS AT NO ADDITIONAL COST.

3. REMOVE EXISTING PLUGS AND CONNECT PROPOSED UTILITY LINES AS INDICATED ON PLANS.

4. UTILITIES PRESENTED ON THESE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATIONS SHOWN ON THE DRAWING. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CONTRACTOR SHALL NOTIFY TEXAS 811' AT 811 OR 1-800-344-8377 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING IN THE VICINITY OF UNDERGROUND UTILITIES.

5. CONTRACTOR SHALL COMPLY WITH LATEST EDITION OF OSHA REGULATIONS AND THE STATE OF TEXAS LAWS CONCERNING EXCAVATION. COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND ALL REGULATIONS OF UTILITY COMPANIES CONCERNING SAFETY AND HEALTH PRACTICES.

6. WHEN TRENCH CONDITION WARRANTS USE OF DEWATERING SYSTEMS, THEIR USE SHALL BE REQUESTED BY CONTRACTOR AND APPROVED BY OWNER. CONTRACTOR TO DEWATER GROUND TO A POINT WHERE GROUNDWATER IS MAINTAINED 3 FEET BELOW THE TRENCH BOTTOM. SILT CAPTURE BAGS ARE REQUIRED ON THE DISCHARGE OF ALL DEWATERING PIPES. WATER DISPOSAL SHALL BE ROUTED TOWARDS AND APPROPRIATE DRAINAGE FACILITY.

7. THESE PLANS DO NOT EXTEND OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. SEAL OF THE REGISTERED PROFESSIONAL ENGINEER(S) HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED IN THESE PLANS. CONTRACTOR SHALL INDEPENDENTLY PREPARE AND/OBTAIN THE APPROPRIATE SAFETY SYSTEMS.
8. REMOVE ALL EXCESS MATERIAL FROM THE SITE AND RESTORE GROUND TO ORIGINAL CONTOURS.

GENERAL NOTES - INSIDE CITY OF HOUSTON AND EXTRATERRITORIAL JURISDICTION LIMITS

1. CONSTRUCT WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING IN ACCORDANCE WITH THE LATEST EDITION OF THE PUBLICATIONS STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, STREET PAVING AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING PUBLISHED BY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING WATER, WASTEWATER, STORM WATER LINES, TRAFFIC CONTROL DEVICES AND OTHER UTILITIES. DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING, REFERENCED ABOVE.

3. THE SIZES OF WATER METERS SHOWN BUT NOT SPECIFICALLY CALLED OUT IN THIS PROJECT ARE ONE INCH OR SMALLER STANDARD CITY OF HOUSTON WATER METERS. ALL OTHER SIZES LARGER THAN ONE INCH ARE SPECIFICALLY CALLED OUT ON THESE DRAWINGS.

4. CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY ENGINEER, HOUSTON PUBLIC WORKS AND ENGINEERING @ 832-394-9098 AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.

5. CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY OF HOUSTON PARKS AND RECREATION DEPARTMENT @ 832-394-8805 AND 832-394-8804 AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION, IN ORDER FOR CITY TO SUSPEND OR RESCHEDULE MOWING OPERATION IN THE MEDIAN OF THE CONSTRUCTION ZONE AREA.

6. CITY OF HOUSTON STANDARD DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING ARE INCORPORATED IN PLANS BY REFERENCE AS IF COPIED VERBATIM. STANDARD DETAILS ARE AVAILABLE FOR DOWNLOAD AT THE FOLLOWING WEB ADDRESS: HTTPS://EDOCS.PUBLICWORKS.HOUSTONTX.GOV/ENGINEERING-AND-CONSTRUCTION/DRAWINGS/STANDARD-DETAILS.HTML. DETAILS INCLUDED IN PLAN SET SUPERSEDE RELATED COH STANDARD DETAILS

CITY OF HOUSTON PUBLIC WORKS
SWPPP CONSTRUCTION NOTES

1. CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND SIDE DITCHES AT LOCATIONS SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPP) PLANS TO KEEP SILT AND OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STORM.

2. DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT SEGMENTS SO THAT EXCAVATION MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENTS OR DRIVEWAYS SHALL BE SWEPT BACK INTO THE EXCAVATED AREA.

3. CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FORM THE EXCAVATED AREA.

4. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.

5. CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.

   - DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
   - AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
   - STRUCTURAL CONTROL MEASURES.
   - LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.

6. CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND OR CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION ON BACKFILLING OPERATIONS, SUCH AREAS SHALL BE REPLACED BY SEEDING OR SODDING. SLOPES 4:1 OR STEEPER SHALL BE REPLACED BY BLOCK SODDING.

CODES AND SPECIFICATIONS

1. DESIGN IS IN ACCORDANCE WITH 2018 INTERNATIONAL BUILDING CODE, HARRIS COUNTY AMENDMENTS.

2. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH APPLICABLE OSHA, STATE, AND LOCAL REGULATIONS. THIS DESIGN IS NOT INTENDED TO CONFLICT WITH SAFETY OR APPLICABLE REGULATIONS OR TO RELIEVE THE CONTRACTOR OF COMPLIANCE WITH THESE REQUIREMENTS.

3. DEAD LOADS
   A. ACTUAL TRIBUTORY STRUCTURE WEIGHT
   B. SUPERIMPOSED DEAD LOADS: 10 PSF

4. LIVE LOADS
   A. PILE CAP: 250 PSF
   B. GRATING: 100 PSF
   C. DRIVEWAY: HS-20 TRUCK LOAD
   D. RETAINING WALL SURCHARGE: 250 PSF

5. GROUND SNOW LOAD: Pg = 0 PSF

NO.	DATE	REVISION	APP.

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GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA, HOUSTON, TEXAS 77098 (713) 520-9070

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Crag Alexander Perry
Signature
116345
Texas P.E. Number
JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

GENERAL

GENERAL CONSTRUCTION NOTES SHEET 1 OF 2

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. G-005

HORIZ: NONE
VERT: NONE

SHEET NO. 5 OF 230

DRAWING SCALE

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CENTERPOINT ENERGY
CAUTION: UNDERGROUND GAS FACILITIES

1. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT 1-800-545-6005 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

2. WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713) 207-5463 OR (713) 945-8037 (7:00 AM TO 4:30PM) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.

3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.

4. WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.

5. FOR EMERGENCIES REGARDING GAS LINES CALL (713) 659-2111 OR (713) 207-4200.

6. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGOUND FACILITIES.
   WARNING: OVERHEAD ELECTRICAL FACILITIES

7. OVERHEAD LINES MAY EXIST ON THE PROPERTY. THE LOCATION OF OVERHEAD LINES HAS NOT BEEN SHOWN ON THESE DRAWINGS AS THE LINES ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION.

8. TEXAS HEALTH AND SAFETY CODE, CHAPTER 752 STATES IT IS ILLEGAL FOR A PERSON TO PERFORM ANY WORK OR ERECT ANY STRUCTURE UNDER CIRCUMSTANCES IN WHICH IT IS POSSIBLE FOR A PERSON, EQUIPMENT OR ANY OBJECT A PERSON IS HOLDING TO COME WITHIN SIX FEET OF HIGH-VOLTAGE OVERHEAD ELECTRIC LINES.

9. IN ADDITION, THE U.S. OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) REGULATIONS STATE A WORKER OR ANY PART OF A CONDUCTIVE MATERIAL, TOOL, PIECE OF EQUIPMENT OR MACHINE MUST NOT COME WITHIN 10 FEET OF AN ENERGIZED LINE 50,000 VOLTS AND BELOW.

10. IF YOUR WORK WILL BE WITHIN 10 FEET OF POWER LINES, YOU MUST CONTACT CENTERPOINT ENERGY AT LEAST 48 HOURS BEFORE BEGINNING.

11. WORK MUST NOT START UNTIL ALL PARTIES RESPONSIBLE FOR THE WORK AND THE UTILITIES HAVE NEGOTIATED A SATISFACTORY MUTUAL ARRANGEMENT TO PROVIDE TEMPORARY DE-ENERGIZATION AND GROUNDING, TEMPORARY RELOCATION OR RAISING OF THE LINE, OR TEMPORARY MECHANICAL BARRIERS TO SEPARATE AND PREVENT CONTACT BETWEEN THE LINE AND THE MATERIAL OR EQUIPMENT OR THE PERSON PERFORMING THE WORK, ACTIVITY OR FUNCTION.

12. PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS AND SUBCONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED CALL CENTERPOINT ENERGY AT (713) 207-2222.
    ACTIVITIES ON OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY:

13. NO APPROVAL TO USE, CROSS OR OCCUPY CENTERPOINT FEE OR EASEMENT PROPERTY IS GIVEN. IF YOU NEED TO USE CENTERPOINT PROPERTY, PLEASE CONTACT OUR SURVEYING AND RIGHT OF WAY DIVISION AT (713) 207-6348 OR (713) 207-5769.

AT&T TEXAS/SWBT FACILITIES

1. THE LOCATIONS OF AT&T TEXAS/SWBT FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.

2. THE CONTRACTOR SHALL CALL 1-800-344-8377 (TEXAS 811) A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.

3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWBT FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES.

4. WHEN AT&T TEXAS/SWBT FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.

5. THE PRESENCE OR ABSENCE OF AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN CONDUIT IN THE AREA.

6. PLEASE CONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER KEVIN RAY AT (713) 614-1983 OR E-MAIL HIM AT KR7896@ATT.COM IF CABLE LOCATE REQUESTS ARE NOT COMPLETED FOR OUR AT&T TEXAS/SWBT FACILITIES.

NO.	DATE	REVISION	APP.

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NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T TEXAS/SWBT underground conduit facilities only. Signature valid for one year.

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Crag Alexander Perry
Engineer
116345
Registration Number
JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

GENERAL

GENERAL
CONSTRUCTION
NOTES
SHEET 2 OF 2

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. G-006

HORIZ: NONE
VERT: NONE

SHEET NO. 6 OF 230

DRAWING SCALE

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DRAWING NUMBERING SYSTEM

G - 101
- SHEET SEQUENTIAL NUMBERS
- LIFT STATION DRAWING PREFIX CODES DESIGNATORS
- DRAWING DISCIPLINE DESIGNATORS

DRAWING DISCIPLINE DESIGNATORS

G - GENERAL
F - FIRMETTE
C - CIVIL
SV - SURVEY
S - STRUCTURAL
Y - YARD PIPING
D - CIVIL DRAINAGE
GE - GENERAL ELECTRIC
GI - GENERAL INSTRUMENTATION
E - ELECTRICAL
I - INSTRUMENTATION
TC - TRAFFIC CONTROL PLAN
SL - STREET LIGHT PLAN
TP - TREE PROTECTION AND MITIGATION PLAN

LIFT STATION DRAWING PREFIX CODES DESIGNATORS

1 - CHESTNUT RIDGE LIFT STATION
2 - LADBROOK LIFT STATION
3 - MAGNOLIA PARK LIFT STATION
4 - PINE PRAIRIE LIFT STATION
5 - STATELY OAKS LIFT STATION

FILL PATTERNS

- EARTH OR GRADE
- BEDROCK
- GRANULAR FILL (CRUSHED ROCK OR GRAVEL)
- SAND
- CONCRETE
- ENGINEERED FILL
- RIPRAP
- STONE
- BRICK
- CMU
- FACE BLOCK
- CHECKERED PLATE
- GRATE
- STEEL
- ALUMINUM
- DEMOLITION
- FLOWABLE FILL

GENERAL SYMBOLOGY

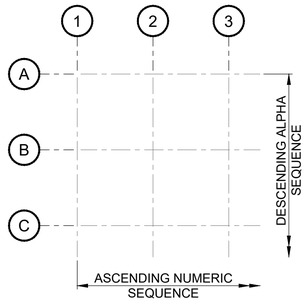
ELEVATION CALLOUTS

TOC 58.33 — **FLOOR ELEVATION** (PLAN VIEWS)

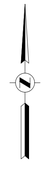
TOC EL. 58.33 — **SPOT ELEVATION** (SECTIONS AND ELEVATIONS)

GRID/COLUMN CALLOUTS

TYPICAL GRID/COLUMN LAYOUT



NORTH ARROW



PROJECT NORTH ARROW (TRUE NORTH)

BREAKS

PLAN, ELEVATION, AND SECTION BREAKS

PIPE BREAK

LINE STYLES

- EXISTING FACILITY
- NEW FACILITY
- OTHER DISCIPLINE NEW FACILITY BACKGROUND
- GRID LINE OR CENTERLINE
- MATCH LINE
- EXAMPLE BOUNDARY LINE
- SITE FENCING

ANNOTATION

SHEET NOTES

- 01 — **SHEET KEYNOTE**
- 2 — **REFERENCE KEYNOTE** (KEYNOTE LIST)
- FLOW 96" — **FLOW ARROW AND PIPE SIZE**
- S-101 — **SITE CONTROL POINTS**
- FIT 01-10 — **PIPE FITTING LABEL NUMBER**
- CAV-01-10 — **VALVE LABEL NUMBER**

REVISIONS

- 1 — **REVISION DELTA**
- **REVISION CLOUD**

SCALE BARS

8' 0 8' 16' 24' — 3/32"=1'-0"

4' 0 4' 8' 12' — 3/16"=1'-0"

8' 0 8' 16' — 1/8"=1'-0"

4' 0 4' 8' — 1/4"=1'-0"

4' 0 4' — 3/8"=1'-0

1' 0 1' 2' 5' — 1/2"=1'-0"

1' 6" 0 1' 2' — 1"=1'-0"

0 10' 20' — 1"=10'

0 10' 20' 40' — 1"=20'

0 10' 20' 30' 60' — 1"=30'

0 50' 100' — 1"=50'

0 20' 40' 60' 120' — 1"=60'

0 50' 100' 200' — 1"=100'

0 75' 150' 300' — 1"=150'

GENERAL ABBREVIATIONS

ABAND	ABANDONED
AB	ANCHOR BOLT
ABV	ABOVE
ADJ	ADJUSTABLE
ADMIN	ADMINISTRATION
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISH FLOOR
AH	ACCESS HATCH
ALUM	ALUMINUM
ANOD	ANODIZED
APPROX	APPROXIMATE
AR	ANCHOR
AS	AIR SUPPLY
ATS	AUTOMATIC TEMPERATURE SENSOR
AVG	AVERAGE
AWG	AMERICAN WIRE GAUGE
AWL	AVERAGE WATER LEVEL
BO	BOARD
BEL	BELOW
BF	BOTTOM FACE
BFP	BACKFLOW PREVENTER
BLDG	BUILDING
BLK	BLOCK (ING)
BM	BEAM
BOF	BOTTOM OF FOOTING
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BOW	BOTTOM OF WALL
C	CHANNEL (STRUCTURAL)
CAP	CAPACITY
CCP	CHEMICAL CARRIER PIPE
CER	CERAMIC
CF	CUBIC FEET
CI	CAST IRON
CIRC	CIRCUMFERENTIAL
CJ	CONSTRUCTION JOINT
CL (C.L.)	CENTER LINE+
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CMU	CONCRETE MASONRY UNIT
CO (C.O.)	CLEAN-OUT
COH	CITY OF HOUSTON
COL	COLUMN
COMB	COMBINATION
COMP	COMPRESSIBLE
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
COR	CORNER (S)
CORR	CORRUGATED
CR	CHESTNUT RIDGE LIFT STATION
C TO C	CENTER TO CENTER
CT	CERAMIC TILE
CTG	COATING
CTJ	CONTROL JOINT
CTR	CENTER (ED)
CTSK	COUNTERSINK
CY	CUBIC YARD
D	DEEP
DAP	DAMPER
DCFM	DECANT FORCEMAIN
DEC	DECANT
DET	DETAIL
DF	DIFFUSER
DH	DEHUMIDIFIER
DI	DIGITAL INPUT OR DUCTILE IRON AS APPLICABLE
DIA	DIAMETER
DIM	DIMENSION
DIR	DIRECTION
DIV	DIVISION
DJ	DISMANTLING JOINT
DL	DEAD LOAD
DM	DENSITY METER
DN	DOWN
DO	DIGITAL OUTPUT
DRV	DRAIN VALVE
DWG	DRAWING
E	EAST
EA	EACH
EB	EXPANSION BOLT
ED	EQUIPMENT DRAIN
EF	EACH FACE OR EXHAUST FAN
EJ	EXPANSION JOINT
EL, ELEV	ELEVATION
ELEC	ELECTRIC (AL)
ENGR	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
ES	ELECTRICAL SUPPLY
ESEW	EMERGENCY SHOWER AND EYE WASH
ESMT	EASEMENT
ESS	EMERGENCY STOP SWITCH
EST	ESTIMATE
ETC	ETCETERA
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR

F	FAN
FAB	FABRICATE (ED)
FC	FLOW CONTROLLER OR FAIL CLOSED
FAC	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FF	FINISHED FLOOR
FE	FLOW ELEMENT
FIN	FINISH (ED)
FL	FLOW LINE OR FLOOD LIGHT, AS APPLICABLE
FLP	FAIL LAST POSITION
FLR	FLOOR
FLASH	FLASHING
FLG	FLANGE
FLX	FLEXIBLE
FM	FORCE MAIN
FND	FOUNDATION
FRP	FIBER REINFORCED PLASTIC OR FIBERGLASS REINFORCED
FT	FLOW TRANSMITTER OF FOOT/FEET
FTG	FOOTING
FUM	FUME HOOD
GA	GAGE
GALV	GALVANIZED
GB	GRADE BREAK
GLV	GALVANIZED
GI	GALVANIZED IRON
GOX	GASEOUS OXYGEN
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GRADE
GRTG	GRATING
GST	GROUND STORAGE TANK
GVL	GRAVEL
GYP BD	GYPSUM BOARD
HB	HOSE BIB
HCO	HYDRAULIC CYLINDER OPERATOR
HD	HYDRAULIC DRIVE UNIT
HDR	HEADER
HI	HIGH
HOR	HORIZONTAL
HP (H.P.)	HORSE POWER OR HIGH POINT OF FLOOR/SLAB/PAVEMENT OR HIGH PRESSURE, AS APPLICABLE
HR	HANDRAIL OR HOUR
HT	HEIGHT
HTI	HEAT TRACED AND INSULATED
HVAC	HEATING/VENTILATION/AIR CONDITIONING
HWT	HOT WATER HEATER
I	INSULATED
I/O	INPUT/OUTPUT
IAS	INSTRUMENT AIR SUPPLY
IAW	IN ACCORDANCE WITH
ID	INSIDE DIAMETER
IJ	ISOLATION JOINT
INS	INSIDE
INSUL	INSULATION
INT	INTERIOR
ITC	INSTRUMENTATION TERMINAL CABINET
ITP	INSTRUMENTATION PANEL
INV	INVERT
JT	JOINT
KO	KNOCKOUT
LB	LADBROOK LIFT STATION
LCP	LOCAL CONTROL PANEL
LF	LINEAR FEET
LI	LEVEL INSTRUMENT
LIT	LEVEL INDICATING TRANSMITTER
LL	LIVE LOAD
LO	LOW
LOC	LOCATION/LOCATED
LONG	LONGITUDINAL
LOU	LOUVER
LP	LOW POINT OR LOW POINT OF FLOOR/SLAB/PAVEMENT
LS	LEVEL SWITCH
LT	LEVEL TRANSMITTER OR LEFT, AS APPLICABLE
LWL	LOW LEVEL SWITCH
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MH (M.H.)	MANHOLE
MIJ	MONOLITHIC ISOLATION JOINT
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MNL	MANUAL
MO	MASONRY OPENING
MONU.	MONUMENT
MP	MAGNOLIA PARK LIFT STATION
MTL	METAL
MWSE	MAXIMUM WATER SURFACE ELEVATION

N	NORTH
NAVD	NORTH AMERICAN VERTICAL DATUM
NFBWA	NORTH FORT BEND WATER AUTHORITY
NHCRWA	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY
NG (N.G.)	NATURAL GRADE OR NATURAL GROUND
NGE	NATURAL GROUND ELEVATION
NIC	NOT IN CONTRACT
NMS	NORTHEAST METER STATION
NPW	NON POTABLE WATER
NTS	NOT TO SCALE
O/A	OFF AUTO
OC	ON CENTER
OD	OUTSIDE DIAMETER
OO	OFF-ON
OHP	OVERHEAD POWER
OPNG	OPENING
OPT	OPTIONAL
ORP	OXIDATION REDUCTION POTENTIAL
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PC (P.C.)	POINT OF CURVATURE
PCC	PORTLAND CEMENT CONCRETE
PCF	POUNDS PER CUBIC FOOT
PCV	PRESSURE CONTROL VALVE
PG	PAGE
PH	PHOSPHATE
PI	PRESSURE INDICATOR
PL	PROPERTY LINE
POLY	POLYTUBING
PP	PINE PRAIRIE LIFT STATION
PR	POWER POLE
PRV	PRESSURE RELIEF VALVE
PR	PRESSATE RETURN
PSI	POUNDS PER SQUARE INCH
PSW	PLANT SERVICE WATE
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
R	RISER
RAD, R.	RADIUS
RCB	REINFORCED CONCRETE BOX
RC	REINFORCED CONCRETE
RCL	REMOTE I/O COMMUNICATION LINK
RCP	REINFORCED CONCRETE PIPE
RECPT	RECEPTACLE
RED	REDUCER
REF	REFERENCE/REFER
REINF	REINFORCING
REM	REMOVE
REQD	REQUIRED
REV	REVISION
RIO	REMOTE INPUT/OUPUT
RM	ROOM
RND	ROUND
ROW	RIGHT OF WAY
RP	RADIO PANEL
RPM	ROTATIONS PER MINUTE
ROT	REMOTE OFF TEST
RT	RIGHT
SCHD	SCHEDULE
SEC	SECTION
SEJ	SLAB EXPANSION
SF	SQUARE FOOT
SHT	SHEET
SO	STATELY OAKS LIFT STATION
SPEC	SPECIFICATION
SPECD	SPECIFIED
SQ	SQUARE
SRV	SERVICE
SS (S.S.)	STAINLESS STEEL OR SIDE SLOPE, AS APPLICABLE
ST	STREET
STA	STATION
STD	STANDARD OR STANDARD PROTOR DENSITY, AS APPLICABLE
STL	STEEL
SWSP	SURFACE WATER SUPPLY PROJECT
TCEQ	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
TEMP	TEMPERATURE
TDH	TOTAL DYNAMIC HEAD
THK	THICK (NESS)
TOC	TOP OF CONCRETE/TOTAL ORGANIC
TOP	TOP OF PIPE
TOS	TOP OF SLAB
TOW	TOP OF WALL
TU	TURBIDITY
TYP	TYPICAL
UH	UNIT HEATER
UN	UNION
UPS	UNINTERRUPED POWER SUPPLY
V	VOLT
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
W/	WITH
W/O	WITHOUT
WHCRWA	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY
WS	WATER SUPPLY
WSE	WATER SURFACE ELEVATION
WSTP	WATERSTOP

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 4:58 PM PEN TABLE: ----

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Craig Alexander Perry
116345
JANUARY 23, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

GENERAL

ABBREVIATIONS
LEGEND
AND
SYMBOLOGY

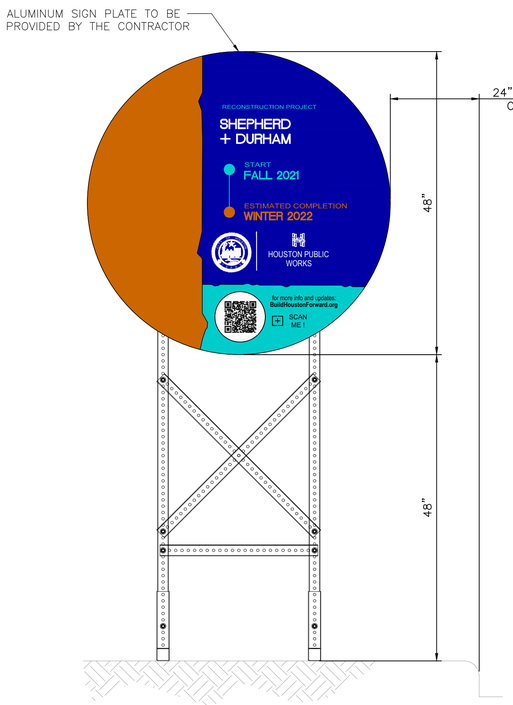
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

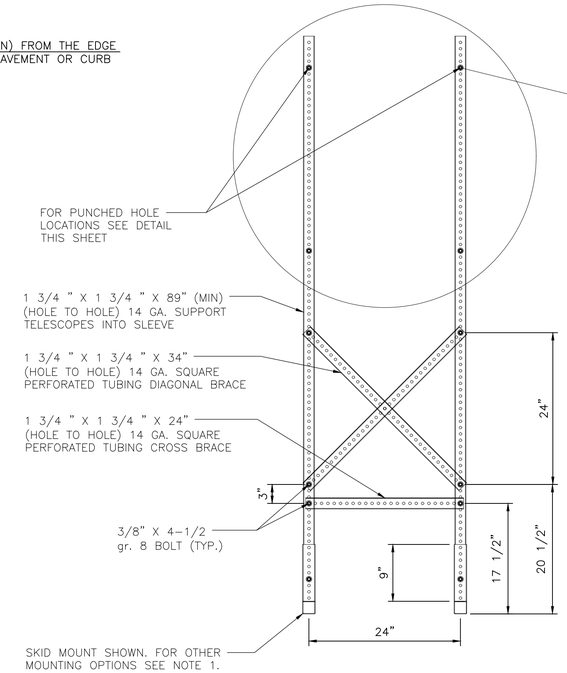
WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. G-007
HORIZ: NONE
VERT: NONE
SHEET NO. 7 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

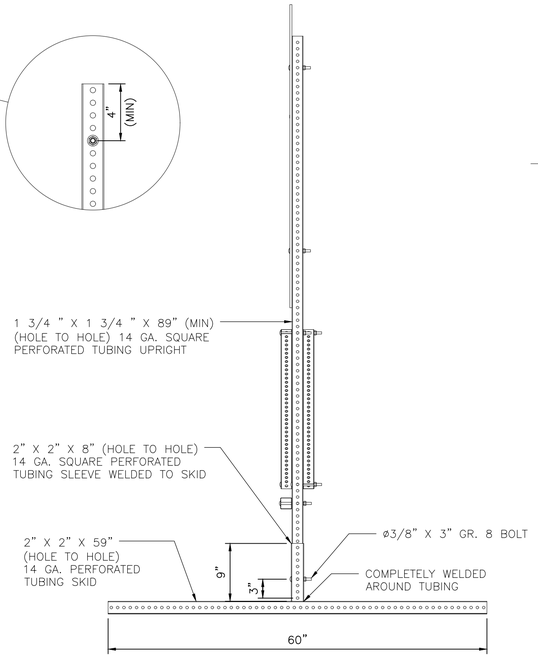
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FRONT VIEW



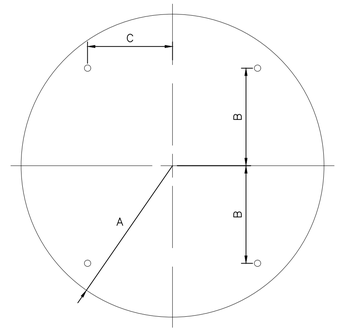
FRONT VIEW



SIDE VIEW

PROJECT SIGN – 48"

SKID MOUNTED SUPPORTS FOR 48" PROJECT SIGN



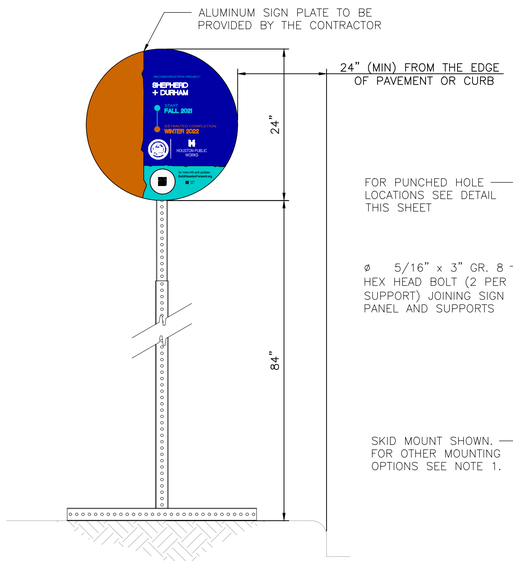
CIRCLE

A	B	C	T
24"	15"	12"	0.080"

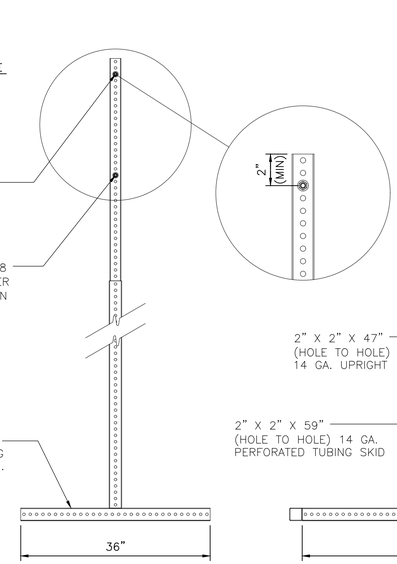
48" SIGN PLATE HOLE DETAIL

NOTES:

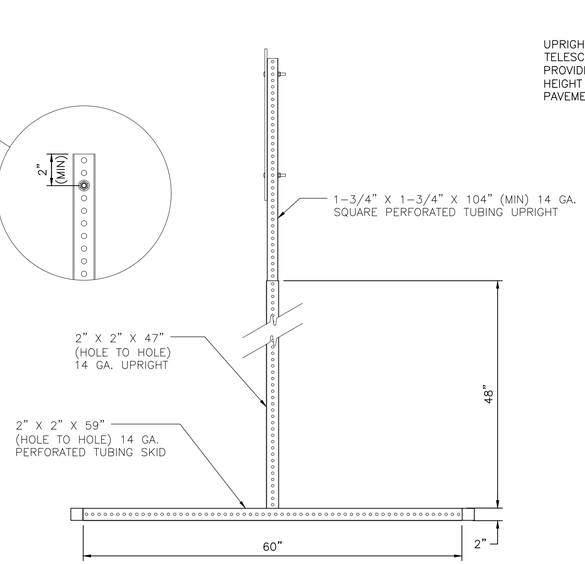
1. ALLOWABLE POST INSTALLATION METHODS ARE: CONCRETE FOOTING, SURFACE MOUNTING, SKID MOUNTING AND PILE DRIVEN POSTS.
2. FOR POST INSTALLATION WITH CONCRETE FOOTING, REFER TO DETAIL 01554-01.
3. FOR SURFACE MOUNTED POST INSTALLATION, REFER TO DETAIL 01554-02.
4. FOR SKID MOUNTING REQUIREMENTS REFER TO SPECIFICATION 01582.
5. PILE DRIVEN POSTS MUST BE DRIVEN TO A MINIMUM DEPTH OF 4-FEET INTO EXISTING GROUND.
6. LAYOUT, TEXT SIZE, AND OVERALL DESIGN OF THE SIGN WILL BE THE RESPONSIBILITY OF THE BUILD HOUSTON COORDINATOR.
7. ALL SIGN POSTS, SIGN TUBING, AND SIGN FASTENERS SHALL BE GALVANIZED STEEL PER SPECIFICATION 01582.



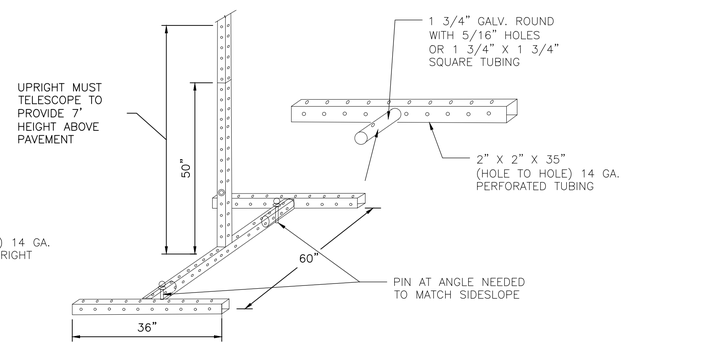
FRONT VIEW



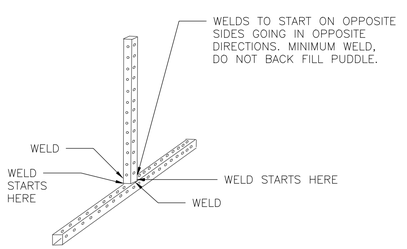
FRONT VIEW



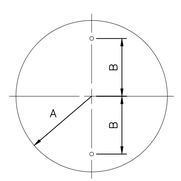
SIDE VIEW



ISO VIEW



ISO VIEW



A	B	C
12"	8"	0.080"

24" SIGN PLATE HOLE DETAIL

PROJECT SIGN – 24"

SKID MOUNTED SUPPORTS FOR 24" PROJECT SIGN

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 5:05 PM PEN TABLE: ----

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-8570

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Craig Alexander Perry
Engineer
116345
Texas Eng Number
JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

GENERAL

CONSTRUCTION SIGN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. G-008

HORIZ: NONE
VERT: NONE

SHEET NO. 8 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\008 G-008.dwg

1. PROPERTY DESCRIPTION

I. LOCATION INFORMATION

A. HARRIS COUNTY COMMISSIONER'S PRECINCT:
☐ 1 ☐ 2 ☒ 3 ☐ 4

B. KEY MAP: CR: 336A, LB: 336B, MP: 495S, PP: 297T, SO: 338A

C. ADDRESS: CR: 2511 CHESTNUT RIDGE ROAD KINGWOOD TX 77339, LB: 2307 LADBROOK DRIVE KINGWOOD TX 77339, MP: 1707 W HEDRICK STREET HOUSTON TX 77011, PP: 5014 PINE PRAIRIE LANE KINGWOOD TX 77345, SO: 2320 STATELY OAK STREET KINGWOOD TX 77345

II. LEGAL DESCRIPTION

A. ACREAGE: CR: 0.0658 AC, LB: 0.0548 AC, MP: 1.0717 AC, PP: 0.1665 AC, SO: 0.0815 AC

B. ☒ SUBDIVISION: CR: KINGWOOD PLACE SECTION TWO, LB: CHEVRON CHEMICAL COMPANY - TRACT I, MP: HILDALGO PARK, PP: MILLS BRANCH VILLAGE SECTION ONE, SO: KINGS POINT VILLAGE SECTION SIX

☐ SURVEY & ABSTRACT: _____

C. ADJACENT ROADS: CR: CHESTNUT RIDGE ROAD, LB: LADBROOK DRIVE, MP: W HEDRICK STREET, PP: PINE PRAIRIE LANE, SO: STATELY OAK STREET

III. PLATTING

A. SUBDIVISION PLAT
☐ PROPOSED PLAT / REPLAT
☒ RECORDED PLAT / REPLAT

B. STREETS PROPOSED
☐ PUBLIC
☐ PRIVATE
☐ PUBLIC & PRIVATE
☒ NONE

PLAT NAME:
CR: KINGWOOD PLACE SECTION TWO, LB: CHEVRON CHEMICAL COMPANY - TRACT I,
MP: HIDALGO PARK SEWAGE PUMP STATION SITE, PP: MILLS BRANCH VILLAGE SECTION ONE,
SO: KINGS POINT VILLAGE SECTION SIX

IV. JURISDICTIONS

☒ CITY OF HOUSTON
☐ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF _____
☐ NO ETJ
☐ UTILITY DISTRICT (NAME)_____

V. HCAD ACCOUNT NOS. (ALL)

CR: 1085310000010, LB: 1091280000001, MP: 0371850000001,
PP: 1161520030068, SO: 1173640160004

2. SITE DETENTION DRAINAGE

PROPOSED DRAINAGE AREA

☐ NEW DEVELOPMENT AREA: _____
☐ RE-DEVELOPMENT AREA (AMOUNT INCREASED IMPERVIOUS AREA): _____
☐ LOW IMPACT DEVELOPMENT (LID)
METHOD/DESCRIPTION _____

II. METHODOLOGY

HCFCD PCPM DETENTION METHOD USED:
☐ METHOD 1 (LESS THAN 20 ACRES)
☐ METHOD 2 (20 ACRES TO 640 ACRES)
☐ METHOD 3 (GREATER THAN 640 ACRES)
☐ OTHER _____

III. DETENTION VOLUME & OUTFALL

OUTFALL TO:
☐ .65, H.C.F.C.D. CHANNEL, (H.C.F.C.D. UNIT NO.) _____
☐ .75, EXISTING STORM SEWER (OWNER & OPERATOR) _____
☐ 1.00, ROADSIDE DITCH, (OWNER & ROAD NAME) _____
☐ OTHER (OWNER & OPERATOR) _____

IV. STORMWATER DETENTION BASIN INFORMATION

A. HCFCD PCPM SUMMARY TABLE SEE SHEET _____ OF THESE PLANS.

DETENTION BASIN SERVICE AREA		ACRES	
STORM EVENT	5% EXCEEDANCE (20-YEAR)	10% EXCEEDANCE (10-YEAR)	1% EXCEEDANCE (100-YEAR)
MAXIMUM ALLOWABLE OUTFLOW (PRE-DEVELOPMENT PEAK FLOW)			
MAXIMUM OUTFLOW PROVIDED (PEAK FLOW FROM BASIN)			
LOWEST NATURAL/FINISHED GROUND OR FINISHED FLOOR ELEVATION ESTIMATE			
DESIGN WATER SURFACE ELEVATION			
MINIMUM STORAGE REQUIRED (ac-ft)			
DETENTION STORAGE PROVIDED (ac-ft)			
STORAGE RATE PROVIDED (ac-ft/hr)			
OUTFLOW VELOCITY INTO CHANNEL (ft/sec)			
DRAIN TIME – 1% ONLY (hours)			
EMERGENCY OVERFLOW (TYPE, SIZE, ELEVATION, ETC.)			

B. DETENTION BASIN TO BE MAINTAINED BY _____

C. DETENTION SERVICE AREA MAP ON SHEET _____

D. ADDITIONAL CRITERIA FOR PUMPED DETENTION BASINS
VOLUME OF PUMPED 1% EXCEEDANCE STORAGE VOLUME = _____ ACFT _____ % OF TOTAL VOLUME
MAXIMUM DESIGN OUTFLOW VELOCITY INTO HCFCD CHANNEL = _____ FT/SEC
DRAIN TIME FOR BASIN = _____ HOURS BASED ON _____ HEAD CONDITIONS

V. DETENTION PROVIDED IN OTHER PLANS:

HCFCD PROJECT No. _____ DATE SIGNED BY HCFCD: _____
PLAN TITLE _____
DETENTION POND SERVICE AREA MAP IS PROVIDED ON SHEET _____
ENGINEERING FIRM _____
DETENTION BASIN MAINTAINED BY: _____

VI. FLOW RESTRICTOR SIZE

OUTFALL PIPE SIZE: _____
RESTRICTOR PIPE SIZE: _____
RESTRICTOR PLATE DIMENSION: _____

VII. DETENTION PROVIDED BY

☐ REGIONAL DETENTION BASIN SYSTEM (APPROVED H.C. PRJ NO.): _____

FOR PROJECTS LOCATED IN ANY FLOODPLAIN

Development constructed or placed in accordance with these plans will comply with all provisions of the designated Floodplain Administrator.
No net fill is allowed in the flood plain and no fill is allowed in the floodway.

OFFSITE SHEET FLOW: (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMODATIONS ARE SHOWN ON SHEET _____ OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED _____.

TOTAL ACREAGE =____
TOTAL DISCHARGE =____

NOTE: ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES MUST BE IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT. THE SIGNING ENGINEER HEREBY CERTIFIES THAT THESE AREAS HAVE BEEN ADDRESSED.

3. SWQ DISCHARGE INTO FCD FACILITY

I. SWPPP: CONSTRUCTION MEASURES. (Must complete)

☐ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S) _____
☐ DISTURBS <1AC. N/A

*II. APPLICABILITY FOR PERMANENT FEATURES. (Must complete)

EXEMPT NEW DEVELOPMENT:
☐ PROJECT IS ON A PARCEL (A COMMON PLAN OF DEVELOPMENT) LESS THAN 5 ACRES. (Must be verified with plat)

EXEMPT REDEVELOPMENT:
☐ PROJECT DOES NOT MEET THE DEFINITION OF SIGNIFICANT REDEVELOPMENT (Part A,Sec. 2.39 of Regulations of Harris County, Texas for Stormwater Quality Management)

EXEMPT GRANDFATHERED:
☐ PROJECT'S DRAINAGE TIES DIRECTLY INTO AN EXISTING DRAINAGE SYSTEM PRIOR TO OCTOBER 1, 2001.
(FOR VERIFICATION: PROVIDE ORIGINAL DRAINAGE AREA MAP INCLUDING CALCULATIONS)

GENERAL:
☐ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: _____
☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN PROJECT TITLE: _____
HARRIS COUNTY PROJECT No _____ & SWQ PERMIT No. _____

STORMWATER QUALITY MANAGEMENT PLAN:
☐ SITE PLAN ON SHEET(S) _____

III. PERMANENT SWQ FEATURES. (COMPLETE IF NOT EXEMPT)

☐ VEGETATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, URBAN FORESTRY DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
☐ POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONSAPPEAR ON SHEET(S)_____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
☐ OTHER(S): _____

4. FLOOD PLAIN STATUS

I. GENERAL INFORMATION

FIRM PANEL(S) FOR PROPERTY: CR & LB: 48201C0315L, MP: 48201C0885N, PP & SO: 48201C0310L
FIRM PANEL(S) DATE: CR & LB: JUNE 18, 2007, MP: MAY 2, 2019, PP & SO: JUNE 18, 2007
STATUS OF PROPERTY ON MAP
☒ ENTIRELY LOCATED IN UNSHADED ZONE "X"
☐ LOCATED PARTIALLY OR ENTIRELY IN ANY "A" ZONE OR SHADED ZONE "X", DELINEATE FLOODPLAIN BOUNDARY ON CONSTRUCTION DRAWINGS (DRAINAGE LAYOUT PG. NO._____) (1% BASE FLOOD LEVEL_____) (0.2% BASE FLOOD LEVEL_____)
☐ SITE REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA CASE NO._____ REVISED FLOODPLAIN IS SHOWN ON SHEET____

ELEVATION INFORMATION
BENCHMARK USED
☒ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)

CHESTNUT RIDGE & LADBROOK:
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT ***(2001 ADJ.)*** FLOODPLAIN REFERENCE MARK NUMBER 070265 IS AN ALUMINUM DISK STAMPED G 103-38 BM 01 LOCATED ON SOUTH SIDEWALK ON KINGWOOD DRIVE EASTBOUND BRIDGE APPROXIMATELY 1.5 MILES EAST FROM THE INTERSECTION OF US 59 IN KEY MAP 336C IN THE SAN JACINTO RIVER WATERSHED ELEV 74.46 FEET NAVD 1988, 2001 ADJUSTMENT

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION

☒ PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X"
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL

III. FLOODPLAIN STORAGE SUMMARY

(APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FEMA REGULATORY FLOODPLAIN).

A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.):
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) 60 CUBIC YARDS 0

B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN:
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) 60 CUBIC YARDS 0
INCLUDING CALCULATIONS)

C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET N/A

5. WORK IN HCFCD RIGHT-OF-WAY

I. TYPE OF WORK TO BE PERFORMED IN HCFCD HCFCD ROW

A. BOND/NOTIFICATION INFORMATION
☐ HCFCD WATERSHED _____
☐ HCFCD UNIT No. _____
☐ NUMBER OF OUTFALLS _____
☐ UTILITY CROSSING
☐ ROADWAY BRIDGE/CULVERT CROSSING
☐ FILL ACTIVITY
☐ REHABILITATION OF CHANNEL
☐ MAINTENANCE
☐ TEMPORARY CROSSING
☐ TRAIL (LENGTH) _____
☐ OTHER _____
COST OF WORK IN HCFCD ROW _____

II. USACE ENVIRONMENTAL PERMIT

☐ US ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NUMBER(S) _____
☐ US ARMY CORPS OF ENGINEERS INDIVIDUAL PERMITS
☐ OTHER
☐ NO PERMITS REQUIRED
EXPLAIN: _____

III. REFERENCE / BASIS OF DETERMINATION

☐ ENVIRONMENTAL CONSULTANT REPORT
BY _____
REPORT TITLE _____
REPORT DATE _____
☐ OTHER _____

NOTES:
I. – III. REQUIRED ON PROJECTS WITH WORK IN A HCFCD CHANNEL. PLEASE REFERENCE SECTION 17 OF THE FLOOD CONTROL DISTRICT POLICY, CRITERIA, AND PROCEDURE MANUAL FOR MORE INFORMATION.

IV. HCFCD STANDARD NOTES: SEE SHEET _____ OF THESE PLANS.

V. HCFCD STANDARD DETAILS: SEE SHEET _____ OF THESE PLANS.

VI. HCFCD ACCESS PLAN: SEE SHEET _____ OF THESE PLANS.

VII. REFER TO THE FOLLOWING PLAN SHEETS: _____
FOR EXISTING AND PROPOSED RIGHT(S) OF WAY INCLUDING DELINEATION AND RECORDING INFORMATION PER HCFCD POLICY, CRITERIA, & PROCEDURE MANUAL (i.e., DRAINAGE EASEMENT, FEE STRIP, ETC.) AND GRANTEE (e.g. COH, HCFCD, PUBLIC, TXDOT, ETC.)

6. REPORTS/AGREEMENTS

I. HCFCD ACCEPTED REPORTS (ALL)

STORMWATER DRAINAGE DESIGN REPORT
REPORT TITLE _____
HCFCD PROJECT #_____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

GEOTECHNICAL INVESTIGATION REPORT
REPORT TITLE _____
HCFCD PROJECT #_____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

HCFCD APPROVED VARIANCE
DESCRIPTION OF VARIANCE _____
DOCUMENT ID #_____
VARIANCE ACCEPTANCE DATE _____

II. AGREEMENT TYPE & No.:

☐ INTERLOCAL (ILA): _____
☐ HCFCD MAINTENANCE _____
☐ TURF ESTABLISHMENT _____
☐ OTHER _____

MAGNOLIA PARK:
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT ***(2001 ADJ.)*** FLOODPLAIN REFERENCE MARK NUMBER 210005 IS A BRASS DISK STAMPED 210005 LOCATED ON EAST SIDEWALK ON S SGT MACARIO GARCIA DRIVE BRIDGE APPROXIMATELY 0.05 MILE NORTH FROM THE INTERSECTION OF AVENUE W IN KEYMAP 495N IN THE BUFFALO BAYOU WATERSHED ELEV 34.38 FEET NAVD 1988, 2001 ADJUSTMENT

PINE PRAIRIE & STATELY OAKS:
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT ***(2001 ADJ.)*** FLOODPLAIN REFERENCE MARK NUMBER 070375 IS A BRASS DISK STAMPED RM 070375 LOCATED ON WEST SIDEWALK ON MILL BRIDGE WAY BRIDGE APPROXIMATELY 190 FEET NORTHEAST FROM THE INTERSECTION OF APPALACHIAN TRAIL IN KEY MAP 297P IN THE SAN JACINTO RIVER WATERSHED ELEV 73.10 FEET NAVD 1988, 2001 ADJUSTMENT

HCFCD SIGNATURE BLOCK

PROJECT NAME: CHESTNUT RIDGE, LADBROOK, MAGNOLIA PARK, PINE PRAIRIE, AND STATELY OAKS LIFT STATIONS

ADDRESS: CR: 2511 CHESTNUT RIDGE ROAD KINGWOOD TX 77339, LB: 2307 LADBROOK DRIVE KINGWOOD TX 77339, MP: 1707 W HEDRICK STREET HOUSTON TX 77011, PP: 5014 PINE PRAIRIE LANE KINGWOOD TX 77345, SO: 2320 STATELY OAK STREET KINGWOOD TX 77345

WAS ACCEPTED BY HARRIS COUNTY FLOOD CONTROL DISTRICT FOR THE PURPOSES LISTED BELOW:

HARRIS COUNTY FLOOD CONTROL DISTRICT

INTERPOSE NO OBJECTION

BY_____
FOR ITEMS LOCATED OUTSIDE OF HCFCD RIGHT-OF-WAY

APPROVED:

BY_____
FOR ITEMS LOCATED WITHIN EXISTING HCFCD RIGHT-OF-WAY

APPROVED:

BY_____
FOR ITEMS LOCATED WITHIN PROPOSED HCFCD RIGHT-OF-WAY

NO REVIEW REQUIRED:

BY_____
FINAL PERMITTING BY OTHERS

ADDITIONAL COMMENTS:

THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH APPROPRIATE FEDERAL, STATE AND LOCAL ENVIRONMENTAL RULES, LAWS, AND REGULATIONS AND ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORDANCE WITH LOCAL GOVERNEMENT CODE CH. 245.

ENGINEER'S CERTIFICATION

I, CRAG A PERRY , A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT I AM NOT VIOLATING ANY PROVISION OF THE CURRENT TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE.

ANY VIOLATIONS WILL BE FORWARDED TO THE HARRIS COUNTY DISTRICT ATTORNEY'S OFFICE FOR PROSECUTION.

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 230.

CRAG A PERRY — SIGNATURE
JANUARY 23, 2026 — DATE

REVISIONS

NOTE: REVISION BLOCK IS TO BE USED ONLY FOR CHANGES MADE AFTER PLANS HAVE BEEN APPROVED BY HARRIS COUNTY FLOOD CONTROL.

DATE	SHEET NO.	DESCRIPTION	P.E. INITIAL	H.C.F.C.D APPROVED DATE

HARRIS COUNTY
FLOOD CONTROL DISTRICT
REVIEW SHEET

VERSION 1.0 OCTOBER 2019

DRAWING NO. G-100

S COUNTY FLOOD CONTROL PROJECT NO. 2508080125

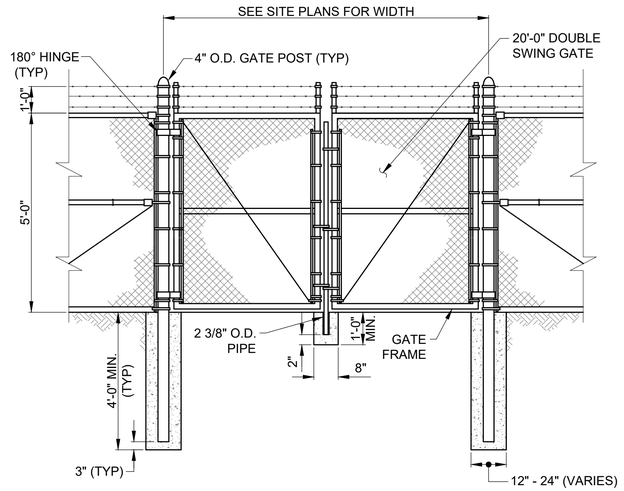
SHEET NUMBER 9 OF 230

PLOTTED: 1/22/2026 5:17 PM PEN TABLE: Z_PUB_WKS_H.ctb

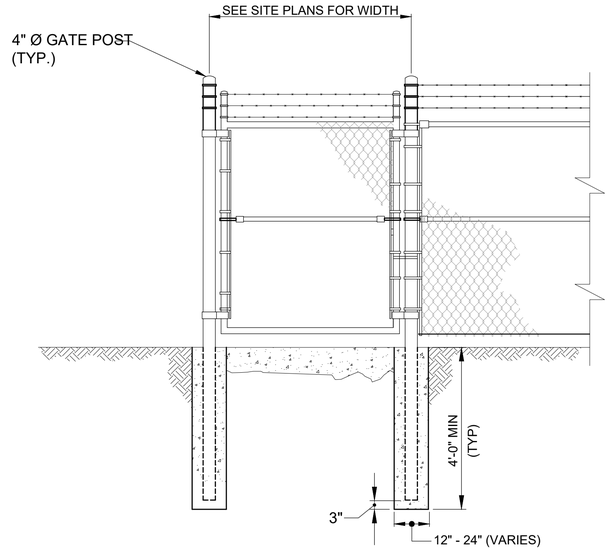
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NOTES:

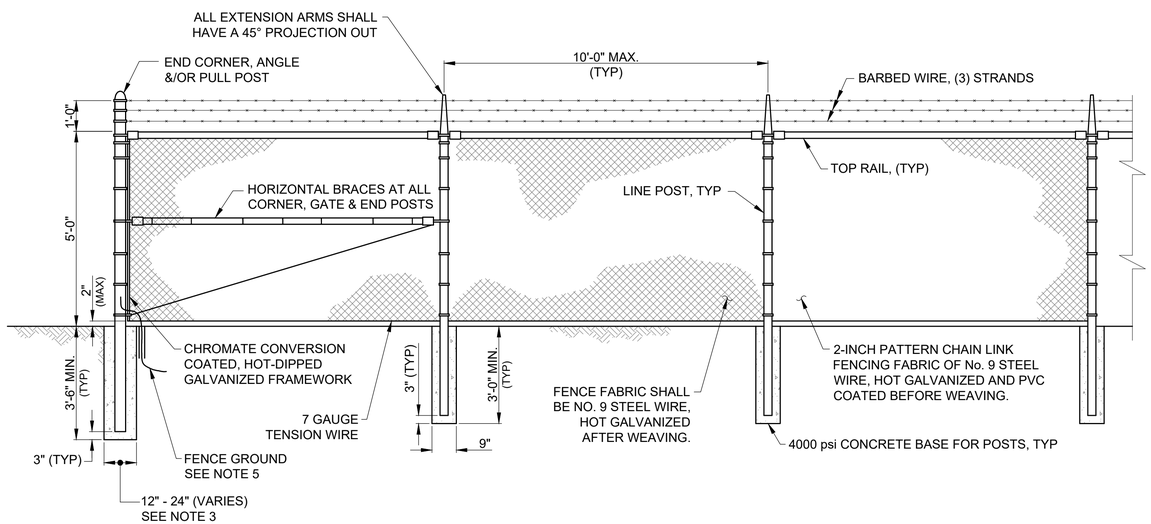
1. ALL FENCING SHALL BE MANUFACTURED AND INSTALLED PER SPECIFICATIONS



D2 GC-001 **DOUBLE LEAF GATE DETAIL**
SCALE: NONE



D3 GC-001 **MAN GATE DETAIL**
SCALE: NONE



D1 GC-001 **GENERAL SITE FENCING**
SCALE: NONE

NO.	DATE	REVISION	APP.

PLOTTED: 1/28/2026 12:03 PM PEN TABLE: ----

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-8570

INTERIM REVIEW ONLY

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Crag Alexander Perry
Engineer
116345
Registration Number
JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

CIVIL STANDARD DETAIL
SITE FENCING AND
ACCESS GATE DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GC-001

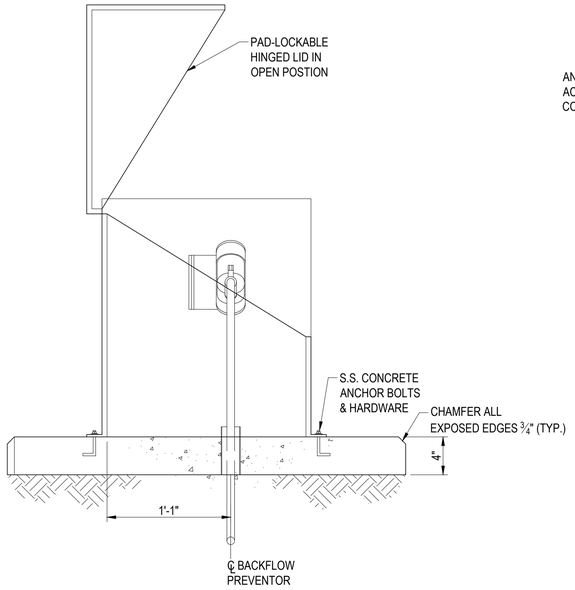
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SHEET NO. 10 OF 230

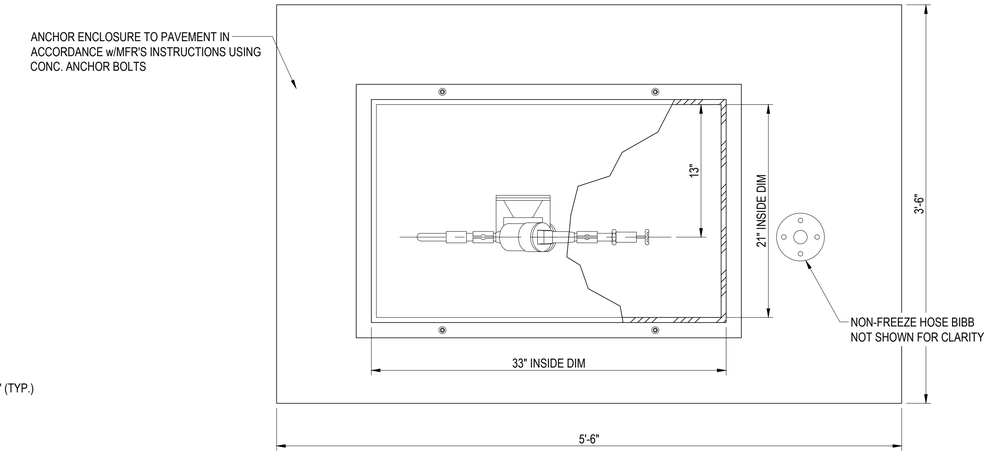
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

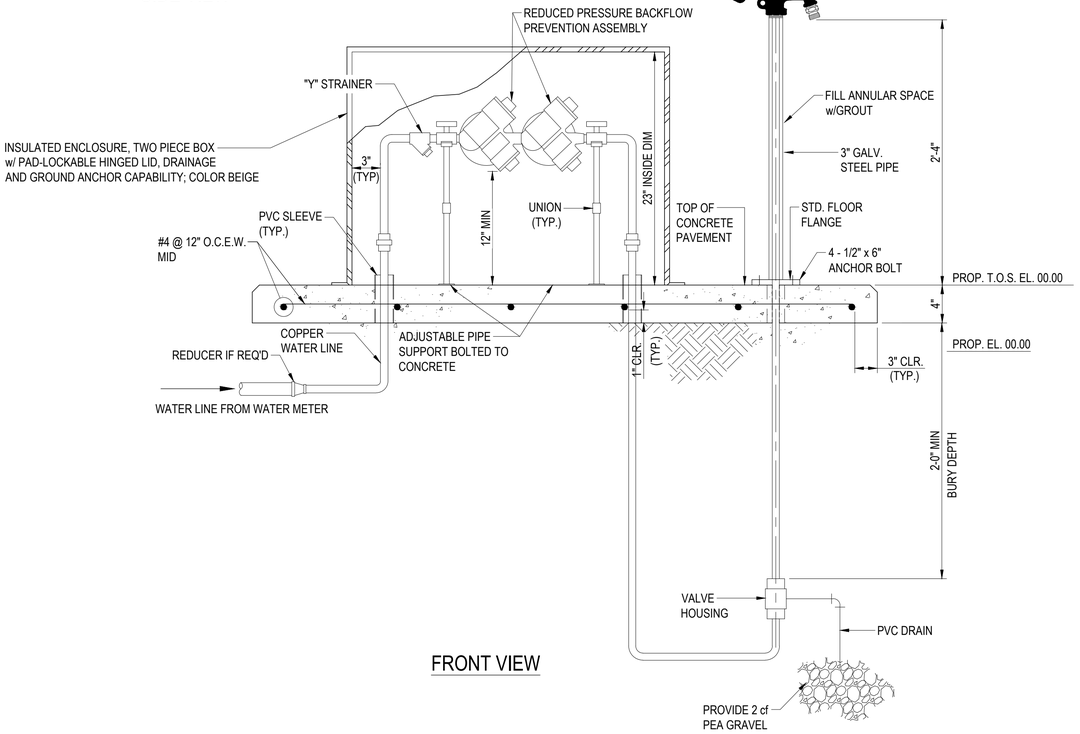
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SIDE VIEW

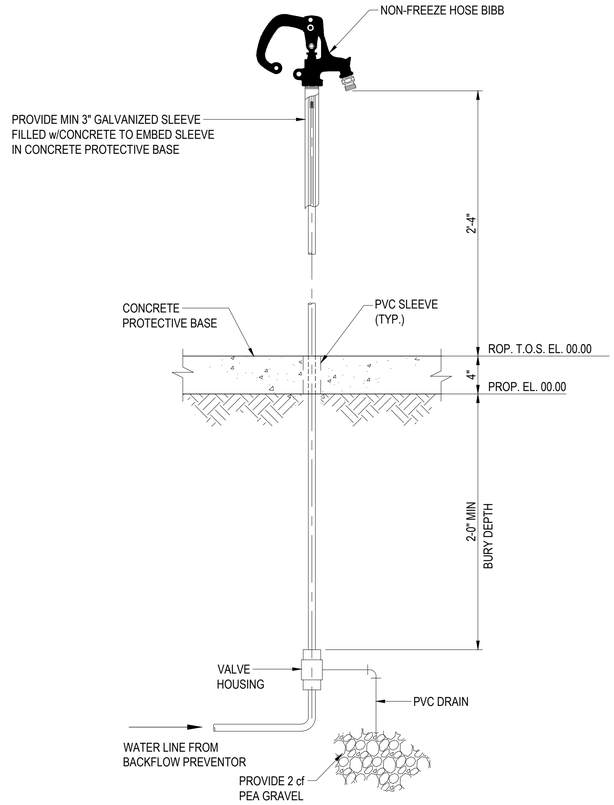


PLAN VIEW



FRONT VIEW

BACKFLOW PREVENTOR INSTALLATION DETAIL



TYPICAL NON-FREEZE HOSE BIBB DETAIL
w/OPTIONAL EMBED SLEEVE

NO.	DATE	REVISION	APP.

PLOTTED: 1/28/2026 12:10 PM PEN TABLE: ----

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9070

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Crag Alexander Perry
Name
116345
License Number
JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

CIVIL STANDARD DETAIL
BACK FLOW PREVENTOR
DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GC-002

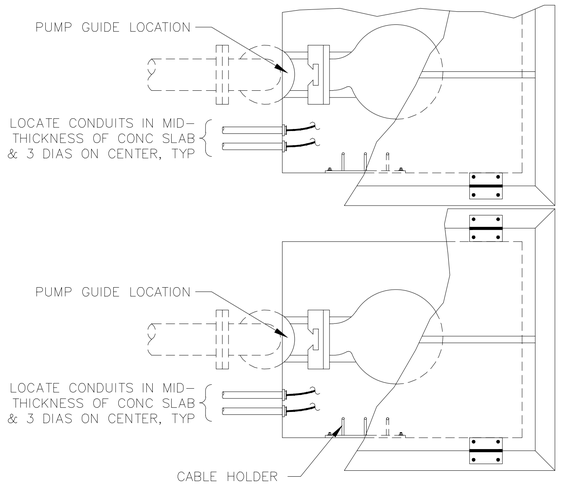
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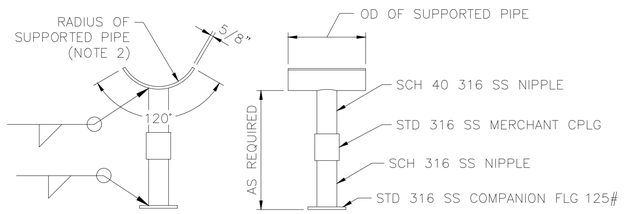
SHEET NO. 11 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

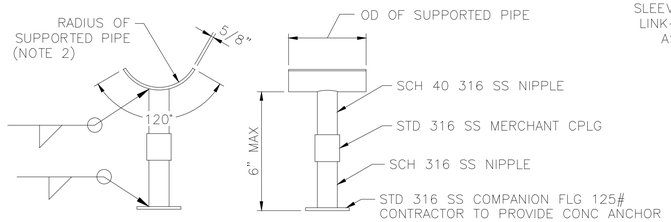
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TYP ADJUSTABLE PIPE SUPPORT
(SEE NOTE 1)
(SEE NOTE B)

DETAIL 2 Z0C02

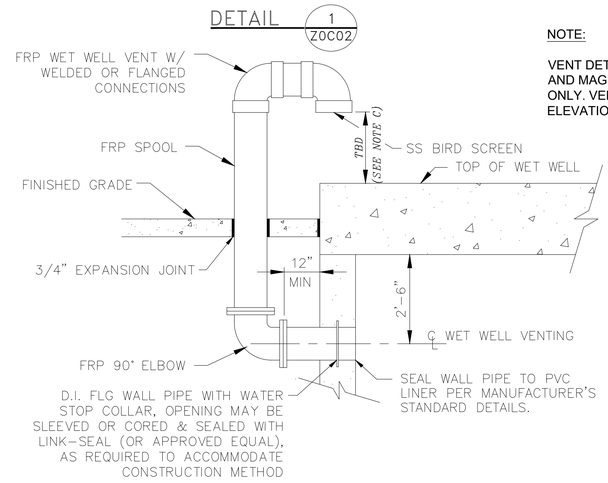


TYP ADJUSTABLE PIPE SUPPORT
FOR USE WITH CONC PIPE SUPPORT PIER
SEE TYP CONC PIPE SUPPORT PIER DETAIL, SHT Z0S02
(SEE NOTE 1)
(SEE NOTE B)

DETAIL 2A Z0C02

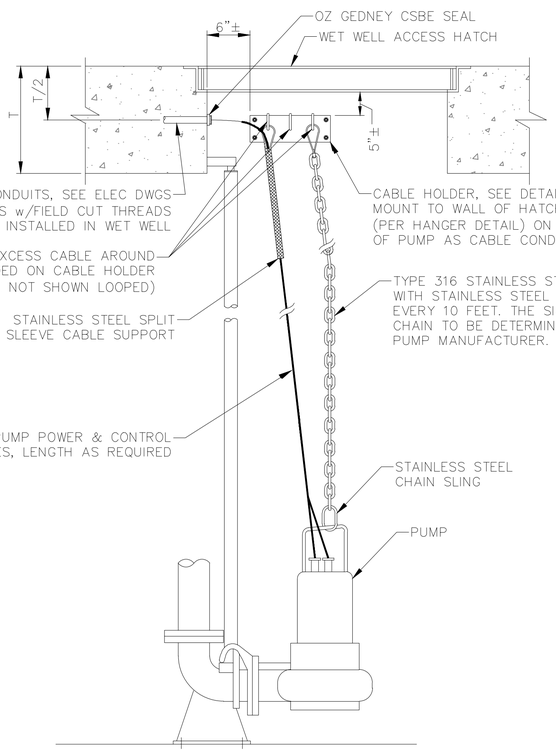
TYPICAL HIGH PROFILE
WET WELL VENTING INSTALLATION

DETAIL 1 Z0C02



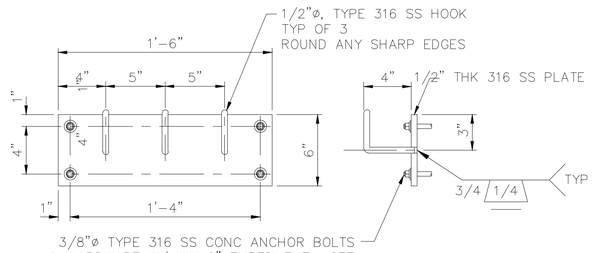
NOTE:

VENT DETAIL APPLIES TO PINE PRAIRIE AND MAGNOLIA PARK LIFT STATIONS ONLY. VENT OPENING SHALL BE THE SAME ELEVATION AS TOP OF ELECTRICAL PAD.



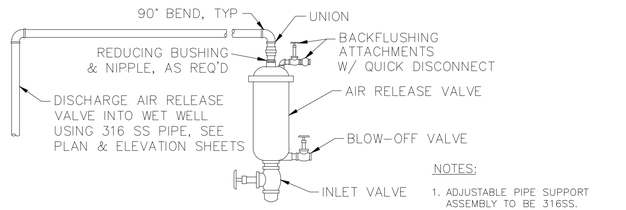
TYP PUMP LIFTING & CABLING DETAIL

DETAIL 3 Z0C02



TYPICAL CABLE HOLDER ASSY

DETAIL 14 Z0C02



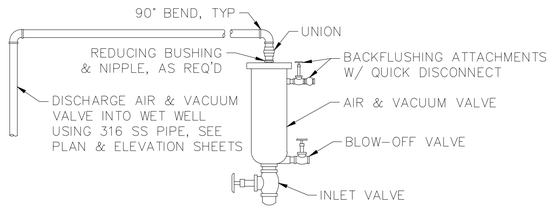
DESIGN ENGINEER TO SIZE VALVE & PIPING FOR SPECIFIC STATION REQUIREMENTS (SEE NOTE E)

NOTES:

1. ADJUSTABLE PIPE SUPPORT ASSEMBLY TO BE 316SS.
2. PROVIDE MEANS OF PREVENTING DISSIMILAR METAL CONTACT.

TYPICAL AIR RELEASE VALVE ASSY

DETAIL 10 Z0C02



DESIGN ENGINEER TO SIZE VALVE & PIPING FOR SPECIFIC STATION REQUIREMENTS (SEE NOTE E)

TYPICAL AIR & VACUUM VALVE ASSY

DETAIL 11 Z0C02

NO.	DATE	REVISION	APP.

PLOTTED: 1/28/2026 12:10 PM PEN TABLE: ----

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-0870

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Craig Alexander Perry
116345
JANUARY 23, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

CIVIL STANDARD DETAIL
MISCELLANEOUS LIFT STATION
DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GC-003

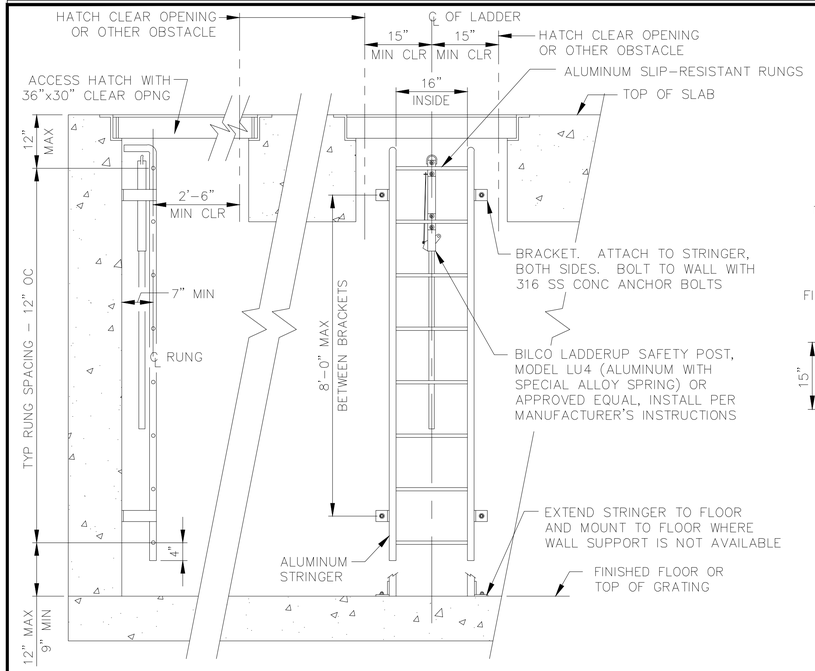
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SHEET NO. 12 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

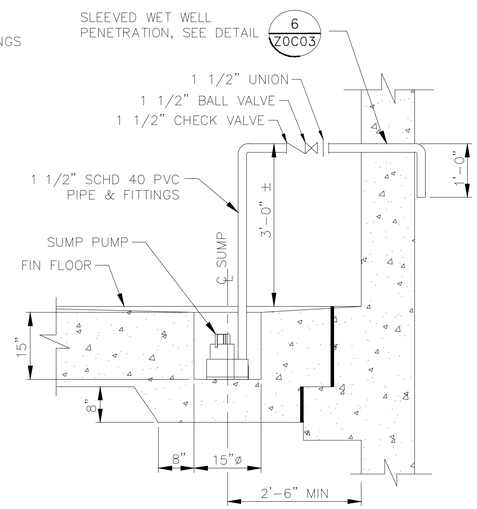
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TYPICAL ENTRY ACCESS LADDER INSTALLATION

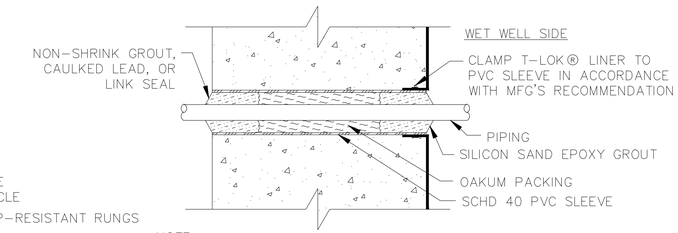
FOR VALVE VAULTS WITH ACCESS HATCHES

DETAIL 8 / Z0C03
SEE NOTE 1



TYPICAL SUMP PUMP INSTALLATION

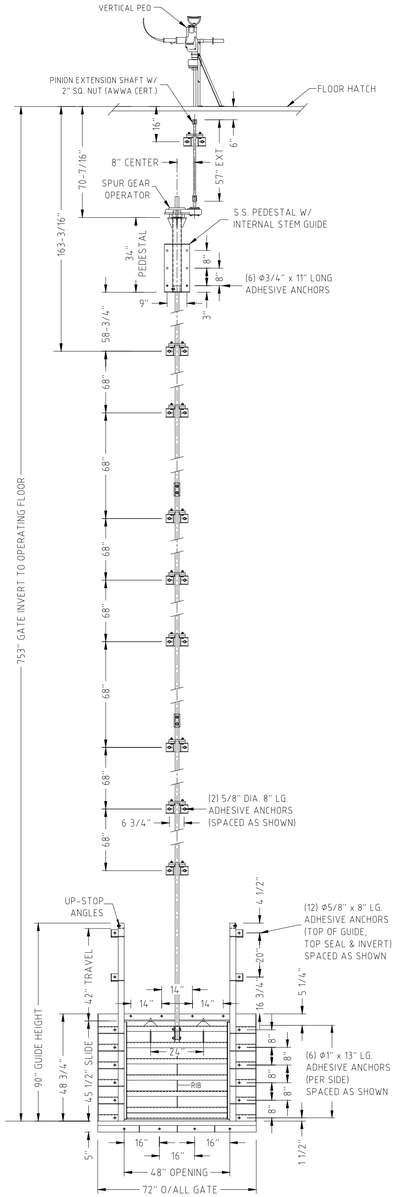
DETAIL 5 / Z0C03

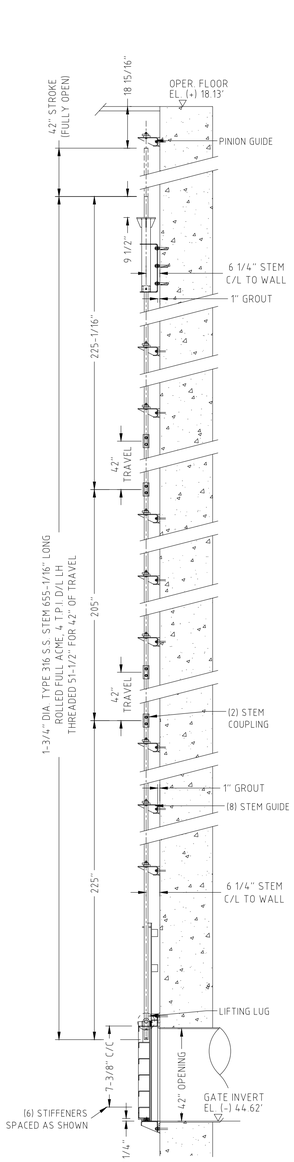


NOTE:
SLEEVED WET WELL PENETRATION IS NOT TO BE USED FOR CONDUIT INSTALLATION. SEE ELECTRICAL DETAIL SHEETS FOR CONDUIT PENETRATIONS.

SLEEVED WET WELL PENETRATION FOR PIPING 4"ø & SMALLER

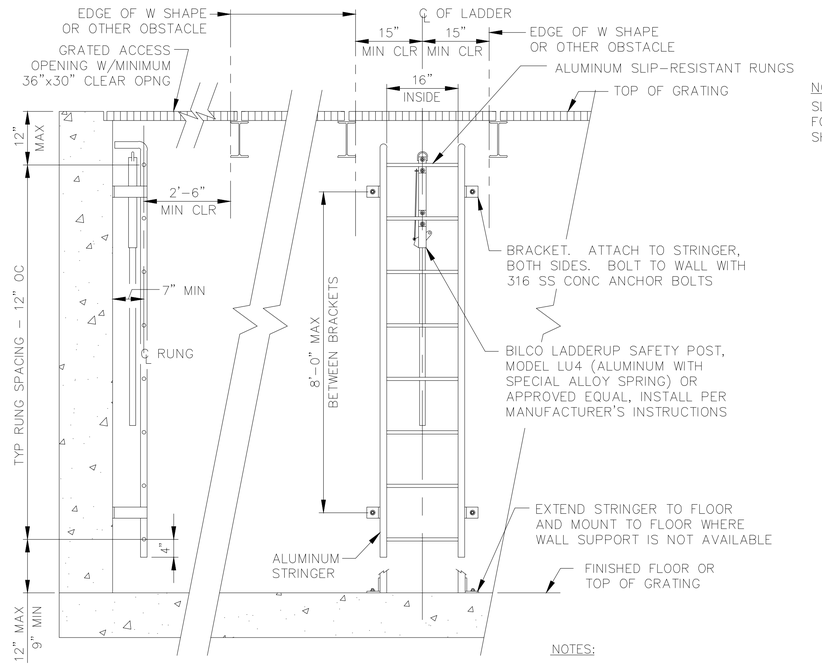
DETAIL 6 / Z0C03





42" x 42" SLUICE GATE
WET WELL SPLITTER BOX

DETAIL 10 / Z0C02



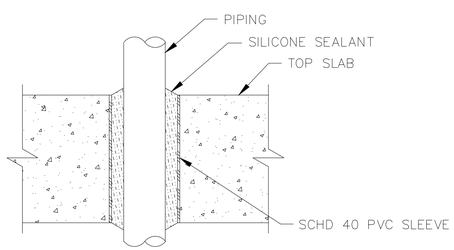
TYPICAL ENTRY ACCESS LADDER INSTALLATION

FOR VALVE VAULTS WITH GRATING

DETAIL 8A / Z0C03
SEE NOTE 1

NOTES:

1. CONTRACTOR TO PROVIDE DETAIL DRAWINGS OF LADDER DURING SHOP DRAWING SUBMISSION.



NOTE:
SLEEVED SLAB PENETRATION IS NOT TO BE USED FOR WET WELL PENETRATIONS.

SLEEVED SLAB PENETRATION

DETAIL 7 / Z0C03

NO.	DATE	REVISION	APP.

PLOTTED: 1/28/2026 12:11 PM PEN TABLE: ----

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T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Crag Alexander Perry
Engineer
116345
Registration Number
JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

CIVIL STANDARD DETAIL
MISCELLANEOUS LIFT STATION
DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

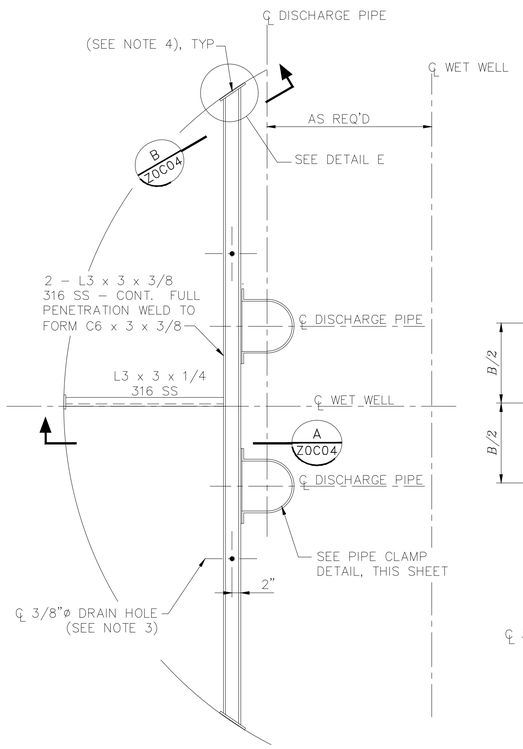
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

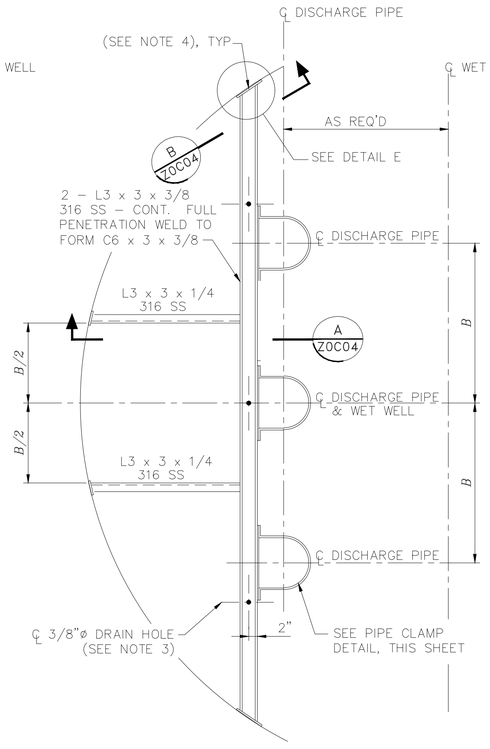
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SHEET NO. 13 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

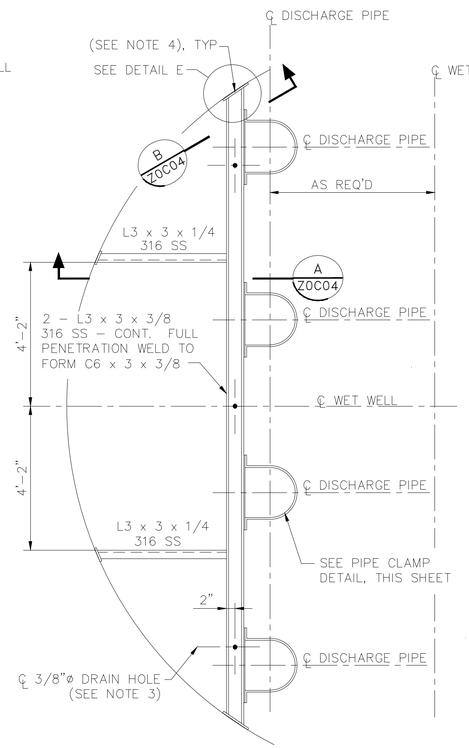
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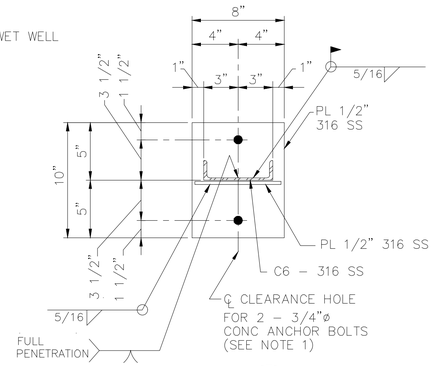
TYP DISCHARGE PIPING SUPPORT
PLAN FOR 2 PUMPS



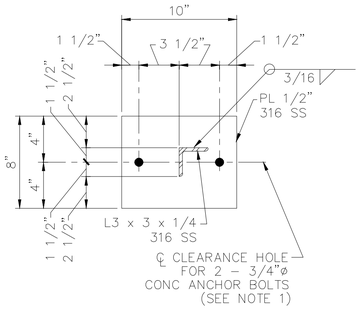
TYP DISCHARGE PIPING SUPPORT
PLAN FOR 3 PUMPS



TYP DISCHARGE PIPING SUPPORT
PLAN FOR 4 PUMPS



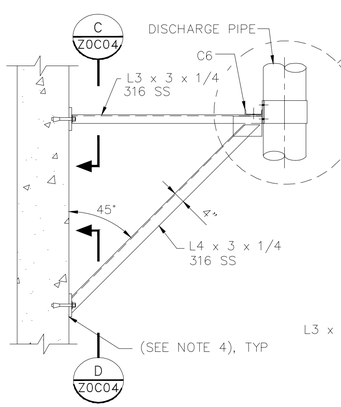
SECTION B Z0C04



SECTION C Z0C04

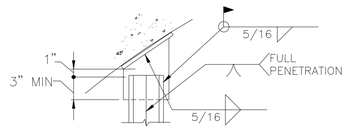
NOTES:

1. CONCRETE ANCHOR BOLTS SHALL HAVE 6" MINIMUM EMBEDMENT AND SHALL BE TYPE 316 STAINLESS STEEL, PER SPECIFICATIONS.
2. SEE STATION AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
3. DRILL 3/8"ø HOLES, 1" OFF ℄ OF C6 AT MIDSPAN BETWEEN LATERAL PIPE SUPPORTS TO ALLOW FOR DRAINAGE. 3 HOLES PER CHANNEL WHERE 2 LATERAL SUPPORTS REQUIRED; 2 HOLES PER CHANNEL WHERE 1 LATERAL SUPPORT REQUIRED.
4. SET 1/4" NEOPRENE GASKET ON WALL SURFACE IN SIKA 1A (OR EQUAL) SEALANT.

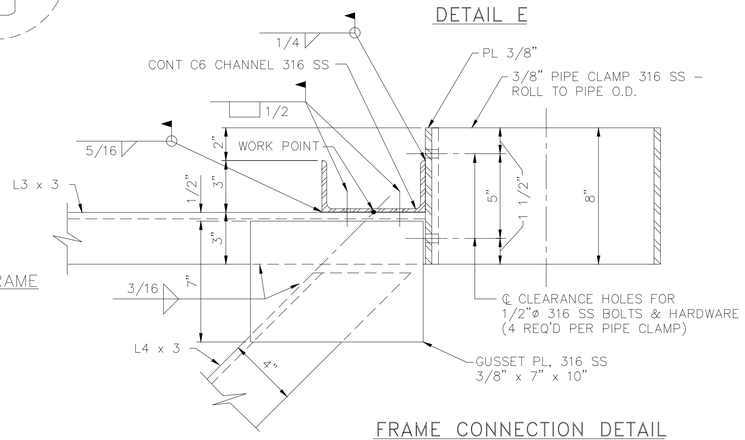


TYP LATERAL PIPE SUPPORT FRAME

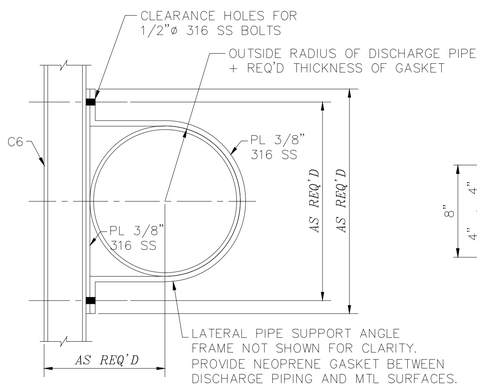
SECTION A Z0C04



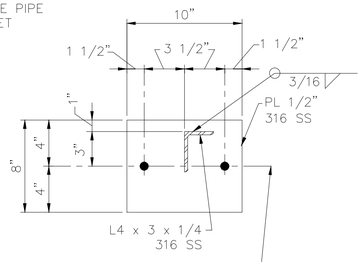
DETAIL E



FRAME CONNECTION DETAIL



PIPE CLAMP DETAIL



SECTION D Z0C04

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

CIVIL STANDARD DETAIL
MISCELLANEOUS LIFT STATION
DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

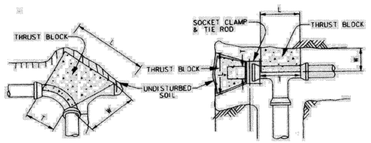
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GC-005	HORIZ: NONE VERT: NONE
SHEET NO. 14 OF 230	DRAWING SCALE

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90° BEND
(45° BENDS SIMILAR)



PIPE
CROSS SECTION

MINIMUM BLOCKING DIMENSION IN INCHES

PIPE SIZE	90° BEND				45° BEND				TEE/PLUG			
	W	H	L	T	W	H	L	T	W	H	L	T
4"	6	12	14	10	6	8	11	8	6	10	12	12
6"	8	14	26	12	8	14	14	12	8	14	19	19
8"	10	16	40	16	10	18	20	16	10	18	26	26
10"	12	24	42	18	12	22	25	18	12	24	30	30
12"	14	36	40	30	14	26	30	22	14	26	40	40

CORRECTION FACTORS

SOIL TYPE	SOIL BEARING STRENGTH S_b (lb/ft²)	MULTIPLY "L" AND "H" BY
SOFT CLAY	1000	1.73
SILT	1500	1.41
SANDY SILT	3000	1.00
SAND	4000	0.87
SANDY CLAY	6000	0.71
HARD CLAY	9000	0.58

NOTES:

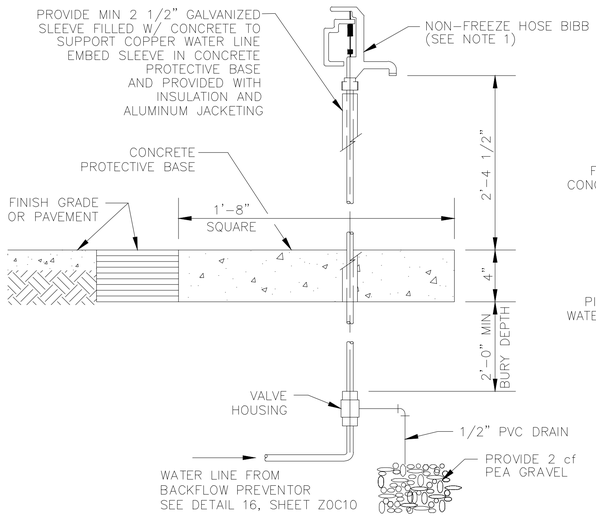
1. DEPTH "H" MAY BE GREATER THAN SPECIFIED TO ALLOW WORKING SPACE.
2. BLOCKING MUST BE PLACED AGAINST UNDISTURBED EARTH. WHERE THIS IS NOT POSSIBLE, THE FILL BETWEEN THE BEARING SURFACE AND UNDISTURBED SOIL MUST BE COMPACTED TO AT LEAST 90% STANDARD PROCTOR DENSITY.
3. PROVIDE CONCRETE IN ACCORDANCE WITH STANDARD SPECIFICATION SECTION 03315 — CONCRETE FOR UTILITY CONSTRUCTION.
4. BLOCKING DIMENSIONS SHOWN ARE BASED ON 3000 PSI SOIL BEARING STRENGTH AND 125 PSI INTERNAL WATER PRESSURE. FOR OTHER SOIL CONDITIONS, MULTIPLY DIMENSIONS "L" AND "H" BY THE APPROPRIATE CORRECTION FACTOR.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

THRUST BLOCK DETAIL
FOR WATER LINES
(4-INCH TO 12 INCH)
(NOT TO SCALE)

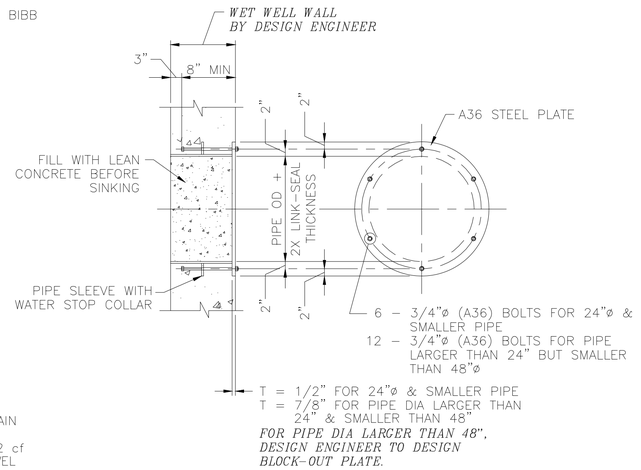
APPROVED: CITY ENGINEER — DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF. DATE: JULY-01-2010 DWG NO: 02511-02



TYP NON-FREEZE HOSE BIBB DETAIL

DETAIL 12 Z0C07

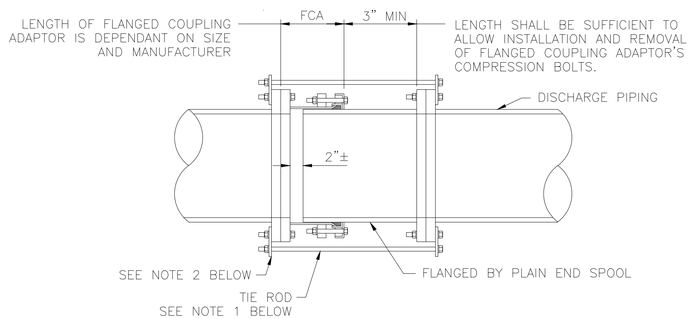


TYPICAL PIPE BLOCK-OUT DETAIL
FOR CAISSON CONSTRUCTION

DETAIL 13A Z0C07

NOTES:

1. PROVIDE WARNING SIGN WHEN HOSE BIBB IS USED FOR POTABLE WATER.

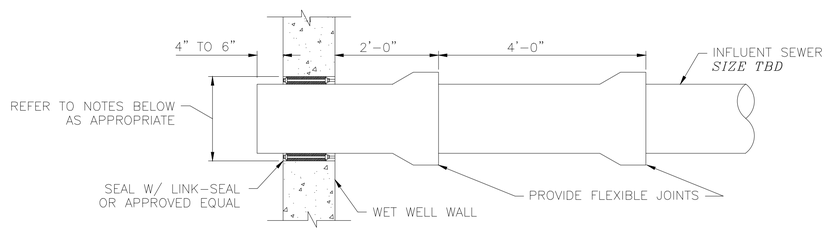


NOTES:

1. PROVIDE A NUMBER OF TIE RODS EQUAL TO 1/2 THE NUMBER OF FLANGE BOLTS. EVENLY SPACE INSTALLATION OF TIE RODS. DIAMETER OF TIE RODS TO BE EQUAL TO THE DIAMETER OF FLANGE BOLTS. LENGTH OF TIE RODS TO BE DETERMINED BY CONTRACTOR BASED ON SIZE AND MANUFACTURER OF FLANGED COUPLING ADAPTOR AND FINAL LENGTH OF SPOOL PIECE.
2. PROVIDE 316 SS TAB FOR ATTACHMENT OF TIE RODS. SIZE TO BE DETERMINED BY CONTRACTOR.
3. CONTRACTOR TO SUBMIT DETAILS DURING SHOP DRAWING SUBMISSION.
4. ALL HARDWARE SHALL BE 316 STAINLESS STEEL. TIE RODS SHOULD BE THREADED.
5. THIS RESTRAINT DOES NOT REPLACE THRUST BLOCKS TO BE PROVIDED AT OTHER LOCATIONS.

TYP FLANGED COUPLING ADAPTOR
RESTRAINT DETAIL

DETAIL 14 Z0C07



FOR OPENINGS TO BE CORED (CAISSON CONSTRUCTION):

1. IDENTIFY PIPE PENETRATION LOCATION WITH 1" DIA PLASTIC PIPE SLEEVE.
2. DIAMETER OF PENETRATION OEPNING SHALL BE EQUAL TO PIPE OUTER DIAMETER PLUS 2 TIME LINK-SEAL THICKNESS.
3. PROVIDE ADDITIONAL REINFORCEMENT AROUND PENETRATION OPENING AS PER DRAWINGS Z0S03 BEFORE CASTING WALL.

FOR OPENINGS TO BE SLEEVED OR FORMED (CAISSON CONSTRUCTION):

1. IDENTIFY PIPE PENETRATION LOCATION.
2. DIAMETER OF PENETRATION OPENING SHALL BE EQUAL TO PIPE OUTER DIAMETER PLUS 2 TIMES LINK-SEAL THICKNESS. SEE "TYPICAL PIPE BLOCK-OUT DETAIL FOR CAISSON CONSTRUCTION," THIS SHEET.
3. PROVIDE ADDITIONAL REINFORCEMENT AROUND PENETRATION OPENING AS PER DRAWING Z0S03 BEFORE CASTING WALL.

FOR OPENINGS TO BE FORMED OR SLEEVED (OPEN CUT CONSTRUCTION):

1. IDENTIFY PIPE PENETRATION LOCATION.
2. DIAMETER OF PENETRATION OPENING SHALL BE EQUAL TO PIPE OUTER DIAMETER PLUS 2 TIMES LINK-SEAL THICKNESS.
3. PROVIDE ADDITIONAL REINFORCEMENT AROUND PENETRATION OPENING AS PER DRAWING Z0S03 BEFORE CASTING WALL.

TYP INFLUENT SEWER ENTRY DETAIL

DETAIL 13 Z0C07

NO.	DATE	REVISION	APP.

PLOTTED: 1/28/2026 12:12 PM PEN TABLE: ----

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Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

CIVIL STANDARD DETAIL
MISCELLANEOUS LIFT STATION
DETAILS

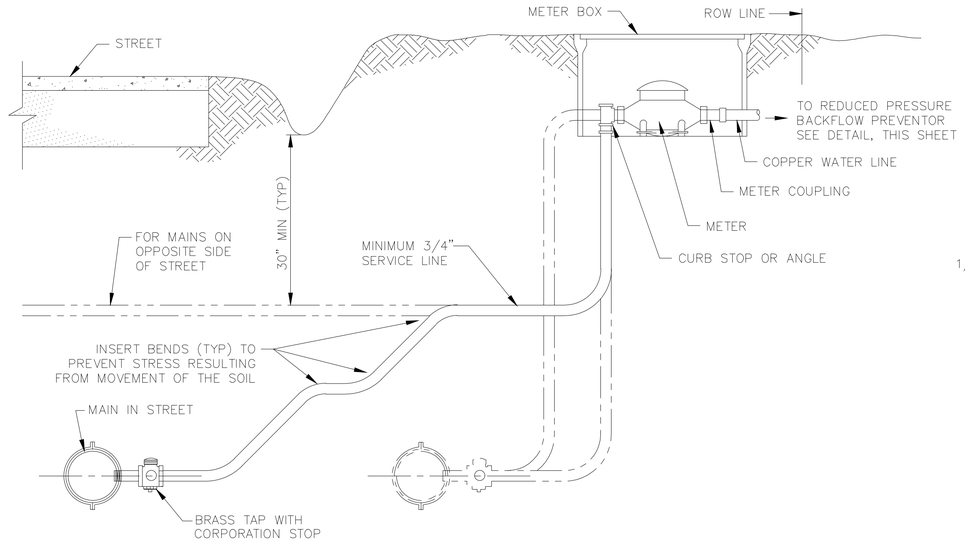
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

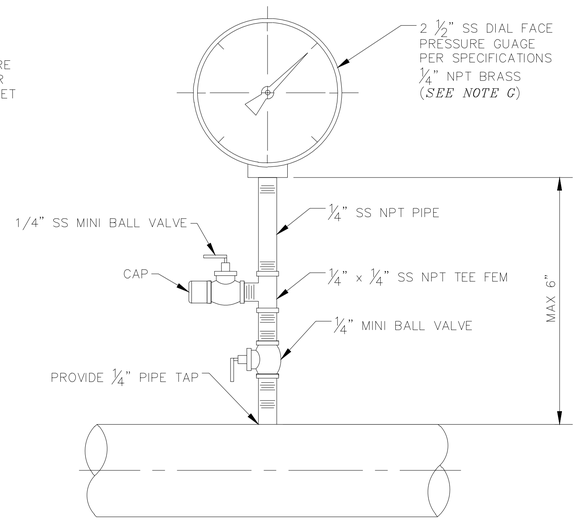
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GC-006
HORIZ: NONE
VERT: NONE
SHEET NO. 15 OF 230
DRAWING SCALE
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FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\015 GC-006.dwg



TYP WATER SERVICE LINE SECTION & METER SET DETAIL

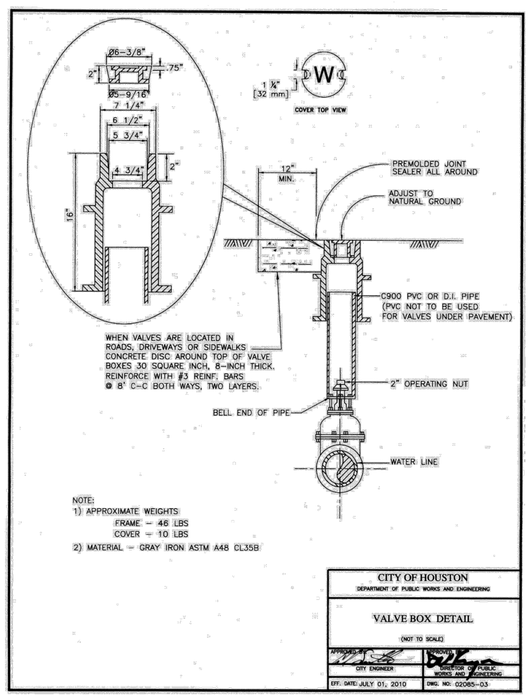


1. ALL FITTINGS SHALL BE STAINLESS STEEL (316)

PRESSURE GAUGE DETAIL

NOTES:

1. ALL FENCING SHALL BE MANUFACTURED AND INSTALLED PER SPECIFICATIONS.
2. PROVIDE *(BLACK, DARK GREEN)* PVC COATED FENCE FABRIC, POSTS AND HARDWARE. PROVIDE *(REDWOOD, BLACK, DARK GREEN)* PVC FENCE SLATS. *(SEE NOTE C)*



NO.	DATE	REVISION	APP.

PLOTTED: 1/28/2026 12:13 PM PEN TABLE: ----

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

CIVIL STANDARD DETAIL
MISCELLANEOUS LIFT STATION DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GC-007

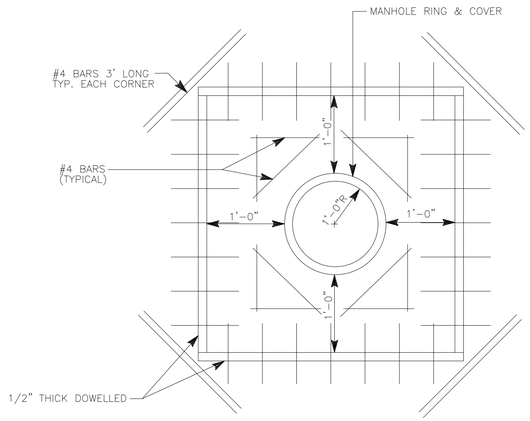
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SHEET NO. 16 OF 230

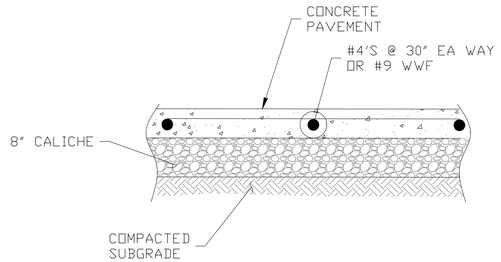
DRAWING SCALE

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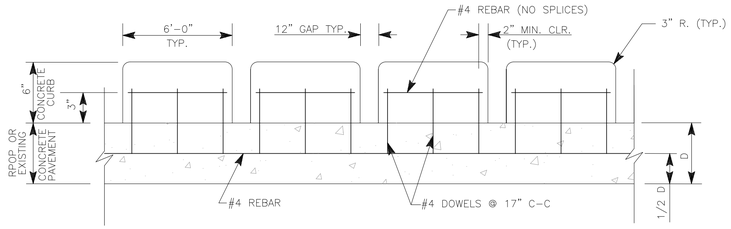
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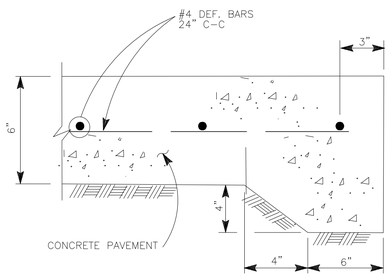
MANHOLE BLOCKOUT IN PAVEMENT
N.T.S.



PAVEMENT SECTION
N.T.S.

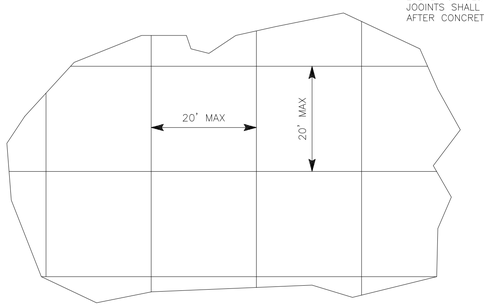


SLOTTED CURB DETAIL
N.T.S.

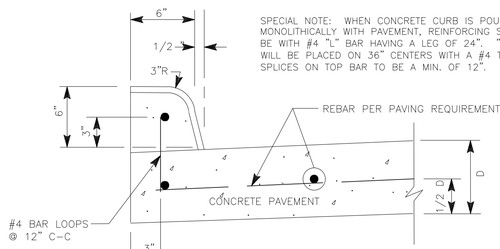


CONCRETE PAVING HEADER
N.T.S.

MAKE CONCRETE CONTROL JOINTS 1-1/2" DEEP IN EVENLY SPACED GUIDES OVER THE PAVED SITE. CONTROL JOINTS SHALL BE GROOVED OR CUT WITHIN 24 HOURS AFTER CONCRETE IS POURED.



CONTROL JOINTS
N.T.S.



SPECIAL NOTE: WHEN CONCRETE CURB IS POURED MONOLITHICALLY WITH PAVEMENT, REINFORCING SHALL BE WITH #4 "L" BAR HAVING A LEG OF 24". "L" BARS WILL BE PLACED ON 36" CENTERS WITH A #4 TOP BAR. SPLICES ON TOP BAR TO BE A MIN. OF 12".

MORTAR FINISH NOT REQUIRED WHEN CURB IS POURED BY A MACHINE, BUT CURB WILL HAVE THE SAME OUTSIDE DIMENSIONS

6" CONCRETE CURB
N.T.S.

NO.	DATE	REVISION	APP.

PLOTTED: 1/28/2026 12:13 PM PEN TABLE: ----

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Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

CIVIL STANDARD DETAIL
LIFT STATION PAVING
DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GC-008

HORIZ:
VERT:

SHEET NO. 17 OF 230

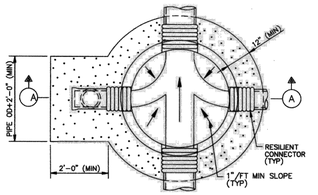
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

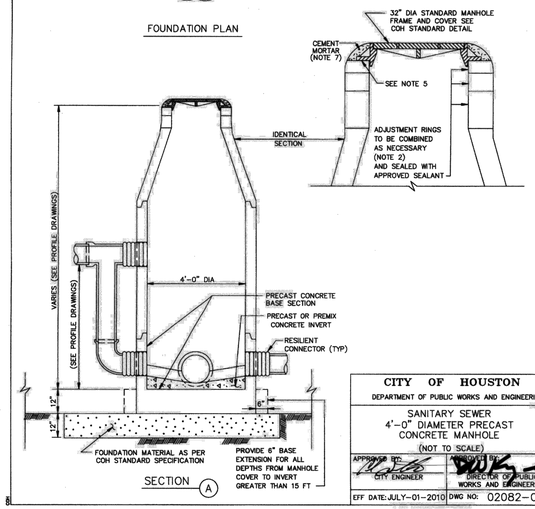
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NOTES:

1. DEPTH OF MANHOLE DETERMINES SECTIONS REQUIRED.
2. PRECAST CONCRETE RINGS SHALL BE PROVIDED FOR A COMBINED ADJUSTMENT HEIGHT OF AT LEAST 12". THE TOTAL HEIGHT OF THE ADJUSTMENT RINGS SHALL NOT EXCEED 1'-6".
3. MANHOLE WALL THICKNESS FOR DEPTH EXCEEDING 12'-0" SHALL BE DETERMINED TO MEET LOADING CONDITIONS. MIN THICKNESS 5".
4. MANHOLE DROP AND INTERSECTING PIPES SHALL BE INSTALLED ONLY WHEN CALLED FOR IN PLAN AND PROFILE DRAWING.
5. SEAT MANHOLE FRAME IN SEALANT PER COH STANDARD SPECIFICATION.
6. ECCENTRIC PRECAST CONCRETE MANHOLE MAY BE USED.
7. OMIT CEMENT MORTAR WHEN MANHOLE IS LOCATED IN PAVED AREAS.
8. MIN REINFORCING IN THE PRECAST CONCRETE BASE SHALL BE # 5 @ 6 EW.



FOUNDATION PLAN

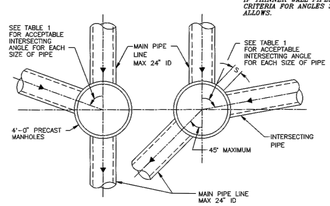


CITY OF HOUSTON	
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
SANITARY SEWER 4'-0" DIAMETER PRECAST CONCRETE MANHOLE (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2010	DWG NO: 02082-02

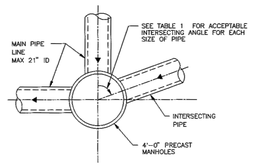
NOTES ON USE OF STANDARD DETAIL 02082-02

NOTES TO SPECIFIER:

1. *"–" INDICATES THAT A SPECIAL DESIGN OR THE NEXT LARGER MANHOLE SIZE SHALL BE USED.*
2. *TABLE 1 IS BASED ON A MIN SEPARATION DISTANCE OF 10.6' OR INTERSECTION PIPE OD/2, WHICHEVER IS GREATER, BETWEEN MAIN AND INTERSECTING PIPES ALONG THE MANHOLE INSIDE WALL ARC.*
3. *PIPE WALL THICKNESS USED IN TABLE 1 ARE BASED ON RCP. THE DESIGN ENGINEER MAY CALCULATE TO SEE IF THINNER WALL PIPES CAN MEET THE SEPARATION CRITERIA FOR ANGLES SMALLER THAN THE TABLE ALLOWS.*



MAX 24" ID MAIN PIPE ALLOWED FOR STRAIGHT THROUGH TO 45° DEFLECTION



MAX 21" ID MAIN PIPE ALLOWED FOR 45° TO 90° DEFLECTION

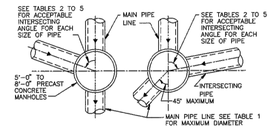
TABLE 1

MIN ANGLE AND INTERSECTING PIPE SIZES FOR A 4'-0" DIA MANHOLE

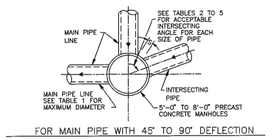
INTERSECTING PIPE SIZE (INCHES)	MIN INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE SIZES IN INCHES							
	6"	8"	10"	12"	15"	18"	21"	24"
6	55	58	60	65	70	75	80	85
8		60	63	68	73	77	82	87
10			66	71	75	80	85	90
12				76	80	85	90	–
15					85	90	–	–
18						–	–	–
21							–	–
24								–

NOT APPLICABLE UNLESS HYDRAULICS DICTATE (INTERSECTING PIPE > MAIN PIPE)

CITY OF HOUSTON	
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
SANITARY SEWER 4'–0" DIAMETER PRECAST CONCRETE MANHOLE NOTES (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT–01–2002	DWG NO: 02082N–02



FOR MAIN PIPES FROM STRAIGHT THROUGH TO 45° DEFLECTION



FOR MAIN PIPE WITH 45° TO 90° DEFLECTION

TABLE 1

MAXIMUM MAIN PIPE DIAMETER (I.D) IN INCHES

MANHOLE DIAMETER (FT)	STRAIGHT THROUGH TO 45° DEFLECTION	WITH 90° DEFLECTION	TABLE TO BE USED
5	36	27	2
6	42	33	3
7	48	36	4
8	60	42	5

TABLE 2

MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 5'–0" DIA MANHOLE

INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES										
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"
8	49	50	54	58	61	66	69	73	77	82	86
10		53	57	61	64	68	71	76	79	84	88
12			61	65	68	72	75	80	83	88	–
15				68	71	75	79	83	87	–	–
18					75	79	82	87	90	–	–
21						83	86	90	–	–	–
24							90	–	–	–	–
27								–	–	–	–
30									–	–	–
33										–	–
36											–

NOTES ON USE OF STANDARD DETAIL 02082–03

TABLE 3

MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 6'–0" DIA MANHOLE

INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES										
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	42"
8	40	42	45	49	51	54	57	61	63	67	70	78
10		44	47	50	53	56	59	62	65	69	72	79
12			50	54	56	60	62	66	68	72	75	83
15				57	59	62	65	69	71	75	78	85
18					62	65	68	71	74	78	81	88
21						68	71	74	77	81	84	–
24							74	77	80	84	87	–
27								83	85	89	–	–
30									–	–	–	–
33										–	–	–
36											–	–
42												–

TABLE 4

MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 7'–0" DIA MANHOLE

INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES												
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	42"	48"
8	35	36	39	42	44	47	49	52	54	57	59	65	71
10		38	40	43	45	48	50	53	55	59	61	67	73
12			43	46	48	51	53	56	58	61	64	70	76
15				48	50	53	55	58	61	64	66	72	78
18					56	56	58	61	63	66	69	74	81
21						58	60	63	66	69	71	77	83
24							63	66	68	71	74	79	86
27								70	72	76	78	84	90
30									78	81	83	89	–
33										86	88	–	–
36											–	–	–
42												–	–
48													–

TABLE 5

MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 8'–0" DIA MANHOLE

INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES													
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	42"	48"	54"	60"
8	30	32	34	36	38	41	43	45	47	50	52	56	61	67	74
10		33	35	38	40	42	44	46	48	51	53	58	63	68	77
12			38	40	42	44	46	49	51	53	55	60	65	71	79
15				42	44	47	48	51	53	55	58	62	67	73	81
18					46	49	51	53	55	58	60	64	70	75	83
21						51	53	55	57	60	62	67	72	77	85
24							55	57	59	62	64	69	74	79	89
27								61	63	66	68	73	78	83	–
30									67	70	72	77	82	87	–
33										74	76	81	86	–	–
36											81	86	–	–	–
42												–	–	–	–
48													–	–	–
54														–	–
60															–

* NOT APPLICABLE (INTERSECTING PIPE GREATER THAN MAIN PIPE)

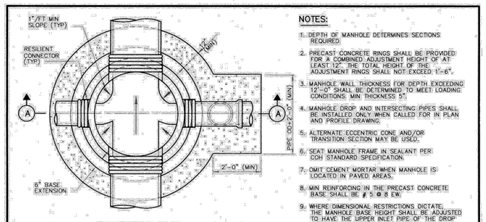
NOTES TO SPECIFIER:

1. *"–" INDICATES THAT A SPECIAL DESIGN OR THE NEXT LARGER MANHOLE SIZE SHALL BE USED.*
2. *TABLES 2 TO 5 ARE BASED ON A MIN SEPARATION DISTANCE OF 10.6' OR INTERSECTION PIPE OD/2, WHICHEVER IS GREATER, BETWEEN MAIN AND INTERSECTING PIPES ALONG THE MANHOLE INSIDE WALL ARC.*
3. *PIPE WALL THICKNESS USED IN TABLES 2 TO 5 ARE BASED ON RCP. THE DESIGN ENGINEER MAY CALCULATE TO SEE IF THINNER WALL PIPES CAN MEET THE SEPARATION CRITERIA FOR ANGLES SMALLER THAN THE TABLES ALLOW.*
4. *LIMITATIONS TO BASE HEIGHT ARE BASED ON RESISTING BUOYANT UPLIFT FORCES BASED ON WATER AT GROUND SURFACE AND A SAFETY FACTOR OF 1.20.*
5. *A SPECIAL DESIGN IS REQUIRED IF MANHOLE ID IS GREATER THAN 8 FT.*

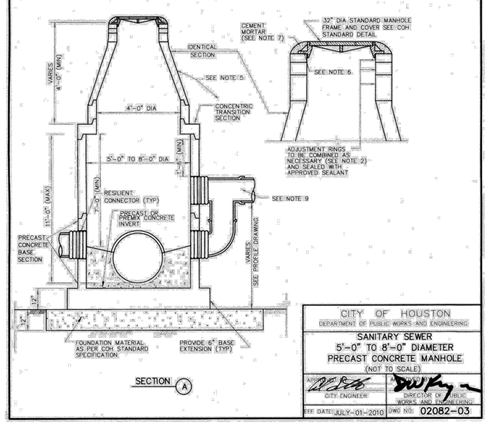
CITY OF HOUSTON	
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
SANITARY SEWER 5'–0" TO 8'–0" DIAMETER PRECAST CONCRETE MANHOLE NOTES (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT–01–2002	DWG NO: 02082N–03

NO.	DATE	REVISION	APP.

PLOTTED: 1/26/2026 12:15 PM PEN TABLE: ----



FOUNDATION PLAN



NOTES:

1. SEAT MANHOLE FRAME IN SEALANT PER COH STANDARD SPECIFICATION.
2. 8" FORCE MAIN HAS BENDS WITHIN 25 FT OF MANHOLE, EXTEND RESTRAINED JOINTS TO 25 FT MINIMUM UPSTREAM OF BEND.
3. OMIT CEMENT MORTAR WHEN MANHOLE IS LOCATED IN PAVED AREA.
4. MINIMUM REINFORCING IN BASE SHALL BE 5 @ 5 E W.
5. PRECAST RINGS SHALL BE PROVIDED FOR A COMBINED ADJUSTMENT HEIGHT OF AT LEAST 12", THE TOTAL HEIGHT OF THE ADJUSTMENT RINGS SHALL NOT EXCEED 1'–6".

NOTES TO SPECIFIER:

1. *INDICATE SIZE OF FORCE MAIN, INCREASER AND DISCHARGE FITTING ON THIS DETAIL OR ON PLAN AND PROFILE.*
2. *PROVIDE INVERT ELEVATIONS OF FORCE MAIN AND SEWER CONNECTIONS TO MH. ON THIS DETAIL OR PLAN AND PROFILE.*
3. *THIS DETAIL IS TO BE USED ONLY WHEN THERE ARE NO INTERSECTING GRAVITY SEWERS.*
4. *DETAIL MAY BE REVISED TO ORIENT INCOMING FORCE MAIN AT OTHER ANGLES RELATIVE TO GRAVITY SEWER.*
5. *IF LENGTH OF DISCHARGE DROP BELOW FLANGED TEE FITTING EXCEEDS 7 TIMES DISCHARGE DIAMETER, PROVIDE STAINLESS STEEL OR FRP PIPE SUPPORT.*

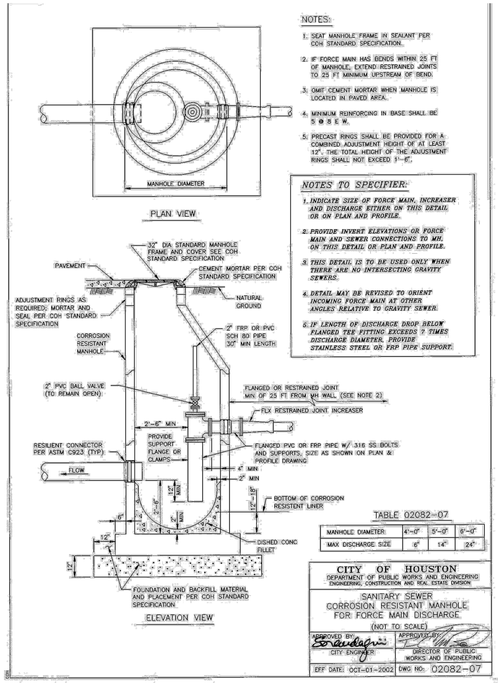


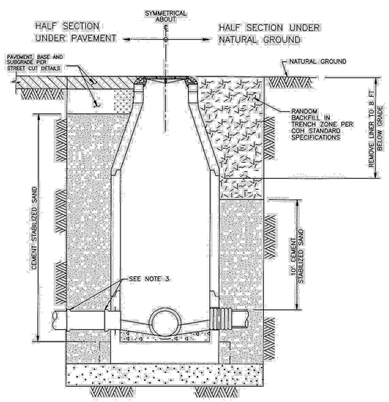
TABLE 02082–07

MANHOLE DIAMETER	4'–0"	5'–0"	8'–0"
MAX DISCHARGE SIZE	8"	14"	24"

CITY OF HOUSTON	
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
SANITARY SEWER CORROSION RESISTANT MANHOLE FOR FORCE MAIN DISCHARGE (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT–01–2002	DWG NO: 02082–07

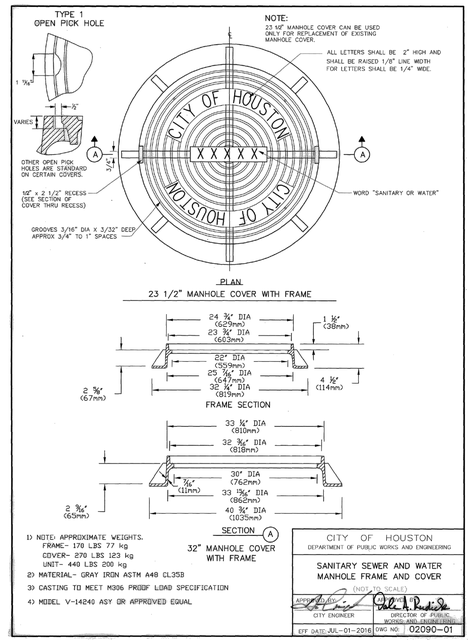
NOTES:

1. GROUTING OF MANHOLE STRUCTURE ANNULAR SPACE WILL BE PERMITTED IN CASES WHERE INSUFFICIENT WORK SPACE EXISTS FOR PLACEMENT AND COMPACTATION OF CEMENT STABILIZED SAND, PER COH STANDARD SPECIFICATION FOR TUNNEL GROUT.
2. THIS DETAIL ALSO APPLIES TO BACKFILL OF SHAFTS WITHOUT STRUCTURES.
3. ARRANGE PIPE JOINTS AS SHOWN WHEN USING RIGID CONNECTION TO CAST IN PLACE MANHOLE BASE.



TYPICAL CROSS – SECTION

CITY OF HOUSTON	
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
SANITARY SEWER BACKFILL OF SHAFTS (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT–01–2002	DWG NO: 02317–08



1) NOTE: APPROXIMATE WEIGHTS.
FRAME– 170 LBS 77 kg
COVER– 270 LBS 123 kg
UNIT– 440 LBS 200 kg
2) MATERIAL– GRAY IRON ASTM A48 CL35B
3) CASTING TO MEET M306 PROOF LOAD SPECIFICATION
4) MODEL V–14240 ASV OR APPROVED EQUAL

CITY OF HOUSTON	
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
SANITARY SEWER AND WATER MANHOLE FRAME AND COVER (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL–01–2016	DWG NO: 02090–01

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F–#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Craig Alexander Perry
Name
116345
Registration Number
JANUARY 23, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

YARD PIPING

STANDARD DETAIL
SANITARY SEWER DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

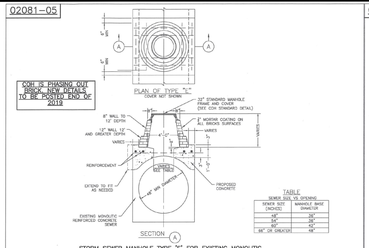
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GC-009	HORIZ: NONE VERT: NONE
SHEET NO. 18 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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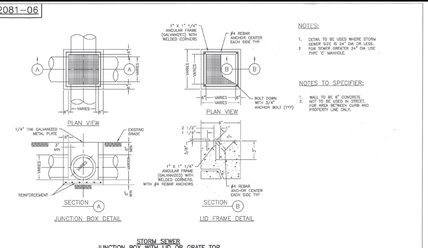
02081-05



HCAD IS PHASING OUT BRICK. NEW DETAILS TO BE POSTED END OF 2018

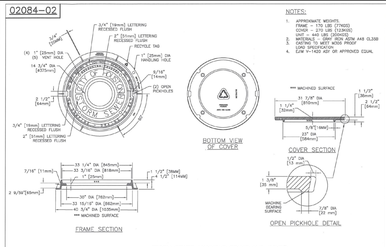
STORM SEWER MANHOLE TYPE "K" FOR EXISTING MONOLITIC REINFORCED CONCRETE 48" DIAMETER AND GREATER
NTS

02081-06



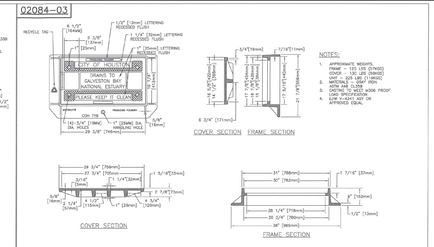
STORM SEWER
JUNCTION BOX WITH LID OR GRATE TOP
FOR MAXIMUM OF 24" DIAMETER STORM SEWER485
NTS

02084-02



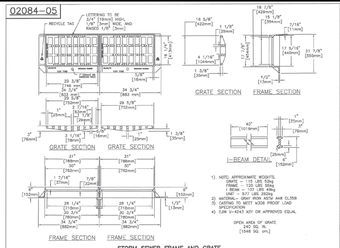
STORM SEWER MANHOLE FRAME AND COVER
NTS

02084-03



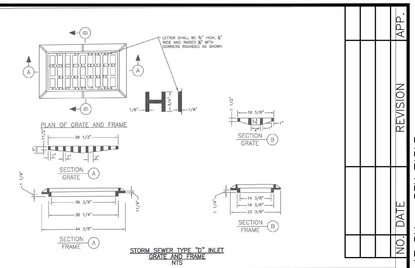
STORM SEWER TYPE "N" INLET ASSEMBLY
NTS

02084-05



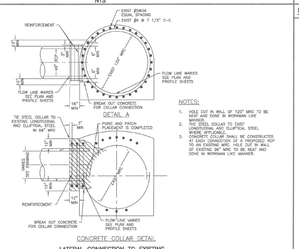
STORM SEWER FRAME AND GRATE
FOR TYPE S-T INLET DOUBLE ASSEMBLY
NTS

02084-06



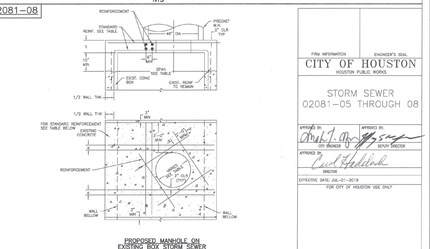
STORM SEWER TYPE "D" INLET
GRATE AND FRAME
NTS

02081-07



MATERIAL CONNECTION TO EXISTING
MONOLITIC REINFORCED CONCRETE STORM SEWER
NTS

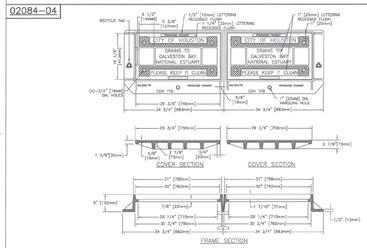
02081-08



PROPOSED MANHOLE ON
EXISTING BOX STORM SEWER
NTS

FIRM INFORMATION
ENGINEER'S SEAL
CITY OF HOUSTON
HOUSTON PUBLIC WORKS
STORM SEWER
02081-05 THROUGH 08
APPROVED BY
CITY ENGINEER
APPROVED BY
DIRECTOR
EFFECTIVE DATE: JUL-01-2019
FOR CITY OF HOUSTON USE ONLY
SHEET NO.

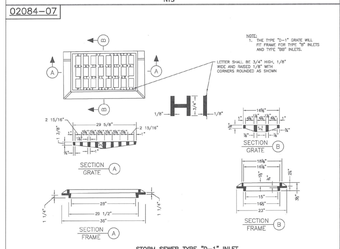
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STORM SEWER TYPE "SB" INLET DOUBLE ASSEMBLY
NTS

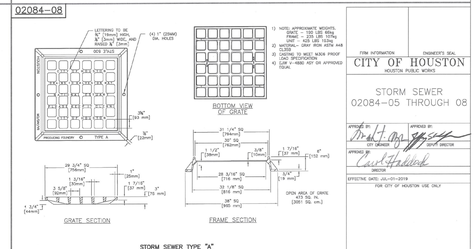
FIRM INFORMATION
ENGINEER'S SEAL
CITY OF HOUSTON
HOUSTON PUBLIC WORKS
STORM SEWER
02084-02 THROUGH 04
APPROVED BY
CITY ENGINEER
APPROVED BY
DIRECTOR
EFFECTIVE DATE: JUL-01-2019
FOR CITY OF HOUSTON USE ONLY
SHEET NO.

02084-07



STORM SEWER TYPE "S-T" INLET
GRATE AND FRAME
NTS

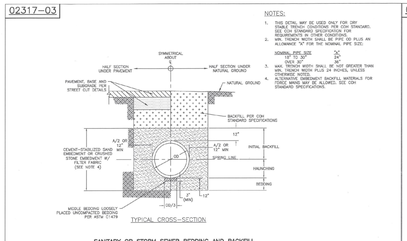
02084-08



STORM SEWER TYPE "A"
INLET GRATE AND FRAME
NTS

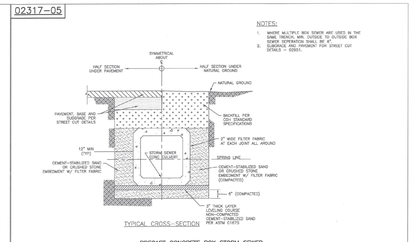
FIRM INFORMATION
ENGINEER'S SEAL
CITY OF HOUSTON
HOUSTON PUBLIC WORKS
STORM SEWER
02084-05 THROUGH 08
APPROVED BY
CITY ENGINEER
APPROVED BY
DIRECTOR
EFFECTIVE DATE: JUL-01-2019
FOR CITY OF HOUSTON USE ONLY
SHEET NO.

02317-03



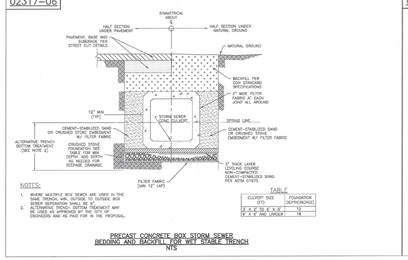
SANITARY OR STORM SEWER BEDDING AND BACKFILL
FOR DRY STABLE TRENCH
NTS

02317-05



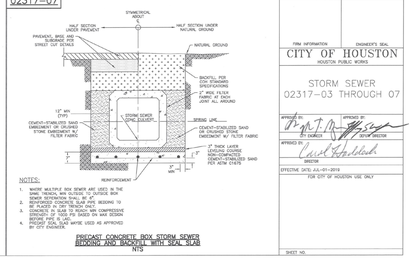
PRECAST CONCRETE BOX STORM SEWER
BEDDING AND BACKFILL FOR DRY STABLE TRENCH
NTS

02317-06



PRECAST CONCRETE BOX STORM SEWER
BEDDING AND BACKFILL FOR WET STABLE TRENCH
NTS

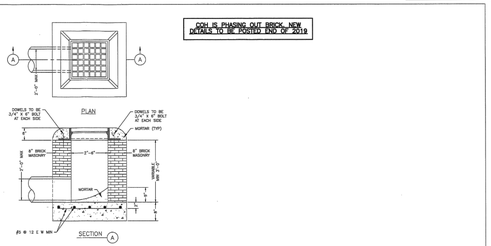
02317-07



PRECAST CONCRETE BOX STORM SEWER
BEDDING AND BACKFILL WITH SEAL SLAB
NTS

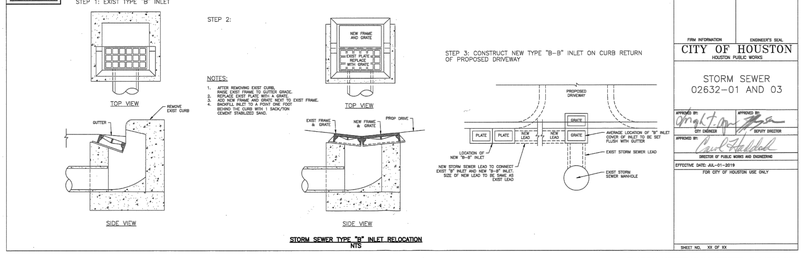
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ENGINEER'S SEAL
CITY OF HOUSTON
HOUSTON PUBLIC WORKS
STORM SEWER
02317-03 THROUGH 07
APPROVED BY
CITY ENGINEER
APPROVED BY
DIRECTOR
EFFECTIVE DATE: JUL-01-2019
FOR CITY OF HOUSTON USE ONLY
SHEET NO.

02632-01



STORM SEWER TYPE "A" GRATE INLET
NTS

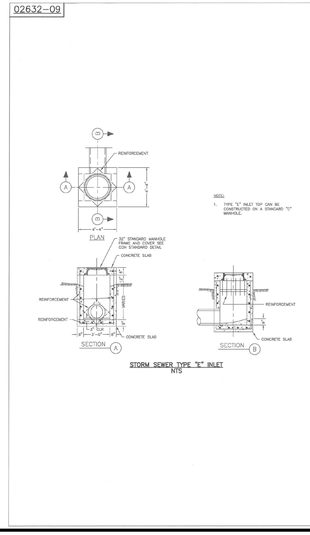
02632-03



STORM SEWER TYPE "B" INLET RELOCATION
NTS

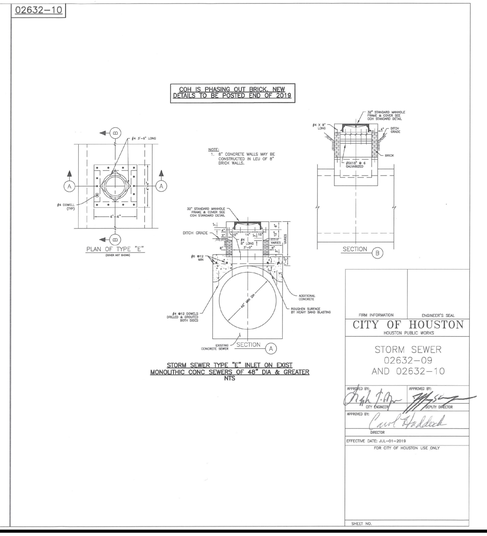
FIRM INFORMATION
ENGINEER'S SEAL
CITY OF HOUSTON
HOUSTON PUBLIC WORKS
STORM SEWER
02632-01 AND 03
APPROVED BY
CITY ENGINEER
APPROVED BY
DIRECTOR
EFFECTIVE DATE: JUL-01-2019
FOR CITY OF HOUSTON USE ONLY
SHEET NO. XX OF XX

02632-09



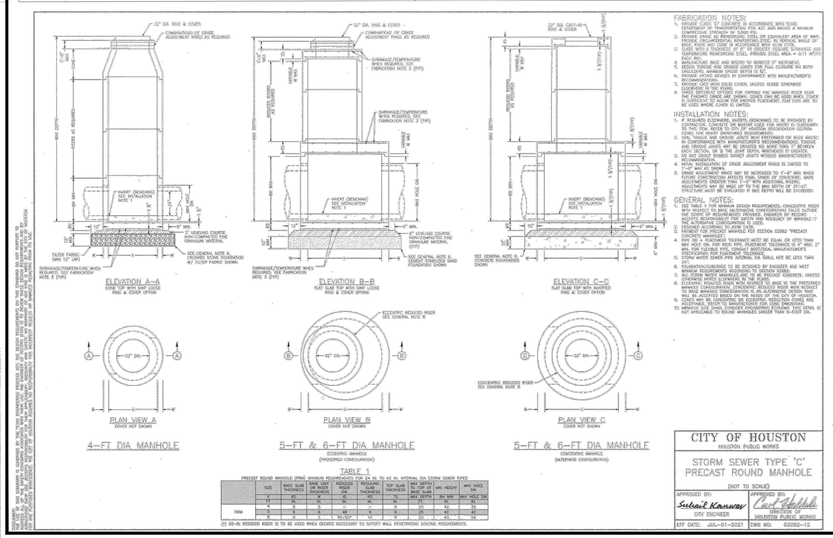
STORM SEWER TYPE "C" INLET
NTS

02632-10



STORM SEWER TYPE "C" INLET ON EXIST
MONOLITHIC CONC SEWERS OF 48" DIA & GREATER
NTS

FIRM INFORMATION
ENGINEER'S SEAL
CITY OF HOUSTON
HOUSTON PUBLIC WORKS
STORM SEWER
02632-09
AND 02632-10
APPROVED BY
CITY ENGINEER
APPROVED BY
DIRECTOR
EFFECTIVE DATE: JUL-01-2019
FOR CITY OF HOUSTON USE ONLY
SHEET NO.



CITY OF HOUSTON
HOUSTON PUBLIC WORKS
STORM SEWER TYPE "C"
PRECAST ROUND MANHOLE
(NOT TO SCALE)
APPROVED BY
CITY ENGINEER
APPROVED BY
DIRECTOR OF
HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2021
CBRS NO. 02202-12

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Craig Alexander Perry
Printed
116345
License Number
JANUARY 23, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

YARD PIPING

STANDARD DETAIL
STORM SEWER DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GC-010

HORIZ: NONE
VERT: NONE

SHEET NO. 19 OF 230

DRAWING SCALE

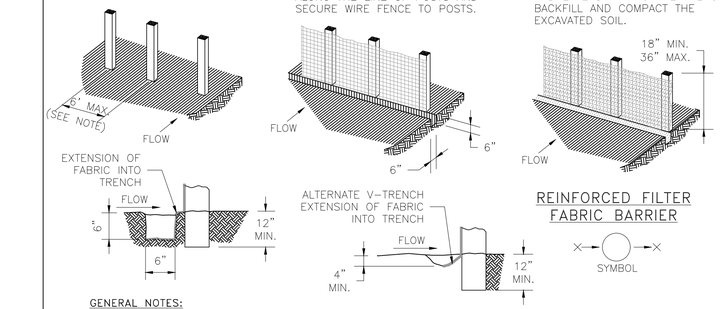
FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP'D

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PLOTTED: 1/26/2026 12:17 PM

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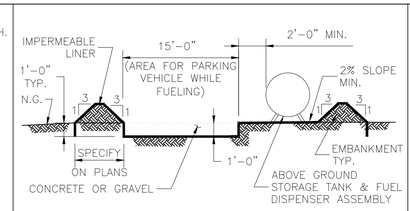


REINFORCED FILTER FABRIC BARRIER

SYMBOL

GENERAL NOTES:

1. SECURELY FASTEN MESH FENCING TO POSTS WITH STAPLES OR TIE WIRES.
2. SECURELY FASTEN FILTER FABRIC TO MESH FENCING.
3. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT A POST, FOLD TOGETHER, AND ATTACH TO A POST.
4. REMOVE SEDIMENT DEPOSITS WHEN SILT REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE IN DEPTH.

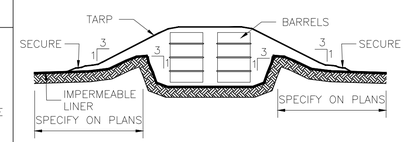


ABOVE GROUND TEMP. VEHICLE & EQUIPMENT FUELING AREA WITH TANK

TFA SYMBOL

GENERAL NOTES:

1. THE SIZE OF TANK FOUNDATION AREA DEPENDS ON THE SIZE OF ABOVE GROUND STORAGE TANK AND DISPENSER ASSEMBLY.
2. PROVIDE A MINIMUM SLOPE OF 2 % TOWARD THE SUMP PIT.
3. INSTALL IMPERMEABLE LINER AS PER MANUFACTURER'S RECOMMENDATIONS.

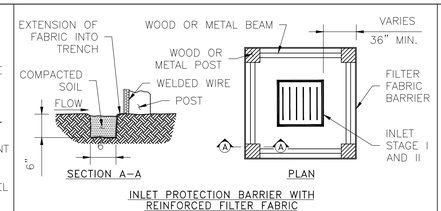


BARREL STORAGE AREA

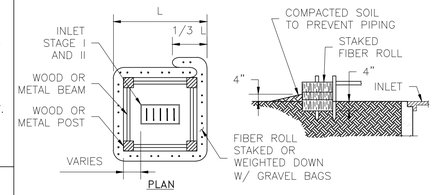
BSA SYMBOL

GENERAL NOTES:

1. ALTERNATIVELY, STORE BARRELS IN AN ENCLOSED BUILDING OR SHED.
2. INSTALL IMPERMEABLE LINER AS PER MANUFACTURER'S RECOMMENDATIONS. 60 mil MINIMUM.
3. CONSTRUCT BERMED AREA WITH VOLUME GREATER THAN OR EQUAL TO 110% VOLUME OF BARRELS.



INLET PROTECTION BARRIER WITH REINFORCED FILTER FABRIC



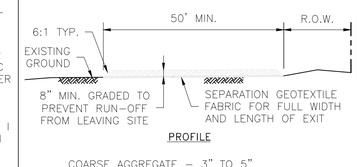
INLET PROTECTION BARRIER WITH FILTER ROLLS

GENERAL NOTES:

1. FIBER ROLLS WILL BE UTILIZED ONLY WHEN SITE CONDITIONS DO NOT PERMIT THE USE OF FILTER FABRIC BARRIER, AND AS APPROVED BY THE ENGINEER.

INLET PROTECTION BARRIERS FOR STAGE I INLETS

IPB SYMBOL

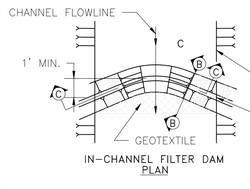


STABILIZED CONSTRUCTION ACCESS

SC-1 SYMBOL

GENERAL NOTES:

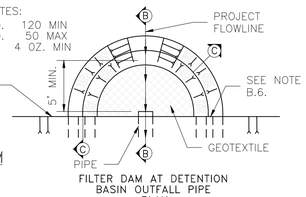
1. MINIMUM LENGTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 50 FEET, WHICHEVER IS MORE.
2. CONSTRUCT AND MAINTAIN CONSTRUCTION EXIT WITH CONSTANT WIDTH ACROSS ITS LENGTH, INCLUDING ALL POINTS OF INGRESS OR EGRESS.
3. UNLESS SHOWN ON THE CONSTRUCTION DRAWINGS, STABILIZATION FOR OTHER AREAS WILL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT.
4. WHEN SHOWN ON THE CONSTRUCTION DRAWINGS, WIDEN OR LENGTHEN STABILIZED AREA TO ACCOMMODATE A TRUCK WASHING AREA. PROVIDE OUTLET SEDIMENT TRAP FOR THE TRUCK WASHING AREA.
5. PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL COARSE AGGREGATE TO MAINTAIN THE REQUIRED DEPTH OR WHEN SURFACE BECOMES PACKED WITH MUD.
6. PERIODICALLY TURN AGGREGATE TO EXPOSE A CLEAN DRIVING SURFACE.
7. MINIMUM 14' WIDTH FOR ONE WAY TRAFFIC AND 20' WIDTH FOR TWO WAY TRAFFIC.



IN-CHANNEL FILTER DAM PLAN

GEOTEXTILE NOTES:

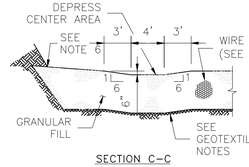
MIN. AOS	SIEVE NO.	120 MIN
MAX. AOS	SIEVE NO.	50 MAX
WEIGHT	OZ/SY	4 OZ. MIN



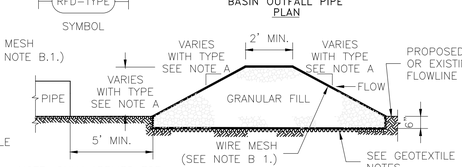
FILTER DAM AT DETENTION BASIN OUTFALL PIPE PLAN

FILTER DAM

RFD-TYPE SYMBOL



SECTION C-C



NOTE: ONLY APPLIES FOR DETENTION BASIN OUTFALL PIPE PROTECTION.

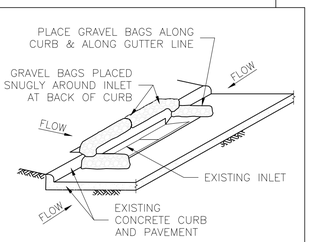
SECTION B-B

A. TYPES OF FILTER DAMS

1. TYPE 1 (NON-REINFORCED)
   a. HEIGHT - 18-24 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM)
   c. SLOPES - 2:1 (MAXIMUM).
2. TYPE 2 (REINFORCED).
   a. HEIGHT - 18-36 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM).
   c. SLOPES - 2:1 (MAXIMUM).
3. TYPE 3 (REINFORCED)
   a. HEIGHT - 36-48 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM).
   c. SLOPES - 3:1 (MAXIMUM).
4. TYPE 4 (GABION)
   a. HEIGHT - 30 INCHES (MINIMUM). MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM).
5. TYPE 5. AS SHOWN ON THE PLANS.

B. CONSTRUCT FILTER DAMS ACCORDING TO THE FOLLOWING CRITERIA UNLESS SHOWN OTHERWISE ON THE PLANS.

1. TYPE 2 AND 3 FILTER DAMS: SECURE WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1 INCH DIAMETER HEXAGONAL OPENINGS.
2. PLACE GRANULAR FILL ON THE WIRE MESH TO HEIGHT AND SLOPES SHOWN ON PLANS OR AS SPECIFIED BY THE ENGINEER.
   a. 3-5 INCHES FOR ROCK FILTER DAM TYPES 1, 2 AND 4.
   b. 4-8 INCHES FOR ROCK FILTER DAM TYPE REFER TO GRANULAR FILL IN SPECIFICATION SECTION No. 02378 RIPRAP AND GRANULAR FILL.
3. FOLD WIRE MESH AT UPSTREAM SIDE OVER GRANULAR FILL AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS.
4. IN STREAMS: SECURE OR STAKE MESH TO STREAM BED PRIOR TO AGGREGATE PLACEMENT.
5. SEE HCFCD SPECIFICATION SECTION NO. 02364-FILTER DAMS.
6. EMBED ONE FOOT MINIMUM INTO SLOPE AND RAISE ONE FOOT HIGHER THAN CENTER OF DEPRESSED AREA AT SLOPE.

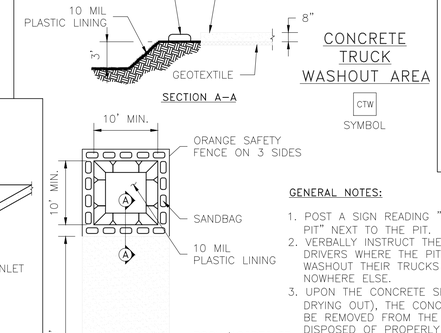


INLET PROTECTION BARRIERS FOR STAGE II INLETS

IPB-II SYMBOL

GENERAL NOTES:

1. REMOVE SEDIMENT DEPOSIT WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE HEIGHT OF THE BARRIER.
2. GRAVEL BAGS SHALL NOT BLOCK THROAT OF INLET UNLESS DIRECTED BY ENGINEER.

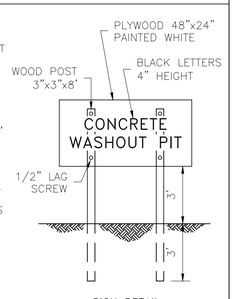


CONCRETE TRUCK WASHOUT AREA

CTW SYMBOL

GENERAL NOTES:

1. POST A SIGN READING "CONCRETE WASHOUT PIT" NEXT TO THE PIT.
2. VERBALLY INSTRUCT THE CONCRETE TRUCK DRIVERS WHERE THE PIT IS AND TO WASHOUT THEIR TRUCKS IN THE PIT AND NOWHERE ELSE.
3. UPON THE CONCRETE SETTING UP (CURING, DRYING OUT), THE CONCRETE WASTE SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED OF PROPERLY BY THE CONTRACTOR. AFTER REMOVAL OF THE CONCRETE WASTE, THE WASHOUT PIT SHALL BE FILLED WITH CLEAN FILL MATERIAL AND COMPACTED TO IN-SITU CONDITIONS, OR AS DIRECTED BY THE PROJECT SPECIFICATIONS.
4. CONCRETE WASHOUT PITS SHALL NOT BE LOCATED DIRECTLY ADJACENT TO, NOR AT ANY TIME DRAIN INTO THE STORM SEWER SYSTEM OR ANY OTHER SWALE, DITCH, OR WATERWAY.
5. CONSTRUCT ENTRY ROAD AND BOTTOM OF WASHOUT AREA TO SUPPORT EXPECTED LOADINGS FROM TRUCKS EQUIPMENT.



SIGN DETAIL (OR EQUIVALENT)

NOTES:

1. STORM WATER POLLUTION PREVENTION PLAN SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND DRAWINGS.
2. CONTRACTOR IS RESPONSIBLE FOR MODIFICATIONS TO SWPPP AS NECESSARY TO REDUCE AND/OR ELIMINATE SEDIMENT FROM ENTERING DRAINAGE SYSTEMS.
3. FILTER FABRIC FENCE SHALL NOT BE PLACED ACROSS DRIVEWAYS OR SIDEWALKS ACCESSING PRIVATE PROPERTY.
4. ALL DISTURBED AREAS THAT ARE NOT PAVED, COVERED BY PAVEMENT, SIDEWALK OR STRUCTURES SHALL BE SODDED.
5. PROVIDE A STANDARD STABILIZED CONSTRUCTION EXIT IN THE CONTRACTORS LAY DOWN/STORAGE AREA.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SIDEWALKS AND CURB ADJACENT TO THE CONSTRUCTION. IF THE SIDEWALKS OR CURBS ARE DAMAGED THE CONTRACTOR WILL BE RESPONSIBLE TO REPLACE AT NO EXTRA COST.
7. IN AREAS OF OPEN CUT CONTRACTOR TO RESTORE WORK AREA TO EXISTING CONDITIONS.

NO.	REVISIONS	DATE	NAME
1	UPDATED DEPARTMENT NAME	2/17/15	RS
2			
3			
4			
5			

HARRIS COUNTY ENGINEERING DEPARTMENT

HARRIS COUNTY TEXAS 1836

PROJECT TITLE:

DRAWN BY: JDZ		HCED STANDARD
CK'D BY: NR	SHEET DESCRIPTION: STORM WATER POLLUTION PREVENTION PLAN DETAILS	29
SCALE: NONE		SHEET NO: /
DATE:	APPROVED BY:	

0 50' 100'
1"=50'

NO.	DATE	REVISION	APP.

PLOTTED: 1/26/2026 12:18 PM PEN TABLE: ----

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Craig Alexander Perry
116345
JANUARY 23, 2025

Engineer of Record
Texas Registered Engineering Firm F-#1800

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL DRAINAGE

STORM WATER POLLUTION PREVENTION PLAN DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GC-011

HORIZ: 1"=50'
VERT: NONE

SHEET NO. 20 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\020 GC-011.dwg

g:\1110\5431-01_coh lift station\phase ii drawings\5431.10 drawings\01_sheets\020 gc-011.dwg

SYMBOLS	DESCRIPTION
52 CS	MEDIUM VOLTAGE DRAWOUT TYPE POWER CIRCUIT BREAKER CS-CONTROL SWITCH
(E.O.) FRAME TRIP	LOW VOLTAGE CIRCUIT BREAKER, 3 POLE UNLESS OTHERWISE NOTED. LSIG IF NOTED MCP IF NOTED ERMS IF NOTED
✳ OR	COMBINATION MOTOR CIRCUIT PROTECTOR AND MAGNETIC MOTOR STARTER, FULL VOLTAGE NON-REVERSING UNLESS OTHERWISE NOTED: ✳ FVR-FULL VOLTAGE REVERSING RVNR-REDUCED VOLTAGE NON-REVERSING 2S1W-TWO SPEED, ONE WINDING 2S2W-TWO SPEED, TWO WINDING
✳ OR	NON-FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE ✳ AMPERE RATING NOTED IF OTHER THAN 30A
✳ OR F ✱	FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE, AMPERE RATING AND FUSE SIZE AS NOTED: ✳ AMPERE RATING NOTED IF OTHER THAN 30A ✱ FUSE RATING
MIS OR I	MOTOR ISOLATION SWITCH, HORSEPOWER RATED
	DRAWOUT TYPE EQUIPMENT OR DEVICE
	MEDIUM VOLTAGE CABLE TERMINATION
	MEDIUM VOLTAGE AIR INTERRUPTER SWITCH
	MEDIUM VOLTAGE FUSED AIR INTERRUPTER SWITCH
	MEDIUM VOLTAGE FUSED MOTOR CONTROLLER
30KVA 480V- 120/208Y K-*	TRANSFORMER, RATINGS AND CONNECTIONS AS NOTED. UNLESS OTHERWISE NOTED ON THE SINGLE LINE DIAGRAMS ALL DRY TYPE TRANSFORMERS SERVICING ADMINISTRATIVE AND LABORATORY SPACES SHALL HAVE A K FACTOR OF 13. ALL OTHER DRY TYPE TRANSFORMERS SHALL HAVE A K-4 RATING. ISOLATION TRANSFORMERS SHALL HAVE A K-20 RATING
✳ A:5	CURRENT TRANSFORMER: ✳ QUANTITY A= PRIMARY AMPERES
✳ PV-SV	POTENTIAL TRANSFORMER: ✳ QUANTITY PV= PRIMARY VOLTAGE SV= SECONDARY VOLTAGE
	GENERATOR, RATINGS AND CONNECTIONS AS NOTED
100A ATS-1 N S	TRANSFER SWITCH AUTOMATIC TRANSFER SWITCH (EG ATS-1) MANUAL TRANSFER SWITCH (EG MTS-1) "N" INDICATES NORMAL SOURCE "S" INDICATES STANDBY SOURCE 100A INDICATES CONTINUOUS CURRENT RATING
✳	VARIABLE SPEED DRIVE CONTROLLER ✳ D.C.= D.C. DRIVE CONTROLLER SCR= SILICON CONTROLLED RECTIFIER VFD= VARIABLE FREQUENCY DRIVE AFD= ADJUSTABLE FREQUENCY DRIVE
	VACUUM CONTACTOR
5KW OR E	UNIT HEATER - ELECTRIC HEATING COIL AND FAN
5KW OR U	UNIT HEATER - STEAM OR WATER HEATING COIL AND FAN
M	MOTOR, NUMERAL INDICATES HORSEPOWER
SPD	SURGE PROTECTION DEVICE
VFD	VARIABLE FREQUENCY DRIVE

SYMBOLS	DESCRIPTION
VM ✳	VOLTMETER (WITH SWITCH IF 3-PHASE)
AM ✳	AMMETER (WITH SWITCH IF 3-PHASE)
*	METER ✳ WM- WATTMETER WHM- WATTHOUR METER WHDM- WATTHOUR DEMAND METER WHDR- WATTHOUR DEMAND RECORDER PF- POWER FACTOR METER RT- RUNNING TIME METER TRANSDUCER AX- CURRENT TRANSDUCER WX- WATT TRANSDUCER
#	RELAY, NO. AS INDICATED 25- SYNCHRONISM CHECK RELAY 27- UNDER VOLTAGE RELAY 38- BEARING PROTECTIVE DEVICE 40- LOSS OF EXCITATION RELAY 42- RUNNING CONTACTOR/PILOT RELAY 46- REVERSE PHASE/PHASE BALANCE/CURRENT RELAY 47- PHASE SEQUENCE VOLTAGE RELAY 49- MACHINE OR TRANSFORMER THERMAL RELAY 50- INSTANTANEOUS OVERCURRENT RELAY 50G- INSTANTANEOUS GROUND 51- TIME OVER CURRENT RELAY 51G- TIME OVERCURRENT RELAY, GROUNDING RESISTOR TYPE 51N- TIME OVERCURRENT RELAY, RESIDUAL TYPE 51V- TIME OVERCURRENT RELAY WITH VOLTAGE RESTRAINT 60- NEGATIVE SEQUENCE VOLTAGE RELAY 62- TIME DELAY RELAY 63- OVER PRESSURE RELAY 67- AC DIRECTIONAL OVERCURRENT RELAY 83- AUTOMATIC SELECTIVE CONTROL OR TRANSFER RELAY 86- LOCKING-OUT RELAY 87- DIFFERENTIAL PROTECTIVE RELAY B- SUFFIX INDICATES "BUS" G- SUFFIX INDICATES "GENERATOR" GF- GROUND FAULT ST- SHUNT TRIP T- SUFFIX INDICATES "TRANSFORMER" X- SUFFIX INDICATES "AUXILIARY"
*	SPECIAL CAPACITOR ✳ SC- SURGE CAPACITOR PF- POWER FACTOR CORRECTION CAPACITOR INCLUDING INDUCTIVE LINK AS NEEDED
	PUSH BUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY CLOSED
	PUSH BUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY OPEN
E-STOP	EMERGENCY STOP PUSH BUTTON WITH RED MUSHROOM HEAD OPERATOR (MAINTAINED CONTACT)
✳ N	STOP PUSH BUTTON WITH RED HEAD OPERATOR (MAINTAINED CONTACT) WITH LOCKABLE OPTION ✳ : E-STOP ✳ : STOP
STOP START	START-STOP PUSH BUTTON CONTROL STATION (MOMENTARY CONTACT) "L" DENOTES LOCKOUT TYPE
STOP START	START-STOP PUSH BUTTON CONTROL STATION, MAINTAINED CONTACT WITH LOCKOUT DEVICE ON STOP
OFF ON	OFF/ON SELECTOR SWITCH
A B C ✳ (XOO) (OOX)	3 POSITION SELECTOR SWITCH, MAINTAINED CONTACT O-OPEN X-CLOSED

POSITION	TOP CONTACT	MIDDLE CONTACT	BOTTOM CONTACT
A	X	O	O
B	0	0	O
C	0	O	X

✳ NAMEPLATE (A/B/C)
HOA- HAND/OFF/AUTO
HOR- HAND/OFF/REMOTE
LOR- LOCAL/OFF/REMOTE
RSL- RAISE/STOP/LOWER
TOA- TEST/OFF/AUTO

NOTE: 2 POSITION MULTI-CONTACT SWITCH FOLLOWS SAME CONVENTION

M #	MOTOR STARTER COIL, NUMBER AS INDICATED
CR #	CONTROL RELAY COIL, NUMBER AS INDICATED
	RVSS: REDUCED VOLTAGE STATIC SOLID SOFT STARTER

SYMBOLS	DESCRIPTION
*	PILOT LIGHT, COLOR AS NOTED ✳ R- RED G- GREEN B- BLUE W- WHITE A- AMBER
* PTT	PILOT LIGHT, PUSH-TO-TEST TYPE, COLOR AS NOTED ABOVE.
TD	TIME DELAY RELAY RANGE AS NOTED SET POINT AS NOTED TDD-TIME DELAY AFTER DE-ENERGIZATION-OFF DELAY TDE-TIME DELAY AFTER ENERGIZATION-ON DELAY
	NOTC-NORMALLY OPEN, TIMED CLOSING WHEN ENERGIZED
	NCTO-NORMALLY CLOSED, TIMED OPENING WHEN ENERGIZED
	NOTO-NORMALLY OPEN, TIMED OPENING WHEN DE-ENERGIZED
	NCTC-NORMALLY CLOSED, TIMED CLOSING WHEN DE-ENERGIZED
⊗	FIELD INSTRUMENT, TAG NO. OR LOOP # AS INDICATED ✳INDICATES INSTRUMENT TYPE DEFINED ON LOOP SHEETS ## - INDICATES LOOP NO.
OR ⊗	LIQUID LEVEL (FLOAT) SWITCH NORMALLY OPEN, CLOSES ON RISING LEVEL NORMALLY CLOSED, OPENS ON RISING LEVEL NORMALLY OPEN, CLOSES ON DROPPING LEVEL NORMALLY CLOSED, OPENS ON DROPPING LEVEL
OR ⊗	PRESSURE OR VACUUM SWITCH NORMALLY OPEN, CLOSES ON RISING PRESSURE NORMALLY CLOSED, OPENS ON RISING PRESSURE NORMALLY OPEN, CLOSES ON DROPPING PRESSURE NORMALLY CLOSED, OPENS ON DROPPING PRESSURE
OR ⊗	TEMPERATURE SWITCH OR THERMOSTAT NORMALLY OPEN, CLOSES ON RISING TEMPERATURE NORMALLY CLOSED, OPENS ON RISING TEMPERATURE NORMALLY OPEN, CLOSES ON DROPPING TEMPERATURE NORMALLY CLOSED, OPENS ON DROPPING TEMPERATURE
OR ⊗	FLOW SWITCH (AIR, WATER, ETC.) NORMALLY OPEN, CLOSES ON INCREASED FLOW NORMALLY OPEN, CLOSES ON DROPPING FLOW NORMALLY CLOSED, OPENS ON INCREASED FLOW NORMALLY CLOSED, OPENS ON DROPPING FLOW
OR ⊗	POSITION (LIMIT) SWITCH NORMALLY OPEN NORMALLY OPEN - HELD CLOSED NORMALLY CLOSED NORMALLY CLOSED - HELD OPEN
OR ⊗	TORQUE SWITCH NORMALLY CLOSED, OPENS ON HIGH TORQUE
	CONDUCTORS OR CONDUITS CROSSING PATHS BUT NOT CONNECTED
	CONDUCTORS ELECTRICALLY CONNECTED
FAN	SUPPLY/EXHAUST FAN

SYMBOLS	DESCRIPTION
LA SC	LIGHTNING ARRESTER/SURGE CAPACITOR
OR	GROUND ROD GROUND ROD WELL
30A	FUSE, AMPERE RATING AS NOTED
OR HTR	HEATER
	INDUCTOR
TG	TACHOMETER GENERATOR
	CONTACT, NORMALLY OPEN (NO)
	CONTACT, NORMALLY CLOSED (NC)
	OVERLOAD RELAY HEATER
K	KEY INTERLOCK
TB	TERMINAL OR TEST BLOCK
RTD	RESISTANCE TEMPERATURE DETECTOR
VE	VIBRATION DETECTOR
DM	DAMPER MOTOR
ETM OR	ELAPSED TIME METER
MOV	MOTOR OPERATED VALVE
	PUSH BUTTON STATION, REFER TO ELECTRICAL SCHEMATIC FOR NUMBER OF DEVICES.
J	JUNCTION BOX
JP	POWER JUNCTION BOX
JI	4-20mA SIGNAL JUNCTION BOX
JC	CONTROL JUNCTION BOX
PB	PULL BOX
TC	TERMINATION CABINET
	REMOTE DEVICES
5	MOV WITHOUT INTEGRATED DISCONNECT
5	MOV WITH INTEGRATED DISCONNECT
	INDICATES LIMITS OF EQUIPMENT OR WIRING ENCLOSURE
MPR	(MPR) MOTOR PROTECTION RELAY

GENERAL NOTE

THIS IS A STANDARD LEGEND. SOME SYMBOLS MAY NOT APPEAR ON THE DRAWINGS.

NO	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

GENERAL ELECTRIC

ELECTRICAL LEGENDS & SYMBOLS SHEET 1 OF 2

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GE-001
HORIZ: NONE
VERT: NONE
SHEET NO. 21 OF 230
DRAWING SCALE
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FILE PATH: C:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\GENERAL_GE-001.dwg

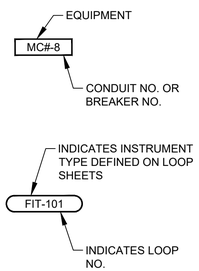
SYMBOLS	DESCRIPTION
A LA-3 b	REFER TO LIGHT FIXTURE SCHEDULE FOR TYPE FIXTURE: "A"- FIXTURE TYPE "b"- CONTROLLED BY SWITCH "b" "LA-3"- CIRCUIT 3 FROM PANEL LA
A b LA-3	REFER TO LIGHT FIXTURE SCHEDULE FOR TYPE FIXTURE, NOTATIONS SAME AS ABOVE
A LA-3 OR A LA-3 NS	INDICATES LIGHT FIXTURES WHICH ARE NONSWITCHED, NOTATIONS SAME AS ABOVE "NS" - NONSWITCHED
A LA-3 b	WALL MOUNTED LIGHTING FIXTURE, NOTATIONS SAME AS ABOVE
A LA-3 b	POLE MOUNTED LIGHTING FIXTURE, NOTATIONS SAME AS ABOVE
A LA-3	EMERGENCY LIGHTING BATTERY UNIT WITH TWO LAMP HEADS, NOTATIONS SAME AS ABOVE
A	REMOTE EMERGENCY ADJUSTABLE WALL LIGHTING FIXTURE WITH TWO LAMP HEADS, NOTATIONS SAME AS ABOVE
A LA-3	CEILING MOUNTED EXIT SIGN, NOTATIONS SAME AS ABOVE
A LA-3	WALL OUTLET EXIT SIGN. ARROW INDICATES DIRECTION OF EGRESS, NOTATIONS SAME AS ABOVE
	CONDUIT, EXPOSED/SURFACE MOUNTED
	CONDUIT OR DUCTBANK, CONCEALED
	CONDUIT, EXPOSED/SURFACE MOUNTED, TURNING UP
	CONDUIT, EXPOSED/SURFACE MOUNTED, TURNING DOWN
	CONDUIT STUBBED OUT AND CAPPED
2(3#3/0+1#2G, 3"C)	DENOTES A QUANTITY OF 2 SETS OF THREE (3) NO.3/0 AWG CONDUCTORS AND 1 NO.AWG GROUND CONDUCTOR EACH INSTALLED IN 3" CONDUIT.
2(2/C#16TS)	DENOTES A QUANTITY OF TWO INSTRUMENT CABLES. EACH CONSISTS OF TWO NO.16 AWG CONDUCTORS TWISTED TOGETHER AND COVERED WITH A METALLIC SHIELD AND AN OVERALL PROTECTIVE JACKET. REFER TO THE SPECIFICATIONS FOR THE EXACT CABLE TO BE PROVIDED.
3(4"C)	DENOTES A QUANTITY OF THREE 4-INCH CONDUITS.
	FLEXIBLE METAL CONDUIT "WHIP" (2#12, #12G, 3/4"C UNLESS OTHERWISE NOTED) FOR RECESSED LIGHTING FIXTURES AND LIQUID TIGHT MOTOR CONNECTIONS
LP#-1,3	HOMERUN, CIRCUITS 1 AND 3 RUN TO PANEL LP-1
$b	SINGLE POLE SWITCH "b"- INDICATES SWITCH LEG SHALL CONTROL LIGHT FIXTURES WITH "b" DESIGNATION
$b x	MULTI POLE SWITCH "x"- INDICATES NUMBER OF POLE "b"- NOTATIONS SAME AS ABOVE
$b P	SINGLE POLE SWITCH AND PILOT LIGHT, "b"- NOTATIONS SAME AS ABOVE
$b D	DIMMER LIGHTING CONTROL SWITCH, "b"- NOTATIONS SAME AS ABOVE
$b TM	TIME SWITCH, "b"-NOTATIONS SAME AS ABOVE
$ M	MANUAL MOTOR STARTER /DISCONNECT
$ OS	SINGLE POLE SWITCH WITH OCCUPANCY SENSOR
$ DM	SINGLE POLE DIMMER SWITCH
$b xx	SWITCH ENCLOSURE "x"- NOTATIONS SAME AS ABOVE "b"- NOTATIONS SAME AS ABOVE "xx"- INDICATES ENCLOSURE TYPE
LC-1	LIGHTING CONTACTOR WITH NUMBER OF POLES AS INDICATED

SYMBOLS	DESCRIPTION
L*-## OR L*-##	LIGHTING PANELBOARD (TYPICAL 120V/240V OR 120V/208V)
H*-## OR H*-##	DISTRIBUTION PANELBOARD (TYPICAL 277V/480V)
LA-3	DUPLEX RECEPTACLE, 20A, 120V, 2P, 3W GFI- GROUND FAULT INTERRUPTER TYPE WP- WEATHERPROOF "LA-3"- CIRCUIT 3 FROM PANEL LA
	WELDING RECEPTACLE
	20A, 240V, 2P, 3W, RECEPTACLE
	CLASS 1, DIVISION 1, RATED TWIST LOCK RECEPTACLE, VOLTAGE AND AMPERAGE RATING AS NOTED
	SINGLE FACE, SINGLE GANG PEDESTAL WITH 20A, 120V, 2P, 3W DUPLEX RECEPTACLE, FURNISHED AND INSTALLED UNDER DIVISION 16 UNLESS OTHERWISE NOTED. * DENOTES FURNISHED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS BUT INSTALLED UNDER DIVISION 16
D	DOUBLE FACE, SINGLE GANG PEDESTAL WITH 20A, 120V, 2P, 3W DUPLEX RECEPTACLE AND 20A, 240V, 2P, 3W SINGLE RECEPTACLE, FURNISHED AND INSTALLED UNDER DIVISION 16 UNLESS OTHERWISE NOTED. * DENOTES FURNISHED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS BUT INSTALLED UNDER DIVISION 16
	DOUBLE RECEPTACLE, 20A, 120V, 2P, 3W MOUNTED IN BOX CURB FURNISHED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS BUT INSTALLED UNDER DIVISION 16
	SINGLE GANG 20A, 120V, 3P, 3W RECEPTACLE
	QUAD RECEPTACLE
OS	OCCUPANCY SENSOR CAPABLE OF VACANCY
PC	PHOTOCELL
	QUICK CONNECT TERMINALS

SYMBOLS	DESCRIPTION
COMMUNICATIONS SYSTEMS	
	TELEPHONE OUTLET
	DATA OUTLET
P	DATA INPUT/OUTPUT CABLE OUTLET. "P" DENOTES PROCESS COMPUTER SYSTEM
	VOICE/DATA OUTLET
S	PAGING SPEAKER HORN
S	PAGING SPEAKER BI-DIRECTIONAL
S	PAGING SPEAKER, CEILING MOUNTED TYPE
S	PAGING SPEAKER, WALL MOUNTED TYPE
SECURITY SYSTEMS	
SAP	SECURITY ALARM PANEL
DS	SECURITY ALARM DOOR SWITCH
KP	SECURITY ALARM KEY PAD
CR	SECURITY SYSTEM CARD ACCESS READER
WS	SECURITY ALARM WINDOW SWITCH
MD	SECURITY ALARM MOTION DETECTOR
	SECURITY CAMERA CCTV- CLOSED CIRCUIT TV CAMERA PTZ- PAN, TILT, ZOOM CAMERA LENS CONTROLS
GB	GLASS BREAK DETECTOR
ACP	ACCESS CONTROL PANEL
FIRE ALARM SYSTEMS	
FACP	FIRE ALARM CONTROL PANEL
SD	SMOKE DETECTOR : D- DENOTES DUCT SMOKE DETECTOR R- DENOTES FIXED TEMPERATURE RATE-OF-RISE TYPE.
F	FIRE ALARM MANUAL PULL STATION, MOUNT AT 4'-0"
	ALARM HORN, MOUNT AT 7'-6" : F- DENOTES FIRE ALARM
	ALARM STROBE, MOUNT AT 6'-8" : F- DENOTES FIRE ALARM
	ALARM HORN AND STROBE LIGHT COMBINATION, MOUNT AT 6'-8" : F- DENOTES FIRE ALARM

TAGGING		
EQUIPMENT	EQUIPMENT TAG	CONDUIT TAG
MOTOR CONTROL CENTER	MCC-1	MC1-XX
SWITCHBOARD	SWBD-1	SB1-XX
SWITCHGEAR	SWGR-1	SG1-XX
PROGRAMMABLE LOGIC CABINET	PLC-1	PL1-XX
VARIABLE FREQUENCY DRIVE	VFD-1	VF1-P
LOW VOLTAGE TRANSFORMER	TX-LX OR TX-HX	TXLX-P OR TXHX-P
SERVICE TRANSFORMER	TX-1	TX1-P
GENERATOR	GEN-1	GN1-X
LIGHTING/POWER PANELBOARD	LP/PP-XX	XX-XX
AUTOMATIC TRANSFER SWITCH	ATS-1	AT1-XX
TYPICAL TAG FOR CONDUIT FROM THIS EQUIPMENT TO DOWN STREAM LOAD FOR EXAMPLE.		

EXAMPLE LEGEND:



ABBREVIATIONS	
AC	ALTERNATING CURRENT
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AG	ABOVE GRADE
ALUM	ALUMINUM
AMP/A	AMPERE
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLF	CURRENT LIMITING FUSE
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CS	CONTROL SWITCH
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DI	DOOR INTERLOCK
DN	DOWN
DWG	DRAWING
EHH	ELECTRICAL HANDHOLE
EC	EMPTY CONDUIT
ELEC	ELECTRICAL
ELEV	ELEVATION
EM	EMERGENCY
EMH	ELECTRICAL MANHOLE
EO	ELECTRICALLY OPERATED
ERMS	ENERGY-REDUCING MAINTENANCE SWITCH
FBO	FURNISHED BY OTHERS
FO	FIBER OPTIC
FRP	FIBERGLASS REINFORCED POLYESTER
FU	FUSE
GCP	GENERATOR CONTROL PANEL
GEN	GENERATOR
G, GRD	GROUND
GFI	GROUND FAULT INTERRUPTER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GO	GATE OPERATOR
GRS	GALVANIZED RIGID STEEL
HH	HANDHOLE
HT	HEIGHT
HTP	HEAT TRACE PANEL
HZ	HERTZ
IMH	INSTRUMENT MAN HOLE
INST	INSTRUMENT
LA	LIGHTNING ARRESTER
LC	LIGHTNING CONTACTOR
LCP	LOCAL CONTROL PANEL
LGTS	LIGHTS
LP	LIGHTING PANEL
	CONTINUED ABOVE RIGHT

	CONTINUED BELOW LEFT
LSIG	LONG TIME/SHORT TIME/ INSTANTANEOUS/GROUND FAULT FEATURE INCLUDED
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MFR	MANUFACTURER
MH	MANHOLE
MLO	MAIN LUGS ONLY
MTG	MOUNTING
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
NC	NORMALLY CLOSED
NO	NORMALLY OPEN OR NUMBER
NTS	NOT TO SCALE
OL	OVERLOAD
OLX	OVERLOAD CONTROL RELAY
PB	PUSH BUTTON OR PULL BOX
PCC	PUMP CONTROL CONSOLE
PPR	PHASE PROTECTIVE RELAY
PFR	PHASE FAILURE RELAY
PH	PHASE
PNLBD	PANELBOARD
PR	PAIR
PT	POTENTIAL TRANSFORMER
PTT	PUSH TO TEST TYPE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RCP	RELAY CONTROL PANEL
RECP	RECEPTACLES
RVSS	REDUCED VOLTAGE SOFT STARTER
SC	SURGE CAPACITOR
SCH	SCHEMATIC
SCCR	SHORT CIRCUIT CURRENT RATING
SEC	SECONDS OR SECONDARY
SH	SHIELDED OR SHEET
SHT	SHEET
SM	MOTOR RATED SWITCH
SN	SOLID NEUTRAL
SS	STAINLESS STEEL
ST	STARTER
SV	SOLENOID VALVE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TC	TERMINATION CABINET
TEL	TELEPHONE
TO	TIME DELAY ON OPENING
TS	TEMPERATURE SWITCH
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TSW	TWISTED SHIELDED WIRE
TYP	TYPICAL
UG	UNDERGROUND
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
VO	VALVE OPERATOR
W	WIRE
WP	WEATHERPROOF
XP	EXPLOSION PROOF
XFMR	TRANSFORMER

GENERAL NOTE

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NO	DATE	REVISION	APP.
1	06/09/2025	PERMIT SET	HF

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

GENERAL ELECTRIC

ELECTRICAL
LEGENDS & SYMBOLS
SHEET 2 OF 2

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GE-002

HORIZ: NONE
VERT: NONE

SHEET NO. 22 OF 230

DRAWING SCALE

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LUMINAIRE SCHEDULE

FIXTURE TYPE	VOLTAGE	LAMP TYPE	TOTAL INPUT WATTS	TOTAL OUTPUT LUMENS	MOUNT	DESCRIPTION	MAKE/MODEL
A	120/277V UNIVERSAL DRIVER	LED	42	4000	SUSPENDED	LINEAR LED LUMINAIRE, UV-STABILIZED, INJECTION-MOLDED, IMPACT-RESISTANT, FROSTED POLYCARBONATE HOUSING, -29°C TO 40°C OPERATING TEMPERATURE, 4000K COLOR TEMPERATURE, 80CRI, UV-STABILIZED, INJECTION-MOLDED, IMPACT-RESISTANT CLEAR POLYCARBONATE LENS, UL 1598 WET LOCATION LISTED.	LITHONIA ARCHWAY VAP LED SERIES VAP-4000L-PCL-WD-MVOLT-40K-80CRI-VAPCMB DAY-BRITE CFI VAPORLUME LED V2 V2WPB70L840-4-UNV TBK OR WBK ACESSORY & FKR-126
B	120/277V UNIVERSAL DRIVER	LED	13	---	STEM MOUNT	RED POLYCARBONATE LENS SUITABLE FOR WET LOCATIONS - 120V, SERIES 105 XBR	---
C	120/277V UNIVERSAL DRIVER WITH EMERGENCY BATTERY PACK WITH PHOTO CELL	LED	12W	1500	WALL	POWDER COATED DIE-CAST ALUMINUM HOUSING, NATURAL ALUMINUM FINISH, -30°C TO 40°C OPERATING TEMPERATURE, 4000K COLOR TEMPERATURE, 70CRI, GASKETED LENS, IESNA TYPE III DISTRIBUTION, NEMA 4X RATED, WET LOCATION RATED, WITH EMERGENCY BATTERY PACK.	LITHONIA LIGHTING WST LED SERIES WST LED P1 40K VF MVOLT E20WC GARDCO LED WALL SCONCE 101L SERIES 101L-16L-530-NW-G1-3-EBPC-UNV-MGY
D	208V UNIVERSAL DRIVER WITH EMERGENCY BATTERY PACK	LED	62	-	POLE MOUNT	HIGH EFFICIENCY LED UNIT WITH PRISMATIC BOROSILICATE GLASS; UL LISTED FOR WET LOCATION USE WITH 208VAC PHOTO CELL	HUBBLE SERIES EML EMLC-50W-30D4 WITH PHOTO CELL OR EQUAL
E	120/277V UNIVERSAL DRIVER WITH EMERGENCY BATTERY PACK	LED	1.2	536	WALL 8-FT ABOVE FLOOR	LED STANDBY EMERGENCY LUMINAIRE, WHITE ENGINEERING GRADE THERMOPLASTIC HOUSING, 16°C TO 32°C OPERATING TEMPERATURE, IMPACT RESISTANT, CORROSION-PROOF, DAMP LOCATION RATED, EMERGENCY BATTERY PACK INCLUDED.	LITHONIA ELM6 LED SERIES LV-S-W1R-120/277-EL-N-UM-DL
X	120/277V UNIVERSAL DRIVER WITH EMERGENCY BATTERY PACK	LED	18.2	N/A	UNIVERSAL	EMERGENCY EXIT SIGN, CAST-ALUMINUM, NEMA-4X, CLEAR UV-STABLE POLYCARBONATE COVER, SINGLE WHITE POLYCARBONATE, FACEPLATE WITH DIRECTIONAL CHEVRON KNOCKOUTS. WHITE HOUSING, UNIVERSAL MOUNT, SEALED MAINTENANCE-FREE NICKEL CADMIUM BATTERY WITH 90 MINUTE CAPACITY.	LITHONIA LIGHTING LV EL N LED SERIES LV-S-W-2-R-120/277-EL N-UM-4X
TPA	N/A	N/A	N/A	N/A	BASE MOUNTED POLE	ROUND STRAIGHT ALUMINUM POLE, 4" DIAMETER WITH 2-3/8" TENON, 8' POLE WITH LOW PROFILE BASE COVER, HANDHOLE WITH RECESSED COVER. RATED FOR 150 MPH, MATCH TENON TO LUMINAIRE TYPE.	LITHONIA LIGHTING FLORIDA RATED POLE RSALP 8 4C T20 VD DNA
TPB	N/A	N/A	N/A	N/A	BASE MOUNTED POLE	ROUND STRAIGHT ALUMINUM POLE, 5" DIAMETER WITH 2-3/8" TENON, 16' POLE WITH LOW PROFILE BASE COVER, HANDHOLE WITH RECESSED COVER. RATED FOR 150 MPH, MATCH TENON TO LUMINAIRE TYPE.	LITHONIA LIGHTING FLORIDA RATED POLE RSALP 16 5C T20 VD DNA

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WBS NO. R-000267-0174-3

GENERAL ELECTRIC

ELECTRICAL
LIGHTING FIXTURE SCHEDULE

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GE-003

HORIZ: NONE
VERT: NONE

SHEET NO. 23 OF 230

DRAWING SCALE

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FILE PATH: O:\HB104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\GENERAL_GE-003.dwg

ELECTRICAL GENERAL NOTES

1. THE NOTES CONTAINED ON THIS SHEET ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR WHEN WORKING IN THE FIELD, AND CONTAIN EXCERPTS FROM THE SPECIFICATION SECTIONS. HOWEVER THE CONTRACTOR IS HEREBY ADVISED THAT THE CONTRACT DOCUMENTS CONSIST OF BOTH THE DRAWINGS AND THE SPECIFICATIONS, AND THAT THE CONTRACTOR MUST COMPLY FULLY WITH BOTH THE BOUND DRAWINGS AND THE BOUND SPECIFICATIONS.

2. ALL EQUIPMENT WIRING, RACEWAYS, ETC. SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, LOCAL CODES, AND INDUSTRY STANDARDS (IE. UL, NEMA, IEEE, ANSI, ETC.) THE DRAWING NOTES AND DETAILS SHALL BE COMPLIED WITH IN ADDITION TO THE REQUIREMENTS IN THE SPECIFICATIONS. REFER TO EACH SPECIFICATION SECTION FOR SPECIFIC REQUIREMENTS.

3. ALL RACEWAY INSTALLATIONS SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. ALL EXPOSED RACEWAY SHALL BE INSTALLED PARALLEL TO BEAMS, CEILINGS, FLOORS AND WALLS. SEE SPECIFICATION ON RACEWAYS FOR ADDITIONAL REQUIREMENTS.

4. CONDUITS SHALL BE TERMINATED IN A NEAT MANNER AND STRICTLY IN ACCORDANCE WITH THE SPECIFICATIONS AND DRAWING DETAILS.

5. CONDUITS TERMINATED INTO ENCLOSURES SHALL BE PERPENDICULAR TO THE WALLS OF THE ENCLOSURE. THE USE OF SHORT SEALTIGHT ELBOW FITTINGS FOR SUCH TERMINATIONS IS NOT PERMITTED.

6. ALL RACEWAY INSTALLATIONS, CROSSING EXPANSION JOINTS OR TRANSITIONS FROM BELOW GRADE TO EXPOSED ABOVE GRADE, SHALL HAVE EXPANSION OR EXPANSION/DEFLECTION TYPE FITTINGS AS SPECIFIED FOR THE APPLICATION. SEE THE DRAWINGS AND THE SPECIFICATION ON RACEWAYS FOR THE EXACT TYPE OF FITTING TO BE USED.

7. NO CONDUIT SMALLER THAN 3/4", NOR WIRE SMALLER THAN NO. 12 AWG, SHALL BE USED UNLESS SPECIFICALLY NOTED.

8. ALL UNDERGROUND SINGLE CONDUITS AND DUCTBANKS OF MULTIPLE CONDUITS SHALL BE RIGID PVC CONDUIT ENCASED IN REINFORCED RED CONCRETE. CONCRETE DYED RED BEFORE PLACEMENT. MINIMUM SIZE IS 2 INCH. FIELD VERIFY THE ROUTING OF ALL EXISTING UNDERGROUND CONDUIT AND DUCTBANKS. COORDINATE ROUTING OF NEW CONDUIT AND DUCTBANKS TO AVOID INTERFERENCE WITH EXISTING CONDUIT, DUCTBANKS, AND OTHER UNDERGROUND UTILITIES.

9. ALL CHANGES OF DIRECTION GREATER THAN 20 DEGREES IN UNDERGROUND SINGLE, OR DUCTBANKS OF MULTIPLE CONDUITS, SHALL BE ACCOMPLISHED USING PVC COATED RIGID ALUMINUM LONG RADIUS BENDS. BENDS OF PVC CONDUIT GREATER THAN 20 DEGREES, OR THE USE OF FLEXIBLE CONDUIT OF ANY TYPE, WILL NOT BE PERMITTED. SEE THE SPECIFICATIONS FOR MORE REQUIREMENTS.

10. LIQUID TIGHT FLEXIBLE ALUMINUM CONDUIT SHALL BE USED FOR THE PRIMARY AND SECONDARY OF TRANSFORMERS, GENERATOR TERMINATIONS AND OTHER EQUIPMENT WHERE VIBRATION IS PRESENT. USE IN OTHER LOCATIONS IS NOT PERMITTED, EXCEPT FOR CONNECTIONS TO INSTRUMENTATION TRANSMITTERS, WHERE MULTIPLE PENETRATIONS ARE REQUIRED. LIQUID TIGHT FLEXIBLE ALUMINUM CONDUIT SHALL HAVE A MAXIMUM LENGTH NOT GREATER THAN THAT OF A FACTORY MANUFACTURED LONG RADIUS ELBOW OF THE CONDUIT SIZE BEING USED. THE MAXIMUM BENDING RADIUS SHALL NOT BE LESS THAN THAT SHOWN IN THE NEC CHAPTER 9, TABLE 2, "OTHER BENDS". BX OR AC TYPE PREFABRICATED CABLES WILL NOT BE PERMITTED.

11. THE WIRING DIAGRAMS, BLOCK DIAGRAMS, QUANTITY/SIZES OF WIRES/CONDUITS REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY APPROVED. ALL MODIFICATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFIED.

12. ALL JUNCTION BOXES, PULL BOXES AND TERMINATION BOXES IN NEMA 12 AREAS SHALL BE ALUMINUM. FOR NEMA 4X AREAS SEE SPECIFICATIONS FOR BOX DETAILS AND SPECIFICATIONS.

13. SEAL ALL RACEWAYS ENTERING JUNCTION BOXES OR CONTROL PANELS CONTAINING ELECTRICAL OR INSTRUMENTATION EQUIPMENT WITH WATERTIGHT SEALANT. REFER TO THE SPECIFICATIONS FOR DETAILS.

14. ALL EQUIPMENT AND ELECTRICAL EQUIPMENT ENCLOSURE LOCATIONS, OR TERMINAL BOX LOCATIONS, ARE APPROXIMATE. THE EXACT LOCATIONS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER/ENGINEER, DURING CONSTRUCTION, AT NO ADDITIONAL COST TO THE OWNER.

15. ALL EQUIPMENT AND ELECTRICAL EQUIPMENT ENCLOSURES DIMENSIONS ARE APPROXIMATE. ALL EQUIPMENT AND ELECTRICAL EQUIPMENT ENCLOSURES OR TERMINAL BOX DIMENSIONS SHALL BE VERIFIED WITH THE EQUIPMENT SUPPLIER. ALLOW FOR LOCATION CHANGES AND INCLUDE IN THE CONTRACT PRICE. THE EXACT LOCATIONS OF ALL ELECTRICAL EQUIPMENT AND ROUTING OF ALL CABLES AND CONDUITS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER/ENGINEER DURING CONSTRUCTION.

16. CORING OF AN EXISTING STRUCTURE SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER/ENGINEER. CORING THROUGH STRUCTURAL BEAMS IS STRICTLY PROHIBITED WITHOUT PRIOR WRITTEN APPROVAL FROM THE OWNER/ENGINEER.

17. THE LOCATION OF ALL ELECTRICAL EQUIPMENT AND ROUTING OF CABLES AND CONDUITS SHALL BE COORDINATED AND APPROVED BY THE OWNER.

18. THE DUCTBANK ROUTING AS SHOWN ON THE DRAWING IS APPROXIMATE. FIELD VERIFY THE EXACT DUCTBANK ROUTING, CABLE LENGTH AND CONDUIT LENGTH.

19. PROVIDE CONDUIT SEALS FOR CONDUIT PENETRATIONS AS PER NEC AND NFPA820.

20. COORDINATE ALL WORK WITH THE OWNER.

21. LOCATE ALL UNDERGROUND UTILITIES BEFORE DIGGING. COORDINATE THE EFFORT WITH THE OWNER.

22. ALL SLOTTED CHANNEL, SLOTTED CHANNEL SUPPORT MATERIAL, WASHERS, SCREWS, NUTS, CONDUIT CLAMPS, ALL THREAD SPRING NUTS AND MISC. MOUNTING HARDWARE SHALL BE 316 STAINLESS STEEL.

23. LIGHTING FIXTURES SHALL BE MOUNTED ACCORDING TO THE MOUNTING HEIGHT GIVEN ON THE DRAWINGS. THE MOUNTING HEIGHT SHALL BE MEASURED FROM THE BOTTOM OF THE LIGHTING FIXTURE TO THE FINISHED FLOOR.

24. CONDUIT AND WIRE FOR THE HVAC EQUIPMENT AND MISCELLANEOUS DEVICES SHALL BE:

    A. 3/4" (MIN) RIGID ALUMINUM.

    B. NO.14 XHHW CU. WIRE XHHW (MIN.).

    C. IN ACCORDANCE WITH ALL ELECTRICAL AND HVAC SPECIFICATIONS REQUIREMENTS.

25. CONDUITS AND WIRES SHOWN ON THE INTERFACE DIAGRAM SHALL BE INSTALLED BY THE CONTRACTOR. GROUPING OF CONDUIT AND WIRE MAY BE CHANGED, IF APPROVED BY THE ENGINEER AND OWNER.

26. ALL CONDULETS SHALL BE FORM 7 AND SHALL HAVE 316 SS CLAMP COVERS WITH 316 SS CLAMPS AND SCREWS. SCREW DOWN COVERS ARE UNACCEPTABLE. REFER TO THE SPECIFICATIONS FOR MORE INFORMATION.

27. ALL BARE COPPER GROUNDING CONDUCTORS SHALL BE TINNED, ALL GROUND RODS SHALL BE 3/4" BY 10' LONG. ALL EXPOSED COPPER GROUND CABLES SHALL BE GREEN INSULATED CONDUCTORS. PROVIDE XHHW INSULATION.

28. WHERE NOTES ON THE DRAWING INDICATE THAT THE CONTRACTOR SHALL FIELD-VERIFY, THE INTENT IS FOR THE CONTRACTOR TO INVESTIGATE TO THE EXTENT NECESSARY TO PROVIDE THE WORK AND MATERIALS PRIOR TO BIDDING AND INCLUDE ALL COSTS IN THE BID PRICE. THE CONTRACT PRICE SHALL NOT BE INCREASED WHEN THE CONTRACTOR HAS NOT INVESTIGATED PER THE NOTES DIRECTING THAT BE DONE.

TYPICAL ENCLOSURE TYPES BY AREA TYPE

NON-HAZARDOUS AREAS	BOXES & ENCLOSURES 1	3R	4X	4X*	12	CONDUIT
OUTDOOR; GENERAL AREAS		X	X			PVC COATED ALUMINUM
OUTDOOR; CHEMICAL AREAS				X		SCHEDULE 80 PVC
INDOOR; CHEMICAL ROOM				X		SCHEDULE 80 PVC
INDOOR; CONDITIONED SPACE					X	RIGID ALUMINUM
INDOOR; NON-CONDITIONED SHOP SPACE					X	RIGID ALUMINUM
INDOOR; NON-CONDITIONED PROCESS AREA			X			RIGID ALUMINUM
INDOOR, ADMIN BUILDING	X					EMT/RIGID ALUMINUM
CLASS I, DIVISION 1	REFER TO NEC, NFPA-820, AND CONTRACT CONSTRUCTION SPECIFICATIONS					
CLASS I, DIVISION 2	REFER TO NEC, NFPA-820, AND CONTRACT CONSTRUCTION SPECIFICATIONS					

GENERAL NOTES:

- EQUIPMENT SUCH AS MOTOR CONTROL CENTER, SWITCHGEAR, VFDS, AND OTHER STAND-ALONE MOTOR STARTERS ARE TO BE SPECIFIED UNIQUELY.
- NEMA 1 ENCLOSURES ARE TO BE NEMA 1 GASKETED.
- NEMA 4X* ENCLOSURES ARE TO BE NON-METALLIC (ie PVC) NEMA 4X
- CONDUIT INSIDE ADMIN BUILDING LOCATION IS TO BE EMT IF CONCEALED IN DRY WALL (AKA SHEET ROCK WALL): OTHERWISE RIGID ALUMINUM.
- OUTDOOR GENERAL AREAS COULD BE 3R OR 4X DEPENDING ON OWNER PREFERENCE AND WHETHER WTP OR WWTP - REFER TO DRAWINGS.

CONDUIT TYPE	LOCATION
RIGID GALVANIZED CONDUIT	NOT ACCEPTABLE FOR USE ON THIS PROJECT EXCEPT FOR THE UTILITY COMPANY'S CONDUCTORS. ALL UTILITY COMPANY'S DUCTS SHALL BE AS SPECIFIED BY UTILITY COMPANY.
PVC COATED ALUMINUM CONDUIT	ALL EMBEDDED CONDUIT BENDS, UNDERGROUND DUCTBANK OF MORE THAN 20 DEGREES, AND ALL CONDUIT STUB-UPS TO A MINIMUM OF 6" ABOVE FINISHED FLOOR OR GRADE AND IN CHLORINE AND CAUSTIC ROOMS.
LIQUID TIGHT FLEXIBLE ALUMINUM CONDUIT	RACEWAY CONNECTION TO VIBRATING EQUIPMENT ONLY, IN ALL AREAS.
RIGID NON-METALLIC, SCHEDULE 40 PVC CONDUIT	UNDERGROUND ENCASED IN RED DYE REINFORCED CONCRETE. (AS WHERE SPECIFIED)
RIGID NON-METALLIC, SCHEDULE 80 PVC CONDUIT	FOR USE IN CHLORINE AND CAUSTIC ROOMS, AND UNDERGROUND. ENCASED IN RED DYED REINFORCED CONCRETE. (AS WHERE SPECIFIED)
FLEXIBLE ALUMINUM CONDUIT	FIXTURE WHIP CONNECTION TO LIGHTING FIXTURES IN NEMA 12 AREAS (MAXIMUM 3-FT). BX OR AC TYPE PREFABRICATED CABLES ARE NOT PERMITTED.
ALUMINUM RIGID METAL CONDUIT	ALL ABOVE GRADE AREAS, EXCEPT FOR CONCRETE EMBEDDED AND THOSE AREAS ALREADY DESCRIBED IN THIS TABLE
ELECTRIC METALLIC TUBING (EMT) CONDUIT	FOR USE ONLY ON CONCEALED, ABOVE GROUND, INTERIOR ELECTRICAL WIRING IN AIR-CONDITIONED ADMINISTRATIVE BUILDINGS REMOTE TO THE PROCESS AREA, AND CLEARLY DEFINED AS SUCH ON THE DRAWINGS OR IN THE SPECIFICATIONS.

DEMOLITION NOTES

1. COORDINATE THE DEMOLITION OF ELECTRICAL CONDUIT, WIRE, EQUIPMENT AND DEVICES WITH THE GENERAL DEMOLITION AND SCHEDULE. THE DRAWINGS ARE INTENDED TO CONVEY THE GENERAL NATURE AND SCOPE OF THE DEMOLITION WORK. EVERY ITEM TO BE DEMOLISHED MAY NOT BE SHOWN. FIELD VERIFY, AND INCLUDE ALL DEMOLITION WORK IN THE CONTRACT PRICE.

2. PROVIDE TEMPORARY WIRE AND CONDUIT FOR THE EQUIPMENT WHICH MAY BE AFFECTED BY THE DEMOLITION BUT TO REMAIN IN SERVICE.

3. RELOCATE AND RECONNECT POWER AND CONTROL RACEWAYS AND CONDUCTORS TO EQUIPMENT AFFECTED BY DEMOLITION WORK.

4. ALL CONDUCTORS BEING DEMOLISHED SHALL BE DISCONNECTED AND REMOVED FROM THE LOAD TO THE SOURCE. SURFACE MOUNTED CONDUITS AND MOUNTING HARDWARE SHALL BE REMOVED. UNDERGROUND CONDUITS WHICH ARE NOT BEING REMOVED OR OTHERWISE NOT BEING MADE UNUSABLE SHALL BE CAPPED AND TAGGED AS SPARE, WITH INFORMATION CLEARLY INDICATING THE LOCATION OF THE OTHER END.

5. ALL SURFACES WHERE DEMOLISHED EQUIPMENT OR CONDUIT IS REMOVED SHALL BE CLEANED, PATCHED AND PAINTED TO MATCH THE SURROUNDING SURFACE.

6. CHECK THE FUNCTION OF EACH CONDUCTOR BEFORE REMOVING OR DISCONNECTING.

7. IF A CONDUCTOR WHICH HAS TO STAY IN SERVICE (NOT BEING DEMOLISHED) IS INSTALLED IN A COMMON CONDUIT WITH CONDUCTORS WHICH ARE BEING DEMOLISHED, THE CONTRACTOR SHALL REMOVE ALL CONDUCTORS FROM THE CONDUIT, PROVIDE NEW CONDUCTORS WHICH ARE REPLACEMENTS FOR THE CONDUCTORS THAT ARE TO REMAIN IN SERVICE AND RE-INSTALL THE NEW CONDUCTORS. AFTER THE CONDUCTORS ARE PULLED, MEGGER OR VFL TEST EACH CONDUCTOR. CONNECT BOTH ENDS OF THE NEW CONDUCTORS AND TEST THE SYSTEM FOR PROPER FUNCTION. DO NOT RE-PULL USED CONDUCTORS UNLESS SPECIFIED.

8. WHERE EQUIPMENT IS BEING RE-FED FROM A NEW SOURCE, EXISTING CONDUIT MAY BE REUSED ONLY IF THE CONDUIT AND FITTINGS ARE OF THE TYPE SPECIFIED FOR NEW WORK ON THIS CONTRACT. IF NOT, THE CONDUIT AND CONDUCTORS SHALL BE REPLACED WITH NEW MATERIAL MEETING THE SPECIFICATIONS, AT NO ADDITIONAL COST TO THE OWNER.

9. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER/ENGINEER TO FLAG EXISTING UNDERGROUND CONDUITS BEFORE DIGGING.

10. THE OWNER HAS THE RIGHT OF FIRST REFUSAL TO THE EQUIPMENT BEING REMOVED. THE CONTRACTOR SHALL DELIVER THE EQUIPMENT WHICH THE OWNER WISHES TO KEEP AT A LOCATION DESIGNATED BY THE OWNER. SEE SPECIFICATIONS.

11. DO NOT MAKE ANY MODIFICATIONS TO THE EXISTING ELECTRICAL EQUIPMENT UNTIL THE FOLLOWING HAS BEEN DONE:

    A. THE OWNER/CONTRACTOR SHALL WITNESS AND RECORD THE CONDITION OF THE EXISTING EQUIPMENT, THE CONTRACTOR SHALL NOTE DOWN ANY DEFECTS OR DEFICIENCIES.

    B. THE OWNER SHALL OPERATE THE EQUIPMENT TO DEMONSTRATE THE CURRENT CONDITIONS. THE CONTRACTOR SHALL NOTE DOWN ANY DEFECTS OR DEFICIENCIES.

    C. A WRITTEN AND PHOTOGRAPHIC RECORD OF THE OPERATION AND EXISTING CONDITION SHALL BE KEPT IN A THREE RING BINDER AT THE OWNER/CONTRACTOR TRAILER, IN FORM OF PICTURES AND INFORMATION.

    D. A FORM SHALL BE GENERATED BY THE CONTRACTOR TO RECORD THE OBSERVATIONS. BOTH PARTIES SHALL SIGN ON THE FORM.

    E. REPLACE ALL MATERIAL OR EQUIPMENT DAMAGED DURING THE COURSE OF WORK.

    F. AFTER THE CHANGES ARE MADE, THE EQUIPMENT SHALL BE INSPECTED AND RE-TESTED TO DEMONSTRATE THAT IT FUNCTIONS CORRECTLY.

    G. NO PORTION OF EXISTING CONDUCTORS SHALL BE SPLICED TO NEW CONDUCTORS FOR RE-USE WITHOUT SPECIFIC APPROVAL FROM THE OWNER/ENGINEER ON A CASE-BY-CASE BASIS.

MCC, CONTROL PANELS, PANELBOARDS

THESE NOTES APPLY TO CONTROL PANELS, MCC ETC WHICH HAS TO BE REFURBISHED, MODIFIED, DISCONNECTED & RECONNECTED OR REWORKED. SEE SECTION 16060:

THE CONTRACTOR SHALL NOT MAKE ANY MODIFICATION UNTIL THE FOLLOWING HAS BEEN DONE:

A. THE OWNER/CONTRACTOR SHALL WITNESS THE CONDITION OF THE EXISTING EQUIPMENT, THE CONTRACTOR SHALL NOTE DOWN ANY DEFECTS OR DEFICIENCY.

B. THE OWNER SHALL OPERATE THE EQUIPMENT TO DEMONSTRATE THE CURRENT CONDITIONS. THE CONTRACTOR SHALL NOTE DOWN ANY DEFECTS OR DEFICIENCIES.

C. A RECORD OF THE OPERATION AND EXISTING CONDITION SHALL BE KEPT IN A THREE RING BINDER AT THE OWNER/CONTRACTOR TRAILER, IN FORM OF PICTURES AND INFORMATION.

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NO	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

GENERAL ELECTRIC

ELECTRICAL
GENERAL NOTES

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GE-004

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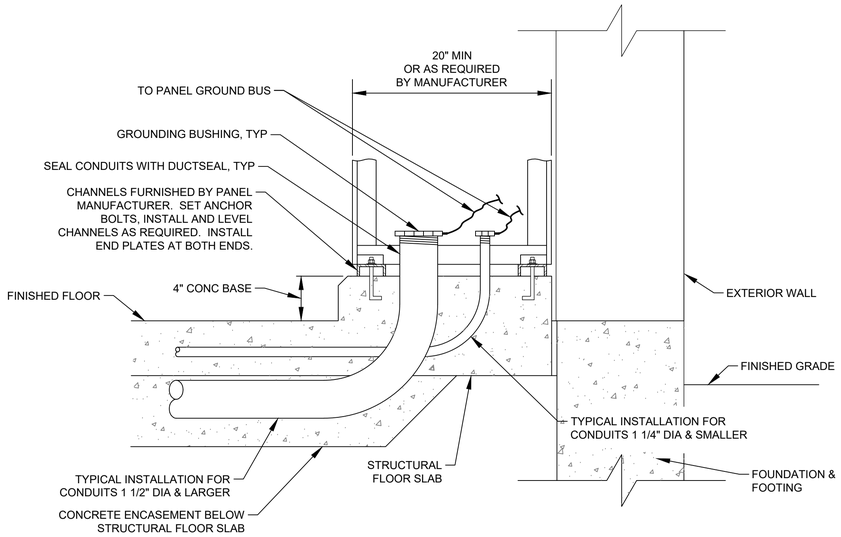
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SHEET NO. 24 OF 230

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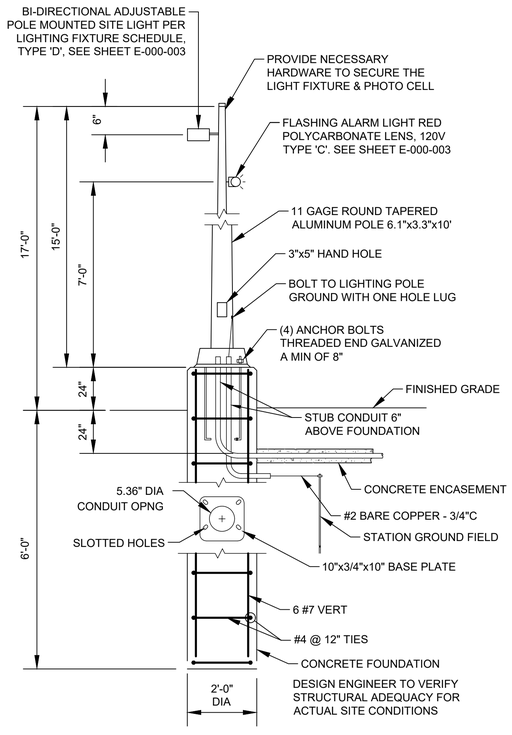
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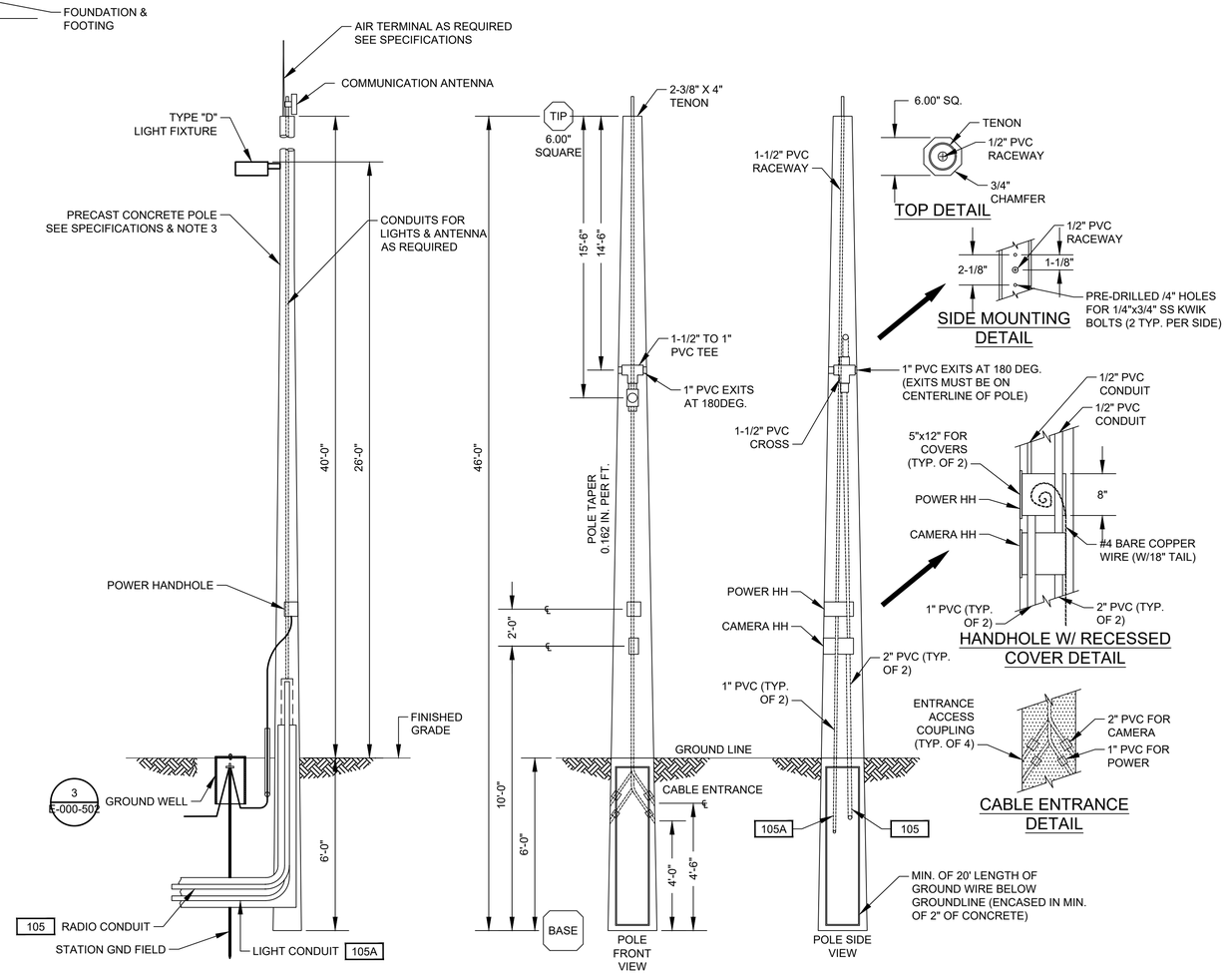
TYPICAL MCC & CONTROL PANEL INSTALLATION & CONDUIT ENTRY

DETAIL 14
NTS -



TYPICAL YARD LIGHT

DETAIL 13
NTS -



COMMUNICATION POLE MOUNTING DETAIL

DETAIL 15
NTS -

NOTES:

1. ON GROUND WIRE TERMINATION'S, ALL PAINTED OR COATED METAL SURFACES SHALL BE REMOVED AND CLEANED TO BARE METAL. TO OBTAIN A SOUND GROUND CONNECTION. ONCE INSTALLED APPLY PROTECTIVE COATING ON BARE METAL AREAS PER MANUFACTURER REQUIREMENTS.
2. PRECAST CONCRETE POLE TO MOUNT THE RADIO RECEIVER.
3. 1" CONDUIT TO EXTEND TO THE TOP OF POLE FOR ETHERNET CABLE FOR RADIO.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

GENERAL ELECTRIC

ELECTRICAL
YARD LIGHT/COMM.
POLE DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

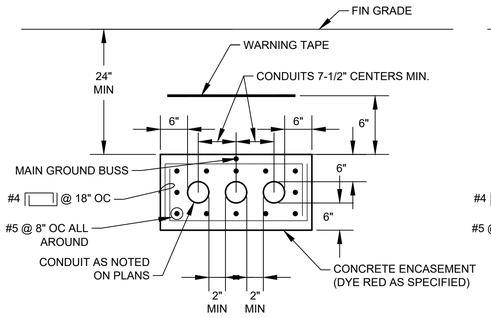
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GE-005
HORIZ: NONE
VERT: NONE
SHEET NO. 25 OF 230
DRAWING SCALE
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1	06/09/2025	PERMIT SET	HF

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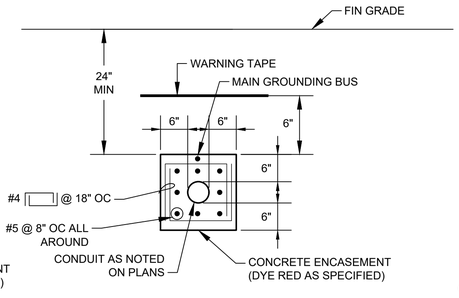
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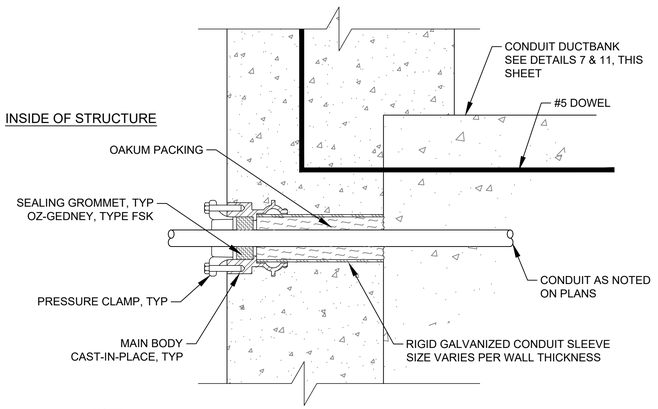
TYP MULTI-CONDUIT DUCTBANK SECTION

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

DETAIL 1 / - NTS



TYP SINGLE-CONDUIT DUCTBANK SECTION

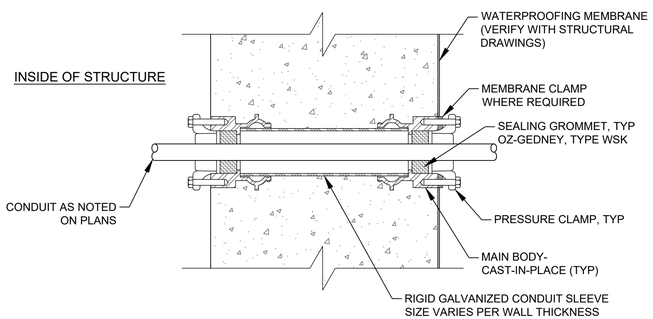


NOTE:

WALL SEAL SHOWN IS TYPICAL FOR EACH CONDUIT IN DUCTBANK.

SINGLE ENDED TYPE

FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS ENCASED IN CONCRETE

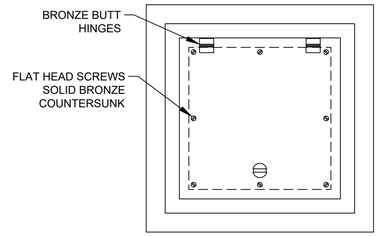


DOUBLE ENDED TYPE WITH MEMBRANE

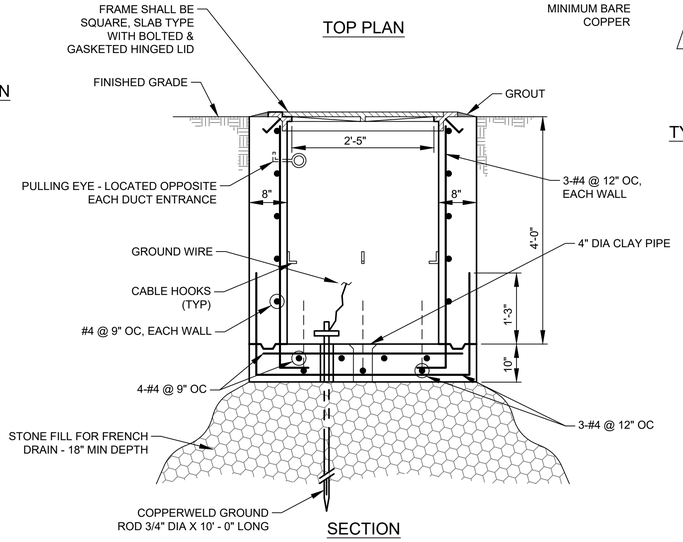
FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS ENCASED IN CONCRETE

TYPICAL CONDUIT SEALS

DETAIL 4 / - NTS



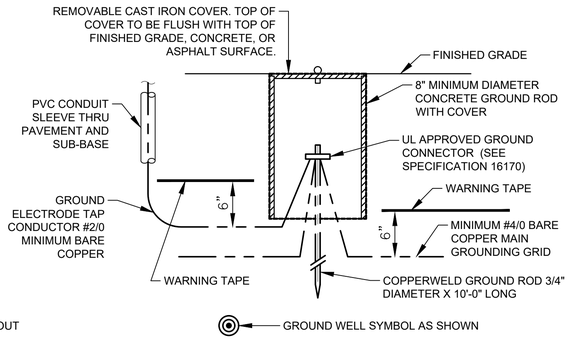
TOP PLAN



SECTION

TYPICAL ELECTRICAL HANDHOLE CONSTRUCTION

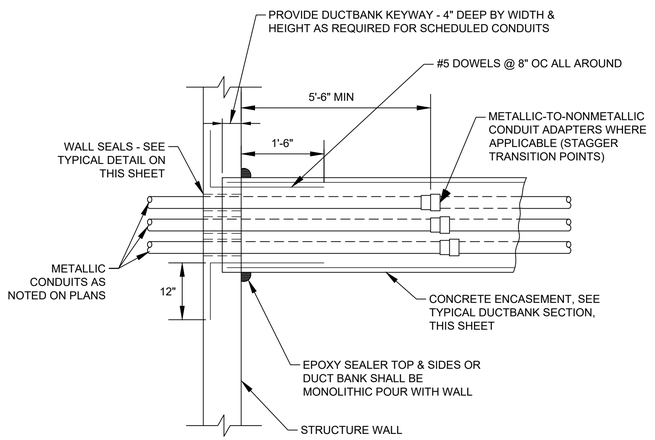
DETAIL 2 / - NTS



TYPICAL GROUND ROD AND WELL INSTALLATION

DETAIL 3 / - NTS

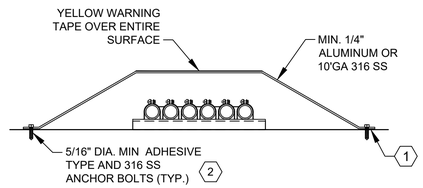
GROUND CONNECTOR SCHEDULE	
WIRE SIZE	BURNDY
#2 AWG	GAR 6426
#2/0 AWG	GAR 6426
#4/0 AWG	GAR 6429
500 kcmil	GAR 6434



PLAN

TYPICAL DUCTBANK ENTRANCE AT STRUCTURE WALL

DETAIL 5 / - NTS



CONDUIT COVER

DETAIL 6 / - NOT TO SCALE

NOTES BY SYMBOL "⟨#⟩":

1. PROVIDE 1/8" NEOPRENE GASKET WHERE ALUMINUM IS SELECTED. DO NOT ALLOW ALUMINUM TO COME INTO DIRECT CONTACT WITH CONCRETE.
2. PROVIDE THE CORRECT SIZE ANCHOR BOLTS BASED ON LOAD.

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1	06/09/2025	PERMIT SET	HF

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

GENERAL ELECTRIC

ELECTRICAL
TYPICAL DETAILS

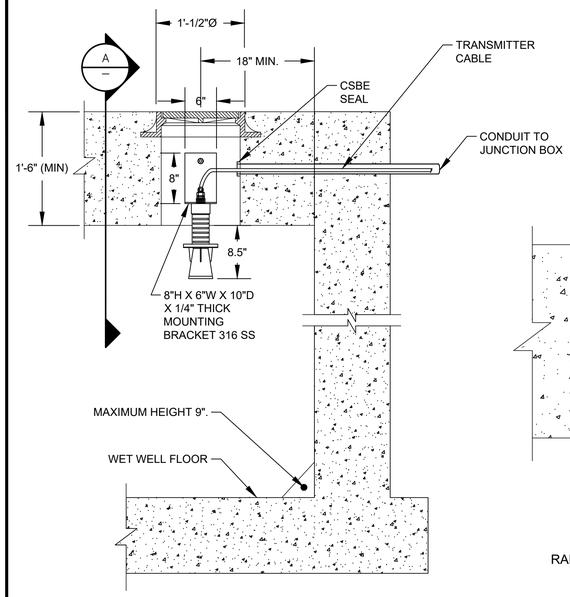
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

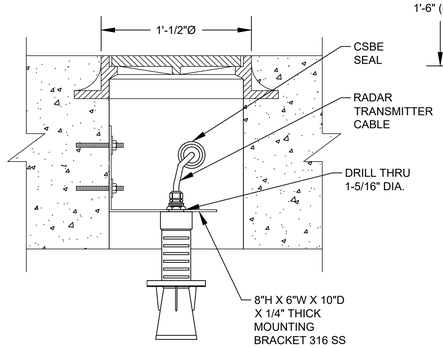
DRAWING NO. GE-006
HORIZ: NONE
VERT: NONE
SHEET NO. 26 OF 230
DRAWING SCALE
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FILE PATH: O:\W8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\GENERAL_GE-006.dwg



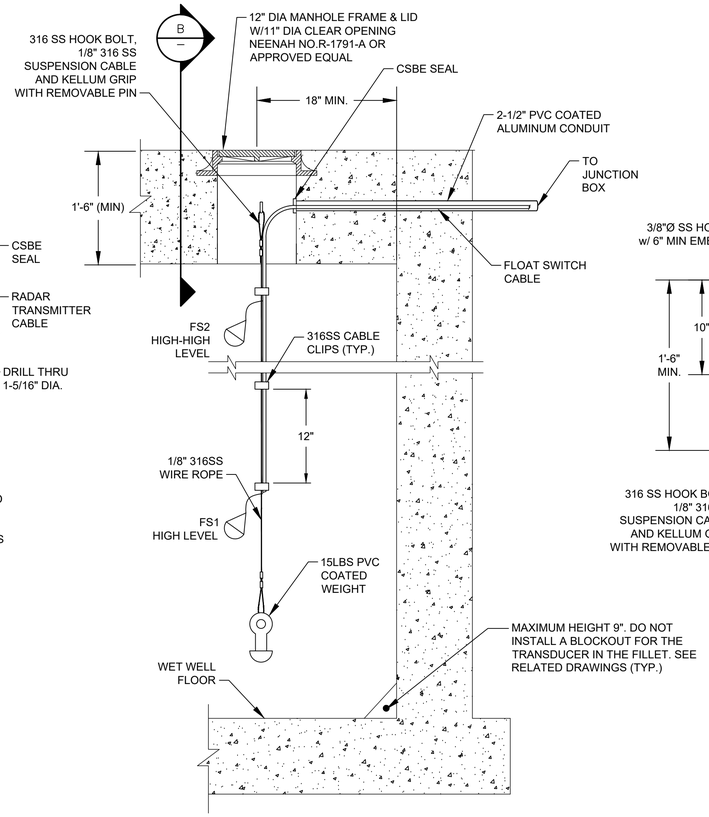
RADAR LEVEL TRANSMITTER MOUNTING
(TYP. LT-1, LT-2)

DETAIL 1
NTS
(SEE NOTE 1, 2, 4 & 5)



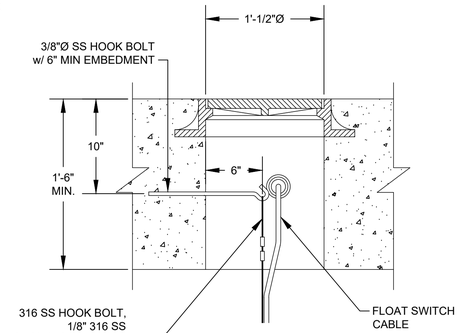
RADAR LEVEL TRANSMITTER MOUNTING
TYP. LT-1 & LT-2

SECTION 2
NTS
(SEE NOTE 1, 2, 4 & 5)



FLOAT SWITCH MOUNTING

DETAIL 3
NTS
(SEE NOTES 3, 4 & 5)

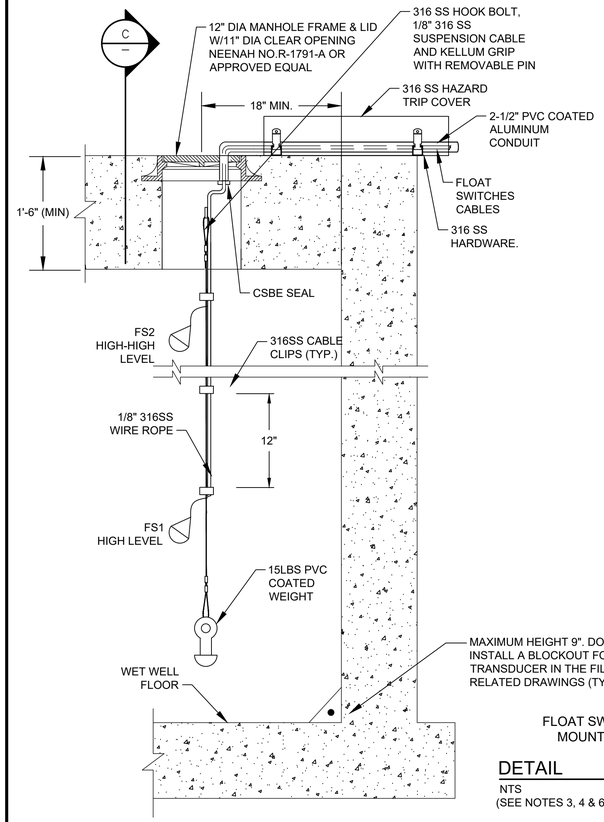


4
FLOAT SWITCH MOUNTING

SECTION 4
NTS
(SEE NOTES 3, 4 & 5)

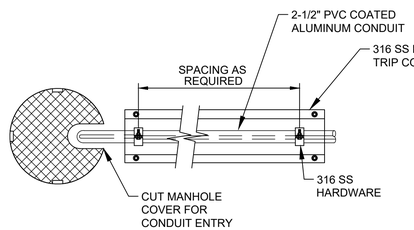
NOTES:

1. NEW RADAR LEVEL TRANSMITTERS FOR LT-1, LT-2.
2. NEW MANHOLES FOR RADAR LEVEL TRANSMITTERS LT-1, LT-2.
3. NEW MANHOLE FOR FLOAT SWITCHES.
4. PAINT MANHOLE LIDS AND HATCHES HUNTER GREEN.
5. NEW MANHOLE INSTALLATION.
6. RETROFIT MANHOLE INSTALLATION.
7. INSIDE WET WELL IS CLASSIFIED AS CLASS I, DIVISION 1. OUTSIDE WET WELL WITHIN 5 FEET OF WET WELL OPENINGS ARE CLASSIFIED AS CLASS I, DIVISION 2.



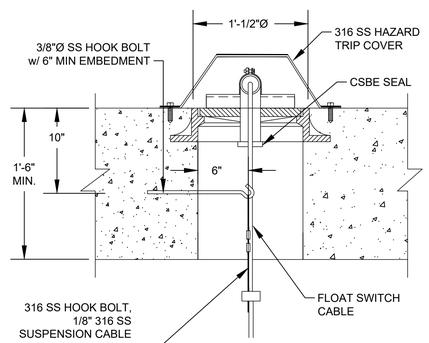
FLOAT SWITCH MOUNTING

DETAIL 5
NTS
(SEE NOTES 3, 4 & 6)



FLOAT SWITCH MOUNTING
TOP VIEW

DETAIL 6
NTS
(SEE NOTES 3, 4 & 6)



FLOAT SWITCH
MOUNTING

SECTION 7
NTS
(SEE NOTES 3, 4 & 6)

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

GENERAL ELECTRIC

ELECTRICAL
RADAR LEVEL TRANSMITTER
GAUGING SYSTEM INSTALLATION
& DETAILS-I

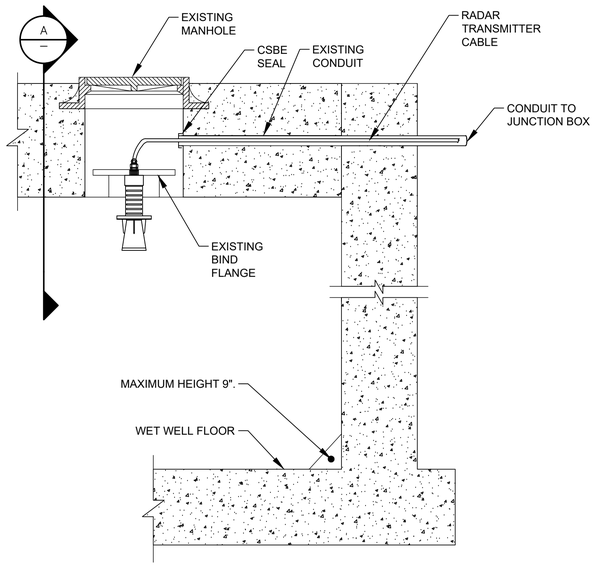
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GE-007
HORIZ: NONE
VERT: NONE
SHEET NO. 27 OF 230
DRAWING SCALE
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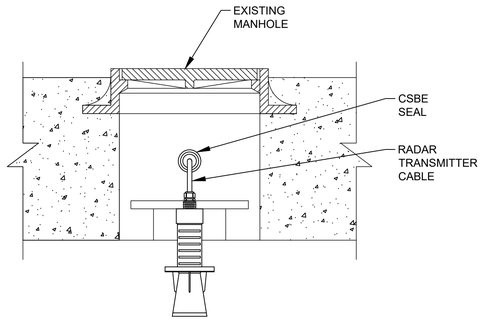
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RADAR LEVEL TRANSMITTER MOUNTING
(TYP. LT-1, LT-2)

DETAIL 8
NTS -

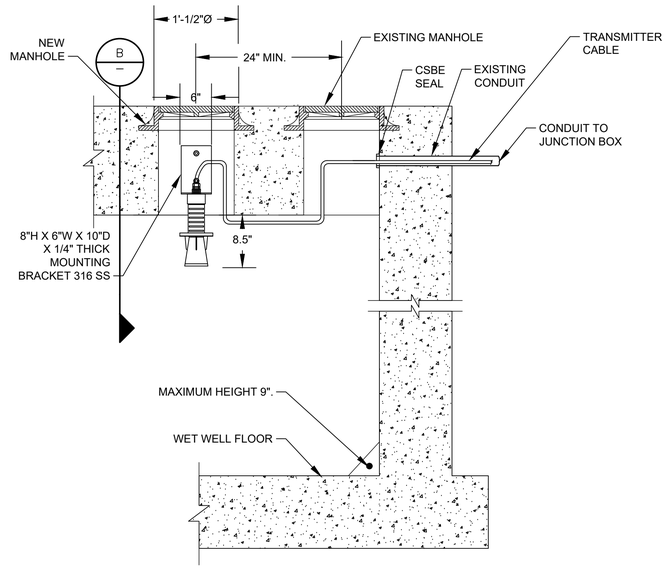
(SEE NOTES 1, 2, 4, 6 & 7)



RADAR LEVEL TRANSMITTER MOUNTING
TYP. LT-1 & LT-2

SECTION 9
NTS -

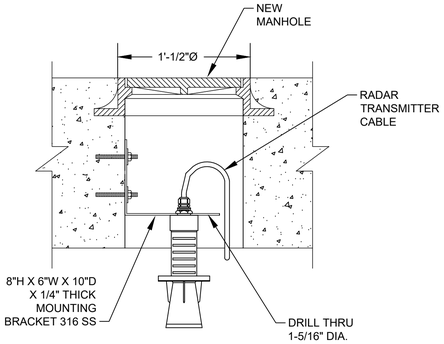
(SEE NOTES 1, 2, 4, 6 & 7)



RADAR LEVEL TRANSMITTER MOUNTING
(TYP. LT-1, LT-2)

DETAIL 10
NTS -

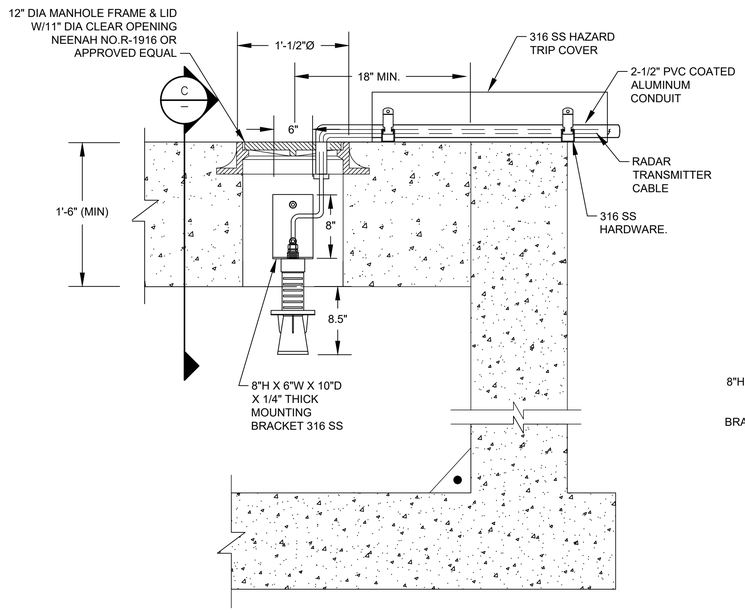
(SEE NOTES 1, 3, 4, 5, 6 & 8)



RADAR LEVEL TRANSMITTER MOUNTING
TYP. LT-1 & LT-2

SECTION 12
NTS -

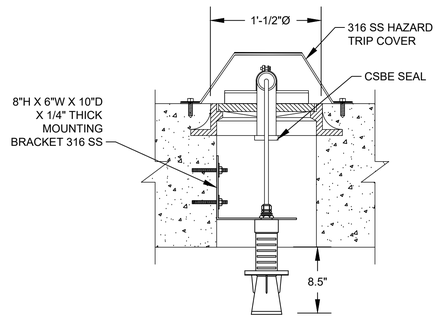
(SEE NOTES 1, 3, 4, 5, 6 & 8)



RADAR LEVEL TRANSMITTER MOUNTING
(TYP. LT-1, LT-2)

DETAIL 11
NTS -

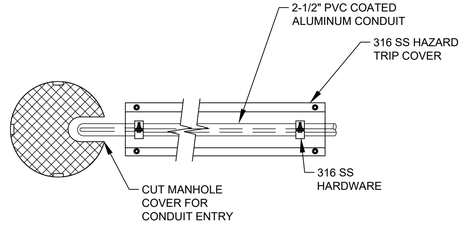
(SEE NOTES 1, 4, 5 & 6)



RADAR LEVEL TRANSMITTER MOUNTING
TYP. LT-1 & LT-2

SECTION 13
NTS -

(SEE NOTES 1, 4, 5 & 6)



FLOAT SWITCH MOUNTING
TOP VIEW

DETAIL 14
NTS -

(SEE NOTES 1, 4, 5 & 6)

NOTES:

1. NEW RADAR LEVEL TRANSMITTERS FOR LT-1, LT-2.
2. EXISTING AIRCELL MANHOLES FOR RADAR LEVEL TRANSMITTERS LT-1, LT-2.
3. EXISTING SUBMERSIBLE TRANSDUCER MANHOLES FOR RADAR LEVEL TRANSMITTERS LT-1, LT-2.
4. PAINT MANHOLE LIDS AND HATCHES HUNTER GREEN.
5. NEW MANHOLE INSTALLATION.
6. RETROFIT MANHOLE INSTALLATION.
7. DEMOLISH ALL EQUIPMENT ASSOCIATED WITH AIRCELL INSIDE THE WETWELL.
8. DEMOLISH ALL EQUIPMENT ASSOCIATED WITH SUBMERSIBLE LEVEL TRANSDUCER INSIDE THE WETWELL.
9. INSIDE WET WELL IS CLASSIFIED AS CLASS I, DIVISION 1. OUTSIDE WET WELL WITHIN 5 FEET OF WET WELL OPENINGS ARE CLASSIFIED AS CLASS I, DIVISION 2.

NO	DATE	REVISION	APP.
1	06/09/2025	PERMIT SET	HF

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

GENERAL ELECTRIC

ELECTRICAL
RADAR LEVEL TRANSMITTER
GAUGING SYSTEM INSTALLATION
& DETAILS-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GE-008

HORIZ: NONE
VERT: NONE

SHEET NO. 28 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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PRIMARY FLOW ELEMENTS

	MAGNETIC FLOW METER
	ULTRASONIC DOPPLER FLOW METER
	ULTRASONIC TIME TRANSIT FLOW METER
	VORTEX FLOW METER
	VENTURI TUBE
	TURBINE OR PROPELLER TYPE METER
	ROTAMETER
	PITOT TUBE
	WEIR FLOW METER
	PARSHALL FLUME OR TRAPEZOIDAL FLUME
	ORIFICE PLATE
	THERMAL MASS FLOWMETER

PRIMARY LEVEL ELEMENTS

	ULTRASONIC LEVEL TRANSDUCER
	RADAR LEVEL TRANSDUCER
	PRIMARY ELEMENT PRESSURE PROBE LEVEL TRANSMITTER
	BUBBLER LEVEL TUBE ELEMENT
	CONDUCTIVE LEVEL PROBE
	FLOAT SWITCH

VALVES

	VALVE - OTHER IN-LINE TYPE NOT OTHERWISE IDENTIFIED
	THREE-WAY VALVE
	BALL VALVE
	GLOBE VALVE
	PINCH VALVE
	GATE VALVE
	NEEDLE VALVE
	DIAPHRAGM VALVE
	BUTTERFLY VALVE
	CHECK VALVE WITH FLOW DIRECTION
	PLUG VALVE
	PRESSURE-REDUCING REGULATOR INTERNAL PRESSURE TAP
	BACK PRESSURE REGULATOR INTERNAL PRESSURE TAP
	PRESSURE-REDUCING REGULATOR EXTERNAL PRESSURE TAP
	BACK PRESSURE REGULATOR EXTERNAL PRESSURE TAP

VALVES

S	SOLENOID ACTUATED VALVE
	"X": P AIR CYLINDER; O OIL CYLINDER; H HYDRAULIC CYLINDER; E ELECTRIC MOTOR; S SOLENOID VALVE
OR NO SYMBOL	MANUAL VALVE

MISC PROCESS SYMBOLS

	ANNULAR TYPE SEAL
	CHEMICAL INJECTION POINT
	STRAINER
	DRAIN
	NORMAL OPERATING LEVEL
UV	UV CHAMBER
	FLOW STRAIGHTENER
	LOAD CELL
	SPRAY NOZZLE
	BLIND FLANGE
	FLANGE
	DIAPHRAGM SEAL
	PRESSURE RELIEF (OUT)
	VACUUM RELIEF (IN)

GATES

	SLUICE/SLIDE GATE
	FLOW CONTROL GATE

MOTORS

M	VARIABLE SPEED MOTOR
M	CONSTANT SPEED MOTOR

PUMPS, BLOWERS AND MISC EQUIPMENT

	CENTRIFUGAL BLOWER
	CENTRIFUGAL PUMP
	DIAPHRAGM PUMP AND MOTOR
	PROGRESSIVE CAVITY PUMP
	SUBMERSIBLE PUMP
	POSITIVE DISPLACEMENT BLOWER

PUMPS, BLOWERS AND MISC EQUIPMENT

	MIXER/FLOCCULATOR/AERATOR
	VERTICAL PUMP-1 USED WHEN DISCHARGE LINE IS IN WETWELL
	VERTICAL PUMP-2 USED WHEN DISCHARGE LINE IS EXPOSED.
	VERTICAL PUMP SHAFT USED WHEN INTAKE OF PUMP IS ENCASED.
	SUBMERSIBLE MIXER
	COMPRESSOR
	HEAT EXCHANGER
	FEED PUMP
	GRINDER/MACERATOR
	METERING PUMP
	PLUNGER PUMP
	PERISTALTIC METERING PUMP
	CENTRIFUGE
	PULSATION DAMPENER
	TURBO BLOWER

PUMPS, BLOWERS AND MISC EQUIPMENT

	ROTARY SCREEN

CONTROL ENCLOSURE, INSTRUMENTS AND SCADA

XXX / P AAA YY / BBB CCC D / ZZZ	DIGITAL/ANALOG INSTRUMENT AAA ISA TAG (REFER TO TABLE) BBB LOOP NUMBER CCC LOOP NUMBER SUB D DIVISION NUMBER P POWER REQUIREMENT XXX DESCRIPTION (USED ON PANEL INSTRUMENTS) YY CHEMICAL ZZZ LOCATION -LOCATED IN THE FIELD -NOT INSIDE OF PANEL -VISIBLE AT FIELD LOCATION -NORMALLY OPERATOR ACCESSIBLE
XXX / P AAA YY / BBB CCC D / ZZZ	DIGITAL/ANALOG INSTRUMENT -LOCATED ON PANEL -VISIBLE TO OPERATOR -NORMALLY OPERATOR ACCESSIBLE
XXX / P AAA YY / BBB CCC D / ZZZ	DIGITAL/ANALOG INSTRUMENT -LOCATED INSIDE PANEL -NOT VISIBLE TO OPERATOR -NORMALLY NOT ACCESSIBLE
XXX / AAA / BBB CCC	DISPLAY (INDICATION/CONTROLLER) AAA ISA TAG (REFER TO TABLE) BBB LOOP NUMBER CCC LOOP NUMBER SUB XXX DESCRIPTION DISPLAY (INDICATION/CONTROLLER) -LOCATED IN THE FIELD -NOT INSIDE OF PANEL -VISIBLE AT FIELD LOCATION -NORMALLY OPERATOR ACCESSIBLE
XXX / AAA / BBB CCC	DISPLAY (INDICATION/CONTROLLER) -LOCATED ON PANEL -VISIBLE TO OPERATOR -NORMALLY OPERATOR ACCESSIBLE
XXX / AAA / BBB CCC	DISPLAY (INDICATION/CONTROLLER) -LOCATED INSIDE PANEL -NOT VISIBLE TO OPERATOR -NORMALLY NOT ACCESSIBLE
	INTERLOCKING RELAY

CONTROL ENCLOSURE AND SCADA

	DIGITAL INPUT
	DIGITAL OUTPUT
	ANALOG INPUT
	ANALOG OUTPUT
	SURGE SUPPRESSOR
	OPTO ISOLATOR
	SIGNAL CONVERTER/ ISOLATOR */* - (INPUT/OUTPUT) * DEFINED AS FOLLOWS: E - VOLTAGE I - CURRENT P - PNEUMATIC PD - PULSE DURATION H - HYDRAULIC O - ELECTROMAGNETIC, SONIC R - RESISTANCE (ELECTRIC)

CONTROL ENCLOSURE, INSTRUMENTS AND SCADA

PLC/RTU LOGIC

FUNCTION SYMBOLS AND ABBREVIATIONS

K	PROPORTIONAL GAIN OR ATTENUATE (INPUT:OUTPUT)
- K	REVERSE PROPORTIONAL GAIN OR ATTENUATE (INPUT:OUTPUT)
Σ	SUMMING
Σ/n	AVERAGING
Δ	SUBTRACTING
√	EXTRACT SQUARE ROOT
÷	DIVIDE
X	MULTIPLY
S	INTEGRATE
+	BIAS POSITIVE
-	BIAS NEGATIVE
F(x)	NONLINEAR OR UNSPECIFIED FUNCTION
>	HIGH SELECT
<	LOW SELECT
⊦	HIGH LIMIT
|	LOW LIMIT

F(X)

INSTRUMENT (COMMON HOUSING)	INSTRUMENT (SEPERATOR HOUSING)	INSTRUMENT (PART OF MAJOR EQUIPMENT)

GENERAL NOTES:

1. THIS IS A GENERAL LEGEND SHEET, SOME SYMBOLS AND ABBREVIATIONS MAY NOT APPLY TO THIS SPECIFIC PROJECT.
2. THIS LEGEND APPLIES TO INSTRUMENTATION DIAGRAMS ONLY AND MAY DIFFER FROM LEGENDS FOR OTHER SHEETS.
3. IN GENERAL THIS LEGEND SHEET AND THE INSTRUMENTATION DIAGRAMS ARE BASED ON INTERNATIONAL SOCIETY OF AUTOMATION, STANDARDS FOR PRACTICES FOR INSTRUMENTATION, STANDARD S5.1 SOME MODIFICATIONS, ADDITIONS AND ALTERATIONS HAVE BEEN MADE AS REQUIRED TO ACCOMMODATE THE PROJECT REQUIREMENTS.
4. SOME PROCESS ITEMS, SUCH AS EQUIPMENT ISOLATION VALVES, BYPASS LINES, ETC., WHICH ARE NOT CRITICAL FOR AN UNDERSTANDING OF THE INSTRUMENTATION AND CONTROL FUNCTIONS ARE NOT SHOWN ON THE INSTRUMENTATION SHEETS.
5. SEE ELECTRICAL SHEETS AND SPECIFICATIONS FOR ADDITIONAL CONTROL AND INTERLOCK REQUIREMENTS FOR EQUIPMENT NOT SHOWN OR NOT PROVIDED BY THE INSTRUMENTATION SUPPLIER.
6. IN THE EVENT OF DISCREPANCY BETWEEN THE PROCESS & INSTRUMENTATION DIAGRAMS AND THE LOOP DIAGRAMS, THE INFORMATION FROM THE LOOP DIAGRAMS SHALL BE USED.

HAND SWITCH ABBREVIATIONS:

HOA	HAND/OFF/AUTO
HOR	HAND/OFF/REMOTE
LOC	LOCAL/OFF/COMPUTER
LOR	LOCAL/OFF/REMOTE
LOS	LOCKOUT STOP
OSC	OPEN/STOP/CLOSE
RSL	RAISE/STOP/LOWER
L/C	LOCAL/COMPUTER
L/R	LOCAL/REMOTE
O/C	OPEN/CLOSE
S/S	START/STOP
A/M	AUTO/MANUAL
H/C	HAND/COMPUTER
PB	PUSHBUTTON

GENERAL NOTE

THIS IS A STANDARD LEGEND. SOME SYMBOLS MAY NOT APPEAR ON THE DRAWINGS.

NO	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

GENERAL INSTRUMENTATION

INSTRUMENTATION
LEGENDS & SYMBOLS-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GI-001

HORIZ: NONE
VERT: NONE

SHEET NO. 29 OF 230

DRAWING SCALE

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LINE SYMBOLS

	MAJOR PROCESS LINE
	MINOR PROCESS LINE
	FUTURE PROCESS LINE
	EXISTING PROCESS LINE
	HARDWIRED SIGNAL
	SOFT LINK
— L — L —	HYDRAULIC LINK
— // — // —	PNEUMATIC LINK
— x — x —	CAPILLARY TUBE OR FILLED SYSTEM SIGNAL
	ELECTROMAGNET OR SONIC SIGNAL (GUIDED)
DESCRIPTION X SHEET# Y	(USED WHEN REFERRING TO A SHEET IN THE DESIGN SET) DESCRIPTION - WHERE FLOW IS GOING SHEET# - WHAT SHEET PROCESS CONTINUES ON X - USED WHEN TWO OR MORE ARROWS ARE REFERING TO THE SAME SHEET. Y - USED WHEN TWO OR MORE ARROWS ARE REFERRING TO THE SAME SHEET.
DESCRIPTION	(USED WHEN REFERRING TO A SHEET NOT IN THE DESIGN SET) DESCRIPTION - WHERE FLOW IS GOING
CAT5e — CAT5e	CAT-5e ETHERNET CABLE
CAT6 — CAT6	CAT-6 ETHERNET CABLE
- -	MODBUS PLUS CABLE
--	RS-485 CABLE
RS-232 — RS-232	RS-232 CABLE
POE — POE	POWER OVER ETHERNET CABLE
T1 — T1	T1 FIBER CONNECTION
FO — FO	NON-SPECIFIC FIBER OPTIC CABLE
100 — 100	FIBER 100BASE-FX
1000 — 1000	FIBER 1000BASE-FX
	SIGNAL CROSSING
	PROCESS LINE CROSSING
	PROCESS LINE/ HARDWIRE SIGNAL CROSSING

EQUIPMENT/LOOP TAGGING

X	EQUIPMENT TAG USED TO IDENTIFY NON-INSTRUMENT EQUIPMENT
X	LOOP TAG USED TO TIE THE PROCESS FLOW DIAGRAM TO A LOOP DIAGRAM

STANDARD VALVE AND PIPING USAGE

PDIT 1	BLOCK/BLEED VALVE ARRANGEMENT
PI 1	INSTRUMENTS WITH VALVE ONLY
PI 1	INSTRUMENTS WITH DIAPHRAGM SEAL
PI 1	INSTRUMENTS WITH ANNULAR SEAL

PANEL DETAIL SYMBOLS

RUN	INDICATING LIGHT -R RED (ACTIVE EQUIPMENT) -G GREEN (EQUIPMENT OFF) -W WHITE (POWER) -B BLUE (CONDITION IE BACKWASH IN PROGRESS) -A AMBER (ALARM CONDITION)
H/O/A	SWITCH -L/R (LOCAL - REMOTE) -L/O/A (LOCAL - OFF - AUTO) -L/O/R (LOCAL - OFF - REMOTE) -H/O/A (HAND - OFF - AUTO) -H/O/R (HAND - OFF - REMOTE)
START	PUSHBUTTON
START	PUSHBUTTON
	HORN
	BEACON
OIT	OPERATOR INTERFACE TERMINAL

SECURITY SYSTEM SYMBOLS

CCTV	CLOSED CIRCUIT TELEVISION CAMERA
PTZ	PAN, TILT, ZOOM CAMERA

GENERAL ABBREVIATIONS

AI	ANALOG INPUT
AL	ALARM PILOT LIGHT
AO	ANALOG OUTPUT
AS	AIR SUPPLY
ASP	APPLICATION SERVICE PROVIDER
BFV	BUTTERFLY VALVE
CCTV	CLOSED CIRCUIT TELEVISION
CH4	METHANE
CL2	CHLORINE
COND	CONDUCTIVITY
COMP	COMPUTER
CP	CONTROL PANEL
CPU	CENTRAL PROCESSING UNIT
CRC	CONTROL ROOM CONSOLE
CTU	CENTRAL TELEMETRY UNIT
DCU	DISTRIBUTED CONTROL UNIT
DI	DIGITAL OR DISCRETE INPUT
DO	DISSOLVED OXYGEN OR DIGITAL OUTPUT
DPU	DISTRIBUTED PROCESSING UNIT
EPP	ETHERNET PATCH PANEL
ES	EMERGENCY STOP
ESW	ETHERNET SWITCH
ETM	ELAPSED TIME METER
FC	FAIL CLOSED
FCP	FIELD CONTROL PANEL
FCS	FILTER CONTROL STATION
FCV	FLOW CONTROL VALVE
FLP	FAIL LAST POSITION
FO	FAIL OPEN
FOPP	FIBER OPTIC PATCH PANEL
FPR	FEEDER PROTECTION RELAY
H2S	HYDROGEN SULFIDE
HMI	HUMAN MACHINE INTERFACE
JB	JUNCTION BOX
IO	INPUT/OUTPUT
IR	INFARED
LAS	LIQUID AMMONIA SULFATE
LCP	LOCAL CONTROL PANEL
LCS	LOCAL CONTROL STATION
LT	LEVEL TRANSMITTER
LPU	LOCAL PROCESSING UNIT
LTS	LOCAL TERMINAL SYSTEM
MC	MOTOR CONTROLLER
NAOCL	SODIUM HYPOCHLORIDE
NC	NORMALLY CLOSED
NH3	AMMONIA
NIM	NETWORK INTERFACE MODULE
NO	NORMALLY OPEN
MCC	MOTOR CONTROL CENTER
MM	MULTI MODE FIBER OPTIC CABLE
MPR	MOTOR PROTECTION RELAY
OIT	OPERATIONS INTERFACE TERMINAL
OL	OVERLOAD
OWS	OPERATOR WORKSTATION
PB	PUSH BUTTON
PCSI	PROCESS CONTROL SYSTEM INTEGRATOR
pH	HYDROGEN ION
PLC	PROGRAMMABLE LOGIC CONTROLLER
PMCS	PROCESS MONITORING CONTROL SYSTEM
POLY	POLYMER
PQM	POWER QUALITY METER
PS	POWER SUPPLY
PSU	POWER SUPPLY UNIT
PV	PINCH VALVE
RBC	REMOTE BASE CONTROLLER
RIO	REMOTE INPUT OUTPUT
RTU	REMOTE TERMINAL UNIT
SCADA	SUPERVISORY CONTROL AND DATA AQUISITION
SM	SINGLE MODE FIBER OPTIC CABLE
SO2	SULFUR DIOXIDE
SOL	SOLENOID
SPD	SURGE PROTECTION DEVICE
UPS	UNINTERRUPTIBLE POWER SUPPLY
TC	TERMINATION CABINET
TURB	TURBIDITY
VIB	VIBRATION
VFD	VARIABLE FREQUENCY DRIVE
VLV	VALVE

MEANINGS OF IDENTIFICATION LETTERS

THIS TABLE APPLIES ONLY TO THE FUNCTIONAL IDENTIFICATION OF INSTRUMENTS.

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS/ANALYTICAL		ALARM		
B	BURNER, COMBUSTION			CLOSE, STOP, DECREASE (1)	
C	CONDUCTIVITY			CONTROL	
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL		OPEN START, INCREASE (1)	
E	VOLTAGE (EMF)		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			FAIL (1)
G	GAUGING (DIMENSIONAL)		GLASS VIEWING DEVICE		
H	HAND				HIGH OR OPEN
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME OR TIME SCHEDULE	TIME RATE OR CHANGE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW OR CLOSED
M	MOISTURE, HUMIDITY, MOTOR, MOTION	MOMENTARY		MOTOR (1)	MIDDLE OR INTERMEDIATE
N	USERS CHOICE		USER'S CHOICE		ON OR OPERATE (1)
O	USER'S CHOICE		ORIFICE (RESTRICTION)		OVERLOAD (1)
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)	PUMP (1)	
Q	QUANTITY (2)	INTEGRATE OR TOTALIZE			
R	RADIATION		RECORD		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE (2)		MULTIFUNCTION (2)	MULTIFUNCTION (2)	MULTIFUNCTION (2)
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER OR LOUVER	
W	WEIGHT OR FORCE		WELL		UNCLASSIFIED (2)
X	UNCLASSIFIED (2)	X AXIS	UNCLASSIFIED (2)	UNCLASSIFIED (2)	UNCLASSIFIED (2)
Y	EVENT, STATE, PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

COMMON HMI/INSTRUMENT ISA TAGGING

ABBREVIATION	MEANING
AIT	ANALYTICAL INDICATING TRANSMITTER
AE	ANALYTICAL ELEMENT
AI	CHEMICAL RESIDUAL/INDICATION
CT	CYCLE TIMER
FIT	FLOW INDICATING TRANSMITTER
FE	FLOW ELEMENT
FI	FLOW INDICATION
FS	FLOAT SWITCH
HS	HAND SWITCH
JAL	POWER ALARM LOW
II	CURRENT INDICATION
LIT	LEVEL INDICATING TRANSMITTER
LE	LEVEL ELEMENT
LI	LEVEL INDICATION
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
LAL	LEVEL ALARM LOW
LAH	LEVEL ALARM HIGH
PIT	PRESSURE INDICATING TRANSMITTER
PE	PRESSURE ELEMENT
PI	PRESSURE INDICATION
PPU	PERPETUAL POWER UNIT
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
SI	SPEED INDICATION
SIC	SPEED INDICATING CONTROLLER
TIT	TEMPERATURE INDICATING TRANSMITTER
TE	TEMPERATURE ELEMENT
TI	TEMPERATURE INDICATION
TSH	TEMPERATURE SWITCH HIGH
WIT	WEIGHT INDICATING TRANSMITTER
WE	WEIGHT ELEMENT
WI	WEIGHT INDICATION
XA	FAULT ANNUNCIATION
YL	MISC. EVENT LIGHT (IN REMOTE)

COMMON HMI/INSTRUMENT ISA TAGGING

ABBREVIATION	MEANING
ZCH	OPEN GATE/VALVE
ZCL	CLOSE GATE/VALVE
ZSH	POSITION SWITCH HIGH
ZSL	POSITION SWITCH LOW
ZLH	VALVE/GATE OPEN
ZLL	VALVE/GATE CLOSED
ZIT	POSITION INDICATING TRANSMITTER

GENERAL NOTE

THIS IS A STANDARD LEGEND. SOME SYMBOLS MAY NOT APPEAR ON THE DRAWINGS.

NO	DATE	REVISION	APP.
1	06/09/2025	PERMIT SET	HF

PLOTTED: 12/16/2025 10:14 AM PEN TABLE: Coh_ctb_230809.ctb

GAI
Gupta & Associates, Inc.
CONSULTING ENGINEERING
Registration No. F-2593
302 Dennis St.,
Houston, Texas 77006
Tel: 713-636-2936
Fax: 713-636-2987
email: hforouzan@gaiconsulting.com

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

GENERAL INSTRUMENTATION

INSTRUMENTATION
LEGENDS & SYMBOLS-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GI-002

HORIZ: NONE
VERT: NONE

SHEET NO. 30 OF 230

DRAWING SCALE

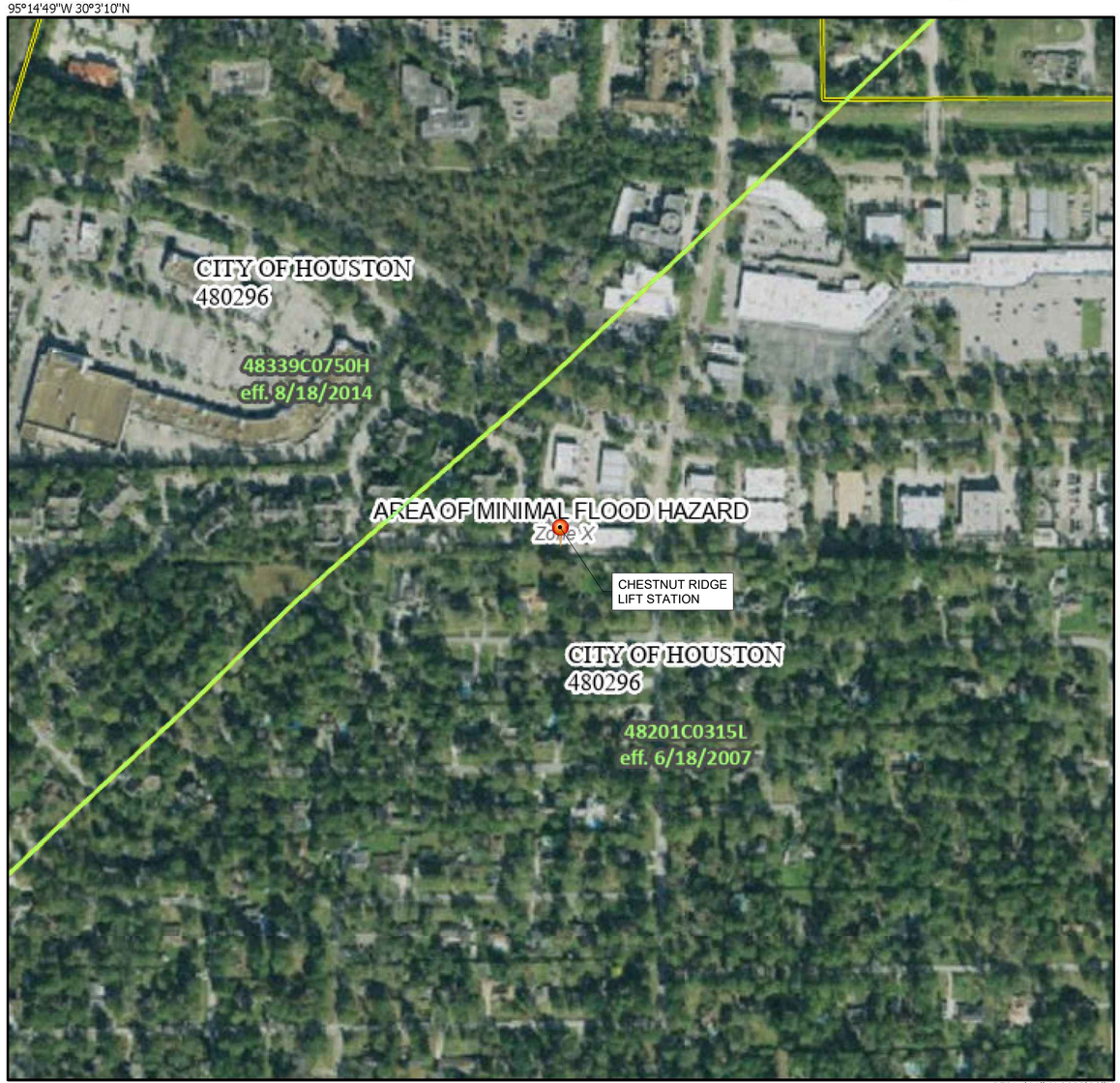
FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\GENERAL_GI-002.dwg

National Flood Hazard Layer FIRMette

FEMA

95°14'49"W 30°3'10"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

95°14'11"W 30°2'39"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/4/2025 at 4:08 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/22/2026 5:18 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Crag Alexander Perry
Engineer 116345
Registration Number
JANUARY 23, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

FIRMETTE

CHESTNUT RIDGE LIFT STATION
NATIONAL FLOOD HAZARD
LAYER FIRMETTE MAP

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. F-101

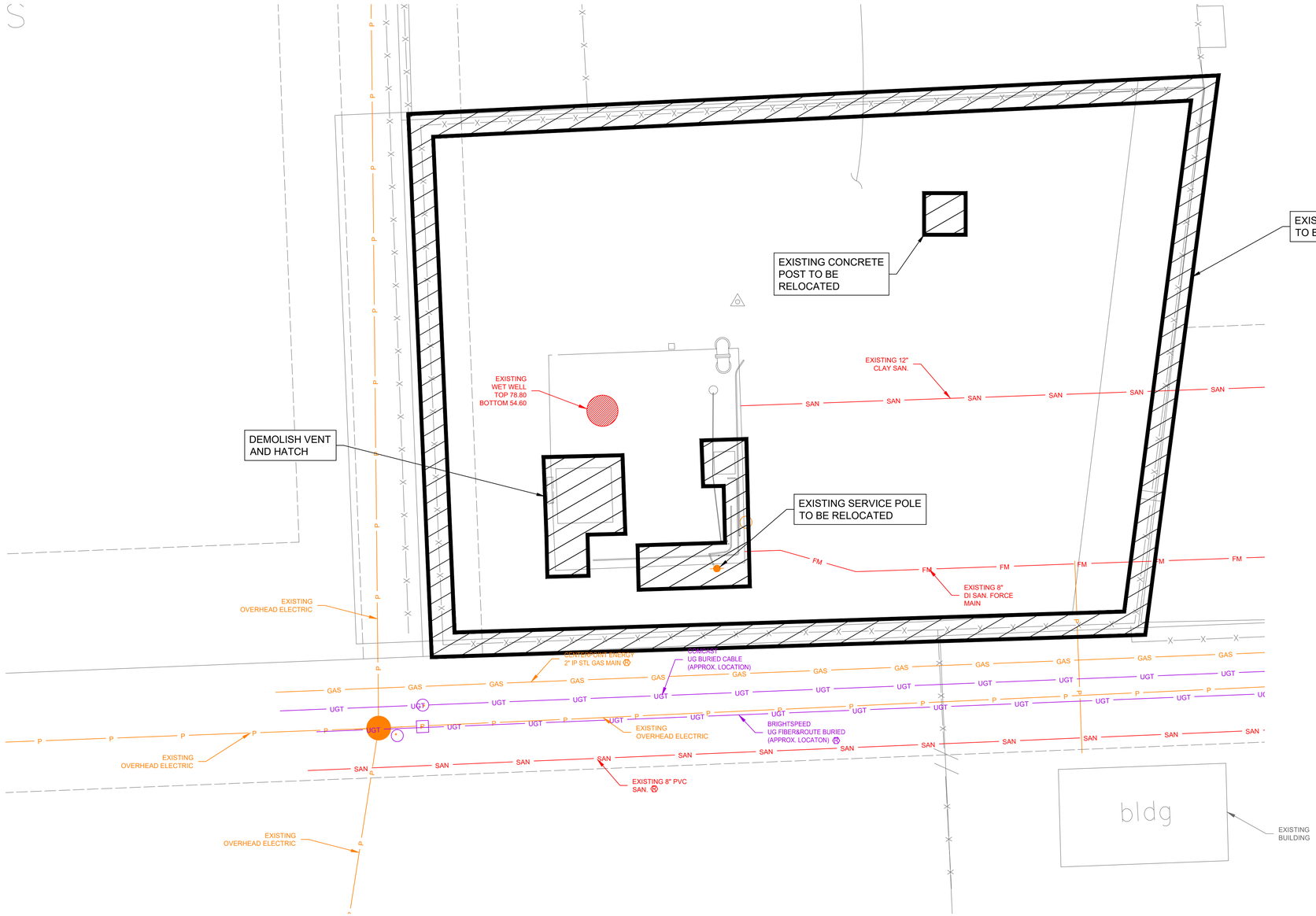
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VERT: NONE

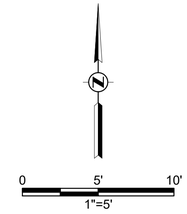
SHEET NO. 31 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\019 F-101.dwg





NO.	DATE	REVISION	APP.

PEN TABLE: -----

PLOTTED: 1/22/2026 5:26 PM

LEGEND:

LIMITS OF LIFT STATION SITE DEMOLITION

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
3. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.
4. CONTRACTOR SHALL GRIND DOWN EXPOSED STEEL AFTER SAW CUTTING CONCRETE WALL AND COAT STEEL WITH EPOXY COATING OR SUITABLE COATING PRIOR TO APPLYING WET WELL COATING.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 070265 IS AN ALUMINUM DISK STAMPED G 103-38 BM 01 LOCATED ON SOUTH SIDEWALK ON KINGWOOD DRIVE EASTBOUND BRIDGE APPROXIMATELY 1.5 MILES EAST FROM THE INTERSECTION OF US 59 IN KEYMAP 336C IN THE SAN JACINTO RIVER WATERSHED.

ELEV 74.46 FEET NAVD 1988, 2001 ADJUSTMENT

HORIZONTAL DATUM NOTE:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

EXISTING UTILITY NOTE:

EXISTING UNDERGROUND UTILITY INFORMATION (TYPE, SIZE & OWNERSHIP) ARE SHOWN APPROXIMATELY BASED ON THE AVAILABLE RECORD DRAWINGS AND FIELD VERIFICATION (WHERE FEASIBLE) WITHOUT PROBING AND EXCAVATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATION SHOWN ON THE DRAWING. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING OR BORE AND JACKING IN THE VICINITY OF UNDERGROUND UTILITIES. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CALL UTILITY COORDINATING COMMITTEE AT 713-223-4567, AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THE STREET RIGHT-OF-WAY.

DEMOLITION NOTE:

WHEN MEASURED FROM THE PROPERTY LINE OF ANY NEARBY RESIDENTIAL PROPERTY. ANY SOUND PRODUCED BY THE ERECTION, EXCAVATION, CONSTRUCTION, OR DEMOLITION OF ANY STRUCTURE, INCLUDING THE USE OF TOOLS OR EQUIPMENT (CONDUCTED BETWEEN THE HOURS OF 7 A.M. AND 8 P.M.), SHALL NOT EXCEED 85 DB(A).

RIGHT OF REFUSAL NOTE:

"SALVAGE MATERIAL AND EQUIPMENT LISTED HEREINAFTER SHALL BECOME THE PROPERTY OF THE CITY OF HOUSTON UNLESS OTHERWISE DESIGNATED IN WRITING. THE CITY OF HOUSTON SHALL HAVE FIRST REFUSAL RIGHTS TO RETAIN ALL ITEMS SHOWN TO BE DEMOLISHED AND/OR REMOVED IN THE DRAWINGS. PRIOR TO INITIATING DEMOLITION, THE CONTRACTOR AND THE CITY OF HOUSTON PROJECT MANAGER SHALL MAKE A JOINT INSPECTION TO IDENTIFY ALL ITEMS TO BE RETAINED BY THE CITY OF HOUSTON. THE CONTRACTOR SHALL RELOCATE AND STORE ITEMS, TO BE RETAINED BY THE CITY OF HOUSTON, WHERE DIRECTED ONSITE OR OFFSITE."

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Craig Alexander Perry
116345
JANUARY 23, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

CHESTNUT RIDGE LIFT STATION
DEMOLITION
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

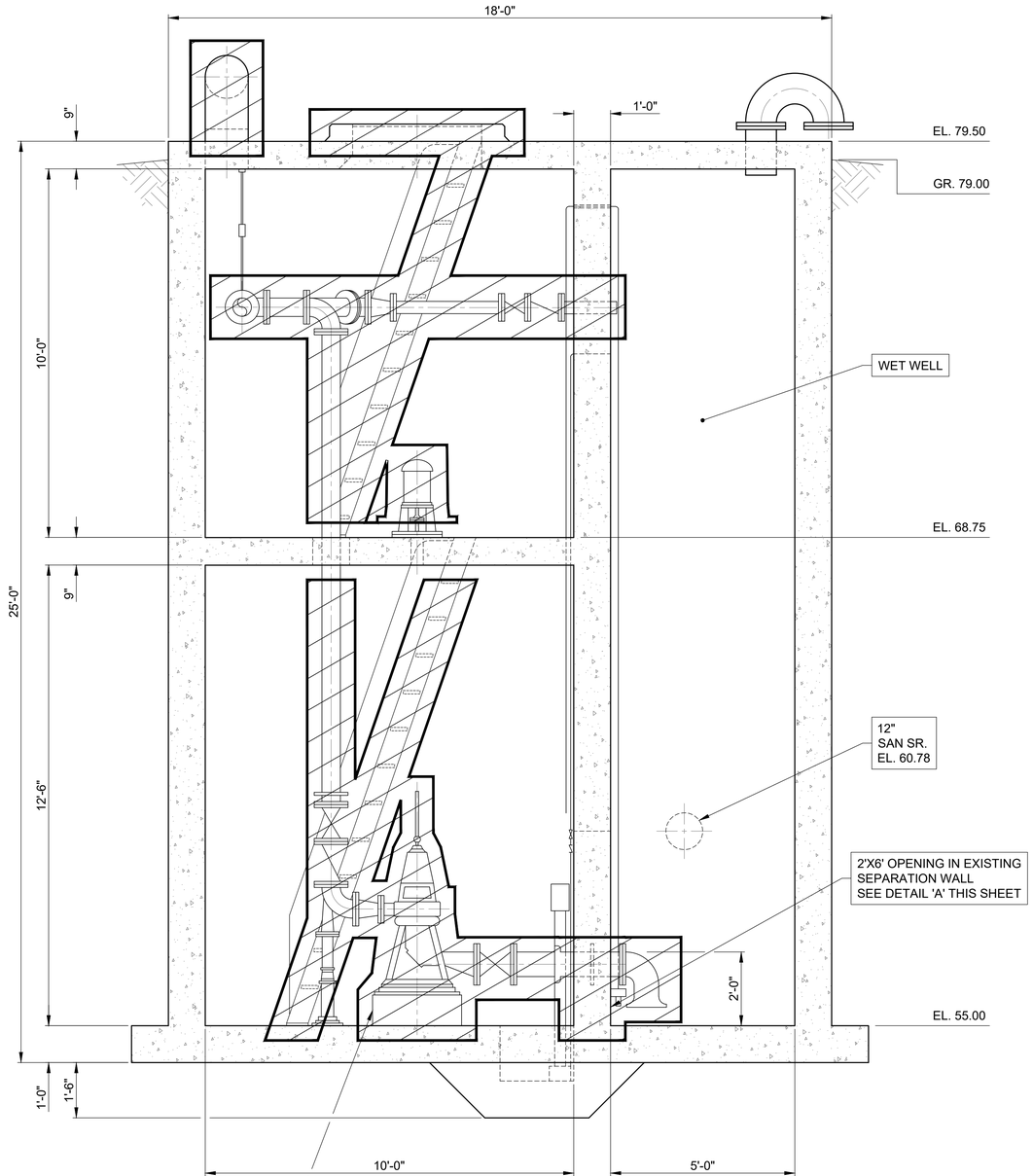
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

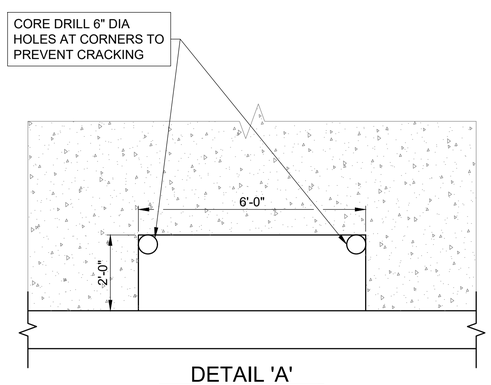
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-101	HORIZ: 1"=5' VERT: NONE
SHEET NO. 32 OF 230	DRAWING SCALE

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FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\024 C-101.dwg





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

CA C-102 SECTION
SCALE: 1/2"=1'-0"

LEGEND:

LIMITS OF LIFT STATION DEMOLITION

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
3. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.
4. SAW CUT EXISTING CONCRETE AT BOTTOM AND DIVIDING WALL BETWEEN THE WET WELL AND DRY WELL AREAS TO CREATE A 2 FOOT BY 6 FOOT OPENING. COAT EXPOSED STEEL WITH EPOXY PAINT PRIOR TO CONCRETE COATING OF THE WET WELL.

RIGHT OF REFUSAL NOTE:

"SALVAGE MATERIAL AND EQUIPMENT LISTED HEREINAFTER SHALL BECOME THE PROPERTY OF THE CITY OF HOUSTON UNLESS OTHERWISE DESIGNATED IN WRITING. THE CITY OF HOUSTON SHALL HAVE FIRST REFUSAL RIGHTS TO RETAIN ALL ITEMS SHOWN TO BE DEMOLISHED AND/OR REMOVED IN THE DRAWINGS. PRIOR TO INITIATING DEMOLITION, THE CONTRACTOR AND THE CITY OF HOUSTON PROJECT MANAGER SHALL MAKE A JOINT INSPECTION TO IDENTIFY ALL ITEMS TO BE RETAINED BY THE CITY OF HOUSTON. THE CONTRACTOR SHALL RELOCATE AND STORE ITEMS, TO BE RETAINED BY THE CITY OF HOUSTON, WHERE DIRECTED ONSITE OR OFFSITE."

DEMOLITION NOTE:

WHEN MEASURED FROM THE PROPERTY LINE OF ANY NEARBY RESIDENTIAL PROPERTY. ANY SOUND PRODUCED BY THE ERECTION, EXCAVATION, CONSTRUCTION, OR DEMOLITION OF ANY STRUCTURE, INCLUDING THE USE OF TOOLS OR EQUIPMENT (CONDUCTED BETWEEN THE HOURS OF 7 A.M. AND 8 P.M.), SHALL NOT EXCEED 85 DB(A).

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 5:27 PM PEN TABLE: ----

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JANUARY 23, 2025
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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

CHESTNUT RIDGE LIFT STATION
DEMOLITION
SECTION VIEW

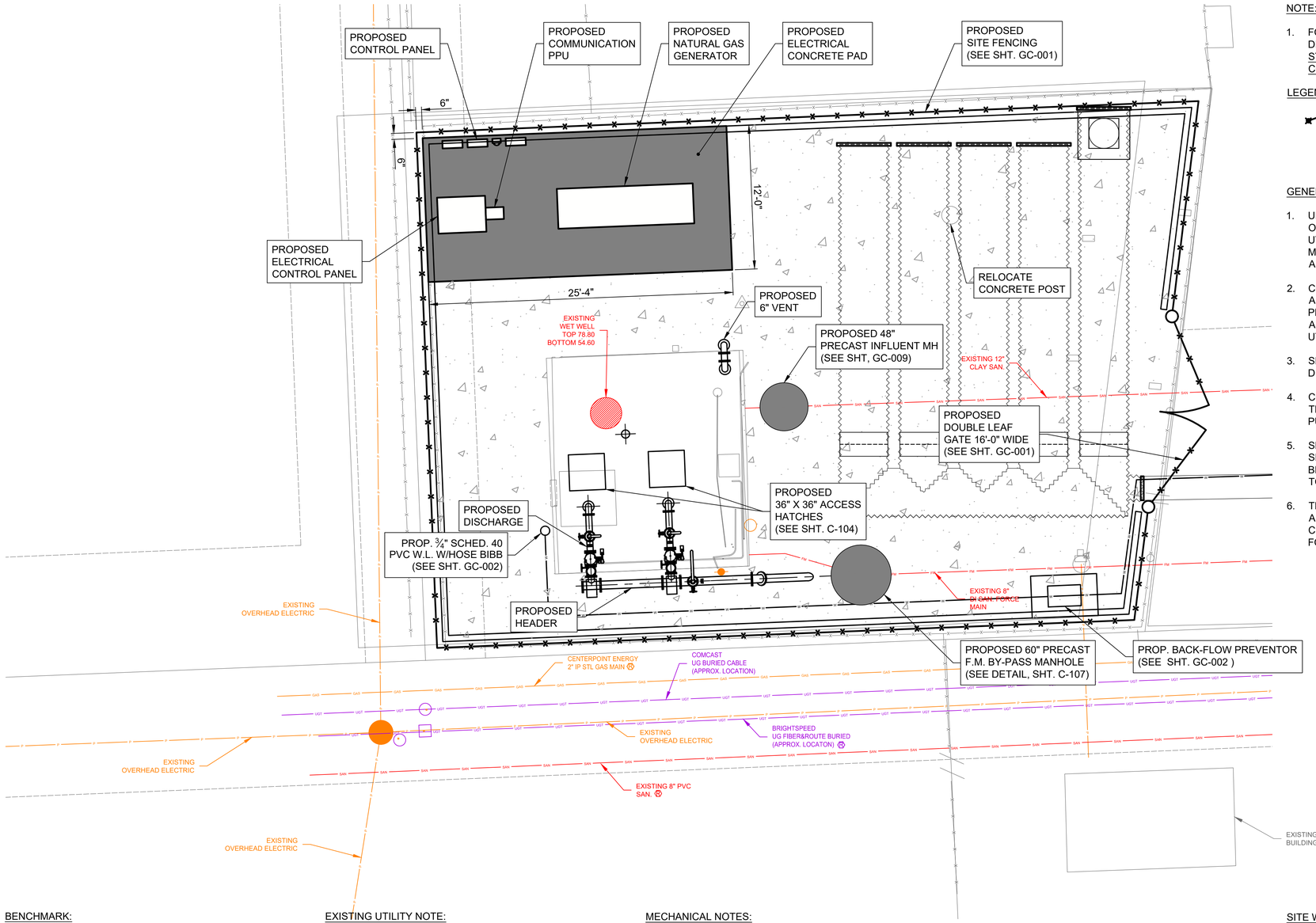
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-102
HORIZ: 1/2"=1'-0"
VERT: NONE
SHEET NO. 33 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\025 C-102.dwg



NOTE:

1. FOR SITE CONTROL POINTS TABLE SEE DRAWING NO. C-106 CHESTNUT RIDGE LIFT STATION PUMP OPERATION AND SITE CONTROL POINTS TABLES.

LEGEND:

CR-101 SITE CONTROL POINTS

GENERAL NOTES:

1. UNDERGROUND UTILITIES MAY EXIST IN THE VICINITY OF THIS PROJECT. LOCATIONS SHOWN FOR EXISITING UTILITIES ARE APPROXIMATE AND OTHER UTILITIES MAY EXIST IN THE VICINITY OF THIS PROJECT WHICH ARE NOT SHOWN ON THESE PLANS
2. CONTRACTOR IS REQUIRED TO CONTACT APPROPRIATE UTILITY COMPANIES AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION TO ASCERTAIN THE LOCATION OF ALL UNDERGROUND UTILITIES IN THE VICINITY OF THIS PROJECT.
3. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
4. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE WET WELL HATCHES PER SELECTED HATCH AND PUMP MANUFACTURER'S REQUIREMENTS.
5. SLEEVED OR CORED DISCHARGE PIPE OPENINGS SEALED WITH LINK-SEAL (OR APPROVED EQUAL) MAY BE SUBSTITUTED FOR POURED IN PLACE WALL PIPES TO ACCOMMODATE CONSTRUCTION METHOD.
6. THE GENERATOR IS USED SOLELY FOR EMERGENCIES AND REQUIRED TESTING AND IS COMPLIED WITH CHAPTER 30 SOUND LEVEL ORDINANCE EXEMPTION FOR EMERGENCY WORK.

0 5' 10'
1"=5'

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/29/2026 10:42 AM

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T TEXAS/SWBT underground conduit facilities only. Signature valid for one year.

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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116345
JANUARY 23, 2025
Date

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

CHESTNUT RIDGE LIFT STATION
PROPOSED
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-103
HORIZ: 1"=5'
VERT: NONE
SHEET NO. 34 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 070265 IS AN ALUMINUM DISK STAMPED G 103-38 BM 01 LOCATED ON SOUTH SIDEWALK ON KINGWOOD DRIVE EASTBOUND BRIDGE APPROXIMATELY 1.5 MILES EAST FROM THE INTERSECTION OF US 59 IN KEYMAP 336C IN THE SAN JACINTO RIVER WATERSHED.

ELEV 74.46 FEET NAVD 1988, 2001 ADJUSTMENT

HORIZONTAL DATUM NOTE:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

EXISTING UTILITY NOTE:

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MECHANICAL NOTES:

1. ALL LIFT STATION ABOVE GROUND PIPING TO BE FLANGED DUCTILE IRON PIPING, CLASS 53, AND FITTINGS TO BE SHORT BODY UNLESS OTHERWISE SHOWN.
2. ALL LIFT STATION BELOW GROUND PIPING TO BE MECHANICAL JOINT RESTRAINED.
3. EXPOSED STEEL (OTHER THAN STAINLESS STEEL) IN WET WELL TO BE COATED IN ACCORDANCE WITH CITY OF HOUSTON PAINTING AND PROTECTIVE COATING SPECS FOR WASTEWATER TREATMENT PLANT SUBMERGED EQUIPMENT AND PIPING.
4. CONTRACTOR TO PROVIDE TEMPORARY CONSTRUCTION PLUGS WHERE NECESSARY ON INFLUENT AND DISCHARGE PIPING IF SANITARY SEWER CONSTRUCTION IS NOT CONCURRENT WITH LIFT STATION CONSTRUCTION. OTHERWISE MAKE CONNECTION. (NO SEPARATE PAY).
5. ALL BOLTS IN WET WELL TO BE ANSI TYPE 304 SS.
6. DISSIMILAR METAL PIPES CONNECTIONS SHALL BE CONNECTED TO PROTECT EACH METAL AGAINST CORROSION.
7. FERROUS SURFACES PIPING AND VALVES SHALL BE COATED IN ACCORDANCE WITH THE LATEST CITY OF HOUSTON STANDARD SPECIFICATIONS.
8. CONTRACTOR SHALL ENSURE THAT THE BOTTOM OF WET WELL SHALL HAVE A MINIMUM SLOPE OF 10 PERCENT TOWARDS THE PUMPS INTAKE AND SHALL HAVE A SMOOTH FINISH.
9. CHECK VALVES SHALL BE AIR CUSHIONED WITH SIDE MOUNT LEVER AND WEIGHT. THE VALVE SHAFT SHALL EXTEND THROUGH BOTH SIDES OF THE BODY WITH MIN. SHAFT DIAMETERS EQUAL TO APCO SERIES 6000. THE CUSHION SHALL BE TOTALLY ENCLOSED, SWIVEL MOUNTED AT THE BOTTOM AND EQUIPPED WITH MICROMETER AIR CONTROL VALVE AND BREATHER FILTERS.

SITE WORK AND PIPING NOTES:

1. SEWER MATERIALS, CONSTRUCTION, AND TESTING TO BE IN ACCORDANCE WITH THE CITY OF HOUSTON PUBLIC WORKS DEPARTMENT SPECIFICATION.
2. ALL BURIED DUCTILE IRON PIPE AND FITTINGS TO BE POLYETHYLENE WRAPPED.
3. EXPOSED FORCE MAIN PIPING TO BE DUCTIE IRON PIPE, CLASS 53 FOR EXPOSED PIPING, AND CLASS 50 FOR BURIED PIPING.
4. 3/4" WATERLINE AND WATER METER TO BE INSULATED WITH SUITABLE INSULATION MATERIAL TO PROTECT AGAINST FREEZING OR APPROVED EQUAL.

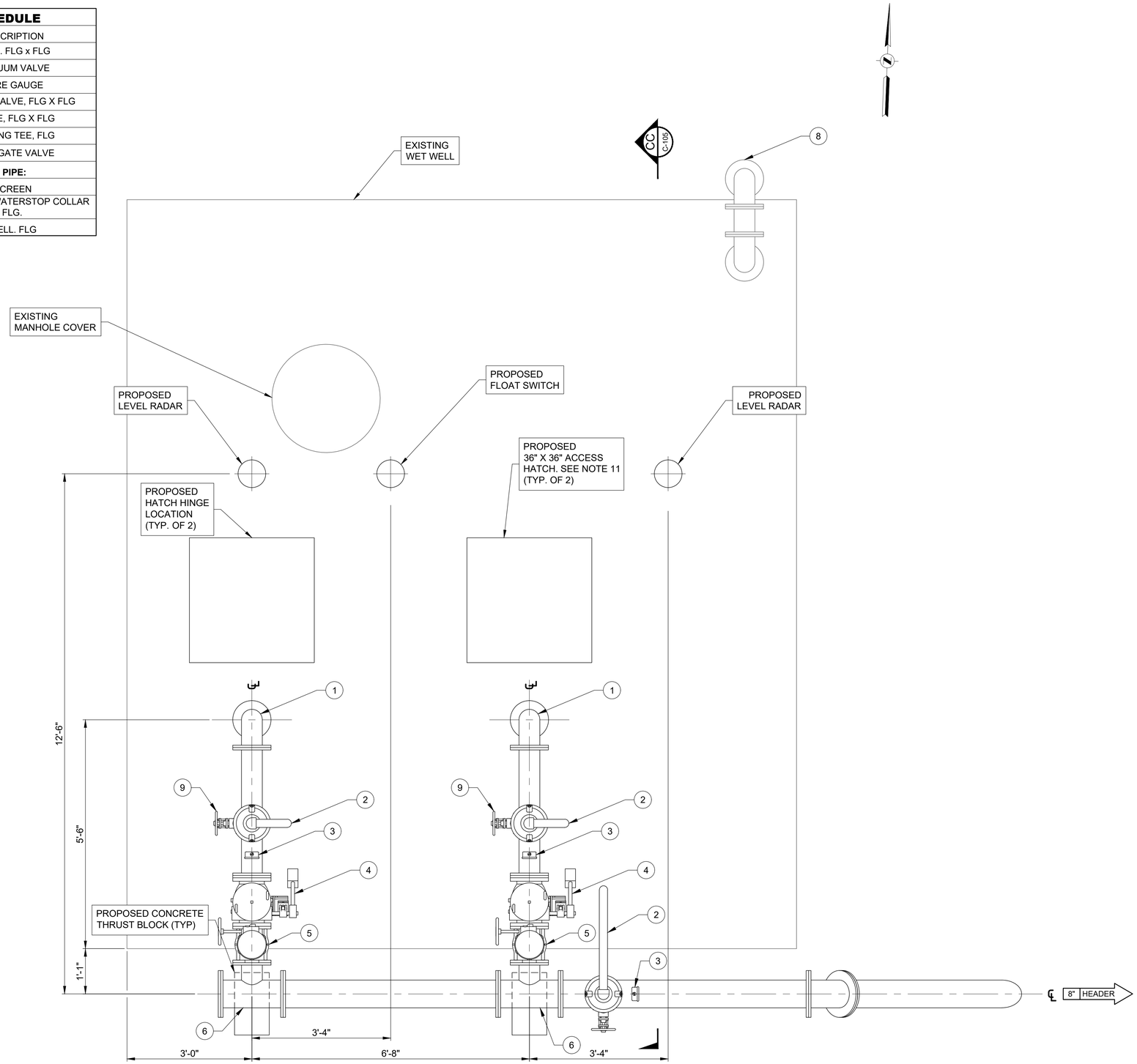
PAVING NOTES:

1. CONCRETE PAVEMENT TO BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON PAVEMENT CONSTRUCTION SPECIFICATIONS.

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\026 C-103.dwg

PIPE FITTING AND VALVES SCHEDULE

KEYED NOTES	QUANTITY	SIZE	ITEM DESCRIPTION
1	2	6"	D.I. 90° ELL. FLG x FLG
2	3	2"	AIR & VACUUM VALVE
3	3	1/4"	PRESSURE GAUGE
4	2	6"	SWING CHECK VALVE, FLG X FLG
5	2	6"	PLUG VALVE, FLG X FLG
6	1	6" X 8"	D.I. REDUCING TEE, FLG
7	2	6"	ISOLATION GATE VALVE
8	1	6" Ø	**VENT PIPE:**
	1	6"	BIRD SCREEN
	1	6"	D. I. WALL PIPE W/WATERSTOP COLLAR PE X FLG.
	2	6"	D.I. 90° ELL. FLG



CB C-104 PLAN
SCALE: 3/4"=1'-0"

NOTES:

1. SEE DETAILS AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. CONTRACTOR SHALL VERIFY DIMENSIONS DIMENSIONS NOTED ON DRAWINGS FOR PUMPS APPROVED IN SUBMITTALS.
3. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
4. INSTALL PLUG VALVES TO OPEN UPWARD WITH HORIZONTAL STEM.
5. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
6. SLEEVED OR CORED DISCHARGE PIPE OPENINGS SEALED WITH LINK-SEAL (OR APPROVED EQUAL) MAY BE SUBSTITUTED FOR POURED IN PLACE WALL PIPES TO ACCOMMODATE CONSTRUCTION METHOD.
7. CONTRACTOR SHALL PROVIDE BLOCK-OUTS IN CONCRETE FILLETS FOR CLEARANCE AROUND LEVEL TRANSDUCER.
8. LIFT STATION SAFETY HATCHES SHALL BE PAINTED FOREST GREEN.
9. LABEL HATCHES WITH CORRESPONDING PUMP NUMBER USING STANDARD PAINT STENCILS. MINIMUM 8" HEIGHT.
10. VENT PIPES SHALL BE DUCTILE IRON WITH UV PROTECTIVE COATINGS AS REQUIRED BY THE CITY OF HOUSTON.
11. HATCHES SHALL BE CAST-IN WITH TOPS FLUSH WITH THE CONCRETE DECK, FLOOD TIGHT WITH HOLD OPEN ARMS. HATCHES SHALL BE MANUFACTURED BY BILCO COMPANY, HALLIDAY PRODUCTS, OR EQUAL.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/22/2026 5:33 PM

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Crag Alexander Perry
Registered Engineer
116345
License Number
JANUARY 23, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

CHESTNUT RIDGE LIFT STATION
PROPOSED
PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-104

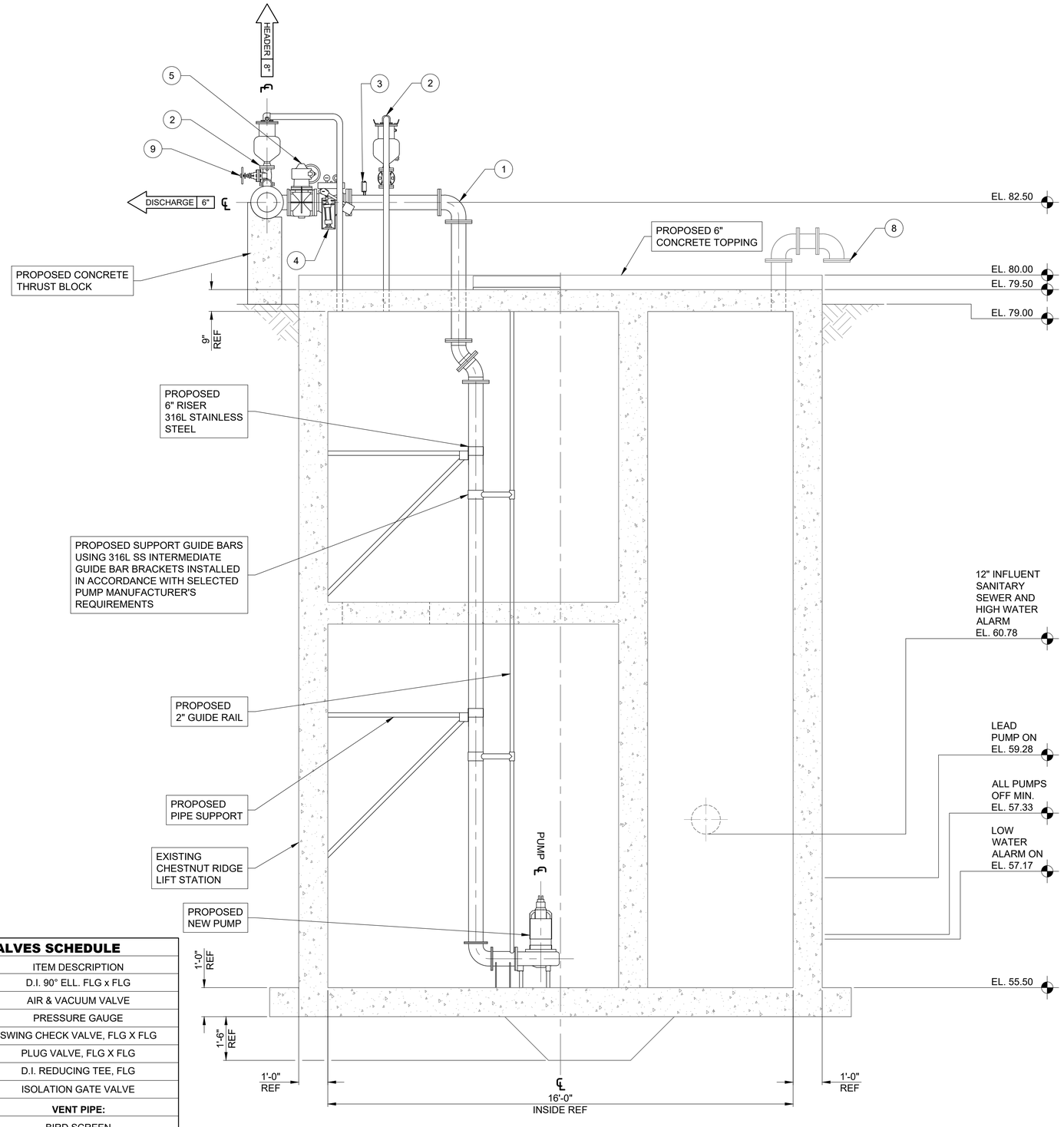
HORIZ: 3/4"=1'-0"
VERT: NONE

SHEET NO. 35 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\027 C-104.dwg



CC C-105 SECTION
SCALE: 1/2"=1'-0"

PIPE FITTING AND VALVES SCHEDULE

KEYED NOTES	QUANTITY	SIZE	ITEM DESCRIPTION
1	2	6"	D.I. 90° ELL. FLG x FLG
2	3	2"	AIR & VACUUM VALVE
3	3	1/4"	PRESSURE GAUGE
4	2	6"	SWING CHECK VALVE, FLG X FLG
5	2	6"	PLUG VALVE, FLG X FLG
6	1	6" X 8"	D.I. REDUCING TEE, FLG
7	2	6"	ISOLATION GATE VALVE
8	1	6" Ø	**VENT PIPE:**
	1	6"	BIRD SCREEN
	1	6"	D. I. WALL PIPE W/WATERSTOP COLLAR PE X FLG.
	2	6"	D.I. 90° ELL. FLG

NOTES:

1. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. CONTRACTOR TO PROVIDE ADHESIVE (SIKA ANCHORFIX 2020 OR EQUAL), FOR ANCHOR BOLTS TO BE EMBEDDED IN CONCRETE SLAB. CONTRACTOR TO SUBMIT DESIGN OF PUMP ANCHOR BOLTS AND PATTERN, INCLUDING CALCULATIONS DURING SHOP DRAWING SUBMISSION.
3. CONTRACTOR TO PROVIDE ADHESIVE ANCHORS (SIKA ANCHORFIX 2020 OR EQUAL) FOR ALL SUBMERGED CONDITIONS. AND SUBMIT DESIGN OF ANCHOR BOLTS DURING SHOP DRAWING SUBMISSION.
4. ALL PIPING IN THE WET WELL SHALL BE FLANGED, NO FLANGED COUPLING ADAPTORS, OR VICTAULIC STYLE COUPLINGS SHALL BE PERMITTED INSIDE THE WET WELL.
5. SUPPORT GUIDE BARS SHALL BE SUPPORTED WITH 316SS SUPPORTS. AND SHALL BE INSTALLED IN ACCORDANCE WITH PUMP MANUFACTURER'S REQUIREMENTS. SUPPORT SHALL BE SPACED AT MAX. 5'-0".
6. ABRASIVE BLAST AND COAT ALL PIPING AND FITTINGS NOT BEING REPLACED IN WET WELL.
7. WET WELL SHALL BE BLASTED AND CLEANED. A PROTECTIVE COATING SHALL BE APPLIED ON ALL INTERIOR CONCRETE SURFACE OF THE WET WELL.. REFER TO COH PROTECTIVE COATINGS, SPEC. 09901, SYSTEM 108.
8. ALL PROPOSED PIPING AND FITTINGS INSIDE THE WET WELL SHALL BE 316L SS.
9. HATCHES SHALL BE CAST-IN WITH TOPS FLUSH WITH THE CONCRETE DECK, FLOOD TIGHT WITH HOLD OPEN ARMS. HATCHES SHALL BE MANUFACTURED BY BILCO COMPANY, HALLIDAY PRODUCTS, OR EQUAL.

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 5:40 PM PEN TABLE: ----

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Craig Alexander Perry
116345
JANUARY 23, 2025

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

CHESTNUT RIDGE LIFT STATION
PROPOSED
SECTION VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

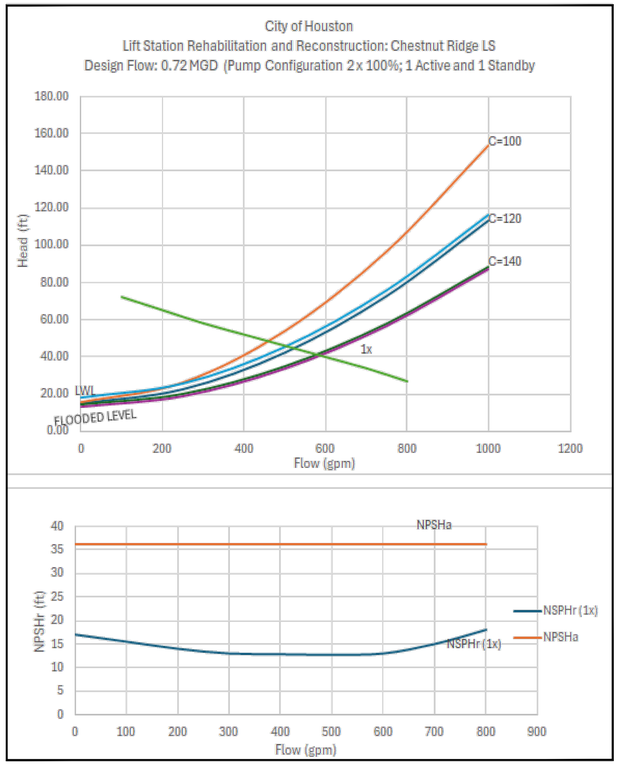
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-105
HORIZ: 1/2"=1'-0"
VERT: NONE
SHEET NO. 36 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\028 C-105.dwg

SITE CONTROL POINTS TABLE					
LABEL NO.	NORTHING	EASTING	POINT DESCRIPTION	POINT LOCATION	DRAWING NO.
CR-101	13950294.4849	3158990.2048	LIFT STATION	CENTER	C-103
CR-102	13950288.4167	3158996.2731	LIFT STATION	CENTER	C-103
CR-103	13950282.3485	3158992.7696	LIFT STATION	CENTER	C-103
CR-104	13950276.2803	3158998.8378	LIFT STATION	CENTER	C-103
CR-105	13950270.2121	3158995.3343	LIFT STATION	CENTER	C-103
CR-106	13950264.1439	3159001.4025	LIFT STATION	CENTER	C-103
CR-107	13950258.0757	3158997.8990	LIFT STATION	CENTER	C-103
CR-108	13950252.0075	3159003.9672	LIFT STATION	CENTER	C-103
CR-109	13950245.9392	3159000.4638	LIFT STATION	CENTER	C-103
CR-110	13950239.8710	3159006.5320	LIFT STATION	CENTER	C-103
CR-111	13950233.8028	3159003.0285	LIFT STATION	CENTER	C-103
CR-112	13950227.7346	3159009.0967	LIFT STATION	CENTER	C-103
CR-113	13950221.6664	3159005.5932	LIFT STATION	CENTER	C-103
CR-114	13950215.5982	3159011.6614	LIFT STATION	CENTER	C-103
CR-115	13950209.5300	3159008.1579	LIFT STATION	CENTER	C-103
CR-116	13950203.4618	3159014.2262	LIFT STATION	CENTER	C-103



C3 C-106 PUMP OPERATION CURVES

PUMP CHARACTERISTICS	PUMP NO. 1	PUMP NO. 2
"NOTES: 1. Pump curves and characteristics are based on FLYGT Model NP 3127 HT 3~ Adaptive 488. Other acceptable manufacturers are named in Section 11311 of the specifications."		
MOTOR DATA:		
MOTOR HP:	10	10
MOTOR RPM:	1,765	1,765
MAX SPHERICAL SOLIDS PASSAGE (IN):	2	2
CAPACITY (GPM)		
DESIGN	500	500
RUNOUT	958.77	958.77
NPSHa (FT)	36.31	36.31
NPSHr (FT)	12.73	12.73
DESIGN DISCHARGE HEAD (FT)	45.17	45.17
RUNOUT HEAD (FT)	16.42	16.42
SHUTOFF HEAD (FT)	80.08	80.08
PUMP CYCLE TIME (MIN)	6	6
DESIGN FLOW (GPM	520	520
CUMULATIVE CAPACITY (GPM)	960	960
PUMP CONFIGURATION	2 x 100%	

C2 C-106 PUMP DATA TABLE

RISING LEVEL CYCLE			
WATER LEVEL DEPTH	**WATER LEVEL ELEVATION**	**ACTION**	**PUMP(S) IN OPERATION**
3.78	59.28	PUMP TURNS ON	PUMP ON
5.28	60.78	HIGH WATER ALARM	HIGH WATER ALARM SOUNDS
FALLING LEVEL CYCLE			
WATER LEVEL DEPTH	**WATER LEVEL ELEVATION**	**ACTION**	**PUMP(S) IN OPERATION**
3.78	57.33	PUMP TURNS OFF	ALL PUMPS OFF
0.88	57.17	LOW WATER ALARM	LOW WATER ALARM SOUNDS

C1 C-106 STATION OPERATION TABLES

One Pump Flow (gpm)	Head (ft)	NSPHr	NPSHa
0	80.08	17.00	36.31
100	72.00	15.50	36.31
200	65.00	14.00	36.31
300	58.00	13.00	36.31
400	52.00	12.83	36.31
500	46.00	12.73	36.31
600	40.00	13.00	36.31
700	34.00	15.00	36.31
800	27.00	18.00	36.31

C4 C-106 PUMP FLOW, TOTAL DYNAMIC HEAD, AND NPSH REQUIREMENTS FOR OPERATION

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 3:26 PM PEN TABLE: ----

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Crag Alexander Perry
Engineer 116345
Registration Number
JANUARY 23, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

CHESTNUT RIDGE LIFT STATION
PUMP OPERATION AND
SITE CONTROL POINTS TABLES

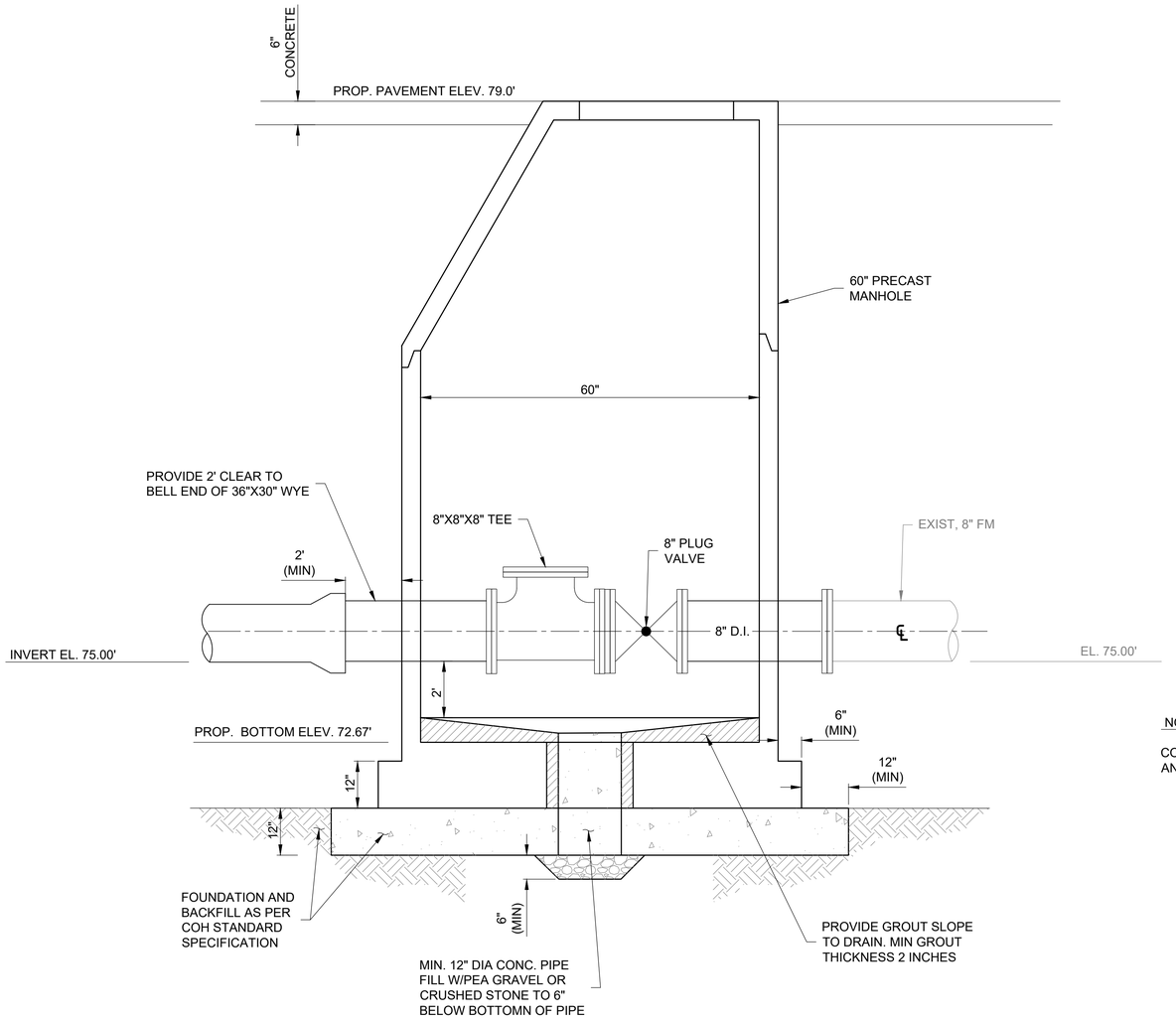
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-106
HORIZ: NONE
VERT: NONE
SHEET NO. 37 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\029 C-106.dwg



60" BY-PASS MANHOLE

SCALE: N.T.S.

NOTE:

CONTRACTOR TO FIELD VERIFY LOCATION AND DEPTH OF EXISTING FORCE MAIN.

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 5:41 PM PEN TABLE: ----

GANNETT FLEMING

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Craig Alexander Perry
Name
116345
License No.
JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

CHSETNUT RIDGE LIFT STATION
PROPOSED
F.M. BY-PASS MANHOLE DETAIL

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-107

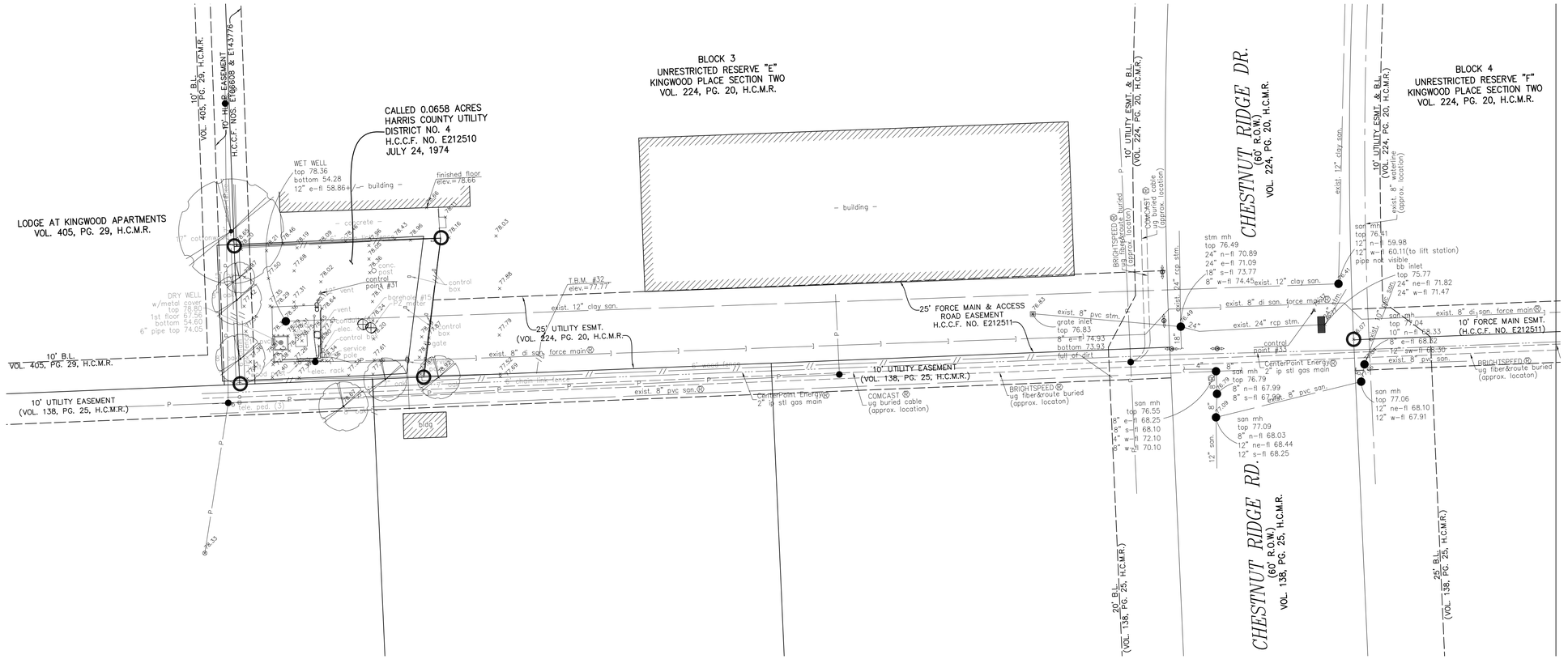
HORIZ: AS NOTED
VERT: NONE

SHEET NO. 38 OF 230

DRAWING SCALE

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FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\030 C-107.dwg



Control Point Table				
Point #	Northing	Easting	Elevation	Raw Description
31	13949704.9200	3157771.0140	77.730	SET 1/2" I.R. W/CAP
32	13949690.7100	3157843.4660	77.766	SET "X" CUT ON CONC.
33	13949699.3500	3158094.7650	75.364	SET "X" CUT ON CONC.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 070265 IS AN ALUMINUM DISK STAMPED G 103-38 BM 01 LOCATED ON SOUTH SIDEWALK ON KINGWOOD DRIVE EASTBOUND BRIDGE APPROXIMATELY 1.5 MILES EAST FROM THE INTERSECTION OF US 59 IN KEYMAP 336C IN THE SAN JACINTO RIVER WATERSHED

ELEV. 74.46 FEET NAVD 1988, 2001 ADJUSTMENT

T.B.M #32:

SET "X" CUT ON CONCRETE DRIVEWAY ON THE EAST SIDE OF CHESTNUT RIDGE LIFT STATION APPROX. 220 FT WEST FROM THE INTERSECTION OF CHESTNUT RIDGE DR
ELEV.= 77.77 FT.

HORIZONTAL DATUM:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

EXISTING UTILITY NOTE:

EXISTING UNDERGROUND UTILITY INFORMATION (TYPE, SIZE & OWNERSHIP) ARE SHOWN APPROXIMATELY BASED ON THE AVAILABLE RECORD DRAWINGS AND FIELD VERIFICATION (WHERE FEASIBLE) WITHOUT PROBING AND EXCAVATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATION SHOWN ON THE DRAWING. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING OR BORE AND JACKING IN THE VICINITY OF UNDERGROUND UTILITIES. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CALL UTILITY COORDINATING COMMITTEE AT 713-223-4567, AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THE STREET RIGHT-OF-WAY.

LEGEND:

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- COLUMN
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- IRRIGATION CONTROL VALVE
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- REFERENCE INFORMATION (FROM RECORD DRAWING)
- SBC MANHOLE
- SIGN
- SIGNAL POLE
- SPRINKER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE-CREPE MYRTLE
- TREE-PINE
- UTILITY MARK
- WATER METER
- WATER VALVE
- BOREHOLE

- BRUSH ROW
- DITCH/SWALE CENTER LINE
- EASEMENT OR BUILDING LINE
- FENCE
- GAS LINE
- GUARD RAIL
- HEDGE ROW OR TREE LINE
- HIGH BANK
- OVERHEAD POWER LINE WITH OR W/O CABLE
- SANITARY SEWER LINE
- SANITARY FORCE MAIN
- STORM LINE
- TELEPHONE LINE
- UG STREET LIGHT CABLE
- WATER LINE

ABBREVIATIONS:

E./ESMT.	EASEMENT	I.R.	IRON ROD
B.L.	BUILDING LINE	I.P.	IRON PIPE
STM.	STORM	CONC.	CONCRETE
SAN.	SANITARY	LT	LIGHT
SWR.	SEWER	UG	UNDER GROUND
N.F.I.F.	NOT FOUND IN FIELD		



VICINITY MAP KEYMAP: 336 A

N.T.S.

GRAPHIC SCALE

20 0 10 20 40

SCALE: 1" = 20'-0"

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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TBPELS Engineering Firm Reg. No. F-4578
TBPELS Surveying Firm Reg. No. 10075600

STATE OF TEXAS REGISTERED KUTUBUL A. M. MAINUDDIN 6404 PROFESSIONAL LAND SURVEYOR
11/25/25

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

SURVEY

CHESTNUT RIDGE LIFT STATION
EXISTING SITE SURVEY
AND CONTROL POINTS TABLE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. SV-101

HORIZ: 1"=20'
VERT: N/A

SHEET NO. 39 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 11/25/2025 11:18 PM

FILE PATH: S:\Proj-2024\24033 (COH LIFT STATIONS)\Dwgs\Topo Survey Sheets\SV-101\SV-101-Chestnut Ridge LS.dwg

GENERAL NOTES FOR STRUCTURES

CONCRETE

1. DESIGN SHALL CONFORM TO THE LATEST BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI-318) WITH SPECIAL REQUIREMENTS OF ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI-350).

2. ALL REINFORCING BARS SHALL CONFORM TO ASTM A-615, GRADE 60, ARRANGEMENT AND DETAILS OF REINFORCING STEEL, INCLUDING BAR SUPPORTS AND SPACERS, SHALL BE IN ACCORDANCE WITH THE LATEST ACI DETAILING MANUAL, UNLESS OTHERWISE NOTED.

3. ALL SLAB AND BEAM REINFORCEMENT SHALL HAVE A MINIMUM EXTENSION INTO THE SUPPORT IN ACCORDANCE WITH THE LATEST ACI CODE. IF SUCH EXTENSION IS NOT POSSIBLE, BARS SHALL TERMINATE IN STANDARD HOOKS.

4. HORIZONTAL WALL REINFORCEMENT AND TEMPERATURE REINFORCEMENT SHALL LAP A MINIMUM OF 1.7Ld AT SPLICES. WALL DOWELS AND WALL BAR EXTENSIONS AND ALL STRESS SPLICES SHALL LAP A MINIMUM OF 1.7Ld, UNLESS NOTED OTHERWISE.

5. WALL OR COLUMNS SHALL HAVE DOWELS FROM FOUNDATIONS OR CONSTRUCTION BELOW OF SAME SIZE AND SPACING AS WALL OR COLUMN VERTICAL STEEL. SEE FOOTING SCHEDULE.

6. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL NOT BE LESS THAN THE FOLLOWING:

   STRUCTURAL MEMBERS, FOUNDATIONS, WALLS AND SUSPENDED SLABS ---- 4000 PSI
   SLABS-ON-GRADE ---------- 4000 PSI
   LEAN CONCRETE CLASS B ---------- 1500 PSI
   GROUT FILL CLASS H ----------3000 PSI

7. UNLESS OTHERWISE SHOWN, THE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

   SLABS
   TOP AND BOTTOM OF FORMED SLABS ---------- 2"
   TOP OF WALK AND DRIVEWAY SLABS ---------- 2"
   SURFACES IN CONTACT WITH LIQUID ---------- 2"
   BOTTOM OF SLABS ON FILL OR SOIL ---------- 3"

   FOOTINGS
   TOP AND SIDES ---------- 2 1/2"
   BOTTOM ---------- 3"

8. HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS SHOWN OR NOTED ON THE PLANS ARE RECOMMENDED. ANY DEVIATION FROM THOSE SHOWN SHALL HAVE APPROVAL OF THE ENGINEER.

9. ANY STOP IN FRAMED CONCRETE WORK MUST BE IN THE CENTER OF THE SPAN AND INCORPORATE AN APPROVED KEYWAY, REINFORCEMENT SHALL EXTEND THROUGH THESE JOINTS IF REQUIRED FOR CONTINUITY.

10. USE TYPE 'C2' JOINT FOR ALL CONSTRUCTION JOINTS IN WALLS AND SLABS BELOW GRADE AND WALLS WHICH SEPARATE AREAS OF SOIL OR LIQUID FROM PERMANENTLY DRY AREAS SUCH AS TUNNELS, GALLERIES, BASEMENT ROOMS, ETC. USE TYPE 'C1' JOINT AT ALL OTHER CONSTRUCTION JOINTS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.

11. CONCRETE WALLS AND PARTITIONS SHALL BE POURED IN MAXIMUM LENGTHS OF 40 FEET BETWEEN VERTICAL CONSTRUCTION JOINTS.

12. ALL CONCRETE SLABS OVER 8" IN THICKNESS, REINFORCED WITH BARS, AND POURED AGAINST SOILSHALL BE POURED IN A STRIP PATTERN OF 40 FEET OR LESS IN EACH DIRECTION.

13. ALL EXPOSED EDGES OF SLABS SHALL BE CHAMFERED 3/4" UNLESS OTHER MEMBERS ARE ERECTED FLUSH WITH THEM.

14. REFER TO ARCHITECTURAL, PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL SLEEVES, PIPES, CONDUITS AND MISCELLANEOUS ANCHORING DEVICES TO BE INCORPORATED IN THE CONSTRUCTION.

FOUNDATIONS

1. ALLOWABLE SOIL BEARING PRESSURE, EXCAVATION AND BACKFILL FOR FOUNDATIONS AND STRUCTURES SHALL BE AS RECOMMENDED IN THE GEOTECHNICAL REPORT.

2. ALL EXCAVATIONS SHALL BE CARRIED OUT IN THE DRY, AND PROVISIONS SHALL BE MADE TO PREVENT THE BOTTOM OF ALL EXCAVATIONS FROM FREEZING OR FLOODING AT ALL TIMES.

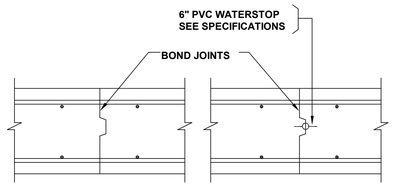
3. ALL FOUNDATIONS SHALL BE CONSTRUCTED IN EXCAVATIONS FREE OF STANDING WATER.

4. BACKFILL MATERIAL, PLACING AND COMPACTION OF BACKFILL SHALL BE IN ACCORDANCE WITH THE DRAWINGS, AND THE CONTRACT SPECIFICATIONS.

DESIGN CRITERIA

1. BUILDING CODE ---------- INTERNATIONAL BUILDING CODE (IBC) 2021 AS AMENDED BY 2021 HOUSTON CONSTRUCTION CODE
2. RISK CATEGORY ---------- III
3. DESIGN LOADS
   - A. FLOOR LIVE LOADS
     - a. STAIRS ---------- 150 PSF
     - b. LIFT STATION TOP SLAB ---------- 300 PSF
     - c. MECHANICAL AND ELECTRICAL ROOM ---------- 250 PSF
   - B. WIND DESIGN DATA
     - a. BASIC WIND SPEED (V_{ULT}) ---------- 145 MPH
       (V_{ASD}) ---------- 113 MPH
     - b. EXPOSURE CATEGORY ---------- C
   - C. SEISMIC DESIGN DATA
     - a. IMPORTANCE FACTOR (I_E) ---------- 1.25
     - b. MAPPED SPECTRAL RESPONSE (S_S) ---------- 0.068g
     - c. MAPPED SPECTRAL RESPONSE (S_1) ---------- 0.039g
     - d. SPECTRAL RESPONSE (S_{DS}) ---------- 0.072g
     - e. SPECTRAL RESPONSE (S_{D1}) ---------- 0.062g
     - f. SEISMIC DESIGN CATEGORY ---------- A
     - g. SITE CLASS ---------- D
4. DESIGN DEAD LOADS
   - A. SELF WEIGHT OF MATERIALS

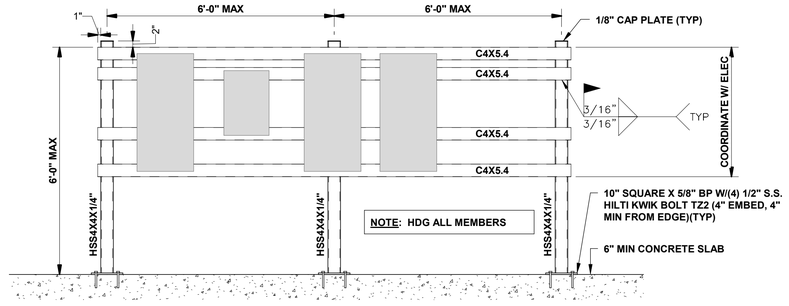
LD=TENSILE DEVELOPMENT LENGTH FOR REINF BARS WITH FY = 60 KSI	
BAR SIZE	TENSION DEVELOPMENT LENGTH 'LD' INCHES
3	12
4	12
5	15
6	19
7	26
8	35
9	44
10	56
11	68



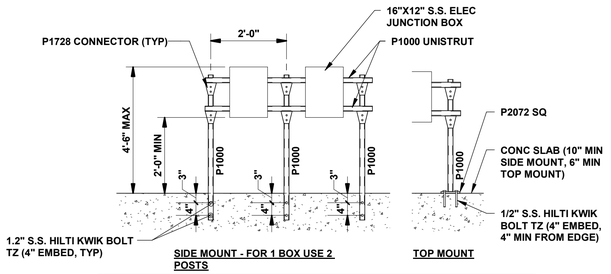
TYPE C1 TYPE C2

NOTES:
1. IN JOINTS W/ MORE THAN ONE KEY, PLACE WATERSTOP IN KEY NEAREST TO SURFACE AGAINST EARTH OR WATER
2. REINFORCING STEEL IS CONTINUOUS THROUGH CONSTRUCTION JOINT

CONSTRUCTION JOINTS



SERVICE MOUNTING RACK DETAIL



SIDE MOUNT - FOR 1 BOX USE 2 POSTS

TOP MOUNT

NOTES:
1. HDG ALL MEMBERS
2. PXXX DESIGNATIONS REFER TO UNISTRUT MEMBERS/CONNECTORS.

ELEC JUNCTION BOX MOUNTING DETAIL

ABBREVIATIONS

ADDL	----------	ADDITIONAL
ALT	----------	ALTERNATE
&	----------	AND
ARCH	----------	ARCHITECTURAL
@	----------	AT
BM	----------	BEAM
BOT	----------	BOTTOM
B/	----------	BOTTOM OF
BLDG	----------	BUILDING
C	----------	CENTERLINE
C/C	----------	CENTER TO CENTER
CLR	----------	CLEAR(ANCE)
COL	----------	COLUMN
CONC	----------	CONCRETE
CONST	----------	CONSTRUCTION
CONT	----------	CONTINUOUS
DET	----------	DETAIL
DIA	----------	DIAMETER
Ø	----------	DIAMETER
DWG	----------	DRAWING
DWL	----------	DOWEL
EF	----------	EACH FACE
EW	----------	EACH WAY
EL	----------	ELEVATION
EXP	----------	EXPANSION
EXT	----------	EXTERIOR
FTG	----------	FOOTING
HP	----------	HIGH POINT
HORIZ	----------	HORIZONTAL
IF	----------	INSIDE FACE
INT	----------	INTERIOR
LL	----------	LIVE LOAD
LP	----------	LOW POINT
MH	----------	MANHOLE
MAX	----------	MISCELLANEOUS
MIN	----------	MINIMUM
#	----------	NUMBER
OC	----------	ON CENTER
OPNG	----------	OPENING
OA	----------	OVERALL
PVC	----------	POLYVINYL CHLORIDE
R	----------	RADIUS
REINF	----------	REINFORCEMENT
REQD	----------	REQUIRED
SCHED	----------	SCHEDULE
SECT	----------	SECTION
SPEC	----------	SPECIFICATIONS
SS	----------	STAINLESS STEEL
STD	----------	STANDARD
STIRR	----------	STIRRUP
SYMM	----------	SYMMETRICAL
T	----------	TOP
T/	----------	TOP OF
TYP	----------	TYPICAL
UON	----------	UNLESS OTHERWISE NOTED
VAR	----------	VARIES
VERT	----------	VERTICAL
WWF	----------	WELDED WIRE FABRIC
W/	----------	WITH

NOTES:

1. DETAILS SHOWN ON THIS DRAWING ARE TYPICAL DETAILS AND SHALL BE USED WHOLLY OR IN PART WHERE THEY APPLY EXCEPT WHERE MODIFIED BY DETAILED DRAWINGS & SPECIFICATIONS.

NO.	DATE	REVISION	APP.

PLOTTED: 12/19/2025 10:42:18 AM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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THEODORE RICHARD KRULL
Registered
143561
Registration Number
DECEMBER 19, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

CHESTNUT RIDGE
GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-101

HORIZ: As indicated

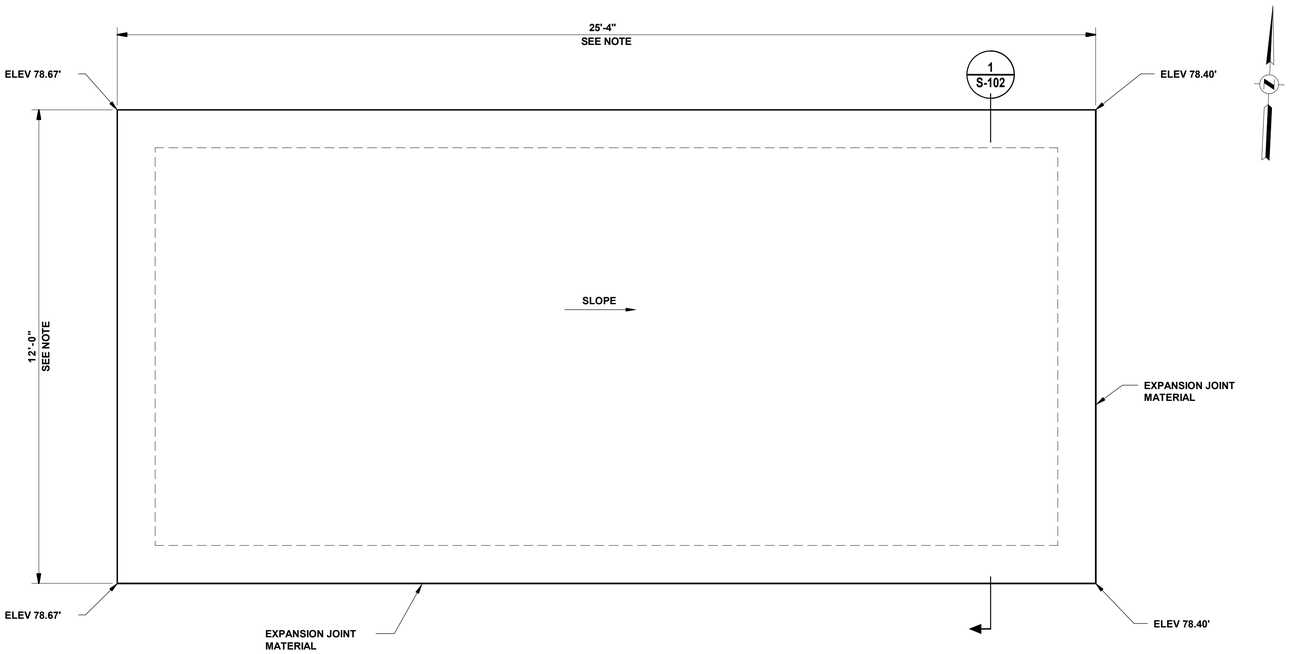
VERT: As indicated

SHEET NO. 40 OF 230

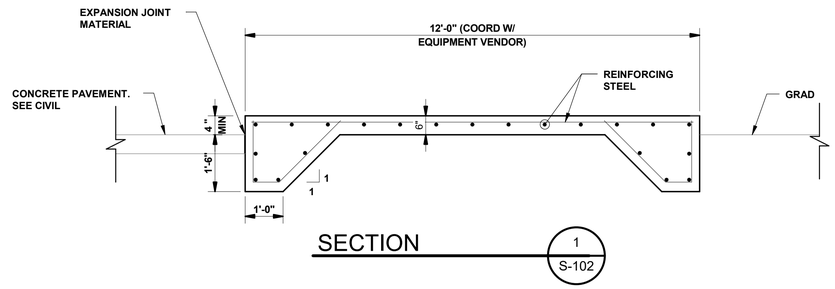
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILEPATH: Autodesk Docs://081109_COH_Lift_Station_Rehab_and_Reconstruction/081109_S_CHR_central_R23.rvt



NOTE:
1. COORDINATE SLAB DIMENSIONS AND LOCATION WITH EQUIPMENT AND CIVIL PLANS.



SECTION 1 / S-102

GENERATOR AND ELECTRICAL EQUIPMENT PAD PLAN

NO.	DATE	REVISION	APP.

PLOTTED: 12/19/2025 10:42:18 AM

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

CHESTNUT RIDGE

EQUIPMENT PAD PLAN AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-102

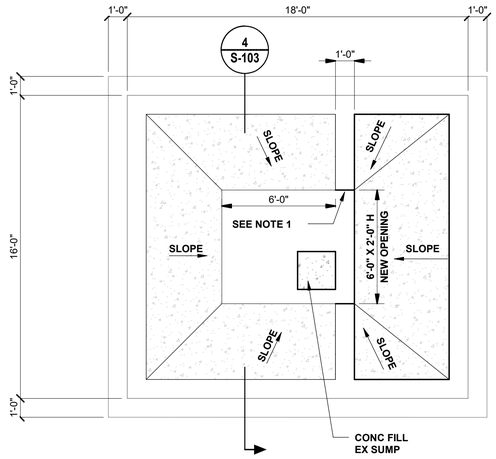
HORIZ: 1/2" = 1'-0"
VERT: 1/2" = 1'-0"

SHEET NO. 41 OF 230

DRAWING SCALE

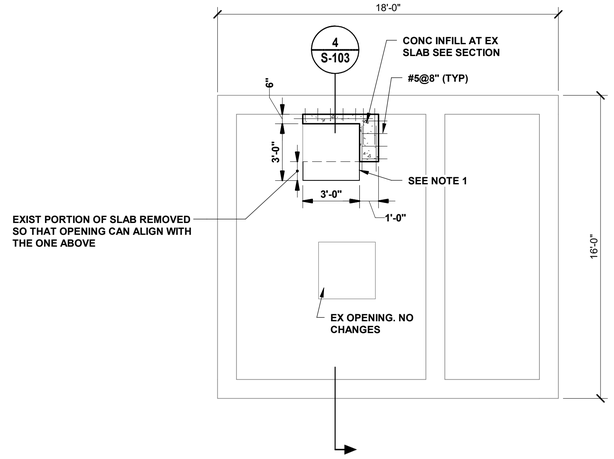
FOR CITY OF HOUSTON USE ONLY

FILEPATH: Autodesk Docs://081109_COH_Lift_Station_Rehab_and_Reconstruction/081109_S_CHR_central_R23.rvt



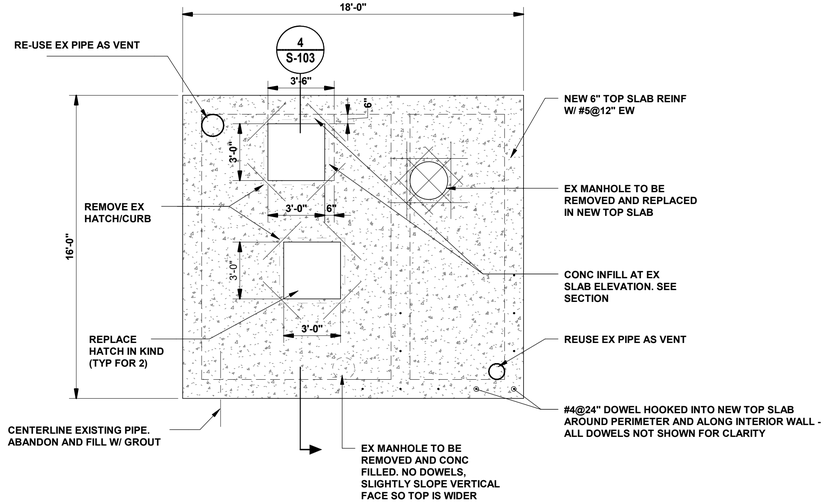
NOTE:
1. AT CUT EDGE OF EXISTING WALL, FIRST COAT ANY EXPOSED REBAR WITH EPOXY AND THEN APPLY A MINIMUM 1/8" THICK REPAIR MORTAR COATING OVER THE ENTIRE CUT FACE.

1 PLAN AT EL 55.50'
SCALE: 1/4" = 1'-0"

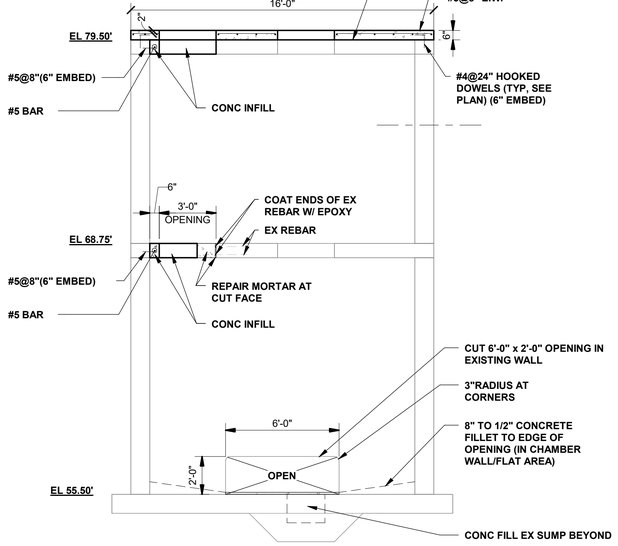


NOTES:
1. AT CUT EDGE OF EXISTING SLAB, FIRST COAT ANY EXPOSED REBAR WITH EPOXY AND THEN APPLY A MINIMUM 1/8" THICK REPAIR MORTAR COATING OVER THE ENTIRE CUT FACE.

2 PLAN AT EL 68.75'
SCALE: 1/4" = 1'-0"



3 PLAN AT EL 79.50'
SCALE: 1/4" = 1'-0"



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

NO.	DATE	REVISION	APP.

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143561
Registered Person
DECEMBER 19, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

CHESTNUT RIDGE

EXISTING LIFT STATION

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-103

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

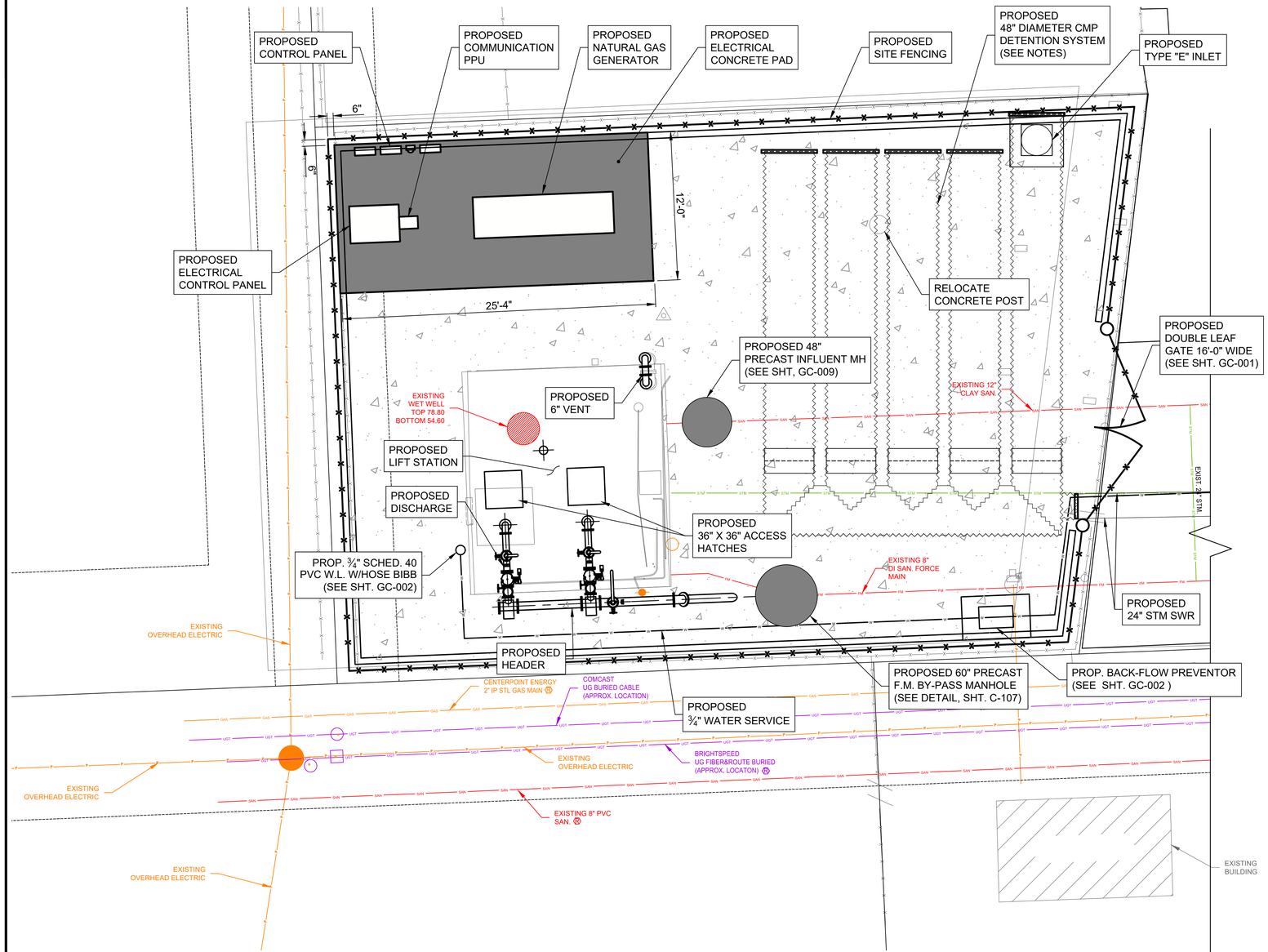
VERT: 1/4" = 1'-0"

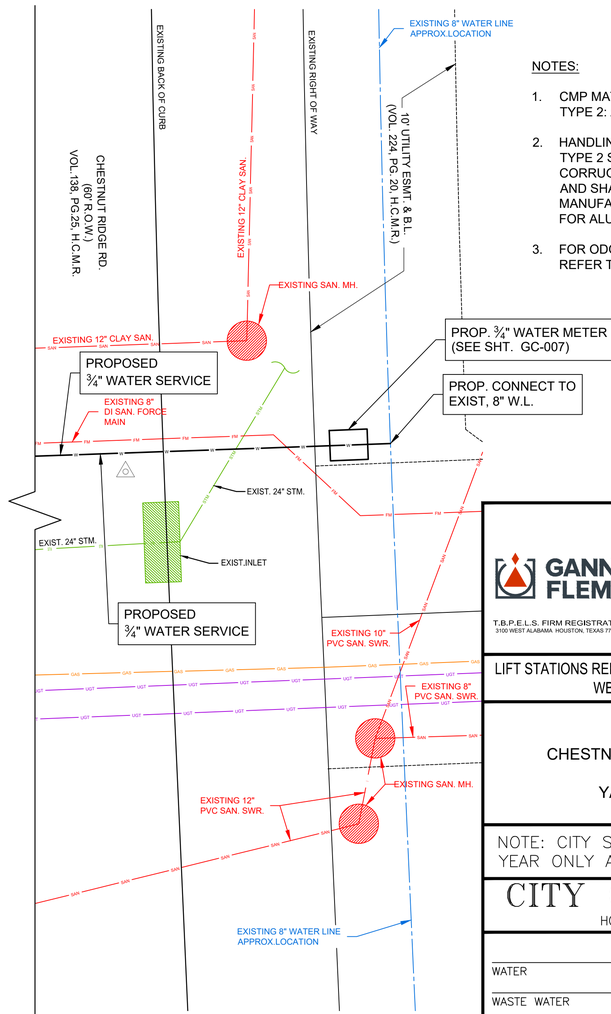
SHEET NO. 42 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILEPATH: Autodesk Docs://081109_COH_Lift_Station_Rehab_and_Reconstruction/081109_S_CHR_central_R23.rvt





0 5' 10'
1"=5'

NOTES:

1. CMP MATERIAL SHALL BE ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760.
2. HANDLING AND ASSEMBLY OF ALUMINUM TYPE 2 SHALL BE PER NATIONAL CORRUGATED STEEL PIPE ASSOCIATION AND SHALL BE IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS FOR ALUMINUM PIPE.
3. FOR ODOR CONTROL DESIGN DETAILS, REFER TO SPECIFICATIONS.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/29/2026 10:42 AM

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Craig Alexander Perry

116345

JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

YARD PIPING

CHESTNUT RIDGE LIFT STATION
PROPOSED
YARD PIPING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-101

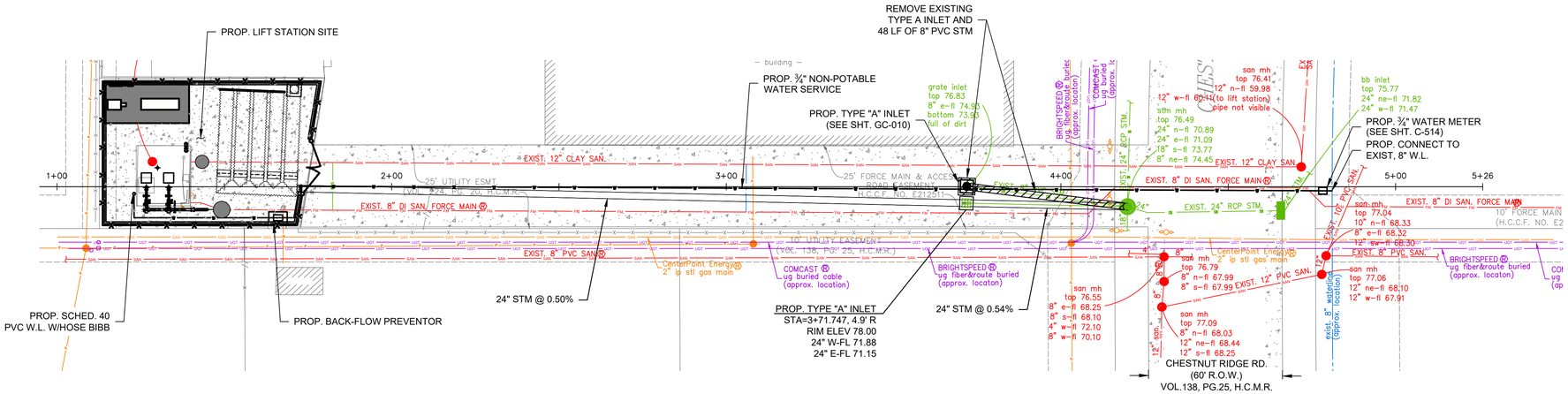
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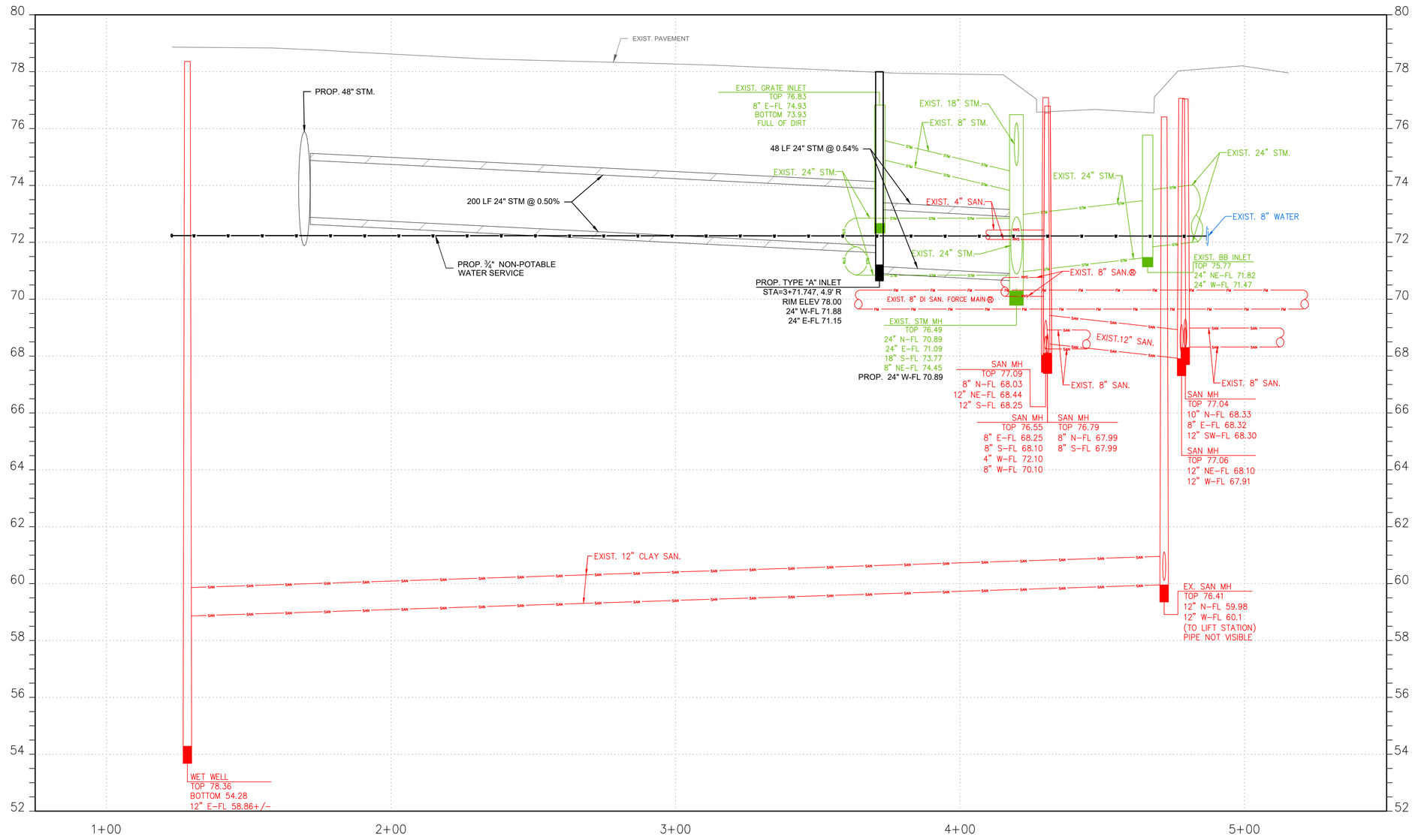
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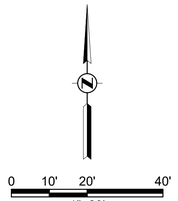
DRAWING SCALE

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FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Chestnut Ridge\000 Y-101.dwg







NO.	DATE	REVISION	APP.

PLOTTED: 1/29/2026 11:13 AM PEN TABLE: ------

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

YARD PIPING

CHESTNUT RIDGE LIFT STATION
PROPOSED
YARD PIPING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-102

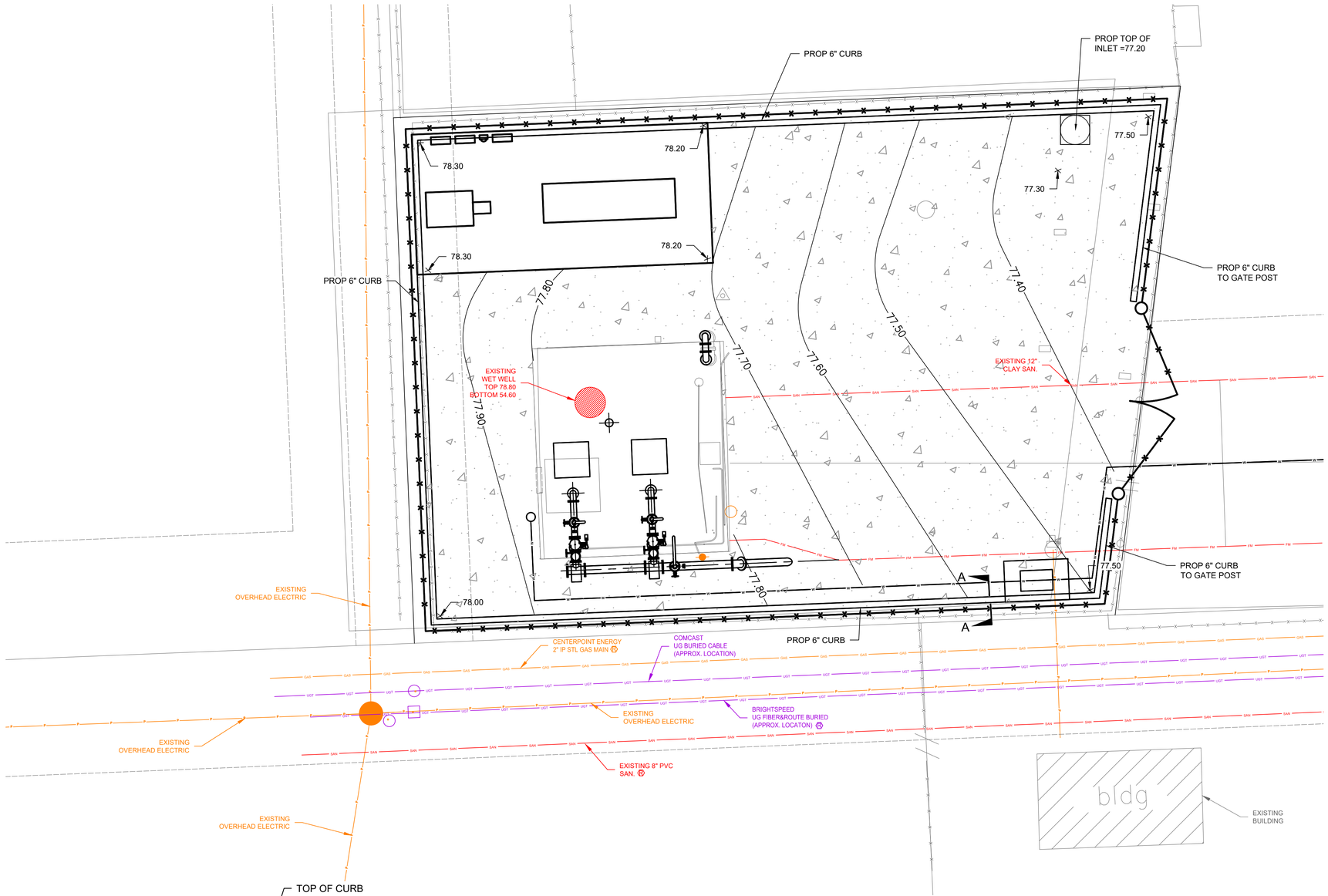
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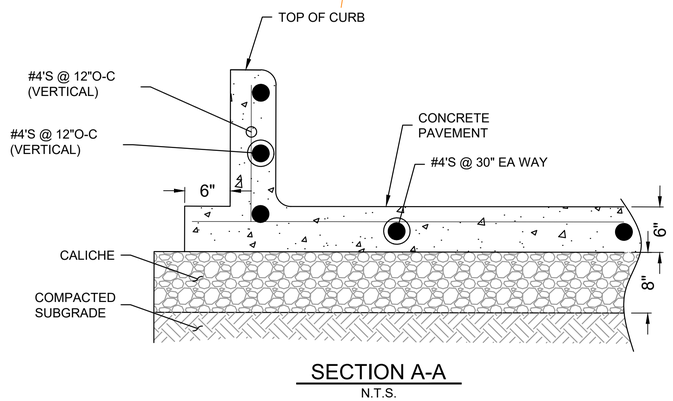
SHEET NO. 44 OF 230

DRAWING SCALE

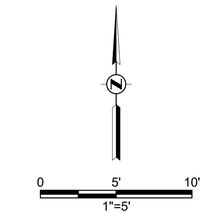
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SECTION A-A
N.T.S.



LEGEND:

00.00 PROPOSED CONTOURS

NO.	DATE	REVISION	APP.

PEN TABLE: -----

PLOTTED: 1/23/2026 7:53 AM

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JANUARY 23, 2025
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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL DRAINAGE

CHESTNUT RIDGE LIFT STATION
PROPOSED
GRADING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

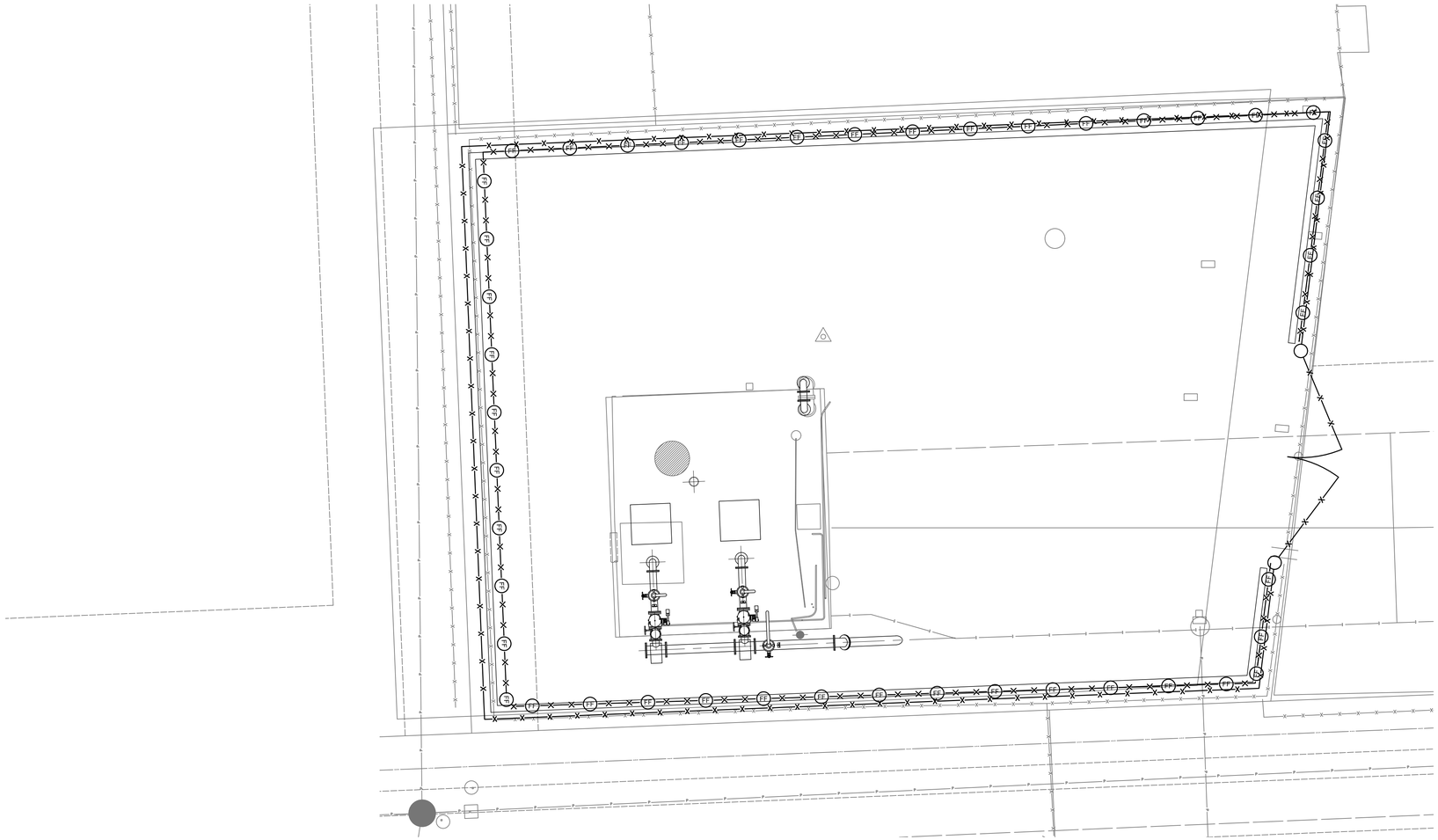
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-101	HORIZ: 1"=5' VERT: NONE
SHEET NO. 45 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Chestnut Ridge\000 D-101.dwg



0 5' 10'
1"=5'

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/23/2026 8:24 AM

NOTES:
1. STORM WATER POLLUTION PREVENTION PLAN SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND DRAWINGS.

2. CONTRACTOR IS RESPONSIBLE FOR MODIFICATIONS TO SWPPP AS NECESSARY TO REDUCE AND/OR ELIMINATE SEDIMENT FROM ENTERING DRAINAGE SYSTEMS.

3. FILTER FABRIC FENCE SHALL NOT BE PLACED ACROSS DRIVEWAYS OR SIDEWALKS ACCESSING PRIVATE PROPERTY.

4. ALL DISTURBED AREAS THAT ARE NOT PAVED, COVERED BY PAVEMENT, SIDEWALK OR STRUCTURES SHALL BE SODDED.

5. PROVIDE A STANDARD STABILIZED CONSTRUCTION EXIT IN THE CONTRACTORS LAY DOWN/STORAGE AREA.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SIDEWALKS AND CURB ADJACENT TO THE CONSTRUCTION. IF THE SIDEWALKS OR CURBS ARE DAMAGED THE CONTRACTOR WILL BE RESPONSIBLE TO REPLACE AT NO EXTRA COST.

7. IN AREAS OF OPEN CUT CONTRACTOR TO RESTORE WORK AREA TO EXISTING CONDITIONS.

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Crag Alexander Perry
Name

116345
License No.

JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL DRAINAGE

CHESTNUT RIDGE LIFT STATION
PROPOSED
STORM WATER POLLUTION
PREVENTION PLAN AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-102

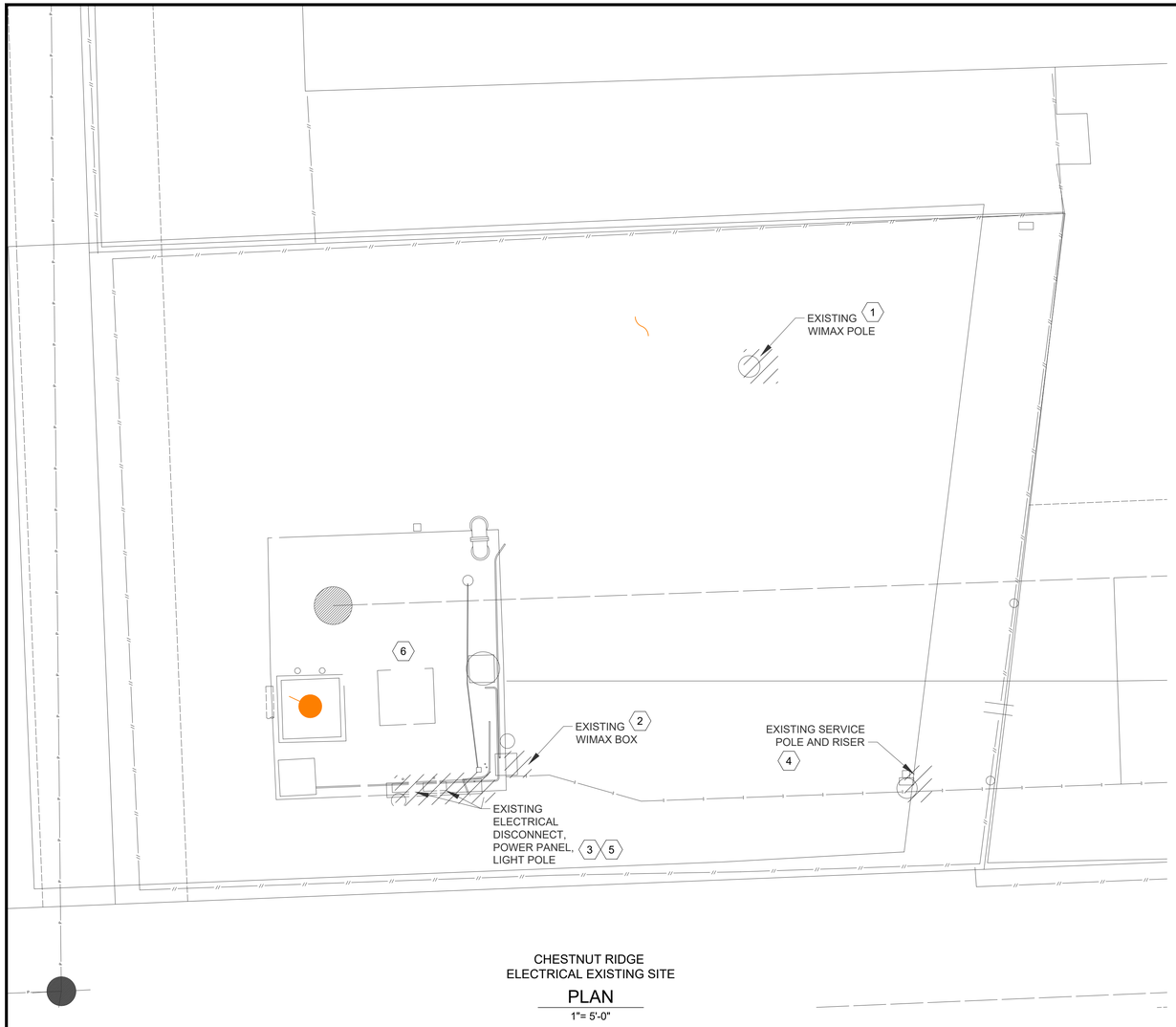
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VERT: NONE

SHEET NO. 46 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

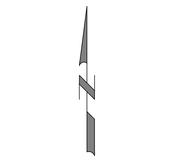
FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Chestnut Ridge\000 D-102.dwg



CHESTNUT RIDGE
ELECTRICAL EXISTING SITE

PLAN

1"= 5'-0"



1"=5'

NOTES BY SYMBOL "⟨#⟩":

1. EXISTING WIMAX POLE TO BE DEMOLISHED AND REMOVED.
2. EXISTING WIMAX BOX TO BE DEMOLISHED AND REMOVED.
3. EXISTING POWER PANEL AND DISCONNECTS TO BE DEMOLISHED AND REMOVED.
4. EXISTING SERVICE POLE AND RISER TO BE REMOVED AND REPLACED.
5. EXISTING LIGHT POLE TO BE REMOVED AND REPLACED.
6. ALL EXISTING ELECTRICAL EQUIPMENT, DEVICES, AND COMPONENTS, IN DRY PIT TO BE DEMOLISHED AND REMOVED.

LEGEND:

ITEMS TO BE DEMOLISHED.



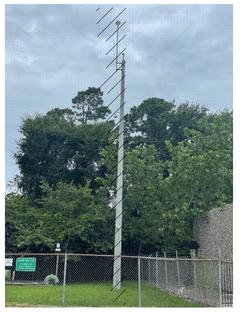
EXISTING DRY PIT
LIGHTING (2ND FLOOR)

PHOTOGRAPH G - 6
NTS



EXISTING SUMP PUMP
CONTROL PANEL IN DRY PIT

PHOTOGRAPH H - 6
NTS



EXISTING WIMAX
POLE

PHOTOGRAPH A - 1
NTS



EXISTING WIMAX BOX

PHOTOGRAPH B - 2
NTS



EXISTING SERVICE POLE

PHOTOGRAPH C - 4
NTS



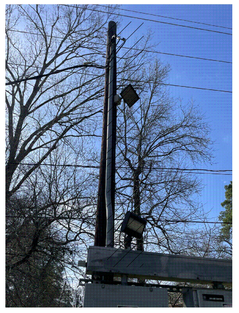
EXISTING CONTROL PANEL
AND PLC BOX (2ND FLOOR)

PHOTOGRAPH D - 6
NTS



EXISTING DISCONNECT
& POWER PANEL

PHOTOGRAPH E - 3
NTS



EXISTING LIGHT FIXTURES

PHOTOGRAPH F - 5
NTS

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
DEMOLITION SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-101

HORIZ: 1"=5'-0"
VERT: 1"=5'-0"

SHEET NO. 47 OF 230

DRAWING SCALE

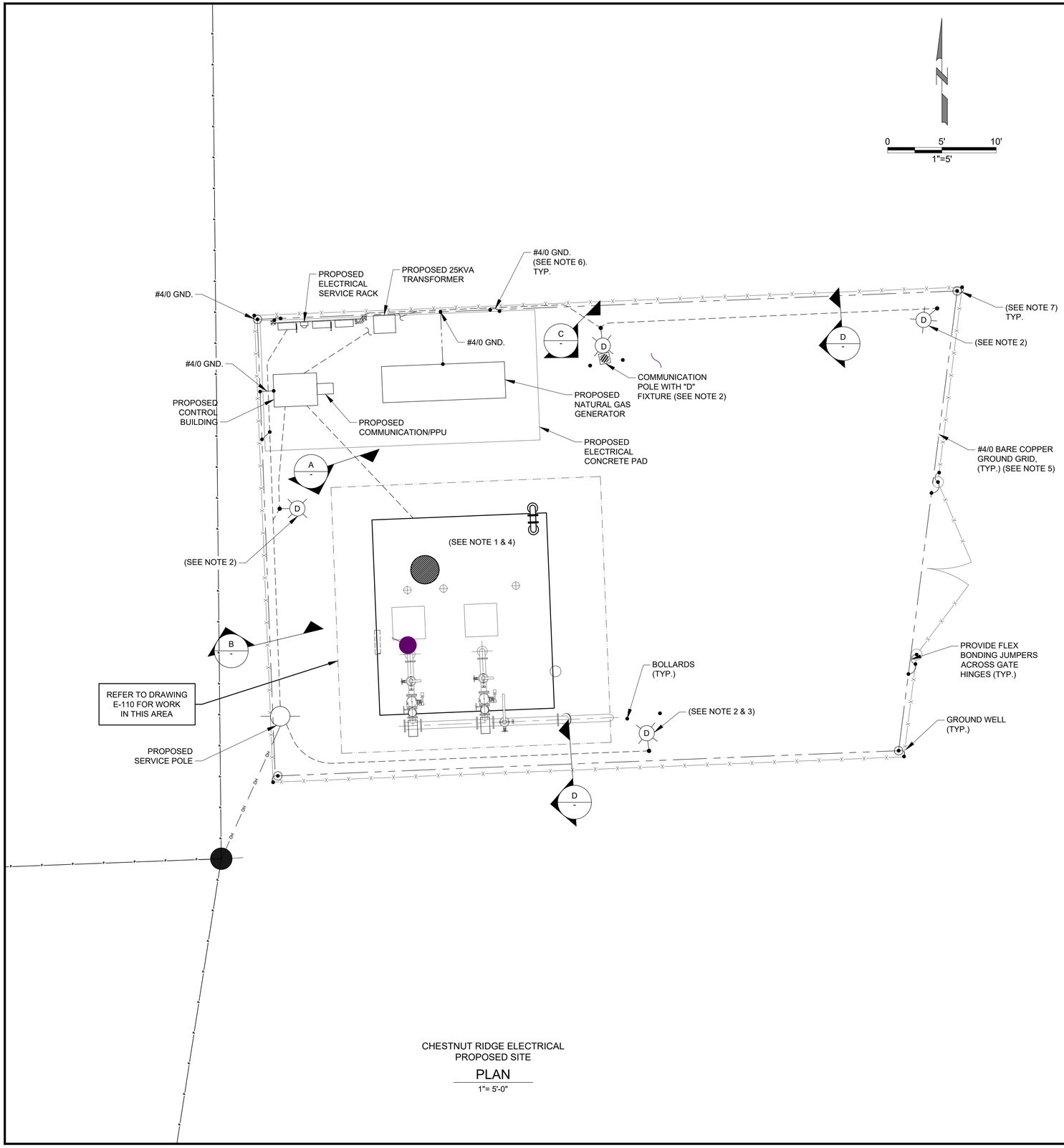
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NO.	DATE	REVISION	APP.

PEN TABLE: ----

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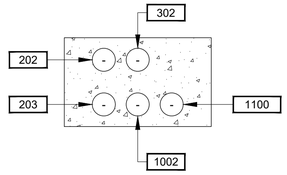
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CHESTNUT RIDGE ELECTRICAL
PROPOSED SITE

PLAN

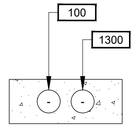
1"= 5'-0"



DUCTBANK

SECTION A

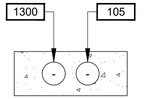
NTS



DUCTBANK

SECTION B

NTS



DUCTBANK

SECTION C

NTS



DUCTBANK

SECTION D

NTS

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. YARD LIGHT CONTROLLED BY LIGHTING SWITCH.
3. TYPE "B" FIXTURE TO BE INSTALLED ON THE POLE PROVIDING WIRES FOR THE "B" LIGHT.
4. INSIDE WETWELL RATED NEMA CLASS 1, DIV. 1. OUTSIDE ABOVE GROUND, AROUND WETWELL RATED CLASS 1, DIV. 2 ACCORDING TO NFPA 820.
5. GROUNDING LOOP SHALL BE BURIED 30" BELOW FINISHED GRADE.
6. #4/0 BARE COPPER GROUND TO BE BONDED TO THE PAD REBAR.
7. #2/0 BARE COPPER GROUND TO BE BONDED TO FENCE POST.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
PROPOSED SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

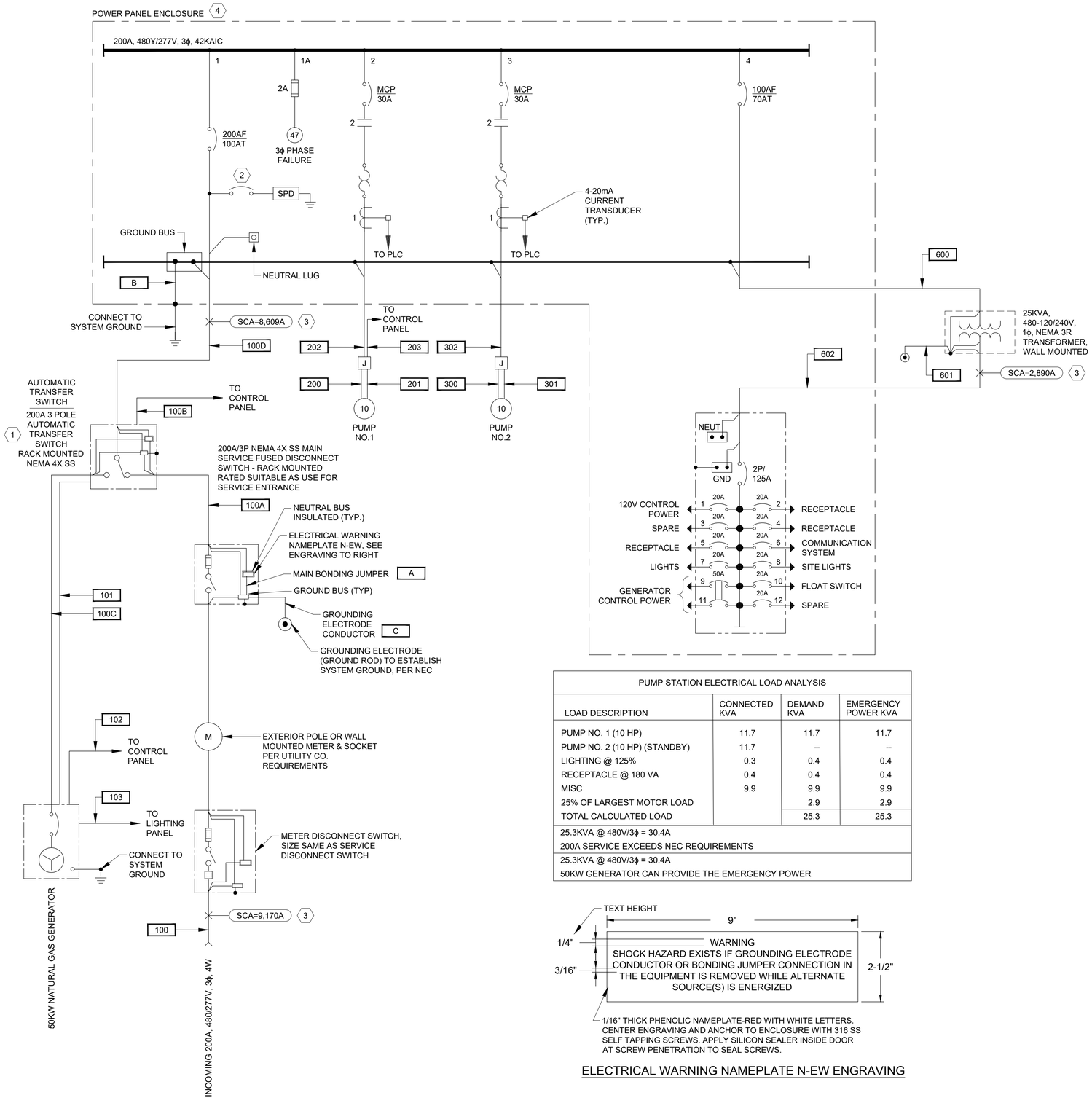
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-102	HORIZ: 1"=5'-0" VERT: 1"=5'-0"
SHEET NO. 48 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Chestnut Ridge\Chestnut Ridge_E-02.dwg



PUMP STATION ELECTRICAL LOAD ANALYSIS			
LOAD DESCRIPTION	CONNECTED KVA	DEMAND KVA	EMERGENCY POWER KVA
PUMP NO. 1 (10 HP)	11.7	11.7	11.7
PUMP NO. 2 (10 HP) (STANDBY)	11.7	--	--
LIGHTING @ 125%	0.3	0.4	0.4
RECEPTACLE @ 180 VA	0.4	0.4	0.4
MISC	9.9	9.9	9.9
25% OF LARGEST MOTOR LOAD		2.9	2.9
TOTAL CALCULATED LOAD		25.3	25.3
25.3KVA @ 480V/3ϕ = 30.4A 200A SERVICE EXCEEDS NEC REQUIREMENTS			
25.3KVA @ 480V/3ϕ = 30.4A 50KW GENERATOR CAN PROVIDE THE EMERGENCY POWER			

ELECTRICAL WARNING NAMEPLATE N-EW ENGRAVING

NOTES BY SYMBOL "#":

1. PROVIDE A NORMALLY OPEN (NO) AUXILIARY CONTACT FOR BOTH POSITIONS.
2. PROVIDE BREAKER ACCORDING TO MANUFACTURER'S REQUIREMENTS.
3. POINT TO POINT METHOD IS USED FOR SHORT CIRCUIT CURRENT CALCULATION.
4. CONTRACTOR SHALL PROVIDE PERMANENTLY AFFIXED LABEL (2" X 3") SHOWING THE AVAILABLE FAULT CURRENT AND CALCULATION DATE. THE LABEL SHALL BE BLUE LETTERING ON A CONTRASTING BACKGROUND.
5. THE INSULATION TYPES OF ALL ELECTRICAL CONDUCTORS USED IN THE PROJECT HAVE BEEN SPECIFIED IN ELECTRICAL SPECIFICATIONS (16120, 16121, AND 16122). THE TYPES OF CONDUITS USED IN THE PROJECT HAS BEEN SPECIFIED IN ELECTRICAL SPECIFICATIONS 16111.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
ONE-LINE DIAGRAM

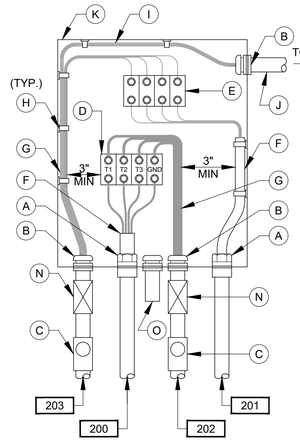
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
STORM WATER QUALITY
WASTE WATER
FACILITIES
STORM WATER
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

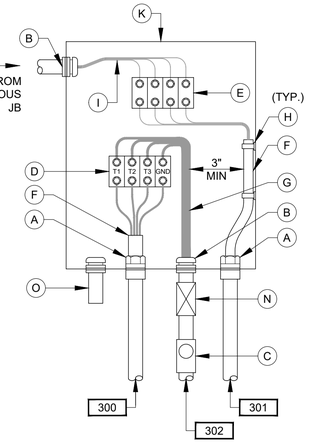
DRAWING NO. E-103
HORIZ: NONE
VERT: NONE
SHEET NO. 49 OF 230
DRAWING SCALE
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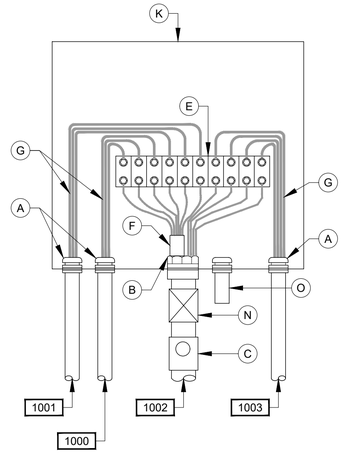
PUMP NO.1
JUNCTION BOX

DETAIL 3
NTS
(SEE NOTE 7)



PUMP NO.2
JUNCTION BOX

DETAIL 4
NTS
(SEE NOTE 7)

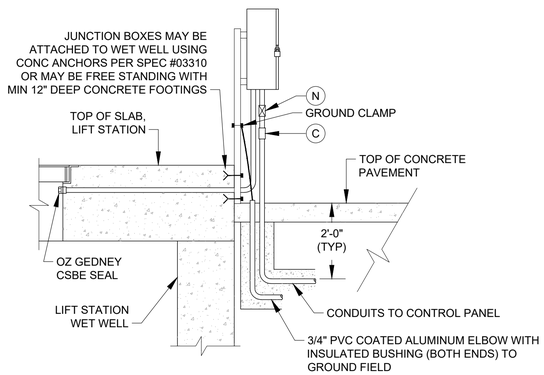


LEVEL TRANSMITTER
JUNCTION BOX

DETAIL 5
NTS
(SEE NOTE 7)

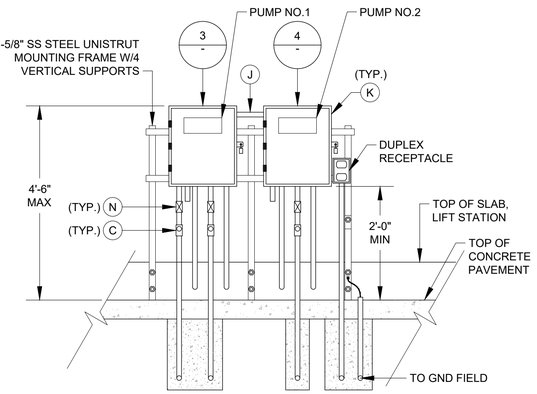
NOTES:

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 NON INTRINSICALLY SAFE MOTOR FEEDER WIRING.
3. UNLESS OTHERWISE NOTED, ALL EXTERIOR EXPOSED CONDUITS SHALL BE PVC COATED ALUMINUM.
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.
10. COORDINATE WITH WASTE WATER OPERATIONS ELECTRICAL ORGANIZATION FOR THE OPENING OF JUNCTION BOXES TO THE SIDE OF WET WELL IF REQUIRED DURING CONSTRUCTION.
11. THE ENCLOSURES WITH ELECTRICAL CIRCUITS SHALL BE A MINIMUM OF 5 FEET FROM ANY CLASSIFIED AREA, OTHERWISE EXPLOSION PROOF TYPE ENCLOSURES SHALL BE USED.

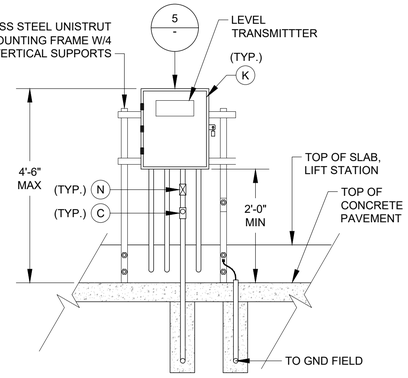


TYP SIDE VIEW FOR DETAIL 1, & 2

(SEE NOTE 10)



DETAIL 1
NTS
(SEE NOTE 9 & 11)



DETAIL 2
NTS
(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 PUMP NO.1 TO NO.2
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, MINIMUM SIZE: 12"W X 16"H X 6"D
L - NAMEPLATE, SEE SPECIFICATIONES (SEE NAMEPLATE SCHEDULE)
M - NOT USED.
N - EXPANSION FITTING
O - DRAIN VENT

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
JUNCTION BOX DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-104

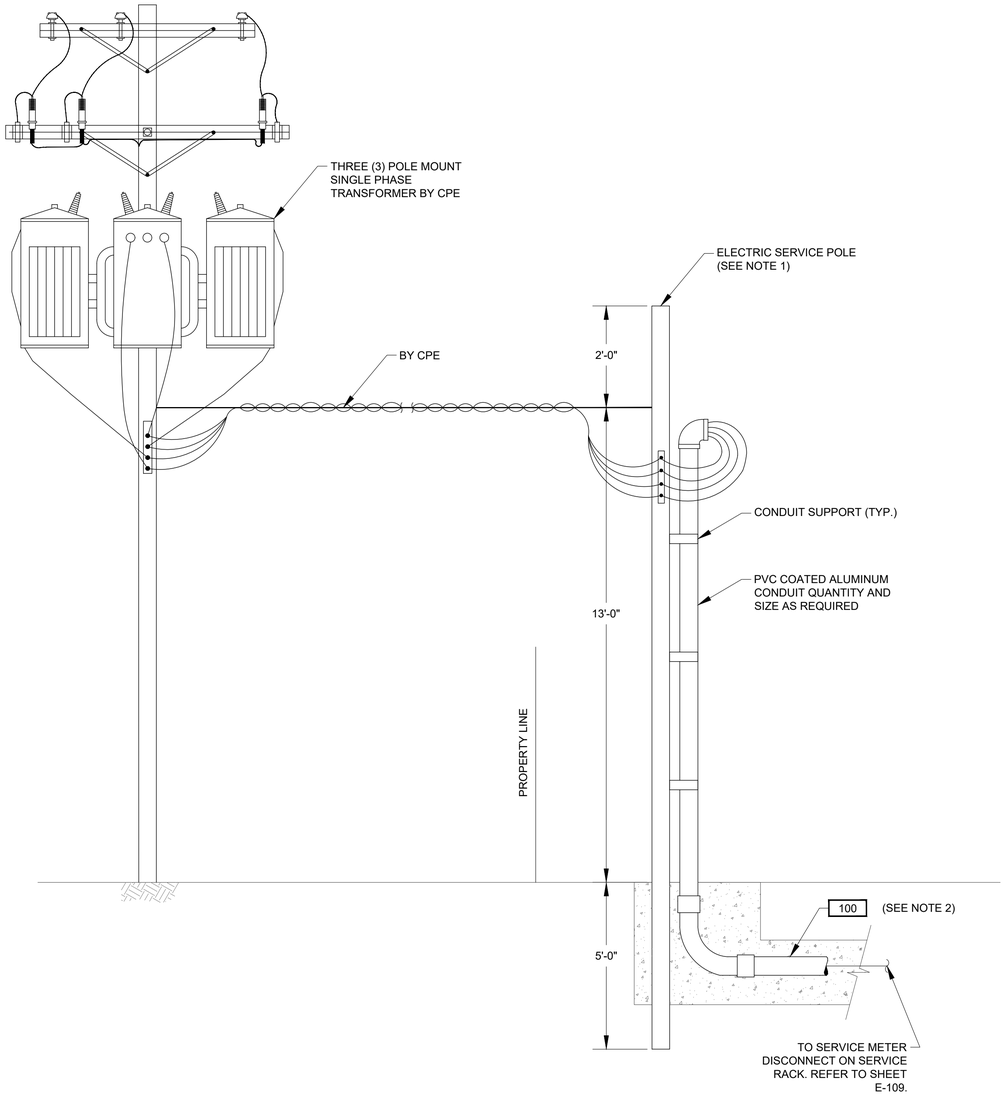
HORIZ: NONE
VERT: NONE

SHEET NO. 50 OF 230

DRAWING SCALE

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ELECTRICAL SERVICE ENTRANCE

DETAIL 1
NTS. -

NOTES:

1. WOODEN POLE 20' LONG. TOP DIAMETER 6", BOTTOM DIAMETER 8" PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.
2. ELECTRICAL SERVICE FEEDER PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR. COORDINATE WITH CPE FOR THE REQUIREMENTS OF THE INSTALLATION.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
SERVICE POLE DETAIL

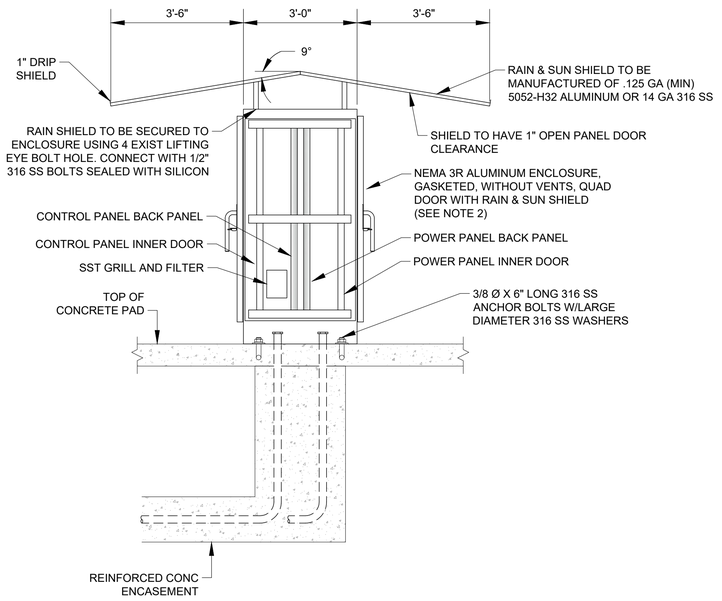
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

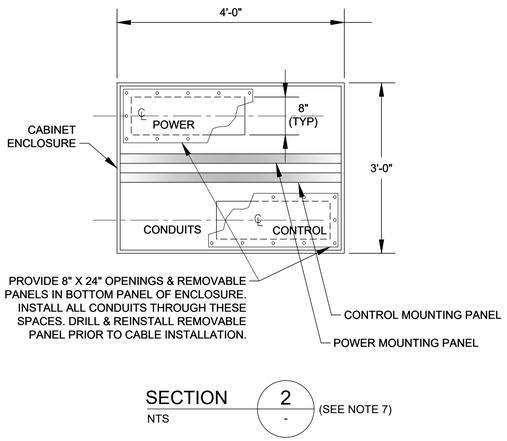
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-105
HORIZ: NONE
VERT: NONE
SHEET NO. 51 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

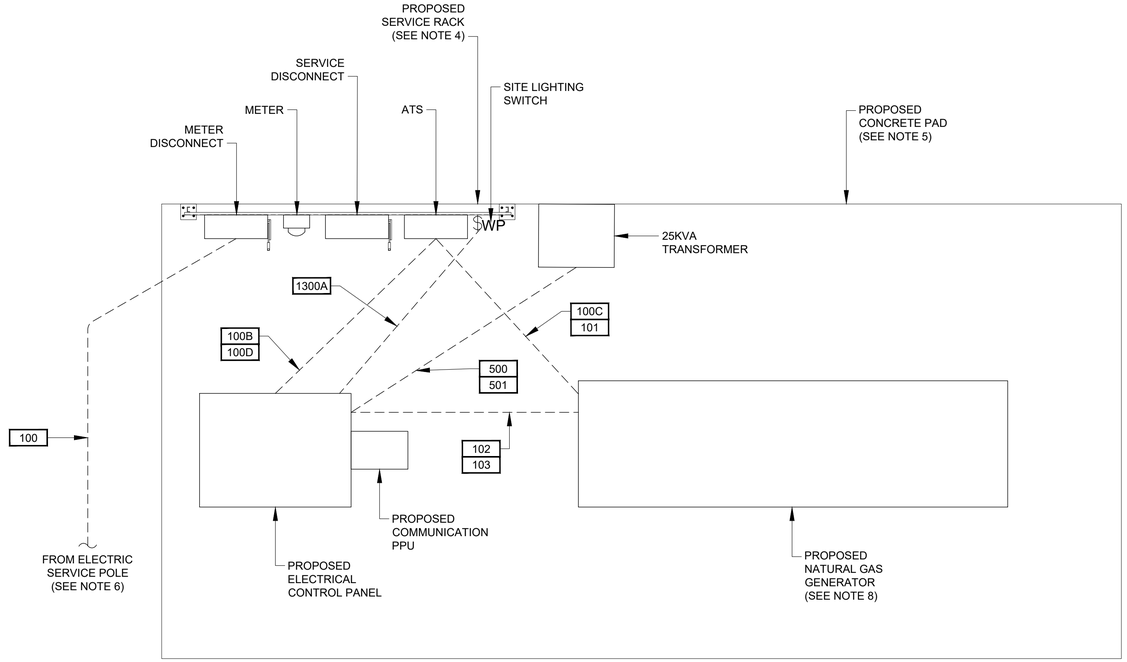
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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Chestnut Ridge\Chestnut Ridge_E-05.dwg



CONTROL CABINET ENCLOSURE ON CONCRETE PAD



SECTION 2 (SEE NOTE 7)
NTS -



CONTROL CABINET ENCLOSURE ON ELEVATED PAD DETAIL

DETAIL 1
1/2" = 1'-0" -

NOTES:

1. SEE SHEET I-104 FOR EQUIPMENT SCHEDULE.
2. REFER TO SPEC 13325-8 FOR PANEL DIMENSIONS.
3. EXPANSION JOINT FITTINGS AS REQUIRED.
4. REFER TO SERVICE RACK FOR DETAIL.
5. REFER TO STRUCTURAL DRAWINGS .
6. REFER TO SHEET E-102 FOR CONTINUATION.
7. ALL CONDUIT ENTERING THE CABINET SHALL BE BOTTOM ENTRY.
8. THIS GENERATOR WILL BE USED FOR EMERGENCY USE ONLY.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
CONTROL PANEL DETAIL

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-106
HORIZ: NONE
VERT: NONE
SHEET NO. 52 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Chestnut Ridge\Chestnut Ridge_E-06.dwg

	DESCRIPTION	SERVICE		ROUTING			CONDUIT & WIRE SIZE
		VOLTAGE	AMPS OR HP	FROM	TO	VIA	
A	MAIN BONDING JUMPER	--	--	MAIN FUSED DISCONNECT NEUTRAL	MAIN FUSED DISCONNECT GROUND	--	#6 CU GND.
B	EQUIPMENT BONDING JUMPER	--	--	MCC/POWER PANEL ENCLOSURE	POWER/CONTROL PANEL & EQUIPMENT	--	#6 CU GND.
C	GROUNDED ELECTRODE CONDUCTOR	--	--	GROUNDING ELECTRODE	MAIN SERVICE FUSED DISCONNECT GROUNDING	--	#6 CU GND.
100	SERVICE ENTRANCE	480V	200A	UTILITY POWER SERVICE	METER DISCONNECT	--	3 #3/0 AWG., #6 NEUT. #6 GND., 2-1/2" C.
100A	SERVICE POWER	480V	200A	SERVICE DISCONNECT	ATS	--	3 #3/0 AWG., #6 NEUT. #6 GND., 2-1/2" C.
100B	MCC SERVICE POWER	24VDC	--	ATS	CONTROL PANEL	--	4 #14 AWG., 1"C.
100C	NORMAL/EMERGENCY POWER STATUS	480V	200A	ATS	GENERATOR	--	3 #3/0 AWG., #6 NEUT. #6 GND., 2-1/2" C.
100D	ELECTRIC POWER	480V	200A	ATS	CONTROL PANEL	--	3 #3/0 AWG., #6 NEUT. #6 GND., 2-1/2" C.
101	GENERATOR CONTROL	120V	--	ATS	GENERATOR	--	6#14, #12 GND., 1"C.
102	ANNUNCIATION	--	--	GENERATOR	CONTROL PANEL	--	MANUFACTURER CABLE IN 2"C.
103	GENERATOR AUX. POWER	120/240V	50A	GENERATOR	LIGHTING PANEL	--	3#4 AWG., #6 GND., 1-1/2"C.
105	COMMUNICATION	--	--	COMMUNICATION POLE	PPU-AC PANEL	--	POE CABLE IN 1"C.
200	PUMP NO. 1 POWER	480V	10 HP	PUMP NO. 1	PUMP NO. 1 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
201	PUMP NO. 1 CONTROLS	120V	--	PUMP NO. 1	PUMP NO. 1 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
202	PUMP NO. 1 POWER	480V	10 HP	PUMP NO. 1 JUNCTION BOX	PUMP STARTER	--	3#10, #10 GND., 1"C.
203	COMBINED PUMP CONTROLS	120V	--	PUMP NO. 1 JUNCTION BOX	PUMP STARTER	COMBINE PUMP 1 & 2 CONTROLS	COMBINE 200 & 300 TAG WIRING, 8#14, 1"C.
300	PUMP NO. 2 POWER	480V	10 HP	PUMP NO. 2	PUMP NO. 2 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
301	PUMP NO. 2 CONTROLS	120V	--	PUMP NO. 2	PUMP NO. 2 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
302	PUMP NO. 2 POWER	480V	10 HP	PUMP NO. 2 JUNCTION BOX	PUMP STARTER	--	3#10, #10 GND., 1"C.
600	LIGHTING TRANSFORMER FEEDER	480V	70A	MOTOR CONTROL CENTER	LIGHTING TRANSFORMER	--	2#4, #4 GND., 1"C.
601	LIGHTING TRANSFORMER GROUND	--	--	LIGHTING PANEL	GROUND FIELD	--	#8 GND., 1"C.
602	LIGHTING PANEL FEEDER	120/240V	--	LIGHTING TRANSFORMER	LIGHTING PANEL	--	3#4, #6 GND., 1-1/4" C.
1000	LEVEL TRANSMITTER	24VDC	--	TRANSMITTER JUNCTION BOX	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2"C
1001	LEVEL TRANSMITTER	24VDC	--	TRANSMITTER JUNCTION BOX	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2"C
1002	COMBINED LEVEL TRANSMITTERS & FLOAT SWITCH	24VDC	--	CONTROL PANEL	TRANSMITTER JUNCTION BOX	--	2-TRI, 4#14, 2" C.
1003	WELL FLOAT SWITCHES	24VDC	--	TRANSMITTER JUNCTION BOX	FLOAT SWITCH NO.1 & NO.2	--	MANUFACTURER'S CABLE IN 2-1/2"C
1100	120VAC FOR RECEPTACLE	-	--	LIGHTING PANEL	RECEPTACLE NEXT TO TRANSMITTER J-BOX	--	2#12, #12G, 1" C.
1300	SITE LIGHTING	120VAC	--	LIGHTING PANEL	SITE LIGHTS	--	2#12, #12G, 1" C.
1300A	SITE LIGHTING	120VAC	--	LIGHTING PANEL	SITE LIGHTING SWITCH	--	2#12 AWG., #12 GND., 1" C.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

CHESTNUT RIDGE LIFT STATION CONDUIT SCHEDULE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-107

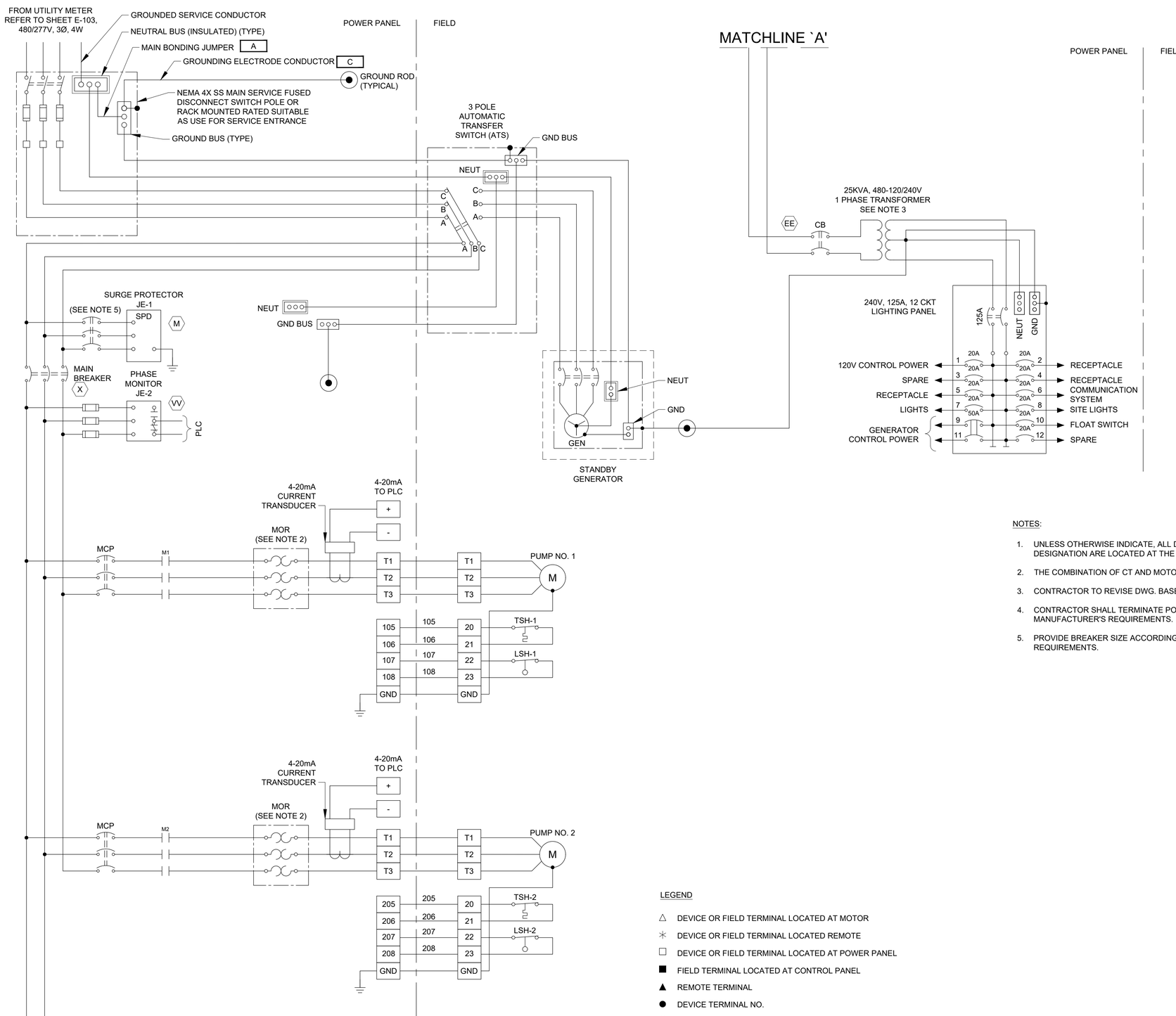
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VERT: NONE

SHEET NO. 53 OF 230

DRAWING SCALE

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NOTES:

1. UNLESS OTHERWISE INDICATE, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE CONTROL PANEL.
2. THE COMBINATION OF CT AND MOTOR OVERLOAD RELAY IF REQUIRED.
3. CONTRACTOR TO REVISE DWG. BASED ON MANUFACTURE AND SIZE.
4. CONTRACTOR SHALL TERMINATE POWER & CONTROL WIRES PER MANUFACTURER'S REQUIREMENTS.
5. PROVIDE BREAKER SIZE ACCORDING TO MANUFACTURER'S REQUIREMENTS.

LEGEND

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

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

CHESTNUT RIDGE LIFT STATION THREE-WIRE DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-108

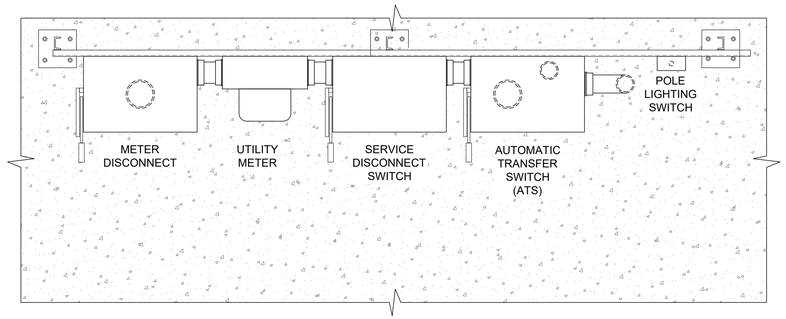
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VERT: NONE

SHEET NO. 54 OF 230

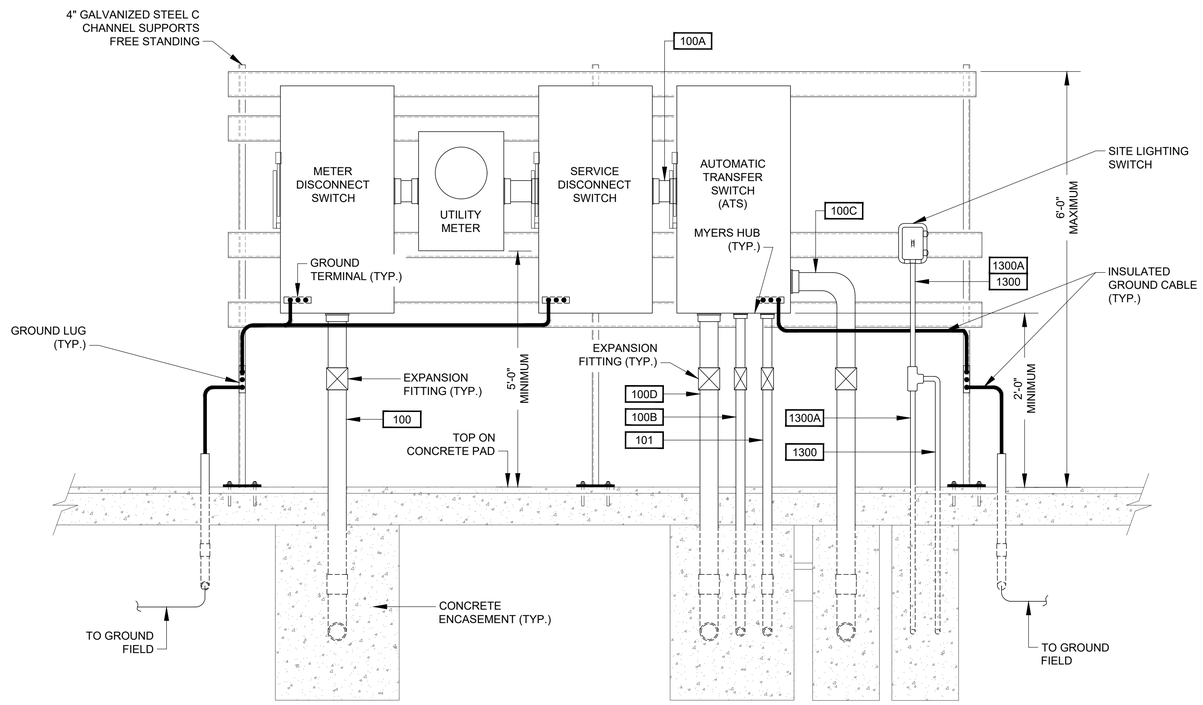
DRAWING SCALE

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PLAN



SERVICE MOUNTING RACK

DETAIL 1
NTS. -

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
SERVICE RACK DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

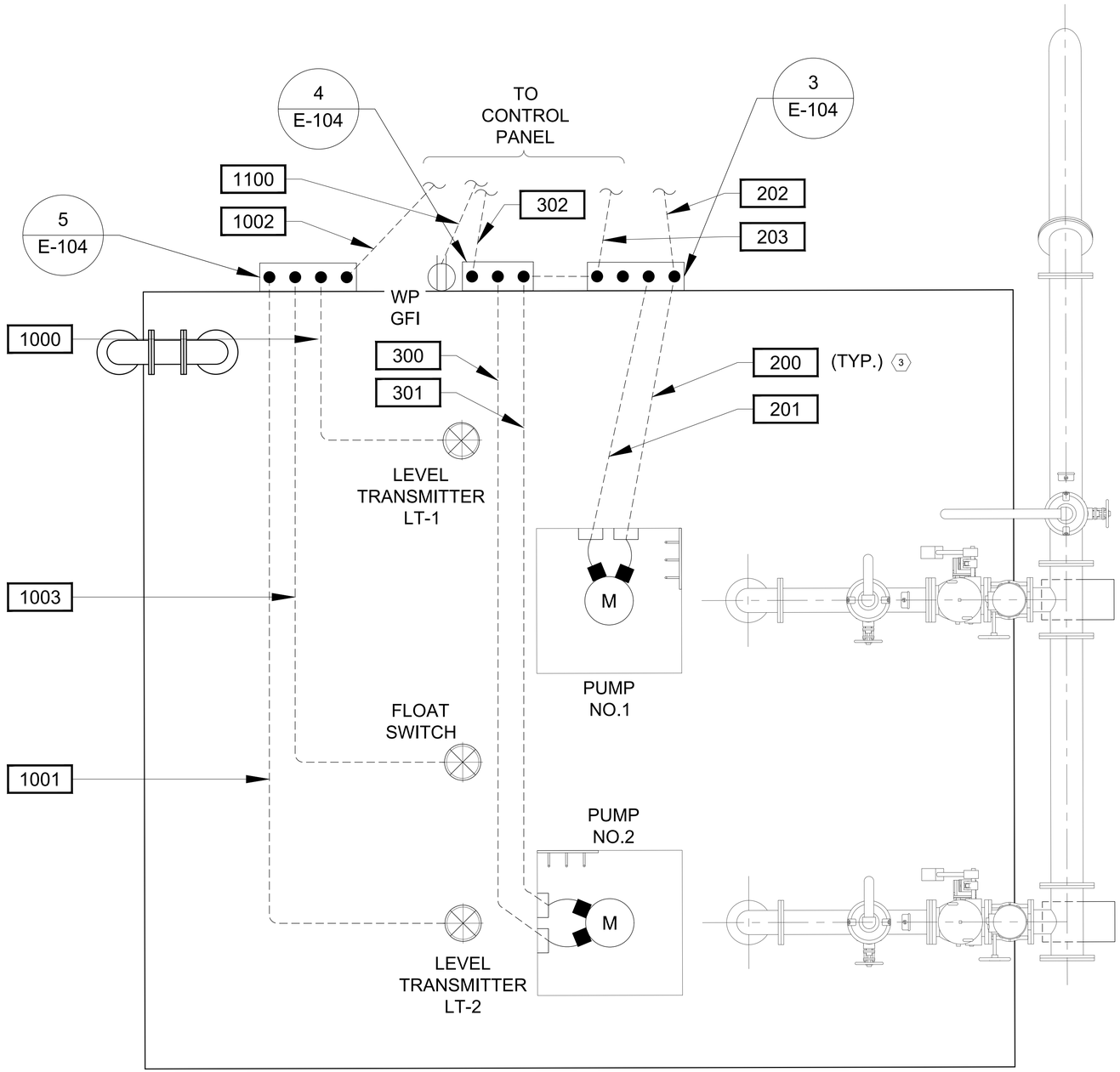
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-109
HORIZ: NONE
VERT: NONE
SHEET NO. 55 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

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NOTES BY SYMBOL "⟨#⟩":

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. INSIDE WETWELL RATED NEMA CLASS 1, DIV. 1, OUTSIDE ABOVE GROUND, AROUND WETWELL RATED CLASS 1, DIV. 2 ACCORDING TO NFPA 820.
3. NEW CONDUIT TO BE MOUNTED ON TOP OF THE SLAB. TRIP PROTECTION COVER FOR THE CONDUIT SHALL BE INSTALLED AS REQUIRED.



CHESTNUT RIDGE LIFT STATION
ENLARGED PLAN

PLAN

3/4"=1'-0" ⟨1⟩⟨2⟩

6" 0 1 2
SCALE: 3/4" = 1'-0"

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
ENLARGED SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

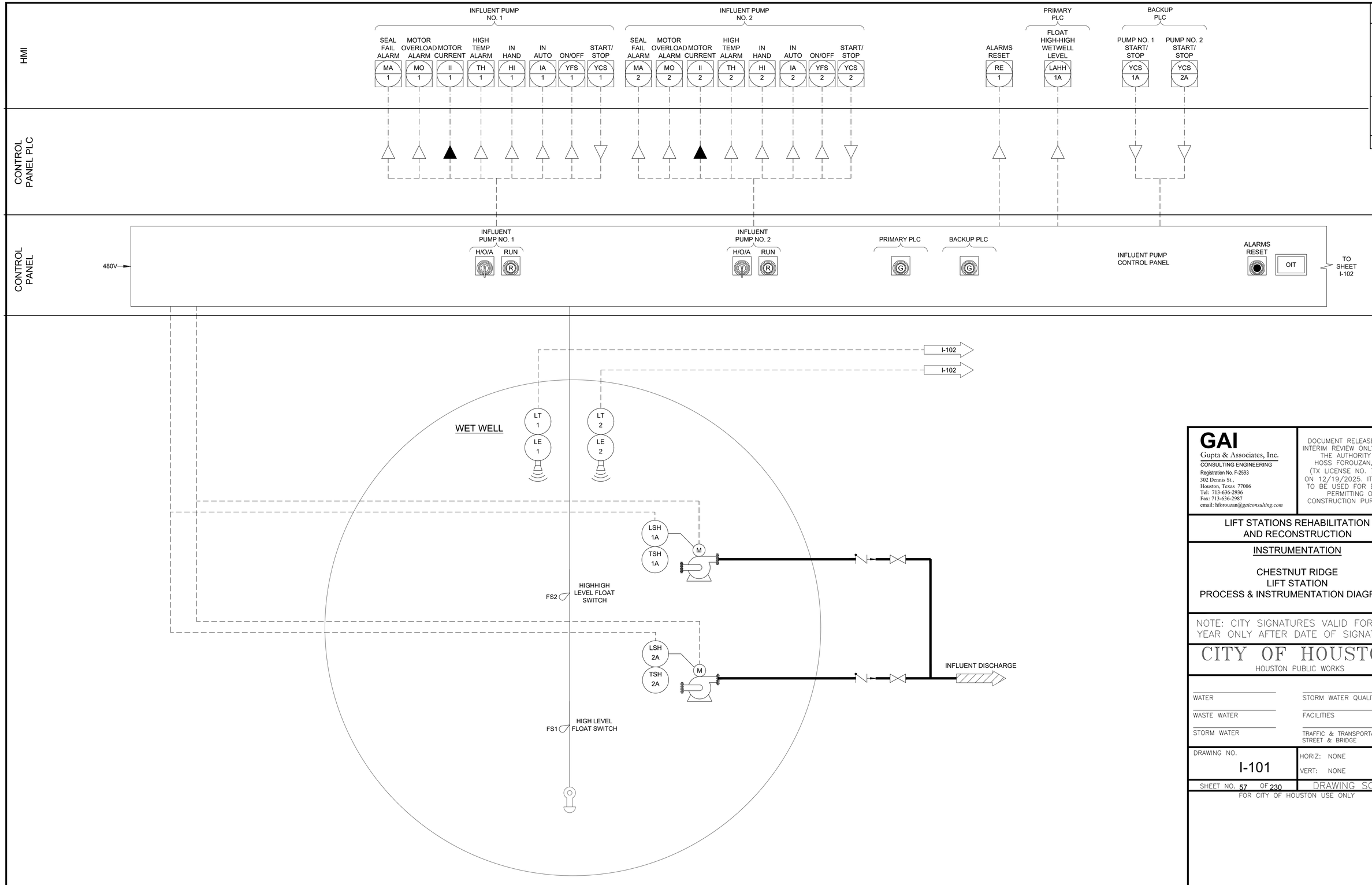
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-110	HORIZ: 3/4"=1'-0" VERT: 3/4"=1'-0"
SHEET NO. 56 OF 230	DRAWING SCALE

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
PROCESS & INSTRUMENTATION DIAGRAM-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

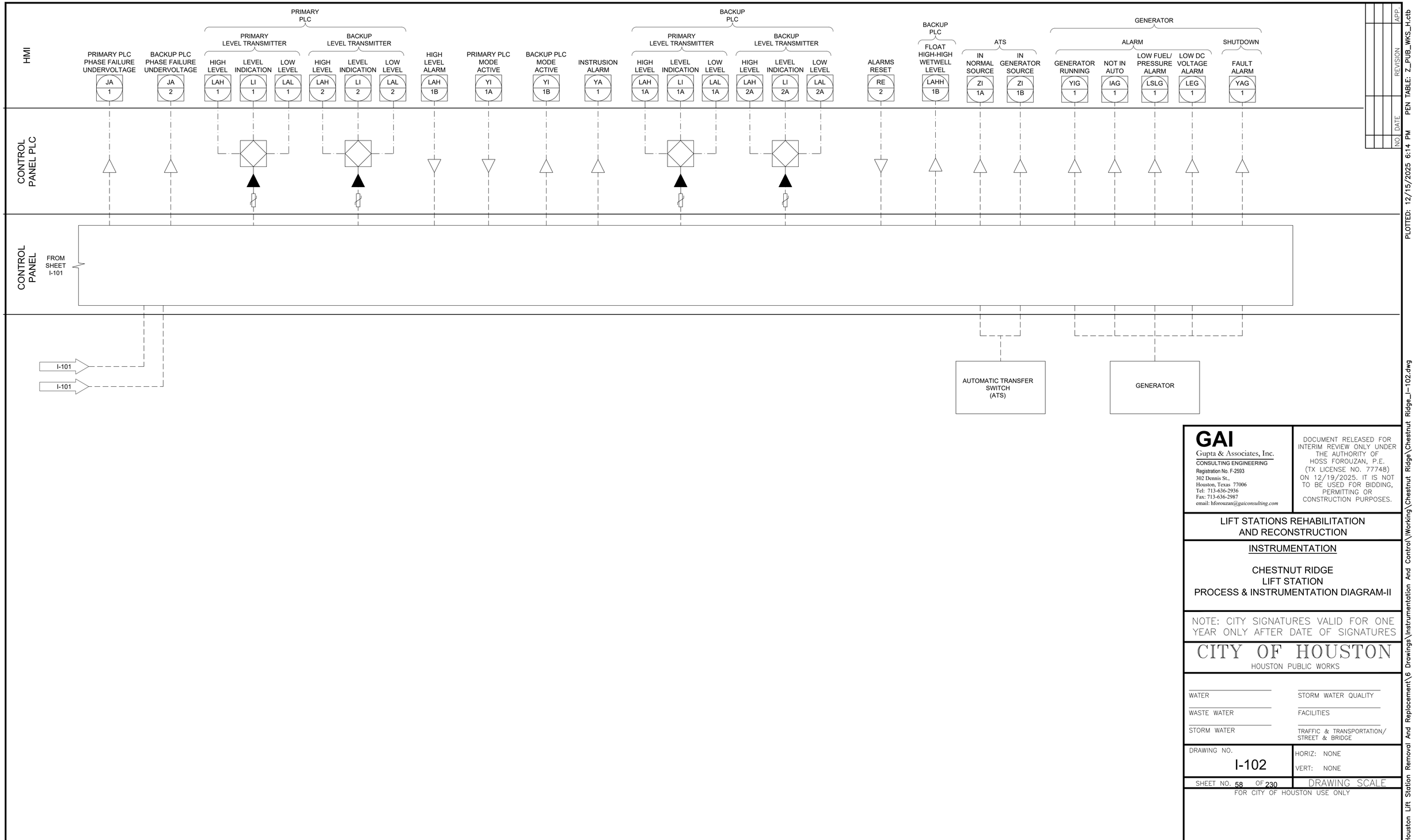
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-101	HORIZ: NONE VERT: NONE
SHEET NO. 57 OF 230	DRAWING SCALE

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-102

HORIZ: NONE
VERT: NONE

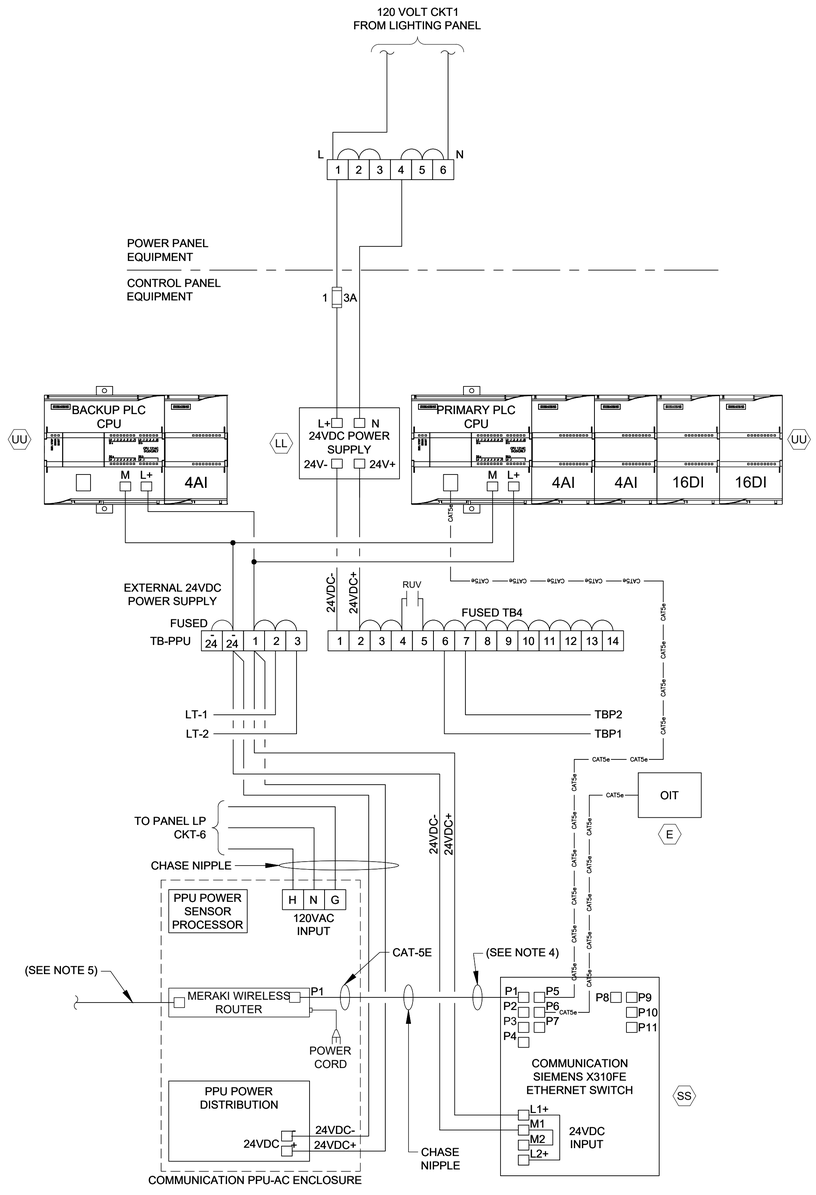
SHEET NO. 58 OF 230

DRAWING SCALE

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NOTES:

1. FOR DESCRIPTION AND RATINGS OF ITEMS INDICATED WITH ITEM TAG, SEE DEVICE RATINGS SCHEDULE.
2. REFER TO SPEC SECTION 16120 FOR CONDUCTOR COLOR CODE.
3. THE PLC POWER SUPPLY SHALL FEED THE 24VDC I/O.
4. ETHERNET CABLE FOR MERAKI CELLULAR ROUTER (P1).
5. POE CABLE TO RADIO.
6. COMMUNICATION PPU-AC & SCADA SHALL BE PROVIDED BY CONTRACTOR INCLUDING TO RUN CONDUITS & WIRES.
7. COORDINATE WITH VENDOR TO PROVIDE PROPER VENTILATION WHERE APPLICABLE.

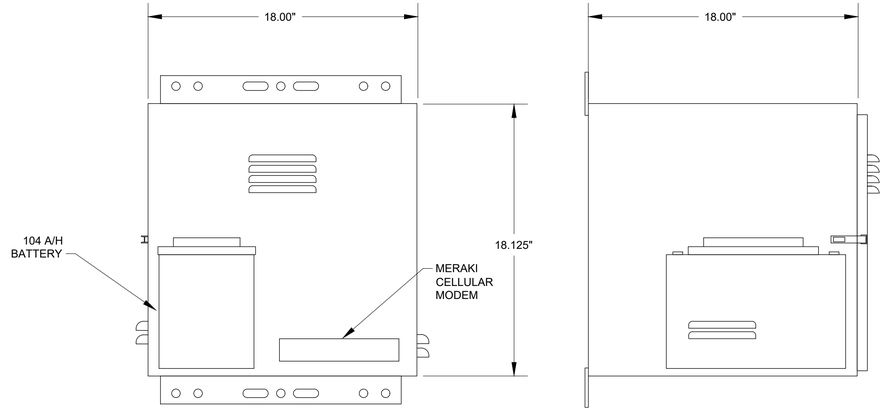


CONTROL POWER & COMMUNICATIONS WIRING

DIAGRAM

NTS

(SEE NOTE 2 & 6)



PPU-AC CONTROL ENCLOSURE

ELEVATION

NTS

(SEE NOTE 7)

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
COMMUNICATIONS DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-103

HORIZ: NONE

VERT: NONE

SHEET NO. 59 OF 230

DRAWING SCALE

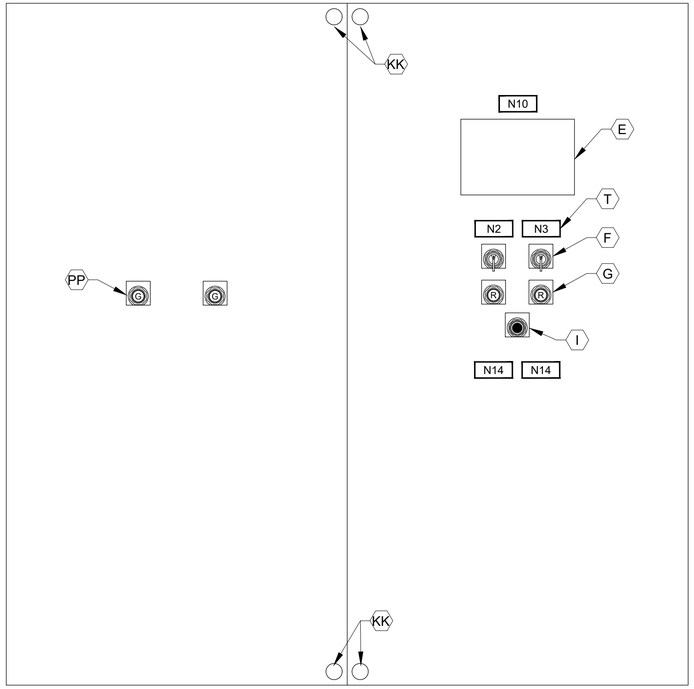
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EQUIPMENT AND DEVICE SCHEDULE

ITEM	QUANTITY	DESCRIPTION
A	1	PANEL BOARD, 120/240V, 1 PHASE, 3 WIRE, 100A, 12 CKTS
B	2	FULL VOLTAGE, NON-REVERSING, SINGLE SPEED, AUTOMATIC MOTOR STARTER W/120 VOLT CONTROL COIL, NEMA SIZE AS SCHEDULED.
C	2	TIME DELAY RELAY WITH THREE FORM C CONTACTS, 120VAC COIL AND 11 PIN SOCKET BASE.
D	1	SINGLE CHANNEL INTRINSICALLY SAFE RELAY
E	1	PROGRAMMING SCREEN (OIT)
F	2	HAND-OFF-AUTO SWITCH, 3 POSITION, HEAVY-DUTY, OILTIGHT WITH 2 SETS OF CONTACT BLOCKS (PUMP CONTROL)
G	2	INDICATING LIGHT, HEAVY DUTY, OILTIGHT, RED, 24 VDC, LED, WITH "RUN" LEGEND
H	1	PERPETUAL POWER UNIT (PPU)
I	1	PUMP ALARM RESET PUSHBUTTON
J	2	SWITCH FOR CABINET LIGHT, 120V, 20A, SPST
K	3	DUPLEX RECEPTACLE, 120V, 20A, 2 WIRE, GROUNDED
L	2	24" LED STRIP LIGHT 120V SUITABLE FOR ZERO DEGREE OPERATION.
M	1	SURGE PROTECTOR - INCOMING POWER
N	*	NOT USED.
P	2	CURRENT TRANSFORMER, RATIO AS SCHEDULED W/4-20mA OUTPUT.
Q	12	TERMINAL BLOCKS, SIZED FOR MOTOR POWER REQUIREMENTS
R	*	RELAY WITH THREE FORM C CONTACTS, AND 11 PIN SOCKET BASE
S	*	NOT USED.
T	*	NAMEPLATES, SEE SPECIFICATIONS (SEE NAMEPLATE SCHEDULE)
U	2	SOLID STATE MOTOR OVERLOAD RELAY
V	6	FUSE HOLDER & FUSES - PHASE FAILURE
W	1	NEMA 3R GASKETED ALUMINUM ENCLOSURE WITHOUT VENTS 72"H x 48"w x 36"D
X	1	DOOR MOUNTED ROTARY HANDLE DISCONNECT SWITCH (SUITABLE FOR ENVIRONMENT)
Y	1	THERMAL-MAGNETIC MOLDED CASE MAIN CIRCUIT BREAKER, SIZE AS SCHEDULED
Z	2	ADJUSTABLE INSTANTENOUS TRIP MOTOR CIRCUIT PROTECTOR, SIZE AS SCHEDULED
AA	*	TERMINAL BLOCKS
BB	2	EXTERNAL OVERLOAD RESET PUSHBUTTON MECHANISM
CC	2	ANALOG I/O SURGE SUPPRESSOR
DD	1	WIRE DUCT 2" WIDE x 2" DEEP MINIMUM
EE	1	THERMAL-MAGNETIC MODLED CASE CIRCUIT BREAKER FOR LIGHTING TRANSFORMER, SIZE AS SCHEDULED
FF	1	GROUND BUS
GG	1	25 KVA, 480 - 240/120V,1ϕ, 3W DRY TYPE NEMA 3R ENCLOSURE TRANSFORMER (PAD MOUNTED)
HH	*	NOT USED.
II	1	120VAC - 24VAC POWER SUPPLY (AS REQUIRED)
JJ	11	CARTRIDGE FUSES & FUSE HOLDER
KK	8	QUARTER TURN CAPTIVE DOOR CLOSURE
LL	1	120VAC - 24VDC PLC POWER SUPPLY 5A
MM	2	MOTION SWITCH
NN	*	NOT USED
PP	2	INDICATING LED LIGHT, HEAVY DUTY, OILTIGHT, GREEN, 24 VDC, LED WITH " PRIMARY PLC" & "BACKUP PLC" LEGEND
QQ	*	NOT USED
RR	*	NOT USED
SS	1	COMMUNICATION ETHERNET SWITCH
TT	1	POWER SURGE PROTECTOR - CONTROL POWER
UU	2	PROGRAMMABLE LOGIC CONTROLLER WITH EXPANSION UNIT
VV	1	PHASE AND UNDER VOLTAGE MONITOR
WW	*	FUSED TERMINAL BLOCKS
XX	2	PUMP PROTECTION MODULE RATED FOR CLASS I, DIVISION I
YY	2	ANALOG SIGNAL ISOLATOR
ZZ	-	NOT USED
AB	-	NOT USED.
AC	1	POWER DISTRIBUTION BLOCK
AD	1	NEUTRAL LUG
AE	1	6" EXHAUST FAN, 120V, STAINLESS FILTERS & GRILL PACKAGE W/BUG GUARD
AF	1	T-STAT FOR EXHAUST FAN

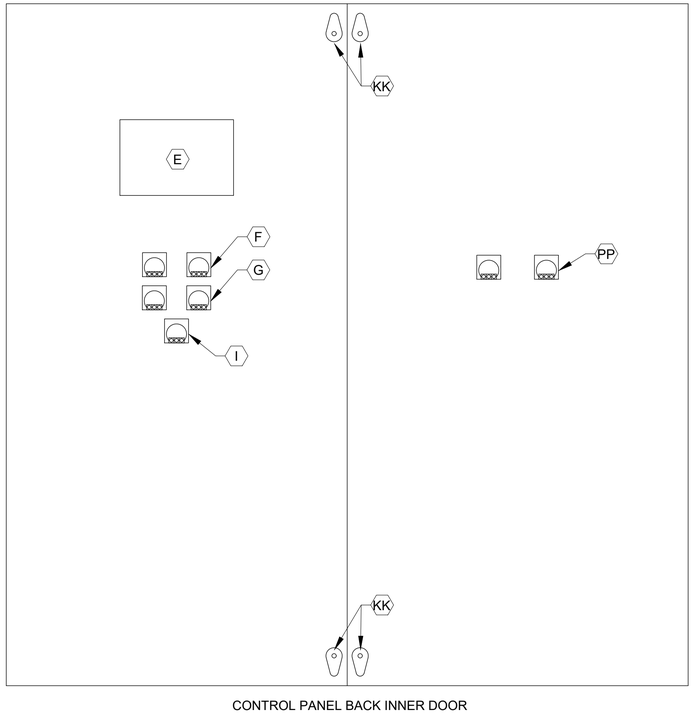
* - AS SCHEDULED



CONTROL PANEL FRONT INNER DOOR

ELEVATION

NTS



CONTROL PANEL BACK INNER DOOR

ELEVATION

NTS

NOTES:

1. NAMEPLATES SHALL BE MOUNTED TO PANELS USING STAINLESS STEEL HARDWARE.
2. REFER SPECIFICATIONS FOR ALL PANEL COMPONENTS.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT & SCHEDULE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-104

HORIZ: NONE

VERT: NONE

SHEET NO. 60 OF 230

DRAWING SCALE

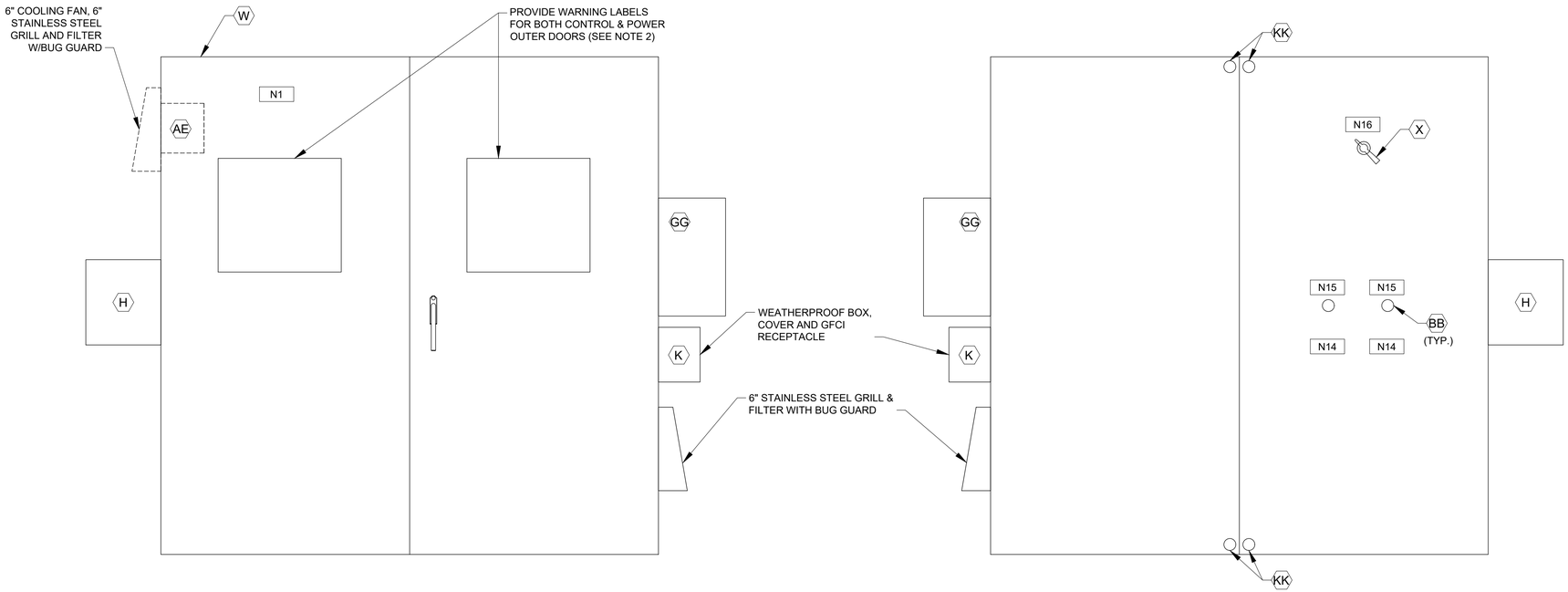
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PEN TABLE: Z_PUB_WKS_H.ctb

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Chestnut Ridge\Chestnut Ridge_I-104.dwg



CONTROL CABINET (CONTROL SIDE)
OUTER DOOR

ELEVATION

NTS

CONTROL CABINET (POWER SIDE)
INNER DOOR

ELEVATION

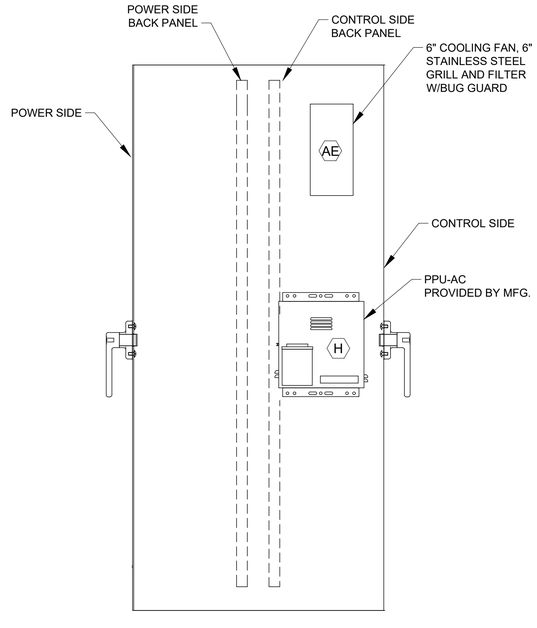
NTS
(SEE NOTE 1)

NOTES:

1. SEE SHEET I-104 FOR EQUIPMENT SCHEDULE.
2. REFER TO NEC SECTIONS 110.16 & 110.21

NAMEPLATE SCHEDULE

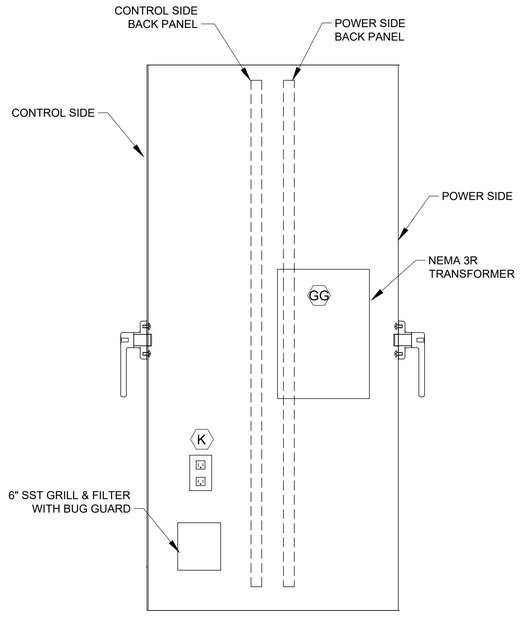
DESIGNATION	ENGRAVED
N1	PUMP STATION DESIGNATION
N2	PUMP NO. 1
N3	PUMP NO. 2
N4	NOT USED.
N5	NOT USED.
N6	NOT USED.
N7	NOT USED.
N8	NOT USED.
N9	NOT USED.
N10	PROGRAMMING SCREEN
N11	NOT USED.
N12	PRIMARY PLC
N13	BACKUP PLC
N14	MOTOR DATA
	HORSEPOWER (OUTPUT) ----------
	RPM AT FULL LOAD ----------
	TIME RATING ----------
	FREQUENCY ----------
	NUMBER OF PHASES ----------
	MODEL NUMBER ----------
	RATED VOLTAGE ----------
	SERVICE FACTOR ----------
	FULL LOAD AMPS ----------
	INSULATION CLAS ----------
	NEMA DESIGN LETTER ----------
	TEMPERATURE RISE ----------
	NEMA FRAME SIZE ----------
	DATE OF MANUFACTURE ----------
	THERMO PROTECTION (IF REQUIRED) --
	MOISTURE PROTECTION (IF REQUIRED)-
N15	EXTERNAL OVERLOAD RESET PUSH BUTTON MECHANISM
N16	MAIN BREAKER



CONTROL CABINET (LEFT SIDE VIEW)

ELEVATION

NTS



CONTROL CABINET (RIGHT SIDE VIEW)

ELEVATION

NTS

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-105

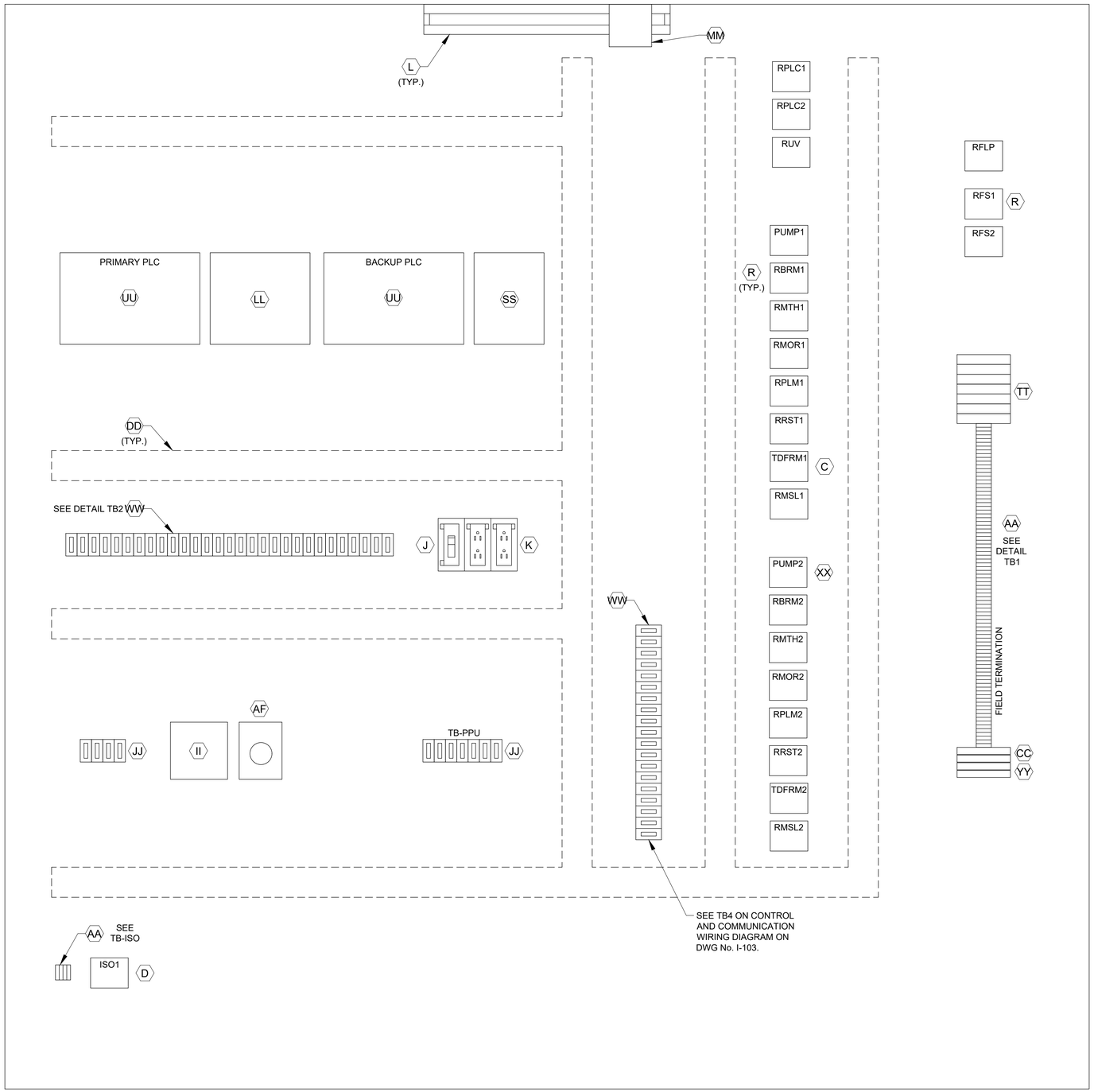
HORIZ: NONE

VERT: NONE

SHEET NO. 61 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY



CONTROL PANEL
ELEVATION

L1A
L1N
SPARE
3
3N
49
50
51
52
53
54
1004
1
24V-
24V-
1002
2
11
1001
1001A
12
1003
1003A
1002
1004
18
3N
19
20
36
36N
41
42
43
44
SPARE
L1A
L1N
103
104
105
106
107
108
110
113
115
116
119
SPARE
203
204
205
206
207
208
210
213
215
216
219

DETAIL TB1

ALL L AND N FOR EACH PUMP CONTROL TO BE FUSED

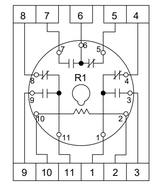
36A
37A
50
52
54
52A
54A
L+
M
35B
38B
41B
47B
13B
13AB
13GB
L+
M
14B
14AB
14GB
L+
M
13
13A
13G
14
14A
14G
SPARE
18
SPARE
28
29
32
35B
33
42
44
SPARE
103
104
115
109
110
118
120
121
122
123
SPARE
209
210
211
218
220
222
223

DETAIL TB2

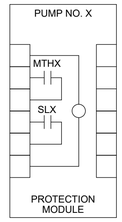
1500
1501
1503
1504

DETAIL TB-ISO

LEGEND	
TAG	DESCRIPTION
RMTH	MOTOR HIGH TEMPERATURE ALARM RELAY
RPLM	PLC PUMP RUN RELAY
RRST	PUMP RESET AUX RELAY
RPLC	PLC MODE AUX RELAY
RMOR	MOTOR OVERLOAD ALARM RELAY
RBRM	BACKUP SYSTEM RUN RELAY
RUV	UNDER VOLTAGE RELAY
ISO	INTRINSICALLY SAFE RELAY
RFS	PUMP RUN FLOAT SWITCH RELAY
TDFRM	TIMER FLOAT SWITCH RUN RELAY
RMSL	MOTOR SEAL LEAK ALARM RELAY
RFLP	FLOAT LOCKOUT PUMP RELAY



RELAY DETAIL
ITEM R



PUMP PROTECTION MODULE
DETAIL, ITEM XX

NOTE: REPLACE "X" WITH APPROPRIATE PUMP NO.

NOTES:

1. SEE SHEET I-104 FOR EQUIPMENT SCHEDULE.

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

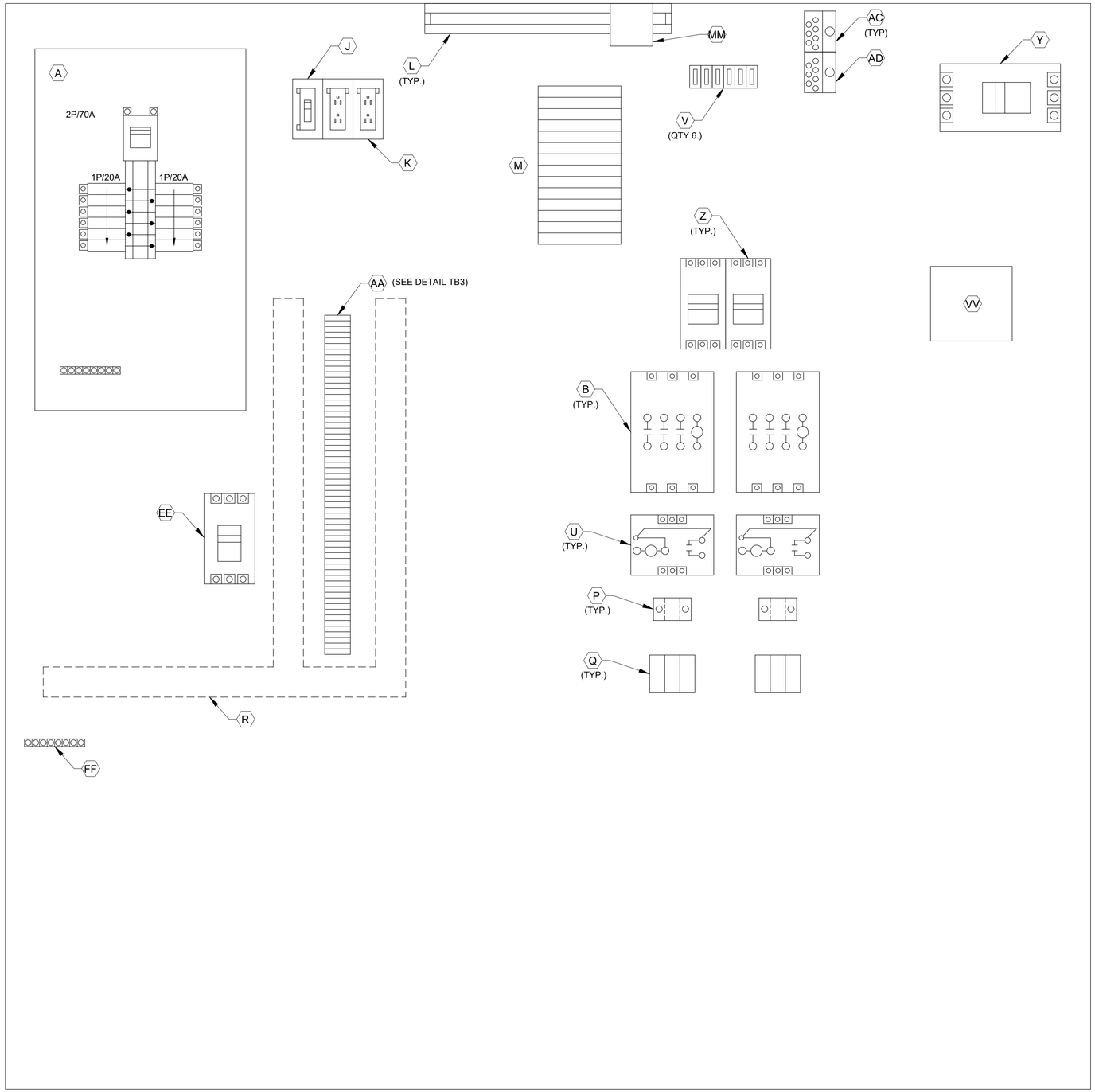
DRAWING NO. I-106	HORIZ: NONE VERT: NONE
SHEET NO. 62 OF 230	DRAWING SCALE

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NO.	DATE	REVISION	APP.

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POWER PANEL
ELEVATION

3
18
L1A
L1N
SPARE
SPARE
103
104
105
106
107
108
110
113
115
116
119
SPARE
203
204
205
206
207
208
210
213
215
216
219
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE

DETAIL TB3

NOTES:

1. SEE SHEET I-104 FOR EQUIPMENT SCHEDULE.

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-III

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

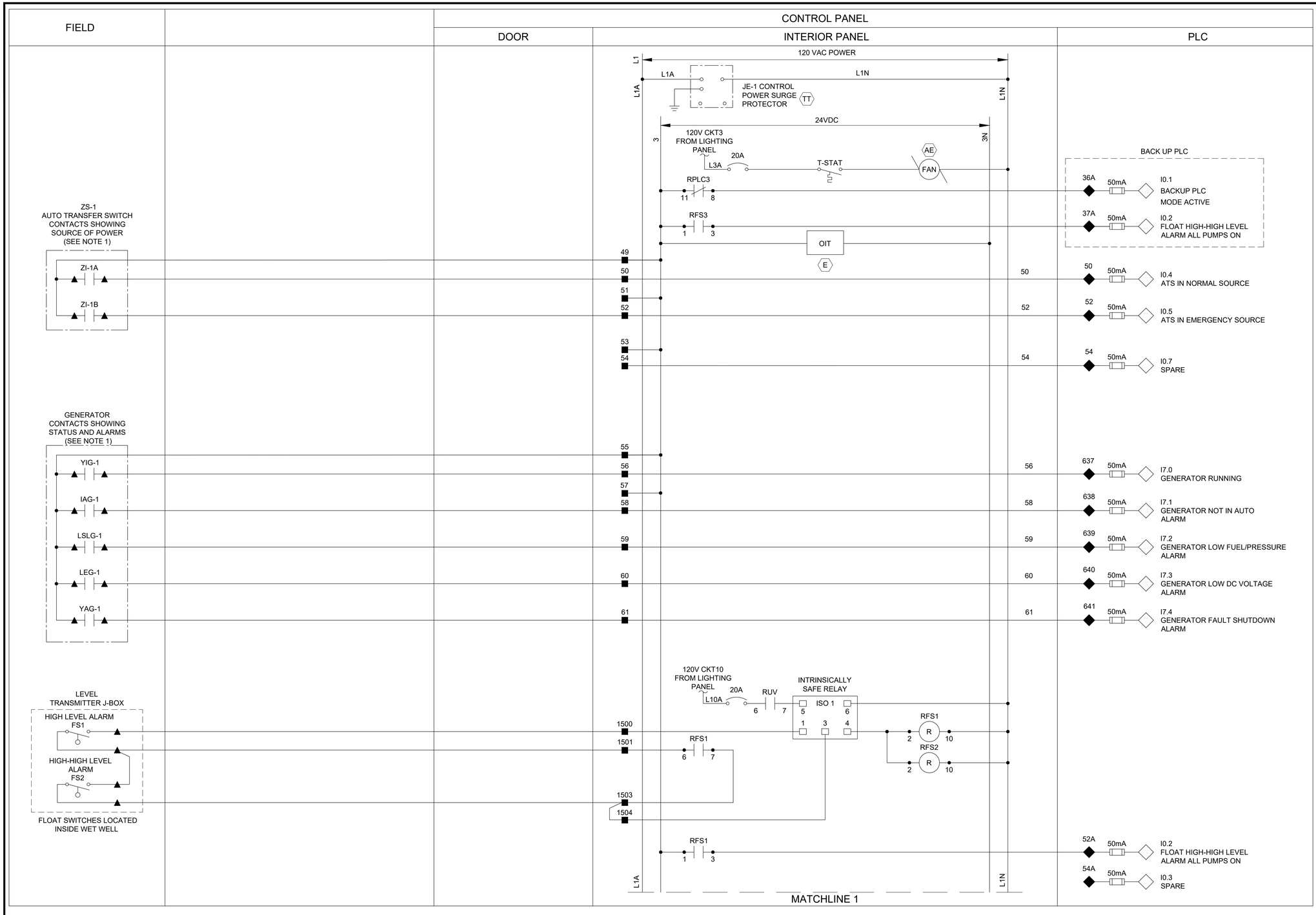
DRAWING NO. I-107	HORIZ: NONE VERT: NONE
SHEET NO. 63 OF 230	DRAWING SCALE

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NO.	DATE	REVISION	APP.

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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:

1. PROVIDE MANUAL TRANSFER SWITCH DRY CONTACT.
2. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

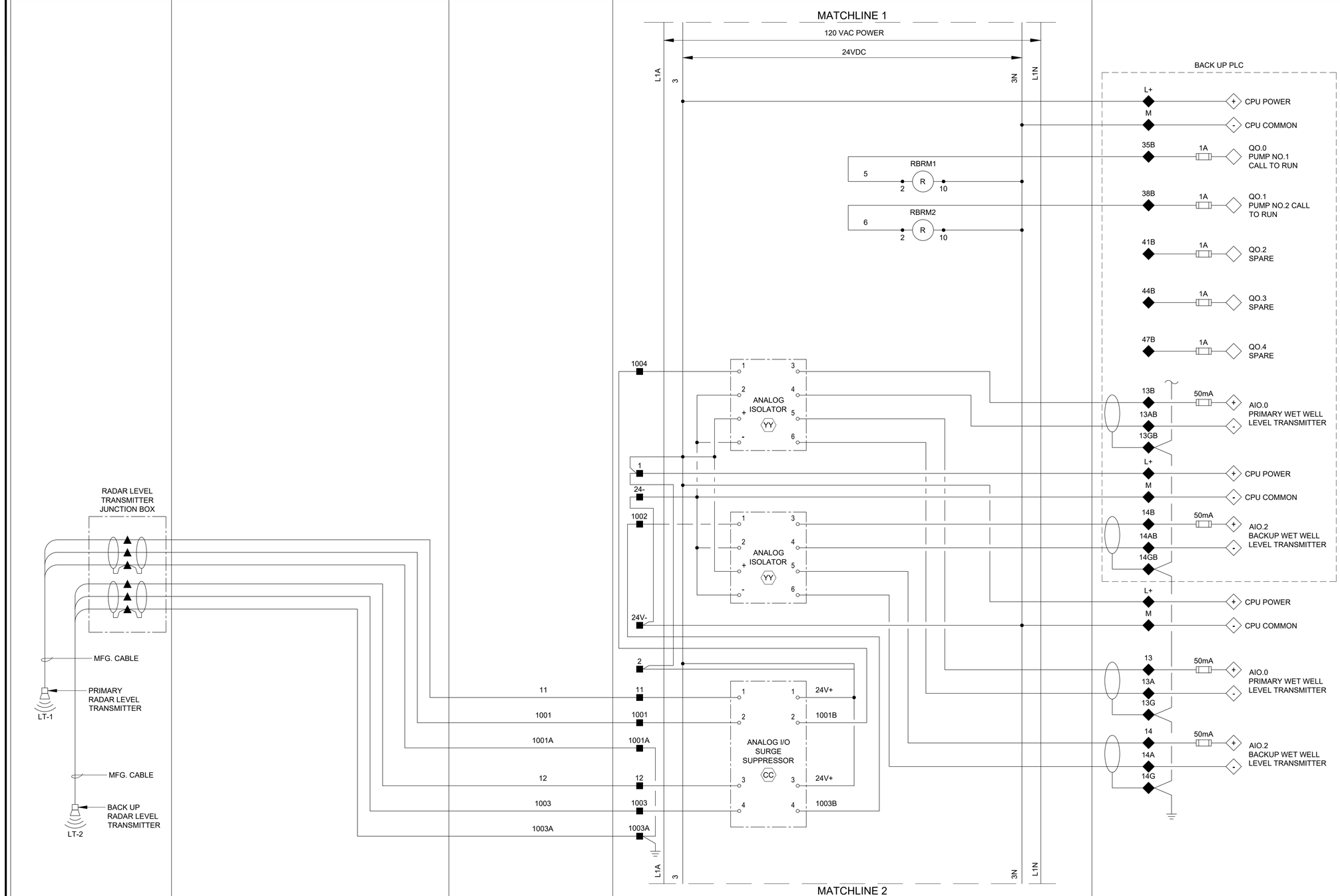
DRAWING NO. I-108	HORIZ: NONE VERT: NONE
SHEET NO. 64 OF 230	DRAWING SCALE

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FIELD		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

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

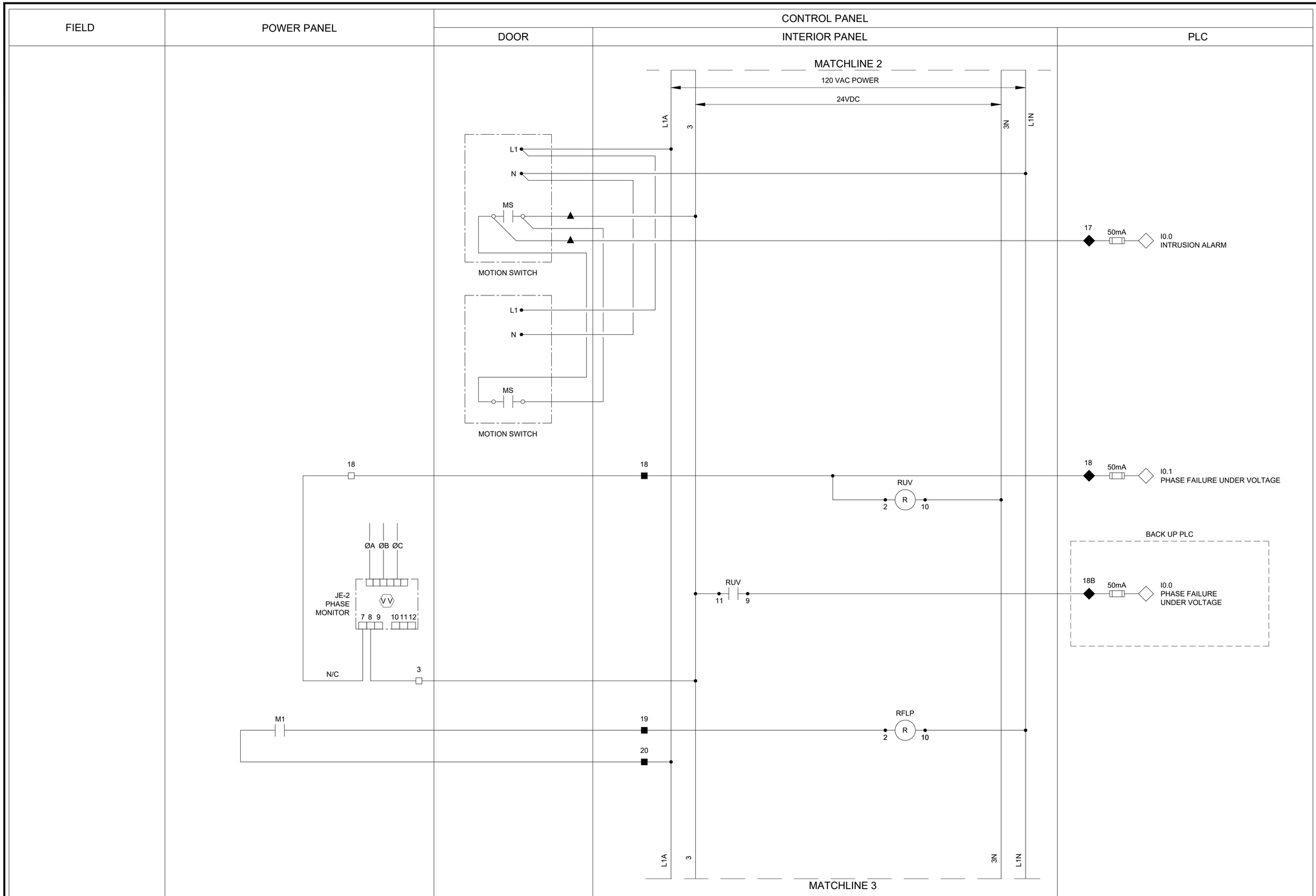
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-109	HORIZ: NONE VERT: NONE
SHEET NO. 65 OF 230	DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Chestnut Ridge\Chestnut Ridge_I-109.dwg



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:

1. PROVIDE ONE LIMIT SWITCH PER EXTERIOR CONTROL PANEL AND POWER PANEL DOOR, WIRED IN PARALLEL.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-III

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-110

HORIZ: NONE
VERT: NONE

SHEET NO. 66 OF 230

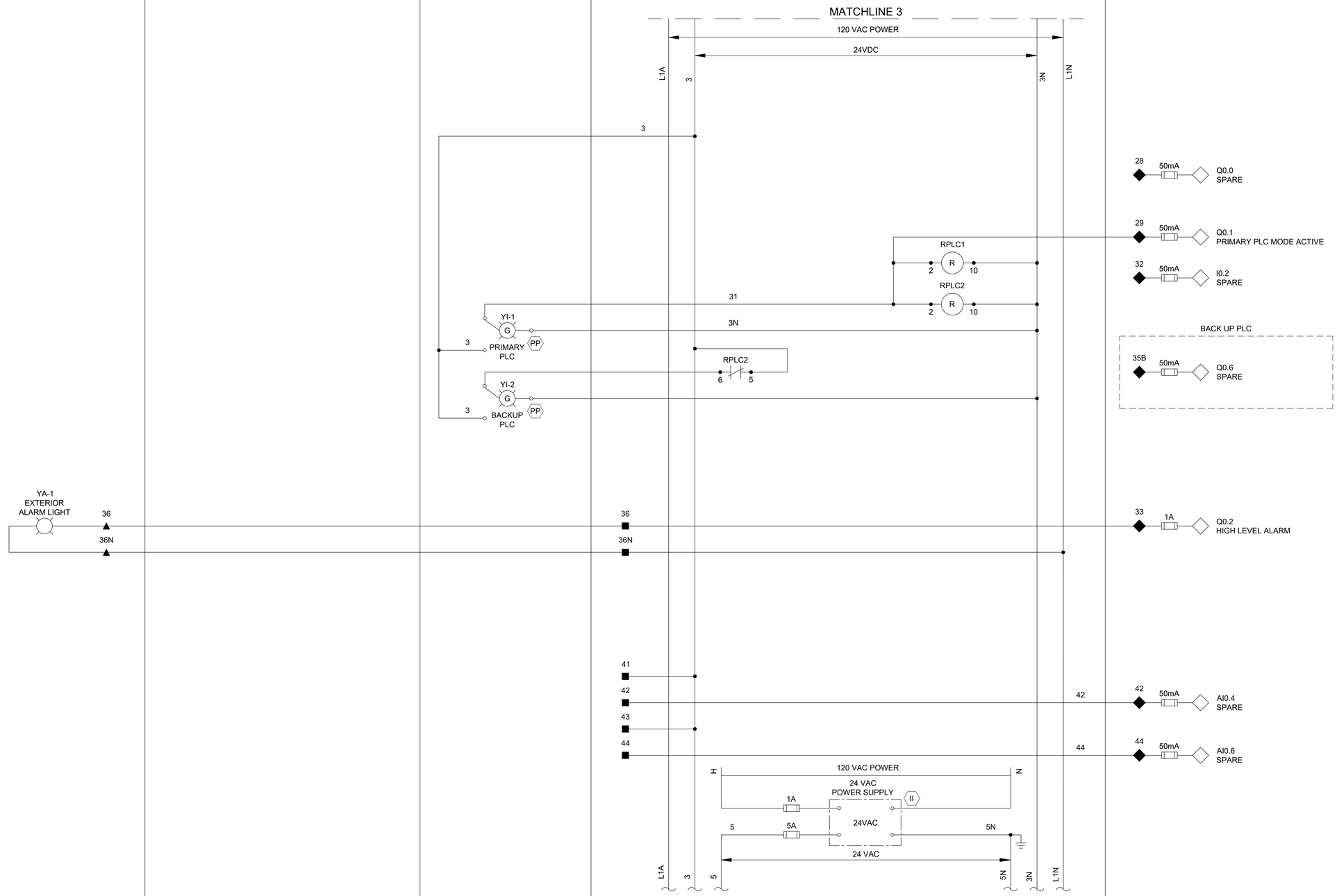
DRAWING SCALE

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FIELD	POWER PANEL	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

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-IV

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-111

HORIZ: NONE
VERT: NONE

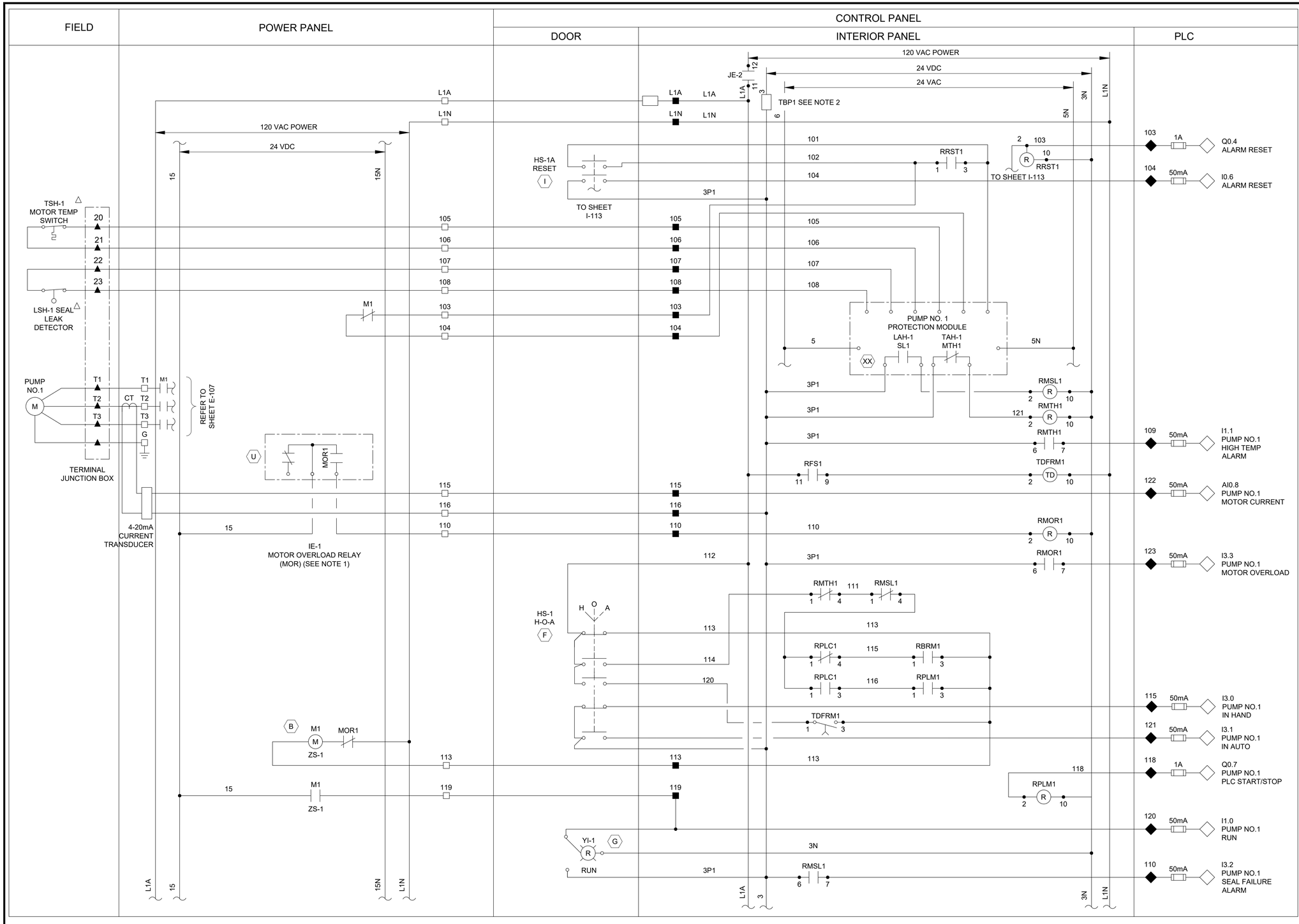
SHEET NO. 67 OF 230

DRAWING SCALE

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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:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM DRAWING NO. I-303.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
PUMP NO.1
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

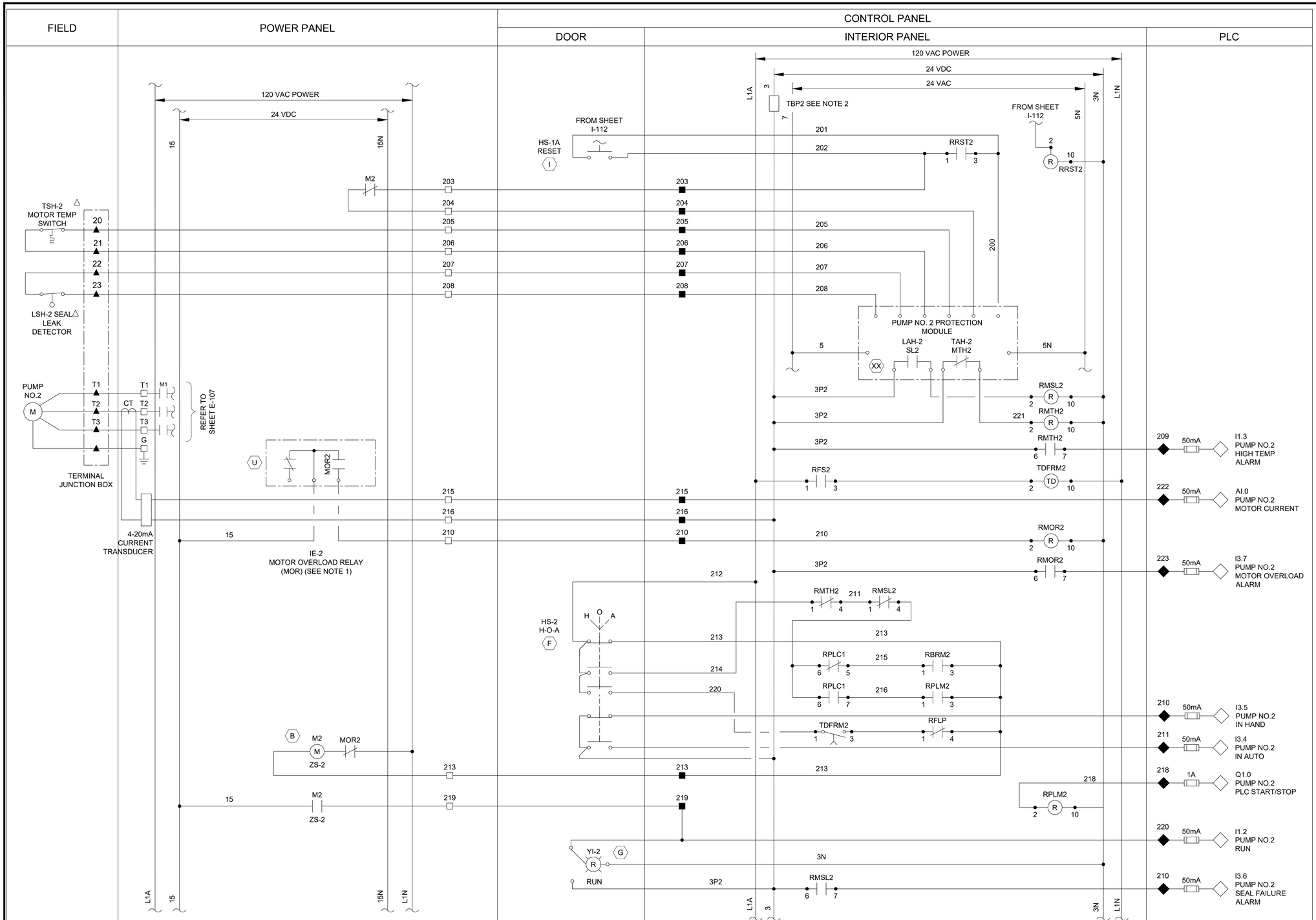
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-112	HORIZ: NONE VERT: NONE
SHEET NO. 68 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM DRAWING NO. I-103.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

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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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
PUMP NO.2
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-113
HORIZ: NONE
VERT: NONE
SHEET NO. 69 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

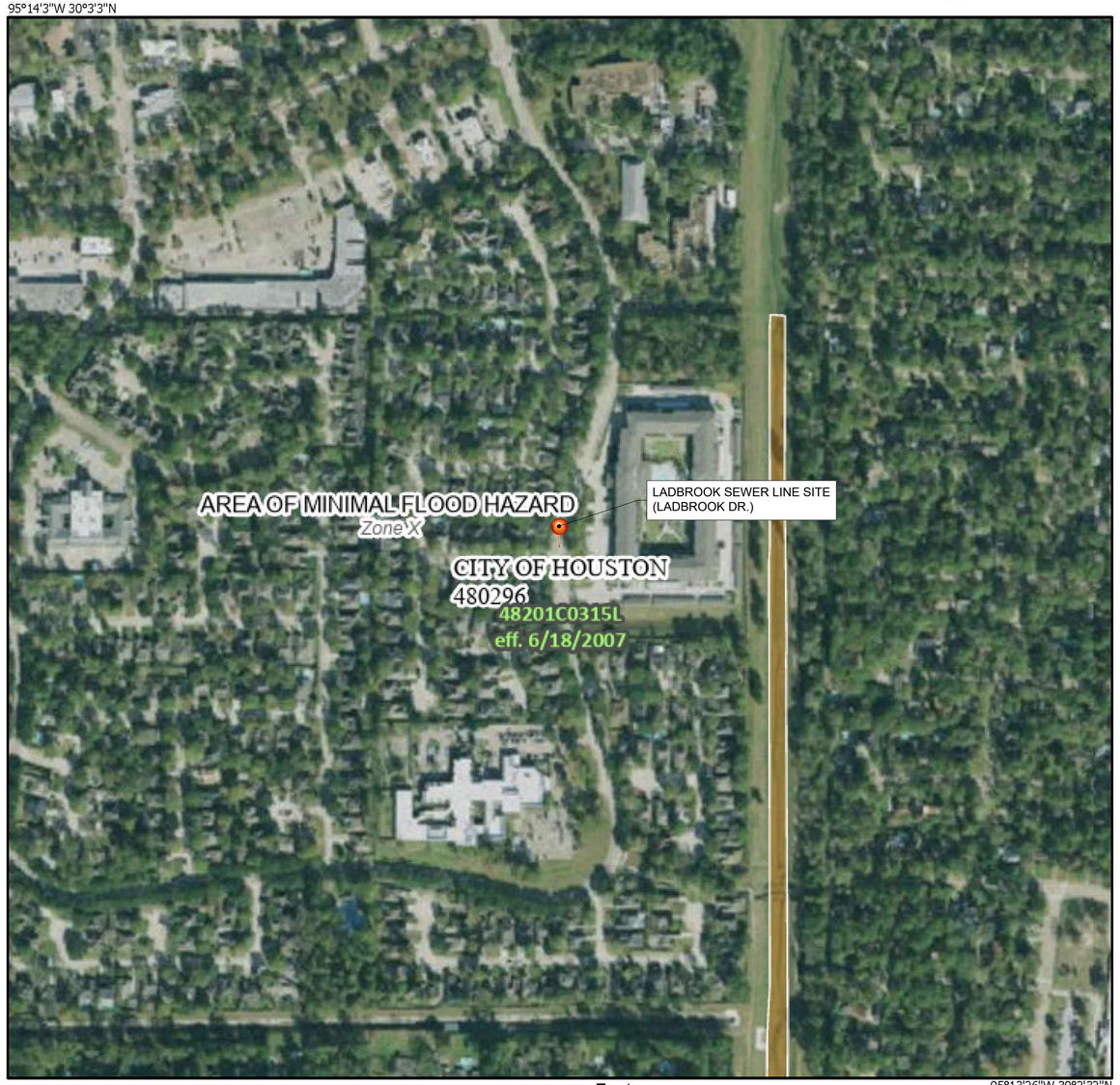
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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Chestnut Ridge\Chestnut Ridge_I-113.dwg

National Flood Hazard Layer FIRMette

FEMA

95°14'3"W 30°3'3"N



95°13'26"W 30°2'32"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/4/2025 at 4:13 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

N

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/22/2026 5:23 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA, HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:

Crag Alexander Perry
Engineer
116345
Registration Number
JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

FIRMETTE

LADBROOK LIFT STATION
NATIONAL FLOOD HAZARD
LAYER FIRMETTE MAP

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

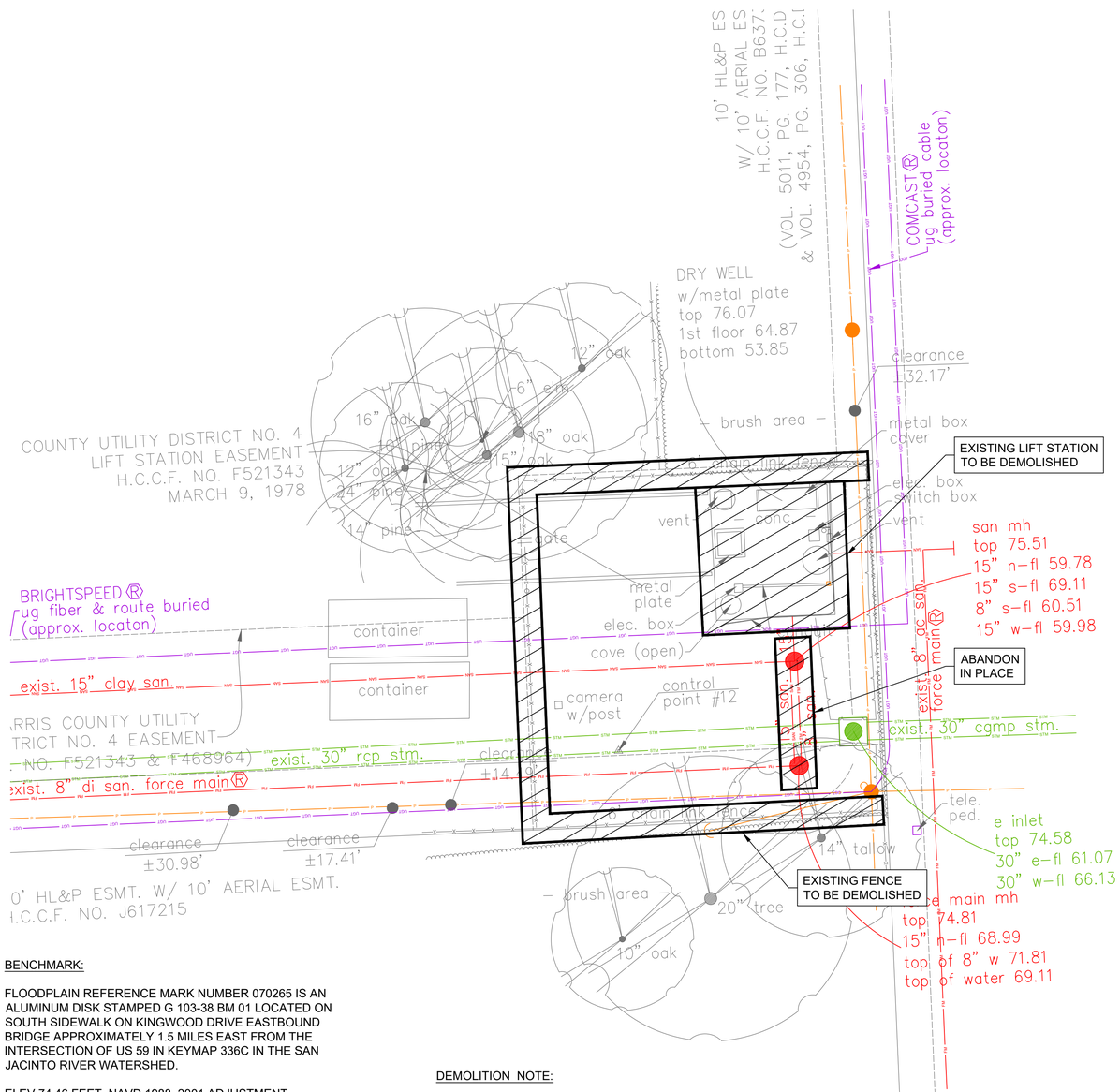
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. F-201	HORIZ: 1"=250' VERT: NONE
SHEET NO. 70 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\020 F-201.dwg



H.C.F.C.D. UNIT NO.
G 103-38-00-01
CALLED 62.1851 ACRES
HARRIS COUNTY FLOOD
CONTROL DISTRICT
H.C.C.F. NO. H361522
PARCEL "C"
NOV. 23, 1981

0 10' 20'
1"=10'

LEGEND:

LIMITS OF LIFT STATION SITE DEMOLITION

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 5:41 PM PEN TABLE: -----

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 070265 IS AN ALUMINUM DISK STAMPED G 103-38 BM 01 LOCATED ON SOUTH SIDEWALK ON KINGWOOD DRIVE EASTBOUND BRIDGE APPROXIMATELY 1.5 MILES EAST FROM THE INTERSECTION OF US 59 IN KEYMAP 336C IN THE SAN JACINTO RIVER WATERSHED.

ELEV 74.46 FEET NAVD 1988, 2001 ADJUSTMENT.

HORIZONTAL DATUM NOTE:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

EXISTING UTILITY NOTE:

EXISTING UNDERGROUND UTILITY INFORMATION (TYPE, SIZE & OWNERSHIP) ARE SHOWN APPROXIMATELY BASED ON THE AVAILABLE RECORD DRAWINGS AND FIELD VERIFICATION (WHERE FEASIBLE) WITHOUT PROBING AND EXCAVATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATION SHOWN ON THE DRAWING. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING OR BORE AND JACKING IN THE VICINITY OF UNDERGROUND UTILITIES. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CALL UTILITY COORDINATING COMMITTEE AT 713-223-4567, AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THE STREET RIGHT-OF-WAY.

DEMOLITION NOTE:

WHEN MEASURED FROM THE PROPERTY LINE OF ANY NEARBY RESIDENTIAL PROPERTY. ANY SOUND PRODUCED BY THE ERECTION, EXCAVATION, CONSTRUCTION, OR DEMOLITION OF ANY STRUCTURE, INCLUDING THE USE OF TOOLS OR EQUIPMENT (CONDUCTED BETWEEN THE HOURS OF 7 A.M. AND 8 P.M.), SHALL NOT EXCEED 85 DB(A).

RIGHT OF REFUSAL NOTE:

"SALVAGE MATERIAL AND EQUIPMENT LISTED HEREINAFTER SHALL BECOME THE PROPERTY OF THE CITY OF HOUSTON UNLESS OTHERWISE DESIGNATED IN WRITING. THE CITY OF HOUSTON SHALL HAVE FIRST REFUSAL RIGHTS TO RETAIN ALL ITEMS SHOWN TO BE DEMOLISHED AND/OR REMOVED IN THE DRAWINGS. PRIOR TO INITIATING DEMOLITION, THE CONTRACTOR AND THE CITY OF HOUSTON PROJECT MANAGER SHALL MAKE A JOINT INSPECTION TO IDENTIFY ALL ITEMS TO BE RETAINED BY THE CITY OF HOUSTON. THE CONTRACTOR SHALL RELOCATE AND STORE ITEMS, TO BE RETAINED BY THE CITY OF HOUSTON, WHERE DIRECTED ONSITE OR OFFSITE."

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
3. REMOVE AND SALVAGE MANHOLE FRAMES AND COVERS, PUMPS, MOTORS, PIPING, AND FITTINGS. DELIVER SALVAGED ITEMS TO THE NEAREST CITY OF HOUSTON MAINTENANCE FACILITY.
4. MANHOLES TO BE DEMOLISHED SHALL BE DEMOLISHED TO A MINIMUM DEPTH OF 4 FEET BELOW FINISHED GRADE, AND SHALL BE FILLED WITH ACCEPTABLE FLOWABLE FILL APPROVED BY THE ENGINEER.
5. ABANDONED SEWER LINES SHALL BE COMPLETELY FILLED WITH ACCEPTABLE FLOWABLE FILL APPROVED BY THE ENGINEER.
6. CLEAN EXISTING WET WELL OF ACCUMULATED SLUDGE. CONTRACTOR SHALL DISPOSE OF SLUDGE AND ALL DEMOLISHED DEBRIS IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.
7. THE LADBROOK LIFT STATION SHALL NOT BE DEMOLISHED UNTIL AFTER THE NEW GRAVITY LINE AND THE LAKE VILLAGE LIFT STATION ARE IN SERVICE. THE LAKE VILLAGE LIFT STATION REPLACEMENT WILL BE BY OTHERS.

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-8570

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Craig Alexander Perry
116345
JANUARY 23, 2025

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

LADBROOK LIFT STATION
DEMOLITION
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

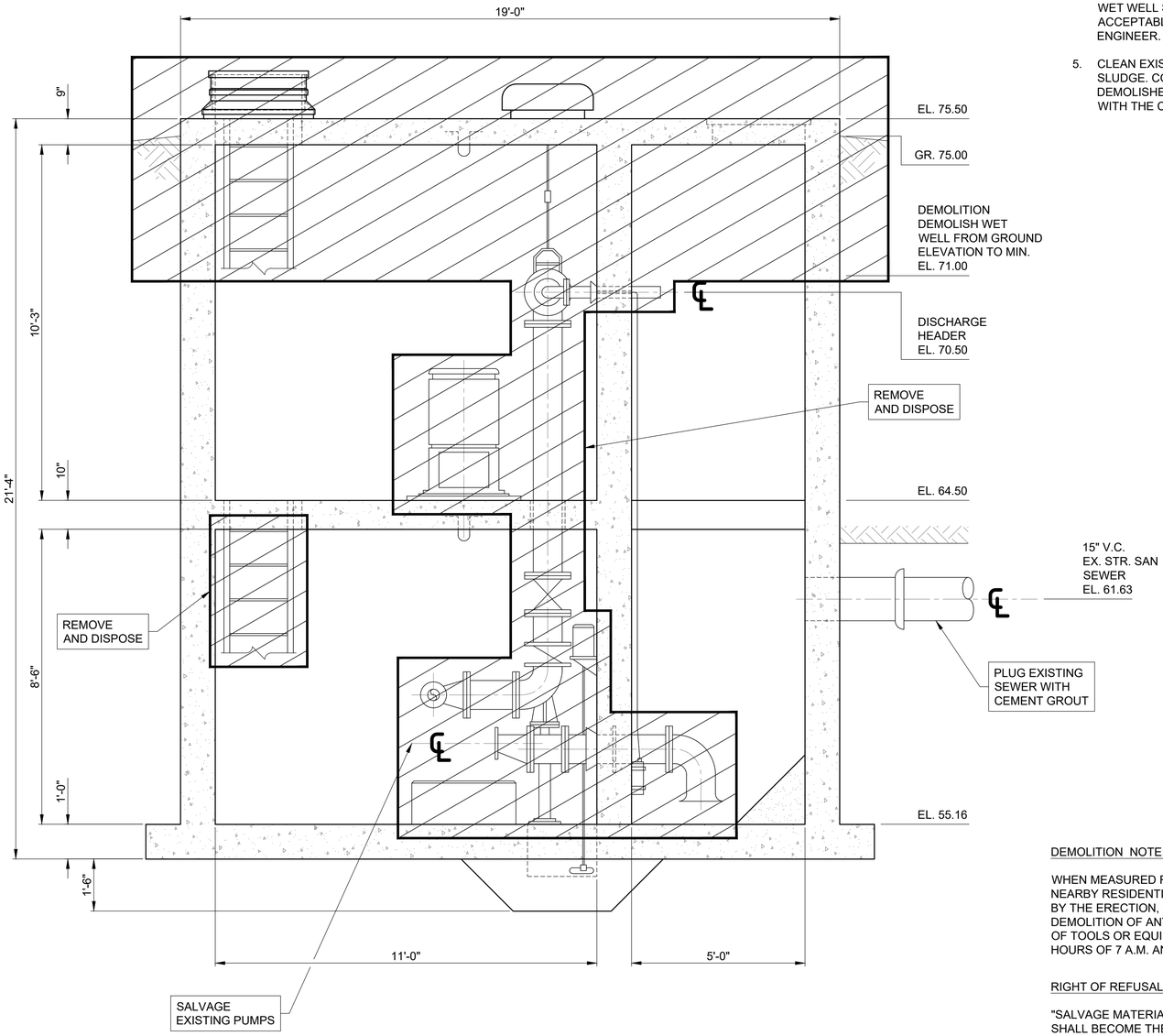
WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-201
HORIZ: 1"=10'
VERT: NONE

SHEET NO. 71 OF 230
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\031 C-201.dwg



LA C-202 SECTION
SCALE: 1/2"=1'-0"

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
3. REMOVE AND SALVAGE EXISTING PUMPS, MOTORS, VALVES, PIPING, AND FITTINGS. SALVAGED ITEMS SHALL BE DELIVERED AS DIRECTED BY THE CITY OF HOUSTON MAINTENANCE OFFICE.
4. WET WELL SHALL BE DEMOLISHED AT LEAST 4 FT BELOW FINISHED GRADE AS SHOWN. DEMOLISHED WET WELL SHALL BE COMPLETELY FILLED WITH ACCEPTABLE FLOWABLE FILL APPROVED BY THE ENGINEER.
5. CLEAN EXISTING WET WELL OF ACCUMULATED SLUDGE. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS AND SLUDGE IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.

LEGEND:

LIMITS OF LIFT STATION DEMOLITION

DEMOLITION NOTE:

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NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/22/2026 5:42 PM

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9070

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Craig Alexander Perry
116345
JANUARY 23, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

LADBROOK LIFT STATION
DEMOLITION
SECTION VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-202

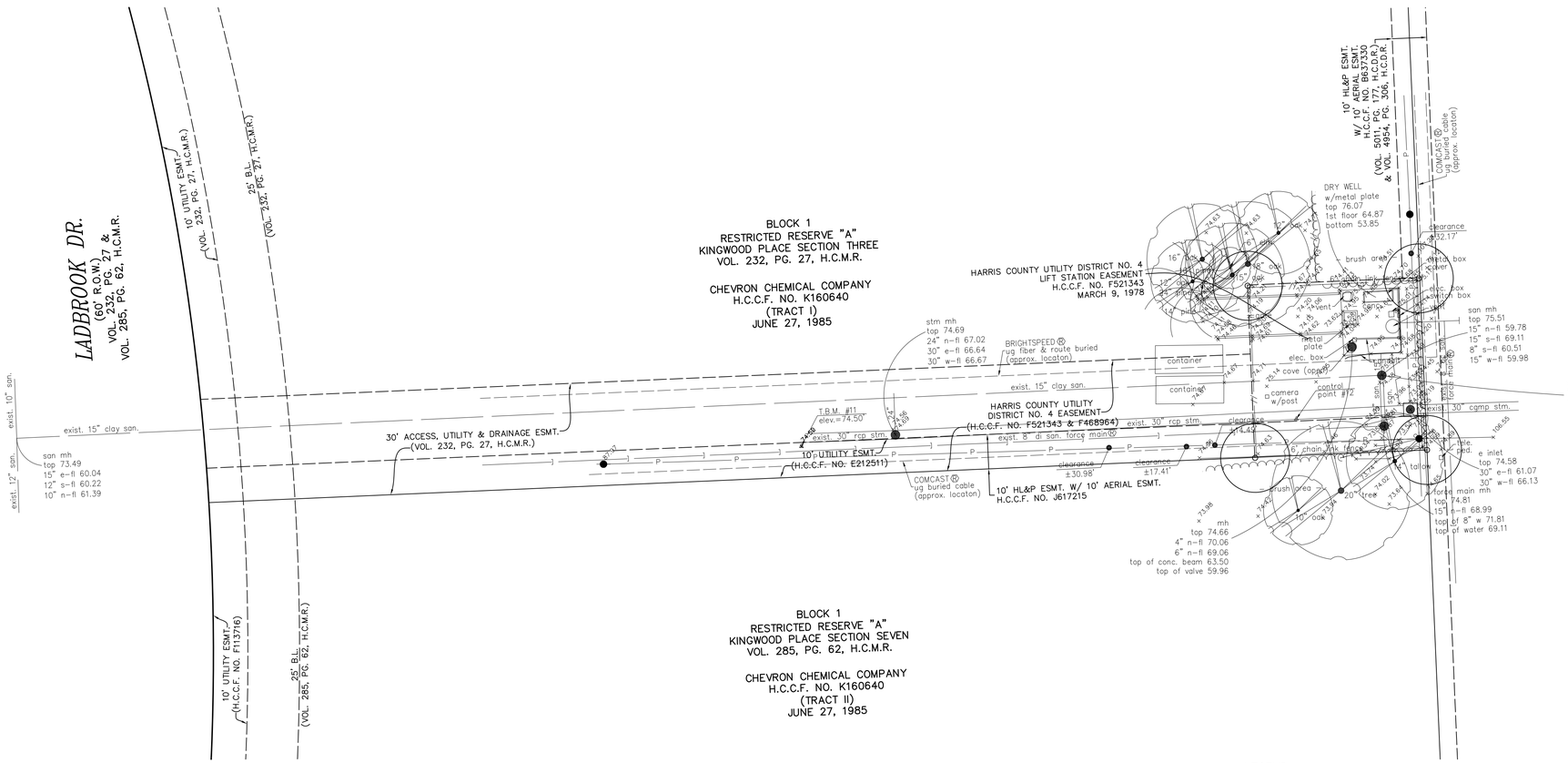
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VERT: NONE

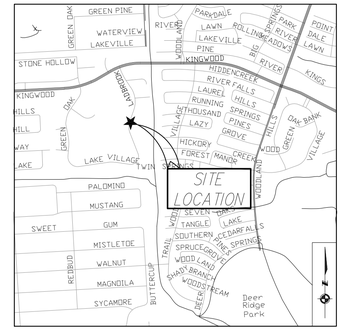
SHEET NO. 72 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\032 C-202.dwg





VICINITY MAP KEYMAP: 336 B

N.T.S.

GRAPHIC SCALE

20 0 10 20 40

SCALE: 1" = 20'-0"

Control Point Table				
Point #	Northing	Easting	Elevation	Raw Description
11	13949874.8970	3162144.2357	74.497	SET 12" I.R. W/CAP
12	13949882.8584	3162287.7980	74.693	SET 12" I.R. W/CAP

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 070265 IS AN ALUMINUM DISK STAMPED G 103-38 BM 01 LOCATED ON SOUTH SIDEWALK ON KINGWOOD DRIVE EASTBOUND BRIDGE APPROXIMATELY 1.5 MILES EAST FROM THE INTERSECTION OF US 59 IN KEYMAP 336C IN THE SAN JACINTO RIVER WATERSHED

ELEV. 74.46 FEET NAVD 1988, 2001 ADJUSTMENT

T.B.M #11:

SET 1/2" I.R. W/CAP LOCATED SOUTH OF THE DRIVEWAY TO THE LIFT STATION APPROXIMATELY 190 FEET EAST FROM LADBROOK DR
ELEV. 74.50 FEET

HORIZONTAL DATUM:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

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LEGEND:

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- COLUMN
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- IRRIGATION CONTROL VALVE
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- REFERENCE INFORMATION (FROM RECORD DRAWING)
- SBC MANHOLE
- SIGN
- SIGNAL POLE
- SPRINKER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE-CREPE MYRTLE
- TREE-PINE
- UTILITY MARK
- WATER METER
- WATER VALVE
- BOREHOLE

- BRUSH ROW
- DITCH/SWALE CENTER LINE
- EASEMENT OR BUILDING LINE
- FENCE
- GAS LINE
- GUARD RAIL
- HEDGE ROW OR TREE LINE
- HIGH BANK
- OVERHEAD POWER LINE WITH OR W/O CABLE
- SANITARY SEWER LINE
- SANITARY FORCE MAIN
- STORM LINE
- TELEPHONE LINE
- UG STREET LIGHT CABLE
- WATER LINE

ABBREVIATIONS:

E./ESMT.	EASEMENT	I.R.	IRON ROD
B.L.	BUILDING LINE	I.P.	IRON PIPE
STM.	STORM	CONC.	CONCRETE
SAN.	SANITARY	LT	LIGHT
SWR.	SEWER	UG	UNDER GROUND
N.F.I.F.	NOT FOUND IN FIELD		

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 7/10/2025 8:29 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-6570

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 Westoffice Dr., Suite 800, Houston, Texas 77042
Tel: 713-975-8769, Fax: 713-975-0920, www.kuoassociates.com
TBPELS Engineering Firm Reg. No. F-4578
TBPELS Surveying Firm Reg. No. 10075600

STATE OF TEXAS REGISTERED KUTUBUL A. M. MAINUDDIN 6404 PROFESSIONAL LAND SURVEYOR
07/10/25

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

SURVEY

LADBROOK LIFT STATION
EXISTING SITE SURVEY
AND CONTROL POINTS TABLE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. SV-201

HORIZ: 1"=20'

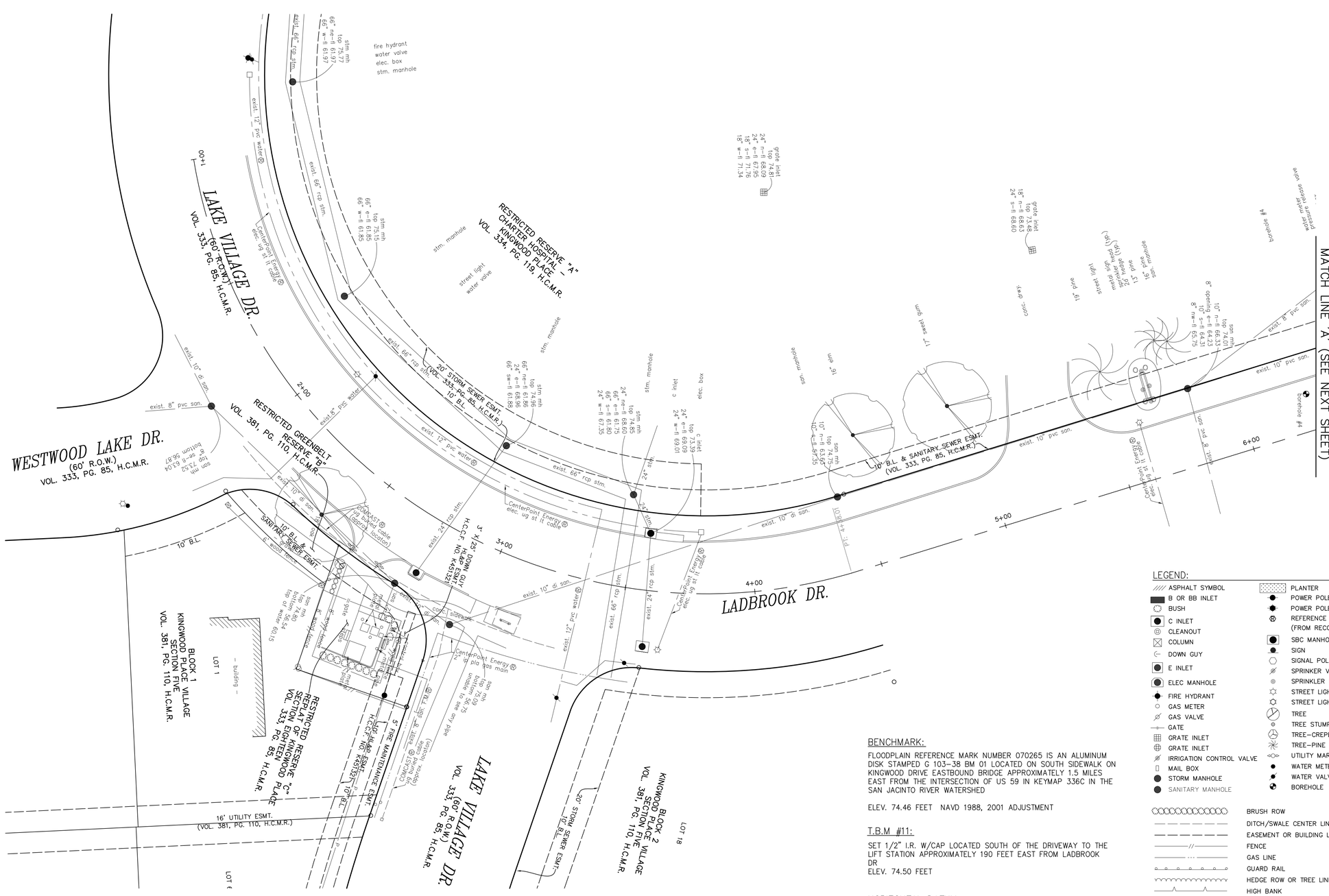
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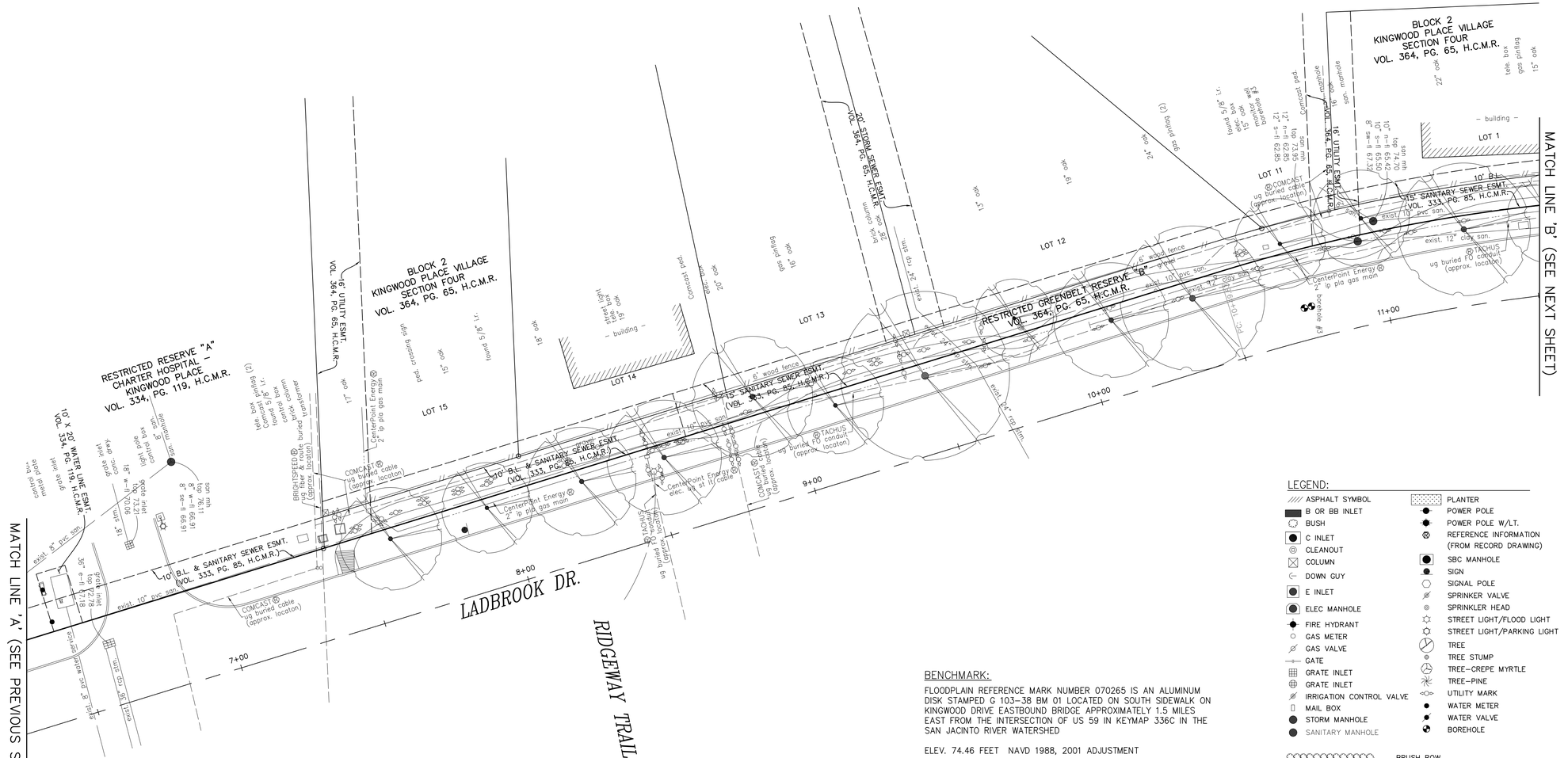
SHEET NO. 73 OF 230

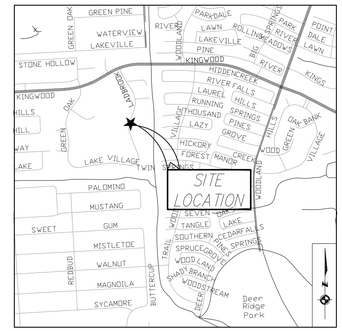
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: S:\Proj-2024\24033 (COH LIFT STATIONS)\Dwgs\Topo Survey Sheets\SV-201\SV-201-Ladbrook LS.dwg


LAKE VILLAGE DR.
(60' R.O.W.)
VOL. 333, PG. 85, H.C.M.R.
WESTWOOD LAKE DR.
(60' R.O.W.)
VOL. 333, PG. 85, H.C.M.R.
LADBROOK DR.
LAKE VILLAGE DR.
(60' R.O.W.)
VOL. 333, PG. 85, H.C.M.R.
RESTRICTED RESERVE "A"
CHARTER HOSPITAL - KINGWOOD PLACE
VOL. 334, PG. 119, H.C.M.R.
RESTRICTED GREENBELT RESERVE "B"
VOL. 381, PG. 110 H.C.M.R.
RESTRICTED RESERVE "C"
REPLAT OF SECTION ONE KINGWOOD PLACE
VOL. 333, PG. 85, H.C.M.R.
BLOCK 1
KINGWOOD PLACE VILLAGE
SECTION FIVE
VOL. 381, PG. 110, H.C.M.R.
BLOCK 2
KINGWOOD PLACE VILLAGE
SECTION FIVE
VOL. 381, PG. 110, H.C.M.R.
20' STORM SEWER ESMT.
VOL. 333, PG. 85, H.C.M.R.)
10' B.L. & SANITARY SEWER ESMT.
(VOL. 333, PG. 85, H.C.M.R.)
16' UTILITY ESMT.
(VOL. 381, PG. 110, H.C.M.R.)
5' PRE MAINTENANCE ESMT.
H.C.C.F. NO. K453121
20' STORM SEWER ESMT.
MATCH LINE 'A' (SEE NEXT SHEET)
exist. 66" rcp stm.
exist. 12" pvc water
exist. 8" pvc san.
exist. 10" pvc water
exist. 10" di san.
exist. 24" rcp stm.
exist. 10" pvc san.
exist. 12" pvc water
exist. 66" rcp stm.
exist. 10" di san.
exist. 10" pvc san.
exist. 8" pvc san.
exist. 10" pvc san.
exist. 12" pvc water
exist. 66" rcp stm.
exist. 24" rcp stm.
exist. 10" di san.
exist. 12" pvc water
exist. 66" rcp stm.
exist. 24" rcp stm.
exist. 10" pvc san.
exist. 8" pvc san.
exist. 10" pvc san.
exist. 10" di san.
exist. 8" pvc san.
exist. 10" pvc san.
exist. 8" pvc san.
exist. 10" pvc san.
exist. 8" pvc san.
exist. 10" pvc





VICINITY MAP KEYMAP: 336 B
N.T.S.

GRAPHIC SCALE
20 0 10 20 40
SCALE: 1" = 20'-0"

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 070265 IS AN ALUMINUM DISK STAMPED G 103-38 BM 01 LOCATED ON SOUTH SIDEWALK ON KINGWOOD DRIVE EASTBOUND BRIDGE APPROXIMATELY 1.5 MILES EAST FROM THE INTERSECTION OF US 59 IN KEYMAP 336C IN THE SAN JACINTO RIVER WATERSHED

ELEV. 74.46 FEET NAVD 1988, 2001 ADJUSTMENT

T.B.M #11:

SET 1/2" I.R. W/CAP LOCATED SOUTH OF THE DRIVEWAY TO THE LIFT STATION APPROXIMATELY 190 FEET EAST FROM LADBROOK DR
ELEV. 74.50 FEET

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LEGEND:

ASPHALT SYMBOL	PLANTER
B OR BB INLET	POWER POLE
BUSH	POWER POLE W/LT.
C INLET	REFERENCE INFORMATION (FROM RECORD DRAWING)
CLEANOUT	SBC MANHOLE
COLUMN	SIGN
DOWN GUY	SIGNAL POLE
E INLET	SPRINKER VALVE
ELEC MANHOLE	SPRINKLER HEAD
FIRE HYDRANT	STREET LIGHT/FLOOD LIGHT
GAS METER	STREET LIGHT/PARKING LIGHT
GAS VALVE	TREE
GATE	TREE STUMP
GRATE INLET	TREE-CREPE MYRTLE
GRATE INLET	TREE-PINE
IRRIGATION CONTROL VALVE	UTILITY MARK
MAIL BOX	WATER METER
STORM MANHOLE	WATER VALVE
SANITARY MANHOLE	BOREHOLE

	BRUSH ROW
	DITCH/SWALE CENTER LINE
	EASEMENT OR BUILDING LINE
	FENCE
	GAS LINE
	GUARD RAIL
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	HIGH BANK
	OVERHEAD POWER LINE WITH OR W/O CABLE
	SANITARY SEWER LINE
	SANITARY FORCE MAIN
	STORM LINE
	TELEPHONE LINE
	UG STREET LIGHT CABLE
	WATER LINE

ABBREVIATIONS:

E./ESMT.	EASEMENT	I.R.	IRON ROD
B.L.	BUILDING LINE	I.P.	IRON PIPE
STM.	STORM	CONC.	CONCRETE
SAN.	SANITARY	LT	LIGHT
SWR.	SEWER	UG	UNDER GROUND
N.F.I.F.	NOT FOUND IN FIELD		

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 7/10/2025 8:41 PM

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-6570

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 Westoffice Dr., Suite 800, Houston, Texas 77042
Tel: 713-975-8769, Fax: 713-975-0920, www.kuoassociates.com
TBPELS Engineering Firm Reg. No. F-4578
TBPELS Surveying Firm Reg. No. 10075600

STATE OF TEXAS REGISTERED KUTUBUL A. M. MAINUDDIN 6404 PROFESSIONAL LAND SURVEYOR
07/10/25

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

SURVEY

LADBROOK DRIVE GRAVITY ROUTE
EXISTING SURVEY
AND CONTROL POINTS TABLE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

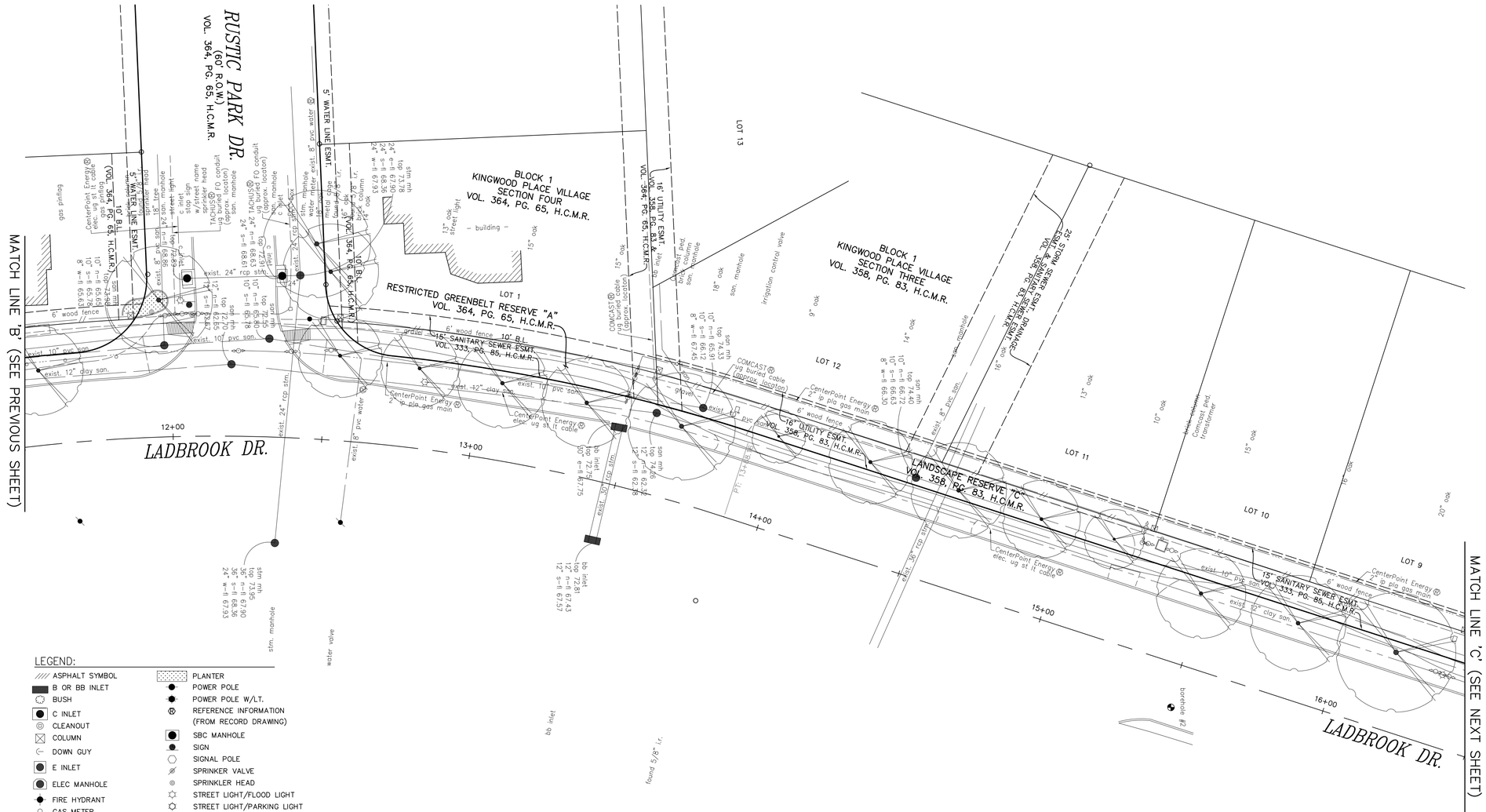
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

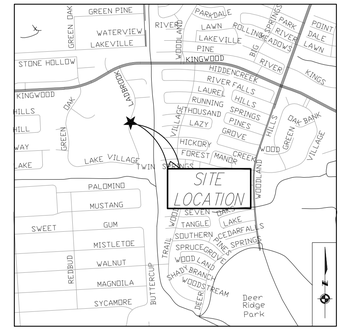
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. SV-203
HORIZ: 1"=20'
VERT: N/A

SHEET NO. 75 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: S:\Proj-2024\24033 (COH LIFT STATIONS)\Dwgs\Topo Survey Sheets\SV-201\SV-202-Ladbrook Dr.dwg





VICINITY MAP KEYMAP: 336 B
N.T.S.

GRAPHIC SCALE
20 0 10 20 40
SCALE: 1" = 20'-0"

LEGEND:

ASPHALT SYMBOL	PLANTER
B OR BB INLET	POWER POLE
BUSH	POWER POLE W/LT.
C INLET	REFERENCE INFORMATION (FROM RECORD DRAWING)
CLEANOUT	SBC MANHOLE
COLUMN	SIGN
DOWN GUY	SIGNAL POLE
E INLET	SPRINKER VALVE
ELEC MANHOLE	SPRINKLER HEAD
FIRE HYDRANT	STREET LIGHT/FLOOD LIGHT
GAS METER	STREET LIGHT/PARKING LIGHT
GAS VALVE	TREE
GATE	TREE STUMP
GRATE INLET	TREE-CREPE MYRTLE
GRATE INLET	TREE-PINE
IRRIGATION CONTROL VALVE	UTILITY MARK
MAIL BOX	WATER METER
STORM MANHOLE	WATER VALVE
SANITARY MANHOLE	BOREHOLE

BRUSH ROW	
DITCH/SWALE CENTER LINE	
EASEMENT OR BUILDING LINE	
FENCE	
GAS LINE	
GUARD RAIL	
HEDGE ROW OR TREE LINE	
HIGH BANK	
OVERHEAD POWER LINE WITH OR W/O CABLE	
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BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 070265 IS AN ALUMINUM DISK STAMPED G 103-38 BM 01 LOCATED ON SOUTH SIDEWALK ON KINGWOOD DRIVE EASTBOUND BRIDGE APPROXIMATELY 1.5 MILES EAST FROM THE INTERSECTION OF US 59 IN KEYMAP 336C IN THE SAN JACINTO RIVER WATERSHED

ELEV. 74.46 FEET NAVD 1988, 2001 ADJUSTMENT

T.B.M #11:

SET 1/2" I.R. W/CAP LOCATED SOUTH OF THE DRIVEWAY TO THE LIFT STATION APPROXIMATELY 190 FEET EAST FROM LADBROOK DR
ELEV. 74.50 FEET

HORIZONTAL DATUM:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

EXISTING UTILITY NOTE:

EXISTING UNDERGROUND UTILITY INFORMATION (TYPE, SIZE & OWNERSHIP) ARE SHOWN APPROXIMATELY BASED ON THE AVAILABLE RECORD DRAWINGS AND FIELD VERIFICATION (WHERE FEASIBLE) WITHOUT PROBING AND EXCAVATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATION SHOWN ON THE DRAWING. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING OR BORE AND JACKING IN THE VICINITY OF UNDERGROUND UTILITIES. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CALL UTILITY COORDINATING COMMITTEE AT 713-223-4567, AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THE STREET RIGHT-OF-WAY.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 7/10/2025 8:42 PM

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 5204870

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STATE OF TEXAS
REGISTERED
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PROFESSIONAL
LAND SURVEYOR
07/10/25

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

SURVEY

LADBROOK DRIVE GRAVITY ROUTE
EXISTING SURVEY
AND CONTROL POINTS TABLE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

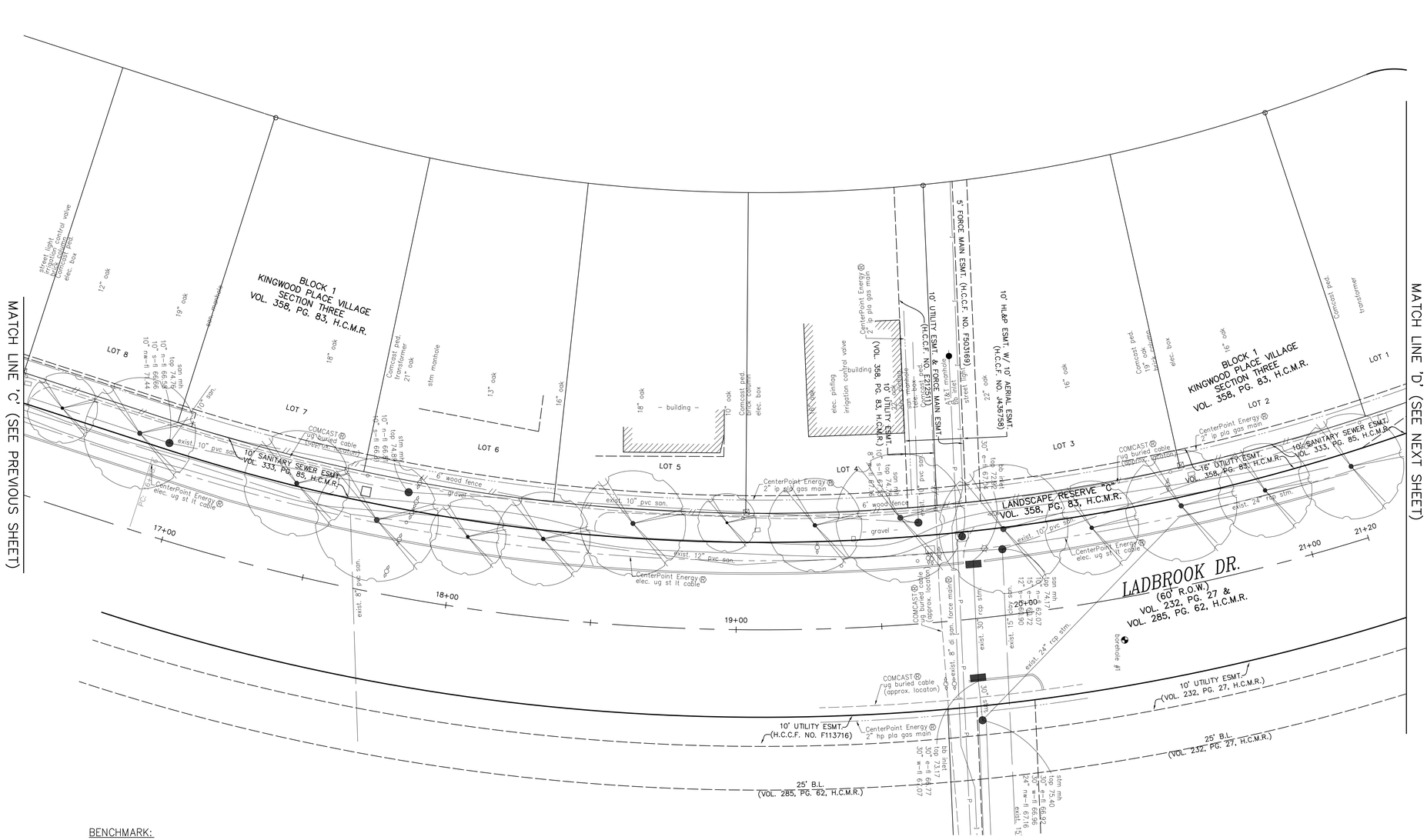
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

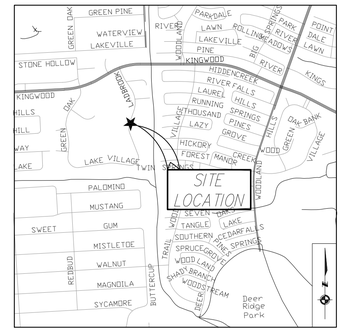
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HORIZ: 1"=20'
VERT: N/A

SHEET NO. 76 OF 230

DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: S:\Proj-2024\24033 (COH LIFT STATIONS)\Dwgs\Topo Survey Sheets\SV-201\SV-202-Ladbrook Dr.dwg





VICINITY MAP KEYMAP: 336 B

N.T.S.

GRAPHIC SCALE

20 0 10 20 40

SCALE: 1" = 20'-0"

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LEGEND:

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- COLUMN
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- IRRIGATION CONTROL VALVE
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- REFERENCE INFORMATION (FROM RECORD DRAWING)
- SBC MANHOLE
- SIGN
- SIGNAL POLE
- SPRINKER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
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- TREE
- TREE STUMP
- TREE-CREPE MYRTLE
- TREE-PINE
- UTILITY MARK
- WATER METER
- WATER VALVE
- BOREHOLE
- BRUSH ROW
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NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 7/10/2025 8:47 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
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STATE OF TEXAS
REGISTERED
KUTUBUL A. M. MAINUDDIN
6404
PROFESSIONAL
LAND SURVEYOR
07/10/25

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

SURVEY

LADBROOK DRIVE GRAVITY ROUTE
EXISTING SURVEY
AND CONTROL POINTS TABLE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. SV-205

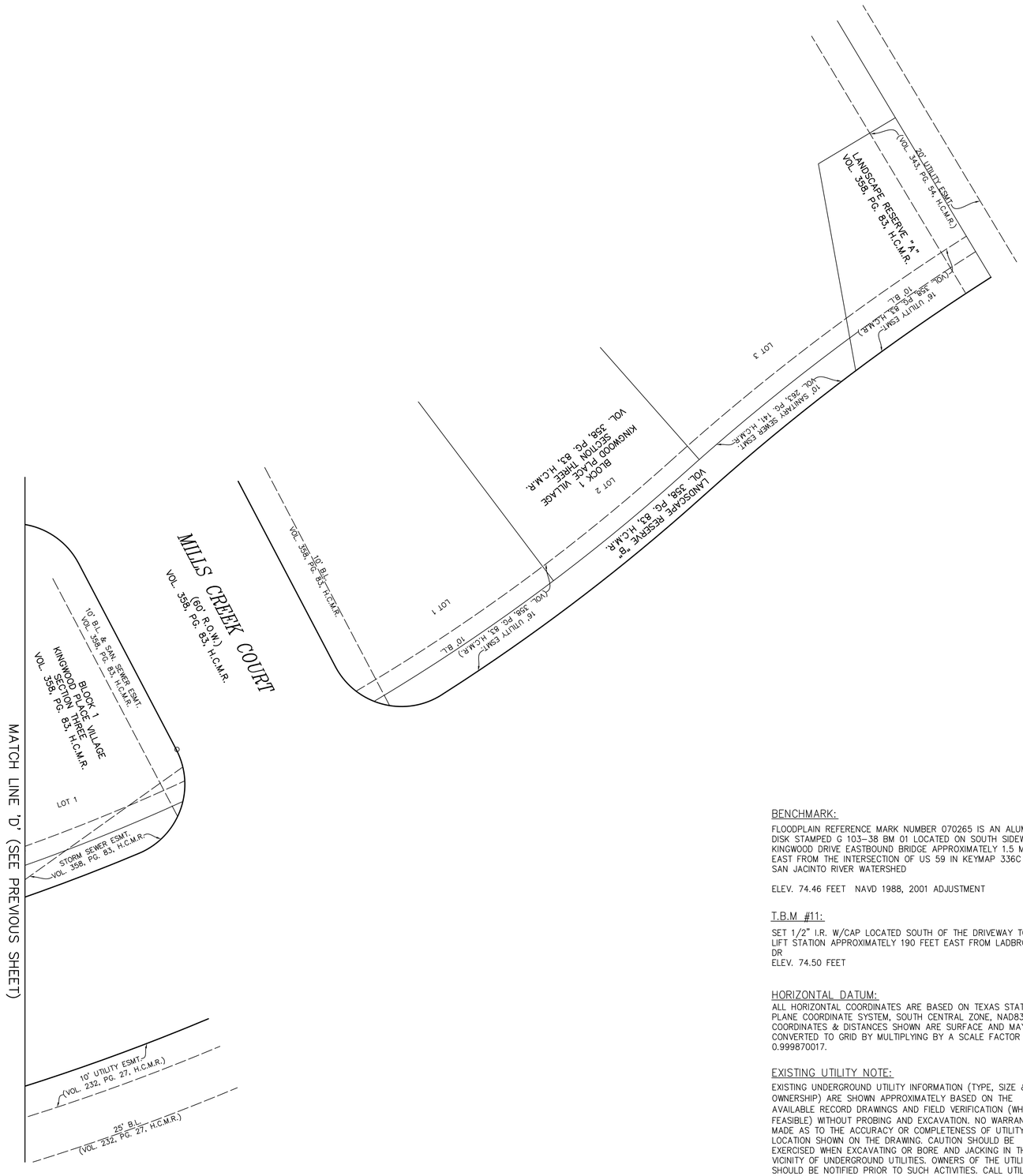
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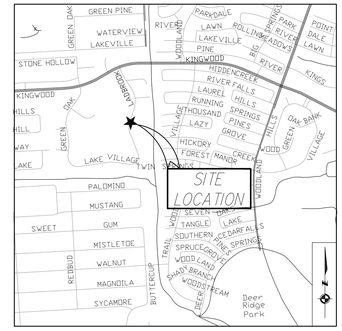
SHEET NO. 77 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: S:\Proj-2024\24033 (COH LIFT STATIONS)\Dwgs\Topo Survey Sheets\SV-201\SV-202-Ladbrook Dr.dwg





VICINITY MAP KEYMAP: 336 B
N.T.S.

GRAPHIC SCALE

20 0 10 20 40

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BENCHMARK:

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NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 7/10/2025 8:50 PM

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STATE OF TEXAS REGISTERED KUTUBUL A. M. MAINUDDIN 6404 PROFESSIONAL LAND SURVEYOR
07/10/25

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

SURVEY

LADBROOK DRIVE GRAVITY ROUTE
EXISTING SURVEY
AND CONTROL POINTS TABLE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. SV-206

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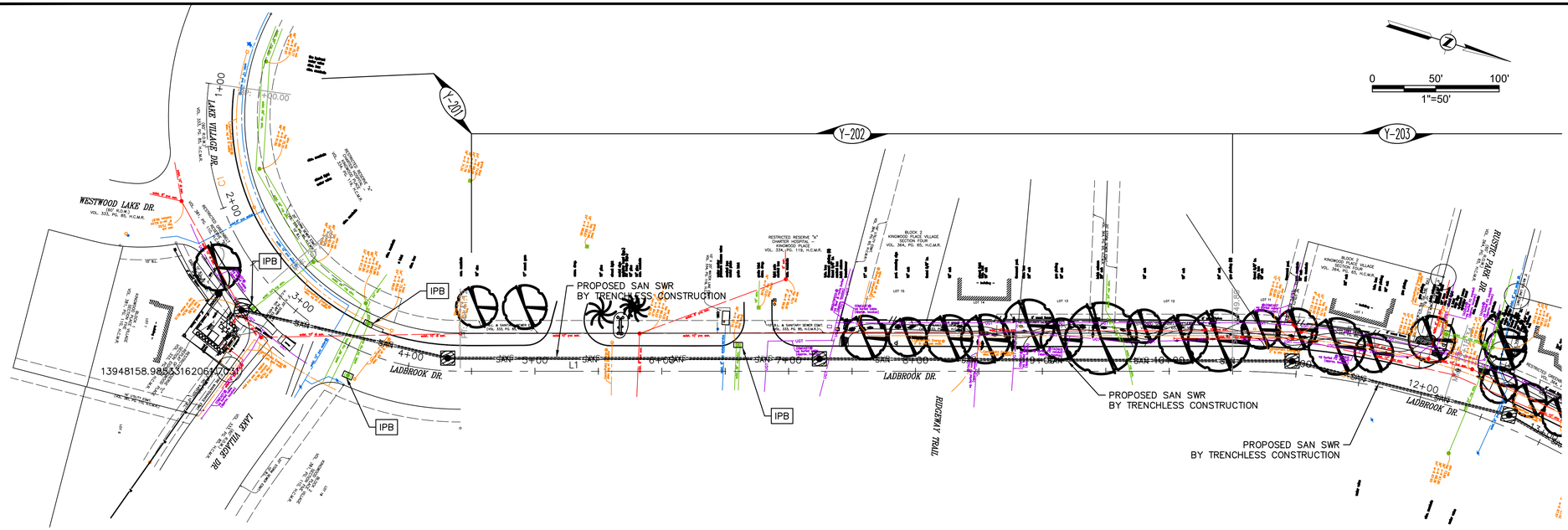
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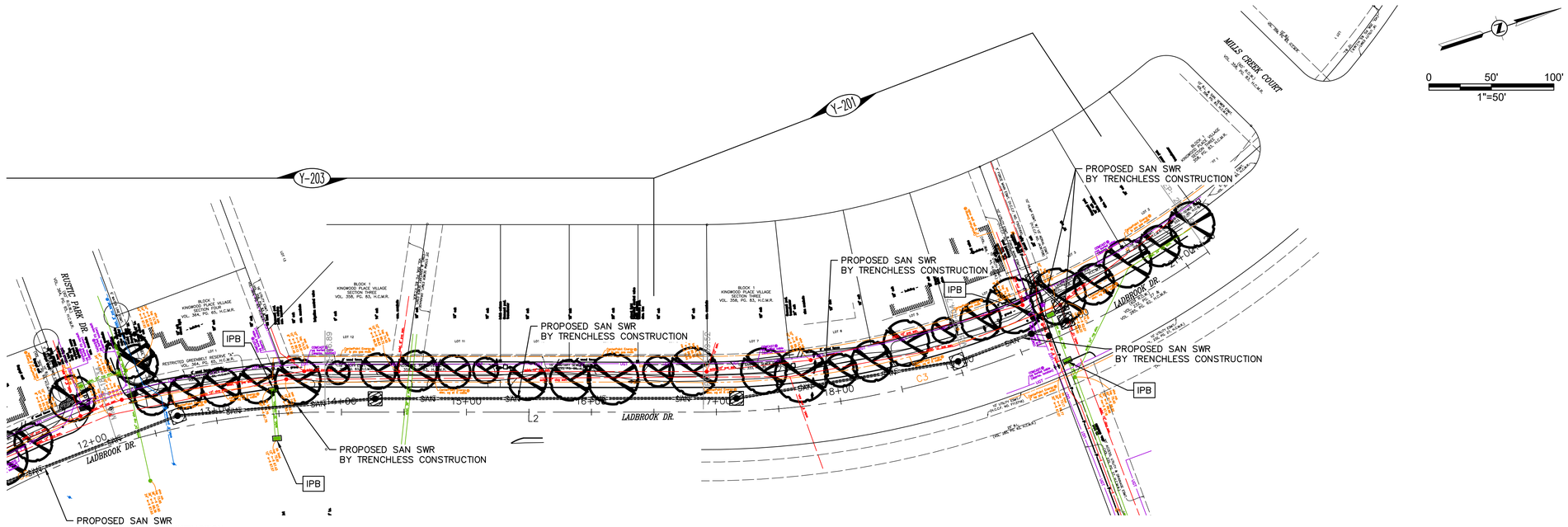
SHEET NO. 78 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: S:\Proj-2024\24033 (COH LIFT STATIONS)\Dwgs\Topo Survey Sheets\SV-201,SV-202-Ladbrook Dr.dwg





NOTES:

1. STORM WATER POLLUTION PREVENTION PLAN SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND DRAWINGS.
2. CONTRACTOR IS RESPONSIBLE FOR MODIFICATIONS TO SWPPP AS NECESSARY TO REDUCE AND/OR ELIMINATE SEDIMENT FROM ENTERING DRAINAGE SYSTEMS.
3. FILTER FABRIC FENCE SHALL NOT BE PLACED ACROSS DRIVEWAYS OR SIDEWALKS ACCESSING PRIVATE PROPERTY.
4. ALL DISTURBED AREAS THAT ARE NOT PAVED, COVERED BY PAVEMENT, SIDEWALK OR STRUCTURES SHALL BE SODDED.
5. PROVIDE A STANDARD STABILIZED CONSTRUCTION EXIT IN THE CONTRACTORS LAY DOWN/STORAGE AREA.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SIDEWALKS AND CURB ADJACENT TO THE CONSTRUCTION. IF THE SIDEWALKS OR CURBS ARE DAMAGED THE CONTRACTOR WILL BE RESPONSIBLE TO REPLACE AT NO EXTRA COST.
7. IN AREAS OF OPEN CUT CONTRACTOR TO RESTORE WORK AREA TO EXISTING CONDITIONS.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/23/2026 12:45 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Craig Alexander Perry

116345

JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

YARD PIPING

STORM WATER POLLUTION PREVENTION PLAN
LADBROOK DRIVE
OVERALL LAYOUT

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-201

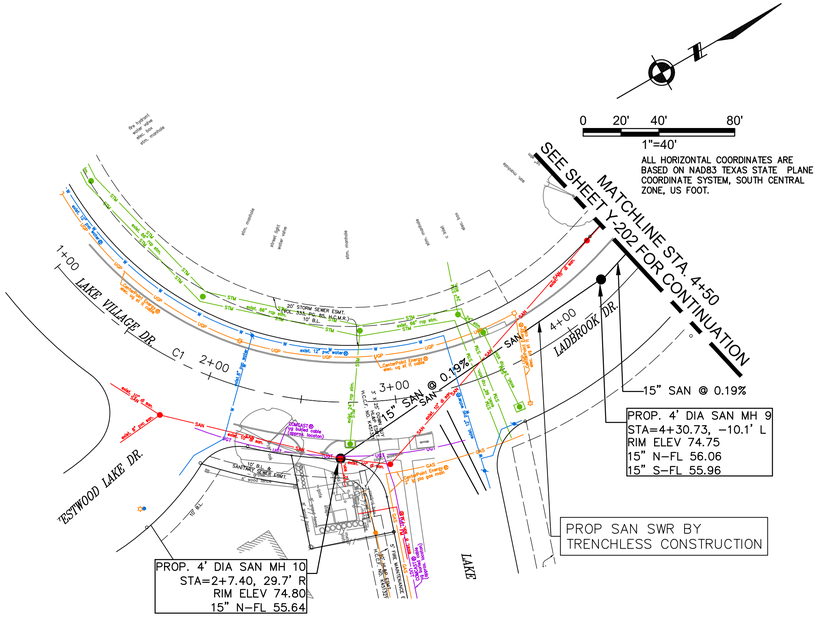
HORIZ: 1"=50'
VERT: NONE

SHEET NO. 79 OF 230

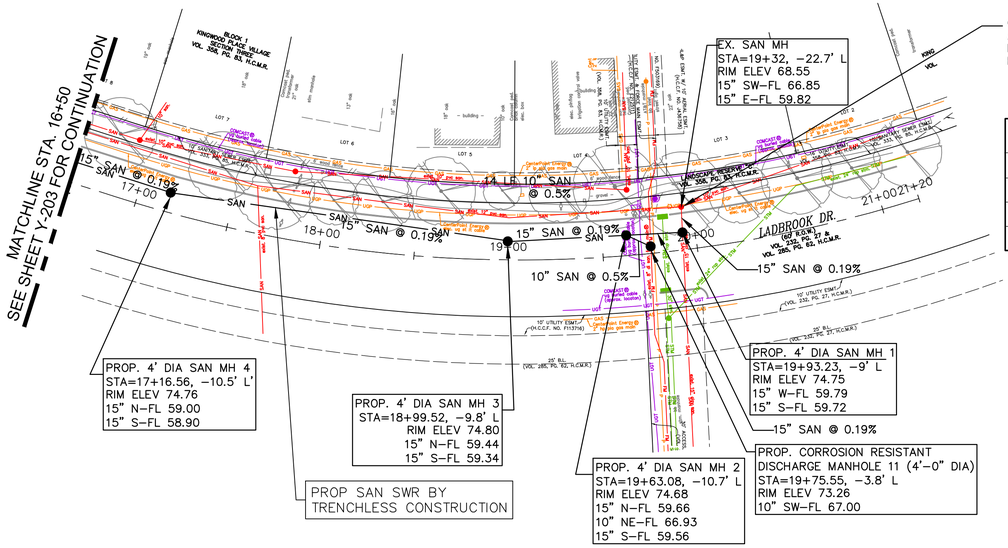
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Ladbrook Gravity Line P&P\000 Y-201.dwg



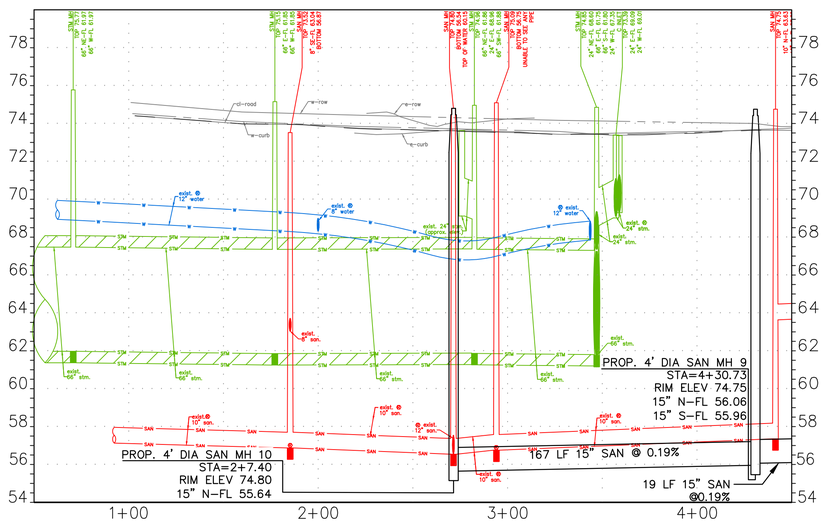
LAKE VILLAGE DR/LADBROOK DR

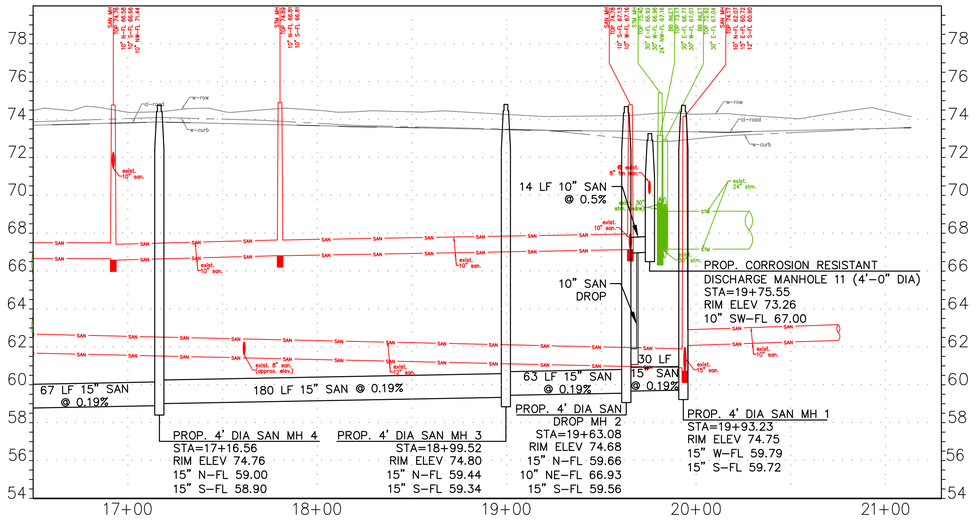


LADBROOK DR

CURVE TABLE				
Curve #	Radius	Length	Chord Direction	CHORD LENGTH
C1	200.00	341.12	N31° 42' 12.71"E	301.25
C2	550.00	337.09	N0° 23' 57.47"E	331.84
C3	700.00	430.45	N0° 20' 27.69"E	423.70

LINE TABLE		
Line #	Length	Direction
L1	608.67	N17° 09' 31.92"W
L2	302.63	N17° 57' 26.86"E





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P.E.
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Registration Number
MAY 01, 2025
date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

YARD PIPING

LADBROOK DRIVE
PLAN AND PROFILE
STA 1+00 TO 4+50
STA 16+50 TO END

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-202

HORIZ: 1"=40'
VERT: 1"=2'

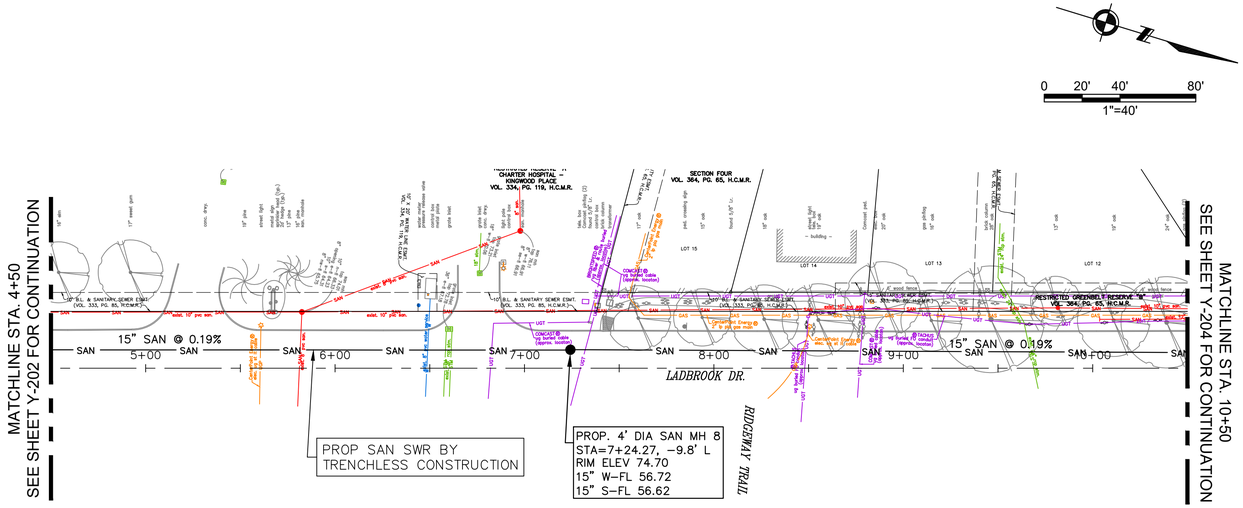
SHEET NO. 80 OF 230
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DRAWING SCALE

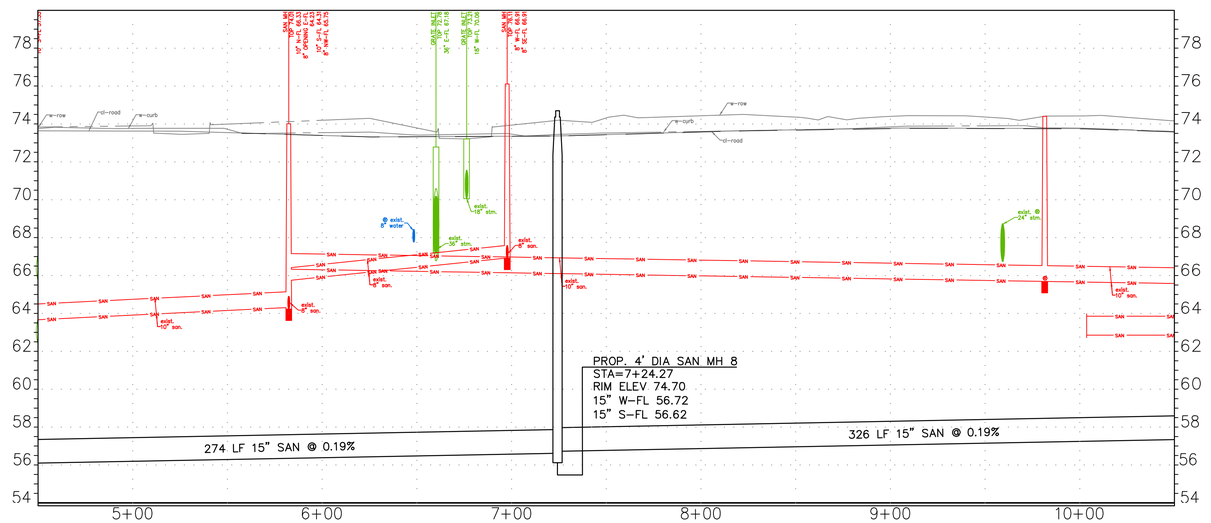
NO.	DATE	REVISION	APP.

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LADBROOK DR



CURVE TABLE				
Curve #	Radius	Length	Chord Direction	CHORD LENGTH
C1	200.00	341.12	N31° 42' 12.71"E	301.25
C2	550.00	337.09	N0° 23' 57.47"E	331.84
C3	700.00	430.45	N0° 20' 27.69"E	423.70

LINE TABLE		
Line #	Length	Direction
L1	608.67	N17° 09' 31.92"W
L2	302.63	N17° 57' 26.86"E

NO.	DATE	REVISION	APP.

PEN TABLE: -----

PLOTTED: 1/23/2026 12:47 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-8070

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Craig Alexander Perry
Name
116345
License No. or Code
MAY 01, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

YARD PIPING

LADBROOK DRIVE
PLAN AND PROFILE
STA 4+50 TO 10+50

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-203

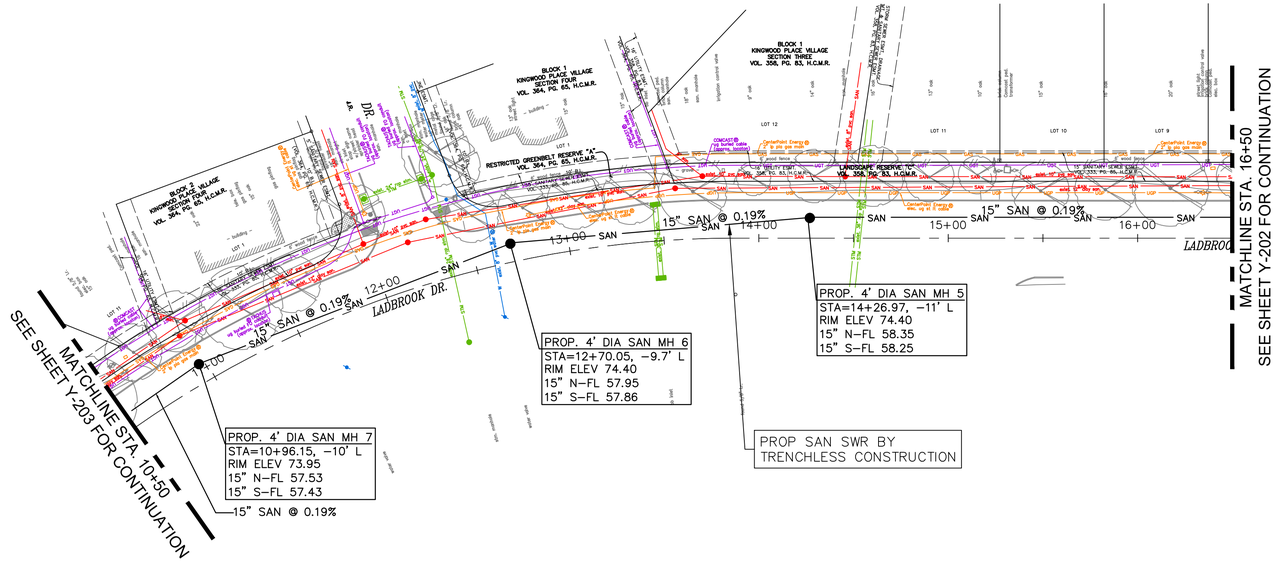
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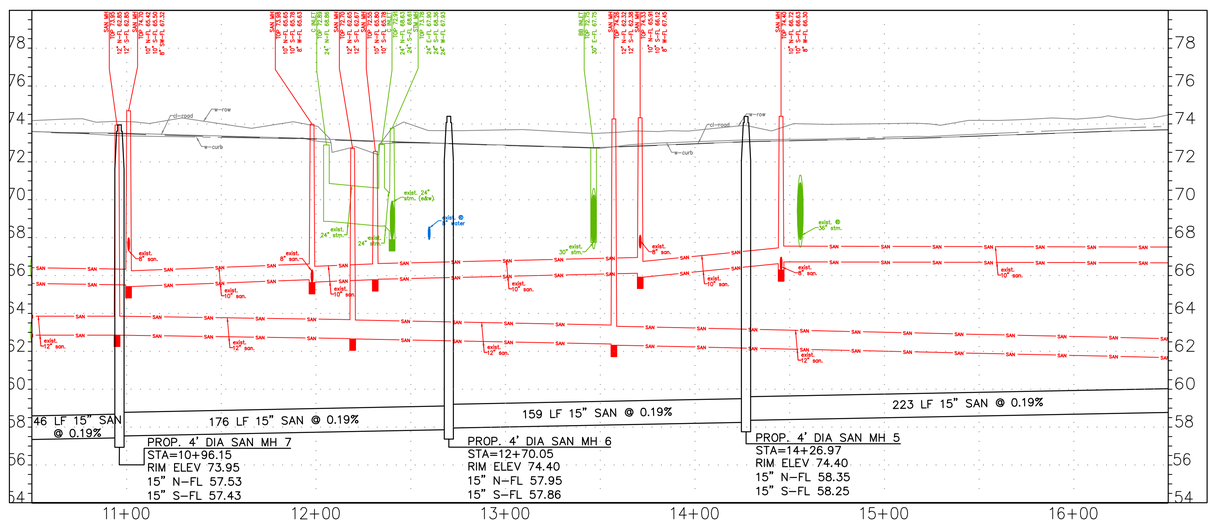
SHEET NO. 81 OF 230

DRAWING SCALE

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FILE PATH: G:\1110\5431-01_COH Lift Station\Ladbrook Gravity Line P&P\000 Y-203.dwg





0 20' 40' 80'
1"=40'

CURVE TABLE				
Curve #	Radius	Length	Chord Direction	CHORD LENGTH
C1	200.00	341.12	N31° 42' 12.71"E	301.25
C2	550.00	337.09	N0° 23' 57.47"E	331.84
C3	700.00	430.45	N0° 20' 27.69"E	423.70

LINE TABLE		
Line #	Length	Direction
L1	608.67	N17° 09' 31.92"W
L2	302.63	N17° 57' 26.86"E

NO.	DATE	REVISION	APP.

PEN TABLE: -----
PLOTTED: 1/23/2026 12:48 PM

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Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

YARD PIPING

LADBROOK DRIVE
PLAN AND PROFILE
STA 10+50 TO 16+50

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-204
HORIZ: 1"=40'
VERT: 1"=2'
SHEET NO. 82 OF 230
DRAWING SCALE
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FILE PATH: G:\1110\5431-01_COH Lift Station\Ladbrook Gravity Line P&P\000 Y-204.dwg



LADBROOK ELECTRICAL
EXISTING SITE

PLAN

1"= 5'-0"



EXISTING SERVICE DISCONNECT

PHOTOGRAPH A
NTS -



EXISTING CPE METER

PHOTOGRAPH B
NTS -



EXISTING WIMAX POLE

PHOTOGRAPH C
NTS -

NOTES BY SYMBOL "#":

1. EXISTING CPE METER SHALL BE DEMOLISHED AND REMOVED BY CENTERPOINT.
2. EXISTING SERVICE DISCONNECT TO BE DEMOLISHED AND REMOVED.
3. EXISTING WIMAX BOX TO BE DEMOLISHED AND REMOVED.
4. EXISTING WIMAX POLE FIXTURES, CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.



EXISTING WIMAX BOX

PHOTOGRAPH D
NTS -

NO.	DATE	REVISION	APP.

PLOTTED: 12/16/2025 3:17 PM PEN TABLE: ----

GAI
Gupta & Associates, Inc.
CONSULTING ENGINEERING
Registration No. F-2593
302 Dennis St.,
Houston, Texas 77006
Tel: 713-636-2936
Fax: 713-636-2987
email: hforouzan@gaiconsulting.com

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

LADBROOK
LIFT STATION
DEMOLITION SITE PLAN

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-201

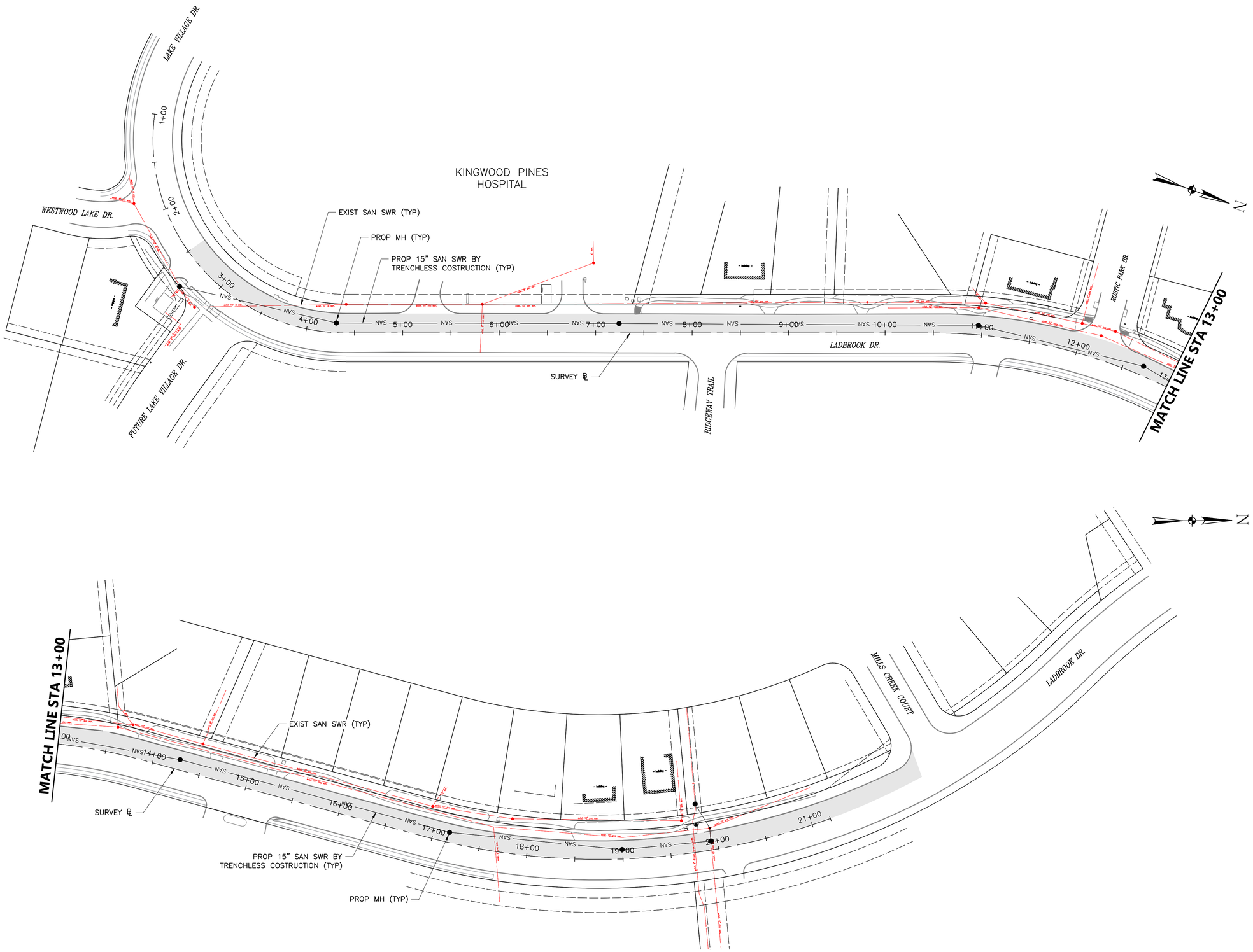
HORIZ: 1"=5'-0"
VERT: 1"=5'-0"

SHEET NO. 83 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Ladbrook\Ladbrook_E-01.dwg



NOTES & LEGEND:

1. PROPOSED TRAFFIC CONTROL PLANS AS SHOWN ARE FOR DAY TIME OPERATION ONLY.
2. CONTRACTOR TO PLACE ALL STORM WATER POLLUTION PREVENTION DEVICES PER PLAN PRIOR TO CONSTRUCTION ACTIVITIES.
3. CONTRACTOR TO PLACE DRUMS/ LPCTB PER LIMITS SHOWN, AS SPECIFIED, AND NOTED ON TRAFFIC CONTROL PLAN.
4. CONTRACTOR TO PLACE ADVANCE WARNING SIGNS AS SPECIFIED, AND NOTED ON TRAFFIC CONTROL PLAN.
5. CONTRACTOR TO CONSTRUCT THE PROPOSED MANHOLES AND 15" SAN SWR. STARTING FROM SOUTH TOWARD NORTH.
6. THERE SHALL NOT BE MORE THAN THREE(3) OPEN SHAFTS AT A TIME.
7. CONTRACTOR SHALL PROVIDE ACCESS TO ALL DRIVEWAYS ALONG THIS PROJECT AT ALL TIMES.
8. CONTRACTOR SHALL ADJUST LOCATION OF ADVANCE WARNING SIGNS AND TRAFFIC CONTROL DEVICES AS HE/SHE PROGRESSES TO THE NEXT SEGMENT OF WORK AREA.

CONSTRUCTION AREA

50 0 50 100

NO	DATE	REVISION	APP.

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T.B.P.E.L.S. FIRM REGISTRATION # F-1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

HOWN ENGINEERS

2825 WILCREST DRIVE,
SUITE 218
HOUSTON, TX 77042
TEL: (832) 899-5657
TBPELS FIRM REG: F-26176

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Name
68184
License No.
DECEMBER 16, 2025
Date

Engineer of Record
Texas Registered Engineering Firm # F-26176

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TRAFFIC CONTROL PLAN

LADBROOK LIFT STATION
TRAFFIC CONTROL PLAN
OVERALL LAYOUT
SHEET 1 OF 1

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. TC-201

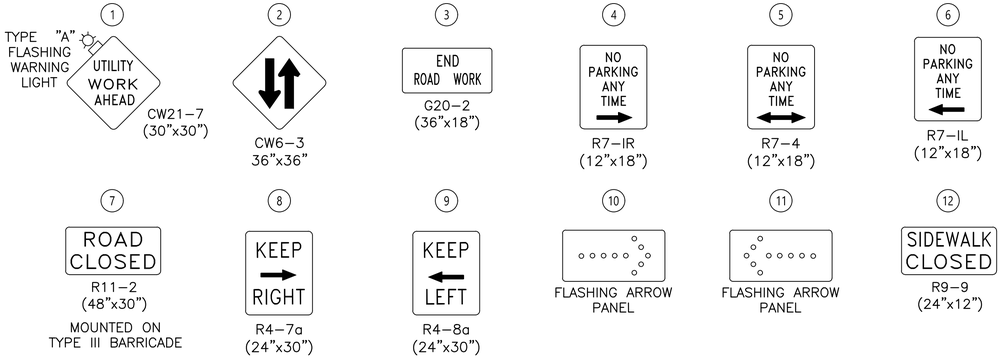
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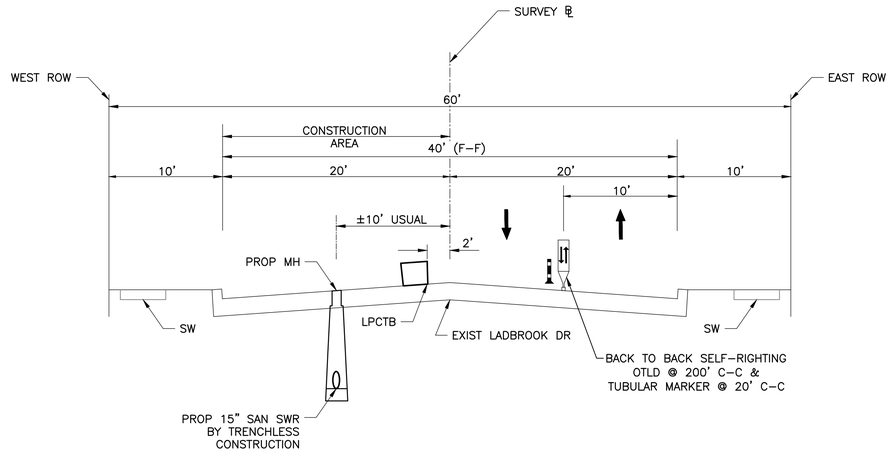
SHEET NO. 84 OF 230

DRAWING SCALE

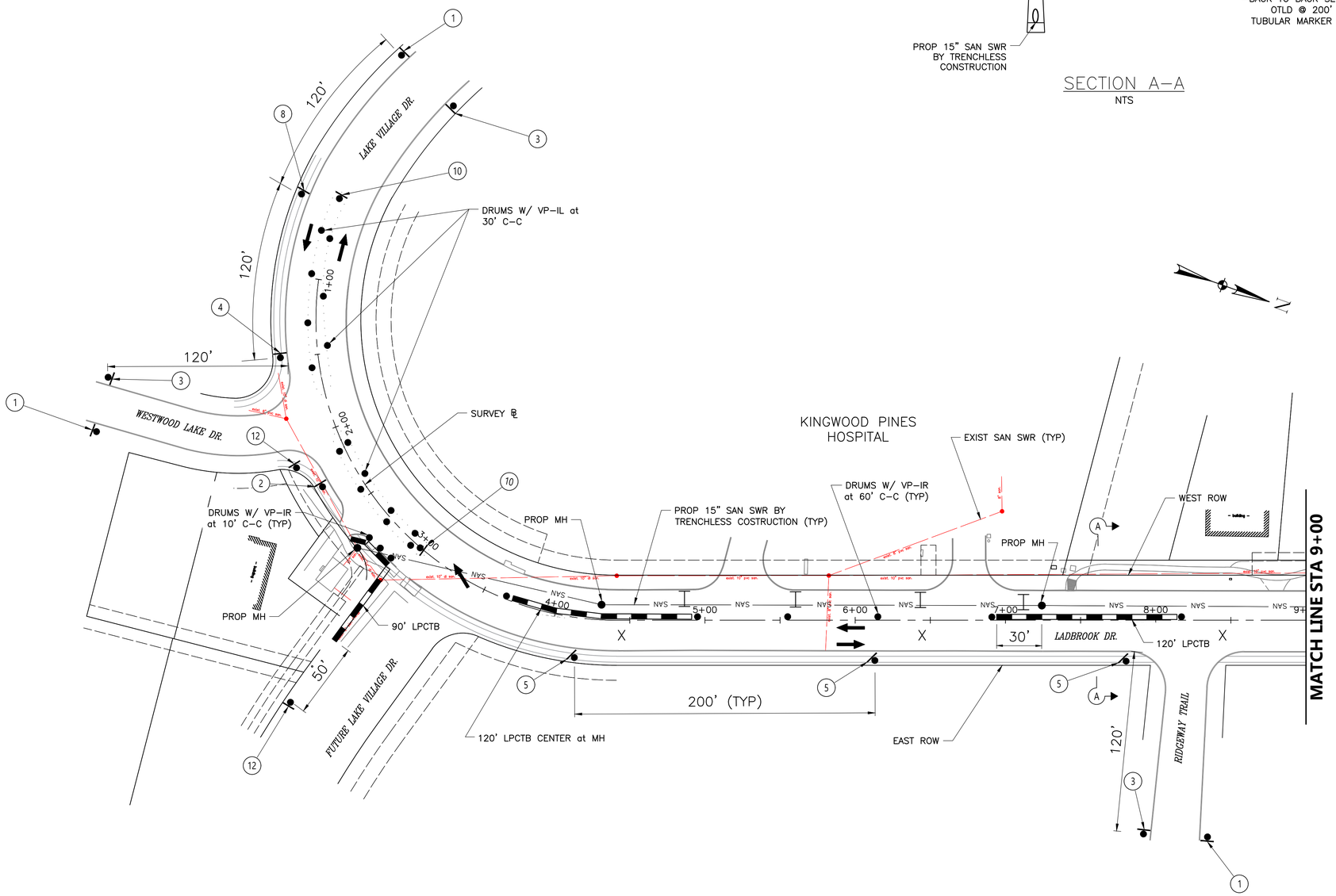
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FILE PATH: Z:\Active Projects\1011-02 COH LS Rehab & Recon Design\1011-02-01 Ladbrook\Drawings\TCP-201- LADBROOK LIFT STATION TRAFFIC CONTROL PLAN OVERALL LAYOUT SHEET 1 OF 1.dgn PLOTTED: 12/16/2025 10:49 AM PEN TABLE: ----





SECTION A-A
NTS



NOTES & LEGEND:

1. SEE "TRAFFIC CONTROL PLAN GENERAL NOTES" & "TRAFFIC CONTROL PLAN OVERALL LAYOUT & CONSTRUCTION SEQUENCING" SHEETS FOR MORE INFORMATION.
2. CONTRACTOR SHALL PROVIDE FLAGMEN TO DIRECT THE TRAFFIC IN ORDER TO ASSIST DRIVEWAY ENTRY/EXIT FOR LOCAL RESIDENTS DURING CONSTRUCTION HOURS.
3. CONTRACTOR SHALL PROVIDE ACCESS TO ALL DRIVEWAYS ALONG THIS PROJECT AT ALL TIMES.
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5. CONTRACTOR SHALL ADJUST LOCATION OF ADVANCE WARNING SIGNS AND TRAFFIC CONTROL DEVICES AS HE/SHE PROGRESSES TO THE NEXT SEGMENT OF WORK AREA.

- DIRECTION OF TRAFFIC
- DRUMS
- LPCTB TYPE 1 & TYPE 2 AT APPROACHES W/ WHITE REFLECTORS ON TOP AT 10' C-C
- TEMPORARY SIGN
- TYPE III BARRICADE W/ TWO TYPE "A" WARNING LIGHTS
- X BACK TO BACK SELF-RIGHTING OTLD @ 200' C-C & TUBULAR MARKER @ 20' C-C
- TUBULAR MARKER

40 0 40 80

NO	DATE	REVISION	APP.

PEN TABLE: ----
PLOTTED: 12/16/2025 10:54 AM
LADBROOK LIFT STATION TRAFFIC CONTROL PLAN SHEET 1 OF 2.dwg
FILE PATH: Z:\Active Projects\1011-02 COH LS Rehab & Recon Design\1011-02-01 Ladbrook\Drawings\TCP-202- LADBROOK

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3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

HOWN ENGINEERS
2825 WILCREST DRIVE, SUITE 218
HOUSTON, TX 77042
TEL: (832) 899-5657
TBPELS FIRM REG: F-26176

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Name
68184
License No.
DECEMBER 16, 2025
Date

Engineer of Record
Texas Registered Engineering Firm # F-26176

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TRAFFIC CONTROL PLAN

LADBROOK LIFT STATION
TRAFFIC CONTROL PLAN
SHEET 1 OF 2

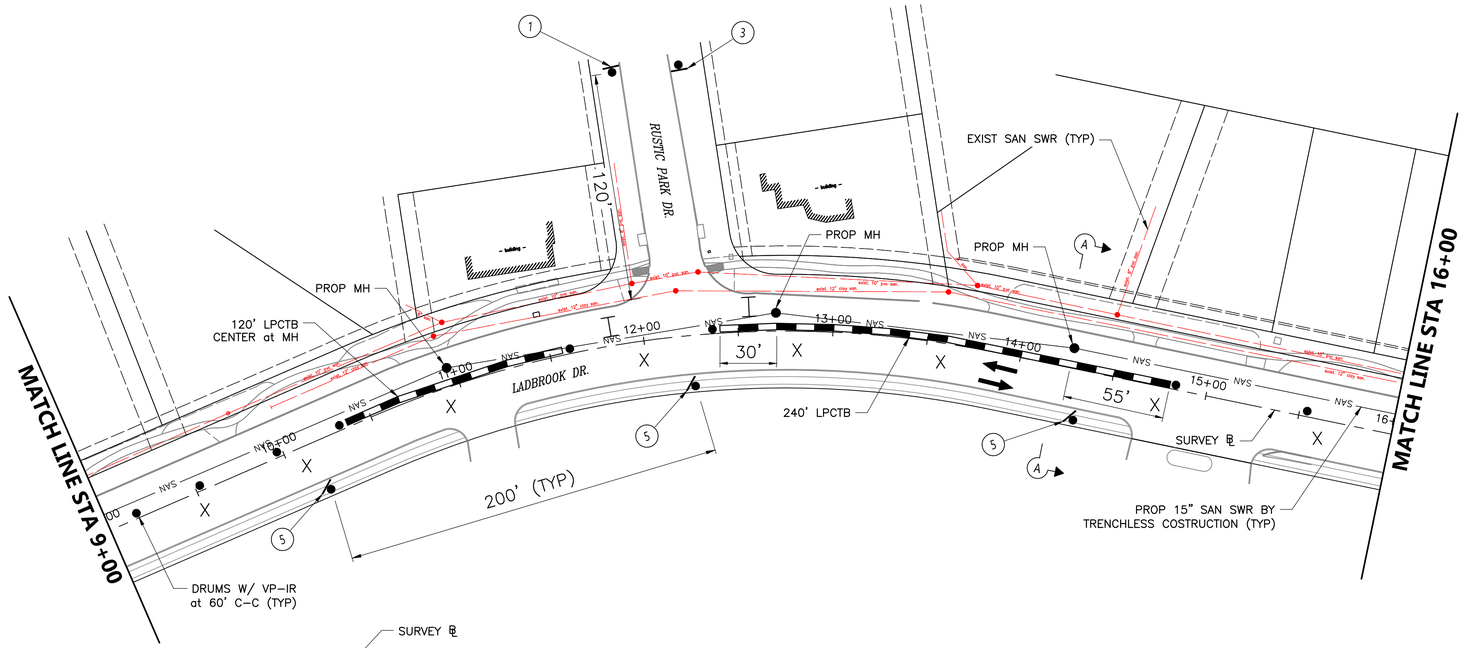
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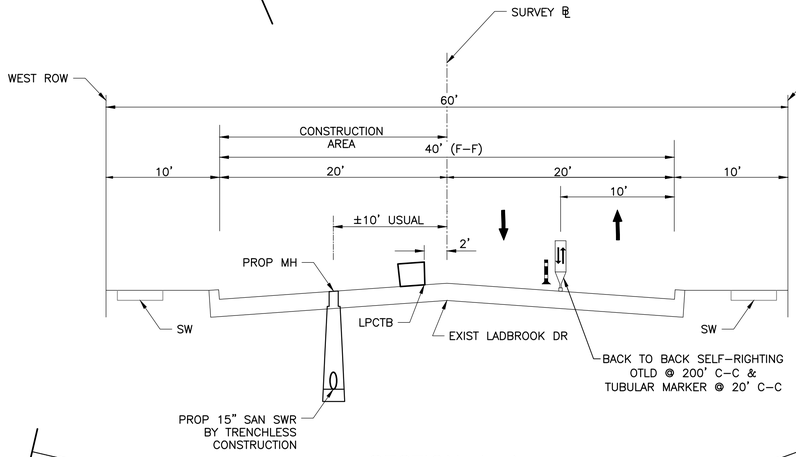
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

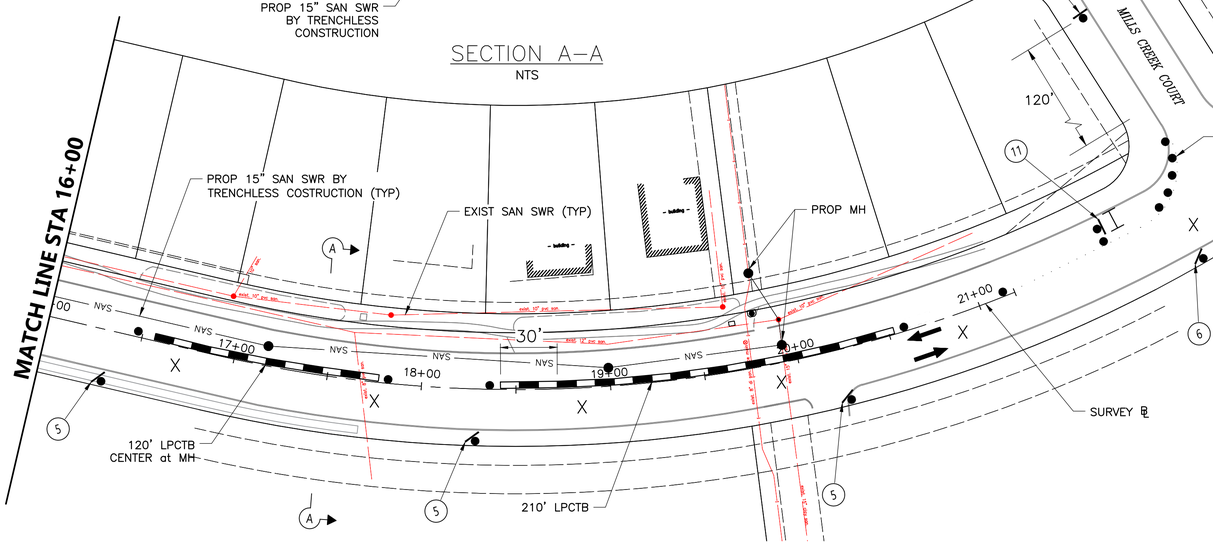
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SHEET NO. 85 OF 230	DRAWING SCALE

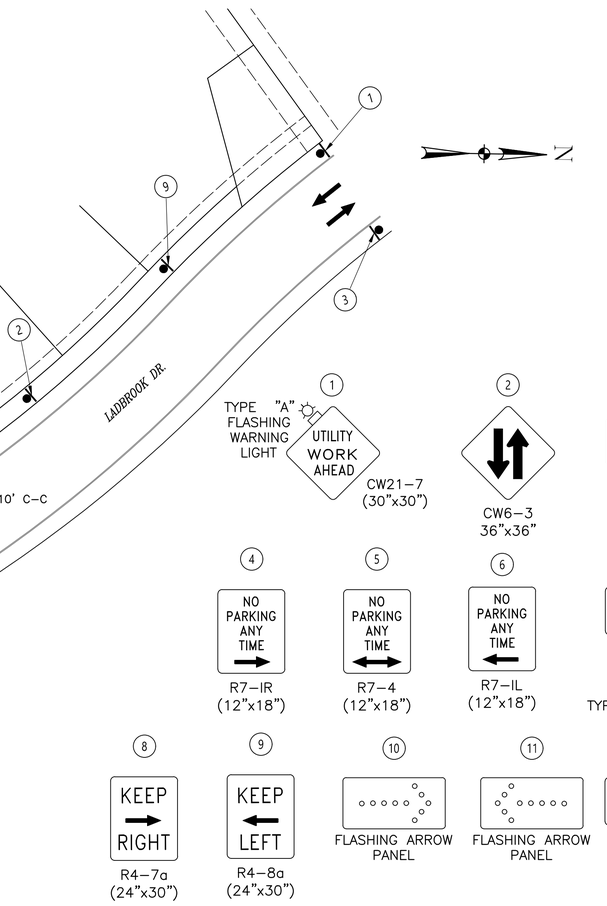
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SECTION A-A
NTS





NOTES & LEGEND:

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5. CONTRACTOR SHALL ADJUST LOCATION OF ADVANCE WARNING SIGNS AND TRAFFIC CONTROL DEVICES AS HE/SHE PROGRESSES TO THE NEXT SEGMENT OF WORK AREA.

- DIRECTION OF TRAFFIC
- DRUMS
- LPCTB TYPE 1 & TYPE 2 AT APPROACHES W/ WHITE REFLECTORS ON TOP AT 10' C-C
- TEMPORARY SIGN
- TYPE III BARRICADE W/ TWO TYPE "A" WARNING LIGHTS
- X BACK TO BACK SELF-RIGHTING OTLD @ 200' C-C & TUBULAR MARKER @ 20' C-C
- TUBULAR MARKER

40 0 40 80

1 TYPE "A" FLASHING WARNING LIGHT — UTILITY WORK AHEAD — CW21-7 (30"x30")
2 — CW6-3 36"x36"
3 — END ROAD WORK — G20-2 (36"x18")
4 — NO PARKING ANY TIME → — R7-IR (12"x18")
5 — NO PARKING ANY TIME ↔ — R7-4 (12"x18")
6 — NO PARKING ANY TIME ← — R7-IL (12"x18")
7 — ROAD CLOSED — R11-2 (48"x30") MOUNTED ON TYPE III BARRICADE
8 — KEEP → RIGHT — R4-7a (24"x30")
9 — KEEP ← LEFT — R4-8a (24"x30")
10 — FLASHING ARROW PANEL
11 — FLASHING ARROW PANEL
12 — SIDEWALK CLOSED — R9-9 (24"x12")

NO	DATE	REVISION	APP.

PEN TABLE: ----- PLOTTED: 12/17/2025 9:26 AM

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2825 WILCREST DRIVE, SUITE 218
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TEL: (832) 899-5657
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68184
DECEMBER 16, 2025
Engineer of Record
Texas Registered Engineering Firm # F-26176

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TRAFFIC CONTROL PLAN

LADBROOK LIFT STATION
TRAFFIC CONTROL PLAN
SHEET 2 OF 2

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. TC-203
HORIZ: 1"=40'
VERT: N/A
SHEET NO. 86 OF 230
DRAWING SCALE
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FILE PATH: H:\Active Projects\1011-02 COH LS Rehab & Recon Design\1011-02-01 Ladbrook\Drawings\TCP-203 - LADBROOK LIFT STATION TRAFFIC CONTROL PLAN SHEET 2 OF 2.dwg

GENERAL NOTES

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) LATEST EDITION WITH REVISIONS DURING THE ENTIRE CONSTRUCTION PERIOD.
2. ALL SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM THE LATEST VERSION OF THE TMUTCD.
3. NO LANES SHALL BE CLOSED DURING THE HOURS OF 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM MONDAY THRU FRIDAY WITHOUT APPROVAL OF THE CITY TRAFFIC ENGINEER.
4. NO WORK SHALL BE PERFORMED IN RESIDENTIAL AREAS FROM 7:00 PM TO 7:00 AM.
5. CONTRACTOR SHALL MAINTAIN APPROVED NUMBER OF THROUGH LANES OF TRAFFIC IN EACH DIRECTION DURING CONSTRUCTION WORKING HOURS. TRAFFIC CONTROL PLANS SHALL INCLUDE ONE–WAY AND/OR DETOUR PLANS. CONTRACTOR SHALL MAINTAIN ADA COMPLIANT PEDESTRIAN ACCESS TO BUS STOPS AND ADEQUATE BUS ACCESS TO ALL THE BUS STOPS.
6. CONTRACTOR SHALL MAINTAIN TRAFFIC LANES AND DETOURS ACCORDING TO TRAFFIC CONTROL PLANS DURING WORKING HOURS.
7. CONTRACTOR SHALL COVER OPEN PAVEMENT EXCAVATIONS FOR MINOR UTILITY WORK WITH ANCHORED STEEL PLATES DURING NON–WORKING HOURS, AND OPEN LANES FOR NORMAL TRAFFIC FLOW WHEN FEASIBLE.
8. IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT METHOD OF "TRAFFIC CONTROL PLANS" DURING THE CONSTRUCTION THAN WHAT IS OUTLINED IN THE CONTRACT DRAWINGS, THE CONTRACTOR SHALL BE RESPONSIBLE TO PREPARE AND SUBMIT AN ALTERNATE SET OF TRAFFIC CONTROL PLANS TO THE CITY OF HOUSTON PROJECT MANAGER FOR APPROVAL TEN WORKING DAYS PRIOR TO IMPLEMENTATION. THESE PLANS SHALL BE DRAWN TO SCALE ON REPRODUCIBLE MYLARS AND SHALL BE SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS. OFFICE OF CITY ENGINEER, MOBILITY PERMITS SECTION REPRESENTATIVE APPROVAL IS REQUIRED TO ACCEPT THE PROPOSED CHANGES.
9. CONTRACTOR SHALL SECURE LANE/SIDEWALK/BICYCLE FACILITY CLOSURE PERMITS FROM OFFICE OF CITY ENGINEER (MOBILITY PERMIT SECTION AT https://geohub.houstontx.gov) BEFORE IMPLEMENTING THE TRAFFIC CONTROL PLAN. THE APPLICATION MUST BE SUBMITTED AT LEAST TEN DAYS PRIOR TO THE IMPLEMENTATION OF THE TRAFFIC CONTROL PLAN AND/OR BEGINNING CONSTRUCTION WORK. THE CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL PLANS, CONSTRUCTION SEQUENCING, AND CONSTRUCTION SCHEDULE WITH THE APPLICATION.
10. CONTRACTOR SHALL HAVE APPROVED TRAFFIC CONTROL PLAN AND PERMIT AT THE JOB SITE FOR INSPECTION AT ALL TIMES.
11. DURING PAVEMENT SURFACE RESTORATION PROJECTS; THE CONTRACTOR SHALL NOT OPEN CLOSED LANES UNTIL THE PAVEMENT SURFACE HAS CURED ENOUGH TO ALLOW VEHICULAR TRAFFIC ACCORDING TO CITY OF HOUSTON STANDARD SPECIFICATIONS.
12. THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND COORDINATING ALL CONSTRUCTION ACTIVITIES WITH STAKE HOLDERS IN THE VICINITY INCLUDING EMERGENCY RESPONSE AGENCIES SUCH AS HOUSTON POLICE DEPARTMENT, HOUSTON FIRE DEPARTMENT, AND METROPOLITAN TRANSIT AUTHORITY.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ISSUING ALL WORK DIRECTIVES TO ALL SUB–CONTRACTORS, UTILITY COMPANIES, AND ALL OTHER ENTITIES PERFORMING CONSTRUCTION WORK ASSOCIATED WITH THE PROJECT.
14. NOTHING IN THESE NOTES OR PLANS SHALL RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT; INCLUDING SAFETY OF ALL MODES OF TRANSPORTATION, PERSONS, AND PROPERTY, AND THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO WORKING HOURS.
15. THE OFFICE OF CITY ENGINEER (MOBILITY PERMITS GROUP) PER THE DIRECTION OF THE CITY TRAFFIC ENGINEER HAVE THE RIGHT TO DEMAND THE INSTALLATION OF ADDITIONAL TRAFFIC CONTROL DEVICES OR MODIFICATIONS OF THESE PLANS AND NOTES, AS DEEMED NECESSARY TO PROMOTE THE SAFE AND ORDERLY FLOW OF TRAFFIC, INCLUDING PEDESTRIANS AND BICYCLES, THROUGH THE CONSTRUCTION WORK ZONE. THE CONTRACTOR SHALL COMPLY WITH THESE ADDITIONAL REQUESTS OR MODIFICATIONS WITH DUE DILIGENCE.
16. ALL EXISTING TRAFFIC CONTROL SIGNS AND PAVEMENT MARKINGS SHALL BE MAINTAINED IN VISIBLE LOCATIONS DURING CONSTRUCTION UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM CITY OF HOUSTON PROJECT MANAGER. THE CONTRACTOR SHALL RESTORE OR REPLACE (AT THE DISCRETION OF THE CITY TRAFFIC ENGINEER) ANY PAVEMENT MARKING OR SIGNING DAMAGE DURING CONSTRUCTION OPERATIONS, INCLUDING RAISED PAVEMENT MARKERS (RPMS).
17. WHEN ENTERING OR LEAVING ROADWAYS CARRYING PUBLIC TRAFFIC, THE CONTRACTOR'S EQUIPMENT, WHETHER EMPTY OR LOADED SHALL IN ALL CASES YIELD TO PUBLIC TRAFFIC WITH THE ASSISTANCE OF CONTRACTOR PROVIDED CERTIFIED FLAGGER/PEACE OFFICER.
18. ACCESS TO DRIVEWAYS ADJACENT TO THE CONSTRUCTION WORK ZONE SHALL BE MAINTAINED AT ALL TIMES AS MUCH AS POSSIBLE. ADDITIONAL CONES AND/OR DELINEATORS MAY BE REQUIRED TO DELINEATE THE DRIVEWAY ACCESS ROUTE THROUGH THE CONSTRUCTION WORK ZONE. A MINIMUM OF ONE TRAVEL LANE SHALL BE MAINTAINED ACROSS THE DRIVEWAYS, UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM CITY OF HOUSTON PROJECT MANAGER.
19. SPILLAGE RESULTING FROM HAULING OPERATIONS ALONG OR ACROSS ANY PUBLIC TRAVELED WAY SHALL BE REMOVED IMMEDIATELY BY THE CONTRACTOR.
20. THE CONTRACTOR SHALL SUBMIT AN APPLICATION FOR TEMPORARY PARKING RESTRICTIONS IF THERE ARE PARKING METERS LOCATED AT THE PROPOSED LANE CLOSURES FROM PARKING MANAGEMENT DIVISION (832–393–8690) AT LEAST TEN BUSINESS DAYS BEFORE IMPLEMENTATION OF LANE CLOSURES. IN ADDITION, TEMPORARY NO PARKING SIGNS SHALL BE POSTED 24 HOURS PRIOR TO COMMENCEMENT OF WORK.
21. ADDITIONAL OFF DUTY OFFICERS/FLAGGERS MAY BE REQUESTED TO DIRECT TRAFFIC WHEN LANES ARE BLOCKED AT THE DISCRETION OF THE CITY PROJECT MANAGER EVEN IF THEY ARE NOT SPECIFICALLY IDENTIFIED ON THE PROJECT PLANS.
22. THE CONTRACTOR SHALL REPLACE WITHIN 72 HOURS, ALL TRAFFIC SIGNAL LOOP DETECTORS DAMAGED DURING CONSTRUCTION.
23. IN GENERAL, A SOLAR POWERED FLASHING ARROW BOARD SHALL BE REQUIRED ON ALL MAJOR THOROUGHFARE LANES CLOSURES. EXCEPTIONS TO FLASHING ARROW BOARDS AND/OR IMPLEMENTATION ON RESIDENTIAL LANE CLOSURES SHALL BE APPROVED BY CITY TRAFFIC ENGINEER.
24. APPROVED TRAFFIC CONTROL PLAN SHALL BE IN PLACE BEFORE STARTING ANY EXCAVATION.
25. WATER FILLED BARRIERS CAN BE USED AS INSTRUCTED BY THE ENGINEER AND APPROVED BY THE CITY FOR PROJECTS WHERE SPACE IS LIMITED AND HEAVY EQUIPMENT TO PLACE CONCRETE BARRIERS IS NOT FEASIBLE. WATER FILLED BARRIERS SHALL NOT BE USED ON ROADWAYS WITH A POSTED SPEED LIMIT MORE THAN 45 MPH.
26. WATER FILLED BARRIERS MUST BE INSTALLED AND MAINTAINED PER THE MANUFACTURER'S REQUIREMENTS AND ROUTINELY INSPECTED FOR DEFECTS.
27. IF WATER FILLED BARRIER IS PROVIDED, USE ENVIRONMENTALLY SAFE ANTI–FREEZING AGENT IN THE WATER WHEN IT IS APPLICABLE PER MANUFACTURER SPECIFICATIONS AND RECOVER AGENT WHEN THE BARRIER IS DRAINED.
28. DISPOSE OF WATER AND AGENT PROPERLY. DO NOT DRAIN WATER FILLED BARRIER INTO OR ACROSS AN EXISTING TRAVEL LANE.
29. PROVIDE BARRIER UNITS THAT ARE CAPABLE OF BEING LIFTED AND MOVED WHEN FILLED IF DRAINING IS NOT POSSIBLE.
30. PROVIDE WATER FILLED BARRIER THAT ACTS AS ITS OWN FREE STANDING, NON–REDIRECTIVE END TREATMENT.
31. WHEN WATER FILLED BARRIERS ARE USED TO CHANNELIZE PEDESTRIANS, THEY MUST HAVE A CONTINUOUS DETECTABLE BOTTOM FOR USERS OF LONG CANES AND THE TOP OF THE UNIT SHALL NOT BE LESS THAN 32 INCHES IN HEIGHT.
32. ANY CLOSURE OF A PEDESTRIAN OR BICYCLE FACILITY SHALL REQUIRE THE SHORTEST DETOUR THAT MAINTAINS THE SAFETY OF PEDESTRIAN AND/OR BICYCLISTS.

SPACING FOR CHANNELIZING DEVICES

A. PLASTIC DRUMS ON MERGING TAPER @ 30' C – C WITH CHEVRON SIGN @ 60' C – C AND WARNING LIGHTS FOR OVERNIGHT CLOSURE.

B. PLASTIC DRUMS ON DOWNSTREAM TAPER @ 30' C – C (RETURN TAPER AND BARRICADE ARE OPTIONAL AND DIVIDED ROADWAY SECTION)

C. PLASTIC DRUMS ON RADII @ 35' C –C.

D. PLASTIC DRUMS ON TANGENT @ 35' C – C WITH VERTICAL PANEL AT 70' C – C AND APPROVED WARNING LIGHT @ 70' C – C (FOR OVERNIGHT CLOSURE).

E. PLASTIC DRUMS IN FRONT OF CONSTRUCTION ZONE @ 20' C – C WITH VERTICAL PANEL AT 40' C – C AND APPROVED WARNING LIGHT @ 40' C – C (FOR OVERNIGHT CLOSURE).

F. CONCRETE TRAFFIC BARRIER (CTB) OR LOW PROFILE CONCRETE TRAFFIC BARRIER (LPCTB) WITH APPROVED REFLECTORS @ 10' C – C IF PAVEMENT DROP IS GREATER THAN 1 FOOT.

G. PLASTIC DRUMS W/GUARD RAIL MOUNTED.

H. SELF– RIGHTING VERTICAL PANEL SPACING.
- 4 LANES TO 2 LANES UNDIVIDED ROADWAY SECTION @ 20' C – C.
- 4 LANES DIVIDED ROADWAY TO ONE SIDE TWO WAY ROADWAY @ 20' C – C.
- LEFT LANE AND RIGHT LANE STORAGE BAYS @ 15' C – C.

I. SPACING SHOWN ON TRAFFIC CONTROL SHALL SUPERSEDE THE ABOVE SPACING.

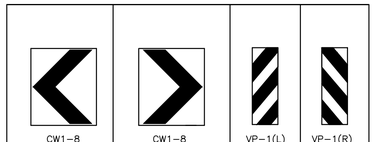
J. SPACING MAY BE ADJUSTED TO PROVIDE DRIVEWAYS, INTERSECTIONS AND /OR MEDIAN OPENINGS.

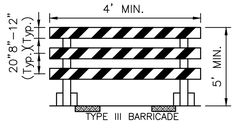
TABLE C3 – TYPICAL SIGN SPACING, TAPER LENGTHS, AND SUGGESTED SPACING OF CHANNELIZATION DEVICES

POSTED SPEED (MPH)	SIGN SPACING "X" (FEET)	MIN. DESIRABLE TAPER LENGTH "L"			SUGGESTED MAXIMUM SPACING OF DEVICE	
		10' OFFSET	11' OFFSET	12' OFFSET	ON A TAPER	ON A TANGENT
30	120'	150'	165'	180'	30'	60'–75'
35	160'	205'	225'	245'	35'	70'–90'
40	240'	265'	295'	320'	40'	80'–100'
45	320'	450'	495'	540'	45'	90'–110'
50	400'	500'	550'	600'	50'	100'–125'
55	500'	550'	605'	660'	55'	110'–140'

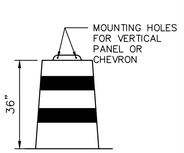
TABLE C4 – STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

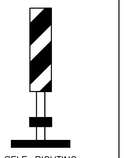
POSTED SPEED (MPH)	DISTANCE "D" (FEET)
30	200
35	250
40	305
45	360
50	425
55	495





NOTE: STRIPES SHOULD SLOPE DOWNWARDS IN THE DIRECTION TOWARDS WHICH TRAFFIC IS DIRECTED.

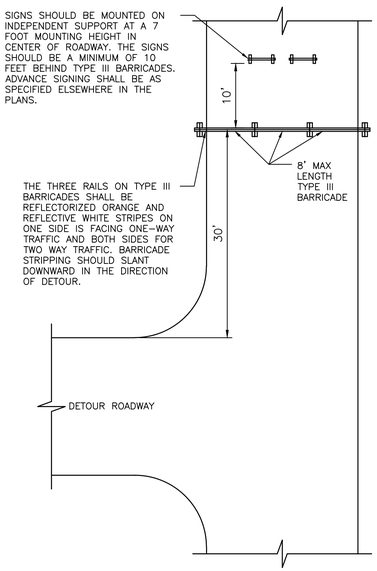




CHANNELIZATION AND BARRICADES

SIGNS SHOULD BE MOUNTED ON INDEPENDENT SUPPORT AT A 7 FOOT MOUNTING HEIGHT IN CENTER OF ROADWAY. THE SIGNS SHOULD BE A MINIMUM OF 10 FEET BEHIND TYPE III BARRICADES. ADVANCE SIGNING SHALL BE AS SPECIFIED ELSEWHERE IN THE PLANS.

THE THREE RAILS ON TYPE III BARRICADES SHALL BE REFLECTORIZED ORANGE AND REFLECTIVE WHITE STRIPES ON ONE SIDE IS FACING ONE–WAY TRAFFIC AND BOTH SIDES FOR TWO WAY TRAFFIC. BARRICADE STRIPPING SHOULD SLANT DOWNWARD IN THE DIRECTION OF DETOUR.



PLAN VIEW
TYPE III BARRICADE (POST AND SKID)
TYPICAL APPLICATION

LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 01555–01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP NOTES CHANNELIZING DEVICES AND BARRICADES

DRAWING SCALE
NOT TO SCALE

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NO	DATE	REVISION	APP.

PEN TABLE: ----

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T.B.P.E.L.S. FIRM REGISTRATION # F-1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

HOWN ENGINEERS
2825 WILCREST DRIVE, SUITE 218
HOUSTON, TX 77042
TEL: (832) 899–5657
TBPELS FIRM REG: F–26176

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A. SETAREHASEMAN, P.E.
68184
DECEMBER 16, 2025
Engineer of Record
Texas Registered Engineering Firm # F-26176

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TRAFFIC CONTROL PLAN

LADBROOK LIFT STATION
TCP NOTES, CHANNELIZING DEVICES, AND BARRICADES
SHEET 1 OF 1

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. TC-204
HORIZ: N/A
VERT: N/A
SHEET NO. 87 OF 230
DRAWING SCALE
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FILE PATH: Z:\Active Projects\1011–02 COH LS Rehab & Recon Design\1011–02–01 Ladbrook\Drawings\STANDARDS\TCP–204 – LADBROOK LIFT STATION TCP NOTES, CHANNELIZING DEVICES, AND BARRICADES, 12/22/2025 07:12:11AM

STREET LIGHT NOTES

1. ALL STREET LIGHTS SHALL BE IN FULL CONFORMANCE WITH CITY OF HOUSTON AND CENTERPOINT ENERGY STANDARDS.
2. CENTER POINT ENERGY SHALL REMOVE AND REPLACE ALL STREET LIGHTS WITHIN THE PROJECT LIMIT UNLESS NOTED OTHERWISE.
   SCOPE OF WORK SHALL INCLUDE REMOVING AND REPLACING THE LIGHT POLE, LAMPS, SERVICE WARNING, CONDUITS AND FOOTINGS.
3. THERE MAY BE MANY OTHER EXISTING UNDERGROUND UTILITIES AND CABLES BOTH PRIVATE AND PUBLIC WITHIN THE PROJECT LIMITS. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT ALL UTILITIES UNLESS CALLED OUT ON THE PLANS TO BE REMOVED.
   ANY DAMAGE TO EXISTING UTILITIES AND STRUCTURES BY CONTRACTOR ACTIVITIES SHALL BE REPAIRED TO ITS ORIGINAL CONDITION OR BETTER AT CONTRACTOR'S OWN EXPENSE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING AND PAYING FOR ALL PERMITS REQUIRED FOR THIS SCOPE OF WORK.
5. STREET LIGHT CONTRACTOR SHALL COORDINATE THIS WORK WITH OTHER CONTRACTORS WORKING ON THIS PROJECT TO AVOID CONFLICTS OR DELAY TO THE PROJECT PROGRESS.

NOTES:

1. CONTRACTOR SHALL ARRANGE A PRE-CONSTRUCTION MEETING THIRTY DAYS (30) PRIOR TO DESIRED START OF CONSTRUCTION BY CONTACTING THE CPEH PROJECT COORDINATOR AND THE COH PROJECT MANAGER (STREET LIGHTING SECTION).
2. POLES AND OTHER DEVICES SHALL NOT BE REMOVED UNTIL TEMPORARY OR PERMANENT REPLACEMENT POLES, SIGNS, TRAFFIC SIGNALS AND LIGHTING HAVE BEEN INSTALLED.
3. NEW AND/OR EXISTING POLE LOCATION SHOULD ALLOW FOR ADA/TAS WHEELCHAIR PASSAGE WIDTH OF 32" MIN. CLR.

NO.	DATE	REVISION	APP.

PLOTTED: 12/17/2025 4:28 PM PEN TABLE: ----

CIVITAS ENGINEERING GROUP
Engineers ● Planners ● Construction Managers
2000 W. Sam Houston Pkwy S., Suite 1400
Houston, Texas 77042
Phone: (713)783-8700, Fax: (713)783-8747
TBPE Firm Registration No. F-4991

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GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STREET LIGHT PLAN

LADBROOK LIFT STATION
STREET LIGHT
GENERAL NOTES

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. SL-201

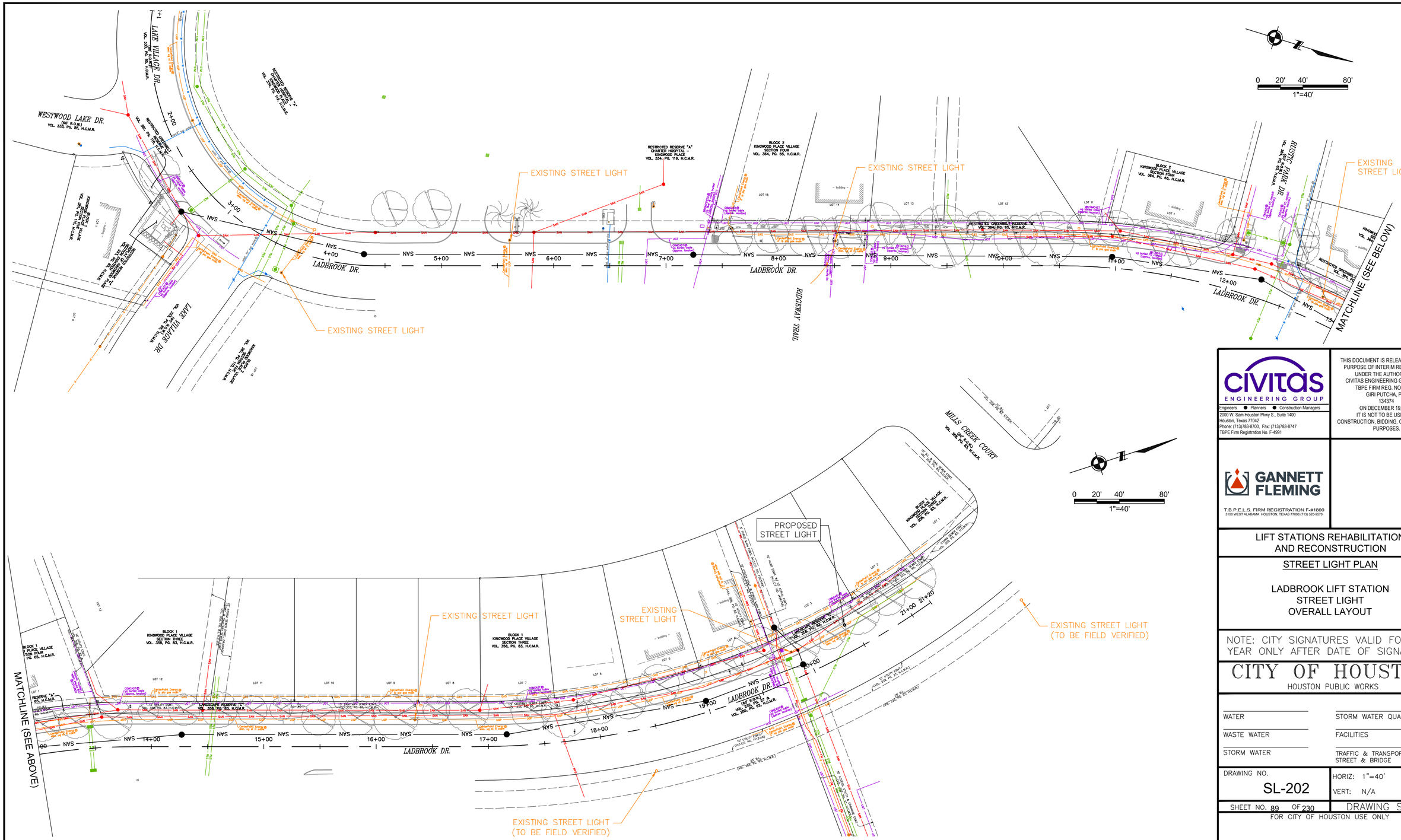
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SHEET NO. 88 OF 230

DRAWING SCALE

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FILE PATH: R:\332 DEC\2301 Coh Lift Station Rehab\PROD\3.2 Cad\3.2.12 Street Light Plan\SL-201 LADBROOK LIFT STATION STREET LIGHT GENERAL NOTES.dwg



NO.	DATE	REVISION	APP.

PEN TABLE: ----

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ENGINEERING GROUP
Engineers ● Planners ● Construction Managers
2000 W. Sam Houston Pkwy S., Suite 1400
Houston, Texas 77042
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STREET LIGHT PLAN

LADBROOK LIFT STATION
STREET LIGHT
OVERALL LAYOUT

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. SL-202

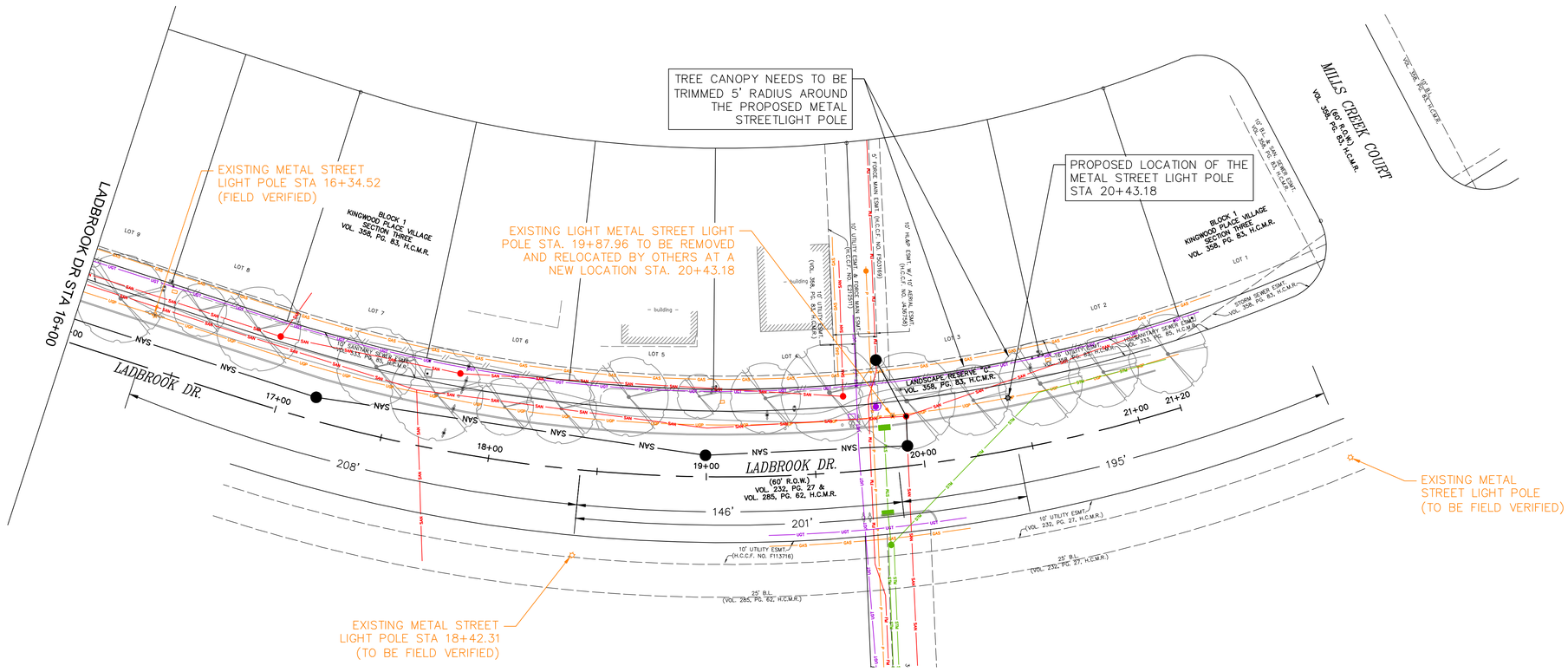
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SHEET NO. 89 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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0 15' 30' 60'

1"=30'

NO.	DATE	REVISION	APP.

LEGEND:

PROPOSED METAL STREET LIGHT

civitas ENGINEERING GROUP

Engineers ● Planners ● Construction Managers

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T.B.P.E.L.S. FIRM REGISTRATION F-#1800
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STREET LIGHT PLAN

LADBROOK LIFT STATION
STREET LIGHT
PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. SL-203

HORIZ: 1"=30'

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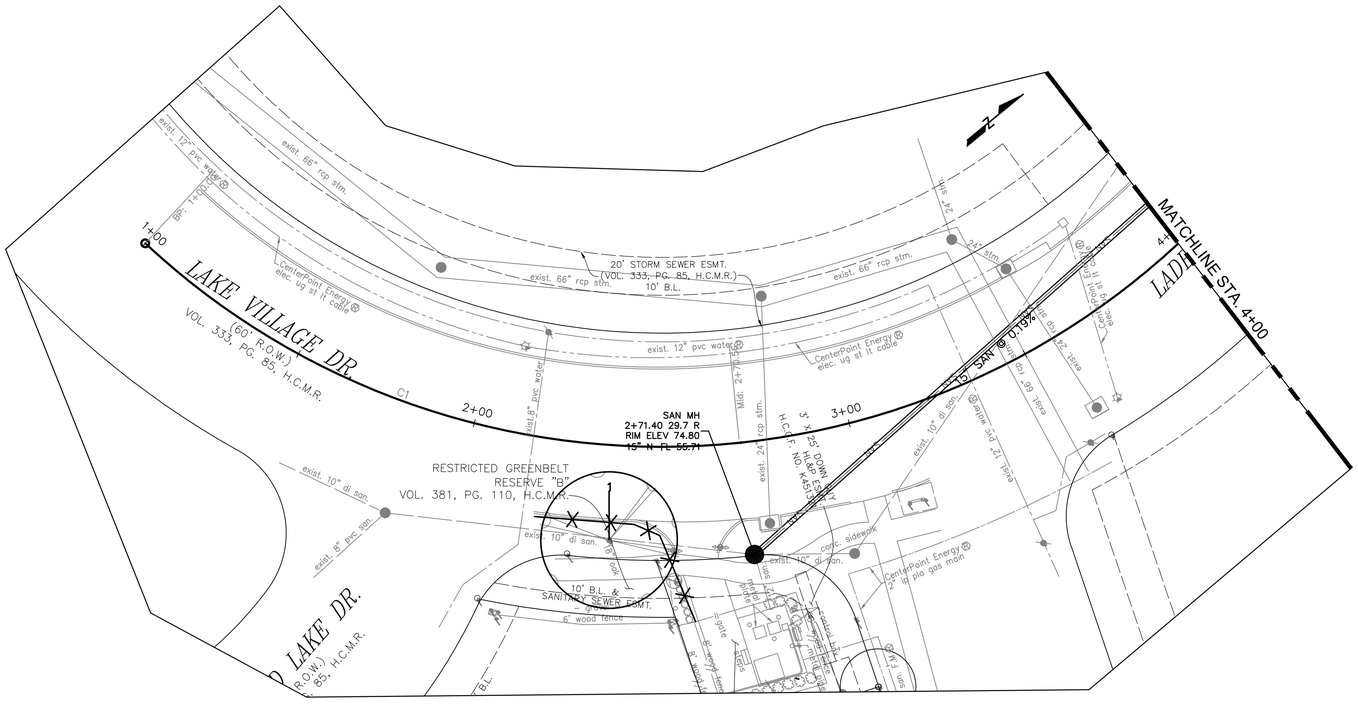
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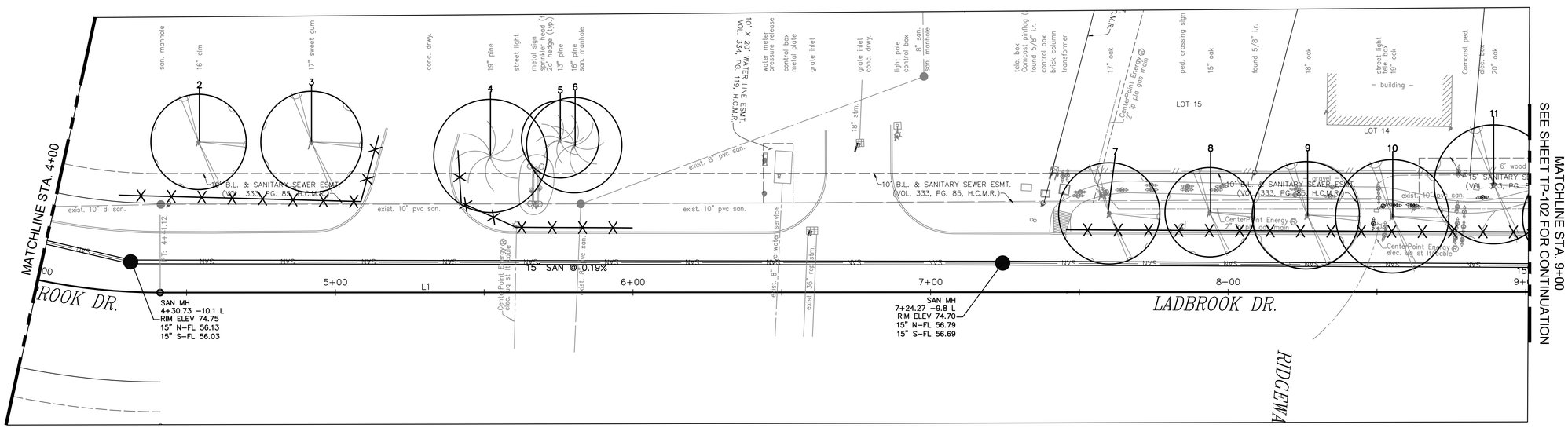
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FILE PATH: R:\332 DEC\2301 Coh Lift Station Rehab\PROD\3.2 Cad\3.2.12 Street Light Plan\SL-203 LADBROOK LIFT STATION STREET LIGHT PLAN.dwg





TREE TREATMENT SCHEDULE

TREE ID	DIAMETER	SPECIES	CONDITION	STATUS	TREATMENT	COMMENTS
1	18	LIVE OAK	GOOD	PRESERVE	FENCING	
2	16	CEDAR ELM	GOOD	PRESERVE	FENCING, CLEARANCE PRUNE	CLEARANCE PRUNE
3	17	SWEETGUM	GOOD	PRESERVE	FENCING	
4	19	LOBLOLLY PINE	GOOD	PRESERVE	FENCING	
5	13	LOBLOLLY PINE	GOOD	PRESERVE	FENCING	TRUNK WOUND (HEALED)
6	16	LOBLOLLY PINE	GOOD	PRESERVE	FENCING	
7	17	LIVE OAK	GOOD	PRESERVE	FENCING	
8	15	LIVE OAK	GOOD	PRESERVE	FENCING	
9	18	LIVE OAK	GOOD	PRESERVE	FENCING	
10	19	LIVE OAK	GOOD	PRESERVE	FENCING	
11	20	LIVE OAK	FAIR	PRESERVE	FENCING	

TREE PROTECTION NOTES:

1. Construction activity is restricted to areas outside protected tree Critical Root Zones as shown on drawings
2. Tree protection fencing must be maintained for duration of construction activities in the area.
3. Refer to Tree Treatment Schedule and Tree Treatment Specifications and Details for implementation of the Tree Protection Plan.
4. Refer to Landscape Planting Plan for tree mitigation plantings.
5. Locate bore pits outside tree Critical Root Zones as shown on drawings.

LEGEND

- # Protected Tree with critical root zone area (Refer to Tree Treatment Schedule)
- # Removal Tree
- X RP X ROOT PRUNING
- X X X X Tree Protection Fencing

NO.	DATE	REVISION	APP.

PEN TABLE: ----

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BURDITT
LAND | PLACE STUDIO
310 Longmire, Conroe, TX 77304
P: (936) 756-3041 | F: (936) 539-3240
www.burditt.com

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PAUL S. HOWARD
User Engineer
N/A
Registration Number
August 22, 2025
Date

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TREE PROTECTION AND MITIGATION PLAN
LADBROOK DRIVE

STA 1+00 TO 9+00

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

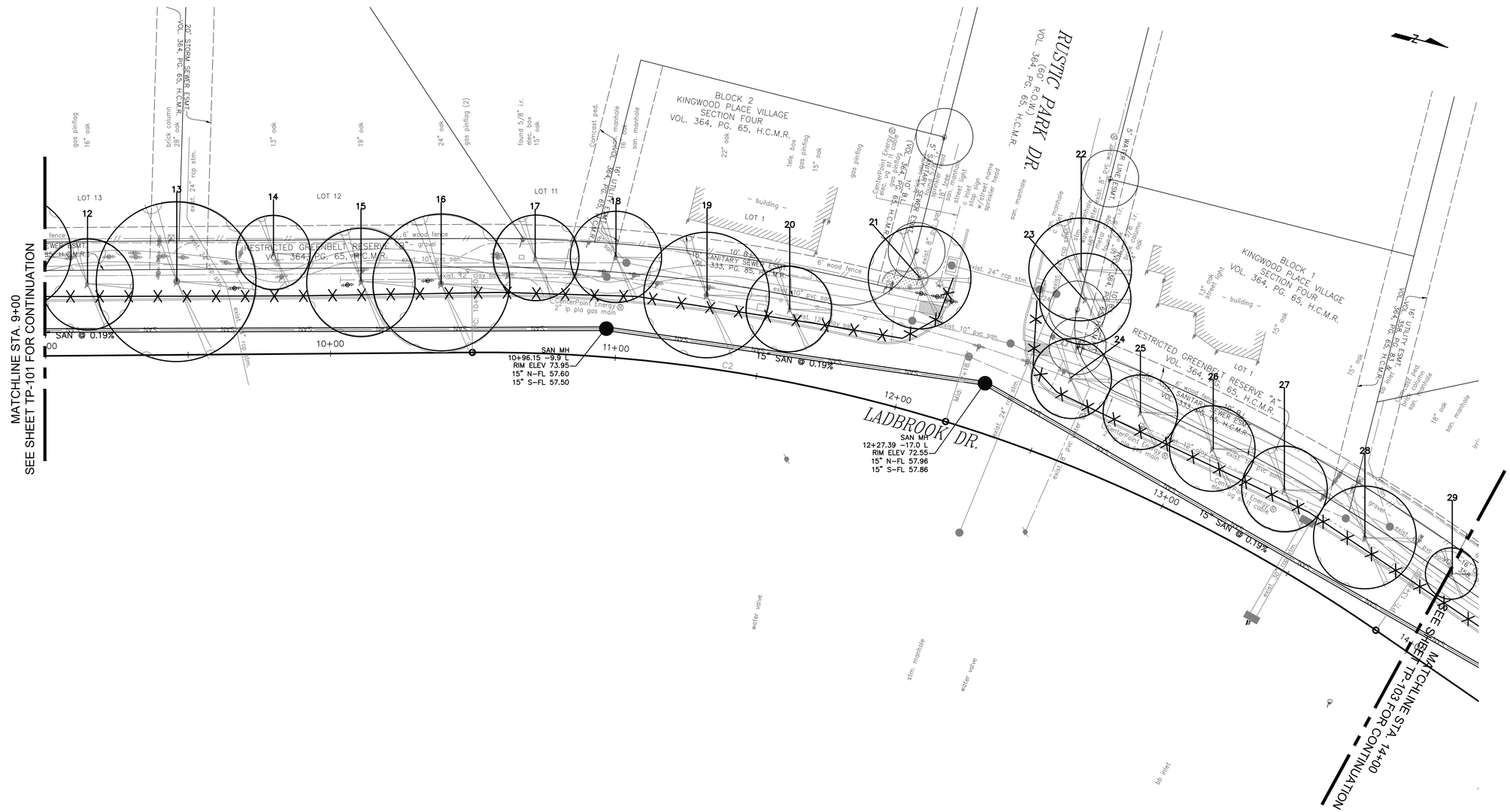
DRAWING NO. TP-201

HORIZ: 1"=20'
VERT: N/A

SHEET NO. 91 OF 230

DRAWING SCALE

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TREE PROTECTION NOTES:

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2. Tree protection fencing must be maintained for duration of construction activities in the area.
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4. Refer to Landscape Planting Plan for tree mitigation plantings.
5. Locate bore pits outside tree Critical Root Zones as shown on drawings.

LEGEND

- Protected Tree with critical root zone area (Refer to Tree Treatment Schedule)
- Removal Tree
- RP ROOT PRUNING
- Tree Protection Fencing

TREE TREATMENT SCHEDULE

TREE ID	DIAMETER	SPECIES	CONDITION	STATUS	TREATMENT	COMMENTS
12	16	LIVE OAK	FAIR	PRESERVE	FENCING	
13	28	LIVE OAK	FAIR	PRESERVE	FENCING	
14	13	LIVE OAK	GOOD	PRESERVE	FENCING	
15	19	LIVE OAK	GOOD	PRESERVE	FENCING	
16	24	LIVE OAK	GOOD	PRESERVE	FENCING	
17	15	LIVE OAK	GOOD	PRESERVE	FENCING	
18	16	LIVE OAK	GOOD	PRESERVE	FENCING	
19	22	LIVE OAK	GOOD	PRESERVE	FENCING	
20	15	LIVE OAK	GOOD	PRESERVE	FENCING	
21	18	LIVE OAK	GOOD	PRESERVE	FENCING, CLEARANCE PRUNE	CLEARANCE PRUNE
22	18	WILLOW OAK	GOOD	PRESERVE	FENCING	
23	16	WILLOW OAK	GOOD	PRESERVE	FENCING	
24	14	LIVE OAK	GOOD	PRESERVE	FENCING	
25	13	LIVE OAK	FAIR	PRESERVE	FENCING	
26	15	LIVE OAK	GOOD	PRESERVE	FENCING	
27	15	LIVE OAK	GOOD	PRESERVE	FENCING	
28	18	LIVE OAK	FAIR	PRESERVE	FENCING	
29	9	LIVE OAK	GOOD	PRESERVE	FENCING	

NO.	DATE	REVISION	APP.

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LAND | PLACE STUDIO
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PAUL S. HOWARD
Name of Engineer
N/A
Registration Number
August 22, 2025
Date

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TREE PROTECTION AND MITIGATION PLAN
LADBROOK DRIVE

STA 9+00 TO 14+00

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. TP-202

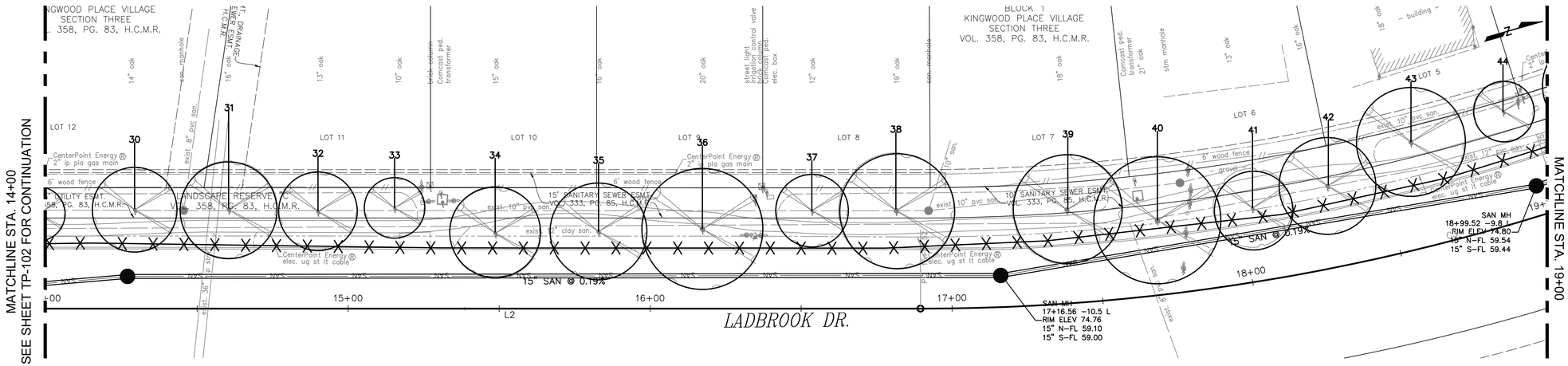
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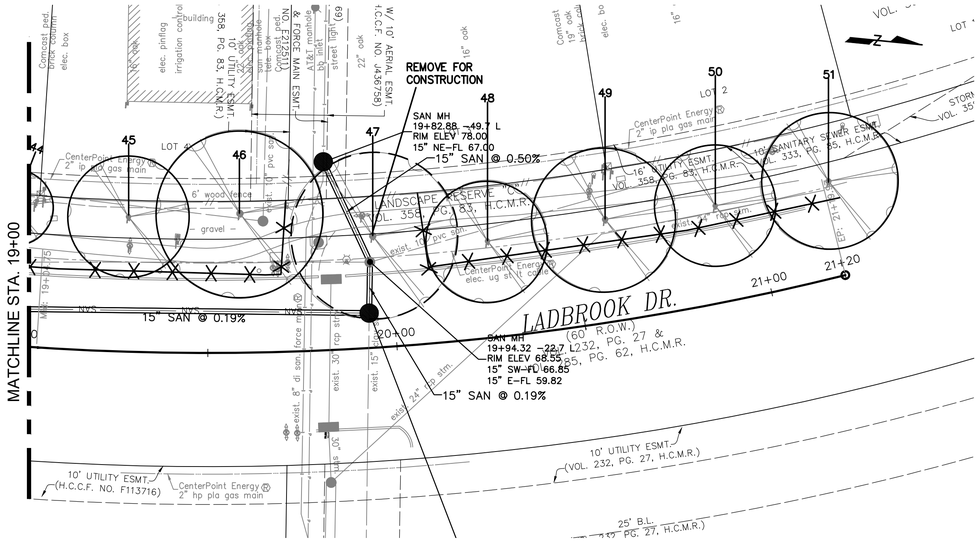
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DRAWING SCALE

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TREE PROTECTION NOTES:

1. Construction activity is restricted to areas outside protected tree Critical Root Zones as shown on drawings
2. Tree protection fencing must be maintained for duration of construction activities in the area.
3. Refer to Tree Treatment Schedule and Tree Treatment Specifications and Details for implementation of the Tree Protection Plan.
4. Refer to Landscape Planting Plan for tree mitigation plantings.
5. Rotate bore pits outside tree Critical Root Zones as shown on drawings.

LEGEND

- Protected Tree with critical root zone area (Refer to Tree Treatment Schedule)
- Removal Tree
- -X- RP -X- ROOT PRUNING
- -X-X-X- Tree Protection Fencing

TREE TREATMENT SCHEDULE

TREE ID	DIAMETER	SPECIES	CONDITION	STATUS	TREATMENT	COMMENTS
30	14	LIVE OAK	GOOD	PRESERVE	FENCING	
31	16	LIVE OAK	GOOD	PRESERVE	FENCING	
32	13	LIVE OAK	FAIR	PRESERVE	FENCING	
33	10	LIVE OAK	FAIR	PRESERVE	FENCING	POOR FORM
34	15	LIVE OAK	FAIR - GOOD	PRESERVE	FENCING	
35	16	LIVE OAK	FAIR-POOR	PRESERVE	FENCING	DIEBACK
36	20	LIVE OAK	FAIR	PRESERVE	FENCING	
37	12	LIVE OAK	FAIR	PRESERVE	FENCING	
38	19	LIVE OAK	FAIR-POOR	PRESERVE	FENCING	DIEBACK
39	18	LIVE OAK	FAIR-GOOD	PRESERVE	FENCING	
40	21	LIVE OAK	FAIR	PRESERVE	FENCING	
41	13	LIVE OAK	POOR	PRESERVE	FENCING	DIEBACK
42	16	LIVE OAK	POOR	PRESERVE	FENCING	
43	18	LIVE OAK	GOOD	PRESERVE	FENCING	
44	10	LIVE OAK	GOOD	PRESERVE	FENCING	
45	16	LIVE OAK	GOOD	PRESERVE	FENCING	
46	22	LIVE OAK	GOOD	PRESERVE	FENCING	
47	22	LIVE OAK	GOOD	REMOVE AND REPLACE	REMOVE	MANHOLE CLOSE TO TREE (3 FT)
48	16	LIVE OAK	GOOD	PRESERVE	FENCING	
49	19	LIVE OAK	GOOD	PRESERVE	FENCING	
50	16	LIVE OAK	GOOD	PRESERVE	FENCING	
51	18	LIVE OAK	GOOD	PRESERVE	FENCING	

TREE TREATMENT SCHEDULE

STATUS/TREATMENT		Total Trees	Total Inches
REMOVE FOR CONSTRUCTION (REPLACE INCH FOR INCH)		1	22
FENCING	1,636	LINEAR FEET	
REPLACEMENT PLANTING (No. of Trees)		6	4" CALIPER
CLEARANCE PRUNING		2	

Note: Replacement tree planting locations are at the direction of the City of Houston Parks Department.

NO.	DATE	REVISION	APP.

PLOTTED: 8/19/2025 3:40 PM PEN TABLE: ----

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LAND | PLACE STUDIO
310 Longmire, Conroe, TX 77304
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www.burditt.com

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PAUL S. HOWARD
Name of Engineer
N/A
Registration Number
August 22, 2025
Date

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TREE PROTECTION AND MITIGATION PLAN
LADBROOK DRIVE

STA 19+00 TO END

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. TP-203

HORIZ: 1"=20'
VERT: N/A

SHEET NO. 93 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: Q:\Shared Drives\Clients_G-L\Gannett Fleming\Ladbrook Lift Stations\7000 Construction Documents\7030 Drawings\B-TREE-PROTECTION-LADBROOK.dwg

TREE TREATMENT SPECIFICATIONS AND DETAILS

TREE PRESERVATION AND TREATMENT SPECIFICATIONS

These Specifications are supplemental to the City of Houston Standard Specifications, Section 01562–Tree and Plant Protection.

PART 1 – GENERAL

1.1 SUMMARY

A. Work includes:

1. Removal operation.
2. Maintenance pruning.
3. Fertilization treatment.
4. Tree protection fencing installation.
5. Mulching operation.
6. Root pruning operation.
7. Root pruning/chemical barrier operation.
8. Utility boring operation.
9. Zero curb cut operation.
10. Transplant operation.
11. Replacement planting.
12. Repair/replacement operation.
13. Sidewalk installation.

B. All Contractors shall meet with the Urban Forester or Owner's Representative to review the Tree Preservation Plan for the site before startup of site work.

C. No site construction shall begin in any areas where tree preservation and treatment measures have not been implemented and approved.

D. Tree preservation and treatment measures shall be reviewed and approved by the Urban Forester or Owner's Representative prior to and immediately following installation.

E. Contractor shall be responsible for compliance to and maintenance of the Tree Preservation Plan.

F. The areas protected by the tree protection fencing are the tree preservation areas. No access to these areas shall be permitted during the construction period without first consulting with the Urban Forester or Owner's Representative.

G. Any roots of preservation trees exposed by construction activity shall be covered with a layer of light topsoil or 10 mil. polyethylene sheeting to prevent desiccation and loss of exposed roots.

H. Any work, excavation, or grading required by construction within the tree preservation areas shall be limited to 2' cut or fill with no roots over 1/2" being cut. This work shall be by hand or with approved equipment and root protection.

I. Trees damaged or lost due to Contractor's negligence during the construction period shall be appraised by the Urban Forester or Owner's Representative and the Owner compensated.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Fertilizer – "XL Injecto Feed" (32–7–7), a product of Dogget Corporation, Lebanon, NJ, (800) 448–1862.

B. Mycorrhizal Fungi – MycorTree Ecto–injectable, a product of Plant Health Care, Inc., (800) 421–9051.

C. Tree Protection Fencing:

1. 4' tall plastic, 1" mesh fence.
2. Iron T–bar posts, 6' tall.
3. Wire, 16 gauge ties.

D. Polyethylene Sheeting: minimum 10 mil. thickness, clear.

E. Mulch: First run mulch or site generated mulch.

F. Products of the same type from other sources shall not be excluded, provided they have like physical and functional characteristics and are approved by the Urban Forester or Owner's Representative.

G. Every effort shall be made to utilize chemicals of an organic or biogradable nature in order to offer the least impact to the environment.

PART 3 – IMPLEMENTATION

3.1 TREATMENTS

A. Removal Operation: (Treatment A).

1. Trees designated to be removed by hand on the Tree Preservation Plan shall be painted with an "X" by the Urban Forester or Owner's Representative.
2. Designated removal trees shall be replaced on an inch for inch basis for the total diameter inches removed.
3. Plant replacement trees as near as possible to their original location (See planting procedure).
4. All tree removals shall be done by a certified Arborist by hand work.
5. All wood and debris from tree removal shall be removed from the site immediately.
6. All stumps shall be ground down to 12" below grade.
7. Any damage to preservation trees occurring during the removal operation shall be repaired.

B. Maintenance Pruning: (Treatment B).

1. Trees to be pruned are designated on the Tree Treatment Schedule and will be identified by the Urban Forester or Owner's Representative.
2. All maintenance pruning work shall be done by a certified Arborist.
3. A Tree Treatment Schedule listing the preservation trees and treatments will be provided.
4. Pruning shall consist of the following method:
   (a) Pruning as defined by the American National Standard for Tree Care Operations – Tree Shrub and Other Woody Plant Maintenance Standards. This would include:
      (1) Crown raising or clearance pruning shall consist of the removal of the lower branches of a tree to provide clearance for streets and sidewalks while maintaining a balanced form.
   (b) All pruning cuts on Oak trees shall be covered with a thin coat of water–based black paint approved by Urban Forester or Owner's Representative if pruning is to occur in April, May, or June.
   (c) All wood and debris from pruning operations shall be removed from the site.

C. Fertilization Treatment – (Treatment C).

1. Preservation trees shall be treated as designated on the Tree Treatment Schedule.
2. Injection of the fertilizer into the root zone of a tree shall consist of the following methods:
   (a) Mix in a tank with agitation capability:
      (1) Fertilizer – 9 pounds by weight per 100 gallons water.
      (2) Mycorrhizal Fungi – 1 lb. per 100 gallons water.
   (b) Inject the Mixture on a 2.5 ft. square grid at 1/2 gallon of mix per hole or 8 gallons per 100 square feet.
   (c) Injection pressure shall be 100–150 PSI as soil conditions warrant.
   (d) Depth of injection shall be 6 – 12 inches.
   (e) Inject the root zone areas, where possible, in the available canopy areas plus 10 feet beyond dripline, but not in root loss zone.
3. Contractor is responsible for mixing, applying and disposal of all chemicals in accordance with strict adherence to manufacturer's directions and/or State and Federal Regulations.

D. Tree Protection Fencing Installation (Treatment D – refer to Tree Preservation Details).

1. Tree protection fencing is designated in the Tree Preservation Plan.
2. Fencing as follows:
   (a) Fabric, 4' tall plastic fence.
   (b) Iron T–bar posts, 6' tall, placed 8' – 0" on center, 24" into the ground.
   (c) Fence is to be attached to posts with wire ties placed every 24" on center.
   (d) Fence is to be placed a minimum of 1 foot from all root prune lines.
3. No access to fenced areas shall be permitted without prior approval of the Urban Forester or Owner's Representative.
4. Contractor shall provide for maintenance and repair of fencing during site work

E. Mulching Operations (Treatment E).

1. A 4" layer of mulch shall be placed in the canopy area of trees where exposed soil or roots are present.
2. Approved access through the canopy areas foar construction equipment or vehicles shall be covered with 6" of mulch covered by 3/4" plywood.

F. Root Pruning Operation (Treatment F – refer to Tree Preservation Details).

1. Trenching areas are designated in the Tree Preservation Plan and exact locations will be marked in the field by the Urban Forester or Owner's Representative.
2. All encroachments located in the canopy of trees shall have the tree side of the excavation root pruned before excavation.
3. Trenching shall be backfilled and compacted immediately after trenching.
4. Trenching shall be backfilled and compacted immediately after trenching.
5. All excavated material shall be placed outside the canopy of the tree or on plywood cover under the canopy of the tree to protect the root zone area.
6. Topsoil should be kept aside so as not to mix with sub grade material and placed back in the pit on the top of the backfill.

G. Root Pruning/Chemical Barrier Installation (Treatment G–refer to Tree Treatment Details).

1. Root Pruning Chemical barrier shall be installed where root pruning is scheduled to be done at the back of curb line for the new curb line.
2. All specifications for root pruning trenching shall apply to this installation with the following additional requirements:
   (a) 10 mil Polyethylene sheeting shall be placed in the trench to the bottom of the trench.
   (b) Anchor sheeting at the top of the trench in order to backfill the trench.
   (c) Cover the top of the sheeting so that no sheeting is exposed.

H. Utility Boring (Treatment H.).

1. All utilities will be bored through the Critical Root Zone (CRZ) of all protected trees.
2. Bore pits will be outside the CRZ of each protected tree.
3. Bore layout must be approved in the field by the Urban Forester or Owner's Representative.
4. Any necessary excavations within the CRZ of protected trees will require the approval of the Urban Forester or Owner's Representative.

I. Zero Curb Cut Operation (Treatment I–refer to Tree Treatment Details).

1. Removal of the old curb located within the canopy area of preservation trees will be done in the following manner:
   (a) Dig our the existing street in front of curb to the bottom of existing curb.
   (b) Remove existing curb by pulling it into the street excavation without digging or clawing behind the curb.
   (c) Cover the exposed soil and roots immediately with 10 mil clear plastic to prevent desiccation of roots.
   (d) Anchor the plastic cover with wooden stakes driven into the soil (avoiding tree roots) behind the old curb edge.
   (e) Plastic shall be removed at the same time as backfill is being placed so that the roots are not exposed to air.
   (f) New curb installation shall be formed and poured without disturance or damage to the exposed roots located at the edge of the oldremoved curb.
   (g) Where necessary, backfill between the old and new curb area shall consit of:
      (1) Backfill void up to within 6" of the top of the curb with a material acceptable to engineering standards. This material shall be clean and free of rocks, debris, or chemical residues that pose a threat to the root environment.
      (2) The remaining 6" of fill behind the curb shall be of the specified topsoil mix.
   (h) Back fill behind the old curb area (Tree Preservation Area) shall consist of the specified topsoil mix. This mix shall be applied in depths of no greater than 3" to the critical root zones of the protected trees by hand.

J. Transplant Operation (Treatment J refer to Tree Treatment Details).

1. Trees designated for transplanting are designated in the Tree Treatment Schedule.
2. Transplants are to be relocated to a location determined by the Urban Forester or Owner's Representative.
3. Contractor shall be responsible for proper relocation, planting, and maintenance of the transpianted trees for one (1) year.

K. Replacement Planting (Refer to Tree Treatment Details).

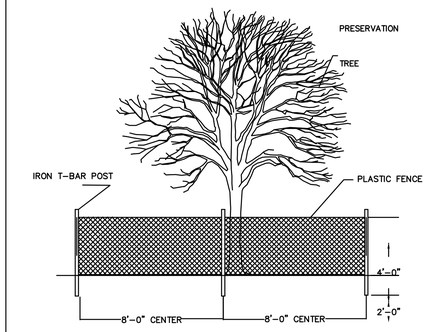
1. Replacement tree planting locations shall be indicated by the owner's representative.
2. Contractor is responsible for verifying locations of underground utilities prior to construction.
3. Trees shall be planted at least five (5') feet from any utility line, curb or sidewalk and outside all utility easements.
4. All plant material shall be maintained in a healthy growing condition, and must be replaced with plant material of similar variety and size if damaged, destroyed, diseased, or removed.
5. Measurement: Dimensions of trees and shrubs shall conform to the American Standard for Nursery Stock, latest edition (ANSI Z–60).
6. All trees shall be staked and secured according to accepted industry practice and details.
7. Each newly planted tree and shrub shall be pruned in accordance with the American Association of Nurserymen Standards or as directed by owner's representative to preserve the natural character of the plant. All dead wood, sucker, and broken or badly bruised branches shall be removed.
8. Guarantee: All plant material shall be guaranteed by the contractor for one full year from the date of installation. The owner shall be responsible for maintenance unless otherwise agreed with contractor. It shall be the contractor's responsibility to monitor the project during the guarantee period and inform the owner if problems develop with the plant material. A plant shall be considered dead if 25% or more of the crown, or main leader has died.

L. Repair/Replacement Operations

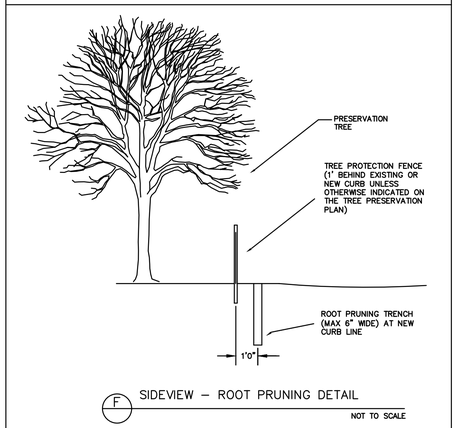
1. If any damage to preservation trees should occur beyond what is expected during the construction period, the Urban Forester or Owner's Representative shall appraise the damage and order the repair by the contractor or responsible party.
2. Trees other than those designated for removal that are destroyed or irreparably damaged as a result of construction operations, shall be removed and replaced with the same size species and variety up to and including 8 inches in diameter. Trees larger than 8 inches in diameter shall be replaced with an 8–inch diameter tree of the same species and variety and total contract amount will be reduced as determined by a qualified appraiser using the Guide for Plant Appraisal published by the International Society of Arboriculture (9th Edition 2000).
3. Owner shall be compensated for all costs involved in mitigation of damages and the appraisal thereof by the Urban Forester or Owner's Representative.

M. Sidewalk Installation (Treatment M)

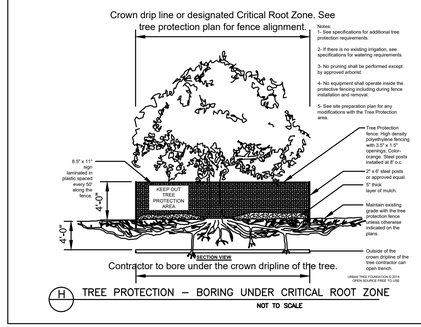
1. Route new sidewalks as far away from tree trunks as possible.
2. New sidewalks to be installed in the Critical Root Zone of protected trees shall be installed without excavating into grade and destroying vital roots.
3. Where possible, install new sidewalks in the footprint of the old sidewalks without disturbing underlying roots or existing grade.
4. Demolition of old sidewalks shall be done without disturbing underlying roots or existing grade.
5. All roots exposed from either demolition of an existing sidewalk or removal of vegetation cover shall be covered with 10 millimeter plastic sheeting or 2 inches of sand to prevent desiccation of roots.
6. No stabilized sand shall be used for sidewalks or in the Critical Root Zonees of protected trees. Substitute geo–textile fabric for stabilized base.
7. Positive drainage must be maintained or provided in the Critical Root Zone where new sidewalks are to be installed.



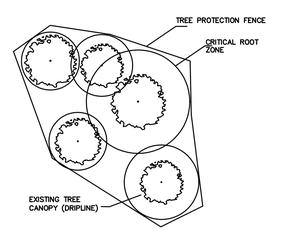
D 1 FRONT VIEW – TREE PROTECTION FENCING DETAIL
NOT TO SCALE



F SIDEVIEW – ROOT PRUNING DETAIL
NOT TO SCALE



H TREE PROTECTION – BORING UNDER CRITICAL ROOT ZONE
NOT TO SCALE



D 2 PLAN VIEW – TREE PROTECTION FENCING GROUPING OF TREES
NOT TO SCALE

TREE PROTECTION NOTES:

1. Construction activity is restricted to areas outside protected tree Critical Root Zones as shown on drawings
2. Tree protection fencing must be maintained for duration of construction activities in the area.
3. Refer to Tree Treatment Schedule and Tree Treatment Specifications and Details for implementation of the Tree Protection Plan.
4. Refer to Landscape Planting Plan for tree mitigation plantings.
5. Rotate bore pits outside tree Critical Root Zones as shown on drawings.

NO.	DATE	REVISION	APP.

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PAUL S. HOWARD
Licensed Landscape Architect
N/A
Registration Number
August 22, 2025
Date

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TREE PROTECTION AND MITIGATION PLAN
LADBROOK DRIVE

TREE TREATMENT SPECIFICATIONS AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. TP-204

HORIZ: 1"=20'
VERT: N/A

SHEET NO. 94 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\Shared Drives\Clients_G–L\Gannett Fleming\Ladbrook Lift Stations\7000 Construction Documents\7030 Drawings\B–TREE–PROTECTION–LADBROOK.dwg

National Flood Hazard Layer FIRMette

FEMA

95°17'58"W 29°45'2"N



95°17'21"W 29°44'31"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/4/2025 at 4:03 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

N

NO.	DATE	REVISION	APP.

PEN TABLE: ----

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T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-0570

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Craig Alexander Perry
116345
JANUARY 23, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

FIRMETTE

MAGNOLIA PARK LIFT STATION
NATIONAL FLOOD HAZARD
LAYER FIRMETTE MAP

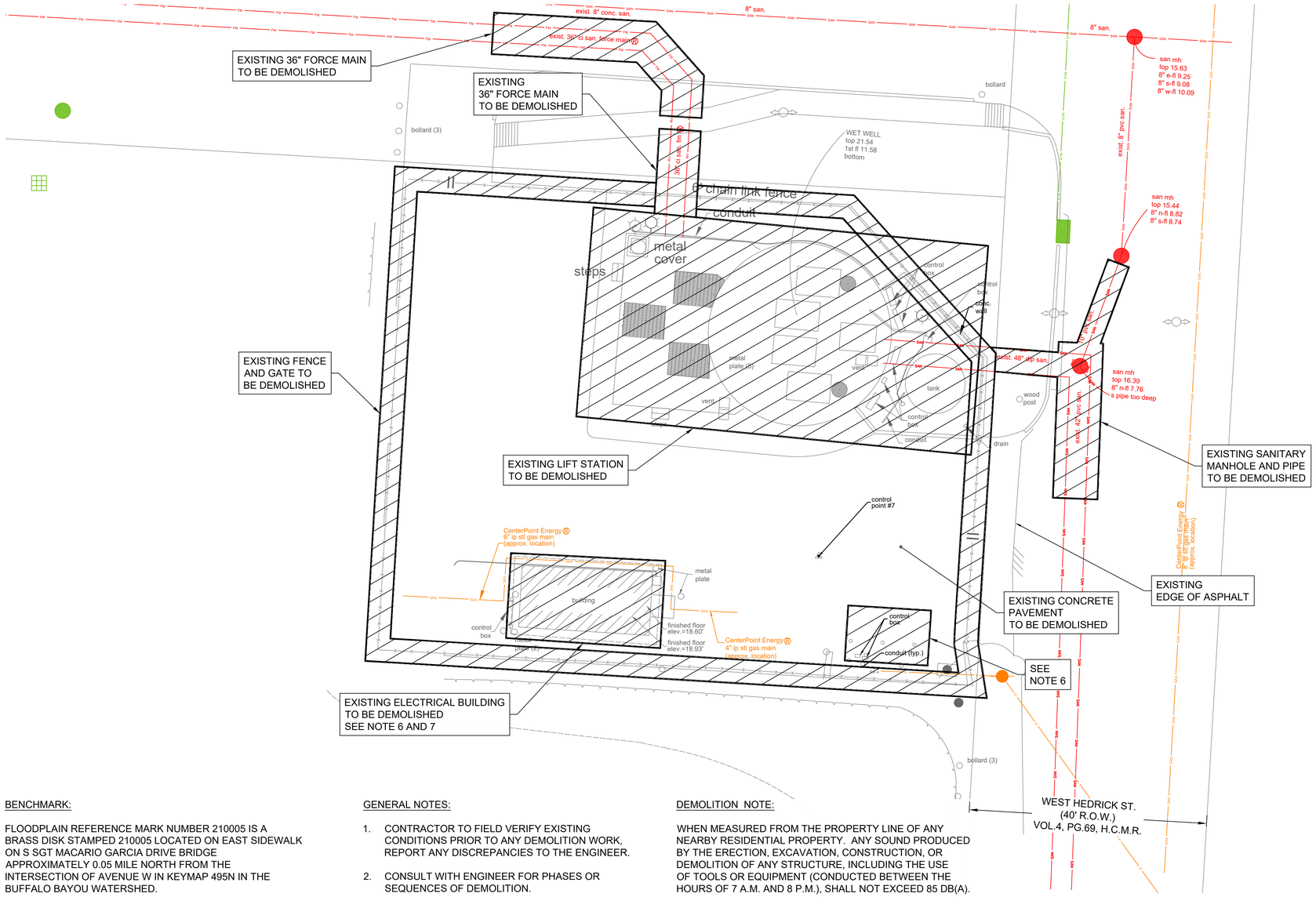
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. F-301	HORIZ: 1"=250'
SHEET NO. 95 OF 230	VERT: NONE
FOR CITY OF HOUSTON USE ONLY	DRAWING SCALE

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\021 F-301.dwg



0 10' 20'

1"=10'

LEGEND:

LIMITS OF LIFT STATION SITE DEMOLITION

NO.	DATE	REVISION	APP.

PEN TABLE: -----

PLOTTED: 1/22/2026 5:46 PM

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 210005 IS A BRASS DISK STAMPED 210005 LOCATED ON EAST SIDEWALK ON S SGT MACARIO GARCIA DRIVE BRIDGE APPROXIMATELY 0.05 MILE NORTH FROM THE INTERSECTION OF AVENUE W IN KEYMAP 495N IN THE BUFFALO BAYOU WATERSHED.

ELEV 34.38 FEET NAVD 1988, 2001 ADJUSTMENT.

HORIZONTAL DATUM NOTE:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

EXISTING UTILITY NOTE:

EXISTING UNDERGROUND UTILITY INFORMATION (TYPE, SIZE & OWNERSHIP) ARE SHOWN APPROXIMATELY BASED ON THE AVAILABLE RECORD DRAWINGS AND FIELD VERIFICATION (WHERE FEASIBLE) WITHOUT PROBING AND EXCAVATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATION SHOWN ON THE DRAWING. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING OR BORE AND JACKING IN THE VICINITY OF UNDERGROUND UTILITIES. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CALL UTILITY COORDINATING COMMITTEE AT 713-223-4567, AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THE STREET RIGHT-OF-WAY.

GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
3. REMOVE AND SALVAGE EXISTING PUMPS, MOTORS, VALVES, PIPING, AND FITTINGS. SALVAGED ITEMS SHALL BE DELIVERED AS DIRECTED BY THE CITY OF HOUSTON MAINTENANCE OFFICE.
4. WET WELL SHALL BE DEMOLISHED AT LEAST 4 FT BELOW FINISHED GRADE AS SHOWN ON PLAN. DEMOLISHED WET WELL SHALL BE COMPLETELY FILLED WITH ACCEPTABLE FLOWABLE FILL APPROVED BY THE ENGINEER.
5. CLEAN EXISTING WET WELL OF ACCUMULATED SLUDGE. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS AND SLUDGE IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.
6. THE EXISTING LIFT STATION AND ELECTRICAL BUILDING SHALL REMAIN IN OPERATION AS LONG AS POSSIBLE DURING CONSTRUCTION. THE ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATION AND TRANSFER OF TEMPORARY POWER SERVICE WITH CENTERPOINT ELECTRICAL.
7. ELECTRICAL CONTRACTOR SHALL COORDINATE RELOCATION OF EXISTING GAS LINES AND LOCATION OF GAS SERVICE LINES FOR THE GENERATORS WITH CENTERPOINT GAS.

DEMOLITION NOTE:

WHEN MEASURED FROM THE PROPERTY LINE OF ANY NEARBY RESIDENTIAL PROPERTY. ANY SOUND PRODUCED BY THE ERECTION, EXCAVATION, CONSTRUCTION, OR DEMOLITION OF ANY STRUCTURE, INCLUDING THE USE OF TOOLS OR EQUIPMENT (CONDUCTED BETWEEN THE HOURS OF 7 A.M. AND 8 P.M.), SHALL NOT EXCEED 85 DB(A).

RIGHT OF REFUSAL NOTE:

"SALVAGE MATERIAL AND EQUIPMENT LISTED HEREINAFTER SHALL BECOME THE PROPERTY OF THE CITY OF HOUSTON UNLESS OTHERWISE DESIGNATED IN WRITING. THE CITY OF HOUSTON SHALL HAVE FIRST REFUSAL RIGHTS TO RETAIN ALL ITEMS SHOWN TO BE DEMOLISHED AND/OR REMOVED IN THE DRAWINGS. PRIOR TO INITIATING DEMOLITION, THE CONTRACTOR AND THE CITY OF HOUSTON PROJECT MANAGER SHALL MAKE A JOINT INSPECTION TO IDENTIFY ALL ITEMS TO BE RETAINED BY THE CITY OF HOUSTON. THE CONTRACTOR SHALL RELOCATE AND STORE ITEMS, TO BE RETAINED BY THE CITY OF HOUSTON, WHERE DIRECTED ONSITE OR OFFSITE."

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:

Craig Alexander Perry
116345
JANUARY 23, 2025

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

MAGNOLIA PARK LIFT STATION
DEMOLITION
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-301

HORIZ: 1"=10'

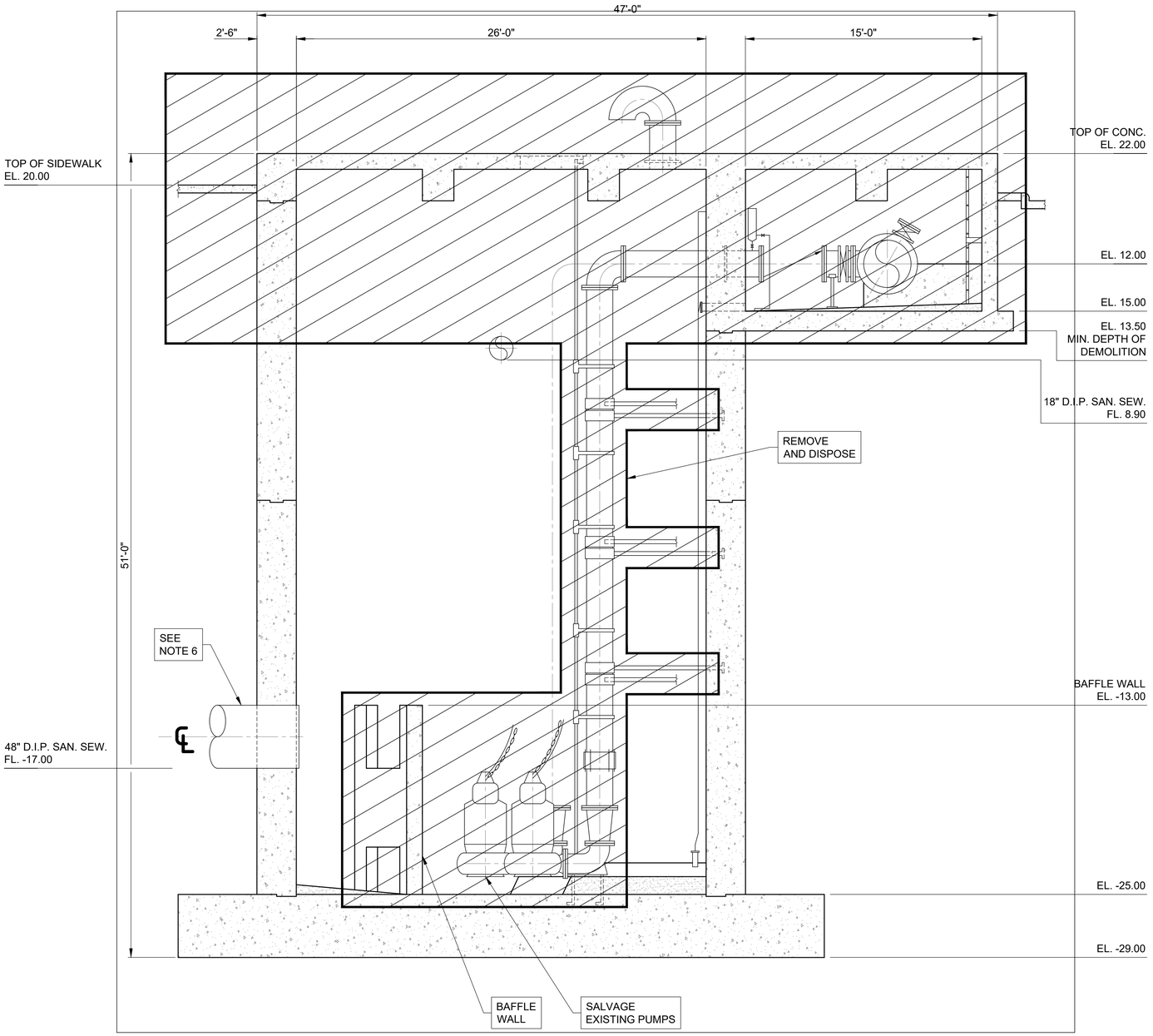
VERT: NONE

SHEET NO. 96 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\033 C-301.dwg



MA C-302 SECTION
SCALE: 1/4"=1'-0"

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
3. REMOVE AND SALVAGE EXISTING PUMPS, MOTORS, VALVES, PIPING, AND FITTINGS. SALVAGED ITEMS SHALL BE DELIVERED TO THE NEAREST CITY OF HOUSTON MAINTENANCE OFFICE.
4. WET WELL SHALL BE DEMOLISHED AT LEAST 4 FT BELOW FINISHED GRADE AS SHOWN ON PLAN. DEMOLISHED WET WELL SHALL BE COMPLETELY FILLED WITH ACCEPTABLE FLOWABLE FILL APPROVED BY THE ENGINEER.
5. CLEAN EXISTING WET WELL OF ACCUMULATED SLUDGE. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS AND SLUDGE IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.
6. ABANDONED 48" INFLUENT LINE SHALL BE FULLY FILLED WITH CEMENT GROUT OR FLOWABLE FILL.

LEGEND:

LIMITS OF LIFT STATION DEMOLITION

DEMOLITION NOTE:

WHEN MEASURED FROM THE PROPERTY LINE OF ANY NEARBY RESIDENTIAL PROPERTY. ANY SOUND PRODUCED BY THE ERECTION, EXCAVATION, CONSTRUCTION, OR DEMOLITION OF ANY STRUCTURE, INCLUDING THE USE OF TOOLS OR EQUIPMENT (CONDUCTED BETWEEN THE HOURS OF 7 A.M. AND 8 P.M.), SHALL NOT EXCEED 85 DB(A).

RIGHT OF REFUSAL NOTE:

"SALVAGE MATERIAL AND EQUIPMENT LISTED HEREINAFTER SHALL BECOME THE PROPERTY OF THE CITY OF HOUSTON UNLESS OTHERWISE DESIGNATED IN WRITING. THE CITY OF HOUSTON SHALL HAVE FIRST REFUSAL RIGHTS TO RETAIN ALL ITEMS SHOWN TO BE DEMOLISHED AND/OR REMOVED IN THE DRAWINGS. PRIOR TO INITIATING DEMOLITION, THE CONTRACTOR AND THE CITY OF HOUSTON PROJECT MANAGER SHALL MAKE A JOINT INSPECTION TO IDENTIFY ALL ITEMS TO BE RETAINED BY THE CITY OF HOUSTON. THE CONTRACTOR SHALL RELOCATE AND STORE ITEMS, TO BE RETAINED BY THE CITY OF HOUSTON, WHERE DIRECTED ONSITE OR OFFSITE."

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 5:47 PM PEN TABLE: ----

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CIVIL

MAGNOLIA PARK LIFT STATION
DEMOLITION
SECTION VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

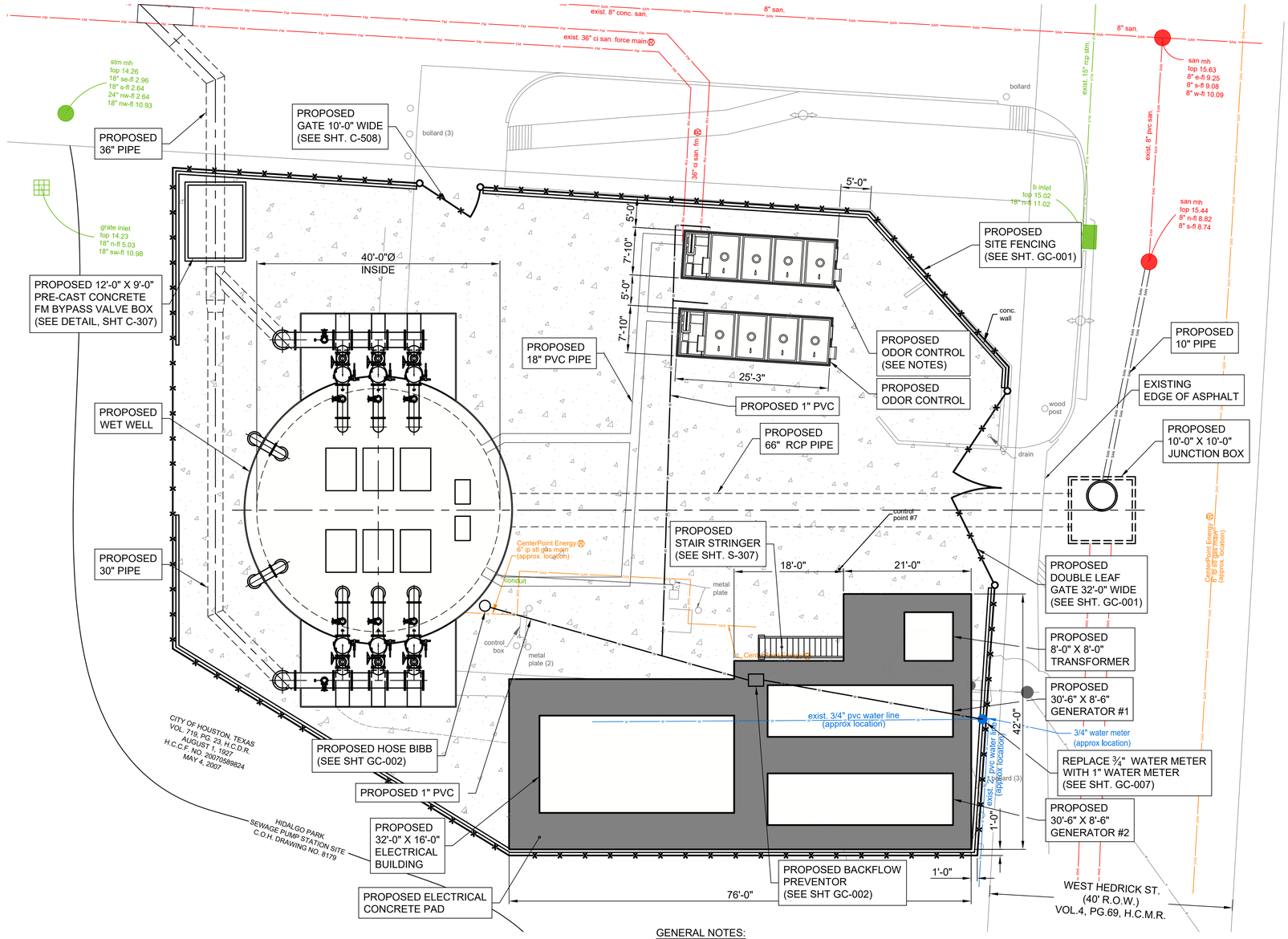
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-302	HORIZ: 1/4"=1'-0" VERT: NONE
SHEET NO. 97 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\034 C-302.dwg



NOTE:

1. FOR SITE CONTROL POINTS TABLE SEE DRAWING NO. C-306 MAGNOLIA PARK LIFT STATION PUMP OPERATION AND SITE CONTROL POINTS TABLES.

LEGEND:

MP-301 SITE CONTROL POINTS

0 10' 20'
1"=10'

NO.	DATE	REVISION	APP.

PEN TABLE: ------

PLOTTED: 1/29/2026 12:49 PM

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T TEXAS/SWBT underground conduit facilities only. Signature valid for one year.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

MAGNOLIA PARK LIFT STATION
PROPOSED
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-303
HORIZ: 1"=10'
VERT: NONE
SHEET NO. 98 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 210005 IS A BRASS DISK STAMPED 210005 LOCATED ON EAST SIDEWALK ON S SGT MACARIO GARCIA DRIVE BRIDGE APPROXIMATELY 0.05 MILE NORTH FROM THE INTERSECTION OF AVENUE W IN KEYMAP 495N IN THE BUFFALO BAYOU WATERSHED.

ELEV 34.38 FEET NAVD 1988, 2001 ADJUSTMENT.

HORIZONTAL DATUM NOTE:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

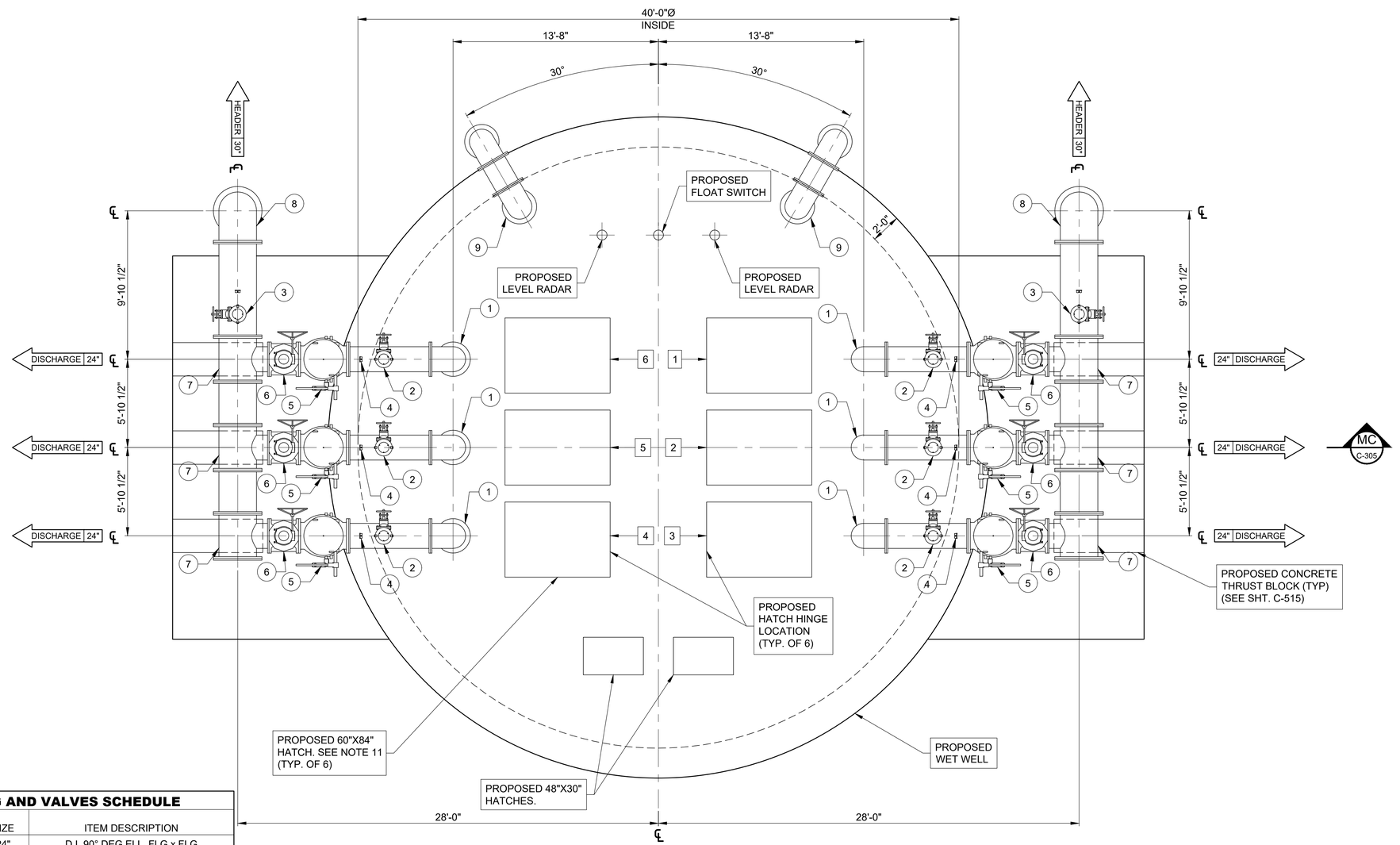
EXISTING UTILITY NOTE:

EXISTING UNDERGROUND UTILITY INFORMATION (TYPE, SIZE & OWNERSHIP) ARE SHOWN APPROXIMATELY BASED ON THE AVAILABLE RECORD DRAWINGS AND FIELD VERIFICATION (WHERE FEASIBLE) WITHOUT PROBING AND EXCAVATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATION SHOWN ON THE DRAWING. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING OR BORE AND JACKING IN THE VICINITY OF UNDERGROUND UTILITIES. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CALL UTILITY COORDINATING COMMITTEE AT 713-223-4567, AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THE STREET RIGHT-OF-WAY.

GENERAL NOTES:

1. SEE DETAILS AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN FOR STRUCTURES.
3. FOR ODOR CONTROL DESIGN DETAILS, REFER TO SPECIFICATIONS SECTION 1140.
4. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE WET WELL HATCHES, PER SELECTED HATCH AND PUMP MANUFACTURER'S REQUIREMENTS.
5. INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO SEATING POSITION.
6. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
7. SLEEVED OR CORED DISCHARGE PIPE OPENINGS SEALED WITH LINK-SEAL (OR APPROVED EQUAL) MAY BE SUBSTITUTED FOR POURED IN PLACE WALL PIPES TO ACCOMMODATE CONSTRUCTION METHOD.
8. LABEL HATCHES WITH THE CORRESPONDING PUMP NUMBER USING A 12-INCH BY 12-INCH 316SS PLATE ENGRAVED WITH 6-INCH LETTERING WELDED TO THE HATCH. LABEL CHECK VALVES WITH THE CORRESPONDING VALVE NUMBER USING A 12-INCH BY 12-INCH 316SS PLATE ENGRAVED WITH 6-INCH LETTERING ADHERED TO THE TOP OF THE CHECK VALVE.
9. ALL ABOVE GROUND PIPING AND FITTINGS SHALL BE FLANGED AND ALL BELOW GROUND PIPING AND FITTINGS SHALL BE MECHANICAL JOINT.
10. SEWER MATERIALS, CONSTRUCTION, AND TESTING TO BE IN ACCORDANCE WITH THE CITY OF HOUSTON PUBLIC WORKS DEPARTMENT SPECIFICATION.
11. ALL BURIED DUCTILE IRON PIPE AND FITTINGS TO BE POLYETHYLENE WRAPPED.
12. FORCE MAIN PIPING TO BE DUCTILE IRON PIPE, CLASS 53 FOR EXPOSED PIPING, AND CLASS 50 FOR BURIED PIPING.
13. 3/4" WATERLINE AND WATER METER TO BE INSULATED WITH SUITABLE INSULATION MATERIAL TO PROTECT AGAINST FREEZING OR APPROVED EQUAL.
14. CONTRACTOR TO FIELD VERIFY LOCATIONS AND ELEVATIONS OF EXISTING FACILITIES PRIOR TO CONSTRUCTION OF PROPOSED FACILITIES.
15. CONTRACTOR SHALL TAKE ALL DUE PRECAUTIONS TO PROTECT EXISTING FACILITIES FROM DAMAGE. ANY DAMAGE TO EXISTING FACILITIES INCURRED AS A RESULT OF CONSTRUCTION OPERATIONS WILL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.
16. CONTRACTOR SHALL NOTIFY ALL APPROPRIATE AGENCIES OR PERSONS IN CHARGE OF PRIVATE AND PUBLIC UTILITIES AFFECTED BY THIS OPERATION PRIOR TO COMMENCEMENT OF WORK.
17. CONTRACTOR TO REMOVE PLUG OR CONNECT TO EXISTING UTILITY LINES AS INDICATED ON PLANS.
18. THE GENERATOR IS USED SOLELY FOR EMERGENCIES AND REQUIRED TESTING AND IS COMPLIED WITH CHAPTER 30 SOUND LEVEL ORDINANCE EXEMPTION FOR EMERGENCY WORK.
19. NON-POTABLE WATER LINE BACKFLOW PREVENTER LOCATED UINDER ELEVATED ELECTRICAL PAD AND SHALL HAVE MIN. 30" COVER.

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\035 C-303.dwg



MB C-304 PLAN
SCALE: 1/4"=1'-0"

PIPE FITTING AND VALVES SCHEDULE

KEYED NOTES	QUANTITY	SIZE	ITEM DESCRIPTION
1	6	24"	D.I. 90° DEG ELL. FLG x FLG
2	6	6"	AIR & VACUUM VALVE
3	2	10"	AIR & VACUUM VALVE
4	8	1/4"	PRESSURE GAUGE
5	6	24"	SWING CHECK VALVE, FLG X FLG
6	6	24"	PLUG VALVE, FLG X FLG
7	6	24" X 30"	D.I. REDUCING TEE, FLG
8	2	30"	D.I. 90° DEG ELL. FLG x FLG
9	2	24" Ø	**VENT PIPE:**
	2	24"	BIRD SCREEN
	2	24"	D. I. WALL PIPE W/WATERSTOP COLLAR PE X FLG.
	4	12"	D.I. 90° ELL. FLG

NOTES:

1. SEE DETAILS AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. CONTRACTOR SHALL VERIFY DIMENSIONS IN APPROVED SHOP DRAWINGS FOR PUMPS SELECTED.
3. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
4. INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO A SEATING POSITION ON THE UPSTREAM FACE (PUMP SIDE).
5. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
6. SLEEVED OR CORED DISCHARGE PIPE OPENINGS SEALED WITH SEAL-LINK (OR APPROVED EQUAL) MAY BE SUBSTITUTED FOR POURED IN PLACE WALL PIPES TO ACCOMMODATE CONSTRUCTION METHOD.
7. CONTRACTOR SHALL PROVIDE BLOCK-OUTS IN CONCRETE FILLETS FOR CLEARANCE AROUND LEVEL TRANSDUCER.
8. LIFT STATION SAFETY HATCHES SHALL BE PAINTED FOREST GREEN.
9. LABEL HATCHES WITH CORRESPONDING PUMP NUMBER USING STANDARD PAINT STENCILS. MINIMUM 8" HEIGHT.
10. VENT PIPES SHALL BE DUCTILE IRON WITH UV PROTECTIVE COATINGS AS REQUIRED BY THE CITY OF HOUSTON.
11. HATCHES SHALL BE CAST-IN WITH TOPS FLUSH WITH THE CONCRETE DECK, FLOOD TIGHT WITH HOLD OPEN ARMS. HATCHES SHALL BE MANUFACTURED BY BILCO COMPANY, HALLIDAY PRODUCTS, OR EQUAL.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/22/2026 6:05 PM

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CIVIL

MAGNOLIA PARK LIFT STATION
PROPOSED
PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-304

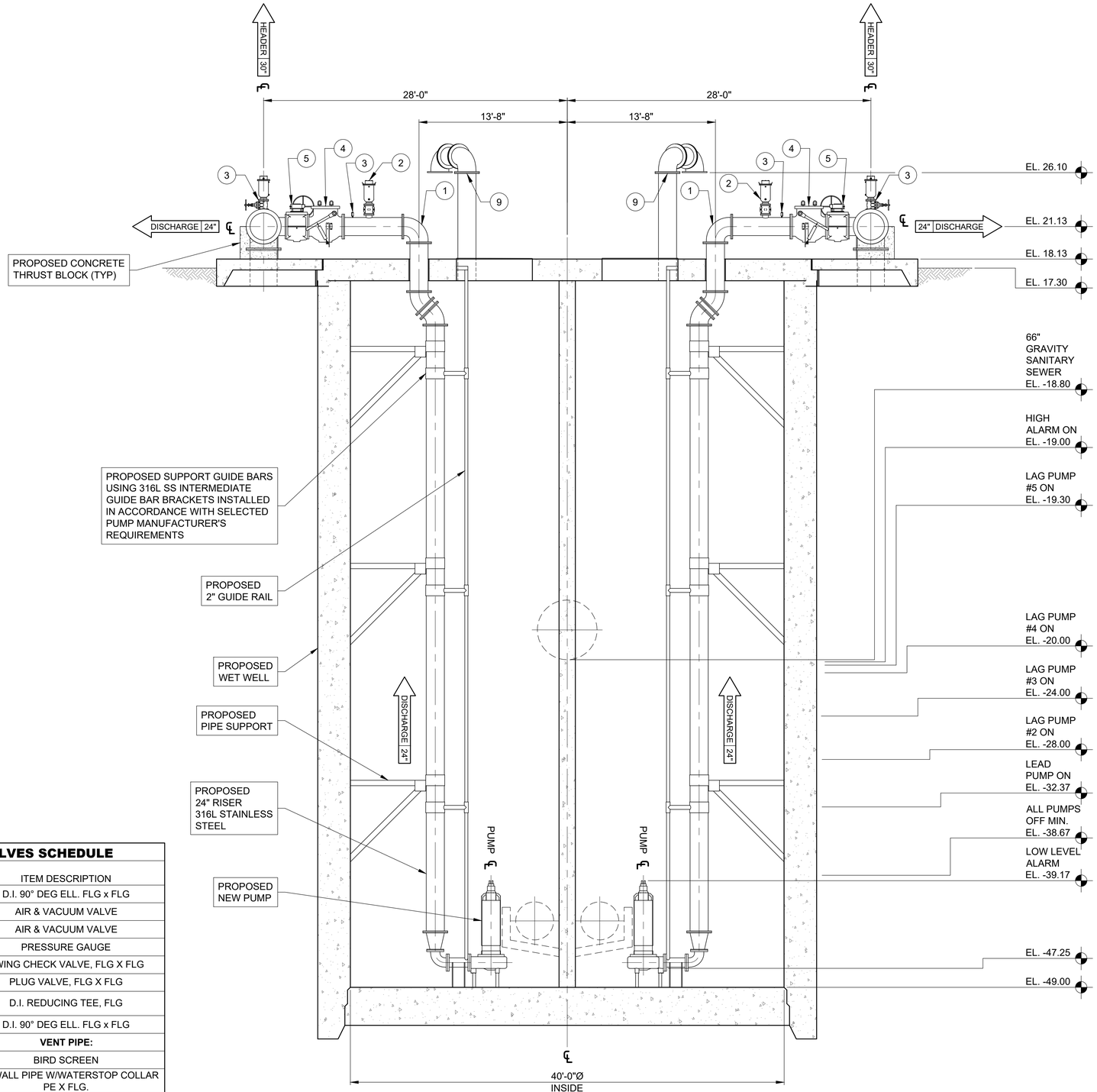
HORIZ: 1/4"=1'-0"
VERT: NONE

SHEET NO. 99 OF 230

DRAWING SCALE

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FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\036 C-304.dwg



MC C-305 SECTION
SCALE: 3/16"=1'-0"

PIPE FITTING AND VALVES SCHEDULE

KEYED NOTES	QUANTITY	SIZE	ITEM DESCRIPTION
1	6	24"	D.I. 90° DEG ELL. FLG x FLG
2	6	6"	AIR & VACUUM VALVE
3	2	10"	AIR & VACUUM VALVE
4	8	1/4"	PRESSURE GAUGE
5	6	24"	SWING CHECK VALVE, FLG X FLG
6	6	24"	PLUG VALVE, FLG X FLG
7	6	24" X 30"	D.I. REDUCING TEE, FLG
8	2	30"	D.I. 90° DEG ELL. FLG x FLG
9	2	24" Ø	**VENT PIPE:**
	2	24"	BIRD SCREEN
	2	24"	D. I. WALL PIPE W/WATERSTOP COLLAR PE X FLG.
	4	12"	D.I. 90° ELL. FLG

NOTES:

1. SEE STRUCTURAL SHEETS FOR INFORMATION NOT SHOWN ON STRUCTURES.
2. SUPPORT GUIDE BARS SHALL BE 316 SS AND SHALL BE MOUNTED IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES.
3. PIPE SUPPORTS SHALL BE 316L SS.
4. SLEEVED OPENING, SEAL WITH LINK SEAL OR APPROVED EQUAL. AT TOP OF SLAB FILL VOID AROUND SEAL WITH GROUT & RECESS APPROXIMATE 1/4" BELOW TOP OF SLAB.
5. THE CONTRACTOR PRIOR TO THE INSTALLATION OF FLOATS SHALL COORDINATE WITH THE CITY OF HOUSTON WASTE WATER OPERATIONS STAFF FOR THE FINAL DESIGN AND OF RADAR AND FLOAT APPROVED LOCATION.
6. INTERMEDIATE GUIDE BARS BRACKETS SHALL BE INSTALLED IN ACCORDANCE WITH PUMP MANUFACTURER'S REQUIREMENT.
7. WET WELL SHALL BE BLASTED AND CLEANED. A PROTECTIVE COATING SHALL BE APPLIED ON ALL INTERIOR CONCRETE SURFACE OF THE WET WELL.. REFER TO COH PROTECTIVE COATINGS, SPEC. 09901, SYSTEM 108.
8. ABRASIVE BLAST AND COAT ALL PIPING AND FITTINGS NOT BEING REPLACED IN WET WELL.
9. PROVIDE PROTECTIVE COATING ON ALL INTERIOR CONCRETE SURFACE OF THE WET WELL. REF TO COH PROTECTIVE COATINGS SPEC. 09901, SYSTEM 108.
10. ALL PROPOSED PIPING AND FITTINGS INSIDE THE WET WELL SHALL BE 316L SS.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/22/2026 6:07 PM

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HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-305
HORIZ: 3/16"=1'-0"
VERT: NONE
SHEET NO. 100 OF 230
DRAWING SCALE
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FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\037 C-305.dwg

1 Pump (gpm)	1 Pump Head (ft)	2 Pumps (gpm)	2 Pumps Head (ft)	3 Pumps (gpm)	3 Pumps Head (ft)	4 Pumps (gpm)	4 Pumps Head (ft)	5 Pumps (gpm)	5 Pumps Head (ft)	1 Pump (gpm)2	NPSHr (1x) (FT)	2 Pumps (gpm)	NPSHr (2x) (FT)	3 Pumps (gpm)	NPSHr (3x) (FT)	4 Pumps (gpm)	NPSHr (4x) (FT)	5 Pumps (gpm)3	NPSHr (5x) (FT)	NPSHa
0	126.50	0	126.50	0	126.50	0	126.50	0	126.50	0	24.00	0	24.00	0	24.10	0	24.10	0	24.00	46.35
1992	120.00	4000	120.00	2000	123.90	2000	124.50	2659	124.00	5000	24.00	10000	24.00	15000	24.10	20000	24.10	25000	24.00	46.35
4912	110.39	6000	117.00	4000	122.00	4000	123.20	6310	122.00	10000	22.30	15000	23.50	20000	24.60	25000	23.00	30000	23.60	46.35
7832	96.00	8000	114.00	6000	120.00	8000	120.00	9960	120.00	15000	23.70	20000	22.30	25000	24.00	30000	22.30	35000	23.50	46.35
9292	89.00	10000	110.00	10000	116.30	12000	117.20	13610	118.00	20000	40.00	25000	21.80	30000	23.30	35000	21.80	40000	23.00	46.35
10752	83.00	12000	105.50	13000	112.90	16000	116.00	17260	116.00	25000	41.00	32000	21.29	39000	23.51	46000	21.14	53000	22.77	46.35
11482	80.00	14000	100.50	14000	111.80	20000	110.00	20911	113.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	46.35
12212	77.00	16000	95.30	18000	105.20	22000	107.70	24561	110.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	46.35
13672	71.00	18000	90.00	20000	102.00	26000	102.90	28210	107.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	46.35
14402	67.50	20000	85.80	24000	95.30	30000	97.70	31860	103.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	46.35
15861	60.00	22000	81.70	26000	92.00	32000	95.10	35510	100.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	46.35
16591	56.00	24000	77.80	30000	85.80	36000	90.00	39159	96.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	46.35

M4 / C-306 PUMP FLOW, TOTAL DYNAMIC HEAD, AND NPSH REQUIREMENTS FOR OPERATION

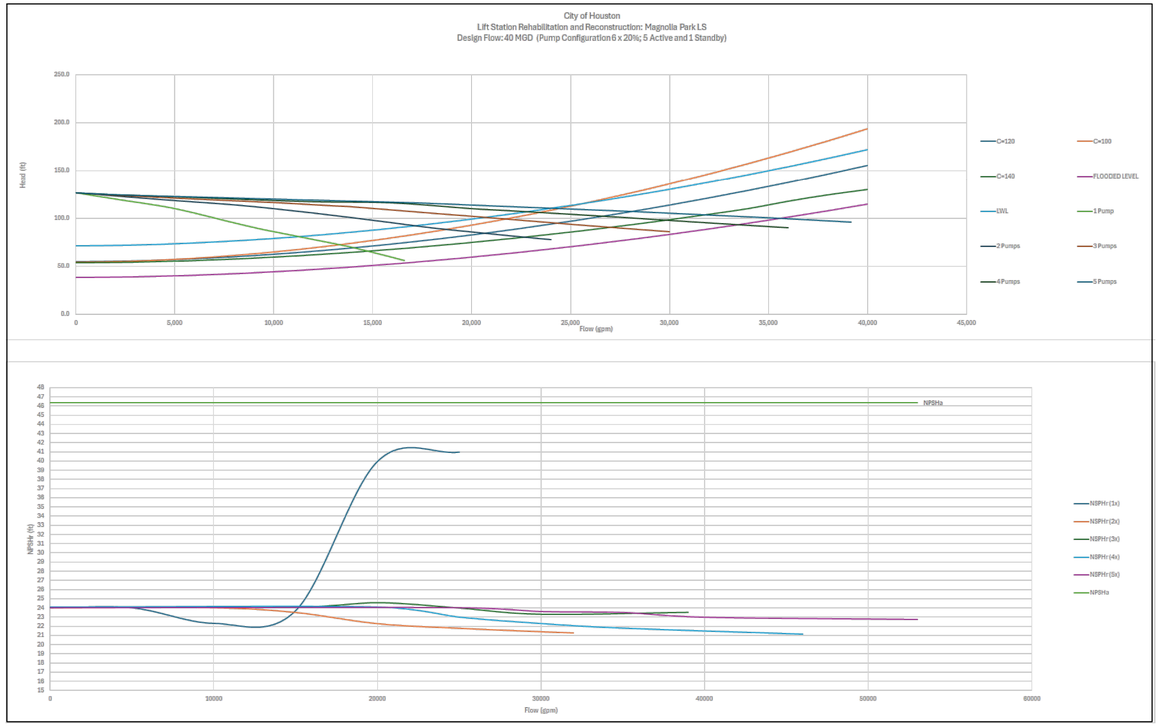
RISING LEVEL CYCLE			
WATER LEVEL DEPTH	**WATER LEVEL ELEVATION**	**ACTION**	**ALARMS/PUMP(S) IN OPERATION**
16.63	-32.37	LEAD PUMP TURNS ON	LEAD PUMP ON
21.00	-28.00	LAG PUMP #2 ON	LEAD AND 2ND PUMPS ON
25.00	-24.00	LAG PUMP #3 ON	LEAD, 2ND, 3RD PUMPS ON
29.00	-20.00	LAG PUMP #4 ON	LEAD, 2ND, 3RD & 4TH PUMPS ON
29.70	-19.30	LAG PUMP #5 ON	LEAD, 2ND, 3RD, 4TH, 5TH PUMPS ON
30.00	-19.00	HIGH WATER ALARM ON	HIGH WATER ALARM SOUNDS ON
FALLING LEVEL CYCLE			
WATER LEVEL DEPTH	**WATER LEVEL ELEVATION**	**ACTION**	**ALARM/PUMP(S) IN OPERATION**
29.70	-19.30	LEAD PUMP TURNS OFF	LEAD PUMP OFF
25.00	-24.00	LAG PUMP #2 TURNS OFF	LEAD, 2ND PUMPS OFF
21.00	-28.00	LAG PUMP #3 TURNS OFF	LEAD, 2ND, 3RD PUMPS OFF
16.63	-32.37	LAG PUMP #4 TURNS OFF	LEAD, 2ND, 3RD, 4TH PUMPS OFF
10.33	-38.67	LAG PUMP #5 TURNS OFF	LEAD, 2ND, 3RD, 4TH, 5TH PUMPS OFF
9.83	-39.17	LOW LEVEL ALARM ON	LOW WATER ALARM SOUNDS ON

M1 / C-306 STATION OPERATION TABLES

SITE CONTROL POINTS TABLE					
LABEL NO.	NORTHING	EASTING	POINT DESCRIPTION	POINT LOCATION	DRAWING NO.
MP-301	13839698.5820	3145510.5618	LIFT STATION	CENTER	C-303
MP-302	13839692.5138	3145516.6300	LIFT STATION	CENTER	C-303
MP-303	13839686.4456	3145513.1265	LIFT STATION	CENTER	C-303
MP-304	13839680.3774	3145519.1947	LIFT STATION	CENTER	C-303
MP-305	13839674.3092	3145515.6912	LIFT STATION	CENTER	C-303
MP-306	13839668.2410	3145521.7595	LIFT STATION	CENTER	C-303
MP-307	13839662.1727	3145518.2560	LIFT STATION	CENTER	C-303
MP-308	13839656.1045	3145524.3242	LIFT STATION	CENTER	C-303
MP-309	13839650.0363	3145520.8207	LIFT STATION	CENTER	C-303
MP-310	13839643.9681	3145526.8889	LIFT STATION	CENTER	C-303
MP-311	13839637.8999	3145523.3854	LIFT STATION	CENTER	C-303
MP-312	13839631.8317	3145529.4536	LIFT STATION	CENTER	C-303
MP-313	13839625.7635	3145525.9502	LIFT STATION	CENTER	C-303
MP-314	13839619.6953	3145532.0184	LIFT STATION	CENTER	C-303
MP-315	13839613.6270	3145528.5149	LIFT STATION	CENTER	C-303
MP-316	13839607.5588	3145534.5831	LIFT STATION	CENTER	C-303

PUMP CHARACTERISTICS	PUMP NO. 1	PUMP NO. 2	PUMP NO. 3	PUMP NO. 4	PUMP NO. 5	PUMP NO. 6
NOTE: 1. Pump curves and characteristics are based on FLYGT Model NP 3531_835 3~ 870. Other acceptable manufacturers are named in Section 11311 of the specifications."						
MOTOR DATA :						
NOMINAL SIZE (HP)	335	335	335	335	335	335
MAX SPEED (RPM)	890	890	890	890	890	890
MAX SPHERICAL SOLIDS PASSAGE (IN):	10	10	10	10	10	10
CAPACITY (GPM):						
DESIGN	5,535	5,535	5,535	5,535	5,535	5,535
RUNOUT	20970	20970	20970	20970	20970	20970
DISCHARGE HEAD (FT):						
DESIGN	106.90	106.90	106.90	106.90	106.90	106.90
RUNOUT	27.11	27.11	27.11	27.11	27.11	27.11
SHUT OFF	126.50	126.50	126.50	126.50	126.50	126.50
EFFICIENCY (%) AT NO. OF PUMPS RUNNING	79.14	74.08	66.22	59.00	52.47	59.00
NSPHa (FT):	46.35	46.35	46.35	46.35	46.35	46.35
NSPHR (FT):	24					
DISCHARGE HEAD (FT):						
DESIGN HEAD (FT)	107.60	107.60	107.60	107.60	107.60	107.60
RUNOUT HEAD (FT)	27.11	27.11	27.11	27.11	27.11	27.11
SHUTOFF HEAD (FT)	126.44	126.44	126.44	126.44	126.44	126.44
PUMP CYCLE TIME (MIN)	15.00					
DESIGN CUMULATIVE CAPACITY (GPM)	27678.46					
PUMP CONFIGURATION	6 x 20%					

M2 / C-306 PUMP DATA TABLE



M3 / C-306 PUMP OPERATION CURVES

GANNETT FLEMING
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3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Crag Alexander Perry
116345
JANUARY 23, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

MAGNOLIA PARK LIFT STATION
PUMP OPERATION AND
SITE CONTROL POINTS TABLES

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

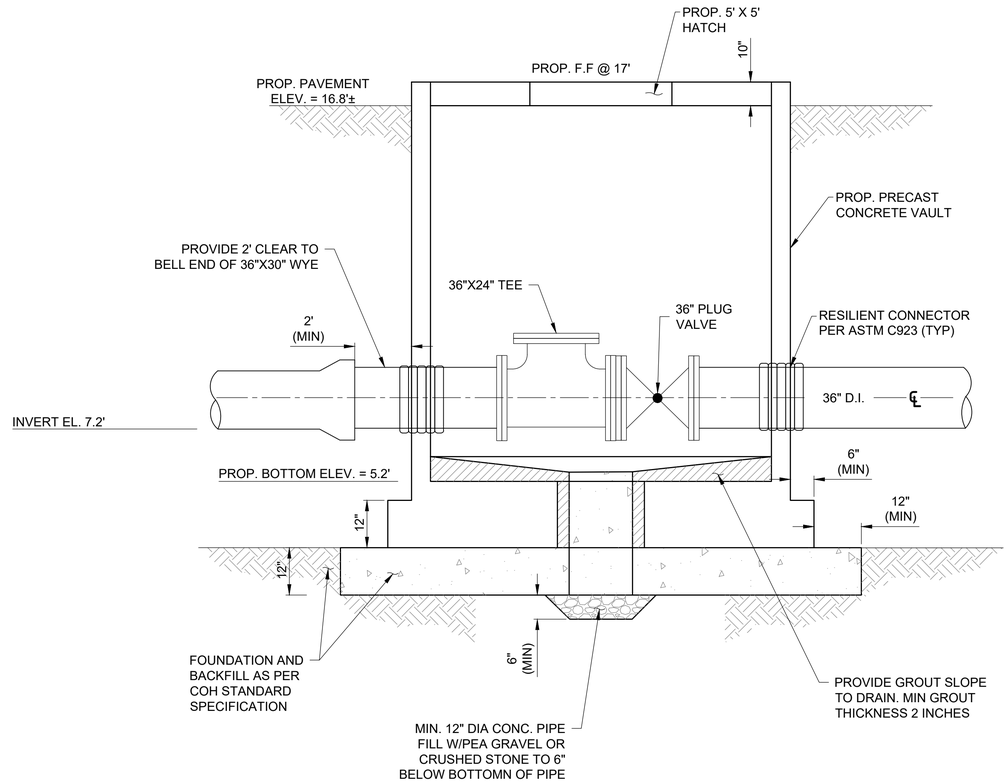
WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-306
HORIZ: NONE
VERT: NONE
SHEET NO. 101 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 6:07 PM PEN TABLE: ----

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12'X9' I.D. VAULT DETAIL

SCALE: N.T.S.

NOTE:

CONTRACTOR TO FIELD VERIFY LOCATION AND DEPTH OF EXISTING FORCE MAIN.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/22/2026 6:08 PM

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Engineer
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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

MAGNOLIA PARK LIFT STATION
PROPOSED
F.M. BY-PASS VAULT DETAIL

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO.
C-307

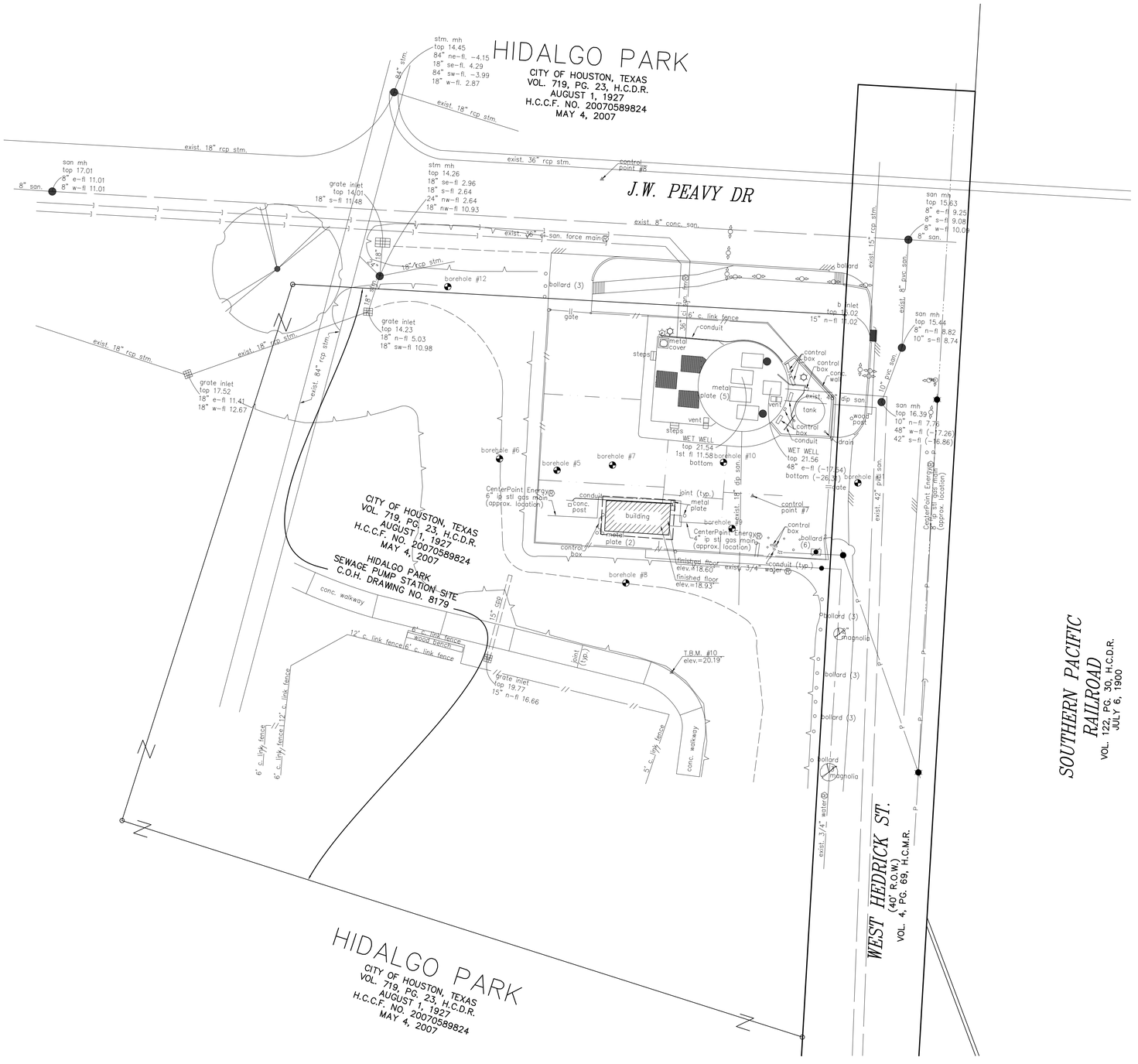
HORIZ: AS NOTED
VERT: NONE

SHEET NO. 102 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\039 C-307.dwg



BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 210005 IS A BRASS DISK STAMPED 210005 LOCATED ON EAST SIDEWALK ON S SGT MACARIO GARCIA DRIVE BRIDGE APPROXIMATELY 0.05 MILE NORTH FROM THE INTERSECTION OF AVENUE W IN KEYMAP 495N IN THE BUFFALO BAYOU WATERSHED

ELEV. 34.38 FEET NAVD 1988, 2001 ADJUSTMENT

T.B.M #10:

SET 'X' CUT ON CONCRETE TRAIL AT THE NORTHEAST CORNER OF THE YOUTH SOFTBALL FIELD
ELEV. 20.19 FEET

HORIZONTAL DATUM:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

EXISTING UTILITY NOTE:

EXISTING UNDERGROUND UTILITY INFORMATION (TYPE, SIZE & OWNERSHIP) ARE SHOWN APPROXIMATELY BASED ON THE AVAILABLE RECORD DRAWINGS AND FIELD VERIFICATION (WHERE FEASIBLE) WITHOUT PROBING AND EXCAVATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATION SHOWN ON THE DRAWING. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING OR BORE AND JACKING IN THE VICINITY OF UNDERGROUND UTILITIES. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CALL UTILITY COORDINATING COMMITTEE AT 713-223-4567, AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THE STREET RIGHT-OF-WAY.

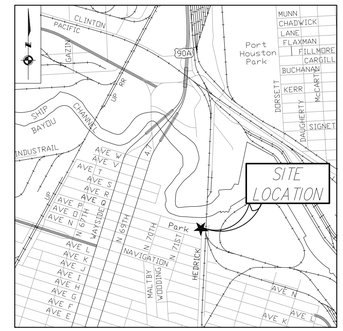
LEGEND:

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- COLUMN
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- IRRIGATION CONTROL VALVE
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- REFERENCE INFORMATION (FROM RECORD DRAWING)
- SBC MANHOLE
- SIGN
- SIGNAL POLE
- SPRINKER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE-CREPE MYRTLE
- TREE-PINE
- UTILITY MARK
- WATER METER
- WATER VALVE
- BOREHOLE
- BRUSH ROW
- DITCH/SWALE CENTER LINE
- EASEMENT OR BUILDING LINE
- FENCE
- GAS LINE
- GUARD RAIL
- HEDGE ROW OR TREE LINE
- HIGH BANK
- OVERHEAD POWER LINE WITH OR W/O CABLE
- SANITARY SEWER LINE
- TELEPHONE LINE
- SANITARY FORCE MAIN
- U/G STREET LIGHT CABLE
- STORM LINE
- WATER LINE

ABBREVIATIONS:

E./ESMT.	EASEMENT	I.R.	IRON ROD
B.L.	BUILDING LINE	I.P.	IRON PIPE
STM.	STORM	CONC.	CONCRETE
SAN.	SANITARY	LT	LIGHT
SWR.	SEWER	UG	UNDER GROUND
N.F.I.F.	NOT FOUND IN FIELD		

Control Point Table				
Point #	Northing	Easting	Elevation	Raw Description
7	13839280.7840	3144660.3277	17.949	SET "X" CUT ON CONC.
8	13839388.8160	3144608.9009	15.017	SET MAG NAIL W/SHINER
10	13839220.5974	3144632.7091	20.187	SET "X" CUT ON CONC.



VICINITY MAP

KEYMAP: 495 S

N.T.S.

GRAPHIC SCALE

20 0 10 20 40

SCALE: 1" = 20'-0"

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 5204870

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 Westoffice Dr., Suite 800, Houston, Texas 77042
Tel: 713-975-8769, Fax: 713-975-0920, www.kuoassociates.com
TBPELS Engineering Firm Reg. No. F-4578
TBPELS Surveying Firm Reg. No. 10075600

STATE OF TEXAS
REGISTERED
KUTUBUL A. M. MAINUDDIN
6404
PROFESSIONAL
LAND SURVEYOR
07/10/25

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 7/10/2025 9:14 PM

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

SURVEY

MAGNOLIA PARK LIFT STATION
EXISTING SITE SURVEY
AND CONTROL POINTS TABLE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. SV-301

HORIZ: 1"=20'

VERT: N/A

SHEET NO. 103 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: S:\Proj-2024\24033 (COH LIFT STATIONS)\Dwgs\Topo Survey Sheets\SV-301\SV-301-Magnolia Park LS.dwg

GENERAL NOTES FOR STRUCTURES

CONCRETE

1. DESIGN SHALL CONFORM TO THE LATEST BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI-318) WITH SPECIAL REQUIREMENTS OF ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI-350).

2. ALL REINFORCING BARS SHALL CONFORM TO ASTM A-615, GRADE 60, ARRANGEMENT AND DETAILS OF REINFORCING STEEL, INCLUDING BAR SUPPORTS AND SPACERS, SHALL BE IN ACCORDANCE WITH THE LATEST ACI DETAILING MANUAL, UNLESS OTHERWISE NOTED.

3. ALL SLAB AND BEAM REINFORCEMENT SHALL HAVE A MINIMUM EXTENSION INTO THE SUPPORT IN ACCORDANCE WITH THE LATEST ACI CODE. IF SUCH EXTENSION IS NOT POSSIBLE, BARS SHALL TERMINATE IN STANDARD HOOKS.

4. HORIZONTAL WALL REINFORCEMENT AND TEMPERATURE REINFORCEMENT SHALL LAP A MINIMUM OF 1.7Ld AT SPLICES. WALL DOWELS AND WALL BAR EXTENSIONS AND ALL STRESS SPLICES SHALL LAP A MINIMUM OF 1.7Ld, UNLESS NOTED OTHERWISE.

5. WALL OR COLUMNS SHALL HAVE DOWELS FROM FOUNDATIONS OR CONSTRUCTION BELOW OF SAME SIZE AND SPACING AS WALL OR COLUMN VERTICAL STEEL. SEE FOOTING SCHEDULE.

6. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL NOT BE LESS THAN THE FOLLOWING:

   STRUCTURAL MEMBERS, FOUNDATIONS, WALLS AND SUSPENDED SLABS ------- 4000 PSI
   SLABS-ON-GRADE ---------- 4000 PSI
   LEAN CONCRETE CLASS B ---------- 1500 PSI
   GROUT FILL CLASS H ---------- 3000 PSI

7. UNLESS OTHERWISE SHOWN, THE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

   SLABS
   TOP AND BOTTOM OF FORMED SLABS ---------- 2"
   TOP OF WALK AND DRIVEWAY SLABS ---------- 2"
   SURFACES IN CONTACT WITH LIQUID ---------- 2"
   BOTTOM OF SLABS ON FILL OR SOIL ---------- 3"

   FOOTINGS
   TOP AND SIDES ---------- 2 1/2"
   BOTTOM ---------- 3"

   WALLS
   LESS THAN 12" THICK ---------- 1 1/2"
   12" OR OVER IN THICKNESS WITH POURS LESS THAN 10 FEET HIGH ------ 2"
   12" OR OVER IN THICKNESS WITH POURS MORE THAN 10 FEET HIGH ----- 2 1/2"

   BEAMS AND GIRDERS
   COVER AT TOP, BOTTOM AND SIDES OF LONGITUDINAL REINF ---------- 2"

   COLUMNS
   COVER FOR VERTICAL BARS ---------- 2"

8. HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS SHOWN OR NOTED ON THE PLANS ARE RECOMMENDED. ANY DEVIATION FROM THOSE SHOWN SHALL HAVE APPROVAL OF THE ENGINEER.

9. ANY STOP IN FRAMED CONCRETE WORK MUST BE IN THE CENTER OF THE SPAN AND INCORPORATE AN APPORVED KEYWAY, REINFORCEMENT SHALL EXTEND THROUGH THESE JOINTS IF REQUIRED FOR CONTINUITY.

10. USE TYPE 'C2' JOINT FOR ALL CONSTRUCTION JOINTS IN WALLS AND SLABS BELOW GRADE AND WALLS WHICH SEPARATE AREAS OF SOIL OR LIQUID FROM PERMANENTLY DRY AREAS SUCH AS TUNNELS, GALLERIES, BASEMENT ROOMS, ETC. USE TYPE 'C1' JOINT AT ALL OTHER CONSTRUCTION JOINTS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.

11. CONCRETE WALLS AND PARTITIONS SHALL BE POURED IN MAXIMUM LENGTHS OF 40 FEET BETWEEN VERTICAL CONSTRUCTION JOINTS.

12. ALL CONCRETE SLABS OVER 8" IN THICKNESS, REINFORCED WITH BARS, AND POURED AGAINST SOILSHALL BE POURED IN A STRIP PATTERN OF 40 FEET OR LESS IN EACH DIRECTION.

13. ALL EXPOSED EDGES OF BEAMS, COLUMNS, SLABS AND WALLS SHALL BE CHAMFERED 3/4" UNLESS MASONRY OR OTHER MEMBERS ARE ERECTED FLUSH WITH THEM.

14. REFERE TO ARCHITECTURAL, PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL SLEEVES, PIPES, CONDUITS AND MISCELLANEOUS ANCHORING DEVICES TO BE INCORPORATED IN THE CONSTRUCTION.

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS". ALL STRUCTURAL STEEL SHALL BE ASTM A36.

2. ELEVATIONS OF STEEL BEAMS SHOWN ON FRAMING PLANS REFER TO TOP OF FLANGE, UNLESS OTHERWISE NOTED.

3. ANCHOR BOLTS AND MISC EMBEDDED STEEL ---------- ASTM A36
   ANCHOR BOLTS WHICH ARE SUBMERGED, LOCATED ABOVE A LIQUID SURFACE, OR ARE IN A CORROSIVE ATMOSPHERE ---------- 316 SS

4. ALL EQUIPMENT ANCHOR BOLT DIMENSIONS AND LOCATIONS SHALL BE VERIFIED FROM CERTIFIED VENDOR DRAWINGS, PRIOR TO CONSTRUCTION.

FOUNDATIONS

1. ALLOWABLE SOIL BEARING PRESSURE, EXCAVATION AND BACKFILL FOR FOUNDATIONS AND STRUCTURES SHALL BE AS RECOMMENDED IN THE GEOTECHNICAL REPORT.

2. ALL EXCAVATIONS SHALL BE CARRIED OUT IN THE DRY, AND PROVISIONS SHALL BE MADE TO PREVENT THE BOTTOM OF ALL EXCAVATIONS FROM FREEZING OR FLOODING AT ALL TIMES.

3. ALL FOUNDATIONS SHALL BE CONSTRUCTED IN EXCAVATIONS FREE OF STANDING WATER.

4. BACKFILL MATERIAL, PLACING AND COMPACTION OF BACKFILL SHALL BE IN ACCORDANCE WITH THE DRAWINGS, AND THE CONTRACT SPECIFICATIONS.

ALUMINUM

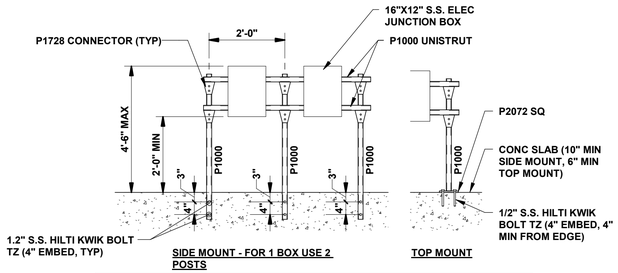
1. ALL ALUMINUM PRODUCTS ARE TO BE 6061-T6.

2. ALL BOLTS ARE TO BE STAINLESS STEEL.

3. DISIMILAR METALS ARE TO BE COATED WITH A BITUMASTIC COATING.

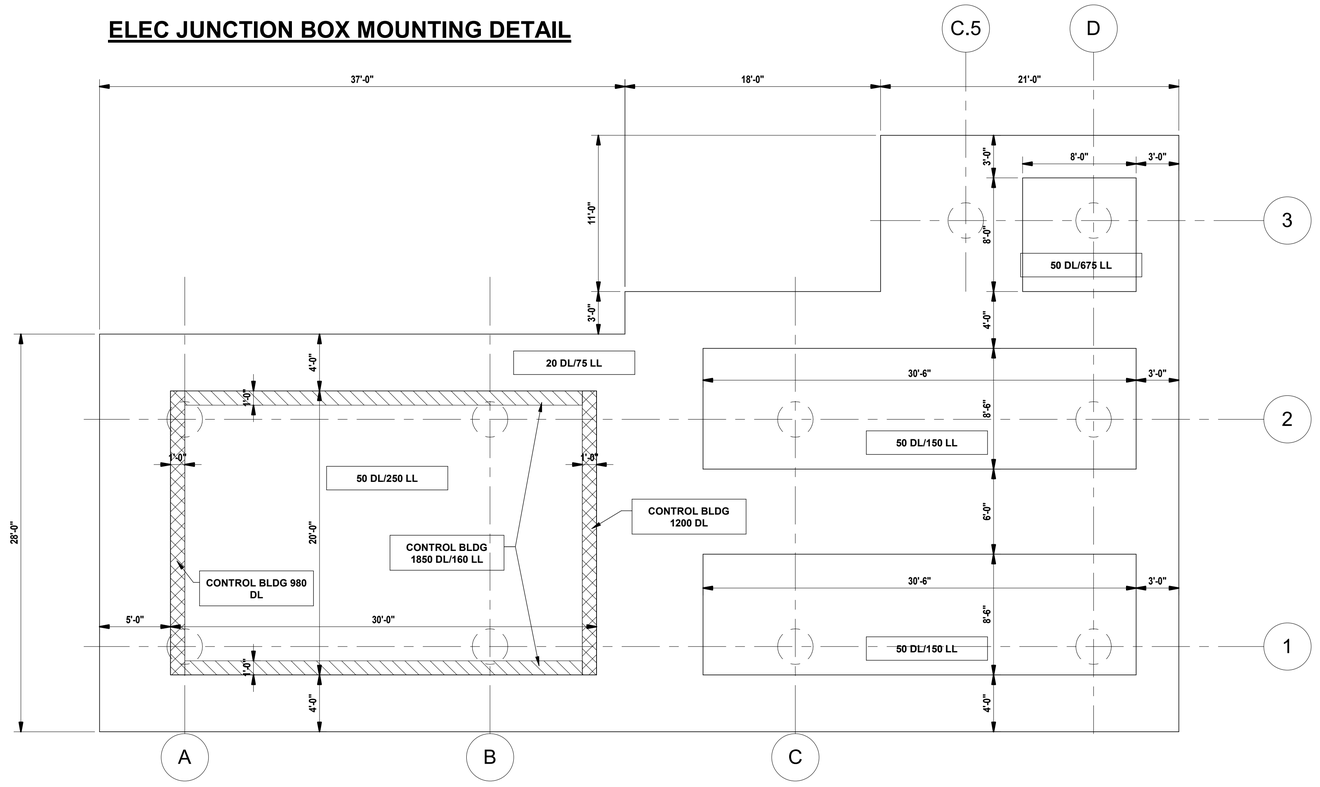
DESIGN CRITERIA

1. BUILDING CODE ---------- INTERNATIONAL BUILDING CODE (IBC) 2021, AS AMENDED BY 2021 HOUSTON CONSTRUCTION CODE
2. RISK CATEGORY ---------- III
3. DESIGN LOADS
   - A. FLOOR LIVE LOADS
     - a. STAIRS ---------- 150 PSF
     - b. LIFT STATION TOP SLAB ---------- 300 PSF
     - c. MECHANICAL AND ELECTRICAL ROOM ---------- 250 PSF
     - d. ELEVATED PLATFORM ---------- SEE DIAGRAM THIS SHEET
   - B. ROOF LIVE LOAD ---------- 20 PSF
   - C. WIND DESIGN DATA
     - a. BASIC WIND SPEED (V_{ULT}) ---------- 145 MPH
       (V_{ASD}) ---------- 113 MPH
     - b. EXPOSURE CATEGORY ---------- C
     - c. PRESSURE COEFFICIENT, EQUIPMENT ON PLATFORM (GCr) ---------- 1.0
     - d. PRESSURE COEFFICENT, CONTROL BUILDING (GCf) ---------- 1.105
     - e. PRESSURE COEFFICENT, ROUND COLUMNS (GCfcol) ---------- 0.72
   - D. SEISMIC DESIGN DATA
     - a. IMPORTANCE FACTOR (I_E) ---------- 1.25
     - b. MAPPED SPECTRAL RESPONSE (S_S) ---------- 0.068g
     - c. MAPPED SPECTRAL RESPONSE (S_1) ---------- 0.039g
     - d. SPECTRAL RESPONSE (S_{DS}) ---------- 0.072g
     - e. SPECTRAL RESPONSE (S_{D1}) ---------- 0.062g
     - f. SEISMIC DESIGN CATEGORY ---------- A
     - g. SITE CLASS ---------- D
4. DESIGN DEAD LOADS
   - A. SELF WEIGHT OF MATERIALS



NOTES:
1. HDG ALL MEMBERS
2. PXXX DESIGNATIONS REFER TO UNISTRUT MEMBERS/CONNECTORS.

ELEC JUNCTION BOX MOUNTING DETAIL



GRAVITY LOADS PLAN (PSF)

ABBREVIATIONS

ADDL	ADDITIONAL	IF	INSIDE FACE
ALT	ALTERNATE	INT	INTERIOR
&	AND	LP	LOW POINT
ARCH	ARCHITECTURAL	MH	MANHOLE
@	AT	MAX	MISCELLANEOUS
BM	BEAM	MIN	MINIMUM
BOT	BOTTOM	#	NUMBER
B/	BOTTOM OF	OC	ON CENTER
BLDG	BUILDING	OPNG	OPENING
℄	CENTERLINE	OA	OVERALL
C/C	CENTER TO CENTER	PVC	POLYVINYL CHLORIDE
CLR	CLEAR(ANCE)	R	RADIUS
COL	COLUMN	REINF	REINFORCEMENT
CONC	CONCRETE	REQD	REQUIRED
CONST	CONSTRUCTION	SCHED	SCHEDULE
CONT	CONTINUOUS	SECT	SECTION
DET	DETAIL	SPEC	SPECIFICATIONS
DIA	DIAMETER	SS	STAINLESS STEEL
Ø	DIAMETER	STD	STANDARD
DWG	DRAWING	STIRR	STIRRUP
DWL	DOWEL	SYMM	SYMMETRICAL
EF	EACH FACE	T	TOP
EW	EACH WAY	T/	TOP OF
EL	ELEVATION	TYP	TYPICAL
EXP	EXPANSION	UON	UNLESS OTHERWISE NOTED
EXT	EXTERIOR	VAR	VARIES
FTG	FOOTING	VERT	VERTICAL
HP	HIGH POINT	WWF	WELDED WIRE FABRIC
HORIZ	HORIZONTAL	W/	WITH

NOTES:

1. DETAILS SHOWN ON THIS DRAWING ARE TYPICAL DETAILS AND SHALL BE USED WHOLLY OR IN PART WHERE THEY APPLY EXCEPT WHERE MODIFIED BY DETAILED DRAWINGS & SPECIFICATIONS.

NO.	DATE	REVISION	APP.

PLOTTED: 12/19/2025 10:44:11 AM

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA, HOUSTON, TEXAS 77098 (713) 520-9070

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THEODORE RICHARD KRULL
143561
DECEMBER 19, 2025

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

MAGNOLIA PARK
GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-301

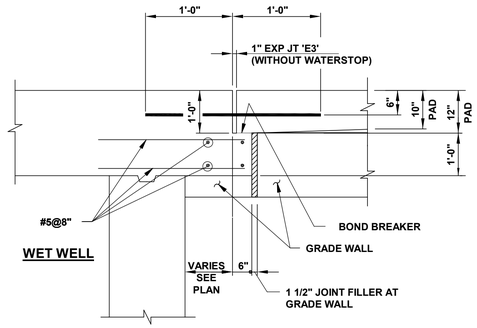
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VERT: As indicated

SHEET NO. 104 OF 230

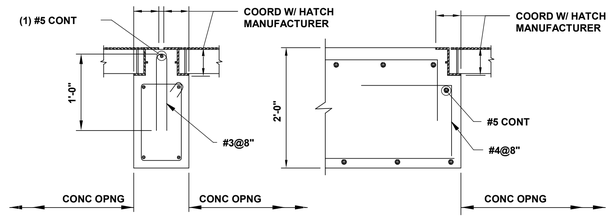
DRAWING SCALE

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FILEPATH: Autodesk Docs://081109_COH_Lift_Station_Rehab_and_Reconstruction/081109_S_MAG_central_R23.rvt

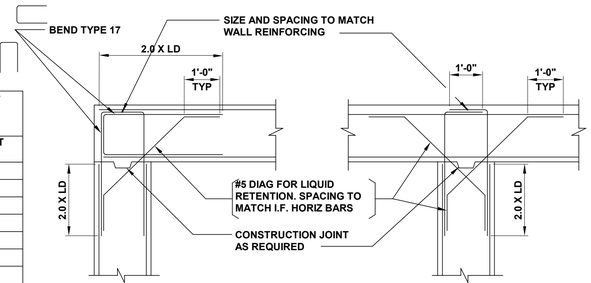


TYPICAL EXPANSION JOINT
(BETWEEN WET WELL AND VALVE PAD)

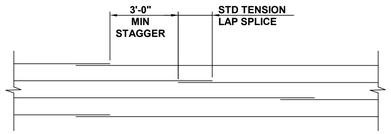


TYPICAL HATCH FRAME SECTIONS

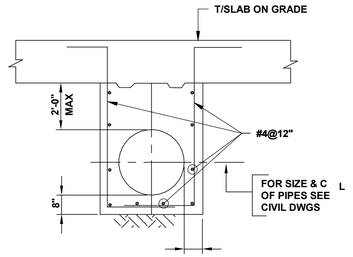
LD=TENSILE DEVELOPMENT LENGTH FOR REINF BARS WITH FY = 60 KSI	
BAR SIZE	TENSION DEVELOPMENT LENGTH 'LD' INCHES
3	12
4	12
5	15
6	19
7	26
8	35
9	44
10	56
11	68



TYPICAL DETAILS OF WALL REINFORCEMENT

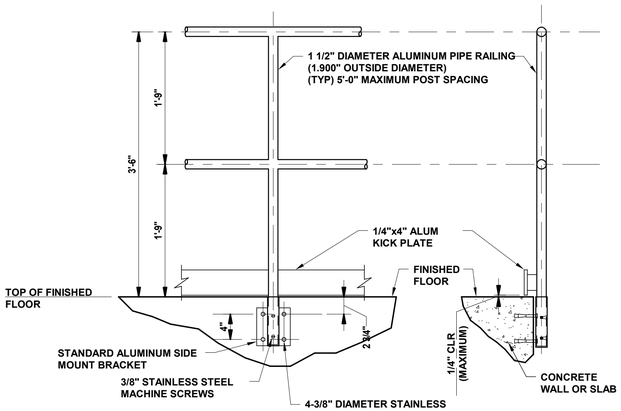


SPLICE LAYOUT FOR HOOP BARS
(WET WELL WALL)



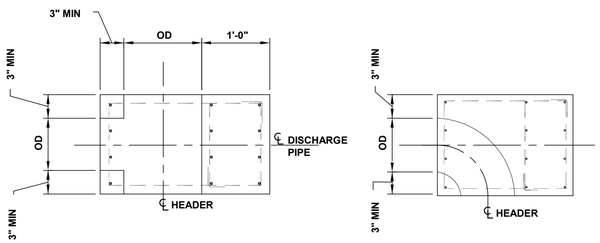
SLAB CONNECTED

PIPE ENCASEMENT DETAILS



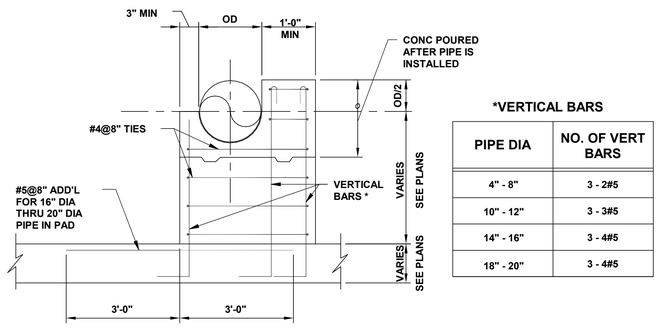
(SIDE OF CONCRETE - FIXED)

ALUMINUM RAILING DETAILS



PLAN - THRUST BLOCK @ TEE

PLAN - THRUST BLOCK @ ELBOW

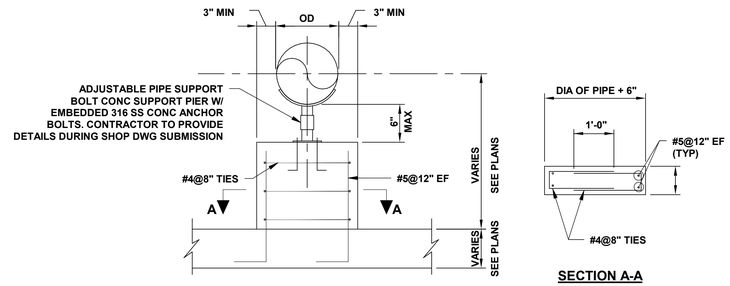


*VERTICAL BARS

PIPE DIA	NO. OF VERT BARS
4" - 8"	3 - 2#5
10" - 12"	3 - 3#5
14" - 16"	3 - 4#5
18" - 20"	3 - 4#5

ELEVATION

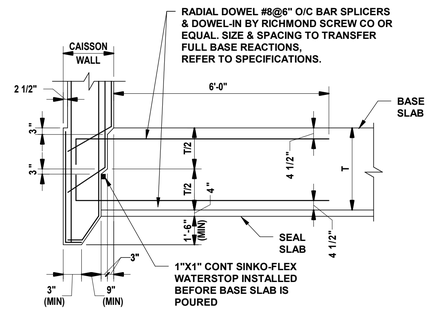
TYPICAL THRUST BLOCK DETAILS



SECTION A-A

NOTES:
1. CONCRETE SUPPORT PIER IS NOT A THRUST BLOCK AND IS NOT INTENDED TO REPLACE THRUST BLOCK PROVIDED AT OTHER LOCATIONS.
2. PLACE SUPPORT PIER APPROX 9" TO 24" FROM CHECK VALVE, SEE CIVIL DRAWINGS. DO NOT PLACE SUPPORT PIER ON TOP OF EXPANSION JOINT.

TYPICAL CONC PIPE SUPPORT PIER DETAIL



CAISSON METHOD TYP BASE DETAIL

NOTES:

1. DETAILS SHOWN ON THIS DRAWING ARE TYPICAL DETAILS AND SHALL BE USED WHOLLY OR IN PART WHERE THEY APPLY EXCEPT WHERE MODIFIED BY DETAILED DRAWINGS & SPECIFICATIONS.

NO.	DATE	REVISION	APP.

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T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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THEODORE RICHARD KRULL
Engineer
143561
Registration Number
DECEMBER 19, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

MAGNOLIA PARK

TYPICAL DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-302

HORIZ: As indicated

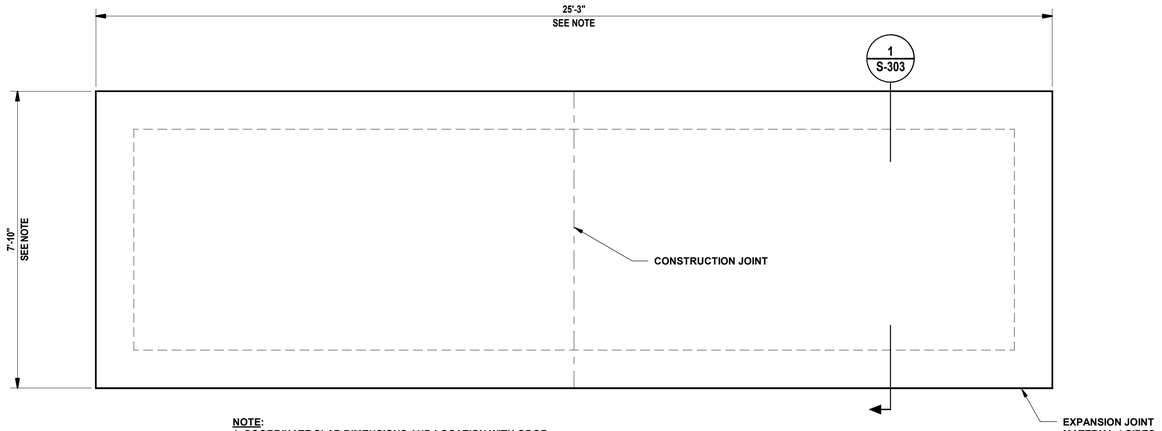
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SHEET NO. 105 OF 230

DRAWING SCALE

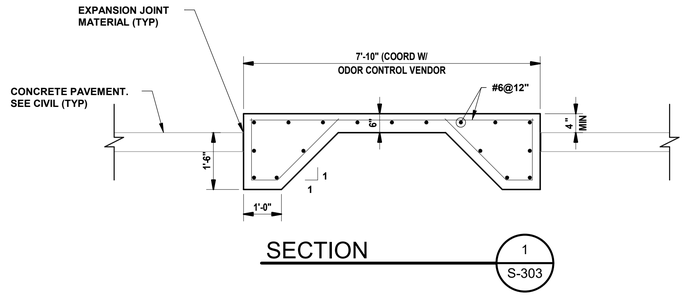
FOR CITY OF HOUSTON USE ONLY

FILEPATH: Autodesk Docs://081109_COH_Lift_Station_Rehab_and_Reconstruction/081109_S_MAG_central_R23.rvt

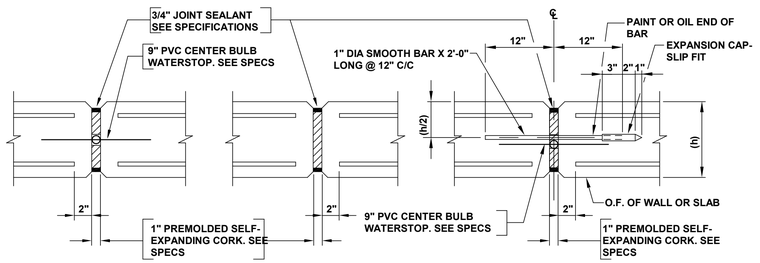


NOTE:
1. COORDINATE SLAB DIMENSIONS AND LOCATION WITH ODOR CONTROL VENDOR AND CIVIL PLANS.
2. TWO PADS REQ'D SEE CIVIL PLANS.

ODOR CONTROL PAD PLAN



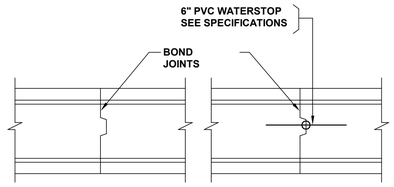
SECTION 1 / S-303



CHAMFER EXPANSION JOINTS IN WALLS AND CEILINGS FOR FLOOR JOINTS USE EDGER INSTEAD OF CHAMFERING

TYPE E1 TYPE E2 TYPE E3

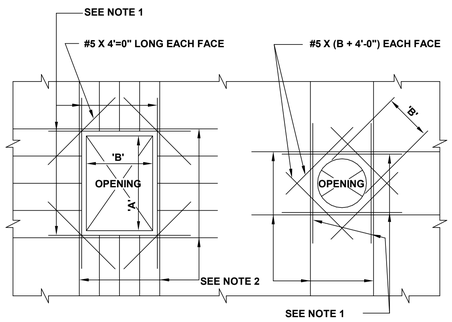
EXPANSION JOINTS



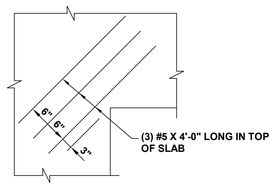
TYPE C1 TYPE C2

NOTES:
1. IN JOINTS W/ MORE THAN ONE KEY, PLACE WATERSTOP IN KEY NEAREST TO SURFACE AGAINST EARTH OR WATER
2. REINFORCING STEEL IS CONTINUOUS THROUGH CONSTRUCTION JOINT

CONSTRUCTION JOINTS



ADDITIONAL REINFORCING STEEL AT OPENINGS IN WALLS AND SLABS



SPECIAL REINFORCEMENT TO BE PLACED AT ALL INSIDE CORNERS IN SLABS OR WALKWAYS

SLAB DETAIL AT RE-ENTRANT CORNER

NOTES:
1. PROVIDE (2) #6 X (B + 4'-0") ADDITIONAL REBARS AT TOP AND BOTTOM AND (2) #6 X (A + 4'-0") ADDITIONAL REBARS AT EACH SIDE OF OPENING IN WALLS ONLY.
2. PROVIDE ADDITIONAL BARS EQUAL TO ONE HALF OF BARS INTERRUPTED AT EACH SIDE OF OPENING AT 3" CENTER TO CENTER. THESE BARS SHALL BE ORIGINAL SIZES AND LENGTHS AS THOSE OF THE INTERRUPTED BARS. (TYPICAL FOR OPENINGS IN SLABS AND PRESSURE WALLS).

NOTES:
1. DETAILS SHOWN ON THIS DRAWING ARE TYPICAL DETAILS AND SHALL BE USED WHOLLY OR IN PART WHERE THEY APPLY EXCEPT WHERE MODIFIED BY DETAILED DRAWINGS & SPECIFICATIONS.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

MAGNOLIA PARK

ODOR CONTROL PAD PLAN AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-303

HORIZ: As indicated

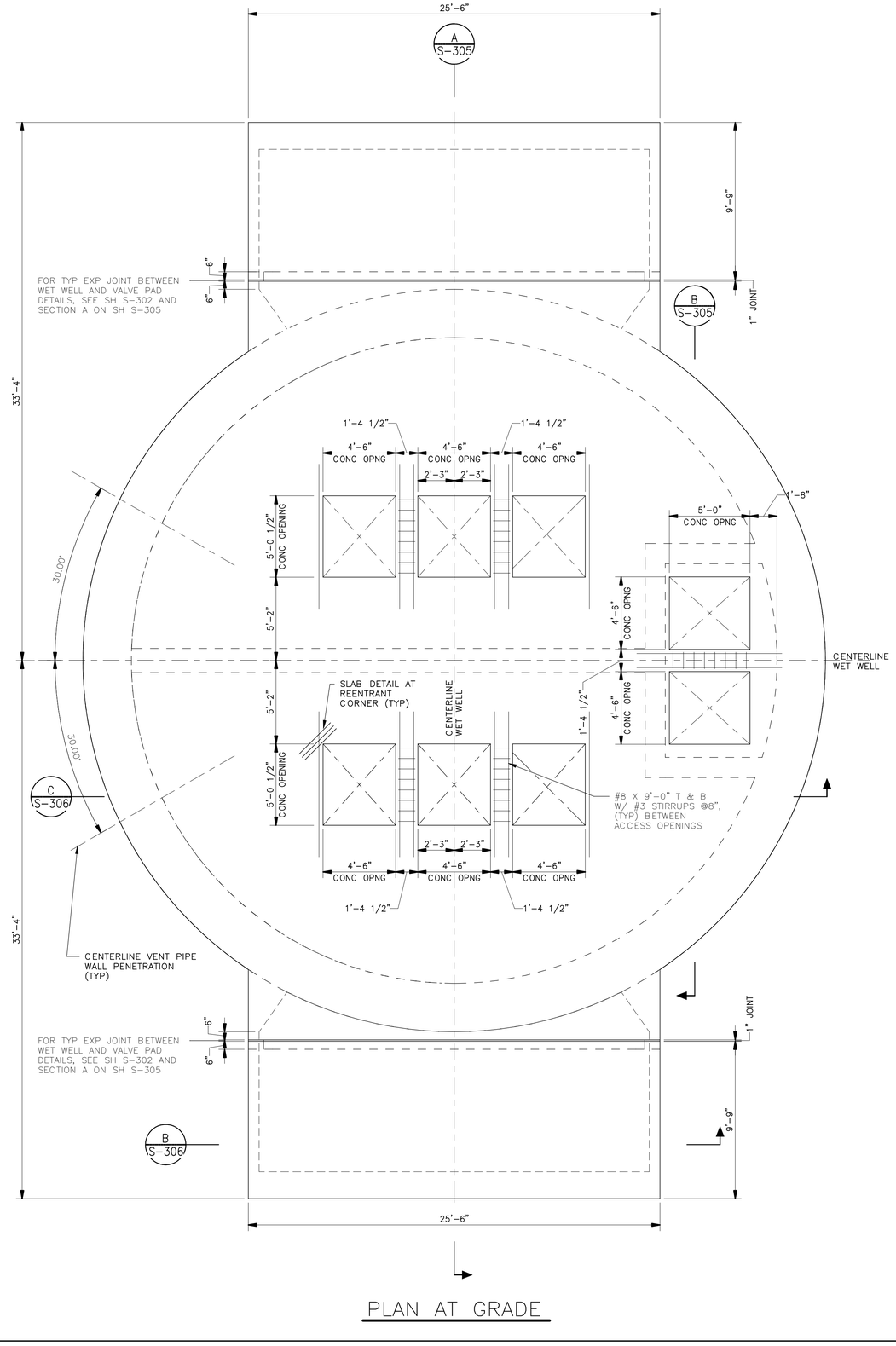
VERT: As indicated

SHEET NO. 106 OF 230

DRAWING SCALE

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PLAN AT GRADE

NOTES:

1. FOR ADDITIONAL REINFORCEMENT AT OPENINGS NOT SHOWN, SEE SHEET S-301.
2. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
3. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL CONFIRM.
4. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
5. WET WELL TO BE COATED WITH PROTECTIVE COATING PER PROJECT SPECIFICATIONS. CONSULT WITH COH PROJECT MANAGER FOR APPROVED PRODUCTS. COATING SHALL COVER ALL CONCRETE SURFACES, AND SHALL EXTEND TO A MINIMUM OF 12" BELOW THE LOW WATER ELEVATION.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

MAGNOLIA PARK

PUMP STATION - PLAN AT GRADE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-304

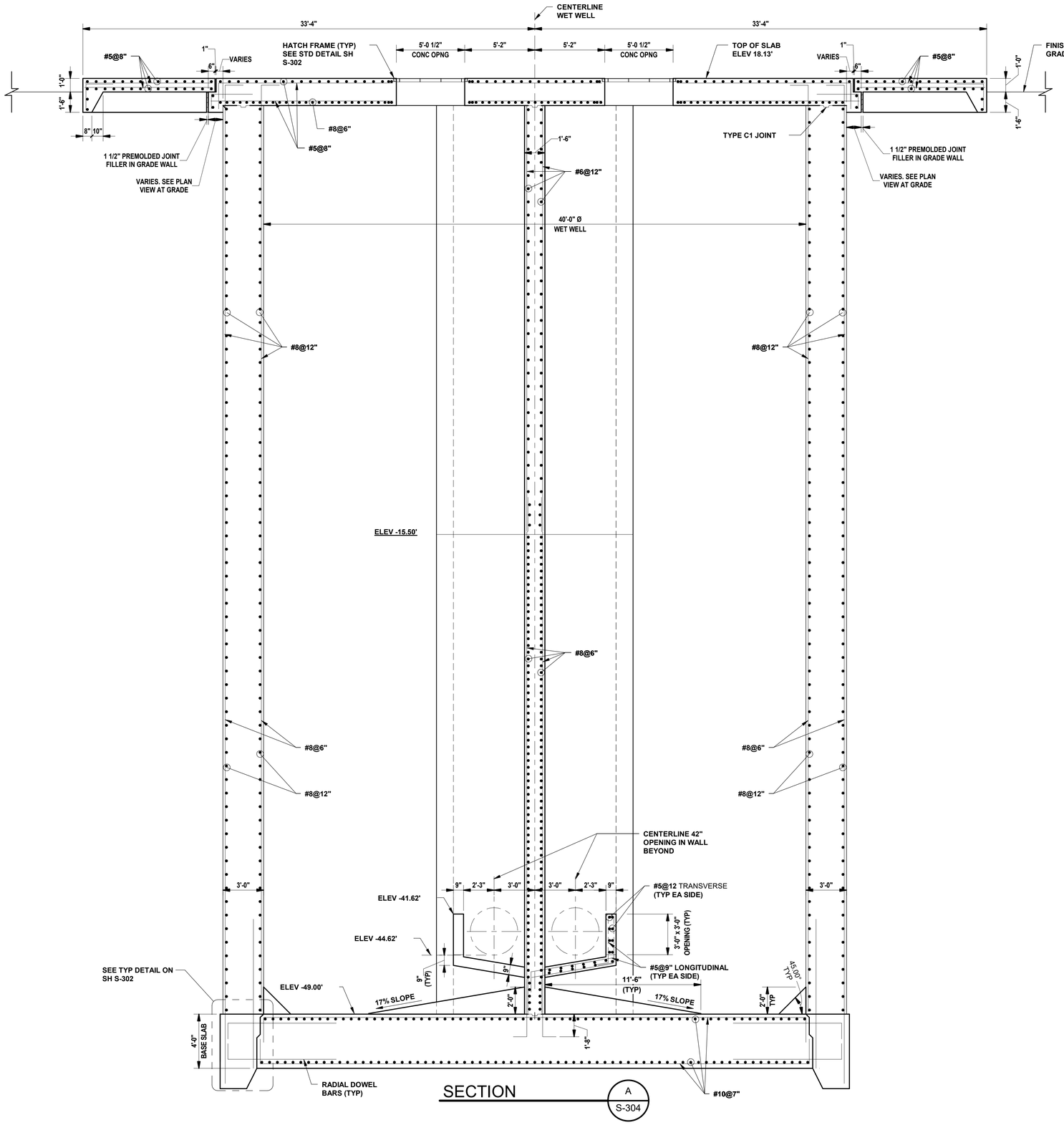
HORIZ: 1/4" = 1'-0"
VERT: 1/4" = 1'-0"

SHEET NO. 107 OF 230

DRAWING SCALE

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NOTES:

1. FOR ADDITIONAL REINFORCEMENT AT OPENINGS NOT SHOWN, SEE SHEET S-301.
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NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

MAGNOLIA PARK
PUMP STATION - CAISSON CONSTRUCTION AT WET WELL

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-305

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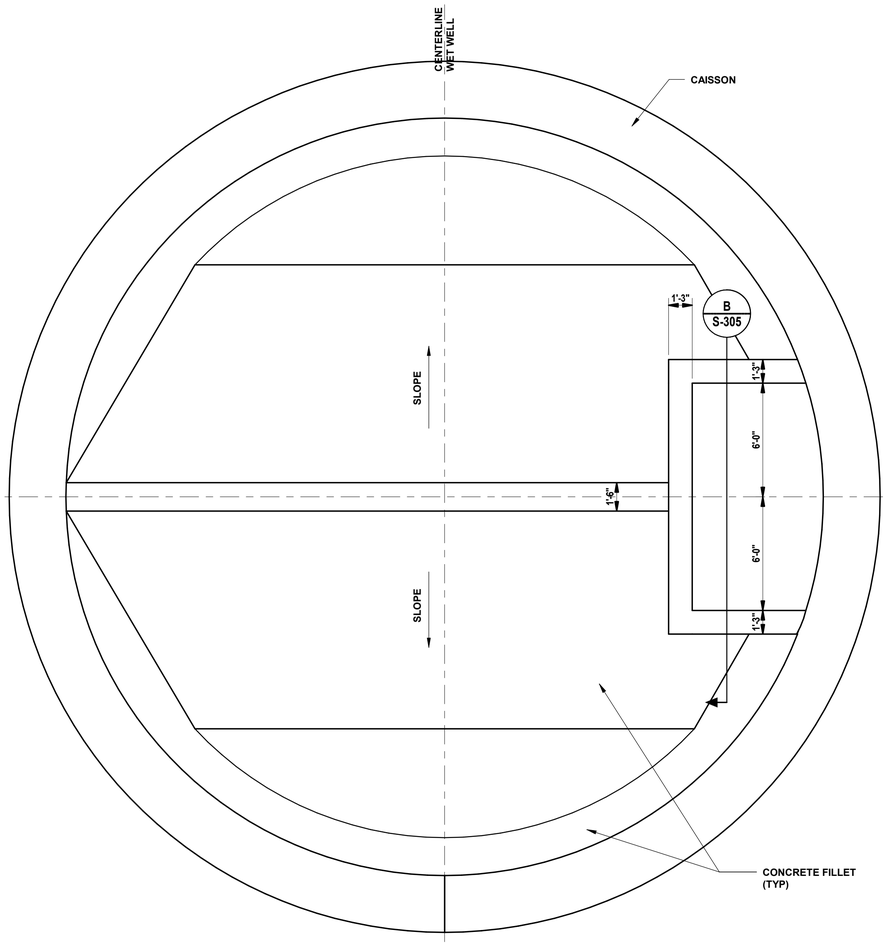
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SHEET NO. 108 OF 230

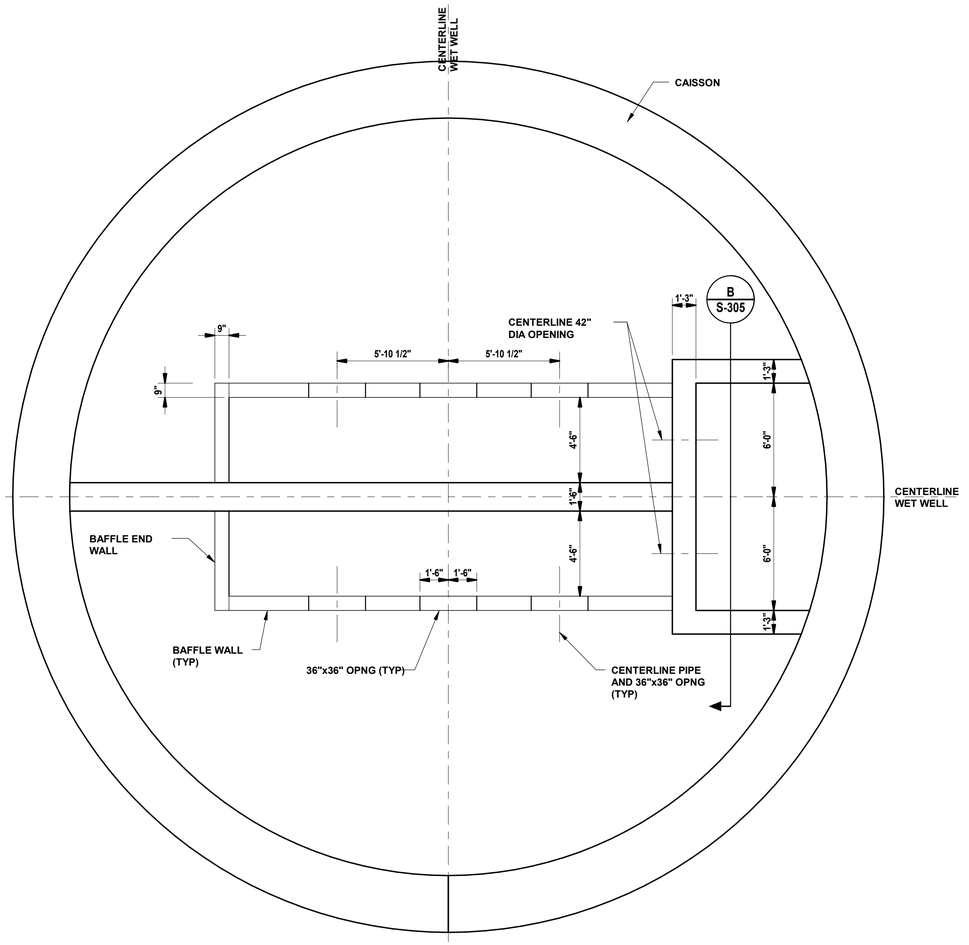
DRAWING SCALE

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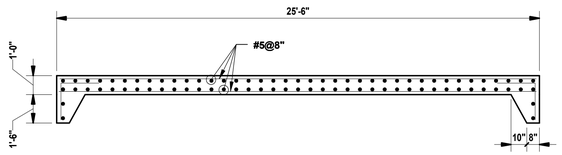
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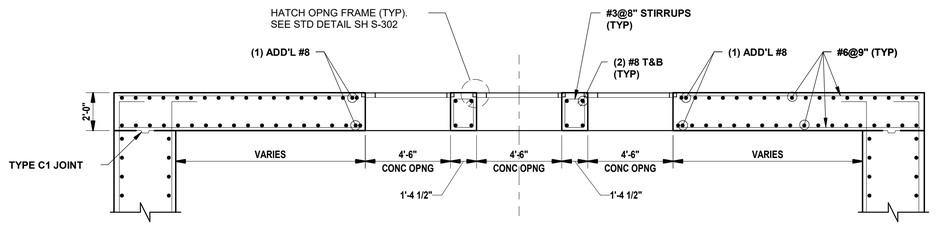
BASE SLAB PLAN



BAFFLE PLAN



SECTION B S-304



SECTION C S-304

NOTES:

1. FOR ADDITIONAL REINFORCEMENT AT OPENINGS NOT SHOWN, SEE SHEET S-301.
2. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

MAGNOLIA PARK

PUMP STATION - BASE SLAB PLAN

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-306

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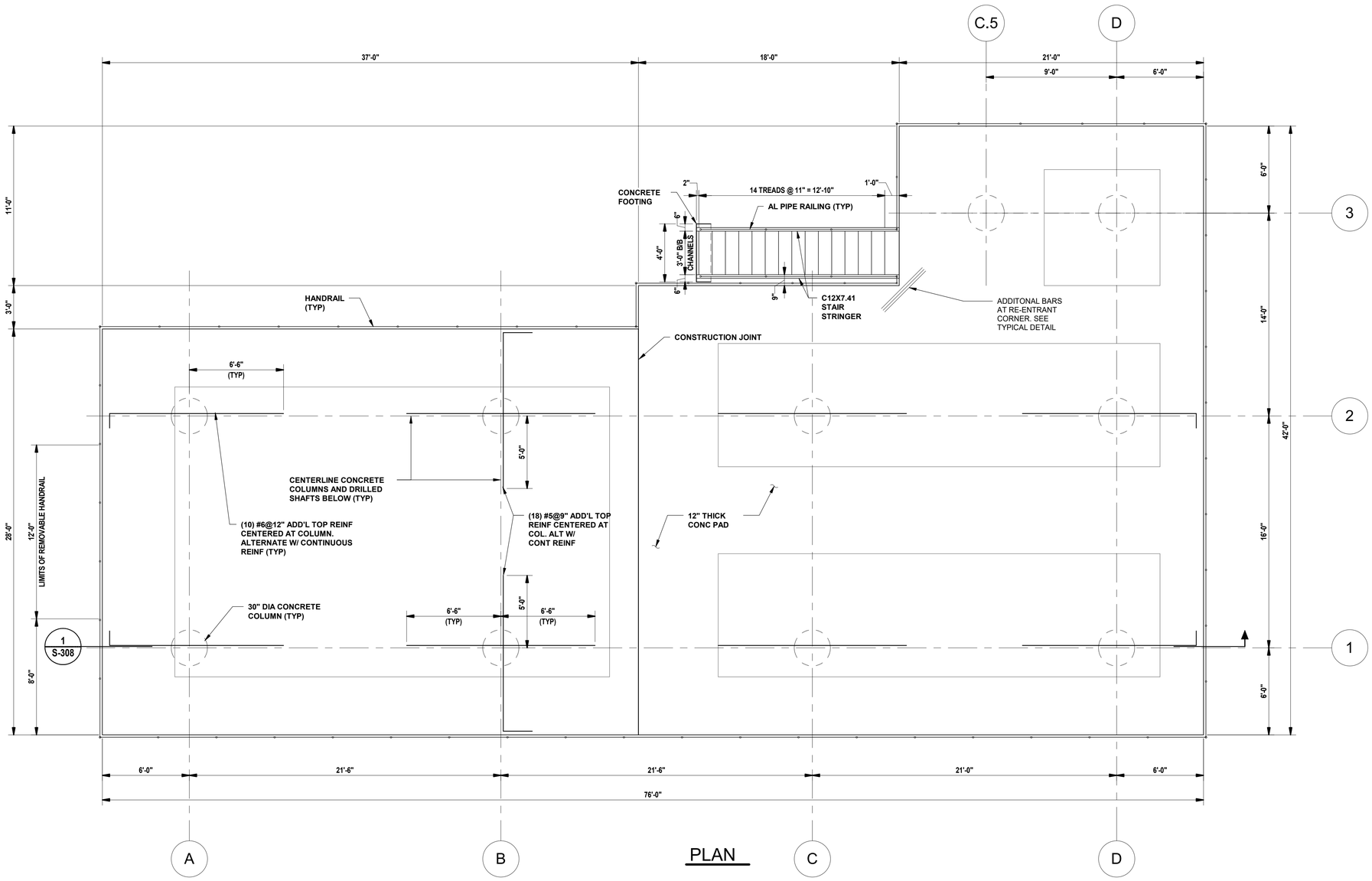
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SHEET NO. 109 OF 230

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PLAN

NO.	DATE	REVISION	APP.

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WBS NO. R-000267-0174-3

STRUCTURAL

MAGNOLIA PARK

ELECTRICAL PAD - PLAN

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HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-307

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

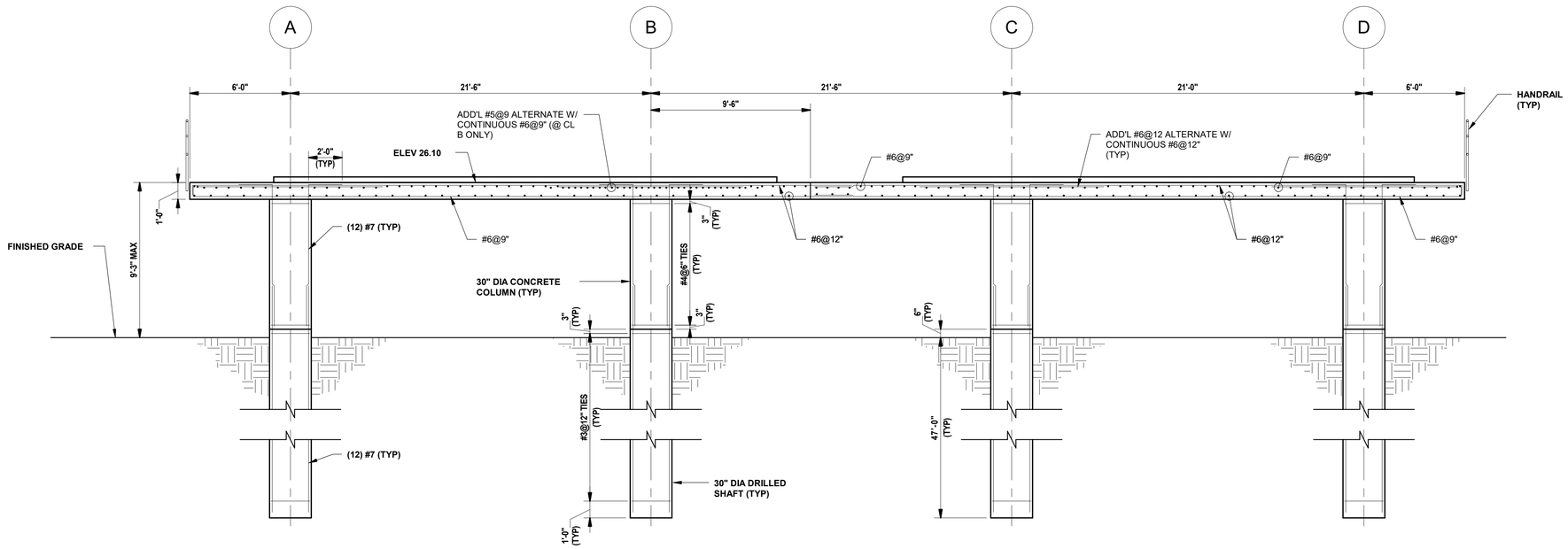
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SHEET NO. 110 OF 230

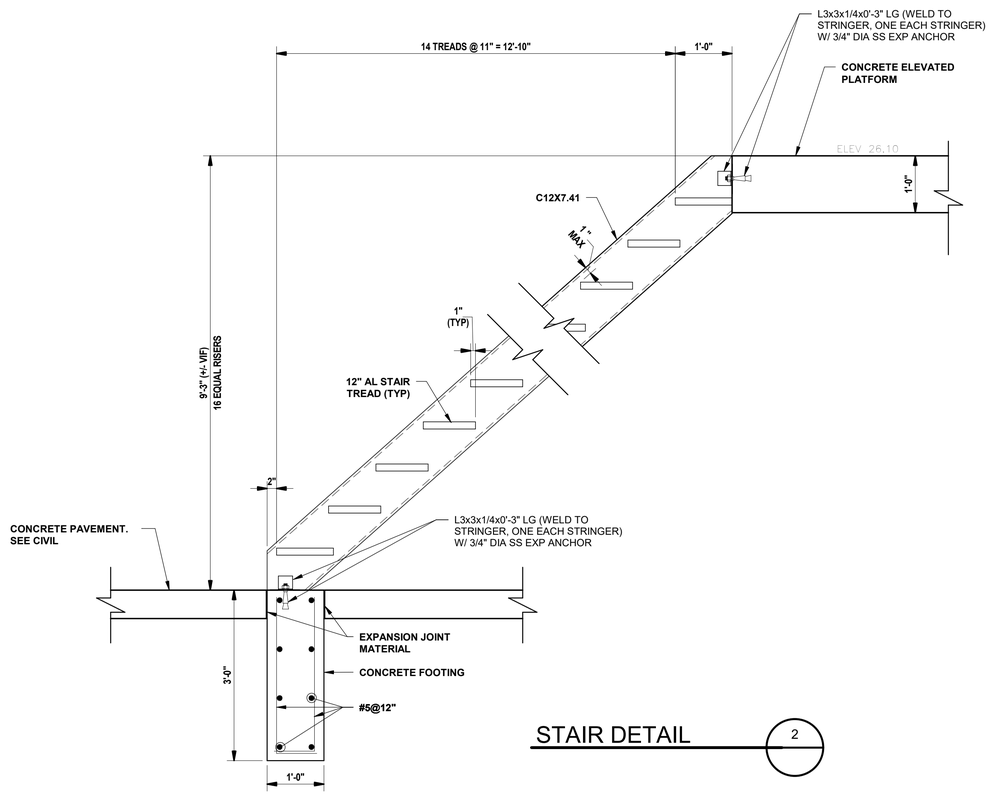
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SECTION 1 S-307



STAIR DETAIL 2

ALUMINUM STAIR NOTES:

1. ALL MATERIAL TO BE ALUMINUM EXCEPT FASTENERS SHALL BE STAINLESS STEEL.
2. ALUMINUM SURFACES IN CONTACT WITH DISSIMILAR MATERIAL SHALL BE COATED.
3. ALL CONNECTIONS SHALL BE DESIGNED FOR A LOADING EQUIVALENT TO A (2) 3/4" DIAMETER BOLT CONNECTION UNLESS NOTED OTHERWISE.
4. PROVIDE ALUMINUM PIPE RAILING ON TOP OF C12.

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WBS NO. R-000267-0174-3

STRUCTURAL

MAGNOLIA PARK

ELECTRICAL PAD - SECTIONS AND DETAILS

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-308

HORIZ: As indicated

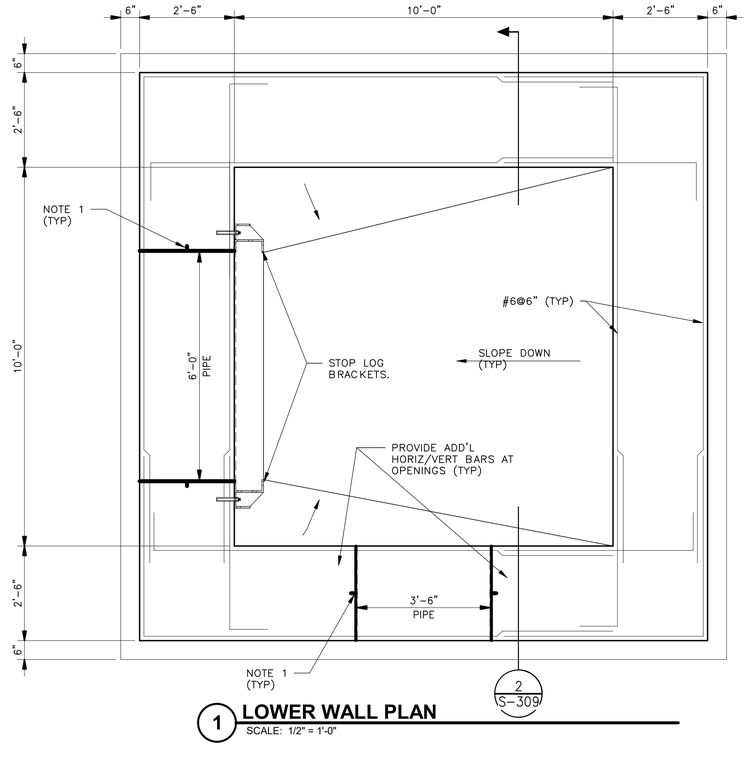
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SHEET NO. 111 OF 230

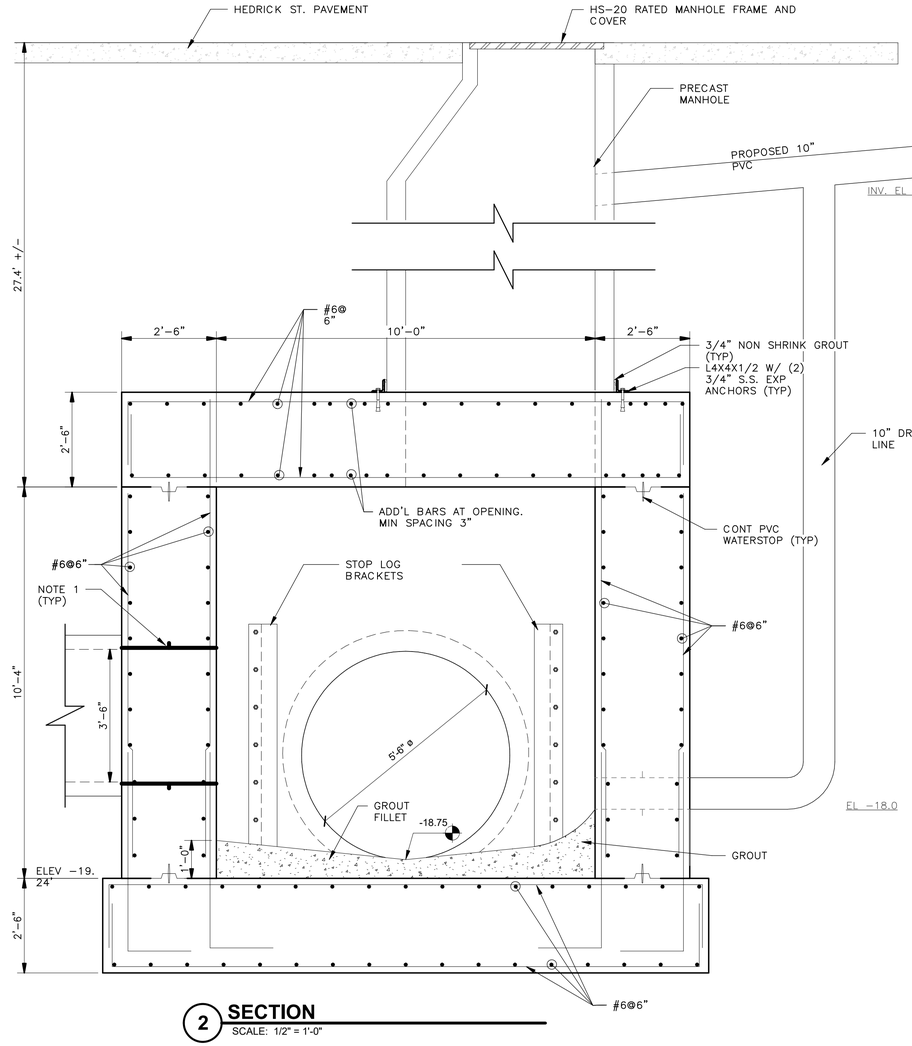
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

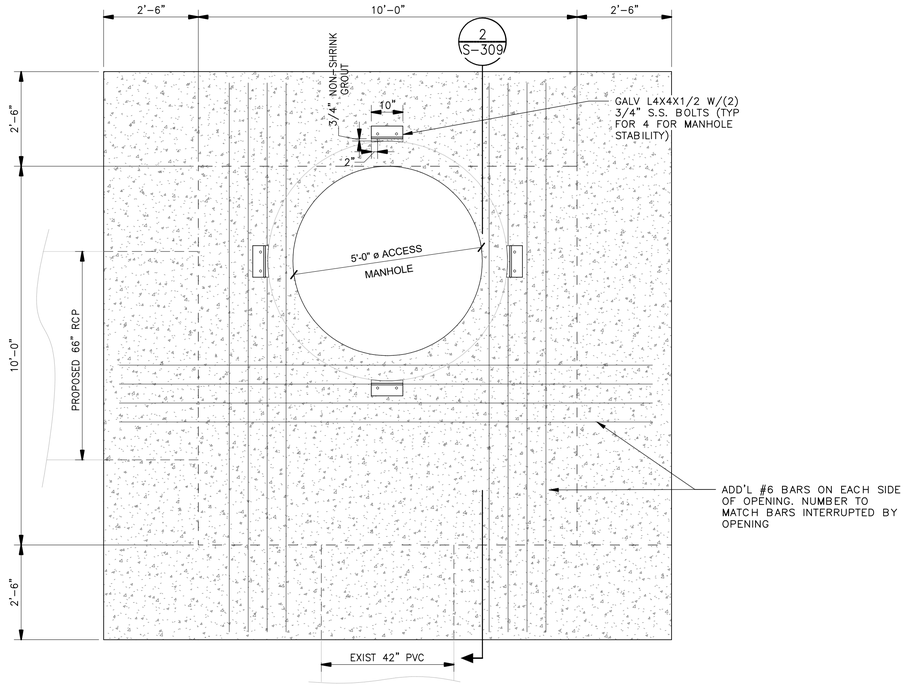
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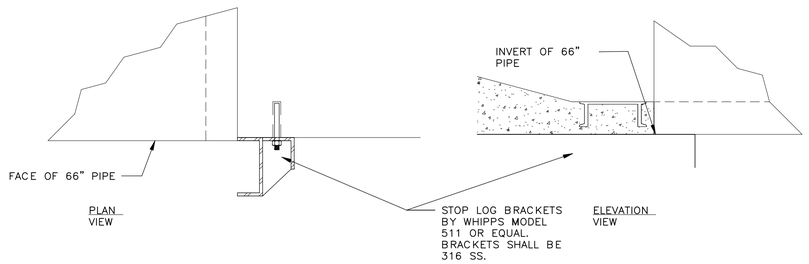
1 LOWER WALL PLAN
SCALE: 1/2" = 1'-0"



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



3 TOP SLAB PLAN
SCALE: 1/2" = 1'-0"



4 BRACKET DETAILS
SCALE: 1" = 1'-0"

NOTES:

1. PROVIDE CAST-IN-PLACE WALL SLEEVE FOR LINK SEAL CONNECTION OF LARGE DIAMETER PIPE THROUGH CONCRETE WALLS. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR SLEEVE SIZES AND INSTALLATION.

NO.	DATE	REVISION	APP.

PLOTTED: 1/23/2026 12:30:33 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9670

INTERIM REVIEW ONLY

Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:

THEODORE RICHARD KRULL
143561
DECEMBER 19, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

MAGNOLIA PARK

JUNCTION BOX - PLAN, SECTION AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-309

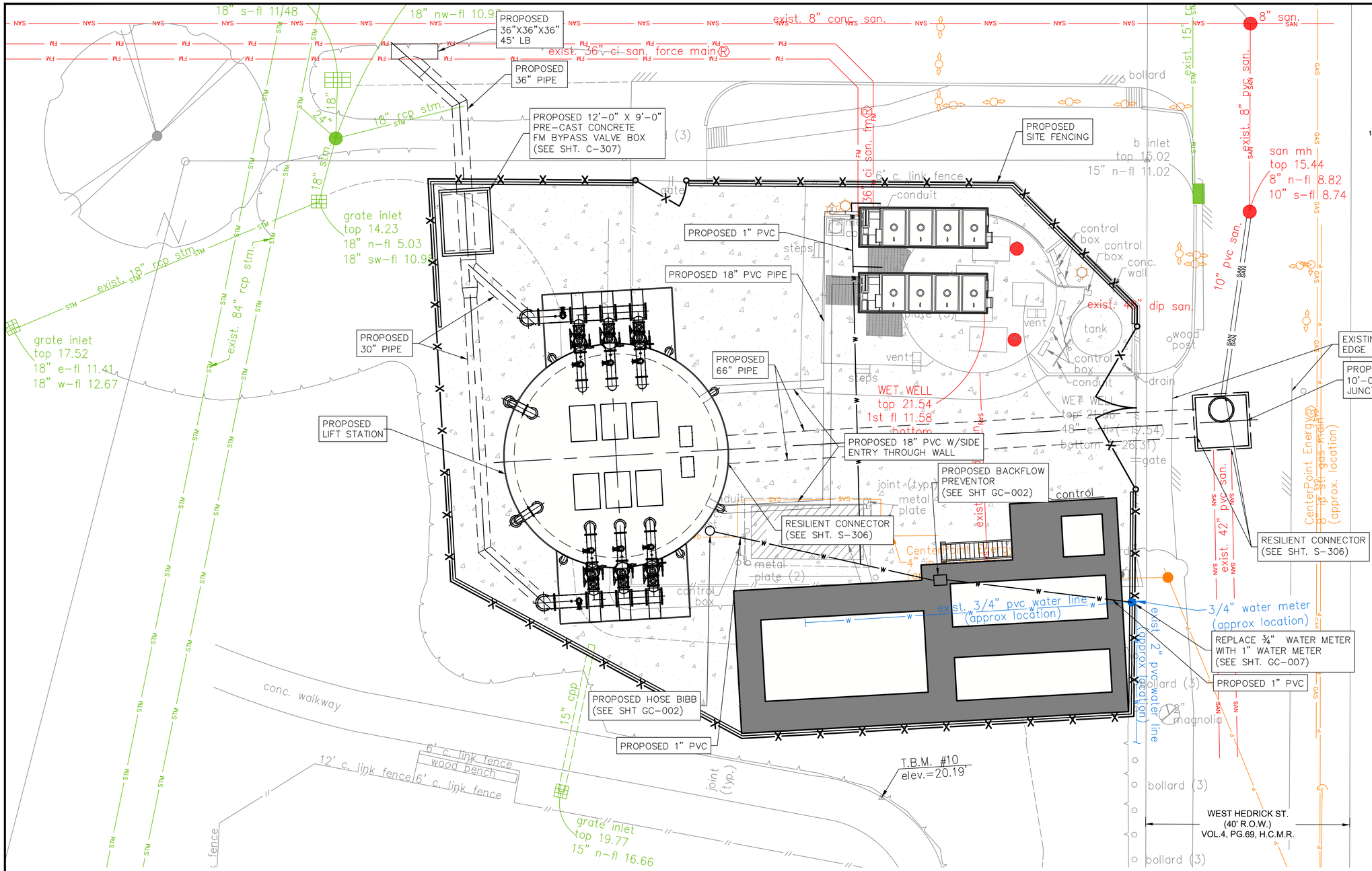
HORIZ: As indicated
VERT: As indicated

SHEET NO. 112 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILEPATH: Autodesk Docs://081109_COH_Lift_Station_Rehab_and_Reconstruction/081109_S_MAG_central_R23.rvt



10' 0 10' 20'

SCALE: 1" = 10'

NOTE:

1. REPLACE EXISTING POTABLE WATER LINE BACK TO EXISTING WATER METER ITH NEW 1" PVC WATER LINE.

NO.	DATE	REVISION	APP.

PLOTTED: 1/29/2026 12:48 PM PEN TABLE: ------

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9070

INTERIM REVIEW ONLY

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Craig Alexander Perry

116345

JANUARY 23, 2025

Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

YARD PIPING

MAGNOLIA PARK LIFT STATION
PROPOSED
YARD PIPING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-301

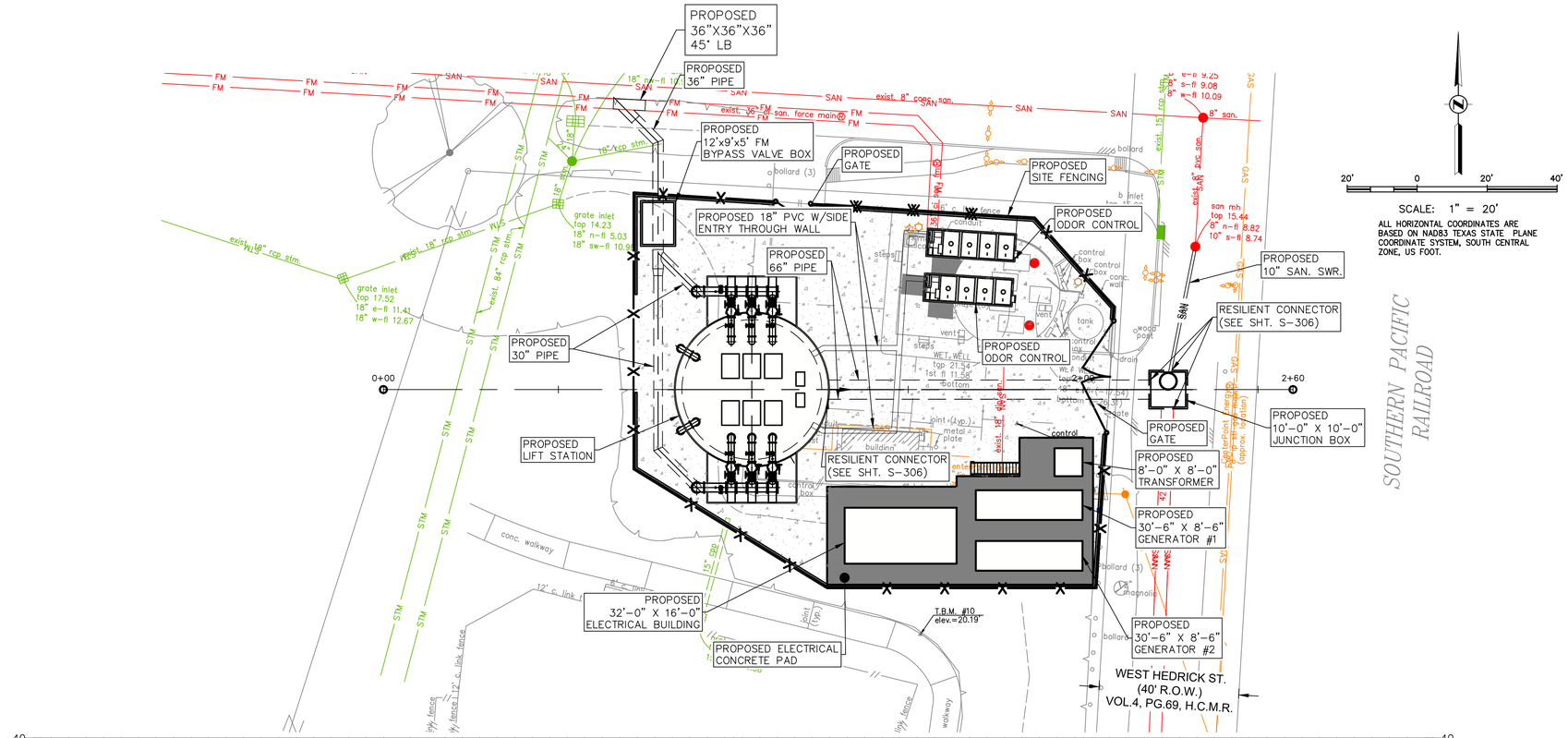
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VERT: NONE

SHEET NO. 113 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Magnolia Park\000 Y-301.dwg



NO.	DATE	REVISION	APP.

PLOTTED: 1/23/2026 11:43 AM PEN TABLE: ------

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Craig Alexander Perry
116345
JANUARY 23, 2025

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

YARD PIPING

MAGNOLIA PARK LIFT STATION
PROPOSED
66" INFLUENT LINE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

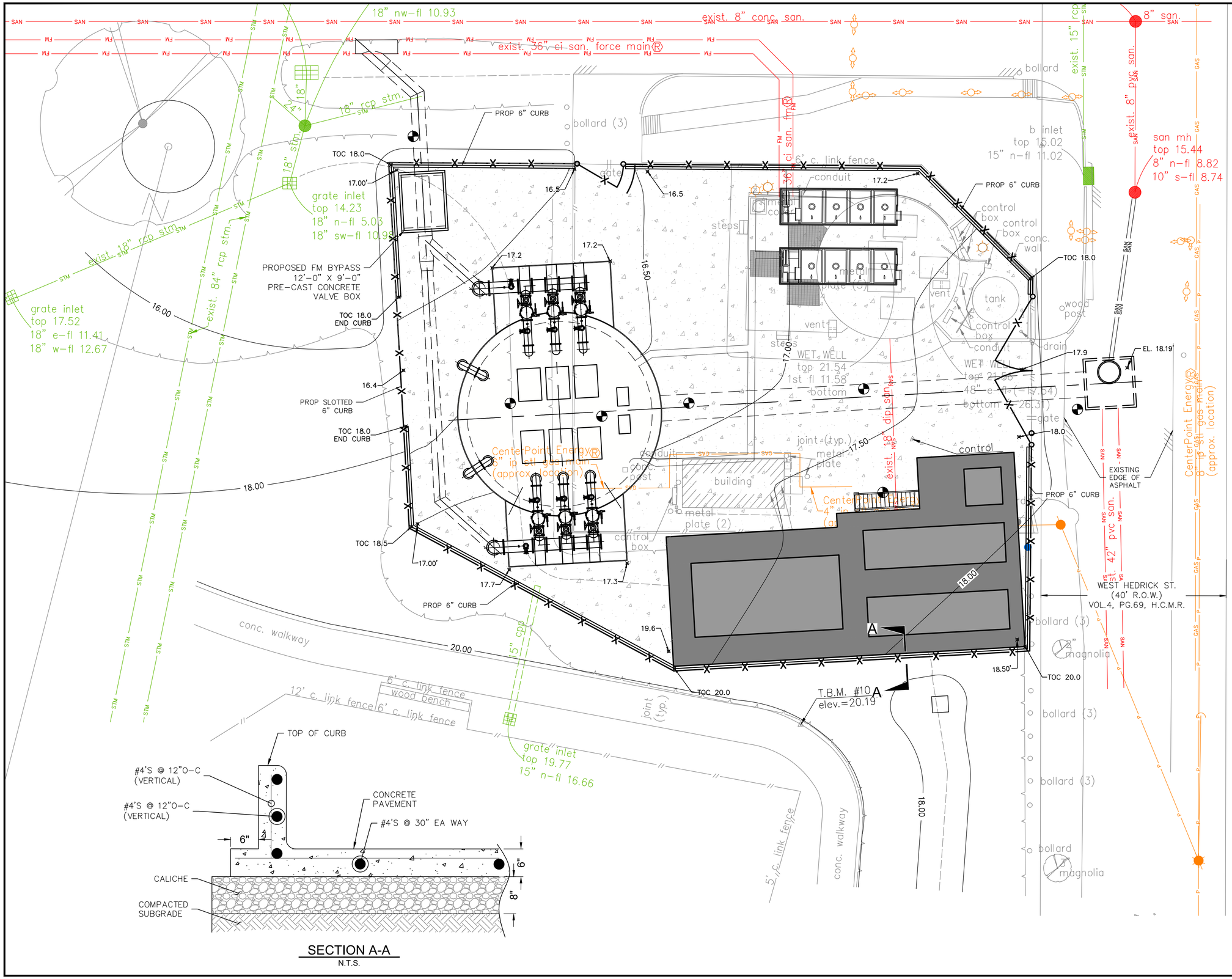
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-302	HORIZ: 1"=20' VERT: 1"=10'
SHEET NO. 114 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Magnolia Park\000 Y-302.dwg



SECTION A-A
N.T.S.

NO	DATE	REVISION	APP.

PEN TABLE: -----

PLOTTED: 1/23/2026 11:23 AM

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Craig Alexander Perry
116345
JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL DRAINAGE

MAGNOLIA PARK LIFT STATION
PROPOSED
GRADING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-301

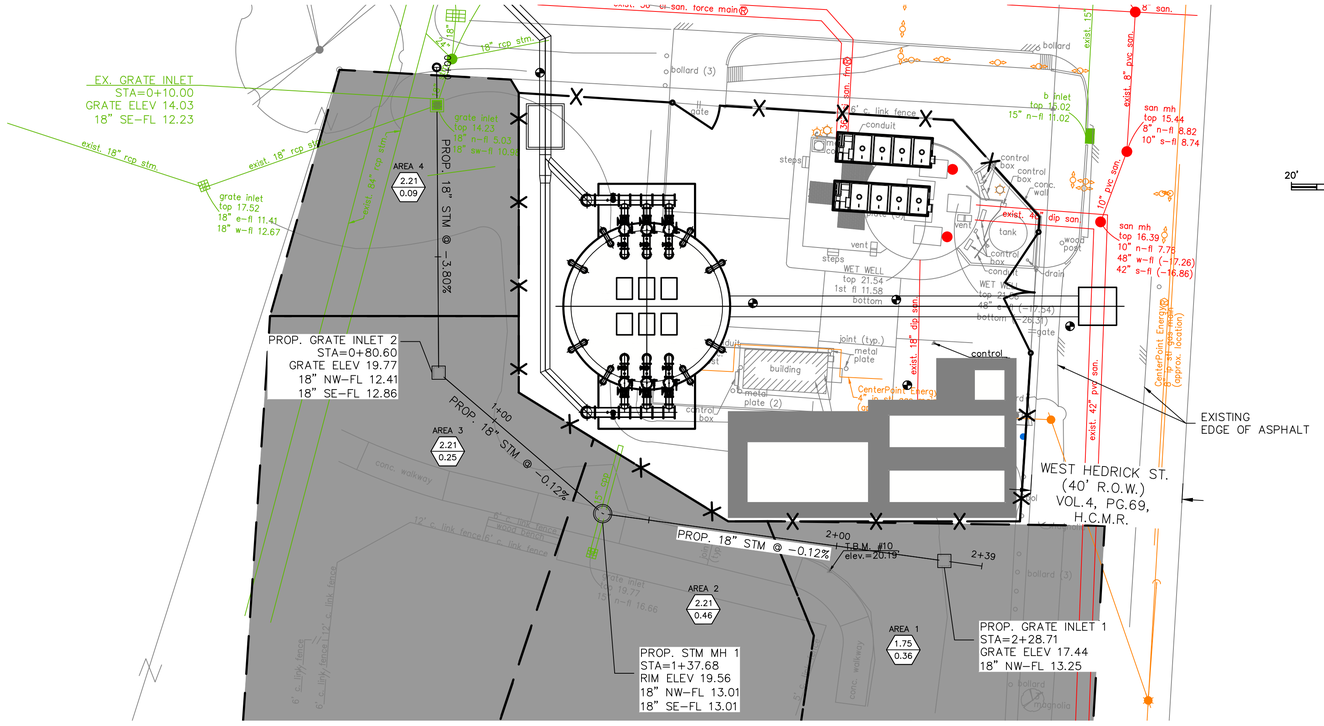
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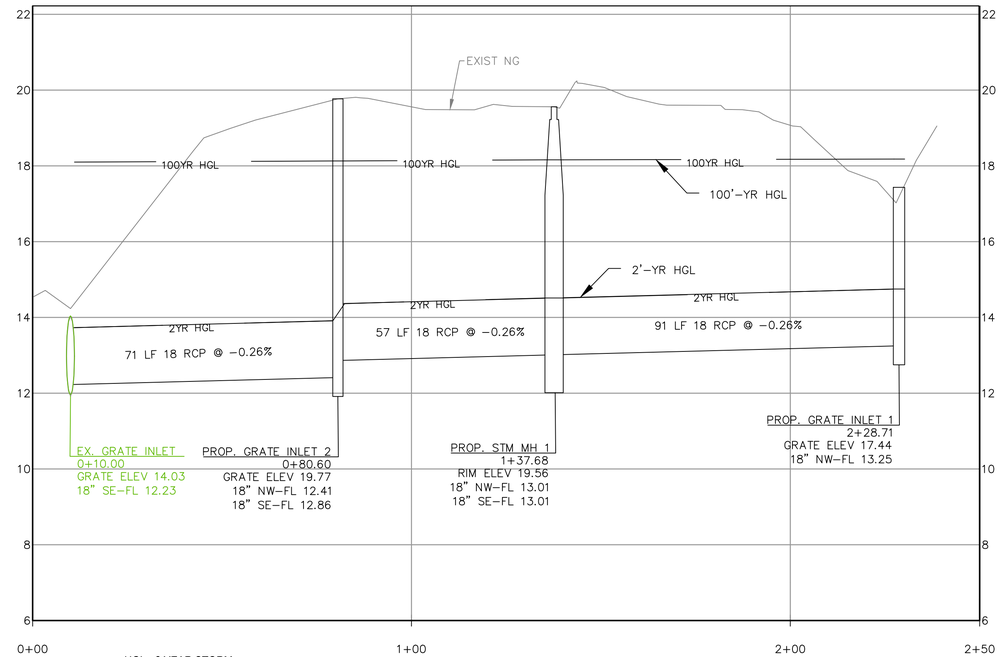
SHEET NO. 115 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Magnolia Park\000 D-301.dwg





SCALE: HORIZ. 1" = 20'-0"
VERT. 1"=10'-0"

HGL - 2 YEAR STORM

Manhole From	Manhole To	Delta Area	Area (Ac)	Runoff Coefficient ©	Sum of CxA	Frequency	Time Of Concenteration (min)	Intensity I (in/hr)	Sum of Flows (CFS)	Reach Length (ft)	Diameter of the pipe (in)	Slope (Pipe Grade) (%)	Manning's Coeff (n)	Design Capacity (cfs)	Design Velocity (ft/s)	Fall (ft)	Flowline Elev (Upstream) (ft)	Flowline Elev (Downstream) (ft)	Actual Velocity (ft/s)	Hydraulic Gradient (%)	Change in Head (ft)		
Inlet_1	Manhole_1	0.3600	0.3600	0.1800	0.06	2.0000	23.35	3.89	0.25	91.0000	18.0000	0.2600	0.0130	5.3562	3.0310	0.240000	13.2500	13.0100	0.1426	0.000576	0.000524	B	48.3500
Manhole_1	Inlet_2	0.4600	0.8200	0.1800	0.21	2.0000	24.66	3.78	0.80	57.0000	18.0000	0.2600	0.0130	5.3562	3.0310	0.600000	13.0100	12.4100	0.4544	0.005843	0.003331	D	9.0700
Inlet_2	Inlet_3	0.2500	1.0700	0.1800	0.40	2.0000	25.12	3.74	1.52	71.0000	18.0000	0.2600	0.0130	5.3562	3.0310	0.630000	12.8600	12.2300	0.8579	0.020828	0.014788	E	0.7244

HGL - 100 YEAR STORM

Area (Ac)	Runoff Coefficient ©	Sum of CxA	Frequency	Time Of Concenteration (min)	Intensity I (in/hr)	Sum of Flows (CFS)	Reach Length (ft)	Diameter of the pipe (in)	Slope (Pipe Grade) (%)	Manning's Coeff (n)	Design Capacity (cfs)	Design Velocity (ft/s)	Fall (ft)	Flowline Elev (Upstream) (ft)	Flowline Elev (Downstream) (ft)	Actual Velocity (ft/s)	Hydraulic Gradient (%)	Change in Head (ft)		
0.3600	0.1800	**0.06**	100.0000	**23.35**	8.73	**0.57**	91.0000	18.0000	0.2600	0.0130	5.3562	3.0310	0.240000	13.2500	13.0100	0.3202	0.002901	0.002640		
0.8200	0.1800	**0.21**	100.0000	**24.66**	8.50	**1.81**	57.0000	18.0000	0.2600	0.0130	5.3562	3.0310	0.600000	13.0100	12.4100	1.0220	0.029559	0.016849	B	60.0000
1.0700	0.1800	**0.40**	100.0000	**25.12**	8.43	**3.41**	71.0000	18.0000	0.2600	0.0130	5.3562	3.0310	0.630000	12.8600	12.2300	1.9309	0.105522	0.074921	D	4.4400
																			E	0.5797

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA, HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Craig Alexander Perry
P.E.
116345
Registered Number
JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL DRAINAGE
MAGNOLIA PARK LIFT STATION
PROPOSED
DRAINAGE AREA MAP
AND
18" STORM SEWER LINE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO.
D-302

HORIZ: 1"=20'
VERT: 1"=10'

SHEET NO. 116 OF 230

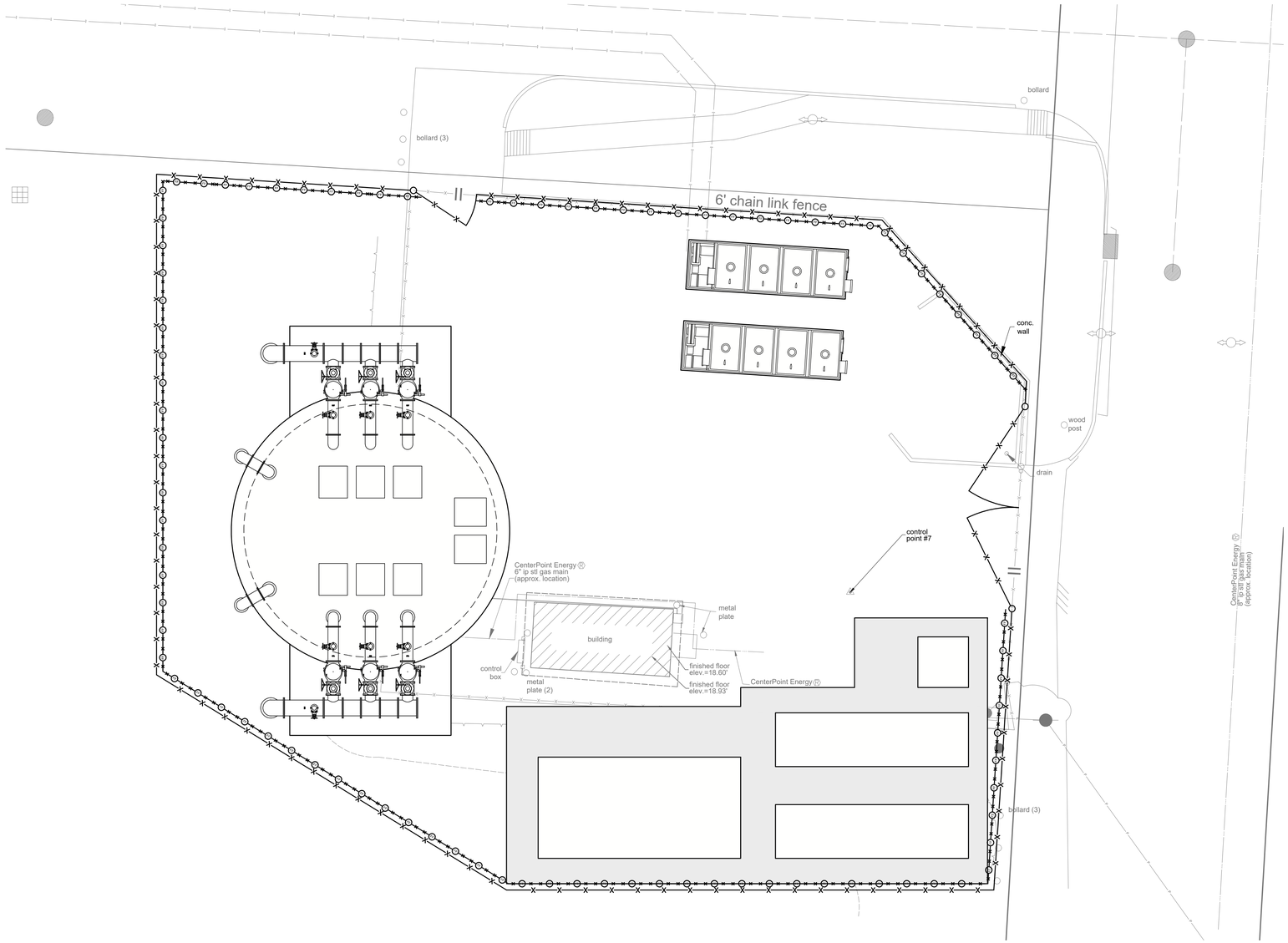
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

PLOTTED: 1/23/2026 9:04 AM PEN TABLE: ----

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Magnolia Park\000 D-302.dwg



0 10' 20'

1"=10'

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/23/2026 9:11 AM

NOTES:

1. STORM WATER POLLUTION PREVENTION PLAN SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND DRAWINGS.

2. CONTRACTOR IS RESPONSIBLE FOR MODIFICATIONS TO SWPPP AS NECESSARY TO REDUCE AND/OR ELIMINATE SEDIMENT FROM ENTERING DRAINAGE SYSTEMS.

3. FILTER FABRIC FENCE SHALL NOT BE PLACED ACROSS DRIVEWAYS OR SIDEWALKS ACCESSING PRIVATE PROPERTY.

4. ALL DISTURBED AREAS THAT ARE NOT PAVED, COVERED BY PAVEMENT, SIDEWALK OR STRUCTURES SHALL BE SODDED.

5. PROVIDE A STANDARD STABILIZED CONSTRUCTION EXIT IN THE CONTRACTORS LAY DOWN/STORAGE AREA.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SIDEWALKS AND CURB ADJACENT TO THE CONSTRUCTION. IF THE SIDEWALKS OR CURBS ARE DAMAGED THE CONTRACTOR WILL BE RESPONSIBLE TO REPLACE AT NO EXTRA COST.

7. IN AREAS OF OPEN CUT CONTRACTOR TO RESTORE WORK AREA TO EXISTING CONDITIONS.

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Craig Alexander Perry

Engineer
116345
Registration Number
JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL DRAINAGE

MAGNOLIA PARK LIFT STATION
PROPOSED
STORM WATER POLLUTION PREVENTION PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-303

HORIZ: 1"=10'

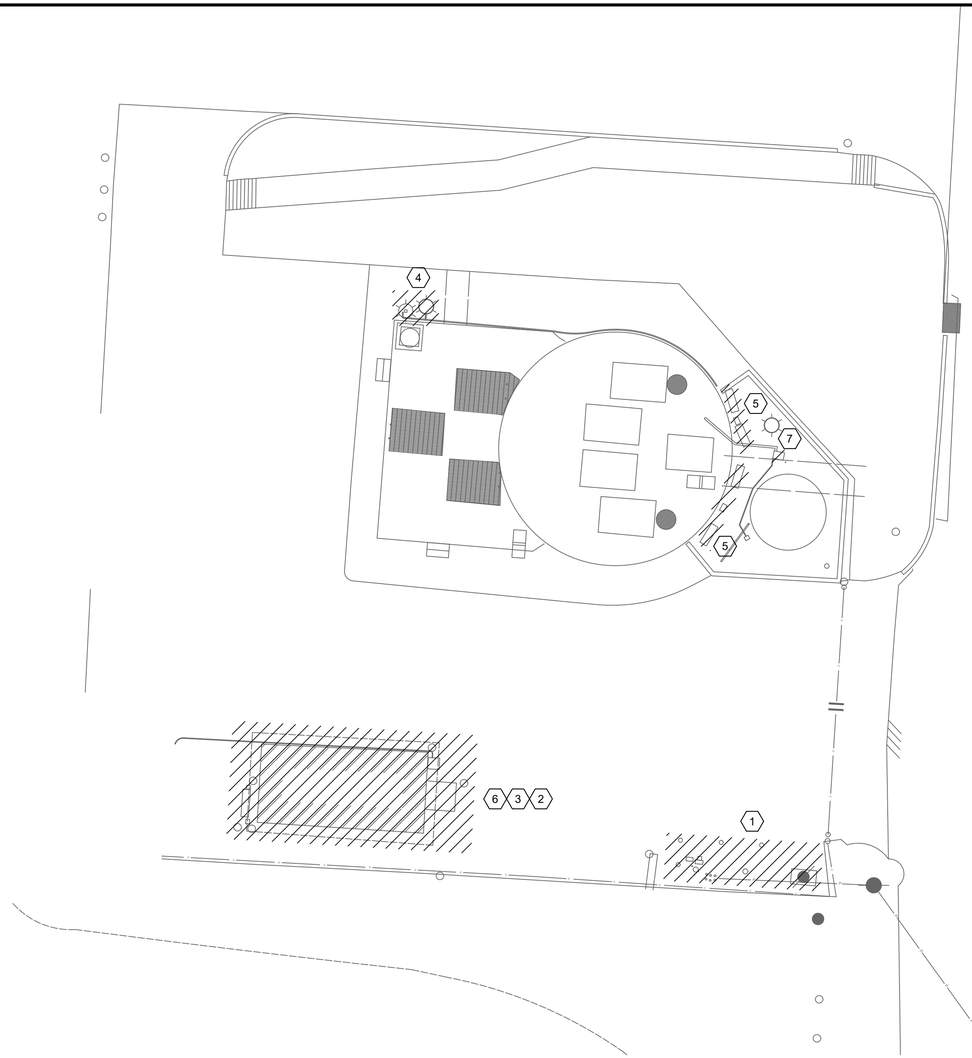
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SHEET NO. 117 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

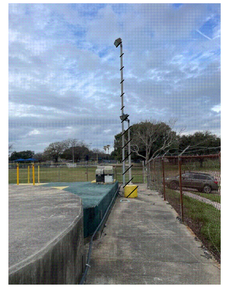
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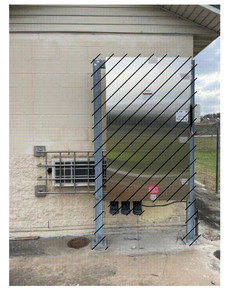
MAGNOLIA PARK ELECTRICAL
EXISTING SITE
PLAN
1"= 10'-0"



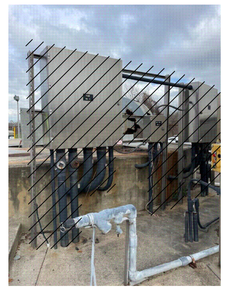
EXISTING WEATHERHEAD
& UTILITY METER
PHOTOGRAPH A - 1
NTS



EXISTING LIGHT
POLE
PHOTOGRAPH D - 4
NTS



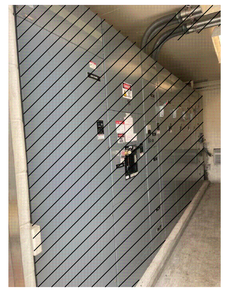
EXISTING GENERATOR
DISCONNECT
PHOTOGRAPH B - 2
NTS



EXISTING PUMP
JUNCTION BOXES & AIR CELL
PHOTOGRAPH E - 5
NTS



EXISTING WIMAX
BOX
PHOTOGRAPH C - 3
NTS



EXISTING MCC
(INSIDE ELECTRICAL BUILDING)
PHOTOGRAPH F - 6
NTS



EXISTING CONTROL PANEL
(INSIDE ELECTRICAL BUILDING)
PHOTOGRAPH G - 6
NTS



EXISTING ODOR CONTROL PANEL
(OUTSIDE ELECTRICAL BUILDING)
PHOTOGRAPH G - 7
NTS

0 10' 20'
1"=10'

NO	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 12/16/2025 7:24 PM

NOTES BY SYMBOL "#":

1. EXISTING WEATHERHEAD & UTILITY METER TO BE DEMOLISHED AND REMOVED.
2. EXISTING GENERATOR DISCONNECT TO BE REMOVED AND RETURNED TO THE WASTEWATER FACILITY MAINTENANCE DEPARTMENT OF THE CITY.
3. EXISTING WIMAX BOX TO BE DEMOLISHED AND REMOVED.
4. EXISTING POLE LIGHT TO BE DEMOLISHED AND REMOVED.
5. EXISTING PUMP JUNCTION BOXES & AIR CELL TO BE DEMOLISHED AND REMOVED.
6. EXISTING ELECTRICAL BUILDING, MCC, AND OTHER ASSOCIATED EQUIPMENT TO BE DEMOLISHED AND REMOVED.
7. EXISTING ODOR CONTROL TO BE DEMOLISHED AND REMOVED.

LEGEND:

ITEMS TO BE DEMOLISHED.

GAI
Gupta & Associates, Inc.
CONSULTING ENGINEERING
Registration No. F-2593
302 Dennis St.,
Houston, Texas 77006
Tel: 713-636-2936
Fax: 713-636-2987
email: hforouzan@gaiconsulting.com

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
DEMOLITION SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-301

HORIZ: 1"=10'-0"
VERT: 1"=10'-0"

SHEET NO. 118 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: C:\HB104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Magnolia Park\Magnolia Park_E-01.dwg

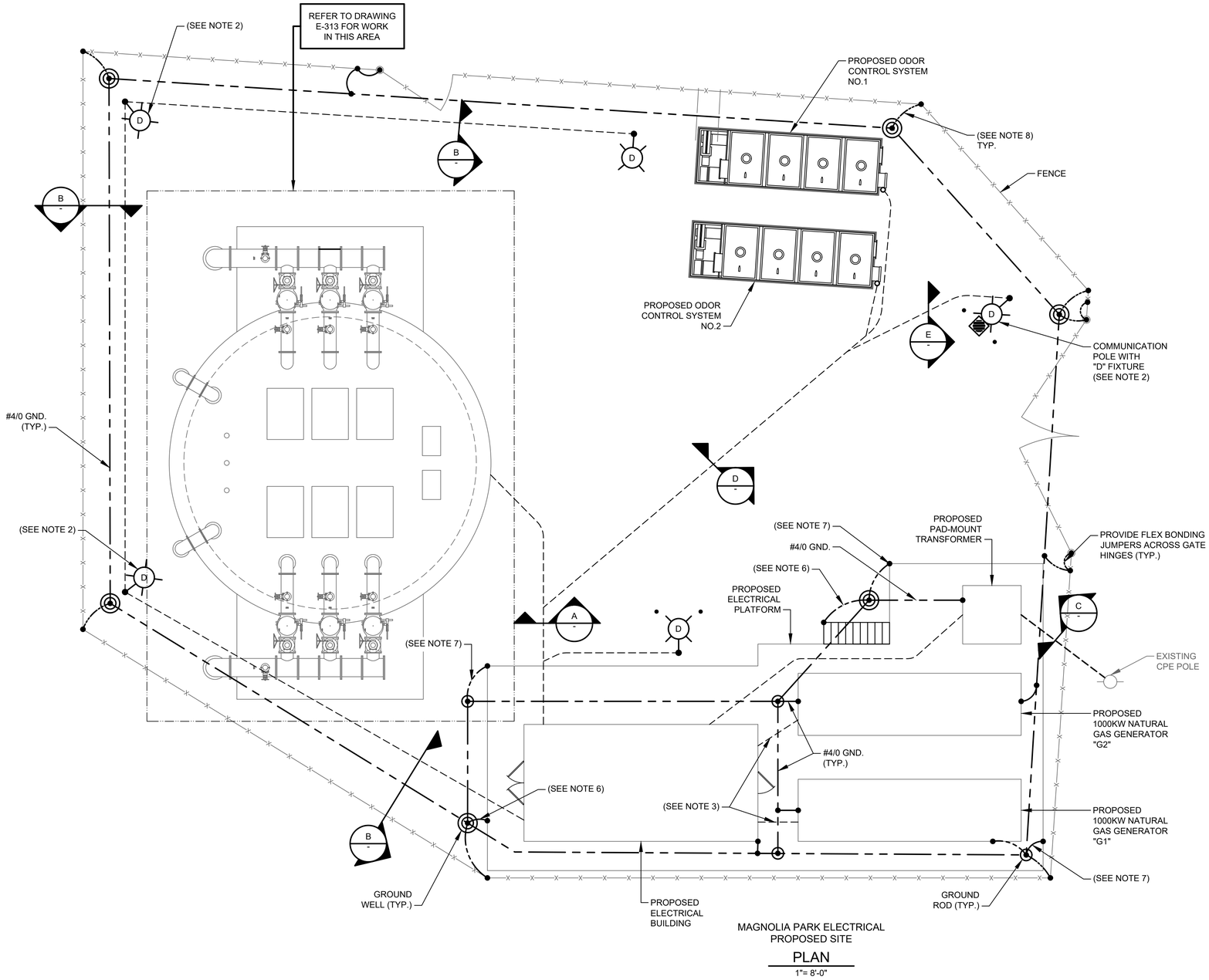
NOTES:

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. YARD LIGHT CONTROLLED BY LIGHTING SWITCH.
3. CONDUITS TO BE INSTALLED BELOW SLAB. REFER TO SHEET E-306 FOR DETAIL.
4. INSIDE WETWELL RATED NEMA CLASS 1, DIV. 1. OUTSIDE ABOVE GROUND, AROUND WETWELL RATED CLASS 1, DIV. 2 ACCORDING TO NFPA 820.
5. GROUNDING LOOP SHALL BE BURIED 30" BELOW FINISHED GRADE.
6. #4/0 BARE COPPER GROUND TO BE BONDED TO HANDRAIL.
7. #4/0 BARE COPPER GROUND TO BE BONDED TO PLATFORM STRUCTURAL STEEL.
8. #2/0 BARE COPPER GROUND TO BE BONDED TO FENCE POST.

NO	DATE	REVISION	APP.

PEN TABLE: ----

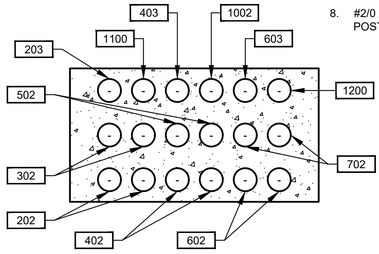
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MAGNOLIA PARK ELECTRICAL
PROPOSED SITE

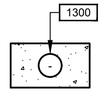
PLAN

1"= 8'-0"



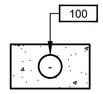
DUCTBANK

SECTION A
NTS



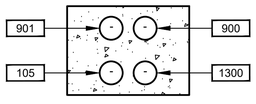
DUCTBANK

SECTION B
NTS



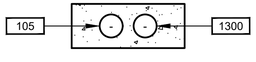
DUCTBANK

SECTION C
NTS



DUCTBANK

SECTION D
NTS



DUCTBANK

SECTION E
NTS

GAI
Gupta & Associates, Inc.
CONSULTING ENGINEERING
Registration No. F-2593
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Houston, Texas 77006
Tel: 713-636-2936
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
PROPOSED SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

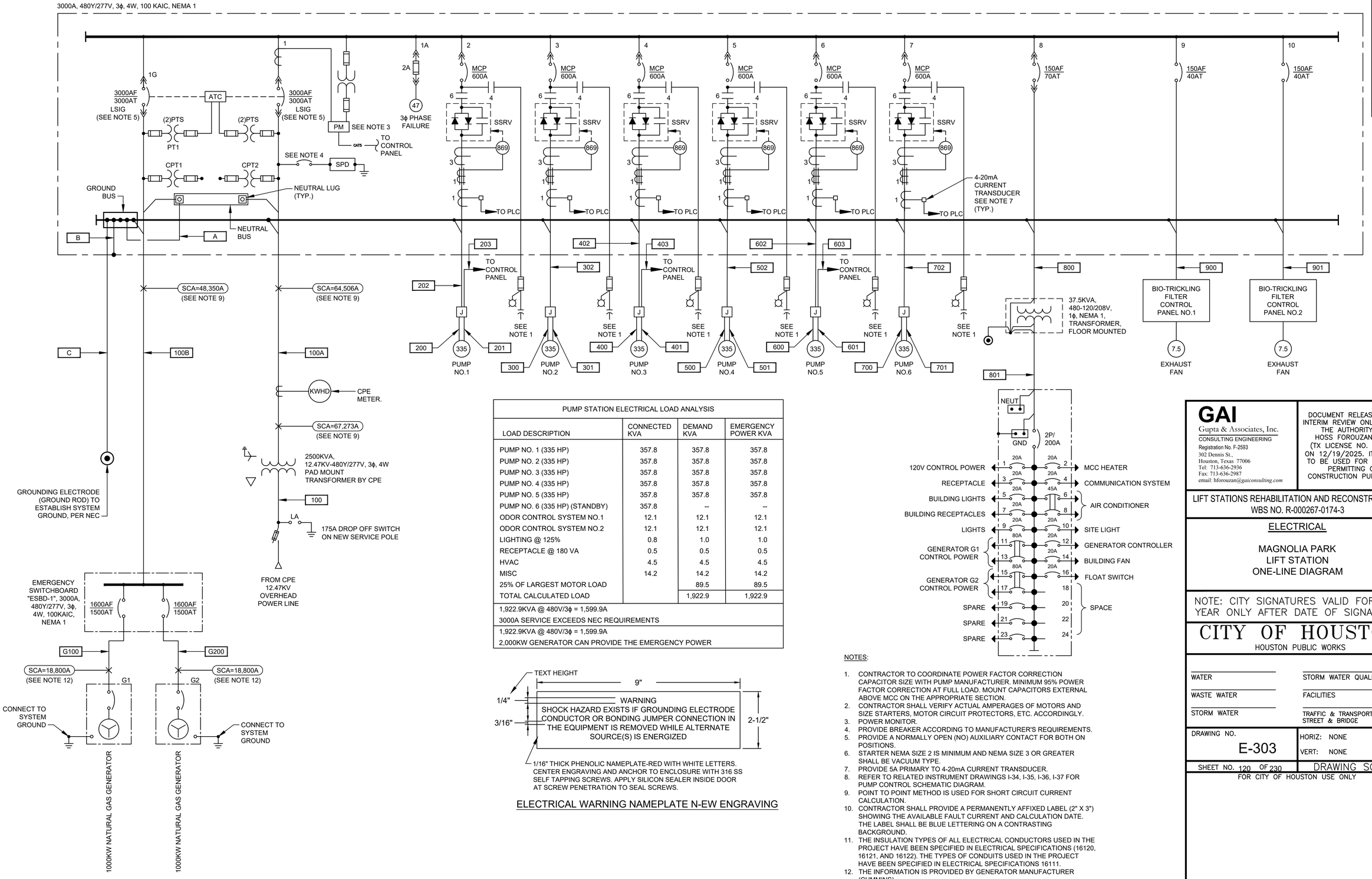
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-302	HORIZ: 1"=8'-0" VERT: 1"=8'-0"
SHEET NO. 119 OF 230	DRAWING SCALE

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FILE PATH: C:\HB104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Magnolia Park\Magnolia Park_E-02.dwg



PUMP STATION ELECTRICAL LOAD ANALYSIS			
LOAD DESCRIPTION	CONNECTED KVA	DEMAND KVA	EMERGENCY POWER KVA
PUMP NO. 1 (335 HP)	357.8	357.8	357.8
PUMP NO. 2 (335 HP)	357.8	357.8	357.8
PUMP NO. 3 (335 HP)	357.8	357.8	357.8
PUMP NO. 4 (335 HP)	357.8	357.8	357.8
PUMP NO. 5 (335 HP)	357.8	357.8	357.8
PUMP NO. 6 (335 HP) (STANDBY)	357.8	--	--
ODOR CONTROL SYSTEM NO.1	12.1	12.1	12.1
ODOR CONTROL SYSTEM NO.2	12.1	12.1	12.1
LIGHTING @ 125%	0.8	1.0	1.0
RECEPTACLE @ 180 VA	0.5	0.5	0.5
HVAC	4.5	4.5	4.5
MISC	14.2	14.2	14.2
25% OF LARGEST MOTOR LOAD		89.5	89.5
TOTAL CALCULATED LOAD		1,922.9	1,922.9
1,922.9KVA @ 480V/3ϕ = 1,599.9A 3000A SERVICE EXCEEDS NEC REQUIREMENTS			
1,922.9KVA @ 480V/3ϕ = 1,599.9A 2,000KW GENERATOR CAN PROVIDE THE EMERGENCY POWER			

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:

1. CONTRACTOR TO COORDINATE POWER FACTOR CORRECTION CAPACITOR SIZE WITH PUMP MANUFACTURER. MINIMUM 95% POWER FACTOR CORRECTION AT FULL LOAD. MOUNT CAPACITORS EXTERNAL ABOVE MCC ON THE APPROPRIATE SECTION.
2. CONTRACTOR SHALL VERIFY ACTUAL AMPERAGES OF MOTORS AND SIZE STARTERS, MOTOR CIRCUIT PROTECTORS, ETC. ACCORDINGLY.
3. POWER MONITOR.
4. PROVIDE BREAKER ACCORDING TO MANUFACTURER'S REQUIREMENTS.
5. PROVIDE A NORMALLY OPEN (NO) AUXILIARY CONTACT FOR BOTH ON POSITIONS.
6. STARTER NEMA SIZE 2 IS MINIMUM AND NEMA SIZE 3 OR GREATER SHALL BE VACUUM TYPE.
7. PROVIDE 5A PRIMARY TO 4-20mA CURRENT TRANSDUCER.
8. REFER TO RELATED INSTRUMENT DRAWINGS I-34, I-35, I-36, I-37 FOR PUMP CONTROL SCHEMATIC DIAGRAM.
9. POINT TO POINT METHOD IS USED FOR SHORT CIRCUIT CURRENT CALCULATION.
10. CONTRACTOR SHALL PROVIDE A PERMANENTLY AFFIXED LABEL (2" X 3") SHOWING THE AVAILABLE FAULT CURRENT AND CALCULATION DATE. THE LABEL SHALL BE BLUE LETTERING ON A CONTRASTING BACKGROUND.
11. THE INSULATION TYPES OF ALL ELECTRICAL CONDUCTORS USED IN THE PROJECT HAVE BEEN SPECIFIED IN ELECTRICAL SPECIFICATIONS (16120, 16121, AND 16122). THE TYPES OF CONDUITS USED IN THE PROJECT HAVE BEEN SPECIFIED IN ELECTRICAL SPECIFICATIONS 16111.
12. THE INFORMATION IS PROVIDED BY GENERATOR MANUFACTURER (CUMMINS).

NO	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
ONE-LINE DIAGRAM

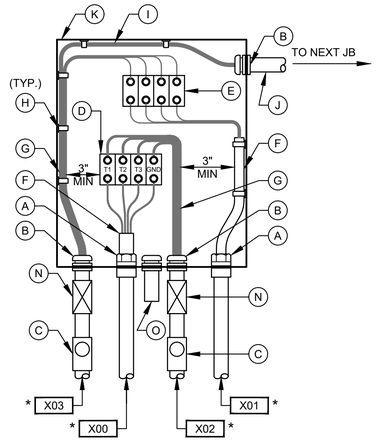
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

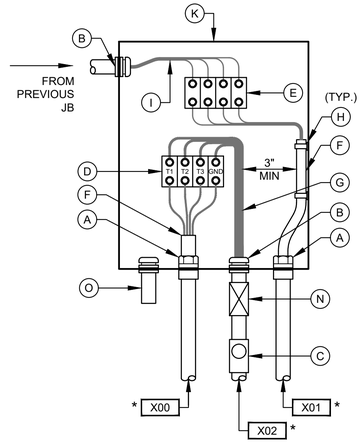
DRAWING NO. E-303
HORIZ: NONE
VERT: NONE
SHEET NO. 120 OF 230
DRAWING SCALE
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FILE PATH: C:\VB104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Magnolia Park\Magnolia Park_E-03.dwg



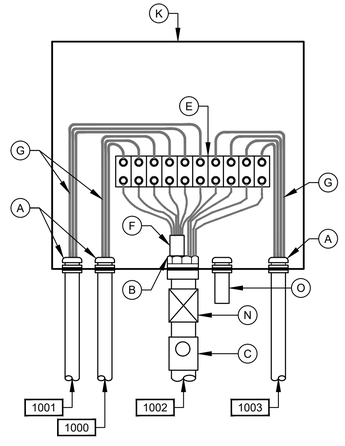
PUMP NO.1 & NO.3 & NO.5
JUNCTION BOX

DETAIL 3
NTS
(SEE NOTE 7)



PUMP NO.2 & NO.4 & NO.6
JUNCTION BOX

DETAIL 4
NTS
(SEE NOTE 7)



LEVEL TRANSMITTER
JUNCTION BOX

DETAIL 5
NTS
(SEE NOTE 7)

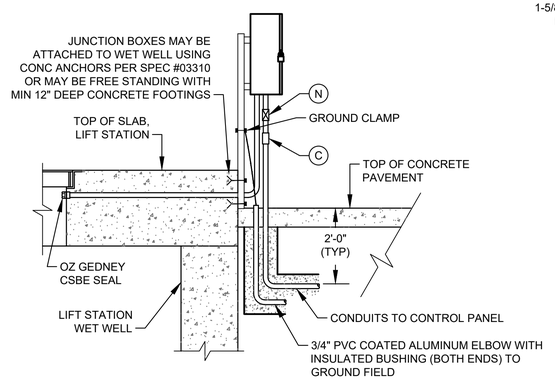
* REPLACE `X' PER NOTATION SCHEDULE

NOTATION SCHEDULE

`X'	PUMP NO.
2	1
3	2
4	3
5	4
6	5
7	6

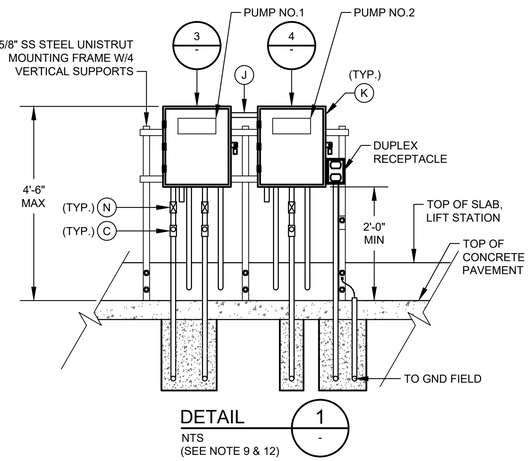
NOTES:

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 NON INTRINSICALLY SAFE MOTOR FEEDER WIRING.
3. UNLESS OTHERWISE NOTED, ALL EXTERIOR EXPOSED CONDUITS SHALL BE PVC COATED ALUMINUM.
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.
10. COORDINATE WITH WASTE WATER OPERATIONS ELECTRICAL ORGANIZATION FOR THE OPENING OF JUNCTION BOXES TO THE SIDE OF WET WELL IF REQUIRED DURING CONSTRUCTION.
11. THE ENCLOSURES WITH ELECTRICAL CIRCUITS SHALL BE A MINIMUM OF 5 FEET FROM ANY CLASSIFIED AREA, OTHERWISE EXPLOSION PROOF TYPE ENCLOSURES SHALL BE USED.
12. THE RECEPTACLES SHALL BE EXPLOSION PROOF TYPE IF INSTALLED WITHIN 5 FEET OF CLASSIFIED AREA, SHALL BE FIELD VERIFIED.

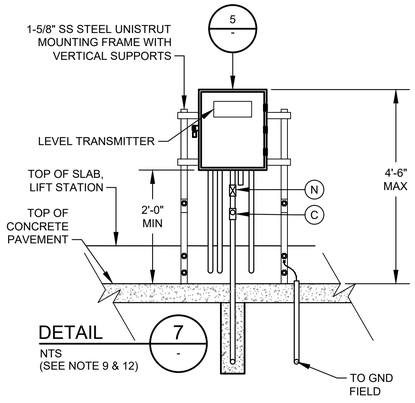


TYP SIDE VIEW FOR DETAIL 2, 2A, 6 & 7

(SEE NOTE 10)



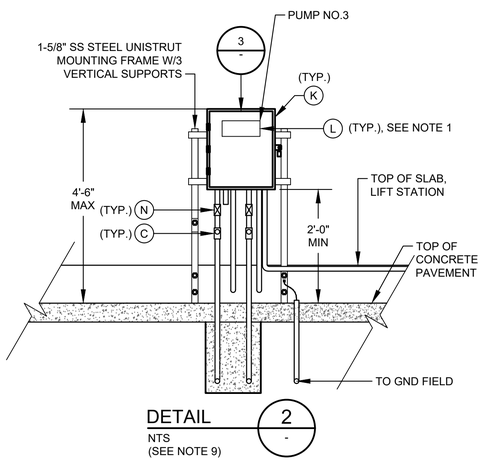
DETAIL 1
NTS
(SEE NOTE 9 & 12)



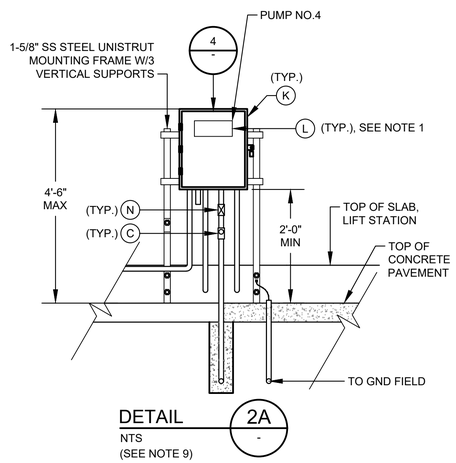
DETAIL 7
NTS
(SEE NOTE 9 & 12)

JUNCTION BOX EQUIPMENT SCHEDULE

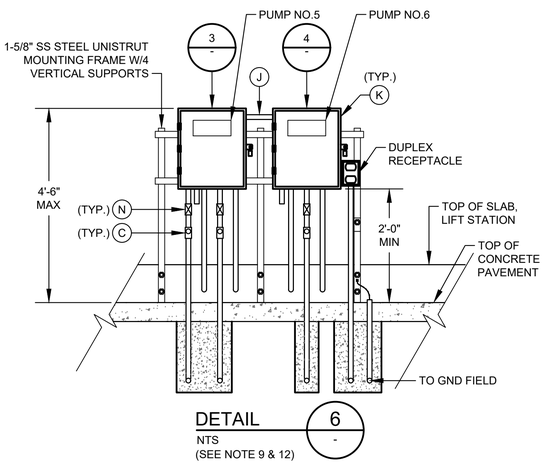
- A - OZ GEDNEY CSBE SEAL
- B - WATERTIGHT CONDUIT HUB WITH INSULATED BUSHING
- C - CLASS I, DIV 1, EXPLOSION PROOF SEAL INSTALLED PER NEC DIV 501
- D - POWER TERMINAL BLOCK W/SCREW DOWN BOX LUGS
- E - CONTROL TERM BLOCK W/SCREW DOWN BOX LUGS
- F - MULTI-CONDUCTOR CABLE, REMOVE OUTER JACKET AS SHOWN
- 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 SPECIFICATIONES (SEE NAMEPLATE SCHEDULE)
- M - MOTOR RATED SWITCH
- N - EXPANSION FITTING
- O - DRAIN VENT



DETAIL 2
NTS
(SEE NOTE 9)



DETAIL 2A
NTS
(SEE NOTE 9)



DETAIL 6
NTS
(SEE NOTE 9 & 12)

NO	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
JUNCTION BOX DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

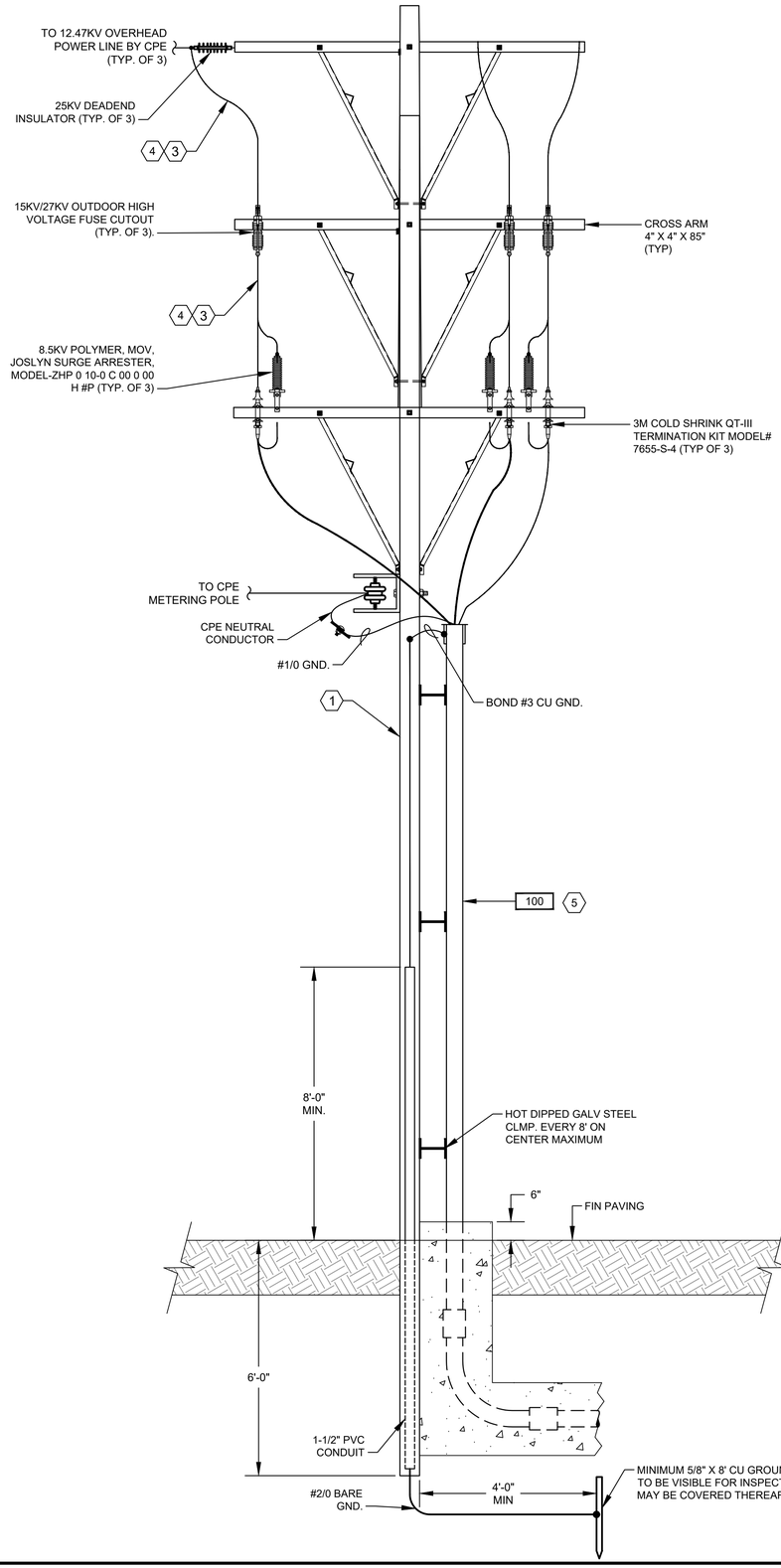
DRAWING NO. E-304

HORIZ: NONE
VERT: NONE

SHEET NO. 121 OF 230
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DRAWING SCALE

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Magnolia Park\Magnolia Park_E-04.dwg



ELECTRICAL SERVICE POLE

DETAIL 1
NTS. -

GENERAL NOTES:

1. ALL CROSS ARMS WITH BRACINGS SHALL BE PROPERLY INSTALLED.
2. ALL AHRDWARE SHALL BE HOT DIPPED GALV. STEEL..
3. THE HOLE IN THE GROUND AROUND THE CONCRETE POLE SHALL BE BACKFILLED WITH CRUSHED LIME STONE AND SHALL BE PROPERLY STAMPED.

NOTES BY SYMBOL "⟨#⟩":

⟨1⟩ NEW CLASS 2 WOOD SERVICE POLE, 55'-0" LONG.

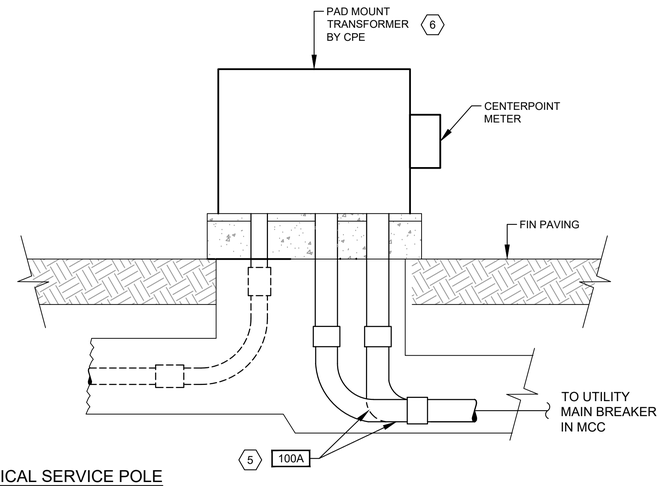
⟨2⟩ THE BURIAL DEPTH SHALL BE 6'-0" MINIMUM.

⟨3⟩ #2 AWG., CU., 15KV SHIELDED 133% INSULATION, WET LOCATION SUNLIGHT RESISTANT TYPE MV CABLE.

⟨4⟩ THE CONDUCTORS TO BE PROVIDED AND INSTALLED BY CPE.

⟨5⟩ ELECTRICAL SERVICE FEEDER PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR. COORDINATE WITH CPE FOR THE REQUIREMENTS OF THE INSTALLATION.

⟨6⟩ THE CONTRACTOR SHALL COORDINATE WITH CENTERPOINT FOR TRANSFORMER PAD REQUIREMENTS.



NO	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
SERVICE POLE DETAILS

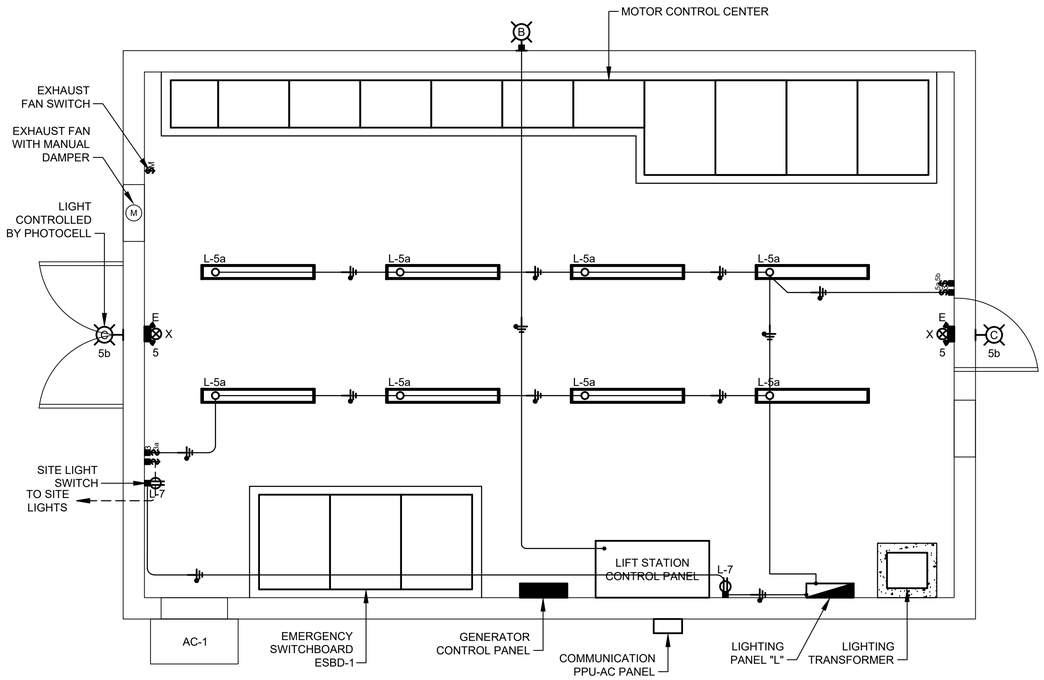
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

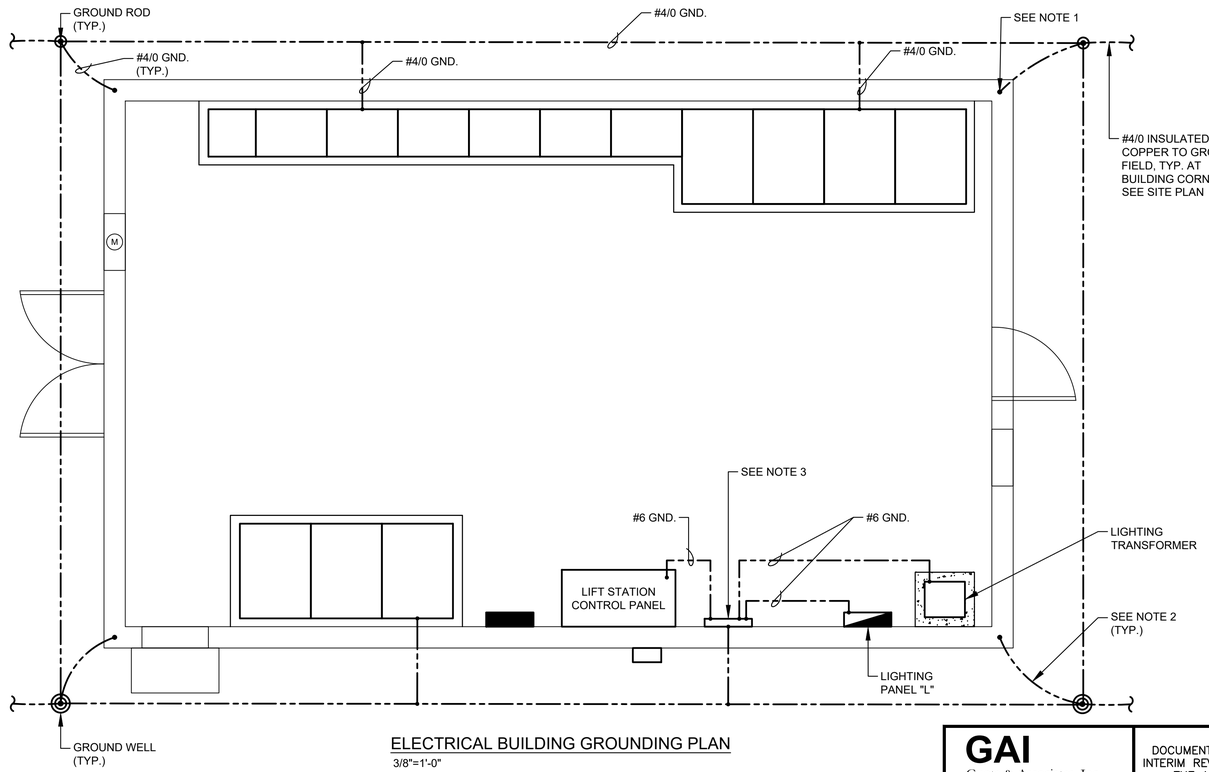
DRAWING NO. E-305
HORIZ: NONE
VERT: NONE
SHEET NO. 122 OF 230
DRAWING SCALE
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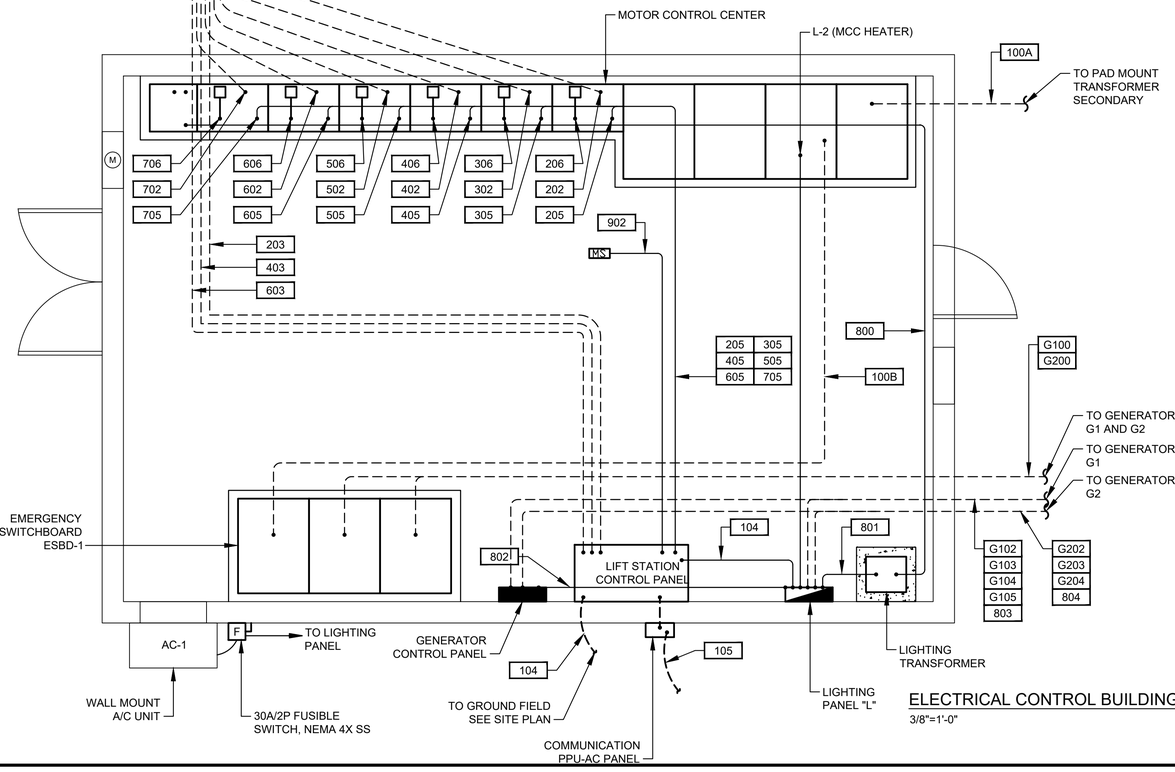
ELECTRICAL CONTROL BUILDING LIGHTING & COMMUNICATION PLAN

3/8"=1'-0"



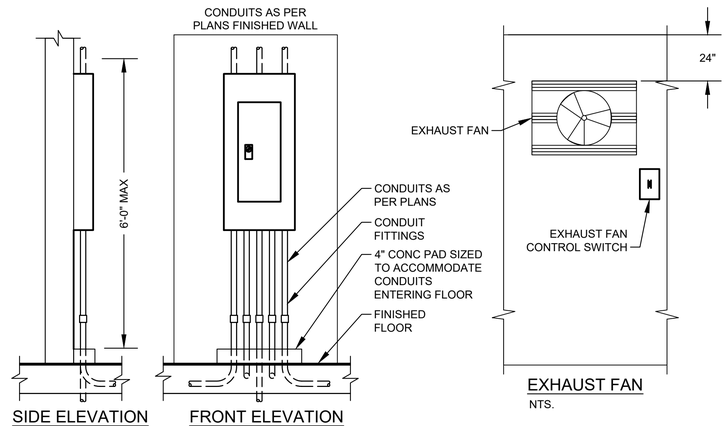
ELECTRICAL BUILDING GROUNDING PLAN

3/8"=1'-0"



ELECTRICAL CONTROL BUILDING POWER PLAN

3/8"=1'-0"



SIDE ELEVATION

FRONT ELEVATION

EXHAUST FAN

NTS.

TYPICAL PANEL INSTALLATION

DETAIL - NTS.

NOTES:

1. THERMO WELD BUILDING GROUND CONDUCTOR TO BUILDING REINFORCING STEEL.
2. BOND REBAR IN CONCRETE FOOTER TO GROUND ROD.
3. 1/4" (D) X 4" (H) X 16" (L) COPPER GROUNDING BUSBAR.

NO	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
CONTROL BUILDING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-306

HORIZ: AS SHOWN

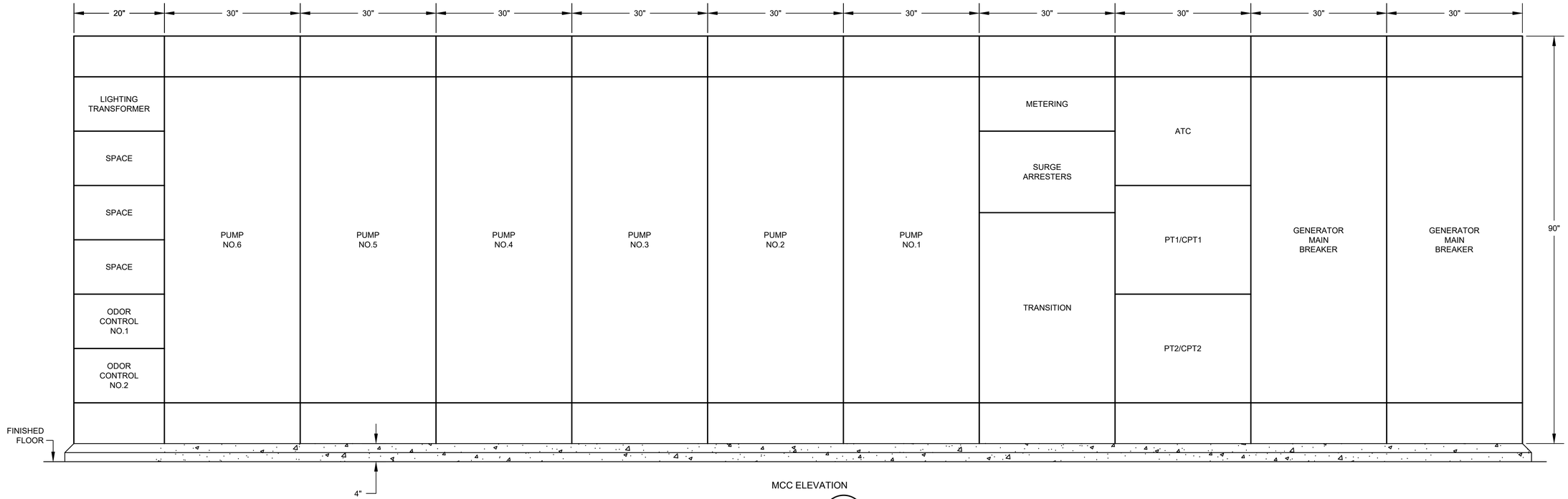
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SHEET NO. 123 OF 230

DRAWING SCALE

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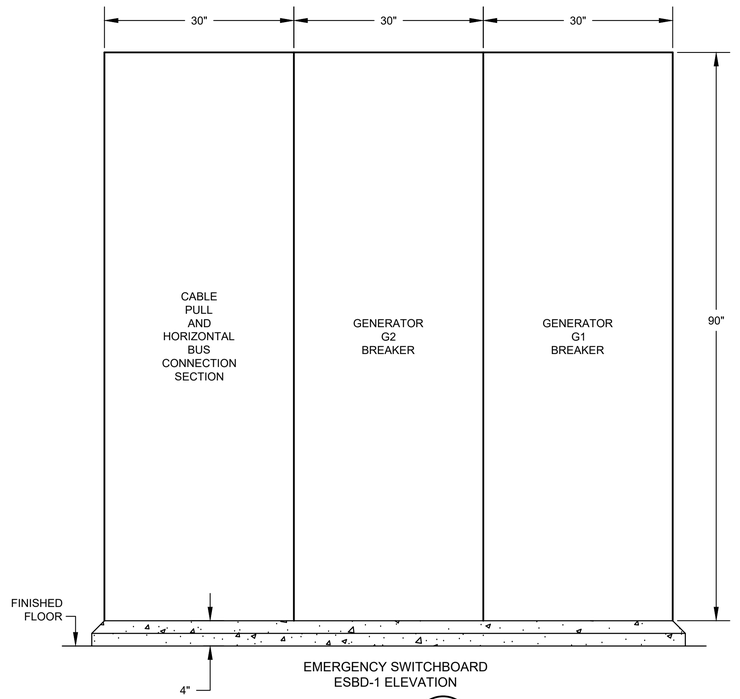
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MCC ELEVATION

DETAIL 1 / -

NTS.



EMERGENCY SWITCHBOARD ESBD-1 ELEVATION

DETAIL 2 / -

NTS.

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MAGNOLIA PARK
LIFT STATION
MCC ELEVATION

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-307

HORIZ: NONE
VERT: NONE

SHEET NO. 124 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Magnolia Park\Magnolia Park_E-07.dwg

	DESCRIPTION	SERVICE		ROUTING			CONDUIT & WIRE SIZE
		VOLTAGE	AMPS OR HP	FROM	TO	VIA	
A	MAIN BONDING JUMPER	--	--	MCC NEUTRAL BUS	MCC GROUND BUS	--	#500 GND.
B	EQUIPMENT BONDING JUMPER	--	--	MCC ENCLOSURE	MCC GROUND BUS	--	#500 GND.
C	GROUNDED ELECTRODE CONDUCTOR	--	--	GROUNDING ELECTRODE	MCC GROUND BUS	--	#500 GND.
100	SERVICE ENTRANCE	12,470V	150A	15KV SERVICE POLE	PAD MOUNT TRANSFORMER PRIMARY	--	3#1 AWG., SHIELDED 15KV, #6 GND., 4"C.
100A	MCC SERVICE POWER	480V	3000A	PAD MOUNT TRANSFORMER SECONDARY	UTILITY MAIN BREAKER IN MCC	--	7 SETS OF 750MCM, #2/0 NEUT., #2/0 AWG. GND., 5"C. EA.
100B	EMERGENCY POWER	480V	3000A	EMERGENCY SWITCHBOARD "ESBD-1"	GENERATOR MAIN BREAKER IN MCC	--	7 SETS OF 750MCM, #2/0 NEUT., #2/0 AWG. GND., 5"C. EA.
100C	NORMAL/EMERGENCY POWER STATUS	24VDC	--	ATC SECTION IN MCC	CONTROL PANEL	--	4#14 AWG., 1"C.
G100	EMERGENCY POWER FROM GENERATOR "G1"	480V	1600A	GENERATOR "G1"	EMERGENCY SWITCHBOARD "ESBD-1"	--	4 SETS OF 600MCM, #2 AWG. NEUT., #2 AWG. GND., 4"C. EA.
G101	"G1" BREAKER ON "ESBD" POSITION SIGNAL	120V	--	GENERATOR "G1"	EMERGENCY SWITCHBOARD "ESBD-1"	--	6#14, 1"C.
G102	BREAKER IN GENERATOR "G1" POSITION SIGNAL	120V	--	GENERATOR "G1"	GENERATOR CONTROL PANEL	--	20#14, 1-1/2"C.
G103	GENERATOR "G1" CONTROL (DC)	24VDC	--	GENERATOR "G1"	GENERATOR CONTROL PANEL	--	30#14, 1-1/2"C.
G104	GENERATOR "G1" CONTROL (AC)	120V	--	GENERATOR "G1"	GENERATOR CONTROL PANEL	--	5#14, 1"C.
G105	GENERATOR "G1" COMMUNICATIONS	24VDC	--	GENERATOR "G1"	GENERATOR CONTROL PANEL	--	CAT.6, 1"C.
G200	EMERGENCY POWER FROM GENERATOR "G2"	480V	1600A	GENERATOR "G2"	EMERGENCY SWITCHBOARD "ESBD-1"	--	4 SETS OF 600MCM, #2 AWG. NEUT., #2 AWG. GND., 4"C. EA.
G201	"G2" BREAKER ON "ESBD" POSITION SIGNAL	120V	--	GENERATOR "G2"	EMERGENCY SWITCHBOARD "ESBD-1"	--	6#14, 1"C.
G202	BREAKER IN GENERATOR "G2" POSITION SIGNAL	120V	--	GENERATOR "G2"	GENERATOR CONTROL PANEL	--	20#14, 1-1/2"C.
G203	GENERATOR "G2" CONTROL (DC)	24VDC	--	GENERATOR "G2"	GENERATOR CONTROL PANEL	--	30#14, 1-1/2"C.
G204	GENERATOR "G2" CONTROL (AC)	120V	--	GENERATOR "G2"	GENERATOR CONTROL PANEL	--	5#14, 1"C.
G300	GENERATOR CONTROL PANEL COMMUNICATIONS	24VDC	--	GENERATOR CONTROL PANEL	CONTROL PANEL	--	CAT.6, 1"C.
G301	GENERATOR "G2" DC POWER	24VDC	--	GENERATOR "G1"	GENERATOR "G2"	--	3#12, 1"C.
G302	COMMUNICATION BETWEEN GENERATOR "G1" & "G2"	24VDC	--	GENERATOR "G1"	GENERATOR "G2"	--	CAT.6, #18 UTC, 1"C.
G303	COMM. BETWEEN ATC AND GEN. CONTROL POWER	24VDC	--	GENERATOR CONTROL PANEL	ATC IN MCC	--	CAT.6, 1"C.
G304	GENERATOR CONTROL	120V	--	ATC IN MCC	GENERATOR CONTROL PANEL	--	12#14, 1"C.
104	CONTROL PANEL POWER	120V	--	LIGHTING PANEL	CONTROL PANEL	--	2#12, #12 GND., 3/4" C.
105	COMMUNICATION	--	--	COMMUNICATION POLE	CONTROL PANEL	--	1-1/2"C., CAT-5E
200	PUMP NO.101 POWER	480V	335 HP	PUMP NO.101	PUMP NO.101 JUNCTION BOX	--	MANUFACTURER CABLE IN 4"C.
201	PUMP NO.101 CONTROLS	120V	--	PUMP NO.101	PUMP NO.101 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
202	PUMP NO.101 POWER	480V	335 HP	PUMP NO.101 JUNCTION BOX	PUMP STARTER	--	2 SETS OF 350MCM, #3 GND., 3"C. EA.
203	COMBINED PUMP CONTROLS	120V	--	PUMP NO.101 JUNCTION BOX	PUMP STARTER	--	COMBINE 200 & 300 WIRING, 10#14 1"C.
205	PUMP NO.101 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	20#14, 1PR.#16, 1-1/2" C.
206	PUMP NO.101 CAPACITOR	480V	TBD	PUMP NO.101 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	3#1, #6 GND., 2"C.
300	PUMP NO.102 POWER	480V	335 HP	PUMP NO.102	PUMP NO.102 JUNCTION BOX	--	MANUFACTURER CABLE IN 4"C.
301	PUMP NO.102 CONTROLS	120V	--	PUMP NO.102	PUMP NO.102 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
302	PUMP NO.102 POWER	480V	335 HP	PUMP NO. 102 JUNCTION BOX	PUMP STARTER	--	3#1, #6 GND., 2"C.
305	PUMP NO.102 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	20#14, 1PR.#16, 1-1/2" C.
306	PUMP NO.102 CAPACITOR	480V	TBD	PUMP NO. 102 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	3#1, #6 GND., 2"C.
400	PUMP NO. 103 POWER	480V	335 HP	PUMP NO. 103	PUMP NO.103 JUNCTION BOX	--	MANUFACTURER CABLE IN 4"C.
401	PUMP NO. 103 CONTROLS	120V	--	PUMP NO. 103	PUMP NO.103 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
402	PUMP NO. 103 POWER	480V	335 HP	PUMP NO. 103 JUNCTION BOX	PUMP STARTER	--	2 SETS OF 350MCM, #3 GND., 3"C. EA.
403	COMBINED PUMP CONTROLS	120V	--	PUMP NO. 103 JUNCTION BOX	CONTROL PANEL	--	COMBINE 400 & 500 WIRING, 10#14 1"C.
405	PUMP NO.103 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CNETER	CONTROL PANEL	--	20#14, 1PR.#16, 1-1/2" C.
406	PUMP NO.103 CAPACITOR	480V	TBD	PUMP NO. 103 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	3#1, #6 GND., 2"C.
500	PUMP NO.104 POWER	480V	335 HP	PUMP NO. 104	PUMP NO.104 JUNCTION BOX	--	MANUFACTURER CABLE IN 4"C.
501	PUMP NO.104 CONTROLS	120V	--	PUMP NO. 104	PUMP NO.104 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
502	PUMP NO.104 POWER	480V	--	PUMP NO. 104 JUNCTION BOX	PUMP STARTER	--	2 SETS OF 350MCM, #3 GND., 3"C. EA.
505	PUMP NO.104 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	20#14, 1PR.#16, 1-1/2" C.
506	PUMP NO.104 CAPACITOR	480V	TBD	PUMP NO. 104 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	3#1, #6 GND., 2"C.
600	PUMP NO.105 POWER	480V	335 HP	PUMP NO. 105	PUMP NO.105 JUNCTION BOX	--	MANUFACTURER CABLE IN 4"C.
601	PUMP NO.105 CONTROLS	120V	--	PUMP NO. 105	PUMP NO.105 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
602	PUMP NO.105 POWER	480V	335 HP	PUMP NO. 105 JUNCTION BOX	PUMP STARTER	--	2 SETS OF 350MCM, #3 GND., 3"C. EA.
603	COMBINED PUMP CONTROLS	120V	--	PUMP NO. 105 JUNCTION BOX	PUMP STARTER	--	COMBINE 600 & 700 WIRING, 10#14 1"C.
605	PUMP NO.105 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	20#14, 1PR.#16, 1-1/2" C.
606	PUMP NO.105 CAPACITOR	480V	TBD	PUMP NO. 105 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	3#1, #6 GND., 2"C.
700	PUMP NO.106 POWER	480V	335 HP	PUMP NO. 106	PUMP NO.102 JUNCTION BOX	--	MANUFACTURER CABLE IN 4"C.
701	PUMP NO.106 CONTROLS	120V	--	PUMP NO. 106	PUMP NO.102 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
702	PUMP NO.106 POWER	480V	335 HP	PUMP NO. 106 JUNCTION BOX	PUMP STARTER	--	3#1, #6 GND., 2"C.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
CONDUIT SCHEDULE-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-308

HORIZ: NONE
VERT: NONE

SHEET NO. 125 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: C:\VB104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Magnolia Park\Magnolia Park_E-08.dwg

	DESCRIPTION	SERVICE		ROUTING			CONDUIT & WIRE SIZE
		VOLTAGE	AMPS OR HP	FROM	TO	VIA	
1000	LEVEL TRANSMITTER LT-1	24VDC	--	TRANSMITTER	TRANSMITTER JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
1001	LEVEL TRANSMITTER LT-2	24VDC	--	TRANSMITTER	TRANSMITTER JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
1002	COMBINED LEVEL TRANSMITTERS & FLOAT SWITCH	24VDC	--	CONTROL PANEL	TRANSMITTER JUNCTION BOX	--	2 TRI, 4 #14, 2"C.
1003	WELL FLOAT SWITCHES	24VDC	--	TRANSMITTER JUNCTION BOX	FLOAT SWITCH NO.1	--	MANUFACTURER CABLE IN 2-1/2"C.
1100	120VAC FOR RECEPTACLE	120V	--	LIGHTING PANEL	RECEPTACLE NEXT TO TRANSMITTER J-BOX	--	2 #12, #12 G, 1"C.
1200	120VAC FOR RECEPTACLE	120V	--	LIGHTING PANEL	RECEPTACLE NEXT TO PUMP NO. 103 J-BOX	--	2 #12, #12 G, 1"C.
1300	SITE LIGHTING	120V	--	LIGHTING PANEL	SITE LIGHTS	VIA SITE LIGHTING SWITCH	2#12, #12 G, 1"C.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

MAGNOLIA PARK LIFT STATION CONDUIT SCHEDULE-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-309

HORIZ: NONE
VERT: NONE

SHEET NO. 126 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Magnolia Park\Magnolia Park_E-09.dwg

MCC | FIELD

MCC MAIN BREAKER

(SEE NOTE 4)

PHASE MONITOR JE-2

PLC

ATC

(SEE NOTE 4)

SPD

SURGE PROTECTOR JE-1

X3 H3
X2 H2
X1
X0 H1
G

CONNECTED TO 12.47KV OVERHEAD POWER LINE BY CPE.

PAD-MOUNT TRANSFORMER BY CPE

GND

GND BUS

NEUT

EMERGENCY SWITCHBOARD "ESBD-1"

NEUT

GEN

STANDBY GENERATOR "G1"

GEN

STANDBY GENERATOR "G2"

GENERATOR MAIN BREAKER

POWER MONITOR

CT3
CT2
CT1

POWER MONITOR

CAT5e

TO CONTROL PANEL

POWER FACTOR CAPACITOR (SEE NOTE 2)

4-20mA CURRENT TRANSDUCER

4-20mA TO PLC

+
-

MCP

M12

M1

CT1
CT2
CT3

GCT

T1 T2 T3

PUMP NO. 1

M

J1 J2 J3 J4 J5 J6 J7 J8

CURRENT INPUTS SLOT J

MULTILIN 869

105 106 107 108 GND

105 106 107 108 GND

20 21 22 23 GND

TSH-1

LSH-1

POWER FACTOR CAPACITOR (SEE NOTE 2)

4-20mA CURRENT TRANSDUCER

4-20mA TO PLC

MCP

M22

M2

CT1
CT2
CT3

GCT

PUMP NO. 2

205 206 207 208 GND

TSH-2

LSH-2

POWER FACTOR CAPACITOR (SEE NOTE 2)

4-20mA CURRENT TRANSDUCER

4-20mA TO PLC

MCP

M32

M3

CT1
CT2
CT3

GCT

PUMP NO. 3

305 306 307 308 GND

TSH-3

LSH-3

MATCHLINE `A'

MATCHLINE `A'

POWER PANEL | FIELD

POWER FACTOR CAPACITOR (SEE NOTE 2)

4-20mA CURRENT TRANSDUCER

4-20mA TO PLC

MCP

M42

M4

CT1
CT2
CT3

GCT

T1 T2 T3

PUMP NO. 4

405 406 407 408 GND

TSH-4

LSH-4

POWER FACTOR CAPACITOR (SEE NOTE 2)

4-20mA CURRENT TRANSDUCER

4-20mA TO PLC

MCP

M52

M5

CT1
CT2
CT3

GCT

PUMP NO. 5

505 506 507 508 GND

TSH-5

LSH-5

POWER FACTOR CAPACITOR (SEE NOTE 2)

4-20mA CURRENT TRANSDUCER

4-20mA TO PLC

MCP

M62

M6

CT1
CT2
CT3

GCT

PUMP NO. 6

605 606 607 608 GND

TSH-6

LSH-6

CB

ODOR CONTROL PANEL NO.1

CB

ODOR CONTROL PANEL NO.2

25KVA, 480-120/240V 1 PHASE TRANSFORMER SEE NOTE 3

EE

CB

CONTINUED FROM ABOVE RIGHT

LEGEND

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

NOTES:

1. UNLESS OTHERWISE INDICATE, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE CONTROL PANEL.
2. CONTRACTOR TO COORDINATE POWER FACTOR CORRECTION CAPACITOR SIZE WITH PUMP MANUFACTURER.
3. CONTRACTOR SHALL TERMINATE POWER & CONTROL WIRES PER MANUFACTURER'S REQUIREMENTS.
4. PROVIDE FUSE SIZE ACCORDING TO MANUFACTURER'S REQUIREMENTS.
5. THE COMBINATION OF CT AND MOTOR OVERLOAD RELAY IF REQUIRED.

CONTINUED FROM BELOW LEFT

240V, 200A, 24 CKT LIGHTING PANEL

200A
NEUT
GND

120V CONTROL POWER	1 / 2	MCC HEATER
RECEPTACLE	3 / 4	COMMUNICATION SYSTEM
BUILDING LIGHTS	5 / 6	AIR CONDITIONER
BUILDING RECEPTACLES	7 / 8	AIR CONDITIONER
LIGHTS	9 / 10	SITE LIGHT
GENERATOR G1 CONTROL POWER	11 / 12	GENERATOR CONTROLLER
	13 / 14	BUILDING FAN
GENERATOR G2 CONTROL POWER	15 / 16	FLOAT SWITCH
SPARE	17 / 18	SPACE
SPARE	19 / 20	SPACE
SPARE	21 / 22	SPACE
SPARE	23 / 24	SPACE

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

MAGNOLIA PARK LIFT STATION THREE-LINE DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-310

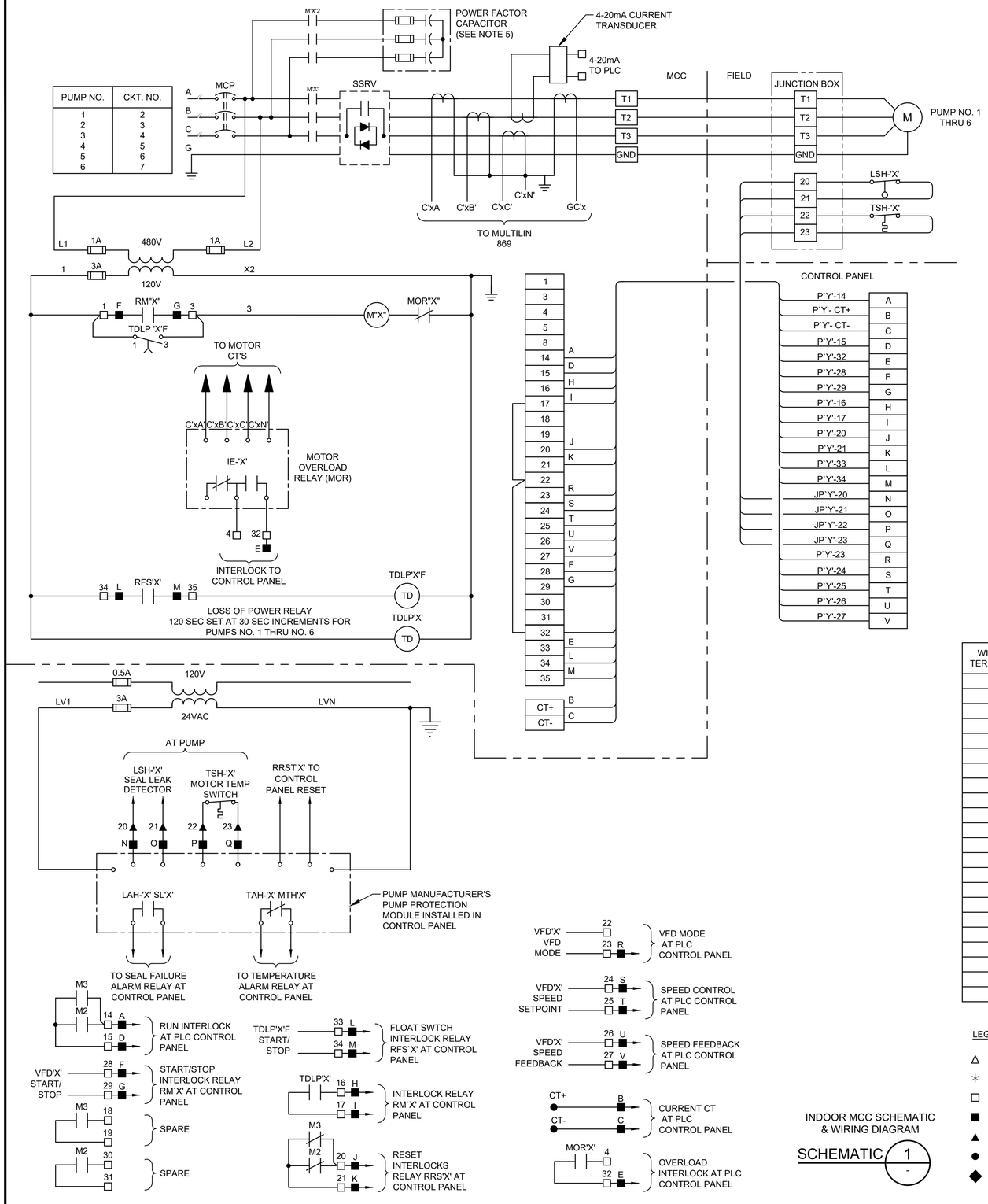
HORIZ: NONE
VERT: NONE

SHEET NO. 127 OF 230

DRAWING SCALE

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FILE PATH: C:\HB104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Magnolia Park\Magnolia Park_E-10.dwg



INDOOR MCC SCHEMATIC & WIRING DIAGRAM

SCHEMATIC 1 / -

NOTES:

1. THE 'X' NOTATION IN SCHEMATIC DESIGNATIONS REPRESENTS APPLICABLE PUMP NO. 1, 2, 3, 4, 5, 6.
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 OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED. OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. (VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.)

WIRE TAG OR TERMINAL LABEL	PUMP NO. 1	PUMP NO. 2	PUMP NO. 3	PUMP NO. 4	PUMP NO. 5	PUMP NO. 6	FUNCTION
A	3P1	3P2	3P3	3P4	3P5	3P6	24VDC CONTROL
B	124	224	324	424	524	624	4-20mA CURRENT TRANSDUCER
C	125	225	325	425	525	625	4-20mA CURRENT TRANSDUCER
D	116	216	316	416	516	616	M CONTACT
E	117	217	317	417	517	617	OVERLOAD ALARM
F	114	214	314	414	514	614	RUN INTERLOCK
G	115	215	315	415	515	615	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	118	218	318	418	518	618	ALARM RESET INTERLOCK
K	119	219	319	419	519	619	ALARM RESET INTERLOCK
L	126	226	326	426	526	626	FLOAT SWITCH RUN INTERLOCK
M	127	227	327	427	527	627	FLOAT SWITCH RUN INTERLOCK
N	120	220	320	420	520	620	SEAL LEAK DETECTOR
O	121	221	321	421	521	621	SEAL LEAK DETECTOR
P	122	222	322	422	522	622	MOTOR TEMPERATURE SWITCH
Q	123	223	323	423	523	623	MOTOR TEMPERATURE SWITCH
R	109	209	309	409	509	609	VFD MODE
S	110	210	310	410	510	610	4-20mA VFD SPEED CONTROL
T	111	211	311	411	511	611	4-20mA VFD SPEED CONTROL
U	112	212	312	412	512	612	4-20mA VFD SPEED INDICATION
V	113	213	313	413	513	613	4-20mA VFD SPEED INDICATION

LEGEND

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

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
MCC SCHEMATIC & WIRING DIAGRAM

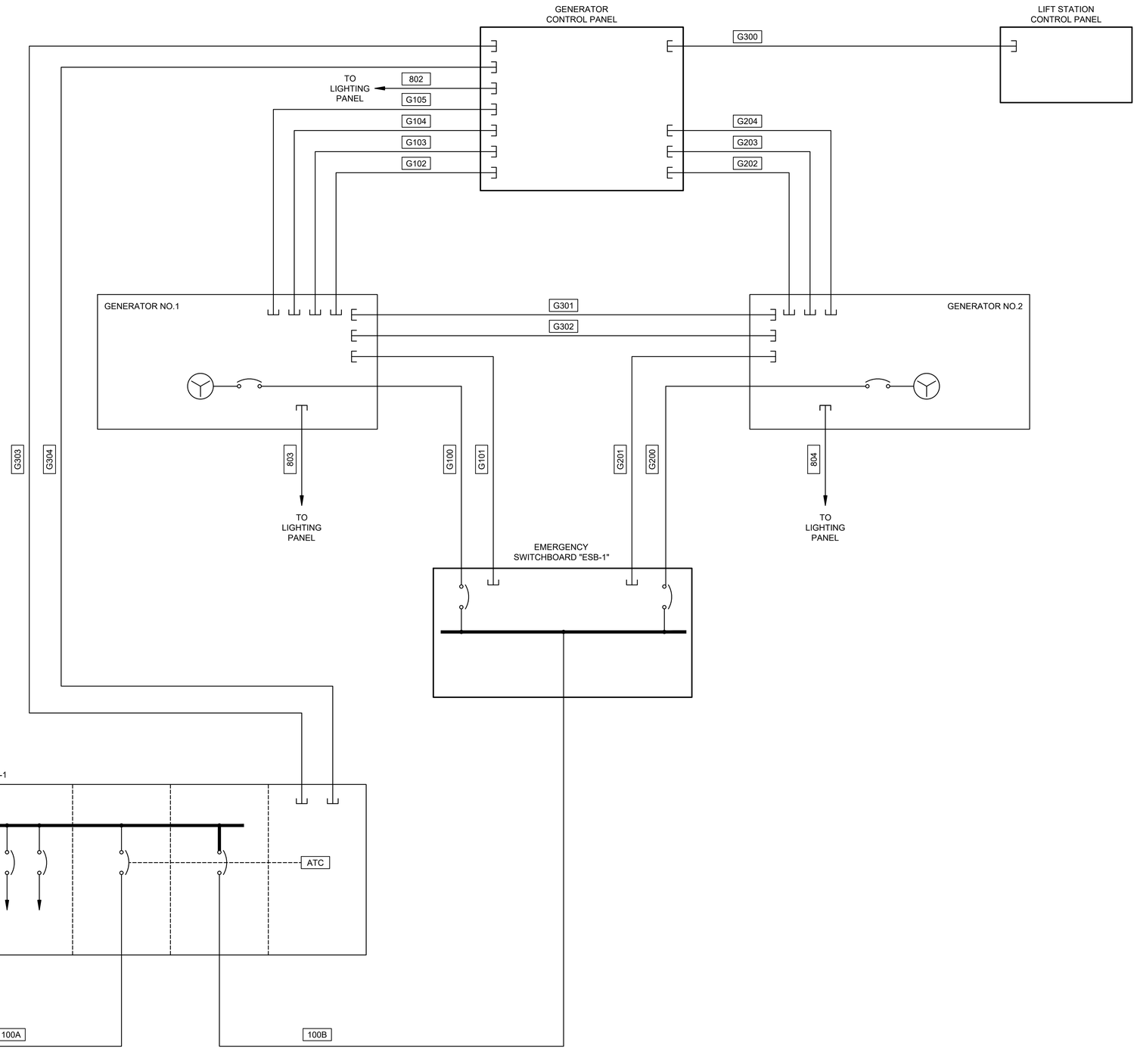
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-311
HORIZ: NONE
VERT: NONE
SHEET NO. 128 OF 230
DRAWING SCALE
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

MAGNOLIA PARK LIFT STATION
UTILITY POWER & GENERATOR POWER TRANSFER WIRING RISER DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-312

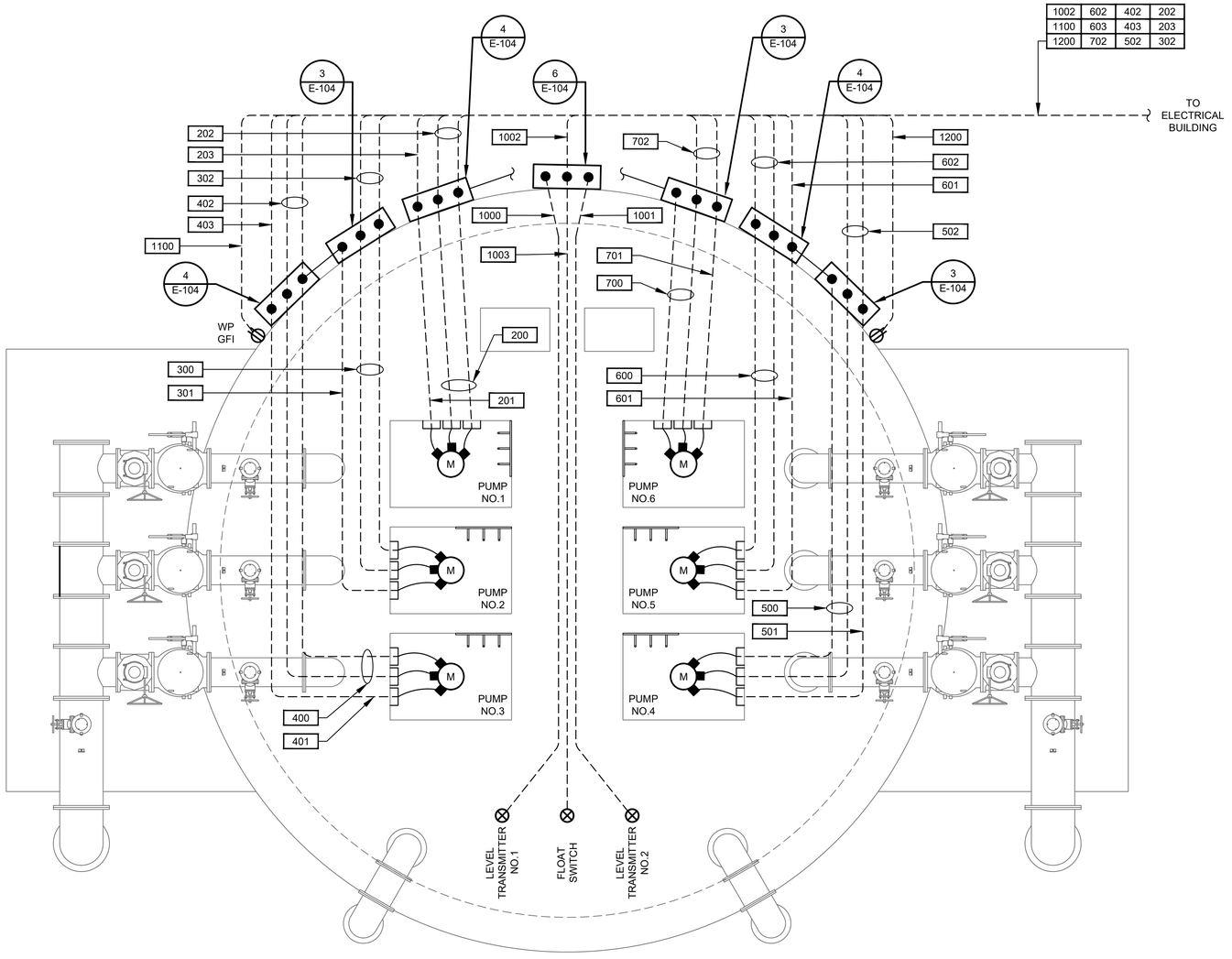
HORIZ: NONE
VERT: NONE

SHEET NO. 129 OF 230

DRAWING SCALE

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MAGNOLIA PARK LIFT STATION
ENLARGED PLAN

PLAN

1/4"=1'-0"

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

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
ENLARGED PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-313

HORIZ: 1/4"=1'-0"
VERT: 1/4"=1'-0"

SHEET NO. 130 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: C:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Magnolia Park\Magnolia Park_E-13.dwg

HMI

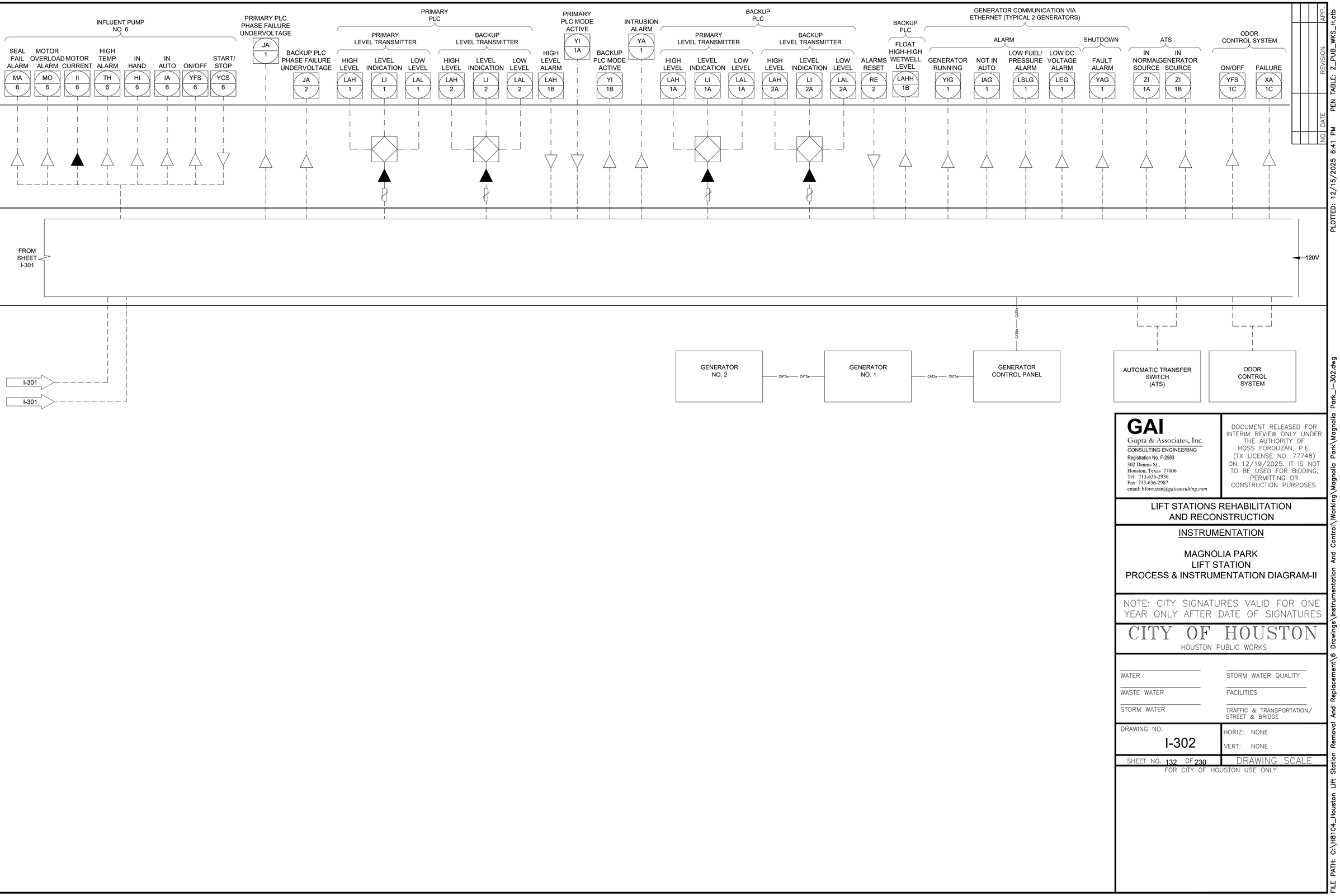
CONTROL PANEL PLC

CONTROL BUILDING

480V

INFLUENT PUMPS MCC

| INFLUENT PUMP NO. 1 | | |



NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

PLOTTED: 12/15/2025 6:41 PM

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-302

HORIZ: NONE

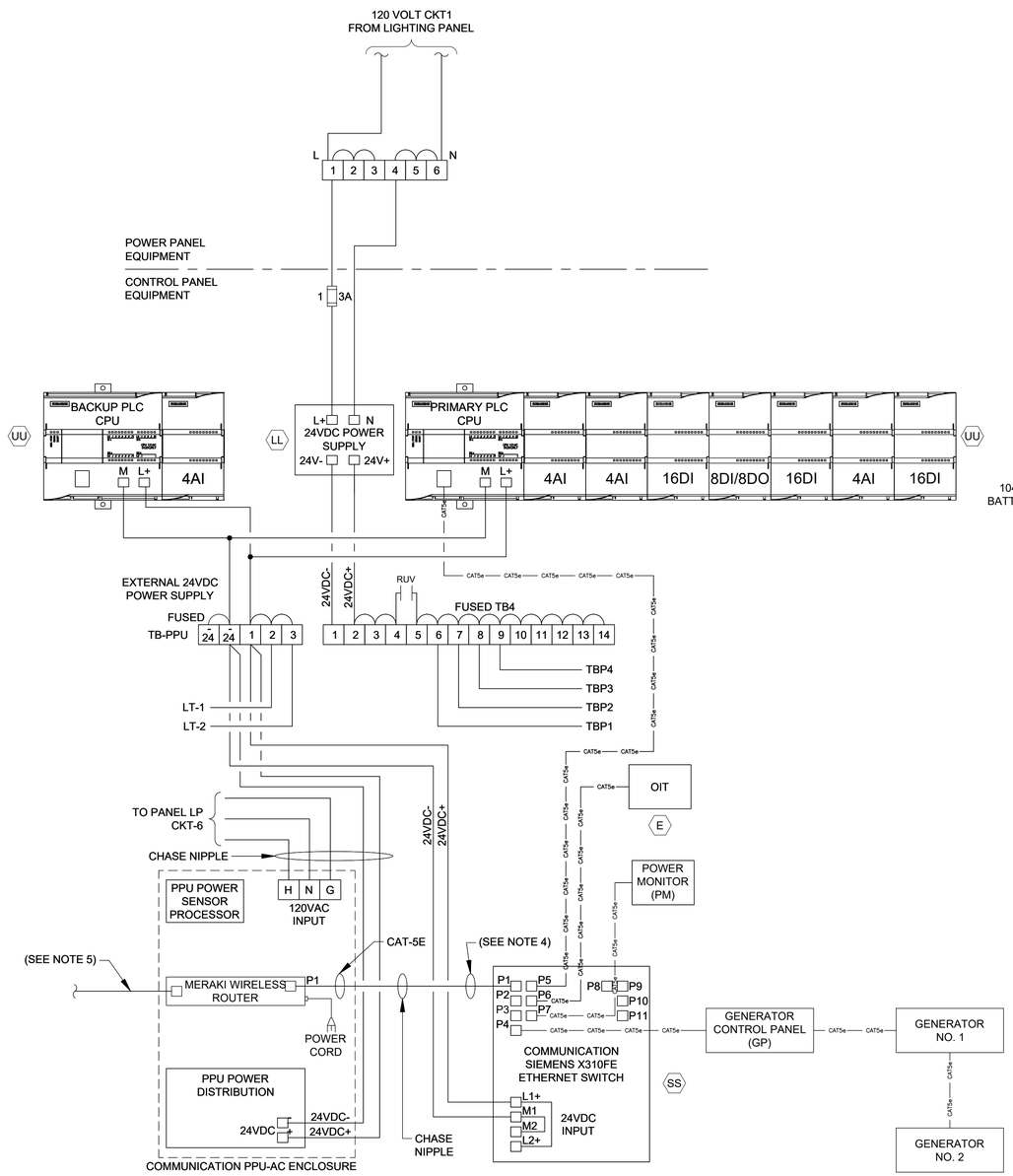
VERT: NONE

SHEET NO. 132 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-302.dwg

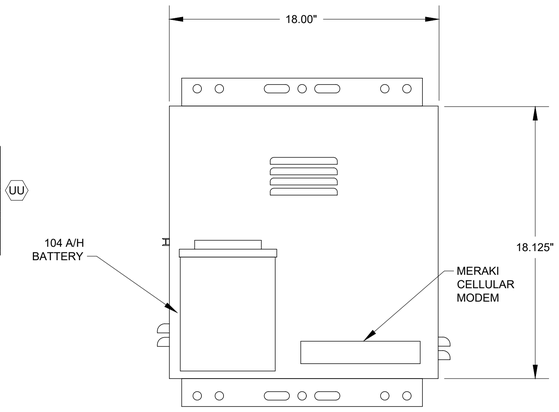


CONTROL POWER &
COMMUNICATIONS WIRING

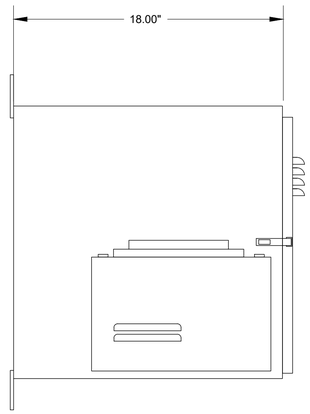
DIAGRAM

NTS

(SEE NOTE 2 & 6)



PPU-AC ENCLOSURE
FRONT VIEW



PPU-AC ENCLOSURE
SIDE VIEW

PPU-AC
CONTROL ENCLOSURE

ELEVATION

NTS

(SEE NOTE 7)

NOTES:

1. FOR DESCRIPTION AND RATINGS OF ITEMS INDICATED WITH ITEM TAG, SEE DEVICE RATINGS SCHEDULE.
2. REFER TO SPEC SECTION 16120 FOR CONDUCTOR COLOR CODE.
3. THE PLC POWER SUPPLY SHALL FEED THE 24VDC I/O.
4. ETHERNET CABLE FOR MERAKI CELLULAR ROUTER (P1).
5. POE CABLE TO RADIO.
6. COMMUNICATION PPU-AC & SCADA SHALL BE PROVIDED BY CONTRACTOR INCLUDING TO RUN CONDUITS & WIRES.
7. COORDINATE WITH VENDOR TO PROVIDE PROPER VENTILATION WHERE APPLICABLE.

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
COMMUNICATIONS DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-303

HORIZ: NONE
VERT: NONE

SHEET NO. 133 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park_I-303.dwg

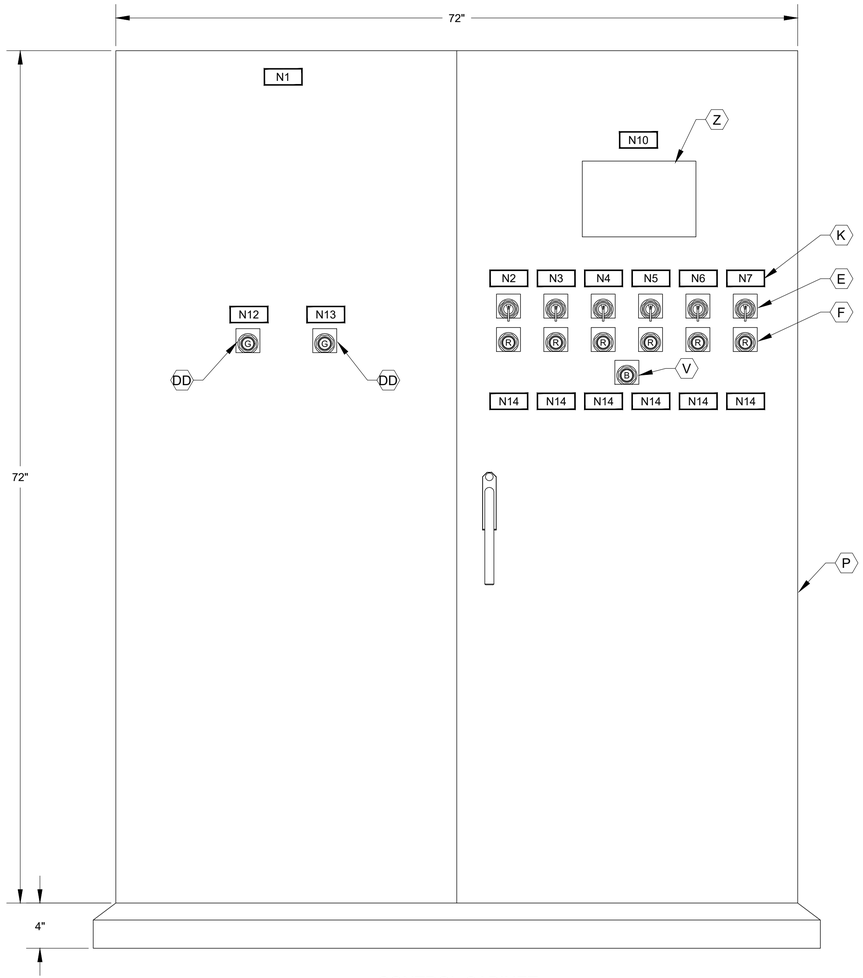
EQUIPMENT AND DEVICE SCHEDULE

ITEM	QUANTITY	DESCRIPTION
A	1	SINGLE CHANNEL INTRINSICALLY SAFE RELAY
B	2	ANALOG SIGNAL ISOLATOR
C	6	PUMP PROTECTION MODULE
D	*	NOT USED
E	6	HAND-OFF-AUTO SWITCH, 3 POSITION, HEAVY-DUTY OIL TIGHT 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.
K	*	NAMEPLATES, SEE SPECIFICATIONS (SEE NAMEPLATE SCHEDULE)
L	2	PROGRAMMABLE LOGIC CONTROLLER WITH EXPANSION UNIT
M	*	CONTROL RELAY 24VDC RELAY WITH THREE FORM C CONTACTS AND 11 PIN SOCKET BASE
N	-	NOT USED
O	-	NOT USED
P	1	NEMA 12 GASKETED STEEL ENCLOSURES WITHOUT VENTS 72" H X 20" D X 72" W
Q	*	TERMINAL BLOCK
R	1	WIRE DUCT 2" WIDE X 2" DEEP MINIMUM
S	1	GROUND BUS
T	1	COMMUNICATION ETHERNET SWITCH
U	9	CARTRIDGE
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 (OIT)
AA	*	120VAC SYSTEM FUSES
BB	1	120VAC - 24VDC POWER SUPPLY, 5A
CC	*	NOT USED
DD	2	INDICATING LIGHT, HEAVY DUTY, OILTIGHT, GREEN, 24VDC, LED WITH "BACKUP PLC" & "PRIMARY PLC" LEGEND
EE	2	ANALOG I/O SURGE SUPPRESSOR
FF	-	NOT USED

* - AS SCHEDULED

NAMEPLATE SCHEDULE

DESIGNATION	ENGRAVED
N1	PUMP STATION DESIGNATION
N2	PUMP NO. 1
N3	PUMP NO. 2
N4	PUMP NO. 3
N5	PUMP NO. 4
N6	PUMP NO. 5
N7	PUMP NO. 6
N8	NOT USED.
N9	NOT USED.
N10	PROGRAMMING SCREEN
N11	NOT USED.
N12	PRIMARY PLC
N13	BACKUP PLC
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 CLAS ---------- NEMA DESIGN LETTER ---------- TEMPERATURE RISE ---------- NEMA FRAME SIZE ---------- DATE OF MANUFACTURE ---------- THERMO PROTECTION (IF REQUIRED) -- MOISTURE PROTECTION (IF REQUIRED)-



CONTROL CABINET
FRONT DOOR ELEVATION

GENERAL NOTES:

1. NAMEPLATES SHALL BE MOUNTED TO PANELS USING STAINLESS STEEL HARDWARE.
2. REFER SPECIFICATIONS FOR ALL PANEL COMPONENTS.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT & SCHEDULE

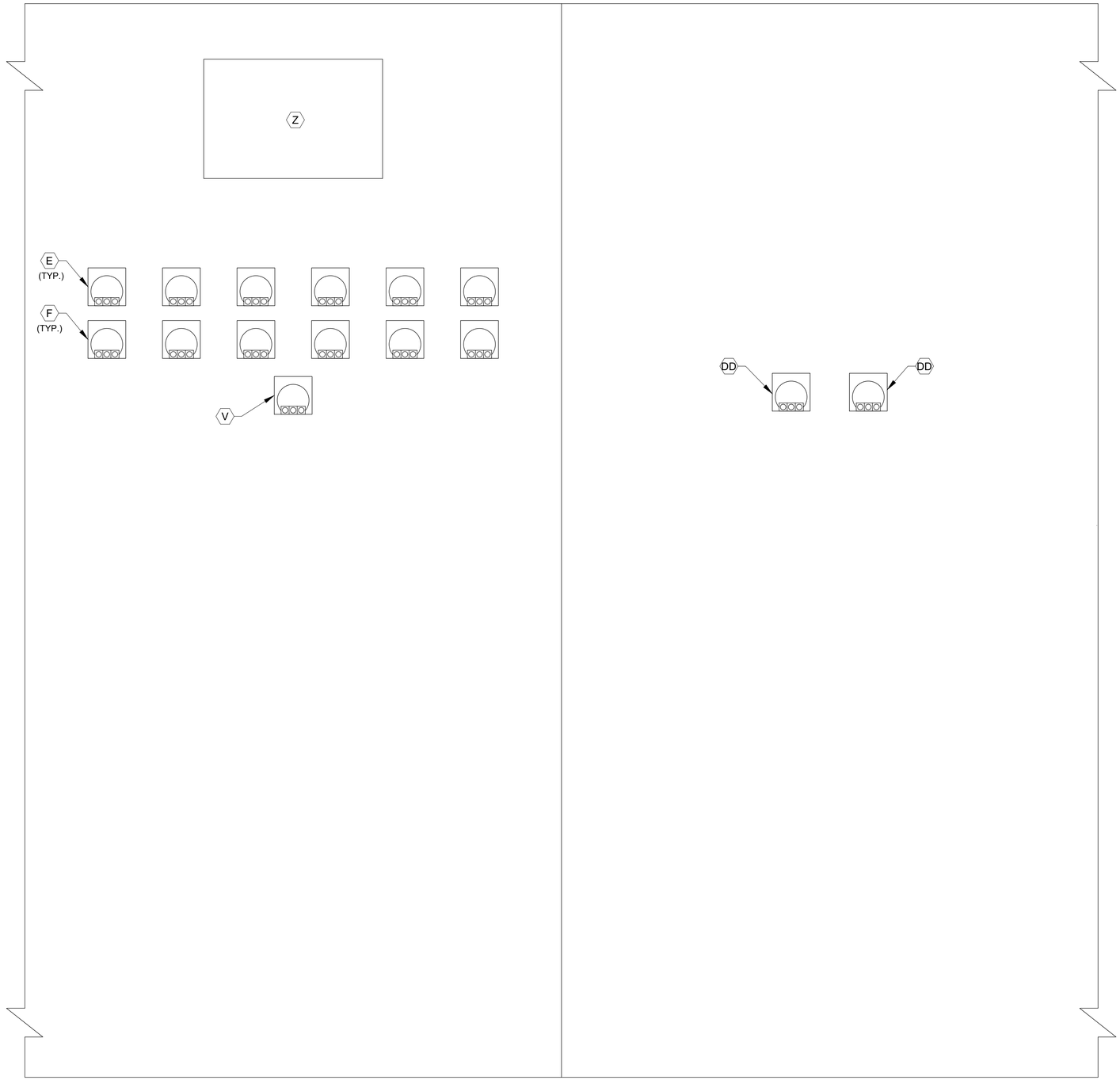
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-304
HORIZ: NONE
VERT: NONE
SHEET NO. 134 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-304.dwg



CONTROL CABINET
BACK DOOR ELEVATION

NOTES:

1. SEE SHEET I-304 FOR EQUIPMENT SCHEDULE.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
CONTROL CABINET
BACK DOOR ELEVATION

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-305

HORIZ: NONE
VERT: NONE

SHEET NO. 135 OF 230

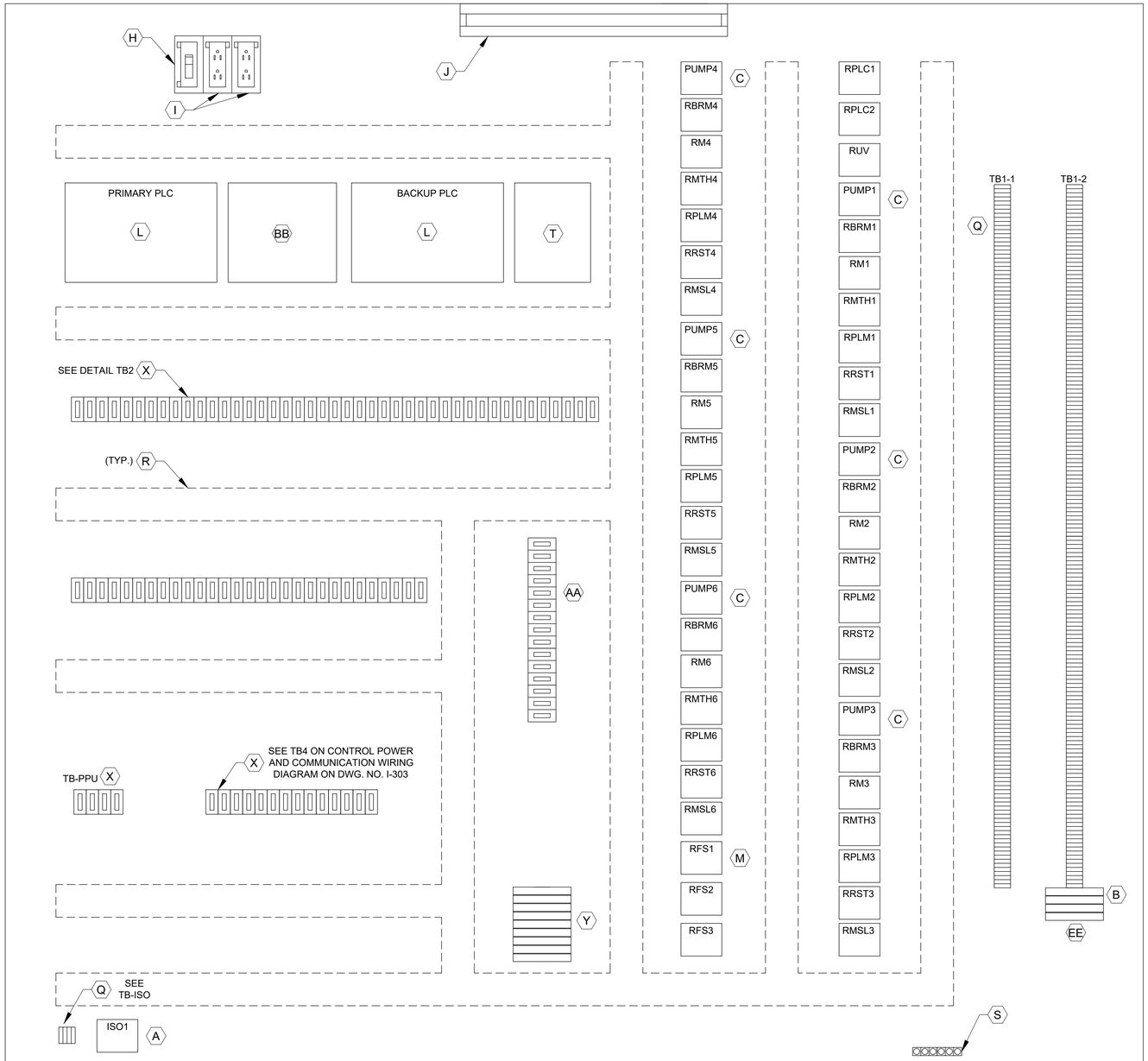
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-305.dwg



CONTROL PANEL ELEVATION

LEGEND	
TAG	DESCRIPTION
RMTH	MOTOR HIGH TEMPERATURE ALARM RELAY
RPLMP	PLC PUMP RUN RELAY
RRST	PUMP RESET AUX RELAY
RPLC	PLC MODE AUX RELAY
RM	PUMP RUN AUX RELAY
RUV	UNDER VOLTAGE RELAY
RBRM	BACKUP SYSTEM RUN RELAY
ISO	INTRINSICALLY SAFE RELAY
RFS	PUMP RUN FLOAT SWITCH RELAY
RMSL	MOTOR SEAL LEAK ALARM RELAY
RFLP	FLOAT LOCKOUT PUMP RELAY

DETAIL TB-ISO
1500
1501
1503
1504

DETAIL TB1-1
L1A
L1N
SPARE
3
3N
SPARE
49
50
51
52
53
54
1004
1
24V-
24V-
SPARE
1002
2
11
1001
1001A
12
1003
1003A
34
3N
SPARE
SPARE
102
103
3P1
109
110
112
116
117
120
121
122
123
124
125
126
127
SPARE
SPARE
202
203
3P2
209
210
212
216
217
220
221
222
223
224
225
226
227

DETAIL TB1-2
SPARE
SPARE
302
303
3P3
309
310
312
316
317
320
321
322
323
324
325
326
327
SPARE
SPARE
402
403
3P4
409
410
412
416
417
420
421
422
423
424
425
426
427
SPARE
SPARE

DETAIL TB1-2
502
503
3P5
509
510
512
516
517
520
521
522
523
524
525
526
527
SPARE
SPARE
602
603
3P6
609
610
612
616
617
620
621
622
623
624
625
626
627

DETAIL TB2
36A
37A
50
52
54
52A
52A
54A
L+
M
35B
38B
41B
44B
SPARE
SPARE
47B
50B
53B
13B
13AB
B
L+
M
14B
14AB
14GB
119
SPARE
L+
M
13
13A
13G
14
14A
14G
1M
2M
1L
3
30
32
34
37
38
41
33B
45
18B
SPARE

DETAIL TB2
100
112
113
114
115
117
118
119
120
121
SPARE
200
212
213
214
215
217
218
219
220
221
SPARE
300
312
313
314
315
317
318
319
320
321
SPARE
400
412
413
414
415
417
418
419
420
421
SPARE

DETAIL TB2
500
512
513
514
515
517
518
519
520
521
SPARE
600
612
613
614
615
617
618
619
620
621
SPARE

NOTES:

1. SEE SHEET I-4 FOR EQUIPMENT SCHEDULE.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-306

HORIZ: NONE
VERT: NONE

SHEET NO. 136 OF 230

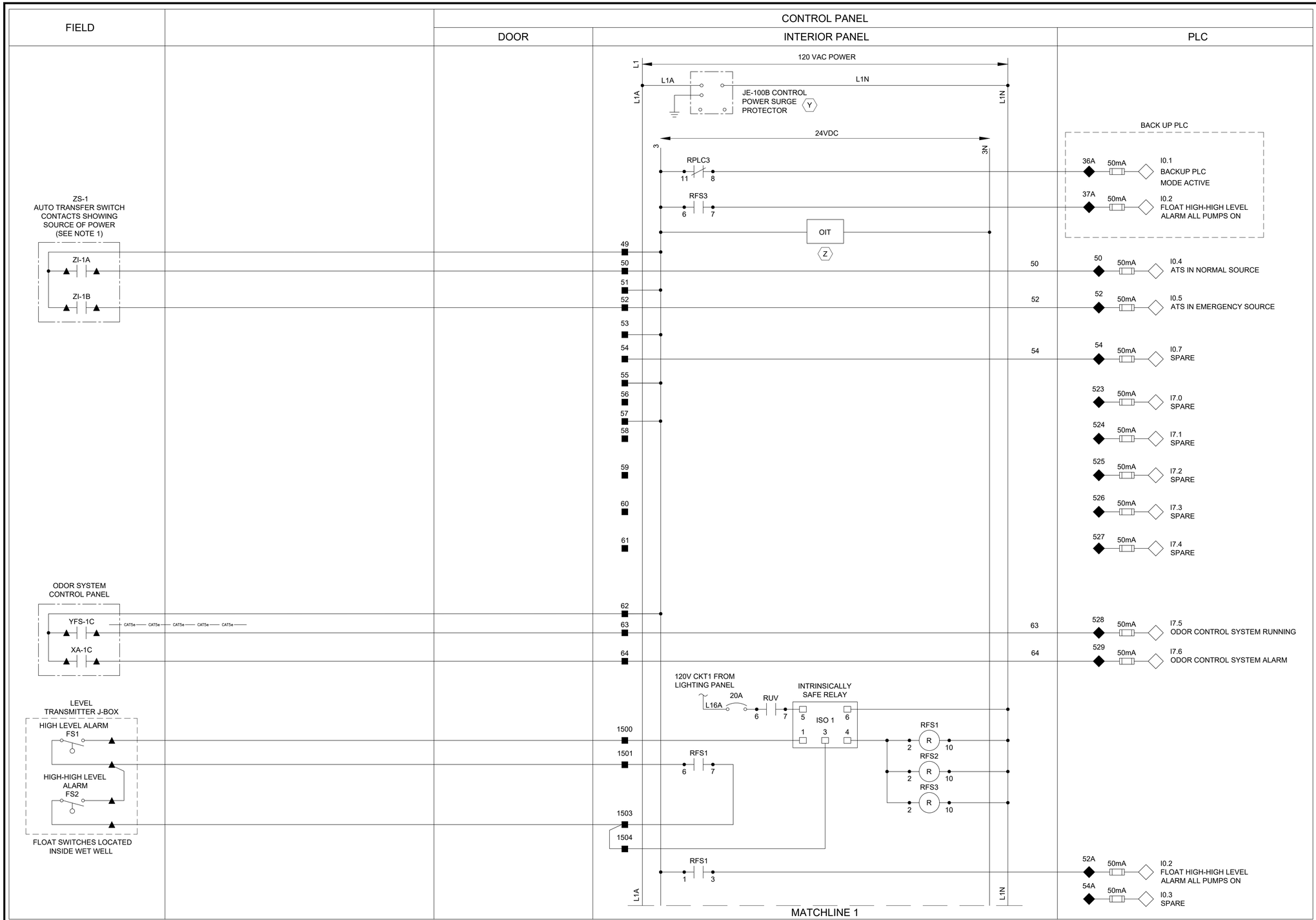
DRAWING SCALE

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NO.	DATE	REVISION	APP.

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-306.dwg



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:

1. PROVIDE AUTO TRANSFER SWITCH AND GENERATOR DRY CONTACT.
2. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
CONTROL WIRING DIAGRAM-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-307	HORIZ: NONE VERT: NONE
SHEET NO. 137 OF 230	DRAWING SCALE

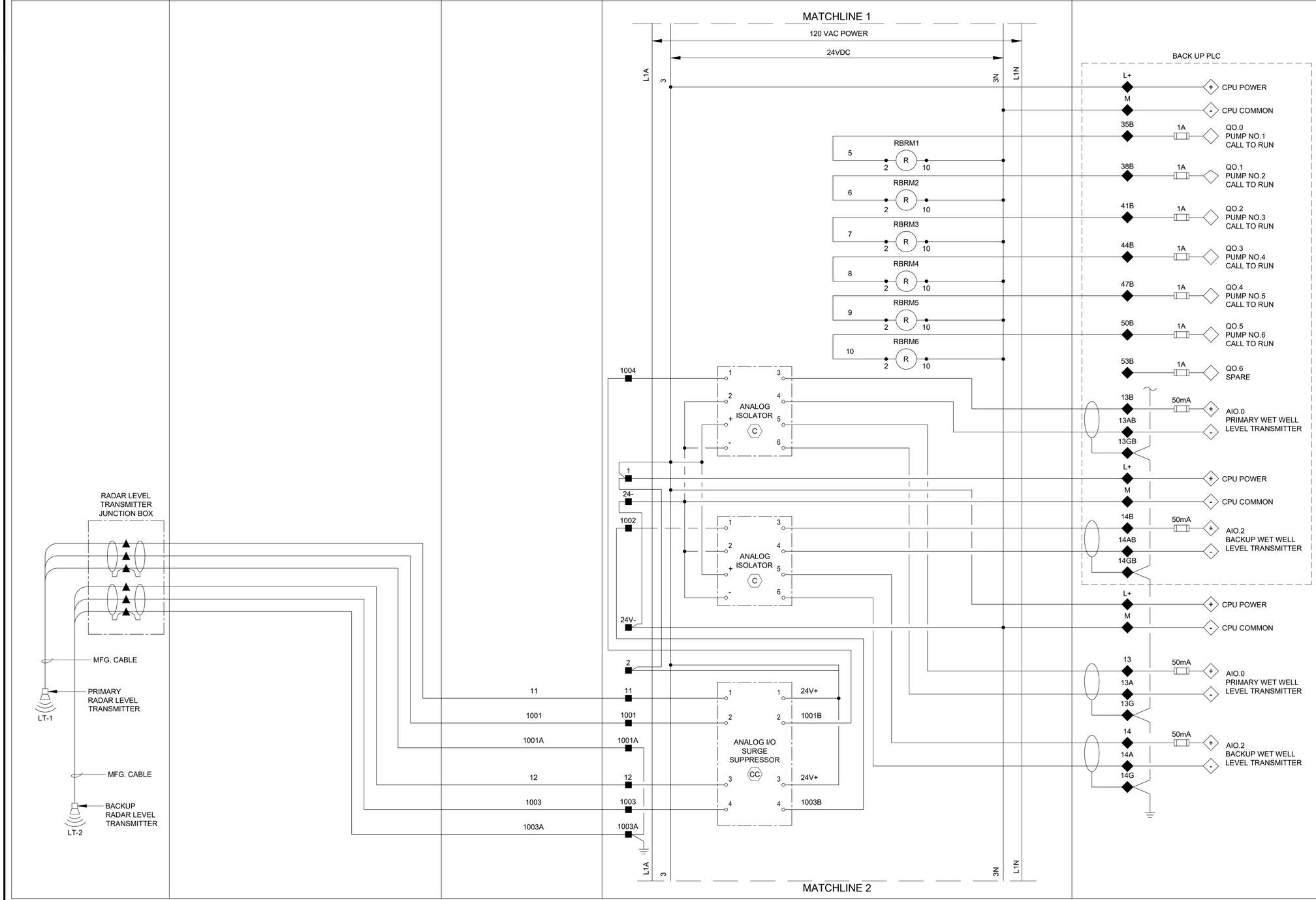
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NO.	DATE	REVISION	APP.

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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

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
CONTROL WIRING DIAGRAM-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

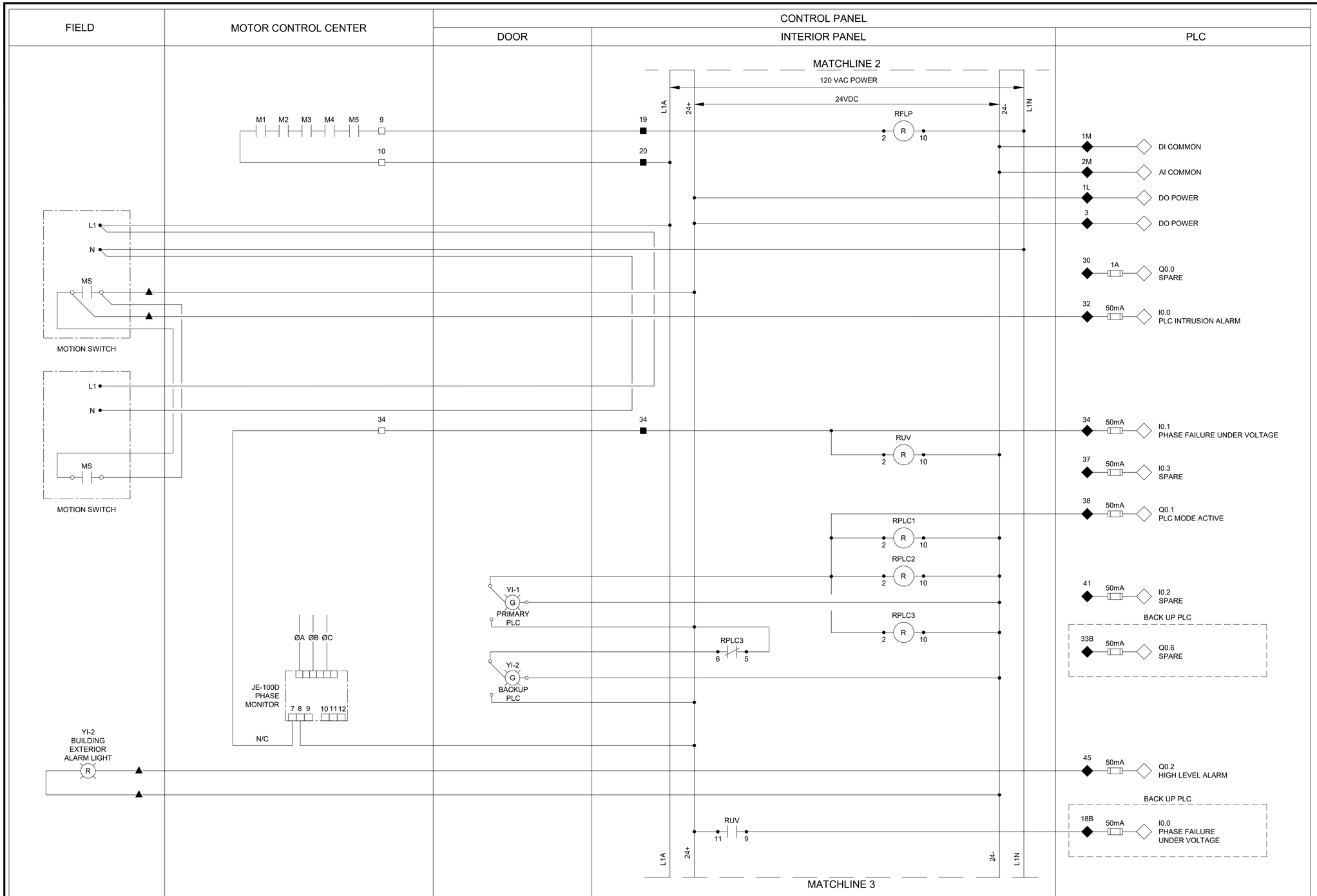
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-308	HORIZ: NONE VERT: NONE
SHEET NO. 138 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-308.dwg



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

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
CONTROL WIRING DIAGRAM-III

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

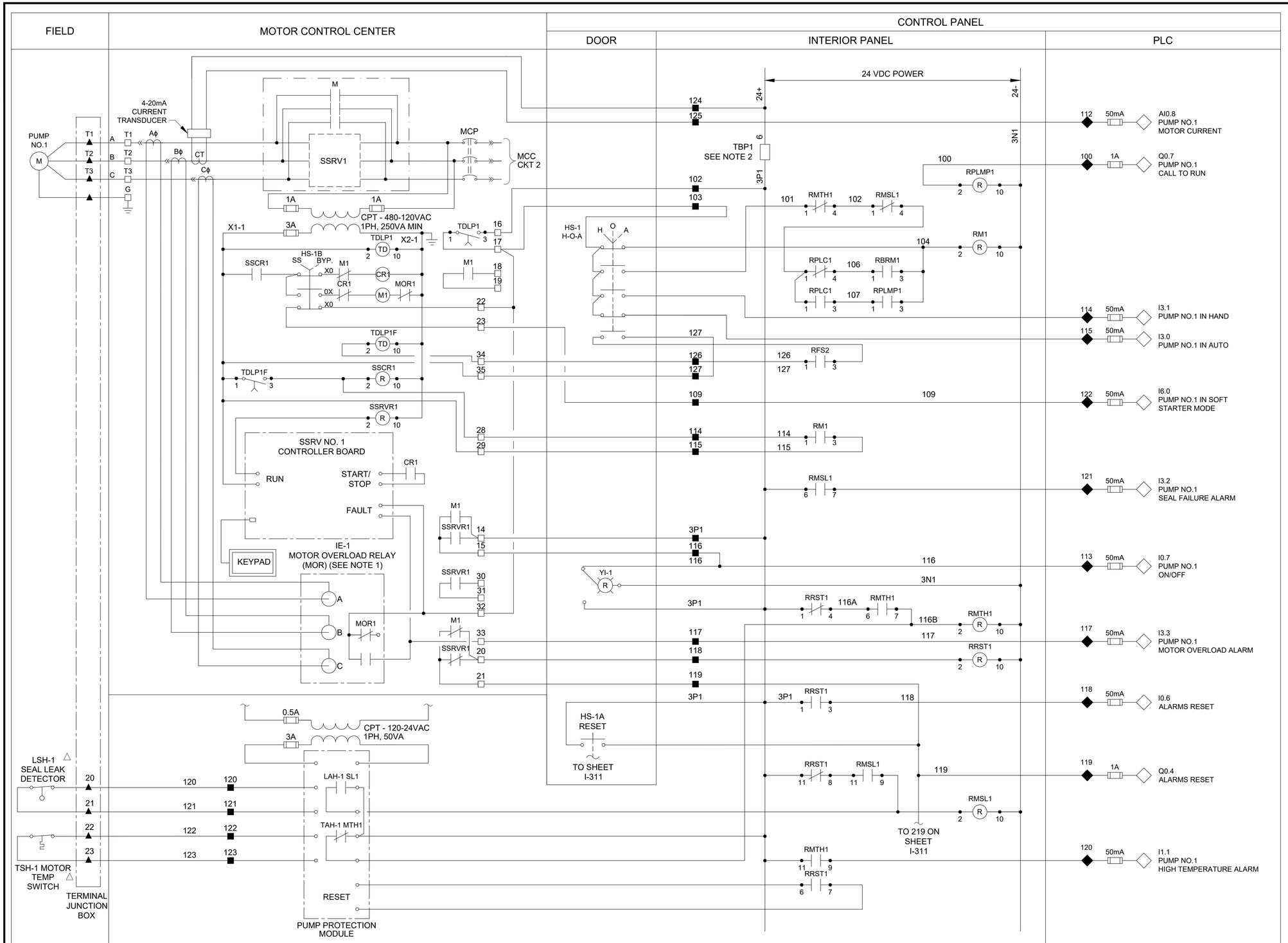
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-309	HORIZ: NONE VERT: NONE
SHEET NO. 139 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-309.dwg



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:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED. OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM DRAWING NO. I-303
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

GAI
Gupta & Associates, Inc.
CONSULTING ENGINEERING
Registration No. F-2593
302 Dennis St.,
Houston, Texas 77006
Tel: 713-636-2936
Fax: 713-636-2987
email: hforouzan@gaiconsulting.com

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
PUMP NO.1
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

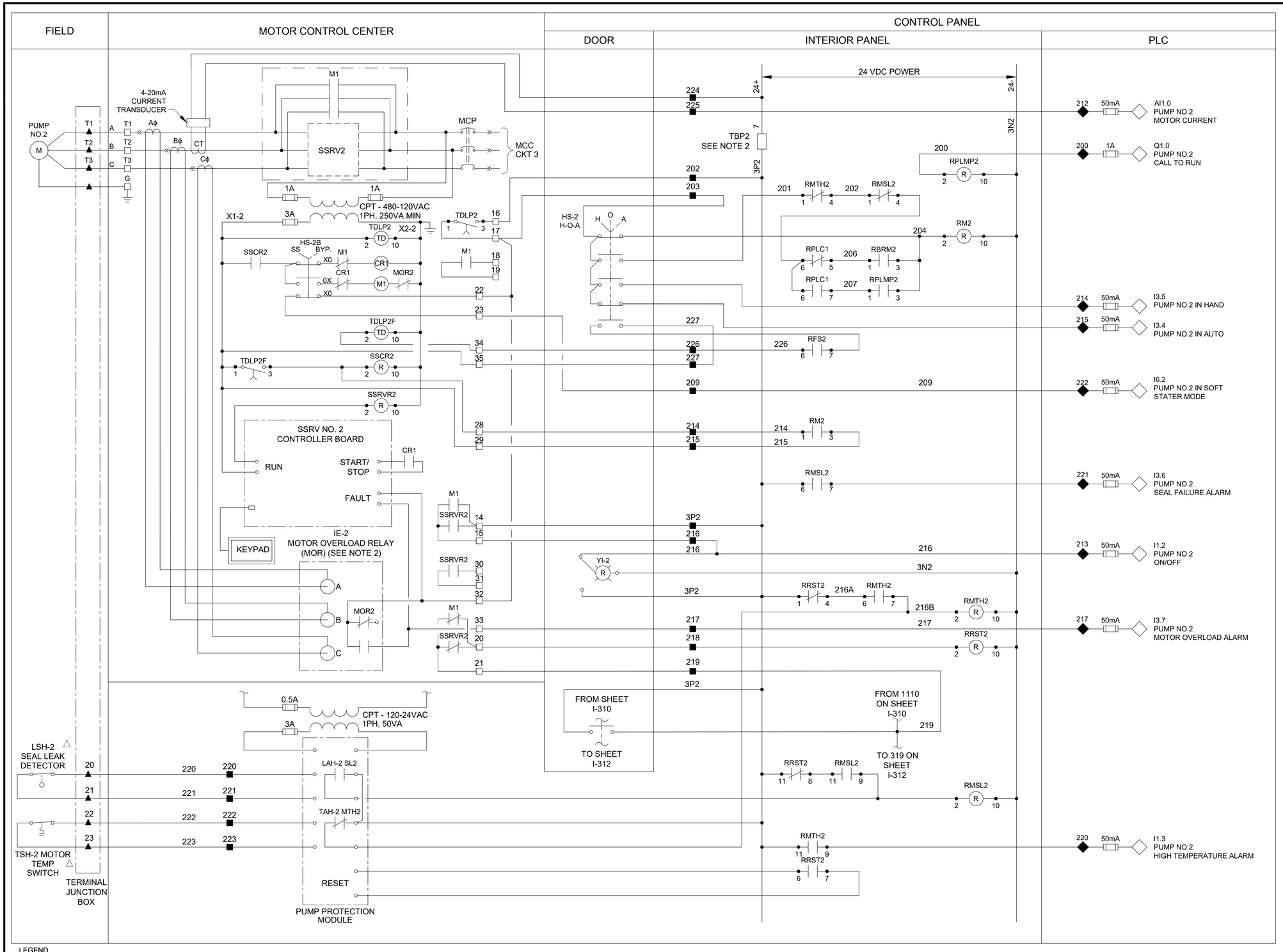
WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-310
HORIZ: NONE
VERT: NONE
SHEET NO. 140 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

PLOTTED: 12/15/2025 6:41 PM PEN TABLE: Z_PUB_WKS_H.ctb

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-310.dwg



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
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NO.	DATE	REVISION	APP.

PLOTTED: 12/15/2025 6:42 PM PEN TABLE: Z_PUB_WKS_H.ctb

FILE PATH: O:\HB104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-311.dwg

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
PUMP NO.2
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

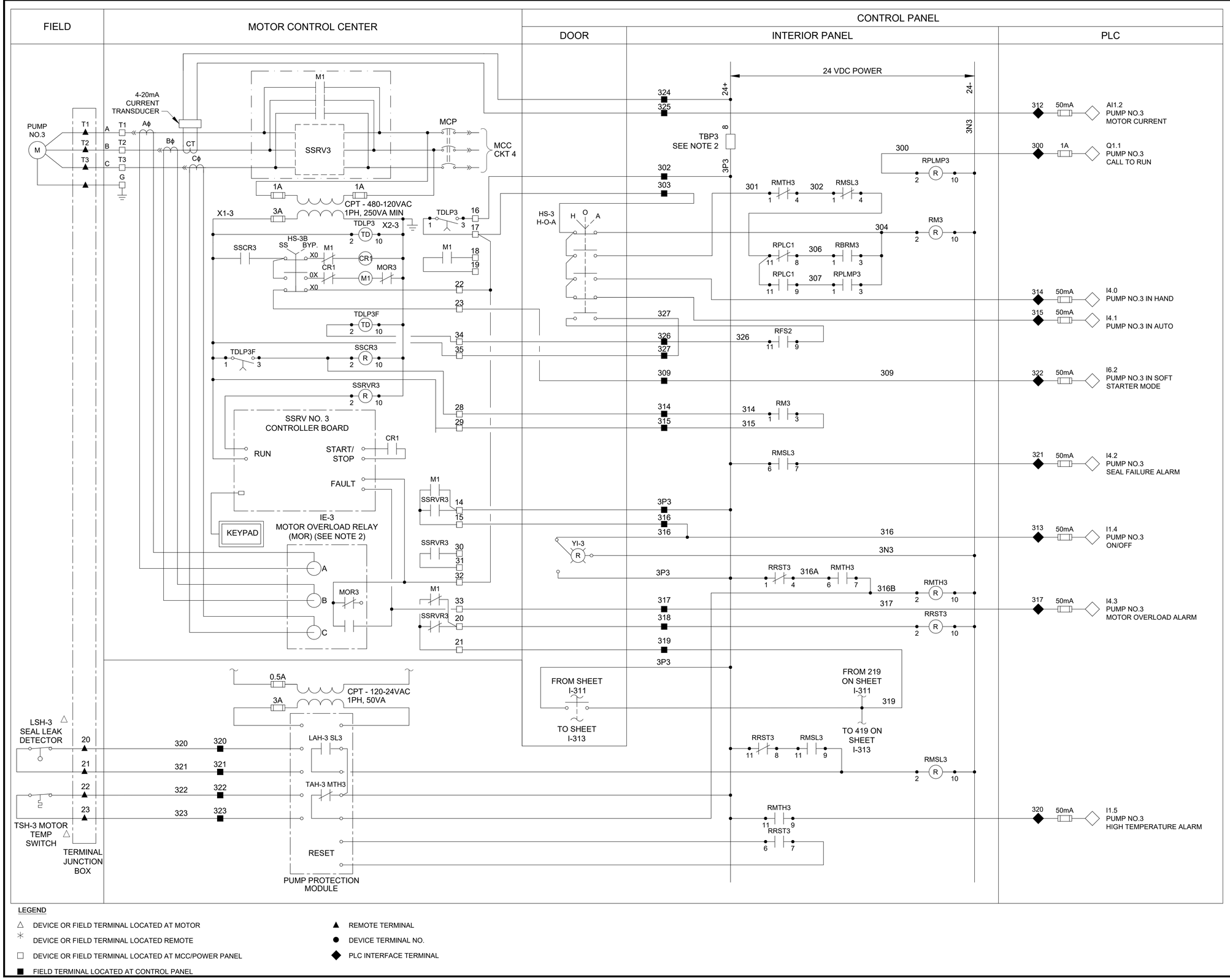
DRAWING NO. I-311

HORIZ: NONE
VERT: NONE

SHEET NO. 141 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
PUMP NO.3
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-312

HORIZ: NONE
VERT: NONE

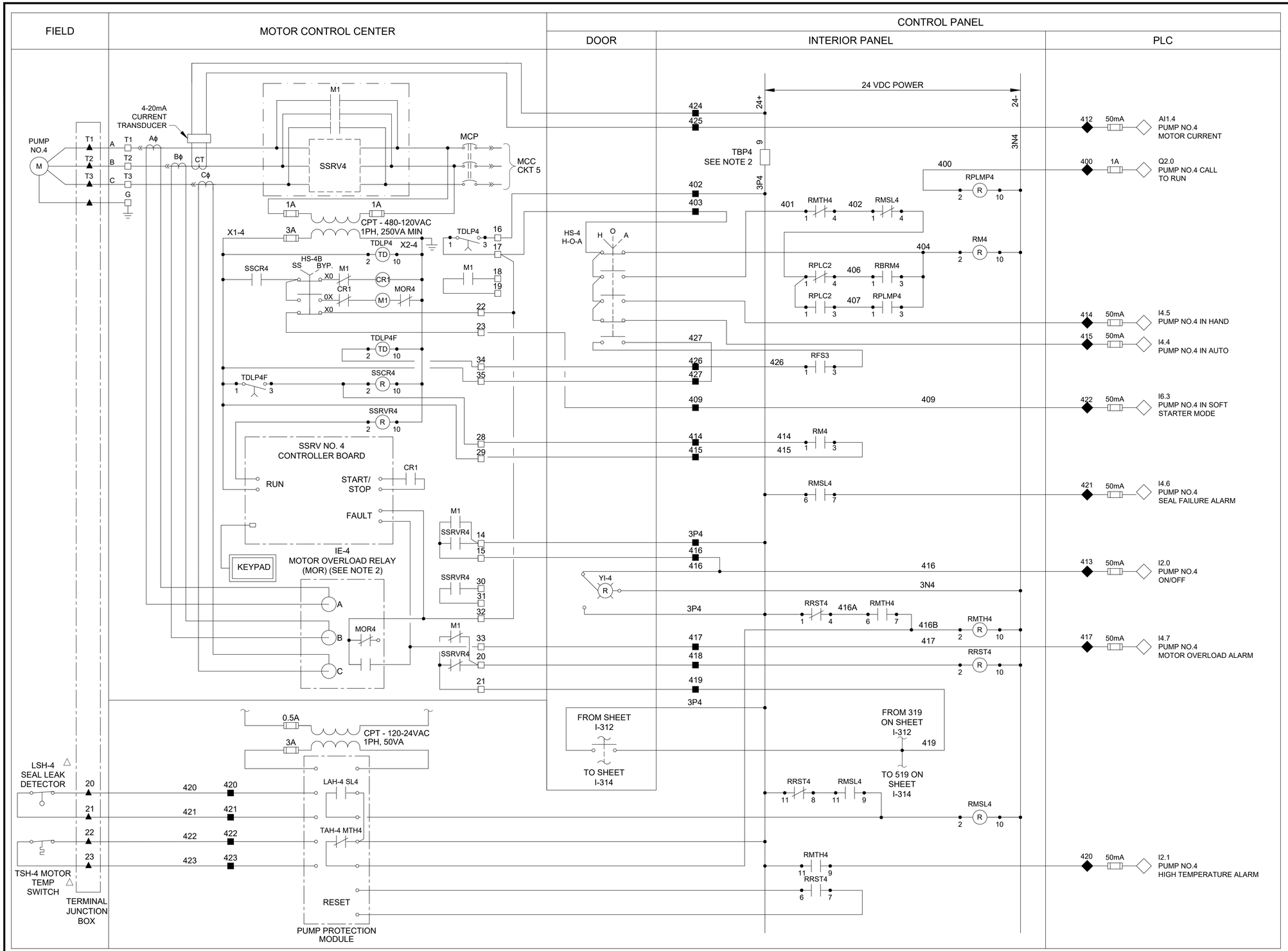
SHEET NO. 142 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

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PLOTTED: 12/15/2025 6:42 PM
FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-312.dwg



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
PUMP NO.4
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-313

HORIZ: NONE
VERT: NONE

SHEET NO. 143 OF 230

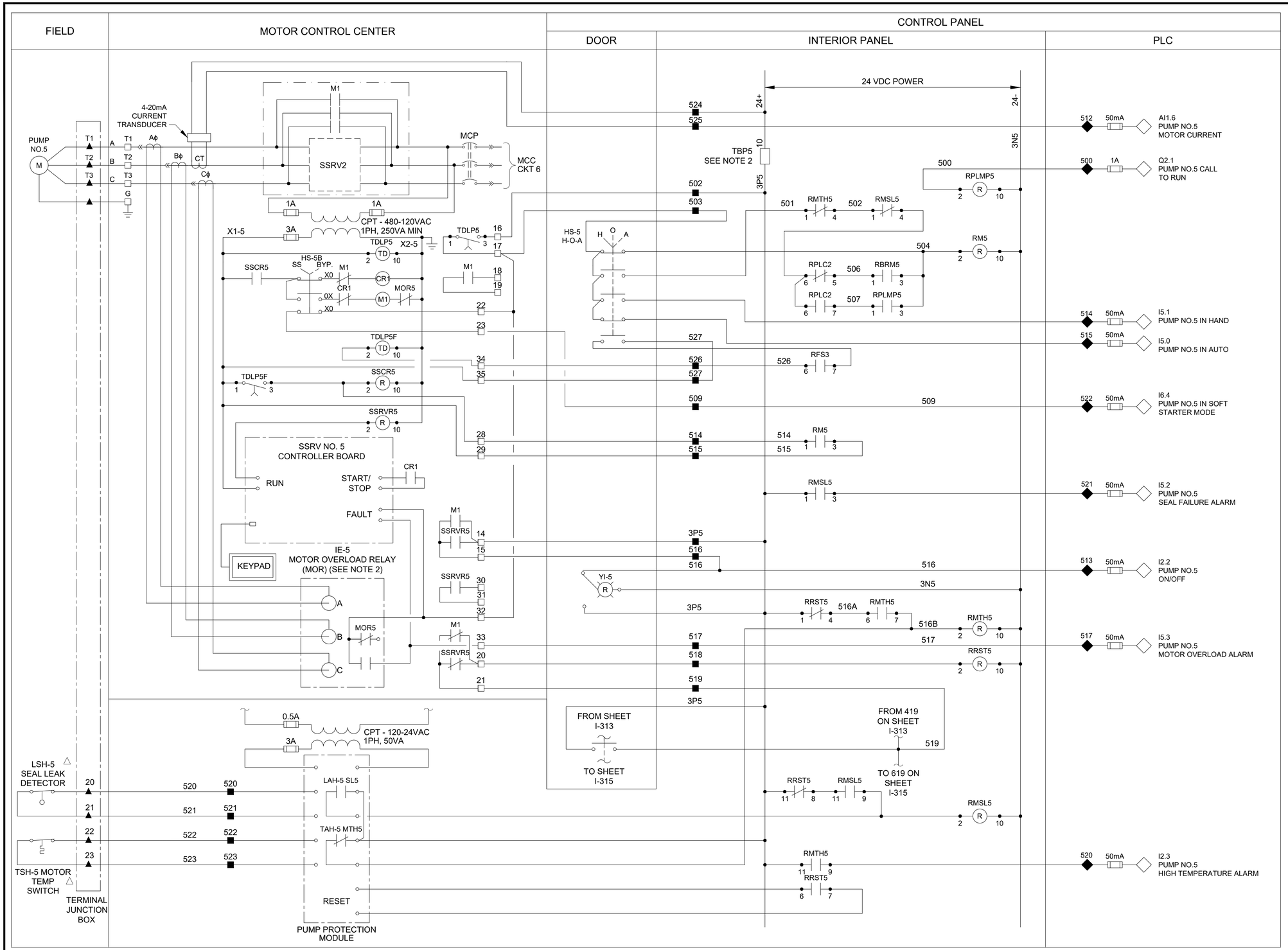
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-313.dwg



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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
PUMP NO.5
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-314

HORIZ: NONE
VERT: NONE

SHEET NO. 144 OF 230

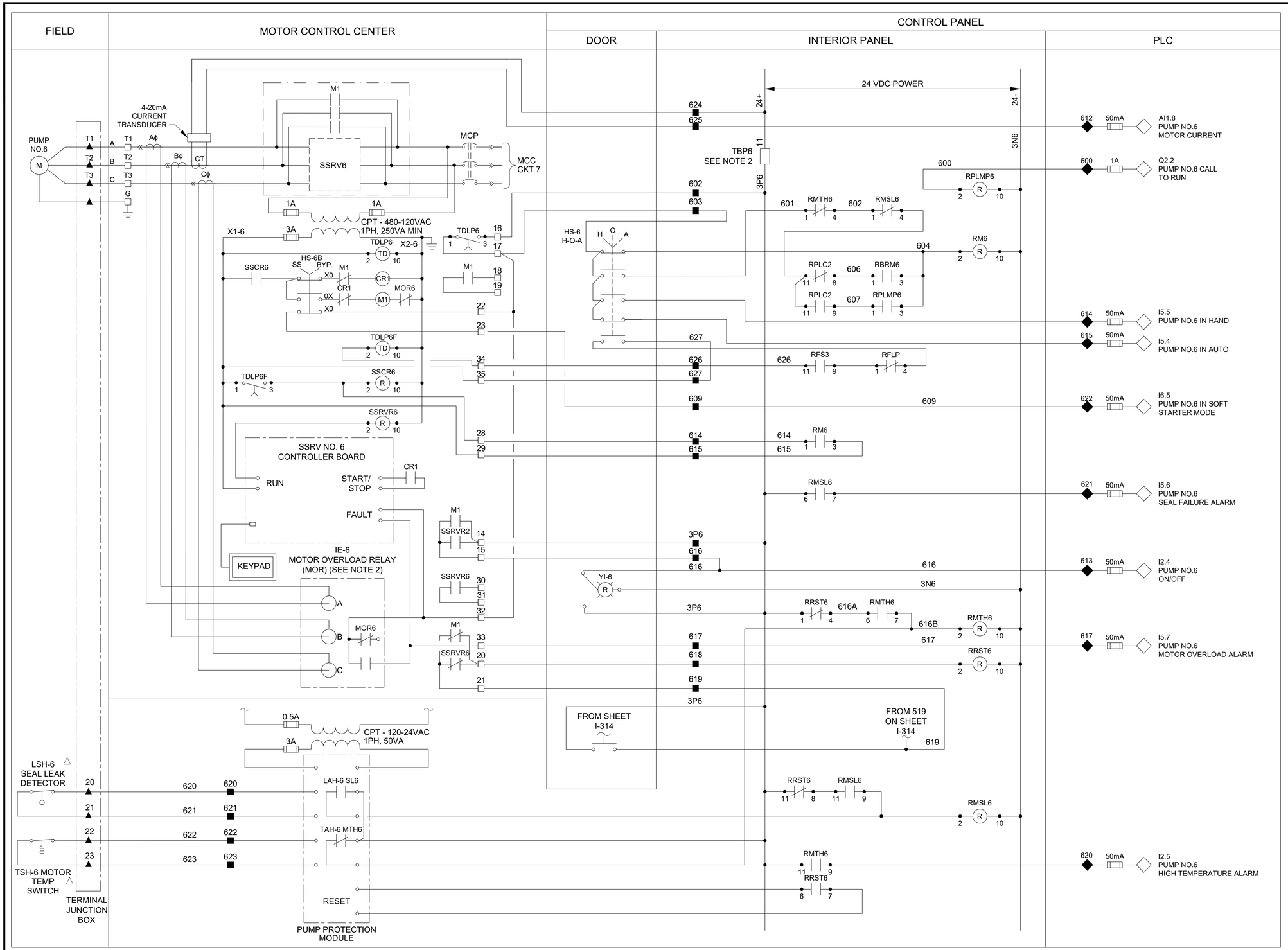
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

PLOTTED: 12/15/2025 6:42 PM PEN TABLE: Z_PUB_WKS_H.ctb

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-314.dwg



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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
PUMP NO.6
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

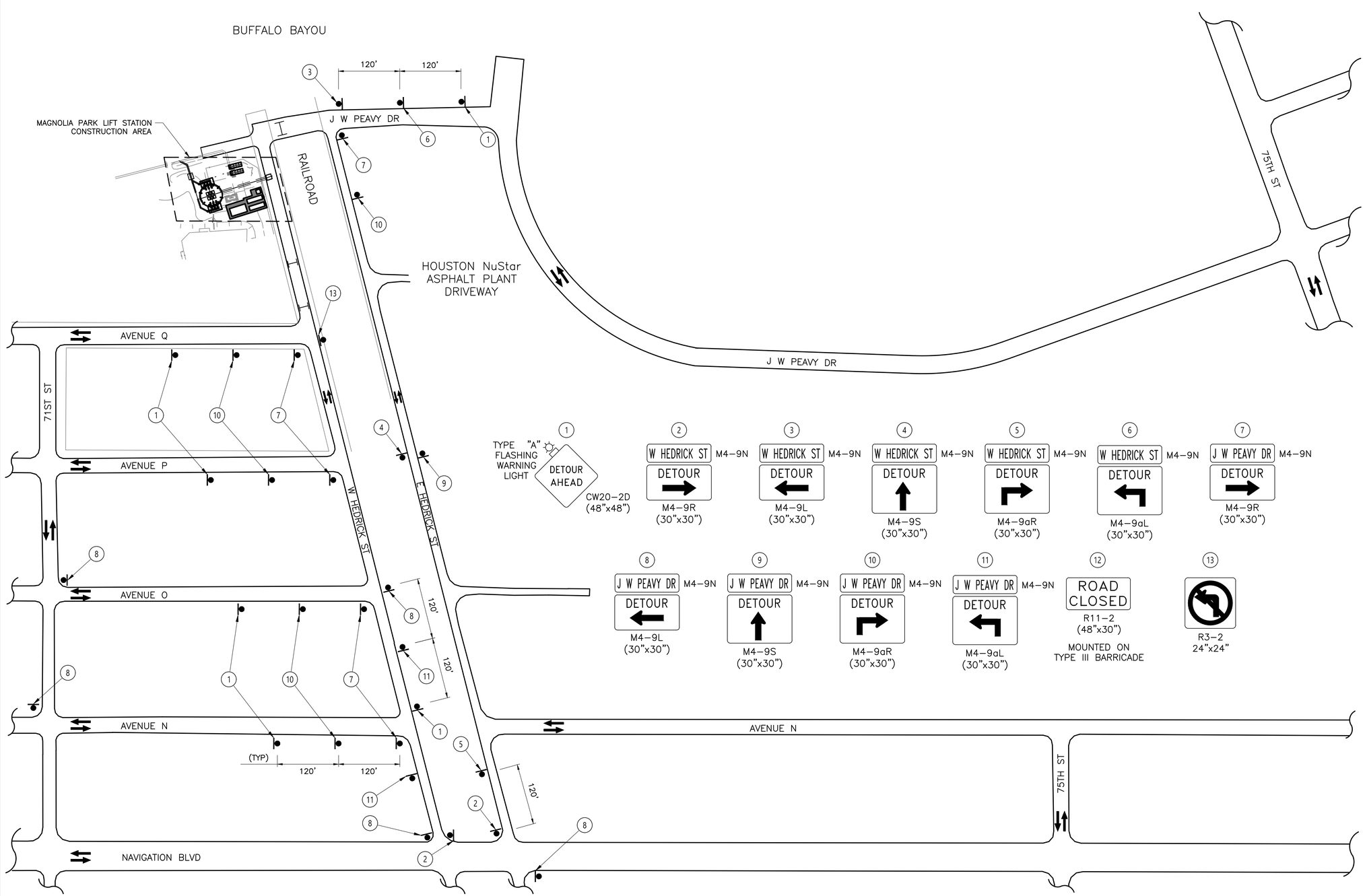
DRAWING NO. I-315	HORIZ: NONE VERT: NONE
SHEET NO. 145 OF 230	DRAWING SCALE

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NO.	DATE	REVISION	APP.

PLOTTED: 12/15/2025 6:42 PM PEN TABLE: Z_PUB_WKS_H.ctb

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-315.dwg



NOTES & LEGEND:

- TYPE III BARRICADE W/ TWO TYPE "A" WARNING LIGHTS
- DIRECTION OF TRAFFIC
- TEMPORARY SIGN

100 0 100 200

NO	DATE	REVISION	APP.

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION # F-1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

HOWN ENGINEERS

2825 WILCREST DRIVE, SUITE 218
HOUSTON, TX 77042
TEL: (832) 899-5657
TBPELS FIRM REG: F-26176

INTERIM REVIEW ONLY

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A. SETAREHASEMAN, P.E.
Name
68184
License
DECEMBER 16, 2025
Date

Engineer of Record
Texas Registered Engineering Firm # F-26176

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

TRAFFIC CONTROL PLAN

MAGNOLIA PARK LIFT STATION
DETOUR PLAN
SHEET 1 OF 1

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. TC-301

HORIZ: 1"=100'
VERT: N/A

SHEET NO. 146 OF 230

DRAWING SCALE

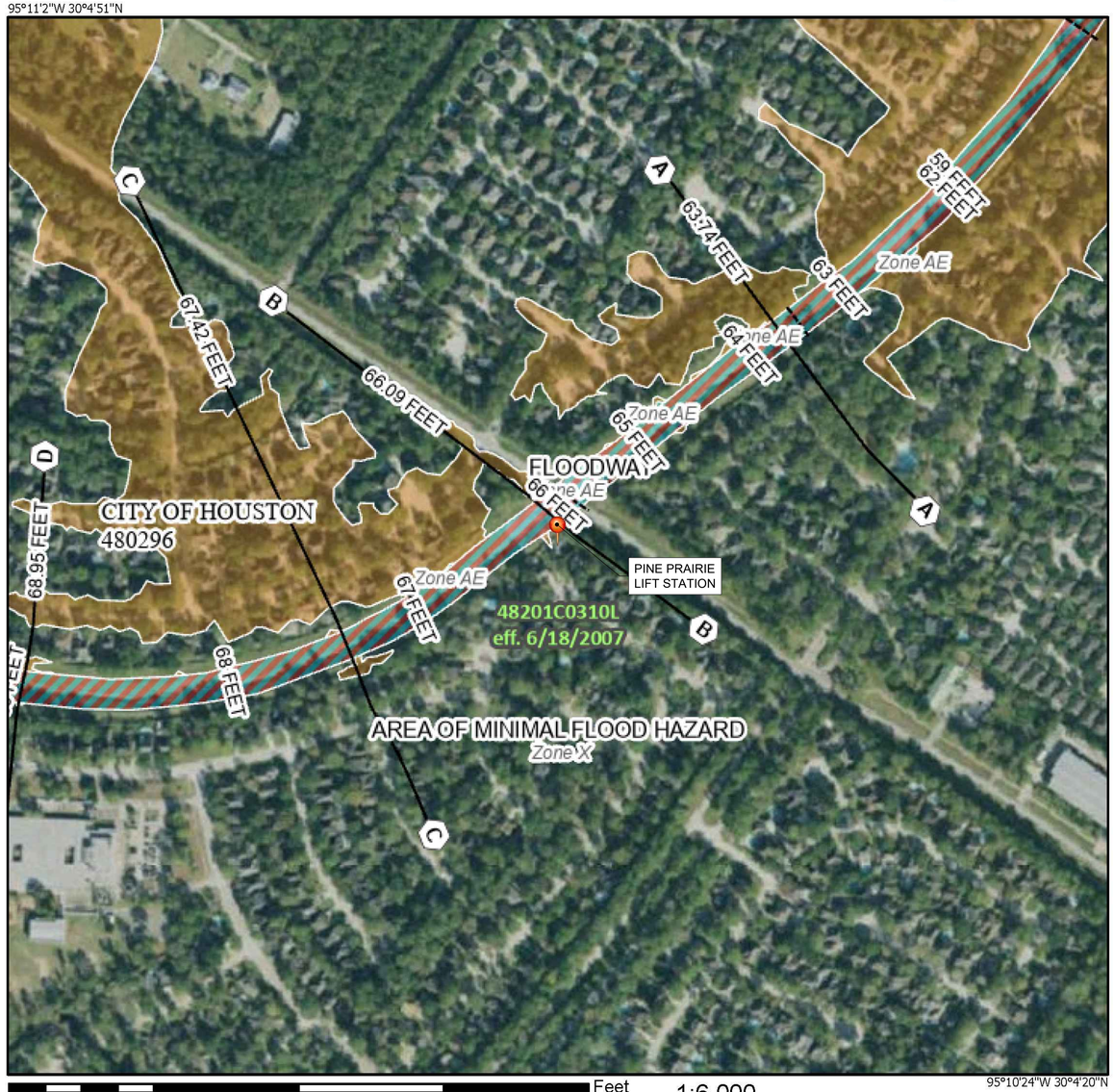
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FILE PATH: H:\Active Projects\1011-02 COH LS Rehab & Recon Design\1011-02-02 Magnolia Park\Drawings\TCP-301 - MAGNOLIA PARK LIFT STATION DETOUR PLAN SHEET 1 OF 1.dwg PLOTTED: 12/17/2025 9:31 AM PEN TABLE: ----

National Flood Hazard Layer FIRMette

FEMA

95°11'2"W 30°4'51"N



95°10'24"W 30°4'20"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/4/2025 at 4:11 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/22/2026 5:25 PM

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3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Crag Alexander Perry
Name
116345
Number
JANUARY 23, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

FIRMETTE

PINE PRAIRIE LIFT STATION
NATIONAL FLOOD HAZARD
LAYER FIRMETTE MAP

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. F-401

HORIZ: 1"=250'

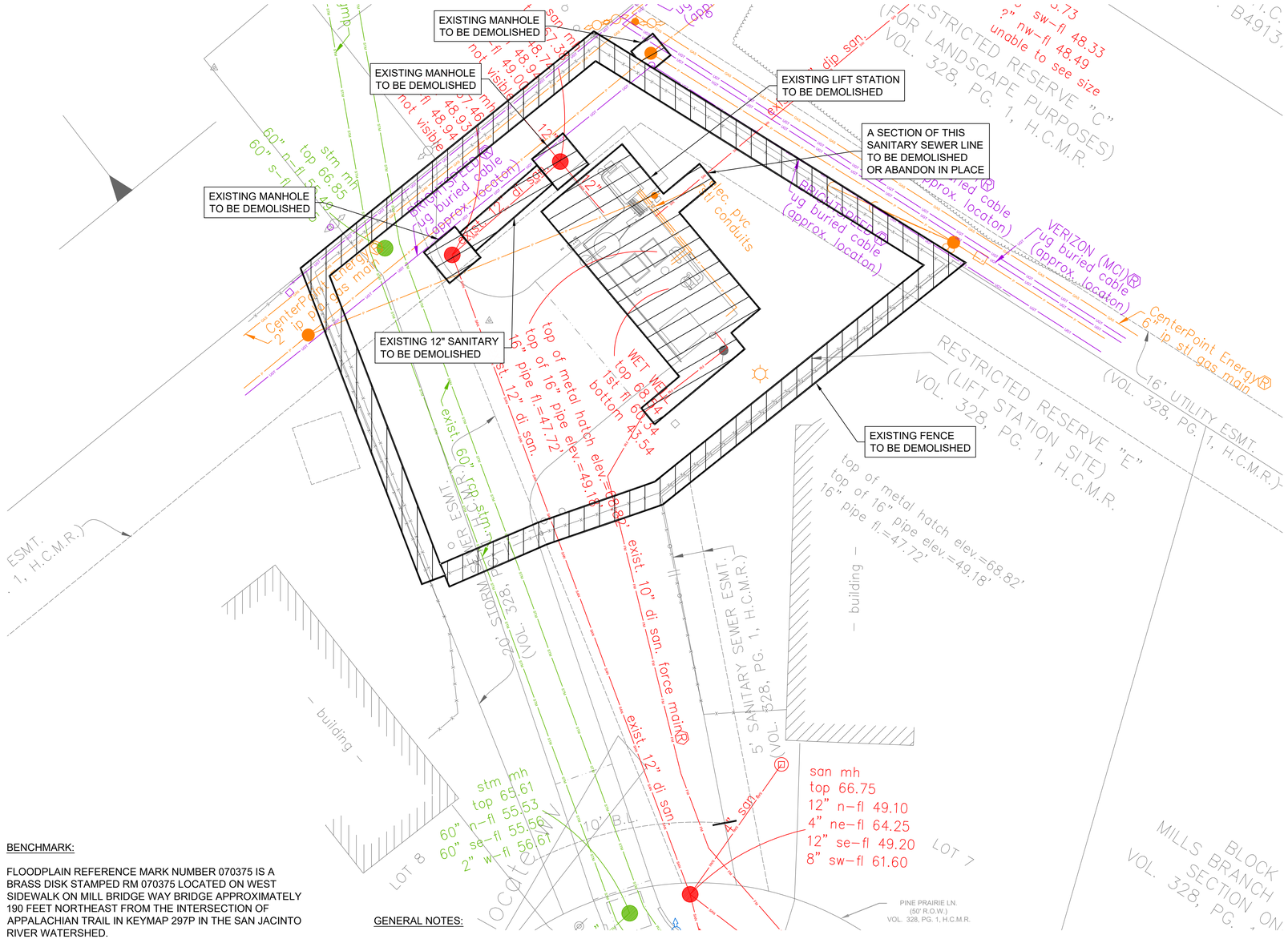
VERT: NONE

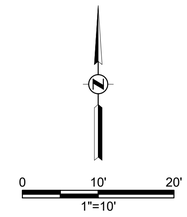
SHEET NO. 147 OF 230

DRAWING SCALE

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FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\022 F-401.dwg





LEGEND:

LIMITS OF LIFT STATION SITE DEMOLITION

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 070375 IS A BRASS DISK STAMPED RM 070375 LOCATED ON WEST SIDEWALK ON MILL BRIDGE WAY BRIDGE APPROXIMATELY 190 FEET NORTHEAST FROM THE INTERSECTION OF APPALACHIAN TRAIL IN KEYMAP 297P IN THE SAN JACINTO RIVER WATERSHED.

ELEV 73.10 FEET NAVD 1988, 2001 ADJUSTMENT.

HORIZONTAL DATUM NOTE:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

EXISTING UTILITY NOTE:

EXISTING UNDERGROUND UTILITY INFORMATION (TYPE, SIZE & OWNERSHIP) ARE SHOWN APPROXIMATELY BASED ON THE AVAILABLE RECORD DRAWINGS AND FIELD VERIFICATION (WHERE FEASIBLE) WITHOUT PROBING AND EXCAVATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATION SHOWN ON THE DRAWING. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING OR BORE AND JACKING IN THE VICINITY OF UNDERGROUND UTILITIES. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CALL UTILITY COORDINATING COMMITTEE AT 713-223-4567, AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THE STREET RIGHT-OF-WAY.

GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
3. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.
4. REMOVE AND SALVAGE EXISTING PUMPS, MOTORS, VALVES, PIPING, AND FITTINGS. SALVAGED ITEMS SHALL BE DELIVERED TO THE NEAREST CITY OF HOUSTON MAINTENANCE OFFICE.
5. WET WELL SHALL BE DEMOLISHED AT LEAST 4 FT BELOW FINISHED GRADE AS SHOWN ON PLAN. DEMOLISHED WET WELL SHALL BE COMPLETELY FILLED WITH ACCEPTABLE FLOWABLE FILL APPROVED BY THE ENGINEER.
6. CLEAN EXISTING WET WELL OF ACCUMULATED SLUDGE. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS AND SLUDGE IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.

DEMOLITION NOTE:

WHEN MEASURED FROM THE PROPERTY LINE OF ANY NEARBY RESIDENTIAL PROPERTY. ANY SOUND PRODUCED BY THE ERECTION, EXCAVATION, CONSTRUCTION, OR DEMOLITION OF ANY STRUCTURE, INCLUDING THE USE OF TOOLS OR EQUIPMENT (CONDUCTED BETWEEN THE HOURS OF 7 A.M. AND 8 P.M.), SHALL NOT EXCEED 85 DB(A).

RIGHT OF REFUSAL NOTE:

"SALVAGE MATERIAL AND EQUIPMENT LISTED HEREINAFTER SHALL BECOME THE PROPERTY OF THE CITY OF HOUSTON UNLESS OTHERWISE DESIGNATED IN WRITING. THE CITY OF HOUSTON SHALL HAVE FIRST REFUSAL RIGHTS TO RETAIN ALL ITEMS SHOWN TO BE DEMOLISHED AND/OR REMOVED IN THE DRAWINGS. PRIOR TO INITIATING DEMOLITION, THE CONTRACTOR AND THE CITY OF HOUSTON PROJECT MANAGER SHALL MAKE A JOINT INSPECTION TO IDENTIFY ALL ITEMS TO BE RETAINED BY THE CITY OF HOUSTON. THE CONTRACTOR SHALL RELOCATE AND STORE ITEMS, TO BE RETAINED BY THE CITY OF HOUSTON, WHERE DIRECTED ONSITE OR OFFSITE."

NO.	DATE	REVISION	APP.

PEN TABLE: -----

PLOTTED: 1/22/2026 6:09 PM

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3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:

Craig Alexander Perry
Name
116345
Registration Number
JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

PINE PRAIRIE LIFT STATION
DEMOLITION
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

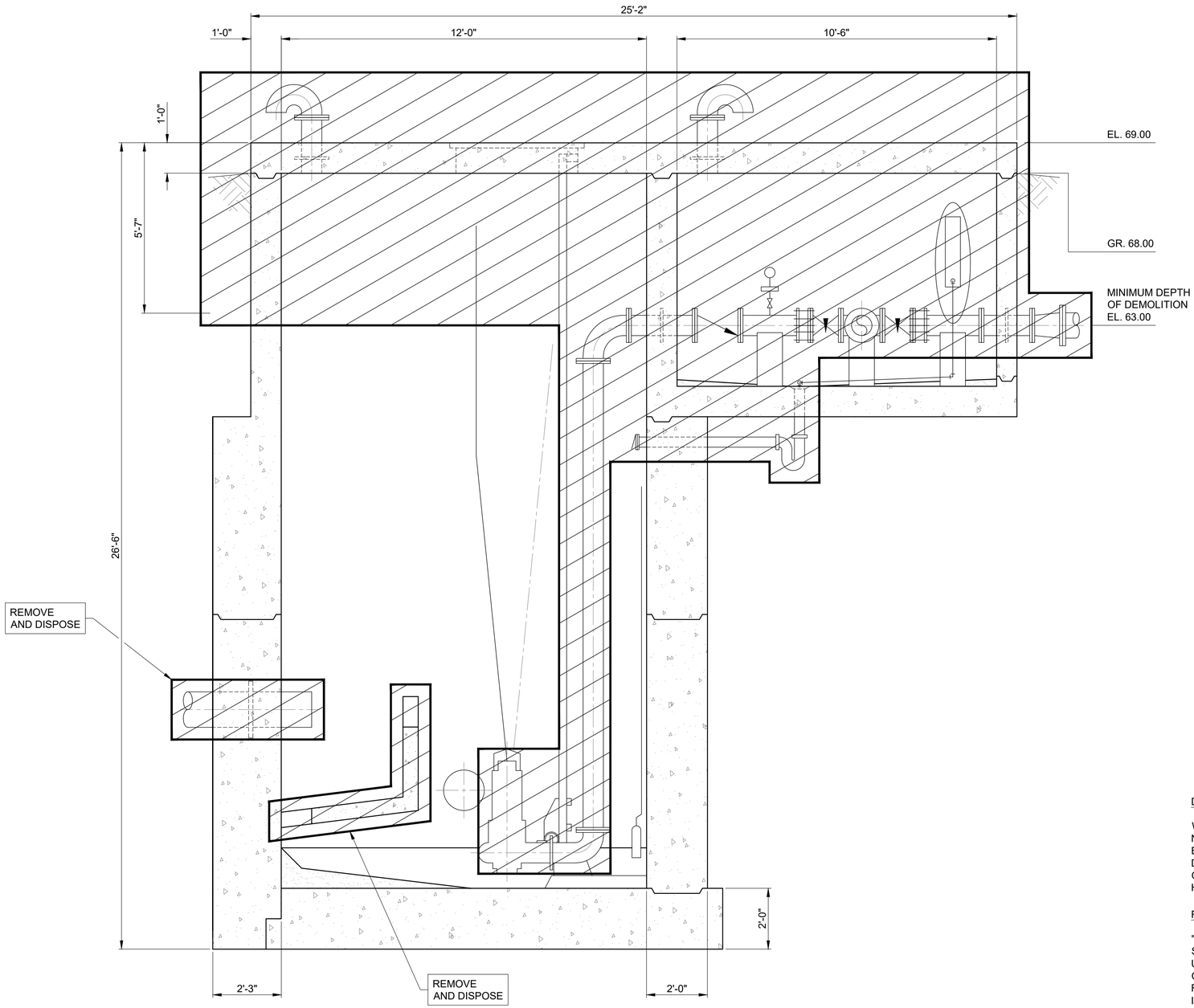
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-401	HORIZ: 1"=10' VERT: NONE
SHEET NO. 148 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\040 C-401.dwg



PA C-402 SECTION
SCALE: 1/2"=1'-0"

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
3. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.
4. REMOVE AND SALVAGE EXISTING PUMPS, MOTORS, VALVES, PIPING, AND FITTINGS. SALVAGED ITEMS SHALL BE DELIVERED TO THE NEAREST CITY OF HOUSTON MAINTENANCE OFFICE.
5. WET WELL SHALL BE DEMOLISHED AT LEAST 4 FT BELOW FINISHED GRADE AS SHOWN ON PLAN. DEMOLISHED WET WELL SHALL BE COMPLETELY FILLED WITH ACCEPTABLE FLOWABLE FILL APPROVED BY THE ENGINEER.
6. CLEAN EXISTING WET WELL OF ACCUMULATED SLUDGE. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS AND SLUDGE IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.

LEGEND:

LIMITS OF LIFT STATION DEMOLITION

DEMOLITION NOTE:

WHEN MEASURED FROM THE PROPERTY LINE OF ANY NEARBY RESIDENTIAL PROPERTY. ANY SOUND PRODUCED BY THE ERECTION, EXCAVATION, CONSTRUCTION, OR DEMOLITION OF ANY STRUCTURE, INCLUDING THE USE OF TOOLS OR EQUIPMENT (CONDUCTED BETWEEN THE HOURS OF 7 A.M. AND 8 P.M.), SHALL NOT EXCEED 85 DB(A).

RIGHT OF REFUSAL NOTE:

"SALVAGE MATERIAL AND EQUIPMENT LISTED HEREINAFTER SHALL BECOME THE PROPERTY OF THE CITY OF HOUSTON UNLESS OTHERWISE DESIGNATED IN WRITING. THE CITY OF HOUSTON SHALL HAVE FIRST REFUSAL RIGHTS TO RETAIN ALL ITEMS SHOWN TO BE DEMOLISHED AND/OR REMOVED IN THE DRAWINGS. PRIOR TO INITIATING DEMOLITION, THE CONTRACTOR AND THE CITY OF HOUSTON PROJECT MANAGER SHALL MAKE A JOINT INSPECTION TO IDENTIFY ALL ITEMS TO BE RETAINED BY THE CITY OF HOUSTON. THE CONTRACTOR SHALL RELOCATE AND STORE ITEMS, TO BE RETAINED BY THE CITY OF HOUSTON, WHERE DIRECTED ONSITE OR OFFSITE."

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/22/2026 6:10 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA, HOUSTON, TEXAS 77098 (713) 520-9070

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116345
Texas 6867 Number
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Date

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

PINE PRAIRIE LIFT STATION
DEMOLITION
SECTION VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-402

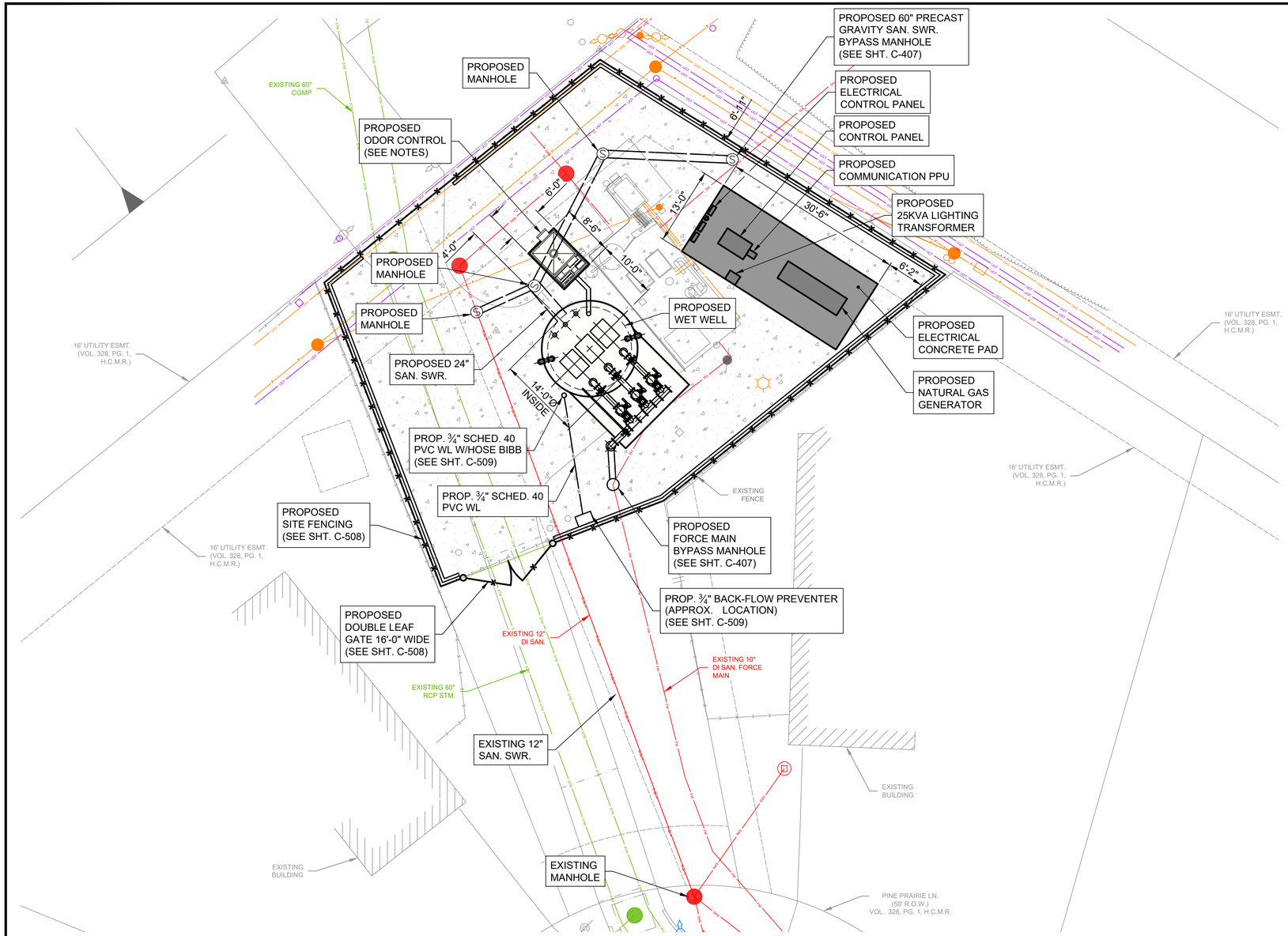
HORIZ: 1/2"=1'-0"
VERT: NONE

SHEET NO. 149 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\041 C-402.dwg



NOTE:

1. FOR SITE CONTROL POINTS TABLE SEE DRAWING NO. C-406 PINE PRAIRIE LIFT STATION PUMP OPERATION AND SITE CONTROL POINTS TABLES.

LEGEND:

PP-401 SITE CONTROL POINTS

0 10' 20'
1"=10'

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/23/2026 10:12 AM

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T TEXAS/SWBT underground conduit facilities only. Signature valid for one year.

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REGISTERED NO. 116345
DATE JANUARY 23, 2025

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

PINE PRAIRIE LIFT STATION
PROPOSED
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-403	HORIZ: 1"=10' VERT: NONE
SHEET NO. 150 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 070375 IS A BRASS DISK STAMPED RM 070375 LOCATED ON WEST SIDEWALK ON MILL BRIDGE WAY BRIDGE APPROXIMATELY 190 FEET NORTHEAST FROM THE INTERSECTION OF APPALACHIAN TRAIL IN KEYMAP 297P IN THE SAN JACINTO RIVER WATERSHED.

ELEV 73.10 FEET NAVD 1988, 2001 ADJUSTMENT.

HORIZONTAL DATUM NOTE:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

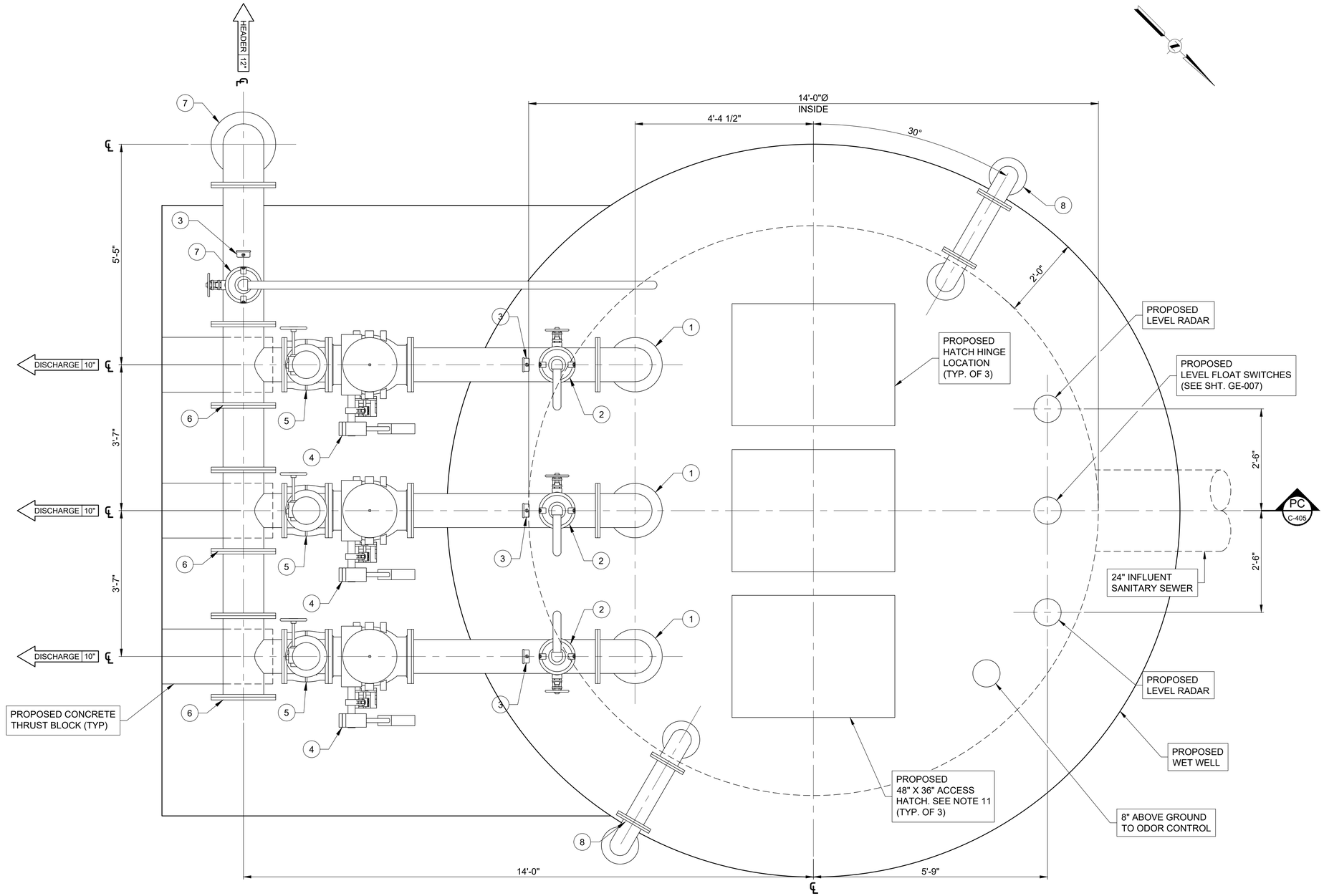
EXISTING UTILITY NOTE:

EXISTING UNDERGROUND UTILITY INFORMATION (TYPE, SIZE & OWNERSHIP) ARE SHOWN APPROXIMATELY BASED ON THE AVAILABLE RECORD DRAWINGS AND FIELD VERIFICATION (WHERE FEASIBLE) WITHOUT PROBING AND EXCAVATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATION SHOWN ON THE DRAWING. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING OR BORE AND JACKING IN THE VICINITY OF UNDERGROUND UTILITIES. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CALL UTILITY COORDINATING COMMITTEE AT 713-223-4567, AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THE STREET RIGHT-OF-WAY.

GENERAL NOTES:

1. SEE DETAIL AND STRUCTURAL SHEETS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
3. FOR ODOR CONTROL DESIGN DETAILS, REFER TO SPECIFICATIONS SECTION 11400.
4. CONTRACTOR TO CONFIRM THE SIZE AND LOCATION OF THE WET WELL HATCHES FOR SELECTED WET WELL AND PUMP MANUFACTURER'S REQUIREMENTS. AND PROVIDE SAFETY GRATING SYSTEM, "RETRO-GRATE" OR APPROVED EQUAL.
5. INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO A SITTING POSITION.
6. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
7. LABEL HATCHES WITH THE CORRESPONDING PUMP NUMBER USING A 12-INCH BY 12-INCH 316SS PLATE ENGRAVED WITH 6-INCH LETTERING WELDED TO THE HATCH. LABEL CHECK VALVES WITH THE CORRESPONDING VALVE NUMBER USING A 12-INCH BY 12-INCH 316SS PLATE ENGRAVED WITH 6-INCH LETTERING ADHERED TO THE TOP OF THE CHECK VALVE.
8. THE GENERATOR IS USED SOLELY FOR EMERGENCIES AND REQUIRED TESTING AND IS COMPLIED WITH CHAPTER 30 SOUND LEVEL ORDINANCE EXEMPTION FOR EMERGENCY WORK.

FILE PATH: G:\1110\5431-01_COH LIft Station\Phase II Drawings\5431.10 Drawings\01_Sheets\042 C-403.dwg



PIPE FITTING AND VALVES SCHEDULE			
KEYED NOTES	QUANTITY	SIZE	ITEM DESCRIPTION
1	6	10"	D.I. 90° ELL. FLG x FLG
2	4	2"	AIR & VACUUM VALVE
3	4	1/4"	PRESSURE GAUGE
4	3	10"	SWING CHECK VALVE, FLG X FLG
5	3	10"	PLUG VALVE, FLG X FLG
6	3	10" X 12"	D.I. REDUCING TEE, FLG
7	1	12"	D.I. 90° ELL. FLG x FLG
8	2	6" Ø	**VENT PIPE:**
	2	6"	BIRD SCREEN
	2	6"	D. I. WALL PIPE W/WATERSTOP COLLAR PE X FLG.
	4	6"	D.I. 90° ELL. FLG

PB C-404 PLAN
SCALE: 3/4"=1'-0"

NOTES:

1. SEE DETAILS AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. CONTRACTOR SHALL VERIFY DIMENSIONS DIMENSIONS NOTED ON DRAWINGS FOR PUMPS SELECTED.
3. INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO A SEATING POSITION.
4. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
5. SLEEVED OR CORED DISCHARGE PIPE OPENINGS SEALED WITH SEAL-LINK (OR APPROVED EQUAL) MAY BE SUBSTITUTED FOR POURED IN PLACE WALL PIPES TO ACCOMMODATE CONSTRUCTION METHOD.
6. CONTRACTOR SHALL PROVIDE BLOCK-OUTS IN CONCRETE FILLETS FOR CLEARANCE AROUND LEVEL TRANSDUCER.
7. LIFT STATION SAFETY HATCHES SHALL BE PAINTED FOREST GREEN.
8. LABEL HATCHES WITH CORRESPONDING PUMP NUMBER USING STANDARD PAINT STENCILS. MINIMUM 8" HEIGHT.
9. VENT PIPES SHALL BE DUCTILE IRON WITH UV PROTECTIVE COATINGS AS REQUIRED BY THE CITY OF HOUSTON.
11. HATCHES SHALL BE CAST-IN WITH TOPS FLUSH WITH THE CONCRETE DECK, FLOOD TIGHT WITH HOLD OPEN ARMS. HATCHES SHALL BE MANUFACTURED BY BILCO COMPANY, HALLIDAY PRODUCTS, OR EQUAL.

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 4:30 PM PEN TABLE: ----

GANNETT FLEMING

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

PINE PRAIRIE LIFT STATION
PROPOSED
PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-404

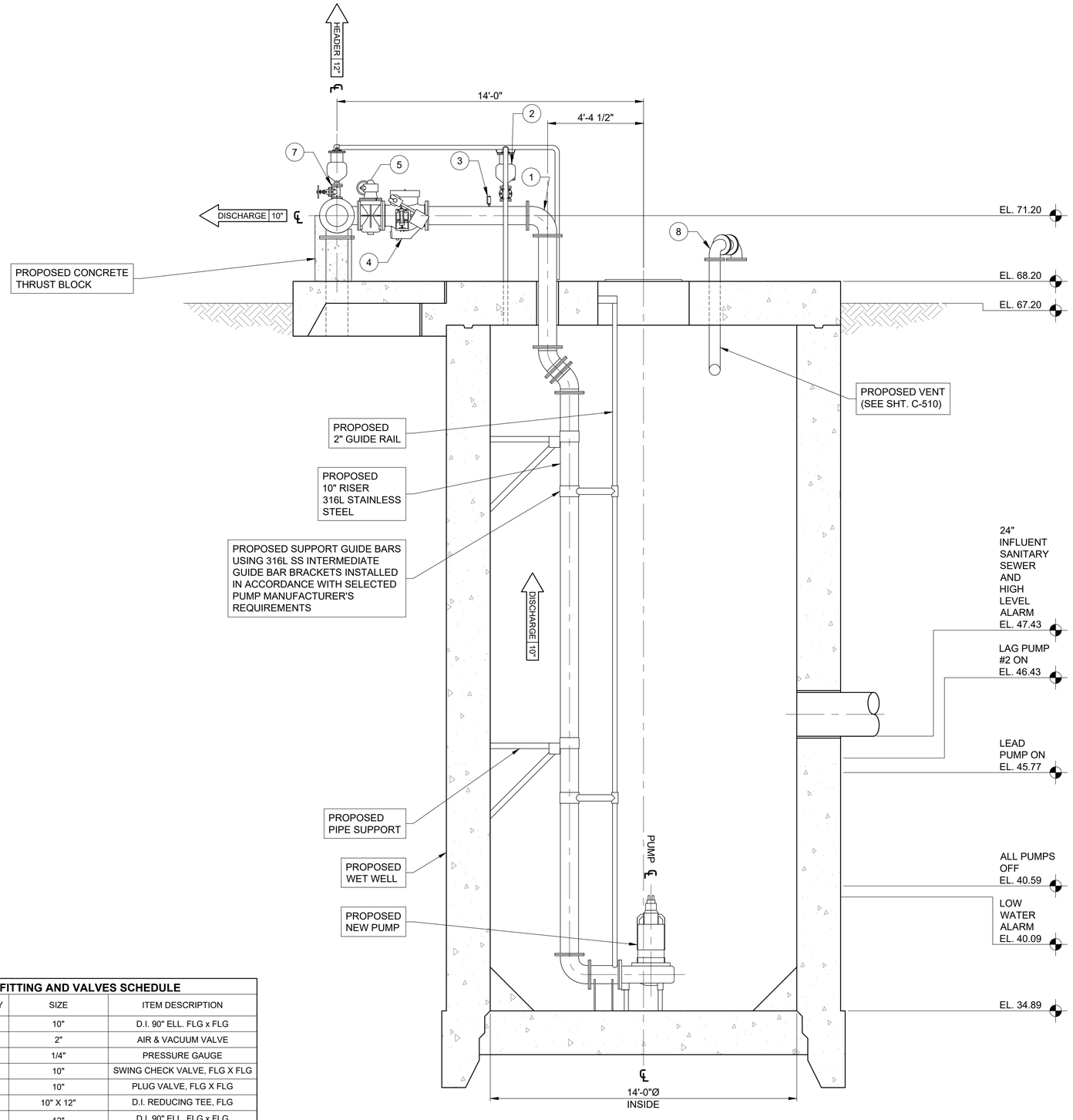
HORIZ: 3/4"=1'-0"
VERT: NONE

SHEET NO. 151 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\043 C-404.dwg



PC C-405 SECTION
SCALE: 3/8"=1'-0"

PIPE FITTING AND VALVES SCHEDULE			
KEYED NOTES	QUANTITY	SIZE	ITEM DESCRIPTION
1	6	10"	D.I. 90° ELL. FLG x FLG
2	3	2"	AIR & VACUUM VALVE
3	4	1/4"	PRESSURE GAUGE
4	3	10"	SWING CHECK VALVE, FLG X FLG
5	3	10"	PLUG VALVE, FLG X FLG
6	3	10" X 12"	D.I. REDUCING TEE, FLG
7	1	12"	D.I. 90° ELL. FLG x FLG
8	2	6" Ø	**VENT PIPE:**
	2	6"	BIRD SCREEN
	2	6"	D. I. WALL PIPE W/WATERSTOP COLLAR PE X FLG.
	4	6"	D.I. 90° ELL. FLG

NOTES:

1. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. PUMP ANCHOR BOLTS ARE TO BE ADHESIVE TYPE, AND EMBEDDED IN CONCRETE SLAB, CONTRACTOR TO SUBMIT DESIGN OF ANCHOR BOLTS AND PATTERN, INCLUDING CALCULATIONS, DURING SHOP DRAWING SUBMISSION.
3. CONTRACTOR TO PROVIDE ADHESIVE IN LIEU OF WEDGE ANCHORS FOR ALL SUBMERGED CONDITIONS. AND SUBMIT DESIGN OF ANCHOR BOLTS DURING SHOP DRAWING SUBMISSION.
4. ALL PIPING IN WET WELL SHALL BE FLANGED, NO FLANGED COUPLING ADAPTORS, OR VICTAULIC STYLE COUPLINGS SHALL BE PERMITTED INSIDE THE WET WELL.
5. SUPPORT GUIDE BARS SHALL BE 316L SS AND INSTALLED IN ACCORDANCE WITH PUMP MANUFACTURER'S REQUIREMENTS.
6. SLEEVED OPENING, SEAL WITH LINK SEAL OR APPROVED EQUAL. AT TOP OF SLAB FILL VOID AROUND SEAL WITH GROUT AND RECESS APPROXIMATELY 1/4" BELOW TOP OF SLAB.
7. ABRASIVE BLAST AND COAT ALL PIPING AND FITTINGS NOT BEING REPLACED IN WET WELL.
8. WET WELL SHALL BE BLASTED AND CLEANED. A PROTECTIVE COATING SHALL BE APPLIED ON ALL INTERIOR CONCRETE SURFACE OF THE WET WELL.. REFER TO COH PROTECTIVE COATINGS, SPEC. 09901, SYSTEM 108
9. ALL PROPOSED PIPING AND FITTINGS INSIDE THE WET WELL SHALL BE 316L SS.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

PINE PRAIRIE LIFT STATION
PROPOSED
SECTION VIEW

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

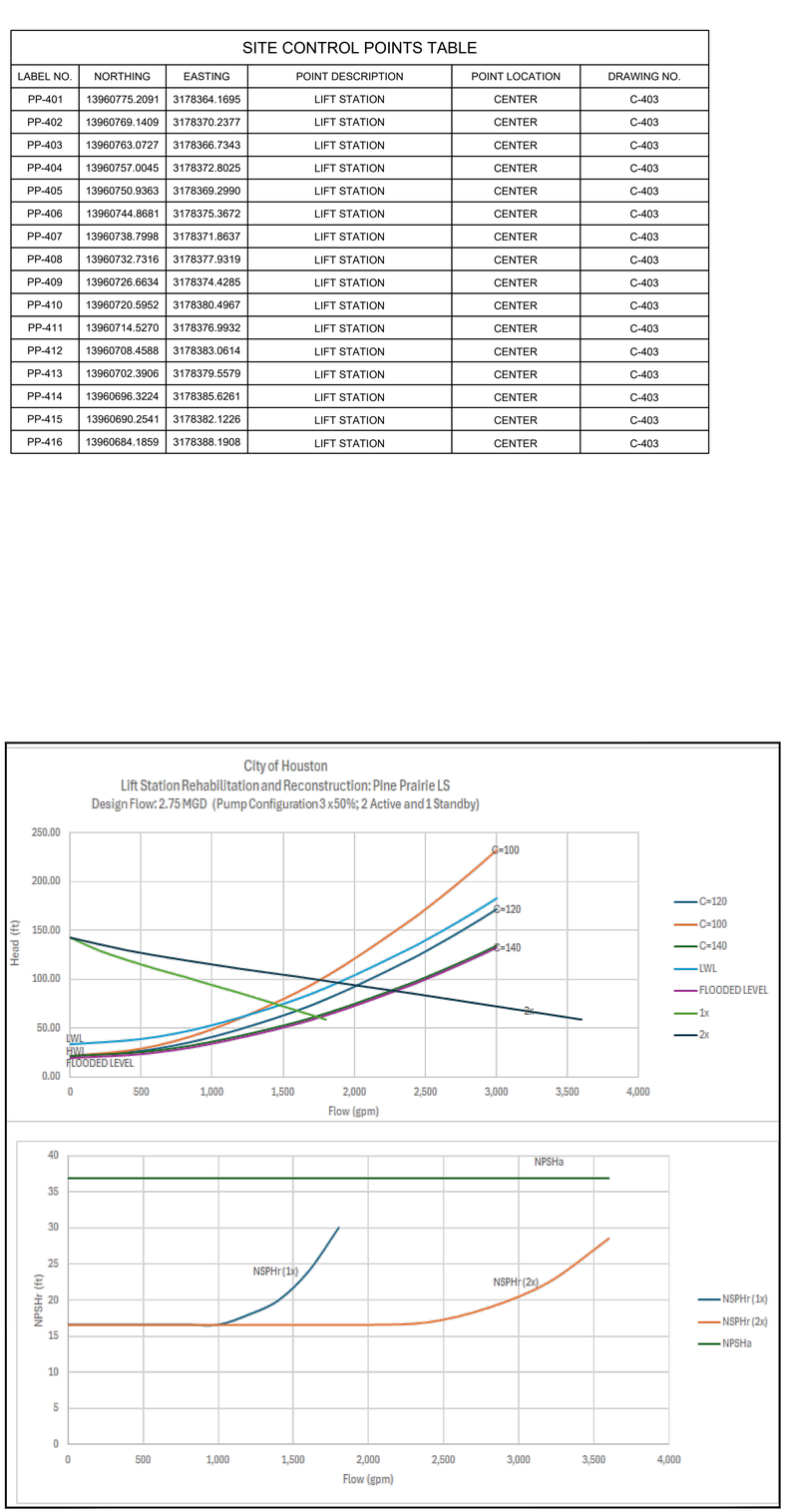
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-405	HORIZ: 3/8"=1'-0" VERT: NONE
SHEET NO. 152 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\044 C-405.dwg

SITE CONTROL POINTS TABLE					
LABEL NO.	NORTHING	EASTING	POINT DESCRIPTION	POINT LOCATION	DRAWING NO.
PP-401	13960775.2091	3178364.1695	LIFT STATION	CENTER	C-403
PP-402	13960769.1409	3178370.2377	LIFT STATION	CENTER	C-403
PP-403	13960763.0727	3178366.7343	LIFT STATION	CENTER	C-403
PP-404	13960757.0045	3178372.8025	LIFT STATION	CENTER	C-403
PP-405	13960750.9363	3178369.2990	LIFT STATION	CENTER	C-403
PP-406	13960744.8681	3178375.3672	LIFT STATION	CENTER	C-403
PP-407	13960738.7998	3178371.8637	LIFT STATION	CENTER	C-403
PP-408	13960732.7316	3178377.9319	LIFT STATION	CENTER	C-403
PP-409	13960726.6634	3178374.4285	LIFT STATION	CENTER	C-403
PP-410	13960720.5952	3178380.4967	LIFT STATION	CENTER	C-403
PP-411	13960714.5270	3178376.9932	LIFT STATION	CENTER	C-403
PP-412	13960708.4588	3178383.0614	LIFT STATION	CENTER	C-403
PP-413	13960702.3906	3178379.5579	LIFT STATION	CENTER	C-403
PP-414	13960696.3224	3178385.6261	LIFT STATION	CENTER	C-403
PP-415	13960690.2541	3178382.1226	LIFT STATION	CENTER	C-403
PP-416	13960684.1859	3178388.1908	LIFT STATION	CENTER	C-403



P3 C-406 PUMP OPERATION CURVES

PUMP CHARACTERISTICS	PUMP No. 1	PUMP No. 2	PUMP No. 3
"NOTES: 1. Pump curves and characteristics are based on FLYGT Model NP 3202 HT 3~ 462. Other acceptable manufacturers are named in Section 11311 of the specifications."			
MOTOR DATA :			
MOTOR POWER (HP)	45	45	45
MOTOR SPEED (RPM)	1,775	1,775	1,775
MAX SPHERICAL SOLIDS PASSAGE (IN):	3	3	3
CAPACITY (GPM)			
DESIGN (GPM)	995	995	995
RUNOUT	2,304.83	2,304.83	2,304.83
DISCHARGE HEAD (FT)			
DESIGN HEAD (FT)	88.30	88.30	88.30
RUNOUT HEAD (FT)	32.62	32.62	32.62
SHUTOFF HEAD (FT)	143.67	143.67	143.67
NPSHa (FT)	36.93	36.93	36.93
NPSHr (FT)	16.36	16.36	16.36
EFFICIENCY (%)	74.54	74.54	74.54
PUMP CYCLE TIME (MIN)	6	6	6
CUMMULATIVE CAPACITY (GPM)	1909		
PUMP CONFIGURATION	3 x 50%		
PUMP CONFIGURATION	3 x 50%		

P2 C-406 PUMP DATA TABLE

One Pump	Two Pumps 1x	Head (ft) 2x	Head (ft)	NPSHr 1X	NPSHr 2X	NPSHa
0	0	143	143	16.63	16.63	36.93
200	400	130	130	16.63	16.63	36.93
400	800	120	120	16.63	16.63	36.93
600	1,200	111	111	16.63	16.63	36.93
800	1,600	103	103	16.63	16.63	36.93
1,000	2,000	94	94	16.63	16.63	36.93
1,200	2,400	86	86	18.00	17.00	36.93
1,400	2,800	77	77	20.00	19.00	36.93
1,600	3,200	68	68	24.00	22.50	36.93
1,800	3,600	59	59	30.00	28.50	36.93

C4 C-406 PUMP FLOW, TOTAL DYNAMIC HEAD, AND NPSH REQUIREMENTS FOR OPERATION

RISING LEVEL CYCLE			
WATER LEVEL DEPTH	WATER LEVEL ELEVATION	ACTION	ALARMS/PUMP(S) IN OPERATION
10.88	45.77	LEAD PUMP TURNS ON	LEAD PUMP ON
11.54	46.43	LAG PUMP #2 TURNS ON	LEAD AND 2ND PUMPS ON
12.54	47.43	HIGH WATER ALARM ON	HIGH WATER ALARM SOUNDS
FALLING LEVEL CYCLE			
WATER LEVEL DEPTH	WATER LEVEL ELEVATION	ACTION	ALARMS/PUMP(S) IN OPERATION
5.66	46.43	LEAD PUMP TURNS OFF	LEAD PUMPS OFF
5.00	40.59	LAG PUMP #2 TURNS OFF	LEAD AND 2ND PUMP OFF
4.67	40.09	LOW LEVEL ALARM	LOW WATER ALARM SOUNDS

P1 C-406 STATION OPERATION TABLES

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 4:08 PM PEN TABLE: ----

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WBS NO. R-000267-0174-3

CIVIL

PINE PRAIRIE LIFT STATION
PUMP OPERATION AND
SITE CONTROL POINTS TABLES

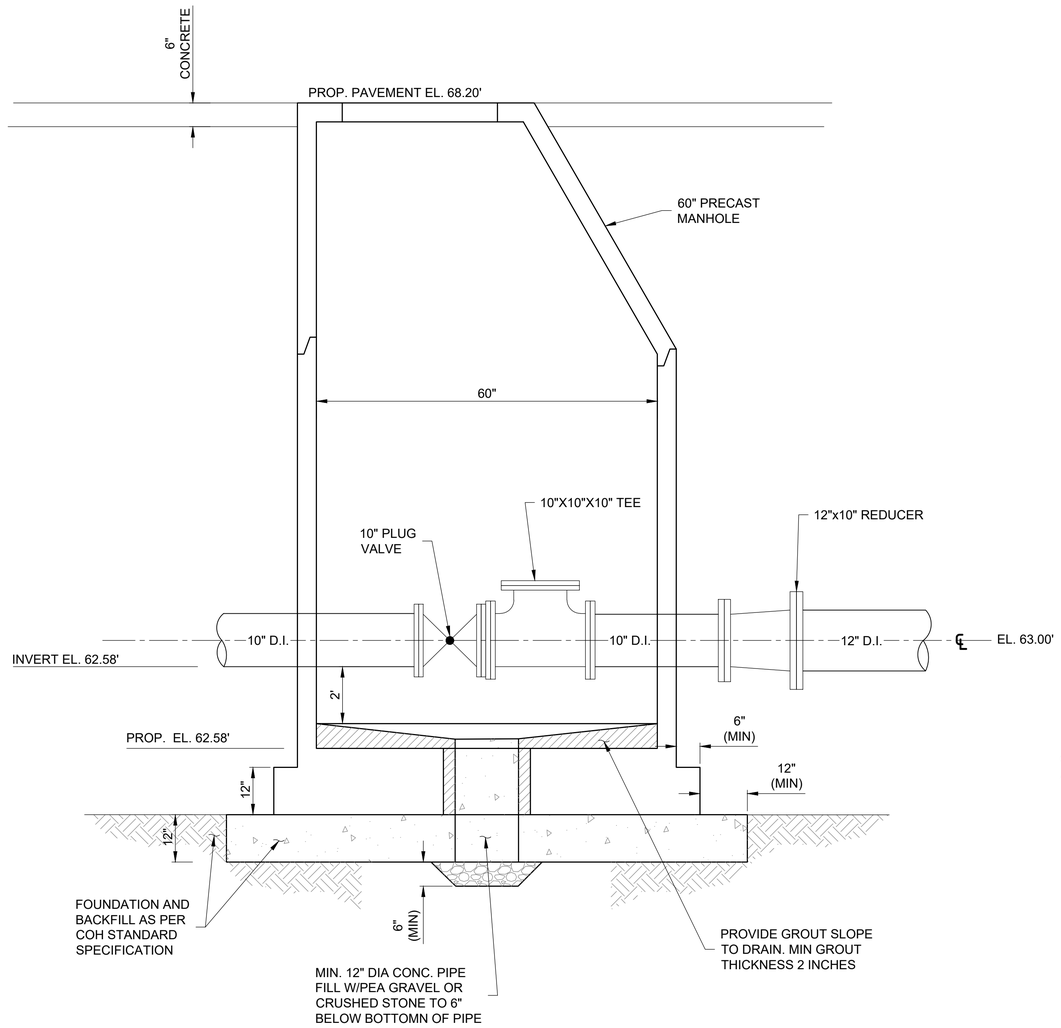
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HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
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DRAWING NO. C-406
HORIZ: NONE
VERT: NONE
SHEET NO. 153 OF 230
DRAWING SCALE
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FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\045 C-406.dwg



60" BYPASS MANHOLE

SCALE: N.T.S.

NOTE:

CONTRACTOR TO FIELD VERIFY LOCATION AND DEPTH OF EXISTING FORCE MAIN.

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 1:42 PM PEN TABLE: ----

GANNETT FLEMING

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Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

PINE PRAIRIE LIFT STATION
PROPOSED
BY-PASS MANHOLE DETAIL

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-407

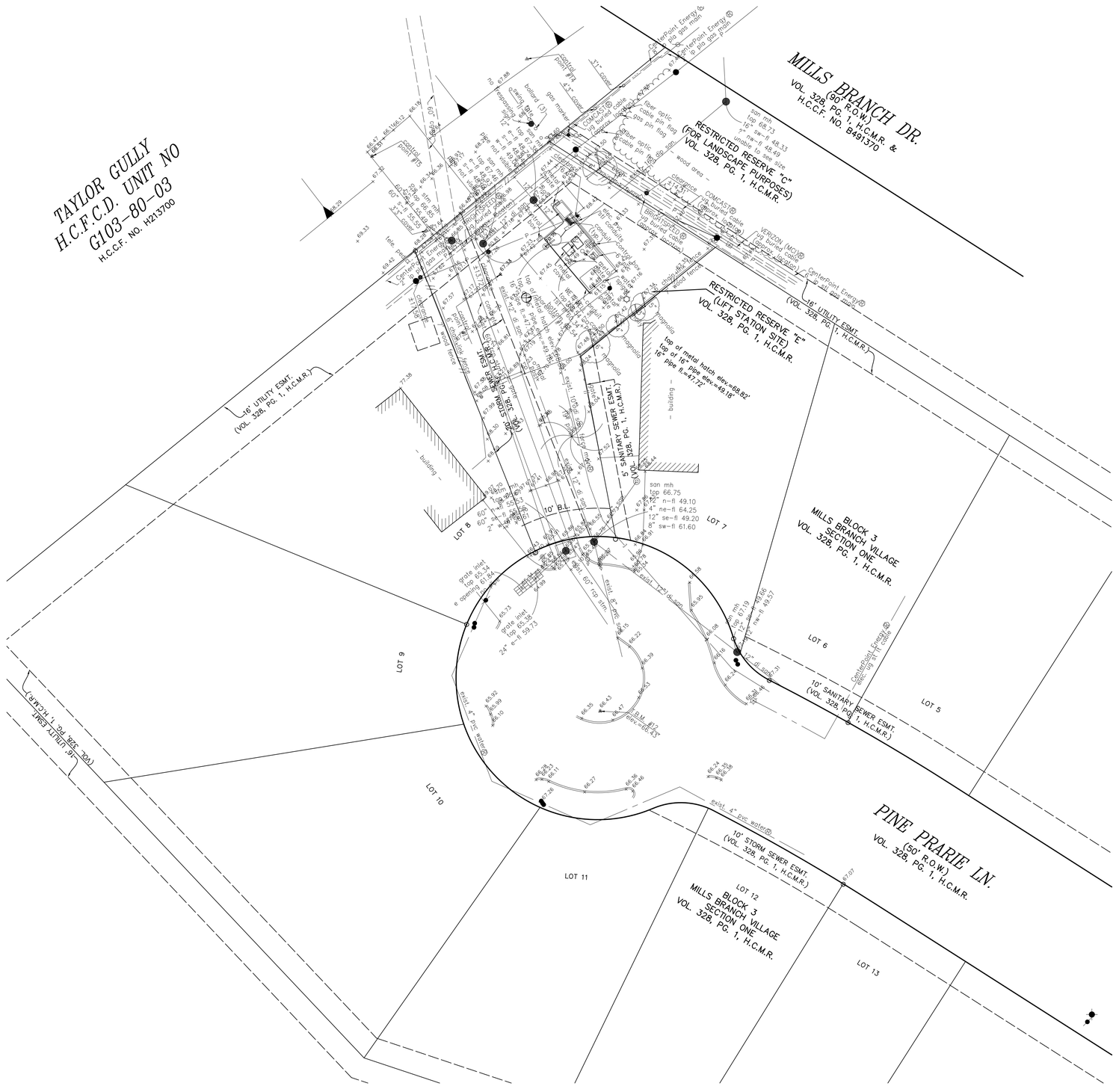
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SHEET NO. 154 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\046 C-407.dwg


TAYLOR GULLY
H.C.F.C.D. UNIT NO
G103-80-03
H.C.C.F. NO. H213700
MILLS BRANCH DR.
(90' R.O.W.)
VOL. 328, PG. 1, H.C.M.R. &
H.C.C.F. NO. B491370
RESTRICTED RESERVE "C"
(FOR LANDSCAPE PURPOSES)
VOL. 328, PG. 1, H.C.M.R.
RESTRICTED RESERVE "E"
(LIFT STATION SITE)
VOL. 328, PG. 1, H.C.M.R.
16' UTILITY ESMT.
(VOL. 328, PG. 1, H.C.M.R.)
5' SANITARY SEWER ESMT.
(VOL. 328, PG. 1, H.C.M.R.)
10' B.L.
BLOCK 3
MILLS BRANCH VILLAGE
SECTION ONE
VOL. 328, PG. 1, H.C.M.R.
LOT 5
LOT 6
LOT 7
LOT 8
LOT 9
LOT 10
LOT 11
LOT 12
LOT 13
10' SANITARY SEWER ESMT.
(VOL. 328, PG. 1, H.C.M.R.)
10' STORM SEWER ESMT.
(VOL. 328, PG. 1, H.C.M.R.)
PINE PRAIRIE LN.
(50' R.O.W.)
VOL. 328, PG. 1, H.C.M.R.
top of metal hatch elev=68.82'
top of 16" pipe elev=49.19'
16" pipe fl=47.72'
san mh
top 66.75
12" n-fl 49.10
4" ne-fl 64.25
12" se-fl 49.20
8" sw-fl 61.60
san mh
top 67.73
16" n-fl 48.33
16" se-fl 48.49
san mh
top 67.19
12" s-fl 49.66
12" ne-fl 49.57
grate inlet
top 65.54
opening 61.84
grate inlet
top 65.58
24" e-fl 58.73
exist 4" pvc water
exist 6" pvc water
exist 8" pvc water
E.M. #12
elev=66.43'
CenterPoint Energy
6" plastic gas main
COMCAST
fiber optic
cable pin flag
COMCAST
buried cable
pin flag
VERIZON (MCI)
buried cable
pin flag
CenterPoint Energy
electric ug lt pole
CenterPoint Energy
electric ug lt pole
CenterPoint Energy
electric ug lt pole
CenterPoint Energy
electric ug lt pole
CenterPoint Energy
8" plastic gas main
CenterPoint Energy
6" plastic gas main
CenterPoint Energy
6" plastic gas main

GENERAL NOTES FOR STRUCTURES

CONCRETE

1. DESIGN SHALL CONFORM TO THE LATEST BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI-318) WITH SPECIAL REQUIREMENTS OF ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI-350).
2. ALL REINFORCING BARS SHALL CONFORM TO ASTM A-615, GRADE 60, ARRANGEMENT AND DETAILS OF REINFORCING STEEL, INCLUDING BAR SUPPORTS AND SPACERS, SHALL BE IN ACCORDANCE WITH THE LATEST ACI DETAILING MANUAL, UNLESS OTHERWISE NOTED.
3. ALL SLAB AND BEAM REINFORCEMENT SHALL HAVE A MINIMUM EXTENSION INTO THE SUPPORT IN ACCORDANCE WITH THE LATEST ACI CODE. IF SUCH EXTENSION IS NOT POSSIBLE, BARS SHALL TERMINATE IN STANDARD HOOKS.
4. HORIZONTAL WALL REINFORCEMENT AND TEMPERATURE REINFORCEMENT SHALL LAP A MINIMUM OF 1.7Ld AT SPLICES. WALL DOWELS AND WALL BAR EXTENSIONS AND ALL STRESS SPLICES SHALL LAP A MINIMUM OF 1.7Ld, UNLESS NOTED OTHERWISE.
5. WALL OR COLUMNS SHALL HAVE DOWELS FROM FOUNDATIONS OR CONSTRUCTION BELOW OF SAME SIZE AND SPACING AS WALL OR COLUMN VERTICAL STEEL. SEE FOOTING SCHEDULE.
6. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL NOT BE LESS THAN THE FOLLOWING:

   STRUCTURAL MEMBERS, FOUNDATIONS, WALLS AND SUSPENDED SLABS ------- 4000 PSI
   SLABS-ON-GRADE ------ 4000 PSI
   LEAN CONCRETE CLASS B ------ 1500 PSI
   GROUT FILL CLASS H ------ 3000 PSI

7. UNLESS OTHERWISE SHOWN, THE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

   SLABS
   TOP AND BOTTOM OF FORMED SLABS _____ 2"
   TOP OF WALK AND DRIVEWAY SLABS _____ 2"
   SURFACES IN CONTACT WITH LIQUID _____ 2"
   BOTTOM OF SLABS ON FILL OR SOIL _____ 3"

   FOOTINGS
   TOP AND SIDES ------ 2 1/2"
   BOTTOM ------ 3"

   WALLS
   LESS THAN 12" THICK ------ 1 1/2"
   12" OR OVER IN THICKNESS WITH POURS LESS THAN 10 FEET HIGH ------ 2"
   12" OR OVER IN THICKNESS WITH POURS MORE THAN 10 FEET HIGH -----2 1/2"

   BEAMS AND GIRDERS
   COVER AT TOP, BOTTOM AND SIDES OF LONGITUDINAL REINF ---------- 2"

   COLUMNS
   COVER FOR VERTICAL BARS ------ 2"

8. HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS SHOWN OR NOTED ON THE PLANS ARE RECOMMENDED. ANY DEVIATION FROM THOSE SHOWN SHALL HAVE APPROVAL OF THE ENGINEER.
9. ANY STOP IN FRAMED CONCRETE WORK MUST BE IN THE CENTER OF THE SPAN AND INCORPORATE AN APPORVED KEYWAY, REINFORCEMENT SHALL EXTEND THROUGH THESE JOINTS IF REQUIRED FOR CONTINUITY.
10. USE TYPE 'C2' JOINT FOR ALL CONSTRUCTION JOINTS IN WALLS AND SLABS BELOW GRADE AND WALLS WHICH SEPARATE AREAS OF SOIL OR LIQUID FROM PERMANENTLY DRY AREAS SUCH AS TUNNELS, GALLERIES, BASEMENT ROOMS, ETC. USE TYPE 'C1' JOINT AT ALL OTHER CONSTRUCTION JOINTS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
11. CONCRETE WALLS AND PARTITIONS SHALL BE POURED IN MAXIMUM LENGTHS OF 40 FEET BETWEEN VERTICAL CONSTRUCTION JOINTS.
12. ALL CONCRETE SLABS OVER 8" IN THICKNESS, REINFORCED WITH BARS, AND POURED AGAINST SOIL SHALL BE POURED IN A STRIP PATTERN OF 40 FEET OR LESS IN EACH DIRECTION.
13. ALL EXPOSED EDGES OF BEAMS, COLUMNS, SLABS AND WALLS SHALL BE CHAMFERED 3/4" UNLESS MASONRY OR OTHER MEMBERS ARE ERECTED FLUSH WITH THEM.
14. REFERE TO ARCHITECTURAL, PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL SLEEVES, PIPES, CONDUITS AND MISCELLANEOUS ANCHORING DEVICES TO BE INCORPORATED IN THE CONSTRUCTION.

STRUCTURAL STEEL

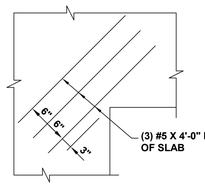
1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS". ALL STRUCTURAL STEEL SHALL BE ASTM A36.
2. ELEVATIONS OF STEEL BEAMS SHOWN ON FRAMING PLANS REFER TO TOP OF FLANGE, UNLESS OTHERWISE NOTED.
3. ALL BOLTED CONNECTIONS SHALL BE MADE WITH 3/4" DIAMETER ASTM A-325 BOLTS EXCEPT AS OTHERWISE SHOWN OR NOTED. ALL CONNECTIONS SHALL BE CAPABLE OF SUPPORTING ON HALF THE MAXIMUM ALLOWABLE UNIFORM LOAD FOR INDICATED BEAM SIZE AND SPAN IN AISC MANUAL OF STEEL CONSTRUCTION, EXCEPT AS OTHERWISE NOTED.
4. FIELD CONNECTIONS SHALL BE BOLTED, EXCEPT AS OTHERWISE SHOWN OR NOTED.
5. ALL WELDING SHALL CONFORM TO THE LATEST SPECIFICATION OF THE AMERICAN WELDING SOCIETY. ALL WELDED CONNECTIONS SHALL BE MADE WITH AWS A5.1 OR A5.5 E70 XX ELECTRODE.
6. ANCHOR BOLTS AND MISC EMBEDDED STEEL ------ ASTM A36
   ANCHOR BOLTS WHICH ARE SUBMERGED, LOCATED ABOVE A LIQUID SURFACE, OR ARE IN A CORROSIVE ATMOSPHERE ------ 316 SS
7. ALL EQUIPMENT ANCHOR BOLT DIMENSIONS AND LOCATIONS SHALL BE VERIFIED FROM CERTIFIED VENDOR DRAWINGS, PRIOR TO CONSTRUCTION.

FOUNDATIONS

1. ALLOWABLE SOILD BEARING PRESSURE, EXCAVATION AND BACKFILL FOR FOUNDATIONS AND STRUCTURES SHALL BE AS RECOMMENDED IN THE GEOTECHNICAL REPORT.
2. ALL EXCAVATIONS SHALL BE CARRIED OUT IN THE DRY, AND PROVISIONS SHALL BE MADE TO PREVENT THE BOTTOM OF ALL EXCAVATIONS FROM FREEZING OR FLOODING AT ALL TIMES.
3. ALL FOUNDATIONS SHALL BE CONSTRUCTED IN EXCAVATIONS FREE OF STANDING WATER.
4. BACKFILL MATERIAL, PLACING AND COMPACTION OF BACKFILL SHALL BE IN ACCORDANCE WITH THE DRAWINGS, AND THE CONTRACT SPECIFICATIONS.

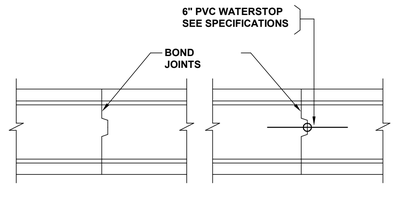
DESIGN CRITERIA

1. BUILDING CODE ------ INTERNATIONAL BUILDING CODE (IBC) 2021, AS AMENDED BY 2021 HOUSTON CONSTRUCTION CODE
2. RISK CATEGORY ------ III
3. DESIGN LOADS
   - A. FLOOR LIVE LOADS
     - a. STAIRS ------ 150 PSF
     - b. LIFT STATION TOP SLAB ------ 300 PSF
     - c. MECHANICAL AND ELECTRICAL ROOM ------ 250 PSF
   - B. ROOF LIVE LOAD ------ 20 PSF
   - C. WIND DESIGN DATA
     - a. BASIC WIND SPEED (V_{ULT}) ------ 145 MPH
       (V_{ASD}) ------ 113 MPH
     - b. EXPOSURE CATEGORY ------ C
   - D. SEISMIC DESIGN DATA
     - a. IMPORTANCE FACTOR (I_E) ------ 1.25
     - b. MAPPED SPECTRAL RESPONSE (S_S) ------ 0.068g
     - c. MAPPED SPECTRAL RESPONSE (S_1) ------ 0.039g
     - d. SPECTRAL RESPONSE (S_{DS}) ------ 0.072g
     - e. SPECTRAL RESPONSE (S_{D1}) ------ 0.062g
     - f. SEISMIC DESIGN CATEGORY ------ A
     - g. SITE CLASS ------ D
4. DESIGN DEAD LOADS
   - A. SELF WEIGHT OF MATERIALS



SPECIAL REINFORCEMENT TO BE PLACED AT ALL INSIDE CORNERS IN SLABS OR WALKWAYS

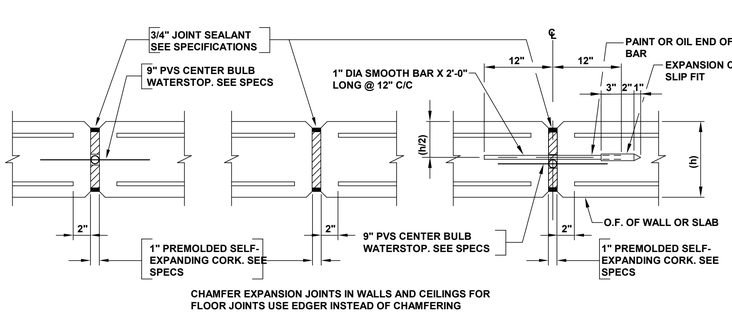
SLAB DETAIL AT RE-ENTRANT CORNER



TYPE C1 TYPE C2

NOTES:
1. IN JOINTS W/ MORE THAN ONE KEY, PLACE WATERSTOP IN KEY NEAREST TO SURFACE AGAINST EARTH OR WATER
2. REINFORCING STEEL IS CONTINUOUS THROUGH CONSTRUCTION JOINT

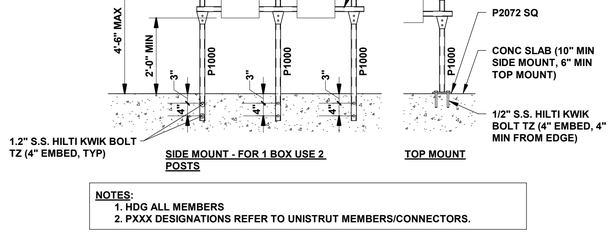
CONSTRUCTION JOINTS



CHAMFER EXPANSION JOINTS IN WALLS AND CEILINGS FOR FLOOR JOINTS USE EDGER INSTEAD OF CHAMFERING

TYPE E1 TYPE E2 TYPE E3

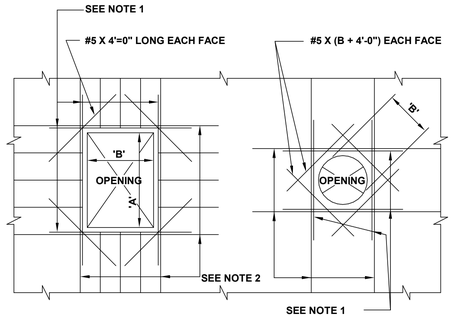
EXPANSION JOINTS



SIDE MOUNT - FOR 1 BOX USE 2 POSTS TOP MOUNT

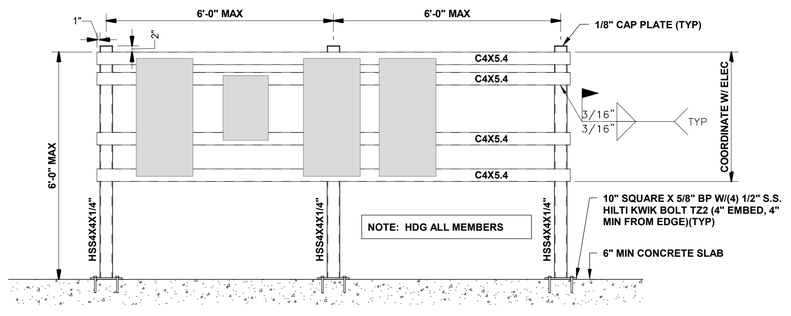
NOTES:
1. HDG ALL MEMBERS
2. PXXX DESIGNATIONS REFER TO UNISTRUT MEMBERS/CONNECTORS.

ELEC JUNCTION BOX MOUNTING DETAIL



ADDITIONAL REINFORCING STEEL AT OPENINGS IN WALLS AND SLABS

NOTES:
1. PROVIDE (2) #6 X (B + 4'-0") ADDITIONAL REBARS AT TOP AND BOTTOM AND (2) #6 X (A + 4'-0") ADDITIONAL REBARS AT EACH SIDE OF OPENING IN WALLS ONLY.
2. PROVIDE ADDITIONAL BARS EQUAL TO ONE HALF OF BARS INTERRUPTED AT EACH SIDE OF OPENING AT 3" CENTER TO CENTER. THESE BARS SHALL BE ORIGINAL SIZES AND LENGTHS AS THOSE OF THE INTERRUPTED BARS. (TYPICAL FOR OPENINGS IN SLABS AND PRESSURE WALLS).



SERVICE MOUNTING RACK DETAIL

ABBREVIATIONS

ADDL	ADDITIONAL	IF	INSIDE FACE
ALT	ALTERNATE	INT	INTERIOR
&	AND	LP	LOW POINT
ARCH	ARCHITECTURAL	MH	MANHOLE
@	AT	MAX	MISCELLANEOUS
BM	BEAM	MIN	MINIMUM
BOT	BOTTOM	#	NUMBER
B/	BOTTOM OF	OC	ON CENTER
BLDG	BUILDING	OPNG	OPENING
C	CENTERLINE	OA	OVERALL
C/C	CENTER TO CENTER	PVC	POLYVINYL CHLORIDE
CLR	CLEAR(ANCE)	R	RADIUS
COL	COLUMN	REINF	REINFORCEMENT
CONC	CONCRETE	REQD	REQUIRED
CONST	CONSTRUCTION	SCHED	SCHEDULE
CONT	CONTINUOUS	SECT	SECTION
DET	DETAIL	SPEC	SPECIFICATIONS
DIA	DIAMETER	SS	STAINLESS STEEL
Ø	DIAMETER	STD	STANDARD
DWG	DRAWING	STIRR	STIRRUP
DWL	DOWEL	SYMM	SYMMETRICAL
EF	EACH FACE	T	TOP
EW	EACH WAY	T/	TOP OF
EL	ELEVATION	TYP	TYPICAL
EXP	EXPANSION	UON	UNLESS OTHERWISE NOTED
EXT	EXTERIOR	VAR	VARIES
FTG	FOOTING	VERT	VERTICAL
HP	HIGH POINT	WWF	WELDED WIRE FABRIC
HORIZ	HORIZONTAL	W/	WITH

NOTES:
1. DETAILS SHOWN ON THIS DRAWING ARE TYPICAL DETAILS AND SHALL BE USED WHOLLY OR IN PART WHERE THEY APPLY EXCEPT WHERE MODIFIED BY DETAILED DRAWINGS & SPECIFICATIONS.

NO.	DATE	REVISION	APP.

PLOTTED: 12/19/2025 10:45:33 AM

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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THEODORE RICHARD KRULL
143561
DECEMBER 19, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

PINE PRAIRIE
GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-401

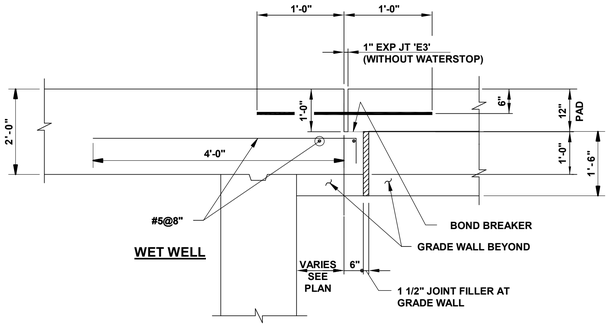
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SHEET NO. 156 OF 230

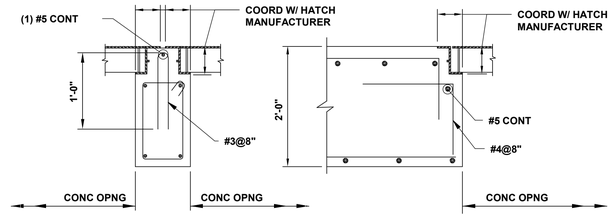
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

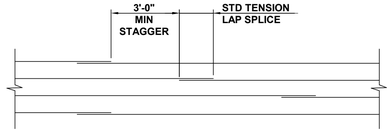
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TYPICAL EXPANSION JOINT
(BETWEEN WET WELL AND VALVE PAD)

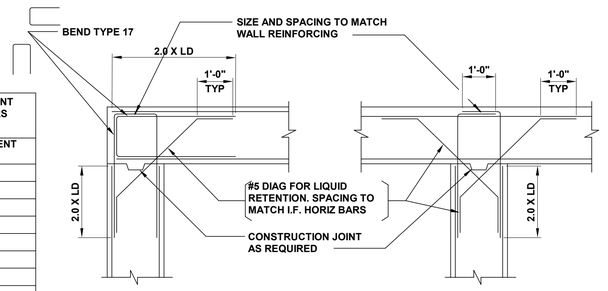


TYPICAL HATCH FRAME SECTIONS

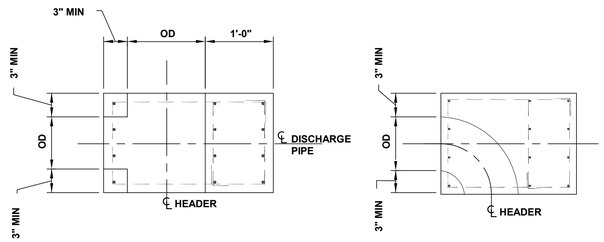


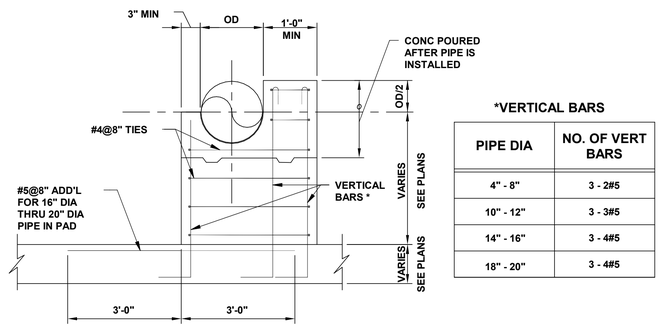
SPLICE LAYOUT FOR HOOP BARS
WET WELL WALL

LD=TENSILE DEVELOPMENT LENGTH FOR REINF BARS WITH FY = 60 KSI	
BAR SIZE	TENSION DEVELOPMENT LENGTH 'LD' INCHES
3	12
4	12
5	15
6	19
7	26
8	35
9	44
10	56
11	68



TYPICAL DETAILS OF WALL REINFORCEMENT

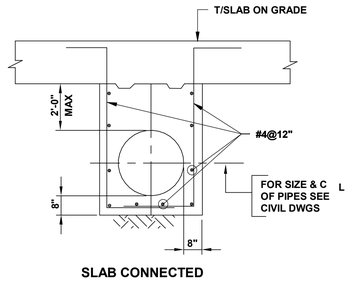




*VERTICAL BARS

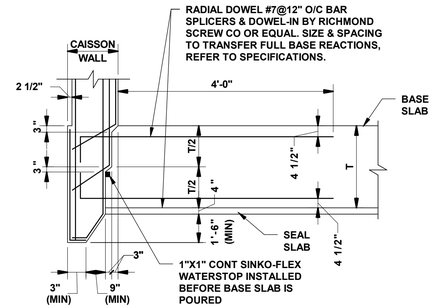
PIPE DIA	NO. OF VERT BARS
4" - 8"	3 - 2#5
10" - 12"	3 - 3#5
14" - 16"	3 - 4#5
18" - 20"	3 - 4#5

TYPICAL THRUST BLOCK DETAILS

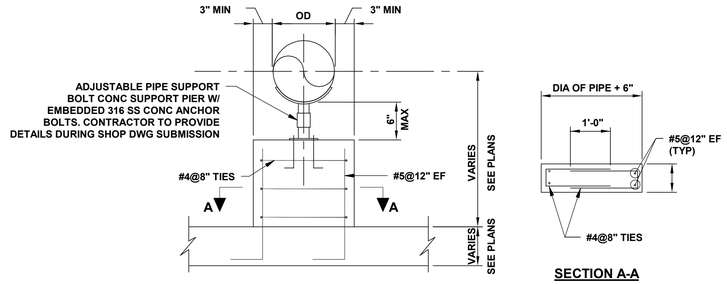


SLAB CONNECTED

PIPE ENCASEMENT DETAILS

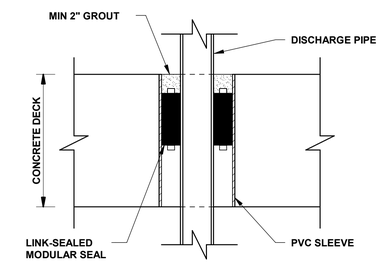


CAISSON METHOD TYP BASE DETAIL



NOTES:
1. CONCRETE SUPPORT PIER IS NOT A THRUST BLOCK AND IS NOT INTENDED TO REPLACE THRUST BLOCK PROVIDED AT OTHER LOCATIONS.
2. PLACE SUPPORT PIER APPROX 9" TO 24" FROM CHECK VALVE, SEE CIVIL DRAWINGS. DO NOT PLACE SUPPORT PIER ON TOP OF EXPANSION JOINT.

TYPICAL CONC PIPE SUPPORT PIER DETAIL



TYPICAL DECK PENETRATION FOR DISCHARGE PIPE

NOTES:
1. DETAILS SHOWN ON THIS DRAWING ARE TYPICAL DETAILS AND SHALL BE USED WHOLLY OR IN PART WHERE THEY APPLY EXCEPT WHERE MODIFIED BY DETAILED DRAWINGS & SPECIFICATIONS.

NO.	DATE	REVISION	APP.

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GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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THEODORE RICHARD KRULL
Engineer
143561
Registration Number
DECEMBER 19, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

PINE PRAIRIE

TYPICAL DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-402

HORIZ: As indicated

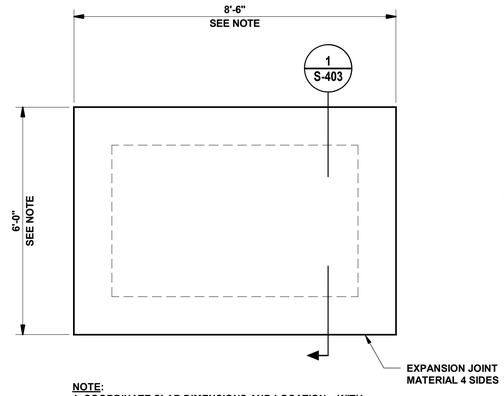
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SHEET NO. 157 OF 230

DRAWING SCALE

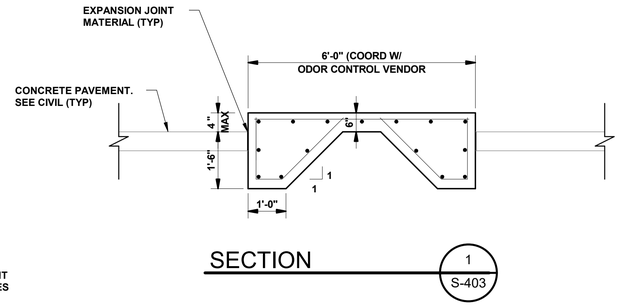
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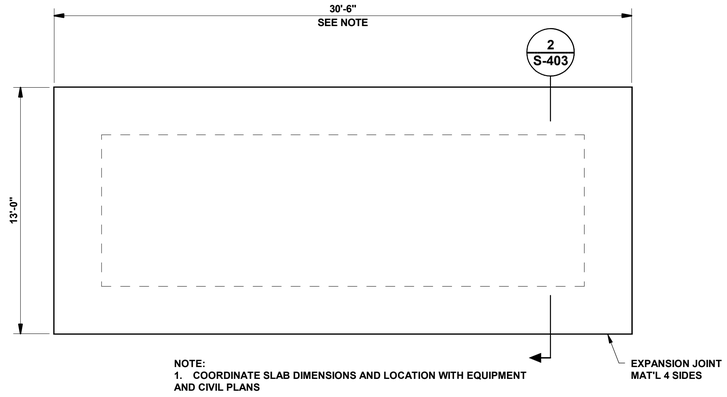


NOTE:
1. COORDINATE SLAB DIMENSIONS AND LOCATION WITH ODOR CONTROL VENDOR AND CIVIL PLANS.

ODOR CONTROL PAD PLAN

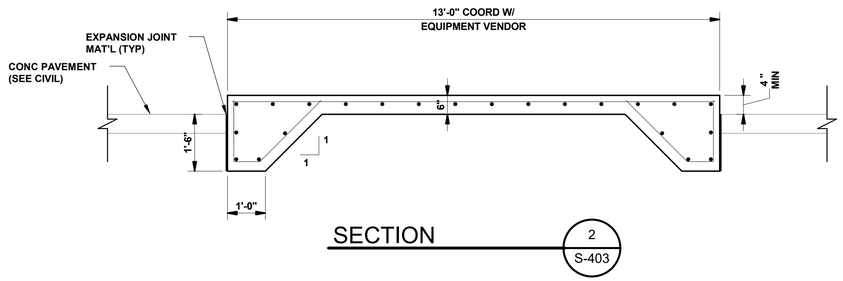


SECTION 1 / S-403



NOTE:
1. COORDINATE SLAB DIMENSIONS AND LOCATION WITH EQUIPMENT AND CIVIL PLANS

ELECTRICAL PAD PLAN



SECTION 2 / S-403

NO.	DATE	REVISION	APP.

PLOTTED: 12/19/2025 10:45:34 AM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-6570

INTERIM REVIEW ONLY

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THEODORE RICHARD KRULL
143561
Registration Number
DECEMBER 19, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

PINE PRAIRIE
ODOR CONTROL AND ELECTRICAL PAD PLAN AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-403

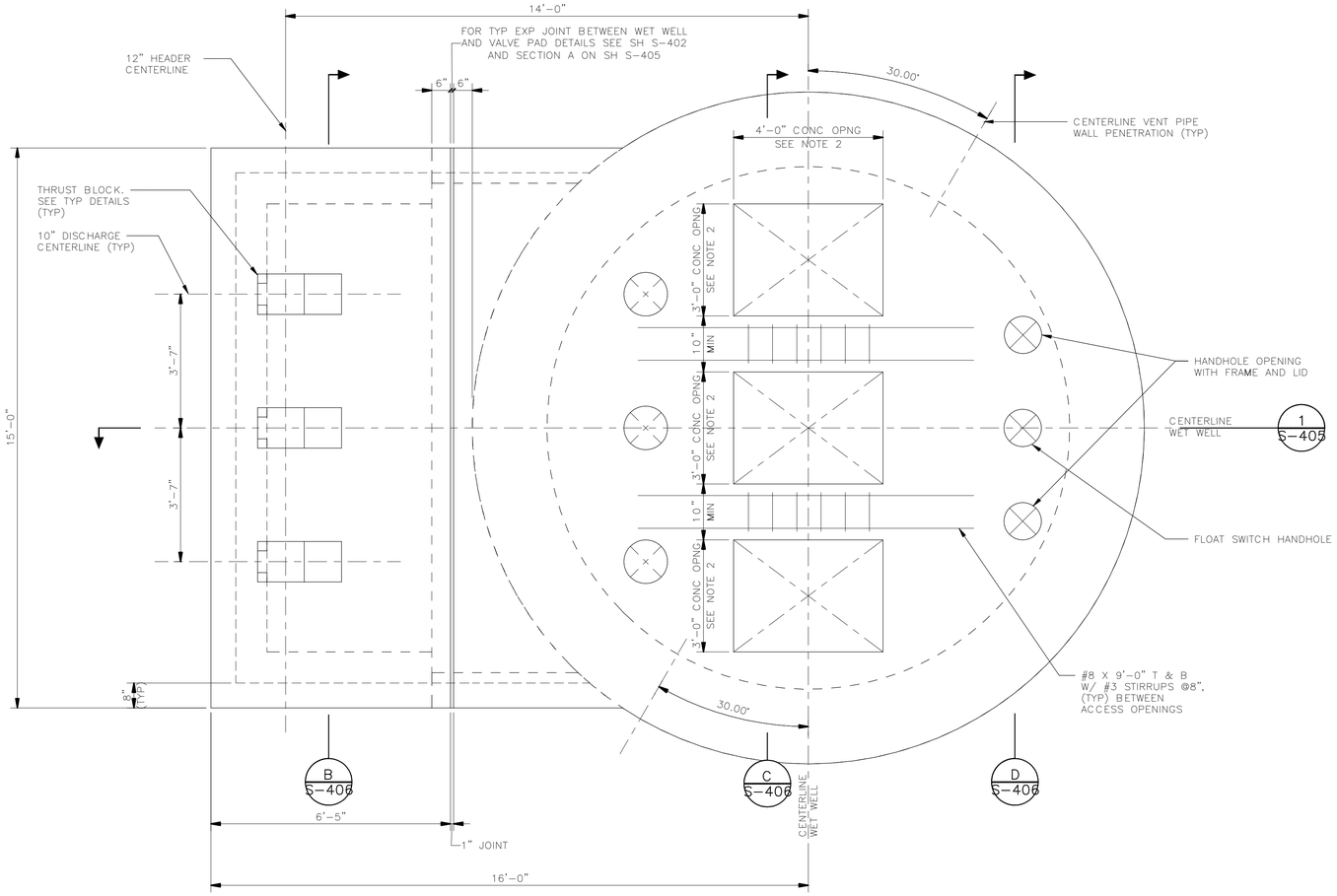
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VERT: As indicated

SHEET NO. 158 OF 230

DRAWING SCALE

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FILEPATH: Autodesk Docs://081109_COH_Lift_Station_Rehab_and_Reconstruction/081109_S_PPR_central_R23.rvt



PLAN AT GRADE

NOTES:

1. FOR ADDITIONAL REINFORCEMENT AT OPENINGS NOT SHOWN, SEE SHEET S-401.
2. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS. HANDHOLES FOR INSTRUMENTS AND FLOAT SWITCHES SHALL BE 12-INCH DIAMETER.
3. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL CONFIRM.
4. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
5. WET WELL TO BE COATED WITH PROTECTIVE COATING PER PROJECT SPECIFICATIONS, CONSULT WITH COH PROJECT MANAGER FOR APPROVED PRODUCTS. COATING SHALL COVER ALL CONCRETE SURFACES, AND SHALL EXTEND TO A MINIMUM OF 12" BELOW THE LOW WATER ELEVATION.
6. DISCHARGE OPENINGS SHALL HAVE CAST-IN PVC SLEEVES SIZED FOR DISCHARGE RISER WITH LINK-SEAL® MODULAR SEALS.

NO.	DATE	REVISION	APP.

PLOTTED: 1/23/2026 12:56:08 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9870

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143561
DECEMBER 19, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

PINE PRAIRIE

PUMP STATION - PLAN AT GRADE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-404

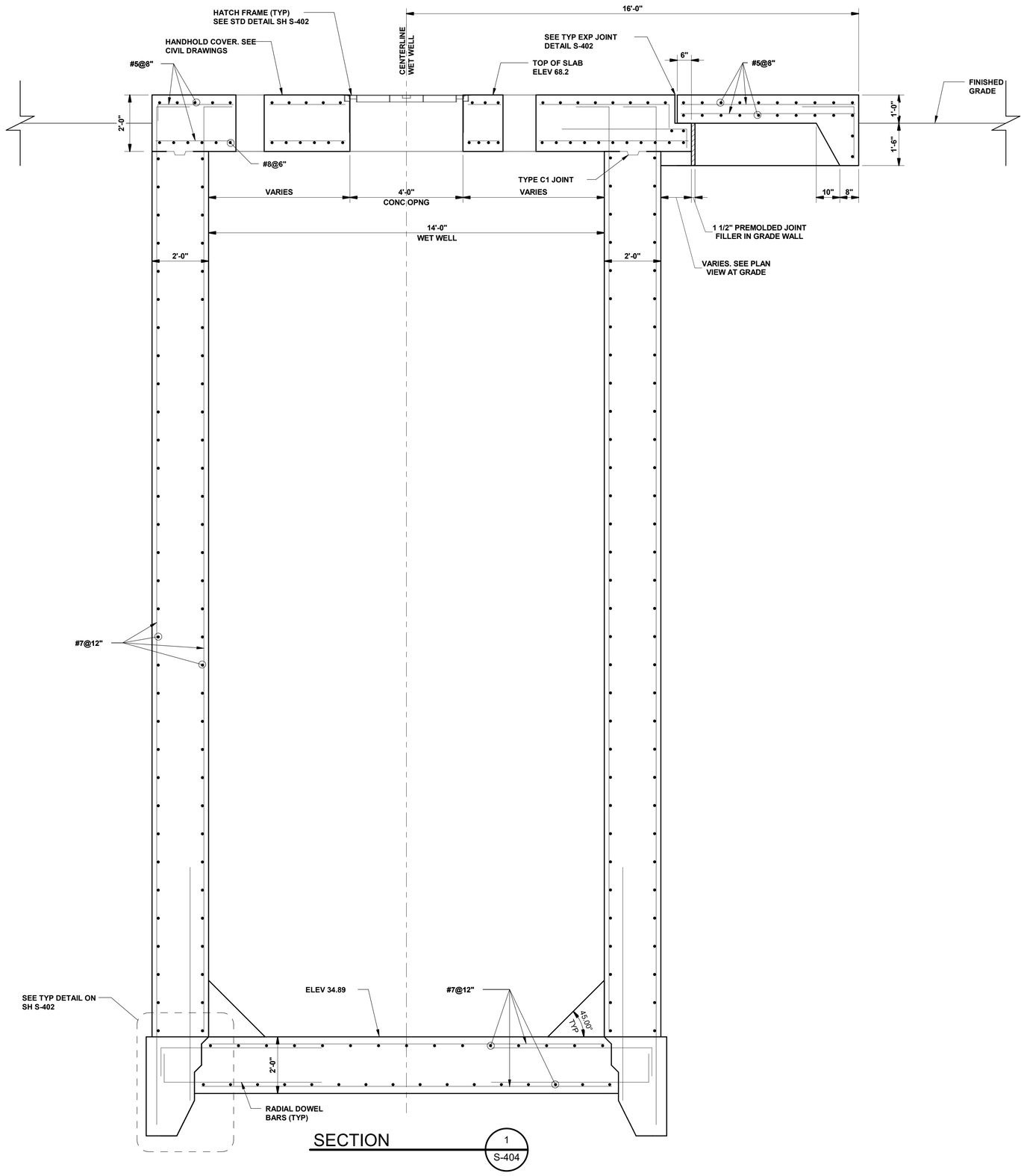
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VERT: 1/2" = 1'-0"

SHEET NO. 159 OF 230

DRAWING SCALE

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FILEPATH: Autodesk Docs://081109_COH_Lift_Station_Rehab_and_Reconstruction/081109_S_PPR_central_R23.rvt



SECTION 1 / S-404

NOTES:

1. FOR ADDITIONAL REINFORCEMENT AT OPENINGS NOT SHOWN, SEE SHEET S-401.
2. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
3. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL CONFIRM.
4. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
5. WET WELL TO BE COATED WITH PROTECTIVE COATING PER PROJECT SPECIFICATIONS, CONSULT WITH COH PROJECT MANAGER FOR APPROVED PRODUCTS. COATING SHALL COVER ALL CONCRETE SURFACES, AND SHALL EXTEND TO A MINIMUM OF 12" BELOW THE LOW WATER ELEVATION.

NO.	DATE	REVISION	APP.

PLOTTED: 12/19/2025 10:45:34 AM

GANNETT FLEMING

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

PINE PRAIRIE

CAISSON CONSTRUCTION AT WET WELL

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-405

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

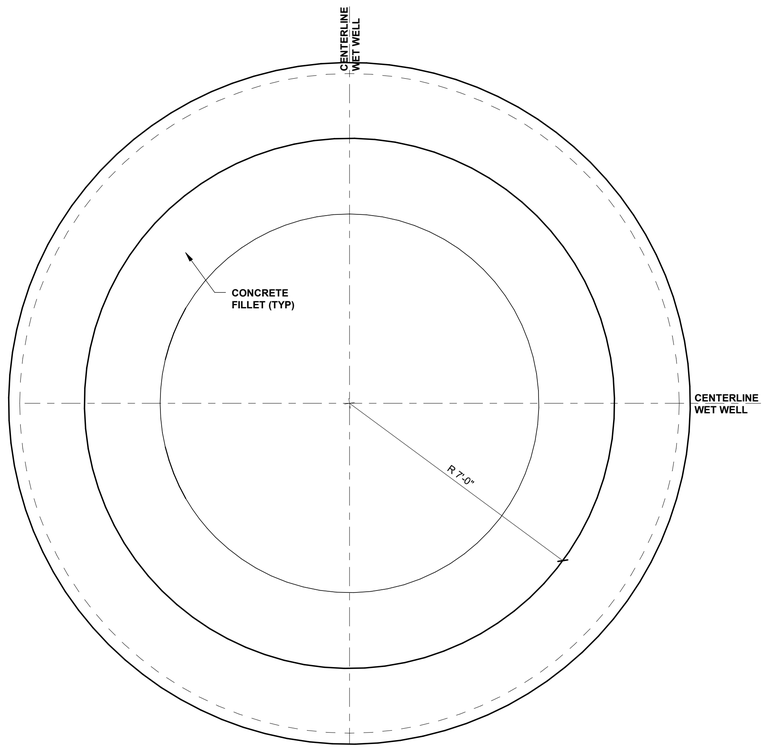
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SHEET NO. 160 OF 230

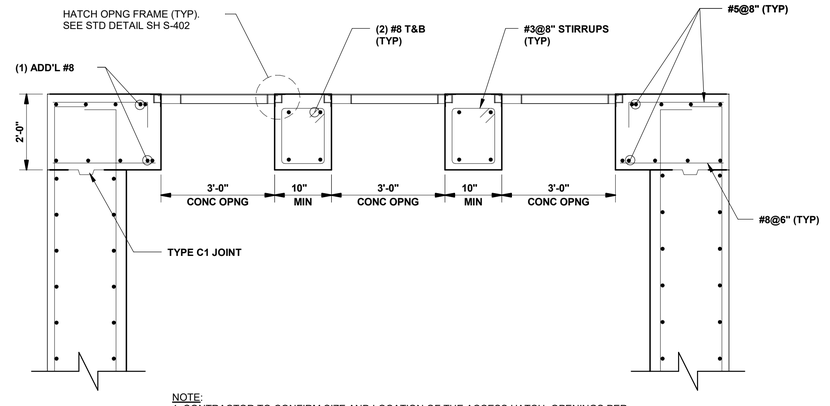
DRAWING SCALE

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FILEPATH: Autodesk Docs://081109_COH_Lift_Station_Rehab_and_Reconstruction/081109_S_PPR_central_R23.rvt

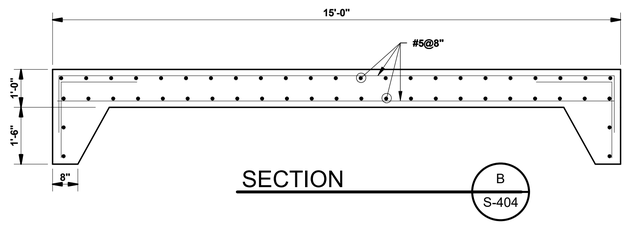


BASE SLAB PLAN

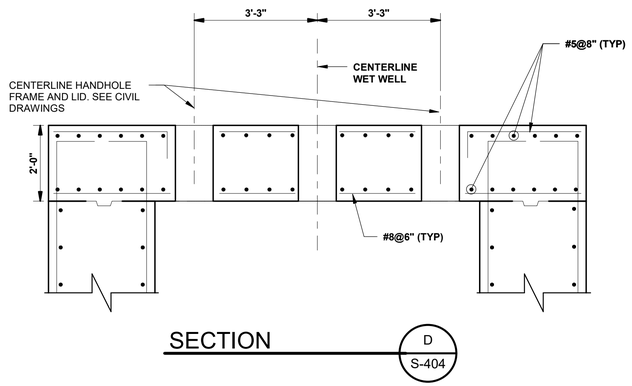


NOTE:
1. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.

SECTION C S-404



SECTION B S-404



SECTION D S-404

NO.	DATE	REVISION	APP.

PLOTTED: 12/19/2025 10:45:35 AM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Engineer
143561
Registration Number
DECEMBER 19, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

PINE PRAIRIE

BASE SLAB PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

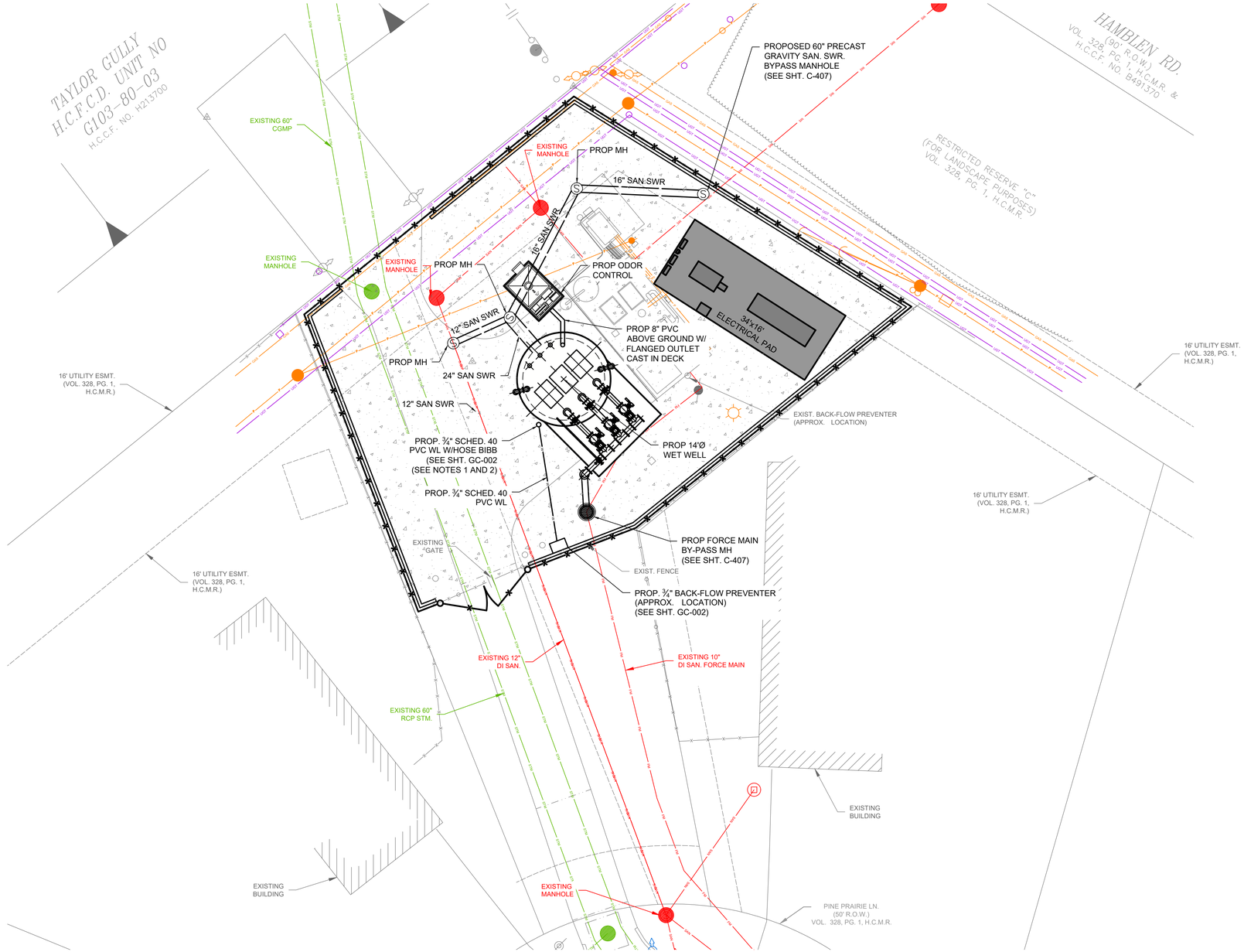
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-406	HORIZ: 1/2" = 1'-0"
	VERT: 1/2" = 1'-0"
SHEET NO. 161 OF 230	DRAWING SCALE

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0 10' 20'

1"=10'

NO.	DATE	REVISION	APP.

PEN TABLE: -----

PLOTTED: 1/29/2026 1:07 PM

NOTES:

1. CONTRACTOR TO FIELD VERIFY LOCATION OF EXISTING WATER LINE.
2. EXTEND EXISTING WATER LINE TO PROP. HOSE BIBB.
3. REMOVE AND SALVAGE EXIST. BACK FLOW PREVENTER.

GANNETT FLEMING

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3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Craig Alexander Perry
Registered Number
116345
JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

YARD PIPING

PINE PRAIRIE LIFT STATION
PROPOSED
YARD PIPING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-401

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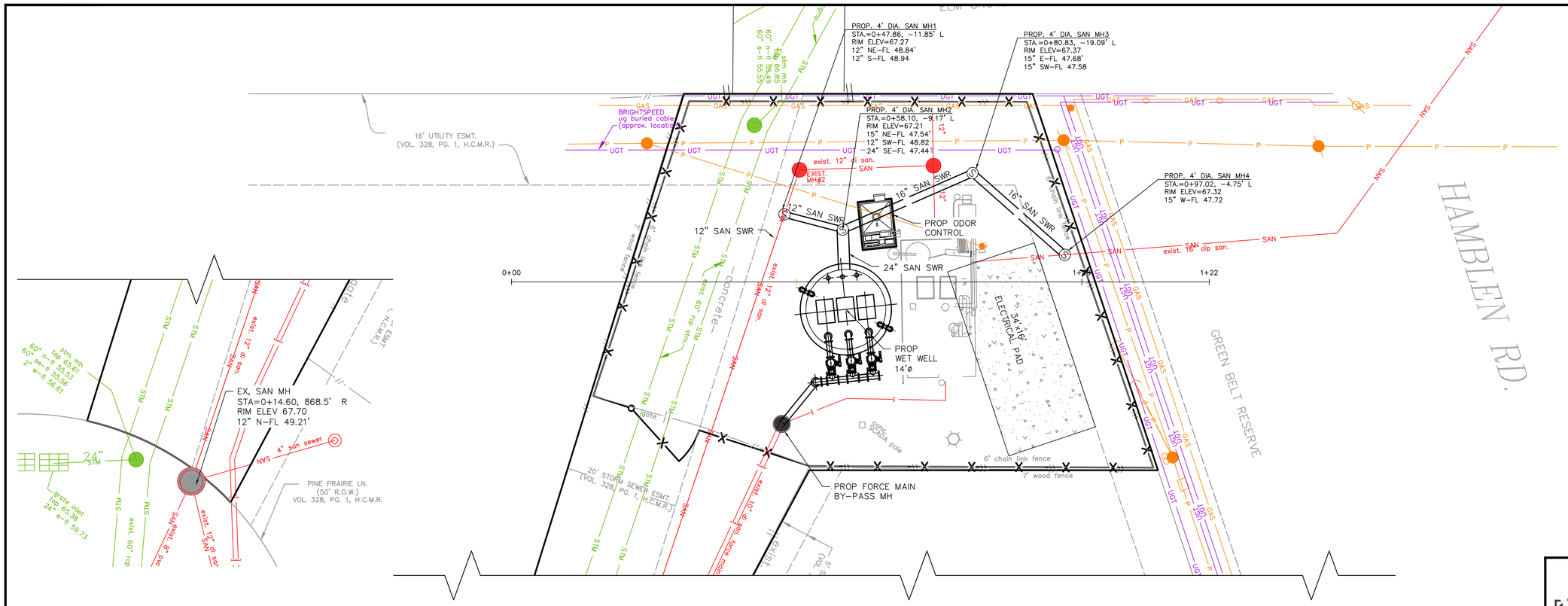
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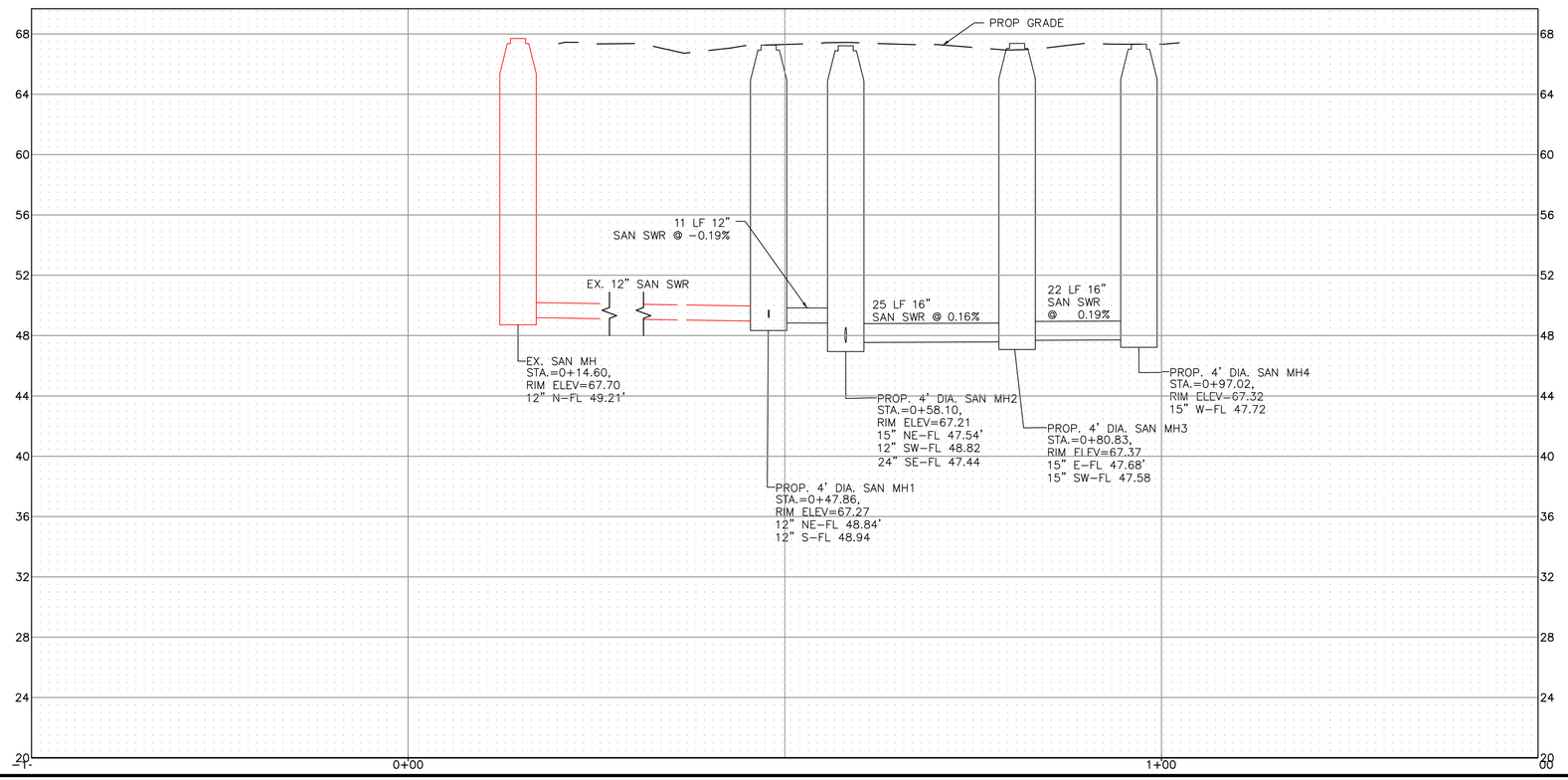
SHEET NO. 162 OF 230

DRAWING SCALE

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FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Pine Prarie\000 Y-401.dwg





SCALE: HORIZ. 1" = 10'-0"
VERT. 1"=5'-0"

NO.	DATE	REVISION	APP.

PLOTTED: 1/23/2026 12:07 PM PEN TABLE: -----

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9870

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Craig Alexander Perry
Signature
116345
License Number
JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

YARD PIPING

PINE PRAIRIE LIFT STATION
PROPOSED
SANITARY SEWER

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-402

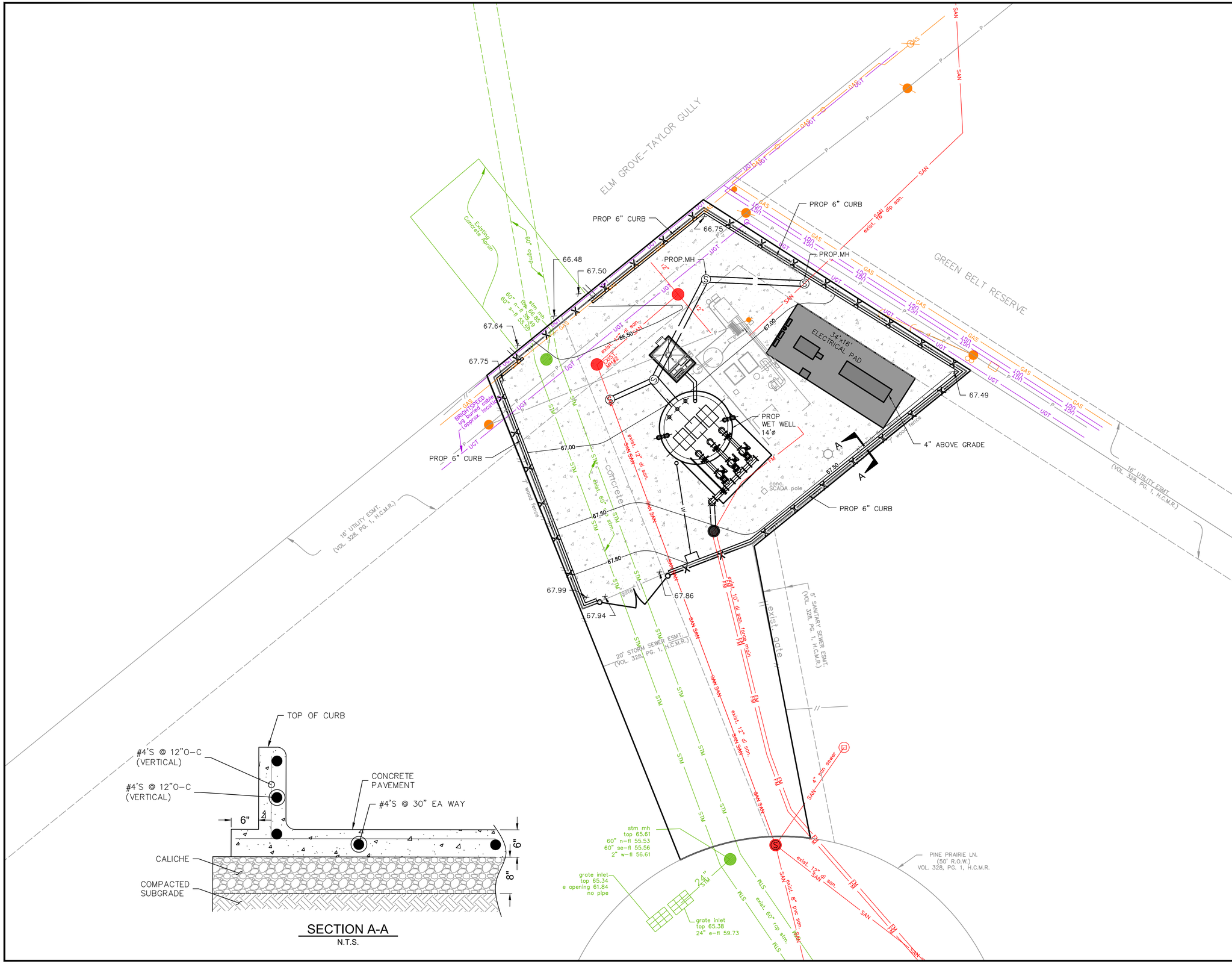
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VERT: 1"=5'

SHEET NO. 163 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH LIft Station\PER\Pine Prarie\000 Y-402.dwg



SECTION A-A
N.T.S.

10' 0 10' 20'

SCALE: 1" = 10'

NO.	DATE	REVISION	APP.

PEN TABLE: -----

PLOTTED: 1/23/2026 11:45 AM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Craig Alexander Perry
116345
JANUARY 23, 2025

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL DRAINAGE

PINE PRAIRIE LIFT STATION
PROPOSED
GRADING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-401

HORIZ: 1"=10'

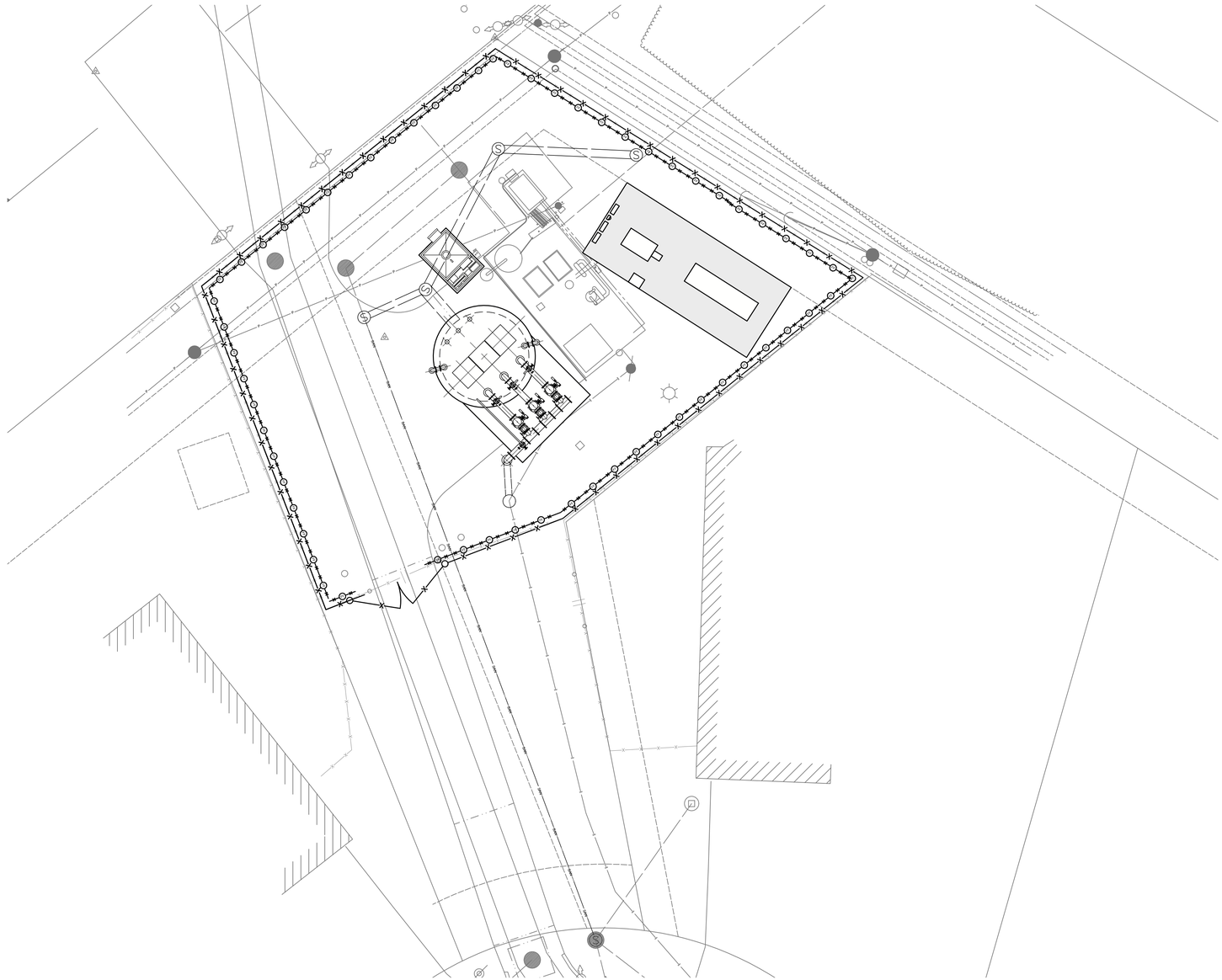
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SHEET NO. 164 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Pine Prairie\000 D-401.dwg



0 10' 20'
1"=10'

NO.	DATE	REVISION	APP.

PLOTTED: 1/23/2026 11:47 AM PEN TABLE: ----

NOTES:
1. STORM WATER POLLUTION PREVENTION PLAN SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND DRAWINGS.

2. CONTRACTOR IS RESPONSIBLE FOR MODIFICATIONS TO SWPPP AS NECESSARY TO REDUCE AND/OR ELIMINATE SEDIMENT FROM ENTERING DRAINAGE SYSTEMS.

3. FILTER FABRIC FENCE SHALL NOT BE PLACED ACROSS DRIVEWAYS OR SIDEWALKS ACCESSING PRIVATE PROPERTY.

4. ALL DISTURBED AREAS THAT ARE NOT PAVED, COVERED BY PAVEMENT, SIDEWALK OR STRUCTURES SHALL BE SODDED.

5. PROVIDE A STANDARD STABILIZED CONSTRUCTION EXIT IN THE CONTRACTORS LAY DOWN/STORAGE AREA.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SIDEWALKS AND CURB ADJACENT TO THE CONSTRUCTION. IF THE SIDEWALKS OR CURBS ARE DAMAGED THE CONTRACTOR WILL BE RESPONSIBLE TO REPLACE AT NO EXTRA COST.

7. IN AREAS OF OPEN CUT CONTRACTOR TO RESTORE WORK AREA TO EXISTING CONDITIONS.

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Registration Number
JANUARY 23, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL DRAINAGE

PINE PRAIRIE LIFT STATION
PROPOSED
STORM WATER POLLUTION
PREVENTION PLAN AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-402

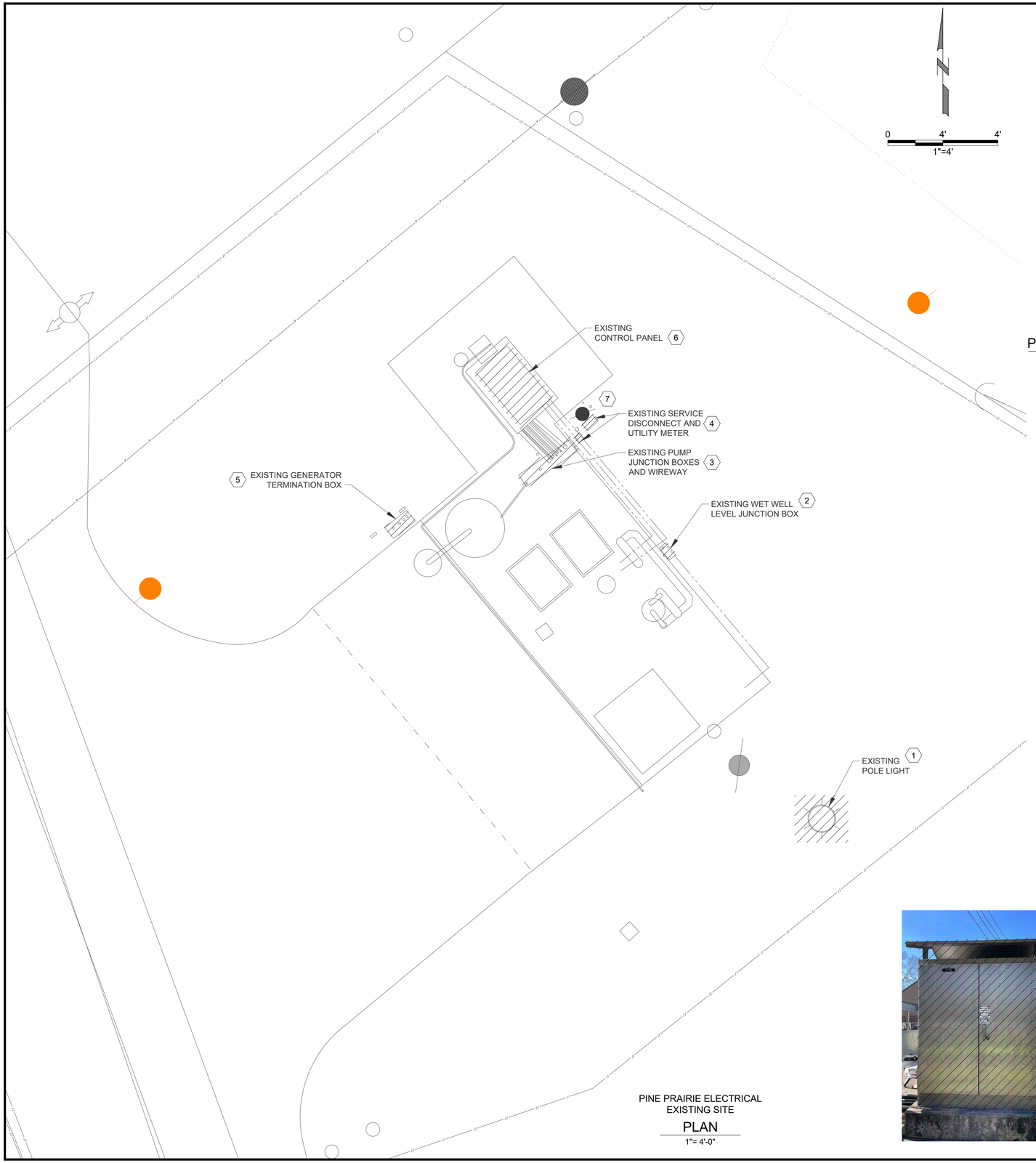
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SHEET NO. 165 OF 230

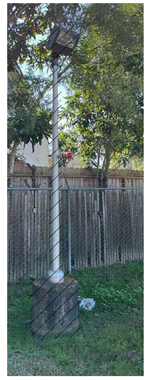
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Pine Prarie\000 D-402.dwg



PINE PRAIRIE ELECTRICAL
EXISTING SITE
PLAN
1"= 4'-0"



EXISTING POLE LIGHT 1
PHOTOGRAPH A
NTS -



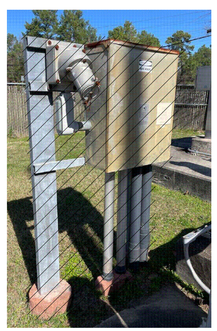
EXISTING WET WELL LEVEL JUNCTION BOX 2
PHOTOGRAPH B
NTS -



EXISTING PUMP JUNCTION BOXES & WIREWAY 3
PHOTOGRAPH C
NTS -



EXISTING SERVICE DISCONNECT & UTILITY METER 4
PHOTOGRAPH D
NTS -



EXISTING GENERATOR DISCONNECT 5
PHOTOGRAPH E
NTS -



EXISTING CONTROL PANEL 6
PHOTOGRAPH F
NTS -



EXISTING SERVICE RISER
PHOTOGRAPH G
NTS -

NOTES BY SYMBOL "#":

1. EXISTING POLE LIGHT TO BE DEMOLISHED AND REMOVED.
2. EXISTING WET WELL LEVEL JUNCTION BOX TO BE DEMOLISHED AND REMOVED.
3. EXISTING PUMP JUNCTION BOXES & WIREWAY TO BE DEMOLISHED AND REMOVED.
4. EXISTING SERVICE DISCONNECT & UTILITY METER TO BE DEMOLISHED AND REMOVED.
5. EXISTING GENERATOR DISCONNECT TO BE DEMOLISHED AND REMOVED.
6. EXISTING CONTROL PANEL TO BE DEMOLISHED AND REMOVED.
7. EXISTING SERVICE RISER TO BE DEMOLISHED AND REMOVED.

LEGEND:

ITEMS TO BE DEMOLISHED.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 12/16/2025 7:28 PM

GAI
Gupta & Associates, Inc.
CONSULTING ENGINEERING
Registration No. F-2593
302 Dennis St.,
Houston, Texas 77006
Tel: 713-636-2936
Fax: 713-636-2987
email: hforouzan@gaiconsulting.com

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

PINE PRAIRIE
LIFT STATION
DEMOLITION SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-401

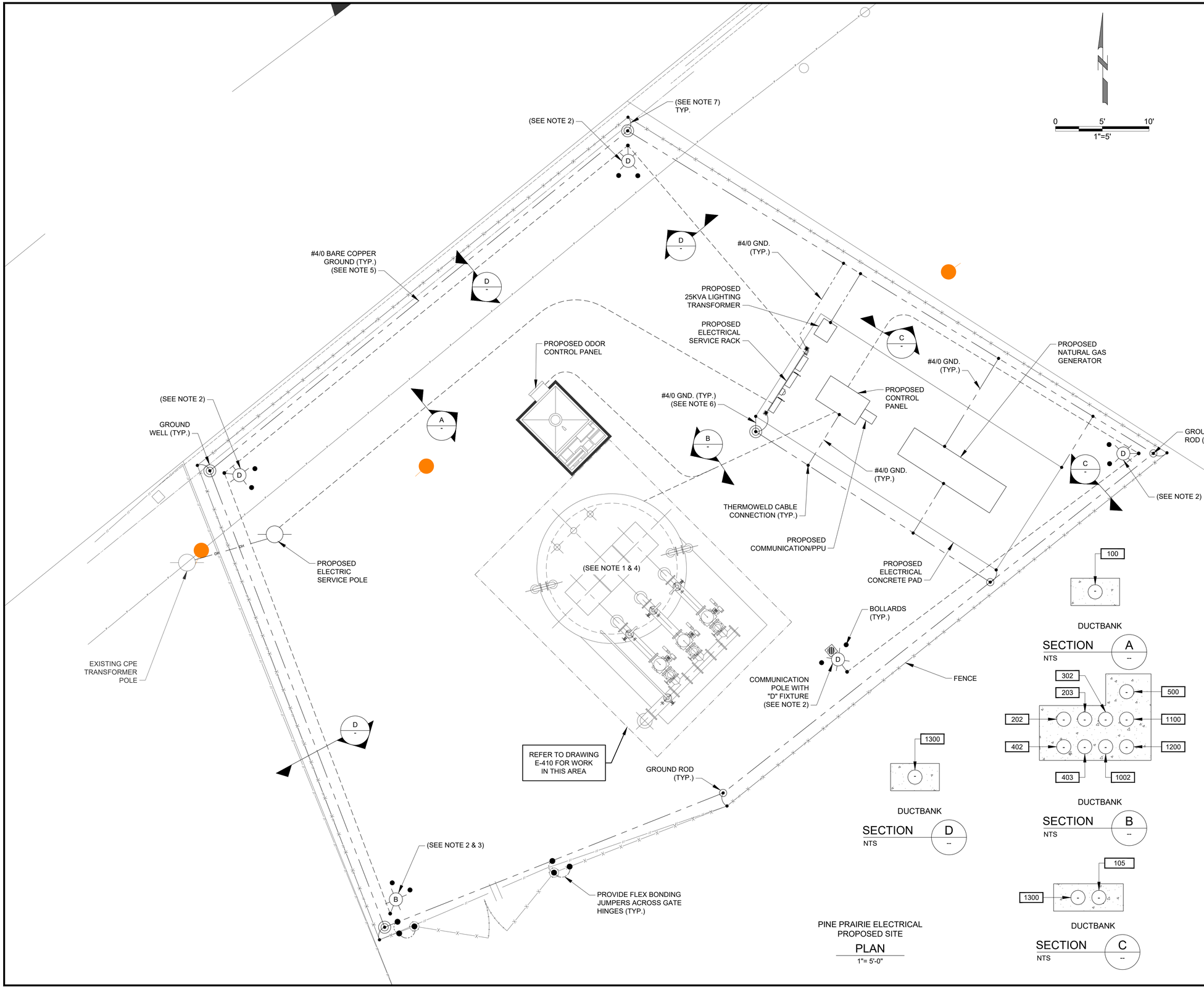
HORIZ: 1"=4'-0"
VERT: 1"=4'-0"

SHEET NO. 166 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-01.dwg



PINE PRAIRIE ELECTRICAL PROPOSED SITE

PLAN

1"= 5'-0"

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. YARD LIGHT CONTROLLED BY LIGHTING SWITCH.
3. TYPE "B" FIXTURE TO BE INSTALLED ON THE POLE PROVIDING WIRES FOR THE "B" LIGHT.
4. INSIDE WETWELL RATED NEMA CLASS 1, DIV. 1. OUTSIDE ABOVE GROUND, AROUND WETWELL RATED CLASS 1, DIV. 2 ACCORDING TO NFPA 820.
5. GROUNDING LOOP SHALL BE BURIED 30" BELOW FINISHED GRADE.
6. #4/0 BARE COPPER GROUND TO BE BONDED TO PAD REBAR.
7. #2/0 BARE COPPER GROUND TO BE BONDED TO FENCE POST.

NO.	DATE	REVISION	APP.

PLOTTED: 12/16/2025 7:28 PM PEN TABLE: Z_PUB_WKS_H.ctb

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CONSULTING ENGINEERING
Registration No. F-2593
302 Dennis St.,
Houston, Texas 77006
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Fax: 713-636-2987
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

PINE PRAIRIE
LIFT STATION
PROPOSED SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

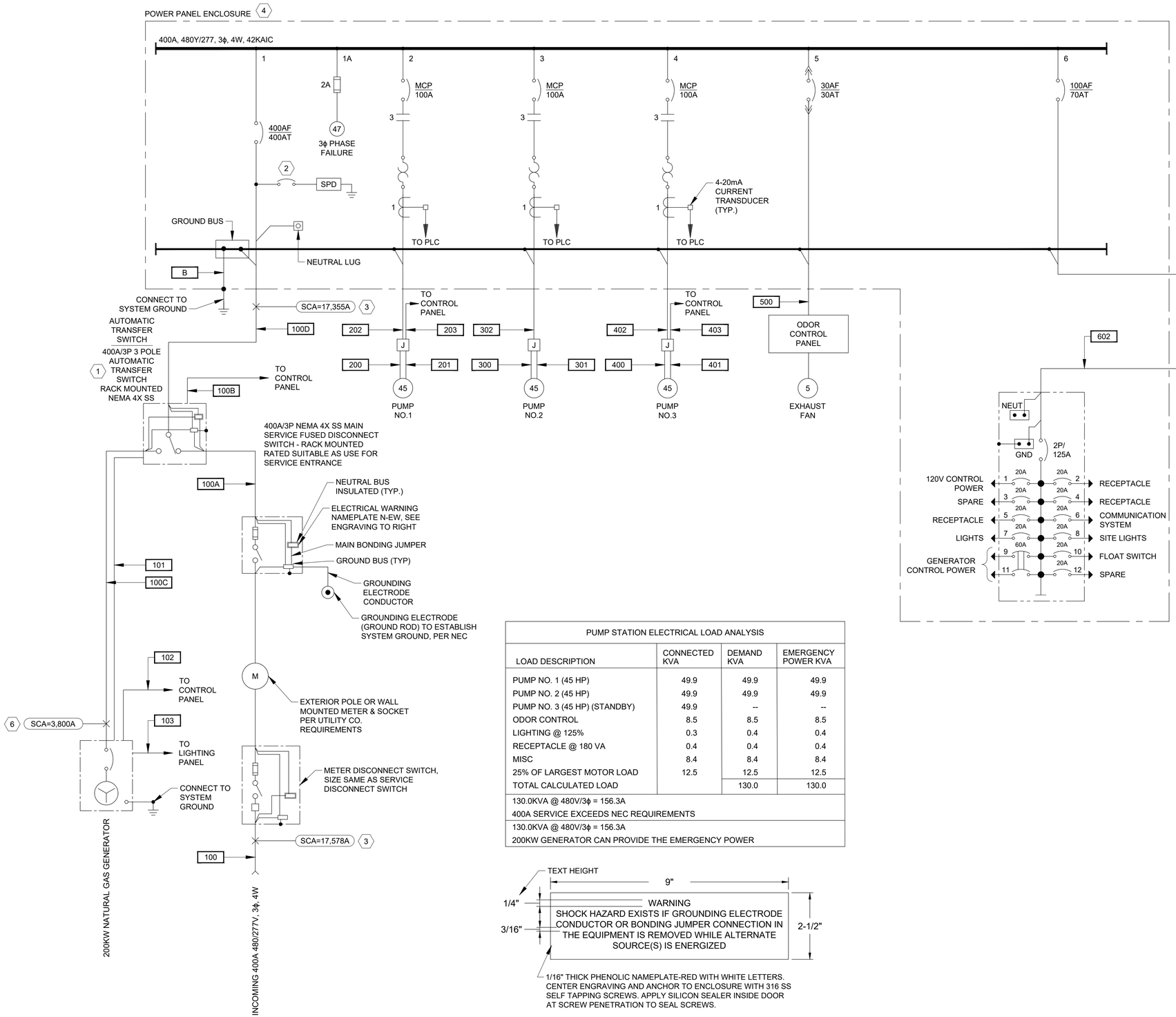
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-402	HORIZ: 1"=5'-0" VERT: 1"=5'-0"
SHEET NO. 167 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-02.dwg



PUMP STATION ELECTRICAL LOAD ANALYSIS			
LOAD DESCRIPTION	CONNECTED KVA	DEMAND KVA	EMERGENCY POWER KVA
PUMP NO. 1 (45 HP)	49.9	49.9	49.9
PUMP NO. 2 (45 HP)	49.9	49.9	49.9
PUMP NO. 3 (45 HP) (STANDBY)	49.9	--	--
ODOR CONTROL	8.5	8.5	8.5
LIGHTING @ 125%	0.3	0.4	0.4
RECEPTACLE @ 180 VA	0.4	0.4	0.4
MISC	8.4	8.4	8.4
25% OF LARGEST MOTOR LOAD	12.5	12.5	12.5
TOTAL CALCULATED LOAD		130.0	130.0
130.0KVA @ 480V/3ϕ = 156.3A			
400A SERVICE EXCEEDS NEC REQUIREMENTS			
130.0KVA @ 480V/3ϕ = 156.3A			
200KW GENERATOR CAN PROVIDE THE EMERGENCY POWER			

ELECTRICAL WARNING NAMEPLATE N-EW ENGRAVING

NOTES BY SYMBOL "#":

1. PROVIDE A NORMALLY OPEN (NO) AUXILIARY CONTACT FOR BOTH ON POSITIONS.
2. PROVIDE BREAKER ACCORDING TO MANUFACTURER'S REQUIREMENTS.
3. POINT TO POINT METHOD IS USED FOR SHORT CIRCUIT CURRENT CALCULATION.
4. CONTRACTOR SHALL PROVIDE A PERMANENTLY AFFIXED LABEL (2" X 3") SHOWING THE AVAILABLE FAULT CURRENT AND CALCULATION DATE. THE LABEL SHALL BE BLUE LETTERING ON A CONTRASTING BACKGROUND.
5. THE INSULATION TYPES OF ALL ELECTRICAL CONDUCTORS USED IN THE PROJECT HAVE BEEN SPECIFIED IN ELECTRICAL SPECIFICATIONS (16120, 16121, AND 16122). THE TYPES OF CONDUITS USED IN THE PROJECT HAS BEEN SPECIFIED IN ELECTRICAL SPECIFICATIONS 16111.
6. THE INFORMATION IS PROVIDED BY GENERATOR MANUFACTURER (CUMMINS).

NO.	DATE	REVISION	APP.

GAI
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

PINE PRAIRIE
LIFT STATION
ONE-LINE DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-403

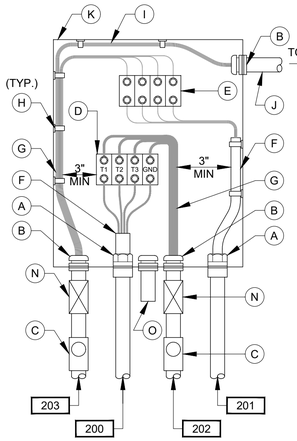
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VERT: NONE

SHEET NO. 168 OF 230

DRAWING SCALE

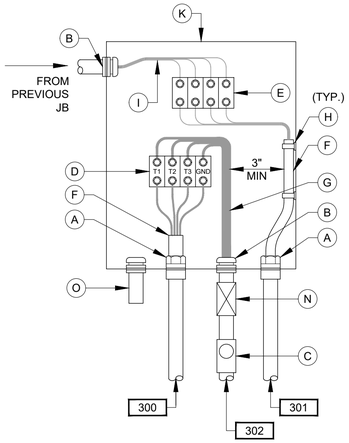
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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-03.dwg



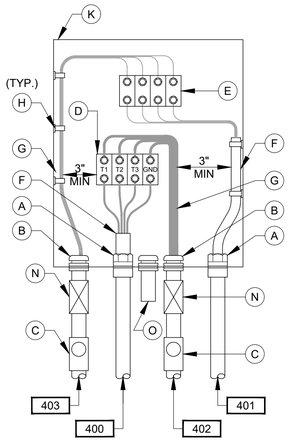
PUMP NO.1
JUNCTION BOX

DETAIL 3
NTS
(SEE NOTE 7)



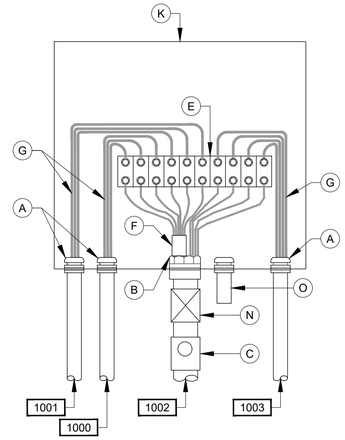
PUMP NO.2
JUNCTION BOX

DETAIL 4
NTS
(SEE NOTE 7)



PUMP NO.3
JUNCTION BOX

DETAIL 5
NTS
(SEE NOTE 7)

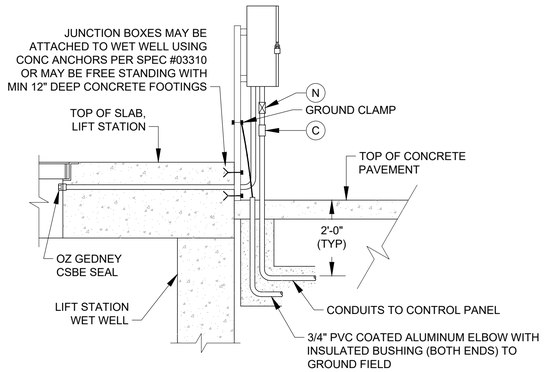


LEVEL TRANSMITTER
JUNCTION BOX

DETAIL 6
NTS
(SEE NOTE 7)

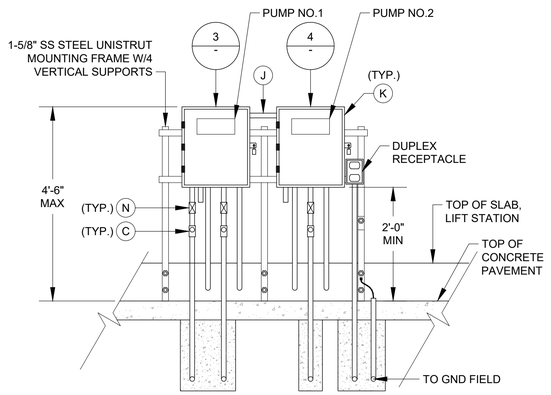
NOTES:

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 NON INTRINSICALLY SAFE MOTOR FEEDER WIRING.
3. UNLESS OTHERWISE NOTED, ALL EXTERIOR EXPOSED CONDUITS SHALL BE PVC COATED ALUMINUM.
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.
10. COORDINATE WITH WASTE WATER OPERATIONS ELECTRICAL ORGANIZATION FOR THE OPENING OF JUNCTION BOXES TO THE SIDE OF WET WELL IF REQUIRED DURING CONSTRUCTION.
11. THE ENCLOSURES WITH ELECTRICAL CIRCUITS SHALL BE A MINIMUM OF 5 FEET FROM ANY CLASSIFIED AREA, OTHERWISE EXPLOSION PROOF TYPE ENCLOSURES SHALL BE USED.

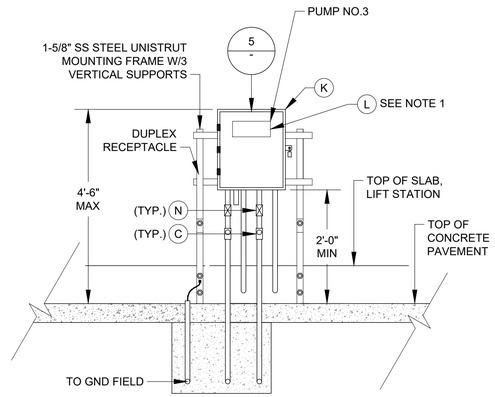


TYP SIDE VIEW FOR DETAIL 1, 2, & 7

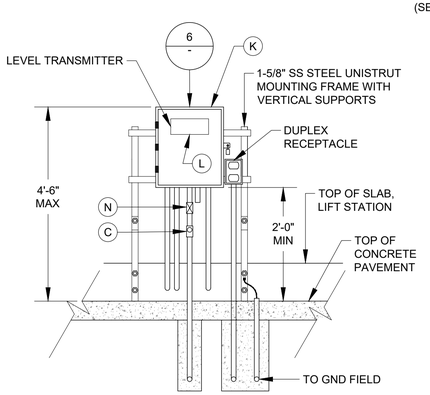
(SEE NOTE 10)



DETAIL 1
NTS
(SEE NOTE 9 & 11)



DETAIL 2
NTS
(SEE NOTE 9)



DETAIL 7
NTS
(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 PUMP NO.1 TO NO.2
- 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, MINIMUM SIZE: 12"W X 16"H X 6"D
- L - NAMEPLATE, SEE SPECIFICATIONES (SEE NAMEPLATE SCHEDULE)
- M - NOT USED.
- N - EXPANSION FITTING
- O - DRAIN VENT

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

PINE PRAIRIE
LIFT STATION
JUNCTION BOX DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

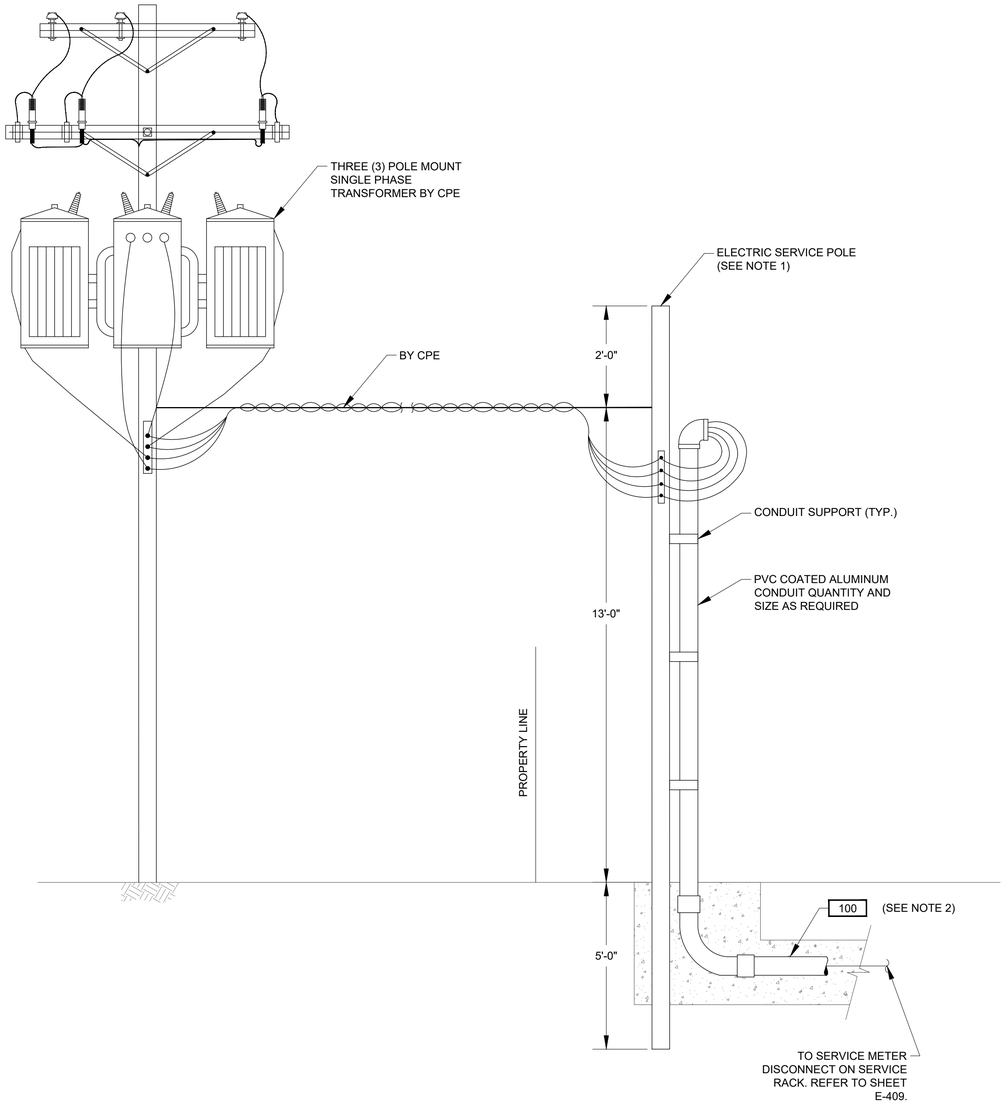
DRAWING NO. E-404

HORIZ: NONE
VERT: NONE

SHEET NO. 169 OF 230
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DRAWING SCALE

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-04.dwg



ELECTRICAL SERVICE ENTRANCE

DETAIL 1
NTS. -

NOTES:

1. WOODEN POLE 20' LONG. TOP DIAMETER 6", BOTTOM DIAMETER 8" PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.
2. ELECTRICAL SERVICE FEEDER PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR. COORDINATE WITH CPE FOR THE REQUIREMENTS OF THE INSTALLATION.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

PINE PRAIRIE
LIFT STATION
SERVICE POLE DETAIL

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-405

HORIZ: NONE
VERT: NONE

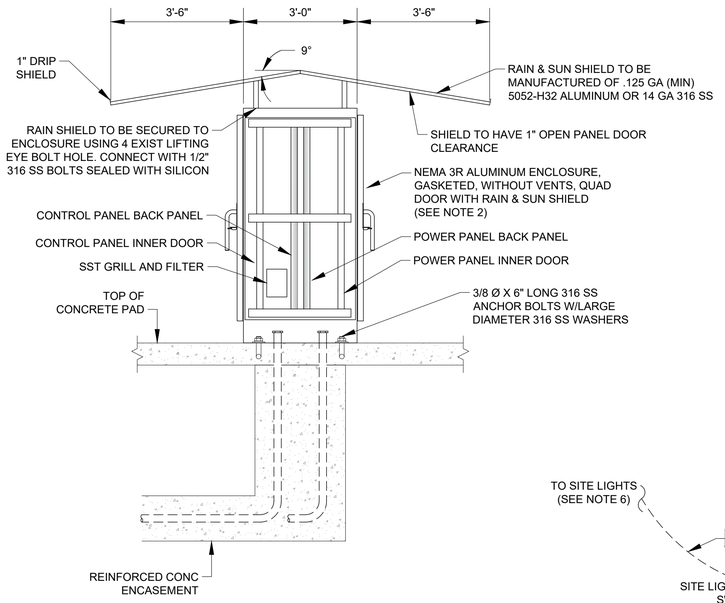
SHEET NO. 170 OF 230

DRAWING SCALE

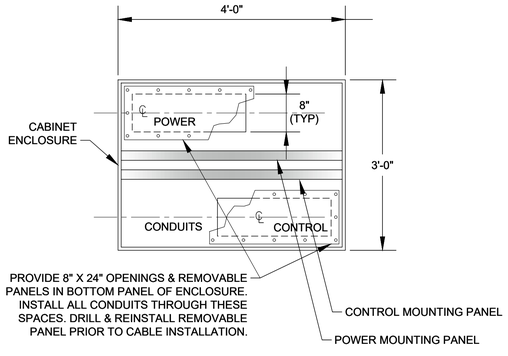
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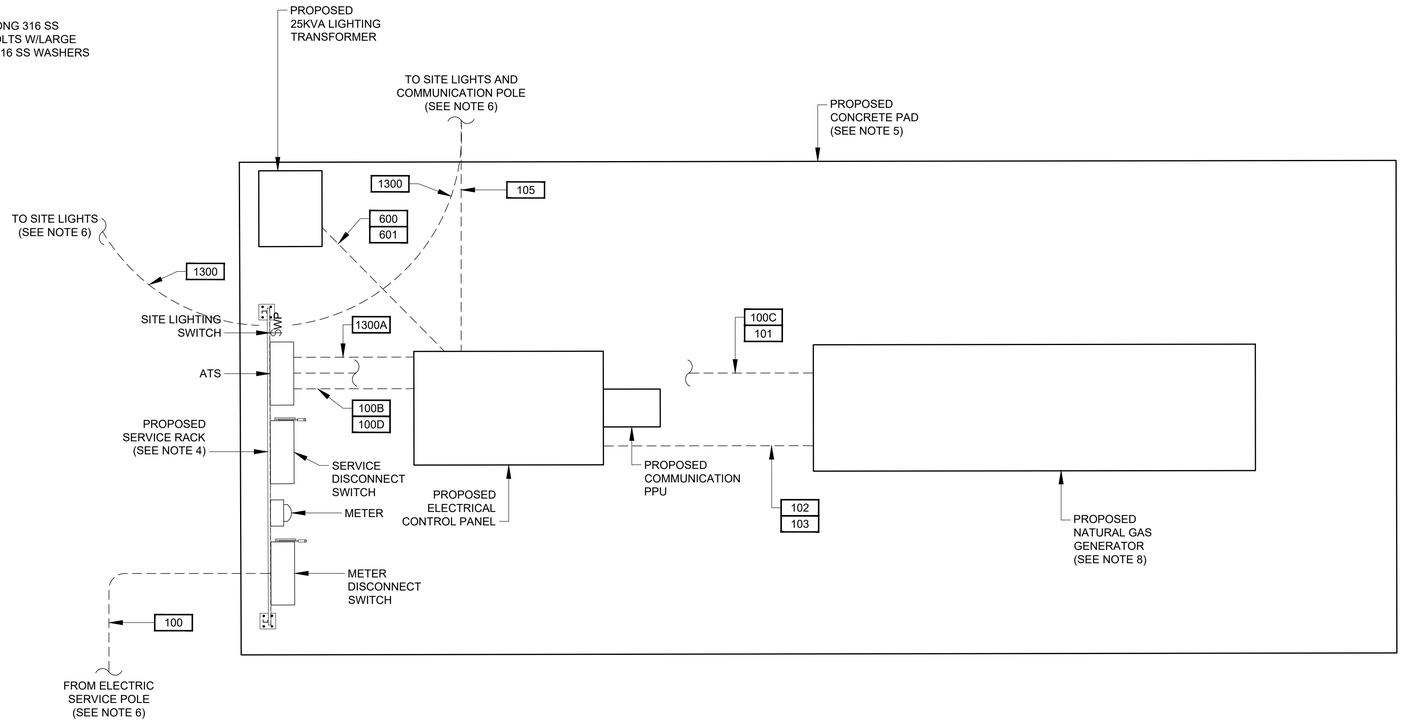
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CONTROL CABINET ENCLOSURE ON CONCRETE PAD



SECTION 2 (SEE NOTE 7)
NTS -



CONTROL CABINET ENCLOSURE ON ELEVATED PAD DETAIL

DETAIL 1
1/2" = 1'-0" -

NOTES:

1. SEE SHEET I-404 FOR EQUIPMENT SCHEDULE.
2. REFER TO SPEC 13325-8 FOR PANEL DIMENSIONS.
3. EXPANSION JOINT FITTINGS AS REQUIRED.
4. REFER TO SERVICE RACK FOR DETAIL.
5. REFER TO STRUCTURAL DRAWINGS .
6. REFER TO SHEET E-402 FOR CONTINUATION.
7. ALL CONDUITS ENTERING THE CABINET SHALL BE BOTTOM ENTRY.
8. THE GENERATOR WILL BE USED IN EMERGENCY USE ONLY.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

PINE PRAIRIE
LIFT STATION
CONTROL PANEL DETAIL

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-406
HORIZ: NONE
VERT: NONE
SHEET NO. 171 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-06.dwg

	DESCRIPTION	SERVICE		ROUTING			CONDUIT & WIRE SIZE
		VOLTAGE	AMPS OR HP	FROM	TO	VIA	
A	MAIN BONDING JUMPER	--	--	MAIN FUSED DISCONNECT NEUTRAL	MAIN FUSED DISCONNECT GROUND	--	#2 CU GND.
B	EQUIPMENT BONDING JUMPER	--	--	MCC/POWER PANEL ENCLOSURE	POWER/CONTROL PANEL & EQUIPMENT	--	#2 CU GND.
C	GROUNDED ELECTRODE CONDUCTOR	--	--	GROUNDING ELECTRODE	MAIN SERVICE FUSED DISCONNECT GROUNDING	--	#2 CU GND.
100	SERVICE ENTRANCE	480V	400A	UTILITY POWER SERVICE	METER DISCONNECT		3 #500 MCM., #2 NEUT., #2 GND., 3-1/2" C.
100A	MCC SERVICE POWER	480V	400A	SERVICE DISCONNECT	ATS	--	3 #500 MCM., #2 NEUT., #2 GND., 3-1/2" C.
100B	NORMAL/EMERGENCY POWER	24VDC	--	ATS	CONTROL PANEL	--	4#14 AWG., 1"C.
100C	EMERGENCY POWER	480V	400A	ATS	GENERATOR	--	3 #500 MCM., #2 NEUT., #2 GND., 3-1/2" C.
100D	ELECTRIC POWER	480V	400A	ATS	CONTROL PANEL	--	3 #500 MCM., #2 NEUT., #2 GND., 3-1/2" C.
101	GENERATOR CONTROL	120V	--	ATS	GENERATOR	--	6#14 AWG., #12 GND., 1"C.
102	ANNUNCIATOR	--	--	GENERATOR	CONTROL PANEL	--	12#14 AWG., #14 GND.
103	GENERATOR AUX. POWER	240/120V	60A	GENERATOR	LIGHTNING PANEL	--	3#4 AWG., #6 GND., 1-1/2"C.
105	COMMUNICATION	--	--	COMMUNICATION POLE	CONTROL PANEL	--	1-1/2"C. CAT 5E
200	PUMP NO. 1 POWER	480V	45 HP	PUMP NO. 1	PUMP NO. 1 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
201	PUMP NO. 1 CONTROLS	120V	--	PUMP NO. 1	PUMP NO. 1 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
202	PUMP NO. 1 POWER	480V	45 HP	PUMP NO. 1 JUNCTION BOX	PUMP STARTER	--	3#3, #6 GND., 1-1/2"C.
203	COMBINED PUMP CONTROLS	120V	--	PUMP NO. 1 JUNCTION BOX	PUMP STARTER	COMBINE PUMP 1 & 2 CONTROLS	COMBINE 200 & 300 TAG WIRING, 8#14, 1"C.
300	PUMP NO. 2 POWER	480V	45 HP	PUMP NO. 2	PUMP NO. 2 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
301	PUMP NO. 2 CONTROLS	120V	--	PUMP NO. 2	PUMP NO. 2 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
302	PUMP NO. 2 POWER	480V	45 HP	PUMP NO. 2 JUNCTION BOX	PUMP STARTER	--	3#4, #6 GND., 2"C.
400	PUMP NO. 3 POWER	480V	45 HP	PUMP NO. 3	PUMP NO. 3 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
401	PUMP NO. 3 CONTROLS	120V	--	PUMP NO. 3	PUMP NO. 3 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
402	PUMP NO. 3 POWER	480V	45 HP	PUMP NO. 3 JUNCTION BOX	PUMP STARTER	--	3#3, #6 GND., 1-1/2"C.
403	PUMP NO. 3 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	4#14, 1"C.
500	ODOR CONTROL POWER	480V	5 HP	CONTROL PANEL	ODOR CONTROL PANEL	--	3#10, #10 GND., 1"C.
600	LIGHTING TRANSFORMER FEEDER	480V	70A	POWER PANEL	LIGHTING TRANSFORMER	--	2#4, #6 GND., 1-1/2"C.
601	LIGHTING TRANSFORMER GROUND	--	--	LIGHTING PANEL	GROUND FIELD	--	#6 GND., 1"C.
602	LIGHTING PANEL FEEDER	120/240V	125A	LIGHTING TRANSFORMER	LIGHTING PANEL	--	3#1, #6 GND., 1-1/4" C.
1000	LEVEL TRANSMITTER	24VDC	--	TRANSMITTER JUNCTION BOX	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2"C
1001	LEVEL TRANSMITTER	24VDC	--	TRANSMITTER JUNCTION BOX	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2"C
1002	COMBINED LEVEL TRANSMITTERS & FLOAT SWITCH	24VDC	--	CONTROL PANEL	TRANSMITTER JUNCTION BOX	--	2-TRI, 4#14, 2" C.
1003	WELL FLOAT SWITCHES	24VDC	--	TRANSMITTER JUNCTION BOX	FLOAT SWITCH NO.1 & NO.2	--	MANUFACTURER'S CABLE IN 2-1/2"C
1100	120VAC FOR RECEPTACLE	120VAC	--	LIGHTING PANEL	RECEPTACLE NEXT TO PUMP NO.2 JUNCTION BOX	--	2#12, #12G, 3/4" C.
1200	120VAC FOR RECEPTACLE	120VAC	--	LIGHTING PANEL	RECEPTACLE NEXT TO LEVEL TRANSMITTER JUNCTION BOX	--	2#12, #12G, 3/4" C.
1300	SITE LIGHTING	120VAC	--	LIGHTING PANEL	SITE LIGHTS	SITE LIGHTING CONTROL SWITCH	2#12, #12G, 1" C.
1300A	SITE LIGHTING CONTROL	120VAC	--	LIGHTING PANEL	SITE LIGHTING CONTROL SWITCH	--	2#12, #12G, 1" C.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

PINE PRAIRIE
LIFT STATION
CONDUIT SCHEDULE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-407

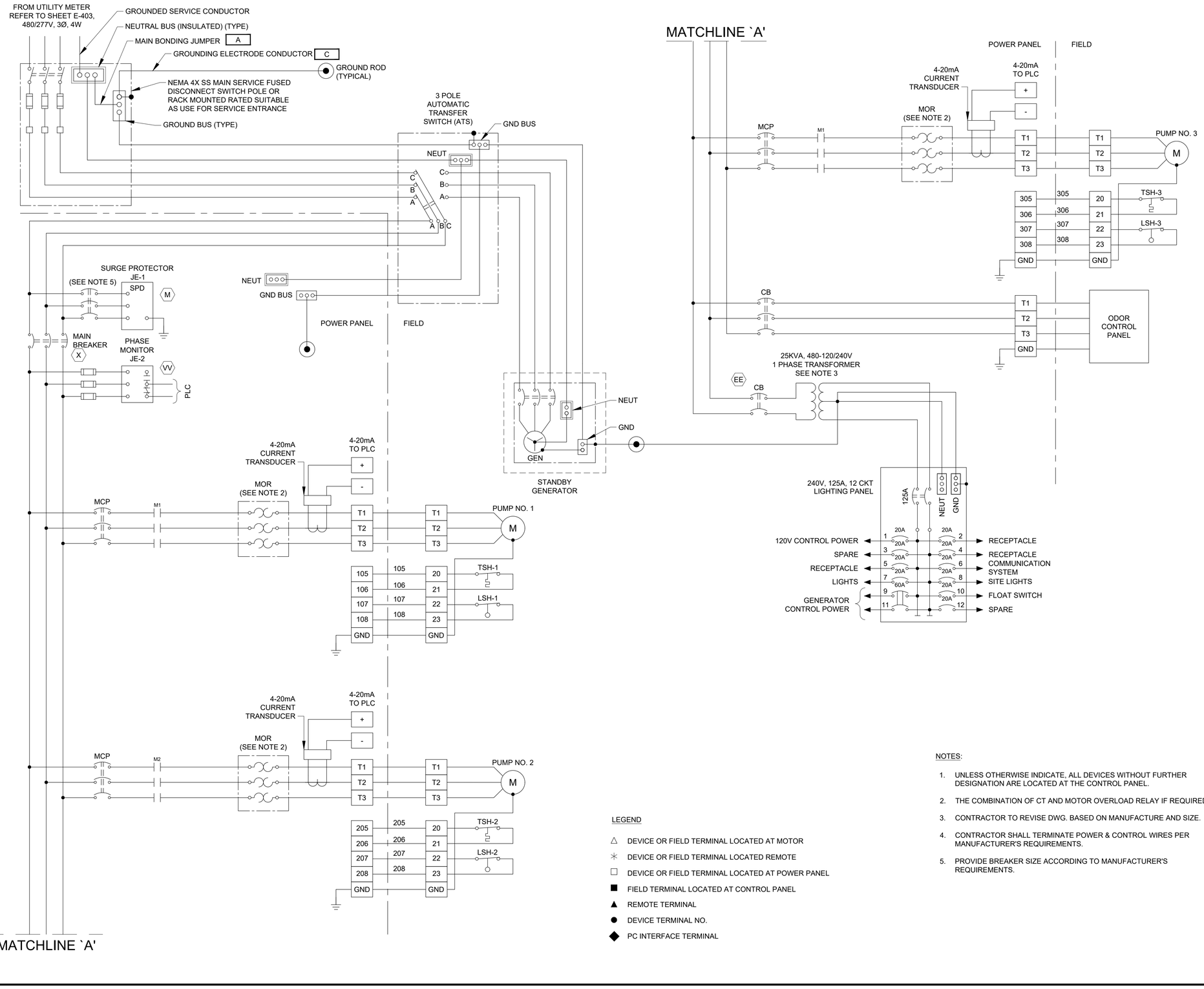
HORIZ: NONE
VERT: NONE

SHEET NO. 172 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-07.dwg



LEGEND

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

NOTES:

1. UNLESS OTHERWISE INDICATE, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE CONTROL PANEL.
2. THE COMBINATION OF CT AND MOTOR OVERLOAD RELAY IF REQUIRED.
3. CONTRACTOR TO REVISE DWG. BASED ON MANUFACTURE AND SIZE.
4. CONTRACTOR SHALL TERMINATE POWER & CONTROL WIRES PER MANUFACTURER'S REQUIREMENTS.
5. PROVIDE BREAKER SIZE ACCORDING TO MANUFACTURER'S REQUIREMENTS.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

PINE PRAIRIE
LIFT STATION
THREE-WIRE DIAGRAM

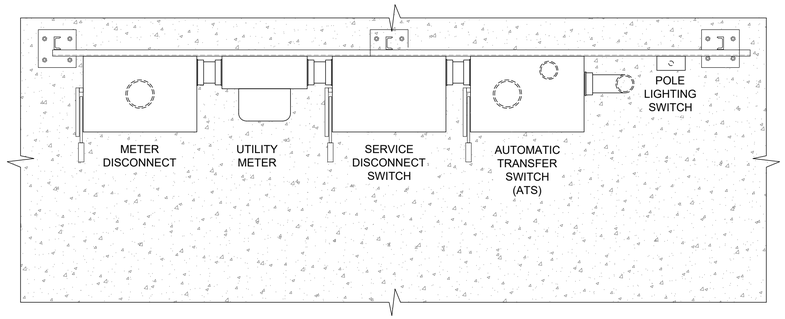
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

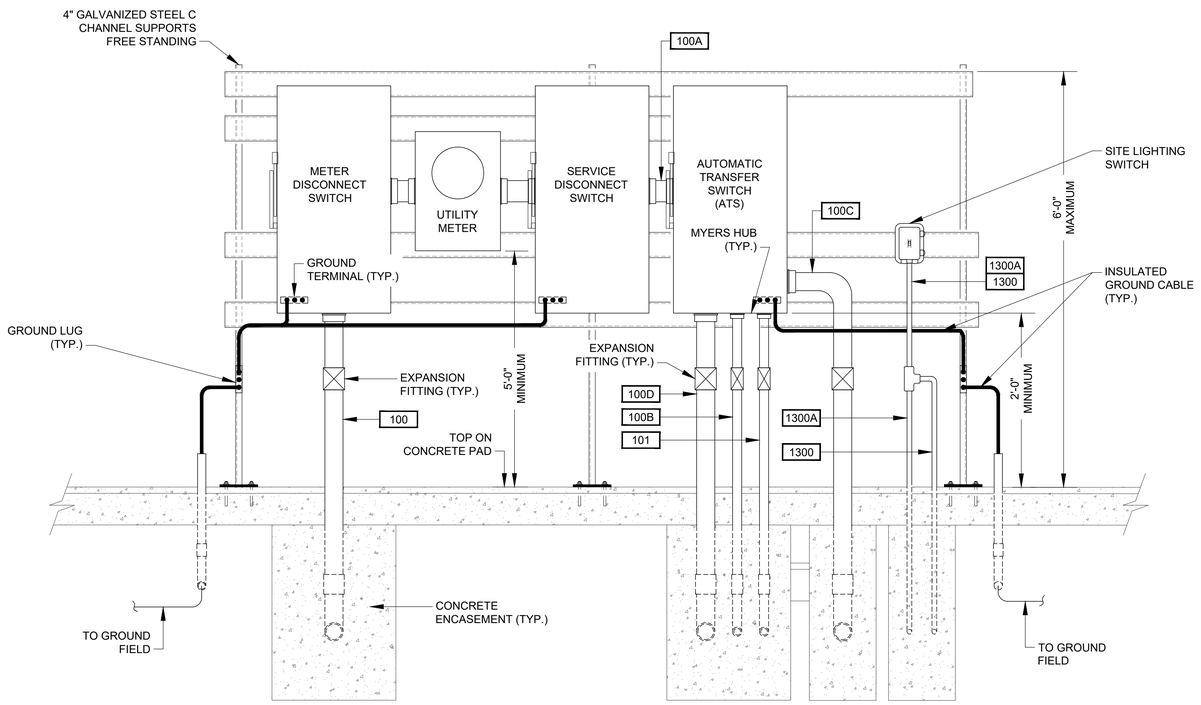
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-408
HORIZ: NONE
VERT: NONE
SHEET NO. 173 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-08.dwg



PLAN



SERVICE MOUNTING RACK

DETAIL 1
NTS. -

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NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

PINE PRAIRIE
LIFT STATION
SERVICE RACK DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-409

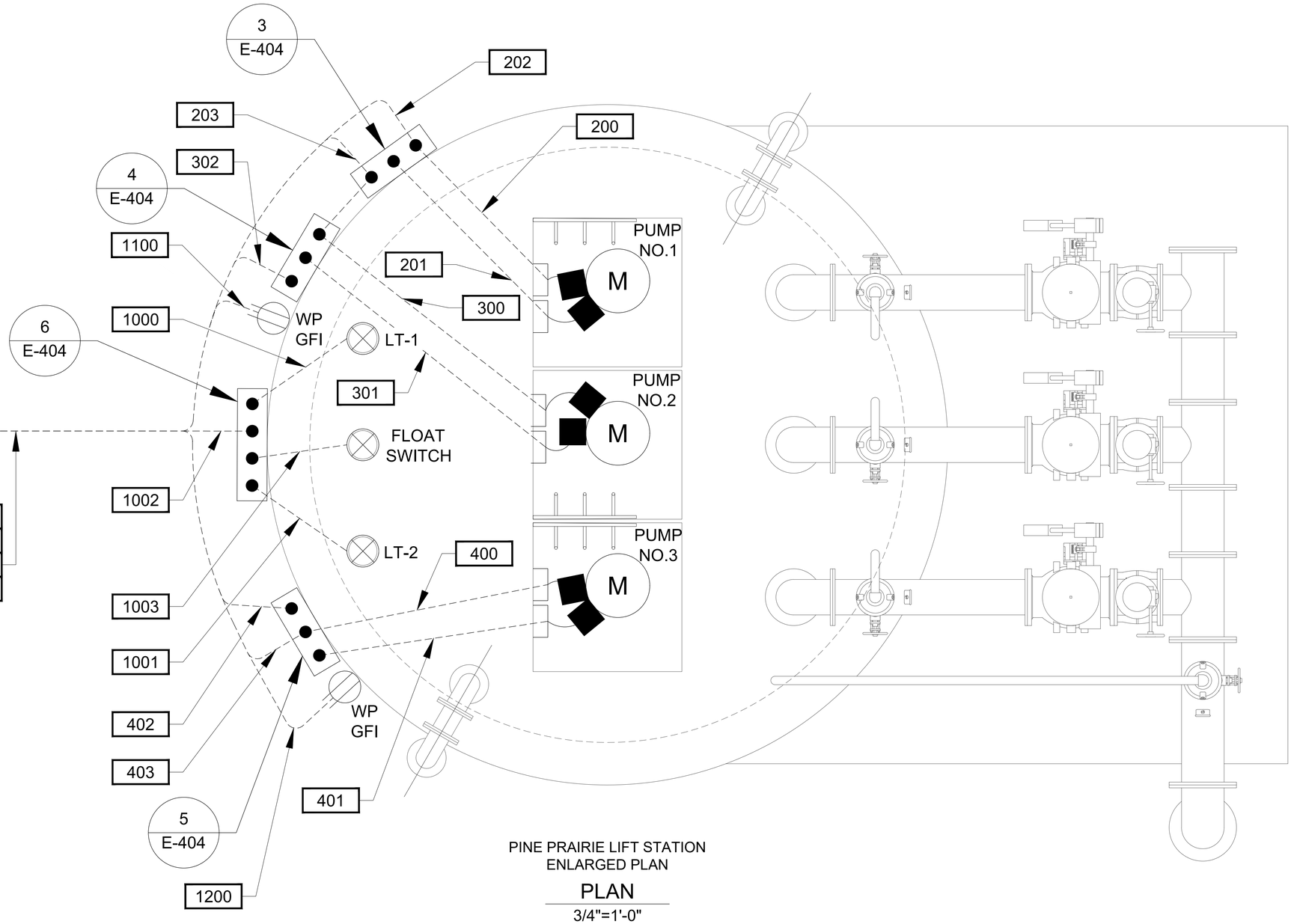
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VERT: NONE

SHEET NO. 174 OF 230

DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-09.dwg



1002	302
402	203
403	202
1100	1200

PINE PRAIRIE LIFT STATION
ENLARGED PLAN

PLAN

3/4"=1'-0"

6" 0 1 2
SCALE: 3/4" = 1'-0"

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

ELECTRICAL

PINE PRAIRIE
LIFT STATION
ENLARGED PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-410

HORIZ: 3/4"=1'-0"
VERT: 3/4"=1'-0"

SHEET NO. 175 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-10.dwg

HMI

INFLUENT PUMP NO. 1

SEAL FAIL ALARM	MOTOR OVERLOAD ALARM	MOTOR CURRENT	HIGH TEMP ALARM	IN HAND	IN AUTO	ON/OFF	START/ STOP
MA 1	MO 1	II 1	TH 1	HI 1	IA 1	YFS 1	YCS 1

INFLUENT PUMP NO. 2

SEAL FAIL ALARM	MOTOR OVERLOAD ALARM	MOTOR CURRENT	HIGH TEMP ALARM	IN HAND	IN AUTO	ON/OFF	START/ STOP
MA 2	MO 2	II 2	TH 2	HI 2	IA 2	YFS 2	YCS 2

INFLUENT PUMP NO. 3

SEAL FAIL ALARM	MOTOR OVERLOAD ALARM	MOTOR CURRENT	HIGH TEMP ALARM	IN HAND	IN AUTO	ON/OFF	START/ STOP
MA 3	MO 3	II 3	TH 3	HI 3	IA 3	YFS 3	YCS 3

PRIMARY PLC

ALARMS RESET	FLOAT HIGH-HIGH WETWELL LEVEL
RE 1	LAHH 1A

BACKUP PLC

PUMP NO. 1 START/ STOP	PUMP NO. 2 START/ STOP	PUMP NO. 3 START/ STOP
YCS 1A	YCS 2A	YCS 3A

CONTROL PANEL PLC

CONTROL PANEL

480V

INFLUENT PUMP NO. 1 — H/O/A, RUN (R)

INFLUENT PUMP NO. 2 — H/O/A, RUN (R)

INFLUENT PUMP NO. 3 — H/O/A, RUN (R)

PRIMARY PLC (G)

BACKUP PLC (G)

INFLUENT PUMP CONTROL PANEL

ALARMS RESET

OIT

TO SHEET I-402

I-402

I-402

WET WELL

LT 1

LE 1

LT 2

LE 2

LSH 1A

TSH 1A

M

HIGHHIGH LEVEL FLOAT SWITCH

FS2

LSH 2A

TSH 2A

M

HIGH LEVEL FLOAT SWITCH

FS1

LSH 3A

TSH 3A

M

INFLUENT DISCHARGE

NO.	DATE	REVISION	APP.

PEN TABLE: ----

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
PROCESS & INSTRUMENTATION DIAGRAM-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-401

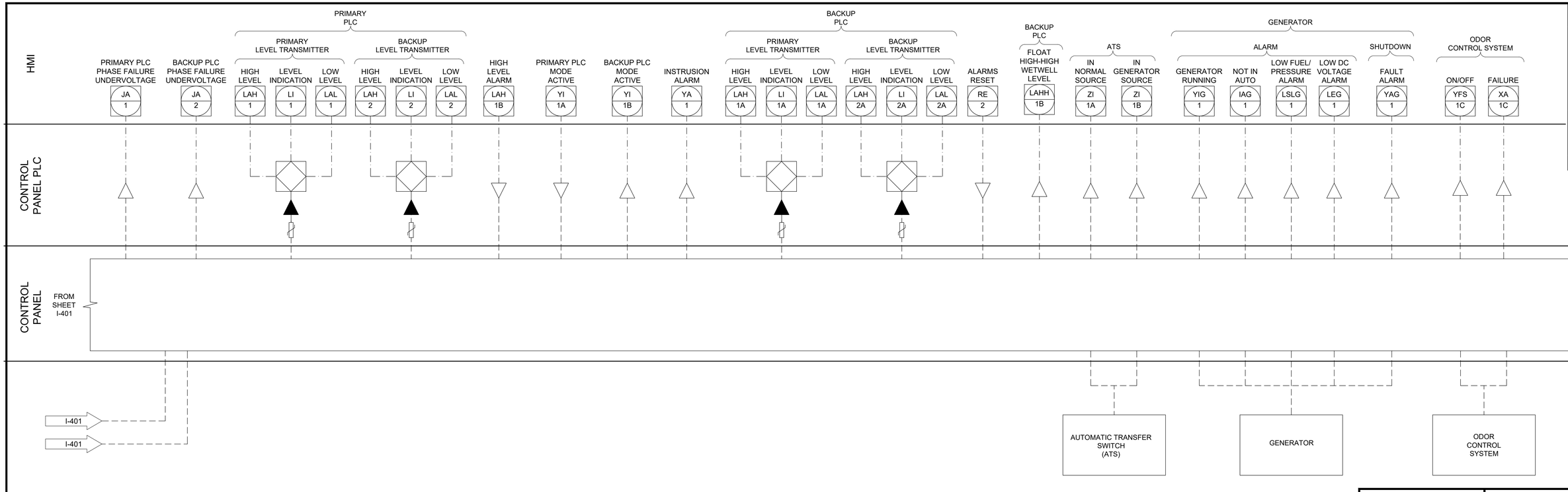
HORIZ: NONE
VERT: NONE

SHEET NO. 176 OF 230

DRAWING SCALE

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-402

HORIZ: NONE

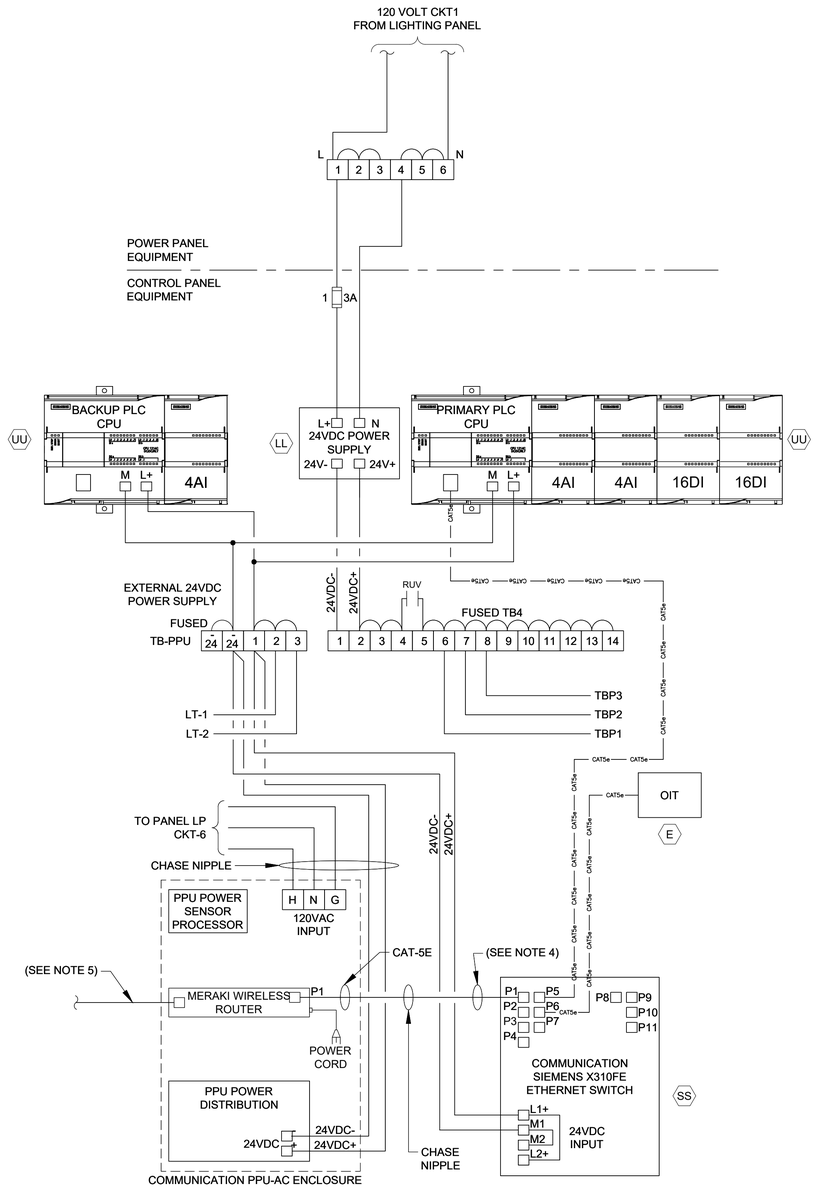
VERT: NONE

SHEET NO. 177 OF 230

DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Pine Prairie\Pine Prairie_I-402.dwg

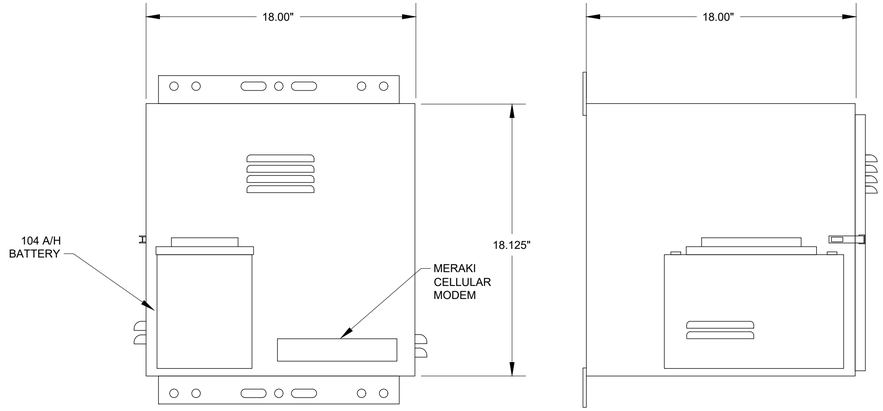


CONTROL POWER &
COMMUNICATIONS WIRING

DIAGRAM

NTS

(SEE NOTE 2 & 6)



PPU-AC
CONTROL ENCLOSURE

ELEVATION

NTS

(SEE NOTE 7)

NOTES:

1. FOR DESCRIPTION AND RATINGS OF ITEMS INDICATED WITH ITEM TAG, SEE DEVICE RATINGS SCHEDULE.
2. REFER TO SPEC SECTION 16120 FOR CONDUCTOR COLOR CODE.
3. THE PLC POWER SUPPLY SHALL FEED THE 24VDC I/O.
4. ETHERNET CABLE FOR MERAKI CELLULAR ROUTER (P1).
5. POE CABLE TO RADIO.
6. COMMUNICATION PPU-AC & SCADA SHALL BE PROVIDED BY CONTRACTOR INCLUDING TO RUN CONDUITS & WIRES.
7. COORDINATE WITH VENDOR TO PROVIDE PROPER VENTILATION WHERE APPLICABLE.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
COMMUNICATIONS DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-403

HORIZ: NONE

VERT: NONE

SHEET NO. 178 OF 230

DRAWING SCALE

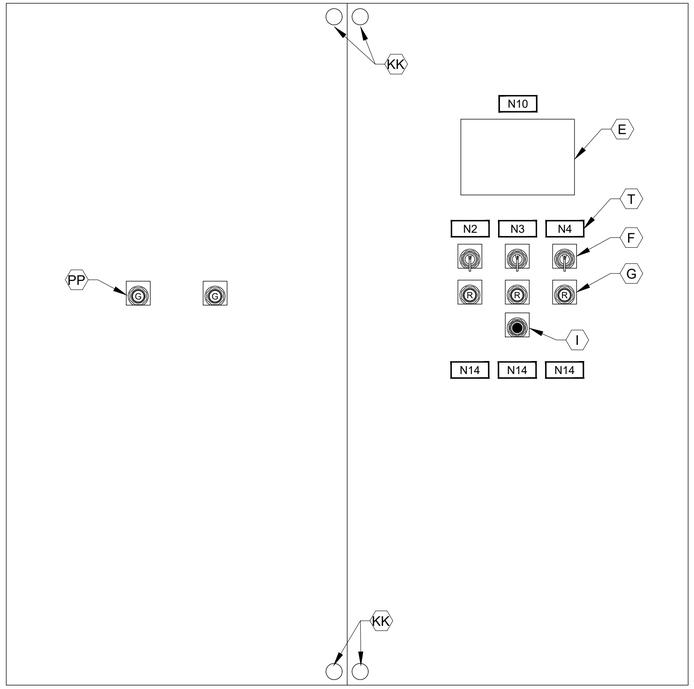
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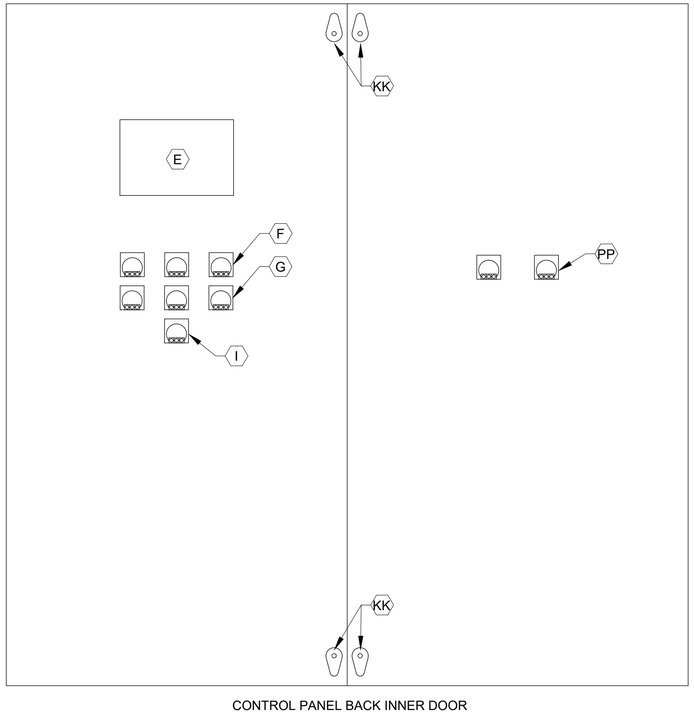
EQUIPMENT AND DEVICE SCHEDULE

ITEM	QUANTITY	DESCRIPTION
A	1	PANEL BOARD, 120/240V, 1 PHASE, 3 WIRE, 100A, 12 CKTS
B	2	FULL VOLTAGE, NON-REVERSING, SINGLE SPEED, AUTOMATIC MOTOR STARTER W/120 VOLT CONTROL COIL, NEMA SIZE AS SCHEDULED.
C	2	TIME DELAY RELAY WITH THREE FORM C CONTACTS, 120VAC COIL AND 11 PIN SOCKET BASE.
D	1	SINGLE CHANNEL INTRINSICALLY SAFE RELAY
E	1	PROGRAMMING SCREEN (OIT)
F	3	HAND-OFF-AUTO SWITCH, 3 POSITION, HEAVY-DUTY, OILTIGHT WITH 2 SETS OF CONTACT BLOCKS (PUMP CONTROL)
G	3	INDICATING LIGHT, HEAVY DUTY, OILTIGHT, RED, 24 VDC, LED, WITH "RUN" LEGEND
H	1	PERPETUAL POWER UNIT (PPU)
I	1	PUMP ALARM RESET PUSHBUTTON
J	2	SWITCH FOR CABINET LIGHT, 120V, 20A, SPST
K	3	DUPLEX RECEPTACLE, 120V, 20A, 2 WIRE, GROUNDED
L	2	24" LED STRIP LIGHT 120V SUITABLE FOR ZERO DEGREE OPERATION.
M	1	SURGE PROTECTOR - INCOMING POWER
N	*	NOT USED.
P	2	CURRENT TRANSFORMER, RATIO AS SCHEDULED W/4-20mA OUTPUT.
Q	12	TERMINAL BLOCKS, SIZED FOR MOTOR POWER REQUIREMENTS
R	*	RELAY WITH THREE FORM C CONTACTS, AND 11 PIN SOCKET BASE
S	*	NOT USED.
T	*	NAMEPLATES, SEE SPECIFICATIONS (SEE NAMEPLATE SCHEDULE)
U	2	SOLID STATE MOTOR OVERLOAD RELAY
V	6	FUSE HOLDER & FUSES - PHASE FAILURE
W	1	NEMA 3R GASKETED ALUMINUM ENCLOSURE WITHOUT VENTS 72"H x 48"w x 36"D
X	1	DOOR MOUNTED ROTARY HANDLE DISCONNECT SWITCH (SUITABLE FOR ENVIRONMENT)
Y	1	THERMAL-MAGNETIC MOLDED CASE MAIN CIRCUIT BREAKER, SIZE AS SCHEDULED
Z	2	ADJUSTABLE INSTANTENOUS TRIP MOTOR CIRCUIT PROTECTOR, SIZE AS SCHEDULED
AA	*	TERMINAL BLOCKS
BB	2	EXTERNAL OVERLOAD RESET PUSHBUTTON MECHANISM
CC	2	ANALOG I/O SURGE SUPPRESSOR
DD	1	WIRE DUCT 2" WIDE x 2" DEEP MINIMUM
EE	1	THERMAL-MAGNETIC MODLED CASE CIRCUIT BREAKER FOR LIGHTING TRANSFORMER, SIZE AS SCHEDULED
FF	1	GROUND BUS
GG	1	25 KVA, 480 - 240/120V,1ϕ, 3W DRY TYPE NEMA 3R ENCLOSURE TRANSFORMER (PAD MOUNTED)
HH	*	NOT USED.
II	1	120VAC - 24VAC POWER SUPPLY (AS REQUIRED)
JJ	11	CARTRIDGE FUSES & FUSE HOLDER
KK	8	QUARTER TURN CAPTIVE DOOR CLOSURE
LL	1	120VAC - 24VDC PLC POWER SUPPLY 5A
MM	2	MOTION SWITCH
NN	*	NOT USED
PP	2	INDICATING LED LIGHT, HEAVY DUTY, OILTIGHT, GREEN, 24 VDC, LED WITH " PRIMARY PLC" & "BACKUP PLC" LEGEND
QQ	*	NOT USED
RR	*	NOT USED
SS	1	COMMUNICATION ETHERNET SWITCH
TT	1	POWER SURGE PROTECTOR - CONTROL POWER
UU	2	PROGRAMMABLE LOGIC CONTROLLER WITH EXPANSION UNIT
VV	1	PHASE AND UNDER VOLTAGE MONITOR
WW	*	FUSED TERMINAL BLOCKS
XX	2	PUMP PROTECTION MODULE RATED FOR CLASS I, DIVISION I
YY	2	ANALOG SIGNAL ISOLATOR
ZZ	-	NOT USED.
AB	-	NOT USED.
AC	1	POWER DISTRIBUTION BLOCK
AD	1	NEUTRAL LUG
AE	1	6" EXHAUST FAN, 120V, STAINLESS FILTERS & GRILL PACKAGE W/BUG GUARD
AF	1	T-STAT FOR EXHAUST FAN

* - AS SCHEDULED



CONTROL PANEL FRONT INNER DOOR
ELEVATION
NTS



CONTROL PANEL BACK INNER DOOR
ELEVATION
NTS

NOTES:

1. NAMEPLATES SHALL BE MOUNTED TO PANELS USING STAINLESS STEEL HARDWARE.
2. REFER SPECIFICATIONS FOR ALL PANEL COMPONENTS.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT & SCHEDULE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

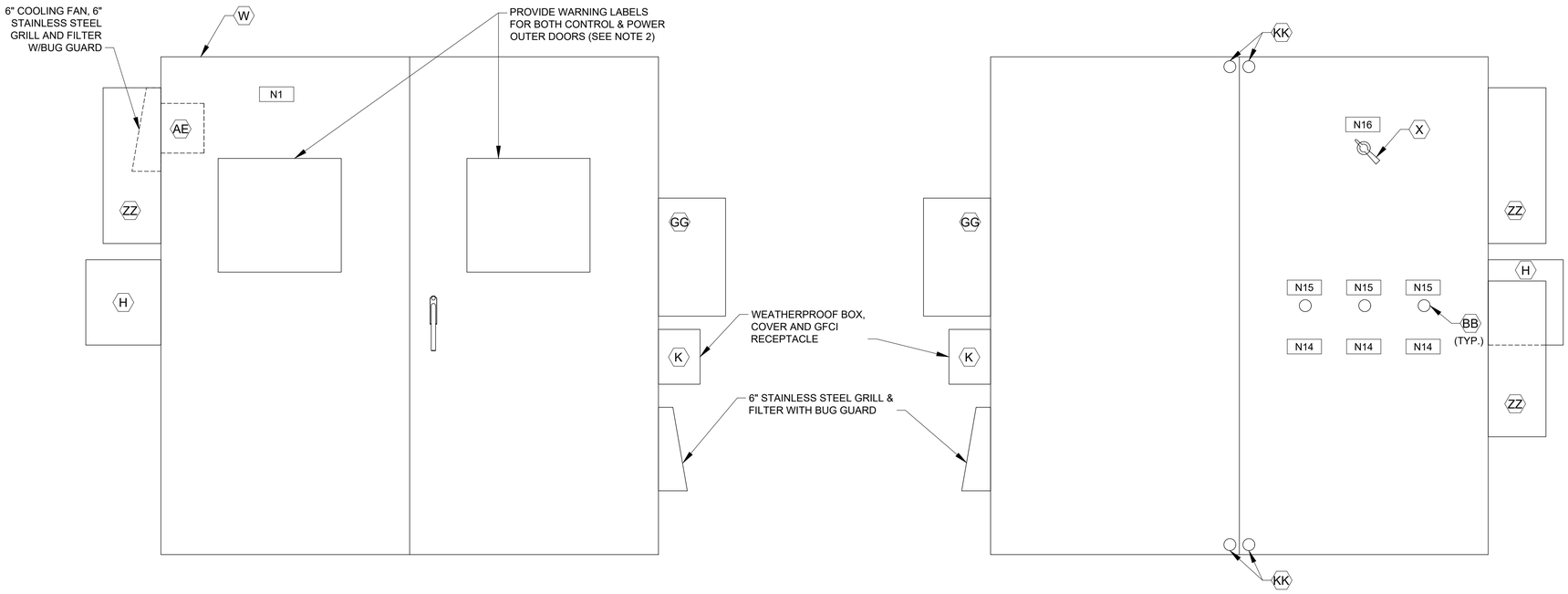
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-404
HORIZ: NONE
VERT: NONE
SHEET NO. 179 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb
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CONTROL CABINET (CONTROL SIDE)
OUTER DOOR

ELEVATION

NTS

CONTROL CABINET (POWER SIDE)
INNER DOOR

ELEVATION

NTS

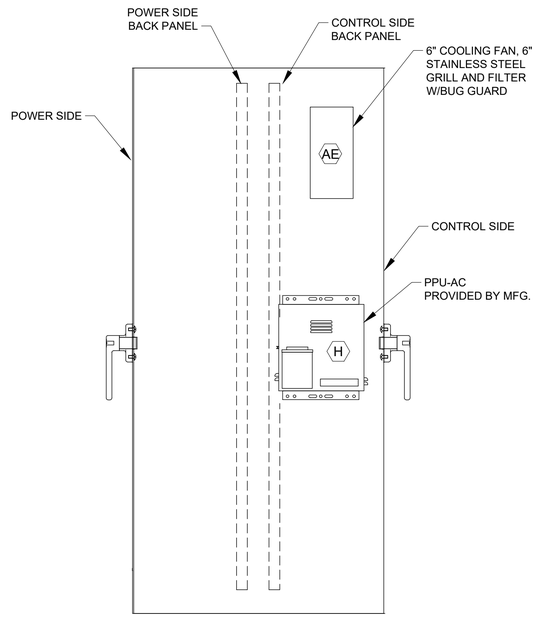
(SEE NOTE 1)

NOTES:

1. SEE SHEET I-404 FOR EQUIPMENT SCHEDULE.
2. REFER TO NEC SECTIONS 110.16 & 110.21

NAMEPLATE SCHEDULE

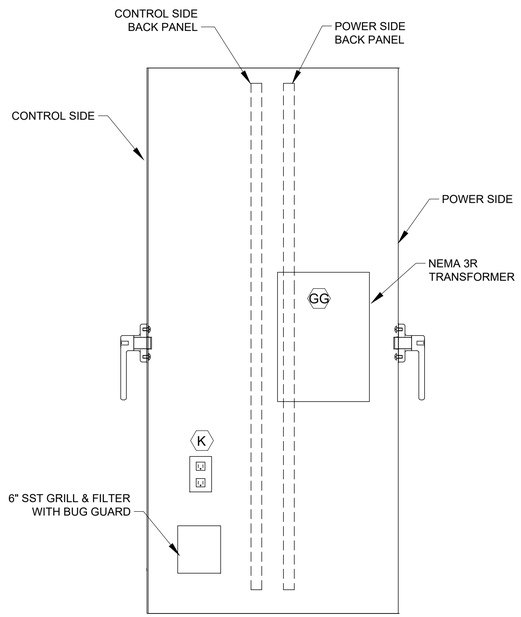
DESIGNATION	ENGRAVED	DESIGNATION	ENGRAVED
N1	PUMP STATION DESIGNATION	N8	NOT USED.
N2	PUMP NO. 1	N9	NOT USED.
N3	PUMP NO. 2	N10	PROGRAMMING SCREEN
N4	PUMP NO. 3	N11	NOT USED.
N5	NOT USED.	N12	PRIMARY PLC
N6	NOT USED.	N13	BACKUP PLC
N7	NOT USED.	N14	MOTOR DATA
			HORSEPOWER (OUTPUT) ----------
			RPM AT FULL LOAD ----------
			TIME RATING ----------
			FREQUENCY ----------
			NUMBER OF PHASES ----------
			MODEL NUMBER ----------
			RATED VOLTAGE ----------
			SERVICE FACTOR ----------
			FULL LOAD AMPS ----------
			INSULATION CLAS ----------
			NEMA DESIGN LETTER ----------
			TEMPERATURE RISE ----------
			NEMA FRAME SIZE ----------
			DATE OF MANUFACTURE ----------
			THERMO PROTECTION (IF REQUIRED) --
			MOISTURE PROTECTION (IF REQUIRED)-
		N15	EXTERNAL OVERLOAD RESET PUSH BUTTON MECHANISM
		N16	MAIN BREAKER



CONTROL CABINET (LEFT SIDE VIEW)

ELEVATION

NTS



CONTROL CABINET (RIGHT SIDE VIEW)

ELEVATION

NTS

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-I

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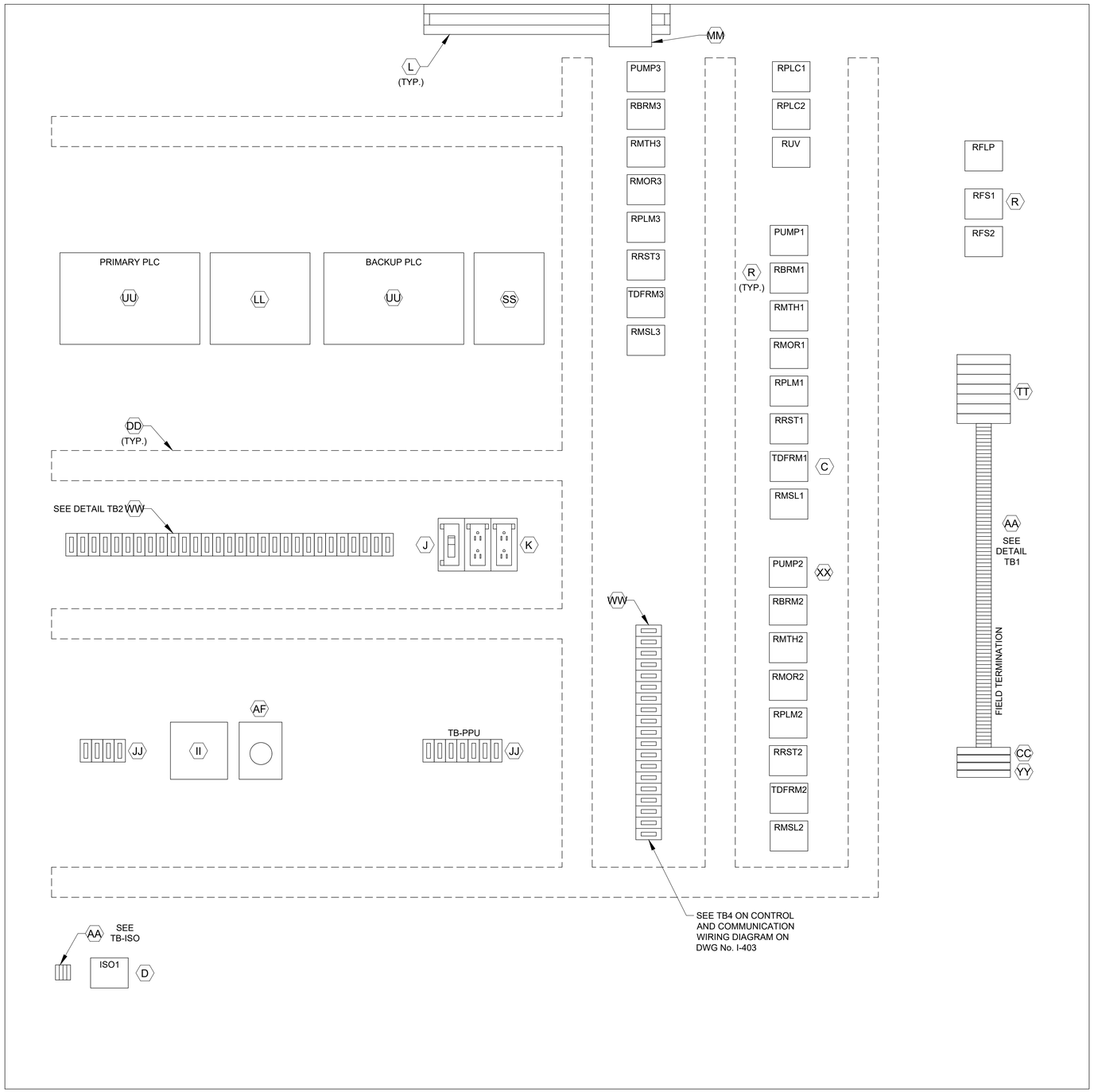
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-405	HORIZ: NONE VERT: NONE
SHEET NO. 180 OF 230	DRAWING SCALE

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CONTROL PANEL
ELEVATION

L1A
L1N
SPARE
3
3N
49
50
51
52
53
54
1004
1
24V-
24V-
1002
2
11
1001
1001A
12
1003
1003A
1002
1004
18
3N
19
20
36
36N
41
42
43
44
SPARE
L1A
L1N
103
104
105
106
107
108
110
113
115
116
119
SPARE
203
204
205
206
207
208
210
213
215
216
219

DETAIL TB1

ALL L AND N FOR EACH PUMP CONTROL TO BE FUSED

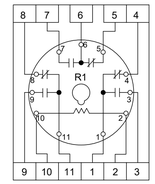
303
304
305
306
307
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310
313
315
316
319
36A
37A
50
52
54
52A
54A
L+
M
35B
38B
41B
47B
13B
13AB
13GB
L+
M
14B
14AB
14GB
L+
M
13
13A
13G
14
14A
14G
SPARE
18
SPARE
28
29
32
35B
33
42
44
SPARE
103
104
115
109
110
118
120
121
122
123
SPARE
209
210
211
218
220
222
223

DETAIL TB2

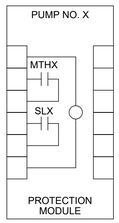
1500
1501
1503
1504

DETAIL TB-ISO

LEGEND	
TAG	DESCRIPTION
RMTH	MOTOR HIGH TEMPERATURE ALARM RELAY
RPLM	PLC PUMP RUN RELAY
RRST	PUMP RESET AUX RELAY
RPLC	PLC MODE AUX RELAY
RMOR	MOTOR OVERLOAD ALARM RELAY
RBRM	BACKUP SYSTEM RUN RELAY
RUV	UNDER VOLTAGE RELAY
ISO	INTRINSICALLY SAFE RELAY
RFS	PUMP RUN FLOAT SWITCH RELAY
TDFRM	TIMER FLOAT SWITCH RUN RELAY
RMSL	MOTOR SEAL LEAK ALARM RELAY
RFLP	FLOAT LOCKOUT PUMP RELAY



RELAY DETAIL
ITEM R



PUMP PROTECTION MODULE
DETAIL, ITEM XX

NOTE: REPLACE "X" WITH
APPROPRIATE PUMP NO.

NOTES:

1. SEE SHEET I-404 FOR EQUIPMENT SCHEDULE.

GAI
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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

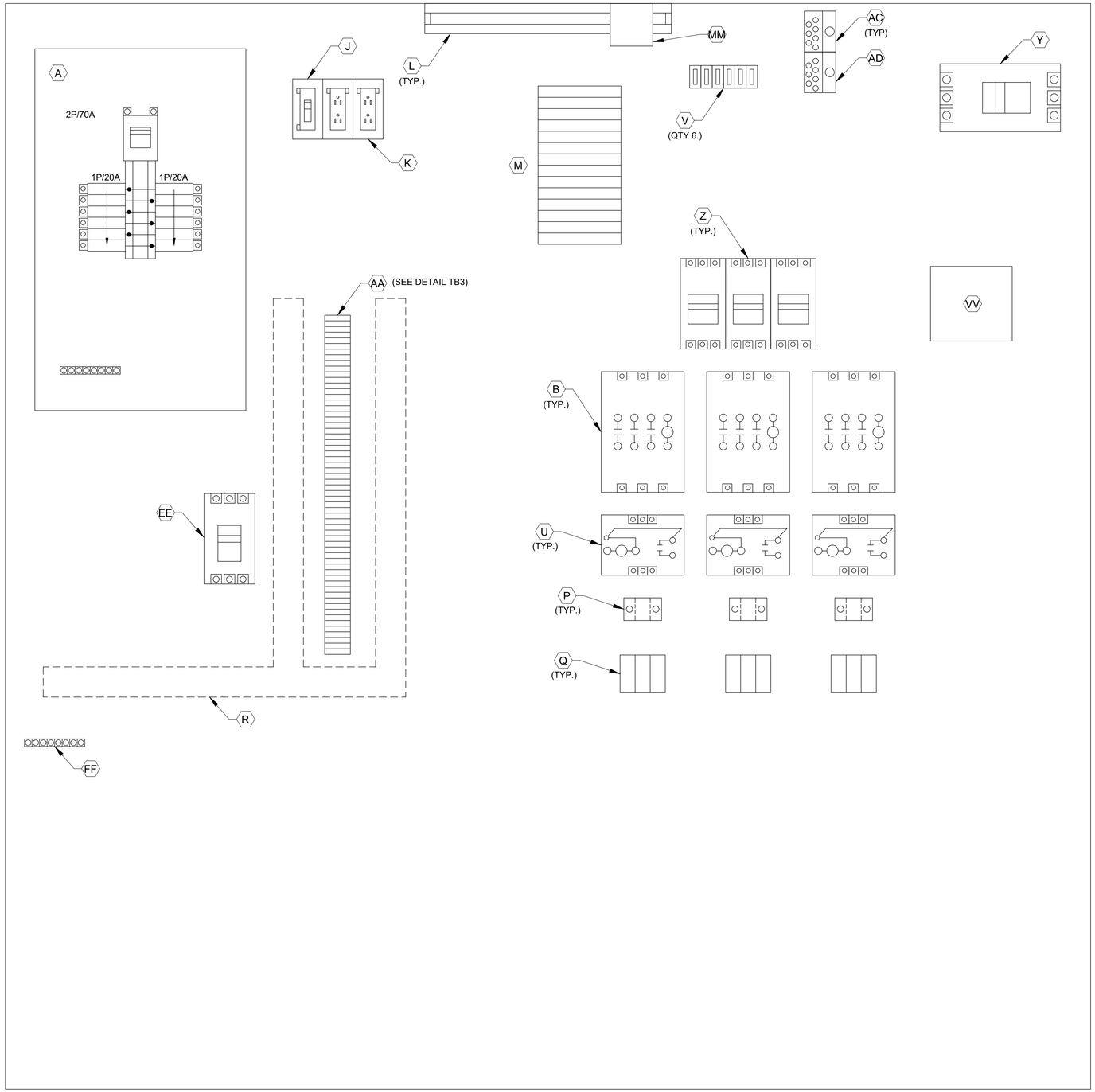
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-406	HORIZ: NONE VERT: NONE
SHEET NO. 181 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NO	DATE	REVISION	APP.

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POWER PANEL
ELEVATION

3
18
L1A
L1N
SPARE
SPARE
103
104
105
106
107
108
110
113
115
116
119
SPARE
203
204
205
206
207
208
210
213
215
216
216
219
SPARE
303
304
305
306
307
308
310
313
315
316
316
319
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE

DETAIL TB3

NOTES:

1. SEE SHEET I-404 FOR EQUIPMENT SCHEDULE.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-III

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

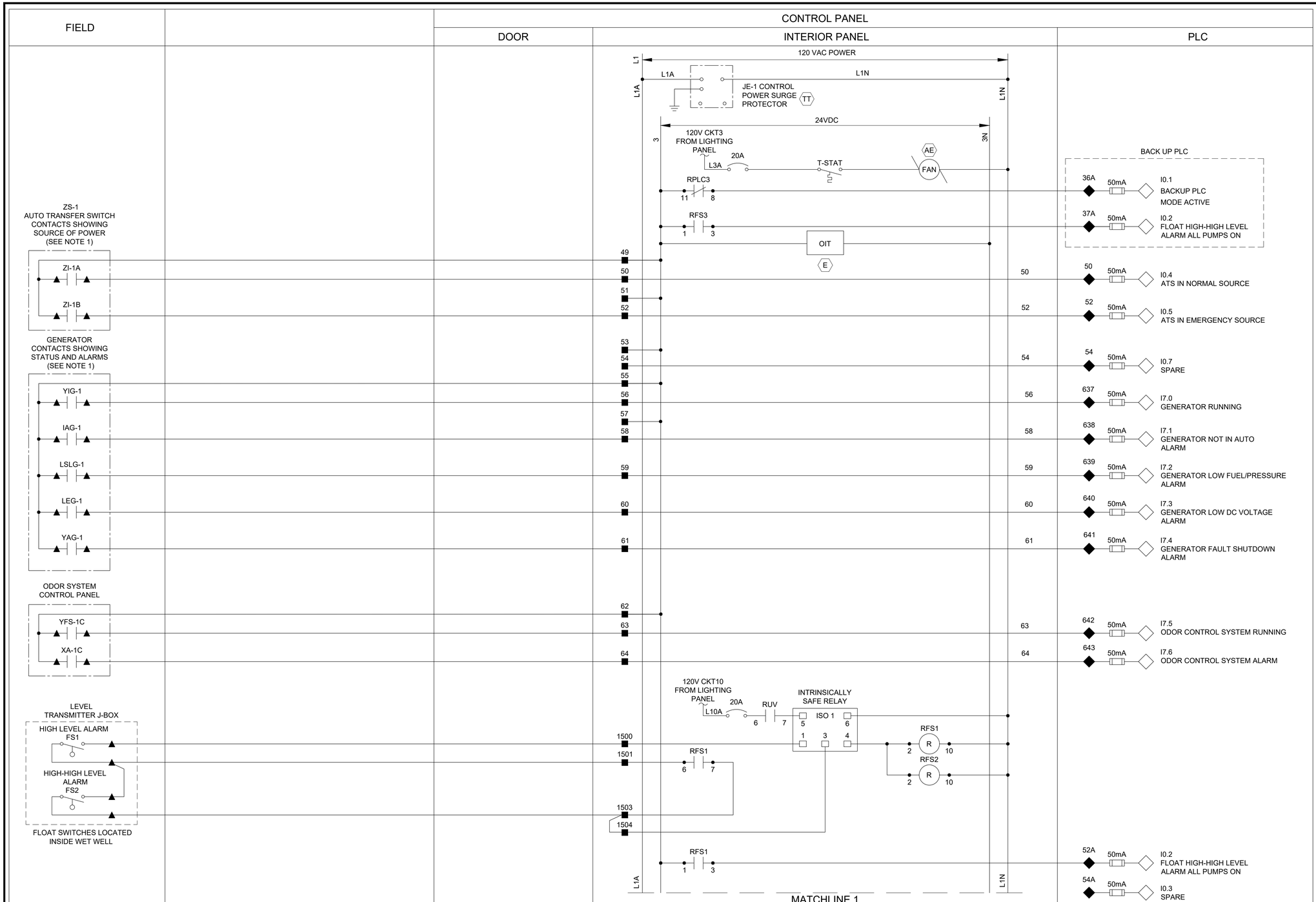
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-407	HORIZ: NONE VERT: NONE
SHEET NO. 182 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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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:

1. PROVIDE MANUAL TRANSFER SWITCH DRY CONTACT.
2. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-408

HORIZ: NONE
VERT: NONE

SHEET NO. 183 OF 230

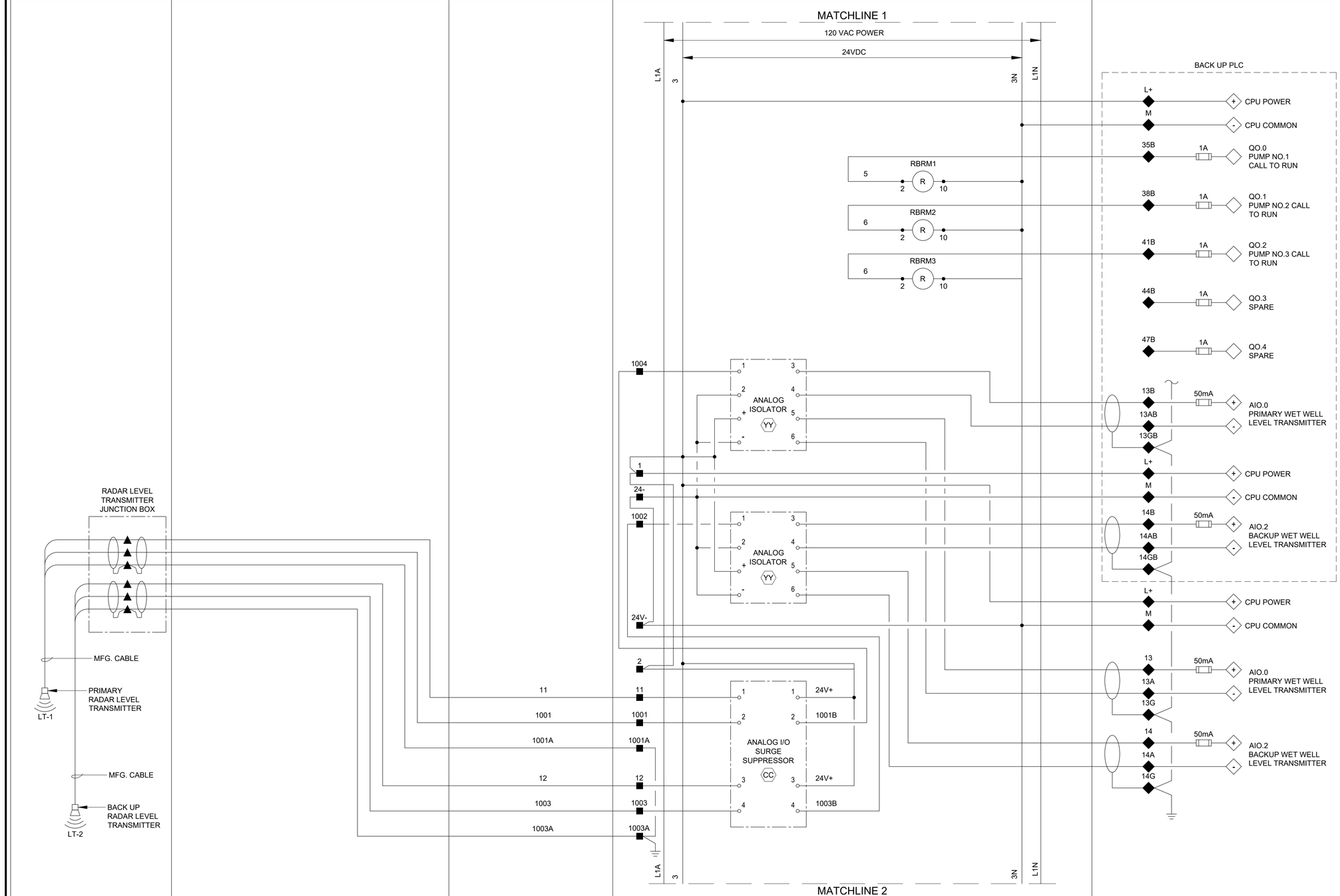
DRAWING SCALE

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FIELD		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

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

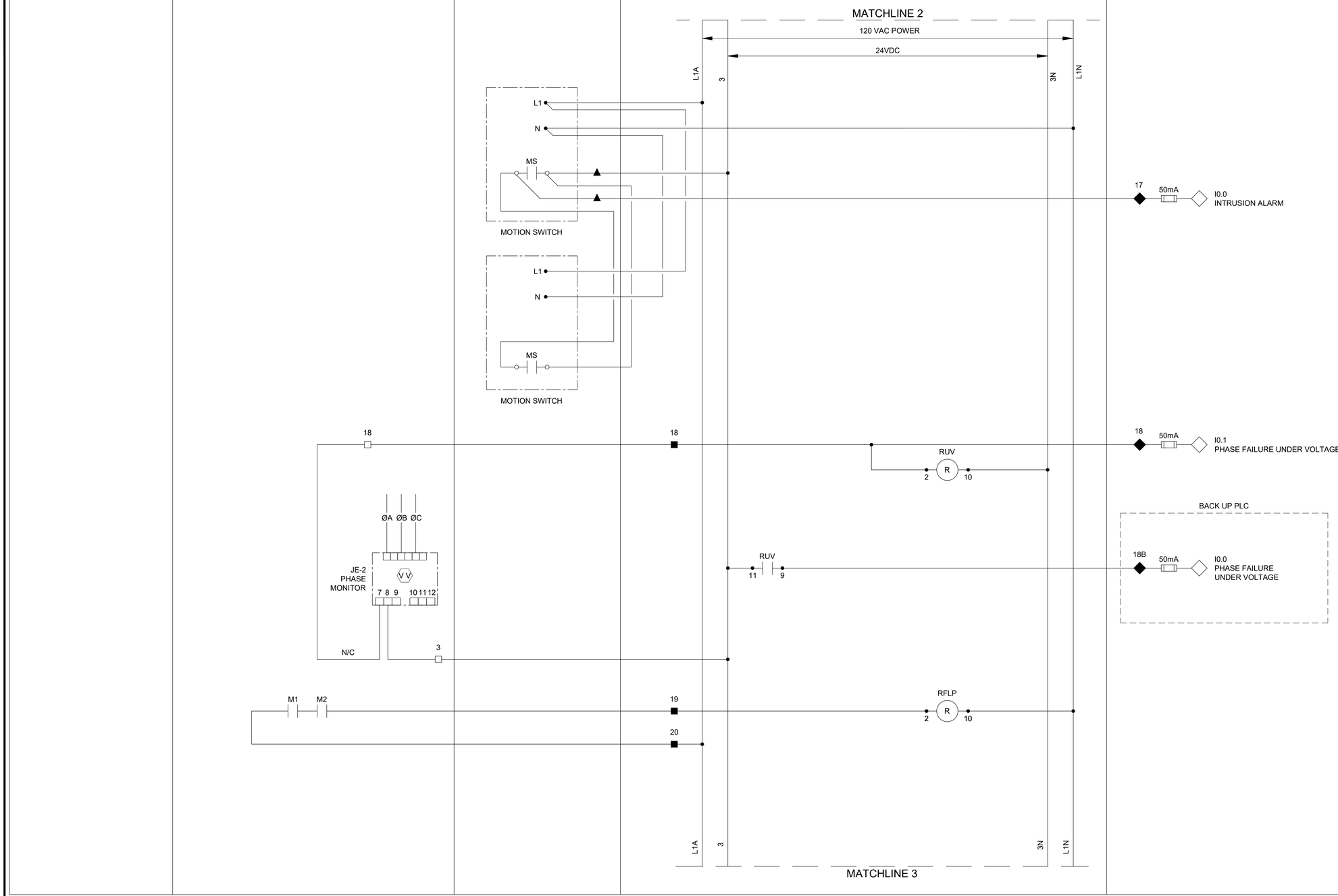
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SHEET NO. 184 OF 230	DRAWING SCALE

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NO.	DATE	REVISION	APP.

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FIELD	POWER PANEL	CONTROL PANEL		
		DOOR	INTERIOR PANEL	PLC



NOTES:

1. PROVIDE ONE LIMIT SWITCH PER EXTERIOR CONTROL PANEL AND POWER PANEL DOOR, WIRED IN PARALLEL.

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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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-III

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

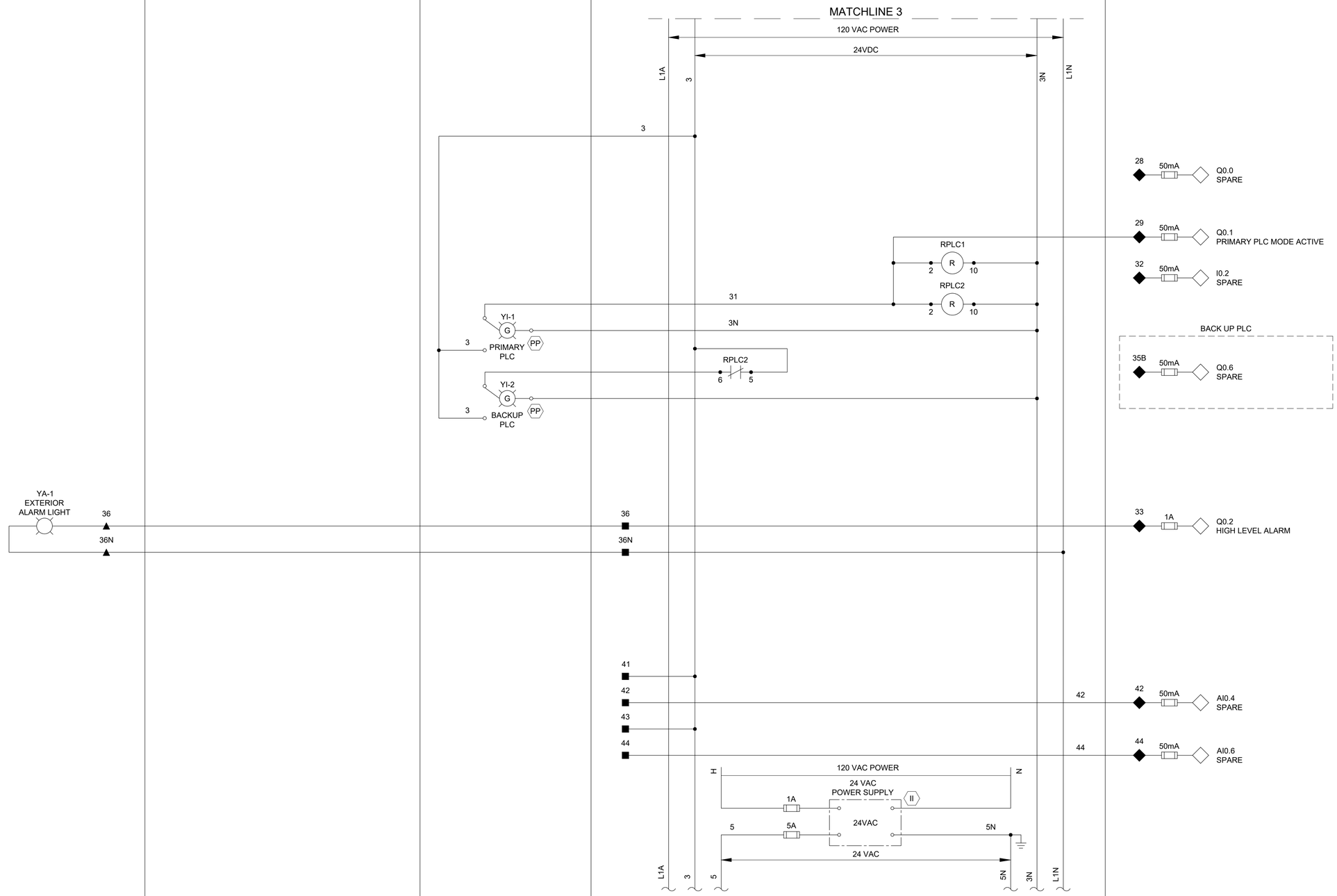
DRAWING NO. I-410	HORIZ: NONE VERT: NONE
SHEET NO. 185 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

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FIELD	POWER PANEL	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

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-IV

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

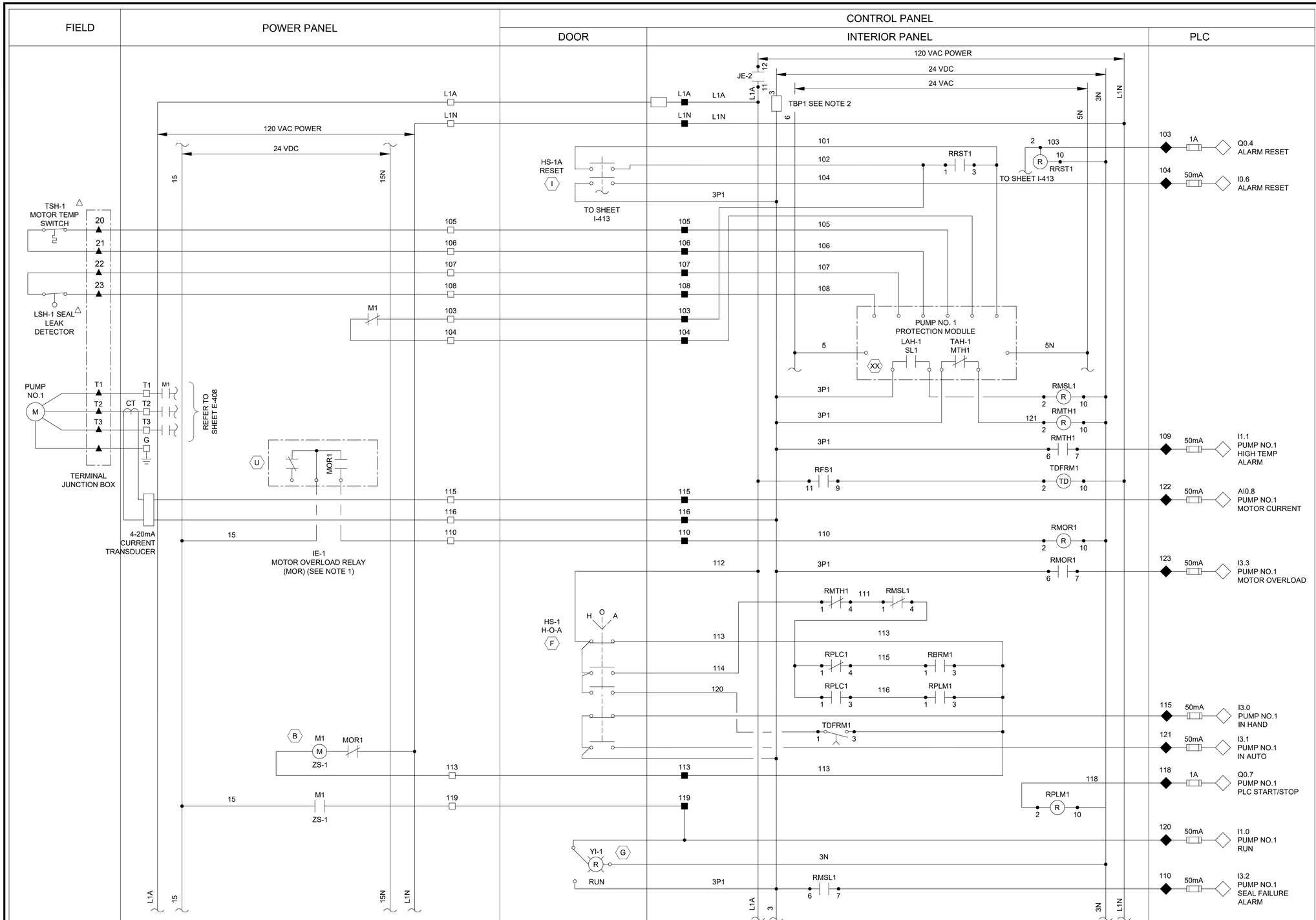
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-411	HORIZ: NONE VERT: NONE
SHEET NO. 186 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Pine Prairie\Pine Prairie_I-411.dwg



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:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM DRAWING NO. I-403.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
PUMP NO.1
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

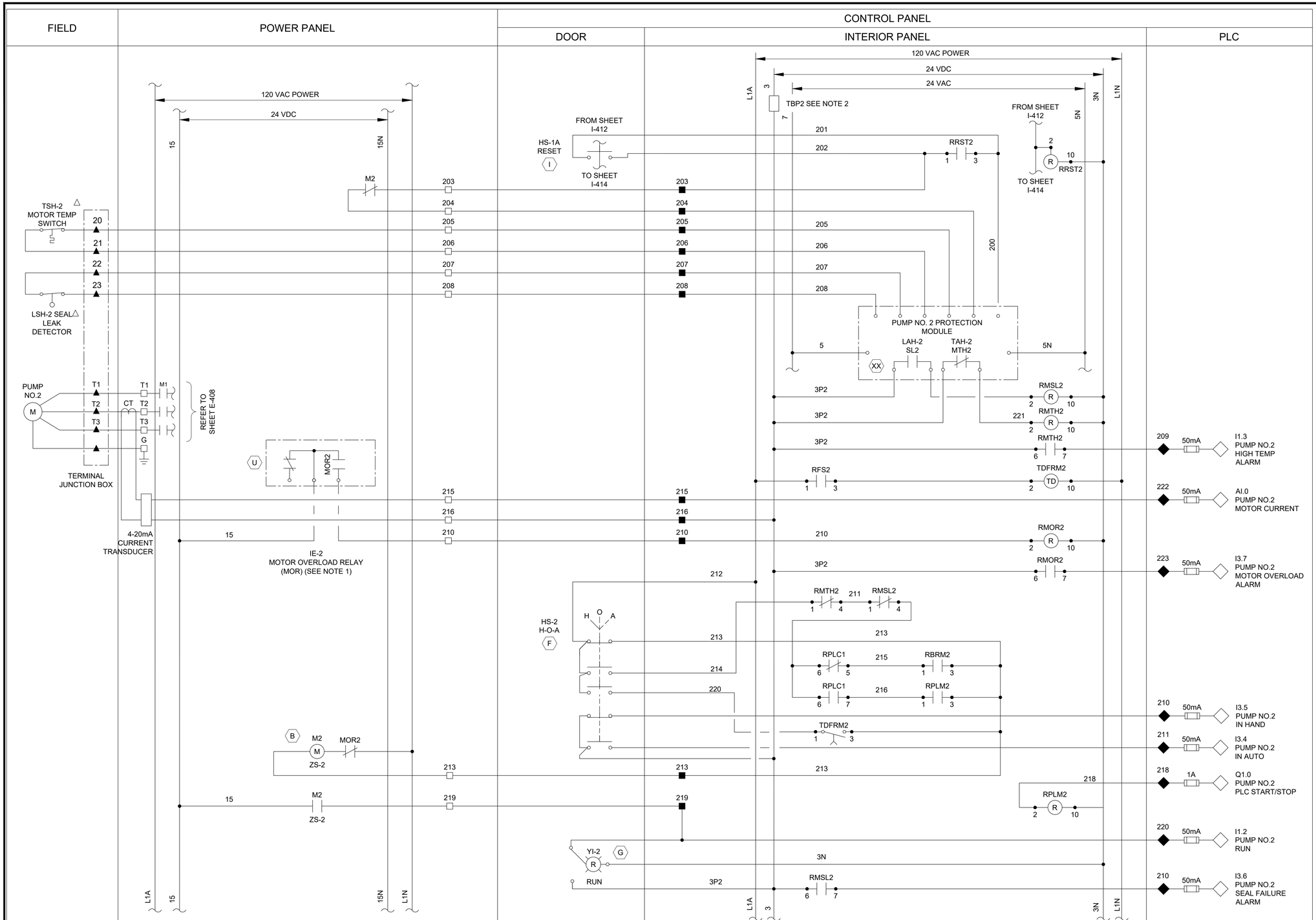
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-412
HORIZ: NONE
VERT: NONE
SHEET NO. 187 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

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LEGEND

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- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
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- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM DRAWING NO. I-403.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
PUMP NO.2
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

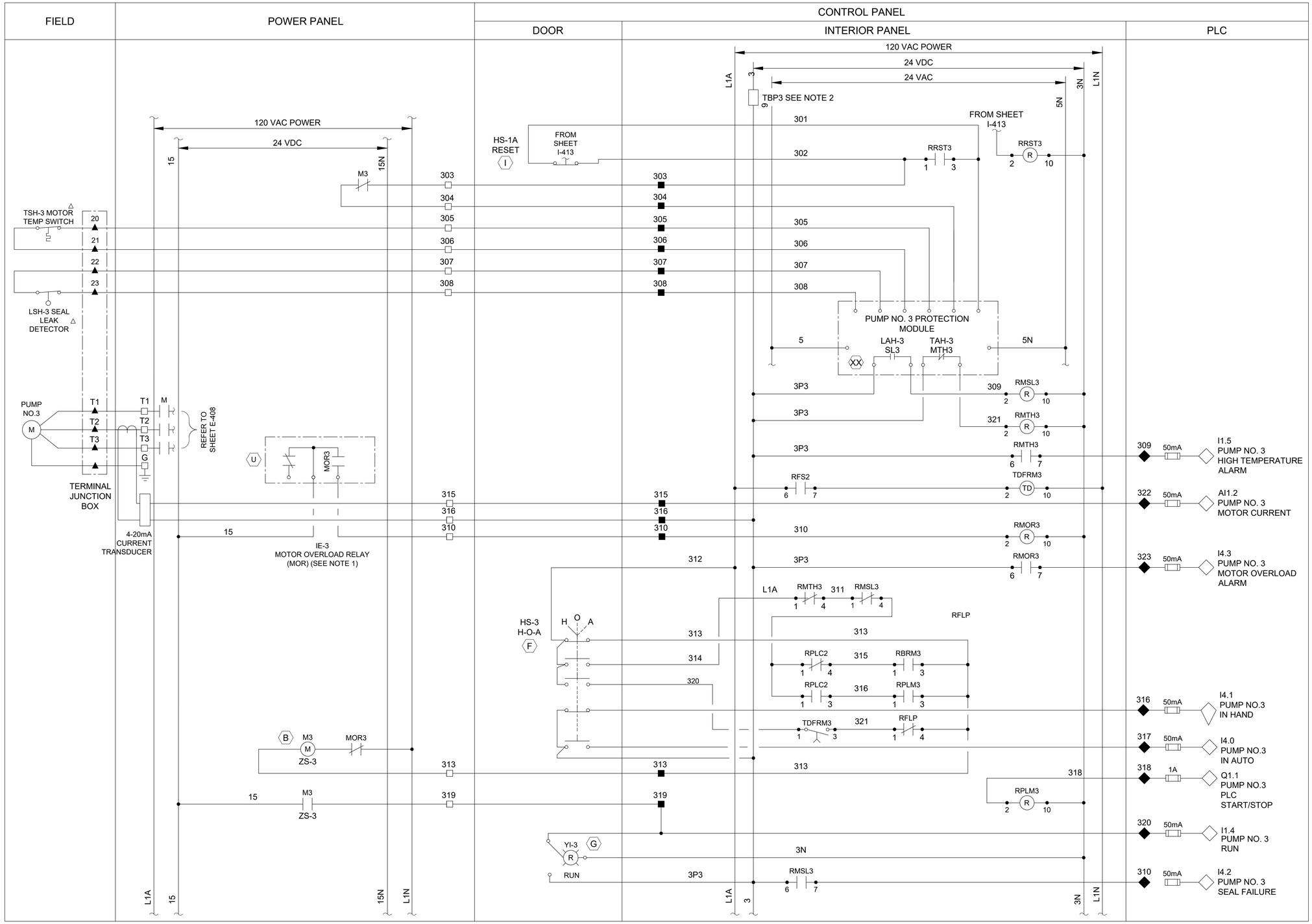
DRAWING NO. I-413	HORIZ: NONE VERT: NONE
SHEET NO. 188 OF 230	DRAWING SCALE

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- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NOTES:

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2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM. DRAWING NO. I-403.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
PUMP NO.3
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-414	HORIZ: NONE VERT: NONE
SHEET NO. 189 OF 230	DRAWING SCALE

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National Flood Hazard Layer FIRMette

FEMA

95°9'6"W 30°3'34"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

95°8'28"W 30°3'3"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/4/2025 at 4:10 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/22/2026 5:25 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:

Craig Alexander Perry
Name
116345
License No.
JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

FIRMETTE

STATELY OAKS LIFT STATION
NATIONAL FLOOD HAZARD
LAYER FIRMETTE MAP

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. F-501

HORIZ: 1"=250'

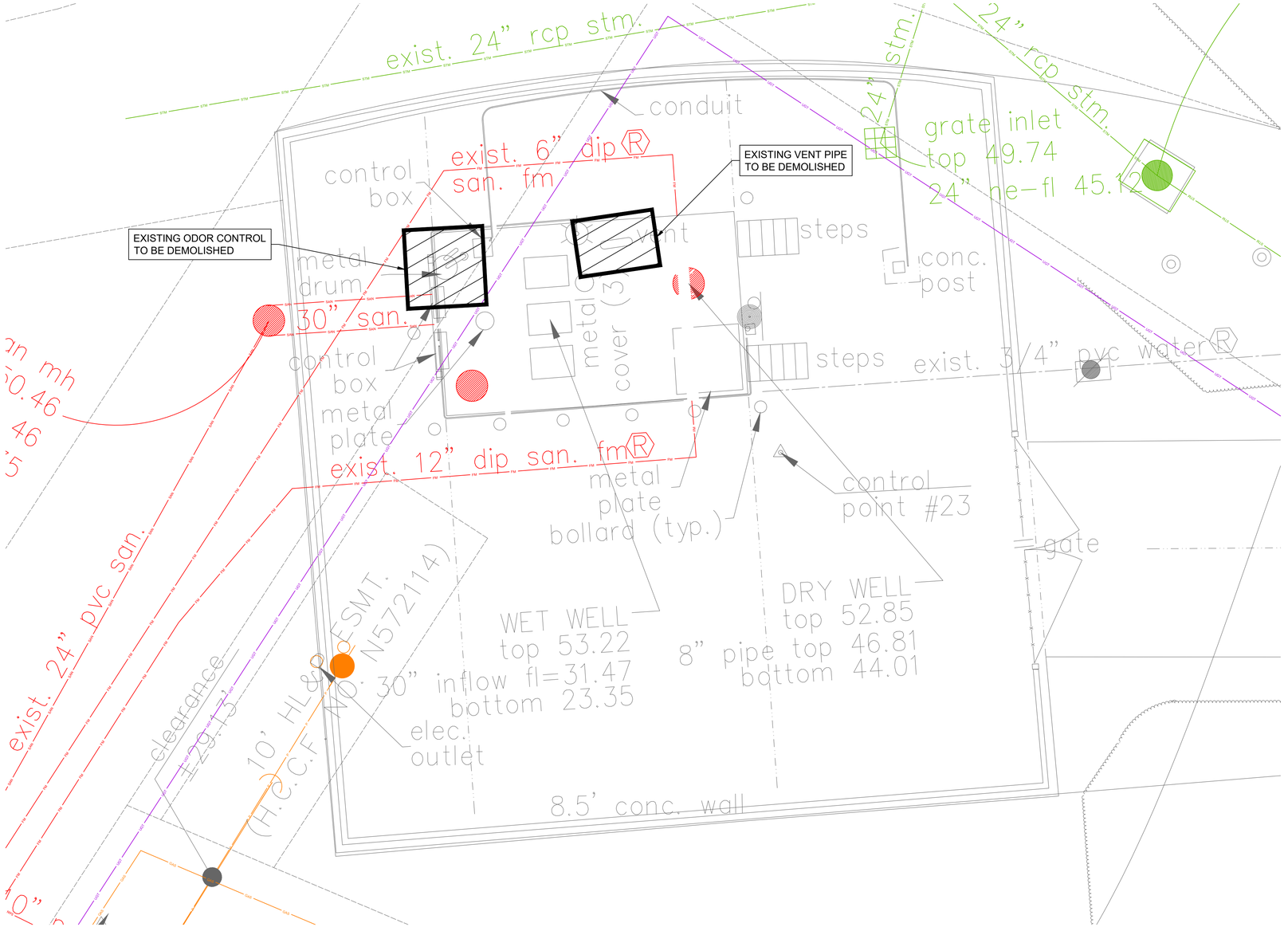
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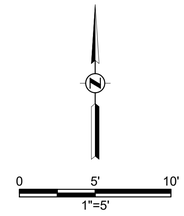
SHEET NO. 190 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\023 F-501.dwg





LEGEND:

LIMITS OF LIFT STATION SITE DEMOLITION

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
3. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 070375 IS A BRASS DISK STAMPED RM 070375 LOCATED ON WEST SIDEWALK ON MILL BRIDGE WAY BRIDGE APPROXIMATELY 190 FEET NORTHEAST FROM THE INTERSECTION OF APPALACHIAN TRAIL IN KEYMAP 297P IN THE SAN JACINTO RIVER WATERSHED.

ELEV 73.10 FEET NAVD 1988, 2001 ADJUSTMENT.

HORIZONTAL DATUM NOTE:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

EXISTING UTILITY NOTE:

EXISTING UNDERGROUND UTILITY INFORMATION (TYPE, SIZE & OWNERSHIP) ARE SHOWN APPROXIMATELY BASED ON THE AVAILABLE RECORD DRAWINGS AND FIELD VERIFICATION (WHERE FEASIBLE) WITHOUT PROBING AND EXCAVATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATION SHOWN ON THE DRAWING. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING OR BORE AND JACKING IN THE VICINITY OF UNDERGROUND UTILITIES. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CALL UTILITY COORDINATING COMMITTEE AT 713-223-4567, AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THE STREET RIGHT-OF-WAY.

DEMOLITION NOTE:

WHEN MEASURED FROM THE PROPERTY LINE OF ANY NEARBY RESIDENTIAL PROPERTY. ANY SOUND PRODUCED BY THE ERECTION, EXCAVATION, CONSTRUCTION, OR DEMOLITION OF ANY STRUCTURE, INCLUDING THE USE OF TOOLS OR EQUIPMENT (CONDUCTED BETWEEN THE HOURS OF 7 A.M. AND 8 P.M.), SHALL NOT EXCEED 85 DB(A).

RIGHT OF REFUSAL NOTE:

"SALVAGE MATERIAL AND EQUIPMENT LISTED HEREINAFTER SHALL BECOME THE PROPERTY OF THE CITY OF HOUSTON UNLESS OTHERWISE DESIGNATED IN WRITING. THE CITY OF HOUSTON SHALL HAVE FIRST REFUSAL RIGHTS TO RETAIN ALL ITEMS SHOWN TO BE DEMOLISHED AND/OR REMOVED IN THE DRAWINGS. PRIOR TO INITIATING DEMOLITION, THE CONTRACTOR AND THE CITY OF HOUSTON PROJECT MANAGER SHALL MAKE A JOINT INSPECTION TO IDENTIFY ALL ITEMS TO BE RETAINED BY THE CITY OF HOUSTON. THE CONTRACTOR SHALL RELOCATE AND STORE ITEMS, TO BE RETAINED BY THE CITY OF HOUSTON, WHERE DIRECTED ONSITE OR OFFSITE."

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 6:12 PM PEN TABLE: -----

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA, HOUSTON, TEXAS 77098 (713) 520-9070

INTERIM REVIEW ONLY

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Craig Alexander Perry
116345
JANUARY 23, 2025

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

STATELY OAKS LIFT STATION
DEMOLITION
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-501

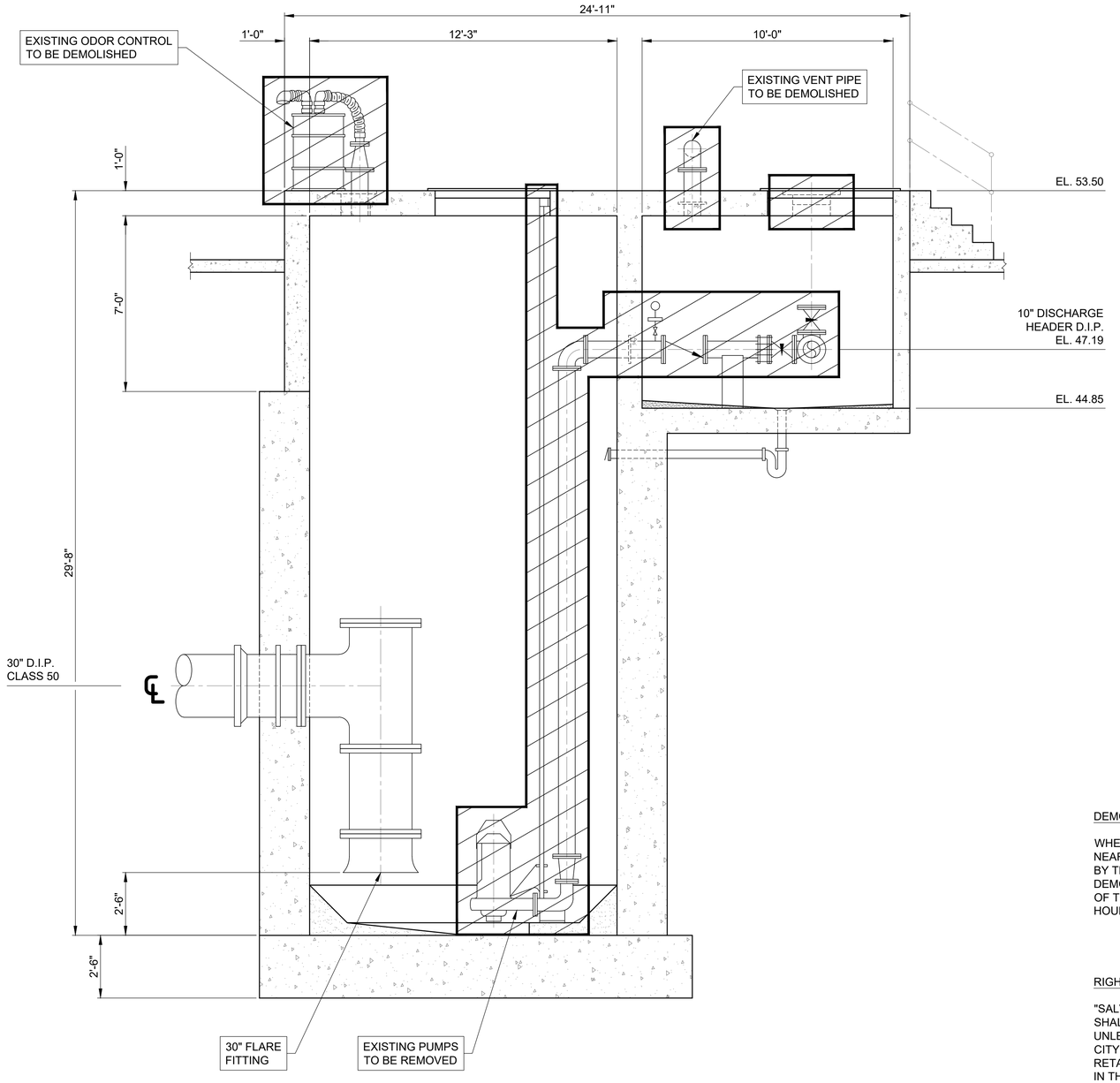
HORIZ: 1"=5'
VERT: NONE

SHEET NO. 191 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\047 C-501.dwg



SA C-502 SECTION
SCALE: 3/8"=1'-0"

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
3. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.
4. REMOVE AND SALVAGE EXISTING PUMPS, MOTORS, VALVES, PIPING, AND FITTINGS. SALVAGED ITEMS SHALL BE DELIVERED TO THE NEAREST CITY OF HOUSTON MAINTENANCE OFFICE.
5. CLEAN EXISTING WET WELL OF ACCUMULATED SLUDGE. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS AND SLUDGE IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.

LEGEND:

LIMITS OF LIFT STATION DEMOLITION

DEMOLITION NOTE:

WHEN MEASURED FROM THE PROPERTY LINE OF ANY NEARBY RESIDENTIAL PROPERTY. ANY SOUND PRODUCED BY THE ERECTION, EXCAVATION, CONSTRUCTION, OR DEMOLITION OF ANY STRUCTURE, INCLUDING THE USE OF TOOLS OR EQUIPMENT (CONDUCTED BETWEEN THE HOURS OF 7 A.M. AND 8 P.M.), SHALL NOT EXCEED 85 DB(A).

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NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 6:12 PM PEN TABLE: ----

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Registration Number
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Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

STATELY OAKS LIFT STATION
DEMOLITION
SECTION VIEW

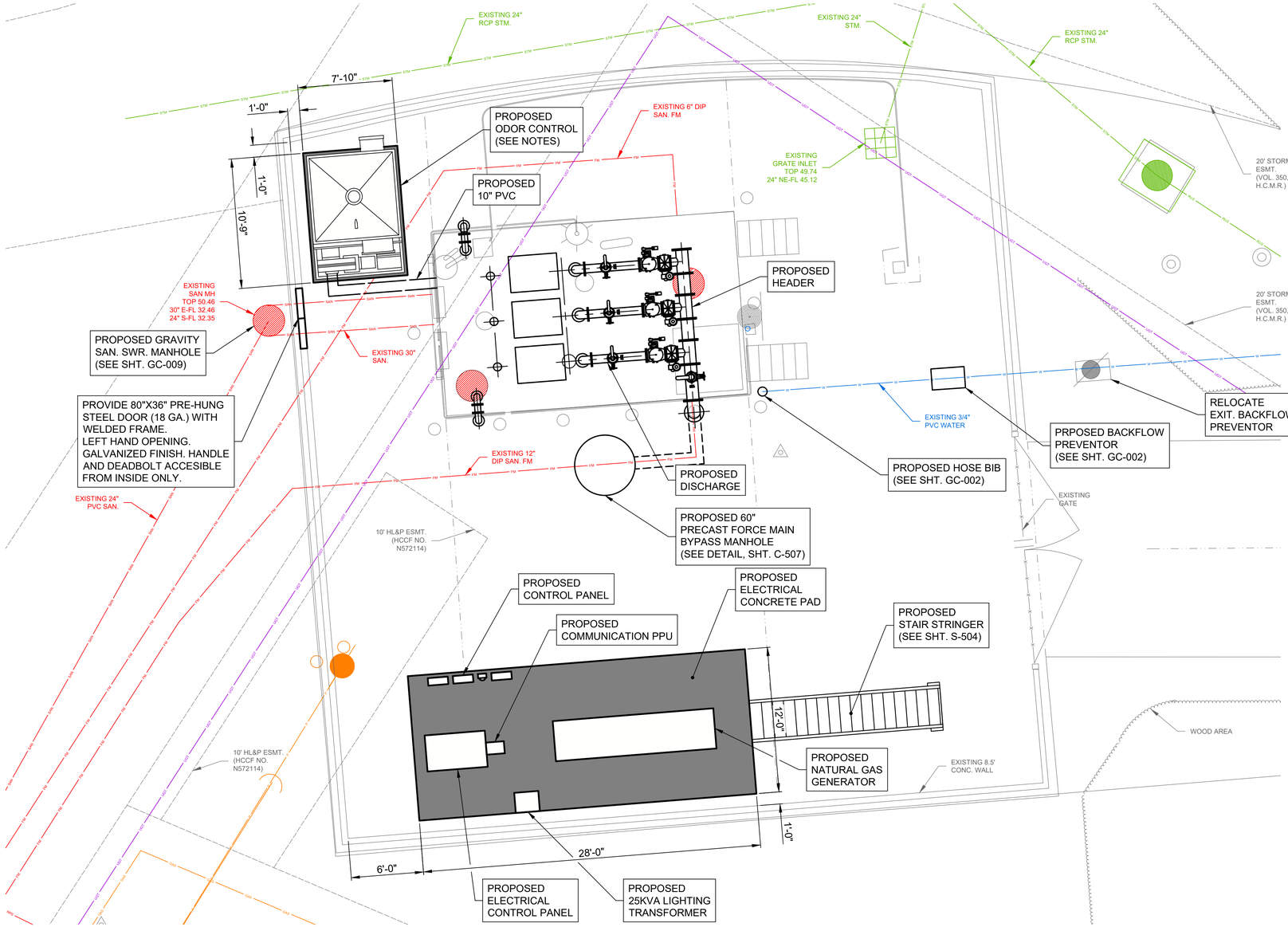
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-502
HORIZ: 3/8"=1'-0"
VERT: NONE
SHEET NO. 192 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\048 C-502.dwg



NOTE:

1. FOR SITE CONTROL POINTS TABLE SEE DRAWING NO. C-506 STATELY OAKS LIFT STATION PUMP OPERATION AND SITE CONTROL POINTS TABLES.

LEGEND:

SO-501 SITE CONTROL POINTS

0 5' 10'
1"=5'

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/29/2026 1:13 PM

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T TEXAS/SWBT underground conduit facilities only. Signature valid for one year.

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

STATELY OAKS LIFT STATION
PROPOSED
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-503

HORIZ: 1"=5'
VERT: NONE

SHEET NO. 193 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 070375 IS A BRASS DISK STAMPED RM 070375 LOCATED ON WEST SIDEWALK ON MILL BRIDGE WAY BRIDGE APPROXIMATELY 190 FEET NORTHEAST FROM THE INTERSECTION OF APPALACHIAN TRAIL IN KEYMAP 297P IN THE SAN JACINTO RIVER WATERSHED.

ELEV 73.10 FEET NAVD 1988, 2001 ADJUSTMENT.

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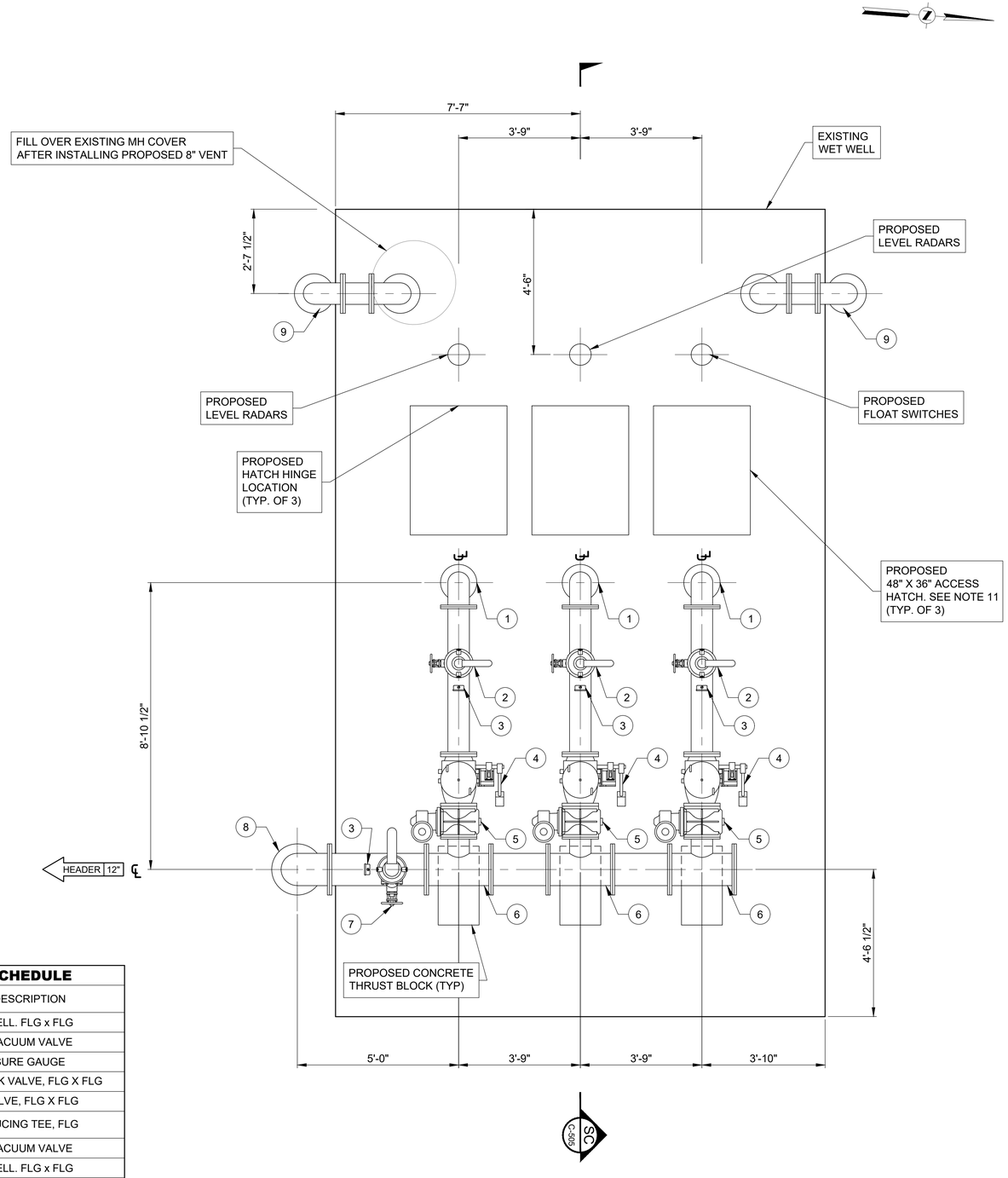
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GENERAL NOTES:

1. SEE DETAIL AND STRUCTURAL SHEETS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. FOR ODOR CONTROL DESIGN DETAILS, REFER TO SPECIFICATIONS SECTION 11400.
3. CONTRACTOR TO CONFIRM THE SIZE AND LOCATION OF THE WET WELL HATCHES FOR SELECTED WET WELL AND PUMP MANUFACTURER'S REQUIREMENTS. AND PROVIDE SAFETY GRATING SYSTEM, "RETRO-GRATE" OR APPROVED EQUAL.
4. INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO A SITTING POSITION.
5. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
6. LABEL HATCHES WITH THE CORRESPONDING PUMP NUMBER USING A 12-INCH BY 12-INCH 316SS PLATE ENGRAVED WITH 6-INCH LETTERING WELDED TO THE HATCH. LABEL CHECK VALVES WITH THE CORRESPONDING VALVE NUMBER USING A 12-INCH BY 12-INCH 316SS PLATE ENGRAVED WITH 6-INCH LETTERING ADHERED TO THE TOP OF THE CHECK VALVE.
7. ALL ABOVE PIPING SHALL BE FLANGED, AND ALL BELOW PIPING SHALL BE MECHANICAL JOINT.
8. FOR PUMP ACCESS HATCHES, CONTRACTOR SHALL PROVIDE A SAFETY GRATING SYSTEM, "RETRO-GRATE" OR APPROVED EQUAL.
9. THE GENERATOR IS USED SOLELY FOR EMERGENCIES AND REQUIRED TESTING AND IS COMPLIED WITH CHAPTER 30 SOUND LEVEL ORDINANCE EXEMPTION FOR EMERGENCY WORK.

FILE PATH: G:\1110\5431-01_COH LIft Station\Phase II Drawings\5431.10 Drawings\01_Sheets\049 C-503.dwg



SB C-504 PLAN
SCALE: 1/2"=1'-0"

SC C-505

PIPE FITTING AND VALVES SCHEDULE

KEYED NOTES	QUANTITY	SIZE	ITEM DESCRIPTION
1	6	8"	D.I. 90° ELL. FLG x FLG
2	3	2"	AIR & VACUUM VALVE
3	4	1/4"	PRESSURE GAUGE
4	3	8"	SWING CHECK VALVE, FLG X FLG
5	3	8"	PLUG VALVE, FLG X FLG
6	3	8" X 12"	D.I. REDUCING TEE, FLG
7	1	3"	AIR & VACUUM VALVE
8	1	12"	D.I. 90° ELL. FLG x FLG
9	2	8" Ø	**VENT PIPE:**
	2		BIRD SCREEN
	2		D. I. WALL PIPE W/WATERSTOP COLLAR PE X FLG.
	4		D.I. 90" ELL. FLG

NOTES:

1. SEE DETAILS AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. CONTRACTOR SHALL VERIFY DIMENSIONS DIMENSIONS NOTED ON DRAWINGS FOR PUMPS SELECTED.
3. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
4. INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO A SEATING POSITION.
5. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
6. SLEEVED OR CORED DISCHARGE PIPE OPENINGS SEALED WITH SEAL-LINK (OR APPROVED EQUAL) MAY BE SUBSTITUTED FOR POURED IN PLACE WALL PIPES TO ACCOMMODATE CONSTRUCTION METHOD.
7. CONTRACTOR SHALL PROVIDE BLOCK-OUTS IN CONCRETE FILLETS FOR CLEARANCE AROUND LEVEL TRANSDUCER
8. LIFT STATION SAFETY HATCHES SHALL BE PAINTED FOREST GREEN.
9. LABEL HATCHES WITH CORRESPONDING PUMP NUMBER USING STANDARD PAINT STENCILS. MINIMUM 8" HEIGHT.
10. VENT PIPES SHALL BE DUCTILE IRON WITH UV PROTECTIVE COATINGS AS REQUIRED BY THE CITY OF HOUSTON.
11. HATCHES SHALL BE CAST-IN WITH TOPS FLUSH WITH THE CONCRETE DECK, FLOOD TIGHT WITH HOLD OPEN ARMS. HATCHES SHALL BE MANUFACTURED BY BILCO COMPANY, HALLIDAY PRODUCTS, OR EQUAL.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/22/2026 6:14 PM

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-0570

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116345
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

STATELY OAKS LIFT STATION
PROPOSED
PLAN VIEW

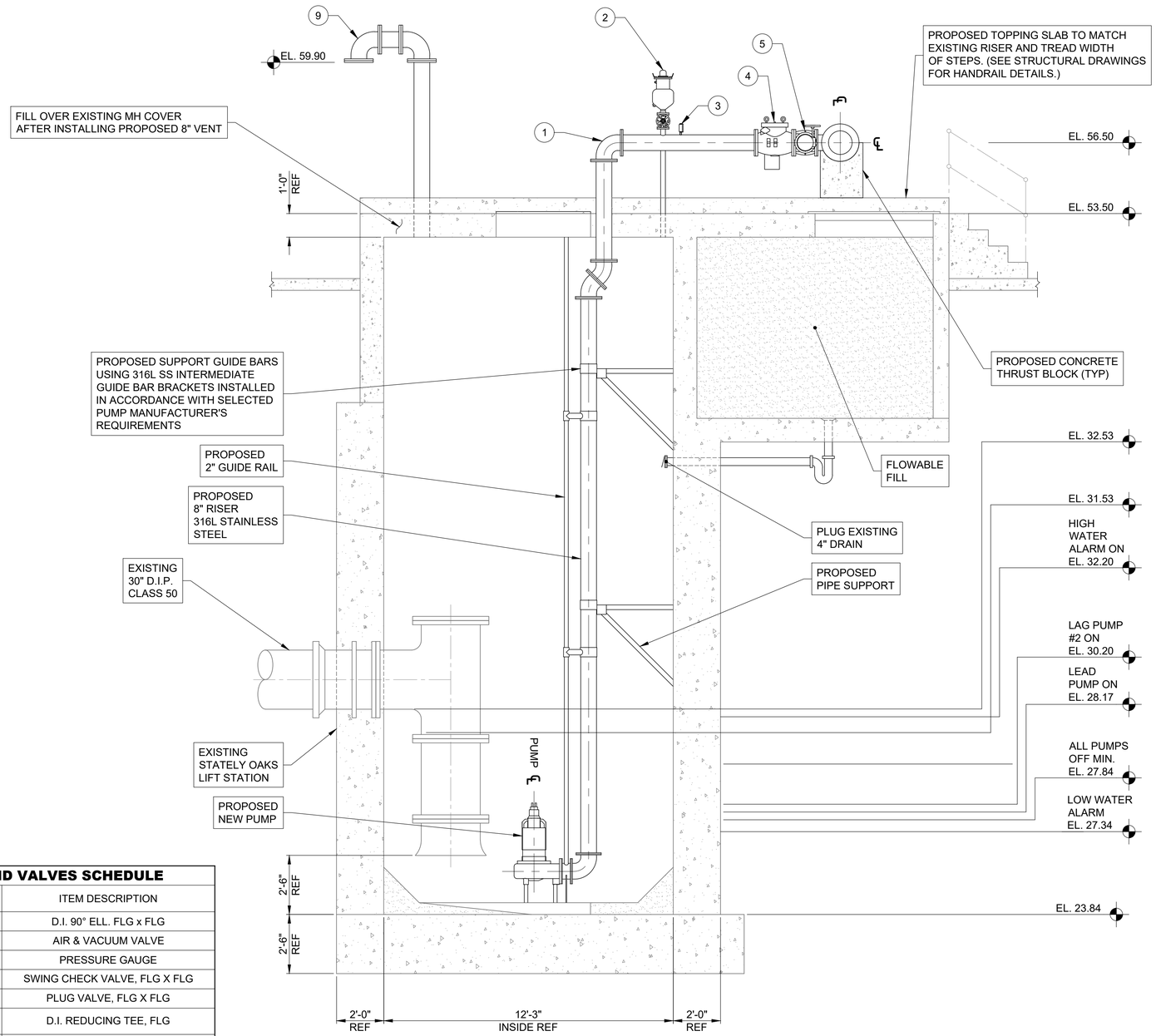
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-504
HORIZ: 1/2"=1'-0"
VERT: NONE
SHEET NO. 194 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\050 C-504.dwg



SC C-505 SECTION
SCALE: 3/8"=1'-0"

PIPE FITTING AND VALVES SCHEDULE

KEYED NOTES	QUANTITY	SIZE	ITEM DESCRIPTION
1	6	8"	D.I. 90° ELL. FLG x FLG
2	3	2"	AIR & VACUUM VALVE
3	4	1/4"	PRESSURE GAUGE
4	3	8"	SWING CHECK VALVE, FLG X FLG
5	3	8"	PLUG VALVE, FLG X FLG
6	3	8" X 12"	D.I. REDUCING TEE, FLG
7	1	3"	AIR & VACUUM VALVE
8	1	12"	D.I. 90° ELL. FLG x FLG
9	2	8" Ø	**VENT PIPE:**
	2		BIRD SCREEN
	2		D. I. WALL PIPE W/WATERSTOP COLLAR PE X FLG.
	4		D.I. 90" ELL. FLG

NOTES:

1. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. PUMP ANCHOR BOLTS ARE TO BE ADHESIVE TYPE, AND EMBEDDED IN CONCRETE SLAB. CONTRACTOR TO SUBMIT DESIGN OF PUMP ANCHOR BOLTS AND PATTERN INCLUDING CALCULATIONS, DURING SHOP DRAWING SUBMISSION.
3. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
4. CONTRACTOR TO PROVIDE ADHESIVE ANCHORS IN LIEU OF WEDGE ANCHORS FOR ALL SUBMERGED CONDITIONS. AND SUBMIT DESIGN OF ANCHOR BOLTS DURING SHOP DRAWING SUBMISSION.
5. ALL PIPING IN THE WET WELL SHALL BE FLANGED. NO FLANGED COUPLING ADAPTORS OR VICTAULIC STYLE COUPLINGS SHALL BE PERMITTED INSIDE THE WET WELL.
6. CONTRACTOR SHALL PLUG ABANDONED PIPING AND FILL ABANDONED VALVE VAULT WITH SUITABLE FLOWABLE FILL MATERIAL.
7. DISCHARGE PIPING SUPPORTS SHALL BE SPACED ACCORDING TO SELECTED PUMP MANUFACTURER'S RECOMMENDATIONS. AND MUST BE A MINIMUM OF TWO DISCHARGE PIPING SUPPORTS.
8. SUPPORT GUIDE BARS SHALL BE 316L SS AND SHALL BE INSTALLED IN ACCORDANCE WITH SELECTED PUMP MANUFACTURER'S REQUIREMENTS.
9. ABRASIVE BLAST AND COAT ALL PIPING AND FITTINGS NOT BEING REPLACED IN WET WELL.
10. WET WELL SHALL BE BLASTED AND CLEANED. A PROTECTIVE COATING SHALL BE APPLIED ON ALL INTERIOR CONCRETE SURFACE OF THE WET WELL. REFER TO COH PROTECTIVE COATINGS, SPEC. 09901, SYSTEM 108.
11. ALL PROPOSED PIPING AND FITTINGS INSIDE THE WET WELL SHALL BE 316L SS.

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 6:15 PM PEN TABLE: ----

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

STATELY OAKS LIFT STATION
PROPOSED
SECTION VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

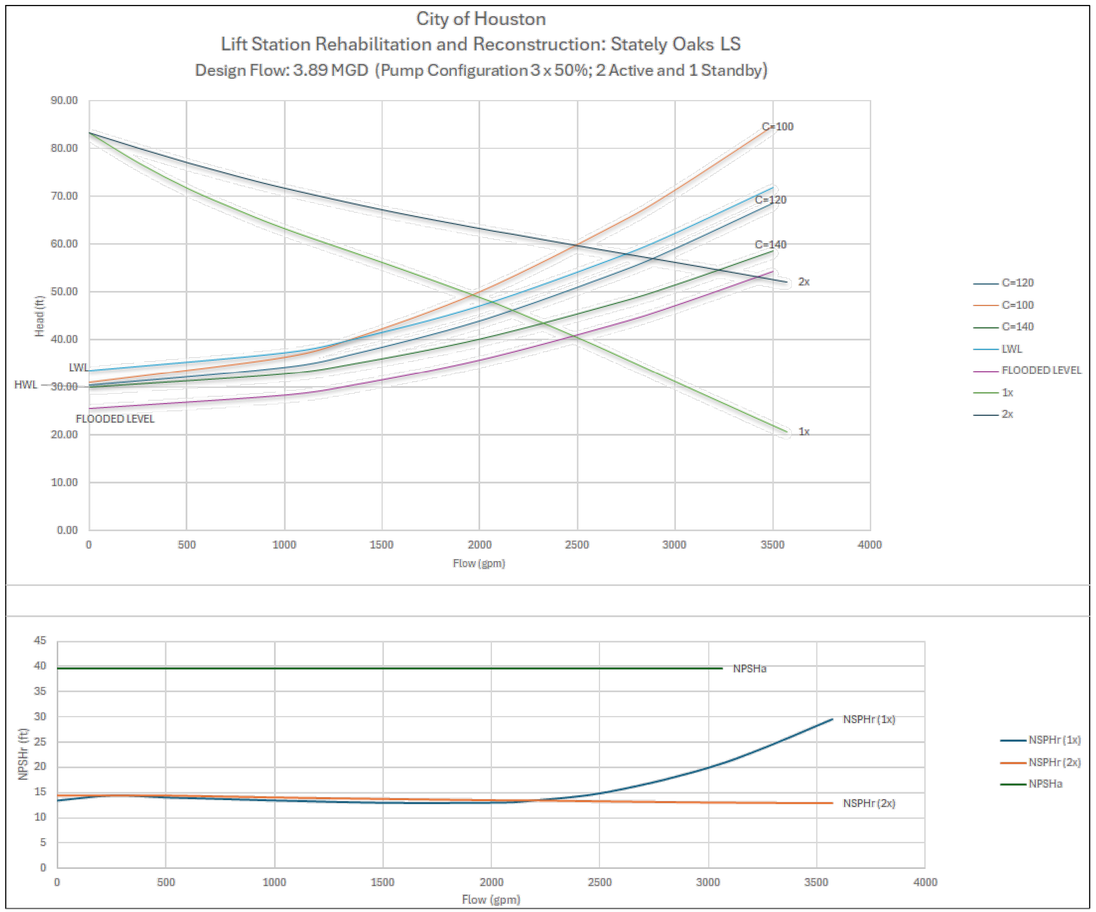
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-505
HORIZ: 3/8"=1'-0"
VERT: NONE
SHEET NO. 195 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\051 C-505.dwg

SITE CONTROL POINTS TABLE					
LABEL NO.	NORTHING	EASTING	POINT DESCRIPTION	POINT LOCATION	DRAWING NO.
SO-501	13953435.6752	3188883.7714	LIFT STATION	CENTER	C-503
SO-502	13953429.6070	3188889.8396	LIFT STATION	CENTER	C-503
SO-503	13953423.5388	3188886.3361	LIFT STATION	CENTER	C-503
SO-504	13953417.4706	3188892.4043	LIFT STATION	CENTER	C-503
SO-505	13953411.4024	3188888.9008	LIFT STATION	CENTER	C-503
SO-506	13953405.3342	3188894.9690	LIFT STATION	CENTER	C-503
SO-507	13953399.2660	3188891.4656	LIFT STATION	CENTER	C-503
SO-508	13953393.1977	3188897.5338	LIFT STATION	CENTER	C-503
SO-509	13953387.1295	3188894.0303	LIFT STATION	CENTER	C-503
SO-510	13953381.0613	3188900.0985	LIFT STATION	CENTER	C-503
SO-511	13953374.9931	3188896.5950	LIFT STATION	CENTER	C-503
SO-512	13953368.9249	3188902.6632	LIFT STATION	CENTER	C-503
SO-513	13953362.8567	3188899.1597	LIFT STATION	CENTER	C-503
SO-514	13953356.7885	3188905.2280	LIFT STATION	CENTER	C-503
SO-515	13953350.7203	3188901.7245	LIFT STATION	CENTER	C-503
SO-516	13953344.6520	3188907.7927	LIFT STATION	CENTER	C-503



S3 C-506 PUMP OPERATION CURVES

PUMP CHARACTERISTICS	PUMP NO. 1	PUMP NO. 2	PUMP NO. 3
"NOTES: 1. Pump curves and characteristics are based on FLYGT Model NP 3202 MT 3~ 642 . Other acceptable manufacturers are named in Section 11311 of the specifications."			
MOTOR DATA :			
MOTOR SIZE (HP)	35	35	35
SPEED (RPM)	1,170	1170	1170
MAX SPHERICAL SOLIDS PASSAGE (IN):	3	3	3
CAPACITY (GPM) :			
DESIGN	1,368	1368	1368
RUNOUT	3,699	3699	3699
DISCHARGE HEAD (FT)			
DESIGN	58.02	58.02	58.02
RUNOUT HEAD (FT)	18.29	18.29	18.29
SHUTOFF HEAD (FT)	83.24	83.24	83.24
DESIGN EFFICIENCY (%)	73.70	73.70	73.70
NPSHa (FT)	39.57	39.57	39.57
NPSHr (FT)	13.50	13.50	13.50
PUMP CYCLE TIME (MIN)	6	6	6
DESIGN CUMMULATIVE CAPACITY (GPM)	2700.0000		
PUMP CONFIGURATION	3 x 50%		

S2 C-506 PUMP DATA TABLE

One Operating Pump	Two Operating Pumps	Head 1x (ft)	Head 2x (ft)	One Pump NSPHr	Two Pumps NSPHr	NPSHa
0	0.00	83.24	83.24	13.50	14.49	39.57
255	255.16	76.90	80.00	14.50	14.49	39.57
510	510.32	71.50	76.93	14.10	14.49	39.57
766	765.51	67.00	74.08	13.80	14.28	39.57
1021	1020.67	62.90	71.50	13.50	14.09	39.57
1531	1530.99	55.70	66.92	13.04	13.77	39.57
2041	2041.34	48.20	62.96	13.10	13.52	39.57
2169	2169.00	46.10	62.08	13.40	13.50	39.57
2551	2551.66	39.50	59.31	15.30	13.28	39.57
3062	3061.97	30.02	55.76	20.80	13.04	39.57
3572	3572.32	20.63	52.08	29.56	12.92	39.57

S4 C-506 PUMP FLOW, TOTAL DYNAMIC HEAD, AND NPSH REQUIREMENTS FOR OPERATION

RISING LEVEL CYCLE			
WATER LEVEL DEPTH	**WATER LEVEL ELEVATION**	**ACTION**	**ALARMS/PUMP(S) IN OPERATION**
6.10	29.94	LEAD PUMP TURNS ON	LEAD PUMP ON
8.10	31.94	LAG PUMP #2 TURNS ON	LEAD & 2ND PUMPS ON
10.10	33.94	HIGH LEVEL ALARM	HIGH LEVEL ALARM SOUNDS
FALLING LEVEL CYCLE			
WATER LEVEL DEPTH	**WATER LEVEL ELEVATION**	**ACTION**	**ALARMS/PUMP(S) IN OPERATION**
8.10	31.94	LEAD PUMP TURNS OFF	LEAD PUMP OFF
4.00	27.84	LAG PUMP #2 TURNS OFF	LEAD AND 2ND PUMP OFF
3.50	27.34	LOW LEVEL ALARM	LOW LEVEL ALARM SOUNDS

S1 C-506 STATION OPERATION TABLES

NO. | DATE | REVISION | APP.

PLOTTED: 1/22/2026 4:09 PM PEN TABLE: ----

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Crag Alexander Perry
Name
116345
License No.
JANUARY 23, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

STATELY OAKS LIFT STATION
PUMP OPERATION AND
SITE CONTROL POINTS TABLES

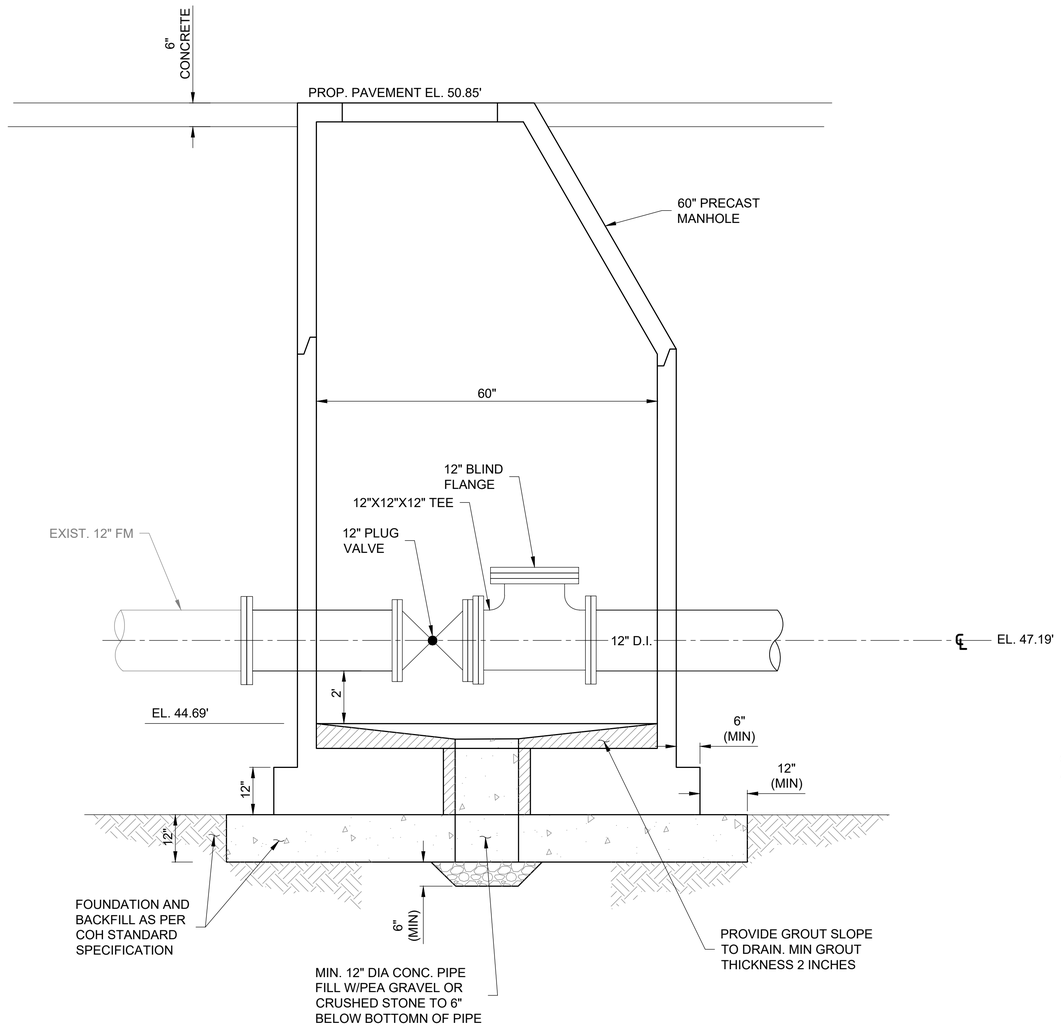
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-506
HORIZ: NONE
VERT: NONE
SHEET NO. 196 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\052 C-506.dwg



NOTE:

CONTRACTOR TO FIELD VERIFY LOCATION AND DEPTH OF EXISTING FORCE MAIN.

60" BYPASS MANHOLE

SCALE: N.T.S.

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 6:19 PM PEN TABLE: ----

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL

STATELY OAKS LIFT STATION
PROPOSED
F.M. BY-PASS MANHOLE DETAIL

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-507

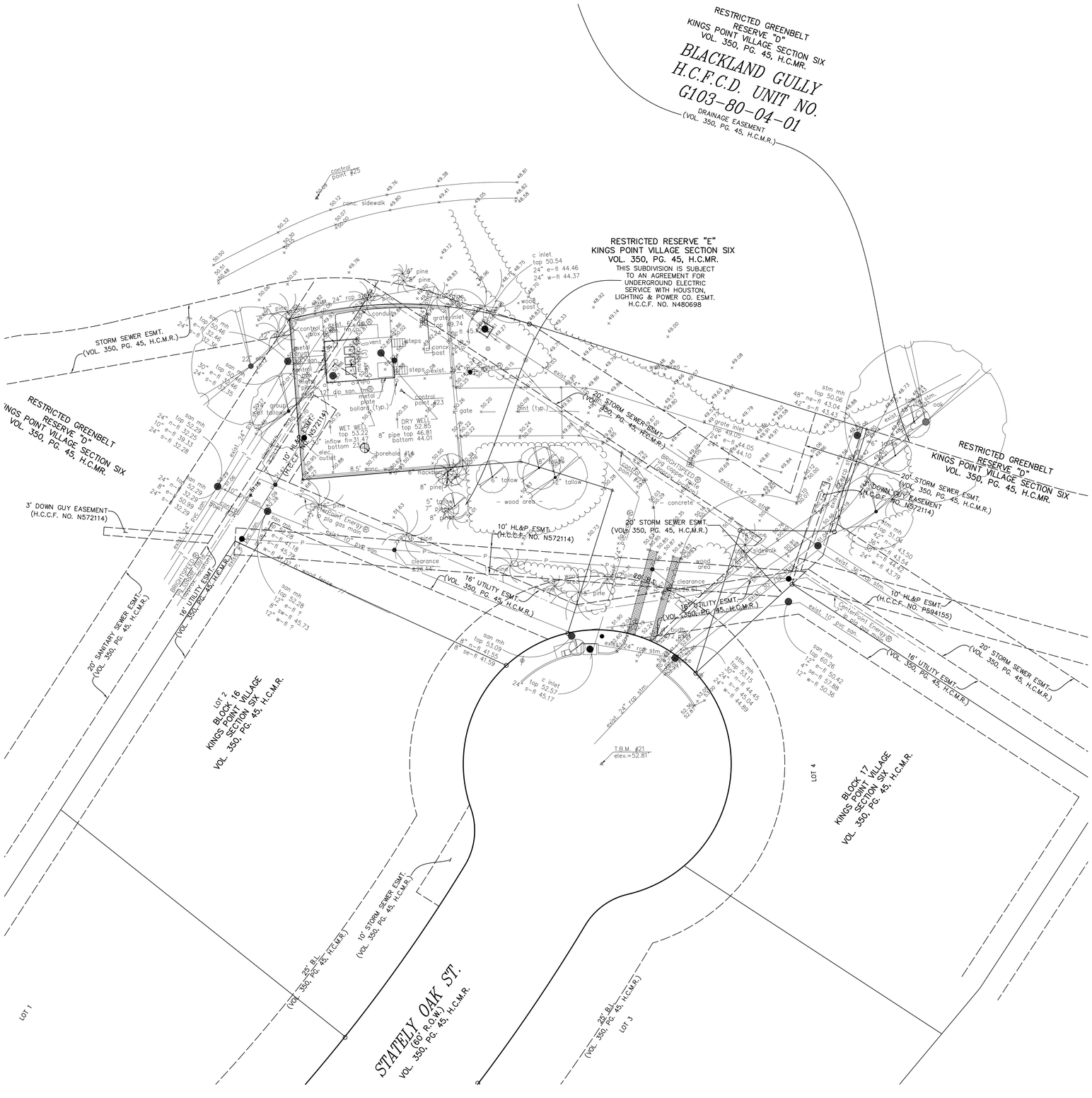
HORIZ: AS NOTED
VERT: NONE

SHEET NO. 197 OF 230

DRAWING SCALE

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FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\053 C-507.dwg



BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 070375 IS A BRASS DISK STAMPED RM 070375 LOCATED ON WEST SIDEWALK ON MILL BRIDGE WAY BRIDGE APPROXIMATELY 190 FEET NORTHEAST FROM THE INTERSECTION OF APPALACHIAN TRAIL IN KEYMAP 297P IN THE SAN JACINTO RIVER WATERSHED

ELEV. 73.10 FEET NAVD 1988, 2001 ADJUSTMENT

T.B.M #21:

SET "X" CUT ON CONCRETE LOCATED AT THE END OF CUL-DE-SAC OF STATELY OAK RD.
ELEV.= 52.81 FT.

HORIZONTAL DATUM:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

EXISTING UTILITY NOTE:

EXISTING UNDERGROUND UTILITY INFORMATION (TYPE, SIZE & OWNERSHIP) ARE SHOWN APPROXIMATELY BASED ON THE AVAILABLE RECORD DRAWINGS AND FIELD VERIFICATION (WHERE FEASIBLE) WITHOUT PROBING AND EXCAVATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATION SHOWN ON THE DRAWING. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING OR BORE AND JACKING IN THE VICINITY OF UNDERGROUND UTILITIES. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CALL UTILITY COORDINATING COMMITTEE AT 713-223-4567, AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THE STREET RIGHT-OF-WAY.

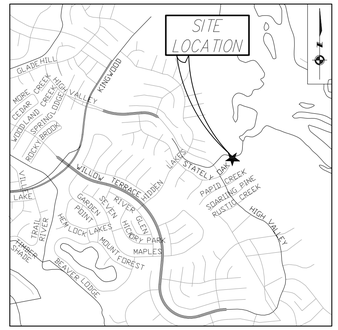
LEGEND:

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- COLUMN
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- IRRIGATION CONTROL VALVE
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- REFERENCE INFORMATION (FROM RECORD DRAWING)
- SBC MANHOLE
- SIGN
- SIGNAL POLE
- SPRINKER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE-CREPE MYRTLE
- TREE-PINE
- UTILITY MARK
- WATER METER
- WATER VALVE
- BOREHOLE
- BRUSH ROW
- DITCH/SWALE CENTER LINE
- EASEMENT OR BUILDING LINE
- FENCE
- GAS LINE
- GUARD RAIL
- HEDGE ROW OR TREE LINE
- HIGH BANK
- OVERHEAD POWER LINE WITH OR W/O CABLE
- SANITARY SEWER LINE
- SANITARY FORCE MAIN
- STORM LINE
- TELEPHONE LINE
- UG STREET LIGHT CABLE
- WATER LINE

ABBREVIATIONS:

E./ESMT.	EASEMENT	I.R.	IRON ROD
B.L.	BUILDING LINE	I.P.	IRON PIPE
STM.	STORM	CONC.	CONCRETE
SAN.	SANITARY	LT	LIGHT
SWR.	SEWER	UG	UNDER GROUND
N.F.I.F.	NOT FOUND IN FIELD		

Control Point Table				
Point #	Northing	Easting	Elevation	Raw Description
21	13953042.7800	3187881.2400	52.807	SET "X" CUT ON CONC.
22	13953158.9900	3187888.7470	49.937	SET "X" CUT ON CONC.
23	13953182.0900	3187806.5410	50.245	SET "X" CUT ON CONC.
24	13953142.9800	3187750.3000	51.152	SET 12" I.R. W/CAP
25	13953253.8500	3187774.9650	50.078	SET 12" I.R. W/CAP



VICINITY MAP KEYMAP: 338 A
N.T.S.

GRAPHIC SCALE
20 0 10 20 40
SCALE: 1" = 20'-0"

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-6570

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TBPELS Engineering Firm Reg. No. F-4578
TBPELS Surveying Firm Reg. No. 10075600

STATE OF TEXAS
KUTUBUL A. M. MAINUDDIN
6404
PROFESSIONAL LAND SURVEYOR
07/08/25

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

SURVEY

STATELY OAKS LIFT STATION
EXISTING SITE SURVEY
AND CONTROL POINTS TABLE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. SV-501
HORIZ: 1"=20'
VERT: N/A
SHEET NO. 198 OF 230
DRAWING SCALE
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NO.	DATE	REVISION	APP.

PEN TABLE: ----
PLOTTED: 7/10/2025 9:00 PM
FILE PATH: S:\Proj-2024\24033 (COH LIFT STATIONS)\Dwgs\Topo Survey Sheets\SV-501\SV-501-Stately Oaks LS.dwg

GENERAL NOTES FOR STRUCTURES

CONCRETE

1. DESIGN SHALL CONFORM TO THE LATEST BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI-318) WITH SPECIAL REQUIREMENTS OF ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI-350).
2. ALL REINFORCING BARS SHALL CONFORM TO ASTM A-615, GRADE 60, ARRANGEMENT AND DETAILS OF REINFORCING STEEL, INCLUDING BAR SUPPORTS AND SPACERS, SHALL BE IN ACCORDANCE WITH THE LATEST ACI DETAILING MANUAL, UNLESS OTHERWISE NOTED.
3. ALL SLAB AND BEAM REINFORCEMENT SHALL HAVE A MINIMUM EXTENSION INTO THE SUPPORT IN ACCORDANCE WITH THE LATEST ACI CODE. IF SUCH EXTENSION IS NOT POSSIBLE, BARS SHALL TERMINATE IN STANDARD HOOKS.
4. HORIZONTAL WALL REINFORCEMENT AND TEMPERATURE REINFORCEMENT SHALL LAP A MINIMUM OF 1.7Ld AT SPLICES. WALL DOWELS AND WALL BAR EXTENSIONS AND ALL STRESS SPLICES SHALL LAP A MINIMUM OF 1.7Ld, UNLESS NOTED OTHERWISE.
5. WALL OR COLUMNS SHALL HAVE DOWELS FROM FOUNDATIONS OR CONSTRUCTION BELOW OF SAME SIZE AND SPACING AS WALL OR COLUMN VERTICAL STEEL. SEE FOOTING SCHEDULE.
6. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL NOT BE LESS THAN THE FOLLOWING:

   STRUCTURAL MEMBERS, FOUNDATIONS, WALLS AND SUSPENDED SLABS ------ 4000 PSI
   SLABS-ON-GRADE ------ 4000 PSI
   LEAN CONCRETE CLASS B ------ 1500 PSI
   GROUT FILL CLASS H ------ 3000 PSI

7. UNLESS OTHERWISE SHOWN, THE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

   SLABS
   TOP AND BOTTOM OF FORMED SLABS ------ 2"
   TOP OF WALK AND DRIVEWAY SLABS ------ 2"
   SURFACES IN CONTACT WITH LIQUID ------ 2"
   BOTTOM OF SLABS ON FILL OR SOIL ------ 3"

   FOOTINGS
   TOP AND SIDES ------ 2 1/2"
   BOTTOM ------ 3"

   WALLS
   LESS THAN 12" THICK ------ 1 1/2"
   12" OR OVER IN THICKNESS WITH POURS LESS THAN 10 FEET HIGH ---- 2"
   12" OR OVER IN THICKNESS WITH POURS MORE THAN 10 FEET HIGH ---- 2 1/2"

   BEAMS AND GIRDERS
   COVER AT TOP, BOTTOM AND SIDES OF LONGITUDINAL REINF ------- 2"

   COLUMNS
   COVER FOR VERTICAL BARS ------ 2"

8. HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS SHOWN OR NOTED ON THE PLANS ARE RECOMMENDED. ANY DEVIATION FROM THOSE SHOWN SHALL HAVE APPROVAL OF THE ENGINEER.
9. ANY STOP IN FRAMED CONCRETE WORK MUST BE IN THE CENTER OF THE SPAN AND INCORPORATE AN APPORVED KEYWAY, REINFORCEMENT SHALL EXTEND THROUGH THESE JOINTS IF REQUIRED FOR CONTINUITY.
10. USE TYPE 'C2' JOINT FOR ALL CONSTRUCTION JOINTS IN WALLS AND SLABS BELOW GRADE AND WALLS WHICH SEPARATE AREAS OF SOIL OR LIQUID FROM PERMANENTLY DRY AREAS SUCH AS TUNNELS, GALLERIES, BASEMENT ROOMS, ETC. USE TYPE 'C1' JOINT AT ALL OTHER CONSTRUCTION JOINTS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
11. CONCRETE WALLS AND PARTITIONS SHALL BE POURED IN MAXIMUM LENGTHS OF 40 FEET BETWEEN VERTICAL CONSTRUCTION JOINTS.
12. ALL CONCRETE SLABS OVER 8" IN THICKNESS, REINFORCED WITH BARS, AND POURED AGAINST SOIL SHALL BE POURED IN A STRIP PATTERN OF 40 FEET OR LESS IN EACH DIRECTION.
13. ALL EXPOSED EDGES OF BEAMS, COLUMNS, SLABS AND WALLS SHALL BE CHAMFERED 3/4" UNLESS MASONRY OR OTHER MEMBERS ARE ERECTED FLUSH WITH THEM.
14. REFERE TO ARCHITECTURAL, PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL SLEEVES, PIPES, CONDUITS AND MISCELLANEOUS ANCHORING DEVICES TO BE INCORPORATED IN THE CONSTRUCTION.

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS". ALL STRUCTURAL STEEL SHALL BE ASTM A36.
2. ELEVATIONS OF STEEL BEAMS SHOWN ON FRAMING PLANS REFER TO TOP OF FLANGE, UNLESS OTHERWISE NOTED.
3. ANCHOR BOLTS AND MISC EMBEDDED STEEL ------ ASTM A36
   ANCHOR BOLTS WHICH ARE SUBMERGED, LOCATED ABOVE A LIQUID SURFACE, OR ARE IN A CORROSIVE ATMOSPHERE ------ 316 SS
4. ALL EQUIPMENT ANCHOR BOLT DIMENSIONS AND LOCATIONS SHALL BE VERIFIED FROM CERTIFIED VENDOR DRAWINGS, PRIOR TO CONSTRUCTION.

FOUNDATIONS

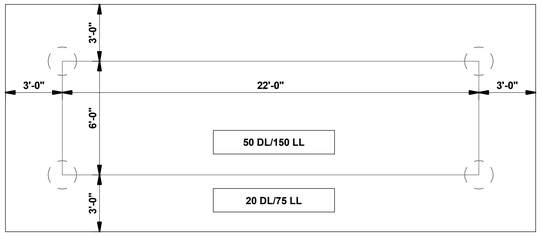
1. ALLOWABLE SOILD BEARING PRESSURE, EXCAVATION AND BACKFILL FOR FOUNDATIONS AND STRUCTURES SHALL BE AS RECOMMENDED IN THE GEOTECHNICAL REPORT.
2. ALL EXCAVATIONS SHALL BE CARRIED OUT IN THE DRY, AND PROVISIONS SHALL BE MADE TO PREVENT THE BOTTOM OF ALL EXCAVATIONS FROM FREEZING OR FLOODING AT ALL TIMES.
3. ALL FOUNDATIONS SHALL BE CONSTRUCTED IN EXCAVATIONS FREE OF STANDING WATER.
4. BACKFILL MATERIAL, PLACING AND COMPACTION OF BACKFILL SHALL BE IN ACCORDANCE WITH THE DRAWINGS, AND THE CONTRACT SPECIFICATIONS.

ALUMINUM

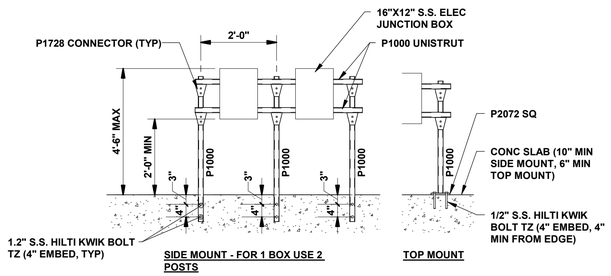
1. ALL ALUMINUM PRODUCTS ARE TO BE 6061-T6.
2. ALL BOLTS ARE TO BE STAINLESS STEEL.
3. DISIMILAR METALS ARE TO BE COATED WITH A BITUMASTIC COATING.

DESIGN CRITERIA

1. BUILDING CODE ------ INTERNATIONAL BUILDING CODE (IBC) 2021, AS AMENDED BY 2021 HOUSTON CONSTRUCTION CODE
2. RISK CATEGORY ------ III
3. DESIGN LOADS
   A. FLOOR LIVE LOADS
      a. STAIRS ------ 150 PSF
      b. LIFT STATION TOP SLAB ------ 300 PSF
      c. MECHANICAL AND ELECTRICAL ROOM ------ 250 PSF
      d. ELEVATED PLATFORM ------ SEE DIAGRAM THIS SHEET
   B. WIND DESIGN DATA
      a. BASIC WIND SPEED (V_{ULT}) ------ 145 MPH
         (V_{ASD}) ------ 113 MPH
      b. EXPOSURE CATEGORY ------ C
      c. PRESSURE COEFFICIENT, EQUIPMENT ON PLATFORM (GCr) ------ 1.0
      d. PRESSURE COEFFICENT, ROUND COLUMNS (GCfcol)------ 0.85
   C. SEISMIC DESIGN DATA
      a. IMPORTANCE FACTOR (I_E) ------ 1.25
      b. MAPPED SPECTRAL RESPONSE (S_S) ------ 0.068g
      c. MAPPED SPECTRAL RESPONSE (S_1) ------ 0.039g
      d. SPECTRAL RESPONSE (S_{DS}) ------ 0.072g
      e. SPECTRAL RESPONSE (S_{D1}) ------ 0.062g
      f. SEISMIC DESIGN CATEGORY ------ A
      g. SITE CLASS ------ D
4. DESIGN DEAD LOADS
   A. SELF WEIGHT OF MATERIALS

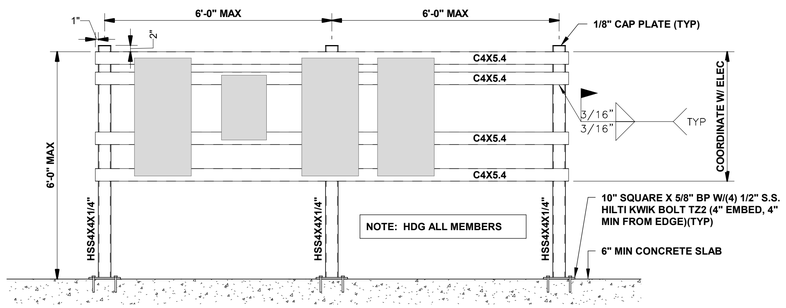


ELECTRICAL SLAB PLAN GRAVITY LOADS (PSF)



NOTES:
1. HDG ALL MEMBERS
2. PXXX DESIGNATIONS REFER TO UNISTRUT MEMBERS/CONNECTORS.

ELEC JUNCTION BOX MOUNTING DETAIL



SERVICE MOUNTING RACK DETAIL

ABBREVIATIONS

ADDL	ADDITIONAL	IF	INSIDE FACE
ALT	ALTERNATE	INT	INTERIOR
&	AND	LL	LIVE LOAD
ARCH	ARCHITECTURAL	LP	LOW POINT
@	AT	MH	MANHOLE
BM	BEAM	MAX	MISCELLANEOUS
BOT	BOTTOM	MIN	MINIMUM
B/	BOTTOM OF	#	NUMBER
BLDG	BUILDING	OC	ON CENTER
C	CENTERLINE	OPNG	OPENING
C/C	CENTER TO CENTER	OA	OVERALL
CLR	CLEAR(ANCE)	PVC	POLYVINYL CHLORIDE
COL	COLUMN	R	RADIUS
CONC	CONCRETE	REINF	REINFORCEMENT
CONST	CONSTRUCTION	REQD	REQUIRED
CONT	CONTINUOUS	SCHED	SCHEDULE
DET	DETAIL	SECT	SECTION
DIA	DIAMETER	SPEC	SPECIFICATIONS
Ø	DIAMETER	SS	STAINLESS STEEL
DL	DEAD LOAD	STD	STANDARD
DWG	DRAWING	STIRR	STIRRUP
DWL	DOWEL	SYMM	SYMMETRICAL
EF	EACH FACE	T	TOP
EW	EACH WAY	T/	TOP OF
EL	ELEVATION	TYP	TYPICAL
EXP	EXPANSION	UON	UNLESS OTHERWISE NOTED
EXT	EXTERIOR	VAR	VARIES
FTG	FOOTING	VERT	VERTICAL
HP	HIGH POINT	WWF	WELDED WIRE FABRIC
HORIZ	HORIZONTAL	W/	WITH

NOTES:

1. DETAILS SHOWN ON THIS DRAWING ARE TYPICAL DETAILS AND SHALL BE USED WHOLLY OR IN PART WHERE THEY APPLY EXCEPT WHERE MODIFIED BY DETAILED DRAWINGS & SPECIFICATIONS.

NO.	DATE	REVISION	APP.

PLOTTED: 12/19/2025 11:00:04 AM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA, HOUSTON, TEXAS 77098 (713) 520-0070

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THEODORE RICHARD KRULL
Printed
143561
Registration Number
DECEMBER 19, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

STATELY OAKS
GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

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WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-501

HORIZ: As indicated
VERT: As indicated

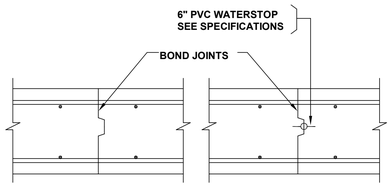
SHEET NO. 199 OF 230

DRAWING SCALE

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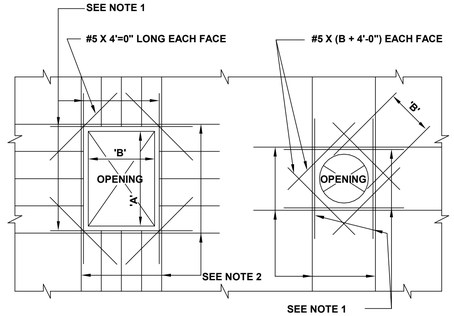
LD=TENSILE DEVELOPMENT LENGTH FOR REINF BARS WITH FY = 60 KSI	
BAR SIZE	TENSION DEVELOPMENT LENGTH 'LD' INCHES
3	12
4	12
5	15
6	19
7	26
8	35
9	44
10	56
11	68



TYPE C1 TYPE C2

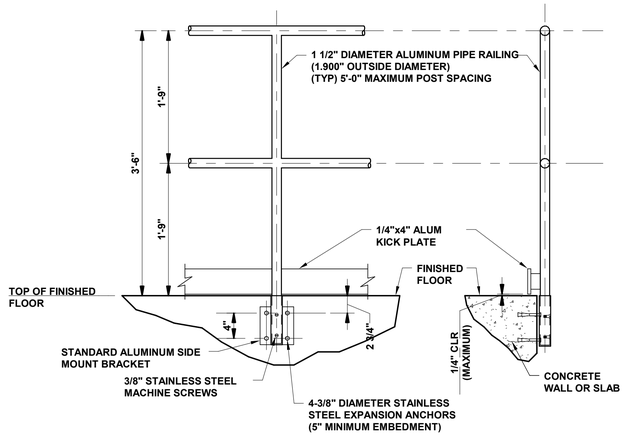
NOTES:
1. IN JOINTS W/ MORE THAN ONE KEY, PLACE WATERSTOP IN KEY NEAREST TO SURFACE AGAINST EARTH OR WATER
2. REINFORCING STEEL IS CONTINUOUS THROUGH CONSTRUCTION JOINT

CONSTRUCTION JOINTS



ADDITIONAL REINFORCING STEEL AT OPENINGS IN WALLS AND SLABS

NOTES:
1. PROVIDE (2) #6 X (B + 4'-0") ADDITIONAL REBARS AT TOP AND BOTTOM AND (2) #6 X (A + 4'-0") ADDITIONAL REBARS AT EACH SIDE OF OPENING IN WALLS ONLY.
2. PROVIDE ADDITIONAL BARS EQUAL TO ONE HALF OF BARS INTERRUPTED AT EACH SIDE OF OPENING AT 3" CENTER TO CENTER. THESE BARS SHALL BE ORIGINAL SIZES AND LENGTHS AS THOSE OF THE INTERRUPTED BARS. (TYPICAL FOR OPENINGS IN SLABS AND PRESSURE WALLS).



(SIDE OF CONCRETE - FIXED)

ALUMINUM RAILING DETAILS

NOTES:

1. DETAILS SHOWN ON THIS DRAWING ARE TYPICAL DETAILS AND SHALL BE USED WHOLLY OR IN PART WHERE THEY APPLY EXCEPT WHERE MODIFIED BY DETAILED DRAWINGS & SPECIFICATIONS.

NO.	DATE	REVISION	APP.

PLOTTED: 12/19/2025 11:00:04 AM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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THEODORE RICHARD KRULL
143561
Registration Number
DECEMBER 19, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

STATELY OAKS

TYPICAL DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-502

HORIZ: As indicated

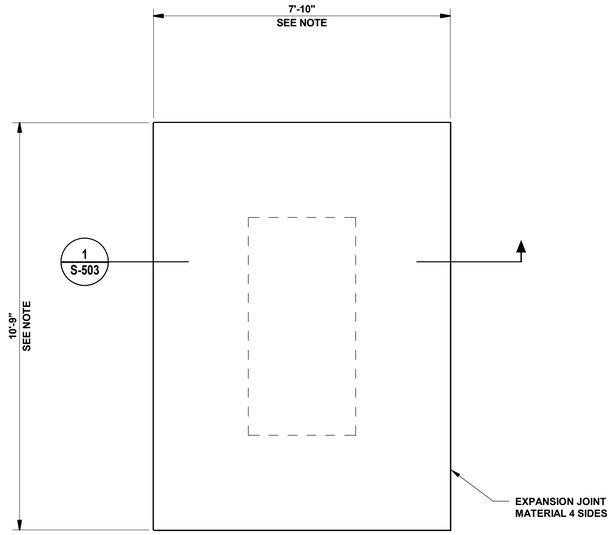
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SHEET NO. 200 OF 230

DRAWING SCALE

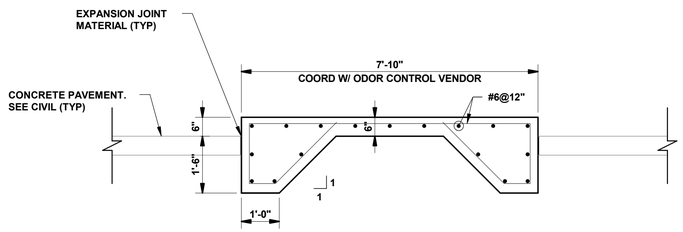
FOR CITY OF HOUSTON USE ONLY

FILEPATH: Autodesk Docs://081109_COH_Lift_Station_Rehab_and_Reconstruction/081109_S_STO_central_R23.rvt



NOTE:
1. COORDINATE SLAB DIMENSIONS AND LOCATION WITH ODOR CONTROL VENDOR AND CIVIL PLANS.

ODOR CONTROL PAD PLAN



SECTION 1/S-503

NO.	DATE	REVISION	APP.

PLOTTED: 12/19/2025 11:00:04 AM

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

STATELY OAKS

ODOR CONTROL PAD PLAN AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-503

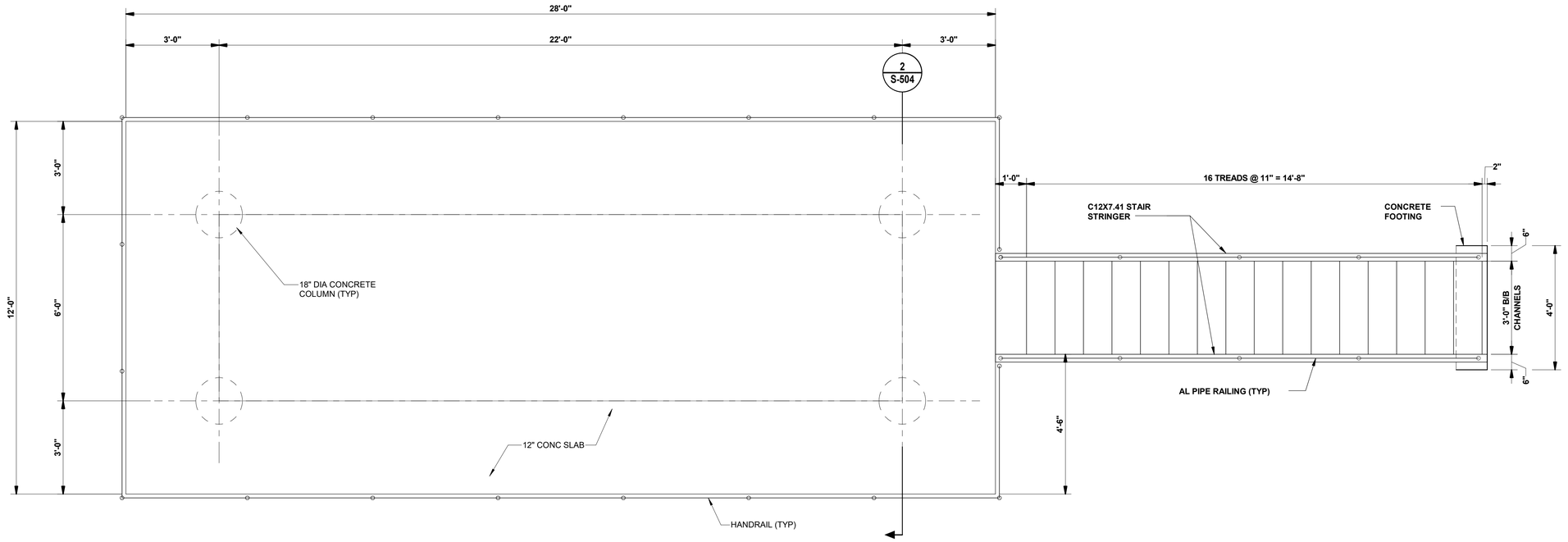
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VERT: 1/2" = 1'-0"

SHEET NO. 201 OF 230

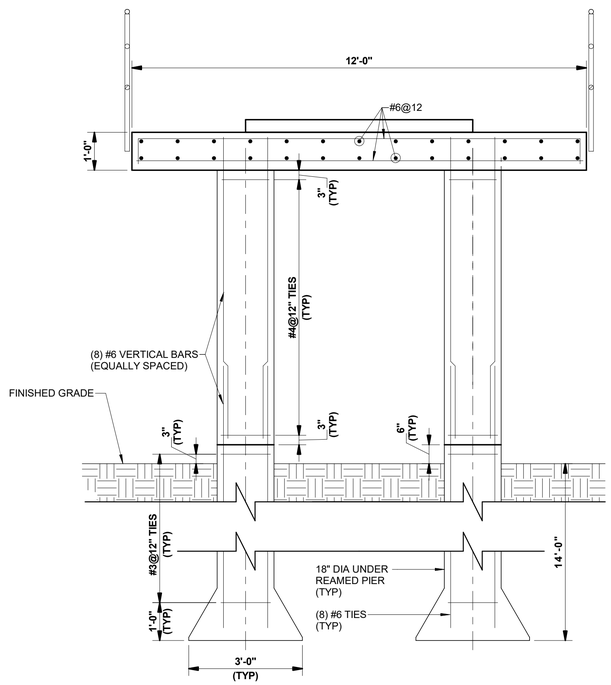
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

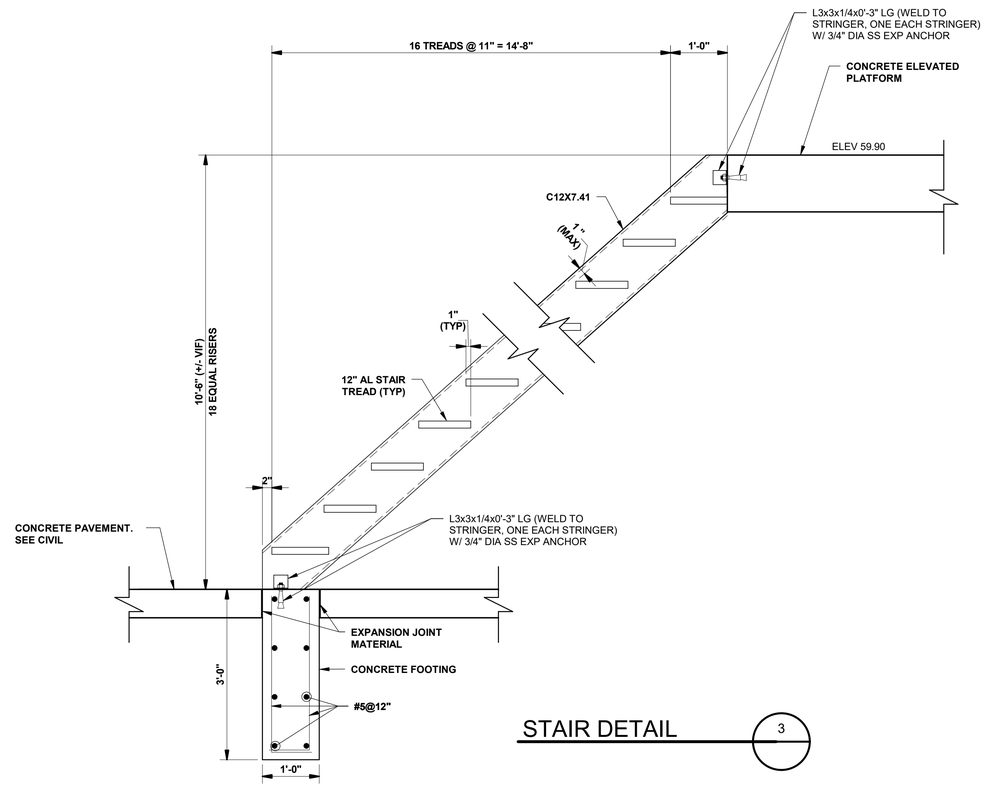
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ELECTRICAL SLAB PLAN



SECTION A — 2 / S-504



STAIR DETAIL — 3

NOTES:

1. DETAILS SHOWN ON THIS DRAWING ARE TYPICAL DETAILS AND SHALL BE USED WHOLLY OR IN PART WHERE THEY APPLY EXCEPT WHERE MODIFIED BY DETAILED DRAWINGS & SPECIFICATIONS.

NO.	DATE	REVISION	APP.

PLOTTED: 12/19/2025 11:00:05 AM

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DECEMBER 19, 2025
Date

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

STATELY OAKS
ELECTRICAL PAD - PLAN, SECTION AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

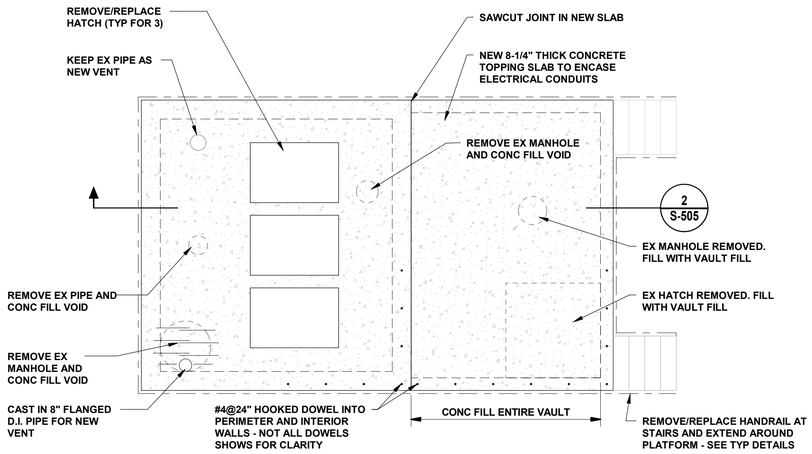
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

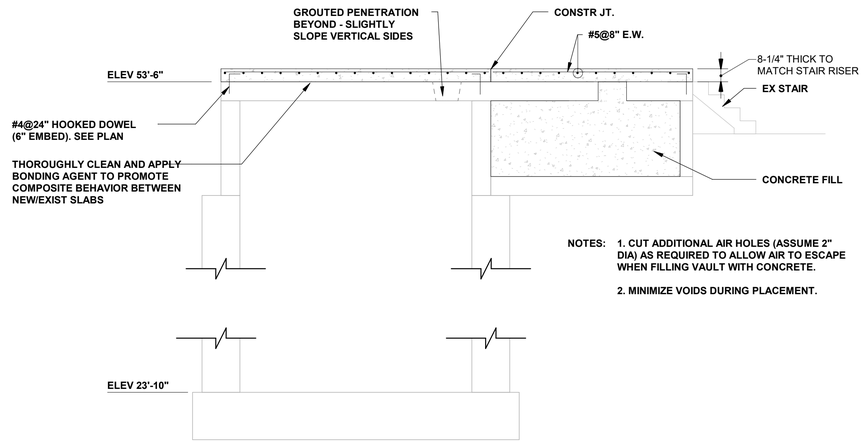
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SHEET NO. 202 OF 230	DRAWING SCALE

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FILEPATH: Autodesk Docs://081109_COH_Lift_Station_Rehab_and_Reconstruction/081109_S_STO_central_R23.rvt



1 LIFT STATION TOP SLAB
SCALE: 1/4" = 1'-0"



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

NO.	DATE	REVISION	APP.

PLOTTED: 12/19/2025 11:00:05 AM

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

STRUCTURAL

STATELY OAKS

EXISTING LIFT STATION - PLAN AND SECTION

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-505

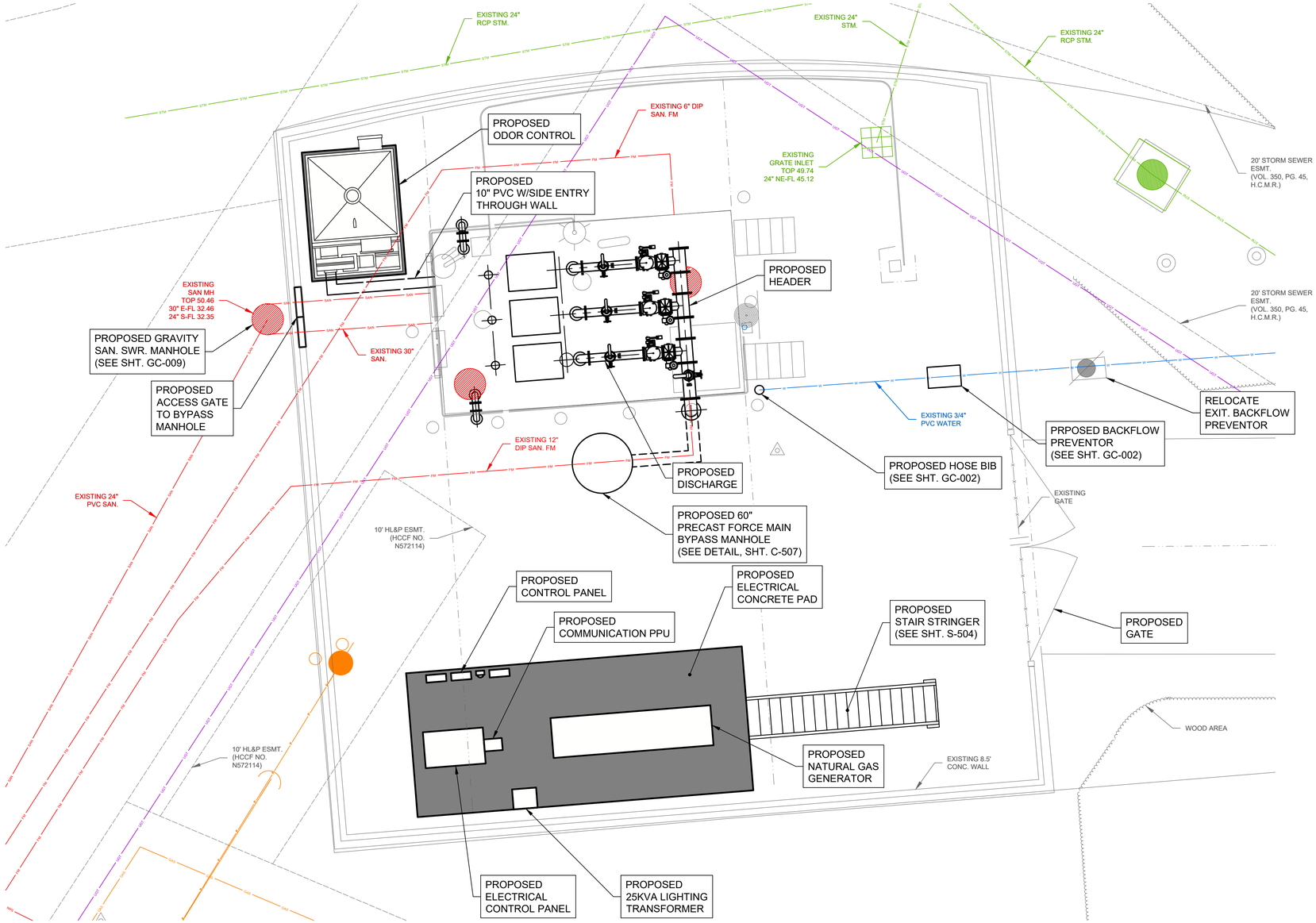
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VERT: 1/4" = 1'-0"

SHEET NO. 203 OF 230

DRAWING SCALE

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FILEPATH: Autodesk Docs://081109_COH_Lift_Station_Rehab_and_Reconstruction/081109_S_STO_central_R23.rvt



0 5' 10'
1"=5'

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/29/2026 1:14 PM

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Craig Alexander Perry
Name
116345
License No.
JANUARY 23, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

YARD PIPING

STATELY OAKS LIFT STATION
PROPOSED
YARD PIPING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-501

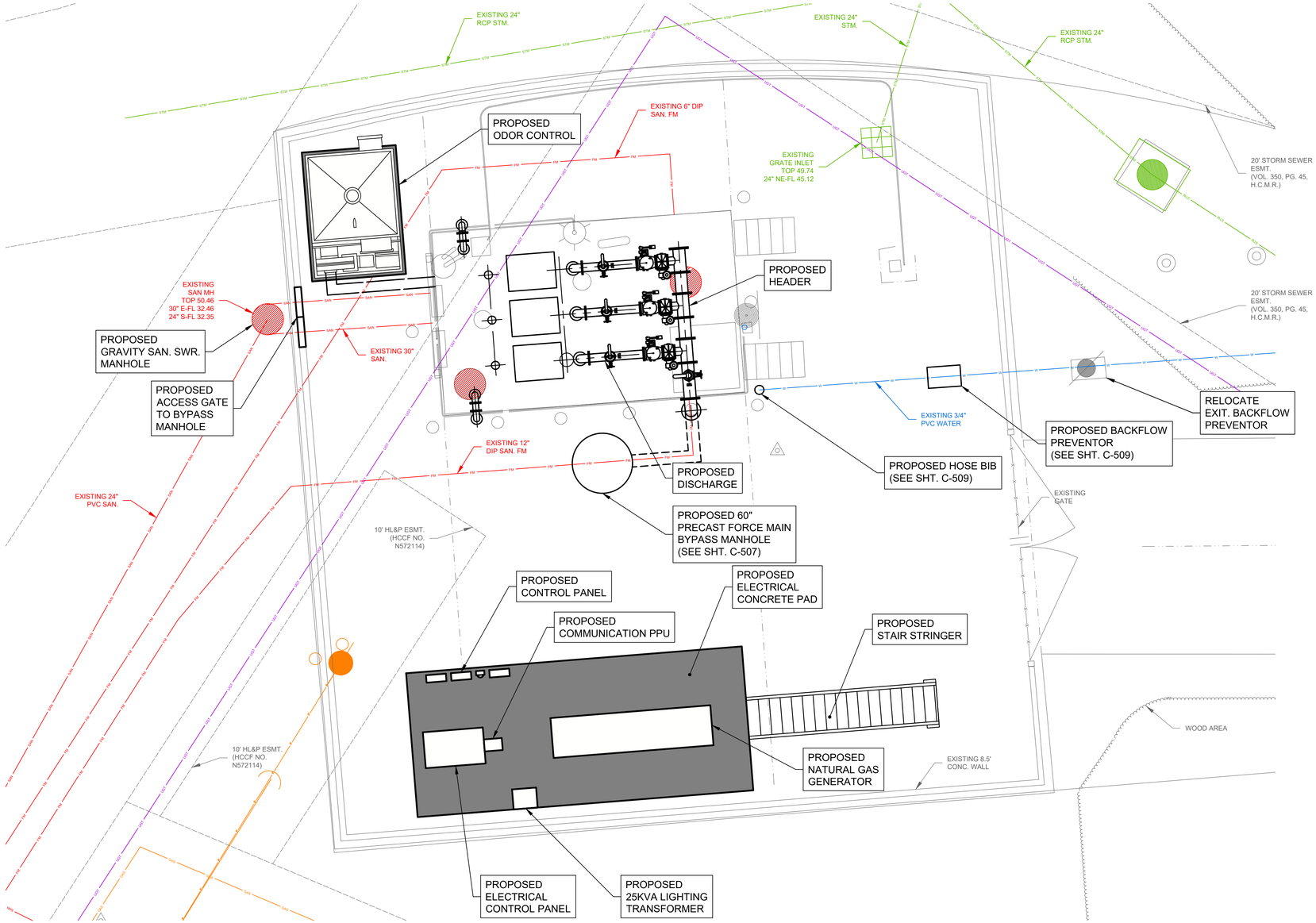
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SHEET NO. 204 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH LIft Station\PER\Stately Oaks\000 Y-501.dwg



0 5' 10'
1"=5'

NO.	DATE	REVISION	APP.

PEN TABLE: -----

PLOTTED: 1/23/2026 12:17 PM

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Texas Registered Engineering Firm F-#1800

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-8570

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL DRAINAGE

STATELY OAKS LIFT STATION
PROPOSED
GRADING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-501

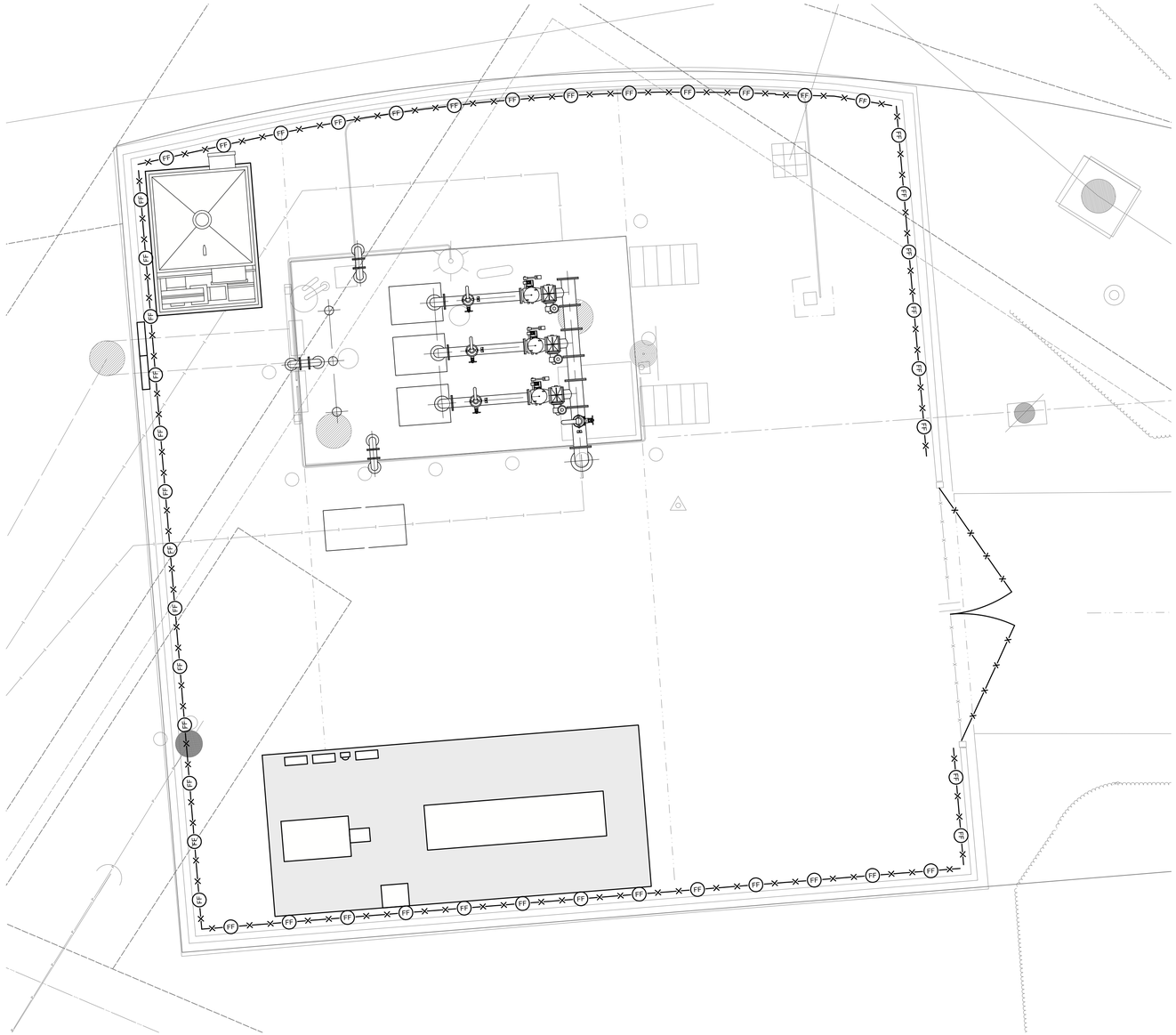
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SHEET NO. 205 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH LIft Station\PER\Stately Oaks\000 D-501.dwg



0 5' 10'
1"=5'

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 1/23/2026 1:51 PM

NOTES:
1. STORM WATER POLLUTION PREVENTION PLAN SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND DRAWINGS.

2. CONTRACTOR IS RESPONSIBLE FOR MODIFICATIONS TO SWPPP AS NECESSARY TO REDUCE AND/OR ELIMINATE SEDIMENT FROM ENTERING DRAINAGE SYSTEMS.

3. FILTER FABRIC FENCE SHALL NOT BE PLACED ACROSS DRIVEWAYS OR SIDEWALKS ACCESSING PRIVATE PROPERTY.

4. ALL DISTURBED AREAS THAT ARE NOT PAVED, COVERED BY PAVEMENT, SIDEWALK OR STRUCTURES SHALL BE SODDED.

5. PROVIDE A STANDARD STABILIZED CONSTRUCTION EXIT IN THE CONTRACTORS LAY DOWN/STORAGE AREA.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SIDEWALKS AND CURB ADJACENT TO THE CONSTRUCTION. IF THE SIDEWALKS OR CURBS ARE DAMAGED THE CONTRACTOR WILL BE RESPONSIBLE TO REPLACE AT NO EXTRA COST.

7. IN AREAS OF OPEN CUT CONTRACTOR TO RESTORE WORK AREA TO EXISTING CONDITIONS.

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Registered
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Registered Number
JANUARY 23, 2025
Date

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION
WBS NO. R-000267-0174-3

CIVIL DRAINAGE

STATELY OAKS LIFT STATION
PROPOSED
STORM WATER POLLUTION PREVENTION
PLAN AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO.
D-502

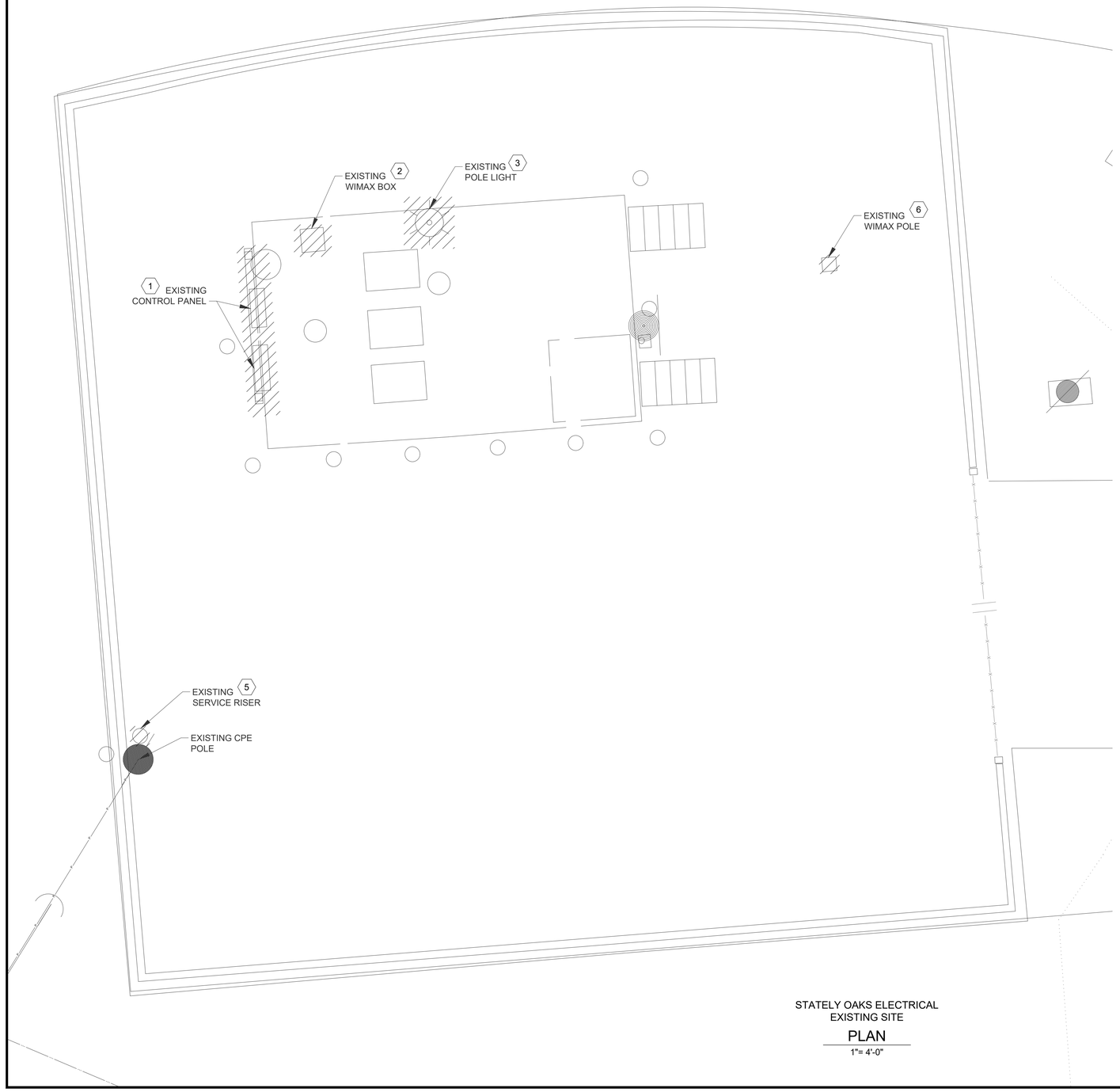
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SHEET NO. 206 OF 230

DRAWING SCALE

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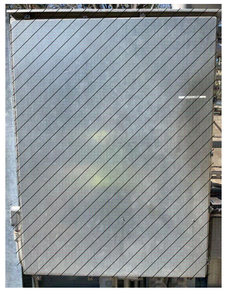
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STATELY OAKS ELECTRICAL
EXISTING SITE

PLAN

1"= 4'-0"



EXISTING CONTROL PANEL 1

PHOTOGRAPH A
NTS -



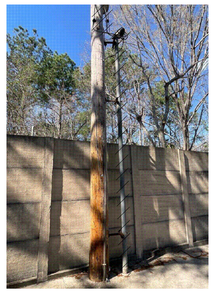
EXISTING SERVICE RACK 4

PHOTOGRAPH E
NTS -



EXISTING CONTROL PANEL 1

PHOTOGRAPH B
NTS -



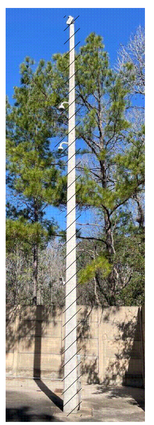
EXISTING SERVICE RISER 5

PHOTOGRAPH F
NTS -



EXISTING WIMAX BOX 2

PHOTOGRAPH C
NTS -



EXISTING SERVICE RISER 6

PHOTOGRAPH G
NTS -



EXISTING POLE LIGHT 3

PHOTOGRAPH D
NTS -

N

0 4' 8'
1"=4'

NO.	DATE	REVISION	APP.

NOTES BY SYMBOL "#":

1. EXISTING CONTROL PANEL TO BE DEMOLISHED AND REMOVED.
2. EXISTING WIMAX BOX TO BE DEMOLISHED AND REMOVED.
3. EXISTING POLE LIGHT TO BE DEMOLISHED AND REMOVED.
4. EXISTING SERVICE RACK TO BE DEMOLISHED AND REMOVED.
5. EXISTING SERVICE RISER TO BE DEMOLISHED AND REMOVED.
6. EXISTING WIMAX POLE TO BE DEMOLISHED AND REMOVED.

LEGEND:

ITEMS TO BE DEMOLISHED.

GAI
Gupta & Associates, Inc.
CONSULTING ENGINEERING
Registration No. F-2593
302 Dennis St.,
Houston, Texas 77006
Tel: 713-636-2936
Fax: 713-636-2987
email: hforouzan@gaiconsulting.com

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
DEMOLITION SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-501

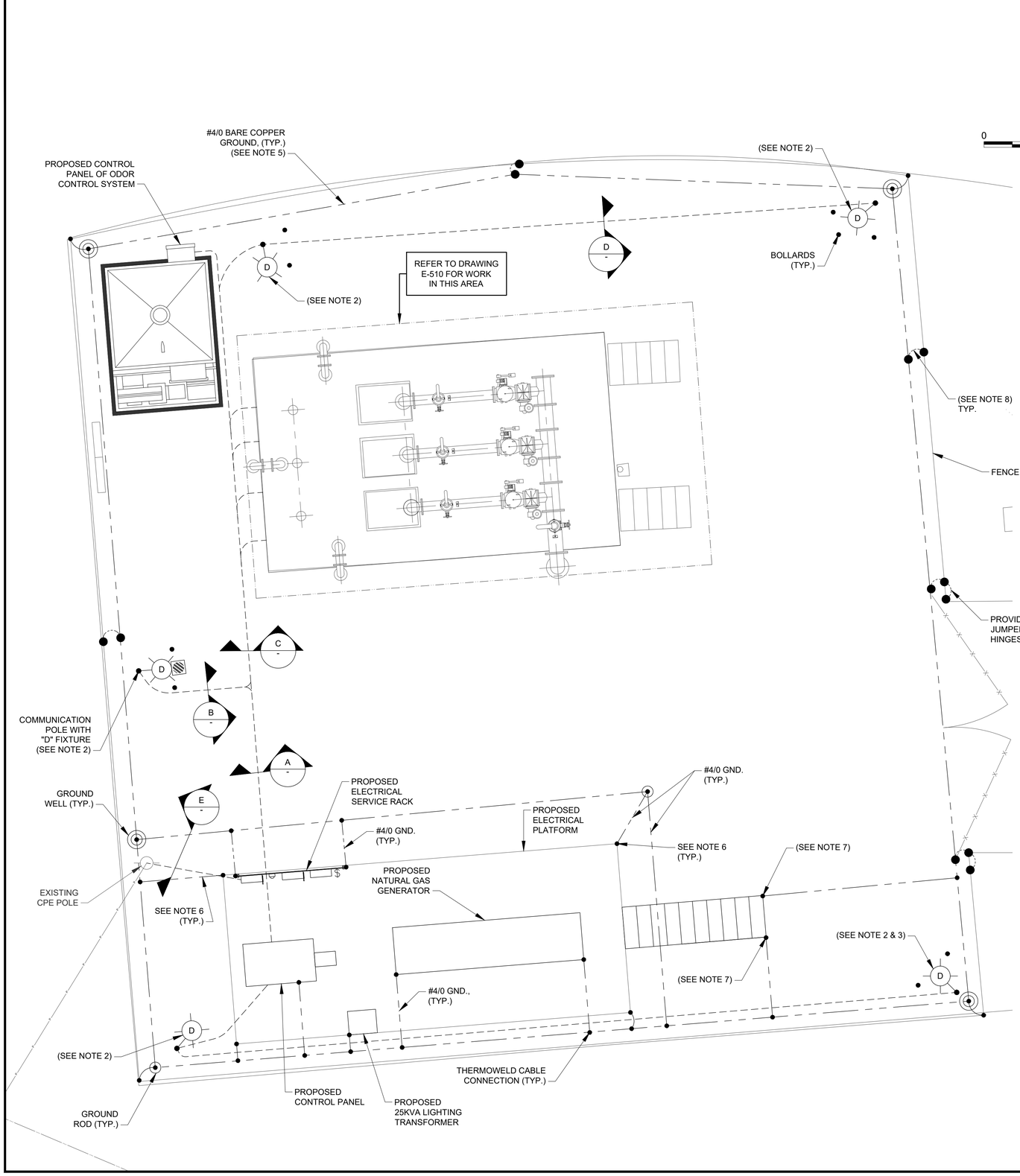
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VERT: 1"=4'-0"

SHEET NO. 207 OF 230

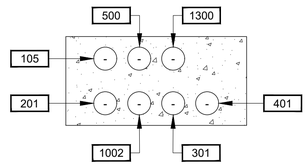
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

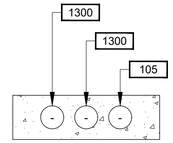
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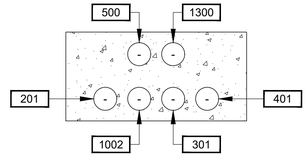
STATELY OAKS ELECTRICAL
PROPOSED SITE
PLAN
1"= 4'-0"



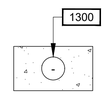
DUCTBANK SECTION A
NTS



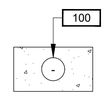
DUCTBANK SECTION B
NTS



DUCTBANK SECTION C
NTS



DUCTBANK SECTION D
NTS



DUCTBANK SECTION E
NTS

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. YARD LIGHT CONTROLLED BY LIGHTING SWITCH.
3. TYPE "B" FIXTURE TO BE INSTALLED ON THE POLE PROVIDING WIRES FOR THE "B" LIGHT.
4. INSIDE WETWELL RATED NEMA CLASS 1, DIV. 1. OUTSIDE ABOVE GROUND, AROUND WETWELL RATED CLASS 1, DIV. 2 ACCORDING TO NFPA 820.
5. GROUNDING LOOP SHALL BE BURIED 30" BELOW FINISHED GRADE.
6. #4/0 BARE COPPER GROUND TO BE BONDED TO PLATFORM STRUCTURAL STEEL.
7. #4/0 BARE COPPER GROUND TO BE BONDED TO HANDRAIL.
8. #2/0 BARE COPPER GROUND TO BE BONDED TO FENCE POST.

NO.	DATE	REVISION	APP.

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Registration No. F-2593
302 Dennis St.,
Houston, Texas 77006
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
PROPOSED SITE PLAN

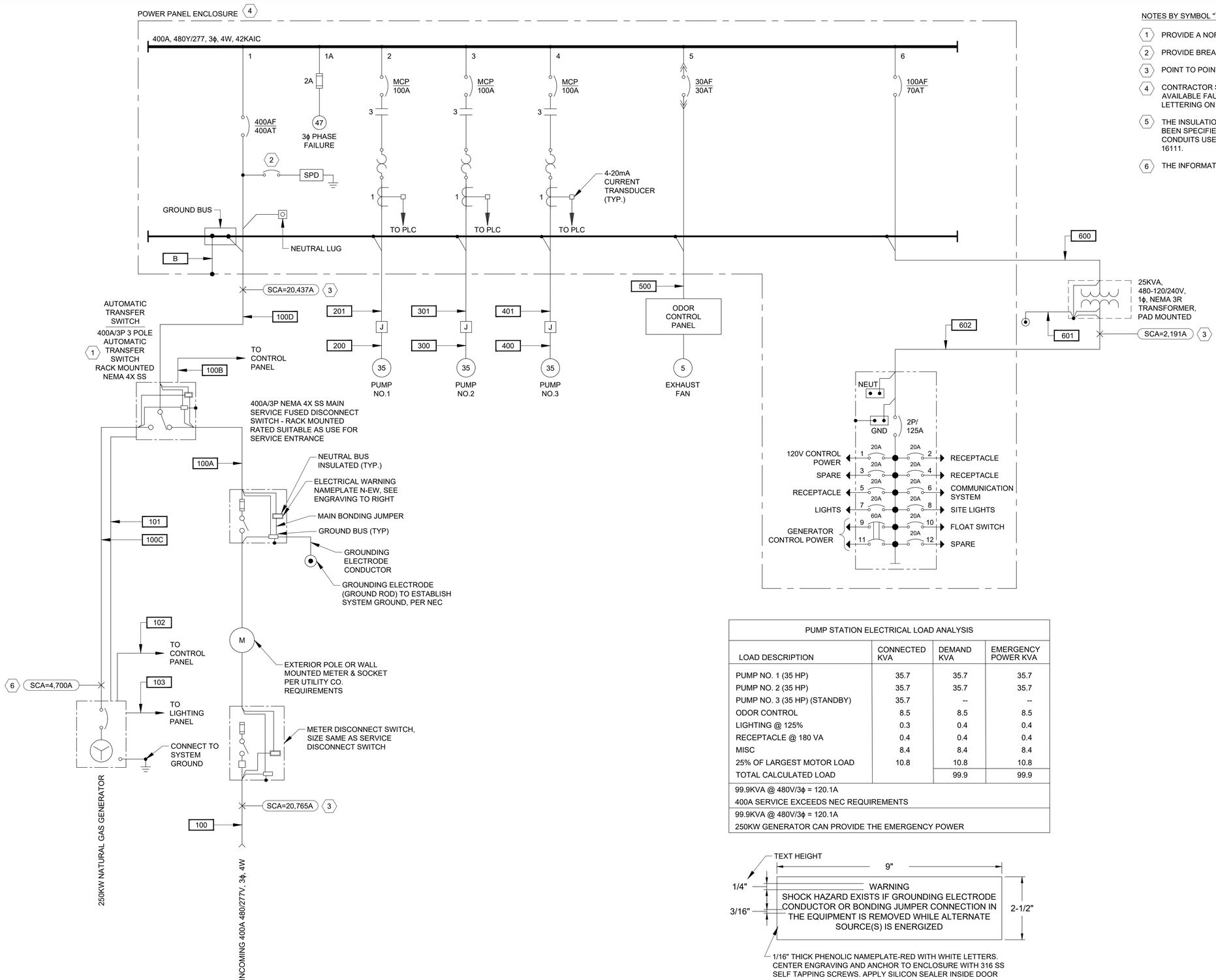
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-502
HORIZ: 1"=4'-0"
VERT: 1"=4'-0"
SHEET NO. 208 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

PLOTTED: 1/22/2026 1:10 PM PEN TABLE: Z_PUB_WKS_H.ctb
FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Stately Oaks\Stately Oaks_E-02.dwg



NOTES BY SYMBOL "⟨#⟩":

1. PROVIDE A NORMALLY OPEN (NO) AUXILIARY CONTACT FOR BOTH ON POSITIONS.
2. PROVIDE BREAKER ACCORDING TO MANUFACTURER'S REQUIREMENTS.
3. POINT TO POINT METHOD IS USED FOR SHORT CIRCUIT CURRENT CALCULATION.
4. CONTRACTOR SHALL PROVIDE A PERMANENTLY AFFIXED LABEL (2" X 3") SHOWING THE AVAILABLE FAULT CURRENT AND CALCULATION DATE. THE LABEL SHALL BE BLUE LETTERING ON A CONTRASTING BACKGROUND.
5. THE INSULATION TYPES OF ALL ELECTRICAL CONDUCTOS USED IN THE PROJECT HAVE BEEN SPECIFIED IN ELECTRICAL SPECIFICATIONS (16120, 16121, AND 16122). THE TYPES OF CONDUITS USED IN THE PROJECT HAS BEEN SPECIFIED IN ELECTRICAL SPECIFICATIONS 16111.
6. THE INFORMATION IS PROVIDED BY GENERATOR MANUFACTURER (CUMMINS).

PUMP STATION ELECTRICAL LOAD ANALYSIS			
LOAD DESCRIPTION	CONNECTED KVA	DEMAND KVA	EMERGENCY POWER KVA
PUMP NO. 1 (35 HP)	35.7	35.7	35.7
PUMP NO. 2 (35 HP)	35.7	35.7	35.7
PUMP NO. 3 (35 HP) (STANDBY)	35.7	--	--
ODOR CONTROL	8.5	8.5	8.5
LIGHTING @ 125%	0.3	0.4	0.4
RECEPTACLE @ 180 VA	0.4	0.4	0.4
MISC	8.4	8.4	8.4
25% OF LARGEST MOTOR LOAD	10.8	10.8	10.8
TOTAL CALCULATED LOAD		99.9	99.9
99.9KVA @ 480V/3ϕ = 120.1A 400A SERVICE EXCEEDS NEC REQUIREMENTS			
99.9KVA @ 480V/3ϕ = 120.1A 250KW GENERATOR CAN PROVIDE THE EMERGENCY POWER			

ELECTRICAL WARNING NAMEPLATE N-EW ENGRAVING

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 1:10 PM PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
ONE-LINE DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-503

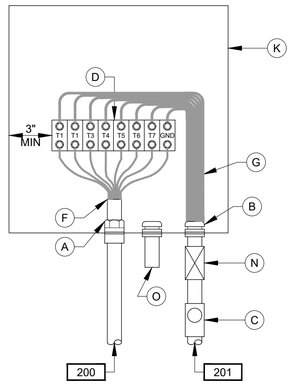
HORIZ: NONE
VERT: NONE

SHEET NO. 209 OF 230

DRAWING SCALE

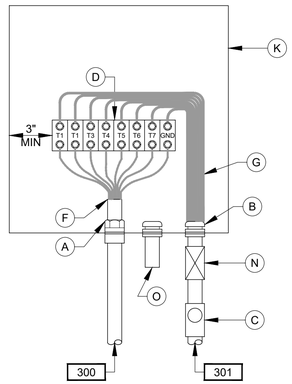
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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Stately Oaks\Stately Oaks_E-03.dwg



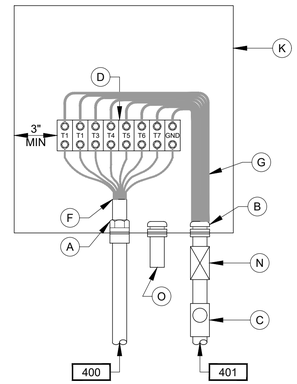
PUMP NO.1
JUNCTION BOX

DETAIL 4
NTS
(SEE NOTE 7)



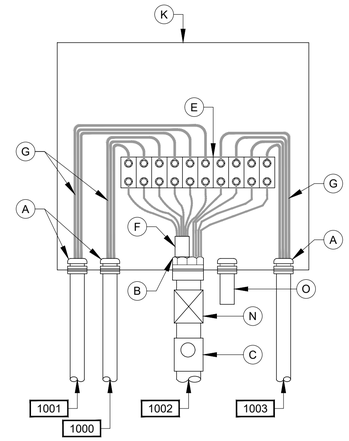
PUMP NO.2
JUNCTION BOX

DETAIL 5
NTS
(SEE NOTE 7)



PUMP NO.3
JUNCTION BOX

DETAIL 6
NTS
(SEE NOTE 7)

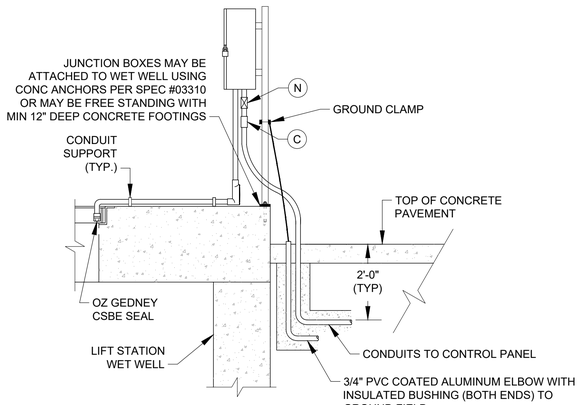


LEVEL TRANSMITTER
JUNCTION BOX

DETAIL 7
NTS
(SEE NOTE 7)

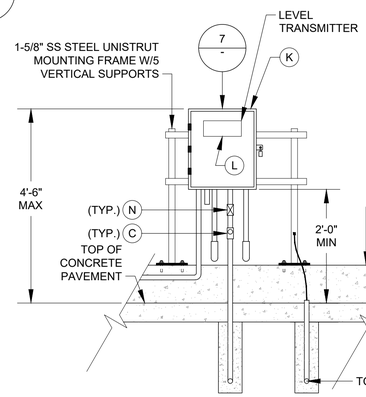
NOTES:

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 NON INTRINSICALLY SAFE MOTOR FEEDER WIRING.
3. UNLESS OTHERWISE NOTED, ALL EXTERIOR EXPOSED CONDUITS SHALL BE PVC COATED ALUMINUM.
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.
10. COORDINATE WITH WASTE WATER OPERATIONS ELECTRICAL ORGANIZATION FOR THE OPENING OF JUNCTION BOXES TO THE SIDE OF WET WELL IF REQUIRED DURING CONSTRUCTION.
11. THE ENCLOSURES WITH ELECTRICAL CIRCUITS SHALL BE A MINIMUM OF 5 FEET FROM ANY CLASSIFIED AREA, OTHERWISE EXPLOSION PROOF TYPE ENCLOSURES SHALL BE USED.
12. THE RECEPTACLES SHALL BE EXPLOSION PROOF TYPE IF INSTALLED WITHIN 5 FEET OF CLASSIFIED AREA. SHALL BE FIELD VERIFIED.



TYP SIDE VIEW FOR DETAIL 1, 2, & 6

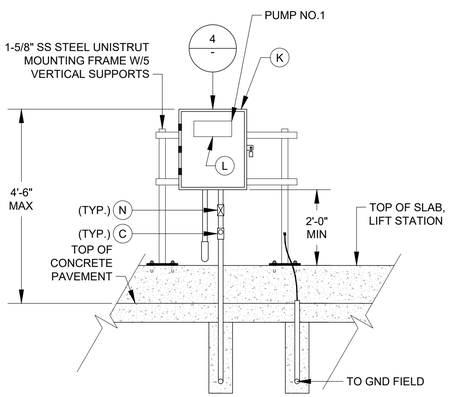
(SEE NOTE 10)



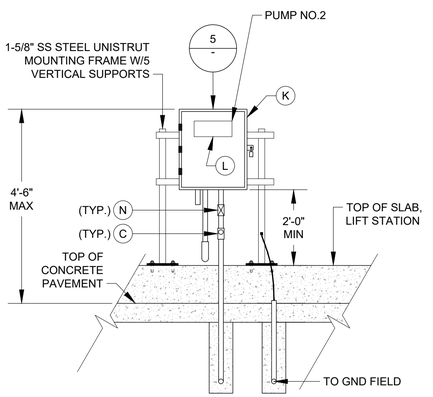
DETAIL 8
NTS
(SEE NOTE 9 & 12)

JUNCTION BOX EQUIPMENT SCHEDULE

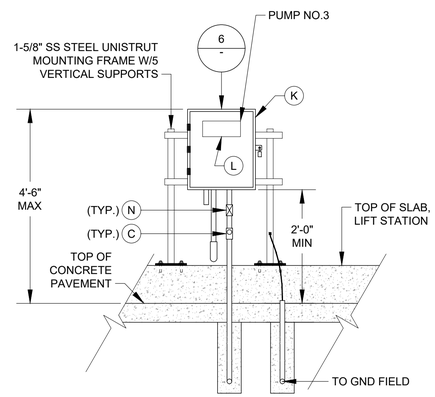
- A - OZ GEDNEY CSBE SEAL
- B - WATERTIGHT CONDUIT HUB WITH INSULATED BUSHING
- C - CLASS I, DIV 1, EXPLOSION PROOF SEAL INSTALLED PER NEC DIV 501
- D - POWER TERMINAL BLOCK W/SCREW DOWN BOX LUGS
- E - CONTROL TERM BLOCK W/SCREW DOWN BOX LUGS
- F - MULTI-CONDUCTOR CABLE, REMOVE OUTER JACKET AS SHOWN
- G - WIRING AS SCHEDULED
- H - NOT USED.
- I - NOT USED.
- J - NOT USED
- K - NEMA 6P STAINLESS STEEL JUNCTION BOX WITH GASKETED FRONT COVER, SINGLE QUARTER TURN, OIL-TIGHT LATCH AND PADLOCKING PROVISIONS, MINIMUM SIZE: 12"W X 16"H X 6"D
- L - NAMEPLATE, SEE SPECIFICATIONES (SEE NAMEPLATE SCHEDULE)
- M - NOT USED.
- N - EXPANSION FITTING
- O - DRAIN VENT



DETAIL 1
NTS
(SEE NOTE 9 & 12)



DETAIL 2
NTS
(SEE NOTE 9 & 12)



DETAIL 3
NTS
(SEE NOTE 9 & 12)

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
JUNCTION BOX DETAIL

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

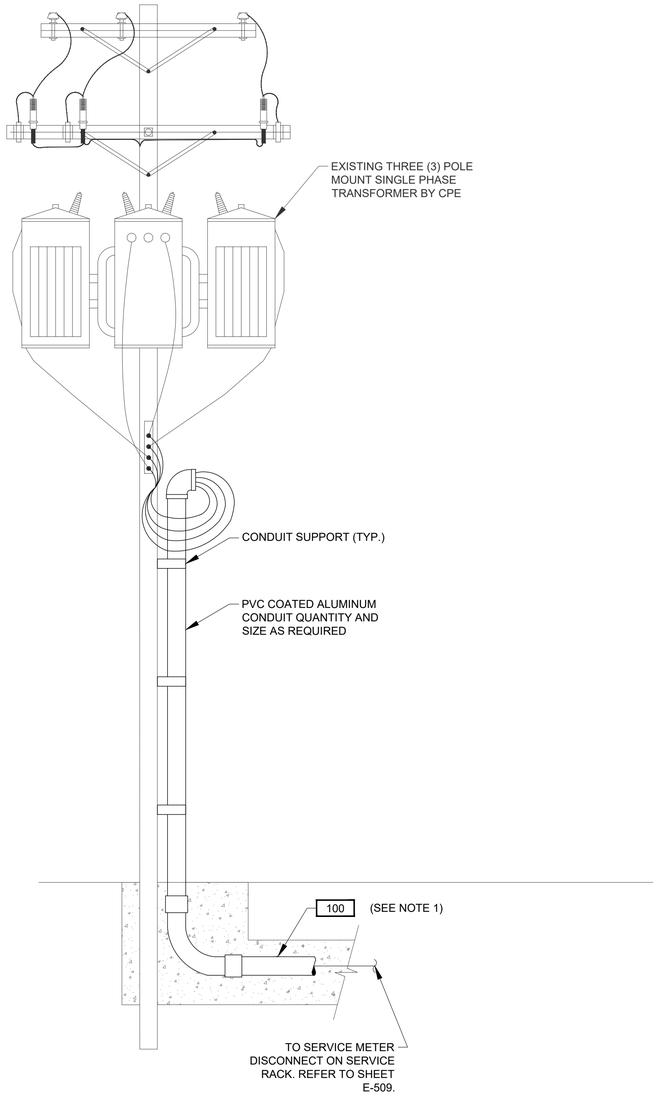
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-504
HORIZ: NONE
VERT: NONE
SHEET NO. 210 OF 230
DRAWING SCALE
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NO.	DATE	REVISION	APP.

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ELECTRICAL SERVICE ENTRANCE

DETAIL 1
NTS. -

NOTES:

1. ELECTRICAL SERVICE FEEDER PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR. COORDINATE WITH CPE FOR THE REQUIREMENTS OF THE INSTALLATION.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
SERVICE POLE DETAIL

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

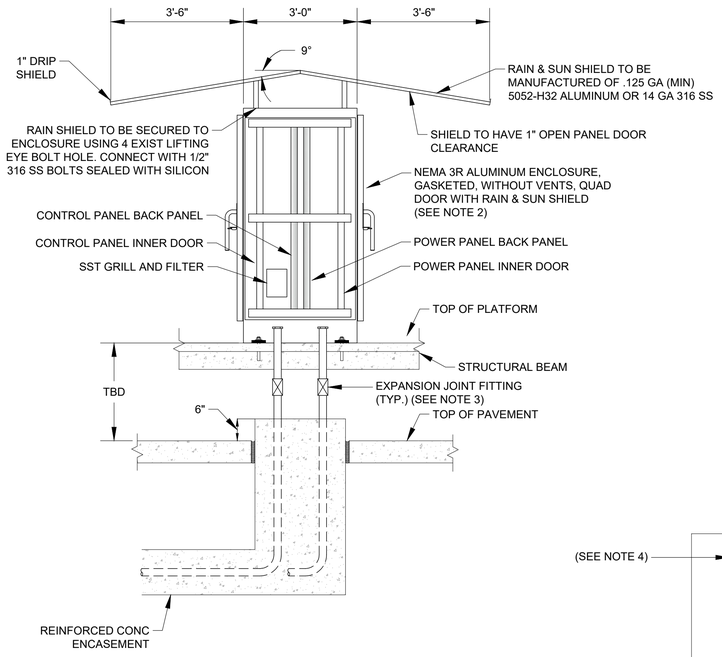
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-505
HORIZ: NONE
VERT: NONE
SHEET NO. 211 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

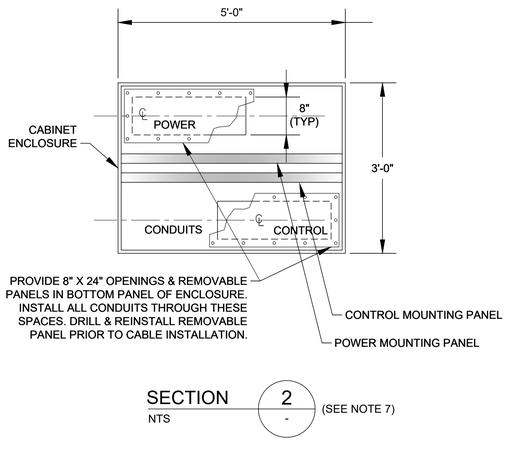
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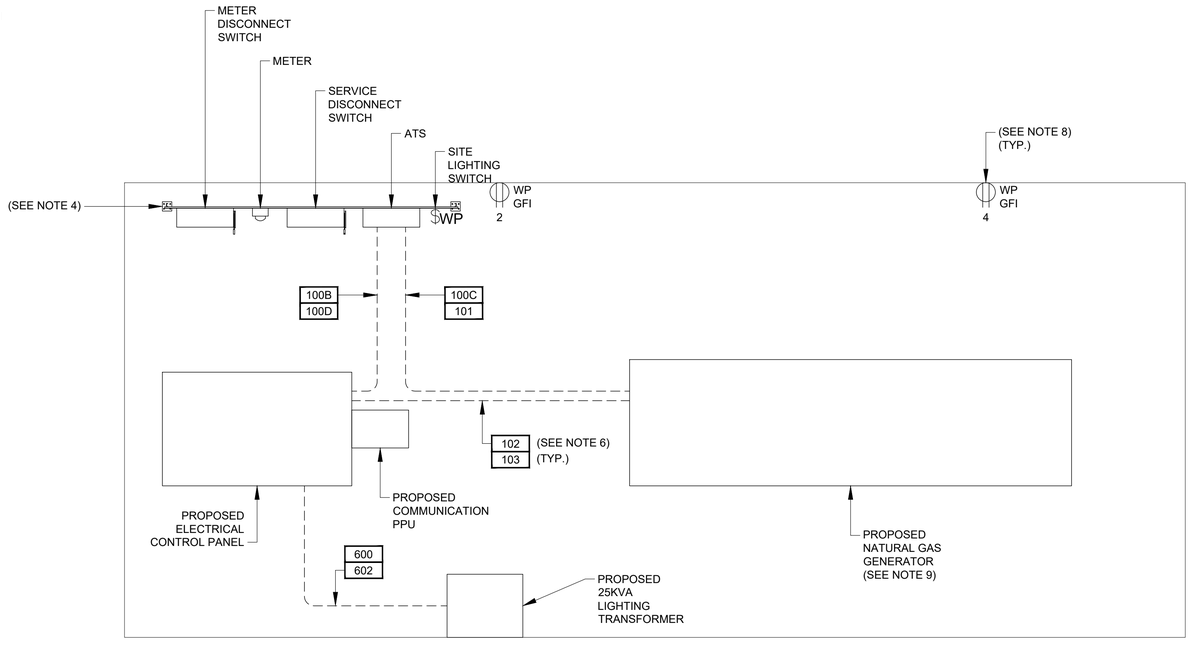


CONTROL CABINET ENCLOSURE WITH PLATFORM

NTS



SECTION 2 (SEE NOTE 7)
NTS -



STATELY OAKS ELECTRICAL
PROPOSED ELECTRICAL PAD

PLAN (SEE NOTE 6)
1/2"= 1'-0"

NOTES:

1. SEE SHEET I-504 FOR EQUIPMENT SCHEDULE.
2. REFER TO SPEC 13325-8 FOR PANEL DIMENSIONS.
3. EXPANSION JOINT FITTINGS AS REQUIRED.
4. REFER TO SERVICE RACK FOR DETAIL.
5. REFER TO STRUCTURAL DRAWINGS .
6. CONDUIT TO BE MOUNTED BELOW PLATFORM SLAB.
7. ALL CONDUITS ENTERING THE CABINET SHALL BE BOTTOM ENTRY.
8. WP GFI RECEPTACLES TP BE MOUNT ON GUARDRAIL.
9. THIS GENERATOR WILL BE USED IN EMERGENCY USE ONLY.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
CONTROL PANEL DETAIL

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-506	HORIZ: AS SHOWN VERT: AS SHOWN
SHEET NO. 212 OF 230	DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Stately Oaks\Stately Oaks_E-06.dwg

	DESCRIPTION	SERVICE		ROUTING			CONDUIT & WIRE SIZE
		VOLTAGE	AMPS OR HP	FROM	TO	VIA	
A	MAIN BONDING JUMPER	--	--	MAIN FUSED DISCONNECT NEUTRAL	MAIN FUSED DISCONNECT GROUND	--	#2 CU GND.
B	EQUIPMENT BONDING JUMPER	--	--	MCC/POWER PANEL ENCLOSURE	POWER/CONTROL PANEL & EQUIPMENT	--	#2 CU GND.
C	GROUNDED ELECTRODE CONDUCTOR	--	--	GROUNDING ELECTRODE	MAIN SERVICE FUSED DISCONNECT GROUNDING	--	#2 CU GND.
100	SERVICE ENTRANCE	480V	400A	UTILITY POWER SERVICE	METER DISCONNECT	--	3#500 MCM, #2 NEUT., #2 CU GND., 3-1/2"C.
100A	SERVICE POWER	480V	400A	SERVICE DISCONNECT	ATS	--	3#500 MCM, #2 NEUT., #2 CU GND., 3-1/2"C.
100B	NORMAL/EMERGENCY POWER	24VDC	--	ATS	CONTROL PANEL	--	4#14 AWG., 1"C.
100C	EMERGENCY POWER	480V	400A	ATS	GENERATOR	--	3#500 MCM, #2 NEUT., #2 CU GND., 3-1/2"C.
100D	ELECTRIC POWER	480V	400A	ATS	CONTROL PANEL	--	3#500 MCM, #2 NEUT., #2 CU GND., 3-1/2"C.
101	GENERATOR CONTROL	120V	--	ATS	GENERATOR	--	6#14 AWG., #12 GND., 1"C.
102	ANNUNCIATOR	--	--	GENERATOR	CONTROL PANEL	--	12#14 AWG., #14 GND.,
103	GENERATOR AUX. POWER	240/120V	60A	GENERATOR	LIGHTING PANEL	--	3#4 AWG., #6 GND., 1-1/2"C.
105	COMMUNICATION	--	--	COMMUNICATION POLE	CONTROL PANEL	--	1-1/2"C. CAT-5E
200	PUMP NO. 1 POWER	480V/120V	70 HP	PUMP NO. 1	PUMP NO. 1 JUNCTION BOX	--	MANUFACTURER CABLE IN 3"C.
201	PUMP NO. 1 POWER AND CONTROLS	480V/120V	70 HP	PUMP NO. 1 JUNCTION BOX	CONTROL PANEL	--	3#2 AWG., 4#14, #8 GND. 2"C.
300	PUMP NO. 2 POWER	480V/120V	70 HP	PUMP NO. 2	PUMP NO. 2 JUNCTION BOX	--	MANUFACTURER CABLE IN 3"C.
301	PUMP NO. 2 POWER AND CONTROLS	480V/120V	70 HP	PUMP NO. 2 JUNCTION BOX	CONTROL PANEL	--	3#2 AWG., 4#14, #8 GND. 2"C.
400	PUMP NO. 3 POWER	480V/120V	70 HP	PUMP NO. 3	PUMP NO. 3 JUNCTION BOX	--	MANUFACTURER CABLE IN 3"C.
401	PUMP NO. 3 POWER AND CONTROLS	480V	70 HP	PUMP NO. 3 JUNCTION BOX	CONTROL PANEL	--	3#2 AWG., 4#14, #8 GND. 2"C.
500	ODOR CONTROL POWER	480V	5 HP	CONTROL PANEL	ODOR CONTROL PANEL	--	3#10, #10 GND., 1"C.
600	LIGHTING PANEL FEEDER	480V	70A	MOTOR CONTROL CENTER	LIGHTING TRANSFORMER	--	2#4, #4 GND., 1-1/2"C.
601	LIGHTING PANEL GROUND	--	--	LIGHTING PANEL	GROUND FIELD	--	#8 GND., 1-1/2"C.
602	LIGHTING PANEL FEEDER	120/240V	--	LIGHTING TRANSFORMER	LIGHTING PANEL	--	3#1, #6 GND., 1-1/2"C.
1000	LEVEL TRANSMITTER	24VDC	--	TRANSMITTER JUNCTION BOX	TRANSMITTER JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
1001	LEVEL TRANSMITTER	24VDC	--	TRANSMITTER JUNCTION BOX	TRANSMITTER JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
1002	COMBINED LEVEL TRANSMITTERS & FLOAT SWITCH	24VDC	--	CONTROL PANEL	TRANSMITTER JUNCTION BOX	--	2-TRI, 4#14, 2"C.
1003	WELL FLOAT SWITCHES	24VDC	--	TRANSMITTER JUNCTION BOX	FLOAT SWITCH NO. 1 & NO. 2	--	MANUFACTURER CABLE IN 2-1/2"C.
1100	120VAC FOR RECEPTACLE	--	--	LIGHTING PANEL	RECEPTACLE ON PLATFORM	--	2#12, #12G, 1"C.
1200	120VAC FOR RECEPTACLE	--	--	LIGHTING PANEL	RECEPTACLE ON PLATFORM	--	2#12, #12G, 1"C.
1300	SITE LIGHTING	120V	--	LIGHTING PANEL	SITE LIGHTS	--	2#12, #12G, 1"C.
1300A	SITE LIGHTING CONTROL	120V	--	LIGHTING PANEL	SITE LIGHTING CONTROL SWITCH	--	2#12, #12G, 1"C.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
CONDUIT SCHEDULE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

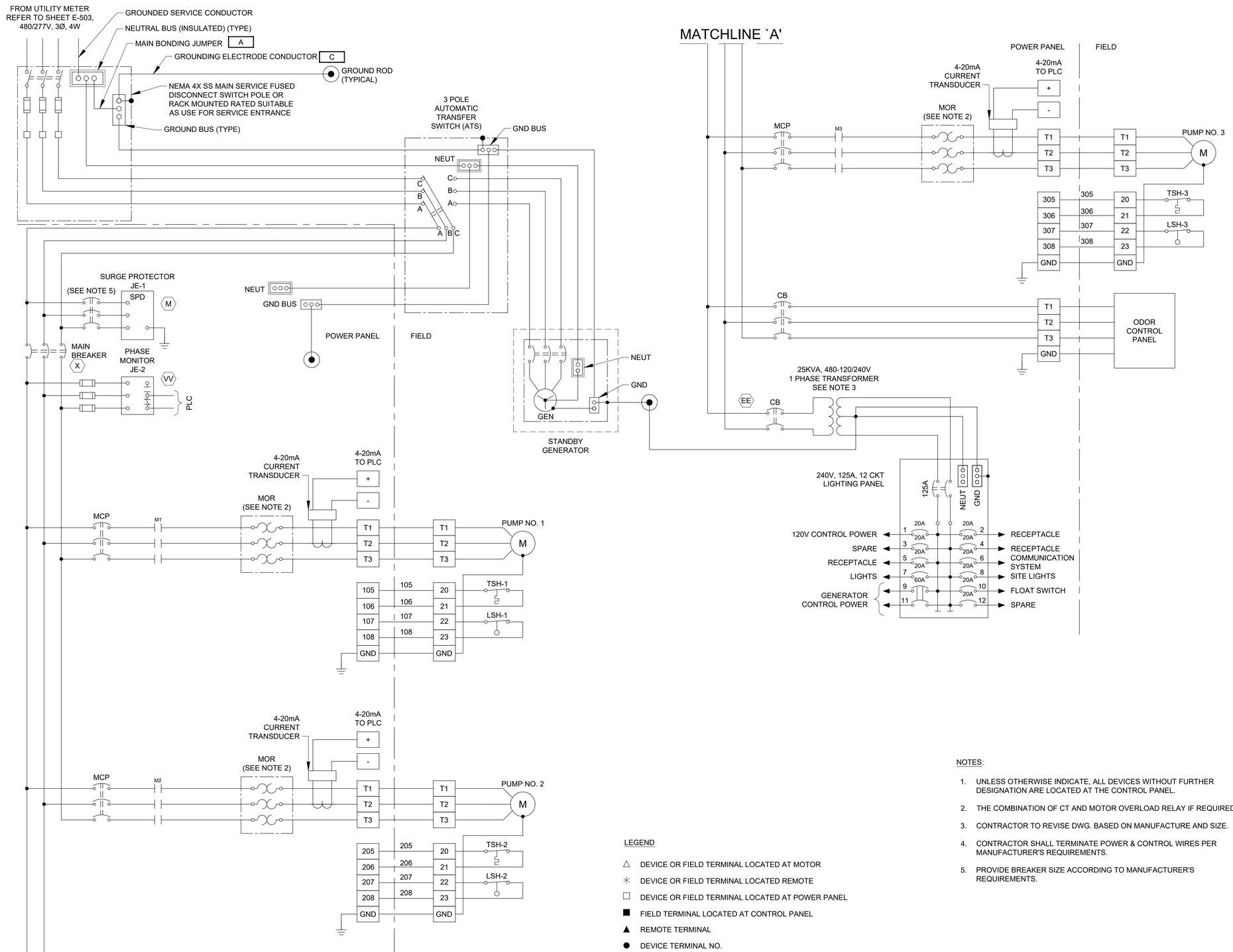
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
STORM WATER QUALITY
WASTE WATER
FACILITIES
STORM WATER
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-507
HORIZ: NONE
VERT: NONE
SHEET NO. 213 OF 230
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\W8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Stately Oaks\Stately Oaks_E-07.dwg



LEGEND

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

NOTES:

1. UNLESS OTHERWISE INDICATE, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE CONTROL PANEL.
2. THE COMBINATION OF CT AND MOTOR OVERLOAD RELAY IF REQUIRED.
3. CONTRACTOR TO REVISE DWG. BASED ON MANUFACTURE AND SIZE.
4. CONTRACTOR SHALL TERMINATE POWER & CONTROL WIRES PER MANUFACTURER'S REQUIREMENTS.
5. PROVIDE BREAKER SIZE ACCORDING TO MANUFACTURER'S REQUIREMENTS.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
THREE-LINE DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-508

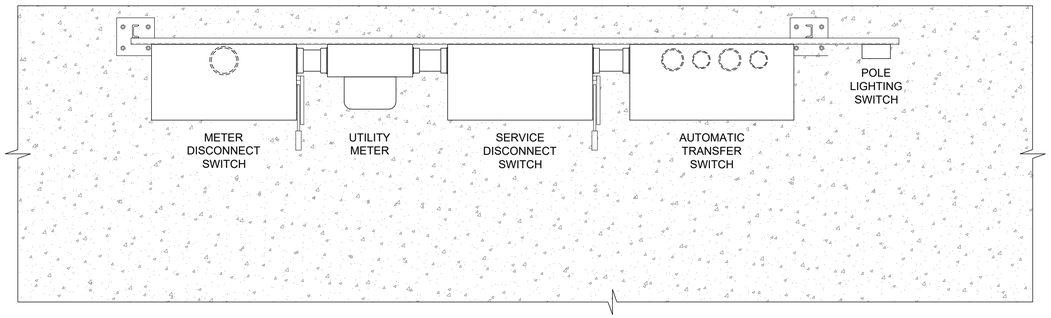
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VERT: NONE

SHEET NO. 214 OF 230

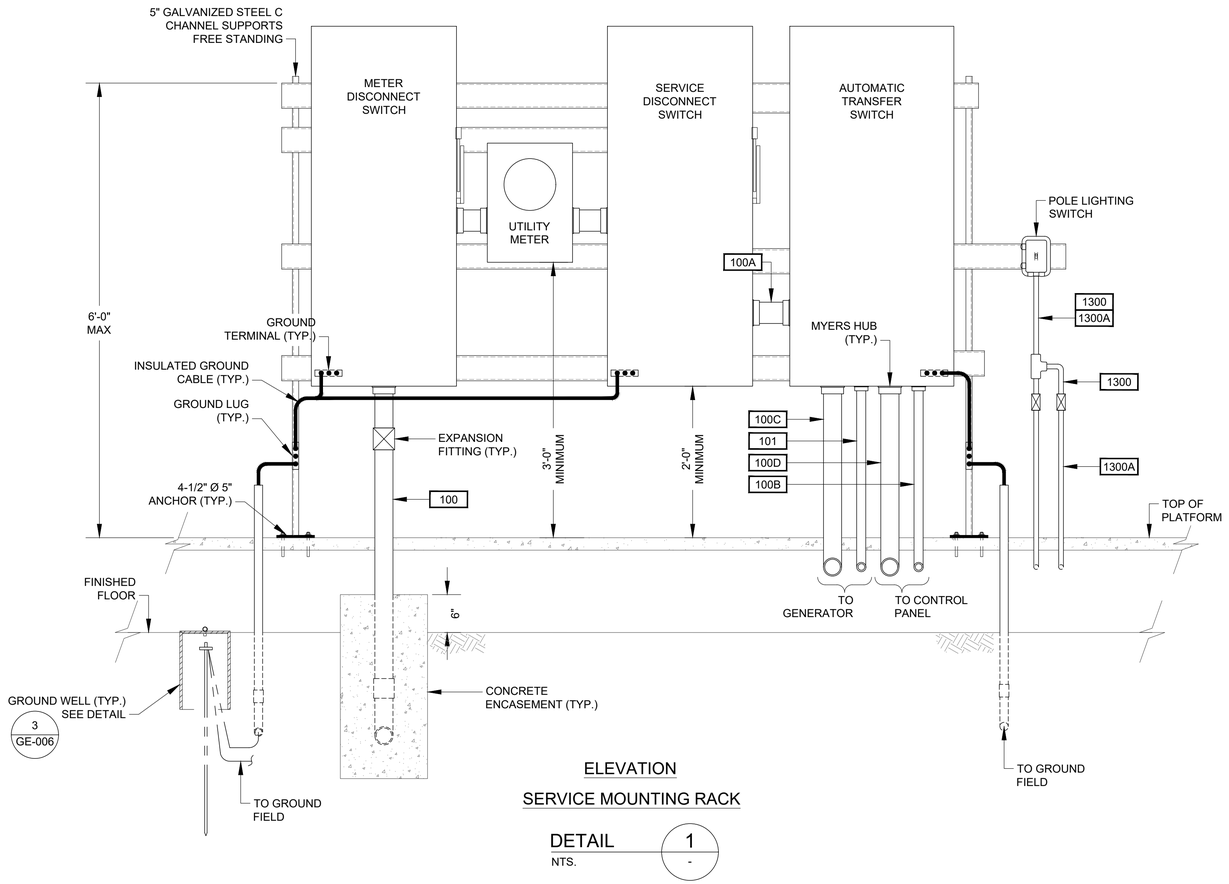
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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PLAN VIEW



ELEVATION

SERVICE MOUNTING RACK

DETAIL 1 / NTS. -

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
SERVICE RACK DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-509

HORIZ: NONE

VERT: NONE

SHEET NO. 215 OF 230

DRAWING SCALE

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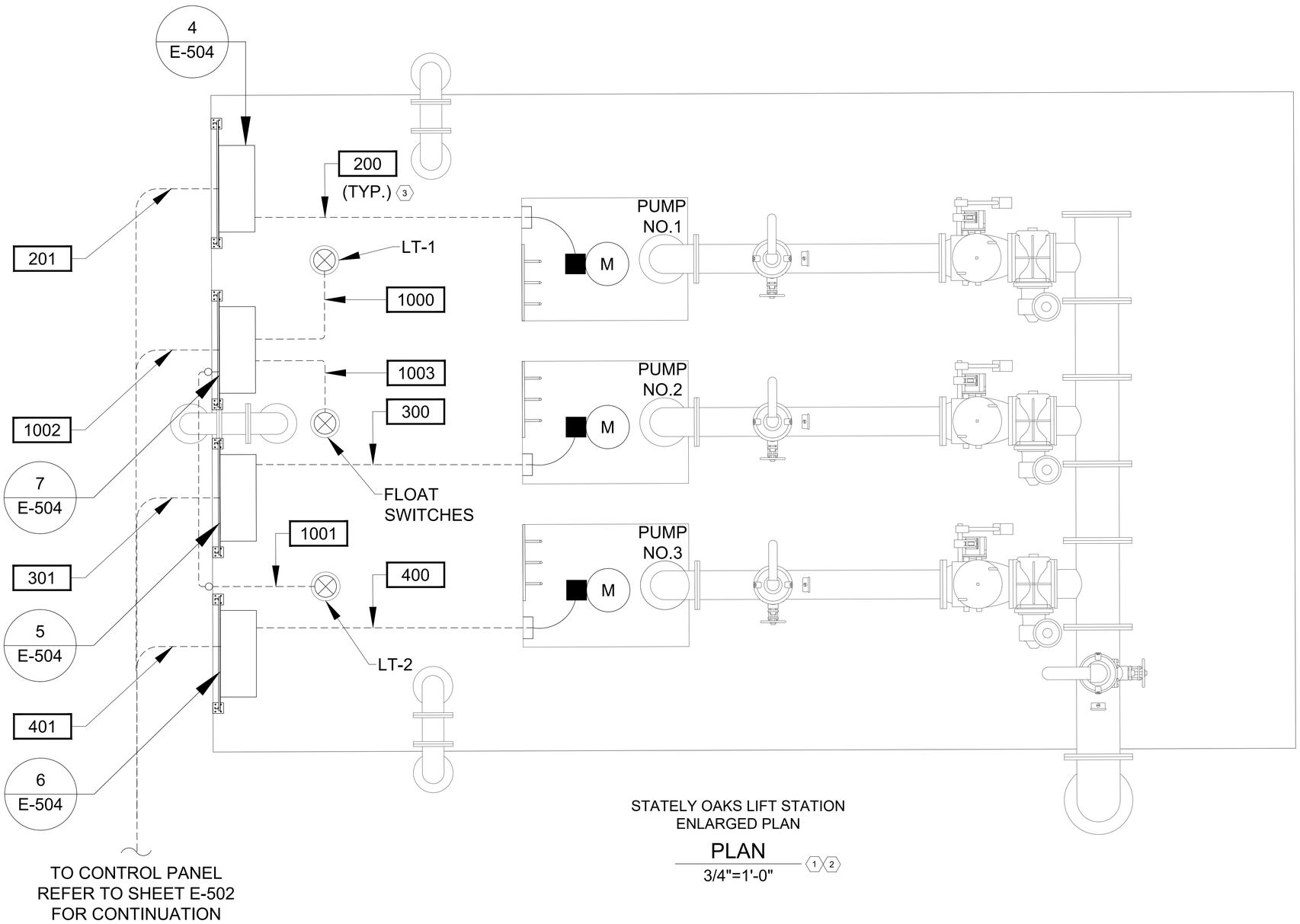
FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Stately Oaks\Stately Oaks_E-09.dwg

NOTES BY SYMBOL "⟨#⟩":

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. INSIDE WETWELL RATED NEMA CLASS 1, DIV. 1, OUTSIDE ABOVE GROUND, AROUND WETWELL RATED CLASS 1, DIV. 2 ACCORDING TO NFPA 820.
3. NEW CONDUIT TO BE MOUNTED ON TOP OF THE SLAB. TRIP PROTECTION COVER FOR THE CONDUIT SHALL BE INSTALLED AS REQUIRED.

6" 0 1 2

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



STATELY OAKS LIFT STATION
ENLARGED PLAN

PLAN
3/4"=1'-0" 1 2

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
ENLARGED PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-510

HORIZ: 3/4"=1'-0"
VERT: 3/4"=1'-0"

SHEET NO. 216 OF 230

DRAWING SCALE

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HMI

INFLUENT PUMP NO. 1

SEAL FAIL ALARM	MOTOR OVERLOAD ALARM	MOTOR CURRENT	HIGH TEMP ALARM	IN HAND	IN AUTO	ON/OFF	START/ STOP
MA 1	MO 1	II 1	TH 1	HI 1	IA 1	YFS 1	YCS 1

INFLUENT PUMP NO. 2

SEAL FAIL ALARM	MOTOR OVERLOAD ALARM	MOTOR CURRENT	HIGH TEMP ALARM	IN HAND	IN AUTO	ON/OFF	START/ STOP
MA 2	MO 2	II 2	TH 2	HI 2	IA 2	YFS 2	YCS 2

INFLUENT PUMP NO. 3

SEAL FAIL ALARM	MOTOR OVERLOAD ALARM	MOTOR CURRENT	HIGH TEMP ALARM	IN HAND	IN AUTO	ON/OFF	START/ STOP
MA 3	MO 3	II 3	TH 3	HI 3	IA 3	YFS 3	YCS 3

PRIMARY PLC

ALARMS RESET	FLOAT HIGH-HIGH WETWELL LEVEL
RE 1	LAHH 1A

BACKUP PLC

PUMP NO. 1 START/ STOP	PUMP NO. 2 START/ STOP	PUMP NO. 3 START/ STOP
YCS 1A	YCS 2A	YCS 3A

CONTROL PANEL PLC

CONTROL PANEL

480V

INFLUENT PUMP NO. 1 — H/O/A, RUN (R)

INFLUENT PUMP NO. 2 — H/O/A, RUN (R)

INFLUENT PUMP NO. 3 — H/O/A, RUN (R)

PRIMARY PLC (G)

BACKUP PLC (G)

INFLUENT PUMP CONTROL PANEL

ALARMS RESET

OIT

TO SHEET I-502

I-502

I-502

WET WELL

LT 1

LE 1

LT 2

LE 2

FS2 HIGH-HIGH LEVEL FLOAT SWITCH

LSH 1A

TSH 1A

M

LSH 2A

TSH 2A

M

FS1 HIGH LEVEL FLOAT SWITCH

LSH 3A

TSH 3A

M

INFLUENT DISCHARGE

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-501

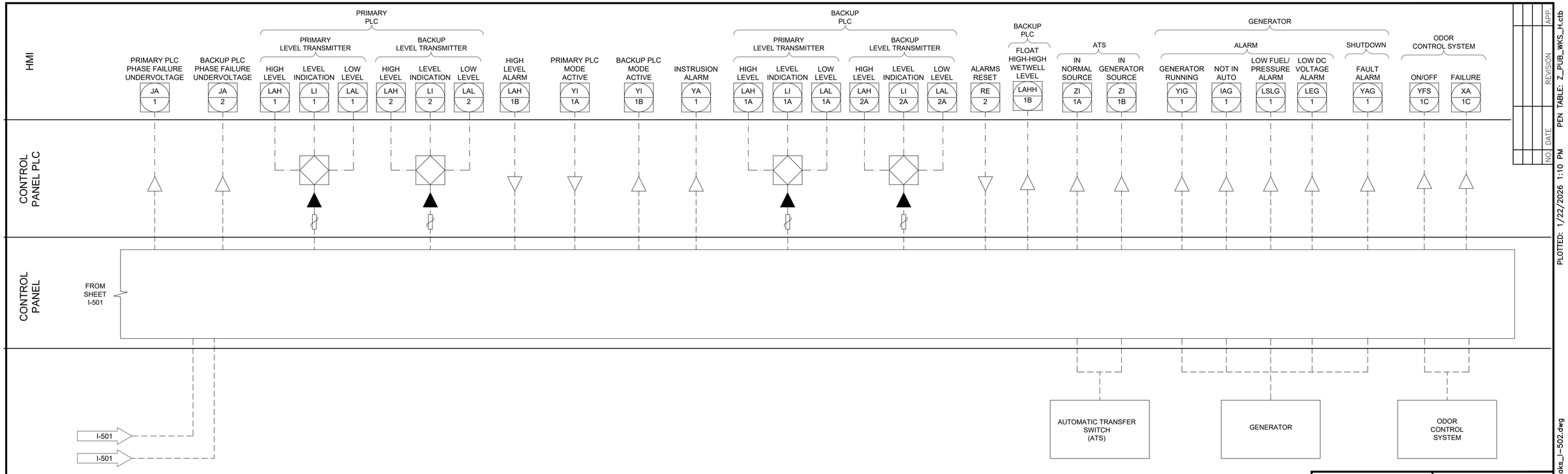
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VERT: NONE

SHEET NO. 217 OF 230

DRAWING SCALE

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NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
PROCESS & INSTRUMENTATION DIAGRAM-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-502

HORIZ: NONE
VERT: NONE

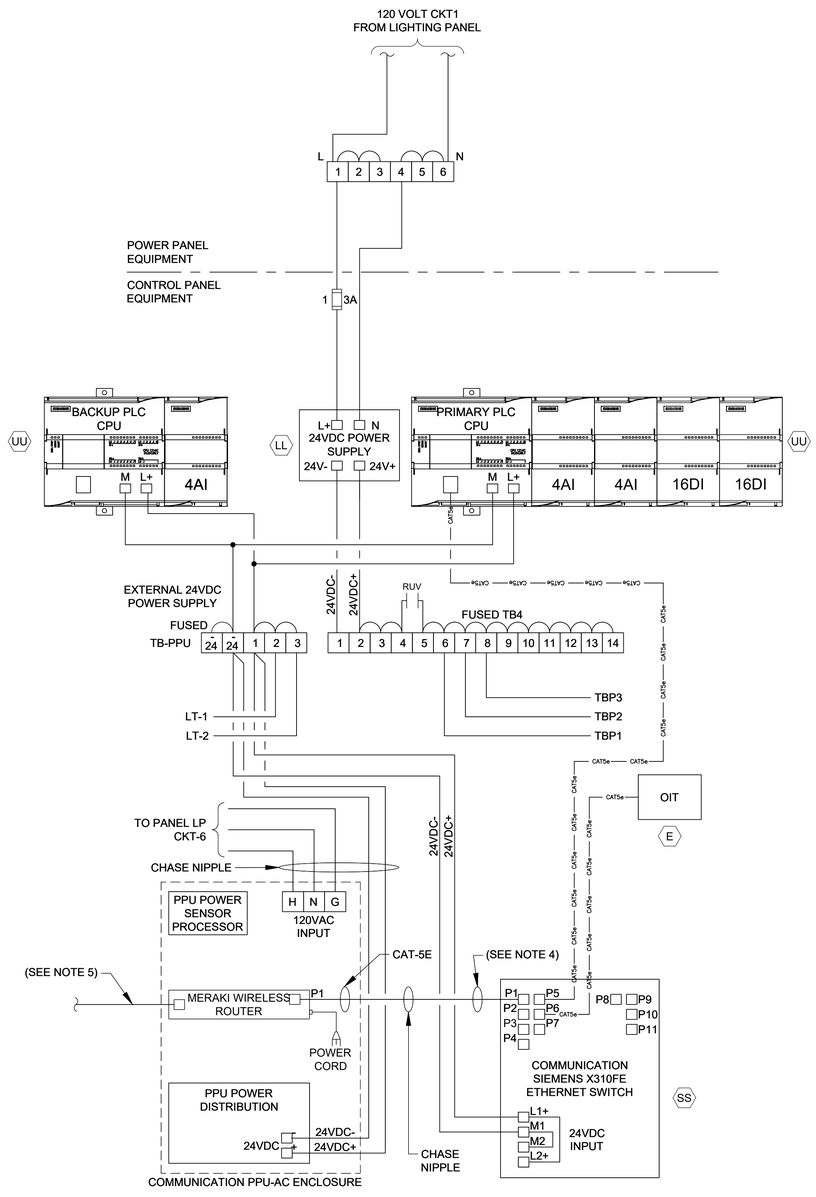
SHEET NO. 218 OF 230

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NOTES:

1. FOR DESCRIPTION AND RATINGS OF ITEMS INDICATED WITH ITEM TAG, SEE DEVICE RATINGS SCHEDULE.
2. REFER TO SPEC SECTION 16120 FOR CONDUCTOR COLOR CODE.
3. THE PLC POWER SUPPLY SHALL FEED THE 24VDC I/O.
4. ETHERNET CABLE FOR MERAKI CELLULAR ROUTER (P1).
5. POE CABLE TO RADIO.
6. COMMUNICATION PPU-AC & SCADA SHALL BE PROVIDED BY CONTRACTOR INCLUDING TO RUN CONDUITS & WIRES.
7. COORDINATE WITH VENDOR TO PROVIDE PROPER VENTILATION WHERE APPLICABLE.

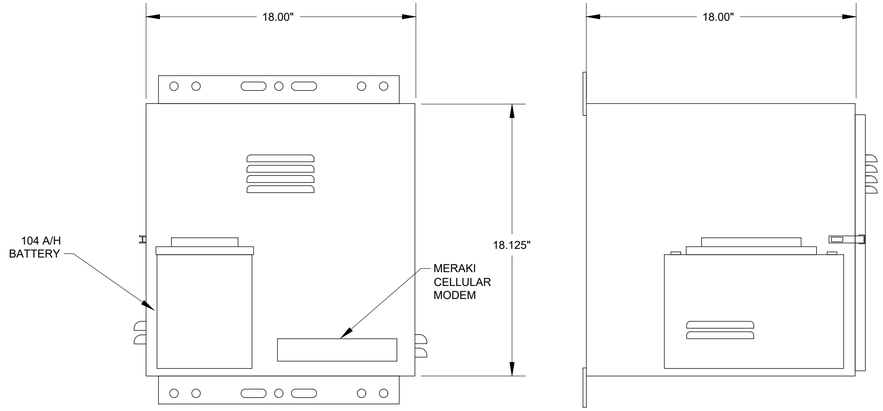


CONTROL POWER & COMMUNICATIONS WIRING

DIAGRAM

NTS

(SEE NOTE 2 & 6)



PPU-AC CONTROL ENCLOSURE

ELEVATION

NTS

(SEE NOTE 7)

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
COMMUNICATIONS DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-503

HORIZ: NONE

VERT: NONE

SHEET NO. 219 OF 230

DRAWING SCALE

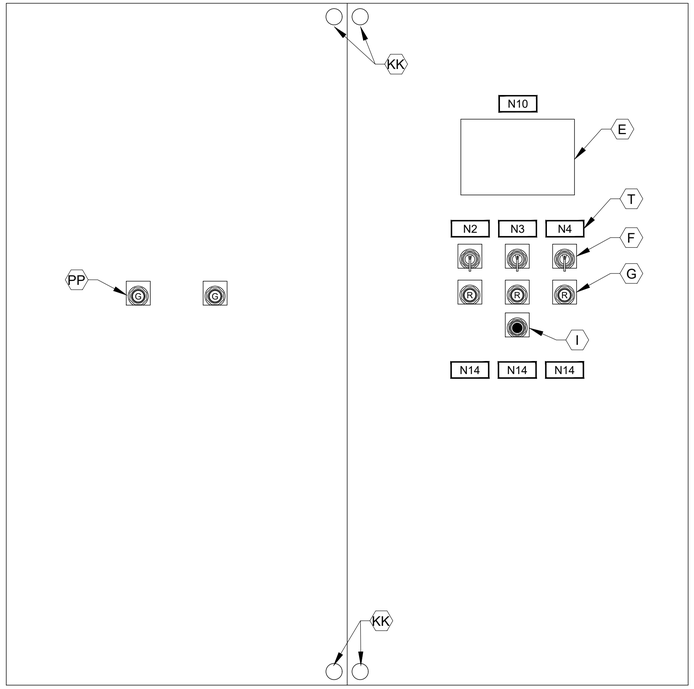
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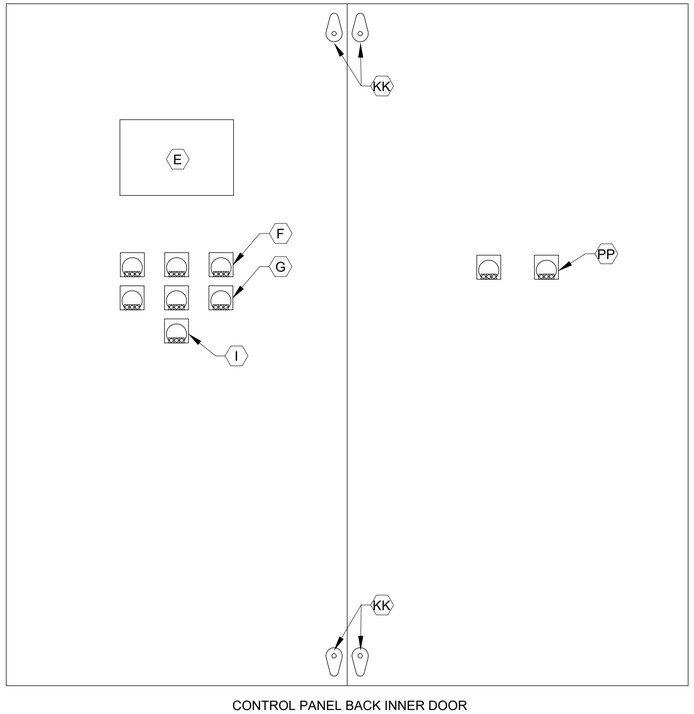
EQUIPMENT AND DEVICE SCHEDULE

ITEM	QUANTITY	DESCRIPTION
A	1	PANEL BOARD, 120/240V, 1 PHASE, 3 WIRE, 100A, 12 CKTS
B	2	FULL VOLTAGE, NON-REVERSING, SINGLE SPEED, AUTOMATIC MOTOR STARTER W/120 VOLT CONTROL COIL, NEMA SIZE AS SCHEDULED.
C	2	TIME DELAY RELAY WITH THREE FORM C CONTACTS, 120VAC COIL AND 11 PIN SOCKET BASE.
D	1	SINGLE CHANNEL INTRINSICALLY SAFE RELAY
E	1	PROGRAMMING SCREEN (OIT)
F	3	HAND-OFF-AUTO SWITCH, 3 POSITION, HEAVY-DUTY, OILTIGHT WITH 2 SETS OF CONTACT BLOCKS (PUMP CONTROL)
G	3	INDICATING LIGHT, HEAVY DUTY, OILTIGHT, RED, 24 VDC, LED, WITH "RUN" LEGEND
H	1	PERPETUAL POWER UNIT (PPU)
I	1	PUMP ALARM RESET PUSHBUTTON
J	2	SWITCH FOR CABINET LIGHT, 120V, 20A, SPST
K	3	DUPLEX RECEPTACLE, 120V, 20A, 2 WIRE, GROUNDED
L	2	24" LED STRIP LIGHT 120V SUITABLE FOR ZERO DEGREE OPERATION.
M	1	SURGE PROTECTOR - INCOMING POWER
N	*	NOT USED.
P	2	CURRENT TRANSFORMER, RATIO AS SCHEDULED W/4-20mA OUTPUT.
Q	12	TERMINAL BLOCKS, SIZED FOR MOTOR POWER REQUIREMENTS
R	*	RELAY WITH THREE FORM C CONTACTS, AND 11 PIN SOCKET BASE
S	*	NOT USED.
T	*	NAMEPLATES, SEE SPECIFICATIONS (SEE NAMEPLATE SCHEDULE)
U	2	SOLID STATE MOTOR OVERLOAD RELAY
V	6	FUSE HOLDER & FUSES - PHASE FAILURE
W	1	NEMA 3R GASKETED ALUMINUM ENCLOSURE WITHOUT VENTS 72"H x 60"w x 36"D
X	1	DOOR MOUNTED ROTARY HANDLE DISCONNECT SWITCH (SUITABLE FOR ENVIRONMENT)
Y	1	THERMAL-MAGNETIC MOLDED CASE MAIN CIRCUIT BREAKER, SIZE AS SCHEDULED
Z	2	ADJUSTABLE INSTANTENOUS TRIP MOTOR CIRCUIT PROTECTOR, SIZE AS SCHEDULED
AA	*	TERMINAL BLOCKS
BB	2	EXTERNAL OVERLOAD RESET PUSHBUTTON MECHANISM
CC	2	ANALOG I/O SURGE SUPPRESSOR
DD	1	WIRE DUCT 2" WIDE x 2" DEEP MINIMUM
EE	1	THERMAL-MAGNETIC MODLED CASE CIRCUIT BREAKER FOR LIGHTING TRANSFORMER, SIZE AS SCHEDULED
FF	1	GROUND BUS
GG	1	25 KVA, 480 - 240/120V,1ϕ, 3W DRY TYPE NEMA 3R ENCLOSURE TRANSFORMER (PAD MOUNTED)
HH	*	NOT USED.
II	1	120VAC - 24VAC POWER SUPPLY (AS REQUIRED)
JJ	11	CARTRIDGE FUSES & FUSE HOLDER
KK	8	QUARTER TURN CAPTIVE DOOR CLOSURE
LL	1	120VAC - 24VDC PLC POWER SUPPLY 5A
MM	2	MOTION SWITCH
NN	*	NOT USED
PP	2	INDICATING LED LIGHT, HEAVY DUTY, OILTIGHT, GREEN, 24 VDC, LED WITH " PRIMARY PLC" & "BACKUP PLC" LEGEND
QQ	*	NOT USED
RR	*	NOT USED
SS	1	COMMUNICATION ETHERNET SWITCH
TT	1	POWER SURGE PROTECTOR - CONTROL POWER
UU	2	PROGRAMMABLE LOGIC CONTROLLER WITH EXPANSION UNIT
VV	1	PHASE AND UNDER VOLTAGE MONITOR
WW	*	FUSED TERMINAL BLOCKS
XX	2	PUMP PROTECTION MODULE RATED FOR CLASS I, DIVISION I
YY	2	ANALOG SIGNAL ISOLATOR
ZZ	3	POWER FACTOR CORRECTION CAPACITOR NEMA 3R STAINLESS STEEL
AB	-	NOT USED.
AC	1	POWER DISTRIBUTION BLOCK
AD	1	NEUTRAL LUG
AE	1	6" EXHAUST FAN, 120V, STAINLESS FILTERS & GRILL PACKAGE W/BUG GUARD
AF	1	T-STAT FOR EXHAUST FAN

* - AS SCHEDULED



CONTROL PANEL FRONT INNER DOOR
ELEVATION
NTS



CONTROL PANEL BACK INNER DOOR
ELEVATION
NTS

NOTES:

1. NAMEPLATES SHALL BE MOUNTED TO PANELS USING STAINLESS STEEL HARDWARE.
2. REFER SPECIFICATIONS FOR ALL PANEL COMPONENTS.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT & SCHEDULE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

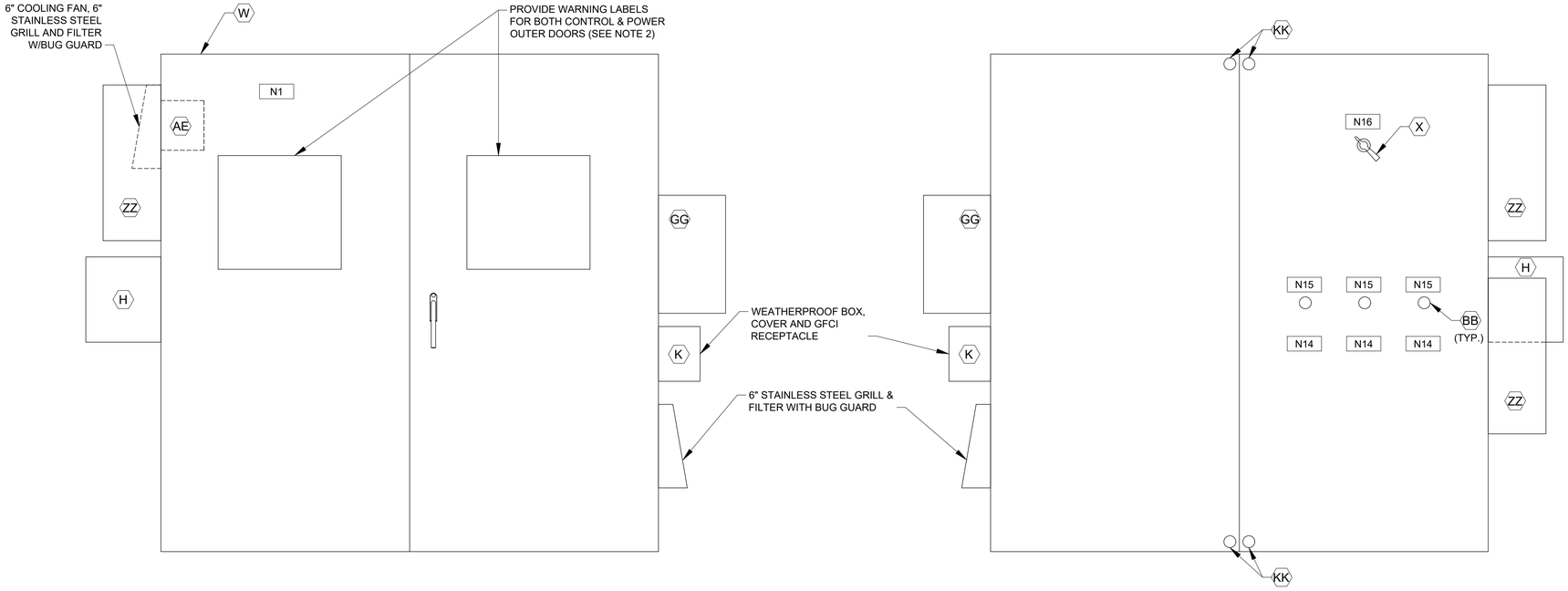
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-504
HORIZ: NONE
VERT: NONE
SHEET NO. 220 OF 230
DRAWING SCALE
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CONTROL CABINET (CONTROL SIDE)
OUTER DOOR

ELEVATION

NTS

CONTROL CABINET (POWER SIDE)
INNER DOOR

ELEVATION

NTS

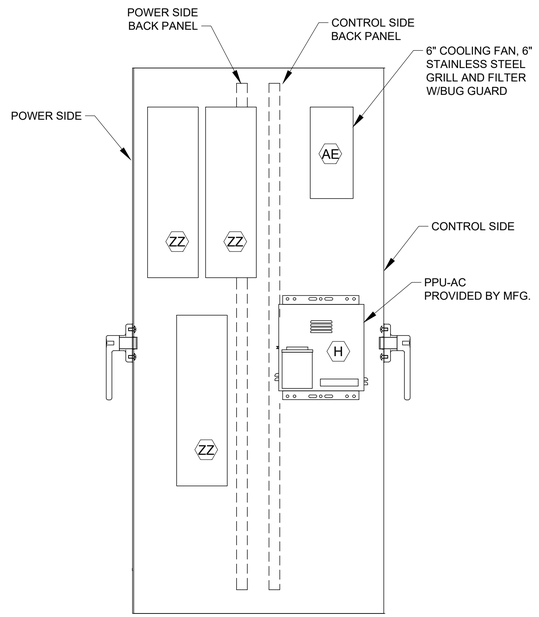
(SEE NOTE 1)

NOTES:

1. SEE SHEET I-504 FOR EQUIPMENT SCHEDULE.
2. REFER TO NEC SECTIONS 110.16 & 110.21

NAMEPLATE SCHEDULE

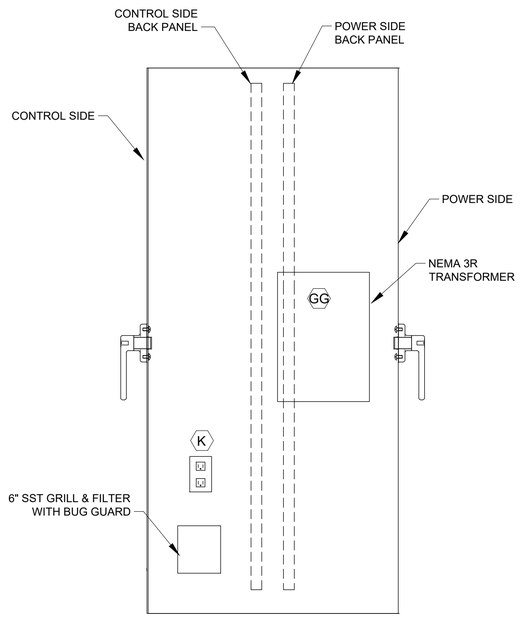
DESIGNATION	ENGRAVED	DESIGNATION	ENGRAVED
N1	PUMP STATION DESIGNATION	N8	NOT USED.
N2	PUMP NO. 1	N9	NOT USED.
N3	PUMP NO. 2	N10	PROGRAMMING SCREEN
N4	PUMP NO. 3	N11	NOT USED.
N5	NOT USED.	N12	PRIMARY PLC
N6	NOT USED.	N13	BACKUP PLC
N7	NOT USED.	N14	MOTOR DATA
			HORSEPOWER (OUTPUT) ----------
			RPM AT FULL LOAD ----------
			TIME RATING ----------
			FREQUENCY ----------
			NUMBER OF PHASES ----------
			MODEL NUMBER ----------
			RATED VOLTAGE ----------
			SERVICE FACTOR ----------
			FULL LOAD AMPS ----------
			INSULATION CLAS ----------
			NEMA DESIGN LETTER ----------
			TEMPERATURE RISE ----------
			NEMA FRAME SIZE ----------
			DATE OF MANUFACTURE ----------
			THERMO PROTECTION (IF REQUIRED) --
			MOISTURE PROTECTION (IF REQUIRED)-
		N15	EXTERNAL OVERLOAD RESET PUSH BUTTON MECHANISM
		N16	MAIN BREAKER



CONTROL CABINET (LEFT SIDE VIEW)

ELEVATION

NTS



CONTROL CABINET (RIGHT SIDE VIEW)

ELEVATION

NTS

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

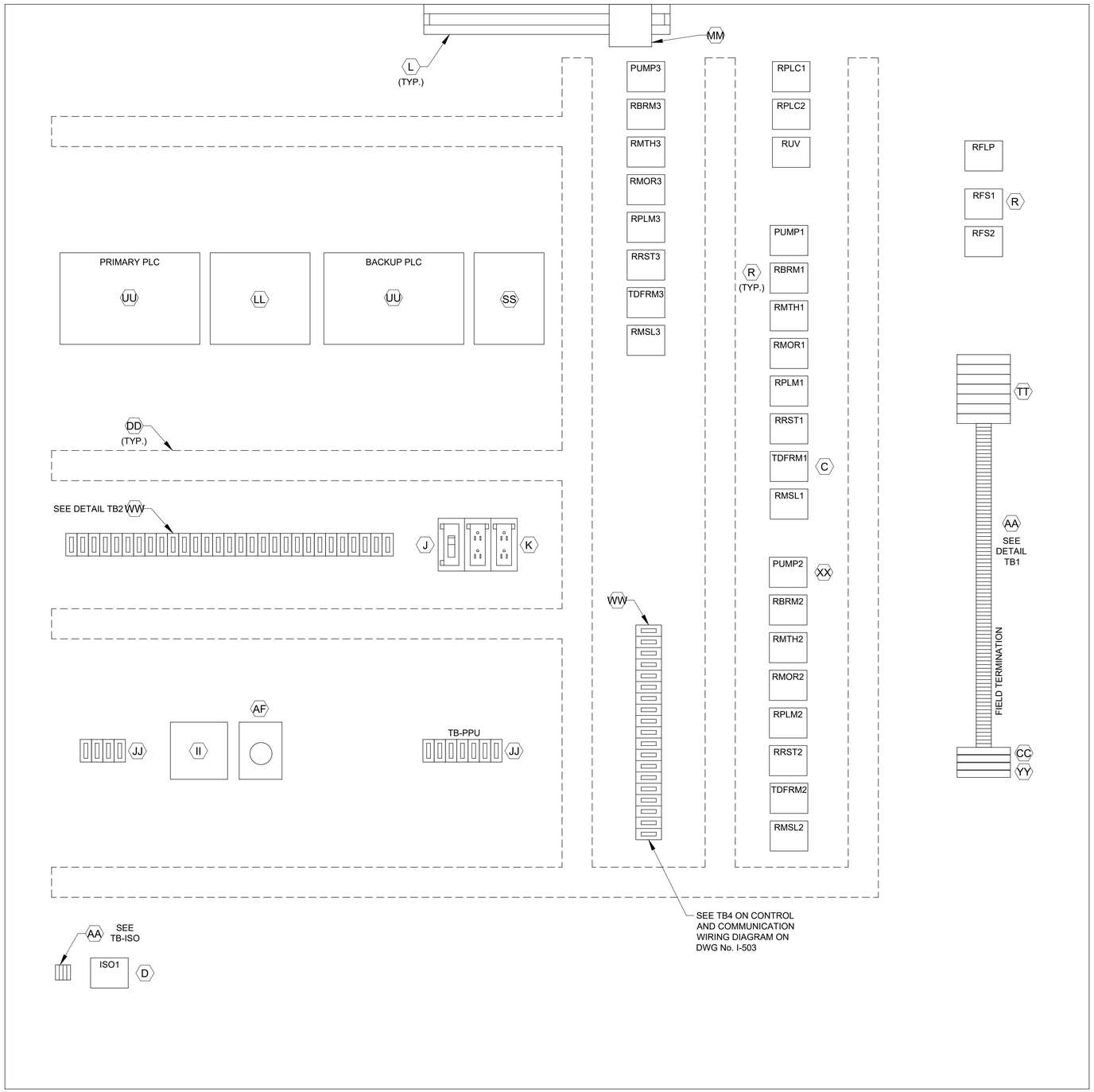
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-505	HORIZ: NONE VERT: NONE
SHEET NO. 221 OF 230	DRAWING SCALE

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CONTROL PANEL
ELEVATION

L1A
L1N
SPARE
3
3N
49
50
51
52
53
54
1004
1
24V-
24V-
1002
2
11
1001
1001A
12
1003
1003A
1002
1004
18
3N
19
20
36
36N
41
42
43
44
SPARE
L1A
L1N
103
104
105
106
107
108
110
113
115
116
119
SPARE
203
204
205
206
207
208
210
213
215
216
219

DETAIL TB1

ALL L AND N FOR EACH PUMP CONTROL TO BE FUSED

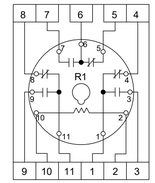
303
304
305
306
307
308
310
313
315
316
319
36A
37A
50
52
54
52A
54A
L+
M
35B
38B
41B
47B
13B
13AB
13GB
L+
M
14B
14AB
14GB
L+
M
13
13A
13G
14
14A
14G
SPARE
18
SPARE
28
29
32
35B
33
42
44
SPARE
103
104
115
109
110
118
120
121
122
123
SPARE
209
210
211
218
220
222
223

DETAIL TB2

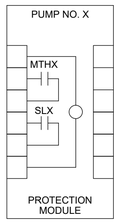
1500
1501
1503
1504

DETAIL TB-ISO

LEGEND	
TAG	DESCRIPTION
RMTH	MOTOR HIGH TEMPERATURE ALARM RELAY
RPLM	PLC PUMP RUN RELAY
RRST	PUMP RESET AUX RELAY
RPLC	PLC MODE AUX RELAY
RMOR	MOTOR OVERLOAD ALARM RELAY
RBRM	BACKUP SYSTEM RUN RELAY
RUV	UNDER VOLTAGE RELAY
ISO	INTRINSICALLY SAFE RELAY
RFS	PUMP RUN FLOAT SWITCH RELAY
TDFRM	TIMER FLOAT SWITCH RUN RELAY
RMSL	MOTOR SEAL LEAK ALARM RELAY
RFLP	FLOAT LOCKOUT PUMP RELAY



RELAY DETAIL
ITEM R



PUMP PROTECTION MODULE
DETAIL, ITEM XX

NOTE: REPLACE "X" WITH
APPROPRIATE PUMP NO.

NOTES:

1. SEE SHEET I-504 FOR EQUIPMENT SCHEDULE.

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

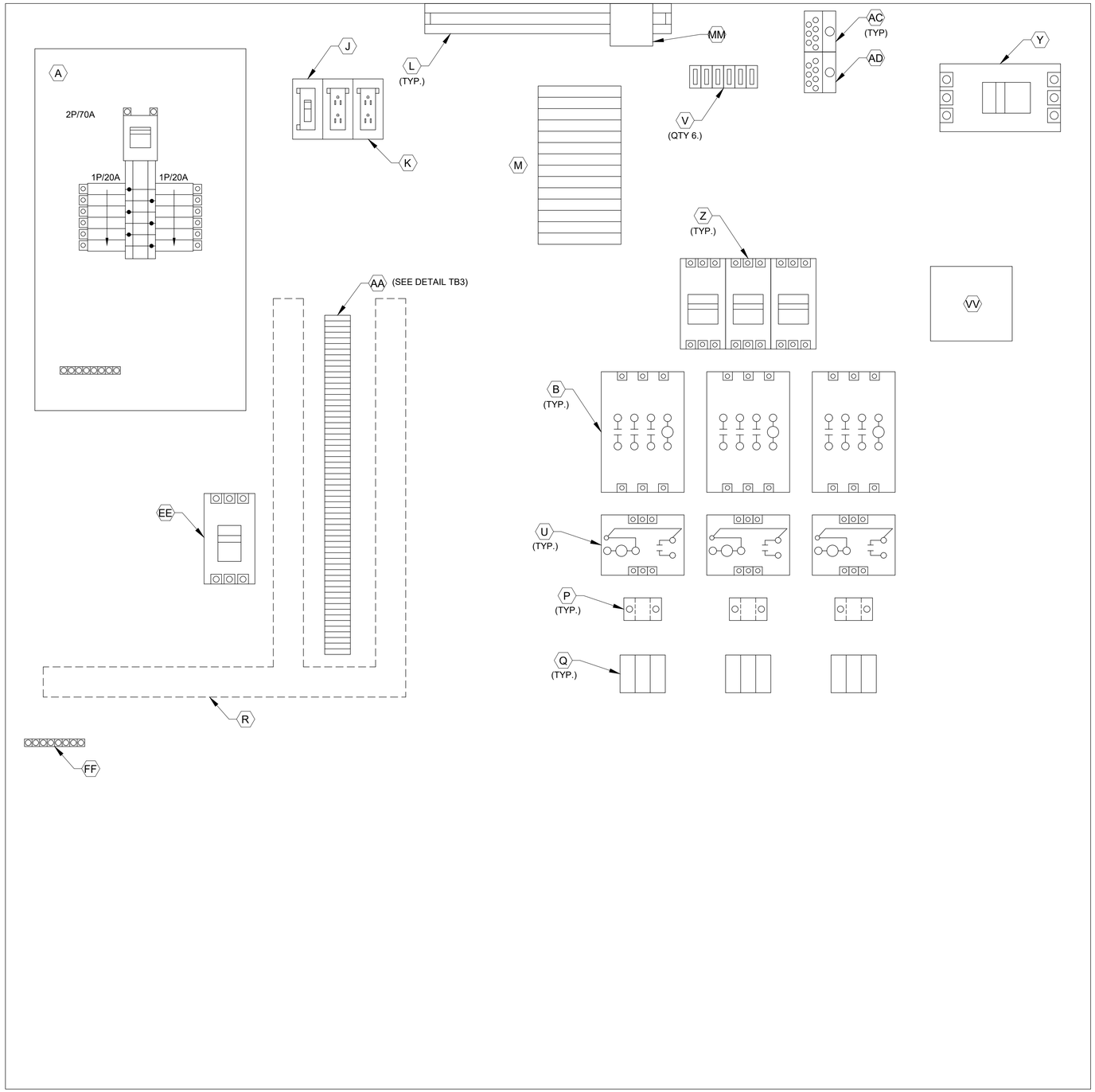
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-506	HORIZ: NONE VERT: NONE
SHEET NO. 222 OF 230	DRAWING SCALE

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POWER PANEL
ELEVATION

3
18
L1A
L1N
SPARE
SPARE
103
104
105
106
107
108
110
113
115
116
119
SPARE
203
204
205
206
207
208
210
213
215
216
216
219
SPARE
303
304
305
306
307
308
310
313
315
316
316
319
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE

DETAIL TB3

NOTES:

1. SEE SHEET I-504 FOR EQUIPMENT SCHEDULE.

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 1:10 PM PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-III

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

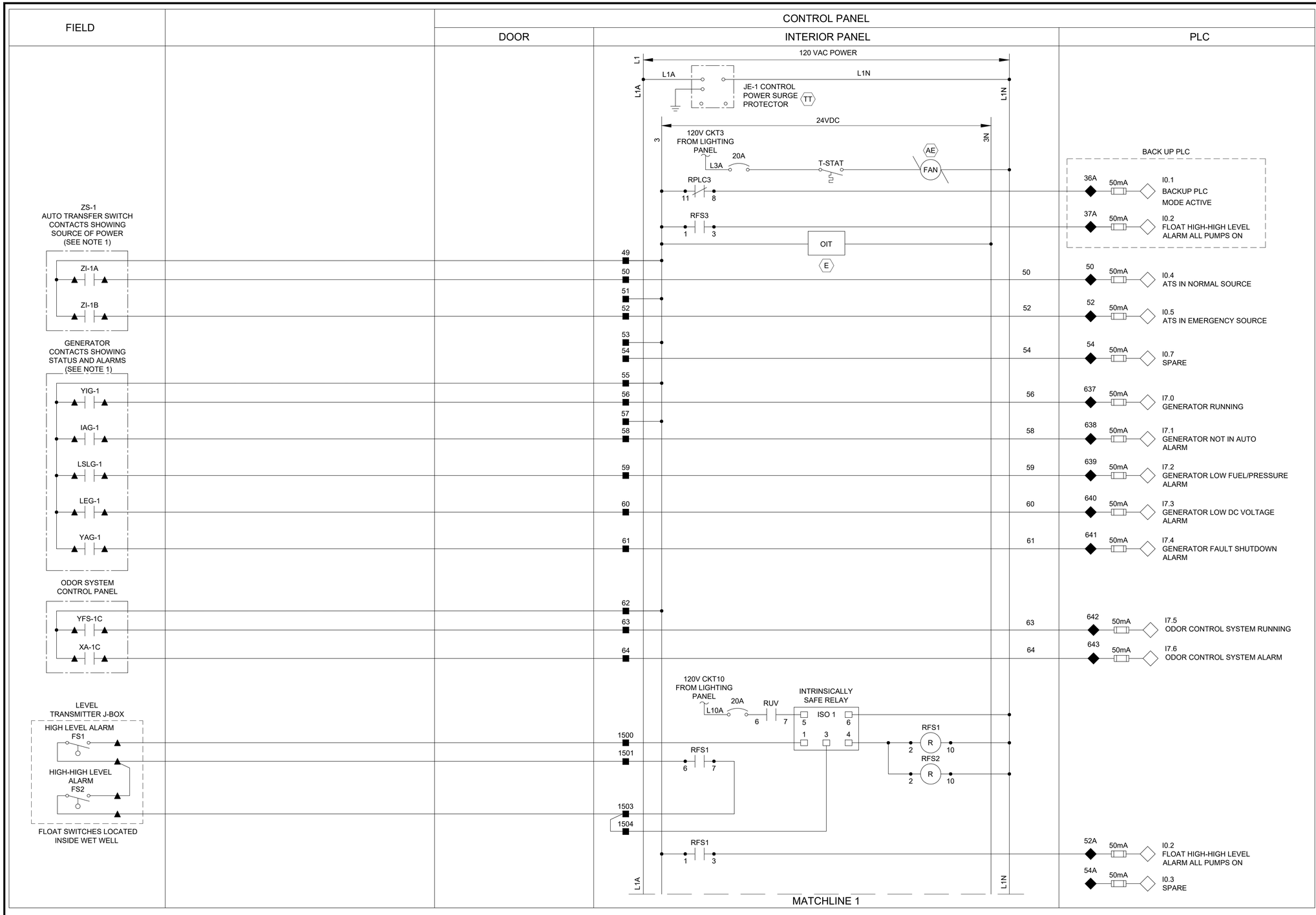
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-507	HORIZ: NONE VERT: NONE
SHEET NO. 223 OF 230	DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Stately Oaks\Stately Oaks_I-507.dwg



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:

1. PROVIDE MANUAL TRANSFER SWITCH DRY CONTACT.
2. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-508

HORIZ: NONE
VERT: NONE

SHEET NO. 224 OF 230

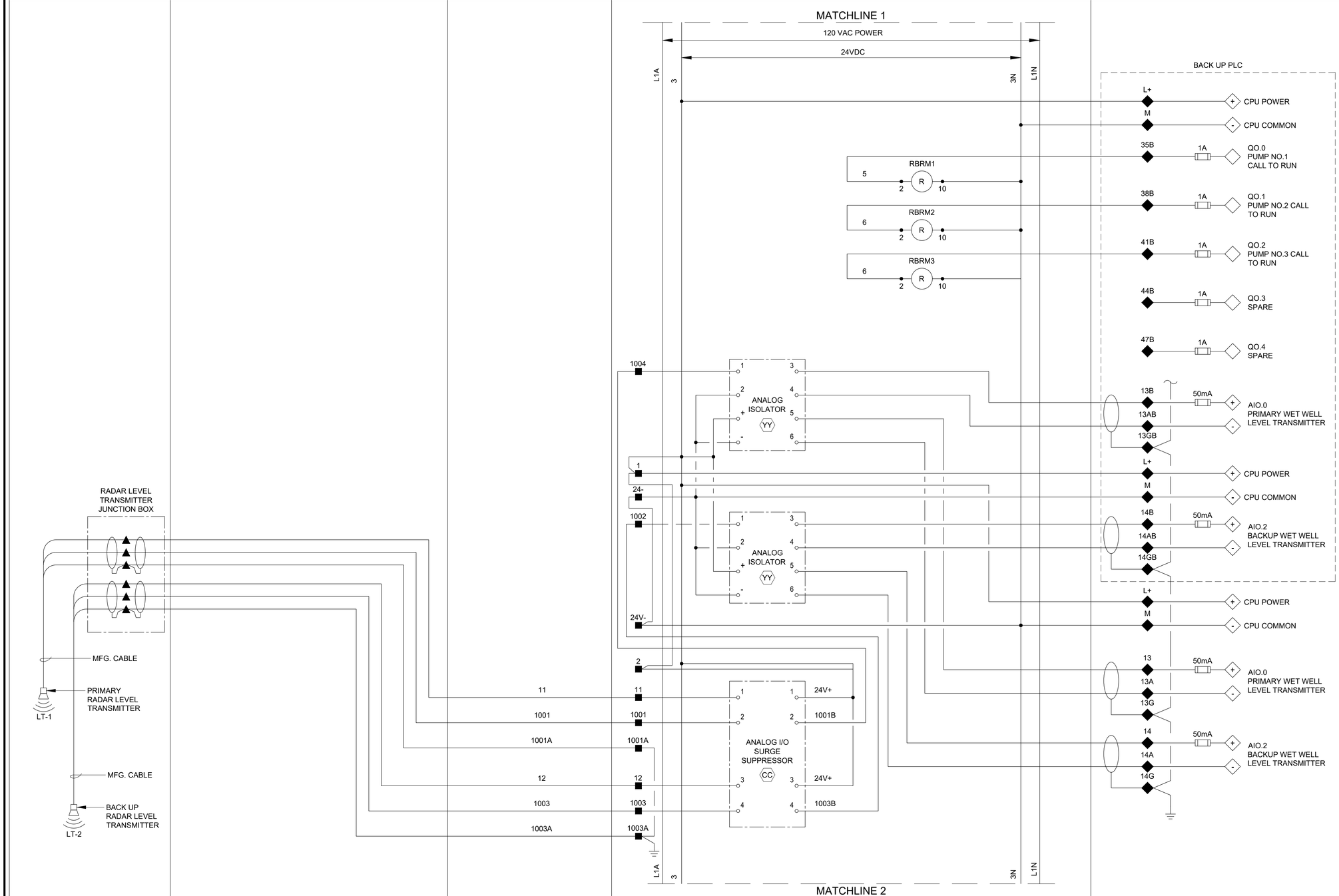
DRAWING SCALE

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NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb
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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Stately Oaks\Stately Oaks_I_508.dwg

FIELD		CONTROL PANEL	
		DOOR	INTERIOR PANEL



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

NO.	DATE	REVISION	APP.

PLOTTED: 1/22/2026 1:10 PM PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-II

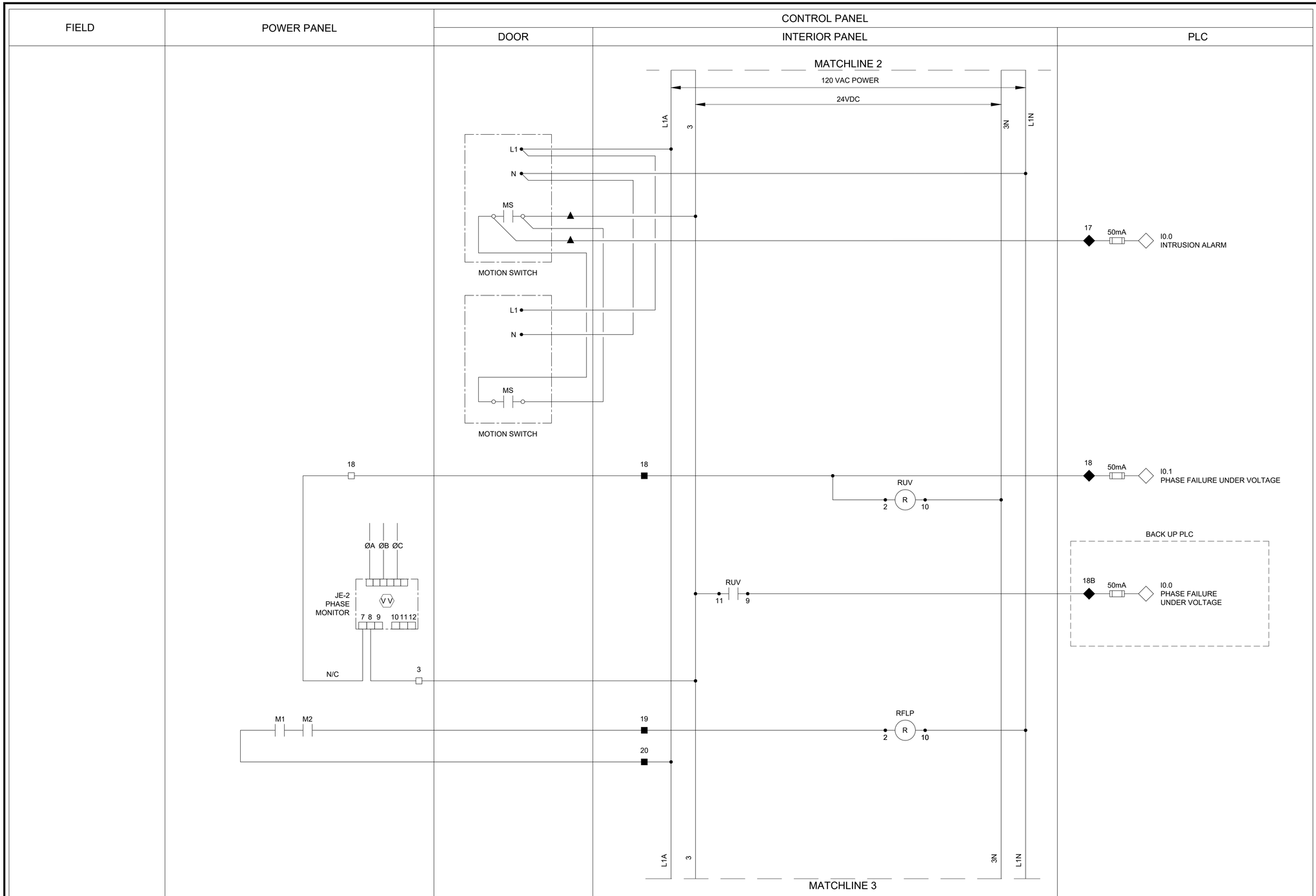
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-509	HORIZ: NONE VERT: NONE
SHEET NO. 225 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY



NOTES:

1. PROVIDE ONE LIMIT SWITCH PER EXTERIOR CONTROL PANEL AND POWER PANEL DOOR, WIRED IN PARALLEL.

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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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-III

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

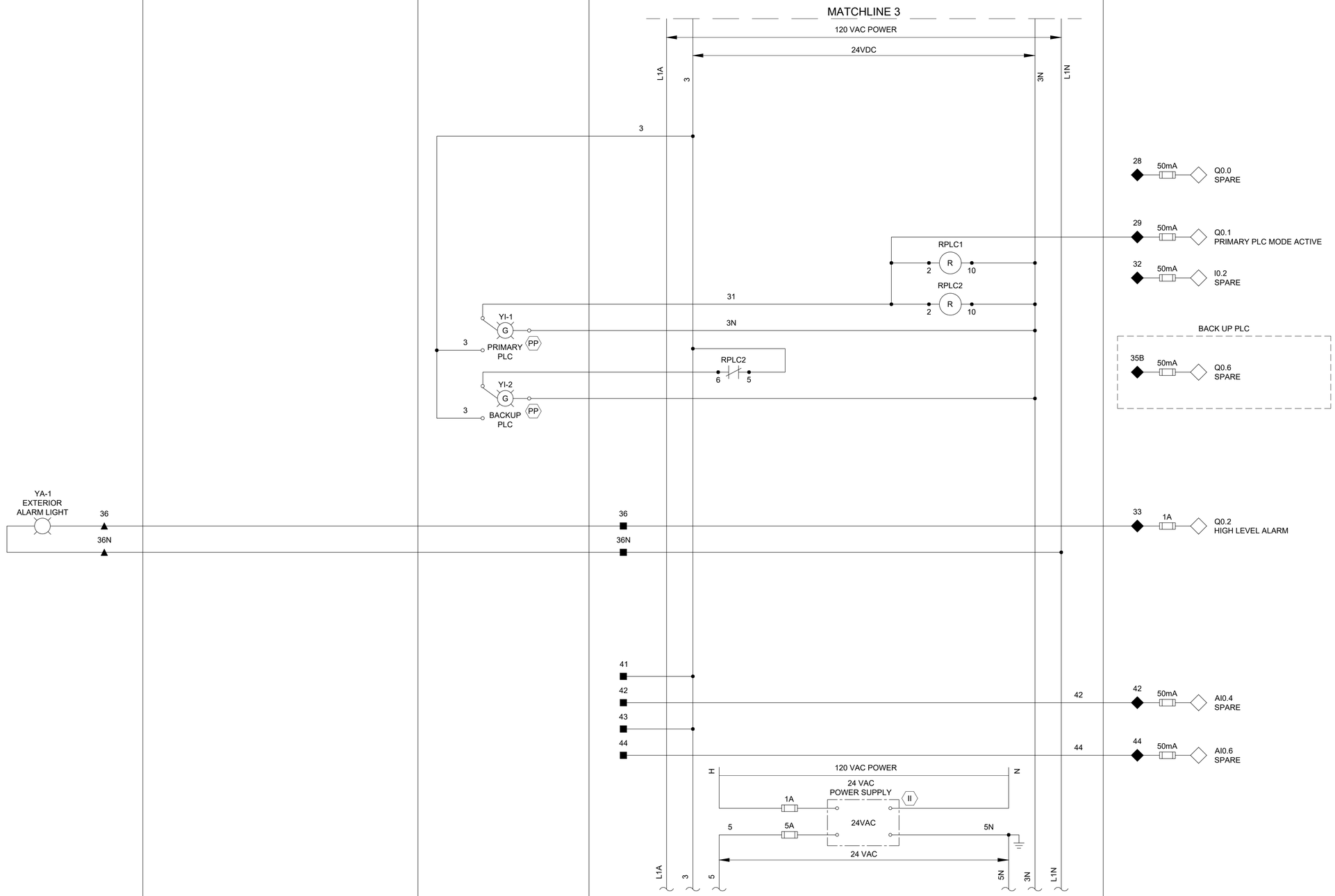
DRAWING NO. I-510
HORIZ: NONE
VERT: NONE
SHEET NO. 226 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

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FIELD	POWER PANEL	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

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-IV

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-511

HORIZ: NONE
VERT: NONE

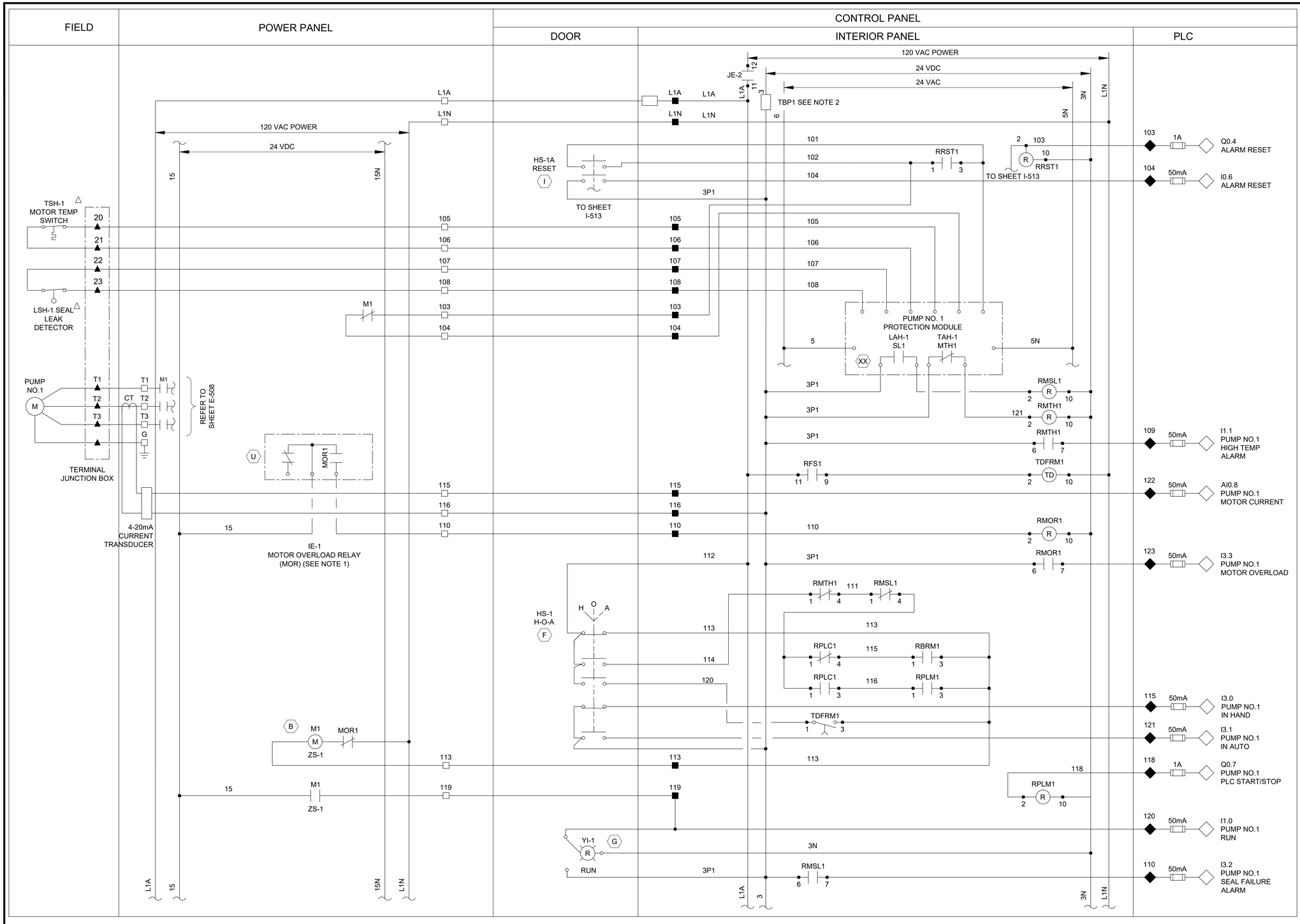
SHEET NO. 227 OF 230

DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Stately Oaks\Stately Oaks_I-511.dwg



NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM DRAWING NO. I-503.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

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

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
PUMP NO.1
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-512	HORIZ: NONE VERT: NONE
SHEET NO. 228 OF 230	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Stately Oaks\Stately Oaks_I_512.dwg

FIELD | POWER PANEL | CONTROL PANEL — DOOR | CONTROL PANEL — INTERIOR PANEL | PLC

120 VAC POWER
24 VDC
24 VAC
15
15N
L1A
3
7
TBP2 SEE NOTE 2
3N
5N
L1N

FROM SHEET I-512
HS-1A RESET
TO SHEET I-514

M2
TSH-2 MOTOR TEMP SWITCH
LSH-2 SEAL LEAK DETECTOR
20
21
22
23

PUMP NO.2
M
T1
T2
T3
G
CT
M1
REFER TO SHEET E-508
TERMINAL JUNCTION BOX

U
MOR2

4-20mA CURRENT TRANSDUCER

IE-2
MOTOR OVERLOAD RELAY (MOR) (SEE NOTE 1)

201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223

RRST2
200
PUMP NO. 2 PROTECTION MODULE
LAH-2 SL2
TAH-2 MTH2
XX
RMSL2
RMTH2
TDFRM2
RFS2
RMOR2
RPLC1
RBRM2
RPLM2
HS-2 H-O-A
H
O
A
F
B
ZS-2
YI-2
R
RUN

209 50mA I1.3 PUMP NO.2 HIGH TEMP ALARM
222 50mA AI.0 PUMP NO.2 MOTOR CURRENT
223 50mA I3.7 PUMP NO.2 MOTOR OVERLOAD ALARM
210 50mA I3.5 PUMP NO.2 IN HAND
211 50mA I3.4 PUMP NO.2 IN AUTO
218 1A Q1.0 PUMP NO.2 PLC START/STOP
220 50mA I1.2 PUMP NO.2 RUN
210 50mA I3.6 PUMP NO.2 SEAL FAILURE ALARM

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:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM DRAWING NO. I-503.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

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STATE OF TEXAS
H. A. FOROUZAN
77748
REGISTERED PROFESSIONAL ENGINEER
12/19/2025

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
PUMP NO.2
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

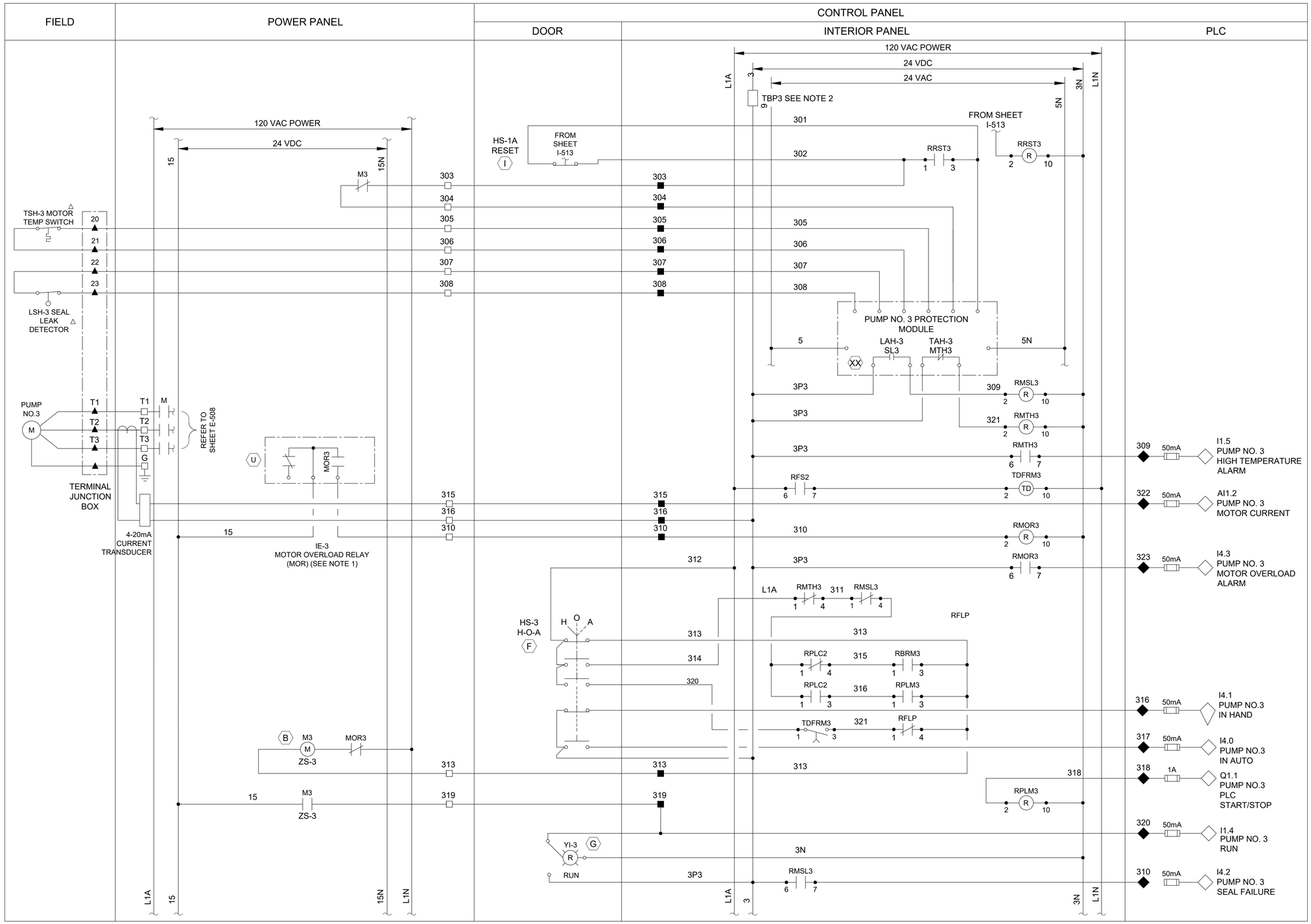
WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-513
HORIZ: NONE
VERT: NONE
SHEET NO. 229 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

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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:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM. DRAWING NO. I-503.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

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12/19/2025

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
PUMP NO.3
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-514
HORIZ: NONE
VERT: NONE
SHEET NO. 230 OF 230
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

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