CITY OF HOUSTON

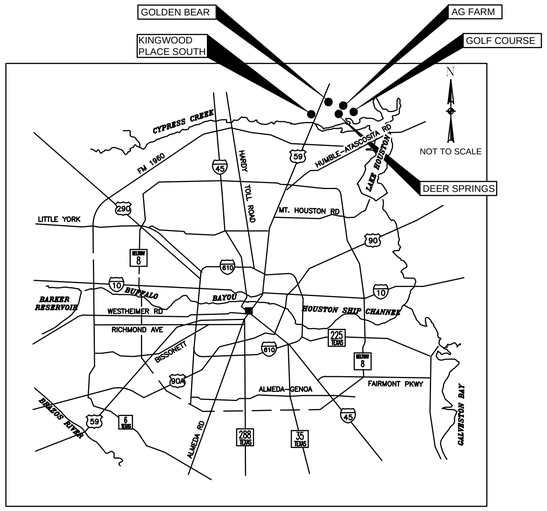
HOUSTON PUBLIC WORKS

CAPITAL PROJECTS

LIFT STATION REHABILITATION AND RECONSTRUCTION DESIGN (FEMA) – KINGWOOD PLACE SOUTH, GOLDEN BEAR, DEER SPRINGS, AG FARM, AND GOLF COURSE

WBS NO. R-000267-0177-3

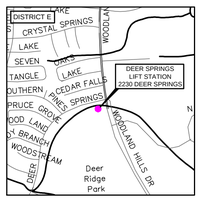
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LOCATION MAP



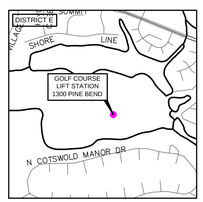
AG FARM
KEY MAP NO 336-G



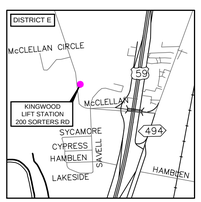
DEER SPRINGS
KEY MAP NO 336-G



GOLDEN BEAR
KEY MAP NO 336-A



GOLF COURSE
KEY MAP NO 336-H



KINGWOOD PLACE SOUTH
KEY MAP NO 335-H

TDLR EABPR _____

MAYOR
JOHN WHITMIRE

CONTROLLER
CHRIS HOLLINS

DISTRICT COUNCIL MEMBERS

AMY PECK, DISTRICT A
TARSHA JACKSON, DISTRICT B
ABBIE KAMIN, DISTRICT C
CAROLYN EVANS–SHABAZZ, DISTRICT D
FRED FLICKINGER, DISTRICT E
TIFFANY D. THOMAS, DISTRICT F
MARY NAN HUFFMAN, DISTRICT G
MARIO CASTILLO, DISTRICT H
JOAQUIN MARTINEZ, DISTRICT I
EDWARD POLLARD, DISTRICT J
MARTHA CASTEX–TATUM, DISTRICT K

COUNCIL MEMBERS AT–LARGE

JULIAN RAMIREZ, POSITION 1
WILLIE DAVIS, POSITION 2
TWILA CARTER, POSITION 3
ALEJANDRA SALINAS, POSITION 4
SALLIE ALCORN, POSITION 5

NO.	DATE	REVISION	APP.
0	2/25/2026	90% SUBMITTAL	

DCCM INFRASTRUCTURE, INC.
TXENG F–257
1710 SEAMIST DR
713.869.3433
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PARKS–FORESTRY DEPT.

METRO

HOUSTON WATER

TRANSPORTATION & DRAINAGE OPERATIONS

CAPITAL PROJECTS

SURVEY

CITY ENGINEER DATE

DIRECTOR OF HOUSTON PUBLIC WORKS DATE

FOR CITY OF HOUSTON USE ONLY

SHEET NO 1 OF 298 SHEETS

FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.03_Drawings\24-1930-PD-COVER.dwg PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 2/25/2026 11:32 AM

SHEET LIST

SHEET #	SHEET DESIG	SHEET TITLE
GENERAL		
1	G-1	COVER
2	G-2	SHEET INDEX
3	G-3	GENERAL NOTES - (SHEET 1 OF 2)
4	G-4	GENERAL NOTES - (SHEET 2 OF 2)
5	G-5	CIVIL GENERAL NOTES
6	G-6	STRUCTURAL GENERAL NOTES
7	G-7	STRUCTUAL SITE SPECIFIC NOTES
8	G-8	ELECTRICAL GENERAL NOTES
9	G-9	LEGENDS AND SYMBOLS (SHEET 1 OF 2)
10	G-10	LEGENDS AND SYMBOLS (SHEET 2 OF 2)
11	G-11	ELECTRICAL GENERAL LEGENDS AND SYMBOLS - (SHEET 1 OF 2)
12	G-12	ELECTRICAL GENERAL LEGENDS AND SYMBOLS - (SHEET 2 OF 2)
13	G-13	INSTRUMENTATION GENERAL LEGENDS & SYMBOLS (SHEET 1 OF 2)
14	G-14	INSTRUMENTATION GENERAL LEGENDS & SYMBOLS (SHEET 2 OF 2)
15	G-15	ELECTRICAL GENERAL FIXTURE SCHEDULE
16	G-16	FLOODPLAIN MAPS - (SHEET 1 OF 2)
17	G-17	FLOODPLAIN MAPS - (SHEET 2 OF 2)
18	G-18	SURVEY CONTROL MAP - AG FARM (SHEET 1 OF 2)
19	G-19	SURVEY CONTROL MAP - AG FARM (SHEET 2 OF 2)
20	G-20	SURVEY CONTROL MAP - DEER SPRINGS (SHEET 1 OF 2)
21	G-21	SURVEY CONTROL MAP - DEER SPRINGS (SHEET 2 OF 2)
22	G-22	SURVEY CONTROL MAP - GOLDEN BEAR (SHEET 1 OF 2)
23	G-23	SURVEY CONTROL MAP - GOLDEN BEAR (SHEET 2 OF 2)
24	G-24	SURVEY CONTROL MAP - GOLF COURSE (SHEET 1 OF 2)
25	G-25	SURVEY CONTROL MAP - GOLF COURSE (SHEET 2 OF 2)
26	G-26	SURVEY CONTROL MAP - KINGWOOD PLACE SOUTH (SHEET 1 OF 2)
27	G-27	SURVEY CONTROL MAP - KINGWOOD PLACE SOUTH (SHEET 2 OF 2)
AG FARM LIFT STATION		
28	M-101	PROPOSED OVERALL SITE LAYOUT
29	CS-101	PROPOSED CONSTRUCTION SEQUENCE (SHEET 1 OF 2)
30	CS-102	PROPOSED CONSTRUCTION SEQUENCE (SHEET 2 OF 2)
31	C-101	CIVIL EXISTING SITE PLAN (SHEET 1 OF 2)
32	C-102	CIVIL EXISTING SITE PLAN (SHEET 2 OF 2)
33	C-103	CIVIL DEMOLITION PLAN
34	C-104	CIVIL PROPOSED SITE PLAN (SHEET 1 OF 2)
35	C-105	CIVIL PROPOSED SITE PLAN (SHEET 2 OF 2)
36	C-106	CIVIL DRAINAGE PLAN
37	C-107	CIVIL GRADING PLAN
38	C-108	CIVIL WATER PLAN
39	C-109	CIVIL FENCE PLAN
40	M-102	MECHANICAL DEMOLITION PLAN AND SECTION (SHEET 1 OF 2)
41	M-103	MECHANICAL DEMOLITION PLAN AND SECTION (SHEET 2 OF 2)
42	M-103	MECHANICAL LIFT STATION PLAN
43	M-104	MECHANICAL LIFT STATION SECTION VIEWS
44	M-105	MECHANICAL LIFT STATION SECTION
45	S-101	STRUCTURAL DEMOLITION (SHEET 1 OF 2)
46	S-102	STRUCTURAL DEMOLITION (SHEET 2 OF 2)
47	S-103	STRUCUTRAL OPENINGS & STAIRS
48	S-104	STRUCUTRAL DISCHARGE PIPE SUPPORT
49	S-105	STRUCUTRAL DISCHARGE FRAME
50	S-106	STRUCUTRAL ELEVATED ELEC. PLATFORM
51	S-107	STRUCTURAL GENERATOR PLATFORM
52	S-108	STRUCUTRAL PIPE SADDLE DETAIL
53	S-109	STRUCUTRAL SUPPORT BEAM (1 OF 2)
54	S-110	STRUCUTRAL SUPPORT BEAM (2 OF 2)
55	S-111	STRUCUTRAL ODOR PLATFORM
56	E-101	ELECTRICAL DEMOLITION OVERALL SITE PLAN
57	E-102	ELECTRICAL PROPOSED OVERALL SITE PLAN
58	E-103	ELECTRICAL PROPOSED ENLARGED LIFT STATION SITE PLAN
59	E-104	ELECTRICAL PROPOSED ONE-LINE DIAGRAM
60	E-105	ELECTRICAL INCOMING POWER THREE LINE DIAGRAM
61	E-106	ELECTRICAL CONDUIT SCHEDULE
62	E-107	ELECTRICAL SERVICE RACK DETAIL
63	E-108	ELECTRICAL CONTROL CABINET ENCLOSURE DETAIL
64	E-109	ELECTRICAL JUNCTION BOX DETAIL
65	E-110	ELECTRICAL PROPOSED PLATFORM LAYOUT
66	E-111	ELECTRICAL SERVICE POLE DETAIL
67	E-112	ELECTRICAL TYPICAL DETAILS
68	I-101	INSTRUMENTATION P&ID DIAGRAM (SHEET 1 OF 2)
69	I-102	INSTRUMENTATION P&ID DIAGRAM (SHEET 2 OF 2)
70	I-103	INSTRUMENTATION COMMUNICATIONS DIAGRAM
71	I-104	INSTRUMENTATION CONTROL CAB. EQUIP. LAYOUT & SCHEDULE
72	I-105	INSTRUMENTATION CONTROL CABINET EQUIPMENT LAYOUT (SHEET 1 OF 3)
73	I-106	INSTRUMENTATION CONTROL CABINET EQUIPMENT LAYOUT (SHEET 2 OF 3)
74	I-107	INSTRUMENTATION CONTROL CABINET EQUIPMENT LAYOUT (SHEET 3 OF 3)
75	I-108	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 1 OF 4)
76	I-109	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 2 OF 4)
77	I-110	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 3 OF 4)
78	I-111	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 4 OF 4)
79	I-112	INSTRUMENTATION PUMP NO. 1 CONTROL WIRING DIAGRAM
80	I-113	INSTRUMENTATION PUMP NO. 2 CONTROL WIRING DIAGRAM
81	I-114	INSTRUMENTATION PUMP NO. 3 CONTROL WIRING DIAGRAM
DEER SPRINGS LIFT STATION		
82	M-201	PROPOSED OVERALL SITE LAYOUT
83	CS-201	PROPOSED CONSTRUCTION SEQUENCE
84	C-201	CIVIL EXISTING SITE PLAN
85	C-202	CIVIL DEMOLITION PLAN
86	C-203	CIVIL PROPOSED SITE PLAN
87	C-204	CIVIL DRAINAGE PLAN
88	C-205	CIVIL PROPOSED STORM PROFILE
89	C-206	CIVIL PROPOSED GRADING PLAN
90	C-207	CIVIL WATER PLAN
91	C-208	CIVIL FENCE PLAN
92	M-202	MECHANICAL DEMOLITION PLAN AND SECTION
93	M-203	MECHANICAL LIFT STATION PLAN
94	M-204	MECHANICAL LIFT STATION SECTION
95	S-201	STRUCTURAL CAISSON WET WELL AND VALVE PAD
96	S-202	STRUCTURAL ELEVATED PLATFORM LAYOUT
97	S-203	STRUCTURAL ELEVATED PLATFORMS DETAIL
98	S-204	STRUCTURAL ODOR CONTROL SLAB ON GRADE
99	E-201	ELECTRICAL DEMOLITION OVERALL SITE PLAN
100	E-202	ELECTRICAL PROPOSED OVERALL SITE PLAN
101	E-203	ELECTRICAL PROPOSED ENLARGED LIFT STATION SITE PLAN
102	E-204	ELECTRICAL PROPOSED ONE-LINE DIAGRAM
103	E-205	ELECTRICAL INCOMING POWER THREE LINE DIAGRAM
104	E-206	ELECTRICAL CONDUIT SCHEDULE
105	E-207	ELECTRICAL SERVICE RACK DETAIL
106	E-208	ELECTRICAL CONTROL CABINET ENCLOSURE DETAIL
107	E-209	ELECTRICAL JUNCTION BOX DETAIL
108	E-210	ELECTRICAL PROPOSED PLATFORM LAYOUT
109	E-211	ELECTRICAL SERVICE POLE DETAIL
110	E-212	ELECTRICAL TYPICAL DETAILS
111	E-213	YARD LIGHT & COMMUNICATION POLE DETAILS
112	I-201	INSTRUMENTATION P&ID DIAGRAM (SHEET 1 OF 2)
113	I-202	INSTRUMENTATION P&ID DIAGRAM (SHEET 2 OF 2)
114	I-203	INSTRUMENTATION COMMUNICATIONS DIAGRAM
115	I-204	INSTRUMENTATION CONTROL CAB. EQUIP. LAYOUT & SCHEDULE
116	I-205	INSTRUMENTATION CONTROL CABINET EQUIPMENT LAYOUT (SHEET 1 OF 3)
117	I-206	INSTRUMENTATION CONTROL CABINET EQUIPMENT LAYOUT (SHEET 2 OF 3)
118	I-207	INSTRUMENTATION CONTROL CABINET EQUIPMENT LAYOUT (SHEET 3 OF 3)
119	I-208	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 1 OF 4)
120	I-209	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 2 OF 4)
121	I-210	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 3 OF 4)
122	I-211	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 4 OF 4)
123	I-212	INSTRUMENTATION PUMP NO. 1 CONTROL WIRING DIAGRAM
124	I-213	INSTRUMENTATION PUMP NO. 2 CONTROL WIRING DIAGRAM
GOLDEN BEAR LIFT STATION		
125	M-301	PROPOSED OVERALL SITE LAYOUT
126	CS-301	PROPOSED CONSTRUCTION SEQUENCE
127	C-301	CIVIL EXISTING SITE PLAN
128	C-302	CIVIL DEMOLITION PLAN
129	C-303	CIVIL PROPOSED SITE PLAN
130	C-304	CIVIL DRAINAGE PLAN
131	C-305	CIVIL GRADING PLAN
132	C-306	CIVIL WATER PLAN
133	C-307	CIVIL FENCE PLAN
134	M-302	MECHANICAL DEMOLITION PLAN AND SECTION
135	M-303	MECHANICAL LIFT STATION PLAN
136	M-304	MECHANICAL LIFT STATION SECTION
137	S-301	STRUCTURAL DEMOLITION
138	S-302	STRUCTURAL PROPOSED CONDITIONS
139	S-303	STRUCTURAL ELEVATED PLATFORM
140	S-304	STRUCTURAL ODOR CONTROL SLAB ON GRADE
141	E-301	ELECTRICAL DEMOLITION OVERALL SITE PLAN
142	E-302	ELECTRICAL PROPOSED OVERALL SITE PLAN
143	E-303	ELECTRICAL PROPOSED ENLARGED LIFT STATION SITE PLAN
144	E-304	ELECTRICAL PROPOSED ONE-LINE DIAGRAM
145	E-305	ELECTRICAL INCOMING POWER THREE LINE DIAGRAM
146	E-306	ELECTRICAL CONDUIT SCHEDULE
147	E-307	ELECTRICAL SERVICE RACK DETAIL
148	E-308	ELECTRICAL CONTROL CABINET ENCLOSURE DETAIL
149	E-309	ELECTRICAL JUNCTION BOX DETAIL
150	E-310	ELECTRICAL PROPOSED PLATFORM LAYOUT
151	E-311	ELECTRICAL SERVICE POLE DETAIL
152	E-312	ELECTRICAL TYPICAL DETAILS
153	E-313	YARD LIGHT & COMMUNICATION POLE DETAILS
154	I-301	INSTRUMENTATION P&ID DIAGRAM (SHEET 1 OF 2)
155	I-302	INSTRUMENTATION P&ID DIAGRAM (SHEET 2 OF 2)
156	I-303	INSTRUMENTATION COMMUNICATIONS DIAGRAM
157	I-304	INSTRUMENTATION CONTROL CAB. EQUIP. LAYOUT & SCHEDULE
158	I-305	INSTRUMENTATION CONTROL CABINET EQUIPMENT LAYOUT (SHEET 1 OF 3)
159	I-306	INSTRUMENTATION CONTROL CABINET EQUIPMENT LAYOUT (SHEET 2 OF 3)
160	I-307	INSTRUMENTATION CONTROL CABINET EQUIPMENT LAYOUT (SHEET 3 OF 3)
161	I-308	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 1 OF 4)
162	I-309	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 2 OF 4)
163	I-310	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 3 OF 4)
164	I-311	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 4 OF 4)
165	I-312	INSTRUMENTATION PUMP NO. 1 CONTROL WIRING DIAGRAM
166	I-313	INSTRUMENTATION PUMP NO. 2 CONTROL WIRING DIAGRAM
GOLF COURSE LIFT STATION		
167	M-401	PROPOSED OVERALL SITE LAYOUT
168	CS-401	PROPOSED CONSTRUCTION SEQUENCE
169	C-401	CIVIL EXISTING SITE PLAN
170	C-402	CIVIL DEMOLITION PLAN
171	C-403	CIVIL PROPOSED SITE PLAN
172	C-404	CIVIL DRAINAGE PLAN
173	C-405	CIVIL GRADING PLAN
174	C-406	CIVIL WATER PLAN
175	C-407	CIVIL FENCE PLAN
176	M-402	MECHANICAL DEMOLITION PLAN AND SECTION (SHEET 1 OF 2)
177	M-403	MECHANICAL DEMOLITION PLAN AND SECTION (SHEET 2 OF 2)
178	M-404	MECHANICAL LIFT STATION PLAN
179	M-405	MECHANICAL LIFT STATION PLAN SECTION VIEWS
180	M-406	MECHANICAL LIFT STATION SECTION
181	S-401	STRUCTURAL DEMOLITION (SHEET 1 OF 2)
182	S-402	STRUCTURAL DEMOLITION (SHEET 2 OF 2)
183	S-403	STRUCTURAL PROPOSED PIPE SADDLE
184	S-404	STRUCTURAL DISCHARGE PIPE SUPPORT FRAME
185	S-405	STRUCTURAL PIPE SUPPORT BEAM
186	S-406	STRUCTURAL PIPE SADDLE DETAILS
187	S-407	STRUCTURAL ELEV. PLATFORMS
188	S-408	STRUCTURAL ELEV. PLATFORMS STAIRS, HANDRAIL, & CONNECTION DETAIL
189	S-409	STRUCTURAL PIPE SADDLE DETAIL (1 OF 2)
190	S-410	STRUCTURAL PIPE SADDLE DETAIL (2 OF 2)
191	S-411	STRUCUTRAL ODOR CONTROL PLATFORM
192	E-401	ELECTRICAL DEMOLITION OVERALL SITE PLAN
193	E-402	ELECTRICAL PROPOSED OVERALL SITE PLAN
194	E-403	ELECTRICAL PROPOSED ENLARGED LIFT STATION SITE PLAN
195	E-404	ELECTRICAL PROPOSED ONE-LINE DIAGRAM
196	E-405	ELECTRICAL INCOMING POWER THREE LINE DIAGRAM
197	E-406	ELECTRICAL CONDUIT SCHEDULE
198	E-407	ELECTRICAL SERVICE RACK DETAIL
199	E-408	ELECTRICAL CONTROL CABINET ENCLOSURE DETAIL
200	E-409	ELECTRICAL JUNCTION BOX DETAIL
201	E-410	ELECTRICAL PROPOSED PLATFORM LAYOUT
202	E-411	ELECTRICAL SERVICE POLE DETAIL
203	E-412	ELECTRICAL TYPICAL DETAILS
204	E-413	YARD LIGHT & COMMUNICATION POLE DETAILS
205	I-401	INSTRUMENTATION P&ID DIAGRAM (SHEET 1 OF 2)
206	I-402	INSTRUMENTATION P&ID DIAGRAM (SHEET 2 OF 2)
207	I-403	INSTRUMENTATION COMMUNICATIONS DIAGRAM
208	I-404	INSTRUMENTATION CONTROL CAB. EQUIP. LAYOUT & SCHEDULE
209	I-405	INSTRUMENTATION CONTROL CABINET EQUIPMENT LAYOUT (SHEET 1 OF 3)
210	I-406	INSTRUMENTATION CONTROL CABINET EQUIPMENT LAYOUT (SHEET 2 OF 3)
211	I-407	INSTRUMENTATION CONTROL CABINET EQUIPMENT LAYOUT (SHEET 3 OF 3)
212	I-408	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 1 OF 4)
213	I-409	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 2 OF 4)
214	I-410	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 3 OF 4)
215	I-411	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 4 OF 4)
216	I-412	INSTRUMENTATION PUMP NO. 1 CONTROL WIRING DIAGRAM
217	I-413	INSTRUMENTATION PUMP NO. 2 CONTROL WIRING DIAGRAM
218	I-414	INSTRUMENTATION PUMP NO. 3 CONTROL WIRING DIAGRAM
KINGWOOD PLACE LIFT STATION		
219	M-501	PROPOSED OVERALL SITE LAYOUT
220	CS-501	PROPOSED CONSTRUCTION SEQUENCE
221	C-501	CIVIL EXISTING SITE PLAN
222	C-502	CIVIL DEMOLITION PLAN
223	C-503	CIVIL PROPOSED SITE PLAN
224	C-504	CIVIL DRAINAGE PLAN
225	C-505	CIVIL GRADING PLAN
226	C-506	CIVIL WATER PLAN
227	C-507	CIVIL FENCE PLAN
228	M-502	MECHANICAL DEMOLITION PLAN
229	M-503	MECHANICAL DEMOLITION SECTION
230	M-504	MECHANICAL LIFT STATION PLAN
231	M-505	MECHANICAL LIFT STATION SECTION
232	S-501	STRUCTURAL DEMOLITION
233	S-502	STRUCTURAL ELEVATED PLATFORMS
234	S-503	STRUCTURAL ELEV. PLATFORM STAIRS, HANDRAIL, AND CONNECTION
235	S-504	STRUCTURAL ODOR CONTROL SLAB
236	E-501	ELECTRICAL DEMOLITION OVERALL SITE PLAN
237	E-502	ELECTRICAL PROPOSED OVERALL SITE PLAN
238	E-503	ELECTRICAL PROPOSED ENLARGED LIFT STATION SITE PLAN
239	E-504	ELECTRICAL PROPOSED ONE-LINE DIAGRAM
240	E-505	ELECTRICAL INCOMING POWER THREE LINE DIAGRAM
241	E-506	ELECTRICAL CONDUIT SCHEDULE
242	E-507	ELECTRICAL SERVICE RACK DETAIL
243	E-508	ELECTRICAL CONTROL CABINET ENCLOSURE DETAIL
244	E-509	ELECTRICAL JUNCTION BOX DETAIL
245	E-510	ELECTRICAL PROP. PLATFORM
246	E-511	ELECTRICAL SERVICE POLE DETAIL
247	E-513	ELECTRICAL TYPICAL DETAILS (SHEET 1 OF 2)
248	E-514	ELECTRICAL TYPICAL DETAILS (SHEET 2 OF 2)
249	I-501	INSTRUMENTATION P&ID DIAGRAM (SHEET 1 OF 2)
250	I-502	INSTRUMENTATION P&ID DIAGRAM (SHEET 2 OF 2)
251	I-503	INSTRUMENTATION COMMUNICATIONS DIAGRAM
252	I-504	INSTRUMENTATION CONTROL CAB. EQUIP. LAYOUT & SCHEDULE
253	I-505	INSTRUMENTATION CONTROL CABINET EQUIPMENT LAYOUT (SHEET 1 OF 3)
254	I-506	INSTRUMENTATION CONTROL CABINET EQUIPMENT LAYOUT (SHEET 2 OF 3)
255	I-507	INSTRUMENTATION CONTROL CABINET EQUIPMENT LAYOUT (SHEET 3 OF 3)
256	I-508	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 1 OF 4)
257	I-509	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 2 OF 4)
258	I-510	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 3 OF 4)
259	I-511	INSTRUMENTATION CONTROL PANEL CONTROL WIRING DIA (SHEET 4 OF 4)
260	I-512	INSTRUMENTATION PUMP NO. 1 CONTROL WIRING DIAGRAM
261	I-513	INSTRUMENTATION PUMP NO. 2 CONTROL WIRING DIAGRAM
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262	D-101	CONSTRUCTION SIGN BUILD HOUSTON FORWARD
263	D-102	CIVIL DETAILS - WATER (SHEET 1 OF 2)
264	D-103	CIVIL DETAILS - WATER (SHEET 2 OF 2)
265	D-104	CIVIL DETAILS - STORM (SHEET 1 OF 5)
266	D-105	CIVIL DETAILS - STORM (SHEET 2 OF 5)
267	D-106	CIVIL DETIALS - STORM (SHEET 3 OF 5)
268	D-107	CIVIL DETAILS - STORM (SHEET 4 OF 5)
269	D-108	CIVIL DETAILS - STORM (SHEET 5 OF 5)
270	D-109	CIVIL DETAILS - SWPPP
271	D-110	CIVIL DETAILS - DRIVEWAY
272	D-111	MECHANICAL DETAILS - SAN SEWER (SHEET 1 OF 4)
273	D-112	MECHANICAL DETAILS - SAN SEWER (SHEET 2 OF 4)
274	D-113	MECHANICAL DETAILS - SAN SEWER (SHEET 3 OF 4)
275	D-114	MECHANICAL DETAILS - SAN SEWER (SHEET 4 OF 4)
276	D-115	MECHANICAL DETAILS - STANDARD (SHEET 1 OF 7)
277	D-116	MECHANICAL DETAILS - STANDARD (SHEET 2 OF 7)
278	D-117	MECHANICAL DETAILS - STANDARD (SHEET 3 OF 7)
279	D-118	MECHANICAL DETAILS - STANDARD (SHEET 4 OF 7)
280	D-119	MECHANICAL DETAILS - STANDARD (SHEET 5 OF 7)
281	D-120	MECHANICAL DETAILS - STANDARD (SHEET 6 OF 7)
282	D-121	MECHANICAL DETAILS - STANDARD (SHEET 7 OF 7)
283	D-122	ELECTRICAL (DETAILS) - RADAR DETAIL (SHEET 1 OF 2)
284	D-123	ELECTRICAL (DETAILS) - RADAR DETAIL (SHEET 2 OF 2)
285	D-124	STRUCTURAL DETAILS (SHEET 1 OF 2)
286	D-125	STRUCTURAL DETAILS (SHEET 2 OF 2)
287	D-126	ODOR CONTROL DETAILS (SHEET 1 OF 3)
288	D-127	ODOR CONTROL DETAILS (SHEET 2 OF 3)
289	D-128	ODOR CONTROL DETAILS (SHEET 3 OF 3)
STORMWATER POLLUTION PREVENTION PLAN		
290	P-101	CIVIL SWPPP PLAN - AG FARM LS
291	P-102	CIVIL SWPPP PLAN - DEER SPRINGS LS
292	P-103	CIVIL SWPPP PLAN - GOLDEN BEAR LS
293	P-104	CIVIL SWPPP PLAN - GOLF COURSE LS
294	P-105	CIVIL SWPPP PLAN - KINGWOOD LS
TRAFFIC CONTROL PLAN		
295	TCP-101	AG FARM LIFT STATION TCP
296	TCP-201	DEER SPRING LIFT STATION TCP
297	TCP-301	GOLDEN BEAR LIFT STATION TCP
298	TCP-501	KINGWOOD PLACE SOUTH LIFT STATION TCP

DCCM

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TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND NOT FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA - CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

SHEET INDEX

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 2 OF 298 G-2	

PLOTTED: 2/25/2026 7:26 AM
PLOT STYLE: COH.ctb
FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.03_Drawings\24-1930-PD-INDEX.dwg

PLOTTED: 2/25/2026 7:27 AM
PLOT STYLE: COH.ctb
FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.03_Drawings\24-1930-PD-NOTES-GEN.dwg

GENERAL CONSTRUCTION NOTES:

1. UNLESS OTHERWISE NOTED AND APPROVED ON DRAWINGS, CONSTRUCT CIVIL INFRASTRUCTURE IN ACCORDANCE WITH THE EFFECTIVE EDITION OF THE HOUSTON PUBLIC WORKS STANDARD CONSTRUCTION SPECIFICATIONS, STANDARD CONSTRUCTION DETAILS, AND SUPPLEMENTS, ADDENDA AND AMENDMENTS THERETO. THE LATEST EDITION OF THE ABOVE PUBLICATIONS CAN BE FOUND AT: HTTP://WWW.HOUSTONPERMITTINGCENTER.ORG/OFFICE-CITY-ENGINEER/DESIGN-AND-CONSTRUCTION-STANDARDS.
2. THE DESIGN MUST BE CONSISTENT WITH THE EFFECTIVE EDITION OF HOUSTON PUBLIC WORKS INFRASTRUCTURE DESIGN MANUAL AND TCEQ (TEXAS COMMISSION ON ENVIRONMENTAL QUALITY) REQUIREMENTS.
3. THE GEOTECHNICAL INVESTIGATION FOR THIS PROJECT WAS CONDUCTED IN ACCORDANCE WITH CHAPTER 11 OF THE LATEST EDITION OF THE PUBLICATION INFRASTRUCTURE DESIGN MANUAL, PUBLISHED BY HOUSTON PUBLIC WORKS. SOILS REPORT WAS PREPARED BY [GEOTECHNICAL ENGINEERING FIRM] REPORT NO. [NO. OF REPORT], DATED [DATE OF REPORT].
4. UTILITIES PRESENTED ON THESE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL NOTIFY TEXAS ONE CALL AT 713-223-4567/811 OR 800-344-8377 AND LONE STAR NOTIFICATION CENTER AT 800-669-8344 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION. UTILITIES MARKED WITHIN THE PUBLIC RIGHT OF WAY OR IN EASEMENTS SHALL COMPLY WITH TAC TITLE 16, PART 1, CHAPTER 18, RULE §18.6 AND THE AMERICAN PUBLIC WORKS ADMINISTRATION (APWA) UNIFORM COLOR CODE.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING WATER, WASTEWATER, STORM WATER LINES AND TRAFFIC CONTROL DEVICES. DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE EFFECTIVE EDITION OF HOUSTON PUBLIC WORKS, STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEM, WATER LINES, STORM DRAINAGE, STREET PAVING, AND TRAFFIC AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, STREET PAVING, AND TRAFFIC, REFERENCED ABOVE AND SUPPLEMENTS, ADDENDA AND AMENDMENTS THERETO, AT NO ADDITIONAL COST TO THE CITY OF HOUSTON.
6. CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY ENGINEER, HOUSTON PUBLIC WORKS @ 832-394-9098 OR VIA FAX AT 832-395-4424 FOR INSPECTION AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
7. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO EXISTING CONDITIONS OR BETTER AND TO THE SATISFACTION OF THE OWNING AUTHORITY.
8. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS AND TREES ALONG THE AREA OF EXCAVATION.
9. CONTRACTOR SHALL COMPLY WITH LATEST EDITION OF OSHA REGULATIONS AND THE STATE OF TEXAS LAWS CONCERNING EXCAVATION.
10. CONTRACTOR SHALL MAINTAIN A SET OF REDLINE DRAWINGS AND RECORD AS-BUILT CONDITIONS DURING CONSTRUCTION. THESE AS-BUILT DRAWINGS WILL BE SUBMITTED TO THE DESIGN CONSULTANT WHO WILL MAKE THE CHANGES ON THE ORIGINAL TRACINGS, LABEL EACH SHEET IN THE SET AS "RECORD DRAWINGS", AND RETURN IT TO THE OFFICE OF THE CITY ENGINEER.

SANITARY SEWERS NOTES:

1. ALL SEWERS SHALL BE SUBJECT TO A STANDARD EXFILTRATION TEST. TESTS ARE TO BE PERFORMED ON THE TOTAL FOOTAGE OF SEWER LINE INCLUDED IN THE PROJECT. REQUIREMENTS OF TEXAS ADMINISTRATIVE CODE, TITLE 30 CHAPTER 217, "DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEMS" SHALL GOVERN WHERE CONFLICTS EXIST EXCEPT WHERE CITY REQUIREMENTS ARE MORE STRINGENT.
2. ALL MANHOLES ARE TO BE PER CITY OF HOUSTON STANDARD DETAILS DRAWING NUMBERS 02082-01, 02082-02, 02082N-02, 02082-03, AND 02082N-03 UNLESS OTHERWISE NOTED. USE THE LATEST VERSION AS APPLICABLE.
3. SANITARY SEWER MANHOLES WILL HAVE BEDDING AND BACKFILL PER CITY OF HOUSTON STANDARD DETAILS DRAWING NO. 02317-08 UNLESS OTHERWISE NOTED.
4. THE SANITARY SEWER PVC PIPE SHALL BE ASTM D 3034 TYPE PSM SDR 26 GRAVITY SEWER PIPE, ASTM D2241 SDR 26 PRESSURE RATED SEWER PIPE OR AWWA C-900 DR-18 GREEN PVC PRESSURE RATED SEWER PIPE BASED ON CONSTRUCTION CONDITION REQUIREMENT AND CONFORMING TO ASTM D1784 AND CITY OF HOUSTON STANDARD SPECIFICATION SECTION 02506 POLYVINYL CHLORIDE PIPE.
5. WHEN SS PRESSURE RATED PVC PIPE IS USED ON WATERLINE (WL) CROSSING UNDER CONDITION 1 OF COH IDM TABLE 7.3, THE SAME TYPE OF D2241 SDR 26 PVC PIPE OR C-900 GREEN DR-18 PVC GREEN PRESSURED TO BE UTILIZING IN-BETWEEN TWO SS MH'S. OR TO UTILIZE A DI TRANSITION ADAPTER FOR THE CONNECTING OF ASTM D-3034 PVC GRAVITY PIPE TO DI-OD AWWA C-900 PVC PIPE CENTERED AT WL WHEN CONNECTING TWO DIFFERENT TYPES OF PVC PIPES FOR SEWER CONSTRUCTION.
6. AWWA C-900 DR-18 PVC PIPE USES EITHER AWWA C900 DR-18 PVC FITTINGS OR DIP FITTINGS.
7. ALL SANITARY SEWER LINES UNDER PROPOSED OR FUTURE PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL HAVE BEDDING PER CITY OF HOUSTON STANDARD DETAILS DRAWING NUMBERS 02317-01, 02317-02, OR 02317-03 AS APPLICABLE, WITH 1 ½ SACK CEMENT/CY STABILIZED SAND BACKFILL UP TO THE BOTTOM OF THE PAVEMENT SUBGRADE. 100 PSI PERFORMANCE RESULTS ARE STILL REQUIRED.
8. ALL NEW SANITARY SEWERS CROSSING WATER LINES WITH A CLEARANCE BETWEEN 12 INCHES AND 9 FEET SHALL HAVE A MINIMUM OF ONE 18' JOINT OF DUCTILE IRON OR (GREEN) C900 PVC PIPE MEETING ASTM SPECIFICATION D2241 CENTERED ON WATER LINE. WHEN WATER LINE IS BELOW SANITARY SEWER, PROVIDE MINIMUM 2 FOOT SEPARATION.

SANITARY SEWERS NOTES (CONT.):

9. CONTRACTOR SHALL PROVIDE A MINIMUM HORIZONTAL CLEARANCE OF 9' FEET BETWEEN WATER LINES AND SANITARY SEWER MANHOLES AND LINES.
10. SANITARY SEWER MANHOLE RIMS OUTSIDE OF PROPOSED PAVING WILL BE SET 3" – 6" ABOVE THE SURROUNDING LEVEL FINISHED GRADE AFTER PAVING WITH SLOPED BACKFILL ADDED FOR STORM WATER TO DRAIN AWAY FROM MANHOLE RIM.
11. IN WET STABLE TRENCH AREAS USE BEDDING PER CITY OF HOUSTON STANDARD DETAILS DRAWING NUMBER 02317-02.
12. DEFLECTION TEST: DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE AND SEMI-RIGID SEWER PIPE. THE TEST SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS. NO PIPE SHALL EXCEED A DEFLECTION OF 5% IF THE DEFLECTION TEST IS TO BE RUN USING A RIGID MANDREL, IT SHALL HAVE A DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE. THE TEST SHALL BE PERFORMED AS PER 30 TAC 217.57 LATEST AMENDMENT AND WITHOUT MECHANICAL PULLING DEVICES. NO BALL-TYPE MANDREL IS ALLOWED.
13. INFILTRATION, EXFILTRATION OR LOW-PRESSURE AIR TEST: EITHER OF THE FOLLOWING TESTS SHALL BE PERFORMED AS PER TAC, TITLE 30 217.57 WITHIN THE SPECIFIED TOLERANCES ON ALL GRAVITY SEWERS.
    A. INFILTRATION OR EXFILTRATION TEST: TOTAL LEAKAGE AS DETERMINED BY A HYDROSTATIC HEAD TEST SHALL NOT EXCEED 50 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF TWO (2) FEET.
    B. LOW-PRESSURE AIR TEST: PERFORM TEST ACCORDING TO UNI-B-6-90 OR OTHER APPROPRIATE PROCEDURES. FOR SECTIONS OF PIPE LESS THAN 36" (INCH) AVERAGE INSIDE DIAMETER, THE MINIMUM ALLOWABLE TIME FOR PRESSURE DROP FROM 3.5 P.S.I.G. TO 2.5 P.S.I.G. SHALL BE AS FOLLOWS:

6"	340 SECONDS OR 0.855(L) FOR TEST LENGTHS GREATER THAN 398'
8"	454 SECONDS OR 1.520(L) FOR TEST LENGTHS GREATER THAN 298'
10"	567 SECONDS OR 2.374(L) FOR TEST LENGTHS GREATER THAN 239'
12"	680 SECONDS OR 3.419(L) FOR TEST LENGTHS GREATER THAN 199'
15"	850 SECONDS OR 5.342(L) FOR TEST LENGTHS GREATER THAN 159'
18"	1020 SECONDS OR 7.693(L) FOR TEST LENGTHS GREATER THAN 133'

    WHERE L = LENGTH OF LINE OF SAME PIPE SIZE IN FEET.

14. "SAN. S. E." INDICATES "SANITARY SEWER EASEMENT"
15. FOR SANITARY MANHOLE (MH) RIMS SET INSIDE OF OR @ CURB & GUTTER PAVEMENT AND/OR BELOW T.C., MH RIMS WILL BE SET FLUSHED WITH AN ABUTTING PAVED SURFACE. THE (VALCUN, NEENAH OR EQUAL) HEAVY DUTY BOLTED SOLID MH COVER SHALL BE PROPERLY (AND SECURELY) ATTACHED AND SEALED TO ITS COMPATIBLE GASKETED FRAME BY USING BOTH A NEOPRENE GASKET AND (AT LEAST) 4 COUNTER-SUNK HEX-HEAD COARSE THREADED ½"-13 UNC STAINLESS STEEL BOLTS. THE HEAVY DUTY FRAME MH COVER SHALL BE SOLID (NO AIR HOLES). SAID FRAME SHALL BE BOTH EMBEDDED INTO THE MH'S TOP ALSO SECURELY ANCHORED TO THE UNDERLYING MH STRUCTURE WITH EITHER SECURELY ATTACHED EMBEDDED ANCHOR BOLTS OR THE CONCRETE MH'S EXPOSED REBARS WELDED TO THE FRAME OR OTHER EQUALLY SECURED METHODS TO PREVENT MH COVER/FRAME BLOW-OFFS/EJECTIONS.

STORM CONSTRUCTION NOTES:

1. STORM SEWER SHALL BE REINFORCED CONCRETE PIPE (C-76, CLASS III), AND SHALL BE INSTALLED, BEDDED, AND BACK FILLED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 2317-02, 02317-3, 02317-05, 02317-06, AND 02317-07 (JULY 2019) AS APPLICABLE UNLESS OTHERWISW SHOWN ON THE DRAWINGS.
2. ALL STORM SEWER CONSTRUCTED IN SIDELOT EASMENT SHALL BE R.C.P (C-76, CLASSIII) AND SHALL BE EMBEDDED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 02317-02, 02317-03, 02317-05, 02317-06, AND 02317-07 AS APPLICABLE.
3. ALL SEWER UNDER PROPOSED OR FUTURE PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL BE BACKFILLED WITH 1-1/2 SACK CEMENT/C.Y. STABLIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE. THE REMAINING DEPTH OF TRENCH SHALL BE BACKFILLED WITH SUITABLE EARTH MATERIAL.
4. ALL TRENCH BACKFILL SHALL BE IN 8" LIFTS, WITH TESTS TAKEN AT 100 FOOT INTERVALS IN EACH LIFT, AND MECHNICALLY COMPACTED TO A DENSITY OF NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMACTION TEST (ASTM D-698/AASHTO T99).
5. CIRCULAR AND ELLIPTICAL REINFORCED CONCRETE PIPE SHALL BE INSTALLED USING RUBBER GASKET JOINT CONFORMING TO ASTM C443 AND ASTM C877 RESPECTIVELY.
6. ALL STORM SEWER PIPES AND INLET LEADS SHALL BE 24" AND LARGER R.C.P. (C-76, CLASSIII).
7. ALL PRPOSED PIPE STUB-OUTS FROM MANHOLES AND INLET LEADS ARE TO BE PLUGGED WITH 8" BRICK WALLS UNLESS OTHERWISE NOTED.
8. MINIMUM HORIZONTAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE AT LEAST 48-INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES. MINIMUM VERTICAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE AT LEAST 24-INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES.
9. ADJUST MANHOLE COVERS TO GRADE CONFORMING TO REQUIREMENTS OF SECTION 02086-ADJUSTING MANHOLES, INLETS, AND VALAVE BOXES TO GRADE.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING ANY BACK SLOPE DRAINAGE SYSTEM DISTURBED AS A RESULT OF THIS WORK.
11. ALL DITCHES SHALL BE GRADED TO PROPOSED ELEVATIONS TO INSURE PROPER DRAINAGE. ALL OUTFALLS SHALL BE PROPERLY BACKFILLED AND COMPACTED. ALL DISTURBED AREA SHALL BE REGRADED, SEEDED, AND FERTILIZED.
12. ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLET STRUCTURES.

WATERLINE NOTES:

1. WATERLINES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL, STANDARD SPECIFICATION AND CONSTRUCTION DETAILS.

GRADING NOTES:

1. GENERAL CONTRACTOR AND ALL SUBCONTRACTORS SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE STARTING CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.
2. BEFORE STARTING CONSTRUCTION, CONTRACTOR SHALL VERIFY BENCHMARK ELEVATION AND NOTIFY ENGINEER IF ANY DISCREPANCY AND/OR CONFLICT IS FOUND.
3. CONTRACTOR SHALL ENSURE THERE IS POSITIVE DRAINAGE FROM THE PROPOSED BUILDINGS AND NO PONDING IN PAVED AREAS, AND SHALL NOTIFY ENGINEER IF ANY GRADING DISCREPANCIES ARE FOUND IN THE EXISTING AND PROPOSED GRADES PRIOR TO PLACEMENT OF PAVEMENT OR UTILITIES.
4. CONTRACTOR SHALL PROTECT ALL MANHOLE COVERS, VALVE COVERS, VAULT LIDS, FIRE HYDRANTS, POWER POLES, GUY WIRES, AND TELEPHONE BOXES THAT ARE TO REMAIN IN PLACE AND UNDISTURBED DURING CONSTRUCTION.
5. ALL EXISTING CONCRETE PAVING, SIDEWALK, AND CURB DEMOLITION SHALL BE REMOVED AND DISPOSED OF BY CONTRACTOR. DISPOSAL SHALL BE AT AN APPROVED OFF-SITE, LAWFUL LOCATION, UNLESS DIRECTED OTHERWISE BY THE OWNER.

SWPPP 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.

NO.	DATE	REVISION	APP.

DCCM

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GENERAL NOTES

(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 3 OF 298 G-3	

PRIVATE UTILITY NOTES:

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 ANY AND 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) 613-1983 OR EMAIL HIM AT KR7896@ATT.COM, IF THERE ARE QUESTIONS ABOUT BORING OR EXCAVATING NEAR OUR AT&T TEXAS/SWBT FACILITIES.

CENTERPOINT ENERGY NOTES:

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.
   - -WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL 713-945-8036 OR 713-945-8037 (7:00 AM TO 4:30 PM) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.
   - -WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
   - -WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
   - -FOR EMERGENCIES REGARDING GAS LINES CALL 713-659-3552 OR 713-207-4200
2. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

WARNING: OVERHEAD ELECTRICAL LINES:

1. 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. TEXAS LAW, SECTION 752, HEALTH & SAFETY CODE FORBIDS ACTIVITIES THAT OCCUR IN CLOSE PROXIMITY TO HIGH VOLTAGE LINES, SPECIFICALLY:
   - -ANY ACTIVITY WHERE PERSONS OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES; AND
   - -OPERATING A CRANE, DERRICK, POWER SHOVEL, DRILLING RIG, PILE DRIVER, HOISTING EQUIPMENT, OR SIMILAR APPARATUS WITHIN 10 FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES.
2. PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS, 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

1. NO APPROVAL TO USE, CROSS, OR OCCUPY NO 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

STANDARD NOTES FOR CONSTRUCTION DRAWINGS (HCFCD):

1. OBTAIN AND COMPLY WITH ALL APPLICABLE CITY, COUNTY, STATE, AND FEDERAL PERMITS AND APPROVALS, WITH ASSISTANCE FROM ENGINEER, IF NECESSARY. OBTAIN PERMIT (CERTIFICATION) FROM HARRIS COUNTY ENGINEER TO ENTER HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY.
2. NOTIFY THE HARRIS COUNTY FLOOD CONTROL DISTRICT'S PROPERTY MANAGEMENT DEPARTMENT IN WRITING AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. SUBMIT THE HCFCD 48 HOUR PRE-CONSTRUCTION NOTIFICATION FORM, A COPY OF THE APPROVED CONSTRUCTION DRAWINGS, AND A COPY OF THE CORPS OF ENGINEERS INDIVIDUAL SECTION 404 PERMIT, IF APPLICABLE, TO HCFCD, 9900 NORTHWEST FREEWAY, HOUSTON, TEXAS 77092, ATTN: PROPERTY MANAGEMENT DEPT. BY HAND DELIVERY, OR FAX TO 713-684-4129 (FAX NUMBER).
3. ENGINEER SHALL SUBMIT CERTIFICATION LETTER AND RECORD DRAWINGS TO THE HARRIS COUNTY FLOOD CONTROL DISTRICT'S PROPERTY MANAGEMENT DEPARTMENT REQUESTING INSPECTION OF ITEMS CONSTRUCTED IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. PRIOR TO REQUESTING INSPECTION, THE DRAINAGE RIGHT-OF-WAY AND/OR EASEMENTS SHALL BE STAKED AND FLAGGED.
4. PROTECT, MAINTAIN, AND RESTORE EXISTING BACKSLOPE DRAINAGE SYSTEMS.
5. BACKSLOPE SWALE AND INTERCEPTOR STRUCTURE ELEVATIONS AND LOCATIONS SHOWN ON PLANS ARE APPROXIMATE. FINAL ELEVATIONS AND LOCATIONS SHALL BE FIELD VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
6. ESTABLISH TURF GRASS ON ALL DISTURBED AREAS WITHIN THE CHANNEL OR DETENTION RIGHT-OF-WAY, EXCEPT THE CHANNEL BOTTOM AND WHERE STRUCTURAL EROSION MEASURES ARE USED. MINIMUM ACCEPTANCE CRITERIA ARE 75% COVERAGE OF LIVE BERMUDA GRASS AND NO EROSION OR RILLS DEEPER THAN 4".
7. BACKFILL IN ACCORDANCE WITH THE HARRIS COUNTY FLOOD CONTROL DISTRICT STANDARD SPECIFICATION, SECTION 02315 – EXCAVATING AND BACKFILLING, OR EQUIVALENT.
8. EXCAVATE CHANNEL FLOWLINE TO DESIGN ELEVATION AS SHOWN ON PLANS AND DOWNSTREAM, AS NECESSARY, TO ENSURE NO WATER REMAINS IN THE FACILITY (STORM SEWER, LATERAL CHANNEL, OR DRY BOTTOM DETENTION BASIN) DURING NORMAL WATER SURFACE CONDITIONS IN THE CHANNEL, SO THE FACILITY WILL FUNCTION AS INTENDED. FOR WET BOTTOM DETENTION BASINS, ENSURE NO WATER IS ABOVE THE DESIGN LEVEL IN THE WET BOTTOM DURING NORMAL WATER SURFACE CONDITIONS IN THE CHANNEL.
9. MAINTAIN FLOW IN CHANNEL DURING CONSTRUCTION AND RESTORE CHANNEL TO ORIGINAL CONDITION.
10. REMOVE ALL EXCAVATED MATERIAL FROM THE HARRIS COUNTY FLOOD CONTROL DISTRICT OR DRAINAGE RIGHT-OF-WAY. NO FILL IS TO BE PLACED WITHIN A DESIGNATED FLOOD PLAIN AREA WITHOUT FIRST OBTAINING A FILL PERMIT FROM THE APPROPRIATE JURISDICTIONAL AUTHORITY.

GENERAL NOTES – METRO:

1. CONTRACTOR SHALL NOTIFY METRO AT 713-615-6195 TWO WEEKS PRIOR TO DISTURBING EXISTING BUS STOPS.

1. CONTRACTOR SHALL COORDINATE WITH METRO TO REMOVE EXISTING AMENITIES.
2. BUS STOPS SHALL CONSTRUCTED PER CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL AND MEET CURRENT ADA REQUIREMENTS

NO.	DATE	REVISION	APP.

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SURVEYED BY: LANDTECH, INC.
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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GENERAL NOTES

(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 4 OF 298	G-4

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PLOT STYLE: COH.ctb
FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.03_Drawings\24-1930-PD-NOTES-GEN.dwg

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CITY OF HOUSTON PUBLIC WORKS
TRAFFIC CONSTRUCTION NOTES

1. CONTRACTOR OR OWNER SHALL SUBMIT TRAFFIC CONTROL PLANS WITH THE MOBILITY PERMIT APPLICATION. THE PLANS SHALL BE DRAWN TO SCALE AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS.

2. THE GENERAL NOTES THAT SHALL BE INCLUDED ON THE TRAFFIC CONTROL PLAN CAN BE FOUND IN CHAPTER 15 (15.12 TRAFFIC CONTROL PLAN) OF THE CITY OF HOUSTON'S (CITY) INFRASTRUCTURE DESIGN MANUAL (IDM). BELOW ARE SEVERAL KEY NOTES FROM THE IDM TO BE AWARE OF:

3. 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.

4. NO WORK SHALL BE PERFORMED IN RESIDENTIAL AREAS FROM 7:00PM TO 7:00AM.

5. CONTRACTOR SHALL MAINTAIN APPROVED NUMBER OF 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 COMPLAINT PEDESTRIAN ACCESS TO BUS STOPS AND ADEQUATE BUS ACCESS TO THE BUS STOP.

6. CONTRACTOR SHALL COVER OPEN PAVEMENT EXCAVATIONS FOR MINOR UTILITY WORK WITH ANCHORED STEEL PLATES DURING NON-WORKING HOURS, OPEN LANES FOR NORMAL TRAFFIC FLOW WHEN FEASIBLE.

7. CONTRACTOR SHALL SECURE ROADWAY/SIDEWALK/STREET/BICYCLE FACILITY PERMITS AS DESCRIBED IN CITY OF HOUSTON ORDINANCE, CHAPTER 40 – STREETS & SIDEWALKS, SECTION 40-361 FROM HOUSTON PERMITTING CENTER (MOBILITY PERMIT SECTION AT HTTPS://GEOHUB.HOUSTONTX.GOV) BEFORE IMPLEMENTING THE TRAFFIC CONTROL PLAN. THE APPLICATION MUST BE SUBMITTED AT LEAST TEN BUSINESS 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.

8. CONTRACTOR SHALL HAVE APPROVED TRAFFIC CONTROL PLAN AND PERMIT AT THE JOB SITE FOR INSPECTION AT ALL TIMES

9. 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 DRIVEWAY, UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM THE CITY OF HOUSTON.

10. ADDITIONAL OFF DUTY POLICE OFFICERS/FLAGGERS MAY BE REQUESTED TO DIRECT TRAFFIC WHEN LANES ARE BLOCKED AT THE DIRECTION OF THE CITY EVEN IF THEY ARE NOT SPECIFICALLY IDENTIFIED ON THE PROJECT PLANS.

CITY OF HOUSTON PUBLIC WORKS
STREET & BRIDGE CONSTRUCTION NOTES

1. FILL AREAS ON PLANS SHALL BE FILLED IN LAYERS NOT EXCEEDING 8•• IN DEPTH AND EACH COMPACTED TO NOT LESS THAN 95% STANDARD PROCTOR DENSITY PRIOR TO INSTALLATION OF WATER LINE AND FILL AREA SHALL BE SEEDED AND FERTILIZED WITHIN 10 WORKING DAYS.

2. UTILITY CONTRACTOR SHALL PROVIDE TEMPORARY SILT BARRIER FENCE ON ALL NON-CURBED INLETS WHICH WILL REMAIN IN PLACE AFTER UNDERGROUND CONTRACT IS COMPLETE.

3. CONTRACTOR SHALL PROVIDE SILT BARRIER FENCE ON ALL STAGE 1 CURB INLETS.

4. EXISTING PAVEMENTS, CURBS, DRIVEWAYS, AND SIDEWALKS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO CITY OF HOUSTON STANDARDS, WITH LATEST ADDENDA AND AMENDMENTS THERETO.

5. CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY UPON COMPLETION OF JOB SHALL BE AS GOOD AS OR BETTER THAN PRIOR TO STARTING WORK.

6. EXPOSED 15•• OF REINFORCING STEEL AT PROPOSED SAWED JOINT IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS. HORIZONTAL DOWELS SHALL BE #6 BARS 24•• LONG 24•• C-C DRILLED AND EMBEDDED 8•• INTO THE CENTER OF THE EXISTING SLAB WITH •PO ROC•• OR EQUAL.

7. WHEELCHAIR RAMPS SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF HOUSTON STANDARDS AT ALL INTERSECTIONS WHERE SIDEWALKS EXIST AND THE EXISTING CURB OR SIDEWALK IS DAMAGED OR REMOVED DURING CONSTRUCTION.

8. PRIOR TO STREET CONSTRUCTION, THE CONTRACTOR SHALL CONTACT HOUSTON PUBLIC WORKS AT (PHONE) 832-394-9578 AND COMPLY WITH ALL REQUIREMENTS FOR THE ISSUANCE OF NECESSARY PERMITS/WORK ORDERS FOR STREET CONSTRUCTION.

9. DOUBLE REFLECTORIZED BLUE TRAFFIC MARKERS SHALL BE PLACED 6-INCHES OFFSET OF THE CENTERLINE OF ALL FIRE HYDRANT LOCATIONS BY THE PAVING CONTRACTOR. HYDRANTS LOCATED AT INTERSECTIONS SHALL HAVE A BUTTON PLACED ON EACH STREET.

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STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED
PROFESSIONAL ENGINEER

02/20/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
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CIVIL CONSTRUCTION NOTES
STORM, TRAFFIC & SWPPP

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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 5 OF 298	G-5

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GENERAL CONSTRUCTION NOTES:

1. THE LOCATIONS OF EXISTING UNDERGROUND FACILITIES AND UTILITIES (INCLUDING BUT NOT LIMITED TO PLANT PIPING, VALVES, AND ELECTRICAL DUCT BANKS) ARE BASED ON CONSTRUCTION PLANS OF PREVIOUS PROJECTS AND ARE NOT GUARANTEED TO BE COMPLETE AND/OR ACCURATE. CONTRACTOR SHALL VERIFY ALL UNDERGROUND FACILITIES/UTILITIES IN THE VICINITY OF PROPOSED WORK. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ANY CONFLICTS PRIOR TO COMMENCING WORK.

2. CONTRACTOR SHALL COMPLY WITH OSHA REGULATIONS AND STATE OF TEXAS LAW FOR TRENCHING AND SHORING AS SPECIFIED IN CITY OF HOUSTON ORDINANCE NO. 87-1457.

3. TO PREPARE AN ACCURATE BID AND CONSTRUCT THE SPECIFIED IMPROVEMENTS, THE CONTRACTOR IS RESPONSIBLE FOR UNDERSTANDING ALL MATERIAL AND METHOD OPTIONS IN THE PROJECT SPECIFICATIONS.

4. EXISTING DRAINAGE SHALL BE MAINTAINED AND POSITIVE SHEET FLOW PROVIDED AT ALL TIMES DURING CONSTRUCTION. ANY DRAINAGE DITCH OR STRUCTURE DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE CONSTRUCTION MANAGER AND CITY.

5. EXISTING PAVEMENTS, CURBS, SIDEWALKS, AND DRIVEWAYS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED USING CITY OF HOUSTON STANDARDS.

6. AT JOB COMPLETION CONDITION OF THE PLANT ACCESS ROAD AND/OR RIGHT-OF-WAY SHALL BE AS GOOD OR BETTER THAN THE CONDITION PRIOR TO WORK START AT NO ADDITIONAL COST TO THE CITY.

7. THE CONTRACTOR IS RESPONSIBLE TO UNDERSTAND THAT THIS PROJECT INCLUDES ELEMENTS OF DEMOLITION, ADAPTATION, AND NEW CONSTRUCTION. THESE DRAWINGS WERE DEVELOPED USING AVAILABLE HISTORICAL DATA COUPLED WITH ON-SITE RECONNAISSANCE SURVEYS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF SITE CONDITIONS PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES. ALL DISCREPANCIES AND DISCOVERIES SHALL BE REPORTED TO THE CONSTRUCTION MANAGER.

8. ALL DISTURBED AREAS SHALL BE HYDROMULCH SEEDED PER SPECIFICATION 02921 – HYDROMULCH SEEDING.

9. ALL EXCAVATION SPOILS SHALL BE LAWFULLY DISPOSED OF OFFSITE BY CONTRACTOR AT NO ADDITIONAL COST TO OWNER.

10. ALL WORK AT SITE WHICH POTENTIALLY COULD INTERFERE WITH NORMAL OPERATIONS AT THE PLANT (AND/OR OFF-SITE FACILITIES) SHALL BE COORDINATED WITH THE PLANT SUPERVISOR. CONTRACTOR SHALL SUBMIT A CONSTRUCTION SEQUENCING PLAN DEMONSTRATING THAT NO PLANT OPERATIONS (OR OFF-SITE FACILITIES) WILL BE ADVERSELY AFFECTED MORE THAN 4 HOURS IN ANY 24 HOUR PERIOD. ALL REQUESTS WHICH IMPACT NORMAL OPERATION OF THE PLANT SHALL BE SUBMITTED A MINIMUM OF 5 DAYS IN ADVANCE OF THE ACTIVITY.

11. ALL DRAWING DIMENSIONS SHOWN ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR. NECESSARY HORIZONTAL AND VERTICAL ALIGNMENT CHANGES SHALL BE APPROVED BY THE CITY.

12. CONTRACTOR SHALL REMOVE ALL TRASH, EXCESS MATERIAL, DEBRIS, ETC., FROM THE SITE AT PROJECT COMPLETION PRIOR TO INSPECTION AND APPROVAL BY APPROVING AGENCIES.

13. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES PRIOR TO START OF CONSTRUCTION ACTIVITY.

14. CONTRACTOR IS RESPONSIBLE FOR HIS OWN HORIZONTAL AND VERTICAL CONTROL, REFERENCE POINTS AND CONSTRUCTION STAKING. THIS WORK IS INCIDENTAL TO THE PROJECT AND SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE CITY.

15. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND RELATED ACCESSORIES TO OPERATE IN THE MANNER INTENDED BY THE ENGINEER AND THE MANUFACTURER AND BE IN COMPLIANCE WITH ALL APPLICABLE CODES AND CONTRACT SPECIFICATIONS. THE CONTRACTOR WILL COORDINATE WORK BETWEEN ALL TRADES AND SUBCONTRACTORS TO PROVIDE A COMPLETE INSTALLATION SO THAT THE EQUIPMENT IS OPERATIONAL AT THE COMPLETION OF THE PROJECT. THE COMPLETED WORK SHALL NOT LACK ANY PART WHICH CAN BE REASONABLY INFERRED AS INCIDENTAL FOR PROPER AND USEFUL OPERATION OF THE FACILITY. THIS INCLUDES ALL ITEMS OF EQUIPMENT, LABOR AND MATERIALS, WHERE SUCH ITEMS ARE REQUIRED TO FULFILL THE INTENT OF THE CONTRACT, AND WILL BE IN ACCORDANCE WITH CODE REQUIREMENTS, STANDARDS, REGULATORY AGENCIES, MANUFACTURER'S RECOMMENDATIONS, AND ACCEPTABLE INDUSTRY PRACTICE. THIS WORK WILL BE DONE AT NO ADDITIONAL COST TO THE CITY.

16. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SHORING, STABILIZATION, AND SUPPORT OF ALL UTILITIES, INCLUDING ELECTRICAL/INSTRUMENTATION DUCT BANKS, AND STRUCTURES DURING CONSTRUCTION. ANY FACILITIES DAMAGED BY THE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE CITY.

17. ELEVATIONS SHOWN ARE BASED ON SURVEY DATA IN NAVD88 (GEOID 18).

18. ALL DIMENSIONS AND QUANTITIES SHALL BE DETERMINED AND/OR VERIFIED BY THE CONTRACTOR.

19. DO NOT SCALE DRAWINGS UNLESS OTHERWISE NOTED. REPORT ANY DISCREPANCIES TO THE CONSTRUCTION MANAGER IMMEDIATELY.

20. THE LOCATION AND LIMITS OF ALL ON-SITE WORK AND STORAGE AREAS SHALL BE REVIEWED/COORDINATED WITH, AND ACCEPTABLE TO, THE CITY OF HOUSTON. THE CONTRACTOR SHALL LIMIT THEIR ACTIVITIES TO THESE AREAS.

21. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE LOCATION AND ACTIVITIES OF HIS FORCES WITH THE CITY OF HOUSTON TO MINIMIZE INTERFERENCE WITH NORMAL OPERATIONS.

22. ALL PIPING SYSTEMS AND EQUIPMENT SHALL BE ADEQUATELY AND SAFELY SUPPORTED. UNDER THE DIRECTION OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS, CONTRACTOR SHALL DESIGN, PROVIDE, AND INSTALL ALL SUPPORTS AS REQUIRED BY THE PIPING AND EQUIPMENT PROVIDED. ALL PIPING SYSTEMS SHALL BE SUPPORTED PER THE REQUIREMENTS OF ANS1/ANSE 831.1 AND MANUFACTURER'S STANDARDIZATION SOCIETY (MSS) SP-58 AND MSS SP-69. SUPPORT DESIGN SHALL ACCOMMODATE ALL STATIC AND OPERATIONAL CONDITIONS TO WHICH THE PIPING AND EQUIPMENT MAY BE SUBJECTED.

23. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING SITE CONSTRUCTION STORM WATER POLLUTION PREVENTION PLANS (SWPPPs) IN ACCORDANCE WITH TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM (TPDES) CONSTRUCTION GENERAL PERMIT NUMBER 150000 ISSUED MARCH 5, 2013 (THE CONSTRUCTION GENERAL PERMIT) AND SPECIFICATION SECTION – 01570 STORM WATER POLLUTION PREVENTION CONTROL.

24. SPECIFICATION 01110 – SCOPE OF WORK PROVIDES A SUMMARY OF WORK TO BE COMPLETED AND ADDITIONAL INFORMATION ON CONSTRUCTION SEQUENCE.

25. DRAIN LINES SHALL HAVE CLEANOUTS AFTER EACH BEND.

26. THE BOTTOM OF ALL J-BOXES AND CONTROL PANELS MUST BE SET AT AN ELEVATION GREATER THAN DESIGN HIGH-FLOOD ELEVATION FOR EACH SITE. ANYTHING BELOW THAT MUST BE RATED FOR SUBMERSIBLE INSTALLATION.

27. THERE MUST BE A 4-FOOT MINIMUM OPEN CLEARANCE IN FRONT OF CONTROL PANEL DOORS/ACCESS UNLESS CODE REQUIRES MORE CLEARANCE.

GENERAL DEMOLITION NOTES:

1. THE CITY SHALL HAVE THE FIRST RIGHT OF REFUSAL TO RETAIN OR SALVAGE ALL ITEMS SHOWN TO BE DEMOLISHED AND/OR REMOVED, INCLUDING, BUT NOT LIMITED TO, PUMPS, HATCHES AND ELECTRICAL AND INSTRUMENTATION COMPONENTS. PRIOR TO INITIATING DEMOLITION WORK, THE CONTRACTOR AND CITY ENGINEER SHALL MAKE A JOINT INSPECTION OF EACH SITE TO IDENTIFY ALL EQUIPMENT TO BE RETAINED BY THE CITY FOR SALVAGE OR REUSE. ITEMS IDENTIFIED FOR SALVAGE BY THE CITY SHALL BE CAREFULLY REMOVED TO PROTECT FROM DAMAGE. ALL OTHER ITEMS SHOWN TO BE DEMOLISHED/REMOVED THAT ARE NOT RETAINED BY THE CITY SHALL BE PROPERLY REMOVED FROM THE SITE AND HANDLED PER SECTION 02220 FACILITIES DEMOLITION AT NO ADDITIONAL COST TO THE CITY. CONTACT RICHARD BELLINGER AT 832-395-3535 FOR LIFT STATION NORTH OF BUFFALO BAYOU AND TOMAS MARTINEZ AT 832-395-5146 (OFFICE) OR 713-870-9578 (CELL) FOR WWTP SALVAGE AT LEAST 72 HOURS PRIOR TO DEMOLITION IN ORDER TO COORDINATE REMOVAL OF ANY ITEMS THE CITY WISHES TO CLAIM AS SALVAGE. THE CONTRACTOR SHALL DELIVER ALL SALVAGED ITEMS TO A LOCATION, WITHIN THE CITY, DETERMINED BY THE CITY.

2. SUBMIT CONSTRUCTION SEQUENCING PLAN BEFORE STARTING ANY DEMOLITION ACTIVITIES. CONTRACTOR'S METHODS OF DEMOLITION SHALL BE APPROVED BY CONSTRUCTION MANAGER PRIOR TO START OF WORK. REFER TO SECTION 01110 FOR ADDITIONAL INFORMATION ON CONSTRUCTION SEQUENCE.

3. DEMOLITION OF EXISTING STRUCTURES, MECHANICAL SYSTEMS, OR PROCESS SYSTEMS IS GENERALLY SHOWN OR INDICATED ON THE DRAWINGS. UNLESS OTHERWISE INDICATED, THE DEMOLITION OF A STRUCTURE OR PROCESS SYSTEM MEANS THE DEMOLITION, REMOVAL, PROPER CLEANING, AND DISPOSAL OF THE ENTIRE UNIT, INCLUDING SUBSTRUCTURE, SUPERSTRUCTURE, AND APPURTENANCES OR CONTENTS OF THE STRUCTURE OR EQUIPMENT SYSTEM. PROCESS MECHANICAL DEMOLITION IN GENERAL SHALL CONSIST OF DISMANTLING, CLEANING, AND REMOVAL OF EXISTING PIPING, TANKS, BLOWERS, PUMPS, MOTORS, CONTROLS, DUCTWORK, EQUIPMENT, SUPPORT BRACKETS, ANCILLARY DEVICES, AND OTHER APPURTENANCES AS INDICATED IN THE CONTRACT DOCUMENTS, OR REQUIRED FOR THE COMPLETION OF WORK.

4. DEMOLITION OR REMOVAL OF NOTED EQUIPMENT, PIPING, SYSTEMS, AND APPURTENANCES SHALL INCLUDE ALL SUPPORTS, BOLTS, AND STRUCTURAL COMPONENTS. EMBEDDED BOLTS AND METAL INSERT PLATES SHALL BE CUT AND GROUND SMOOTH TO THE WALL/FLOOR PLANE.

5. PATCH AND REPAIR WITH MORTAR OR GROUT ALL EXPOSED FLOOR AND WALL PENETRATIONS FROM DEMOLITION ACTIVITIES IN ACCORDANCE WITH SPECIFICATION 03931 – CONCRETE REPAIR AND REHABILITATION.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PENETRATIONS FOR PASSAGE OF PIPING THROUGH SOLID CONCRETE WALLS, FLOORS, OR FOUNDATION WALLS.

7. REUSED EXISTING PIPING SYSTEMS SHALL BE PROPERLY CLEANED AND INSPECTED PRIOR TO REUSE.

8. ALL EQUIPMENT SHALL BE DE-ENERGIZED AND MADE SAFE PRIOR TO DEMOLITION WORK IN ACCORDANCE WITH SPECIFICATION 16060 – ELECTRICAL DEMOLITION USING LOCK OUT/TAG OUT SAFETY PROCEDURES. THE CONTRACTOR SHALL COORDINATE WITH CENTER POINT ENERGY TO DISCONNECT THE ELECTRICAL POWER.

9. REFER TO CIVIL, STRUCTURAL AND ELECTRICAL SHEETS FOR ADDITIONAL DEMOLITION INFORMATION.

10. THE EXISTING WET WELL SHALL BE CLEANED OF ALL DEBRIS, WASTEWATER AND OTHER RESIDUES.

11. THE CONTRACTOR SHALL DISPOSE OF ANY LIQUID OR SOLID WASTE FOUND IN THE WET WELL AT A DISPOSAL FACILITY LICENSED AND APPROVED BY THE STATE OF TEXAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF TRANSPORTATION, DISPOSAL AND TESTING REQUIRED BY STATE AND FEDERAL REGULATORY AGENCIES, AND BY THE DISPOSAL FACILITY.

12. YARD PIPING THAT IS TO BE DEMOLISHED AND THAT IS NOT DESIGNATED TO BE REMOVED SHALL BE ABANDONED-IN-PLACE PER SECTION 02222.

13. CONTRACTOR SHALL PROTECT EXISTING MONORAIL AND MONORAIL SUPPORT SYSTEMS FROM DAMAGE.

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TBPE Reg. No. F-14240

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PARDHA NAMUDURI, P.E.
#82977
FEBRUARY 2026
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CITY OF HOUSTON
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STRUCTURAL GENERAL NOTES

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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
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GENERAL NOTES FOR SUPERSTRUCTURE:

1. ANALYSIS AND DESIGN FOR REINFORCED CONCRETE WATER RETAINING STRUCTURES IS IN ACCORDANCE WITH THE ACI 350 CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING. OTHER STRUCTURES ARE IN ACCORDANCE WITH ACI–318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE.

2. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE COMPRESSIVE STRENGTH (f'c) AT 28 DAYS SHALL NOT BE LESS THAN THE FOLLOWING.
   - 2.1. STRUCTURAL BEAMS, COLUMNS AND SLABS.....4000 PSI
   - 2.2. NON–SHRINK GROUT.....5000 PSI
   - 2.3. PRECAST CONCRETE .....MINIMUM 6000 PSI
   - 2.4. UNLESS OTHERWISE NOTED ON DRAWINGS, STEEL REINFORCING BARS SHALL BE GRADE 60 WITH A MINIMUM Fy=6000 PSI.
   - 2.5. CLASS–B/CLASS–II CONCRETE REFERS TO LEAN MIX CONCRETE FOR SHAPING THE FLOOR PROFILE (f'c ≤ 500 PSI).

3. REFER TO STRUCTURAL STANDARD DRAWING S1 FOR REINFORCING BARS DEVELOPMENT LENGTH AND LAPPED SPLICE LENGTH.

4. MINIMUM CONCRETE COVER

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

* SLABS AND JOISTS:
   TOP AND BOTTOM BARS FOR DRY CONDITIONS:
   #14 AND #18 BARS.....$1\frac{1}{2}$"
   #11BARS AND SMALLER.....$\frac{3}{4}$"
   FORMED CONCRETE SURFACES EXPOSED TO EARTH, WATER OR WEATHER, & OVER OR IN CONTACT WITH SEWAGE & FOR BOTTOMS BEARING ON WORK MAT OR SLABS SUPPORTING EARTH COVER:
   #5 BARS AND SMALLER.....$1\frac{1}{2}$"
   #6 THROUGH #18 BARS.....2"

* BEAMS AND COLUMNS:
   FOR DRY CONDITIONS:
   STIRRUPS, SPIRALS,AND TIES.....$1\frac{1}{2}$"
   PRINCIPAL REINFORCEMENT.....2"
   EXPOSED TO EARTH, WATER, SEWAGE, OR WEATHER:
   STIRRUPS AND TIES.....2"
   PRINCIPAL REINFORCEMENT.....$1\frac{1}{2}$"

* WALL:
   FOR DRY CONDITIONS:
   #11 BARS AND SMALLER.....$\frac{3}{4}$"
   #14 AND #18 BARS.....$1\frac{1}{2}$"
   FORMED CONCRETE SURFACES EXPOSED TO EARTH, WATER, SEWAGE, WEATHER, OR IN CONTACT WITH GROUND:
   CIRCULAR TANKS WITH RING TENSION.....2"
   ALL OTHERS.....2"

* FOOTINGS AND BASE SLABS:
   AT FORMED SURFACES & BOTTOMS BEARING ON CONCRETE WORK MAT.....2"
   AT UNFORMED SURFACES AND BOTTOMS IN CONTACT WITH EARTH.....3"
   TOP OF FOOTINGS–SAME AS SLABS
   OVER TOP OF PILES.....2"

5. DESIGN LOADS:
   WALKWAY/PLATFORMS LIVE LOADS.....150 PSF
   SNOW LIVE LOAD.....5 PSF
   WIND LOAD.....40 PSF MIN. (100 MPH WIND SPEED)

6. ALL EXPOSED CORNERS OF CONCRETE SHALL HAVE $\frac{3}{4}$" CHAMFERED EDGES.

7. REINFORCING BARS SPACING INDICATED IN DRAWINGS SHALL BE MEASURED FROM BARS CENTER TO CENTER.

STRUCTURAL STEEL:

1. STRUCTURAL STEEL ROLLED SHAPES, PLATES, AND BARS SHALL CONFORM TO ASTM A572, GRADE 50 STEEL OR ENGINEER APPROVED MATERIALS.

2. STRUCTURAL STEEL TUBING SHALL CONFORM TO ASTM A500, GRADE B MINIMUM YIELD STRENGTH FY=46 KSI STEEL OR ENGINEER APPROVED EQUIVALENT MATERIALS.

3. ELECTRODE FOR FIELD AND SHOP WELDING OF STRUCTURAL STEEL SHALL CONFORM TO AWS STANDARD CLASS E70XX.

4. CONNECTION BOLTS FOR STRUCTURAL STEEL MEMBERS SHALL CONFORM TO ASTM A325 TYPE X BOLT.

5. CONCRETE EMBEDDED ANCHOR BOLTS SHALL CONFORM TO ASTM A307.

6. ALL STRUCTURAL STEEL SHALL BE GALVANIZED UNLESS OTHERWISE NOTED.

7. HEADED ANCHOR STUDS SHALL CONFORM TO ASTM A108 STEEL WITH 50,000 PSI MINIMUM YIELD STRENGTH.

8. STRUCTURAL STEEL DETAILING, FABRICATION AND ERECTION SHALL CONFORM TO THE AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDING–ALLOWABLE STRESS DESIGN" 9TH EDITION.

9. UNLESS OTHERWISE NOTED, GRATING SHALL BE $1\text{–}\frac{1}{2}$" x $\frac{3}{16}$" ALUMINUM BAR GRATING AS MANUFACTURED BY McNICHOLS COMPANY OR ENGINEER'S APPROVED EQUIVALENT. FASTENERS SHALL BE PROVIDED. GRATING FIELD WELD WITH SUPPORT FRAMES IS OPTIONAL TO CONTRACTORS.

10. UNLESS OTHERWISE NOTED, ROOF METAL DECK SHALL BE $1\text{–}\frac{1}{2}$" HEIGHT GALVANIZED STEEL AS MANUFACTURED BY VULCRAFT COMPANY 1.5B TYPE B20 OR EQUIVALENT PRODUCTS APPROVED BY ENGINEER.

11. ALL GRATING SHALL SPAN IN THE SHORT DIRECTION AND SHALL BE A MINIMUM OF $1\frac{1}{2}$"x$\frac{3}{16}$"x$\frac{15}{16}$" O.C. GRATING BARS. MATERIAL OF GRATING SHALL BE AS IN SPECIFICATIONS.

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HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

STRUCTURAL GENERAL NOTES
SITE SPECIFIC

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 7 OF 298	G–7

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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 UNDERGROUND GROUNDING CONDUCTORS SHALL BE BARE TIN-PLATED COPPER, 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.

29. REFER TO SPECIFICATION SECTION 16110 RACEWAYS BOXES ENCLOSURES AND FITTINGS FOR INSTALLATION REQUIREMENTS.

TYPICAL ENCLOSURE TYPES BY AREA

NON-HAZARDOUS AREAS	BOXES & ENCLOSURES 1	3R	4X	4X*	12	
OUTDOOR; GENERAL AREAS		X	X			
OUTDOOR; CHEMICAL AREAS				X		
INDOOR; CHEMICAL ROOM				X		
INDOOR; CONDITIONED SPACE					X	
INDOOR; NON-CONDITIONED SHOP SPACE					X	
INDOOR; NON-CONDITIONED PROCESS AREA			X			
INDOOR, ADMIN BUILDING	X					
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
- 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 BUILDINGS.

*REFER TO DESIGN GUIDE LINE 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 SPECIFICATION SECTION 16060 ELECTRICAL DEMOLITION:

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.

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

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

NO.	DATE	REVISION	APP.

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THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
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DATE: 2/25/2026

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

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GENERAL
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EXISTING PLAN VIEW

- WATER METER
- WATER VALVE (GATE)
- WATER VALVE (BUTTERFLY)
- FIRE HYDRANT/FLUSHING VALVE
- TAPPING SLEEVE & VALVE
- REDUCER (8" × 6")
- ROUND CONNECTION
- SANITARY SEWER CLEANOUT & MANHOLE (CO, SAN, SAN MH)
- STORM SEWER MANHOLE (STM, STM MH)
- STORM SEWER INLETS ('B' 'B–B' 'C' 'C–1' 'C–2' 'C–2A' 'GRATE')
- CULVERT PIPE AND HEADWALL
- TOP OF CURB ELEVATION (TC=XX.XX)
- GUTTER ELEVATION (G=XX.XX)
- TOP OF PAVEMENT ELEVATION (TP=XX.XX)
- CONTOUR LINE (XX.X')
- ROW LINE
- PROPERTY LINE
- LOT LINES
- EASEMENT LINE
- CENTER LINE OF ROW
- TRANSIT LINE
- EDGE OF DITCHES
- CENTER LINE OF DITCHES
- EDGE OF DITCHES
- FENCE LINE, WOOD
- FENCE LINE, CHAIN LINK
- FENCE LINE, BARBED WIRE
- FENCE LINE, HOG WIRE
- EDGE OF CONCRETE
- CURB LINE
- CONCRETE WALK
- EDGE OF ASPHALT
- EDGE OF SHELL OR GRAVEL
- DIMENSION LINE (28", 3–17)
- AERIAL POWER LINE (P)
- UNDERGROUND POWER LINE (UGP)
- GAS LINE (GAS)
- UNKNOWN UNDERGROUND LINE (MISC)
- OIL PIPELINE (IDENTIFY CONDUIT) (DGP)
- UNDERGROUND TELECOMM LINE W/VAULT (UGT)
- AERIAL TELECOMM LINE (T)
- RAILROAD LINE
- WATER LINE (20" (AND SMALLER) WATER (W); 24" (LARGER THAN 20") WATER (LDWL))
- SANITARY SEWER LINE (24" (AND SMALLER) SANITARY SEWER (SAN); 30" (LARGER THAN 24") SANITARY SEWER (SAN))
- STORM SEWER LINE (24" (AND SMALLER) STORM SEWER (STM); 30" (LARGER THAN 24") STORM SEWER (STM))
- SANITARY SEWER FORCE MAIN (FM)
- RECLAIMED WATER LINE (RWL)
- NON–POTABLE WATER LINE (NPW)
- GAS METER (GAS)
- GAS VALVE (GAS)
- PROPANE LINE (PROPANE)
- STEAM LINE (STEAM)
- MISC UNDERGROUND PIPELINE LABLE (A2)

PROPOSED PLAN VIEW

- WATER METER (WM)
- WATER VALVE (GATE) (WV)
- WATER VALVE (BUTTERFLY) (BFWV)
- FIRE HYDRANT/FLUSHING VALVE (FH, WV)
- TAPPING SLEEVE & VALVE (TS&V)
- REDUCER (12" × 8")
- ROUND CONNECTION
- SANITARY SEWER CLEANOUT & MANHOLE (SAN, CO, SAN MH)
- STORM SEWER MANHOLE (STM, STM MH)
- STORM SEWER INLETS ('B' 'B–B' 'C' 'C–1' 'C–2' 'C–2A' 'GRATE')
- CULVERT PIPE AND HEADWALL
- TOP OF CURB ELEVATION (TC=XX.XX)
- GUTTER ELEVATION (G=XX.XX)
- TOP OF PAVEMENT ELEVATION (TP=XX.XX)
- CONTOUR LINE (XX.X')
- ROW LINE
- PROPERTY LINE
- LOT LINES
- EASEMENT LINE
- CENTER LINE OF ROW
- TRANSIT LINE
- EDGE OF DITCHES
- CENTER LINE OF DITCHES
- EDGE OF DITCHES
- FENCE LINE, WOOD
- FENCE LINE, CHAIN LINK
- FENCE LINE, BARBED WIRE
- FENCE LINE, HOG WIRE
- EDGE OF CONCRETE
- CURB LINE
- CONCRETE WALK
- EDGE OF ASPHALT
- EDGE OF SHELL OR GRAVEL
- DIMENSION LINE (28", 3–17)
- AERIAL POWER LINE (P)
- UNDERGROUND POWER LINE (UGP)
- GAS LINE (GAS)
- UNKNOWN UNDERGROUND LINE (MISC)
- OIL PIPELINE (IDENTIFY CONDUIT) (DGP)
- UNDERGROUND TELCOMM LINE W/ VAULT (UGT)
- AERIAL TELECOMM LINE (T)
- RAILROAD LINE
- WATER LINE (20" (AND SMALLER) WATER (W); 24" (LARGER THAN 20") WATER (LDWL))
- SANITARY SEWER LINE (24" (AND SMALLER) SANITARY SEWER (SAN); 30" (LARGER THAN 24") SANITARY SEWER (SAN))
- STORM SEWER LINE (24" (AND SMALLER) STORM SEWER (STM); 30" (LARGER THAN 24") STORM SEWER (STM))
- SANITARY SEWER FORCE MAIN (FM)
- RECLAIMED WATER LINE (RWL)
- NON–POTABLE WATER LINE (NPW)
- GAS METER (GAS)
- GAS VALVE (GAS)
- PROPANE LINE (PROPANE)
- STEAM LINE (STEAM)
- MISC UNDERGROUND PIPELINE LABLE (A2)
- MATCH LINE

EXISTING PLAN VIEW

- PAVING HEADER
- BUILDING, RESIDENTIAL (RES. 1–STORY BR. BLDG.)
- BUILDING, COMMERCIAL (COMM. 1–STORY BR. BLDG.)
- TREE
- HEDGE
- IRON PIPE OR IRON ROD MONUMENT (3/4" IP)
- POINT OF INTERSECTION (PI)
- POINT OF CURVE (PC)
- POINT OF TANGENCY (PT)
- POWER POLE (P)
- POWER POLE W/DOWN GUY (P)

EXISTING PROFILE VIEW

- NORTH OR EAST PROPERTY LINE
- SOUTH OR WEST PROPERTY LINE
- NORTH OR EAST CURB
- SOUTH OR WEST CURB
- NORTH OR EAST DITCH
- SOUTH OR WEST DITCH
- NORTH OR EAST NATURAL GROUND
- SOUTH OR WEST NATURAL GROUND
- NORTH OR EAST CULVERT (CULVERT)
- SOUTH OR WEST CULVERT (CULVERT)
- CENTERLINE OF ROW
- CENTERPOINT ENERGY CONDUIT (UGP, CENTERPOINT ENERGY CONDUIT)
- GAS LINE (GAS)
- WESTERN UNION (DGP, UGT)
- AT&T CONDUIT (UGT)
- WATER LINE (20" (AND SMALLER) WATER (W); 24" (LARGER THAN 20") WATER (W))
- SANITARY SEWER LINE (24" (AND SMALLER) SANITARY SEWER (SAN); 30" (LARGER THAN 24") SANITARY SEWER (SAN))
- STORM SEWER LINE (24" (AND SMALLER) STORM SEWER (STM); 30" (LARGER THAN 24") STORM SEWER (STM))
- SANITARY SEWER FORCE MAIN (FM)
- RECLAIMED WATER LINE (RWL)
- NON–POTABLE WATER LINE (NPW)
- CENTERPOINT ENERGY MANHOLE
- AT&T MANHOLE
- WATER LINE MANHOLE
- SANITARY SEWER MANHOLE & CLEANOUT
- STORM SEWER MANHOLE
- STORM SEWER INLET

PROPOSED PLAN VIEW

- PAVING HEADER
- BUILDING, RESIDENTIAL (RES. 1–STORY BR. BLDG.)
- BUILDING, COMMERCIAL (COMM. 1–STORY BR. BLDG.)
- TREE
- HEDGE
- IRON PIPE OR IRON ROD MONUMENT (3/4" IP)
- POINT OF INTERSECTION (PI)
- POINT OF CURVE (PC)
- POINT OF TANGENCY (PT)
- POWER POLE (P)
- POWER POLE W/DOWN GUY (P)

PROPOSED PROFILE VIEW

- NORTH OR EAST PROPERTY LINE
- SOUTH OR WEST PROPERTY LINE
- NORTH OR EAST CURB
- SOUTH OR WEST CURB
- NORTH OR EAST DITCH
- SOUTH OR WEST DITCH
- NORTH OR EAST NATURAL GROUND
- SOUTH OR WEST NATURAL GROUND
- NORTH OR EAST CULVERT (CULVERT)
- SOUTH OR WEST CULVERT (CULVERT)
- CENTERLINE OF ROW
- CENTERPOINT ENERGY CONDUIT (UGP, CENTERPOINT ENERGY CONDUIT)
- GAS LINE (GAS)
- WESTERN UNION (DGP, UGT)
- AT&T CONDUIT (UGT)
- WATER LINE (20" (AND SMALLER) WATER (W); 24" (LARGER THAN 20") WATER (W))
- SANITARY SEWER LINE (24" (AND SMALLER) SANITARY SEWER (SAN); 30" (LARGER THAN 24") SANITARY SEWER (SAN))
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- RECLAIMED WATER LINE (RWL)
- NON–POTABLE WATER LINE (NPW)
- CENTERPOINT ENERGY MANHOLE
- AT&T MANHOLE
- WATER LINE MANHOLE
- SANITARY SEWER MANHOLE & CLEANOUT
- STORM SEWER MANHOLE
- STORM SEWER INLET

MISC STANDARD ELEMENTS

- COH NORTH ARROW (N)
- COH BAR SCALE (0' 10' 20' 40'; SCALE: 1"=20')
- REVISION CLOUDE/DELTA (1)
- DETAIL/SECTION TITLE (1 VIEW TITLE; SCALE: 1:1)
- SECTION CALLOUT (1 / XX)
- DETAIL CALLOUT (1 / XX)

NO.	DATE	REVISION	APP.

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
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SURVEYED BY: LANDTECH, INC.
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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

LEGENDS AND SYMBOLS

(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 9 OF 298	G–9

ABBREVIATIONS:

&	AND
@	AT
AB	ALL BELL
AC	ACRE / ASBESTOS CEMENT
AI/VR	AIR INLET / VACUUM RELIEF
APPROX	APPROXIMATELY
ASPH	ASPHALT
AVE	AVENUE
℄	BASELINE
B/B	BACK TO BACK
BC	BACK OF CURB
BFV	BUTTERFLY VALVE
BL	BUILDING LINE
BLDG	BUILDING
BLVD	BOULEVARD
℄	CENTER LINE
C/C	CENTER TO CENTER
CGMP	CORRUGATED GALVANIZED METAL PIPE
CMP	CORRUGATED METAL PIPE
CIP	CAST IRON PIPE
CLR	CLEARANCE
CO	CLEAN OUT
COH	CITY OF HOUSTON
CONC	CONCRETE
CONSTR	CONSTRUCTION
CPEE	CENTERPOINT ENERGY ELECTRIC
CPEG	CENTERPOINT ENERGY GAS
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DR	DRIVE
DWG	DRAWING
DWY	DRIVEWAY
E	EAST
EL	ELEVATION
EP	EDGE OF PAVEMENT
E/R	END OF RADIUS
ESMT	EASEMENT
EXST	EXISTING
FC	FACE OF CURB
F/F	FACE TO FACE
FH	FIRE HYDRANT
℄	FLOW LINE
FM	FORCE MAIN
FT	FEET
GPS	GLOBAL POSITIONING SYSTEM
GV	GATE VALVE
GV&B	GATE VALVE AND BOX
HCFCD	HARRIS COUNTY FLOOD CONTROL DISTRICT
HDPE	HIGH-DENSITY POLYETHYLENE
HGL	HYDRAULIC GRADE LINE
HP	HIGH PRESSURE
INV EL	INVERT ELEVATION
IP	INTERMEDIATE PRESSURE
IR	IRON ROD

ABBREVIATIONS:

J-BOX	JUNCTION BOX
JT	JOINT
JUNCT	JUNCTION
LF	LINEAR FEET
LN	LANE
LPT	LOW POINT
LT	LEFT
LS	LIFT STATION
MAX	MAXIMUM
METRO	METROPOLITAN TRANSIT AUTHORITY
MH	MANHOLE
MIN	MINIMUM
MON	MONUMENT
N	NORTH
NA	NOT APPLICABLE
NAVD	NORTH AMERICAN VERTICAL DATUM
NG	NATURAL GROUND
NO	NUMBER
NTS	NOT TO SCALE
OCC	ZERO CURB CUT
OS	OFFSET
OH	OVERHEAD
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVATURE
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
PERM	PERMANENT
PGL	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
PNT	POINT
PPCA	POTENTIALLY PETROLEUM CONTAMINATED AREA
PRC	POINT OF REVERSE
PROP	PROPOSED
PSI	POUND PER SQUARE INCH
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE PIPE / POINT OF VERTICAL CURVATURE
PVMT	PAVEMENT
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY

ABBREVIATIONS:

Ⓡ	RECORD DRAWING
R	RADIUS
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REINF	REINFORCED
REM	REMOVABLE
RJ	RESTRAINED JOINT
ROW	RIGHT OF WAY
RR	RAILROAD
RRPM	REFLECTIVE REMOVABLE PAVEMENT MARKERS
RT	RIGHT
S	SOUTH
SAN	SANITARY
SCHED	SCHEDULE
SF	SQUARE FEET
SHT	SHEET
SSE	SANITARY SEWER EASEMENT
ST	STREET
STA	STATION
STD	STANDARD
STL	STEEL
STM	STORM
SWBT	SOUTHWESTERN BELL TELEPHONE
SWR	SEWER
SY	SQUARE YARD
TAN	TANGENT
TBM	TEMPORARY BENCHMARK
TEMP	TEMPORARY
TOB	TOP OF BANK
TOC	TOP OF CURB
TOP	TOP OF PAVEMENT
TOS	TOP OF STACK
TS&V	TAPPING SLEEVE AND VALVE
TXDOT	TEXAS DEPARTMENT OF TRANSPORTATION
TYP	TYPICAL
UE	UTILITY EASEMENT
UGND	UNDERGROUND
VC	VERTICAL CURVE
VPI	VERTICAL POINT OF INTERSECTION
W	WEST
W/	WITH
WL	WATER LINE
WLE	WATER LINE EASEMENT
WM	WATER METER
WP	WOOD POLE
WSEL	WATER SURFACE ELEVATION
WV	WATER VALVE
WWTP	WASTE WATER TREATMENT PLANT

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LEGENDS AND SYMBOLS

(SHEET 2 OF 2)

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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 10 OF 298 | G-10	

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PLOTTED: 2/23/2026 10:59:44AM
PLOT STYLE: COH.ctb
FILE PATH: C:\Users\...\Drawing24-1930-SUB-ELECTRICAL (GENERAL).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 ✳ 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

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

SYMBOLS	DESCRIPTION
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.

DCCM

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

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GENERAL
ELECTRICAL LEGENDS AND SYMBOLS–I
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
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SHEET NO. 11 OF 298 G–11	

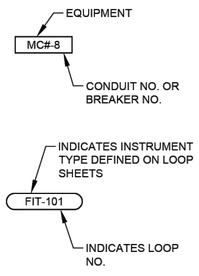
SYMBOLS	DESCRIPTION
LA-3 (A, b)	REFER TO LIGHT FIXTURE SCHEDULE FOR TYPE FIXTURE: "A"- FIXTURE TYPE "b"- CONTROLLED BY SWITCH "b" "LA-3"- CIRCUIT 3 FROM PANEL LA
b, A, LA-3	REFER TO LIGHT FIXTURE SCHEDULE FOR TYPE FIXTURE, NOTATIONS SAME AS ABOVE
A, LA-3 OR LA-3 (A, NS)	INDICATES LIGHT FIXTURES WHICH ARE NONSWITCHED, NOTATIONS SAME AS ABOVE "NS" - NONSWITCHED
LA-3 (A, b)	WALL MOUNTED LIGHTING FIXTURE, NOTATIONS SAME AS ABOVE
LA-3 (A, 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

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.		

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

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
NEC	NATIONAL ELECTRICAL CODE
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
PPU	PERPETUAL POWER UNIT
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

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

NO.	DATE	REVISION	APP.

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DATE: 2/25/2026

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FB NO. 6399

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GENERAL
ELECTRICAL LEGENDS AND SYMBOLS–II
(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 12 OF 298	G-12

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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 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 DIGITAL/ANALOG INSTRUMENT -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

F(X)	
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

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

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GENERAL
INSTRUMENTATION LEGENDS & SYMBOLS–I
(SHEET 1 OF 2)

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DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 13 OF 298	G–13

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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

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GENERAL
INSTRUMENTATION LEGENDS & SYMBOLS–II
(SHEET 2 OF 2)

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MARILENA STOICA, P.E.	
SHEET NO. 14 OF 298	G–14

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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	12	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	120/277V UNIVERSAL DRIVER	LED	70	-	POLE MOUNT	HIGH EFFICIENCY LED UNIT WITH UL LISTED FOR WET LOCATION	LITHONIA LIGHTING D-SERIES SIZE 1 DSX1 LED P2 50K T4M MVOLT RPA DDBXD 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
F	MVOLT (120/277 UNIVERSAL DRIVER)	LED	30	-	STANCHION MOUNT	BODY MOUNTING MODULES AND GUARD-COPPER-FREE AL WITH CORRO-FREE EPOXY POWDER COAT. SUITABLE FOR CLASS I, DIVISION I HAZARDOUS LOCATIONS.	CROUSE-HINDS EV LED J4C701
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

NO.	DATE	REVISION	APP.

DCCM

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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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GENERAL
ELECTRICAL LIGHTING FIXTURE SCHEDULE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 15 OF 298 G-15	

PLOTTED: 2/25/2026 7:29 AM
PLOT STYLE: COH.ctb
FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.02_Reference_Files\24-1930-FLOOD PLAIN MAPS.dwg

National Flood Hazard Layer FIRMette



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; 513000 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

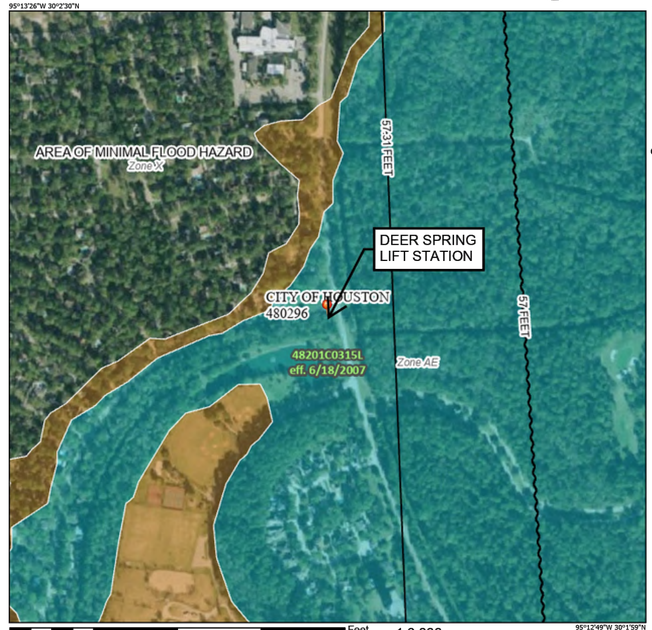
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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 11/25/2024 at 9:47 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.

National Flood Hazard Layer FIRMette



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

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The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/25/2024 at 9:46 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.

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National Flood Hazard Layer FIRMette



Basemap Imagery Source: USGS National Map 2023

Legend

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

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

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The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/25/2024 at 9:45 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.

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NO.	DATE	REVISION	APP.

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TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

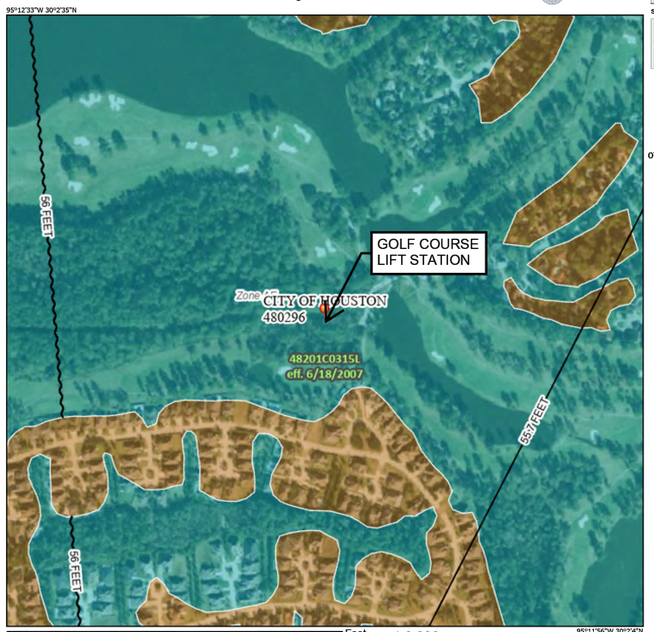
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

FLOODPLAIN MAPS
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 16 OF 298 G-16	

National Flood Hazard Layer FIRMette



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
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- OTHER FEATURES: 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation; Coastal Transect; 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

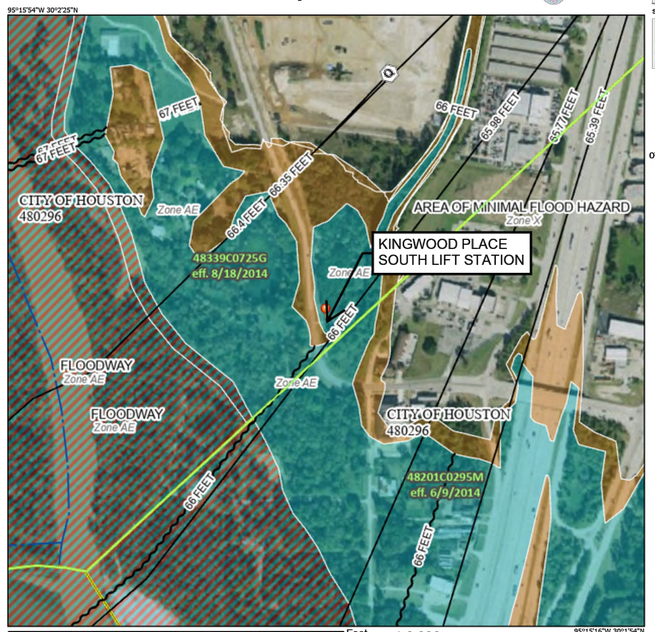
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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 11/25/2024 at 9:48 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.

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National Flood Hazard Layer FIRMette



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
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- 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 11/25/2024 at 9:41 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.

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1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

FLOODPLAIN MAPS
(SHEET 2 OF 2)

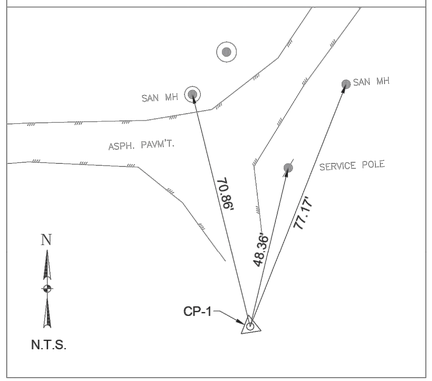
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R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 17 OF 298 G–17	

PLOTTED: 2/25/2026 7:29 AM
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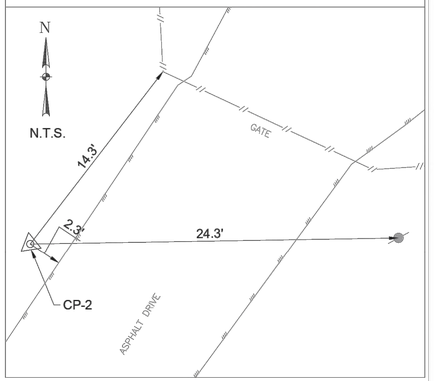
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PLOTTED BY: STMILLER on 2/25/2026 11:20 AM

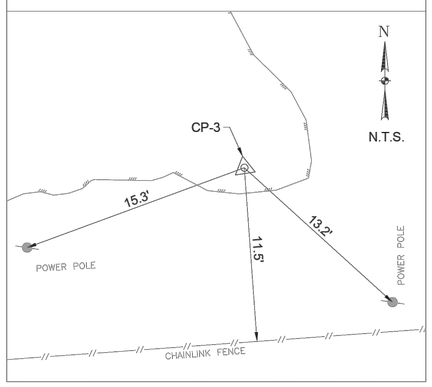
CP-1
SET 3/8" IR W/LANDTECH CAP



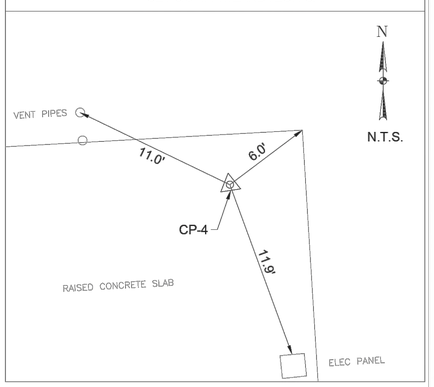
CP-2
SET 3/8" IR W/LANDTECH CAP



CP-3
SET 3/8" IR W/LANDTECH CAP

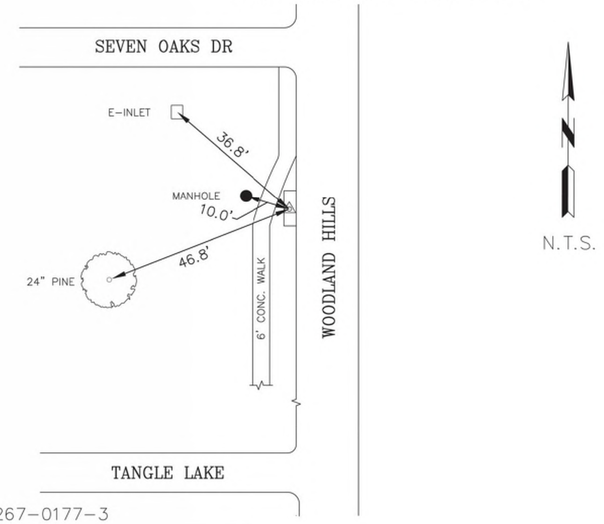


CP-4
SET 3/8" IR W/LANDTECH CAP



CITY OF HOUSTON

CITY SURVEY 5769
7710
SITE CONTROL MONUMENT



Project WBS# R-000267-0177-3

Texas Coordinate System of 1983,
South Central Zone, U. S. Survey Feet

X= 3,164,662.39

Y= 13,944,900.70

Lat.= 30°02'22.609484"N

Lon.= 95°13'08.128877"W

Reference Frame Used: NAD 83 (2011) (EPOCH: 2010)

Vertical Adjustment used: NAVD 88 (2001 ADJ.) (REFERENCED TO HCFCD RM 070250)

General Location: ON A BOX CURB INLET ON THE WEST SIDE OF WOODLAND HILLS DRIVE, APPROX. 140' SOUTH OF 7 OAKS DRIVE.

Date Set: 10-30-2025 Type of Mark: 1

3 Nearest project control points (bearings and distances stated below):

To Control Point # 1 (5/8"IRwLandtech Cap): S 03°50'18" E, 774.47'
To Control Point # 2 (5/8"IRwLandtech Cap): S 10°25'57" E, 748.54'
To Control Point # 3 (5/8"IRwLandtech Cap): N 80°11'21" E, 1,122.67'

NOTE:
1. Bearings are grid bearings.
2. Scale Factor = 1.000
3. Surface= Grid / S.F.

Keymap Page: 336G

Orthometric Elevation = 59.85'

Ellipsoid Height= -30.44'

Geoid: 18

Datum Source & Adjustment: GPS OBSERVED 10-30-2025

Surveyed By: Landtech, Inc.
1315 Sam Houston Pkwy N, Suite 100
Houston, TX 77043
TBPELS Registration No. 10019100

STATE OF TEXAS
REGISTERED
MICHAEL R. G. JOINES
7064
PROFESSIONAL
LAND SURVEYOR

11/14/2025

City of Houston, Harris County, Texas

NO.	DATE	REVISION	APP

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS
REGISTERED
MICHAEL R. G. JOINES
7064
PROFESSIONAL
LAND SURVEYOR
12-17-2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

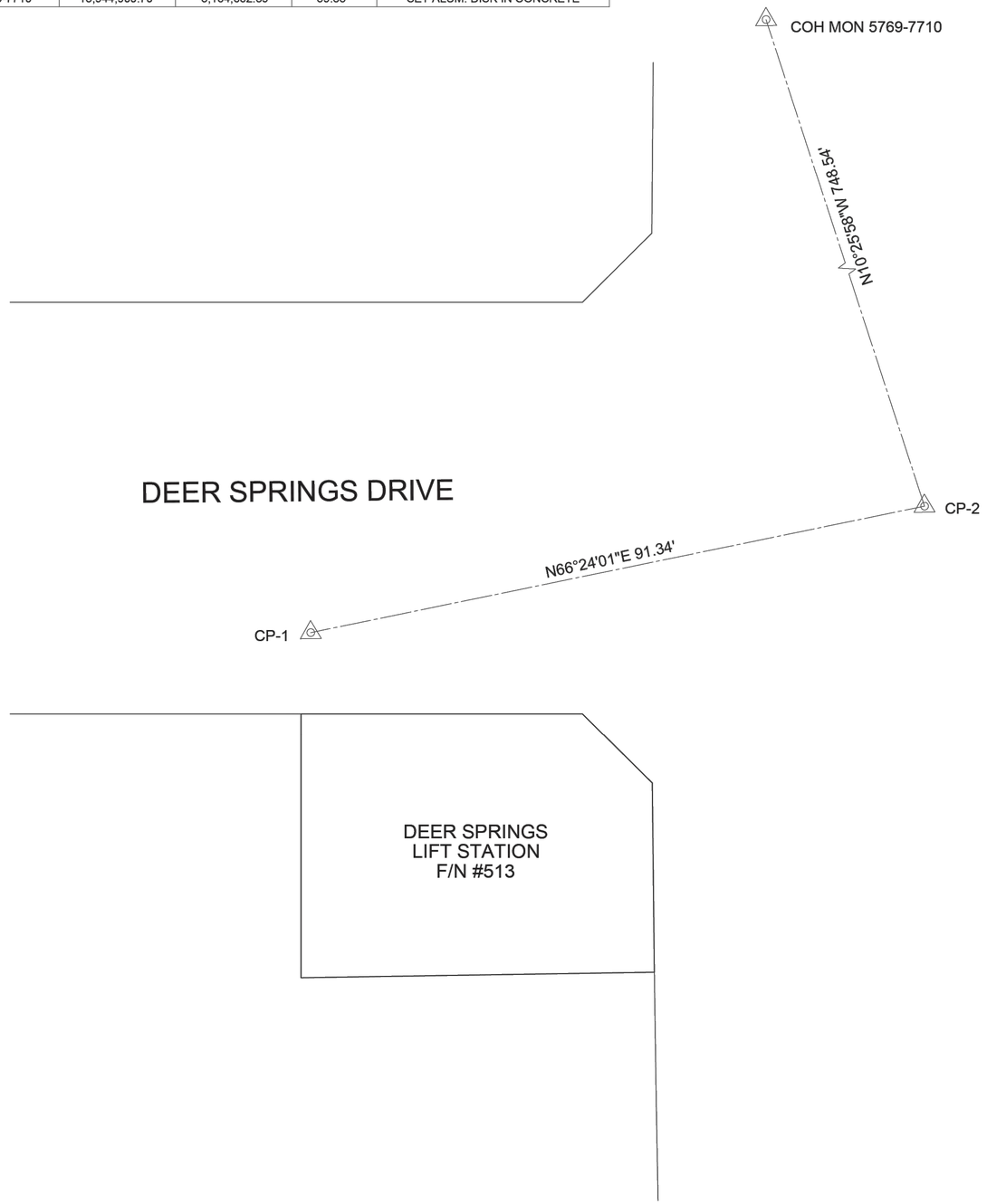
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

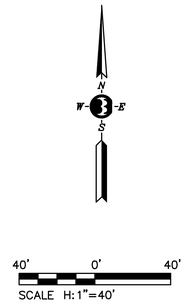
AG FARM LIFT STATION
SURVEY CONTROL MAP

(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 19 OF 298	G-19

POINT	GRID NORTHING	GRID EASTING	ELEVATION	DESCRIPTION
CP-1	13,944,127.97	3,164,714.24	54.63	SET 3/8" IR W/LANDTECH CAP
CP-2	13,944,164.54	3,164,797.94	55.08	SET 3/8" IR W/LANDTECH CAP
COH MON 5769-7710	13,944,900.70	3,164,662.39	59.85	SET ALUM. DISK IN CONCRETE







NOTES:

1) ALL BEARINGS AND COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83). ALL DISTANCES AND COORDINATES SHOWN ARE GRID VALUES IN U.S. SURVEY FEET.

2) ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070255, A FOUND ALUMINUM DISC STAMPED "G 103-36-02.1 BM 01" IN A CULVERT HEADWALL SOUTH OF KINGWOOD DRIVE, APPROXIMATELY 165 FEET WEST OF ITS INTERSECTION WITH SHADY RUN DRIVE.

ELEVATION = 54.15' (NAVD88, 2001 ADJ.)

NO.	DATE	REVISION	APP

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713.869.3433
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STATE OF TEXAS REGISTERED MICHAEL R. G. JOINES 7064 PROFESSIONAL LAND SURVEYOR
12-17-2025

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
SURVEY CONTROL MAP

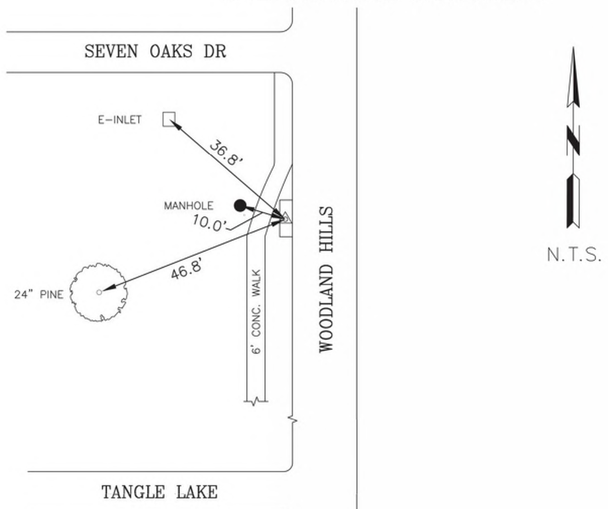
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WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: 1"=1'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 20 OF 298 G-20	

PLOTTED: 2/25/2026 7:30 AM
PLOTTED BY: STM 17008 11:20 AM
FILE PATH: S:\COH\Kingwood\17008\SURVEY\LDD\SHEETS\17008 DEER SPRINGS 2025 COH.dwg

CITY OF HOUSTON

CITY SURVEY 5769 7710
SITE CONTROL MONUMENT



N.T.S.

Project WBS# R-000267-0177-3

Texas Coordinate System of 1983,
South Central Zone, U. S. Survey Feet

X= 3,164,662.39
Y= 13,944,900.70
Lat.= 30°02'22.609484"N
Lon.= 95°13'08.128877"W

Keymap Page: 336G
Orthometric Elevation = 59.85'
Ellipsoid Height= -30.44'
Geoid: 18
Datum Source & Adjustment: GPS OBSERVED 10-30-2025

Reference Frame Used: NAD 83 (2011) (EPOCH: 2010)
Vertical Adjustment used: NAVD 88 (2001 ADJ.) (REFERENCED TO HCFCD RM 070250)
General Location: ON A BOX CURB INLET ON THE WEST SIDE OF WOODLAND HILLS DRIVE, APPROX. 140' SOUTH OF 7 OAKS DRIVE.

Date Set: 10-30-2025 Type of Mark: 1

3 Nearest project control points (bearings and distances stated below):

To Control Point # 1 (5/8"IRwLandtech Cap): S 03°50'18" E, 774.47'
To Control Point # 2 (5/8"IRwLandtech Cap): S 10°25'57" E, 748.54'
To Control Point # 3 (5/8"IRwLandtech Cap): N 80°11'21" E, 1,122.67'

NOTE:
1. Bearings are grid bearings.
2. Scale Factor = 1.000
3. Surface= Grid / S.F.

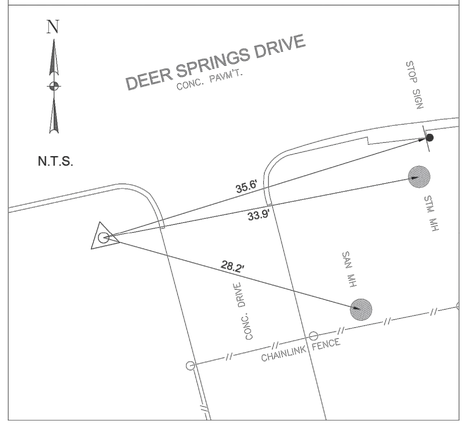
Surveyed By: Landtech, Inc.
1315 Sam Houston Pkwy N, Suite 100
Houston, TX 77043
TBPELS Registration No. 10019100

STATE OF TEXAS REGISTERED MICHAEL R. G. JOINES 7064 PROFESSIONAL LAND SURVEYOR

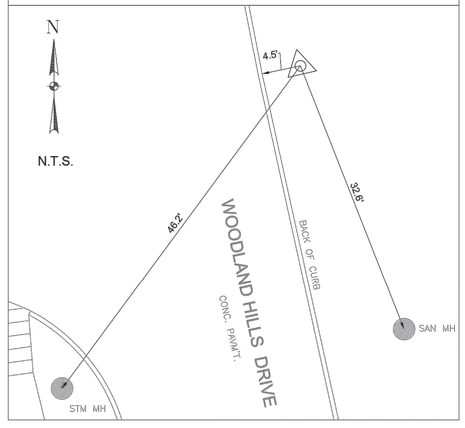
11/14/2025

City of Houston, Harris County, Texas

CP-1
SET 3/8" IR W/LANDTECH CAP



CP-2
SET 3/8" IR W/LANDTECH CAP



NO.	DATE	REVISION	APP

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS REGISTERED MICHAEL R. G. JOINES 7064 PROFESSIONAL LAND SURVEYOR
12-17-2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
SURVEY CONTROL MAP

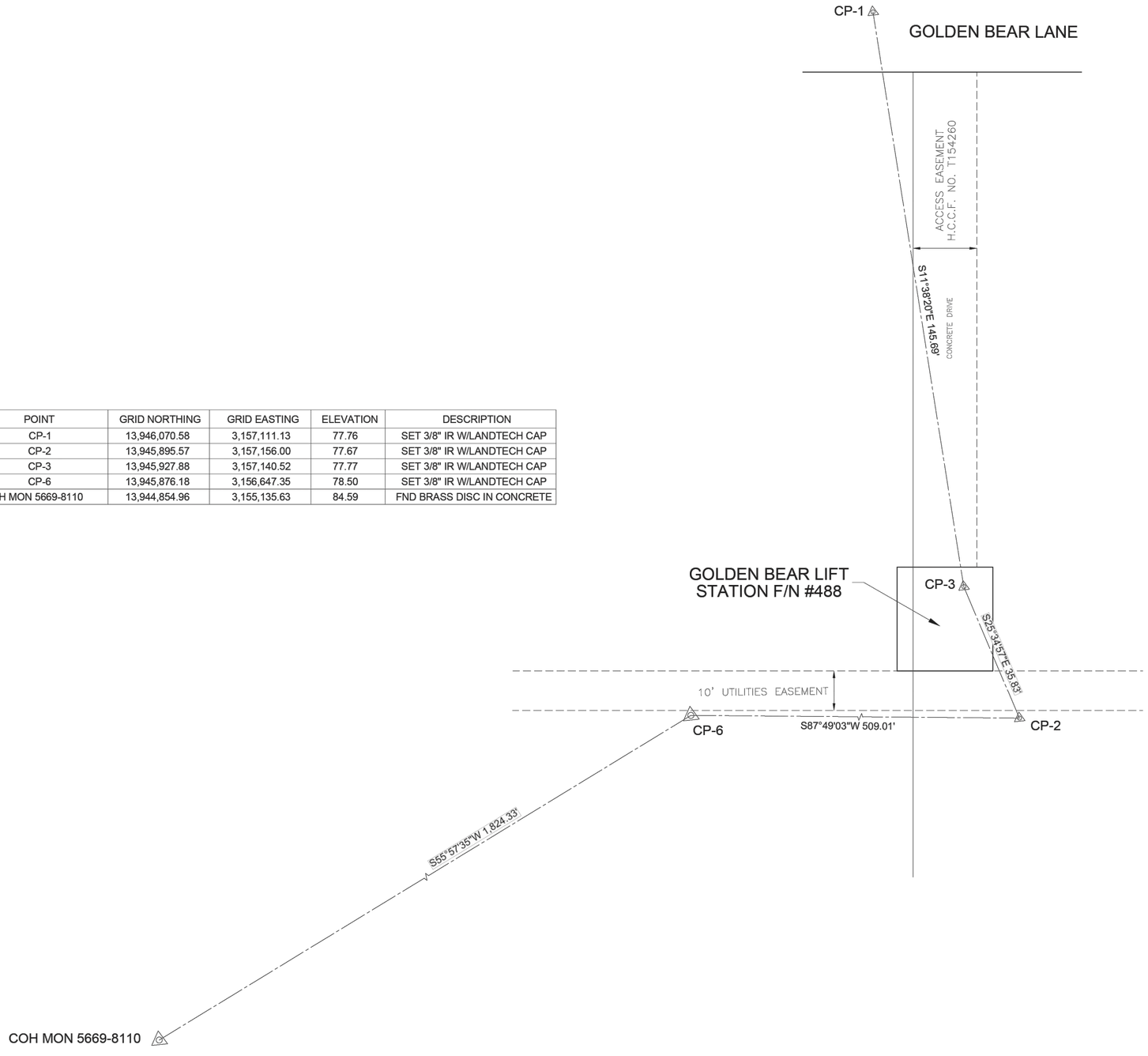
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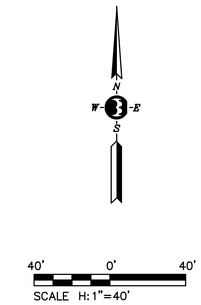
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 21 OF 298 G-21	

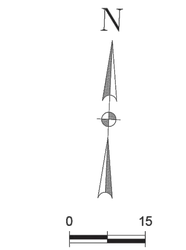
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PLOTTED BY: STYLE: 17.0.0.0.0.ctb 11:20 AM
XREF: 24-1930-BF-SURVEY_LIFT STATION SITE.dwg

POINT	GRID NORTHING	GRID EASTING	ELEVATION	DESCRIPTION
CP-1	13,946,070.58	3,157,111.13	77.76	SET 3/8" IR W/LANDTECH CAP
CP-2	13,945,895.57	3,157,156.00	77.67	SET 3/8" IR W/LANDTECH CAP
CP-3	13,945,927.88	3,157,140.52	77.77	SET 3/8" IR W/LANDTECH CAP
CP-6	13,945,876.18	3,156,647.35	78.50	SET 3/8" IR W/LANDTECH CAP
COH MON 5669-8110	13,944,854.96	3,155,135.63	84.59	FND BRASS DISC IN CONCRETE







NO.	DATE	REVISION	APP

NOTES:

1) ALL BEARINGS AND COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83). ALL DISTANCES SHOWN ARE GRID VALUE IN U.S. SURVEY FEET.

2) ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070265, A FOUND ALUMINUM DISC STAMPED "G 103-38 BM 01" IN THE SOUTH SIDEWALK OF A BRIDGE ALONG KINGWOOD DRIVE, APPROXIMATELY 850 FEET WEST OF ITS INTERSECTION WITH WOODLAND GROVE DRIVE.

ELEVATION = 74.46' (NAVD88, 2001 ADJ.)

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS
REGISTERED
MICHAEL R. G. JOINES
7064
PROFESSIONAL
LAND SURVEYOR
12-17-2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

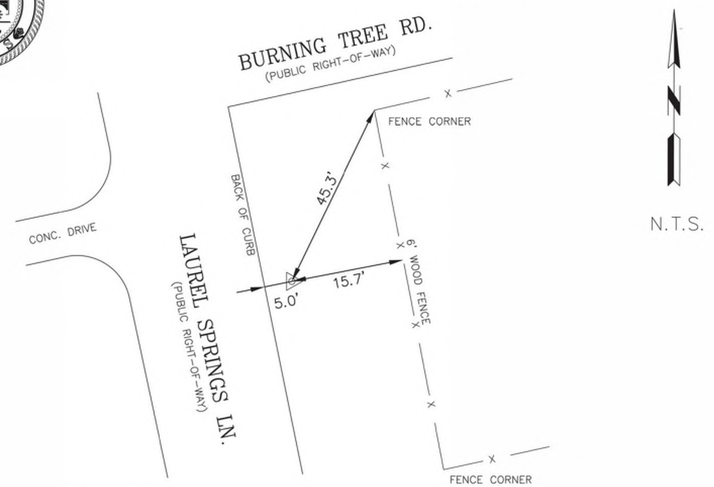
GOLDEN BEAR LIFT STATION SURVEY CONTROL MAP

(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=15' VERT: 1"=2'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 22 OF 298	G-22

CITY OF HOUSTON

CITY SURVEY 5669
SITE CONTROL MONUMENT 8110



Project WBS# R-000267-0177-3

Texas Coordinate System of 1983,
South Central Zone, U. S. Survey Feet

X= 3,155,135.63
Y= 13,944,854.96
Lat.= 30°02'25.1933"N
Lon.= 95°14'56.4819"W

Keymap Page: 336E
Orthometric Elevation = 84.59'
Ellipsoid Height= -5.80'
Geoid: 18
Datum Source & Adjustment: GPS OBSERVED 10-30-2025

Reference Frame Used: NAD 83 (2011) (EPOCH: 2010)
Vertical Adjustment used: NAVD 88 (2001 ADJ.) (REFERENCED TO HCFCD RM 070265)

General Location: LAUREL SPRINGS LANE AT BURNING TREE ROAD

Date Set: 03-12-2020 Type of Mark: BRASS DISC IN CONCRETE

3 Nearest project control points (bearings and distances stated below):

To Control Point # 1 (60D Nail): N 62°25'53" E, 2,244.62
To Control Point # 2 (5/8"IRwLandtech Cap): N 62°44'56" E, 2,272.61'
To Control Point # 3 (5/8"IRwLandtech Cap): N 58°23'39" E, 2,319.56'

NOTE:
1. Bearings are grid bearings.
2. Scale Factor = 1.000
3. Surface= Grid / S.F.

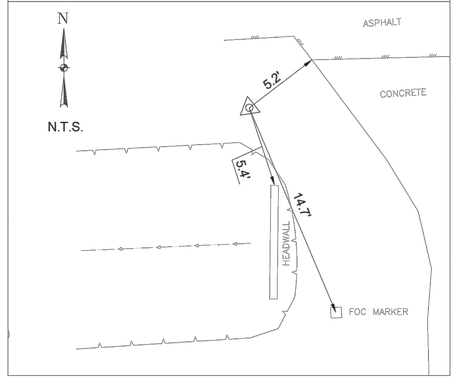
Surveyed By: Landtech, Inc.
1315 Sam Houston Pkwy N, Suite 100
Houston, TX 77043
TBPELS Registration No. 10019100

STATE OF TEXAS · REGISTERED · MICHAEL R. G. JOINES · 7064 · PROFESSIONAL LAND SURVEYOR

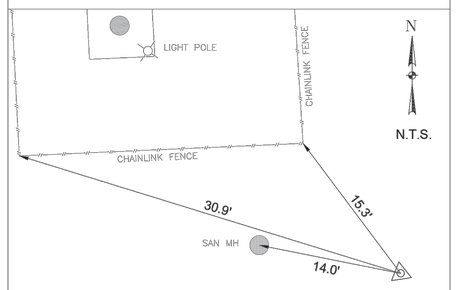
REVISED 11/14/2025

City of Houston, Harris County, Texas

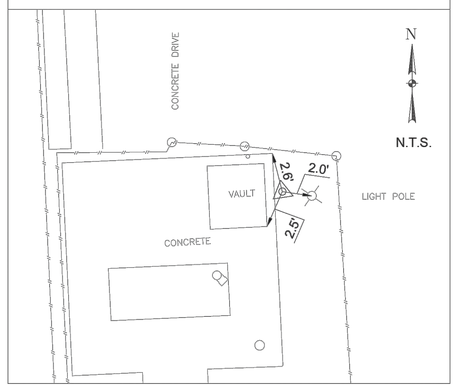
CP-1
SET 3/8" IR W/LANDTECH CAP



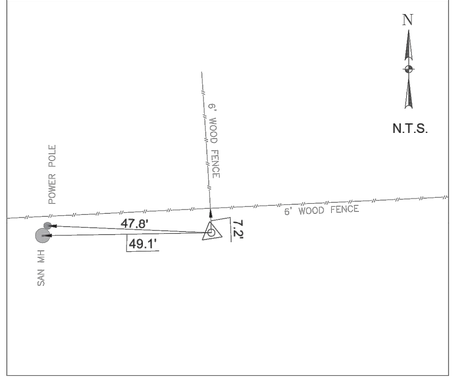
CP-2
SET 3/8" IR W/LANDTECH CAP



CP-3
SET 3/8" IR W/LANDTECH CAP



CP-6
SET 3/8" IR W/LANDTECH CAP



DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS · REGISTERED · MICHAEL R. G. JOINES · 7064 · PROFESSIONAL LAND SURVEYOR
12-17-2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
SURVEY CONTROL MAP

(SHEET 2 OF 2)

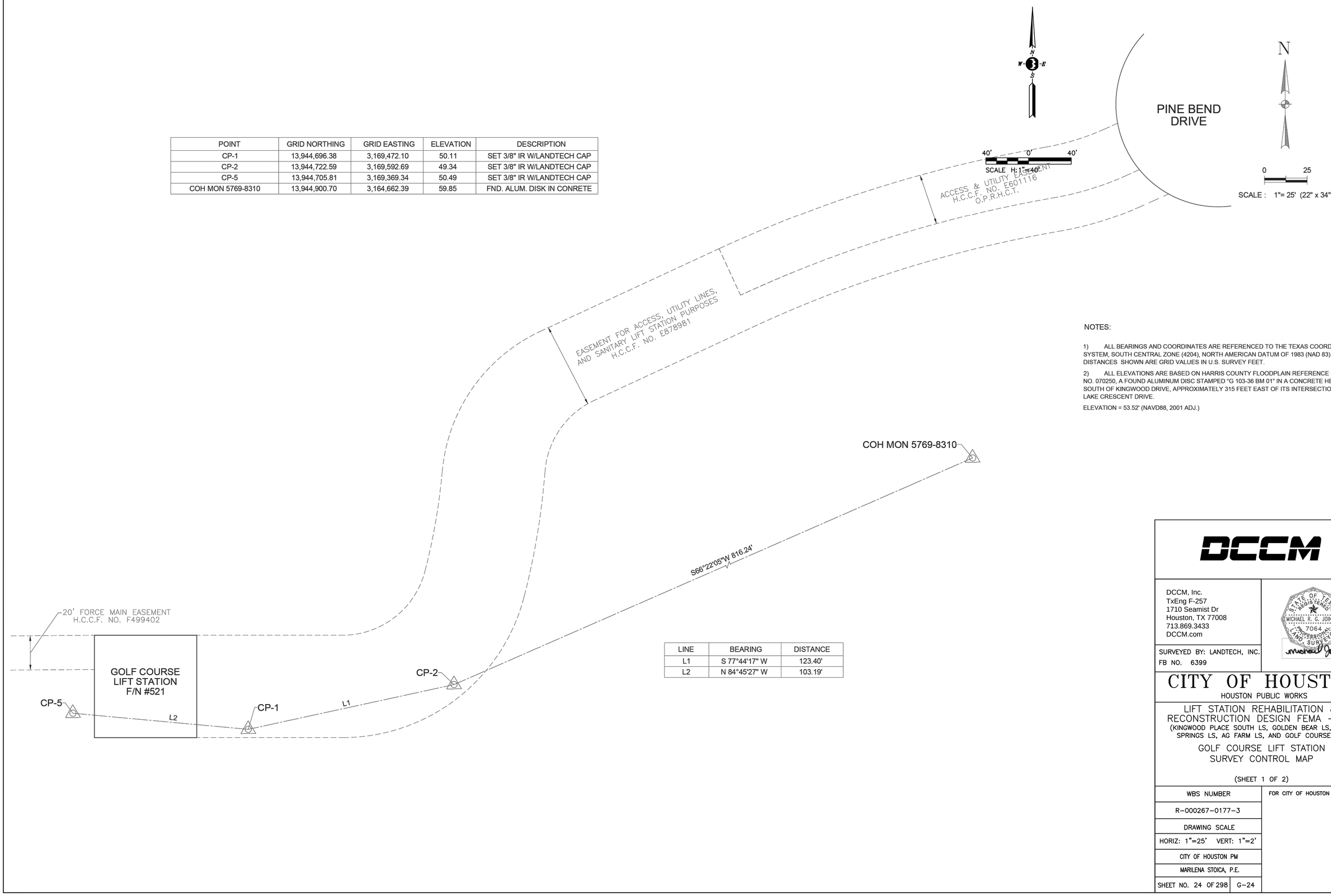
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 23 OF 298 G-23	

NO.	DATE	REVISION	APP

FILE PATH: S:\COB4\Survey\DWG\000193\2000\DGN\H-BEARD 1255-GALVAN STG\Reference_Files\24-1930-BF-SURVEY_LOCATION.dwg) - COH.ctb
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PLOTTED BY: STOICA, MARILENA 11:20 AM

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PLOTTED BY: Marilena Stoica PLOT STYLE TABLE: 17.0.0.0.2.ctb 11:20 AM

POINT	GRID NORTHING	GRID EASTING	ELEVATION	DESCRIPTION
CP-1	13,944,696.38	3,169,472.10	50.11	SET 3/8" IR W/LANDTECH CAP
CP-2	13,944,722.59	3,169,592.69	49.34	SET 3/8" IR W/LANDTECH CAP
CP-5	13,944,705.81	3,169,369.34	50.49	SET 3/8" IR W/LANDTECH CAP
COH MON 5769-8310	13,944,900.70	3,164,662.39	59.85	FND. ALUM. DISK IN CONRETE



LINE	BEARING	DISTANCE
L1	S 77°44'17" W	123.40'
L2	N 84°45'27" W	103.19'

N

0 25

SCALE : 1"= 25' (22" x 34")

NOTES:

1) ALL BEARINGS AND COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83). ALL DISTANCES SHOWN ARE GRID VALUES IN U.S. SURVEY FEET.

2) ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070250, A FOUND ALUMINUM DISC STAMPED "G 103-36 BM 01" IN A CONCRETE HEADWALL SOUTH OF KINGWOOD DRIVE, APPROXIMATELY 315 FEET EAST OF ITS INTERSECTION WITH LAKE CRESCENT DRIVE.

ELEVATION = 53.52' (NAVD88, 2001 ADJ.)

NO.	DATE	REVISION	APP

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

STATE OF TEXAS
REGISTERED
MICHAEL R. G. JONES
7064
PROFESSIONAL
LAND SURVEYOR
12-17-2025

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
SURVEY CONTROL MAP

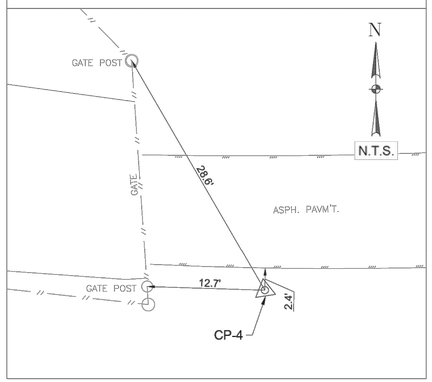
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: 1"=25' VERT: 1"=2'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 24 OF 298	G–24

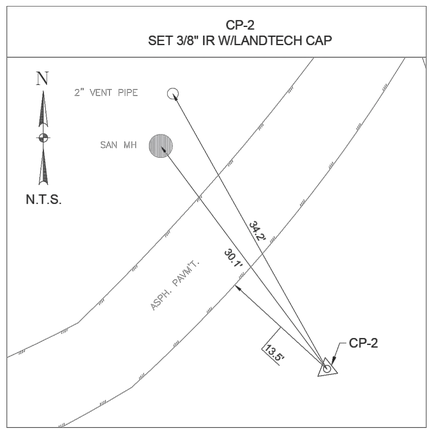
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PLOTTED BY: STM_LT702 11:20 AM

NO.	DATE	REVISION	APP

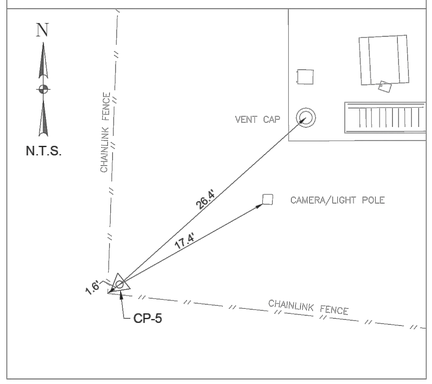
CP-1
SET 3/8" IR W/LANDTECH CAP



CP-2
SET 3/8" IR W/LANDTECH CAP

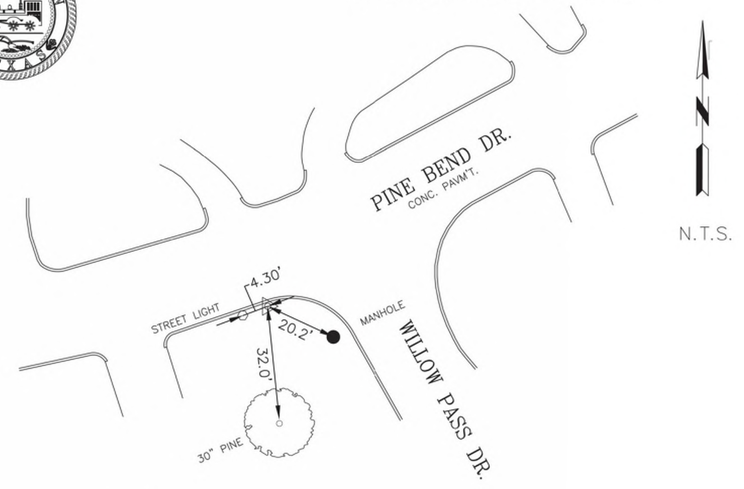


CP-5
SET 3/8" IR W/LANDTECH CAP



CITY OF HOUSTON

CITY SURVEY 5769 8310
SITE CONTROL MONUMENT



Project WBS# R-000267-0177-3

Texas Coordinate System of 1983,
South Central Zone, U. S. Survey Feet

X= 3,170,340.48
Y= 13,945,049.79
Lat.= 30°02'22.263394"N
Lon.= 95°12'03.504607"W

Keymap Page: 337E
Orthometric Elevation = 54.27'
Ellipsoid Height= −35.98'
Geoid: 18
Datum Source & Adjustment: GPS OBSERVED 10-30-2025

Reference Frame Used: NAD 83 (2011) (EPOCH: 2010)
Vertical Adjustment used: NAVD 88 (2001 ADJ.) (REFERENCED TO HCFCD RM 070250)
General Location: ON THE SOUTHWEST CORNER OF PINE BEND DR. AND WILLOW PASS DR.

Date Set: 09-14-2016 Type of Mark: 1

3 Nearest project control points (bearings and distances stated below):

To Control Point # 1 (5/8"IRwLandtech Cap): S 66°22'04" W, 816.25'
To Control Point # 2 (5/8"IRwLandtech Cap): S 67°51'17" W, 937.55'
To Control Point # 3 (cut "X" in conc): S 71°00'56" W, 1,002.91'

NOTE:
1. Bearings are grid bearings.
2. Scale Factor = 1.000
3. Surface= Grid / S.F.

Surveyed By: Landtech, Inc.
1315 Sam Houston Pkwy N, Suite 100
Houston, TX 77043
TBPELS Registration No. 10019100

STATE OF TEXAS · REGISTERED · MICHAEL R. G. JOINES · 7064 · PROFESSIONAL LAND SURVEYOR
REVISED 11/14/2025

City of Houston, Harris County, Texas

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

STATE OF TEXAS · REGISTERED · MICHAEL R. G. JOINES · 7064 · PROFESSIONAL LAND SURVEYOR
12-17-2025

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

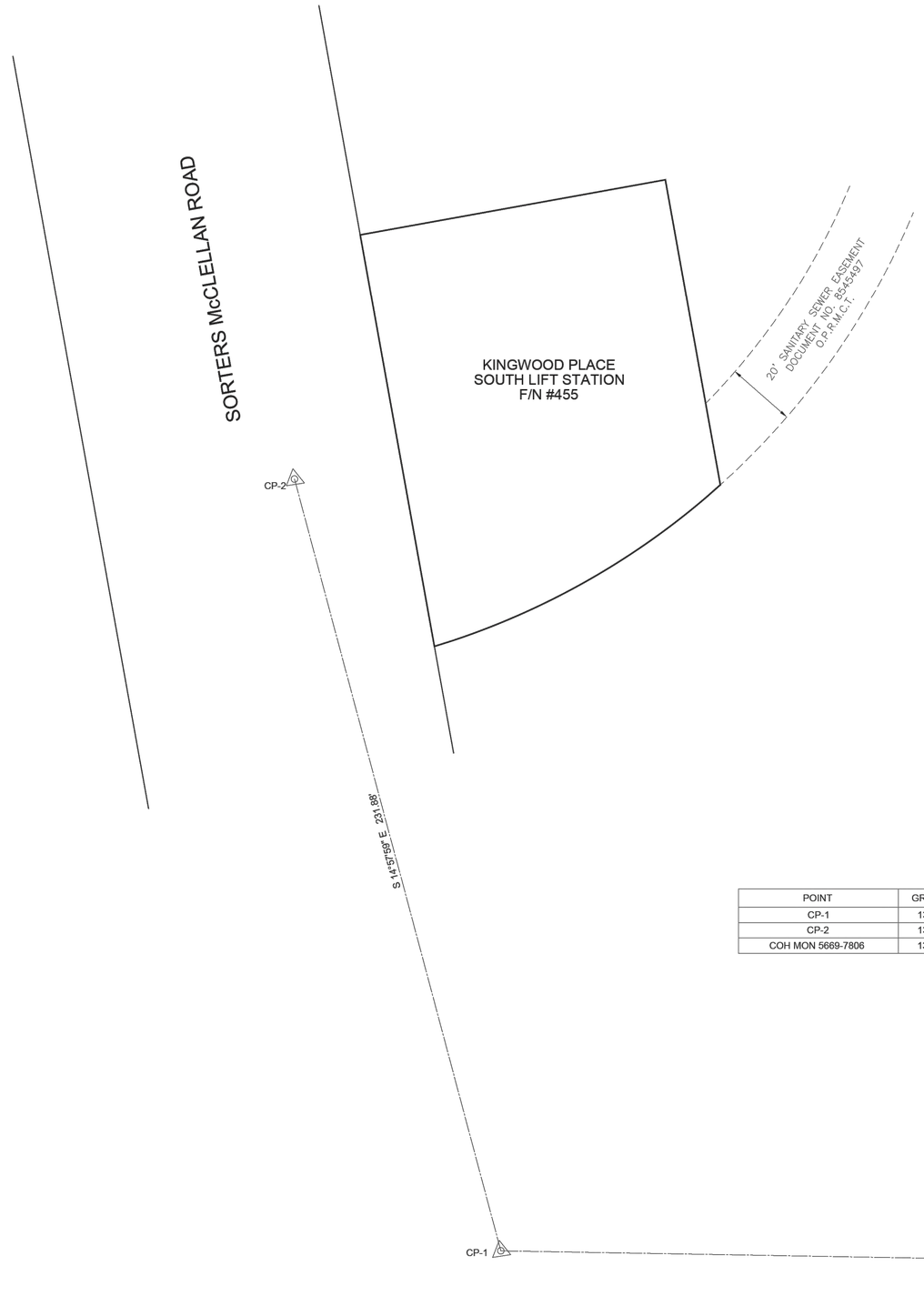
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

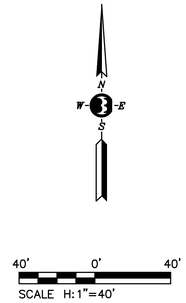
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

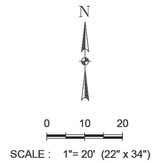
GOLF COURSE LIFT STATION
SURVEY CONTROL SHEET

(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 25 OF 298	G-25







POINT	GRID NORTHING	GRID EASTING	ELEVATION	DESCRIPTION
CP-1	13,942,899.06	3,151,839.81	63.94	SET 3/8" IR W/LANDTECH CAP
CP-2	13,943,123.08	3,151,779.93	66.63	SET 3/8" IR W/LANDTECH CAP
COH MON 5669-7806	13,942,888.05	3,152,479.62	78.70	FND BRASS DISK (HCFCD RM 100005)

NOTES:

1. ALL BEARINGS AND COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83). ALL DISTANCES SHOWN ARE GRID VALUE IN U.S. SURVEY FEET.

2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 100005, A FOUND BRASS DISC ON A CURB INLET STAMPED 100005 ALONG THE NORTH SIDE OF SORTERS/MCCLELLAN ROAD, APPROXIMATELY 300 FEET WEST OF ITS INTERSECTION WITH US 59 FEEDER ROAD.
ELEVATION = 78.70' (NAVD88, 2001 ADJ.)

NO.	DATE	REVISION	APP

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS REGISTERED MICHAEL R. G. JONES 7064 PROFESSIONAL LAND SURVEYOR
12-17-2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION SURVEY CONTROL MAP

(SHEET 1 OF 2)

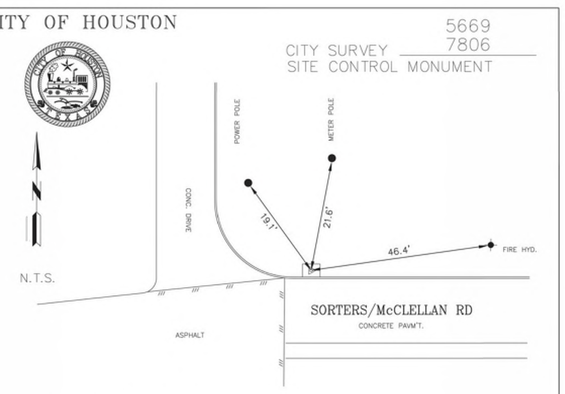
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HORIZ: 1"=20' VERT: 1"=2'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 26 OF 298	G-26

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PLOTTED BY: STOICA, MARILENA 11:20 AM

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PLOTTED BY: STM_E170\0182ab 11:20 AM

CITY OF HOUSTON

CITY SURVEY 5669
SITE CONTROL MONUMENT 7806



Project WBS# R-000267-0177-3

Texas Coordinate System of 1983,
South Central Zone, U. S. Survey Feet

Keymap Page: 335H

X= 3,152,479.62

Orthometric Elevation = 78.70'

Y= 13,942,888.05

Ellipsoid Height= -11.85'

Lat.= 30°02'06.574677"N

Geoid: 18

Lon.= 95°15'27.401705"W

Datum Source & Adjustment: GPS OBSERVED 10-30-2025

Reference Frame Used: NAD 83 (2011) (EPOCH: 2010)

Vertical Adjustment used: NAVD 88 (2001 ADJ.) (HCFCD RM 100005)

General Location: ON A BOX INLET ON THE NORTH SIDE OF SORTERS MCCLELLAN ROAD, APPROX. 200' WEST OF THE US 59 SOUTHBOUND FEEDER

Date Set: 05-01-2003 Type of Mark: 1

3 Nearest project control points (bearings and distances stated below):
To Control Point # 1 (5/8"IRwLandtech Cap): N 89°00'48" W, 639.90'
To Control Point # 2 (5/8"IRwLandtech Cap): N 71°25'57" W, 738.11'

NOTE:
1. Bearings are grid bearings.
2. Scale Factor = 1.000
3. Surface= Grid / S.F.

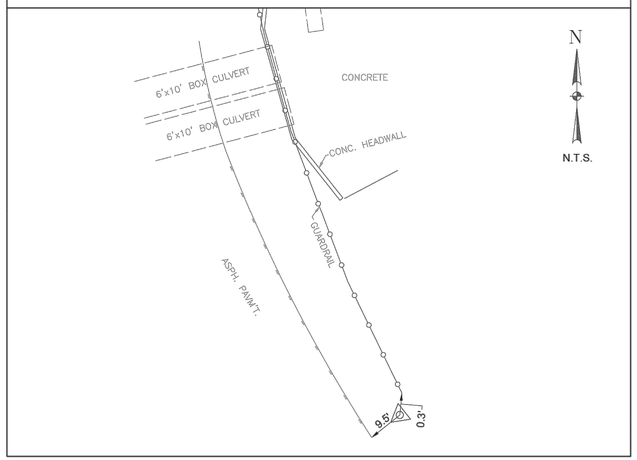
Surveyed By: Landtech, Inc.
1315 Sam Houston Pkwy N, Suite 100
Houston, TX 77043
TBPELS Registration No. 10019100

STATE OF TEXAS REGISTERED MICHAEL R. G. JONES 7064 PROFESSIONAL LAND SURVEYOR

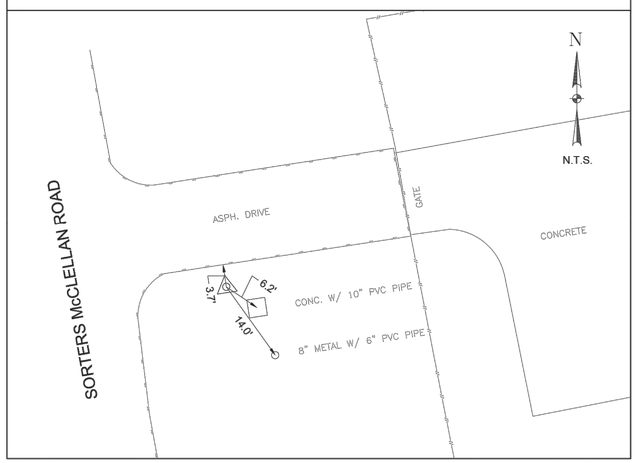
11/14/2025

City of Houston, Harris County, Texas

CP-1
SET 3/8" IR W/LANDTECH CAP



CP-1
SET 3/8" IR W/LANDTECH CAP



NO.	DATE	REVISION	APP

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS REGISTERED MICHAEL R. G. JONES 7064 PROFESSIONAL LAND SURVEYOR

12-17-2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

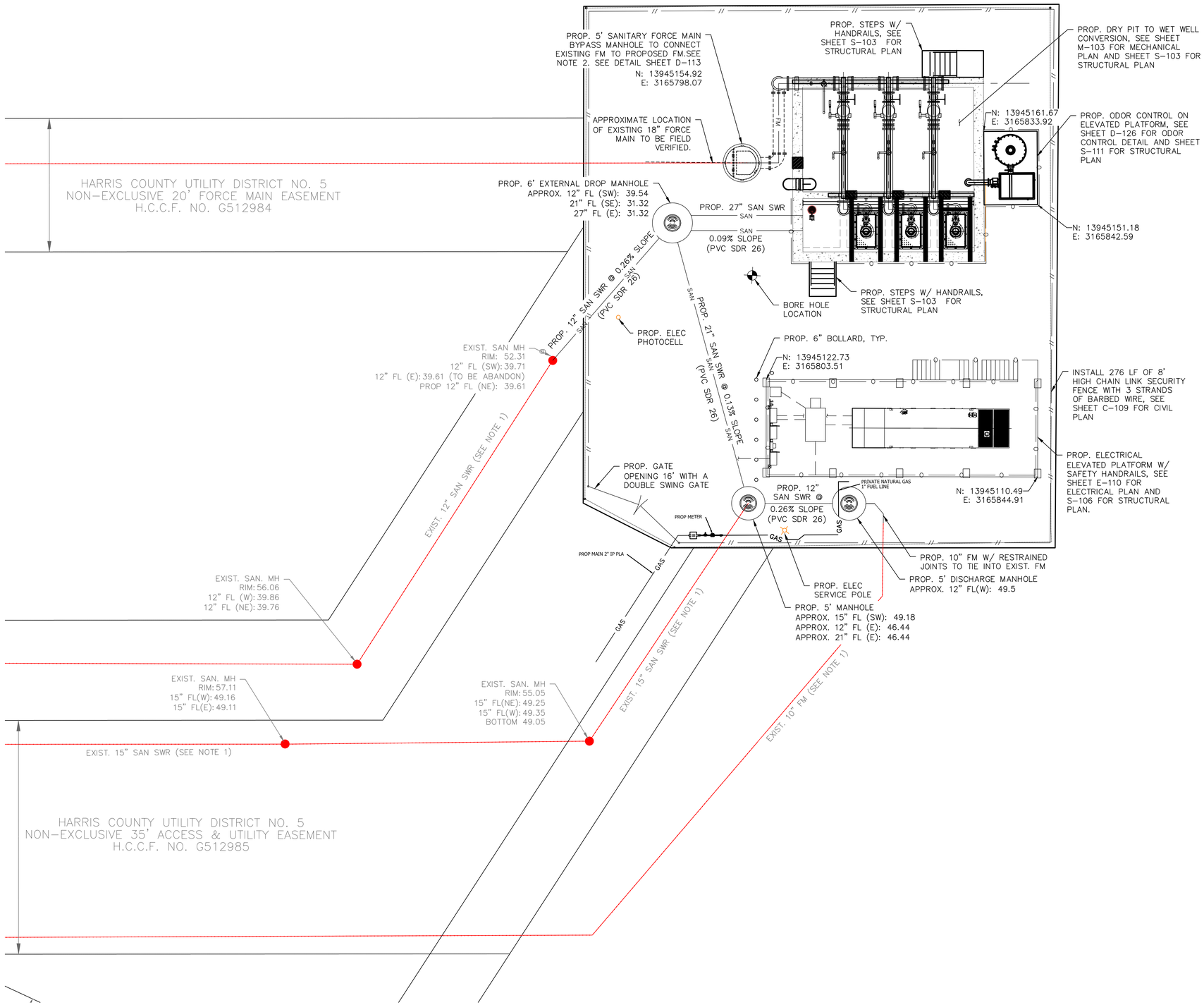
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION SURVEY CONTROL MAP

(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 27 OF 298	G-27

PLOTTED: 2/25/2026 3:18 PM
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OVERALL SITE PLAN
SCALE: 1" = 8'-0"

0 8 16
SCALE IN FEET

NOTES:

1. PIPE SIZE IS BASED ON GIMS AND MUST BE FIELD VERIFIED BY CONTRACTOR. CONTRACTOR TO INFORM THE EOR OF ANY PIPE SIZE INACCURACIES SHOWN ON THE PLAN.

NO.	DATE	REVISION	APP.

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND NOT FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

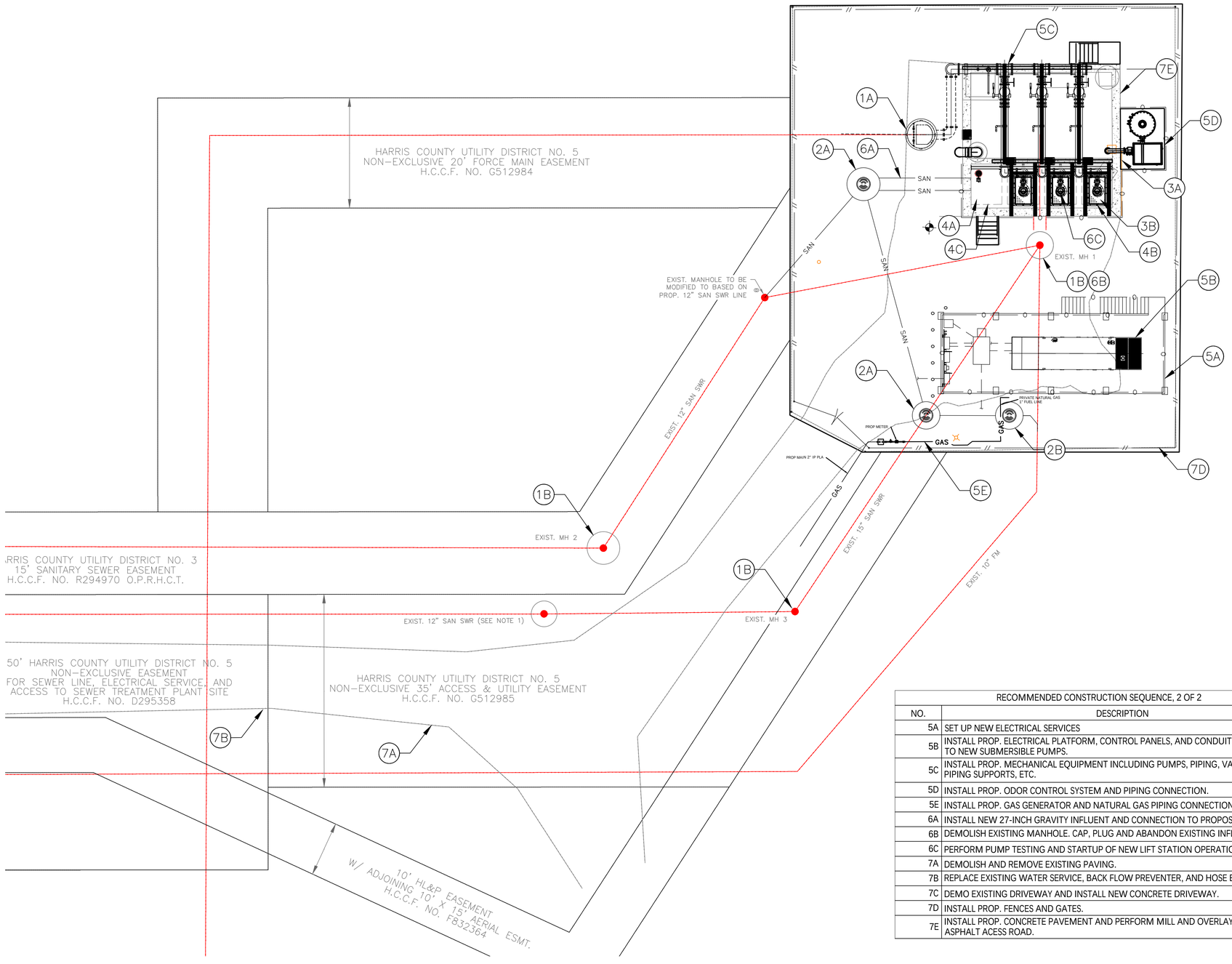
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION

PROPOSED OVERALL SITE LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=8' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 28 OF 298	M-101

PLOTTED: 2/25/2026 3:21 PM
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FILE PATH: J:\COHouston\0000001930\0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.03_Drawings\24-1930-PD-CONST SEQ.dwg



OVERALL SITE PLAN
SCALE: 1" = 8'-0"

0 8 16
SCALE IN FEET

NO.	DATE	REVISION	APP.

RECOMMENDED CONSTRUCTION SEQUENCE, 1 OF 2	
NO.	DESCRIPTION
1A	INSTALL THE PROPOSED BYPASS MANHOLE.
1B	INSTALL TEMPORARY PLUGS IN EXISTING MANHOLES 1-3 TO ISOLATE FLOW TO WET WELL AND PROVIDE BYPASS PUMPING SERVICES FROM MANHOLES 1-3 TO NEW BYPASS MANHOLE.
2A	INSTALL NEW MANHOLES AND NEW GRAVITY LINES TO RE-ROUTE FLOW TO PROPSED MANHOLE 4.
2B	INSTALL NEW FORCEMAIN DISCHARGE MANHOLE AND INFLUENT FORCE MAIN TIE-IN. RELOCATE ALL BYPASS PUMPING SERVICES TO PROPOSED MANHOLE 4. FORCE MAIN TIE-IN WILL REQUIRE TEMPRORARY SHUTDOWN OF EXISTING INFLUENT FORCE MAIN. CONTRACTOR SHALL COORDINATE SHUTDOWN WITH CITY OF HOUSTON WASTEWATER OPERATIONS.
3A	DEMOLITION AND REMOVAL OF EXISTING ELECTRICAL ITEMS: MCC, PANELS FROM DRY PIT, ETC.
3B	DEMOLISH AND REMOVE MECHANICAL EQUIPMENT INCLUDING PUMPS, PIPING, AND VALVES FROM THE DRY PIT.
4A	CLEAN EXISTING WET WELL VIA REMOVAL AND DISPOSAL OF SLUDGE AND SOLIDS.
4B	STRUCTURAL MODIFICATION OF WET WELL AND DRY PIT TOP SLAB TO INSTALL PROP. FLOOD-PROOF HATCHES.
4C	COAT EXISTING WET WELL.

RECOMMENDED CONSTRUCTION SEQUENCE, 2 OF 2	
NO.	DESCRIPTION
5A	SET UP NEW ELECTRICAL SERVICES
5B	INSTALL PROP. ELECTRICAL PLATFORM, CONTROL PANELS, AND CONDUIT CONNECTIONS TO NEW SUBMERSIBLE PUMPS.
5C	INSTALL PROP. MECHANICAL EQUIPMENT INCLUDING PUMPS, PIPING, VALVES, HEADER PIPING SUPPORTS, ETC.
5D	INSTALL PROP. ODOR CONTROL SYSTEM AND PIPING CONNECTION.
5E	INSTALL PROP. GAS GENERATOR AND NATURAL GAS PIPING CONNECTION.
6A	INSTALL NEW 27-INCH GRAVITY INFLUENT AND CONNECTION TO PROPOSED WET WELL.
6B	DEMOLISH EXISTING MANHOLE. CAP, PLUG AND ABANDON EXISTING INFLUENT LINES.
6C	PERFORM PUMP TESTING AND STARTUP OF NEW LIFT STATION OPERATION.
7A	DEMOLISH AND REMOVE EXISTING PAVING.
7B	REPLACE EXISTING WATER SERVICE, BACK FLOW PREVENTER, AND HOSE BIBB.
7C	DEMO EXISTING DRIVEWAY AND INSTALL NEW CONCRETE DRIVEWAY.
7D	INSTALL PROP. FENCES AND GATES.
7E	INSTALL PROP. CONCRETE PAVEMENT AND PERFORM MILL AND OVERLAY OF EXISTING ASPHALT ACESS ROAD.

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

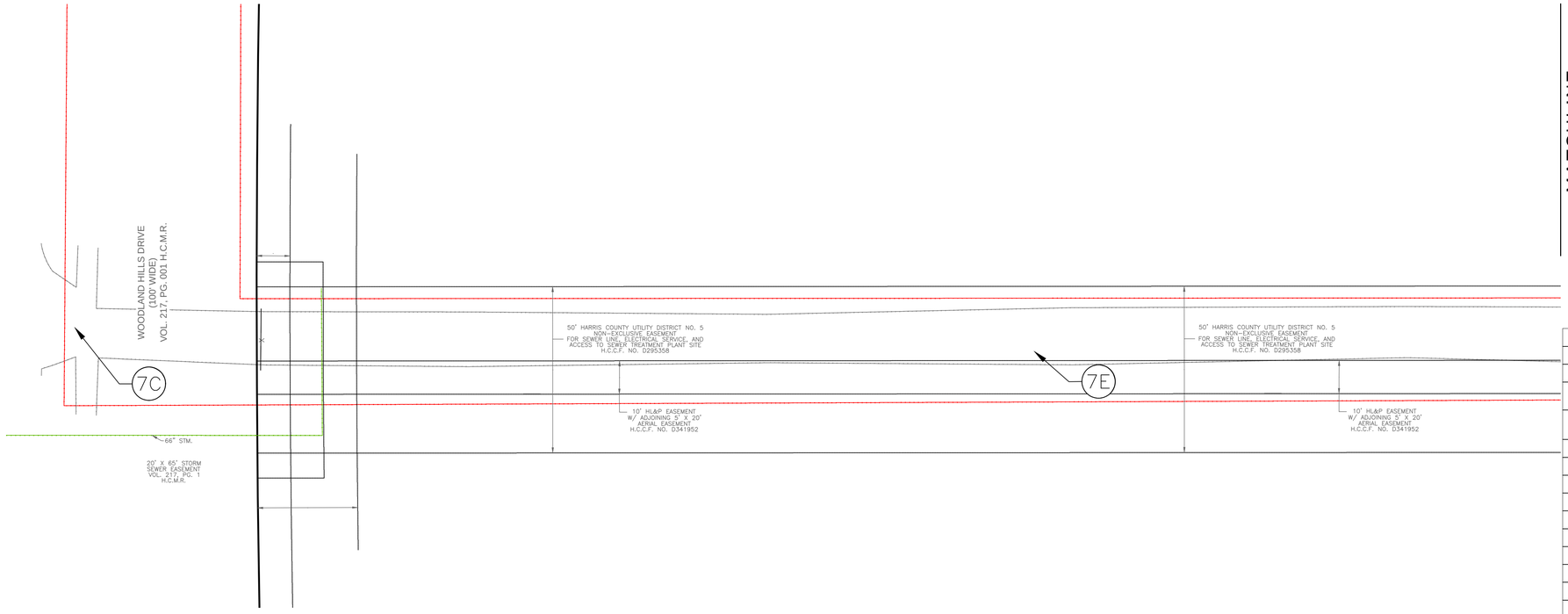
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
PROPOSED CONSTRUCTION SEQUENCE

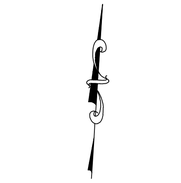
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WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=8' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 29 OF 298	CS-101

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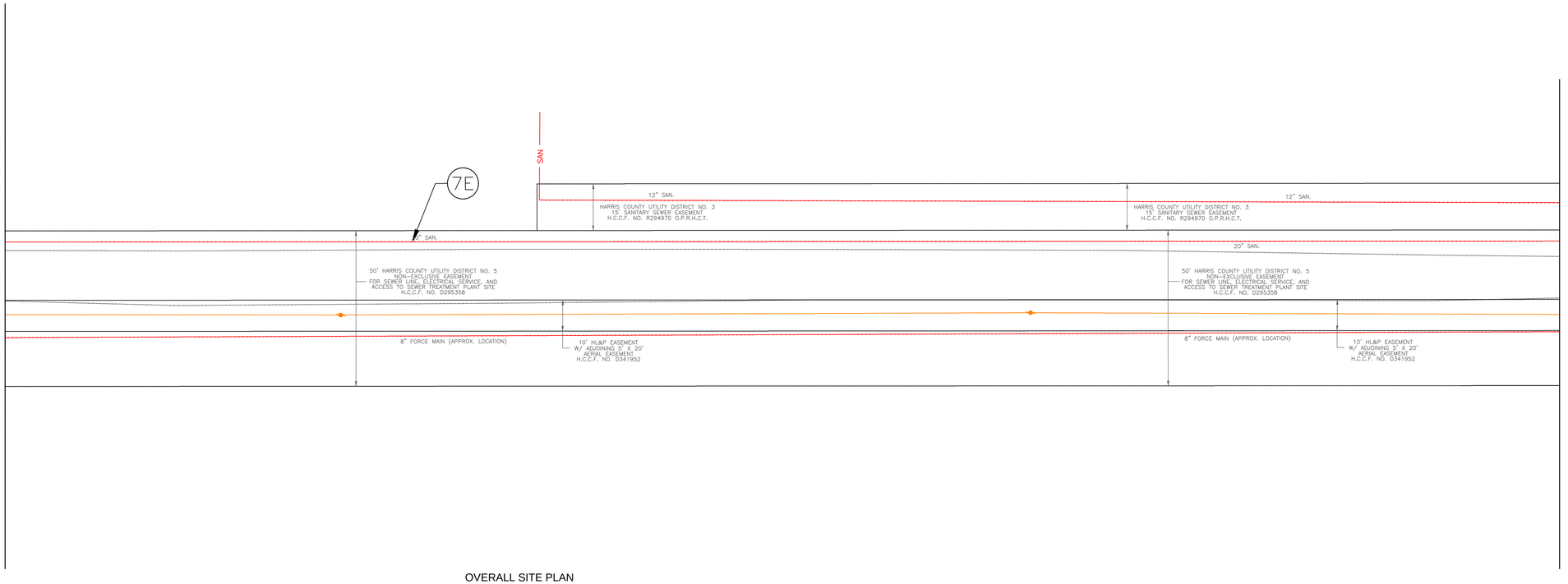
MATCHLINE. SEE PLAN BELOW



NO.	DATE	REVISION	APP.

RECOMMENDED CONSTRUCTION SEQUENCE, 2 OF 2	
NO.	DESCRIPTION
5A	SET UP NEW ELECTRICAL SERVICES
5B	INSTALL PROP. ELECTRICAL PLATFORM, CONTROL PANELS, AND CONDUIT CONNECTIONS TO NEW SUBMERSIBLE PUMPS.
5C	INSTALL PROP. MECHANICAL EQUIPMENT INCLUDING PUMPS, PIPING, VALVES, HEADER PIPING SUPPORTS, ETC.
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6C	PERFORM PUMP TESTING AND STARTUP OF NEW LIFT STATION OPERATION.
7A	DEMOLISH AND REMOVE EXISTING PAVING.
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7D	INSTALL PROP. FENCES AND GATES.
7E	INSTALL PROP. CONCRETE PAVEMENT AND PERFORM MILL AND OVERLAY OF EXISTING ASPHALT ACESS ROAD.

MATCHLINE. SEE PLAN ABOVE



MATCHLINE. SEE SHEET 29

OVERALL SITE PLAN
SCALE: 1" = 10'-0"

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

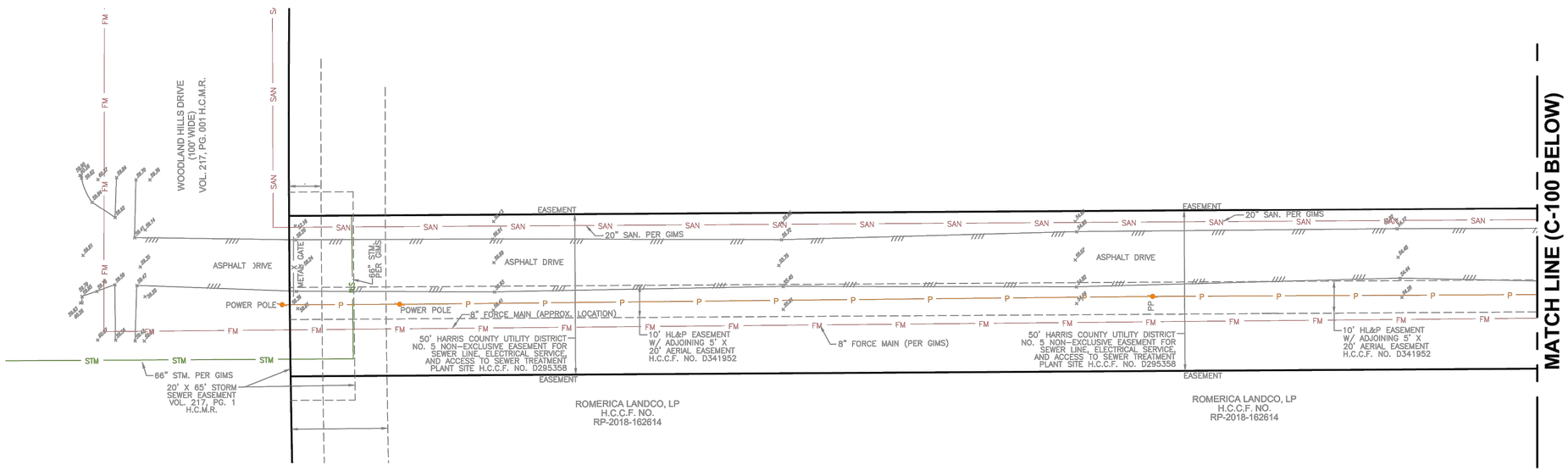
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

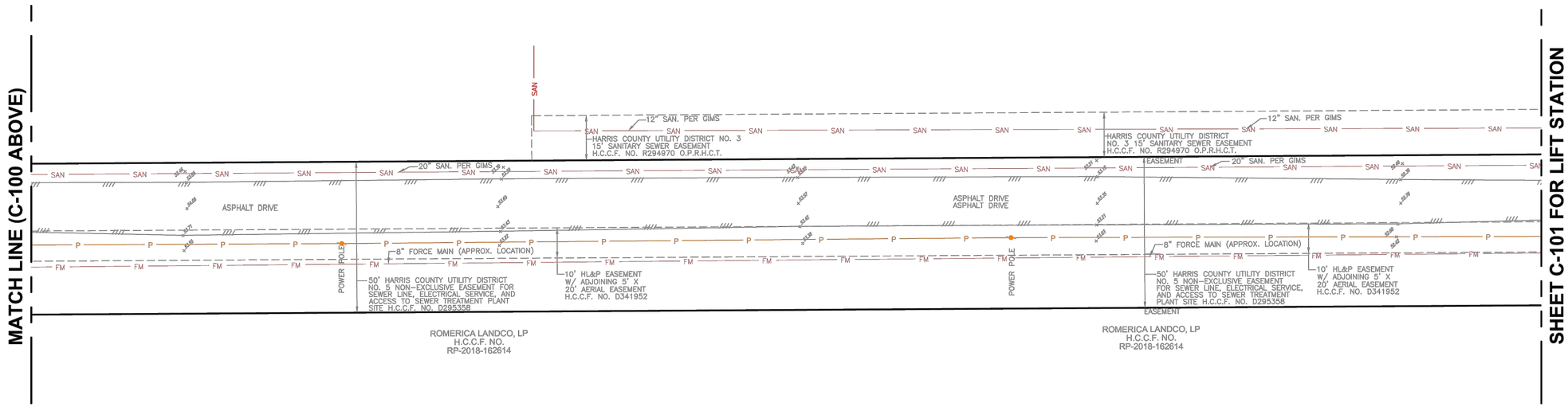
AG FARMS LIFT STATION
PROPOSED CONSTRUCTION SEQUENCE

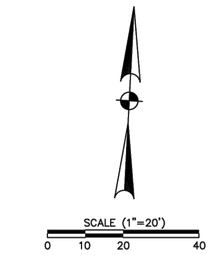
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WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 30 OF 298	CS-102

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NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070250, A FOUND ALUMINUM DISC STAMPED "G 103–36 BM 01" IN A CONCRETE HEADWALL SOUTH OF KINGWOOD DRIVE, APPROXIMATELY 315 FEET EAST OF ITS INTERSECTION WITH LAKE CRESCENT DRIVE. ELEVATION = 53.52' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

NO.	DATE	REVISION	APP.

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS · NATHAN A. WILSON · 136610 · LICENSED PROFESSIONAL ENGINEER

02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
EXISTING CONDITIONS

(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: 1"=20' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 31 OF 298	C–101

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NO.	DATE	REVISION	APP.

SCALE (1"=10')
0 5 10 20

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E: 3165773.0447

N: 13945181.3089
E: 3165844.1120

CHAIN LINK FENCE

69.47'

METAL LID

PIPES

ENTRANCE

VENT CAP

LAMP

RAISED CONCRETE VAULT

VENT CAP

GRATE MANHOLE

PIPE VENT

STEPS

ELEC. PANEL

METAL GRATE

ELEC. PANEL ON BARREL

MANHOLE TOWER

18" FORCE MAIN (APPROX. LOCATION)

HARRIS COUNTY UTILITY DISTRICT NO. 5 NON-EXCLUSIVE 20' FORCE MAIN EASEMENT H.C.C.F. NO. G512984

73.49'

79.90'

CHAIN LINK FENCE

CHAIN LINK FENCE

12" SAN. PER GIMS

SAN. MANHOLE RIM 98.34

VENT PIPES

SAN. MANHOLE RIM 51.97
12" FL(NE) 39.27
12" FL(SW) 39.37

HARRIS COUNTY UTILITY DISTRICT NO. 5 H.C.C.F. NO. G512987

LAMP

CAMERA

ASPHALT

SERVICE POLE

N: 13945102.7185
E: 3165777.1823

GATE

15.29'

CHAIN LINK FENCE

56.43'

N: 13945096.9732
E: 3165790.2784

N: 13945100.0420
E: 3165848.1346

12" SAN. PER GIMS

SAN. MANHOLE RIM 55.72
BOTTOM 39.72

50'R

ASPHALT DRIVE

SERVICE POLE W/ METER

15" SAN. PER GIMS

SERVICE POLE

SAN. MANHOLE RIM 56.77
BOTTOM 44.07

MANHOLE TOP

12" SAN. PER GIMS

MANHOLE TOP

HARRIS COUNTY UTILITY DISTRICT NO. 3 15' SANITARY SEWER EASEMENT H.C.C.F. NO. R294970 O.P.R.H.C.T.

20" SAN. PER GIMS

20" SAN. PER GIMS

SAN. MANHOLE RIM 54.71
BOTTOM 48.71

HARRIS COUNTY UTILITY DISTRICT NO. 5 NON-EXCLUSIVE 35' ACCESS & UTILITY EASEMENT H.C.C.F. NO. G512985

POWER POLE

SERVICE POLE

8" FORCE MAIN (APPROX. LOCATION)

25'R

12'R

12'

10' HL&P EASEMENT W/ ADJOINING 10' X 15' AERIAL ESMT. H.C.C.F. NO. F832364

50' HARRIS COUNTY UTILITY DISTRICT NO. 5 NON-EXCLUSIVE EASEMENT FOR SEWER LINE, ELECTRICAL SERVICE, AND ACCESS TO SEWER TREATMENT PLANT SITE H.C.C.F. NO. D295358

ROMERICA LANDCO, LP
H.C.C.F. NO.
RP-2018-162614

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070250, A FOUND ALUMINUM DISC STAMPED "G 103-36 BM 01" IN A CONCRETE HEADWALL SOUTH OF KINGWOOD DRIVE, APPROXIMATELY 315 FEET EAST OF ITS INTERSECTION WITH LAKE CRESCENT DRIVE. ELEVATION = 53.52' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER
02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

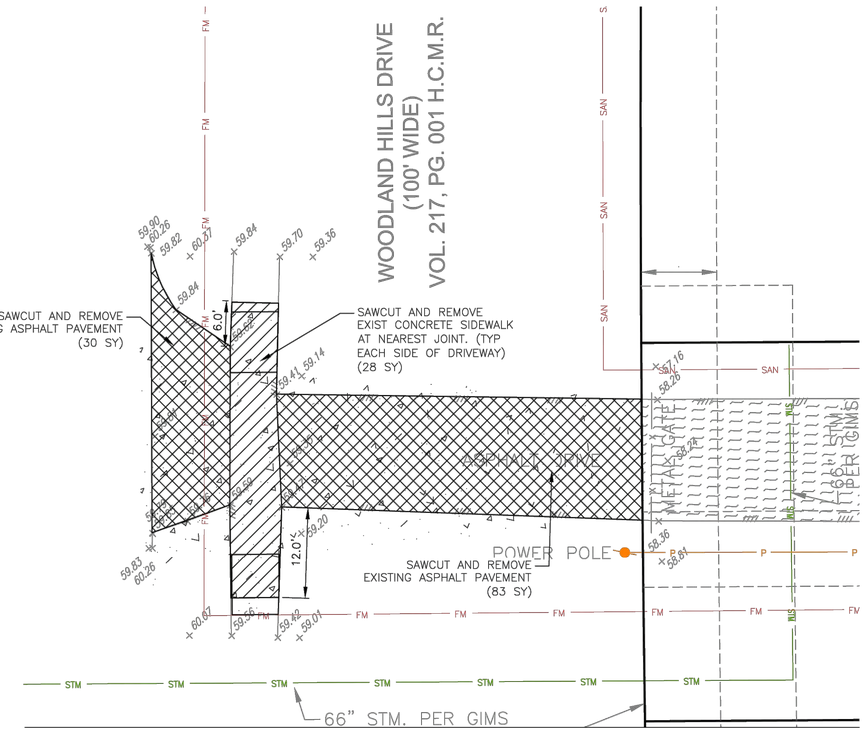
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
EXISTING CONDITIONS

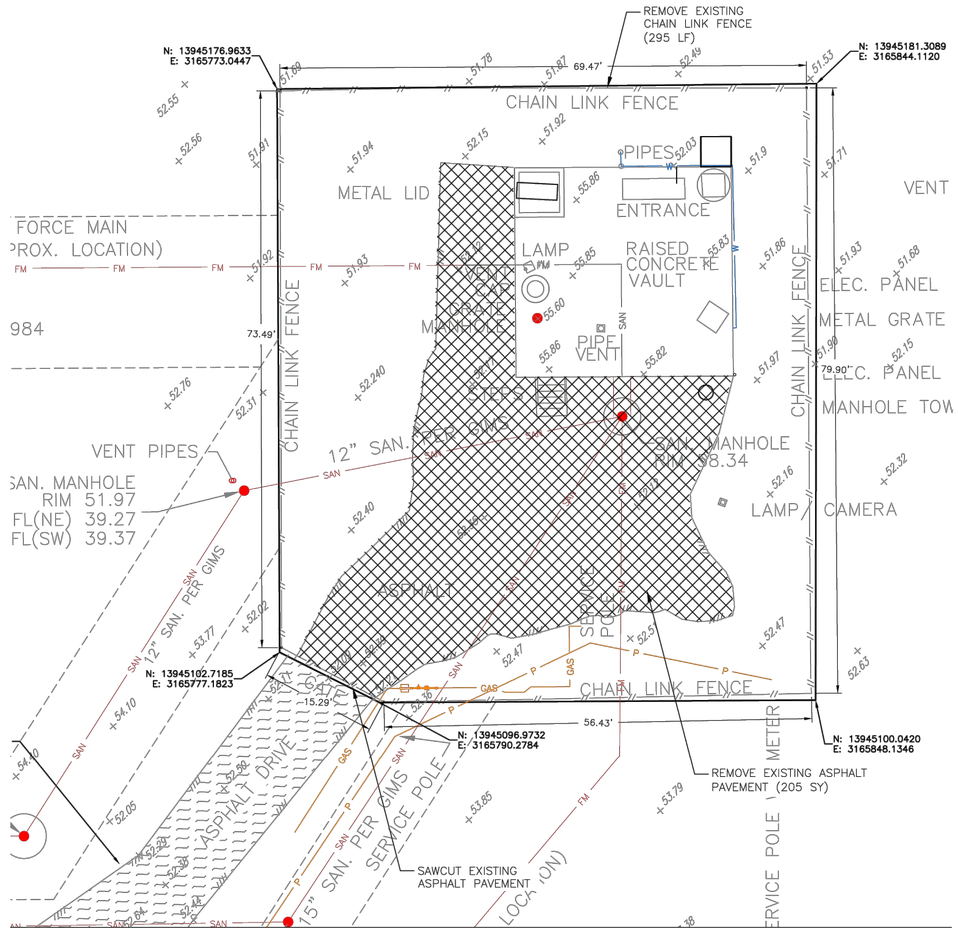
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 32 OF 298	C-102

PLOTTED: 2/26/2026 4:34 PM
PLOT STYLE: COH.ctb
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PARTIAL DRIVEWAY DEMOLITION PLAN
SCALE 1"=10'



PARTIAL SITE DEMOLITION PLAN
SCALE 1"=10'

NO.	DATE	REVISION	APP.

SCALE (1"=10')
0 5 10 20

NOTES

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3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

LEGEND

- MILL EXISTING ASPHALT TO A DEPTH OF 1" (1912 SY)
- REMOVE EXISTING ASPHALT
- REMOVE EXISTING CONCRETE

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

NATHAN A. WILSON 136610 LICENSED PROFESSIONAL ENGINEER
02/20/2026

CITY OF HOUSTON

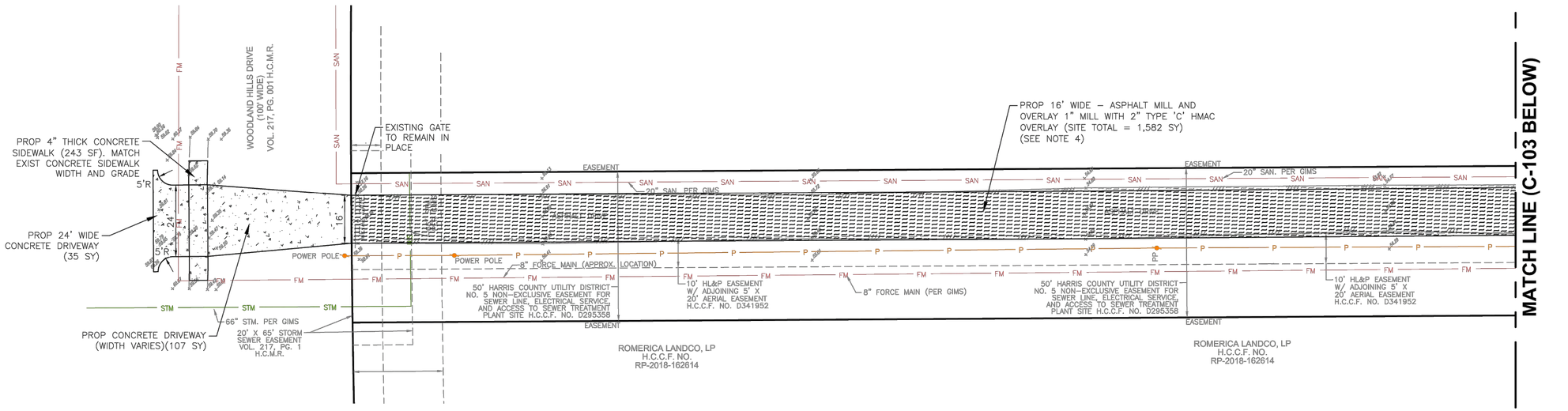
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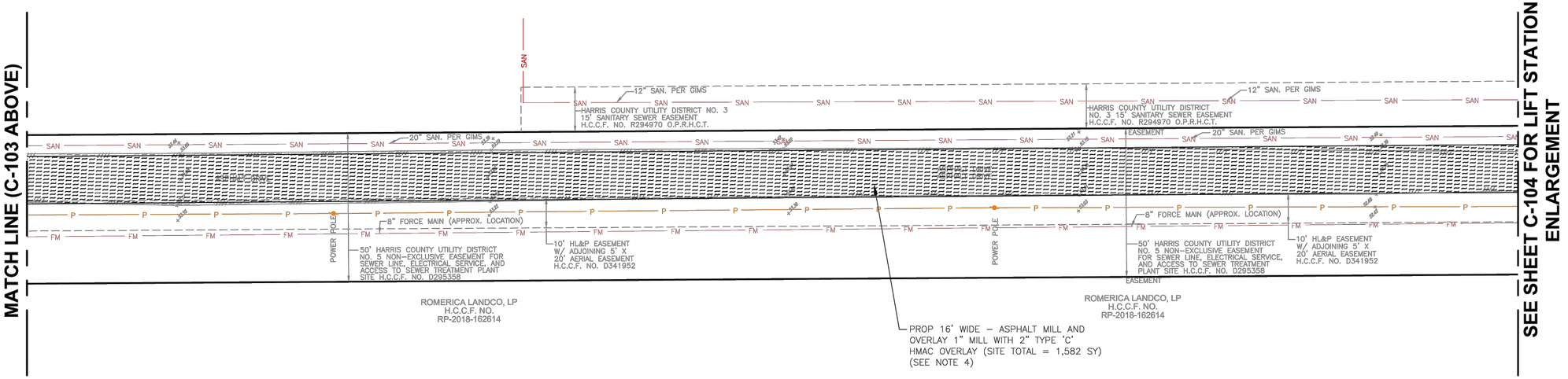
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

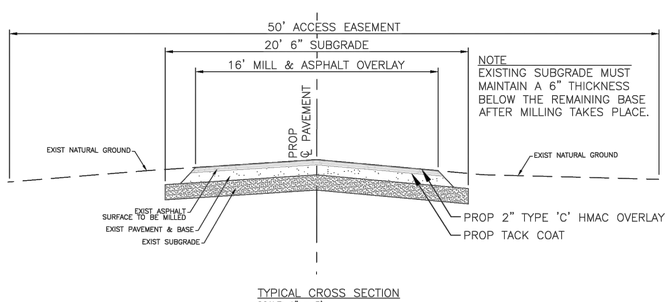
AG FARM LIFT STATION
DEMOLITION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 33 OF 298	C-103

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TYPICAL CROSS SECTION
SCALE: 1" = 5'

NO.	DATE	REVISION	APP.

SCALE (1"=20')
0 10 20 40

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070250, A FOUND ALUMINUM DISC STAMPED "G 103–36 BM 01" IN A CONCRETE HEADWALL SOUTH OF KINGWOOD DRIVE, APPROXIMATELY 315 FEET EAST OF ITS INTERSECTION WITH LAKE CRESCENT DRIVE. ELEVATION = 53.52' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.
4. CONTRACTOR SHALL MILL AND OVERLAY UNTIL THE END OF STATION UPGRADES TO AVOID DAMAGE TO THE NEW PAVEMENT.

LEGEND

ASPHALT MILL AND OVERLAY

CONCRETE PAVEMENT

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER
02/20/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

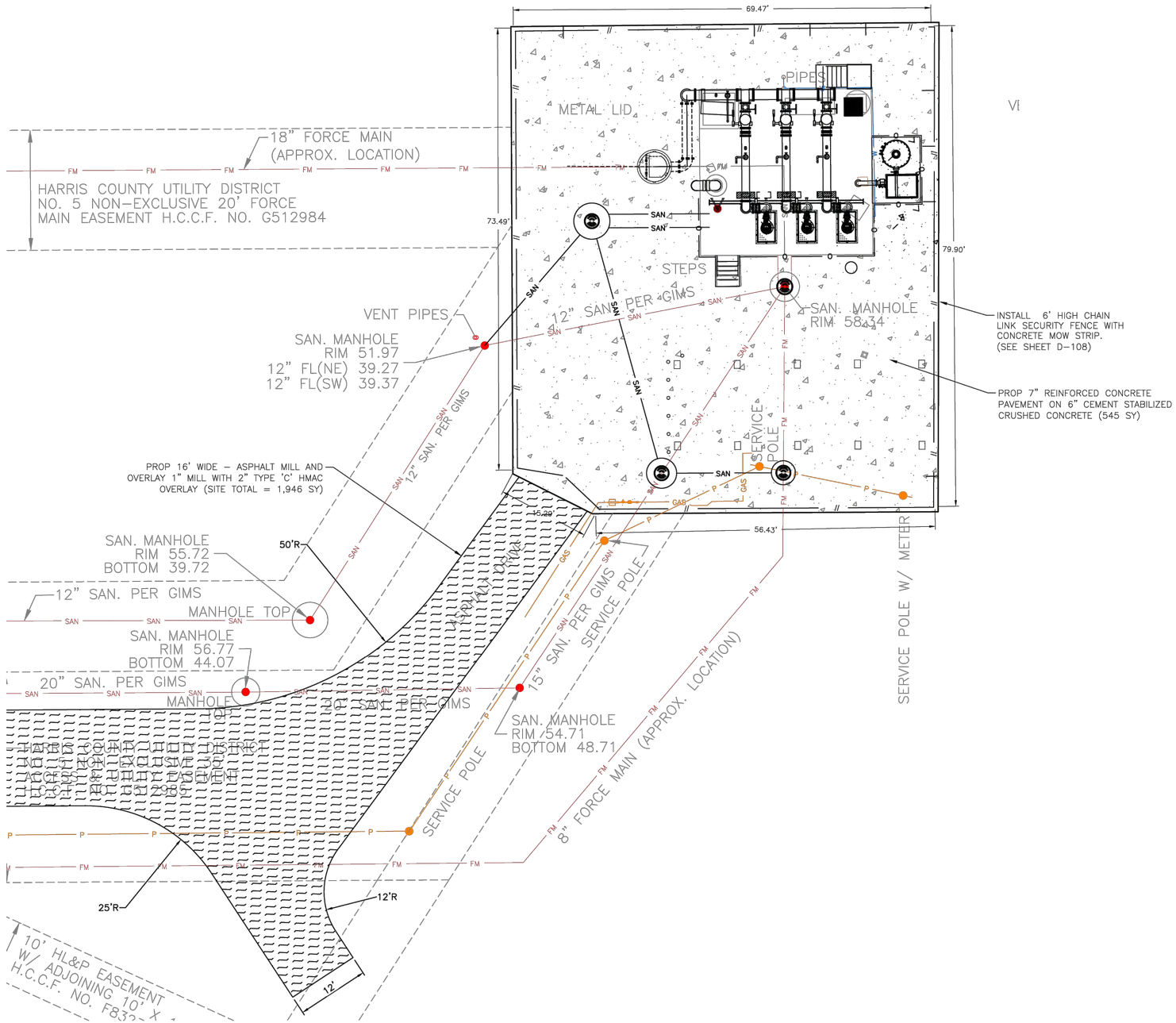
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
PROPOSED CIVIL SITE PLAN

(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=20' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 34 OF 298	C-104

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NO.	DATE	REVISION	APP.

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LEGEND

- ASPHALT MILL AND OVERLAY
- CONCRETE PAVEMENT

DCCM

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
PROPOSED CIVIL SITE PLAN

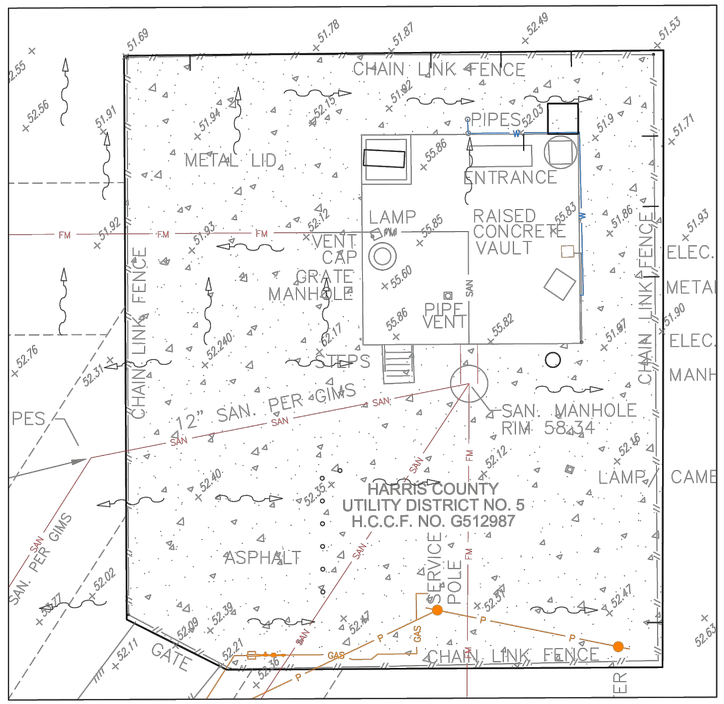
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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 35 OF 298	C-105

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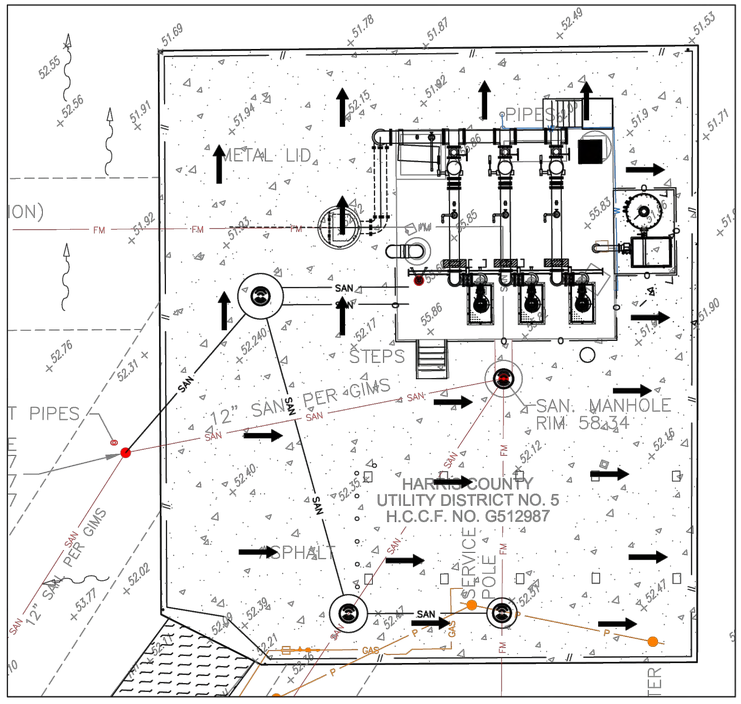
QUANTITIES

Paving within right-of-way and easement		
Existing Asphalt (Easement) (to remain)	17,205	sf
Existing Asphalt right-of-way (to be removed)	1,270	sf
Paving within access easement		
Proposed Asphalt Overlay	17,516	sf
Proposed Concrete Driveway	1,522	sf
Access Drive Detention		
Area of Asphalt Maintenance (Existing)	17,205	sf
Area of Asphalt Maintenance (Overlay)	17,516	sf
Asphalt area Subject to Detention	311	sf
Storage Required*	**248.80**	**cf**
* Detention storage not required for asphalt maintenance / overlays.		
Driveway within right-of-way Detention		
Asphalt to be removed	1,270	sf
New Concrete Pavement	1,522	sf
Concrete area Subject to Detention	252	sf
Storage Required	**710**	**cf**
Notes:		
Storage rate 0.4 Ac-ft/Ac for new impervious cover at locations where existing impervious cover is removed.		
Storage rate 0.80 Ac-ft/Ac for new impervious cover.		
Lift Station Pad Site Detention		
Asphalt to be removed	1,836	sf
Proposed concrete paving	4,919	sf
Concrete area Subject to Detention	3,083	sf
Storage Required	**3,201**	**cf**
Total Storage Required	**4,159**	**cf**
Cut and Fill Data		
Total Cut	-16.85	cf
Total Fill	5.16	cf
Net Cut	-11.69	cf
Lift Station Drainage Calculations		
Total Area	5,709.00	sf
	0.13	Ac
Total Impervious Cover		
Lift Station Top	790.00	sf
Paving	4,919.00	sf
	5,709.00	sf
Runoff Coefficient	**0.80**	

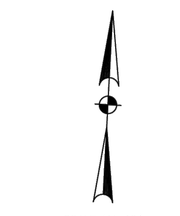


LS PAD SITE EXISTING CONDITIONS

No fill is proposed to be place below the BFE on this site.
Floodplain mitigation is not required.



LS PAD SITE PROPOSED SITE IMPROVEMENTS



NO.	DATE	REVISION	APP.

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3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

LEGEND

- EXISTING DRAINAGE DIRECTION
- PROPOSED DRAINAGE DIRECTION
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT

FLOOD DATA

FIRM Map 28201C0315L
Effective Date: 6/18/2007
100-year flood elevation = 57.00
500-year flood elevation = 58.50
The project location is within Zone AE.

AG FARM F/N #516

Physical Address:
1600 WOODLAND HILLS DRIVE
KINGWOOD, TEXAS 77339

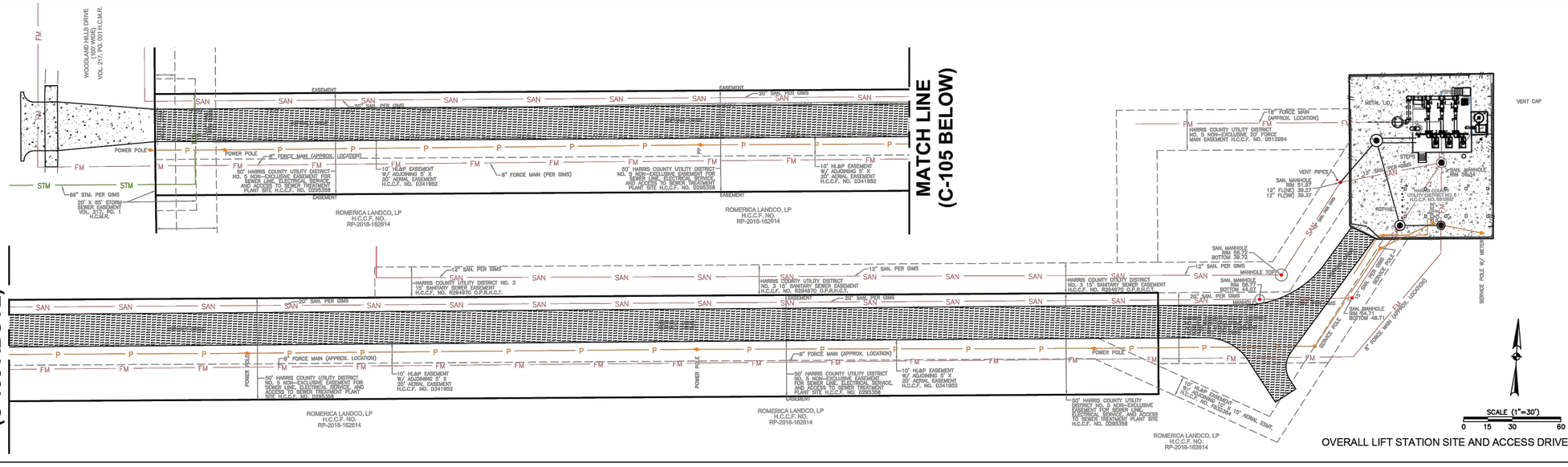
DRAINAGE CALCULATIONS PREPARED FOR POINT DISCHARGE

2 YR EVENT - COH IDF CURVE b = 48.35, d = 9.07, e = 0.7244

FROM	TO	ADDED	TOTAL	TC	Intensity	C	C*I	Additional	Frequancy	CUM	REACH	LINE/BOX					DESIGN		D.S.	OTHER	FLOWLINE		ACT.V	SLOPE	delta H	ELEV. HYD. GRAD.		TC	HG DIST	Maximum	Method 1
JUNCTION	JUNCTION	AREA	AREA	min				Q	Factor	Q(2-YR)	ft	SIZE	WIDTH	HEIGHT	SLOPE	MANNING'S	Q	V	FALL	LOSSES	UP-	DOWN-	fps	HYD.	ft	UP-	DOWN-	UP-	BELOW TC	Ponding	(Y/N)
		ac	ac					cfs		cfs		in	FT	FT	%	"n"	cfs	fps	(ft)	ft	STREAM	STREAM		GRAD. (%)		STREAM	STREAM	STREAM	ft	Elevation	
SYSTEM A																														
LINE 1																														
1	2	0.13	0.13	21.99	4.01	0.80	3.21	0.00	1.00	0.42	70	8			1.000	0.013	1.21	3.5	0.50		52.50	51.80	1.20	0.120	0.084	53.17	52.47	53.00	-0.17	54.00	Yes

100 YR EVENT - COH IDF CURVE b = 60.66, d = 4.44, e = 0.5797

FROM	TO	ADDED	TOTAL	TC	Intensity	C	CI	Additional	Frequancy	CUM	REACH	LINE/BOX					DESIGN		D.S.	OTHER	FLOWLINE		ACT.V	SLOPE	delta H	ELEV. HYD. GRAD.		TC	HG DIST	Maximum	Method 1
JUNCTION	JUNCTION	AREA	AREA	min				Q	Factor	Q(100-YR)	ft	SIZE	WIDTH	HEIGHT	SLOPE	MANNING'S	Q	V	FALL	LOSSES	UP-	DOWN-	fps	HYD.	ft	UP-	DOWN-	UP-	BELOW TC	Ponding	(Y/N)
		ac	ac					cfs		cfs		in	FT	FT	%	"n"	cfs	fps	(ft)	ft	STREAM	STREAM		GRAD. (%)		STREAM	STREAM	STREAM	ft	Elevation	
SYSTEM A																														
LINE 1																														
1	2	0.13	0.13	21.99	9.09	0.55	5.00	0.00	1.25	0.82	70	8			1.000	0.013	1.21	3.5	0.50		52.50	51.80	2.34	0.456	0.319	53.17	52.47	89.11	35.94	90.11	Yes



OVERALL LIFT STATION SITE AND ACCESS DRIVE

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11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
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SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS — NATHAN A. WILSON — 136610 — LICENSED PROFESSIONAL ENGINEER

02/20/2026

CITY OF HOUSTON

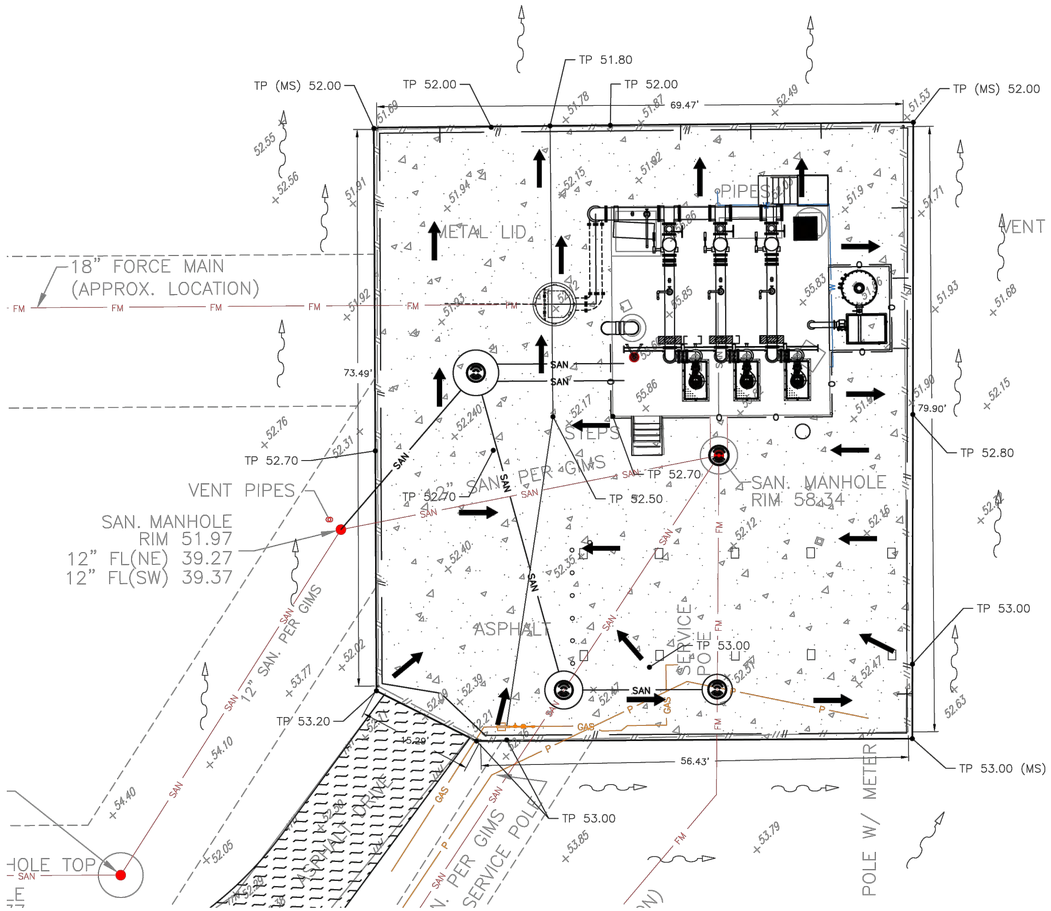
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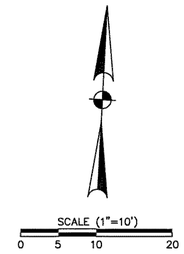
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
PROPOSED CIVIL DRAINAGE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: AS NOTED VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 36 OF 298	C-106





NO.	DATE	REVISION	APP.

NOTES

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3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

LEGEND

- EXISTING DRAINAGE DIRECTION
- PROPOSED DRAINAGE DIRECTION
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
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Houston, TX 77079
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STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER

02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

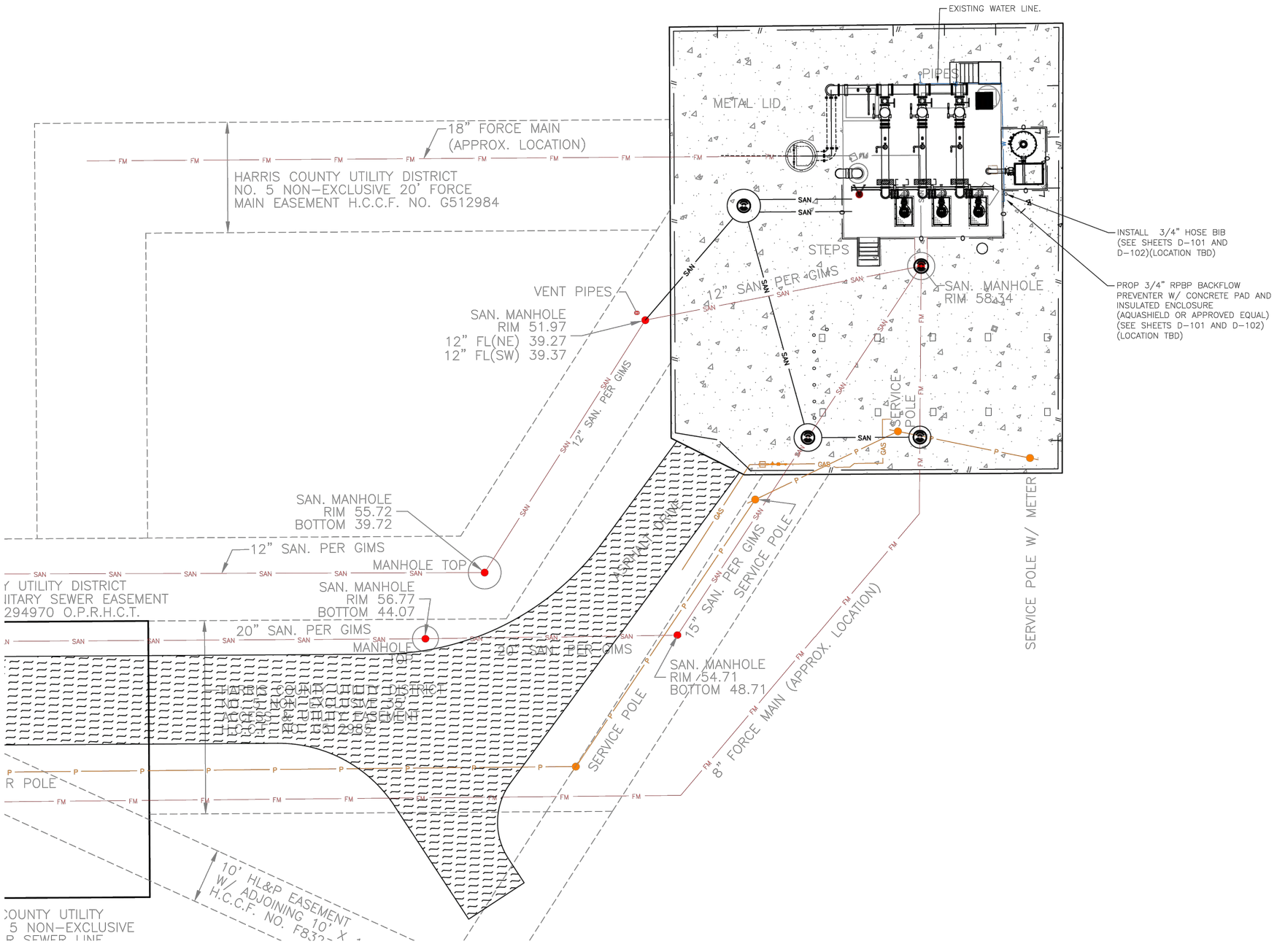
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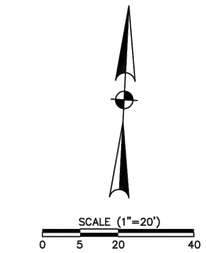
AG FARM LIFT STATION
PROPOSED CIVIL GRADING PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 37 OF 298	C-107

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LEGEND

ASPHALT MILL AND OVERLAY

CONCRETE PAVEMENT

DCCM

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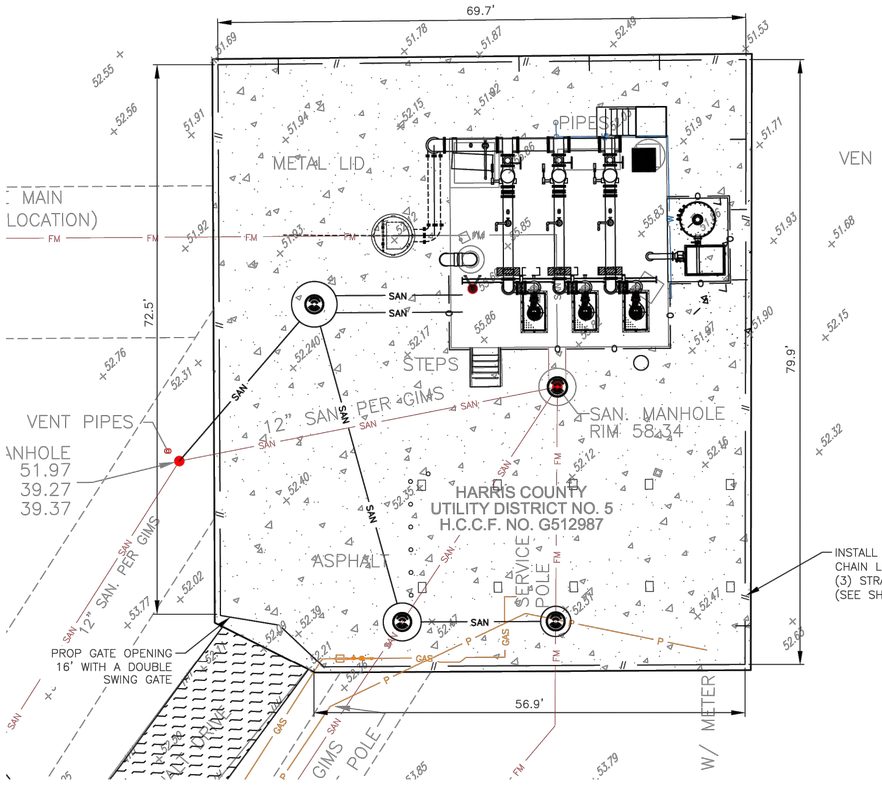
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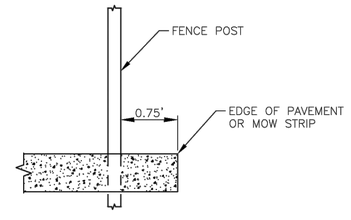
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
PROPOSED CIVIL WATER PLAN

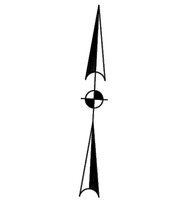
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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 38 OF 298	C-108

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FENCE SECTION VIEW
SCALE: 1" = 1'-0"



NO.	DATE	REVISION	APP.

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LEGEND

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ASPHALT PAVEMENT

DCCM

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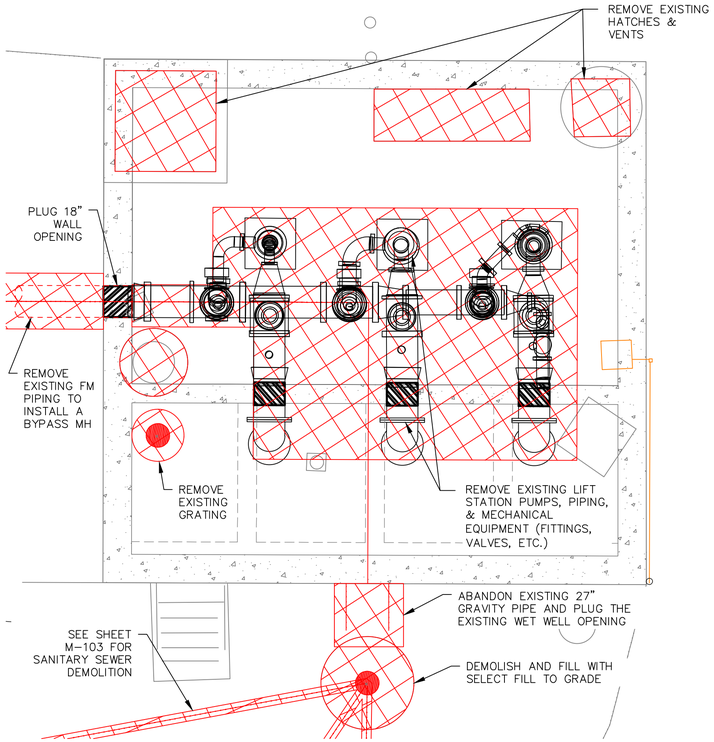
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(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
PROPOSED CIVIL FENCE PLAN

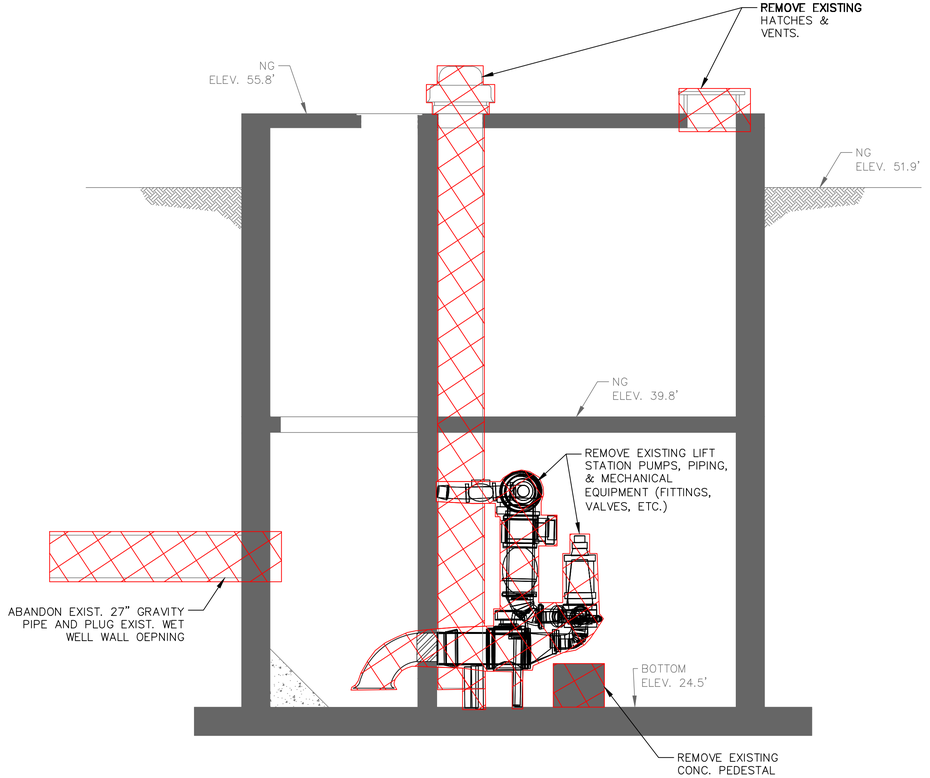
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DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 39 OF 298	C-109

PLOTTED: 2/25/2026 11:32 AM
PLOT STYLE: COH.ctb
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EXISTING AG FARM LIFT STATION

SCALE: 1" = 4'-0"



SECTION

SCALE: 1" = 4'-0"

NOTES:

1. PROVIDE SAFE WORKING CONDITIONS FOR EMPLOYEES THROUGHOUT DEMOLITION AND REMOVAL OPERATIONS. OBSERVE SAFETY REQUIREMENTS FOR WORK BELOW GRADE.
2. MAINTAIN SAFE ACCESS TO ADJACENT PROPERTY AND BUILDINGS. DO NOT OBSTRUCT ROADWAYS, SIDEWALKS OR PASSAGEWAYS ADJACENT TO THE WORK.
3. PERFORM DEMOLITION IN A MANNER TO PREVENT DAMAGE TO ADJACENT PROPERTY. REPAIR DAMAGE TO CITY PROPERTY OR ADJACENT PROPERTY AN FACILITIES.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFETY AND INTEGRITY OF ADJACENT STRUCTURES AND SHALL BE LIABLE FOR ANY DAMAGE DUE TO MOVEMENT OR SETTLEMENT. PROVIDE PROPER FRAMING AND SHORING NECESSARY FOR SUPPORT. CEASE OPERATIONS IF AN ADJACENT STRUCTURE APPEARS TO BE ENDANGERED. RESUME DEMOLITION ONLY AFTER PROPER PROTECTIVE MEASURES HAVE BEEN TAKEN.
5. NOTIFY AND COORDINATE WITH UTILITY COMPANY AND ADJACENT BUILDING OCCUPANTS WHEN TEMPORARY INTERRUPTION OF UTILITY SERVICE IS NECESSARY.
6. DO NOT BACKFILL WITH MATERIAL FROM DEMOLITION UNLESS APPROVED BY PROJECT MANAGER.
7. ALL OPENINGS BELOW THE REMOVED WALLS SHALL BE SEALED WITH NON-SHRINK GROUT.
8. CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS (INCLUDING DEMOLISH PERMITS, COH FORM NO. CE-0175 & TEXAS DSHS FORM APB#5) REQUIRED. CONTRACTOR SHALL COORDINATE DISCONNECT WITH CENTERPOINT ENERGY TO ELECTRICAL POWER.
9. THE CITY OF HOUSTON HAS THE FIRST RIGHT OF REFUSAL OF ANY EQUIPMENT OR MATERIAL REMOVED. CONTACT CITY PROJECT MANAGER AT LEAST 72 HOURS PRIOR TO DEMOLITION IN ORDER TO COORDINATE REMOVAL OF ANY ITEMS THE CITY WISHES TO CLAIM AS SALVAGE. THE CONTRACTOR SHALL DELIVER ALL SALVAGED ITEMS TO A LOCATION, WITHIN THE CITY, DETERMINED BY THE CITY, THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL OTHER EQUIPMENT AND MATERIAL NOT IDENTIFIED FOR SALVAGE.
10. THE EXISTING WET WELL SHALL BE CLEANED OF ALL DEBRIS, WASTEWATER, AND OTHER RESIDUES.
11. THE CONTRACTOR SHALL DISPOSE OF ANY LIQUID OR SOLID WASTE FOUND IN THE WET WELL AT A DISPOSAL FACILITY LICENSED & APPROVED BY THE STATE OF TEXAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF TRANSPORTATION, DISPOSAL & TESTING REQUIRED BY STATE & FEDERAL REGULATORY AGENCIES, & BY THE DISPOSAL FACILITY
12. CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS (INCLUDING DEMOLISH PERMITS, ENCROACHMENT PERMITS, ETC.)

NOTES CONT'D:

13. DO NOT PROCEED WITH DEMOLITION OR REMOVAL OPERATIONS UNTIL AUTHORIZED BY PROJECT MANAGER. NO DEMOLITION SHALL BE PERFORMED UNTIL BYPASS PUMPING IS OPERATIONAL.
14. PLUG, GROUT FILL & ABANDON 8-INCH INFLUENT LINE (TO WET WEATHER LIFT STATION).

NO.	DATE	REVISION	APP.

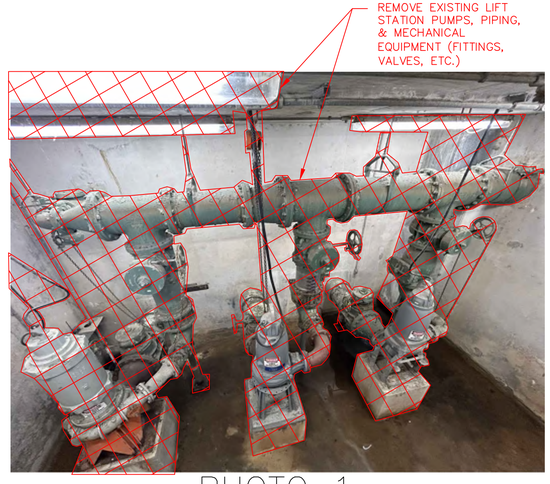


PHOTO 1



PHOTO 2

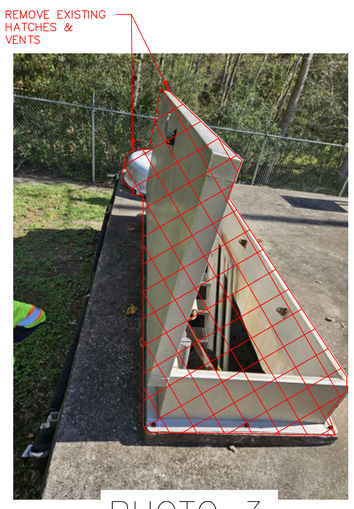


PHOTO 3



PHOTO 4

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DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

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FB NO. 6399

CITY OF HOUSTON

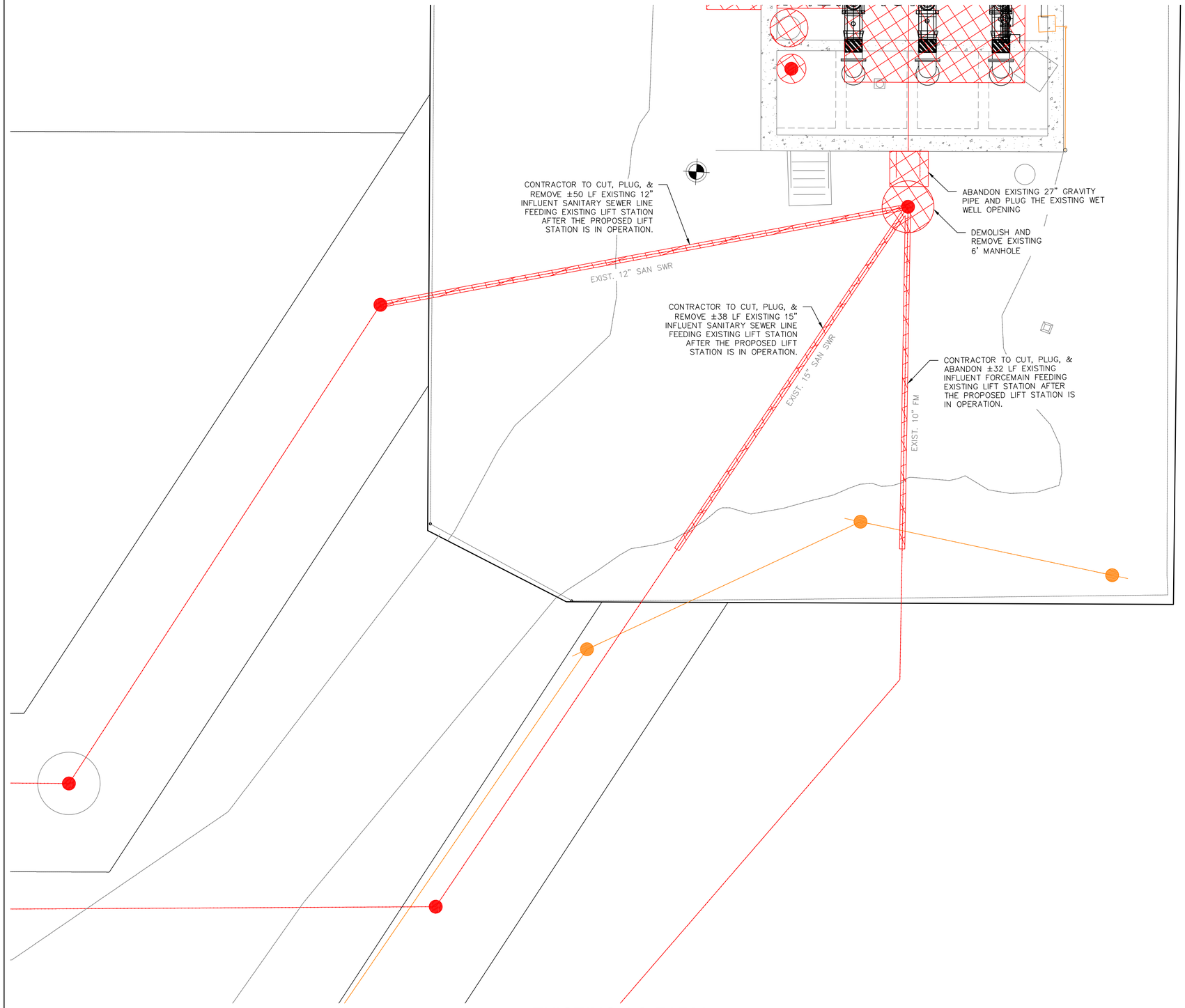
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
MECHANICAL
DEMOLITION PLAN AND SECTION
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
H: 1"=4'-0" V: 1"=4'-0"	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 40 OF 298	M-102

PLOTTED: 2/25/2026 11:32 AM
PLOT STYLE: COH.ctb
FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.03_Drawings\24-1930-PD-DEMO.dwg



EXISTING AG FARM
LIFT STATION

SCALE: 1" = 5'-0"

0 5 10
SCALE IN FEET

NOTES:

1. PROVIDE SAFE WORKING CONDITIONS FOR EMPLOYEES THROUGHOUT DEMOLITION AND REMOVAL OPERATIONS. OBSERVE SAFETY REQUIREMENTS FOR WORK BELOW GRADE.
2. MAINTAIN SAFE ACCESS TO ADJACENT PROPERTY AND BUILDINGS. DO NOT OBSTRUCT ROADWAYS, SIDEWALKS OR PASSAGEWAYS ADJACENT TO THE WORK.
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12. CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS (INCLUDING DEMOLISH PERMITS, ENCROACHMENT PERMITS, ETC.)

NO.	DATE	REVISION	APP.

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TxEng F-257
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TEXAS REGISTRATION No. 98576

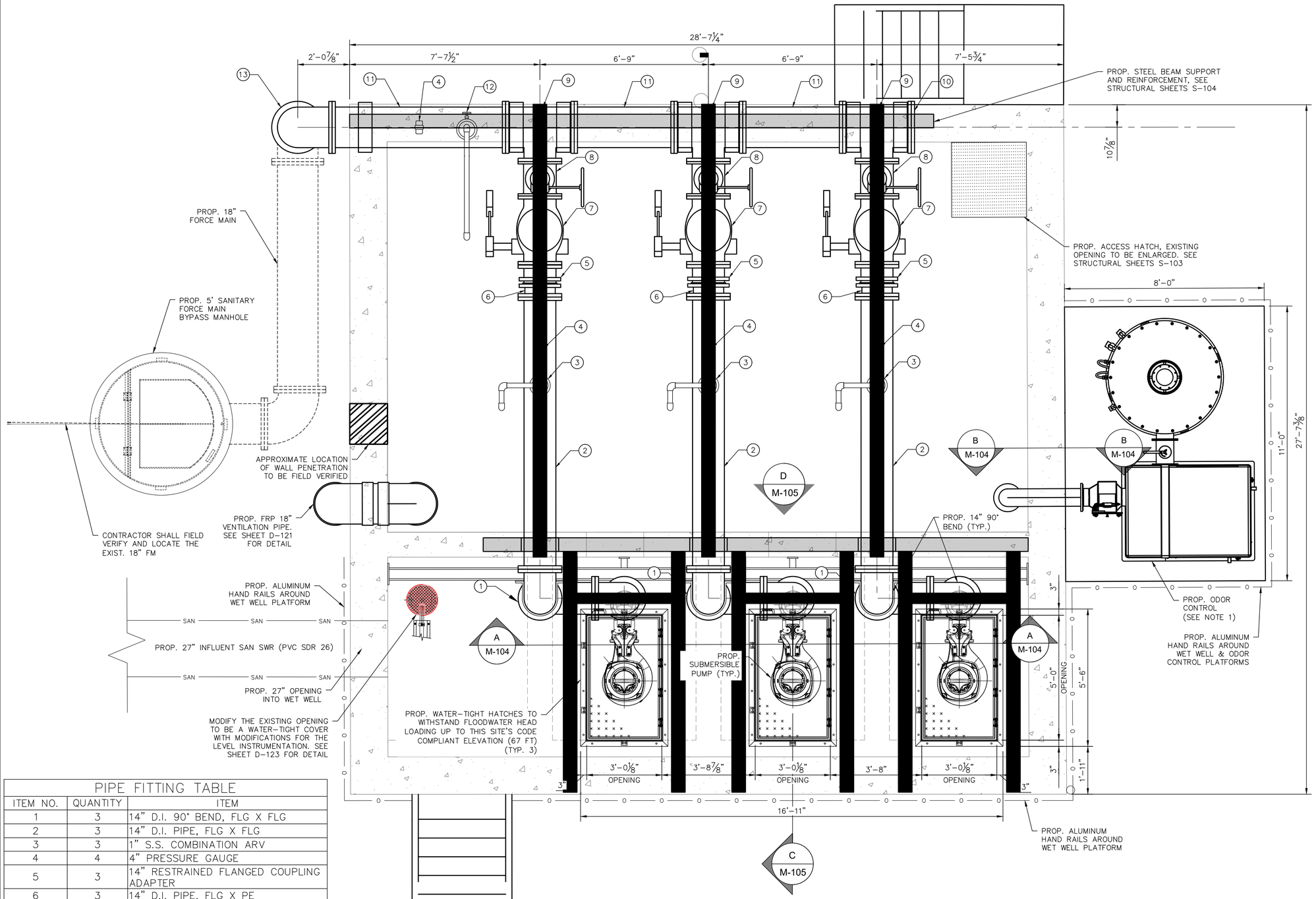
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
MECHANICAL
SAN SWR DEMOLITION PLAN
(SHEET 2 OF 2)

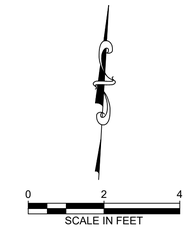
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R-000267-0177-3	
DRAWING SCALE	
H: 1"=5' V: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 41 OF 298	M-103

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PLAN @ GRADE
SCALE: 1" = 2'-0"

PIPE FITTING TABLE		
ITEM NO.	QUANTITY	ITEM
1	3	14" D.I. 90° BEND, FLG X FLG
2	3	14" D.I. PIPE, FLG X FLG
3	3	1" S.S. COMBINATION ARV
4	4	4" PRESSURE GAUGE
5	3	14" RESTRAINED FLANGED COUPLING ADAPTER
6	3	14" D.I. PIPE, FLG X PE
7	3	14" SWING CHECK VALVE, FLG X FLG
8	3	14" PLUG VALVE, FLG X FLG
9	3	18" X 14" D.I. REDUCING TEE, FLG
10	1	18" BLIND FLANGE
11	3	18" D.I. PIPE, FLG X FLG
12	1	2" S.S. ARV
13	1	18" D.I. 90°, FLG X FLG



NO.	DATE	REVISION	APP.

NOTES:

1. ODOR CONTROL MECHANICAL EQUIPMENT IS NOT RECOMMENDED TO BE INSTALLED ABOVE THE 500-YR FLOODPLAIN, AS IT IS NOT CONSIDERED A CRITICAL COMPONENT OF THE LIFT STATION AND WOULD CAUSE DIFFICULTY FOR ACCESS AND ON-GOING MAINTENANCE.
2. ELEVATIONS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY CONTRACTOR. CONTRACTOR SHALL CONTACT EOR IF PROPOSED ELEVATIONS ARE NOT FEASIBLE.
3. CONTRACTOR SHALL CONTACT LAKE VILLAGE WWTP TO COORDINATE THE BYPASS OF THE EXISTING 8" FM PRIOR TO COMMENCING WORK.

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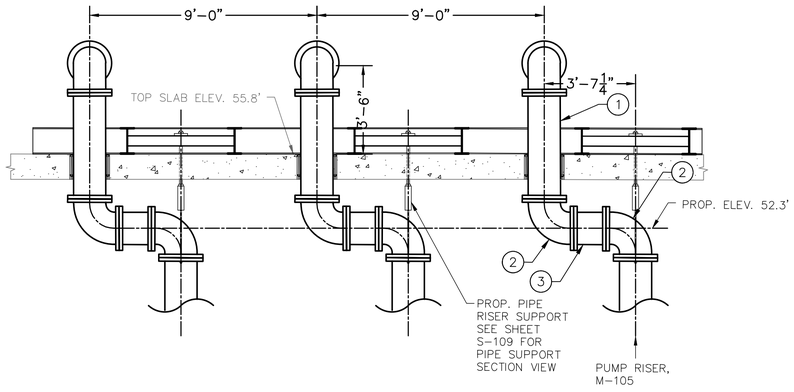
RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

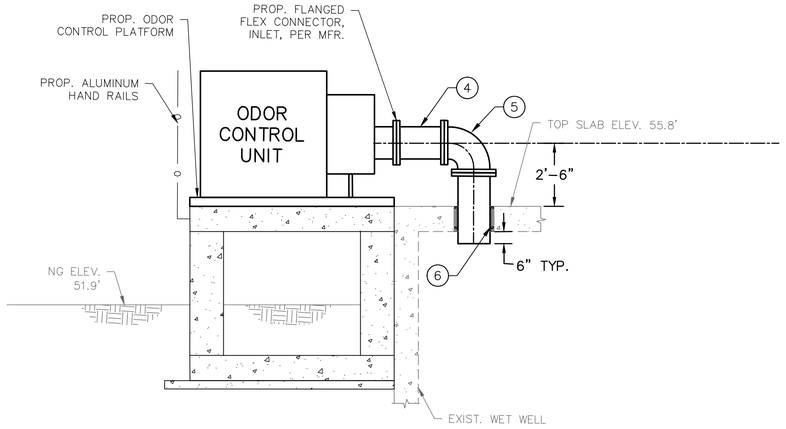
AG FARM LIFT STATION
MECHANICAL
LIFT STATION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=5' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 42 OF 298	M-103



SECTION A-A

SCALE: 1" = 3'-0"



SECTION B-B

SCALE: 1" = 3'-0"

PIPE FITTING TABLE		
ITEM NO.	QUANTITY	ITEM
1	3	14" DI WALL PIPE, FLG X FLG
2	6	14" DI 90° BEND, FLG X FLG
3	3	14" DI PIPE, FLG X FLG
4	1	8" FRP, FLG X FLG
5	2	8" FRP 90° BEND, FLG X FLG
6	1	8" FRP WALL PIPE, PE WITH LINK SEAL

0 3 6

SCALE IN FEET

NO.	DATE	REVISION	APP.

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713.869.3433
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
MECHANICAL
LIFT STATION SECTION VIEWS

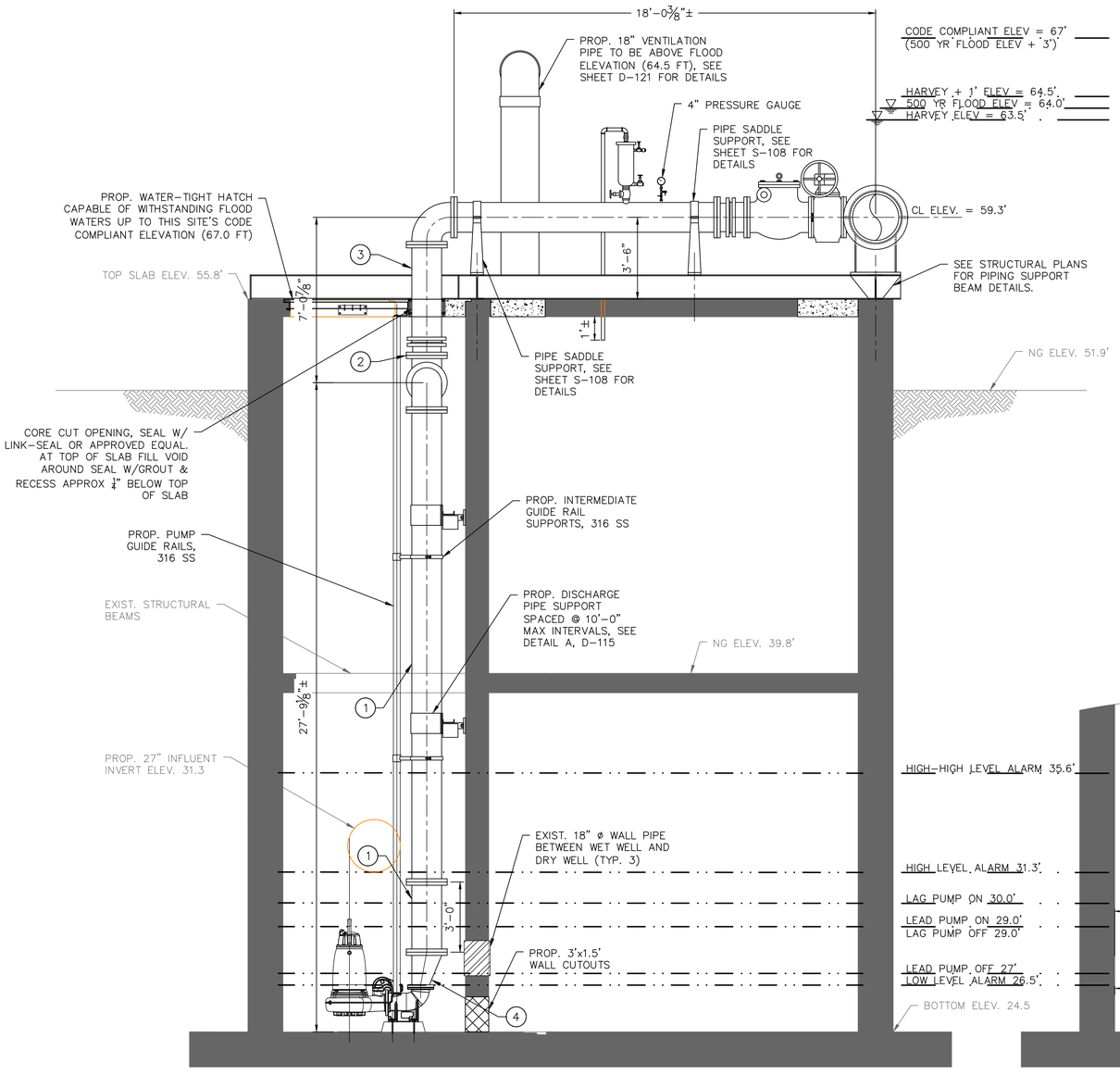
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R-000267-0177-3	
DRAWING SCALE	
H: 1"=3' V: 1"=3'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 43 OF 298	M-104

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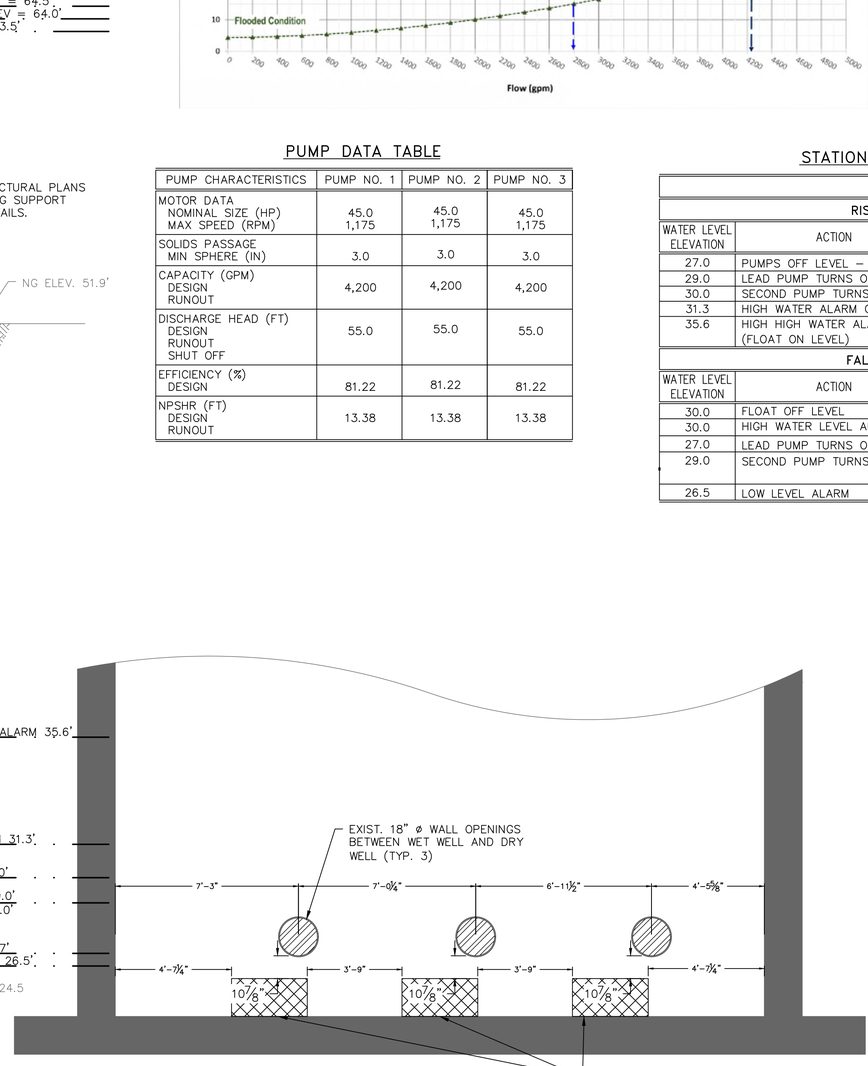
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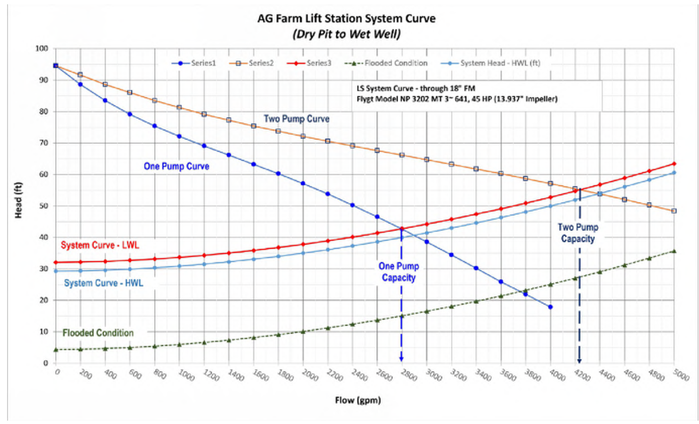
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D
M-105
SECTION VIEW
SCALE: 1" = 3'-0"



E
M-105
LIFT STATION WET WELL PROFILE
SCALE: 1" = 3'-0"



PUMP DATA TABLE

PUMP CHARACTERISTICS	PUMP NO. 1	PUMP NO. 2	PUMP NO. 3
MOTOR DATA NOMINAL SIZE (HP) MAX SPEED (RPM)	45.0 1,175	45.0 1,175	45.0 1,175
SOLIDS PASSAGE MIN SPHERE (IN)	3.0	3.0	3.0
CAPACITY (GPM) DESIGN RUNOUT	4,200	4,200	4,200
DISCHARGE HEAD (FT) DESIGN RUNOUT SHUT OFF	55.0	55.0	55.0
EFFICIENCY (%) DESIGN	81.22	81.22	81.22
NPSHR (FT) DESIGN RUNOUT	13.38	13.38	13.38

STATION OPERATION TABLES

RISING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
27.0	PUMPS OFF LEVEL – NO ACTION	ALL PUMPS ARE OFF
29.0	LEAD PUMP TURNS ON	LEAD PUMP ON
30.0	SECOND PUMP TURNS ON	LEAD & SECOND PUMPS ON
31.3	HIGH WATER ALARM ON	HIGH WATER ALARM SOUND
35.6	HIGH HIGH WATER ALARM ON (FLOAT ON LEVEL)	FIRM PUMPS ON (FLOATS)

FALLING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
30.0	FLOAT OFF LEVEL	FIRM PUMPS OFF (FLOATS)
30.0	HIGH WATER LEVEL ALARM OFF	LEAD & SECOND PUMPS ON
27.0	LEAD PUMP TURNS OFF	SECOND PUMP ON
29.0	SECOND PUMP TURNS OFF	ALL PUMPS STOPPED – STANDBY PUMP SWITCHES TO LEAD PUMP
26.5	LOW LEVEL ALARM	–

PIPE FITTING TABLE

ITEM NO.	QUANTITY	ITEM
1	9	14" D.I. PIPE, FLG X FLG
2	3	14" RESTRAINED FLANGED COUPLING ADAPTER
3	3	14" D.I. PIPE, PE X FLG
4	3	14" X 8" D.I. PIPE REDUCER, FLG X FLG

NO.	DATE	REVISION	APP.

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DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
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TEXAS REGISTRATION No. 98576

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FB NO. 6399

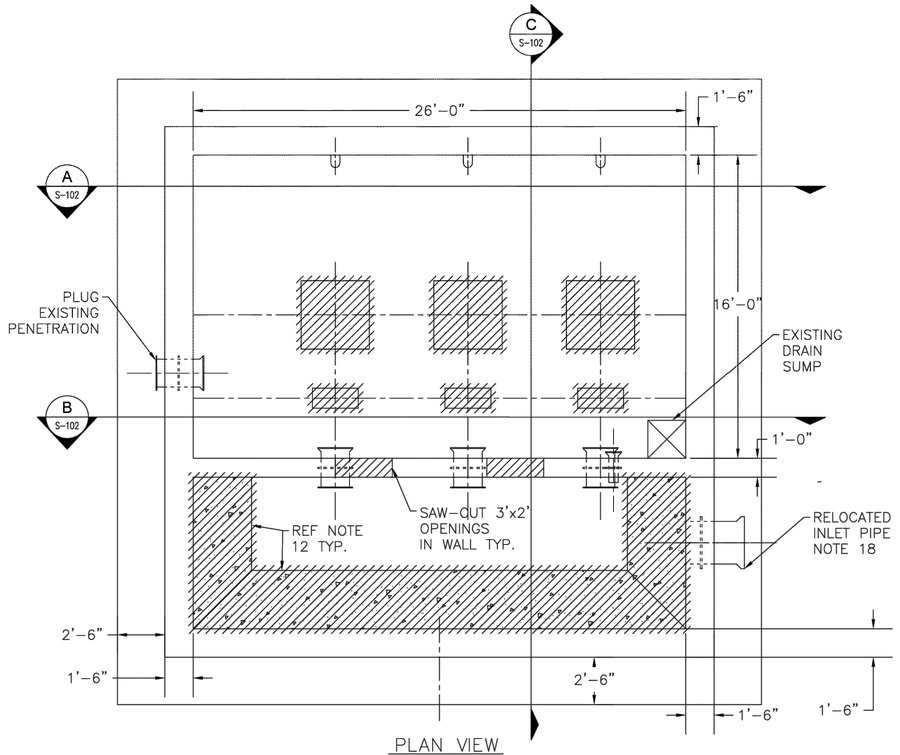
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

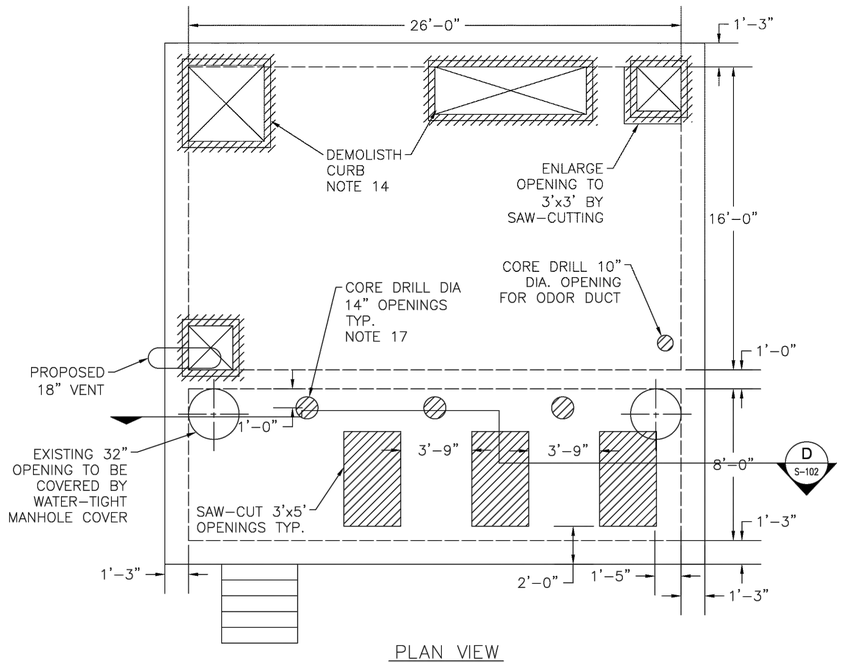
AG FARM LIFT STATION
MECHANICAL
LIFT STATION SECTION

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=3' VERT: 1"=3'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 44 OF 298	M-105

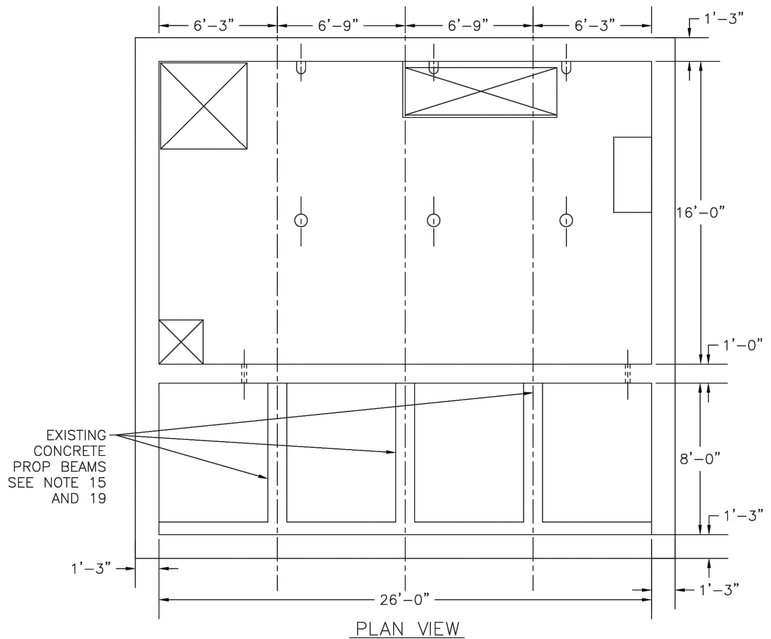
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PLAN VIEW
PLAN AT EL. 25.67
SCALE: 1/4"=1'-0"



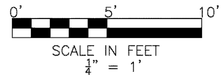
PLAN VIEW
PLAN AT EL. 57.00
SCALE: 1/4"=1'-0"



PLAN VIEW
PLAN AT EL. 41.00
(NO STRUCTURAL DEMOLITION ON THIS FLOOR)
SCALE: 1/4"=1'-0"

NOTES

1. ALL EXISTING EMBEDDED WALL PIPES SHALL BE GROUTED AND SEALED WITH MATCHING BLIND FLANGES.
2. PARTIAL DEMOLITION OF EXISTING EQUIPMENT, CONCRETE, AND STRUCTURAL STEEL MUST BE MONITORED CAREFULLY FOR THE STABILITY , CONTROL, VIBRATIONS, CRACKS, LEAKS, AND OTHER PROGRESSIVE OR SUDDEN DAMAGE TO THE PORTIONS OF STRUCTURE TO BE RETAINED.
3. NO DEMOLITION SHOULD START UNLESS THE INTERMEDIATE SLAB AND ROOF SLAB ARE FULLY SUPPORTED WITH SHORING SYSTEM.
4. THE LOCATIONS OF PROPS ON BOTH FLOORS SHALL MATCH CLOSELY SO THE VERTICAL LOADS ARE DIRECTLY TRANSFERRED TO THE BOTTOM FLOOR WITHOUT CAUSING OVERSTRESSING.
5. HEAVY DEMOLITION EQUIPMENT CAUSING EXCESSIVE VIBRATIONS MAY NOT BE USED.
6. LARGE CHUNKS OF CONCRETE MUST BE ADEQUATELY SECURED AND REMOVED WITH CRANE AND NOT ALLOWED TO FREE FALL TO LOWER ELEVATIONS.
7. DEBRIS REMOVAL AND DEMOLITION ACTIVITY MUST NOT BE DONE AT THE SAME TIME.
8. DEMOLITION OF LARGE SLAB OPENINGS MUST BE DONE WITH SAW-CUTTING ONLY. CURBS AND EDGES OF SAW CUT CONCRETE SHALL BE DEMOLISHED MANUALLY TO EXPOSE THE EXISTING REBAR.
9. NEW CONCRETE WORK SHALL NOT START UNTIL ALL DEMOLISHION IS COMPLETE.
10. DEMOLITION IN THESE AREAS IS MEANT TO EXPOSE EXISTING SLAB REBAR FOR LAPPING WITH PROPOSED PROP BEAMS.
11. HYDRAULIC DEMOLITION USING HIGH-PRESSURE WATER JETS MAY BE CONSIDERED FOR AREAS REFERENCED IN NOTE 10.
12. DEMOLISH EXISTING CLASS 2 CONCRETE PROFILE TO MAKE ROOM FOR NEW SUBMERSIBLE PUMPS, BENDS, GUIDE RAILS, ETC.
13. THE LOCATIONS OF SCAFFOLD PROPS ON MULTIPLE FLOORS SHALL MATCH CLOSELY SO THE VERTICAL LOADS ARE DIRECTLY TRANSFERRED TO THE BOTTOM FLOOR WITHOUT CAUSING OVERSTRESSING.
14. INSTALL NO 5 ANCHORS @8"C/C PER FACE ON WALL SURFACES WHERE EXISTING REBARS ARE NOT AVAILABLE. CHIP EXISTING CONCRETE SURFACE TO BOND WITH NEW CONCRETE.
15. EXISTING PROP BEAMS ARE ESSENTIAL FOR THE STABILITY OF STRUCTURE. ALL CARE MUST BE TAKEN FOR THE PROTECTION OF THESE BEAMS. DEMOLITION DEBRIS SHALL NOT BE ALLOWED TO FREE FALL OR DAMAGE THE BEAMS. SCAFFOLDS OR FORM WORK SHALL NOT BE SUPPORTED ON THESE BEAMS.
16. SAW-BINDING MAY OCCUR WHILE SAW-CUTTING OPENINGS FOR THE ACCESS HATCHES.
17. VERIFY FINAL OD OF DISCHARGE RISER WITH PIPING DRAWINGS
18. SAW CUT OPENING IN WALL AND RELOCATE INLET PIPE.
19. PROP BEAMS ARE STRUCTURAL STRUTS PROVIDED TO RESIST (PROP) HORIZONTAL FORCES DUE TO HYDRAULIC PRESSURE.



NO.	DATE	REVISION	APP.

DCCM

neera
880 Tully Road
Ste 087
Houston, TX 77079
832.641.5413
TBPE Reg. No. F-14240

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FEBRUARY 2026

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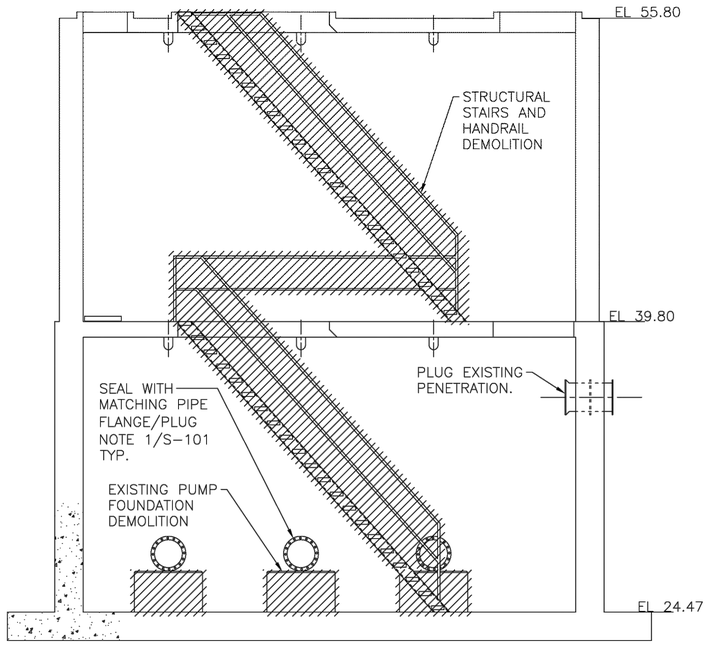
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
DEMOLITION PLANS

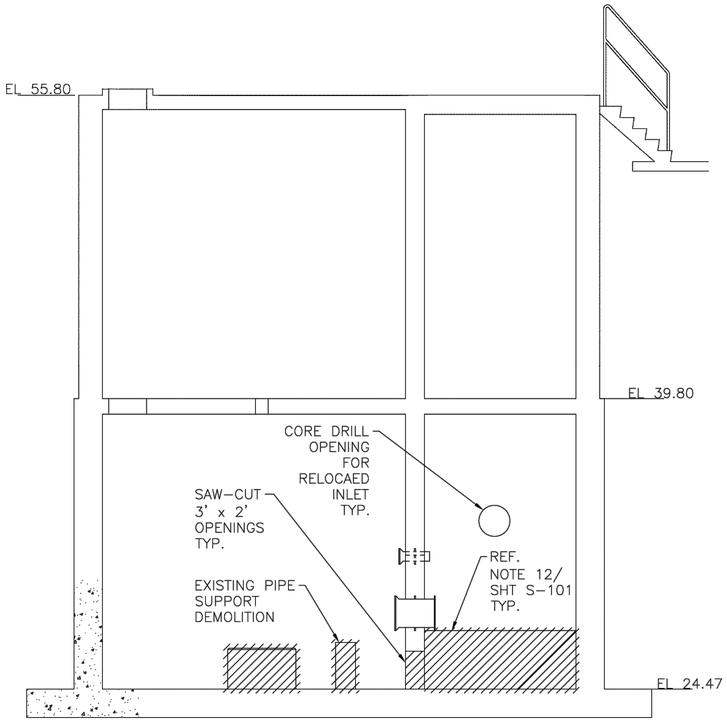
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R-000267-0177-3	
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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 45 OF 298	S-101

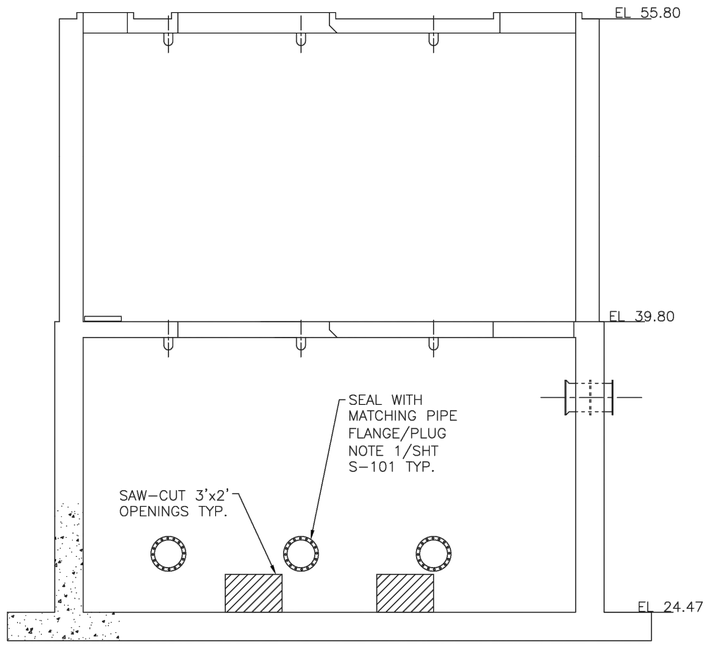
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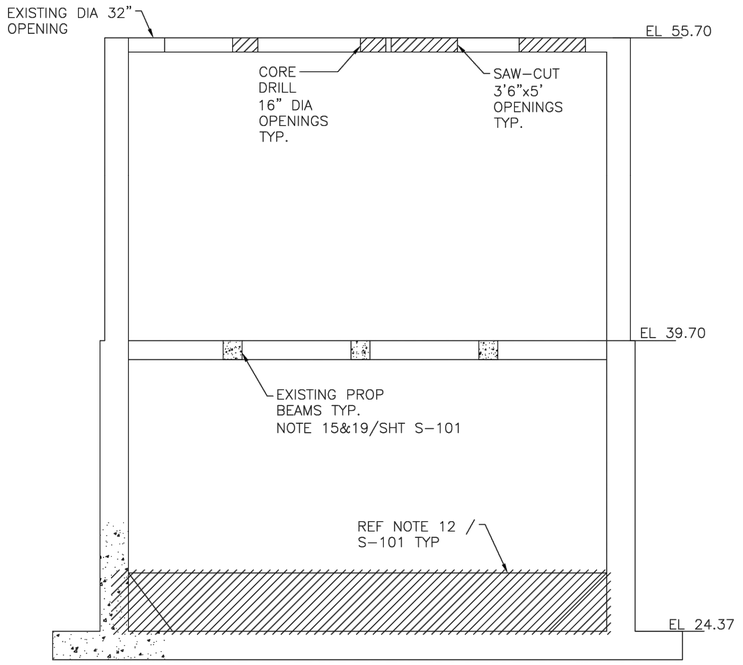
SECTION VIEW
SECTION A–A
SCALE: 1/4"=1'–0"



SECTION VIEW
SECTION C–C
SCALE: 1/4"=1'–0"



SECTION VIEW
SECTION B–B
SCALE: 1/4"=1'–0"



SECTION VIEW
SECTION D–D
SCALE: 1/4"=1'–0"

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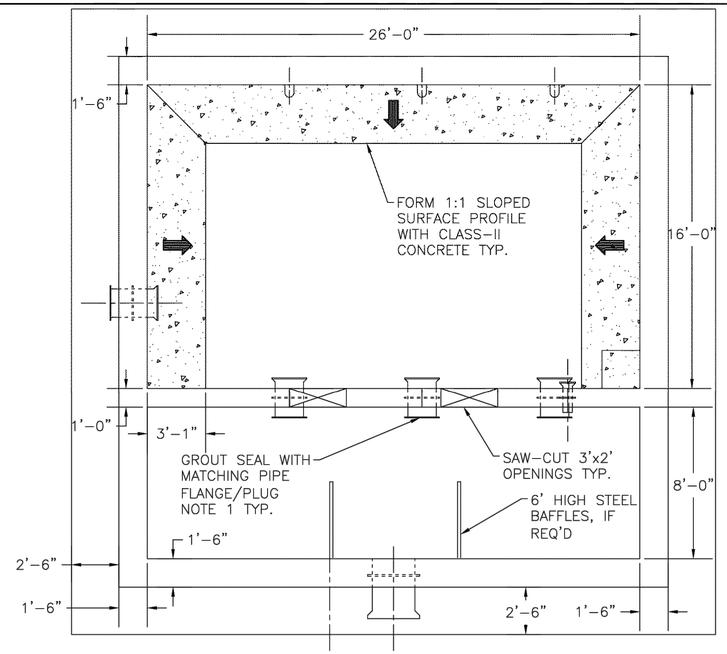
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
DEMOLITION SECTION AND DETAILS

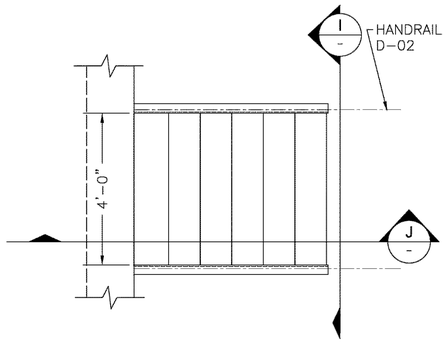
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DRAWING SCALE	
HORIZ: 1/4"=1' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 46 OF 298	S–102

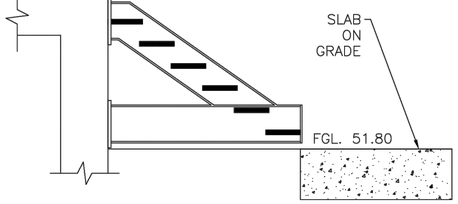
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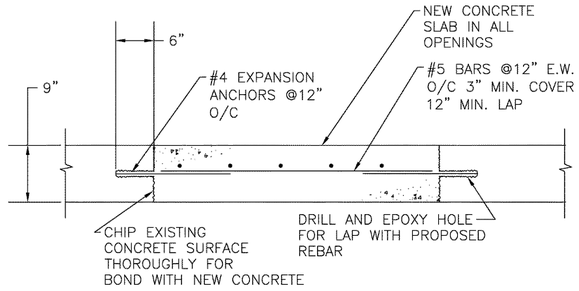
PROPOSED FLOOR PROFILE WITH LEAN CONCRETE
PLAN AT EL. 25.67
SCALE: 1/4"=1'-0"



PLAN VIEW
PLATFORM ACCESS STAIRS
SCALE: 1/2"=1'-0"

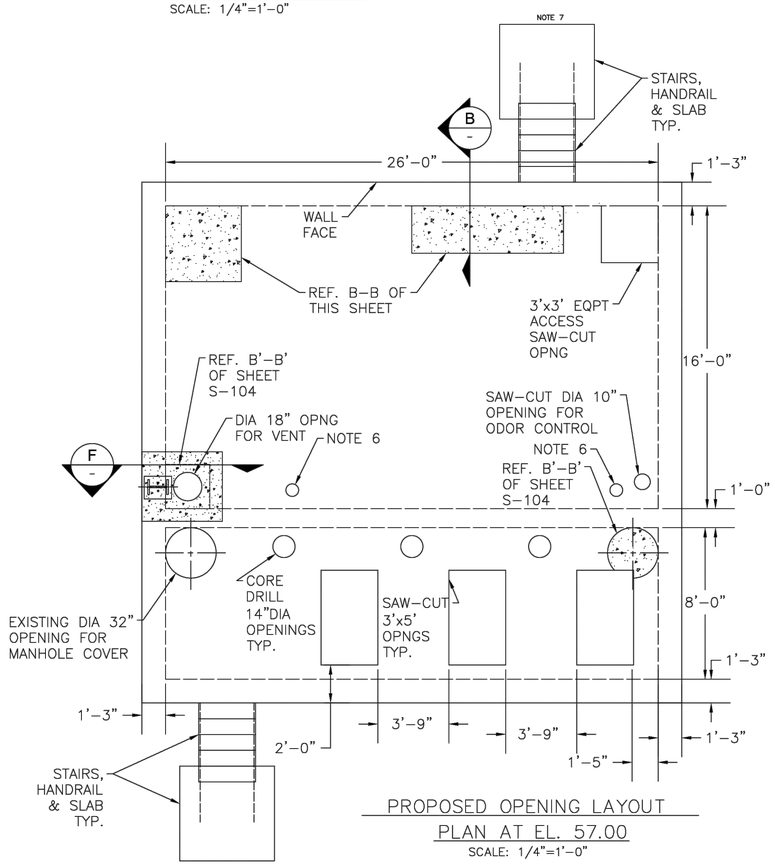


SECTION J-J
PLATFORM ACCESS STAIRS
SCALE: 1/2"=1'-0"

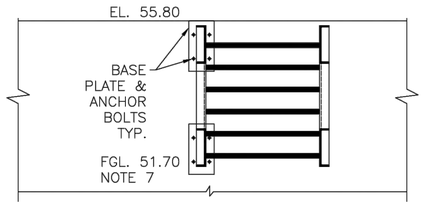


1. JAGGED EDGE IN SECTION REPRESENTS ROUGHENED/CHISELED CONCRETE SURFACE TO DEVELOP BOND WITH NEW CONCRETE.
2. DRILL HOLES PER ANCHOR MANUFACTURER RECOMMENDATIONS.

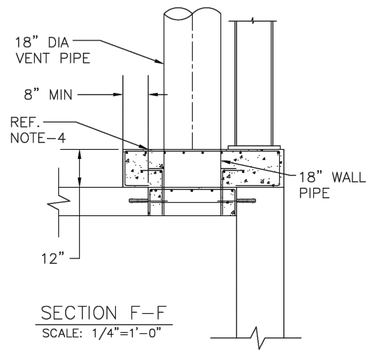
SECTION B-B
SCALE: 1"=1'-0"



PROPOSED OPENING LAYOUT
PLAN AT EL. 57.00
SCALE: 1/4"=1'-0"



SECTION I-I
PLATFORM ACCESS STAIRS
SCALE: 1/2"=1'-0"



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

NOTES:

1. REFER TO MECH/PIPE DRAWINGS FOR LOCATIONS AND SIZE OF OPNGS AND SUPPORTS.
2. ALL HATCH, MANHOLE COVERS, EQPT HATCHES, VENTS & PIPE PENETRATIONS SHALL BE PRESSURE RATED.
3. MIN. 1" GAP SHALL BE MAINTAINED BETWEEN EXISTING TOP OF SLAB AND STEEL BEAMS. THE GAP IS INTENDED TO: (A) ISOLATE PIPE LOADS FROM IMPOSING ON TO ROOF SLAB (B) ALLOW FREE DRAINAGE.
4. CONCRETE FILLED OPENING WITH REINFORCEMENT. LAP REBAR WITH ANCHORS DRILLED INTO EXISTING EDGE CONCRETE.
5. PROVIDE PIPE SUPPORTS AT LOCATIONS AS SHOWN IN PIPING DRAWINGS.
6. OPENINGS FOR RADAR LEVEL TRANSMITTER AND BACKUP FLOAT LEVEL SENSORS SHALL BE LOCATED PER ELECTRICAL DRAWINGS.
7. ADJUST THE SURROUNDING GRADE, IF NECESSARY, FOR ACCESS TO THE STAIRS.

NO.	DATE	REVISION	APP.

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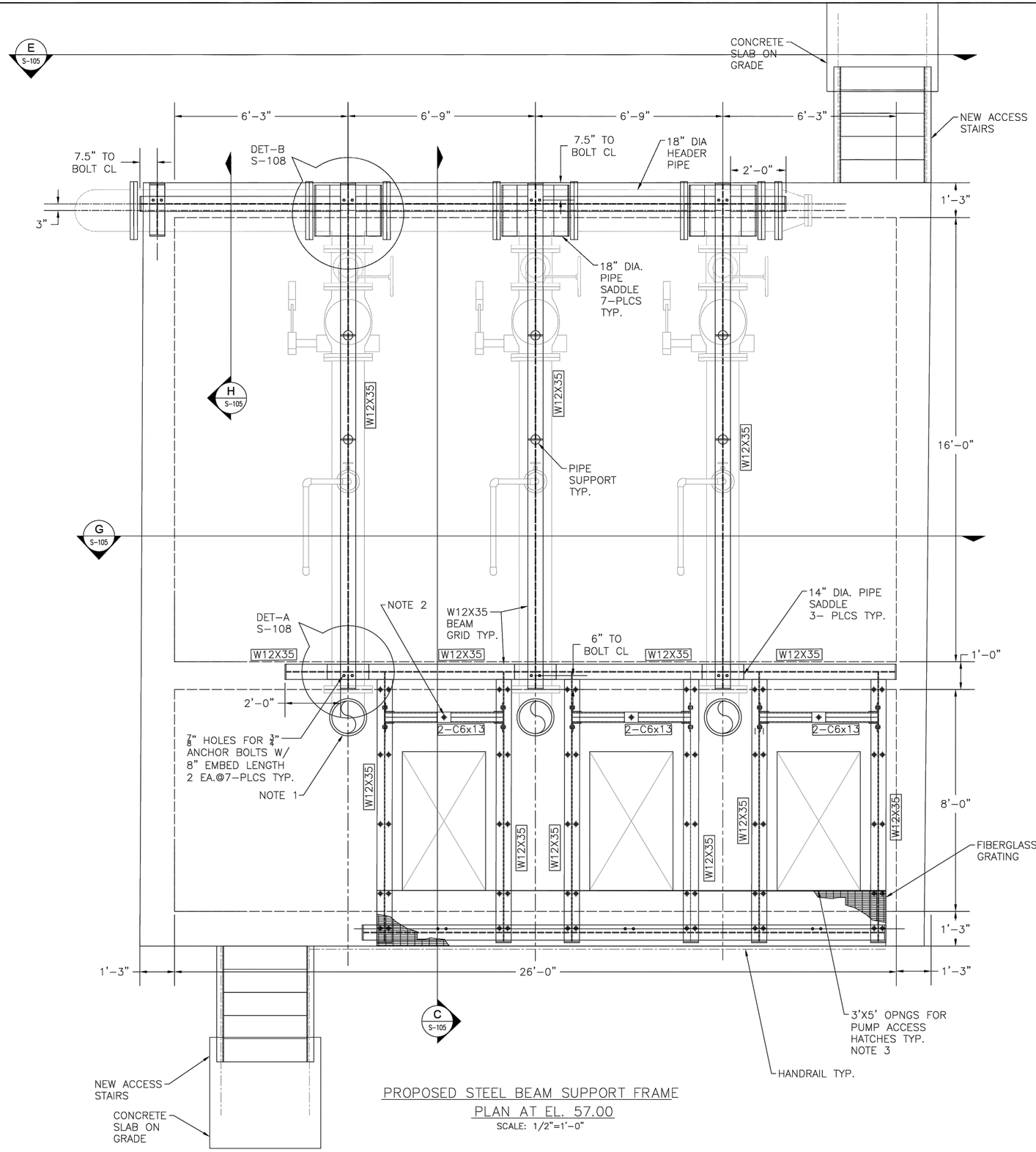
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
ROOF OPENINGS & STEEL ACCESS STAIRS LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: AS NOTEDVERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 47 OF 298	S-103

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PLOTTED: 2/26/2026 8:42 PM



PROPOSED STEEL BEAM SUPPORT FRAME
PLAN AT EL. 57.00
SCALE: 1/2"=1'-0"

0' 2.5' 5'
SCALE IN FEET
1" = 1'

NO.	DATE	REVISION	APP.

NOTES:

1. INSTALL PRESSURE RATED SEALANT/GASKET ON INSTALLATION OF DISCHARGE RISER PIPE.
2. TACK WELD LOCKNUT AFTER INSTALLATION OF RISER BELOW.
3. REFER TO MECHANICAL SHEETS FOR LOCATION AND SIZE.
4. PRE-MANUFACTURED SADDLE CLAMPS MAY BE ADAPTED, IF AVAILABLE.
5. BEAM GRID IS INTENDED TO TRANSFER PIPE LOADS TO WALLS THROUGH PIPE SUPPORTS. ENSURE 1" GAP IS MAINTAINED BELOW SUPPORT BEAM. IF NECESSARY, FABRICATE CAMBER (COMPENSATORY PRESET CURVATURE) IS INCORPORATED INTO PIPE GRID) PRIOR TO INSTALLATION.

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LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

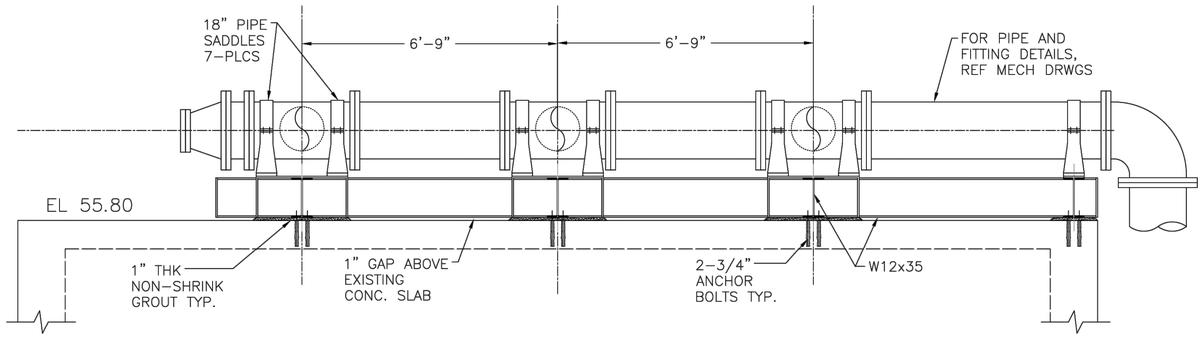
AG FARM LIFT STATION
DISCHARGE PIPE SUPPORT FRAME
ENLARGED FRAME LAYOUT PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1/2"=1' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 48 OF 298	S-104

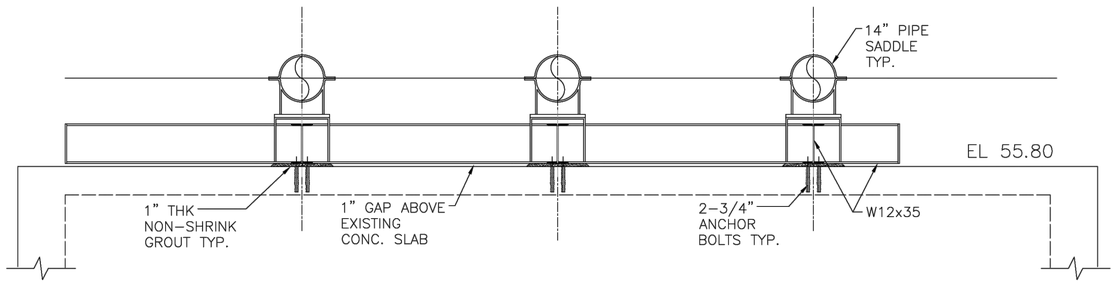
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0' 2.5' 5'
SCALE IN FEET
1/2" = 1'

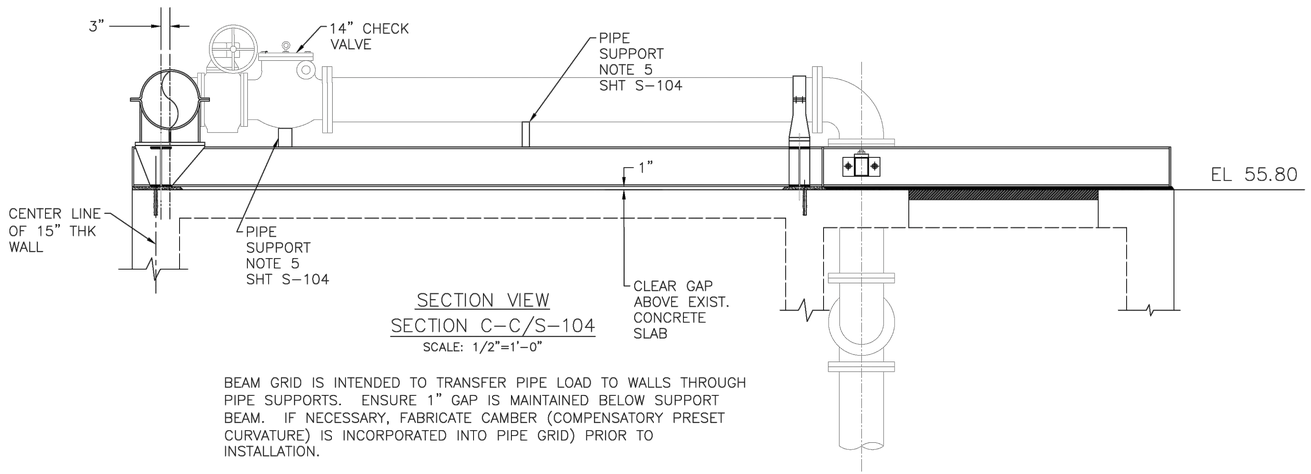
NO.	DATE	REVISION	APP.



SECTION VIEW
SECTION E–E/S104
SCALE: 1/2"=1'–0"

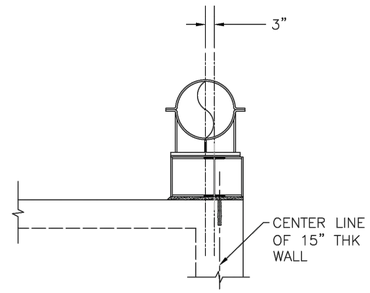


SECTION VIEW
SECTION G–G/S–104
SCALE: 1/2"=1'–0"



SECTION VIEW
SECTION C–C/S–104
SCALE: 1/2"=1'–0"

BEAM GRID IS INTENDED TO TRANSFER PIPE LOAD TO WALLS THROUGH PIPE SUPPORTS. ENSURE 1" GAP IS MAINTAINED BELOW SUPPORT BEAM. IF NECESSARY, FABRICATE CAMBER (COMPENSATORY PRESET CURVATURE) IS INCORPORATED INTO PIPE GRID) PRIOR TO INSTALLATION.



SECTION VIEW
SECTION H–H/S–104
SCALE: 1/2"=1'–0"

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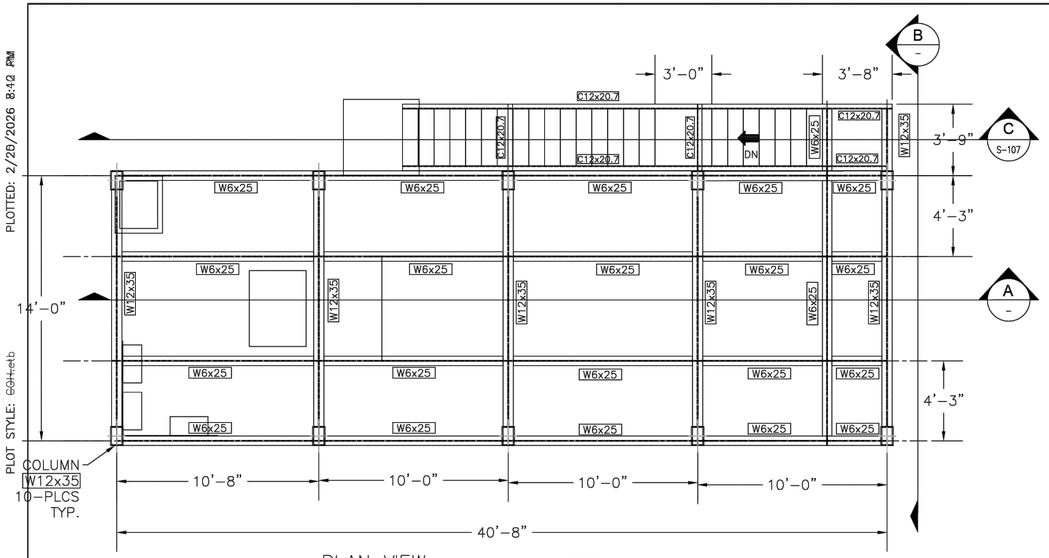
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LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
DISCHARGE PIPE SUPPORT FRAME
ENLARGED FRAME LAYOUT SECTIONS

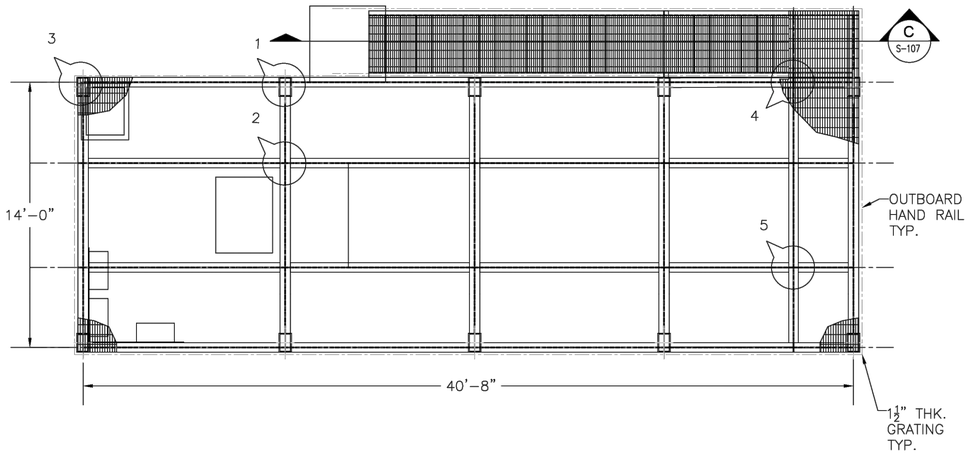
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R–000267–0177–3	
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HORIZ: 1/2"=1' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 49 OF 298	S–105

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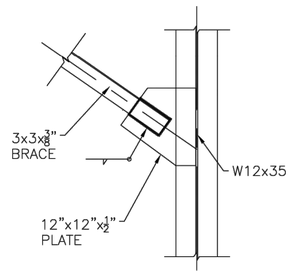


PLAN VIEW
ELECTRICAL PLATFORM
FRAMING LAYOUT
SCALE: 1/4"=1'-0"

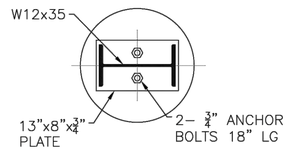
NOTES:
1. MAIN FRAMING BEAMS ARE SHOWN ABOVE. SEE DETAIL 1 AND DETAIL 2 OF S-111 FOR ADDITIONAL BEAMS TO ANCHOR EQUIPMENT SKIDS.
2. FOR EQUIPMENT LOCATIONS SEE ELECTRICAL AND MECHANICAL DRAWINGS.



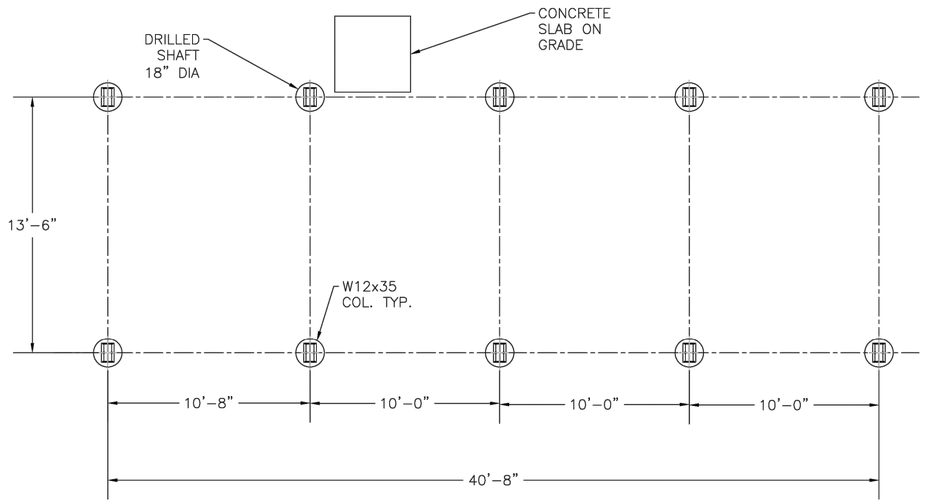
PLAN VIEW
ELECTRICAL PLATFORM
GRATING AND HANDRAIL
SCALE: 1/4"=1'-0"



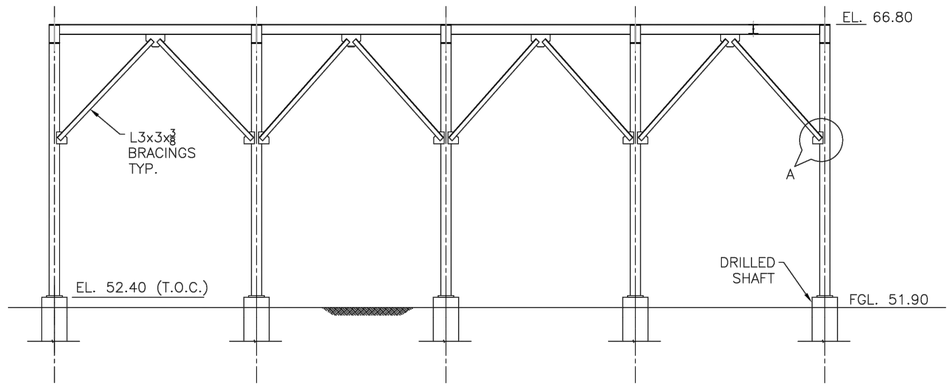
DETAIL A
BRACE CONNECTION DETAIL
SCALE: 1"=1'-0"



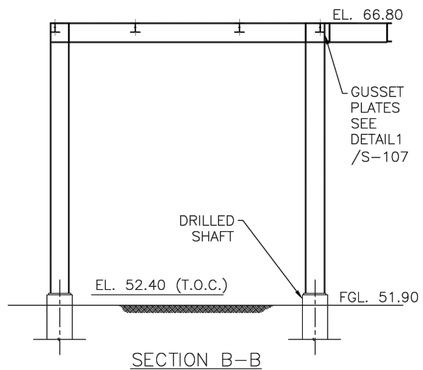
COLUMN BASEPLATE DETAIL
SCALE: 1"=1'-0"



PLAN VIEW
DRILLED SHAFTS
SCALE: 1/4"=1'-0"



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



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

NOTES:
1. PIER CENTERLINE AND EMBEDDED ANCHOR BOLTS SHALL BE INSTALLED TO THE HIGHEST DEGREE OF ACCURACY. THE VERTICAL AND HORIZONTAL TOLERANCES OF FINISHED SURFACE AND AXIS OF PIERS SHALL BE ±0.5".
2. ANCHOR BOLTS ON PIER TOP SHALL BE INSTALLED TO A TOLERANCE OF ±0.125". THE PURPOSE OF MAINTAINING TOLERANCES IS EASY INSTALLATION OF SHOP DRILLED COLUMN BASES NOT REQUIRING EXTENSIVE FIELD MENDS.
3. FOR ALUMINUM HANDRAILS SEE SHT D-02.
4. ALL GRATING SHALL BE ALUMINUM.

SUMMARY OF DRILLED PIERS

Lift Station Site	Shaft Depth, feet	Diameter of Pier	Number of piers
AG Farm Lift Station Generator /Electrical Platform Odor Control Platform	10'	18" Dia.	10
Deer Springs Lift Station Generator/ Electrical Platform Odor Control Platform	25'	18" Dia.	8
Golden Bear Lift Station Electrical Platform Odor Control Platform	10'	18" Dia.	6
Golf Course Lift Station Generator /Electrical Platform Odor Control Platform	10'	18" Dia.	10
Kingwood Place South Lift Station Generator /Electrical Platform Odor Control Platform	10'	18" Dia.	8

NO.	DATE	REVISION	APP.

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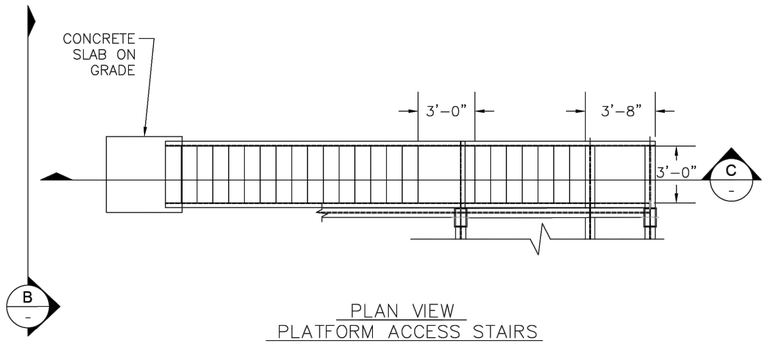
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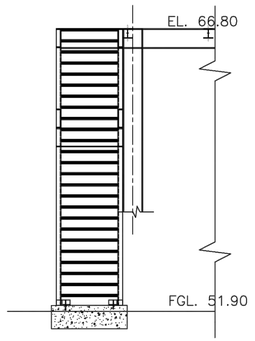
AG FARM LIFT STATION
ELEVATED PLATFORMS
GENERAL ARRANGEMENT & FRAMING DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: AS NOTEDVERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 50 OF 298	S-106

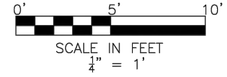
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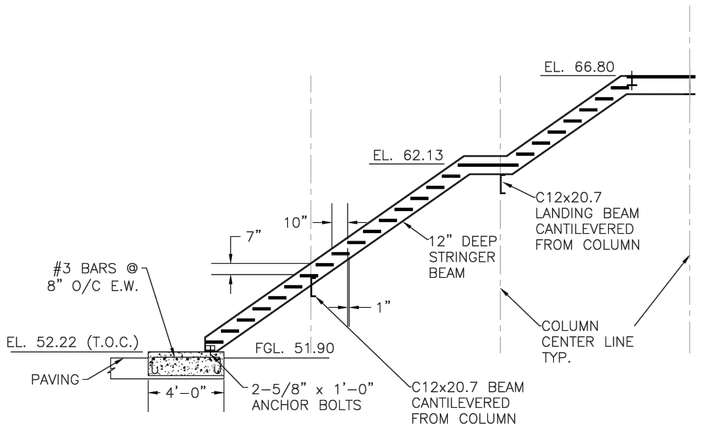
PLAN VIEW
PLATFORM ACCESS STAIRS
SCALE: 1/4"=1'-0"



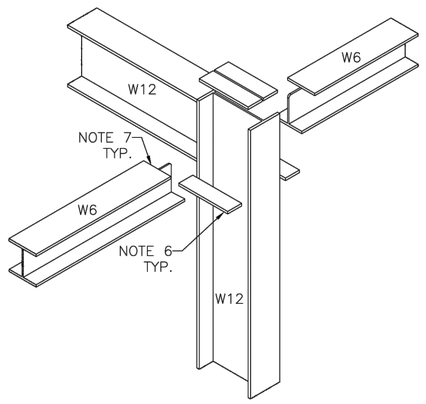
SECTION B-B
PLATFORM ACCESS STAIRS
SCALE: 1/4"=1'-0"



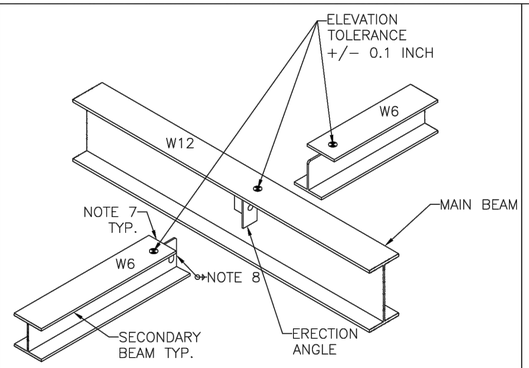
NOTES:
1. HANDRAILS ARE NOT SHOWN FOR CLARITY. REFER TO S-102 FOR HANDRAIL AND GRATINGS.
2. PROVIDE ADEQUATE GUSSETS AND STIFFENER PLATES FOR CONTINUITY OF FORCES AND MOMENTS.
3. CLEAT ANGLES AND TEMPORARY BOLTS MAY BE USED FOR ERECTION. ALL CONNECTIONS MUST BE FIELD WELDED ALL AROUND TO ENSURE COMPLETE FORCE (AND MOMENT) TRANSFER.
4. CONNECTIONS WITH FLUSH FLANGE ELEVATIONS MUST BE SET WITH RECESS (CUT OFF) ON FLANGE OF SMALLER MEMBER WHILE THE WEB IS EXTENDED.
5. COORDINATE BEARING BEAMS AND SECONDARY CHANNELS WITH EQUIPMENT SKID LOCATIONS FOR TIE DOWN BOLTS WITH ELECT. DRWGS.
6. PROVIDE ½" THK GUSSET/STIFFENER PLATES AS SHOWN FOR FLANGE TO FLANGE AND WEB TO WEB CONTINUITY.
7. TRIM AND FIT FLANGES OF SECONDARY BEAMS FOR WEB TO WEB CONTINUITY AND ELEVATION TOLERANCE OF ± ¼".
8. FILLET WELD ALL EDGES OF SECONDARY BEAM (WITH MAIN BEAM) ALL ROUND, TYP.
9. ALL GUSSET/FLANGE PLATES ARE ½" THK UNLESS NOTED OTHERWISE.
10. ERECTION BOLTS WITH SLOTTED HOLES SHALL BE USED FOR FINER ADJUSTMENT AND LEVELING FOR ELEVATION TOLERANCE.
11. MANUFACTURED STAIR PANELS OF STANDARD WIDTH MAY BE USED IN PLACE OF CUSTOM PANELS.
12. ALL BEAMS & COLUMNS IN MWFRF ARE W12x35 UNLESS NOTED OTHERWISE. ALL SECONDARY BEAMS SUPPORTING OTHER SECONDARY BEAMS AND EQUIPMENT SKID ARE W6x25 OR C12x20.7 OR C10x20 AS NECESSARY.



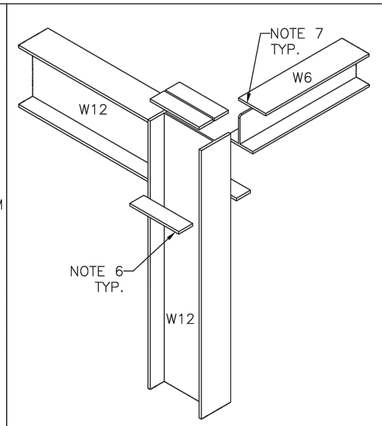
SECTION C-C
PLATFORM ACCESS STAIRS
SCALE: 1/4"=1'-0"



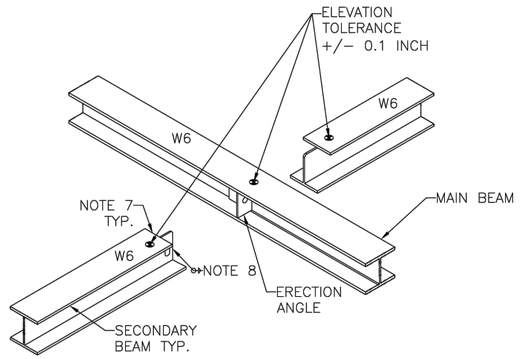
DETAIL 1/S-106
SCALE: NTS



DETAIL 2/S-106
SCALE: NTS



DETAIL 3/S-106
SCALE: NTS



DETAIL 4&5/S-106
SCALE: NTS

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TBPE Reg. No. F-14240

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FB NO. 6399

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PARDHA NAMUDURI, P.E.
#82977
FEBRUARY 2026

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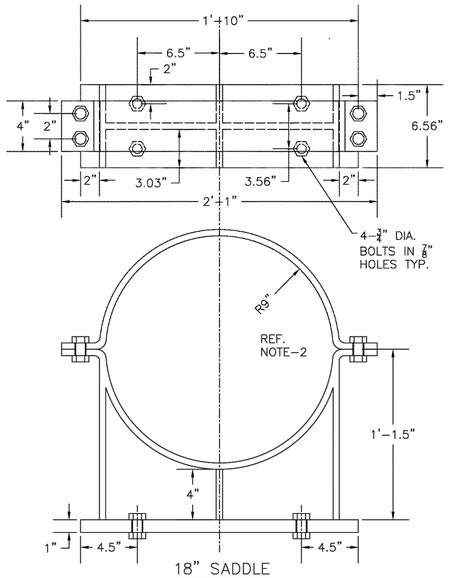
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

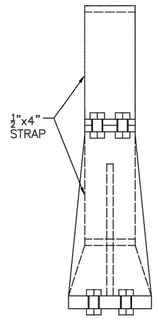
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
GENERATOR PLATFORM
STAIRS, HANDRAIL, AND CONNECTION DETAILS

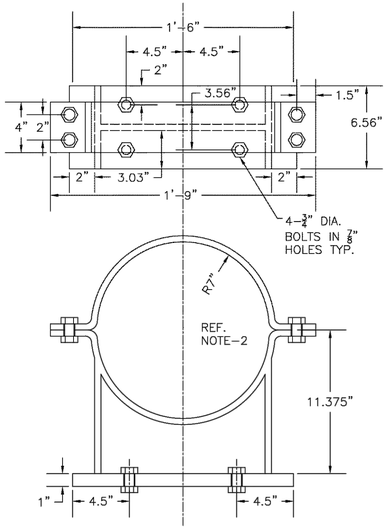
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MARILENA STOICA, P.E.	
SHEET NO. 51 OF 298	S-107

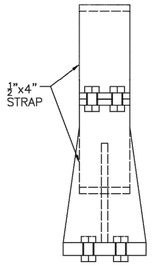
NO.	DATE	REVISION	APP.





18" SADDLE
PLAN & ELEVATION VIEWS
SCALE: 2" = 1'

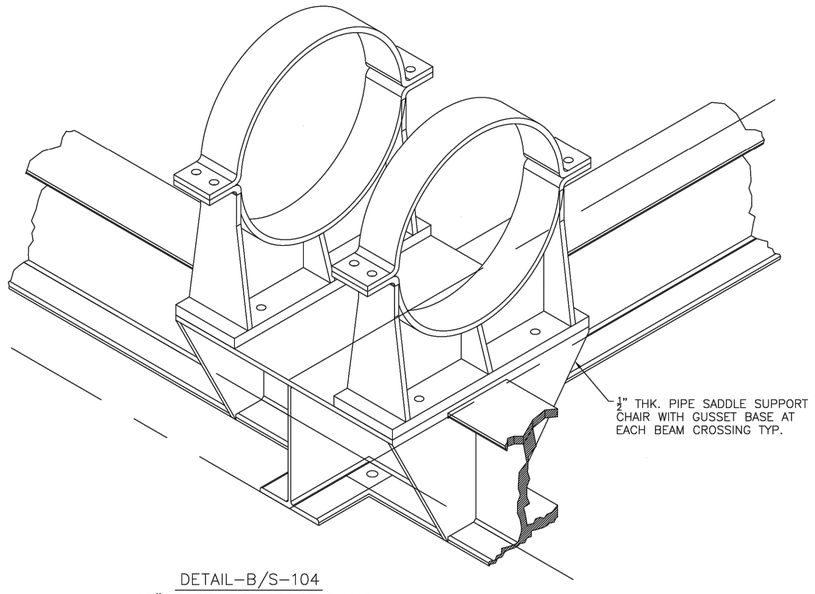




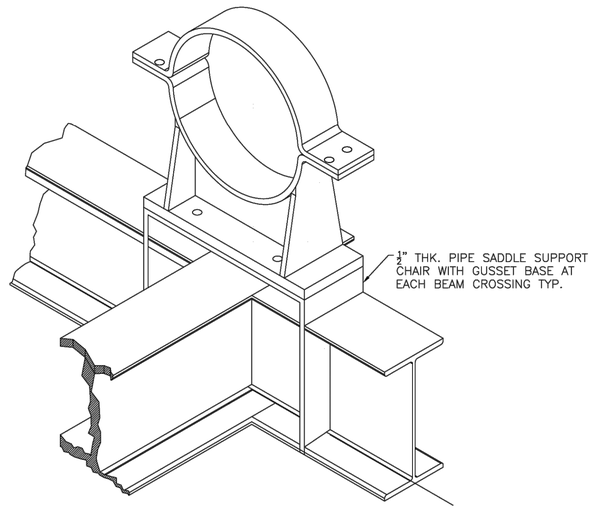
14" SADDLE
PLAN & ELEVATION VIEWS
SCALE: 2" = 1'

NOTES:

1. ALL PLATES ARE ½" THK. EXCEPT BASE PLATE WHICH IS 1" THK.
2. MATCH THE CURVATURE OF STRAPS WITH ACTUAL PIPE O.D.



DETAIL-B/S-104
18" SADDLE SUPPORT CHAIR
SCALE: N.T.S



DETAIL-A/S-104
14" SADDLE SUPPORT CHAIR
SCALE: N.T.S

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LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

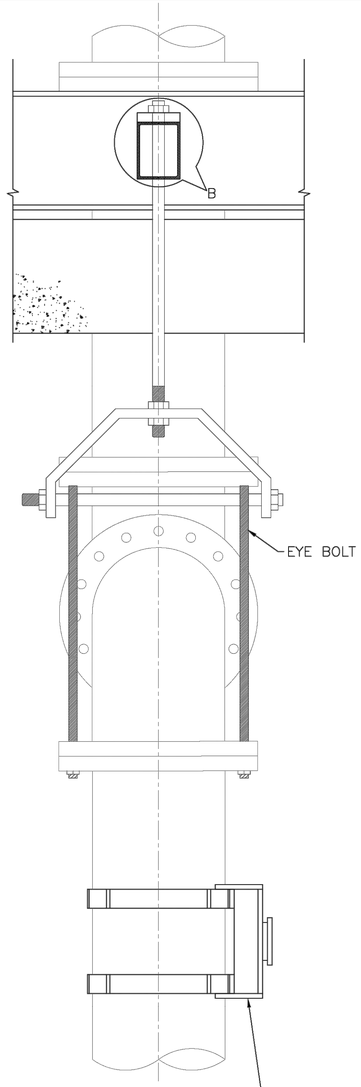
AG FARM LIFT STATION

PIPE SADDLE DETAILS

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DRAWING SCALE	
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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 52 OF 298	S-108

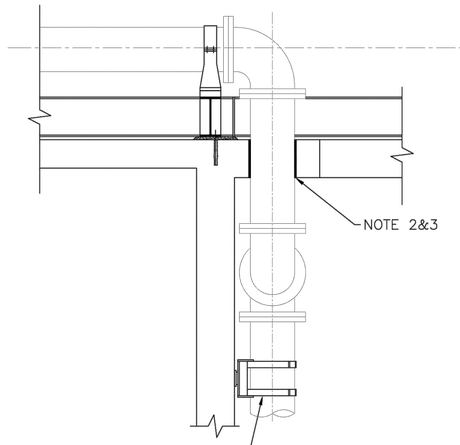
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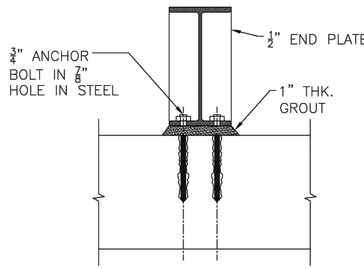
PIPINGTECH.COM FIG 900: BOLT CRADLE SUPPORT PIPE SIZE 14" OR APPROVED EQUAL. TYP 3PLCS/RISER

PIPE RISER SUPPORT
SECTION K–K
SCALE : 1–1/2"=1'–0"



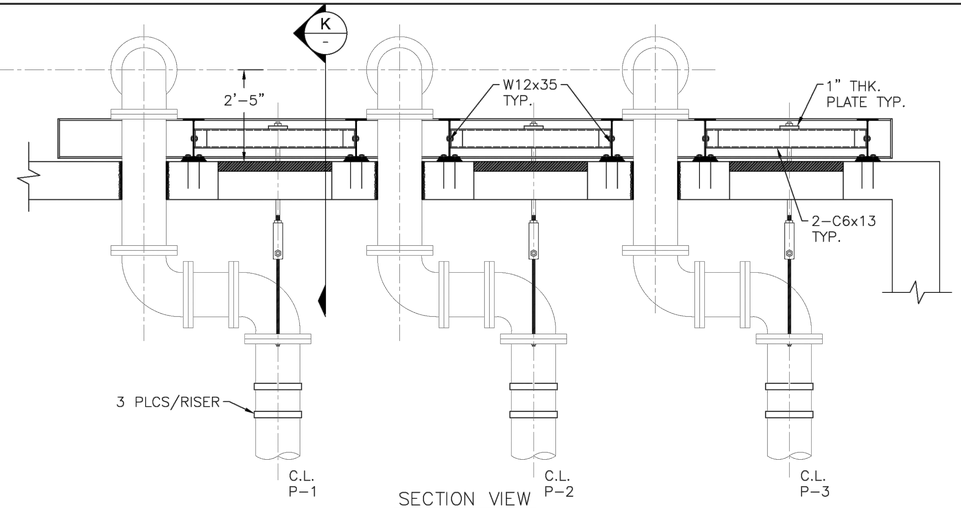
PIPINGTECH.COM FIG 900: BOLT CRADLE SUPPORT PIPE SIZE 14" OR APPROVED EQUAL. TYP 3PLCS/RISER

SECTION VIEW
SECTION J–J
SCALE: 1/2"=1'–0"

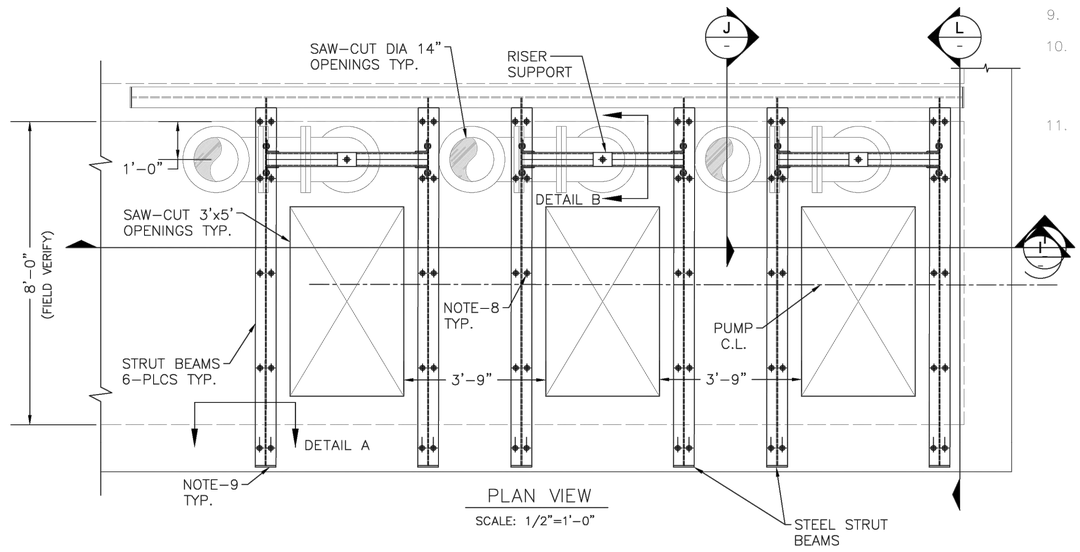


DETAIL–A
SCALE: 1–1/2"=1'–0"

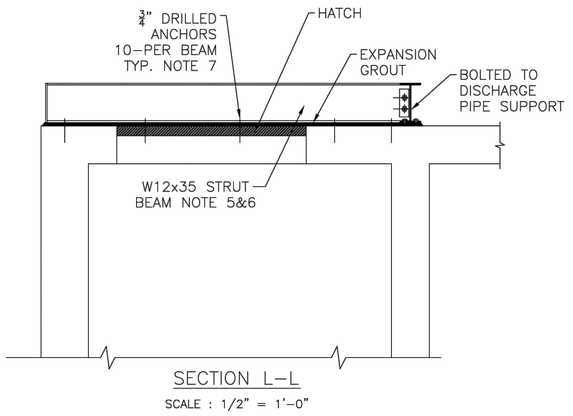
DETAIL–B
SCALE: 3"=1'–0"



SECTION VIEW
SECTION I–I
SCALE: 1/2"=1'–0"



PLAN VIEW
SCALE: 1/2"=1'–0"



SECTION L–L
SCALE : 1/2" = 1'–0"

NOTES:

1. THIS SHEET IS FOR STRUCTURAL INFORMATION ONLY. COORDINATE WITH MECHANICAL SHEETS FOR PIPE DETAILS, OPENING SIZES AND LOCATIONS.
2. INSTALL PRESSURE RATED SEALANT/GASKET ON INSTALLATION OF PIPE.
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5. STEEL STRUT BEAMS ARE PROVIDED TO COMPENSATE FOR IN–PLANE STIFFNESS LOST DUE TO LARGE ACCESS OPENINGS IN THE EXISTING SLAB. THEREFORE, THEY SHOULD BE INSTALLED AND SNUG–FIT PRIOR TO ANY DEMOLITION FOR COMPOSITE SLAB BEHAVIOR.
6. NO DEMOLITION/SAW–CUTTING SHALL START UNTIL ANCHORING /GROUTING /INSTALLATION OF STRUT BEAMS TO EXISTING SLAB.
7. RECORD DRAWINGS FOR THE ORIGINAL CONSTRUCTION MAY BE OBTAINED FROM THE CITY PROJECT MANAGER FOR VERIFICATION EXISTING STRUCTURE MEASUREMENTS.
8. IF DRILLING ADJACENT HOLES AS SHOWN IS NOT FEASIBLE, DRILLED ANCHOR HOLES MAY BE STAGGERED ALONG THE LENGTH OF THE BEAM.
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10. DRILLED ANCHORS AS CALLED OUT ON THESE SHEETS ARE HILTI HIT–RE 500V3 WITH HILTI QUICK BOLT. DO NOT USE EXPANSION ANCHORS THAT MAY CAUSE CONCRETE TO SPLIT.
11. WIDTH OF WET WELL IS NOT UNIFORM, CONTRACTOR SHALL MAKE FIELD MEASUREMENTS AT EACH STRUT BEAM LOCATION (REFERENCED IN NOTE 5 ABOVE), AND CUSTOM–FABRICATE SO EACH BEAM SNUGLY FITS (TOLERANCE +/–0.5") WITHOUT EXCESSIVE END GAPS.

NO.	DATE	REVISION	APP.

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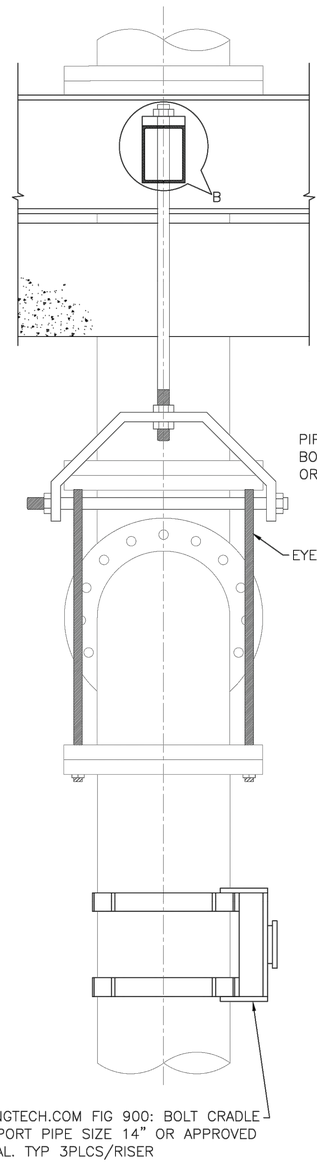
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
SUPPORT BEAMS ABOVE WET WELL SLAB
OPTION 1

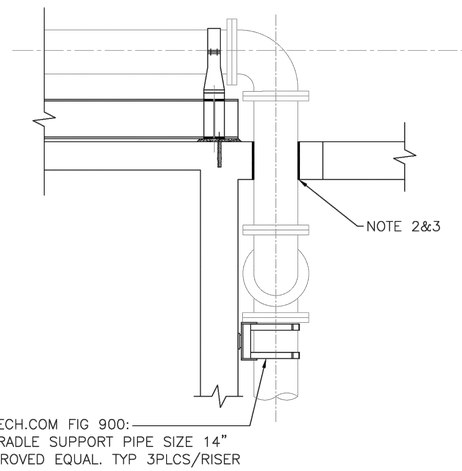
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HORIZ: 1"/2=1' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 53 OF 298	S–109

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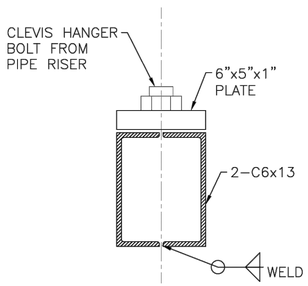
PIPINGTECH.COM FIG 900: BOLT CRADLE SUPPORT PIPE SIZE 14" OR APPROVED EQUAL. TYP 3PLCS/RISER

PIPE RISER SUPPORT
SECTION K–K
SCALE : 1–1/2"=1'–0"

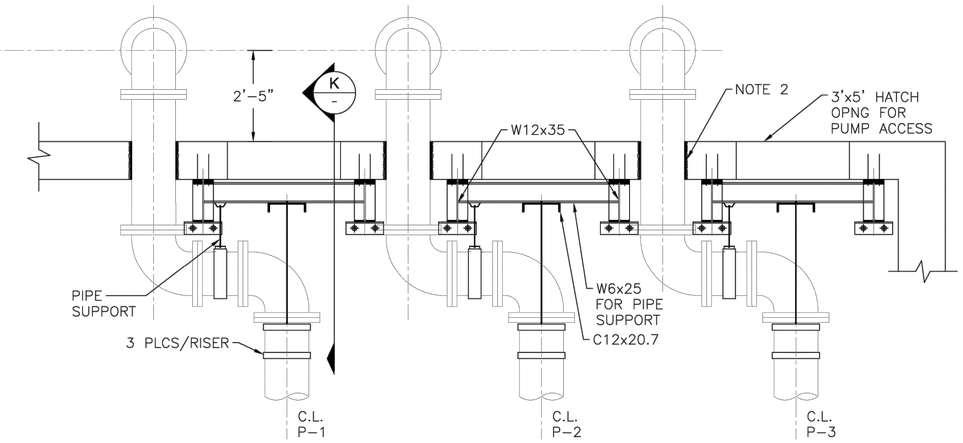


SECTION VIEW
SECTION J–J
SCALE: 1/2"=1'–0"

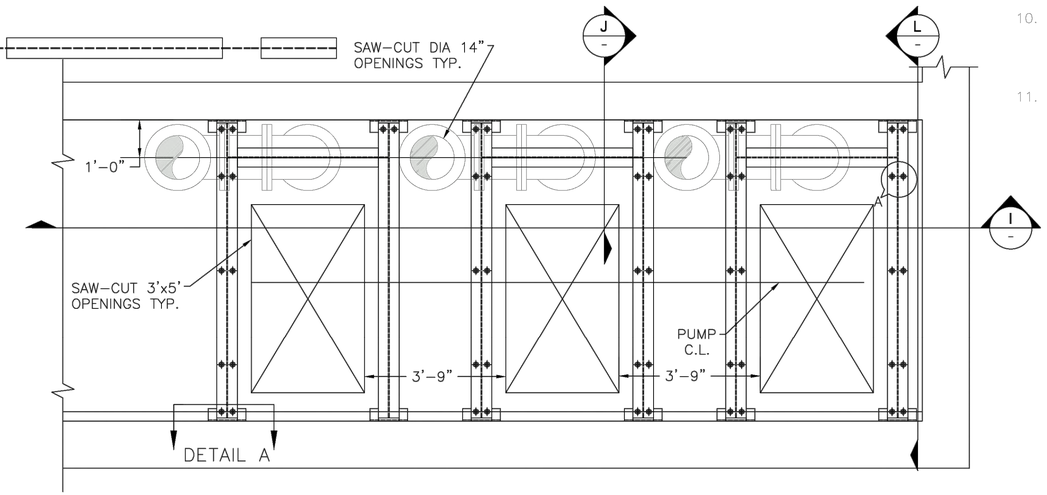
DETAIL–A
SCALE: 1–1/2"=1'–0"



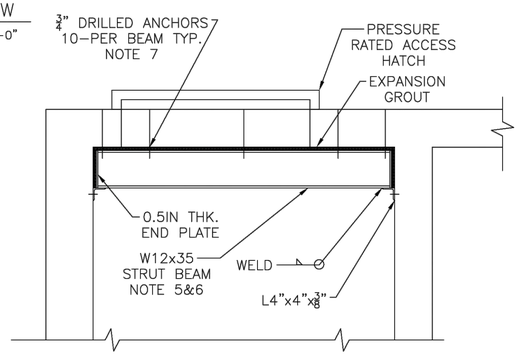
DETAIL–B
SCALE: 3"=1'–0"



SECTION VIEW
SECTION I–I
SCALE: 1/2"=1'–0"



PLAN VIEW
SCALE: 1/2"=1'–0"



SECTION L–L
SCALE : 1/2" = 1'–0"

NOTES:

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NO.	DATE	REVISION	APP.

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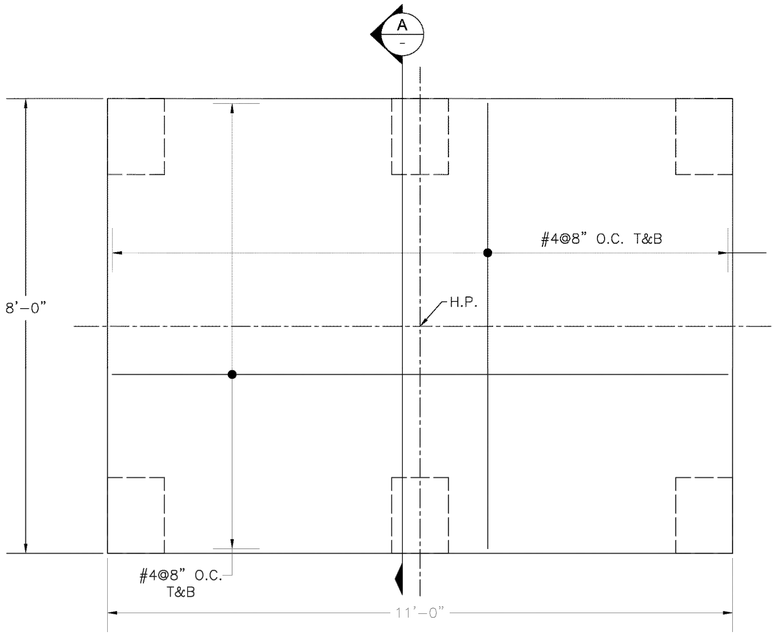
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

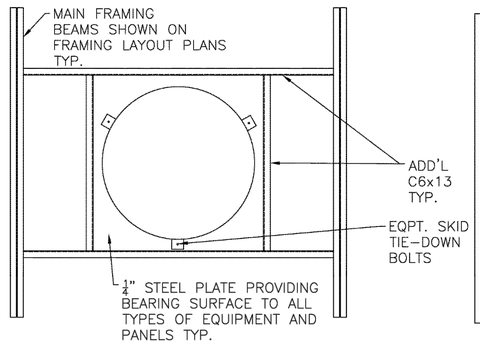
AG FARM LIFT STATION
SUPPORT BEAMS ABOVE WET WELL SLAB
OPTION 2

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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 54 OF 298	S–110

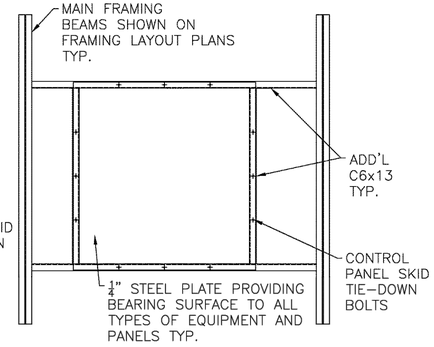
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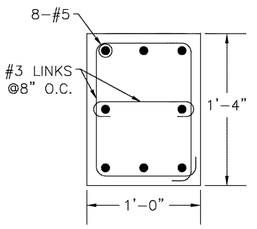
PLAN VIEW
TOP SLAB REINFORCEMENT
SCALE: 3/4"=1'-0"



DETAIL-1/S-106
CUSTOM FLOOR FRAME SUPPORTING
ODOR CONTROL EQPT. SKID
SCALE: NTS



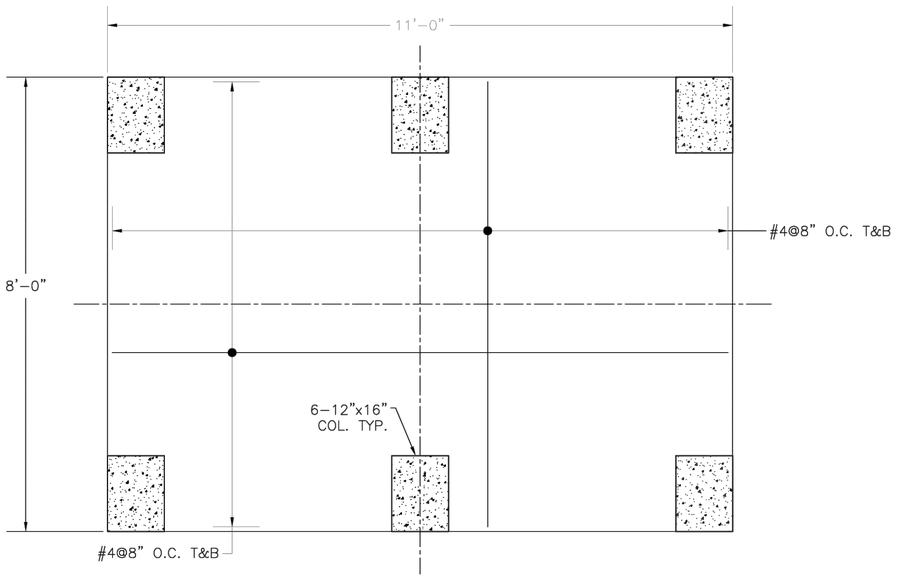
DETAIL-2/S-106
CUSTOM FLOOR FRAME SUPPORTING
CONTROL PANEL
SCALE: NTS



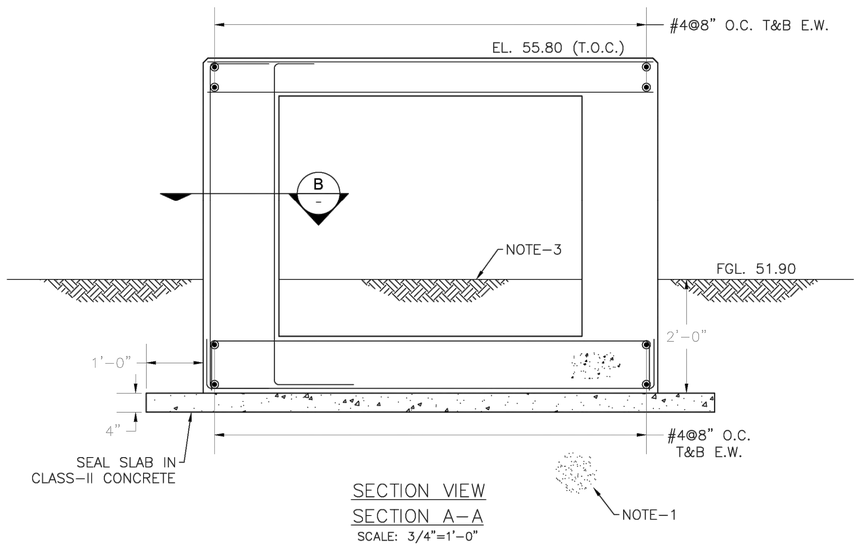
COLUMN REINFORCEMENT
SECTION B-B
SCALE: 1-1/2"=1'-0"

NO.	DATE	REVISION	APP.

NOTES:
1. REMOVE ANY LOOSE MATERIAL VOIDS, POCKETS, ORGANIC MATERIAL, ETC. HAND COMPACT SUB-GRADE TO 95% STANDARD PROCTOR DRY DENSITY. BACKFILL WITH CLASS-II CONCRETE PRIOR TO INSTALLING SEAL SLAB. DUE TO PROXIMITY TO LIFT STATION EXTERIOR WALL, HIGH ENERGY COMPACTORS MAY NOT BE USED.
2. FOR CONCRETE AND REINFORCEMENT SPECIFICATIONS, REFER TO G-01 STRUCTURAL GENERAL NOTES.
3. FINISHED GROUND PROFILE SHALL BE SLOPING AWAY FROM THE EXISTING LIFT STATION.
4. USE HARDWOOD PANELS BETWEEN ALL CONTACT SURFACES BETWEEN TABLE TOP AND EXISTING LIFT STATION WALL.
5. ADD ANCHOR BOLTS TO TIE EQUIPMENT TO THE SLAB.



PLAN VIEW
BASE SLAB REINFORCEMENT
SCALE: 3/4"=1'-0"



SECTION VIEW
SECTION A-A
SCALE: 3/4"=1'-0"

DCCM

neera
880 Tully Road
Ste 087
Houston, TX 77079
832.641.5413
TBPE Reg. No. F-14240

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

90% DESIGN

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF
PARDHA NAMUDURI, P.E.
#82977
FEBRUARY 2026
THIS DOCUMENT IS NOT INTENDED FOR BIDDING, PERMITTING AND/OR CONSTRUCTION PURPOSES

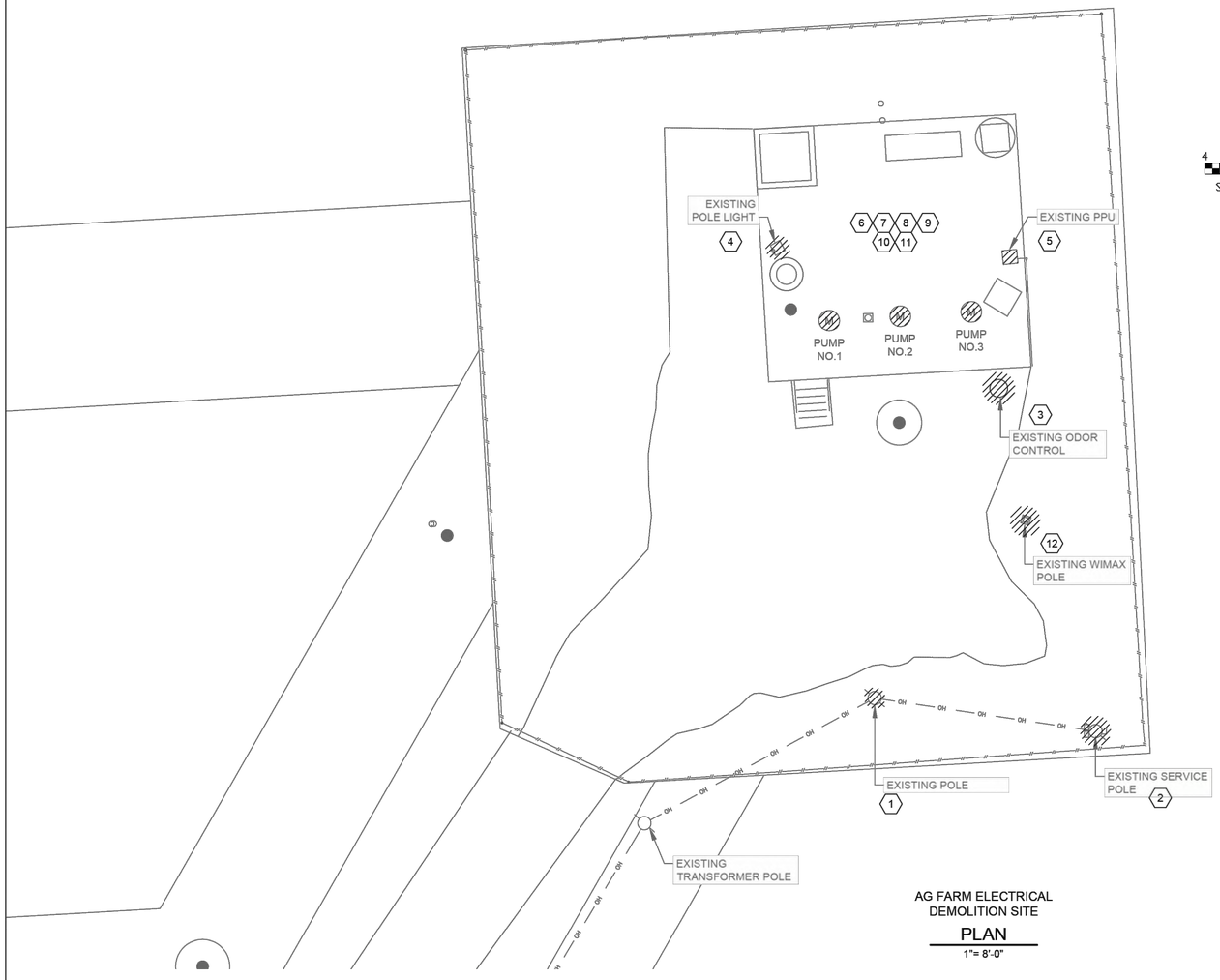
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
ODOR CONTROL CONCRETE PLATFORM
REINFORCEMENT DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1/4"=1' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 55 OF 298 | S-111	

PLOTTED: 2/23/2026 7:14:07 AM
PLOT STYLE: COH.ctb
FILE PATH: G:\[illegible]\DUB - ELECTRICAL (AG FARM).dwg



AG FARM ELECTRICAL
DEMOLITION SITE
PLAN
1"= 8'-0"

4 0 4 8
SCALE: 1" = 8'

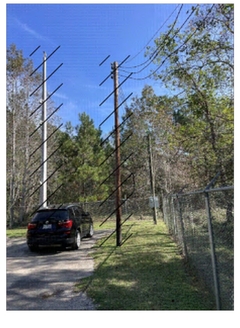


EXISTING LIGHT FIXTURES & FLOOR MOUNT J-BOX IN DRY PIT
PHOTOGRAPH L (10, 11) NTS

EXISTING PLC PANEL IN DRY PIT
PHOTOGRAPH K (9) NTS

EXISTING CONTROL PANEL IN DRY PIT
PHOTOGRAPH J (8) NTS

EXISTING CHART RECORDER IN DRY PIT
PHOTOGRAPH I (7) NTS



EXISTING POWER POLE & WIMAX POLE
PHOTOGRAPH A (1, 12) NTS



EXISTING SERIVE POLE
PHOTOGRAPH B (2) NTS



EXISTING METERING AND PT BOX
PHOTOGRAPH C (2) NTS



EXISTING METERING DISCONNECT
PHOTOGRAPH D (2) NTS



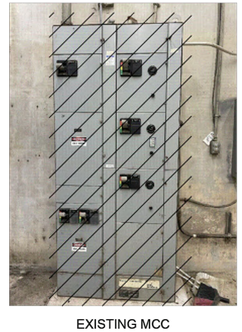
EXISTING ODOR CONTROL
PHOTOGRAPH E (3) NTS



EXISTING LIGHT POLE
PHOTOGRAPH F (4) NTS



EXISTING PPU
PHOTOGRAPH G (5) NTS



EXISTING MCC IN DRY PIT
PHOTOGRAPH H (6) NTS

NOTES BY SYMBOL "#":

1. EXISTING POWER POLE TO BE DEMOLISHED AND REMOVED.
2. EXISTING SERVICE POLE, METER, PT BOX, SERVICE DISCONNECT AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
3. EXISTING ODOR CONTROL AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
4. EXISTING YARD LIGHT ON TOP OF LIFT STATION SLAB AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
5. EXISTING PPU AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED AND RETURNED TO THE WASTEWATER FACILITY MAINTENANCE DEPARTMENT OF THE CITY.
6. EXISTING MCC IN DRY PIT AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
7. EXISTING CHART RECORDER IN DRY PIT AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
8. EXISTING CONTROL PANEL IN DRY PIT AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
9. EXISTING PLC PANEL IN DRY PIT AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
10. EXISTING LIGHT FIXTURES, LIGHT SWITCHES, RECEPTACLES, IN DRY PIT AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
11. EXISTING FLOOR MOUNT J-BOX'S IN DRY PIT AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
12. EXISTING WIMAX POLE AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.

GENERAL NOTES:

1. THE OWNER HAS THE RIGHT OF FIRST REFUSAL TO THE EQUIPMENT BEING REMOVED. CONTRACTOR SHALL DELIVER THE EQUIPMENT WHICH OWNER WISHES TO KEEP AT LOCATION DESIGNATED BY THE OWNER. SEE SPECIFICATIONS SECTION 16060 FRO ELECTRICAL DEMOLITION.

NO.	DATE	REVISION	APP.

LEGEND:

ITEMS TO BE DEMOLISHED.

DCCM

GAI
Gupta & Associates, Inc.
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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

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FB NO. 6399

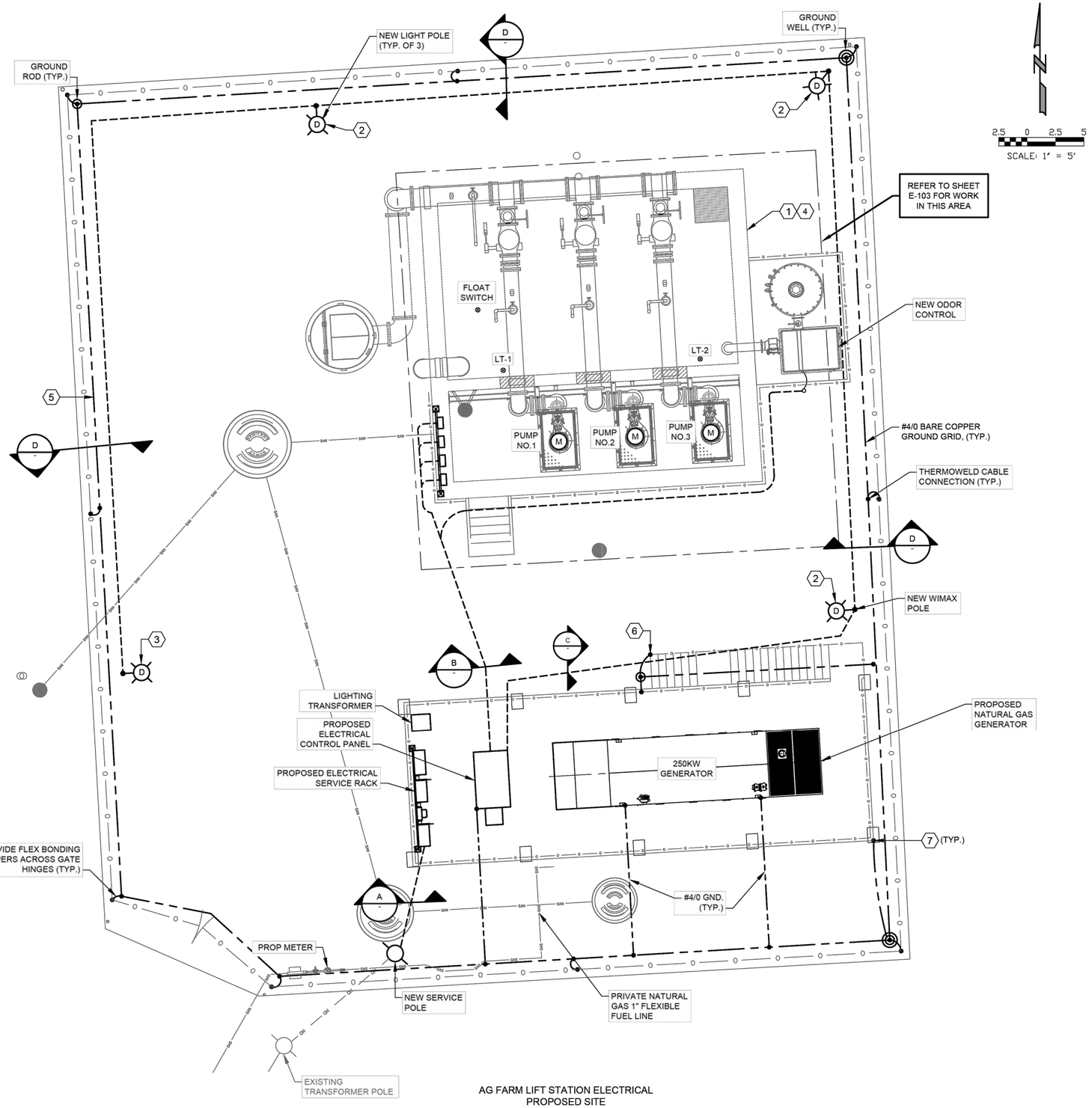
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
ELECTRICAL
DEMOLITION OVERALL SITE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=8' VERT: 1"=8'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 56 OF 298	E-101

PLOTTED: 2/23/2026 7:14:07 AM
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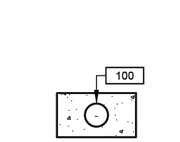


AG FARM LIFT STATION ELECTRICAL
PROPOSED SITE

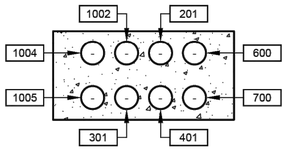
PLAN
1"= 5'-0"

NOTES BY SYMBOL "#":

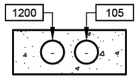
1. THE ELECTRICAL INSTALLATION IN THE WET WELL SHALL BE EXPLOSION PROOF, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE FOR CLASS I, DIVISION 1 LOCATIONS.
2. YARD LIGHT CONTROLLED BY LIGHTING SWITCH.
3. DUSK TO DAWN PHOTOCELL CONTROL.
4. INSIDE WETWELL RATED NEMA CLASS 1, DIV. 1. OUTSIDE ABOVE GROUND, 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. TYPE "B" FIXTURE TO BE INSTALLED ON THE POLE PROVIDING WIRES FOR THE "B" LIGHT.



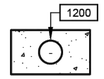
DUCTBANK SECTION A
NTS



DUCTBANK SECTION B
NTS



DUCTBANK SECTION C
NTS



DUCTBANK SECTION D
NTS

NO.	DATE	REVISION	APP.

DCCM

GAI
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SURVEYED BY: LANDTECH, INC.
FB NO. 6399

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
ELECTRICAL
PROPOSED OVERALL SITE PLAN

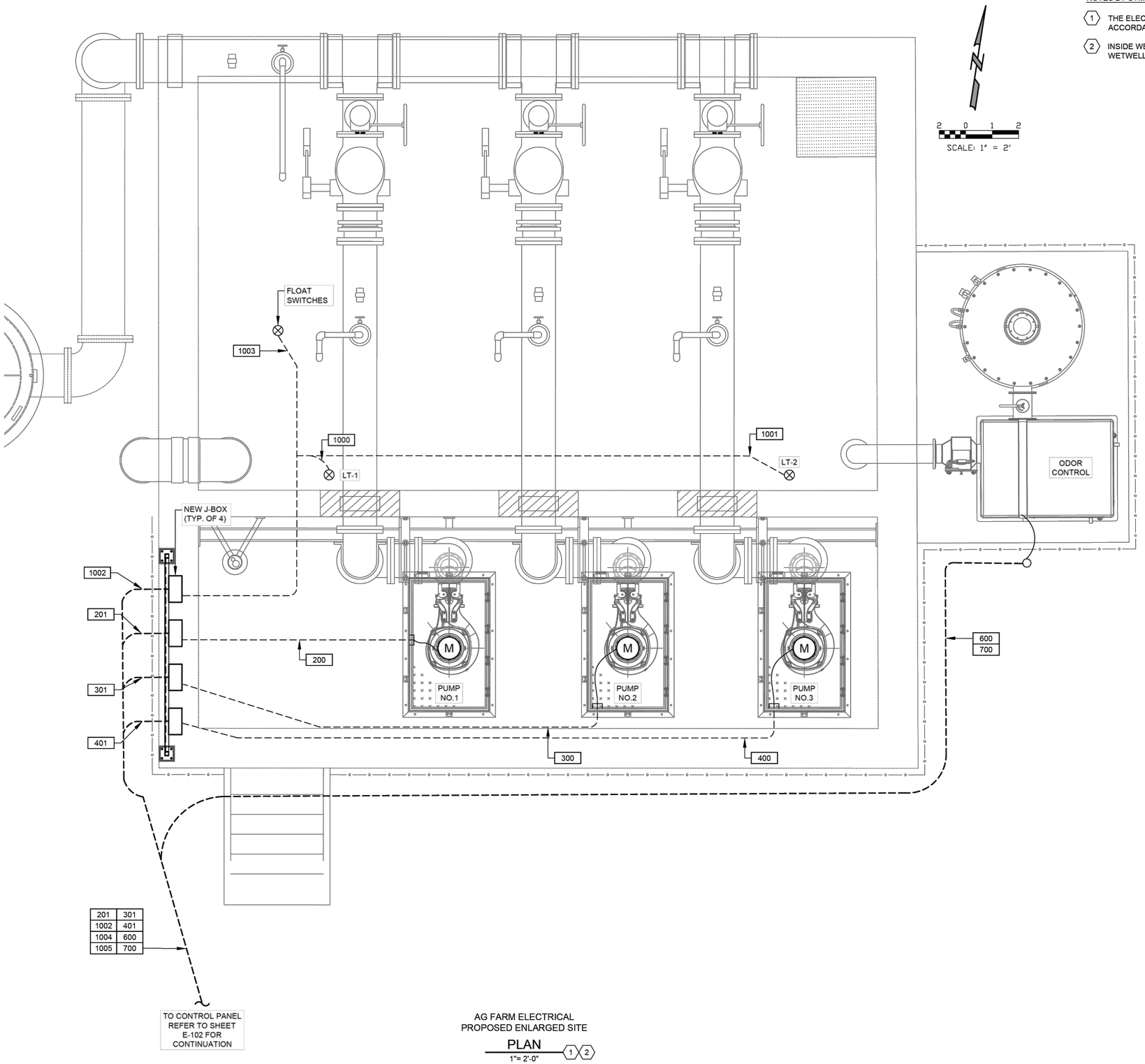
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=5' VERT: 1"=5'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 57 OF 298	E-102

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.

NO.	DATE	REVISION	APP.



AG FARM ELECTRICAL
PROPOSED ENLARGED SITE
PLAN ⟨1⟩⟨2⟩
1"= 2'-0"

DCCM

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email: hforouzan@gaiconsulting.com

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FB NO. 6399

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TEXAS P.E. NO. 77748
DATE: 2/25/2026

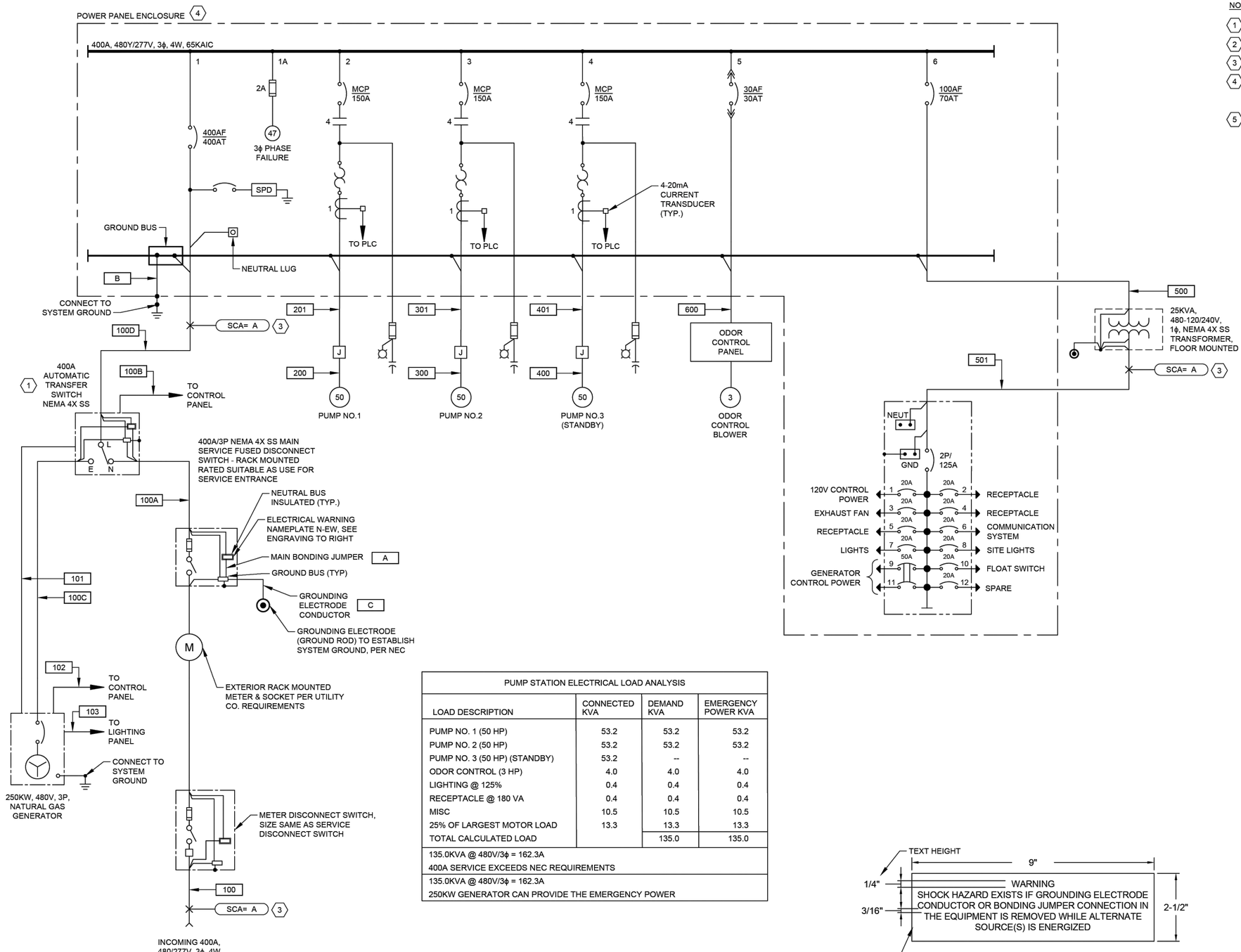
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
ELECTRICAL
PROP. ENLARGED LIFT STATION SITE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=2' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 58 OF 298	E-103

PLOTTED: 2/23/2026 7:14:07 AM
PLOT STYLE: Gaitctb
FILE PATH: ...ELECTRICAL (AG FARM).dwg



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.

PUMP STATION ELECTRICAL LOAD ANALYSIS			
LOAD DESCRIPTION	CONNECTED KVA	DEMAND KVA	EMERGENCY POWER KVA
PUMP NO. 1 (50 HP)	53.2	53.2	53.2
PUMP NO. 2 (50 HP)	53.2	53.2	53.2
PUMP NO. 3 (50 HP) (STANDBY)	53.2	--	--
ODOR CONTROL (3 HP)	4.0	4.0	4.0
LIGHTING @ 125%	0.4	0.4	0.4
RECEPTACLE @ 180 VA	0.4	0.4	0.4
MISC	10.5	10.5	10.5
25% OF LARGEST MOTOR LOAD	13.3	13.3	13.3
TOTAL CALCULATED LOAD		135.0	135.0
135.0KVA @ 480V/3ϕ = 162.3A 400A SERVICE EXCEEDS NEC REQUIREMENTS			
135.0KVA @ 480V/3ϕ = 162.3A 250KW GENERATOR CAN PROVIDE THE EMERGENCY POWER			

AG FARM ELECTRICAL
PROPOSED ONE-LINE
DIAGRAM
NTS.

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

NO.	DATE	REVISION	APP.

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GAI
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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
ELECTRICAL
PROPOSED ONE–LINE DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 59 OF 298	E–104

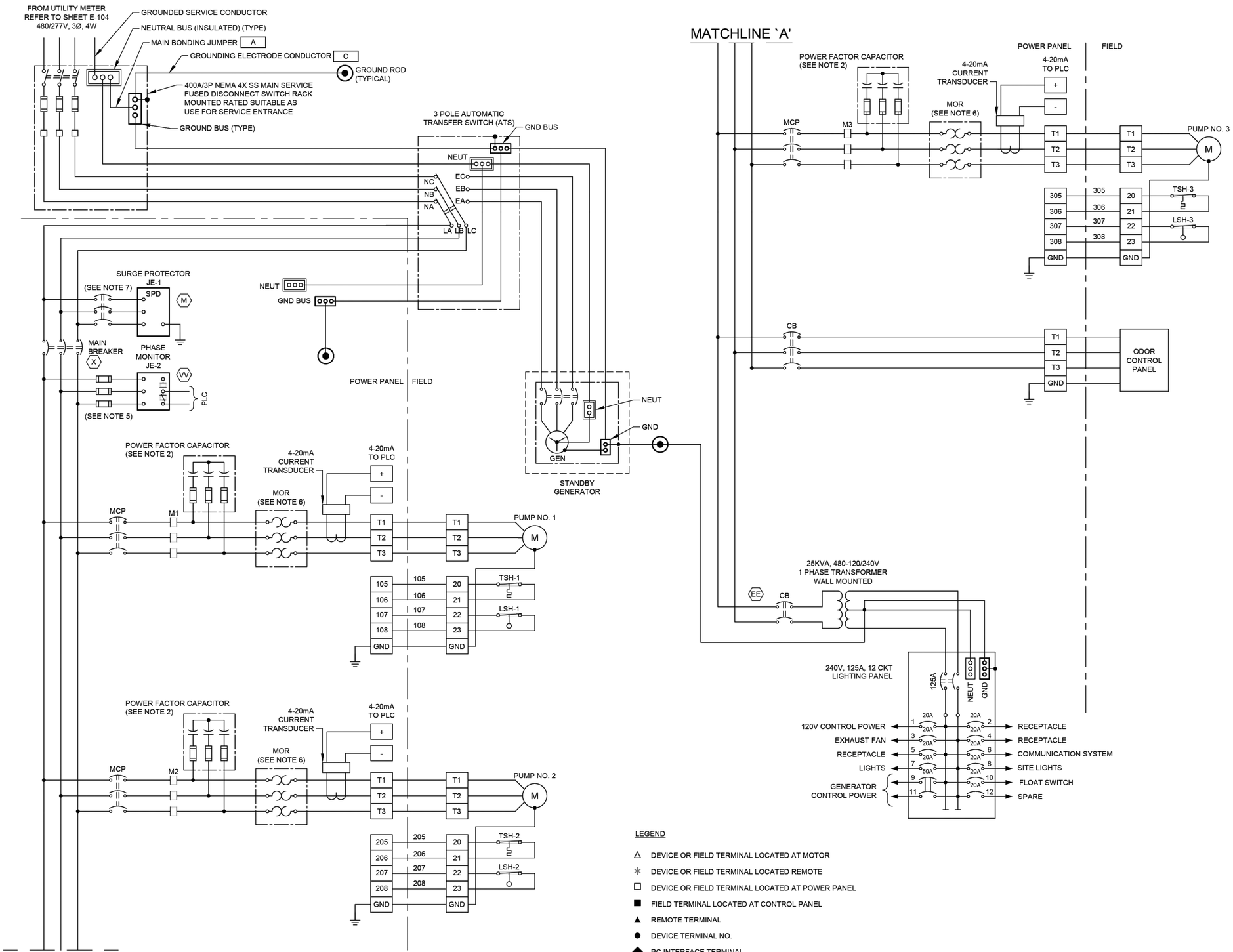
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FILE PATH: C:\Projects\City of Houston\Lift Station Rehabilitation & Reconstruction\Design\Arch Recon\Submittal\Drawings\Electrical\AG FARM\E-104 AG FARM ELECTRICAL (AG FARM).dwg

PLOTTED: 2/23/2026 7:40:07 AM
PLOT STYLE: Gaitctb
FILE PATH: G:\...\SUB-ELECTRICAL (AG FARM).dwg

NOTES:

1. UNLESS OTHERWISE INDICATED, 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 TO REVISE DWG. BASED ON MANUFACTURE AND SIZE.
4. CONTRACTOR SHALL TERMINATE POWER & CONTROL WIRES PER MANUFACTURER'S REQUIREMENTS.
5. PROVIDE FUSE SIZE ACCORDING TO MANUFACTURER'S REQUIREMENTS.
6. THE COMBINATION OF CT AND MOTOR OVERLOAD RELAY IF REQUIRED.
7. PROVIDE BREAKER SIZE ACCORDING TO MANUFACTURER'S REQUIREMENTS.

NO.	DATE	REVISION	APP.



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

DCCM

GAI
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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
ELECTRICAL
INCOMING POWER THREE LINE DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 60 OF 298	E-105

	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	--	#1/0 CU GND.
B	EQUIPMENT BONDING JUMPER	--	--	MCC/POWER PANEL ENCLOSURE	POWER/CONTROL PANEL & EQUIPMENT	--	#1/0 CU GND.
C	GROUNDED ELECTRODE CONDUCTOR	--	--	GROUNDING ELECTRODE	MAIN SERVICE FUSED DISCONNECT GROUNDING	--	#1/0 CU GND.
100	SERVICE ENTRANCE	480V	400A	UTILITY POWER SERVICE	METER DISCONNECT		3#500 MCM, #1/0 NEUT. #1/0 CU GND. 3-1/2"C.
100A	SERVICE POWER	480V	400A	SERVICE DISCONNECT	ATS	--	3#500 MCM, #1/0 NEUT. #1/0 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, #1/0 NEUT. #1/0 CU GND. 3-1/2"C.
100D	ELECTRIC POWER	480V	400A	ATS	CONTROL PANEL	--	3#500 MCM, #1/0 NEUT. #1/0 CU GND. 3-1/2"C.
101	GENERATOR CONTROL	120V	--	ATS	GENERATOR	--	6#14, #12 GND. 1"C.
102	ANNUNCIATION	24VDC	--	GENERATOR	CONTROL PANEL	--	12#14 AWG, #14 GND.
103	GENERATOR AUX. POWER	240/120V	--	GENERATOR	LIGHTING PANEL	--	3#4 AWG, #6 GND. 1-1/2"C.
105	COMMUNICATION	24VDC	--	COMMUNICATION POLE	PPU-AC	--	POE CABLE IN 1" CONDUIT
200	PUMP NO. 1 POWER	480V	50 HP	PUMP NO. 1	PUMP NO. 1 JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT
201	PUMP NO. 1 POWER AND CONTROLS	480V	50 HP	PUMP NO. 1 JUNCTION BOX	CONTROL PANEL	--	3#3 AWG, 4#14, #8 GND. 2"C.
300	PUMP NO. 2 POWER	480V	50 HP	PUMP NO. 2	PUMP NO. 2 JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT
301	PUMP NO. 2 POWER AND CONTROLS	480V	50 HP	PUMP NO. 2 JUNCTION BOX	CONTROL PANEL	--	3#3 AWG, 4#14, #8 GND. 2"C.
400	PUMP NO. 3 POWER	480V	50 HP	PUMP NO. 3	PUMP NO. 3 JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT
401	PUMP NO. 3 POWER AND CONTROLS	480V	50 HP	PUMP NO. 3 JUNCTION BOX	CONTROL PANEL	--	3#3 AWG, 4#14, #8 GND. 2"C.
500	LIGHTING TRANSFORMER PRIMARY FEEDER	480V	70A	CONTROL PANEL	LIGHTING TRANSFORMER PRIMARY	--	2#4 AWG, #8 GND. 1"C.
501	LIGHTING TRANSFORMER SECONDARY FEEDER	240/120V	--	LIGHTING TRANSFORMER SECONDARY	LIGHTING PANEL	--	3#1 AWG, #6 GND. 1-1/2"C.
600	ODOR CONTROL UNIT	480V	--	CONTROL PANEL	ODOR CONTROL UNIT	--	3#8 AWG, #10 GND. 1"C.
700	ODOR CONTROL	120V	--	CONTROL PANEL	ODOR CONTROL UNIT	--	8#14 AWG, #14 GND. 1"C.
1000	LEVEL TRANSMITTER	24VDC	--	LEVEL TRANSMITTER LT-1	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT
1001	LEVEL TRANSMITTER	24VDC	--	LEVEL TRANSMITTER LT-2	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT
1002	COMBINED LEVEL TRANSMITTERS & FLOAT SWITCH	24VDC	--	CONTROL PANEL	TRANSMITTER JUNCTION BOX	--	2 TRIAD #16, 4#14 AWG, 1"C.
1003	WELL FLOAT SWITCHES	120V	--	TRANSMITTER JUNCTION BOX	FLOAT SWITCH NO.1 THROUGH NO.7	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT
1100	120VAC FOR RECEPTACLE	--	--	LIGHTING PANEL	RECEPTACLE NEXT TO LIGHTING PANEL	--	2#12 AWG, #12 GND, 3/4"C.
1200	SITE LIGHTING	120V	--	LIGHTING PANEL	SITE LIGHTING	--	2#12 AWG, #12 GND. 1"C.

NOTES BY SYMBOL "⟨#⟩":

⟨1⟩ REFER TO SPEC SECTION 16120 FOR CONDUCTOR COLOR CODE.

NO.	DATE	REVISION	APP.

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TEXAS P.E. NO. 77748
DATE: 2/25/2026

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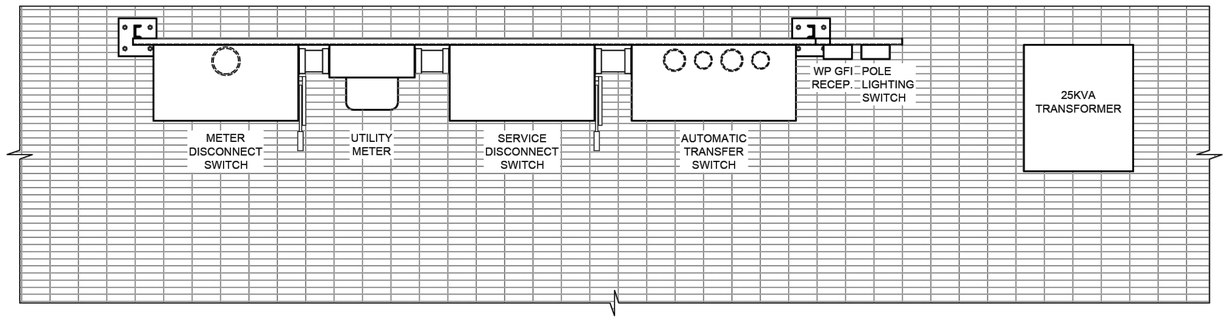
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

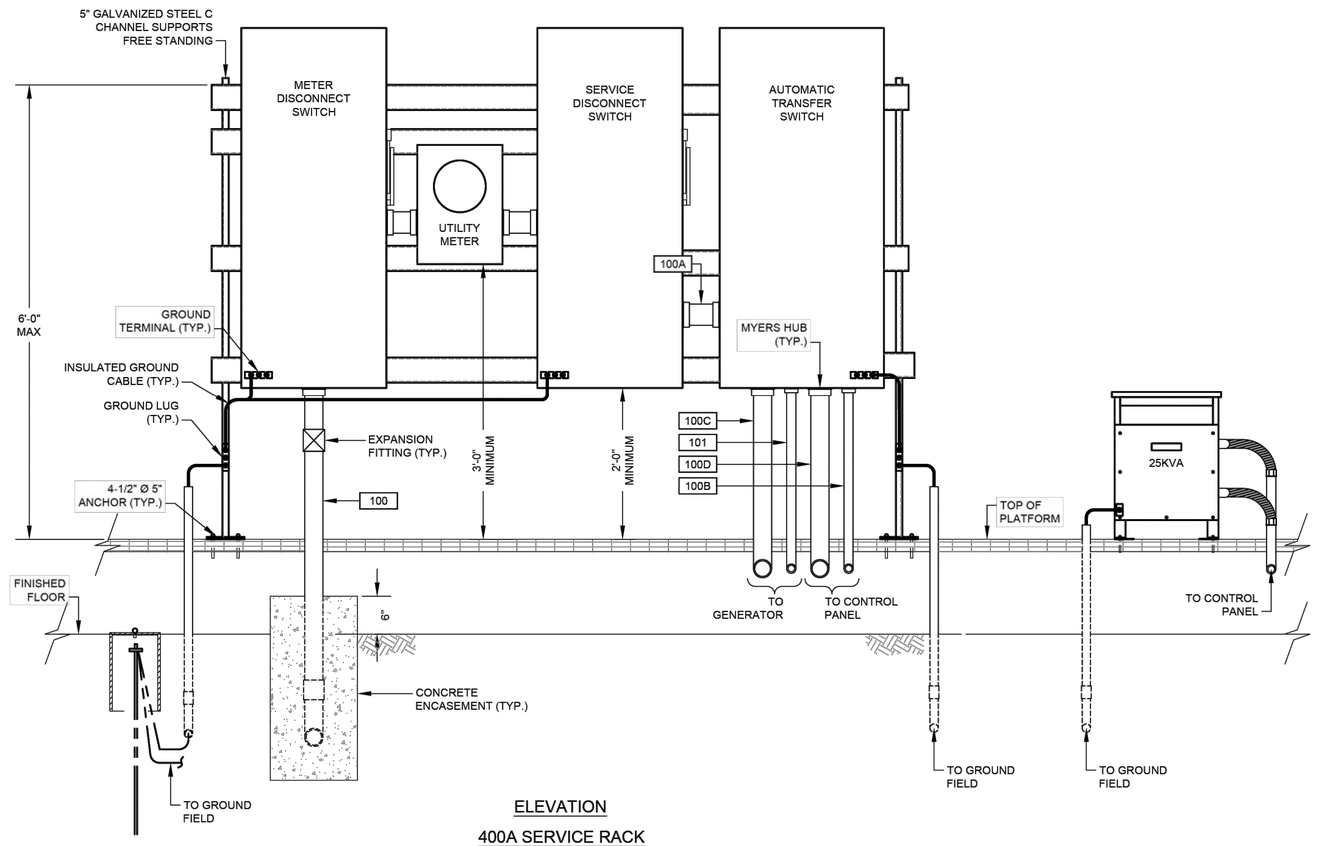
AG FARM LIFT STATION
ELECTRICAL
CONDUIT SCHEDULE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 61 OF 298	E-106

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PLAN VIEW



ELEVATION

400A SERVICE RACK

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON
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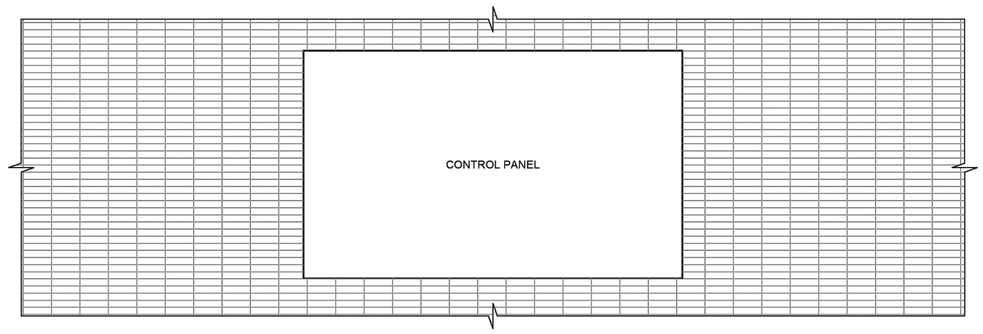
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARMS LIFT STATION
ELECTRICAL
SERVICE RACK DETAIL

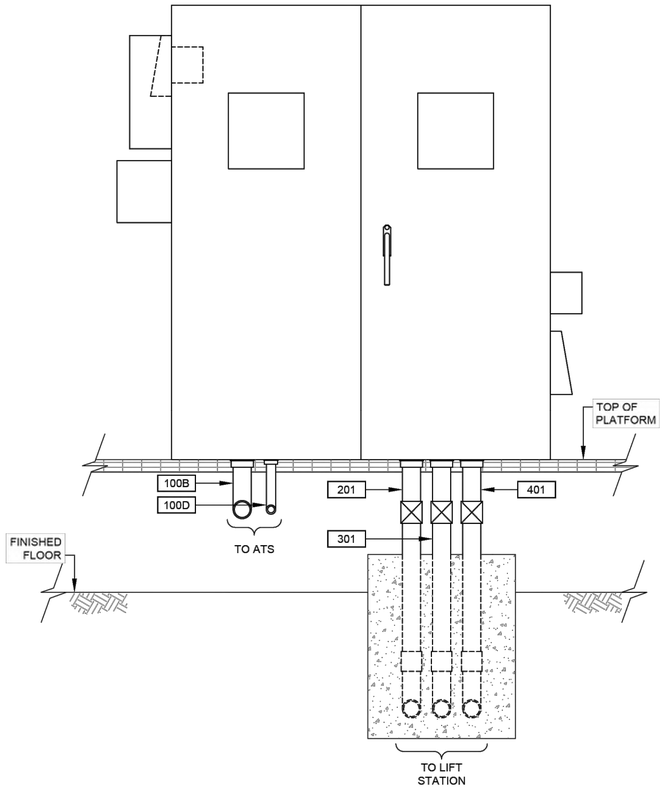
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 62 OF 298	E-107

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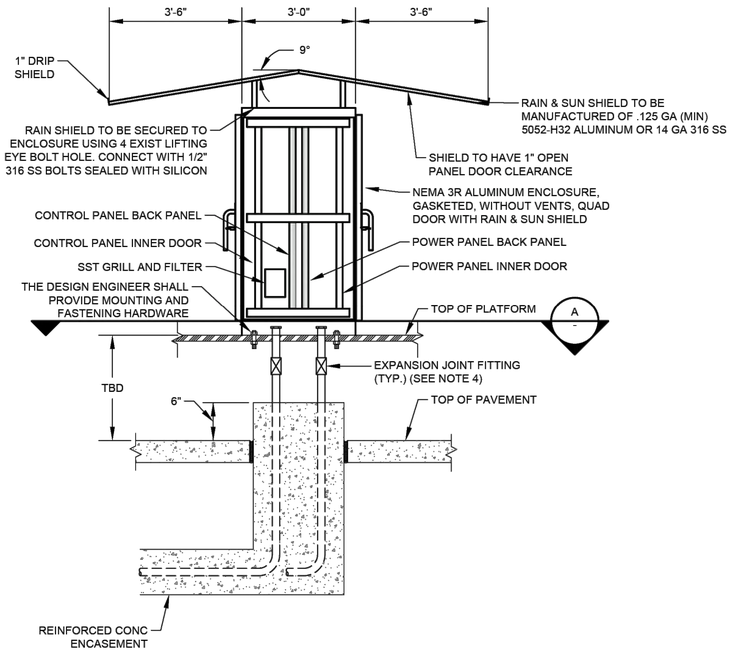


PLAN VIEW



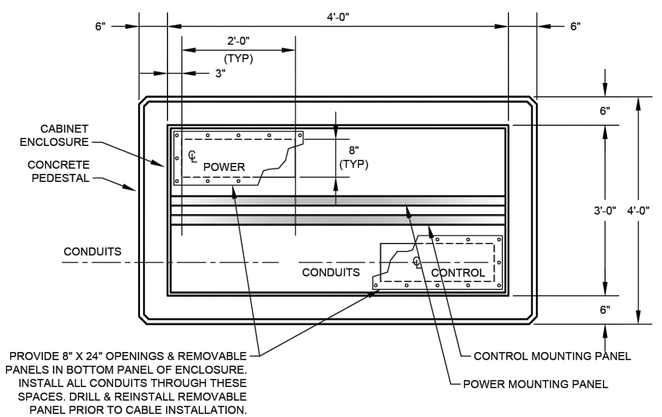
CONTROL PANEL ELEVATION

DETAIL 1 / NTS



CONTROL CABINET ENCLOSURE WITH PLATFORM
(SEE NOTE 6)

DETAIL 2 / NTS



SECTION A / NTS

GENERAL NOTES:

1. REFER TO SPECIFICATION SECTION 13325 PROCESS CONTROL SYSTEMS CONTROL PANELS FOR PANEL DIMENSIONS.
2. COMMUNICATION PANEL TO BE INSTALLED ABOVE SERVICE RACK ELEVATION.
3. EXPANSION JOINT FITTINGS AS REQUIRED.
4. REFER TO SERVICE RACK FOR DETAIL.
5. POWER FACTOR CAPACITOR TO BE MOUNTED OUTSIDE SIDE WALL OF THE CONTROL CABINET.
6. REFER TO STRUCTURAL DRAWINGS FOR PLATFORM DETAIL.

NO.	DATE	REVISION	APP.

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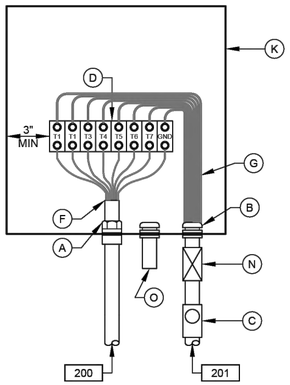
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
ELECTRICAL
CONTROL CABINET ENCLOSURE DETAIL

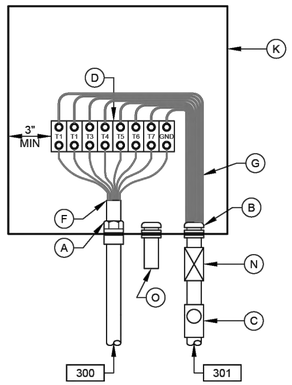
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 63 OF 298	E-108

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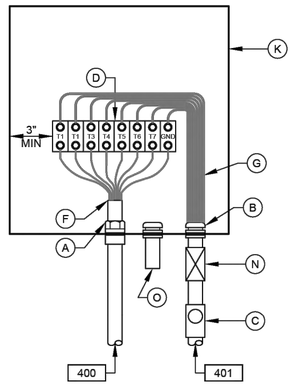
JUNCTION BOX NO.1

DETAIL 2 / NTS / - / (SEE NOTE 7)



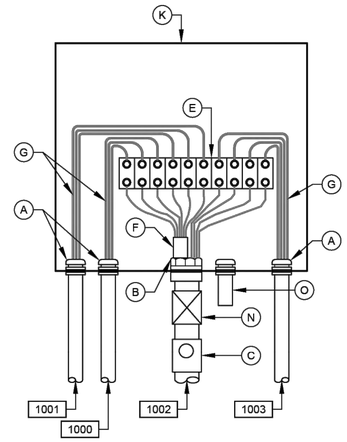
JUNCTION BOX NO.2

DETAIL 3 / NTS / - / (SEE NOTE 7)



JUNCTION BOX NO.3

DETAIL 5 / NTS / - / (SEE NOTE 7)



LEVEL TRANSMITTER JUNCTION BOX

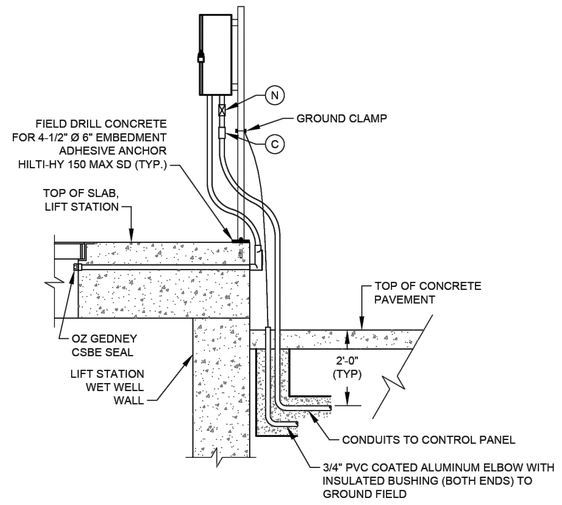
DETAIL 4 / NTS / - / (SEE NOTE 7)

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.

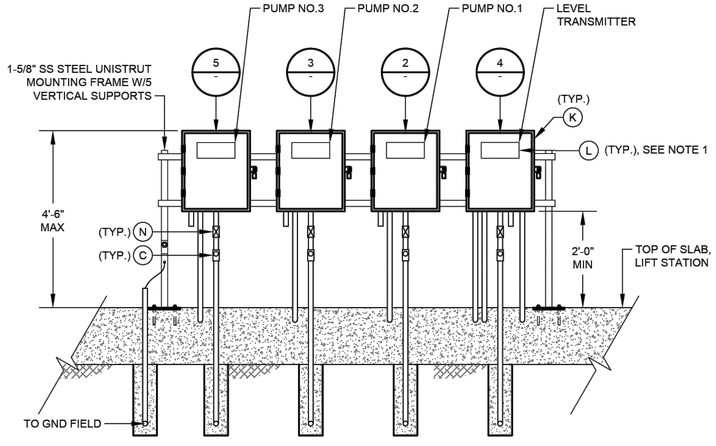
JUNCTION BOX EQUIPMENT SCHEDULE

- 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 6P 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



TYP SIDE VIEW FOR DETAIL 1

(SEE NOTE 10)



DETAIL 1 / NTS / - / (SEE NOTE 9 & 12)

NO.	DATE	REVISION	APP.

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FB NO. 6399

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
ELECTRICAL
JUNCTION BOX DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 64 OF 298	E-109

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GENERAL NOTES:

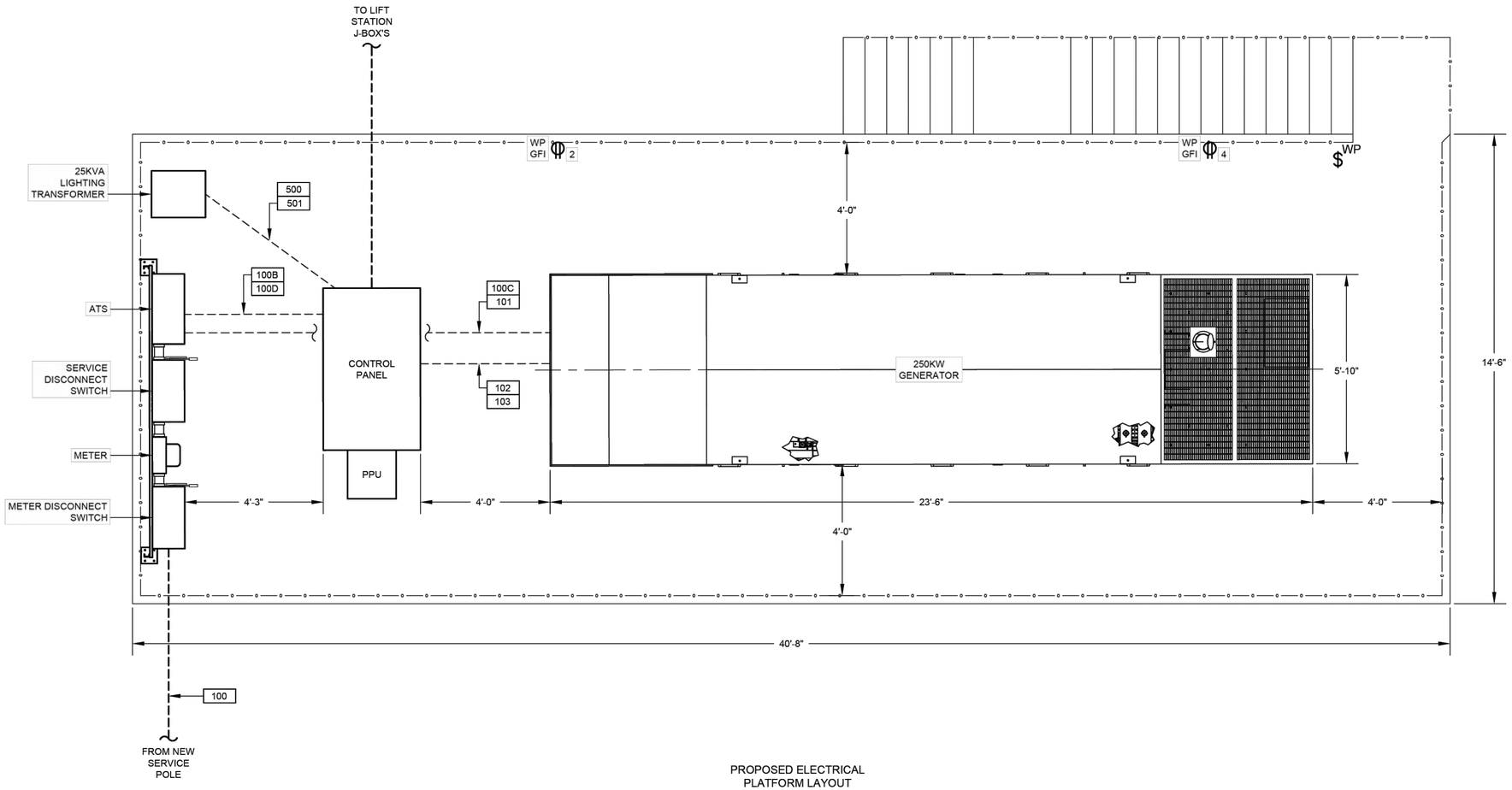
1. ALL NATURAL GAS PIPING FROM CNP GAS TO NATURAL GAS GENERATOR IS TO BE INSTALLED BY A PROFESSIONAL PLUMBER LICENSED IN THE STATE OF TEXAS.

NOTES BY SYMBOL "⟨#⟩":

⟨1⟩ REFER TO STRUCTURAL DRAWINGS FOR PLATFORM DETAILS.

⟨2⟩ CONDUIT TO BE INSTALLED BELOW PLATFORM.

⟨3⟩ GENERATOR NOISE LEVEL SHALL MEET LOCAL NOISE REQUIREMENTS AT 65dBA DAYTIME AND 58 dBA NIGHTTIME.



PROPOSED ELECTRICAL PLATFORM LAYOUT

DETAIL 1 ⟨1⟩⟨2⟩⟨3⟩
1" = 2'-0"

NO.	DATE	REVISION	APP.

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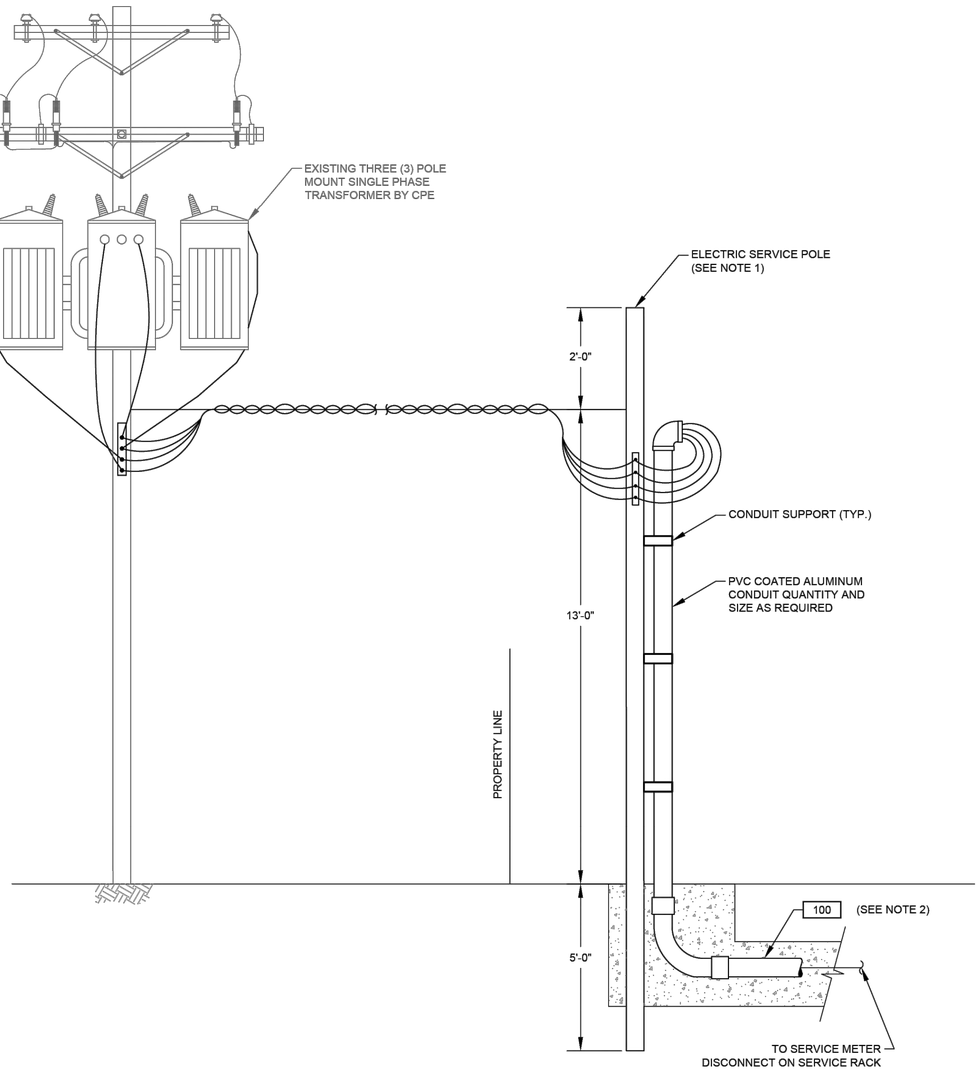
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
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AG FARM LIFT STATION
ELECTRICAL
PROPOSED ELECTRICAL PLATFORM LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=2' VERT: 1"=2'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 65 OF 298	E-110

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TYPICAL ELECTRICAL SERVICE ENTRANCE
FOR POWER SUPPLY BELOW 500KVA

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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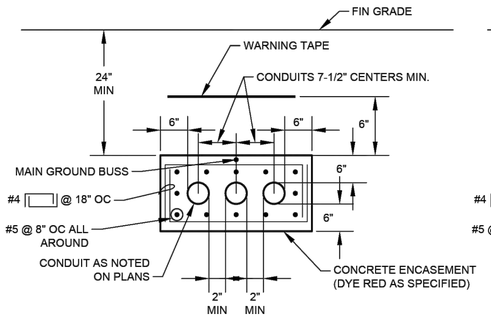
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AG FARM LIFT STATION
ELECTRICAL
ELECTRICAL SERVICE POLE DETAIL

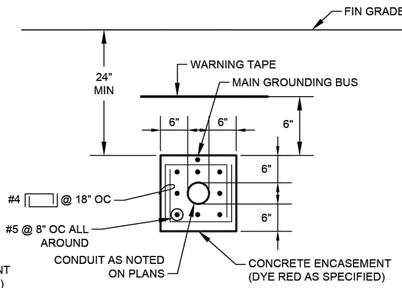
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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MARILENA STOICA, P.E.	
SHEET NO. 66 OF 298	E-111



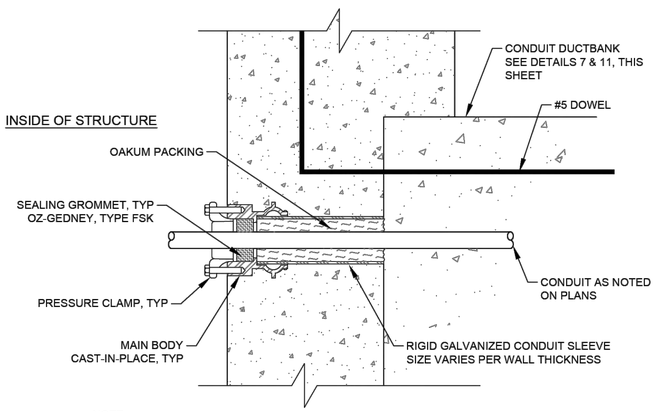
TYP MULTI-CONDUIT DUCTBANK SECTION

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

DETAIL 1 NTS



TYP SINGLE-CONDUIT DUCTBANK SECTION

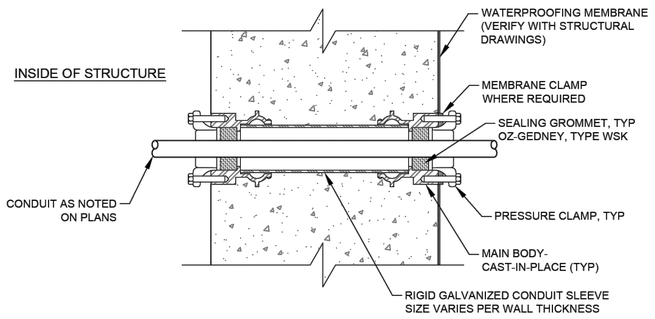


NOTE:

WALL SEAL SHOWN IS TYPICAL FOR EACH CONDUIT IN DUCTBANK.

SINGLE ENDED TYPE

FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS ENCASED IN CONCRETE

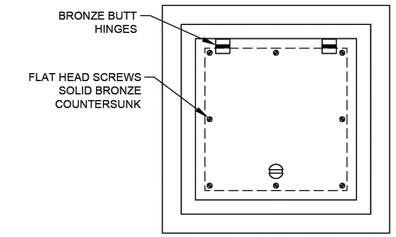


DOUBLE ENDED TYPE WITH MEMBRANE

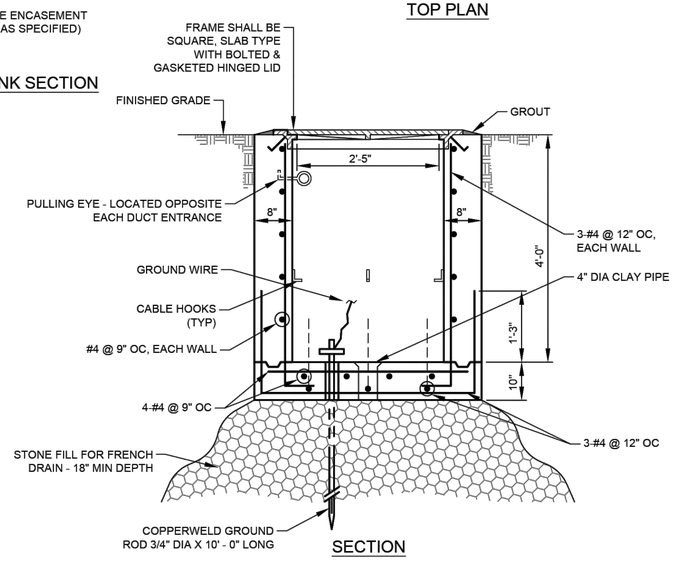
FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS ENCASED IN CONCRETE

TYPICAL CONDUIT SEALS

DETAIL 4 NTS



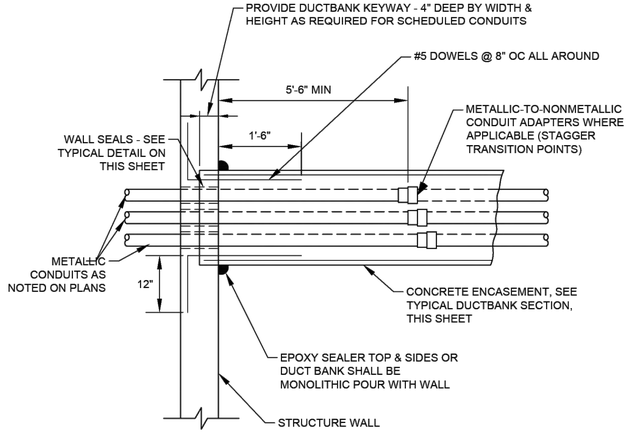
TOP PLAN



SECTION

TYPICAL ELECTRICAL HANDHOLE CONSTRUCTION

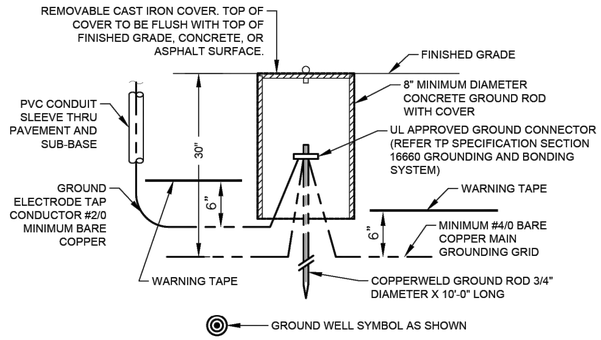
DETAIL 2 NTS



PLAN

TYPICAL DUCTBANK ENTRANCE AT STRUCTURE WALL

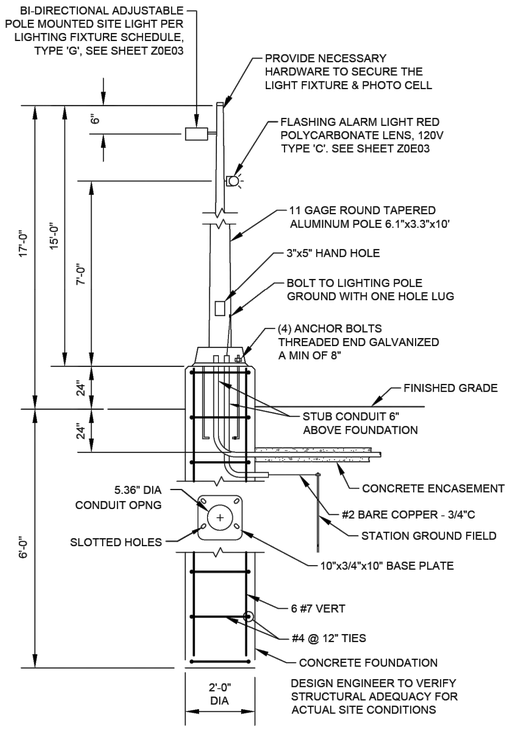
DETAIL 5 NTS



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



TYPICAL YARD LIGHT

DETAIL 6 NTS

NO.	DATE	REVISION	APP.

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TEXAS P.E. NO. 77748
DATE: 2/25/2026

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FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
ELECTRICAL
ELECTRICAL TYPICAL DETAILS

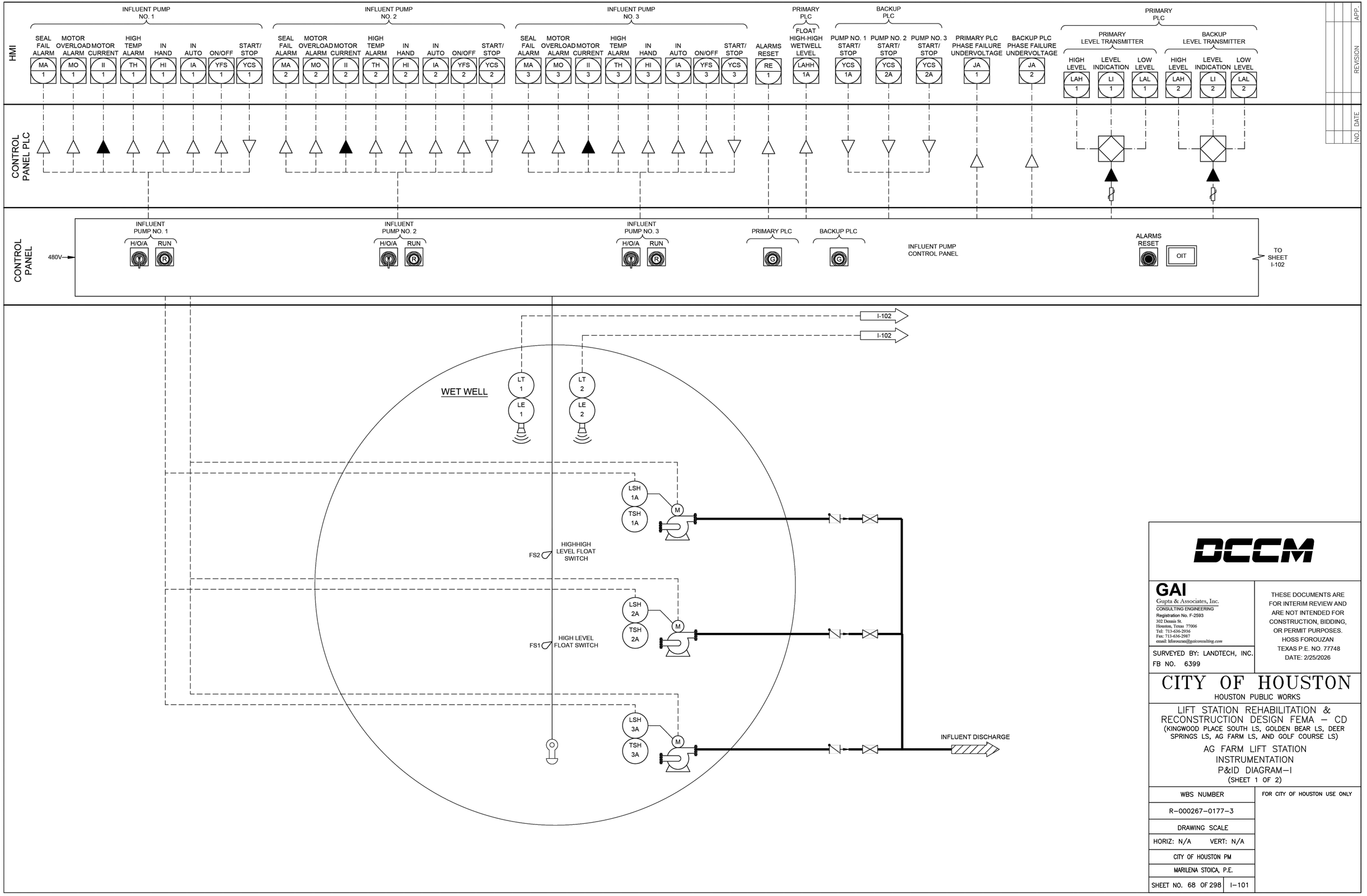
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DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 67 OF 298	E-112

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PLOT STYLE: Color.ctb
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PLOTTED: 2/23/2026 7:48:08 AM

PLOT STYLE: Gai-ctb

FILE PATH: Q:\[illegible]\Drawings\Submittals\Record Submittal (02-23)\I-101 P&ID (AG FARM).dwg



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(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
INSTRUMENTATION
P&ID DIAGRAM–I
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 68 OF 298	I–101

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NO.	DATE	REVISION	APP.

HMI

BACKUP PLC
PRIMARY LEVEL TRANSMITTER
BACKUP LEVEL TRANSMITTER
BACKUP PLC
ATS
GENERATOR
ALARM
SHUTDOWN
ODOR CONTROL SYSTEM

HIGH LEVEL ALARM	PRIMARY PLC MODE ACTIVE	BACKUP PLC MODE ACTIVE	INSTRUSION ALARM	PRIMARY HIGH LEVEL	PRIMARY LEVEL INDICATION	PRIMARY LOW LEVEL	BACKUP HIGH LEVEL	BACKUP LEVEL INDICATION	BACKUP LOW LEVEL	ALARMS RESET	BACKUP PLC FLOAT HIGH-HIGH WETWELL LEVEL	ATS IN NORMAL SOURCE	ATS IN GENERATOR SOURCE	GENERATOR RUNNING	NOT IN AUTO	LOW FUEL/ PRESSURE ALARM	LOW DC VOLTAGE ALARM	SHUTDOWN FAULT ALARM	ODOR CONTROL SYSTEM ON/OFF	ODOR CONTROL SYSTEM FAILURE
LAH 1B	YI 1A	YI 1B	YA 1	LAH 1A	LI 1A	LAL 1A	LAH 2A	LI 2A	LAL 2A	RE 2	LAHH 1B	ZI 1A	ZI 1B	YIG 1	IAG 1	LSLG 1	LEG 1	YAG 1	YFS 1C	XA 1C

CONTROL PANEL PLC

CONTROL PANEL

FROM SHEET I-101

I-101

I-101

AUTOMATIC TRANSFER SWITCH (ATS)

GENERATOR

ODOR CONTROL SYSTEM

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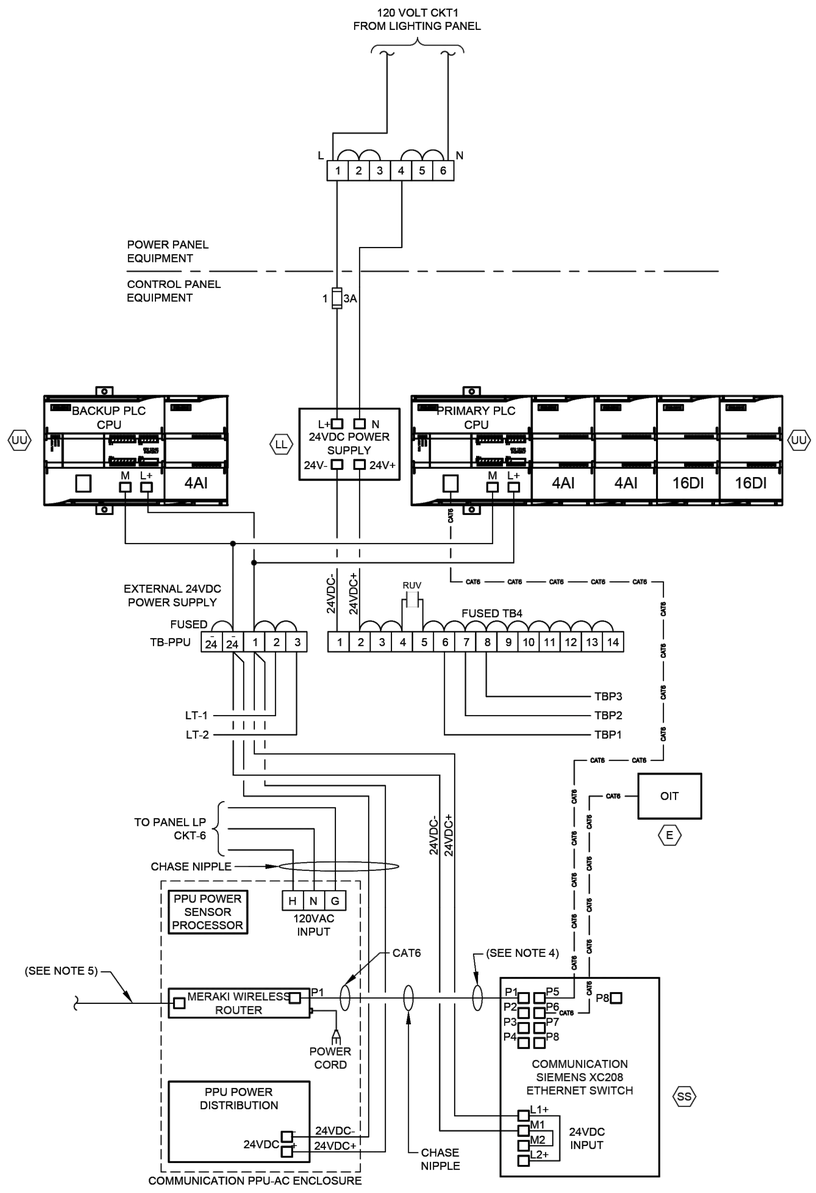
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
INSTRUMENTATION
P&ID DIAGRAM–II
(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 69 OF 298	I–102

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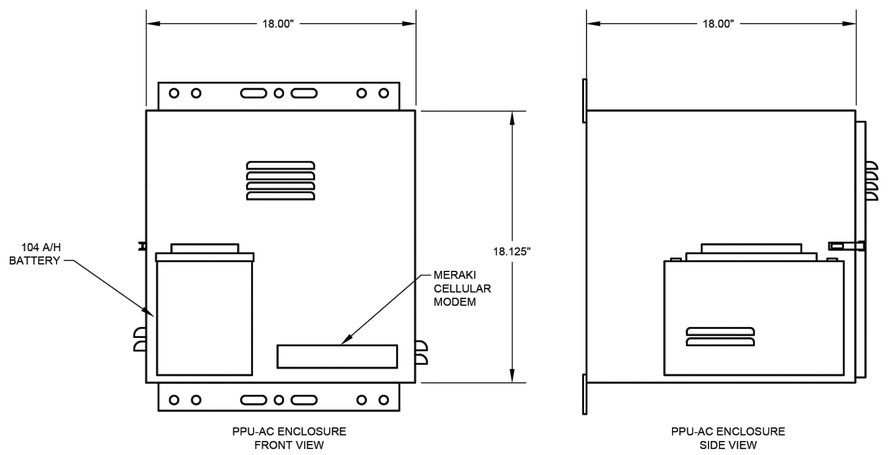


CONTROL POWER & COMMUNICATIONS WIRING

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. CAT6 ETHERNET CABLE FOR MERAKI CELLULAR ROUTER (P1).
5. CAT6 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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DATE: 2/25/2026

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
INSTRUMENTATION
COMMUNICATIONS DIAGRAM

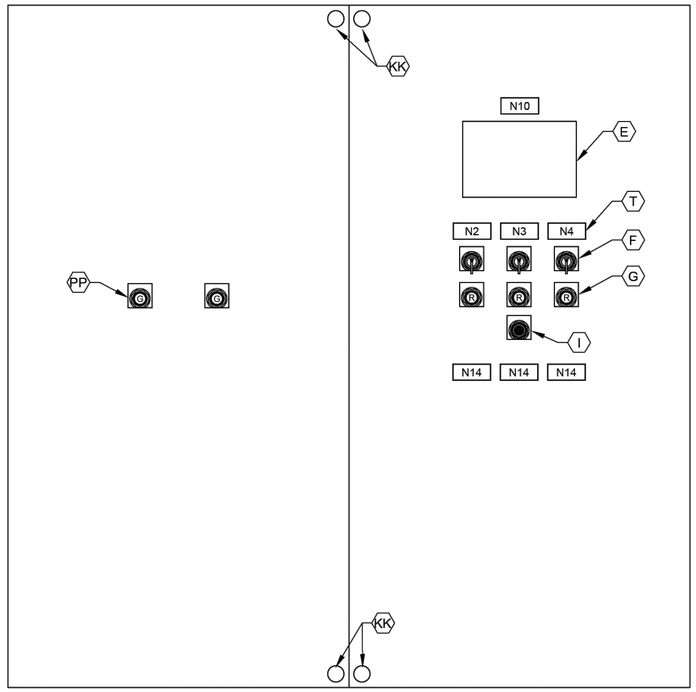
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 70 OF 298	I-103

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PLOT STYLE: G4ctb
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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	3	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

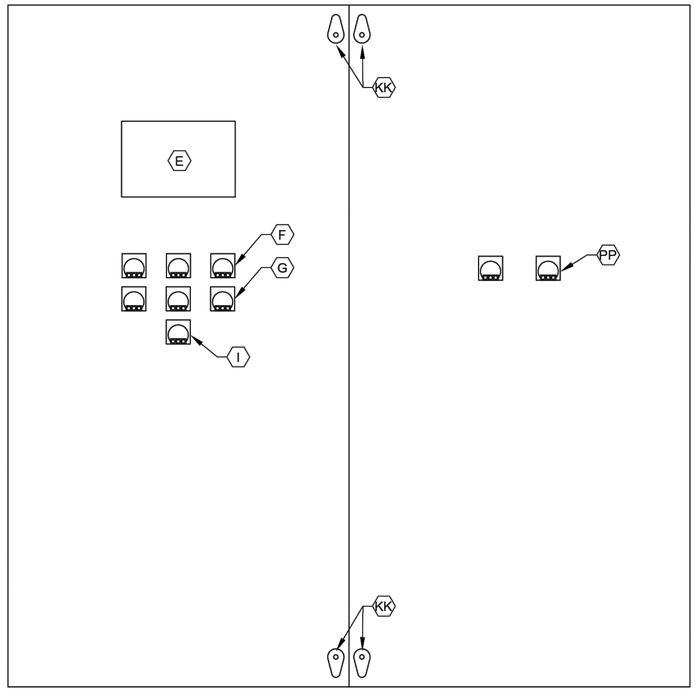
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CONTROL PANEL FRONT INNER DOOR

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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TEXAS P.E. NO. 77748
DATE: 2/25/2026

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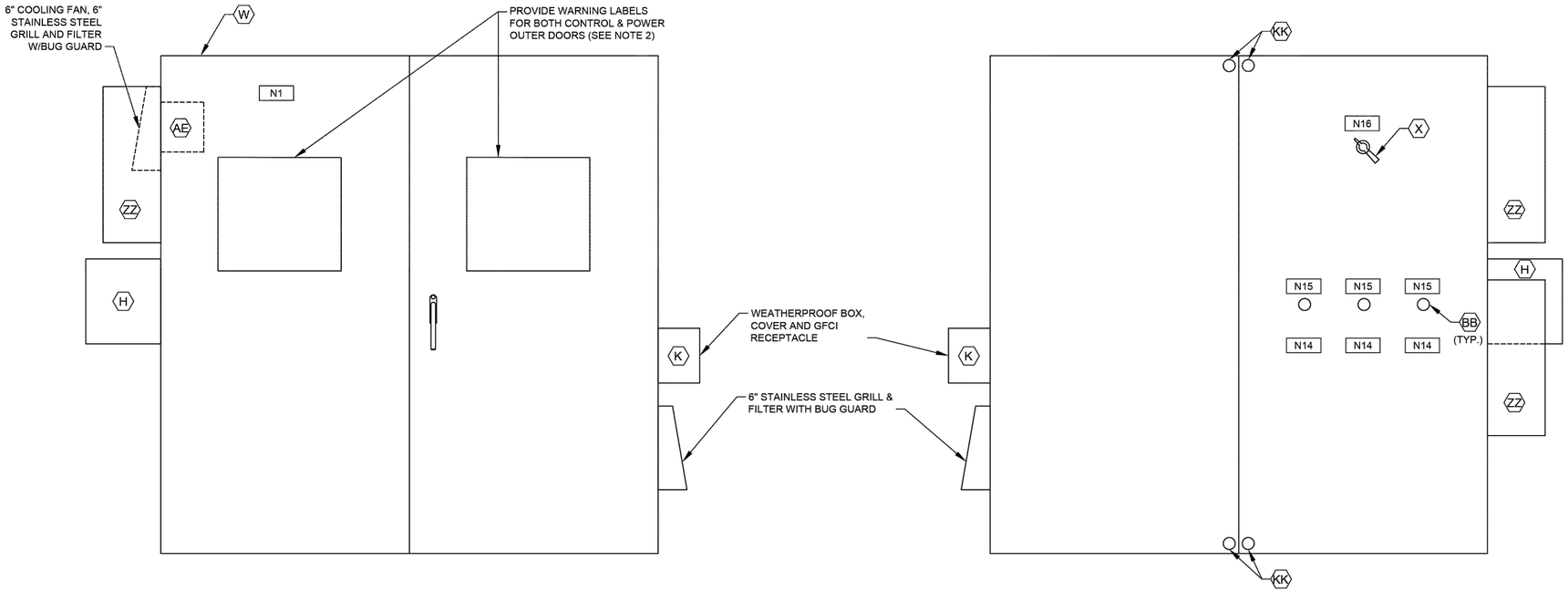
CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
INSTRUMENTATION
CONTROL CAB. EQUIP. LAYOUT & SCHEDULE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 71 OF 298	I–104



CONTROL CABINET (CONTROL SIDE)
OUTER DOOR

ELEVATION

NTS

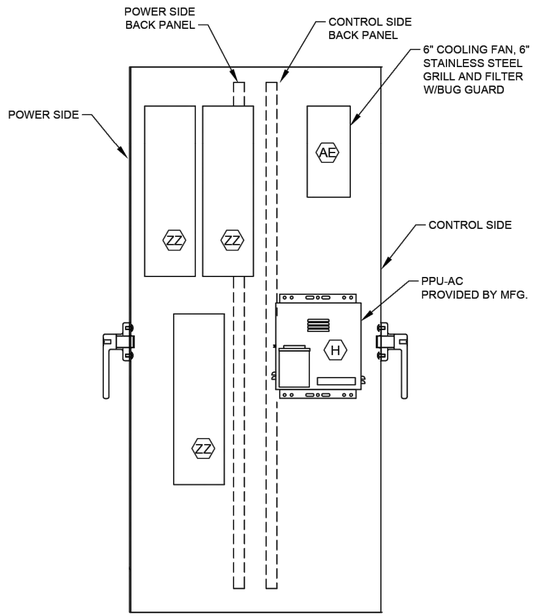
CONTROL CABINET (POWER SIDE)
INNER DOOR

ELEVATION

NTS
(SEE NOTE 1)

NAMEPLATE SCHEDULE

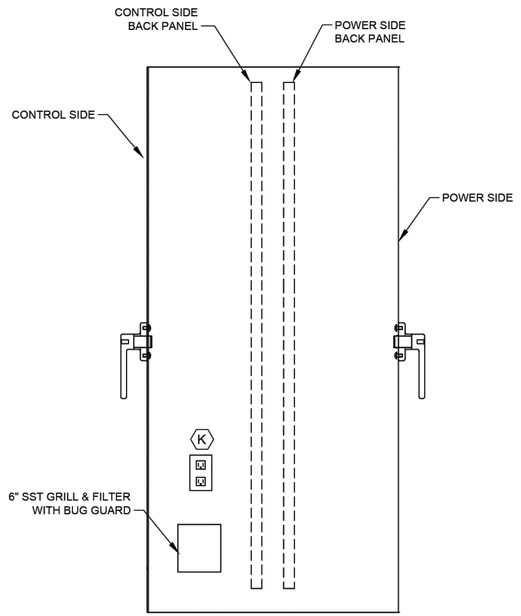
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N1	PUMP STATION DESIGNATION	N8	NOT USED.
N2	PUMP NO. 1	N9	NOT USED.
N3	PUMP NO. 2	N10	PROGRAMMING SCREEN
N4	PUMP NO. 3	N11	NOT USED.
N5	NOT USED.	N12	PRIMARY PLC
N6	NOT USED.	N13	BACKUP PLC
N7	NOT USED.	N14	MOTOR DATA
			HORSEPOWER (OUTPUT) ----------
			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

NOTES:

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

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CITY OF HOUSTON

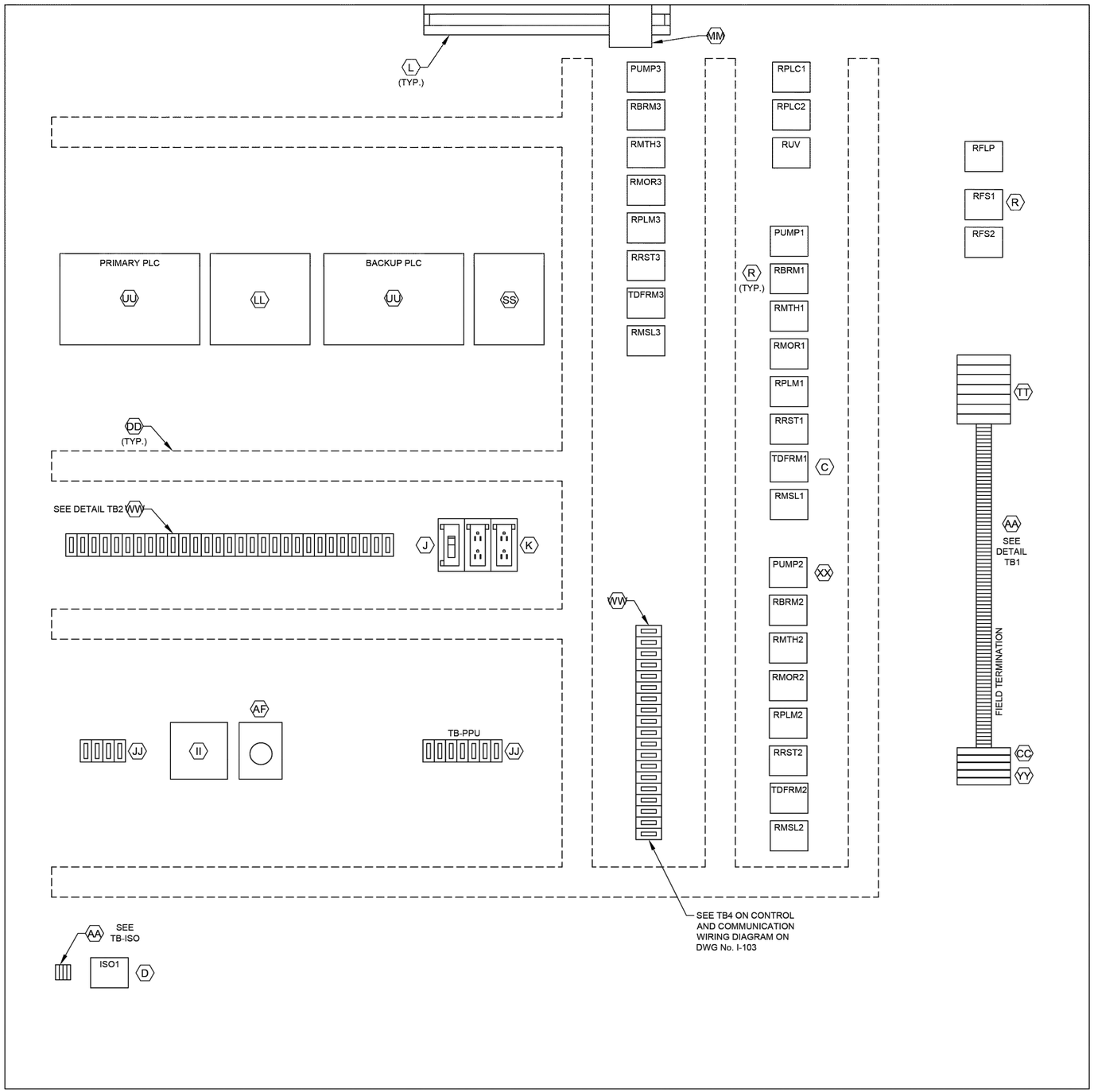
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
INSTRUMENTATION
CONTROL CABINET EQUIPMENT LAYOUT–I
(SHEET 1 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 72 OF 298	I–105

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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
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206
207
208
210
213
215
216
219

DETAIL TB1

ALL L AND N FOR EACH PUMP CONTROL TO BE FUSED

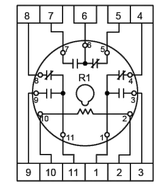
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DETAIL TB2

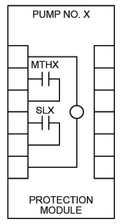
1500
1501
1503
1504

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.

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

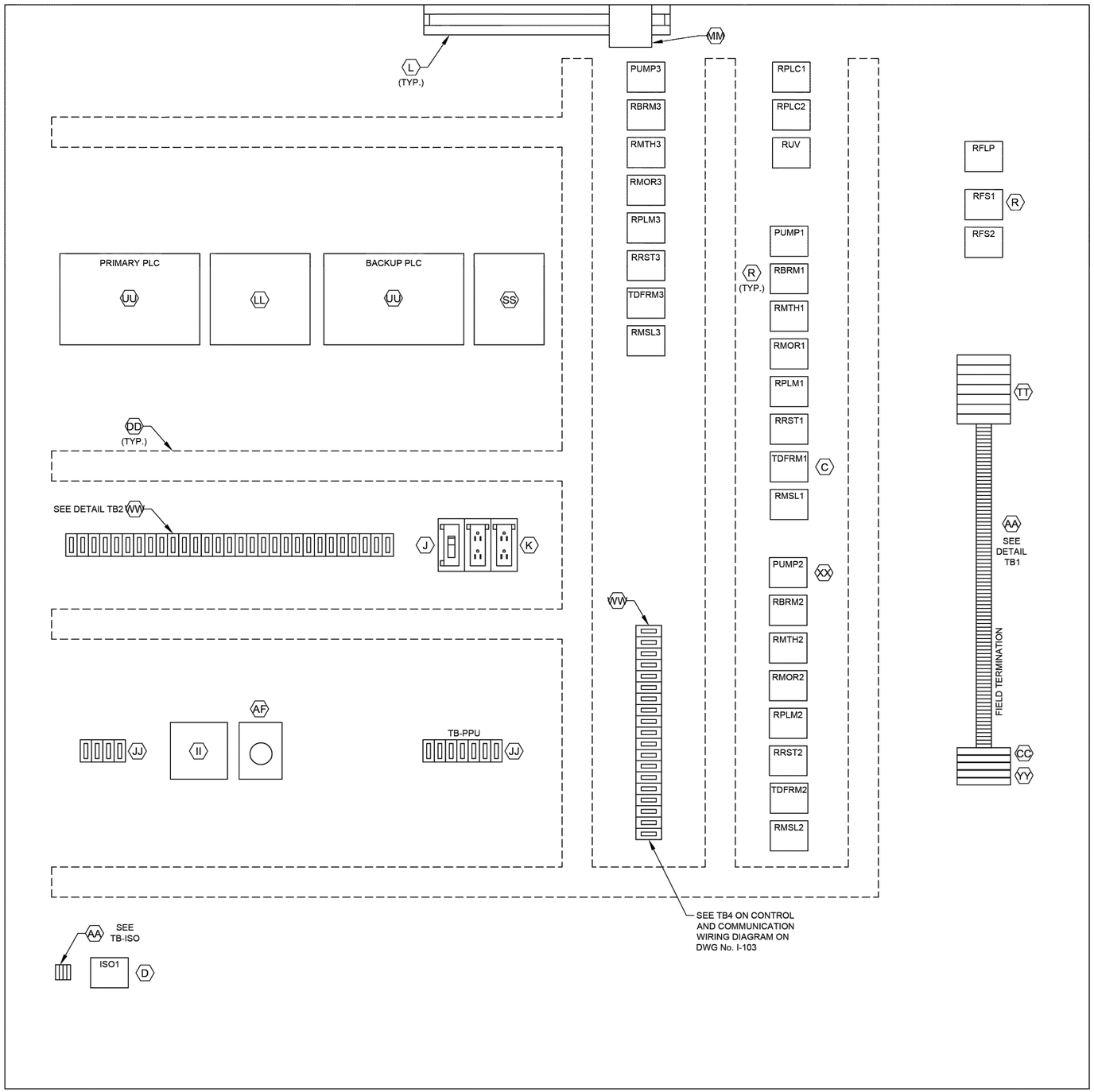
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
INSTRUMENTATION
CONTROL CABINET EQUIPMENT LAYOUT–II
(SHEET 2 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 73 OF 298 I–106	

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FILE PATH: G:\[illegible]

PLOTTED: 2/23/2026 11:08 AM
PLOT STYLE: G4bw.ctb
FILE PATH: G:\[illegible]\I-103 (AG FARM).dwg



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

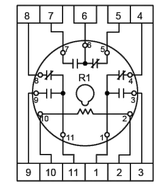
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305
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310
313
315
316
319
36A
37A
50
52
54
52A
54A
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M
35B
38B
41B
47B
13B
13AB
13GB
L+
M
14B
14AB
14GB
L+
M
13
13A
13G
14
14A
14G
SPARE
18
SPARE
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

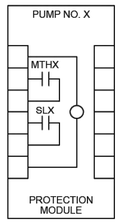
1500
1501
1503
1504

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.

NO.	DATE	REVISION	APP.

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
INSTRUMENTATION
CONTROL CABINET EQUIPMENT LAYOUT–III
(SHEET 3 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 74 OF 298	I–107

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FILE PATH: C:\Users\hforouzan\Desktop\Projects\Houston\Lift Stations\Kingwood Place South LS, Golden Bear LS, Deer Springs LS, AG Farm LS, and Golf Course LS\Drawings\Electrical\Control Panel\Control Panel Control Wiring Dia-I (AG FARM).dwg

NO.	DATE	REVISION	APP.

FIELD

CONTROL PANEL

DOOR

INTERIOR PANEL

PLC

120 VAC POWER

L1

L1A

L1N

JE-1 CONTROL POWER SURGE PROTECTOR (TT)

24VDC

3

3N

120V CKT3 FROM LIGHTING PANEL

L3A

20A

T-STAT

AE

FAN

RPLC3

11

8

RFS3

1

3

OIT

E

BACK UP PLC

36A — 50mA — I0.1 BACKUP PLC MODE ACTIVE

37A — 50mA — I0.2 FLOAT HIGH-HIGH LEVEL ALARM ALL PUMPS ON

ZS-1 AUTO TRANSFER SWITCH CONTACTS SHOWING SOURCE OF POWER (SEE NOTE 1)

ZI-1A — 49 — 50 — 50 — 50mA — I0.4 ATS IN NORMAL SOURCE

ZI-1B — 51 — 52 — 52 — 50mA — I0.5 ATS IN EMERGENCY SOURCE

GENERATOR CONTACTS SHOWING STATUS AND ALARMS (SEE NOTE 1)

YIG-1 — 53 — 54 — 54 — 50mA — I0.7 SPARE

IAG-1 — 55 — 56 — 637 — 50mA — I7.0 GENERATOR RUNNING

LSLG-1 — 57 — 58 — 638 — 50mA — I7.1 GENERATOR NOT IN AUTO ALARM

LEG-1 — 59 — 639 — 50mA — I7.2 GENERATOR LOW FUEL/PRESSURE ALARM

YAG-1 — 60 — 60 — 640 — 50mA — I7.3 GENERATOR LOW DC VOLTAGE ALARM

ZS-1 AUTO TRANSFER SWITCH — 61 — 61 — 641 — 50mA — I7.4 GENERATOR FAULT SHUTDOWN ALARM

ODOR SYSTEM

XA-1B — 62 — 63 — 642 — 50mA — I7.5 ODOR SYSTEM RUNNING

YCS-1B — 64 — 64 — 643 — 50mA — I7.6 ODOR SYSTEM FAILURE ALARM

LEVEL TRANSMITTER J-BOX

HIGH LEVEL ALARM FS1

HIGH-HIGH LEVEL ALARM FS2

FLOAT SWITCHES LOCATED INSIDE WET WELL

120V CKT10 FROM LIGHTING PANEL

L10A

20A

RUV

6

7

INTRINSICALLY SAFE RELAY

ISO 1

5

6

1

3

4

RFS1

2

10

R

RFS2

2

10

R

1500

1501

RFS1

6

7

1503

1504

RFS1

1

3

52A — 50mA — I0.2 FLOAT HIGH-HIGH LEVEL ALARM ALL PUMPS ON

54A — 50mA — I0.3 SPARE

L1A

L1N

MATCHLINE 1

NOTES:

1. PROVIDE AUTO TRANSFER SWITCH DRY CONTACT.
2. 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

DCCM

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA–I
(SHEET 1 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 75 OF 298	I–108

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(AG FARM).dwg

NO.	DATE	REVISION	APP.

FIELD

CONTROL PANEL

DOOR

INTERIOR PANEL

PLC

MATCHLINE 1

120 VAC POWER

24VDC

L1A 3

3N L1N

RBRM1 5 2 R 10

RBRM2 6 2 R 10

RBRM3 6 2 R 10

1004

ANALOG ISOLATOR (YY) 1 2 + - 3 4 5 6

1

24-

1002

ANALOG ISOLATOR (YY) 1 2 + - 3 4 5 6

24V-

2

11

1001

1001A

12

1003

1003A

ANALOG I/O SURGE SUPPRESSOR (CC) 1 2 3 4 24V+ 1001B 24V+ 1003B

L1A 3

3N L1N

MATCHLINE 2

BACK UP PLC

L+			CPU POWER
M			CPU COMMON
35B	1A	QO.0	PUMP NO.1 CALL TO RUN
38B	1A	QO.1	PUMP NO.2 CALL TO RUN
41B	1A	QO.2	PUMP NO.3 CALL TO RUN
44B	1A	QO.3	SPARE
47B	1A	QO.4	SPARE
13B	50mA	AIO.0	PRIMARY WET WELL LEVEL TRANSMITTER
13AB			
13GB			
L+			CPU POWER
M			CPU COMMON
14B	50mA	AIO.2	BACKUP WET WELL LEVEL TRANSMITTER
14AB			
14GB			
L+			CPU POWER
M			CPU COMMON
13	50mA	AI0.0	PRIMARY WET WELL LEVEL TRANSMITTER
13A			
13G			
14	50mA	AI0.2	BACKUP WET WELL LEVEL TRANSMITTER
14A			
14G			

RADAR LEVEL TRANSMITTER JUNCTION BOX

MFG. CABLE

PRIMARY RADAR LEVEL TRANSMITTER LT-1

MFG. CABLE

BACK UP RADAR LEVEL TRANSMITTER LT-2

LEGEND

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

DCCM

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION INSTRUMENTATION

CONTROL PANEL CONTROL WIRING DIA–I

(SHEET 2 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 76 OF 298	I–109

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FIELD	POWER PANEL	CONTROL PANEL		
		DOOR	INTERIOR PANEL	PLC

MATCHLINE 2

120 VAC POWER

24VDC

L1A 3 3N L1N

L1
N
MS
MOTION SWITCH

L1
N
MS
MOTION SWITCH

17 50mA I0.0 INTRUSION ALARM

BACK UP PLC

RUV 11 9

18B 50mA I0.0 PHASE FAILURE UNDER VOLTAGE

18 18 50mA I0.1 PHASE FAILURE UNDER VOLTAGE

RUV 2 R 10

ØA ØB ØC

JE-2 PHASE MONITOR

7 8 9 10 11 12

N/C 3

M1 M2

19

20

RFLP 2 R 10

15 50mA I0.4 SPARE
15A
15G

16 50mA AI0.6 SPARE
16A
16G

L1A 3 3N L1N

MATCHLINE 3

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

NO.	DATE	REVISION	APP.

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HOUSTON PUBLIC WORKS

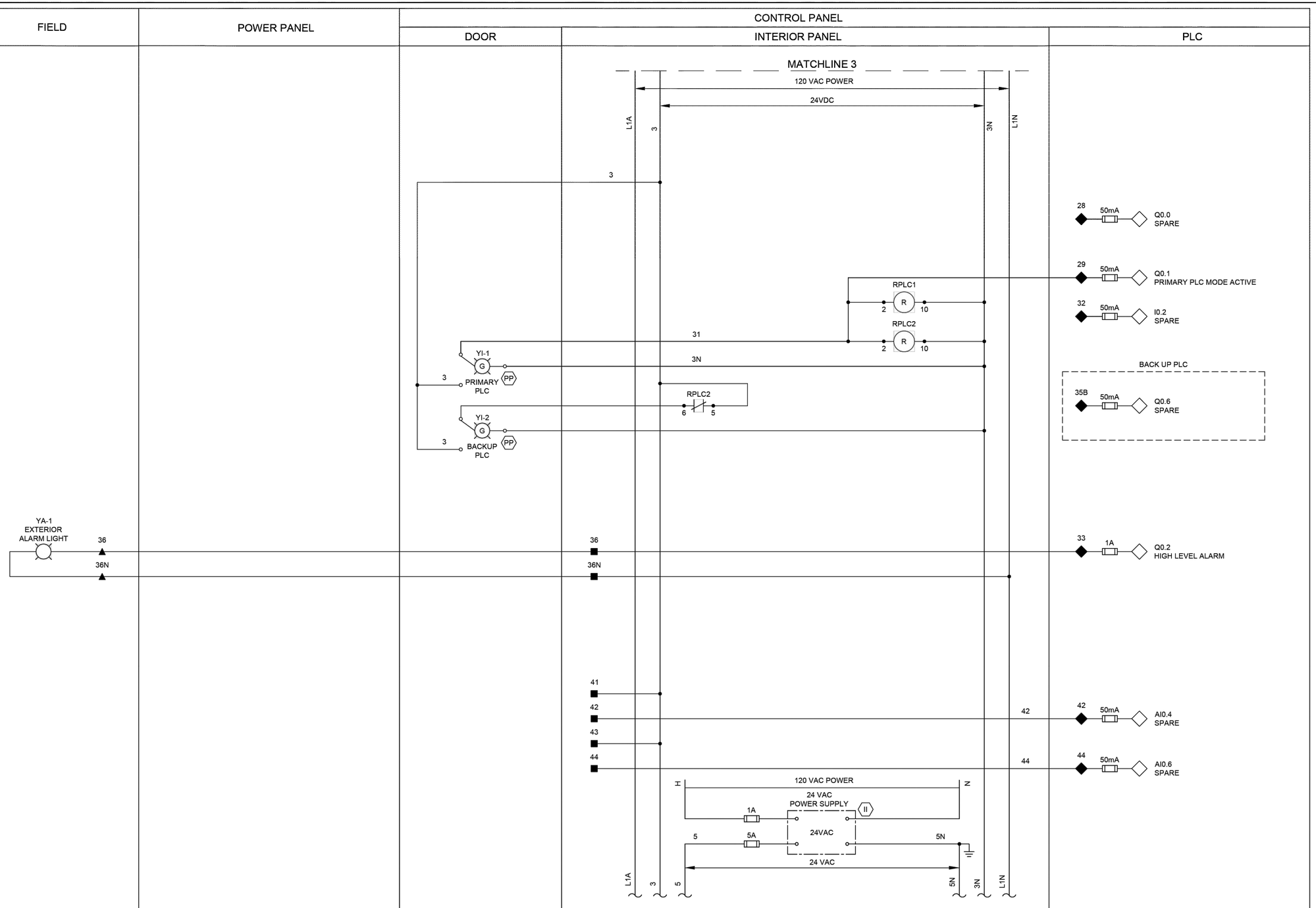
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA–III
(SHEET 3 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 77 OF 298	I–110

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NO.	DATE	REVISION	APP.



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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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA–IV
(SHEET 4 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 78 OF 298	I–111

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FIELD | POWER PANEL | CONTROL PANEL — DOOR | INTERIOR PANEL | PLC

120 VAC POWER
24 VDC
24 VAC
JE-2
TBP1 SEE NOTE 2
HS-1A RESET
TO SHEET I-113
TSH-1 MOTOR TEMP SWITCH
LSH-1 SEAL LEAK DETECTOR
PUMP NO.1
TERMINAL JUNCTION BOX
REFER TO SHEET E-105
4-20mA CURRENT TRANSDUCER
IE-1 MOTOR OVERLOAD RELAY (MOR) (SEE NOTE 1)
HS-1 H-O-A
ZS-1
YI-1 RUN
PUMP NO. 1 PROTECTION MODULE
LAH-1 SL1
TAH-1 MTH1
RRST1
RMSL1
RMTH1
TDFRM1
RFS1
RMOR1
RPLC1
RBRM1
RPLM1

PLC outputs:
- Q0.4 ALARM RESET
- I0.6 ALARM RESET
- I1.1 PUMP NO.1 HIGH TEMP ALARM
- AI0.8 PUMP NO.1 MOTOR CURRENT
- I3.3 PUMP NO.1 MOTOR OVERLOAD
- I3.0 PUMP NO.1 IN HAND
- I3.1 PUMP NO.1 IN AUTO
- Q0.7 PUMP NO.1 PLC START/STOP
- I1.0 PUMP NO.1 RUN
- I3.2 PUMP NO.1 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-104.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

NO.	DATE	REVISION	APP.

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LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION INSTRUMENATATION
PUMP NO.1 CONTROL WIRING DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 79 OF 298	I-112

PLOTTED: 2/23/2026 7:48:08 AM
PLOT STYLE: Grayscale.ctb
FILE PATH: C:\Users\HB15\Desktop\Projects\Houston\Lift Stations\Ag Farm\Drawings\Electrical\Control Panel\Ag Farm Control Panel Wiring Diagram (AG FARM).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-112
HS-1A RESET
TO SHEET I-114
RRST2
FROM SHEET I-112
TO SHEET I-114
RRST2

M2
TSH-2 MOTOR TEMP SWITCH
LSH-2 SEAL LEAK DETECTOR
TERMINAL JUNCTION BOX
PUMP NO.2
REFER TO SHEET E-105
CT
MOR2
4-20mA CURRENT TRANSDUCER
IE-2 MOTOR OVERLOAD RELAY (MOR) (SEE NOTE 1)

PUMP NO. 2 PROTECTION MODULE
LAH-2 SL2
TAH-2 MTH2
RMSL2
RMTH2
TDFRM2
RFS2
RMOR2
RPLM2

HS-2 H-O-A
RMTH2
RMSL2
RPLC1
RBRM2
RPLM2
TDFRM2

ZS-2
YI-2
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

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-104.
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.

DCCM

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

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION INSTRUMENTATION
PUMP NO.2 CONTROL WIRING DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 80 OF 298	I-113

PLOTTED: 2/23/2026
PLOT STYLE: G
FILE PATH:

FIELD | POWER PANEL | CONTROL PANEL: DOOR | CONTROL PANEL: INTERIOR PANEL | PLC

120 VAC POWER
24 VDC
15
15N
M3
TSH-3 MOTOR TEMP SWITCH
LSH-3 SEAL LEAK DETECTOR
20
21
22
23
303
304
305
306
307
308
HS-1A RESET
FROM SHEET I-113
TBP3 SEE NOTE 2
L1A
3
9
24 VAC
3N
L1N
5N
301
302
RRST3
PUMP NO. 3 PROTECTION MODULE
LAH-3 SL3
TAH-3 MTH3
5
PUMP NO.3
T1
T2
T3
G
M
REFER TO SHEET E-105
TERMINAL JUNCTION BOX
4-20mA CURRENT TRANSDUCER
IE-3 MOTOR OVERLOAD RELAY (MOR) (SEE NOTE 1)
MOR3
315
316
310
312
3P3
RMSL3
RMTH3
RFS2
TDFRM3
RMOR3
L1A
311
HS-3 H-O-A
313
314
320
RPLC2
RBRM3
RPLM3
TDFRM3
321
RFLP
B
ZS-3
319
YI-3
RUN
3N
309
321
322
323
316
317
318
320
310
50mA
1A
I1.5 PUMP NO. 3 HIGH TEMPERATURE ALARM
AI1.2 PUMP NO. 3 MOTOR CURRENT
I4.3 PUMP NO. 3 MOTOR OVERLOAD ALARM
I4.1 PUMP NO.3 IN HAND
I4.0 PUMP NO.3 IN AUTO
Q1.1 PUMP NO.3 PLC START/STOP
I1.4 PUMP NO. 3 RUN
I4.2 PUMP NO. 3 SEAL FAILURE

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-104.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

NO.	DATE	REVISION	APP.

DCCM

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Registration No. F-2593
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Houston, Texas 77006
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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

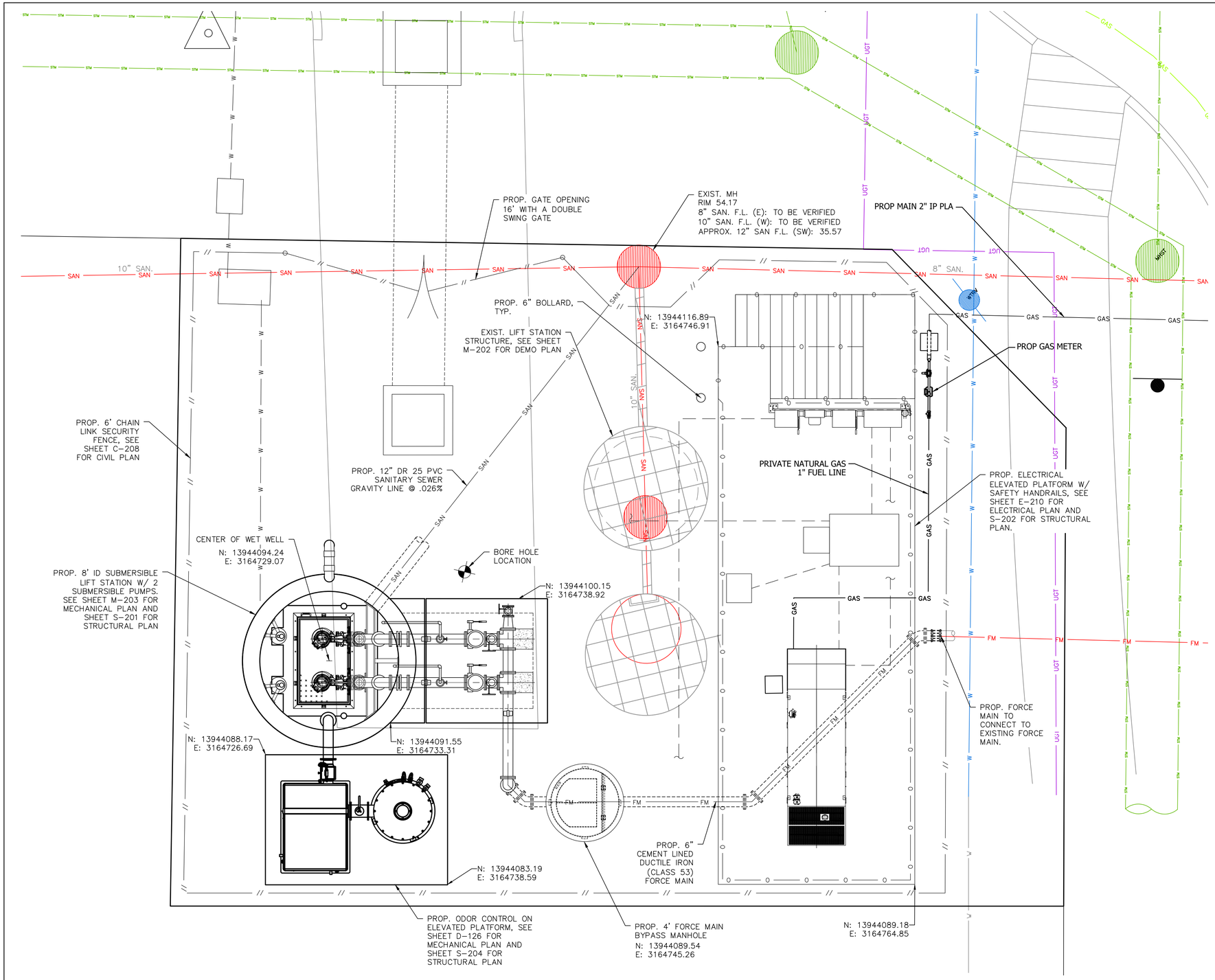
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

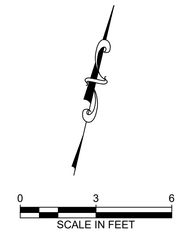
AG FARM LIFT STATION
INSTRUMENTATION
PUMP NO.3 CONTROL WIRING DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 81 OF 298	I-114

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OVERALL SITE PLAN
SCALE: 1" = 3'-0"



NO.	DATE	REVISION	APP.

DCCM

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TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND NOT FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

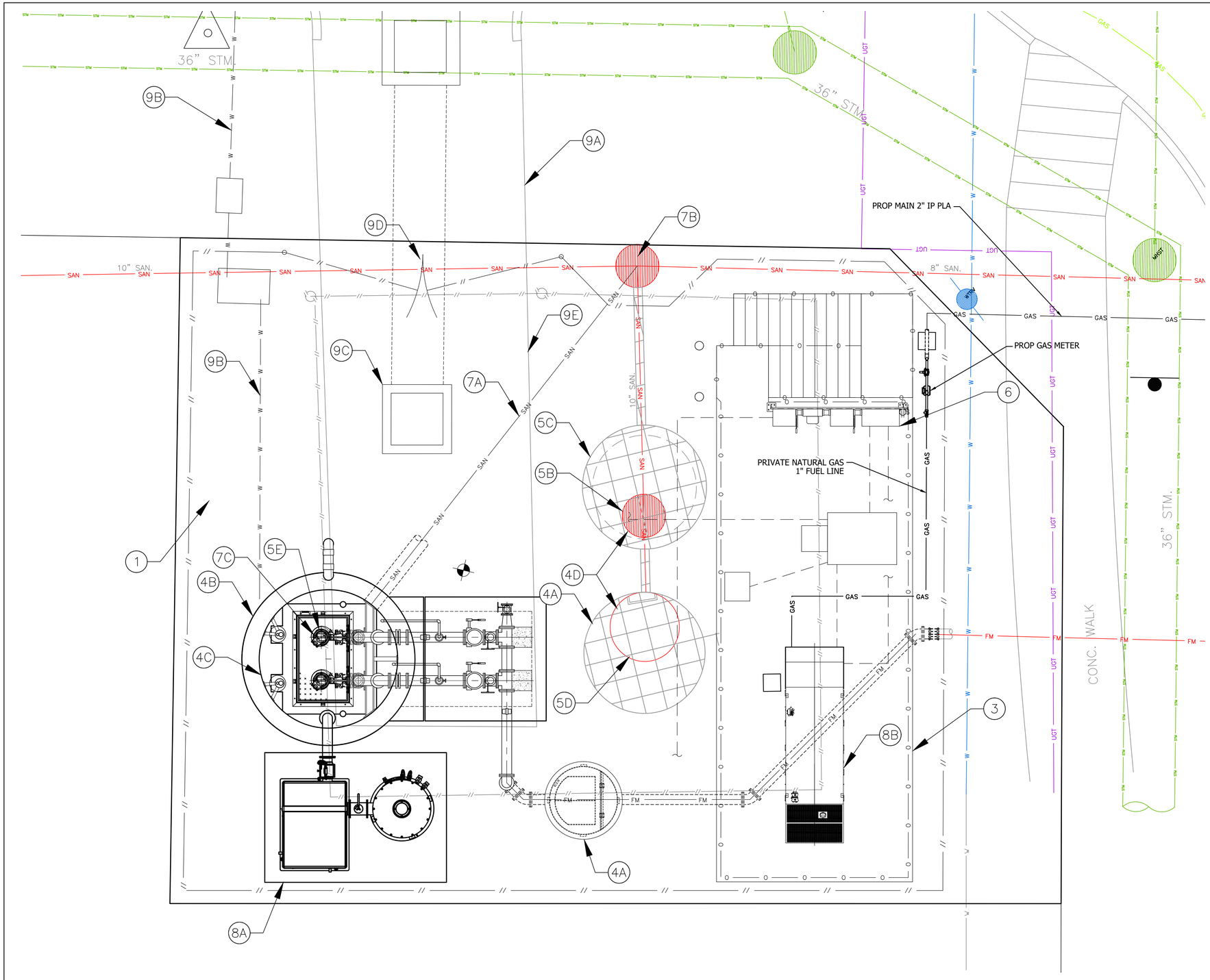
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION

PROPOSED OVERALL SITE LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=3' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 82 OF 298	M-201



OVERALL SITE PLAN

SCALE: 1" = 3'-0"

0 3 6

SCALE IN FEET

NO.	DATE	REVISION	APP.

RECOMMENDED CONSTRUCTION SEQUENCE	
NO.	DESCRIPTION
1	CLEAR AND GRUB ACCORDING TO SURVEY PROPERTY BOUNDARY.
2	PROVIDE TEMPORARY SECURITY FENCES.
3	CONSTRUCT PROP. ELECTRICAL PLATFORM.
4A	INSTALL PROP. BYPASS MANHOLE TO INTERCEPT THE EXISTING FM.
4B	INSTALL PROP. SUBMERSIBLE LS STRUCTURE VIA CAISSON CONSTRUCTION.
4C	COAT PROP. WET WELL.
4D	PROVIDE BYPASS PUMPING SERVICES.
5A	DEMOLISH AND REMOVE MECHANICAL EQUIPMENT INCLUDING PUMPS, PIPING, AND VALVES FROM THE DRY PIT.
5B	CLEAN EXISTING WET WELL VIA REMOVAL AND DISPOSAL OF SLUDGE AND SOLIDS.
5C	DEMOLISH AND REMOVE EXISTING LS STRUCTURE (WET WELL & DRY PIT). PROVIDE BYPASS PUMPING SERVICES.
5D	BACKFILL THE OLD LIFT STATION AREA.
5E	INSTALL PROP. SUBMERSIBLE PUMPS, PIPING, AND MECHANICAL EQUIPMENT.
6	INSTALL PROP. ELECTRICAL CONTROL PANELS, AND CONDUIT CONNECTIONS TO NEW SUBMERSIBLE PUMPS.
7A	INSTALL PROP. 12" GRAVITY LINE TO PROP. SUBMERSIBLE LS.
7B	CONNECT NEW GRAVITY INFLUENT LINE TO EXISTING MANHOLE DURING LOW-FLOW HOURS.
7C	PERFORM PUMP TESTING AND STARTUP OF NEW LIFT STATION OPERATION.
8A	INSTALL PROP. ODOR CONTROL SYSTEM AND PIPING CONNECTION.
8B	INSTALL PROP. GAS GENERATOR AND NATURAL GAS PIPING CONNECTION.
9A	DEMOLISH AND REMOVE EXISTING PAVING.
9B	INSTALL PROP. WATER SERVICE, METER, BACK FLOW PREVENTER, AND HOSE BIBB.
9C	INSTALL PROP. STORM DRAIN.
9D	INSTALL PROP. FENCES AND GATES.
9E	INSTALL PROP. CONCRETE PAVEMENT AND REPLACE DRIVEWAY.

DCCM

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SURVEYED BY: LANDTECH, INC.
FB NO. 6399

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND NOT FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

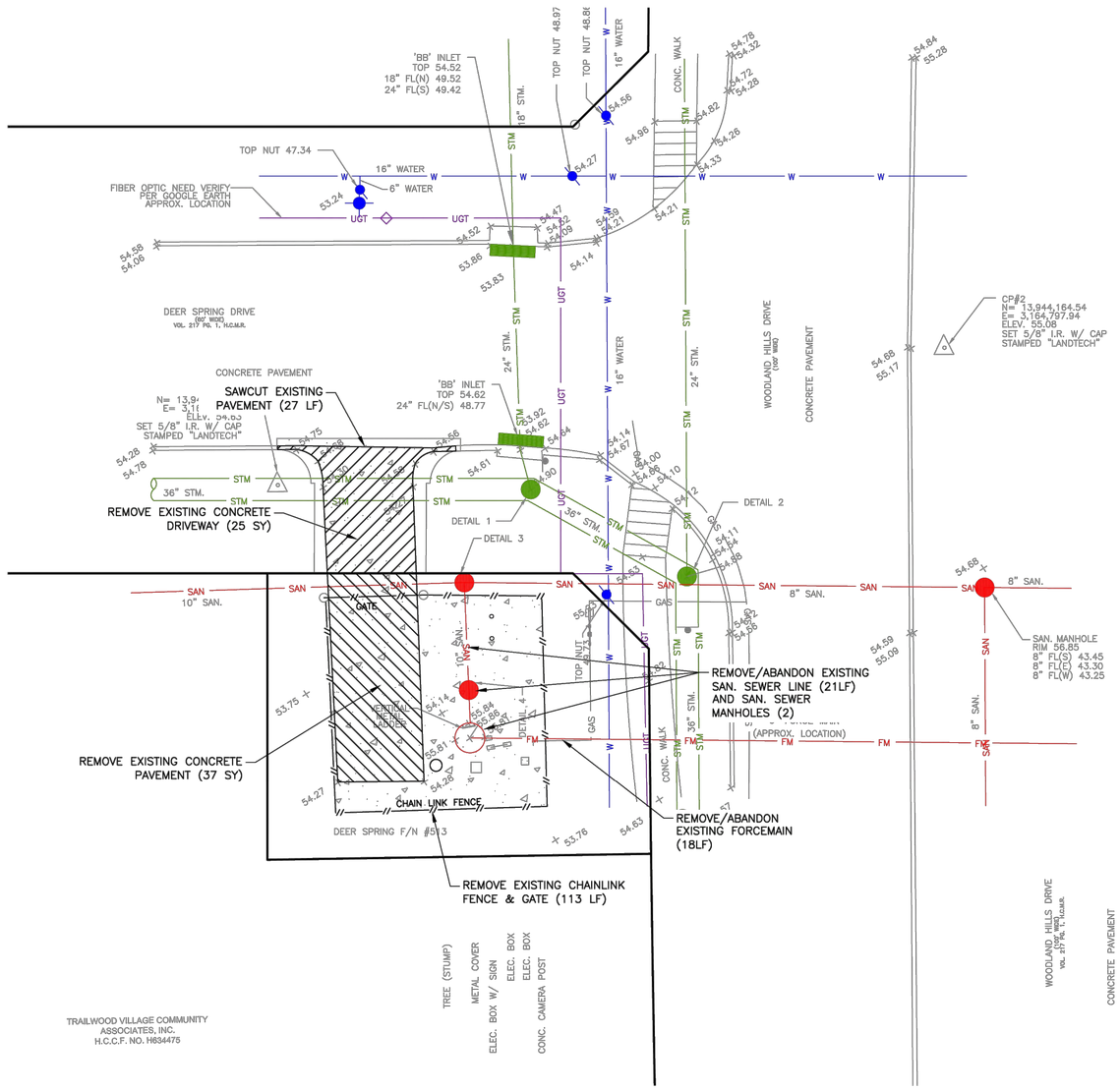
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
PROPOSED CONSTRUCTION SEQUENCE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=3' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 83 OF 298	CS-201

PLOTTED: 2/25/2026 12:46 PM
PLOT STYLE: COH.ctb
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FILE PATH: W:\Projects\000\000\000





NO.	DATE	REVISION	APP.

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070255, A FOUND ALUMINUM DISC STAMPED "G 103–36–02.1 BM 01 HN A CULVERT HEADWALL SOUTH OF KINGWOOD DRIVE, APPROXIMATELY 165 FEET WEST OF ITS INTERSECTION WITH SHADY RUN DRIVE. ELEVATION = 54.15' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENT.

LEGEND

EXISTING CONCRETE DRIVEWAY

EXISTING CONCRETE PAVEMENT

DETAIL 1
STM. MANHOLE
RIM 54.90
24" FL(N) 48.80
36" FL(W/SE) 48.45

DETAIL 2
STM. MANHOLE
RIM 54.88
24" FL(N) 48.18
36" FL(S/NW) 48.18

DETAIL 3
SAN. MANHOLE
RIM 54.17
FILLED W/ WASTE WATER
BOTTOM 37.57

DETAIL 4
SAN. MANHOLE
RIM 54.40
FILLED W/ WASTE WATER
BOTTOM 34.10

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
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800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED
PROFESSIONAL ENGINEER
02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

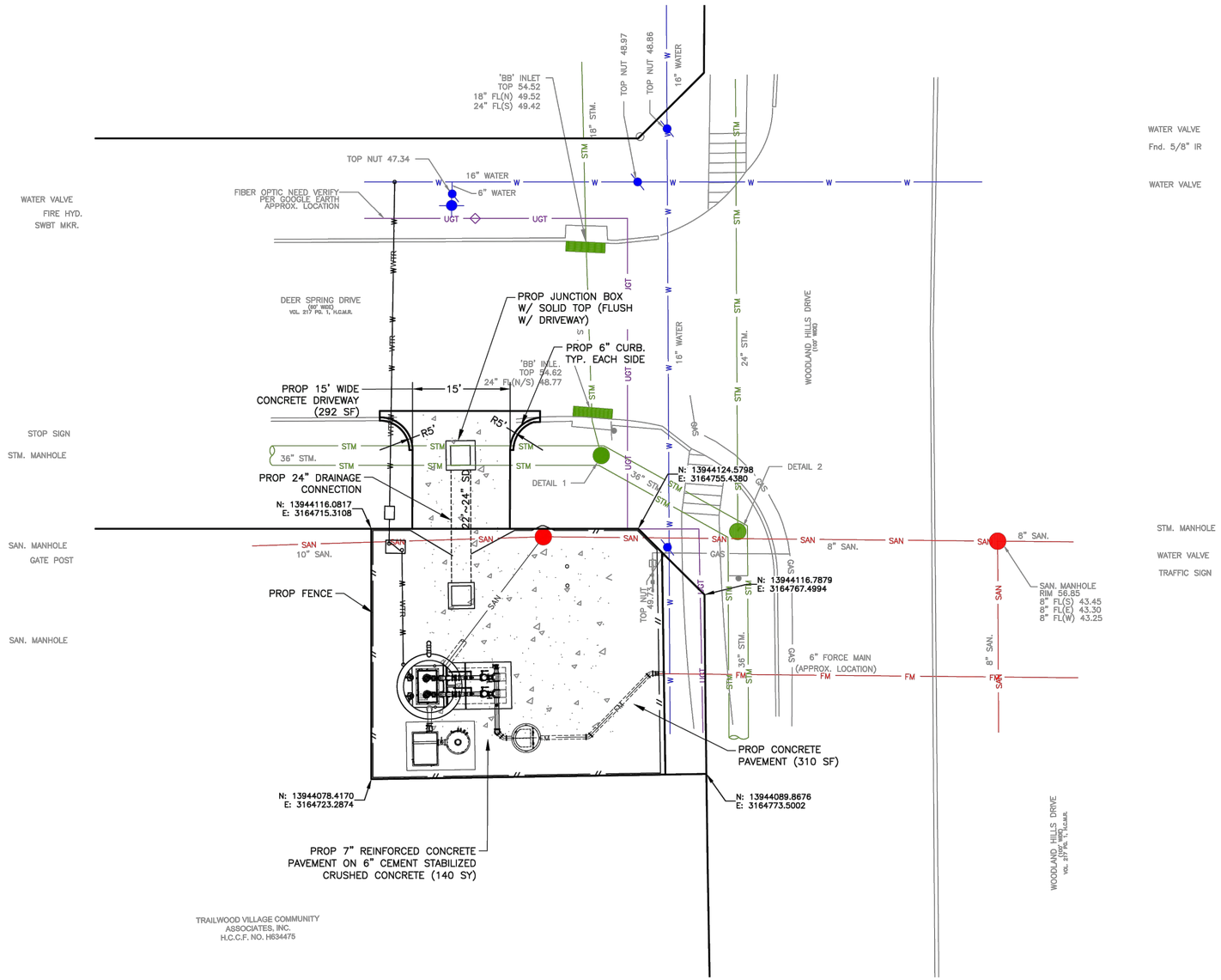
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
CIVIL DEMOLITION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 85 OF 298	C-202

PLOTTED: 2/26/2026 4:38 PM
PLOT STYLE: COH_ctb_230809.ctb
FILE PATH: W:\Acquisitions\000\0000\0000\2023\1800039244.0\CAD\Civil\Sheets\DCCM_CIVIL (DEER SPRING).dwg



SCALE (1"=10')
0 5 10 20

NO.	DATE	REVISION	APP.

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070255, A FOUND ALUMINUM DISC STAMPED "G 103-36-02.1 BM 01" IN A CULVERT HEADWALL SOUTH OF KINGWOOD DRIVE, APPROXIMATELY 165 FEET WEST OF ITS INTERSECTION WITH SHADY RUN DRIVE. ELEVATION = 54.15' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENT.

LEGEND

CONCRETE PAVEMENT

DETAIL 1
STM. MANHOLE
RIM 54.90
24" FL(N) 48.80
36" FL(W/SE) 48.45

DETAIL 2
STM. MANHOLE
RIM 54.88
24" FL(N) 48.18
36" FL(S/NW) 48.18

DETAIL 3
SAN. MANHOLE
RIM 54.17
FILLED W/ WASTE WATER
BOTTOM 37.57

DETAIL 4
SAN. MANHOLE
RIM 54.40
FILLED W/ WASTE WATER
BOTTOM 34.10

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WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
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800.414.1045
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STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER
02/20/2026

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
PROPOSED CIVIL SITE PLAN

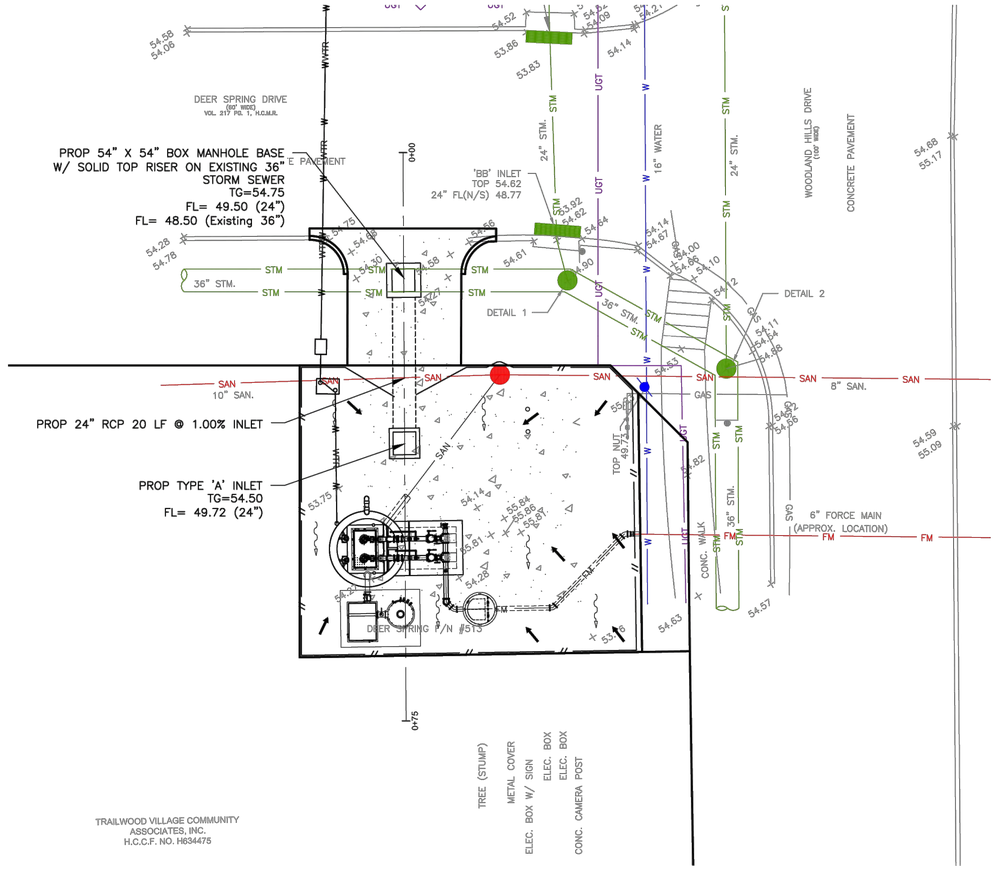
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 84 OF 298	C-203

PLOT STYLE: COH_ctb_230809.ctb PLOTTED: 2/26/2026 4:58 PM
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FILE PATH: W:\Projects\HOU\Projects\HOU0000230809\CIVIL\Drawings\Sheets\HOU0000230809_CIVIL (DEER SPRING).dwg PLOT STYLE: COH_ctb_230809.ctb PLOTTED: 2/26/2026 4:58 PM

Notes:
Storage rate 0.4 Ac-ft/Ac for new impervious cover at locations where existing impervious cover is removed.
Storage rate 0.80 Ac-ft/Ac for new impervious cover.

Lift Station Pad Site Detention		
Pavement to be removed	306	sf
Proposed concrete paving	1,399	sf
Proposed Lift Station Top	125	
Proposed Gravel (river rock for vegetation control) (Permeable)	307	sf
Storage Required	**1,342**	**cf**
Cut and Fill Data		
Total Cut	-890	cf
Total Fill	890	cf
Net Cut	0	cf
Lift Station Drainage Calculations		
Total Area	1,902.00	sf
	0.04	Ac
Total Impervious Cover		
Proposed Paving	1,524.00	sf
	1,524.00	
Runoff Coefficient	**0.80**	





NOTES

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3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENT.

LEGEND

- Existing Drainage Direction
- Proposed Drainage Direction
- Concrete Pavement

FLOOD DATA:

FIRM Map48201C0315L
Effective Date: 6/18/2007
Zone AE
BFE = 57.30
500 –YR WSEL = 62.51

REQUIRED VARIANCES:

1. Omit detention.

2-YEAR EVENT - CoH IDF CURVE b=48.35, D=9.07, E=0.7244 (Existing)

FROM NODE	TO NODE	AREA (SF)	AREA (AC)	AREA (AC)	AREA (AC)	C	Tc (MIN)	2-YR (IN/HR)	TOTAL (CFS)
A	B	1,902	0.0437		0.0437	0.26	20.76	4.13	0.05

100 -YEAR EVENT - CoH IDF CURVE b=60.66, D=4.44, E=0.5797 (Existing)

FROM NODE	TO NODE	AREA (SF)	AREA (AC)	AREA (AC)	AREA (AC)	C	Tc (MIN)	2-YR (IN/HR)	TOTAL (CFS)
A	B	1,902	0.0437		0.0437	0.26	20.76	9.34	0.11

2-YEAR EVENT - CoH IDF CURVE b=48.35, D=9.07, E=0.7244

FROM NODE	TO NODE	AREA (SF)	AREA (AC)	AREA (AC)	AREA (AC)	C	Tc (MIN)	2-YR (IN/HR)	TOTAL (CFS)	SIZE (IN)	MANNING NUMBER	SLOPE (%)	CAPACITY (CFS)	Velocity (FPS)	Pipe Run (FT)	Fall (FT)	DROP (FT)	STREAM (FT)	STREAM (FT)	Actual Velocity ft/sec)	Hydraulic Grade (%)	Change in Head (%)	Elevation HGL (upstream) (ft)	Elevation HGL (downstream) (ft)	Existing Surface Elevation (ft)
A	B	1,902	0.0437		0.0437	0.80	20.76	4.13	0.14	6	0.12	2.00	0.39	5.27	26	0.52									

100 -YEAR EVENT - CoH IDF CURVE b=60.66, D=4.44, E=0.5797

FROM NODE	TO NODE	AREA (SF)	AREA (AC)	AREA (AC)	AREA (AC)	C	Tc (MIN)	2-YR (IN/HR)	TOTAL (CFS)	SIZE (IN)	MANNING NUMBER	SLOPE (%)	CAPACITY (CFS)	Velocity (FPS)	Pipe Run (FT)	Fall (FT)	DROP (FT)	STREAM (FT)	STREAM (FT)	Actual Velocity ft/sec)	Hydraulic Grade (%)	Change in Head (%)	Elevation HGL (upstream) (ft)	Elevation HGL (downstream) (ft)	Existing Surface Elevation (ft)
A	B	1,902	0.0437		0.0437	0.80	20.76	9.34	0.33	6	0.12	2.00	0.39	5.27	26	0.52									

NO.	DATE	REVISION	APP.

DCCM

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11750 Katy Freeway, Suite 1260
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800.414.1045
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SURVEYED BY: LANDTECH, INC.
FB NO. 6399

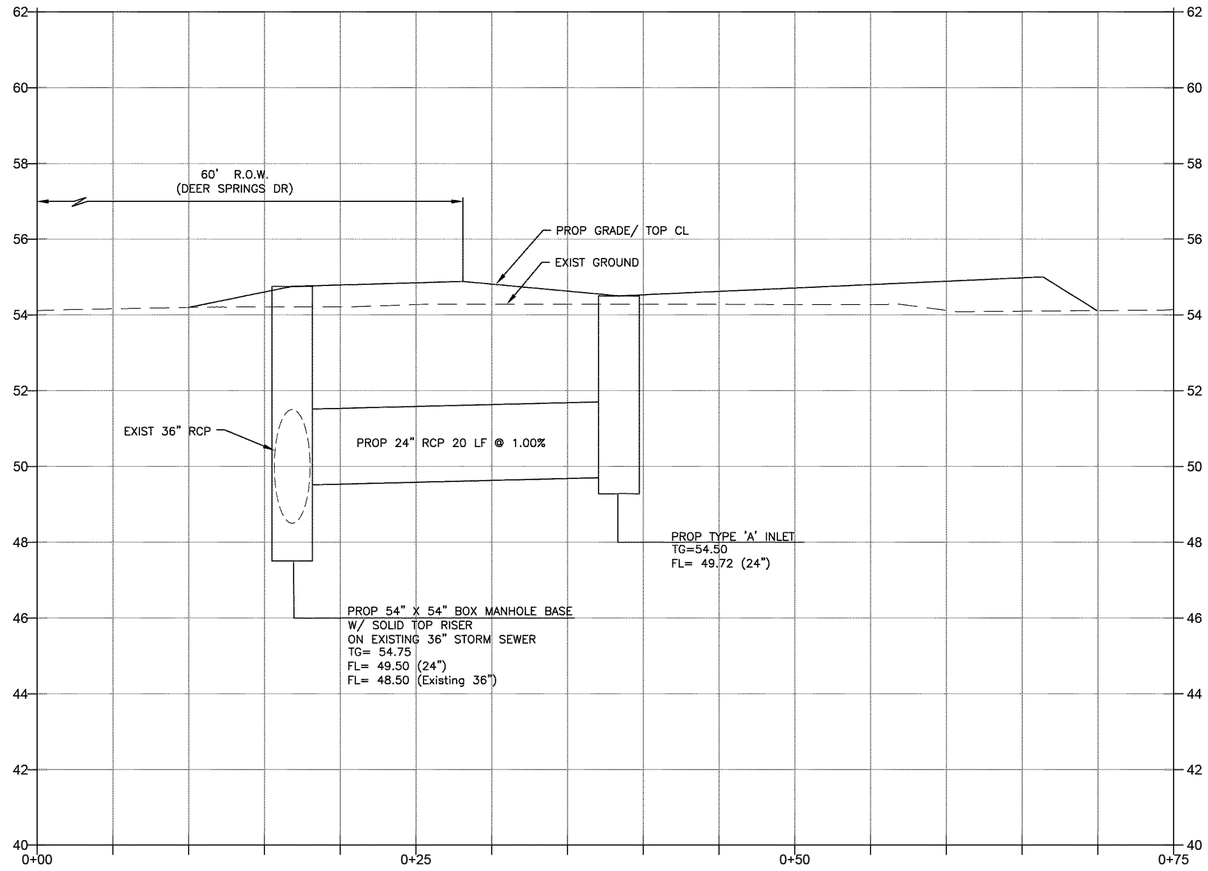
STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER
02/20/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
PROPOSED CIVIL DRAINAGE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 85 OF 298	C–204



NO.	DATE	REVISION	APP.

DCCM

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STATE OF TEXAS
NATHAN A. WILSON
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SURVEYED BY: LANDTECH, INC.
FB NO. 6399

02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

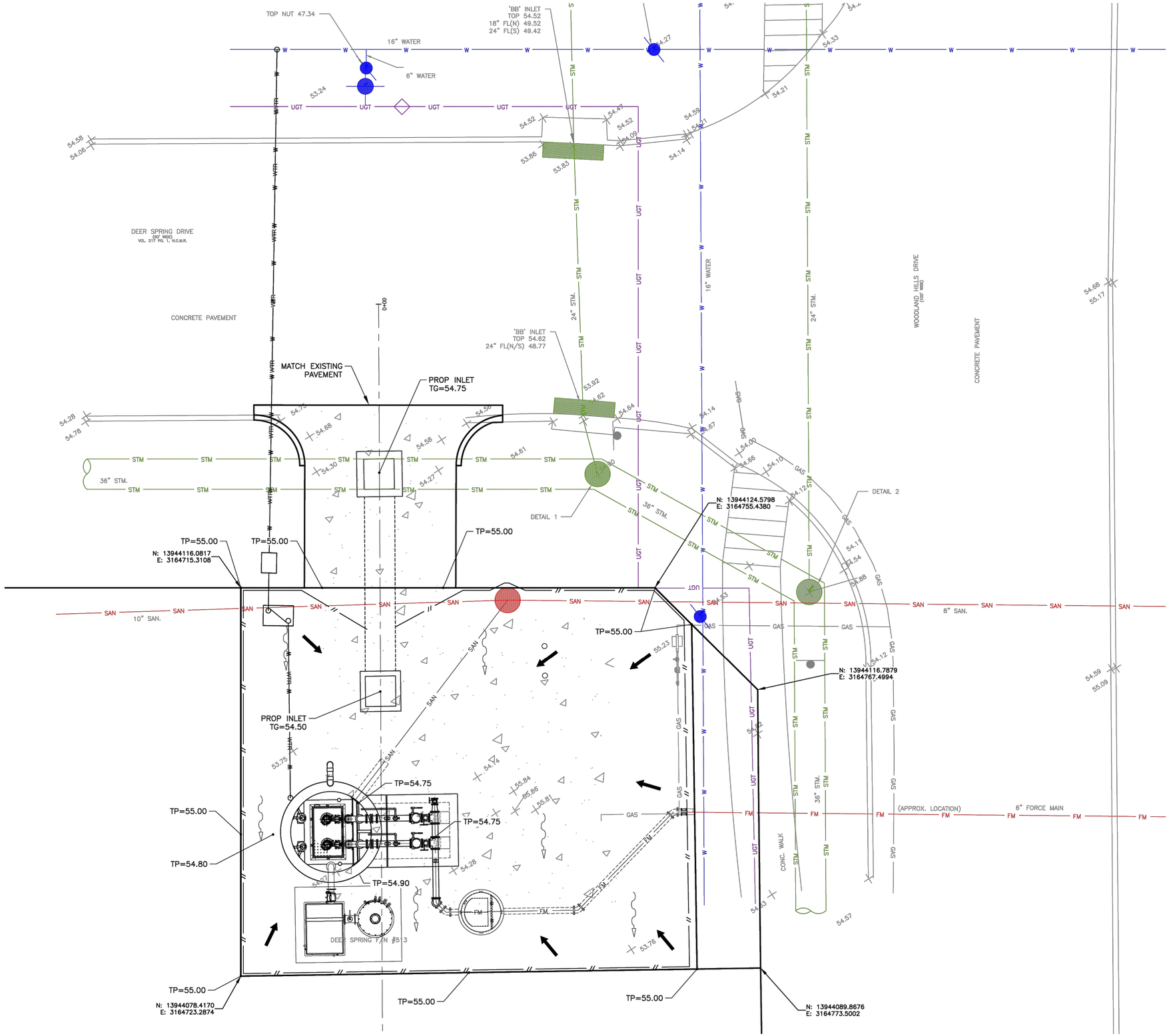
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
PROPOSED CIVIL STORM PROFILE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=5' VERT: 1"=2'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 88 OF 298	C-204

PLOT STYLE: COH_ctb_230809.ctb PLOTTED: 2/26/2026 4:58 PM
FILE PATH: W:\2024projects\024000234.006\Civil\Sheets\DWG\(C-204) PROPOSED CIVIL (DEER SPRING).dwg



SCALE (1"=5')
0 2.5 5 10

NO.	DATE	REVISION	APP.

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070255, A FOUND ALUMINUM DISC STAMPED "G 103–36–02.1 BM 01" IN A CULVERT HEADWALL SOUTH OF KINGWOOD DRIVE, APPROXIMATELY 165 FEET WEST OF ITS INTERSECTION WITH SHADY RUN DRIVE. ELEVATION = 54.15' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENT.

LEGEND

- EXISTING DRAINAGE DIRECTION
- PROPOSED DRAINAGE DIRECTION
- CONCRETE PAVEMENT

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER
02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
PROPOSED CIVIL GRADING PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 86 OF 298	C-204

PLOT STYLE: COH_ctb_230809.ctb PLOTTED: 2/26/2026 4:58 PM

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PLOT STYLE: COH_ctb_230809.ctb PLOTTED: 2/26/2026 4:58 PM
FILE PATH: W:\2024\projections\CIVIL (DEER SPRING).dwg

PROP 3/4" WATER SERVICE TAPPING SADDLE W/ CORPORATION STOP.

PROP 3/4" TYPE 'K' COPPER (AUGER)

PROP 3/4" WATER METER WITH BOX

PROP 3/4" RPBP BACKFLOW PREVENTER W/ CONCRETE PAD AND INSULATED ENCLOSURE (AQUASHIELD OR APPROVED EQUAL) (SEE SHEETS D-101 AND D-102)

PROP 3/4" HOSE BIBB (SEE SHEETS D-101 AND D-102)

TOP NUT 47.34

'BB' INLET TOP 54.52 18" FL(N) 49.52 24" FL(S) 49.42

'BB' INLET TOP 54.62 24" FL(N/S) 48.77

16" WATER

6" WATER

DEER SPRING DRIVE (60' WIDE) VOL. 217 PG. 1, H.C.M.R.

CONCRETE PAVEMENT

WOODLAND HILLS DRIVE (100' WIDE)

CONCRETE PAVEMENT

36" STM.

24" STM.

10" SAN.

8" SAN.

6" FORCE MAIN (APPROX. LOCATION)

DETAIL 1

DETAIL 2

CONC. WALK

DEER SPRING F/N #5.3

SCALE (1"=5')
0 2.5 5 10

NOTES

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LEGEND

CONCRETE PAVEMENT

NO.	DATE	REVISION	APP.

DCCM

WOOLPERT
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11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
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STATE OF TEXAS · NATHAN A. WILSON · 136610 · LICENSED PROFESSIONAL ENGINEER

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

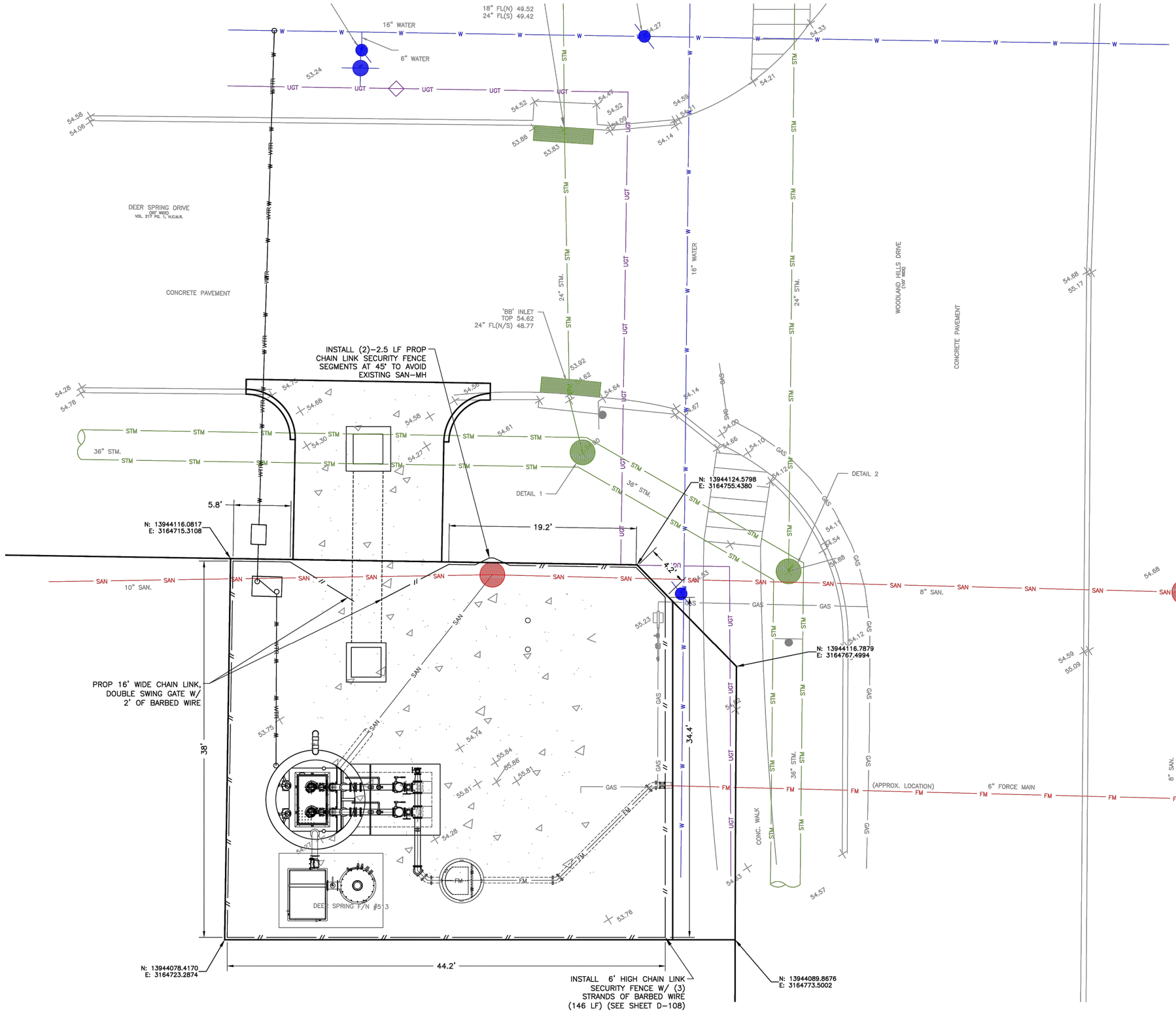
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
PROPOSED CIVIL WATER PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=5' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 90 OF 298	C-207

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SCALE (1"=5')
0 2.5 5 10

NO. | DATE | REVISION | APP.

NOTES

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3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENT.

LEGEND

CONCRETE PAVEMENT

DCCM

WOOLPERT
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SURVEYED BY: LANDTECH, INC.
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STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER
02/20/2026

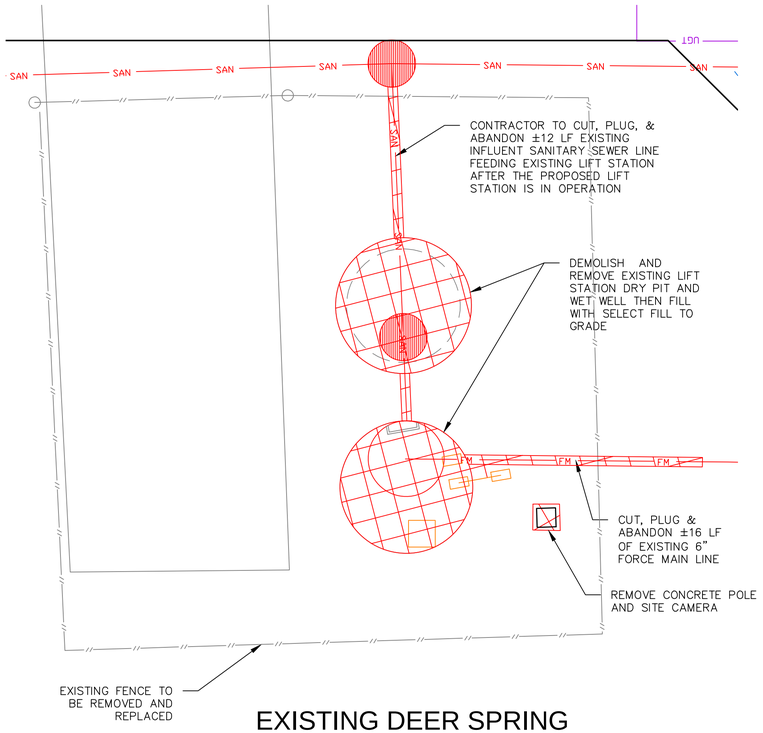
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
PROPOSED CIVIL FENCE PLAN

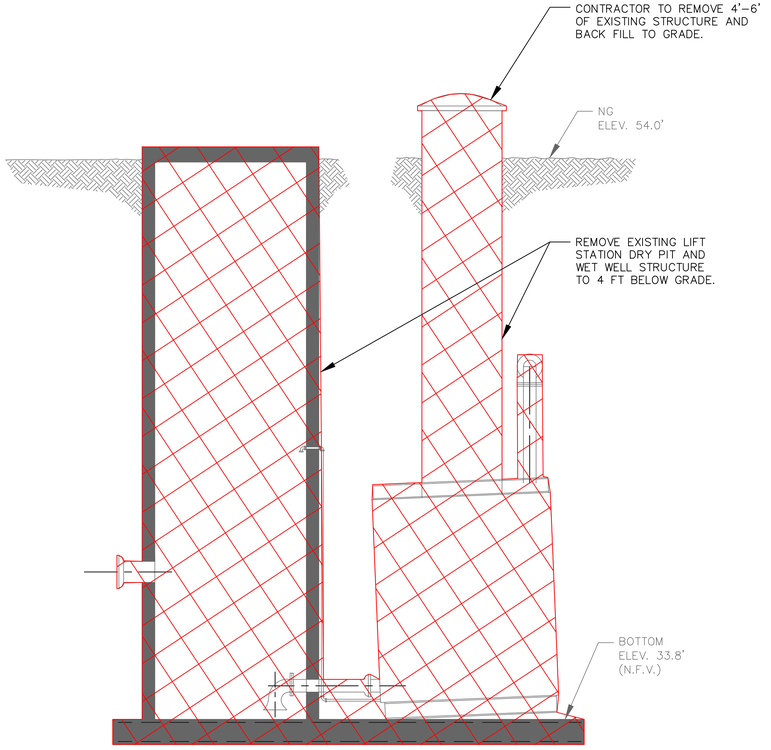
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=5' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 91 OF 298	C-208

PLOTTED: 2/25/2026 11:32 AM
PLOT STYLE: COH.ctb
FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.03_Drawings\24-1930-PD-DEMO.dwg



EXISTING DEER SPRING LIFT STATION

SCALE: 1" = 4'-0"



SECTION

SCALE: 1" = 3'-0"

NOTES:

1. PROVIDE SAFE WORKING CONDITIONS FOR EMPLOYEES THROUGHOUT DEMOLITION AND REMOVAL OPERATIONS. OBSERVE SAFETY REQUIREMENTS FOR WORK BELOW GRADE.
2. MAINTAIN SAFE ACCESS TO ADJACENT PROPERTY AND BUILDINGS. DO NOT OBSTRUCT ROADWAYS, SIDEWALKS OR PASSAGEWAYS ADJACENT TO THE WORK.
3. PERFORM DEMOLITION IN A MANNER TO PREVENT DAMAGE TO ADJACENT PROPERTY. REPAIR DAMAGE TO CITY PROPERTY OR ADJACENT PROPERTY AN FACILITIES.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFETY AND INTEGRITY OF ADJACENT STRUCTURES AND SHALL BE LIABLE FOR ANY DAMAGE DUE TO MOVEMENT OR SETTLEMENT. PROVIDE PROPER FRAMING AND SHORING NECESSARY FOR SUPPORT. CEASE OPERATIONS IF AN ADJACENT STRUCTURE APPEARS TO BE ENDANGERED. RESUME DEMOLITION ONLY AFTER PROPER PROTECTIVE MEASURES HAVE BEEN TAKEN.
5. NOTIFY AND COORDINATE WITH UTILITY COMPANY AND ADJACENT BUILDING OCCUPANTS WHEN TEMPORARY INTERRUPTION OF UTILITY SERVICE IS NECESSARY.
6. DO NOT BACKFILL WITH MATERIAL FROM DEMOLITION UNLESS APPROVED BY PROJECT MANAGER.
7. ALL OPENINGS BELOW THE REMOVED WALLS SHALL BE SEALED WITH NON–SHRINK GROUT.
8. CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS (INCLUDING DEMOLISH PERMITS, COH FORM NO. CE–0175 & TEXAS DSHS FORM APB#5) REQUIRED. CONTRACTOR SHALL COORDINATE DISCONNECT WITH CENTERPOINT ENERGY TO ELECTRICAL POWER.
9. THE CITY OF HOUSTON HAS THE FIRST RIGHT OF REFUSAL OF ANY EQUIPMENT OR MATERIAL REMOVED. CONTACT CITY PROJECT MANAGER AT LEAST 72 HOURS PRIOR TO DEMOLITION IN ORDER TO COORDINATE REMOVAL OF ANY ITEMS THE CITY WISHES TO CLAIM AS SALVAGE. THE CONTRACTOR SHALL DELIVER ALL SALVAGED ITEMS TO A LOCATION, WITHIN THE CITY, DETERMINED BY THE CITY, THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL OTHER EQUIPMENT AND MATERIAL NOT IDENTIFIED FOR SALVAGE.
10. THE EXISTING WET WELL SHALL BE CLEANED OF ALL DEBRIS, WASTEWATER, AND OTHER RESIDUES.
11. THE CONTRACTOR SHALL DISPOSE OF ANY LIQUID OR SOLID WASTE FOUND IN THE WET WELL AT A DISPOSAL FACILITY LICENSED & APPROVED BY THE STATE OF TEXAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF TRANSPORTATION, DISPOSAL & TESTING REQUIRED BY STATE & FEDERAL REGULATORY AGENCIES, & BY THE DISPOSAL FACILITY
12. CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS (INCLUDING DEMOLISH PERMITS, ENCROACHMENT PERMITS, ETC.)

NOTES CONT'D:

13. DO NOT PROCEED WITH DEMOLITION OR REMOVAL OPERATIONS UNTIL AUTHORIZED BY PROJECT MANAGER. NO DEMOLITION SHALL BE PERFORMED UNTIL BYPASS PUMPING IS OPERATIONAL.
14. REMOVE REMAINING SLUDGE, SOLIDS, AND MATERIALS FROM WET WELL AND RINSE/CLEAN INTERIOR PRIOR TO BACKFILL OPERATIONS.
15. REMOVE ALL PIPING, WIRING, CONDUITS, DUCTWORK, AND OTHER MISCELLANEOUS ITEMS TO CONCRETE SURFACES.
16. DEMOLISH AND REMOVE DIVERSION STRUCTURE TO 4–FEET BELOW EXISTING GRADE. DEMOLISH AND REMOVE PAVEMENT STRUCTURE. GRADE AREA TO DRAIN BACKFILL AND PAVE. REFER TO SHEET XX, XX.



PHOTO 1



PHOTO 2

NO.	DATE	REVISION	APP.

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
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713.869.3433
DCCM.com

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND NOT FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

CITY OF HOUSTON

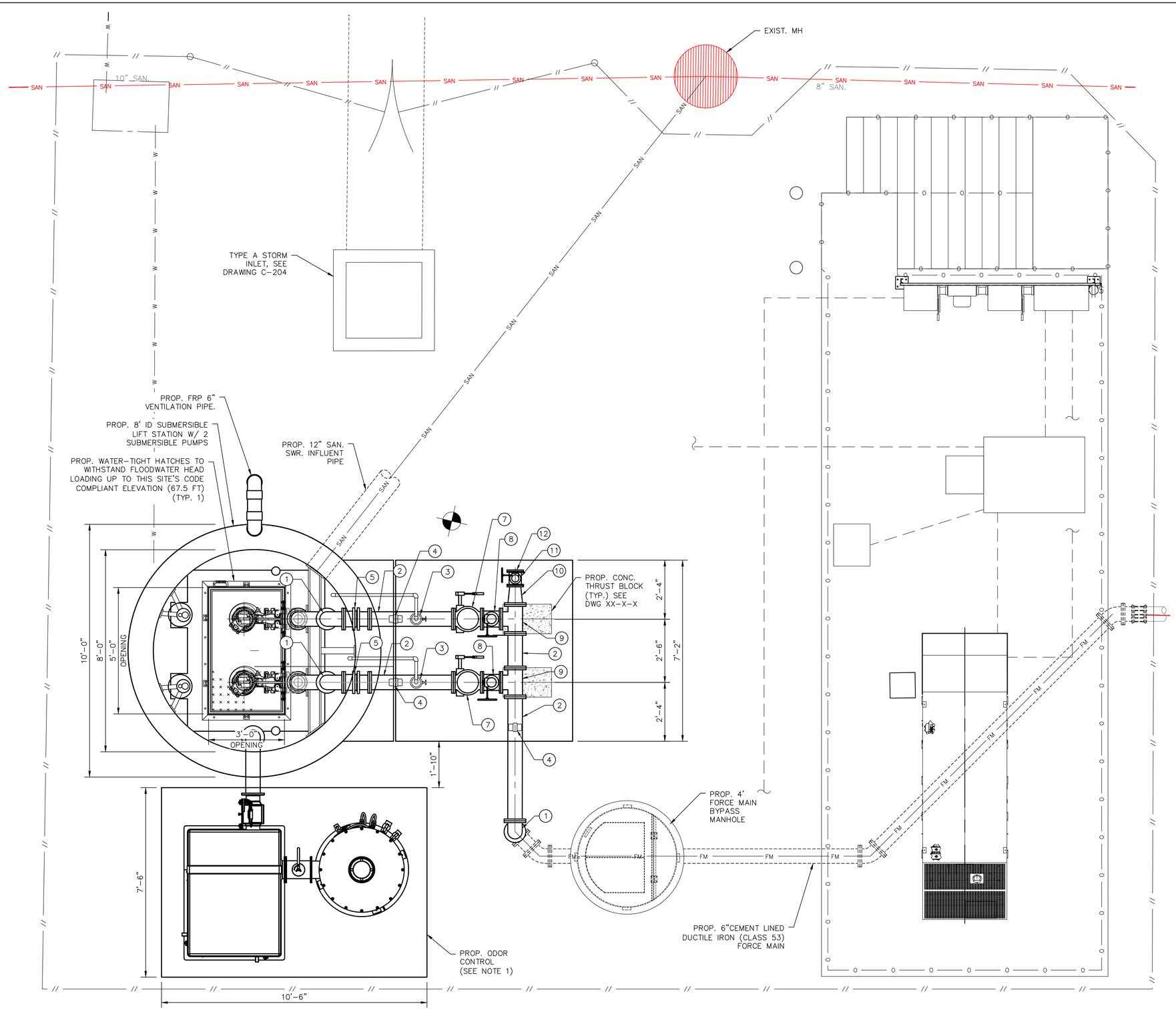
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

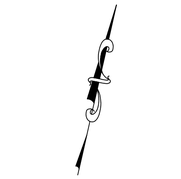
DEER SPRINGS LIFT STATION
MECHANICAL
DEMOLITION PLAN AND SECTION

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
H: AS NOTED V: AS NOTED	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 92 OF 298	M–202

PLOTTED: 2/25/2026 3:08 PM
PLOT STYLE: COH.ctb
FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.03_Drawings\24-1930-PD-PLAN-PROP.dwg



PLAN @ GRADE
SCALE: 1" = 2'-0"



NO.	DATE	REVISION	APP.

PIPE FITTING TABLE		
ITEM NO.	QUANTITY	ITEM
1	4	6" D.I. 90° BEND, FLG X FLG
2	2	6" D.I. PIPE, FLG X FLG
3	2	1" S.S. COMBINATION ARV
4	3	4" PRESSURE GAUGE
5	2	6" RESTRAINED FLANGED COUPLING ADAPTER
6	2	6" D.I. PIPE, FLG X PE
7	2	6" SWING CHECK VALVE, FLG X FLG
8	2	6" PLUG VALVE, FLG X FLG
9	1	6" D.I. TEE, FLG
10	1	6" X 4" D.I. REDUCER, FLG
11	1	6" PLUG VALVE, FLG X FLG
12	1	4" BLIND FLANGE

NOTES:

1. ODOR CONTROL MECHANICAL EQUIPMENT IS NOT RECOMMENDED TO BE INSTALLED ABOVE THE 500-YR FLOODPLAIN, AS IT IS NOT CONSIDERED A CRITICAL COMPONENT OF THE LIFT STATION AND WOULD CAUSE DIFFICULTY FOR ACCESS AND ON-GOING MAINTENANCE.

DCCM

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1710 Seamist Dr
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713.869.3433
DCCM.com

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FB NO. 6399

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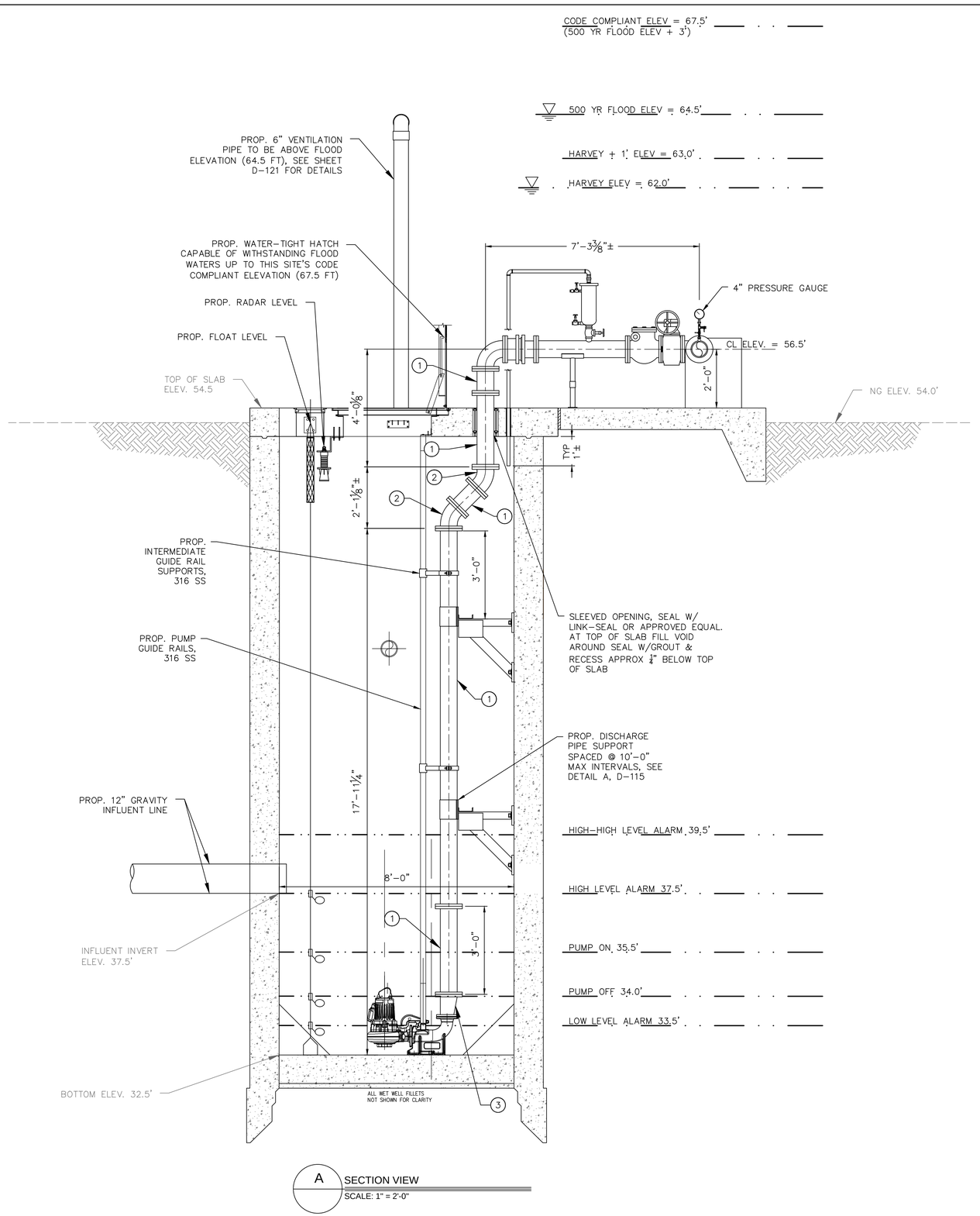
RESPONSIBLE ENGINEER:
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

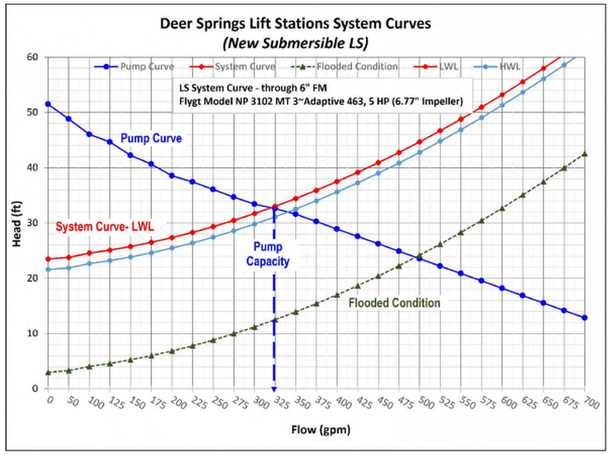
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
MECHANICAL
LIFT STATION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=2' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 93 OF 298	M-203



PIPE FITTING TABLE		
ITEM NO.	QUANTITY	ITEM
1	10	6" D.I. PIPE, FLG X FLG
2	4	6" D.I. 45° BEND, FLG X FLG
3	2	6" X 4" D.I. PIPE REDUCER, FLG X FLG



PUMP DATA TABLE

PUMP CHARACTERISTICS	PUMP NO. 1	PUMP NO. 2
MOTOR DATA NOMINAL SIZE (HP) MAX SPEED (RPM)	 5.0 1,175	 5.0 1,175
SOLIDS PASSAGE MIN SPHERE (IN)	 3.0	 3.0
CAPACITY (GPM) DESIGN RUNOUT	 306.0	 306.0
DISCHARGE HEAD (FT) DESIGN RUNOUT SHUT OFF	 34.0	 34.0
EFFICIENCY (%) DESIGN	 69.9	 69.9
NPSHR (FT) DESIGN RUNOUT	 15.0	 15.0

STATION OPERATION TABLES

RISING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
34.0	PUMPS OFF LEVEL – NO ACTION	ALL PUMPS ARE OFF
35.5	LEAD PUMP TURNS ON	LEAD PUMP ON
37.5	HIGH WATER ALARM ON	HIGH WATER ALARM SOUND
39.5	HIGH HIGH WATER ALARM ON (FLOAT ON LEVEL)	FIRM PUMPS ON (FLOATS)
FALLING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
35.5	FLOAT OFF LEVEL	FIRM PUMPS OFF (FLOATS)
35.5	HIGH WATER LEVEL ALARM OFF	LEAD & SECOND PUMPS ON
34.0	LEAD PUMP TURNS OFF	ALL PUMPS STOPPED – STANDBY PUMP SWITCHES TO LEAD PUMP
33.5	LOW LEVEL ALARM	–

NO.	DATE	REVISION	APP.

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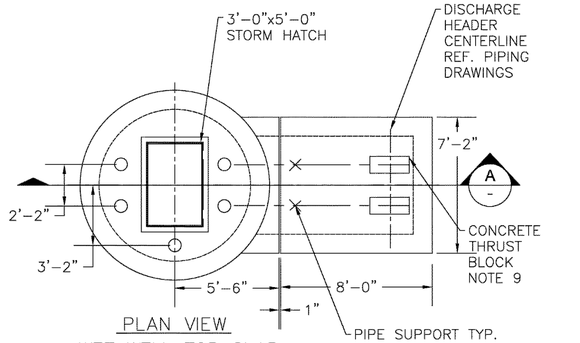
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

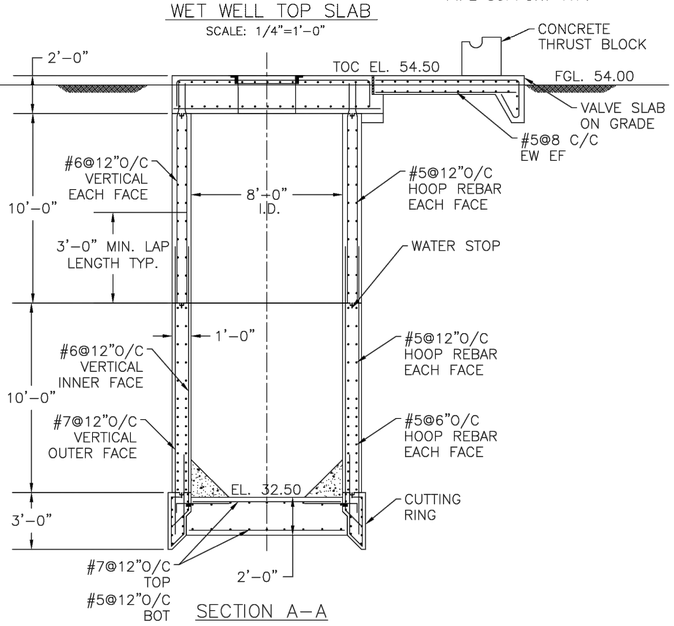
DEER SPRINGS LIFT STATION
MECHANICAL
LIFT STATION SECTION

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=20' VERT: 1"=2'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 94 OF 298	M-204

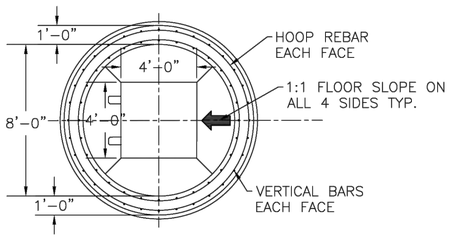
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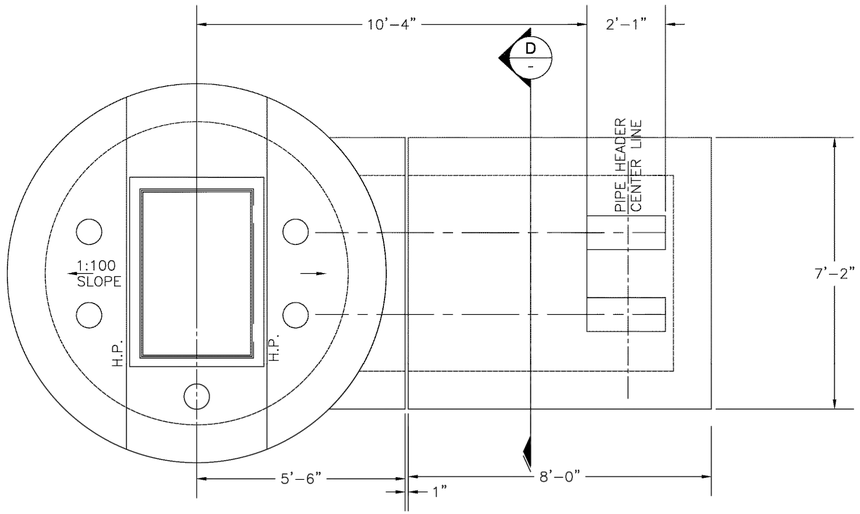
PLAN VIEW
WET WELL TOP SLAB
SCALE: 1/4"=1'-0"



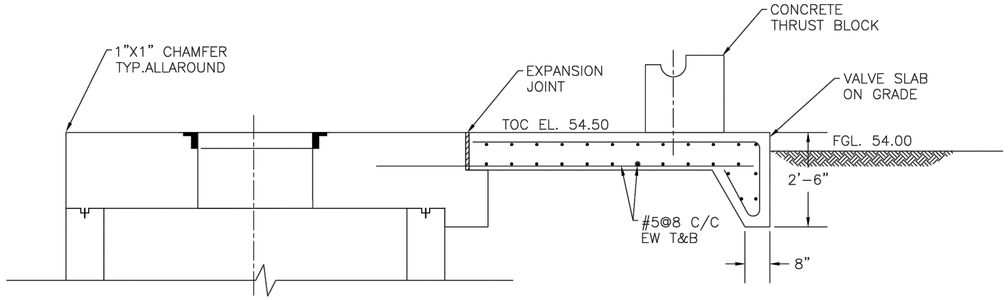
SECTION A-A
CAISSON DETAILS
SCALE: 1/4"=1'-0"



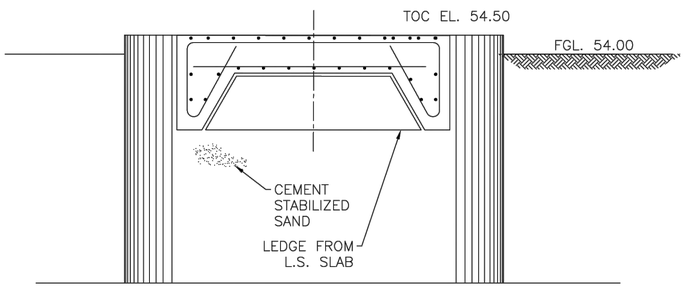
PLAN VIEW
WET WELL FLOOR PROFILE
SCALE: 1/4"=1'-0"



VALVE PAD SLAB
SCALE: 1/2"=1'-0"

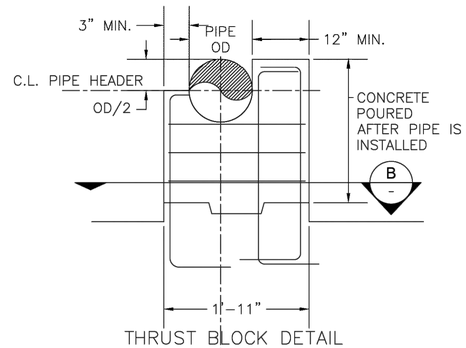


SECTION C-C
SCALE: 1/2"=1'-0"

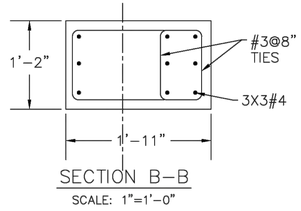


SECTION D-D
VALVE SLAB SECTION
SCALE: 1/4"=1'-0"

NOTES:
1. EXCAVATE AND REMOVE ALL EXISTING BACKFILL AND LOOSE SOIL.
2. COMPACT & LEVEL THE SUBGRADE TO 95% MODIFIED PROCTOR DENSITY.
3. FILL WITH CEMENT STABILIZED SAND (CSS) TO BOTTOM OF PAD FOUNDATION.



THRUST BLOCK DETAIL
SCALE: 1"=1'-0"



SECTION B-B
SCALE: 1"=1'-0"

NOTES:
1. CAISSON SINKING INVOLVES SPECIAL RISKS DURING AND AFTER CONSTRUCTION. CONTRACTORS/SUBCONTRACTORS WHO HAVE COMPLETED AT LEAST THREE (3) PROJECTS OF SIMILAR SIZE AND COMPLEXITY SUCCESSFULLY ARE ALLOWED TO BID THE PROJECT.
2. GROUNDWATER FLOODING, SOIL COLLAPSE, UNCONTROLLED SINKING DUE TO VOIDS IN SOIL, LOSS OF PLUMB, LOSS OF SEAL, OR FLOTATION MAY BE SOME OF THE RISKS. CONTRACTOR SHALL EXPECT AND PREPARE FOR SUCH RISK.
3. ALTERNATE TECHNOLOGIES SUCH AS CONTROLLED LOWERING OF CUTTING EDGE WITH A CRANE MAY BE EMPLOYED.
4. CAISSON POUR LENGTH AND WATER STOP LOCATION ARE SHOWN FOR ESTIMATE PURPOSES ONLY. FINAL LENGTH AND LOCATIONS MAY BE CHOSEN BY THE CONTRACTOR SUITABLE FOR FIELD CONDITIONS AND CONSTRUCTION METHODS.
5. CLEAR CONCRETE COVER OF 3" SHALL BE MAINTAINED USING SPACERS.
6. BOTTOM SLAB (CONCRETE PLUG) SHALL BE CAST ON WATER FREE SUB GRADE TO ACHIEVE IMPERVIOUS CONCRETE SLAB.
7. IF THE FINAL PLUMB AND LOCATION OF PENETRATIONS DO NOT MATCH WITH THE LOCATIONS SHOWN ON DRAWINGS, THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS SO THE CONNECTIONS ARE COMPLETE AND WATER TIGHT AT NO ADDITIONAL COST.
8. FOR LOCATION OF CAISSON PIPE/HATCH OPENINGS, PIPE LOCATIONS AND EQUIPMENT INSTALLATION DETAILS, SEE MECHANICAL/PIPING DRAWINGS.
9. PROTECT PIPING AT THRUST BLOCKS WITH NEOPRENE PADDING.

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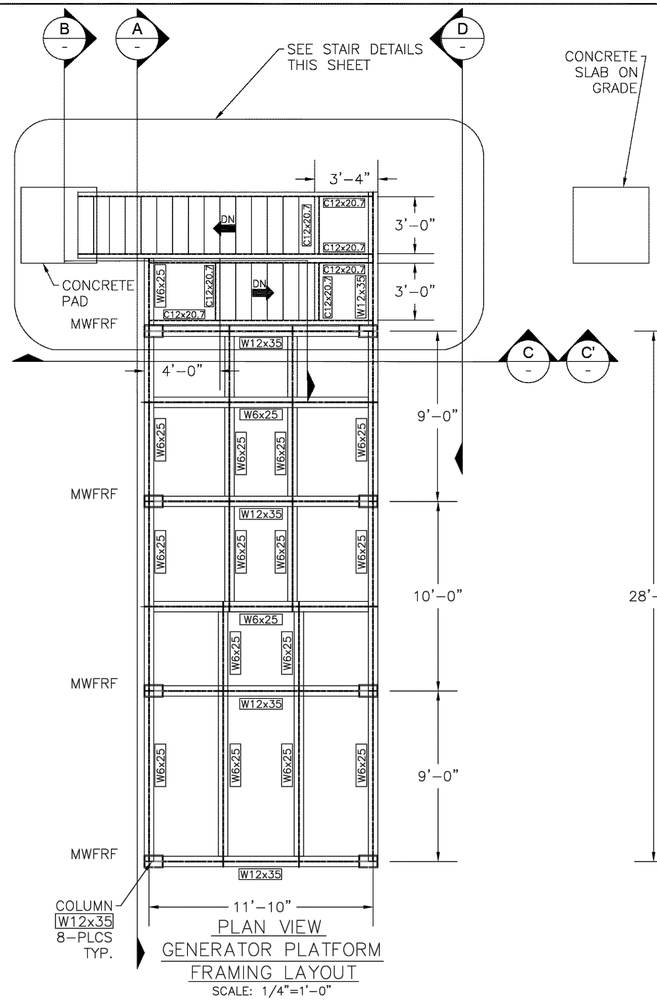
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(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
CAISSON WET WELL AND VALVE PAD

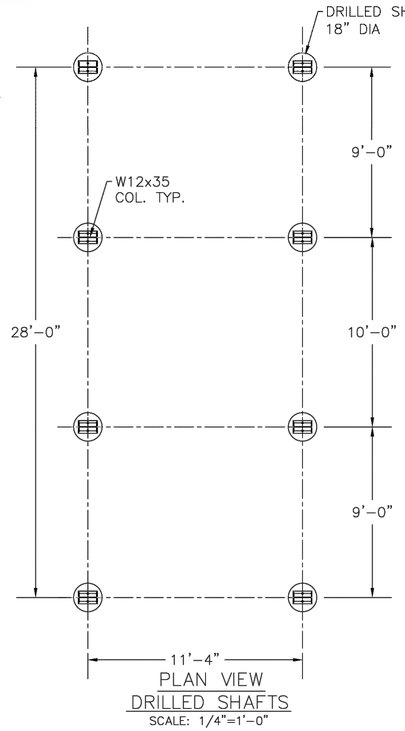
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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 95 OF 298 | S-201	

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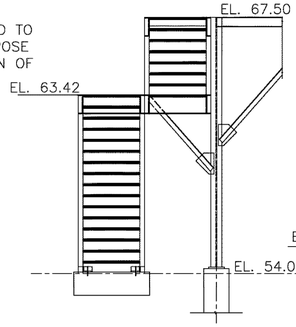
PLAN VIEW
GENERATOR PLATFORM
FRAMING LAYOUT
SCALE: 1/4"=1'-0"



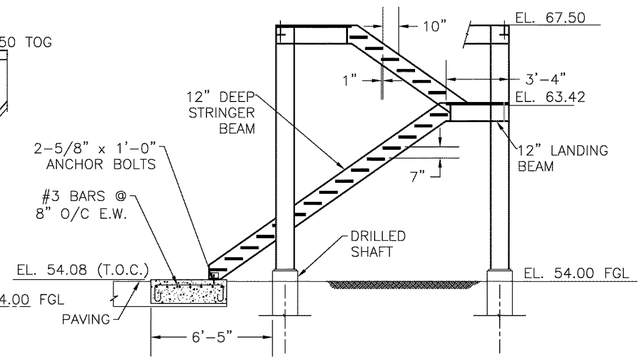
PLAN VIEW
DRILLED SHAFTS
SCALE: 1/4"=1'-0"

NOTES:
1. PIER CENTERLINE AND EMBEDDED ANCHOR BOLTS SHALL BE INSTALLED TO THE HIGHEST DEGREE OF ACCURACY. THE VERTICAL AND HORIZONTAL TOLERANCES OF FINISHED SURFACE AND AXIS OF PIERS SHALL BE WITHIN ±0.5".
2. ANCHOR BOLTS ON PIER TOP SHALL BE INSTALLED TO AN ELEVATION TOLERANCE OF ±0.125". THE PURPOSE OF MAINTAINING TOLERANCES IS EASY INSTALLATION OF SHOP DRILLED COLUMN BASES NOT REQUIRING EXTENSIVE FIELD MENDS.
3. FOR ALUMINUM HANDRAILS SEE SHT D-02.
4. ALL GRATING SHALL BE ALUMINUM.

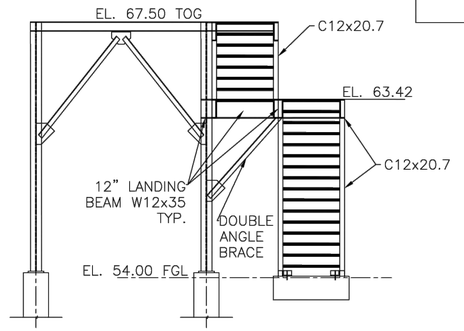
NOTES:
1. MAIN FRAMING BEAMS ARE SHOWN ABOVE. SEE DETAIL1 AND DETAIL 2 OF S-204 FOR ADDITIONAL BEAMS TO ANCHOR EQUIPMENT SKIDS.
2. FOR EQUIPMENT LOCATIONS SEE ELECTRICAL AND MECHANICAL DRAWINGS.



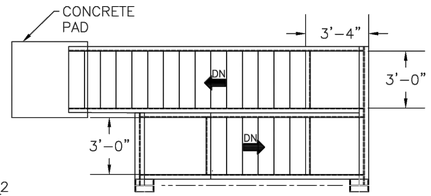
SECTION B-B
PLATFORM ACCESS STAIRS
SCALE: 1/4"=1'-0"



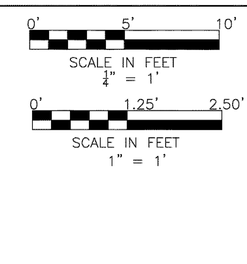
SECTION C-C
PLATFORM ACCESS STAIRS
SCALE: 1/4"=1'-0"

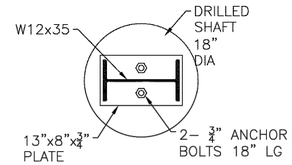


SECTION D-D
PLATFORM ACCESS STAIRS
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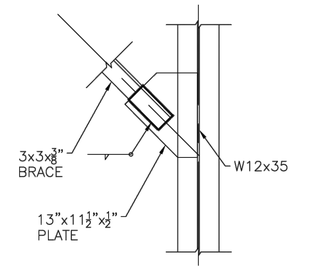


PLAN VIEW
PLATFORM ACCESS STAIRS
SCALE: 1/4"=1'-0"

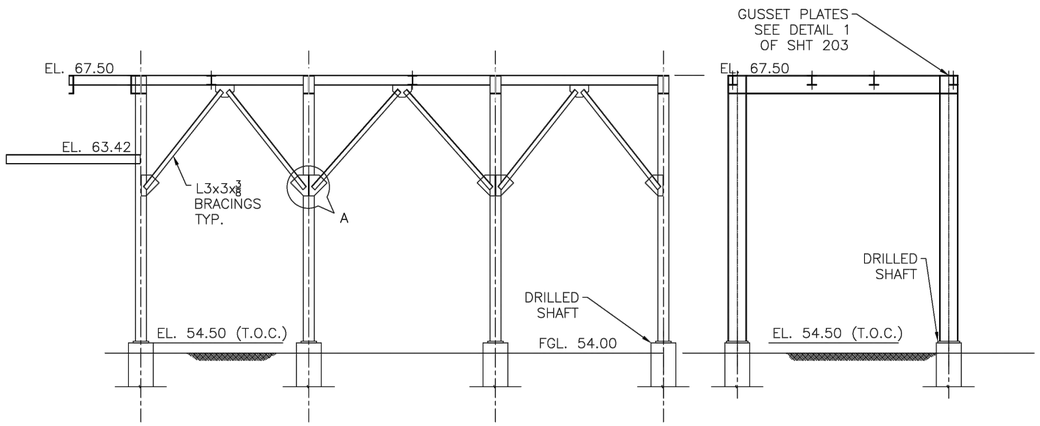




COLUMN BASEPLATE DETAIL
SCALE: 1"=1'-0"



DETAIL A
BRACE CONNECTION DETAIL
SCALE: 1"=1'-0"



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

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

SUMMARY OF DRILLED PIERS

Lift Station Site	Shaft Depth, feet	Diameter of Pier	Number of piers
AG Farm Lift Station Generator /Electrical Platform Odor Control Platform	10'	18" Dia.	10
Deer Springs Lift Station Generator/ Electrical Platform Odor Control Platform	25'	18" Dia.	8
Golden Bear Lift Station Electrical Platform Odor Control Platform	10'	18" Dia.	6
Golf Course Lift Station Generator /Electrical Platform Odor Control Platform	10'	18" Dia.	10
Kingwood Place South Lift Station Generator /Electrical Platform Odor Control Platform	10'	18" Dia.	8

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FEBRUARY 2026

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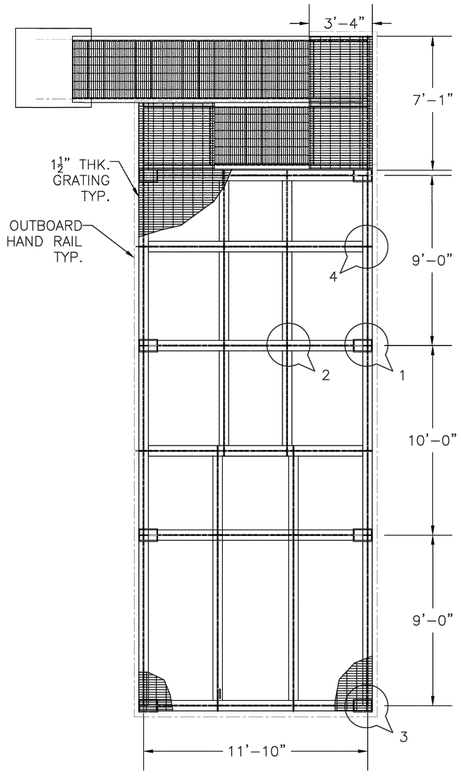
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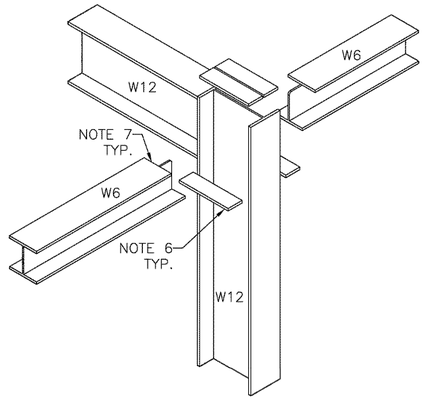
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
ELEVATED PLATFORMS
GENERAL ARRANGEMENT & FRAMING LAYOUT

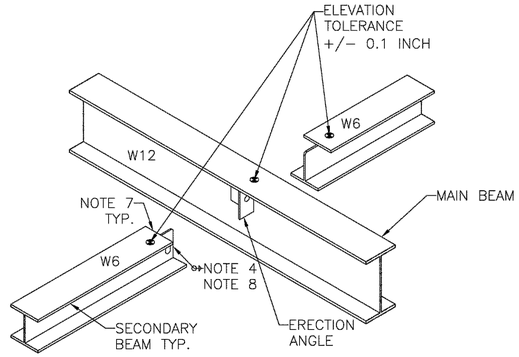
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DRAWING SCALE	
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CITY OF HOUSTON PM	
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SHEET NO. 96 OF 298	S-202



PLAN VIEW
GENERATOR PLATFORM
GRATING AND HANDRAIL
SCALE: 1/4"=1'-0"

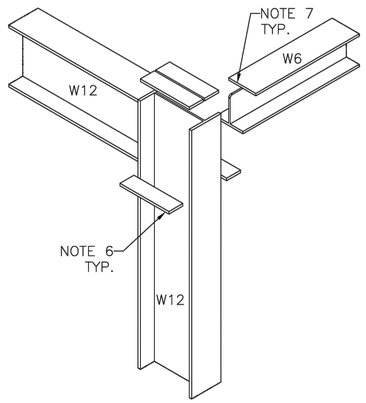


DETAIL 1
SCALE: NTS

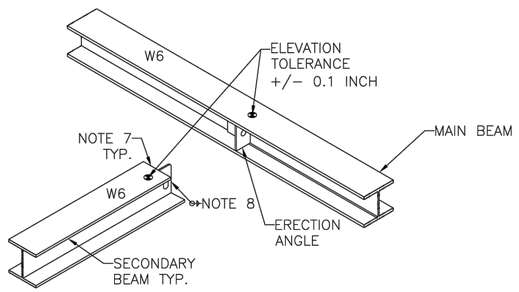


DETAIL 2
SCALE: NTS

NOTES:
1. HANDRAILS ARE NOT SHOWN FOR CLARITY. REFER TO S-202 FOR HANDRAIL AND GRATINGS.
2. PROVIDE GUSSETS AND STIFFENER PLATES FOR CONTINUITY OF FORCES AND MOMENTS.
3. CLEAT/ERECTION ANGLES AND TEMPORARY BOLTS MAY BE USED FOR ERECTION. ALL CONNECTIONS MUST BE FIELD WELDED ALL AROUND TO ENSURE COMPLETE FORCE AND MOMENT TRANSFER.
4. CONNECTIONS WITH FLUSH FLANGE ELEVATIONS MUST BE SET WITH RECESS (CUT OFF) ON FLANGE OF SMALLER MEMBER WHILE ITS WEB IS EXTENDED.
5. COORDINATE LOCATIONS OF BEARING BEAMS AND SECONDARY CHANNELS WITH EQUIPMENT SKID LOCATIONS FOR TIE DOWN BOLTS WITH ELECT. DRWGS.
6. PROVIDE ½" THK GUSSET/STIFFENER PLATES AS SHOWN FOR FLANGE-TO-FLANGE AND WEB-TO-WEB CONTINUITY.
7. TRIM AND FIT FLANGES OF SECONDARY BEAMS FOR WEB-TO-WEB CONTINUITY AND ELEVATION TOLERANCE OF ± ¼".
8. FILLET WELD ALL EDGES OF SECONDARY BEAM WITH MAIN BEAM ALL ROUND, TYP.
9. ALL GUSSET/FLANGE PLATES ARE ½" THK UNLESS NOTED OTHERWISE.
10. ERECTION BOLTS WITH SLOTTED HOLES SHALL BE USED FOR FINER ADJUSTMENT AND LEVELING FOR ELEVATION TOLERANCE.
11. MANUFACTURED STAIR PANELS OF STANDARD WIDTH MAY BE USED IN PLACE OF CUSTOM PANELS.
12. ALL BEAMS & COLUMNS IN MWFRF ARE W12x35 UNLESS NOTED OTHERWISE. ALL SECONDARY BEAMS SUPPORTING OTHER SECONDARY BEAMS AND EQUIPMENT SKID ARE W6x25 OR C12x20.7 OR C10x20 AS NECESSARY.



DETAIL 3
SCALE: NTS



DETAIL 4
SCALE: NTS

SECTION MEASUREMENTS

	OVERALL DEPTH (IN)	FLANGE WIDTH (IN)	WEB THICKNESS (IN)	FLANGE THICKNESS (IN)
W12X35	12.5	6.56	0.3	0.52
W6X25	6.38	6.08	0.32	0.455
C12X20.7	12.0	2.96	0.282	0.501
C10X20	10.0	2.74	0.379	0.436

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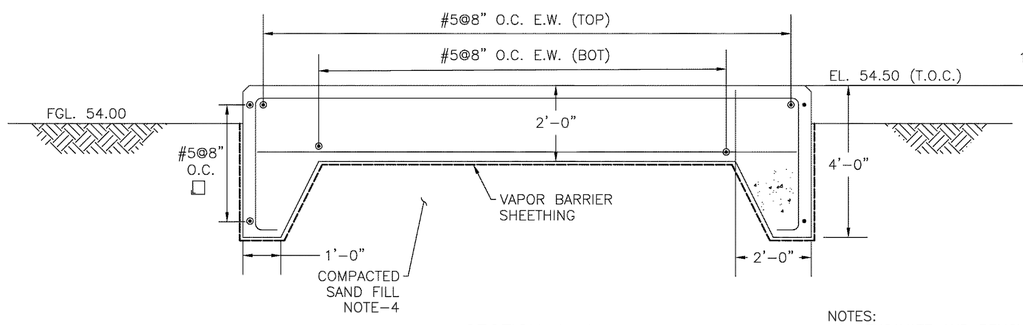
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
ELEVATED PLATFORMS
CONNECTION DETAILS

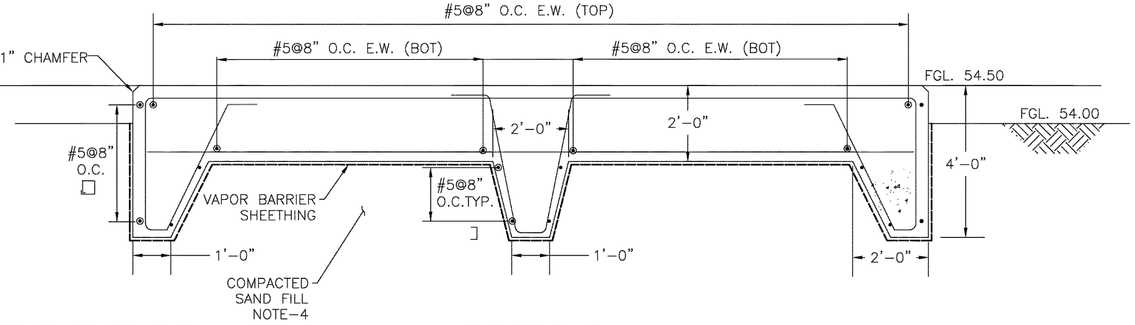
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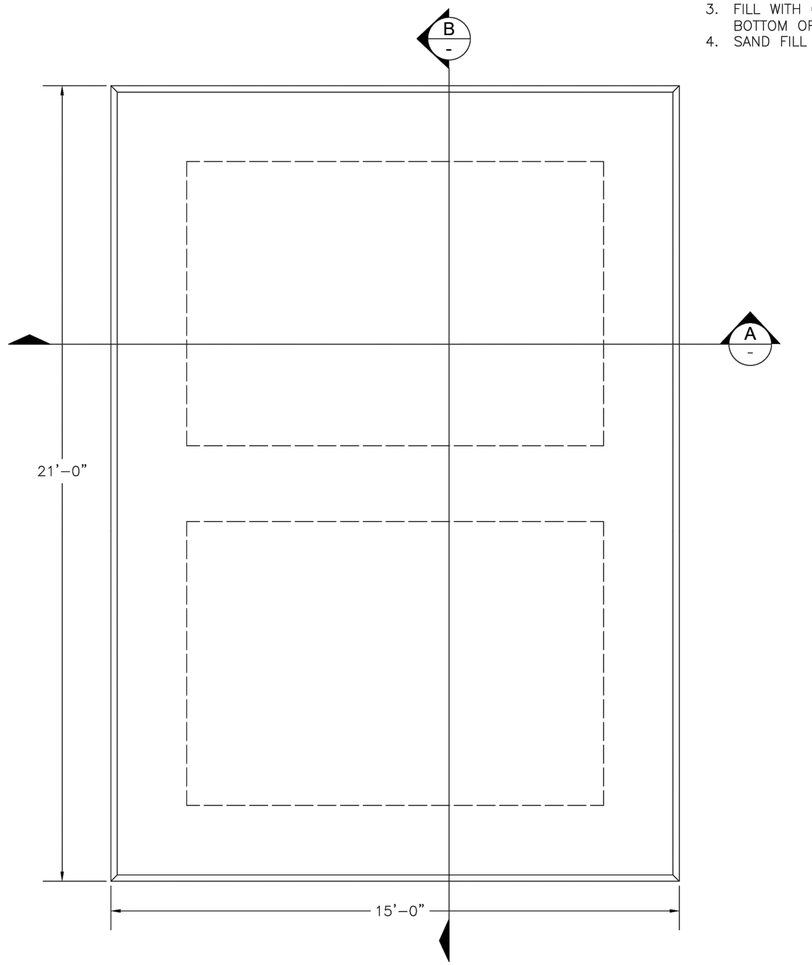


SECTION A-A
SCALE: 1/2"=1'-0"

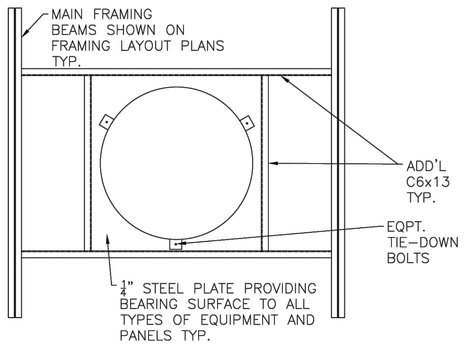


SECTION B-B
SCALE: 1/2"=1'-0"

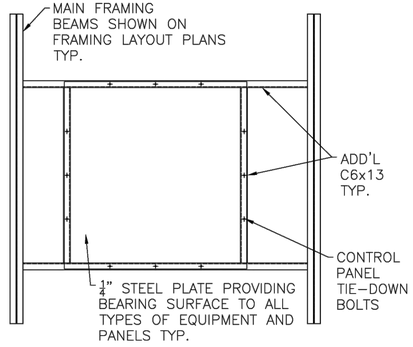
NOTES:
1. EXCAVATE AND REMOVE ALL EXISTING BACKFILL AND LOOSE SOIL.
2. COMPACT & LEVEL THE SUBGRADE TO 95% MODIFIED PROCTOR DENSITY.
3. FILL WITH CEMENT STABILIZED SAND (CSS) TO BOTTOM OF PAD FOUNDATION.
4. SAND FILL MAY BE REPLACED WITH CSS.



ODOR CONTROL FOUNDATION
PLAN VIEW
SCALE: 1/2"=1'-0"



DETAIL-1
CUSTOM FLOOR FRAME SUPPORTING
ODOR CONTROL EQPT. SKID
SCALE: NTS



DETAIL-2
CUSTOM FLOOR FRAME SUPPORTING
CONTROL PANEL
SCALE: NTS

FRAMING NOTES:
1. ATTACH STAIR STRINGERS TO MWFRF (MAIN WIND FORCE RESISTING FRAME) MEMBERS OF THE SUPPORTING FRAME.
2. HOT DIP GALVANIZE ALL STRUCTURAL MEMBERS AFTER FABRICATION.
3. HANDRAIL SHALL BE 42-INCH HIGH TWO-RAIL HANDRAIL WITH MIN 4" HIGH TOE PLATE. CONNECT POSTS TO SUPPORTING MEMBER; NOT GRATING.
4. PROVIDE $\frac{1}{2}$" GUSSET PLATES AS NECESSARY TO CONNECT ANGLE BRACES IN CENTER PLANE OF CONNECTED MEMBERS.
5. MINIMUM 1" GRATING SPANNING IN SHORT DIRECTION SHALL BE TIED TO THE CONNECTING MEMBERS WITH CLIPS.
6. PROVIDE 2-$\frac{5}{8}$"X8"LG ANCHOR BOLT AT COLUMN BASE PLATE AS SHOWN IN S-204.
7. ALL EQUIPMENTS/CABINETS SHALL BE SUPPORTED BY A CUSTOM FLOOR FRAME SHOWN IN DETAIL-1 (S-206).
8. PROVIDE ADDITIONAL SUPPORT BEAMS AS BEARING/BOLTING SURFACE FOR ALL EQUIPMENT SKIDS. SUPPORT BEAMS SHALL SPAN BETWEEN NEAREST STRUCTURE BEAMS.

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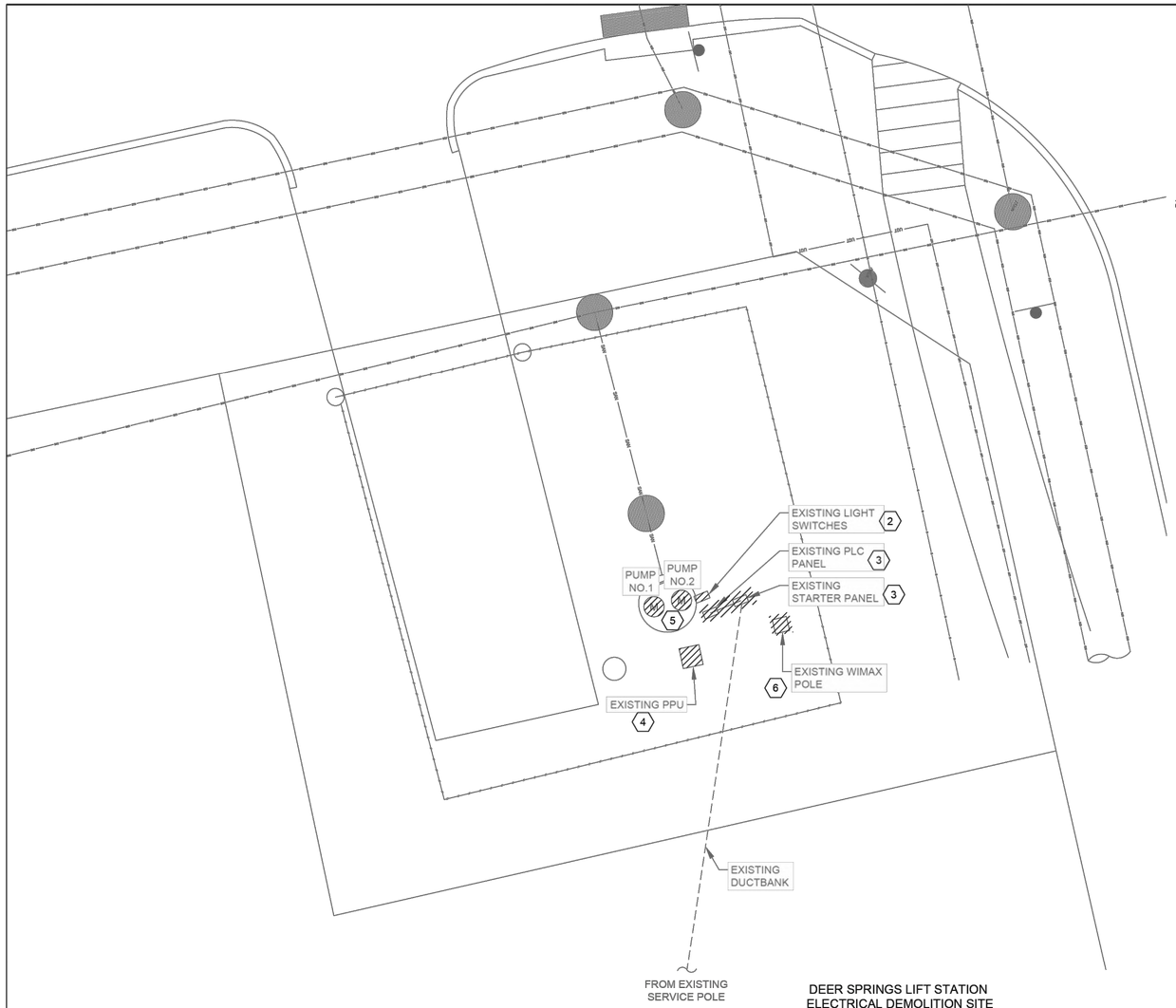
CITY OF HOUSTON
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LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
ODOR CONTROL SLAB ON GRADE
REINFORCEMENT DETIALS

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DRAWING SCALE	
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DEER SPRINGS LIFT STATION
ELECTRICAL DEMOLITION SITE
PLAN
1" = 5'-0"

NOTES BY SYMBOL "#":

1. EXISTING SERVICE POLE, METER, METER DISCONNECT AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
2. EXISTING LIGHT SWITCHES AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
3. EXISTING STARTER PANEL, PLC PANEL AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
4. EXISTING PPU AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED AND RETURNED TO THE WASTEWATER FACILITY MAINTENANCE DEPARTMENT OF THE CITY.
5. EXISTING LIGHT FIXTURES, LIGHT SWITCHES, RECEPTACLES, IN DRY PIT AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
6. EXISTING WIMAX POLE AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.

GENERAL NOTES:

1. THE OWNER HAS THE RIGHT OF FIRST REFUSAL TO THE EQUIPMENT BEING REMOVED. CONTRACTOR SHALL DELIVER THE EQUIPMENT WHICH OWNER WISHES TO KEEP AT LOCATION DESIGNATED BY THE OWNER. SEE SPECIFICATIONS SECTION 16060 FRO ELECTRICAL DEMOLITION.

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DEER SPRINGS LIFT STATION
ELECTRICAL DEMOLITION SITE
PLAN
NTS.



EXISTING LIGHT SWITCHES
PHOTOGRAPH A - 2
NTS



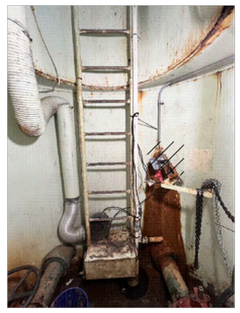
EXISTING METERING DISCONNECT
PHOTOGRAPH B - 1
NTS



EXISTING SERIVE POLE
PHOTOGRAPH C - 1
NTS



EXISTING WIMAX POLE
PHOTOGRAPH H - 6
NTS



EXISTING LIGHT FIXTURES & RECEPTACLES IN DRY PIT
PHOTOGRAPH G - 5
NTS



EXISTING LIFT STATION
PHOTOGRAPH F - 3
NTS



EXISTING PPU
PHOTOGRAPH E - 4
NTS



EXISTING STARTER PANEL AND PLC PANEL
PHOTOGRAPH D - 3
NTS

LEGEND:

ITEMS TO BE DEMOLISHED.

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

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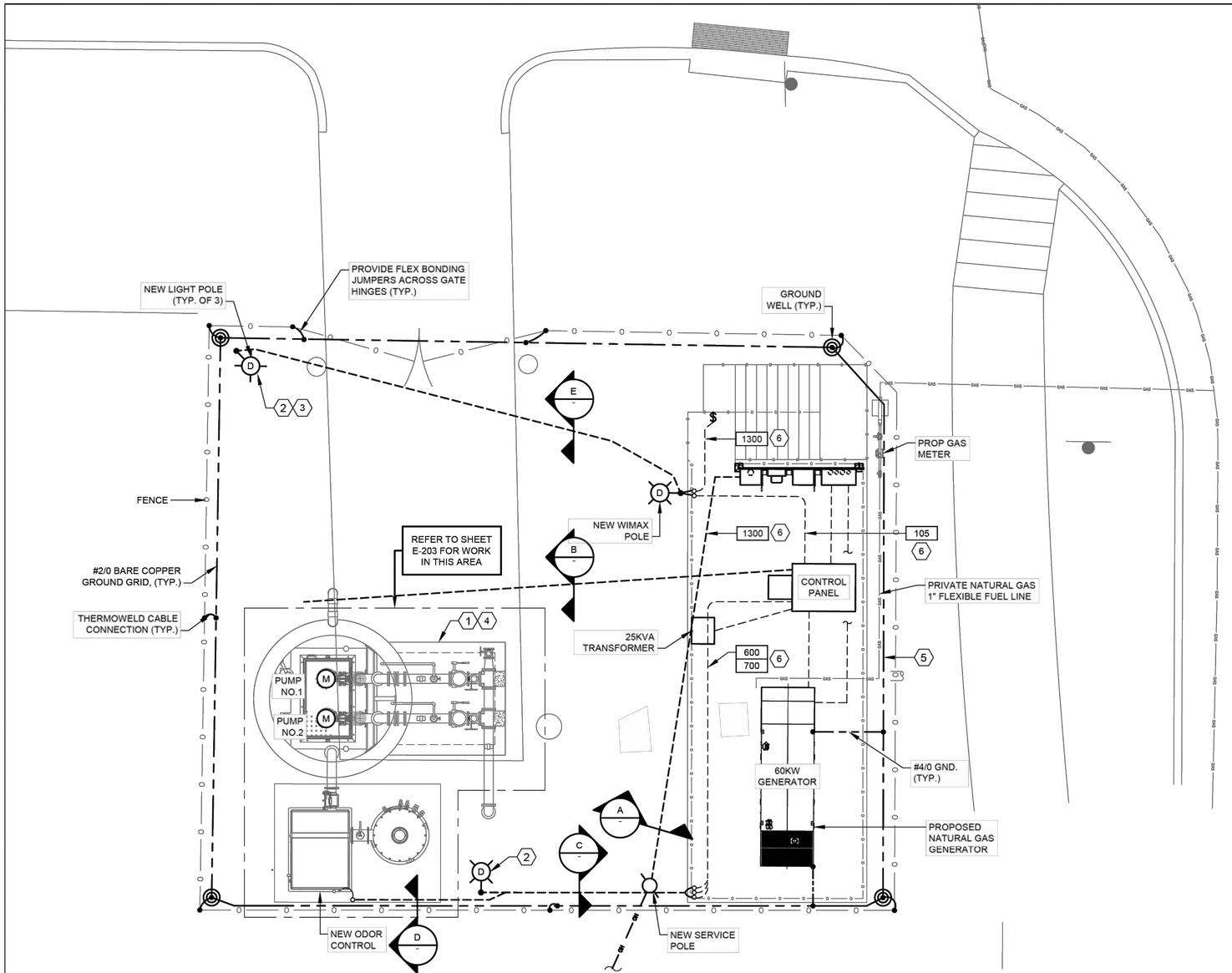
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
ELECTRICAL
DEMOLITION OVERALL SITE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=5' VERT: 1"=5'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 99 OF 298	E-201

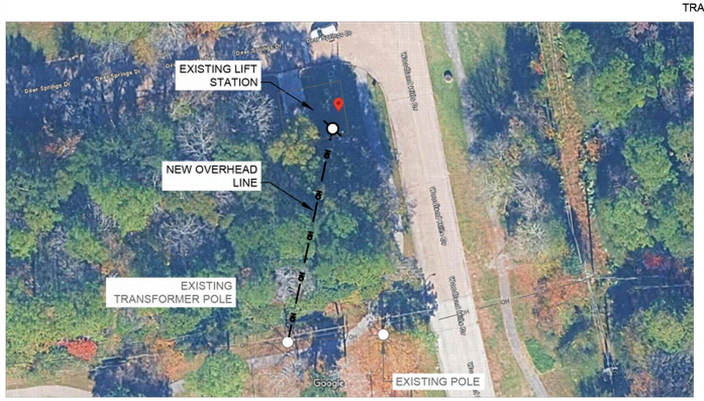
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FILE PATH: C:\Projects\City\Houston\Projects\Active\Deer Springs\Electrical\Drawings\E-202 DEER SPRINGS - ELECTRICAL (DEER SPRING).dwg



DEER SPRINGS LIFT STATION ELECTRICAL
PROPOSED SITE

PLAN

1" = 4'-0"



DEER SPRINGS LIFT STATION ELECTRICAL
PROPOSED SITE

PLAN

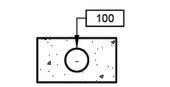
NTS.

SCALE: 1" = 4'

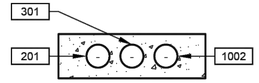
NOTES BY SYMBOL "#":

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. 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. CONDUIT TO BE INSTALLED BELOW PLATFORM.

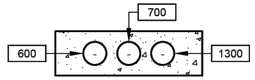
NO.	DATE	REVISION	APP.



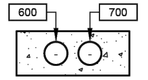
DUCTBANK
SECTION A
NTS



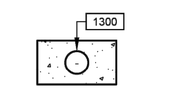
DUCTBANK
SECTION B
NTS



DUCTBANK
SECTION C
NTS



DUCTBANK
SECTION D
NTS



DUCTBANK
SECTION E
NTS

DCCM

GAI
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SURVEYED BY: LANDTECH, INC.
FB NO. 6399

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

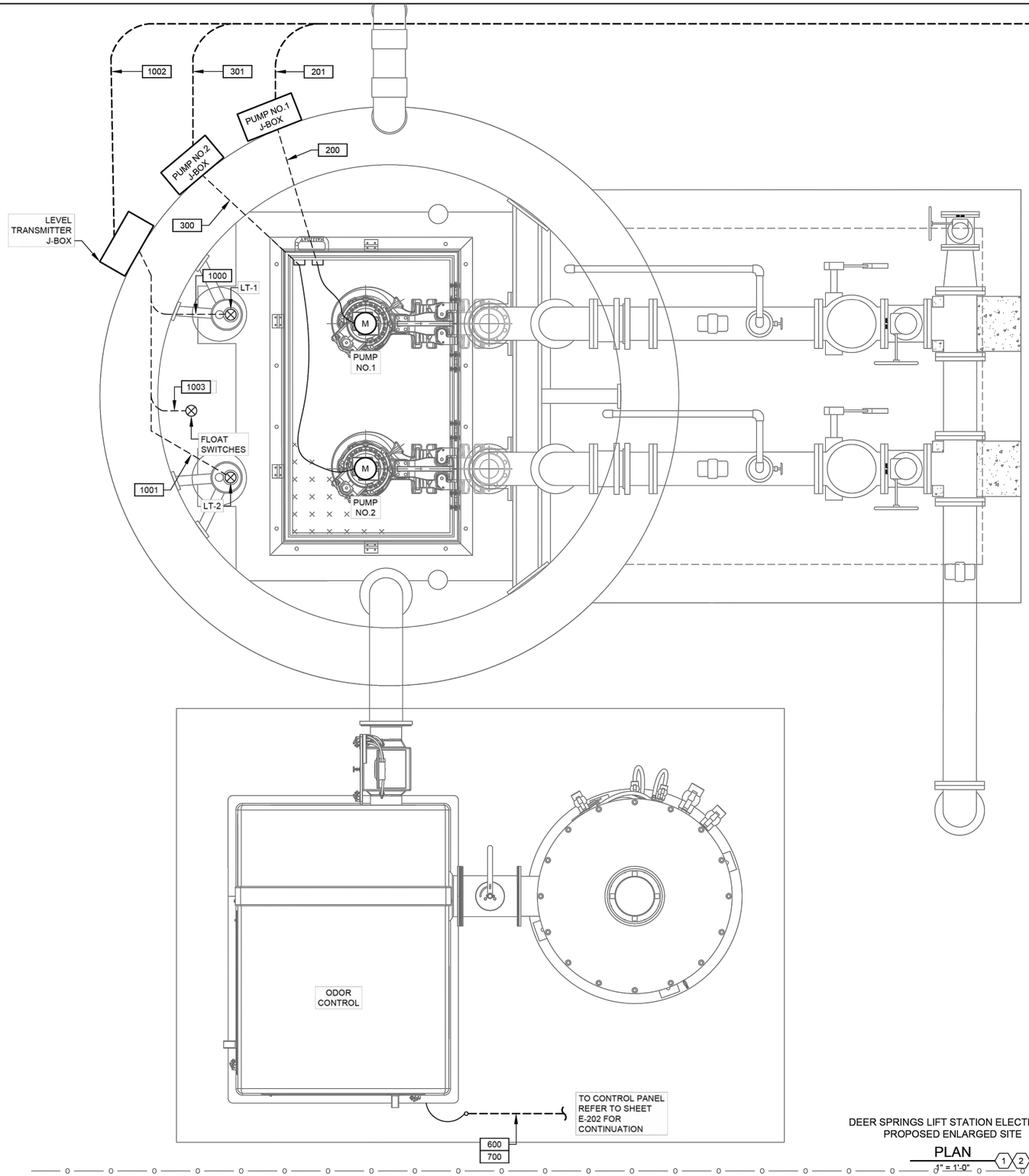
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
ELECTRICAL
PROPOSED OVERALL SITE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=4' VERT: 1"=4'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 100 OF 298	E-202

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DEER SPRINGS LIFT STATION ELECTRICAL
PROPOSED ENLARGED SITE

PLAN (1) (2)

1" = 1'-0"

.5 0 1

SCALE: 1" = 1'-0"

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.

NO.	DATE	REVISION	APP.

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TEXAS P.E. NO. 77748
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

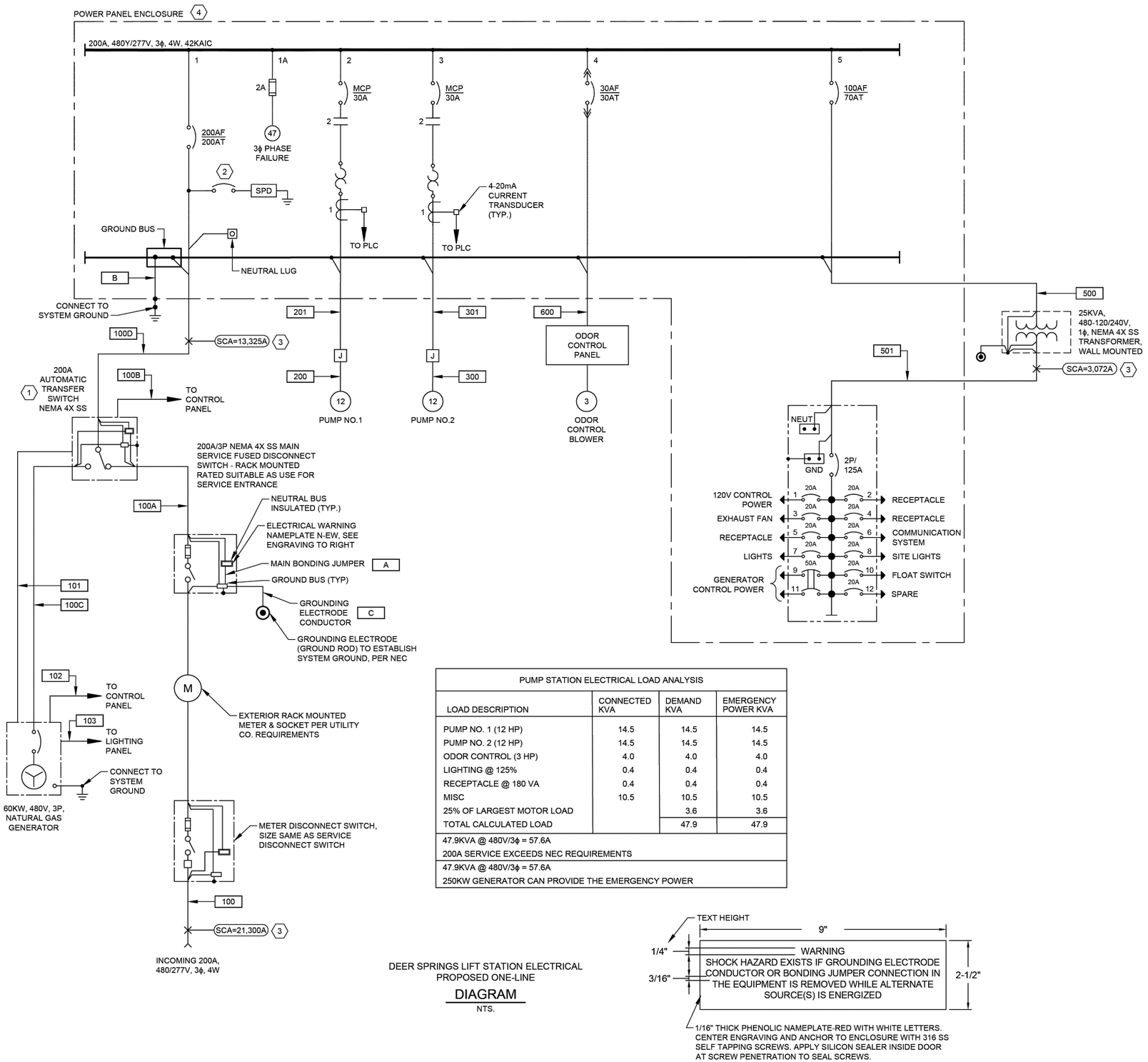
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
ELECTRICAL
PROP. ENLARGED LIFT STATION SITE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=1' VERT: 1"=1'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 101 OF 298	E-203

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PUMP STATION ELECTRICAL LOAD ANALYSIS			
LOAD DESCRIPTION	CONNECTED KVA	DEMAND KVA	EMERGENCY POWER KVA
PUMP NO. 1 (12 HP)	14.5	14.5	14.5
PUMP NO. 2 (12 HP)	14.5	14.5	14.5
ODOR CONTROL (3 HP)	4.0	4.0	4.0
LIGHTING @ 125%	0.4	0.4	0.4
RECEPTACLE @ 180 VA	0.4	0.4	0.4
MISC	10.5	10.5	10.5
25% OF LARGEST MOTOR LOAD		3.6	3.6
TOTAL CALCULATED LOAD		47.9	47.9
47.9KVA @ 480V/3ϕ = 57.6A			
200A SERVICE EXCEEDS NEC REQUIREMENTS			
47.9KVA @ 480V/3ϕ = 57.6A			
250KW GENERATOR CAN PROVIDE THE EMERGENCY POWER			

DEER SPRINGS LIFT STATION ELECTRICAL
PROPOSED ONE-LINE
DIAGRAM
NTS.

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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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS
ELECTRICAL
PROPOSED ONE–LINE DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 102 OF 298	E–204

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FILE PATH: C:\Users\...\DEER SPRINGS ELECTRICAL (DEER SPRING).dwg

FROM UTILITY METER
REFER TO SHEET E-204
480/277V, 3Ø, 4W

GROUNDED SERVICE CONDUCTOR
NEUTRAL BUS (INSULATED) (TYPE)
MAIN BONDING JUMPER [A]
GROUNDING ELECTRODE CONDUCTOR [C]
GROUND ROD (TYPICAL)
200A/3P NEMA 4X SS MAIN SERVICE FUSED DISCONNECT SWITCH RACK MOUNTED RATED SUITABLE AS USE FOR SERVICE ENTRANCE
GROUND BUS (TYPE)

POWER PANEL | FIELD

3 POLE AUTOMATIC TRANSFER SWITCH (ATS)
GND BUS
NEUT
EC
EB
EA
NC
NB
NA
LA LB LC

SURGE PROTECTOR
(SEE NOTE 5)
JE-1
SPD
[M]

MAIN BREAKER
[X]

PHASE MONITOR
JE-2
[VV]
PLC

NEUT
GND BUS

NEUT
GND
GEN
STANDBY GENERATOR

4-20mA CURRENT TRANSDUCER
4-20mA TO PLC
+
-
MOR
(SEE NOTE 6)

MCP
M1
T1
T2
T3
PUMP NO. 1
M

105 106 107 108 GND
20 21 22 23 GND
TSH-1
LSH-1

MCP
M2
PUMP NO. 2
TSH-2
LSH-2

MATCHLINE `A'

MATCHLINE `A'

POWER PANEL | FIELD

CB
T1
T2
T3
GND
ODOR CONTROL PANEL

25KVA, 480-120/240V
1 PHASE TRANSFORMER
FLOOR MOUNTED
(SEE NOTE 3)
[EE]
CB

240V, 125A, 12 CKT
LIGHTING PANEL
125A
NEUT
GND

120V CONTROL POWER	1	2	RECEPTACLE
EXHAUST FAN	3	4	RECEPTACLE
RECEPTACLE	5	6	COMMUNICATION SYSTEM
LIGHTS	7	8	SITE LIGHTS
GENERATOR CONTROL POWER	9	10	FLOAT SWITCH
	11	12	SPARE

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 INDICATED, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE CONTROL PANEL.
2. NOT USED.
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.
6. THE COMBINATION OF CT AND MOTOR OVERLOAD RELAY IF REQUIRED.

NO.	DATE	REVISION	APP.

DCCM

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SURVEYED BY: LANDTECH, INC.
FB NO. 6399

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
ELECTRICAL
INCOMING POWER THREE LINE DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 103 OF 298	E-205

	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	200A	UTILITY POWER SERVICE	METER DISCONNECT		3#3/0 AWG, #2 NEUT. #2 GND. 2-1/2"C.
100A	SERVICE POWER	480V	200A	SERVICE DISCONNECT	ATS	--	3#3/0 AWG, #2 NEUT. #2 GND. 2-1/2"C.
100B	NORMAL/EMERGENCY POWER	24VDC	--	ATS	CONTROL PANEL	--	4#14 AWG, 1"C.
100C	EMERGENCY POWER	480V	200A	ATS	GENERATOR	--	3#3/0 AWG, #2 NEUT. #2 GND. 2-1/2"C.
100D	ELECTRIC POWER	480V	200A	ATS	CONTROL PANEL	--	3#3/0 AWG, #2 NEUT. #2 GND. 2-1/2"C.
101	GENERATOR CONTROL	120V	--	ATS	GENERATOR	--	6#14, #12 GND. 1"C.
102	ANNUNCIATION	--	--	GENERATOR	CONTROL PANEL	--	12#14 AWG, #14 GND
103	GENERATOR AUX. POWER	208/120V	--	GENERATOR	LIGHTING PANEL	--	3#4 AWG, #6 GND. 1-1/2"C.
105	COMMUNICATION	--	--	COMMUNICATION POLE	PPU-AC	--	POE CABLE IN 1"C.
200	PUMP NO. 1 POWER	480V	12 HP	PUMP NO. 1	PUMP NO. 1 JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT
201	PUMP NO. 1 POWER AND CONTROLS	480V	12 HP	PUMP NO. 1 JUNCTION BOX	CONTROL PANEL	--	3#8 AWG, 4#14, #10 GND. 1-1/2"C.
300	PUMP NO. 2 POWER	480V	12 HP	PUMP NO. 2	PUMP NO. 2 JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT
301	PUMP NO. 2 POWER AND CONTROLS	480V	12 HP	PUMP NO. 2 JUNCTION BOX	CONTROL PANEL	--	3#8 AWG, 4#14, #10 GND. 1-1/2"C.
500	LIGHTING TRANSFORMER PRIMARY FEEDER	480V	70A	CONTROL PANEL	LIGHTING TRANSFORMER PRIMARY	--	2#4 AWG, #8 GND. 1"C.
501	LIGHTING TRANSFORMER SECONDARY FEEDER	208/120V	--	LIGHTING TRANSFORMER SECONDARY	LIGHTING PANEL	--	3#1 AWG, #6 GND. 1-1/2"C.
600	ODOR CONTROL UNIT	480V	--	CONTROL PANEL	ODOR CONTROL UNIT	--	3#8 AWG, #10 GND. 1"C.
700	ODOR CONTROL	120V	--	CONTROL PANEL	ODOR CONTROL UNIT	--	8#14 AWG, #14 GND. 1"C.
1000	LEVEL TRANSMITTER	24VDC	--	LEVEL TRANSMITTER LT-1	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT
1001	LEVEL TRANSMITTER	24VDC	--	LEVEL TRANSMITTER LT-2	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT
1002	COMBINED LEVEL TRANSMITTERS & FLOAT SWITCH	24VDC	--	CONTROL PANEL	TRANSMITTER JUNCTION BOX	--	2 TRIAD #16, 4#14 AWG, 1"C.
1003	WELL FLOAT SWITCHES	120V	--	TRANSMITTER JUNCTION BOX	FLOAT SWITCH NO.1 THROUGH NO.7	--	MANUFACTURER'S CABLE IN 2-1/2"C
1100	120VAC FOR RECEPTACLE	--	--	LIGHTING PANEL	RECEPTACLE ON PLATFORM	--	2#12 AWG, #12 GND, 3/4"C.
1200	120VAC FOR RECEPTACLE	120V	--	LIGHTING PANEL	RECEPTACLE ON PLATFORM	--	2#12 AWG, #12 GND. 1"C.
1300	SITE LIGHTING	120V	--	SITE LIGHTING SWITCH	SITE LIGHTING	--	2#12 AWG, #12 GND. 1"C.
1300A	SITE LIGHTING	120V	--	LIGHTING PANEL	SITE LIGHTING SWITCH	--	2#12 AWG, #12 GND. 1"C.

NOTES BY SYMBOL "⟨#⟩":

⟨1⟩ REFER TO SPEC SECTION 16120 FOR CONDUCTOR COLOR CODE.

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

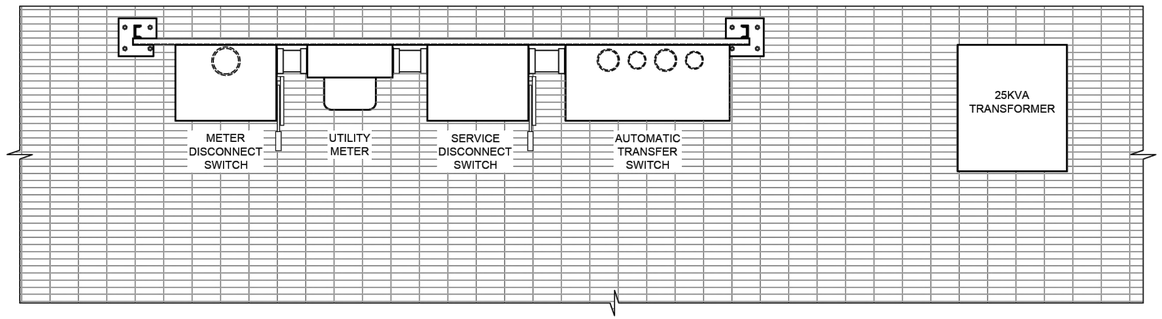
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
ELECTRICAL
CONDUIT SCHEDULE

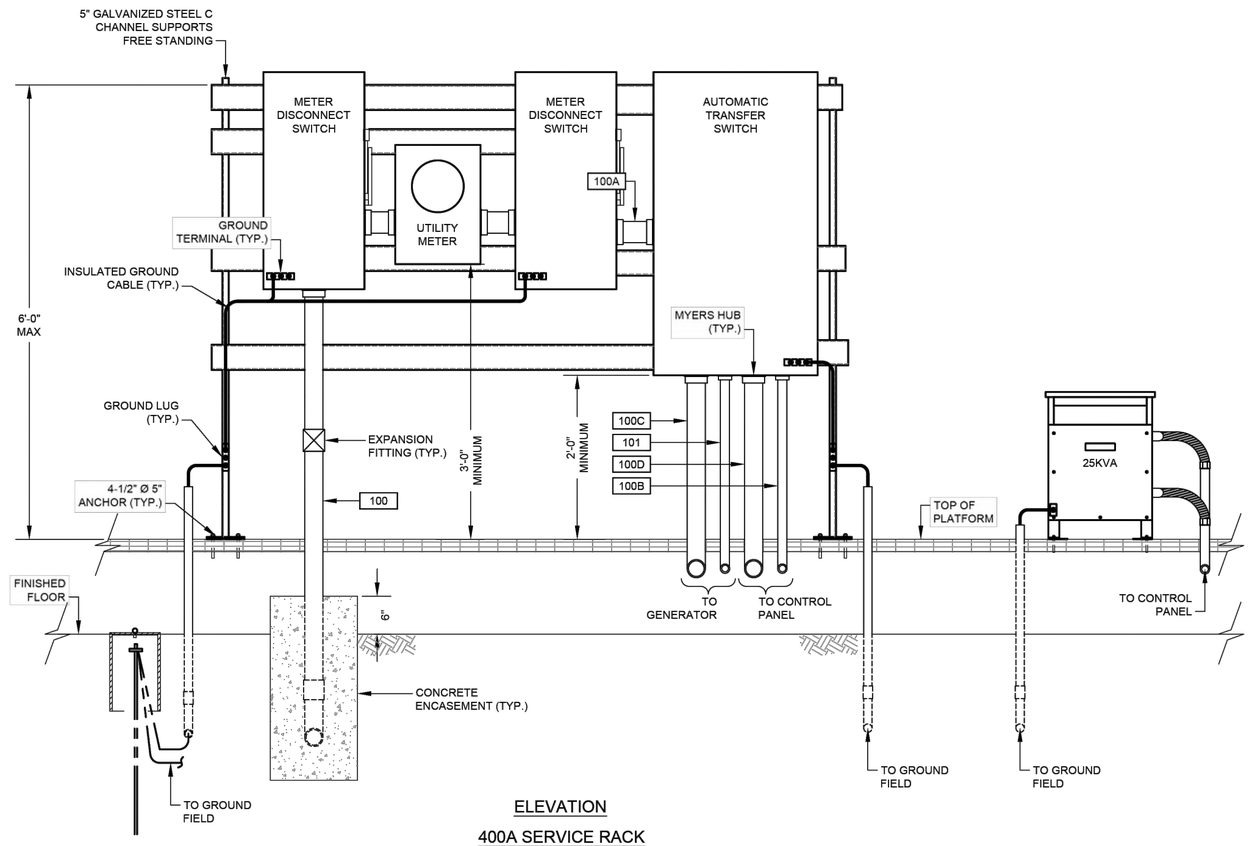
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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 104 OF 298	E-206

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FILE PATH: C:\Users\hforouzan\Gupta & Associates, Inc\Houston - Documents\Projects\Public Works\Deer Springs\[H83245_E3-207-3.dwg - ELECTRICAL (DEER SPRING).dwg



PLAN VIEW



ELEVATION

400A SERVICE RACK

NO.	DATE	REVISION	APP.

DCCM

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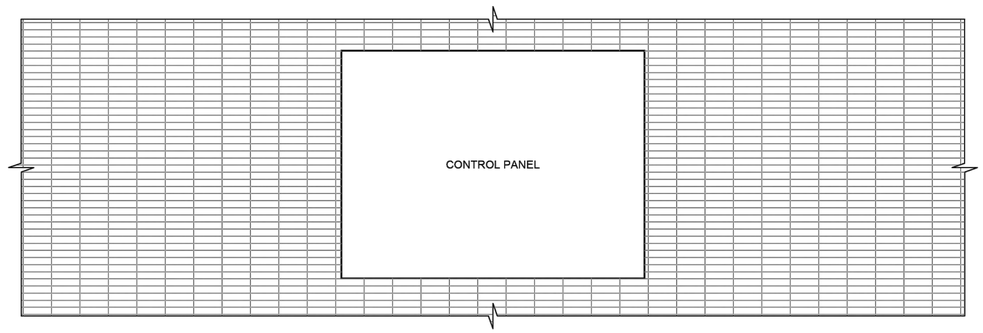
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LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

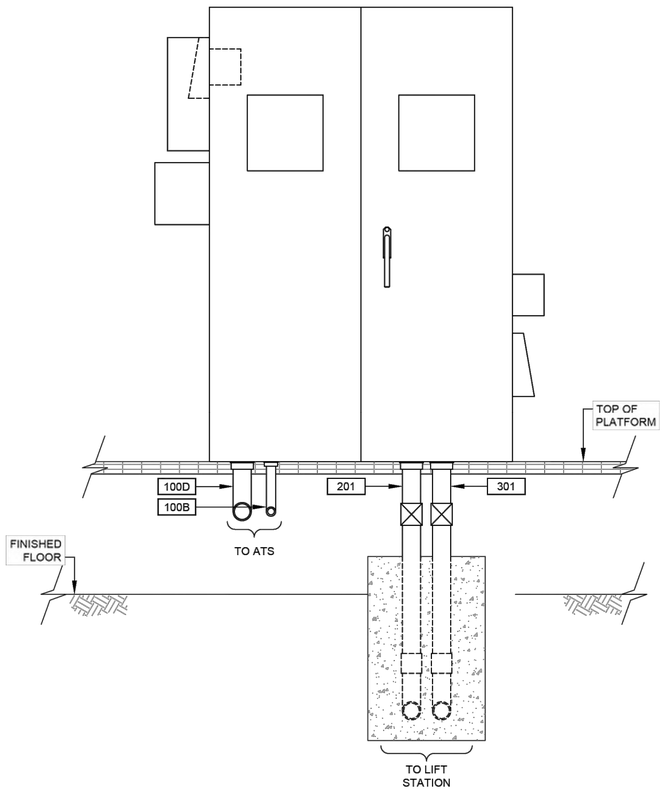
DEER SPRINGS LIFT STATION
ELECTRICAL
SERVICE RACK DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 105 OF 298	E-207

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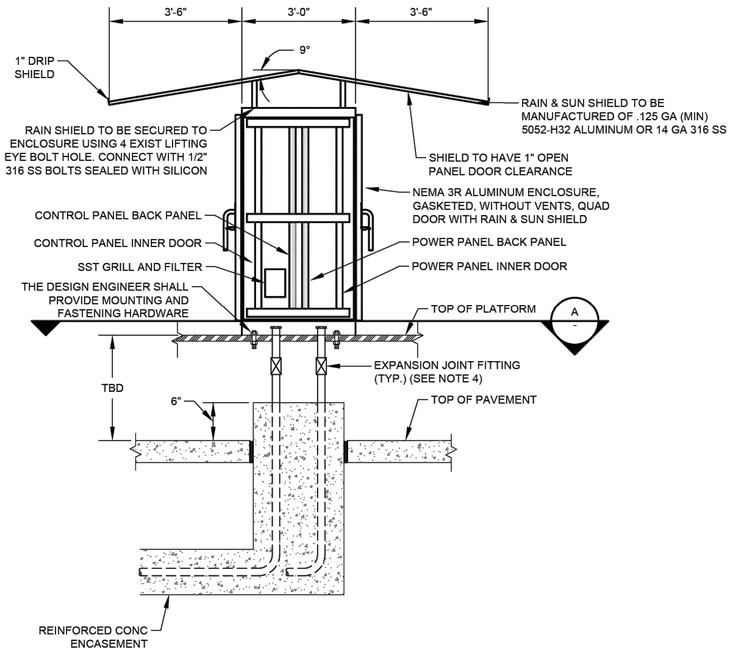


PLAN VIEW



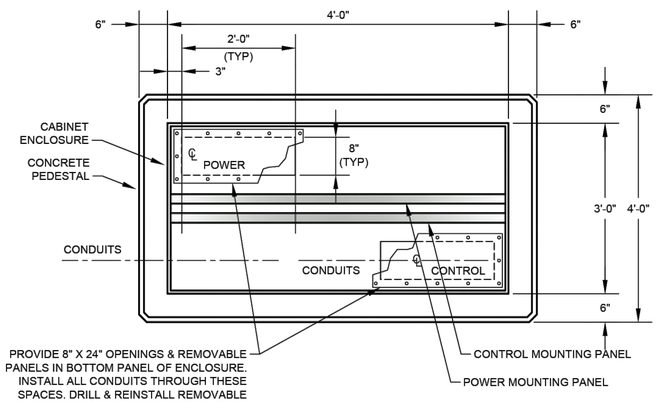
CONTROL PANEL ELEVATION

DETAIL 1 / NTS



CONTROL CABINET ENCLOSURE WITH PLATFORM
(SEE NOTE 6)

DETAIL 2 / NTS



SECTION A / NTS

GENERAL NOTES:

1. REFER TO SPECIFICATION SECTION 13325 PROCESS CONTROL SYSTEMS CONTROL PANELS FOR PANEL DIMENSIONS.
2. COMMUNICATION PANEL TO BE INSTALLED ABOVE SERVICE RACK ELEVATION.
3. EXPANSION JOINT FITTINGS AS REQUIRED.
4. REFER TO SERVICE RACK FOR DETAIL.
5. POWER FACTOR CAPACITOR TO BE MOUNTED OUTSIDE SIDE WALL OF THE CONTROL CABINET.
6. REFER TO STRUCTURAL DRAWINGS FOR PLATFORM DETAIL.

NO.	DATE	REVISION	APP.

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FB NO. 6399

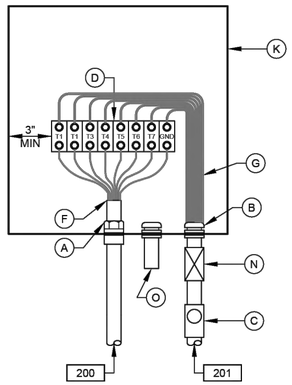
THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

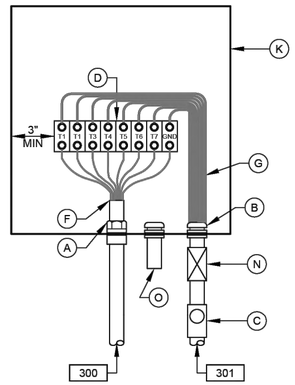
DEER SPRINGS LIFT STATION
ELECTRICAL
CONTROL CABINET ENCLOSURE DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 106 OF 298 E-208	



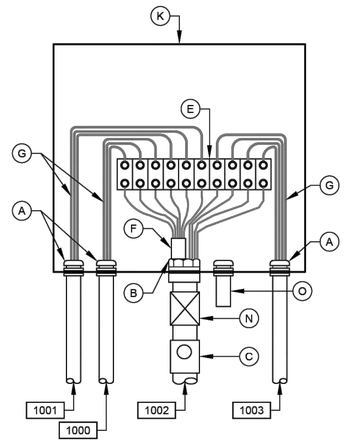
JUNCTION BOX NO.1

DETAIL 2
NTS
(SEE NOTE 7)



JUNCTION BOX NO.2

DETAIL 3
NTS
(SEE NOTE 7)



LEVEL TRANSMITTER
JUNCTION BOX

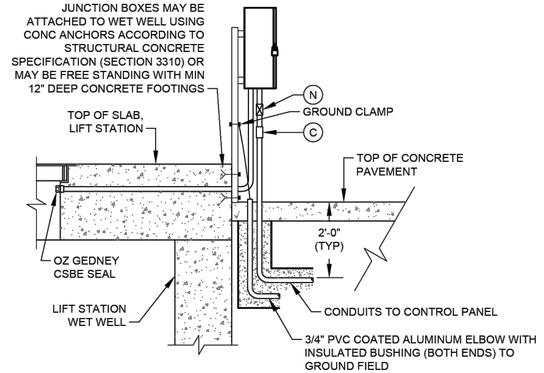
DETAIL 4
NTS
(SEE NOTE 7)

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.

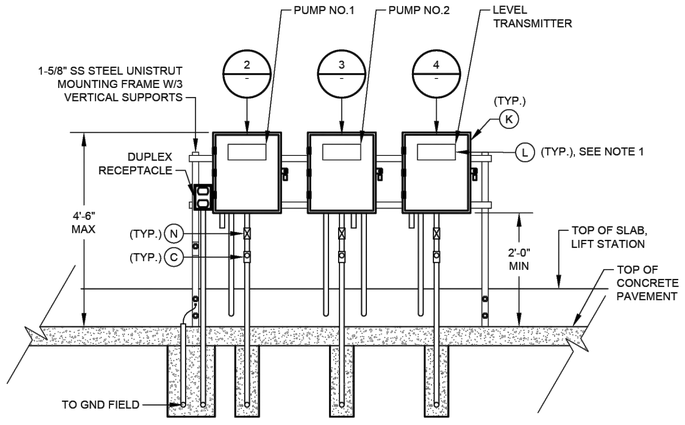
JUNCTION BOX EQUIPMENT SCHEDULE

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 6P 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



TYP SIDE VIEW FOR DETAIL 1

(SEE NOTE 10)



DETAIL 1
NTS
(SEE NOTE 9 & 12)

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FB NO. 6399

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
ELECTRICAL
JUNCTION BOX DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 107 OF 298	E-209

NO.	DATE	REVISION	APP.

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GENERAL NOTES:

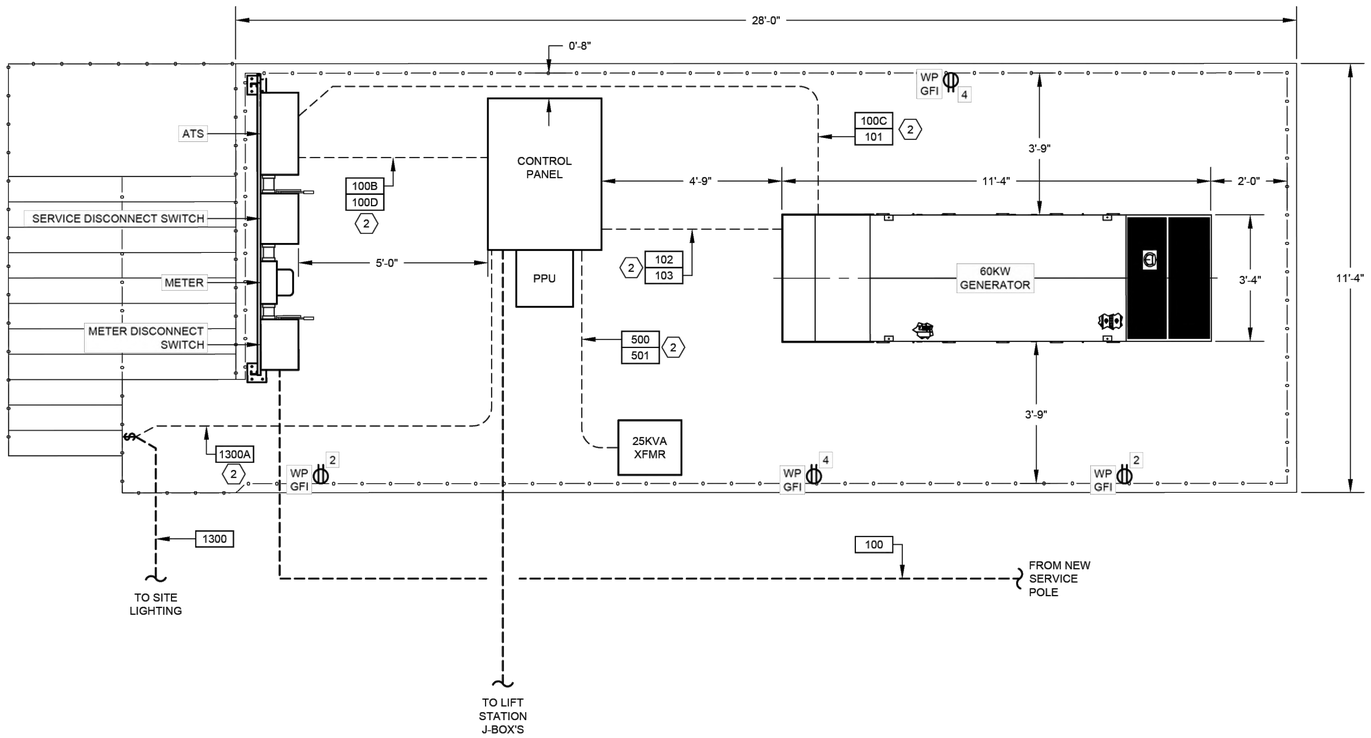
1. ALL NATURAL GAS PIPING FROM CNP GAS TO NATURAL GAS GENERATOR IS TO BE INSTALLED BY A PROFESSIONAL PLUMBER LICENSED IN THE STATE OF TEXAS.

NOTES BY SYMBOL "⟨#⟩":

⟨1⟩ REFER TO STRUCTURAL DRAWINGS FOR PLATFORM DETAILS.

⟨2⟩ CONDUIT TO BE INSTALLED BELOW PLATFORM.

⟨3⟩ GENERATOR NOISE LEVEL SHALL MEET LOCAL NOISE REQUIREMENTS AT 65dBA DAYTIME AND 58 dBA NIGHTTIME.



PROPOSED ELECTRICAL PLATFORM LAYOUT

DETAIL 1 ⟨1⟩⟨3⟩
1" = 2'-0"

NO.	DATE	REVISION	APP.

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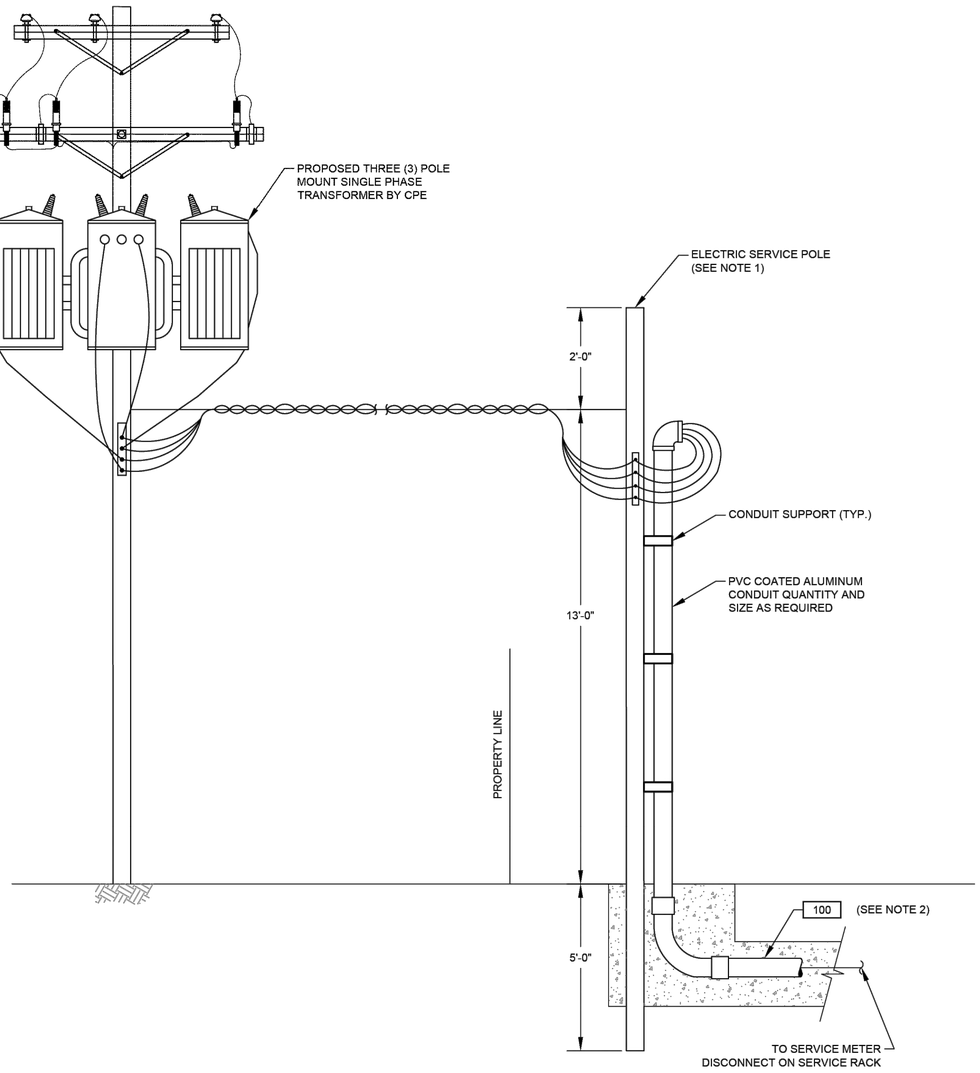
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
ELECTRICAL
PROPOSED ELECTRICAL PLATFORM LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=2' VERT: 1"=2'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 108 OF 298	E-210

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TYPICAL ELECTRICAL SERVICE ENTRANCE
FOR POWER SUPPLY BELOW 500KVA

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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SURVEYED BY: LANDTECH, INC.
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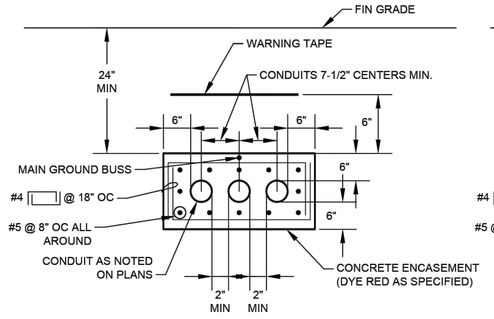
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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
ELECTRICAL
ELECTRICAL SERVICE POLE DETAIL

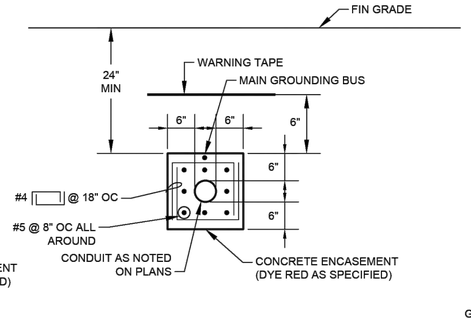
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R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 109 OF 298	E-211



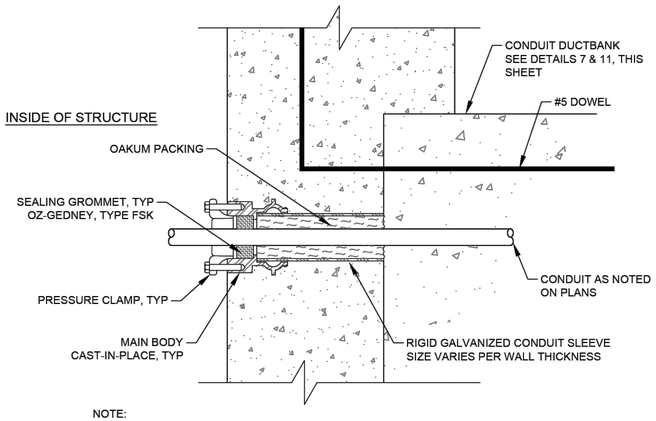
TYP MULTI-CONDUIT DUCTBANK SECTION

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

DETAIL 1 NTS



TYP SINGLE-CONDUIT DUCTBANK SECTION

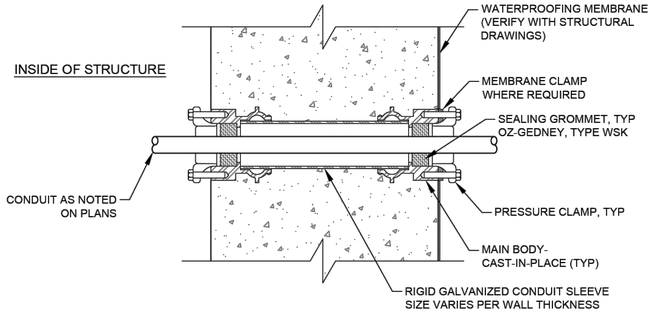


NOTE:

WALL SEAL SHOWN IS TYPICAL FOR EACH CONDUIT IN DUCTBANK.

SINGLE ENDED TYPE

FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS ENCASED IN CONCRETE

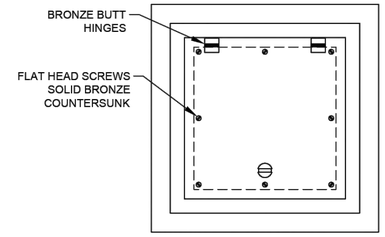


DOUBLE ENDED TYPE WITH MEMBRANE

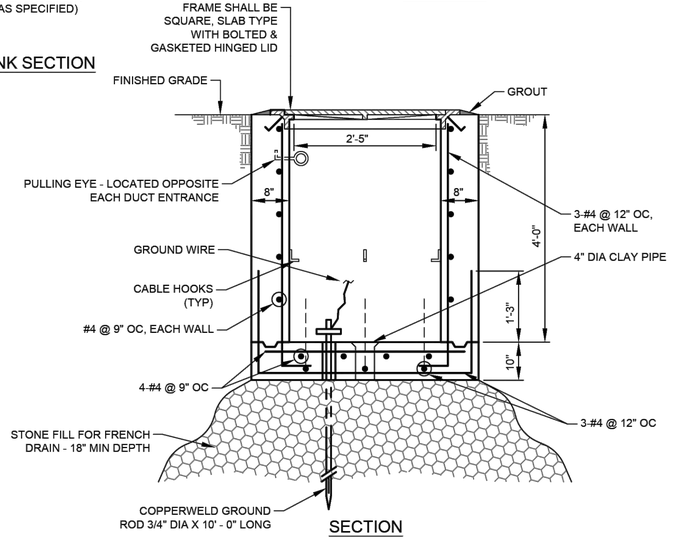
FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS ENCASED IN CONCRETE

TYPICAL CONDUIT SEALS

DETAIL 4 NTS



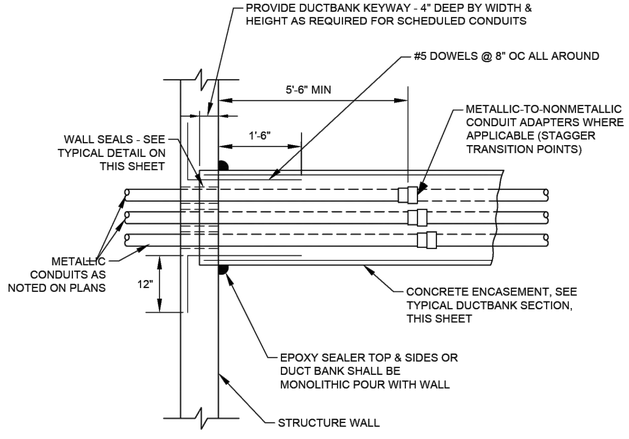
TOP PLAN



SECTION

TYPICAL ELECTRICAL HANDHOLE CONSTRUCTION

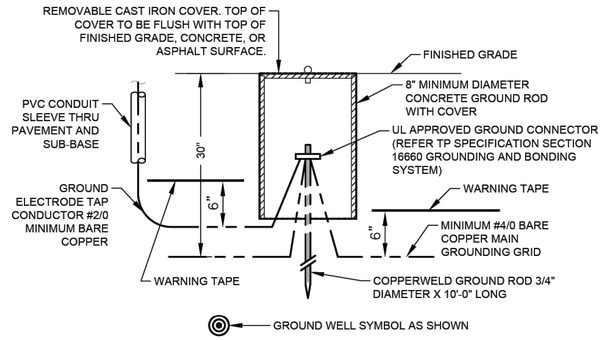
DETAIL 2 NTS



PLAN

TYPICAL DUCTBANK ENTRANCE AT STRUCTURE WALL

DETAIL 5 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

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
ELECTRICAL
ELECTRICAL TYPICAL DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 110 OF 298	E-212

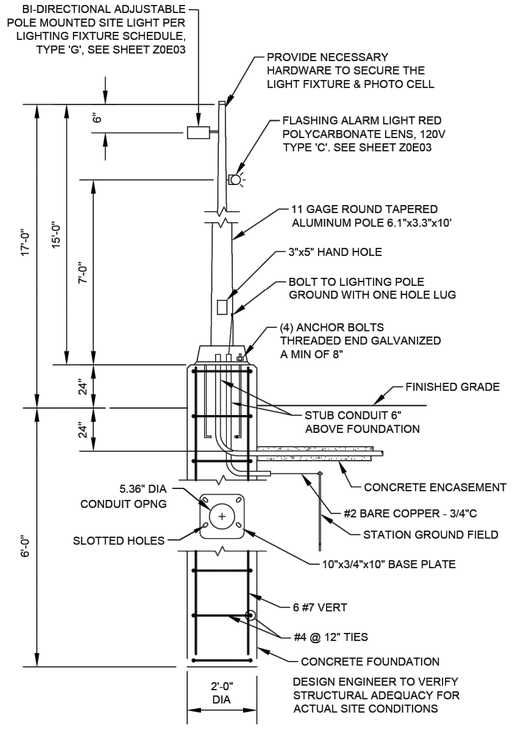
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FILE PATH: C:\Projects\2015\2015010\Design\Arch Reconstruction\Drawings\Electrical\Yard Lights\Deer Springs\[2015010_E-213-Yard Light - ELECTRICAL (DEER SPRING).dwg
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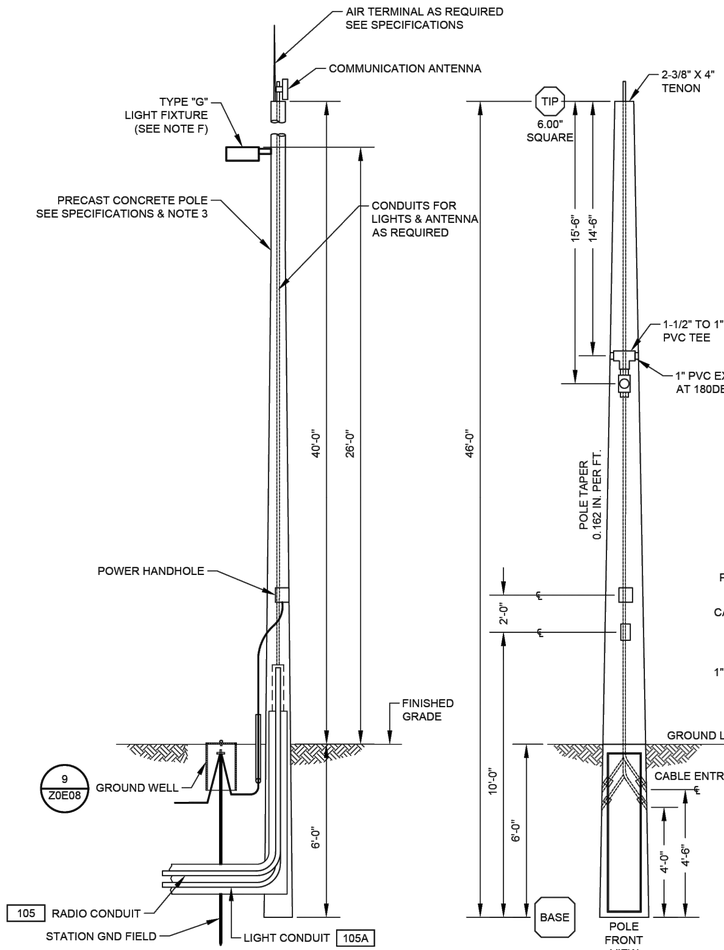
1. ON GROUND WIRE TERMINATION'S, ALL PAINTED OR COATED METAL SURFACES SHALL BE REMOVED AND CLEANED TO BARE METAL. TO OBTAIN A SOUND GROUND CONNECTION. ONCE INSTALLED APPLY PROTECTIVE COATING ON BARE METAL AREAS PER MANUFACTURER REQUIREMENTS.
2. PRECAST CONCRETE POLE TO MOUNT THE RADIO RECEIVER.
3. 1" CONDUIT TO EXTEND TO THE TOP OF POLE FOR ETHERNET CABLE FOR RADIO.

NO.	DATE	REVISION	APP.



TYPICAL YARD LIGHT

DETAIL 1 / NTS



COMMUNICATION POLE MOUNTING DETAIL

DETAIL 2 / NTS

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(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
ELECTRICAL
YARD LIGHT/COMMUNICATOIN POLE DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 111 OF 298	E-213

PLOTTED: 2/23/2026 8:01:12 AM
PLOT STYLE: Color.ctb
FILE PATH: C:\Users\...\Deer Springs\...\DEER SPRINGS).dwg

HMI

CONTROL PANEL PLC

CONTROL PANEL

480V

INFLUENT PUMP NO. 1 — SEAL FAIL ALARM MA 1; MOTOR OVERLOAD ALARM MO 1; MOTOR CURRENT II 1; HIGH TEMP ALARM TH 1; IN HAND HI 1; IN AUTO IA 1; ON/OFF YFS 1; START/STOP YCS 1

INFLUENT PUMP NO. 2 — SEAL FAIL ALARM MA 2; MOTOR OVERLOAD ALARM MO 2; MOTOR CURRENT II 2; HIGH TEMP ALARM TH 2; IN HAND HI 2; IN AUTO IA 2; ON/OFF YFS 2; START/STOP YCS 2

PRIMARY PLC — ALARMS RESET RE 1; FLOAT HIGH-HIGH WETWELL LEVEL LAHH 1A

BACKUP PLC — PUMP NO. 1 START/STOP YCS 1A; PUMP NO. 2 START/STOP YCS 2A

PRIMARY PLC PHASE FAILURE UNDERVOLTAGE JA 1

BACKUP PLC PHASE FAILURE UNDERVOLTAGE JA 2

PRIMARY PLC — PRIMARY LEVEL TRANSMITTER: HIGH LEVEL LAH 1; LEVEL INDICATION LI 1; LOW LEVEL LAL 1

PRIMARY PLC — BACKUP LEVEL TRANSMITTER: HIGH LEVEL LAH 2; LEVEL INDICATION LI 2; LOW LEVEL LAL 2

HIGH LEVEL ALARM LAH 1B

PRIMARY PLC MODE ACTIVE YI 1A

BACKUP PLC MODE ACTIVE YI 1B

INSTRUSION ALARM YA 1

INFLUENT PUMP NO. 1 H/O/A; RUN

INFLUENT PUMP NO. 2 H/O/A; RUN

PRIMARY PLC

BACKUP PLC

INFLUENT PUMP CONTROL PANEL

ALARMS RESET

OIT

TO SHEET I-202

I-202
I-202

WET WELL

LT 1
LE 1

LT 2
LE 2

LSH 1A
TSH 1A
M

FS2 HIGHHIGH LEVEL FLOAT SWITCH

LSH 2A
TSH 2A
M

FS1 HIGH LEVEL FLOAT SWITCH

INFLUENT DISCHARGE

NO.	DATE	REVISION	APP.

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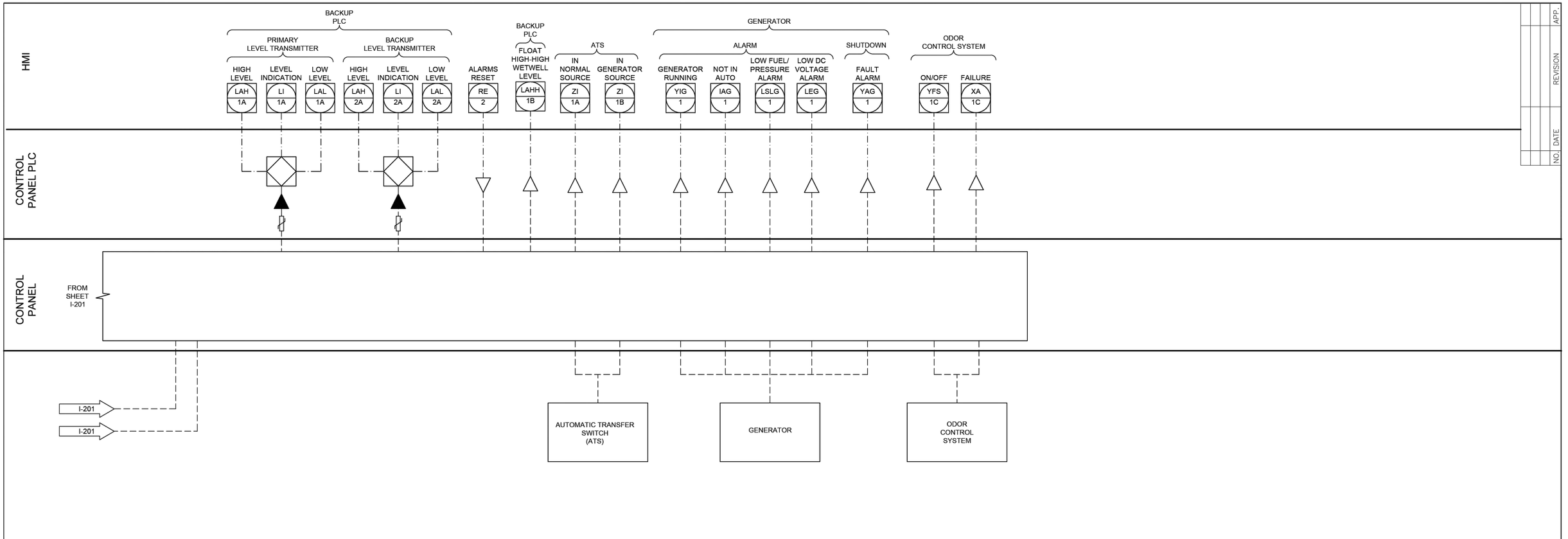
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TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
INSTRUMENTATION
P&ID DIAGRAM–I
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 112 OF 298 I–201	



NO.	DATE	REVISION	APP.

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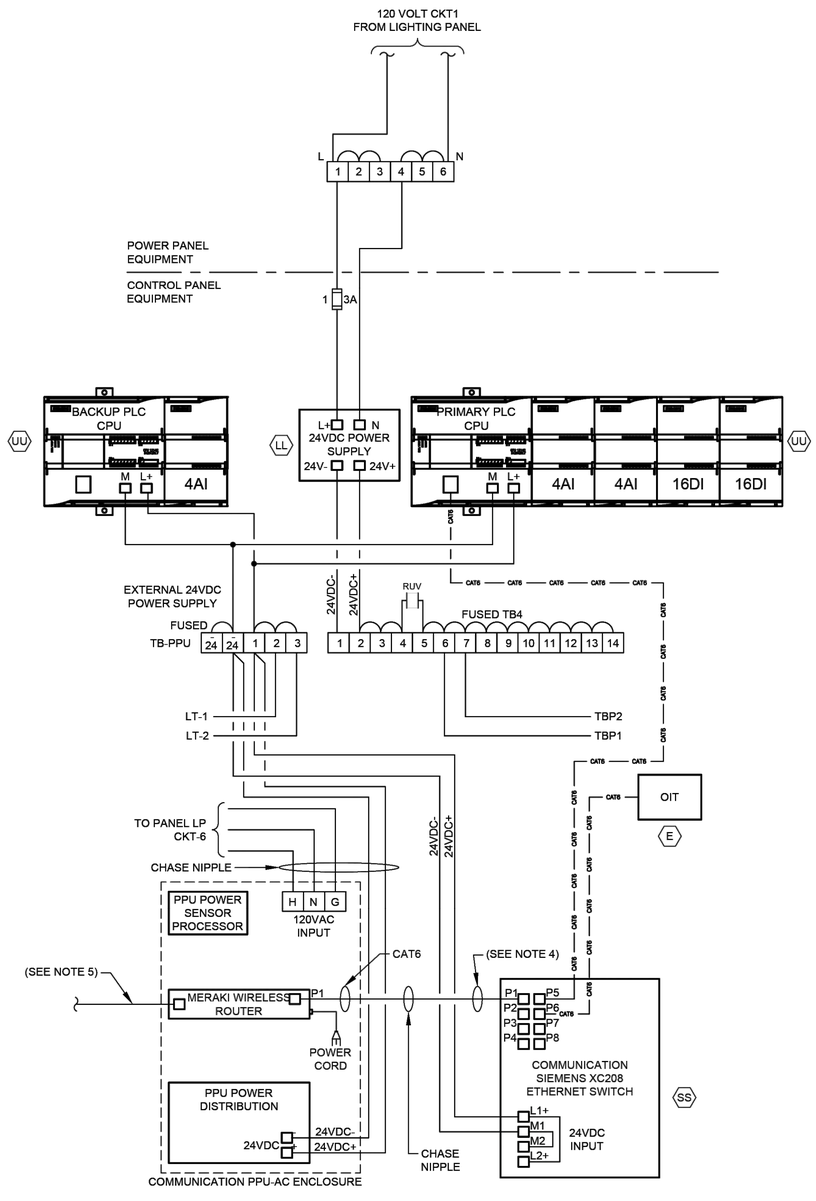
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
INTRUMENTATION
P&ID DIAGRAM–II
(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 113 OF 298	I-202

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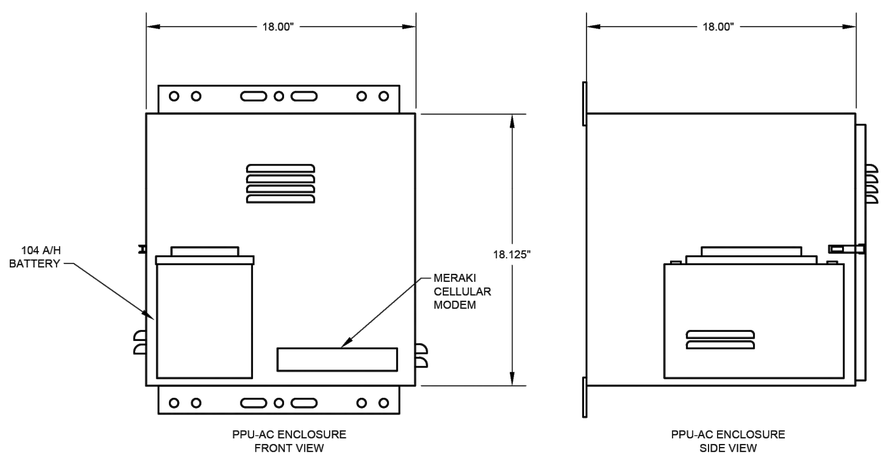


CONTROL POWER & COMMUNICATIONS WIRING

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. CAT6 ETHERNET CABLE FOR MERAKI CELLULAR ROUTER (P1).
5. CAT6 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.

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HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
INSTRUMENTATION
COMMUNICATION DIAGRAM

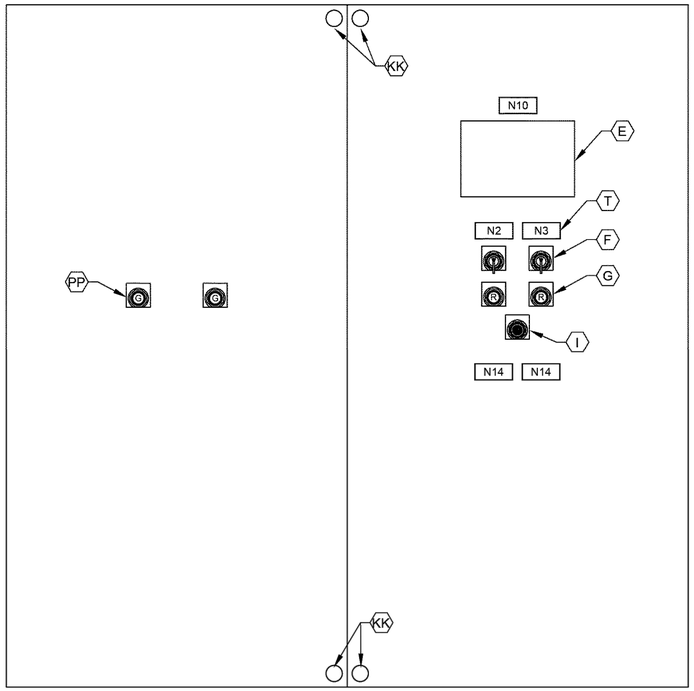
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DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 114 OF 298	I-203

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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	3	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

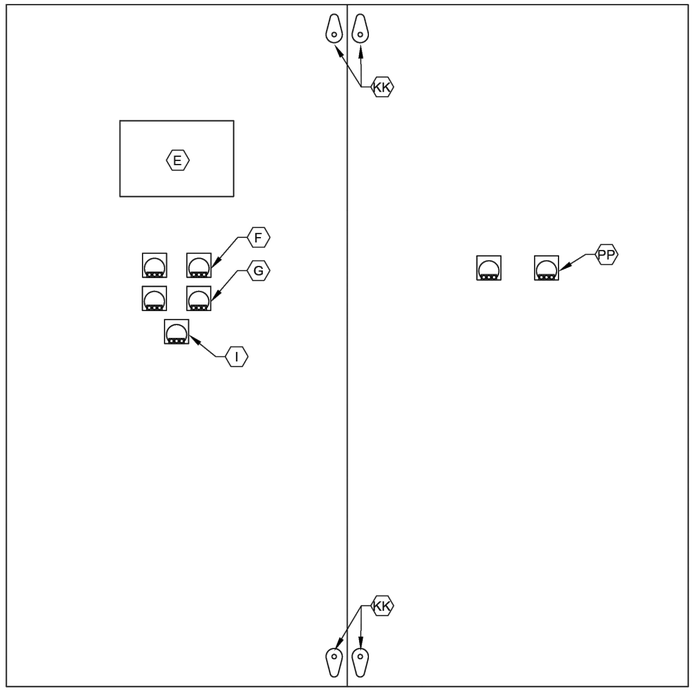
* - AS SCHEDULED



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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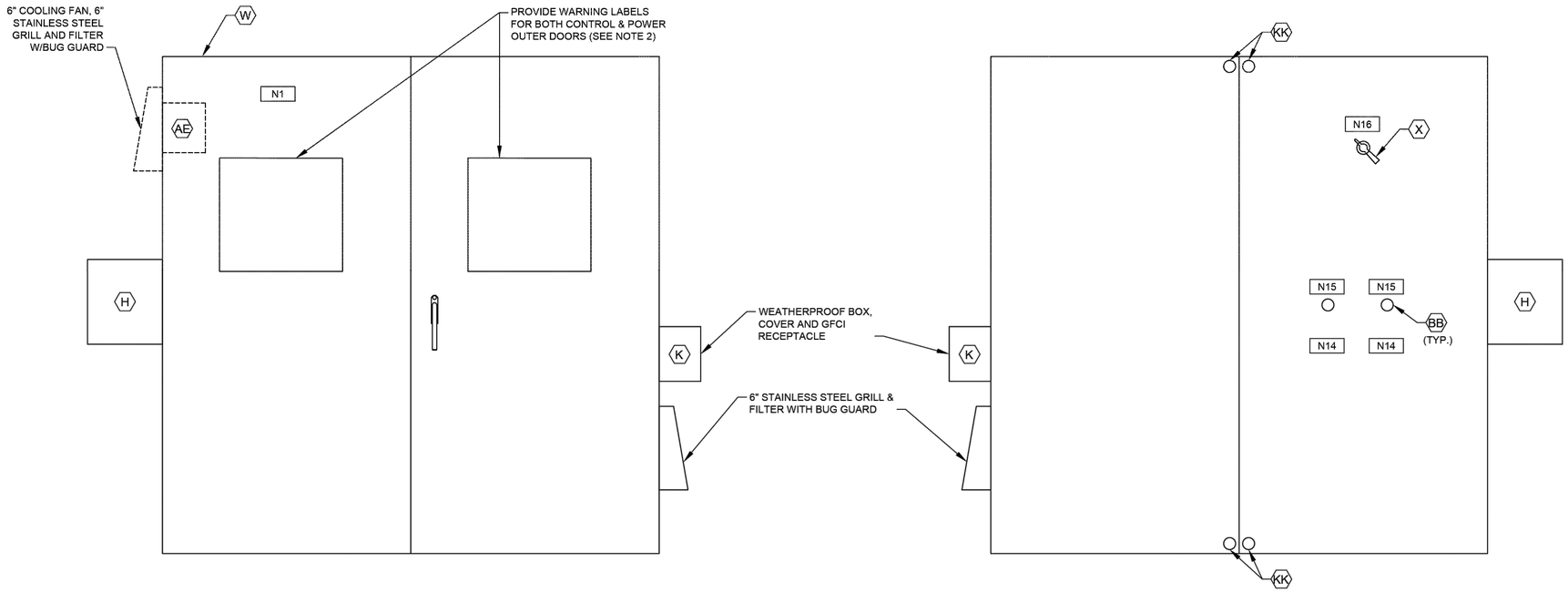
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
INSTRUMENTATION
CONTROL CAB. EQUIP. LAYOUT & SCHD.

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 115 OF 298	I-204

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CONTROL CABINET (CONTROL SIDE)
OUTER DOOR

ELEVATION

NTS

CONTROL CABINET (POWER SIDE)
INNER DOOR

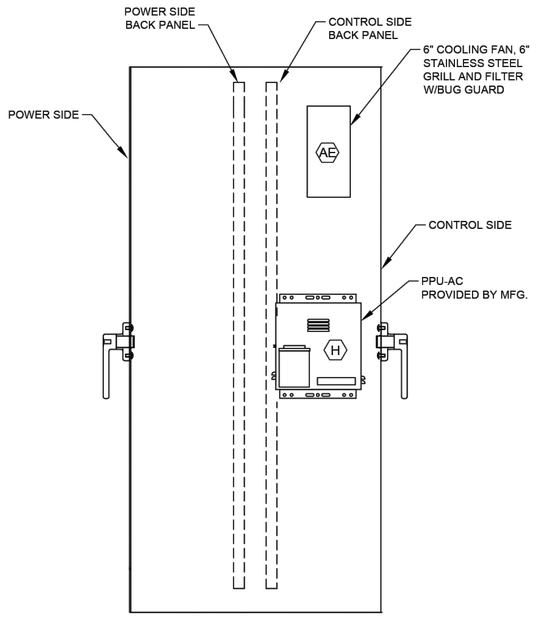
ELEVATION

NTS

(SEE NOTE 1)

NAMEPLATE SCHEDULE

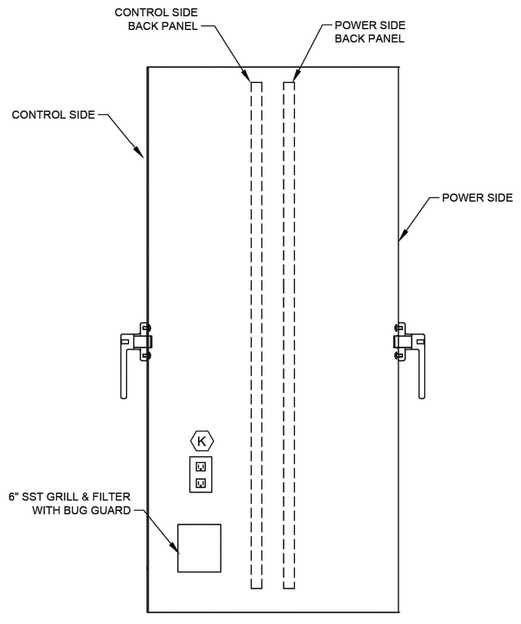
DESIGNATION	ENGRAVED	DESIGNATION	ENGRAVED
N1	PUMP STATION DESIGNATION	N8	NOT USED.
N2	PUMP NO. 1	N9	NOT USED.
N3	PUMP NO. 2	N10	PROGRAMMING SCREEN
N4	NOT USED.	N11	NOT USED.
N5	NOT USED.	N12	PRIMARY PLC
N6	NOT USED.	N13	BACKUP PLC
N7	NOT USED.	N14	MOTOR DATA
			HORSEPOWER (OUTPUT) ----------
			RPM AT 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

NOTES:

1. SEE SHEET I-204 FOR EQUIPMENT SCHEDULE.
2. REFER TO NEC SECTIONS 110.16 & 110.21

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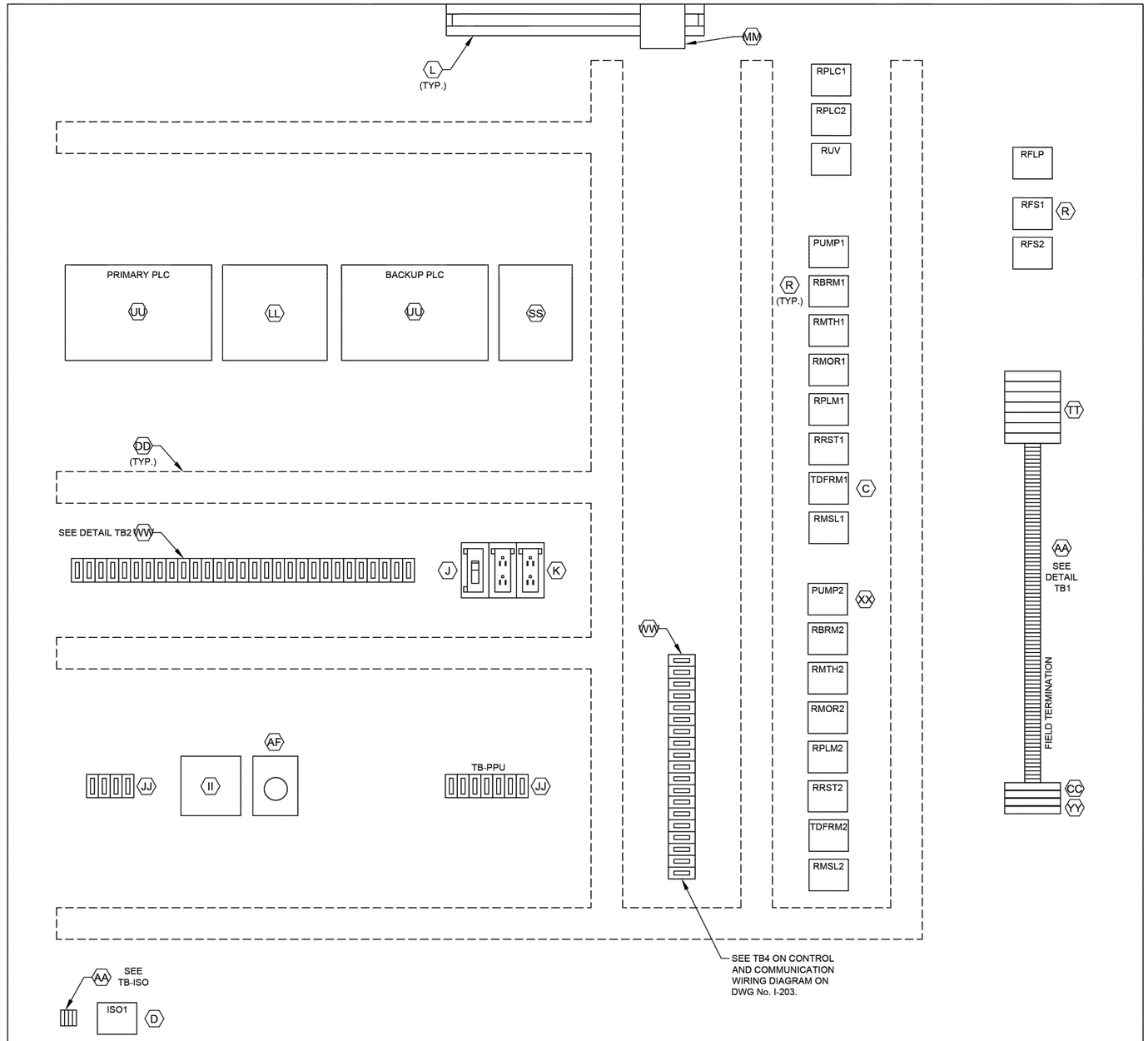
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
INSTRUMENTATION
CONTROL CABINET EQUIPMENT LAYOUT–I
(SHEET 1 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 116 OF 298	I-205

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CONTROL PANEL
ELEVATION

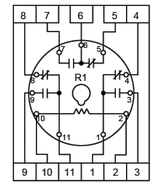
DETAIL TB1
L1A
L1N
SPARE
3
3N
49
50
51
52
53
54
1004
1
24V-
24V-
1002
2
11
1001
1001A
12
1003
1003A
1002
1004
18
3N
19
20
36
36N
41
42
43
44
SPARE
L1A
L1N
103
104
105
106
107
108
110
113
115
116
119
SPARE
203
204
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219

ALL L AND N FOR
EACH PUMP
CONTROL TO BE
FUSED

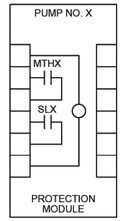
DETAIL TB2
36A
37A
50
52
54
52A
54A
L+
M
35B
38B
41B
47B
13B
13AB
13GB
L+
M
14B
14AB
14GB
L+
M
13
13A
13G
14
14A
14G
SPARE
18
SPARE
28
29
32
35B
33
42
44
SPARE
103
104
115
109
110
118
120
121
122
123
SPARE
209
210
211
218
220
222
223

DETAIL TB-ISO
1500
1501
1503
1504

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-204 FOR EQUIPMENT SCHEDULE.

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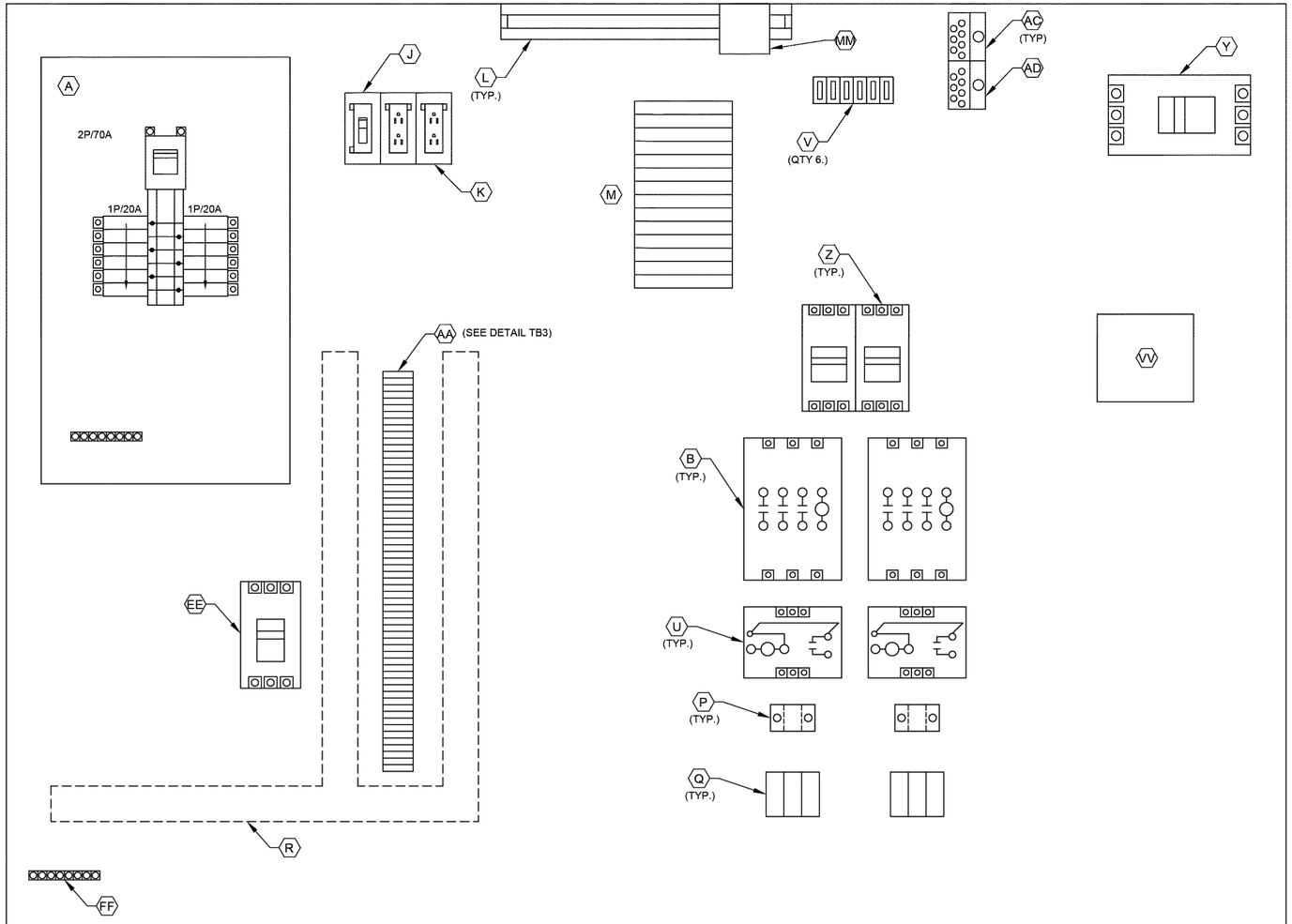
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DEER SPRINGS LIFT STATION
INSTRUMENTATION
CONTROL CABINET EQUIPMENT LAYOUT–II
(SHEET 2 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 117 OF 298	I–206

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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
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SPARE
SPARE
SPARE

DETAIL TB3

NOTES:

1. SEE SHEET I-204 FOR EQUIPMENT SCHEDULE.

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HOUSTON PUBLIC WORKS

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DEER SPRINGS LIFT STATION
INSTRUMENTATION
CONTROL CABINET EQUIPMENT LAYOUT–III
(SHEET 3 OF 3)

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SHEET NO. 118 OF 298	I-207

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NO.	DATE	REVISION	APP.

FIELD

CONTROL PANEL

DOOR

INTERIOR PANEL

PLC

120 VAC POWER

L1 — L1A — L1N

JE-1 CONTROL POWER SURGE PROTECTOR (TT)

24VDC

120V CKT3 FROM LIGHTING PANEL — L3A — 20A — 3 — 3N

T-STAT — AE — FAN

RPLC3 (11, 8)

RFS3 (1, 3)

OIT — E

BACK UP PLC

36A — 50mA — I0.1 BACKUP PLC MODE ACTIVE

37A — 50mA — I0.2 FLOAT HIGH-HIGH LEVEL ALARM ALL PUMPS ON

ZS-1 AUTO TRANSFER SWITCH CONTACTS SHOWING SOURCE OF POWER (SEE NOTE 1)

ZI-1A — 49, 50 — 50 — 50mA — I0.4 ATS IN NORMAL SOURCE

ZI-1B — 51, 52 — 52 — 50mA — I0.5 ATS IN EMERGENCY SOURCE

GENERATOR CONTACTS SHOWING STATUS AND ALARMS (SEE NOTE 1)

	53, 54	54	50mA	I0.7 SPARE
YIG-1	55, 56	56	50mA	I7.0 GENERATOR RUNNING
IAG-1	57, 58	58	50mA	I7.1 GENERATOR NOT IN AUTO ALARM
LSLG-1	59	59	50mA	I7.2 GENERATOR LOW FUEL/PRESSURE ALARM
LEG-1	60	60	50mA	I7.3 GENERATOR LOW DC VOLTAGE ALARM
YAG-1	61	61	50mA	I7.4 GENERATOR FAULT SHUTDOWN ALARM

ODOR SYSTEM

XA-1B — 62, 63 — 63 — 50mA — I7.5 ODOR SYSTEM RUNNING

YCS-1B — 64 — 64 — 50mA — I7.6 ODOR SYSTEM FAILURE ALARM

LEVEL TRANSMITTER J-BOX

HIGH LEVEL ALARM FS1 — 1500, 1501

HIGH-HIGH LEVEL ALARM FS2 — 1503, 1504

FLOAT SWITCHES LOCATED INSIDE WET WELL

120V CKT10 FROM LIGHTING PANEL — L10A — 20A — RUV (6, 7)

INTRINSICALLY SAFE RELAY — ISO 1 (5, 6; 1, 3, 4)

RFS1 (6, 7)

RFS1 (2, 10)

RFS2 (2, 10)

RFS1 (1, 3)

52A — 50mA — I0.2 FLOAT HIGH-HIGH LEVEL ALARM ALL PUMPS ON

54A — 50mA — I0.3 SPARE

MATCHLINE 1

NOTES:

1. PROVIDE AUTO TRANSFER SWITCH DRY CONTACT.
2. 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

DCCM

GAI
Gupta & Associates, Inc.
CONSULTING ENGINEERING
Registration No. F-2593
302 Dennis St.
Houston, Texas 77006
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SURVEYED BY: LANDTECH, INC.
FB NO. 6399

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA.–I
(SHEET 1 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 119 OF 298	I–208

PLOTTED: 2/23/2026 8:12:22 AM
PLOT STYLE: Gaitub
FILE PATH: C:\Users\...\Deer Springs\...\Deer Springs (SPRING).dwg

NO.	DATE	REVISION	APP.

FIELD

CONTROL PANEL

DOOR

INTERIOR PANEL

PLC

MATCHLINE 1

120 VAC POWER

24VDC

L1A 3

3N L1N

RADAR LEVEL TRANSMITTER JUNCTION BOX

MFG. CABLE

PRIMARY RADAR LEVEL TRANSMITTER

LT-1

MFG. CABLE

BACK UP RADAR LEVEL TRANSMITTER

LT-2

RBRM1

RBRM2

ANALOG ISOLATOR (YY)

ANALOG I/O SURGE SUPPRESSOR (CC)

1004

1002

24-

24V-

11

1001

1001A

12

1003

1003A

24V+

1001B

1003B

BACK UP PLC

L+		CPU POWER
M		CPU COMMON
35B	1A	QO.0 PUMP NO.1 CALL TO RUN
38B	1A	QO.1 PUMP NO.2 CALL TO RUN
41B	1A	QO.2 SPARE
44B	1A	QO.3 SPARE
47B	1A	QO.4 SPARE
13B	50mA	AIO.0 PRIMARY WET WELL LEVEL TRANSMITTER
13AB		
13GB		
L+		CPU POWER
M		CPU COMMON
14B	50mA	AIO.2 BACKUP WET WELL LEVEL TRANSMITTER
14AB		
14GB		
L+		CPU POWER
M		CPU COMMON
13	50mA	AIO.0 PRIMARY WET WELL LEVEL TRANSMITTER
13A		
13G		
14	50mA	AIO.2 BACKUP WET WELL LEVEL TRANSMITTER
14A		
14G		

MATCHLINE 2

LEGEND

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

DCCM

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION INSTRUMENTATION

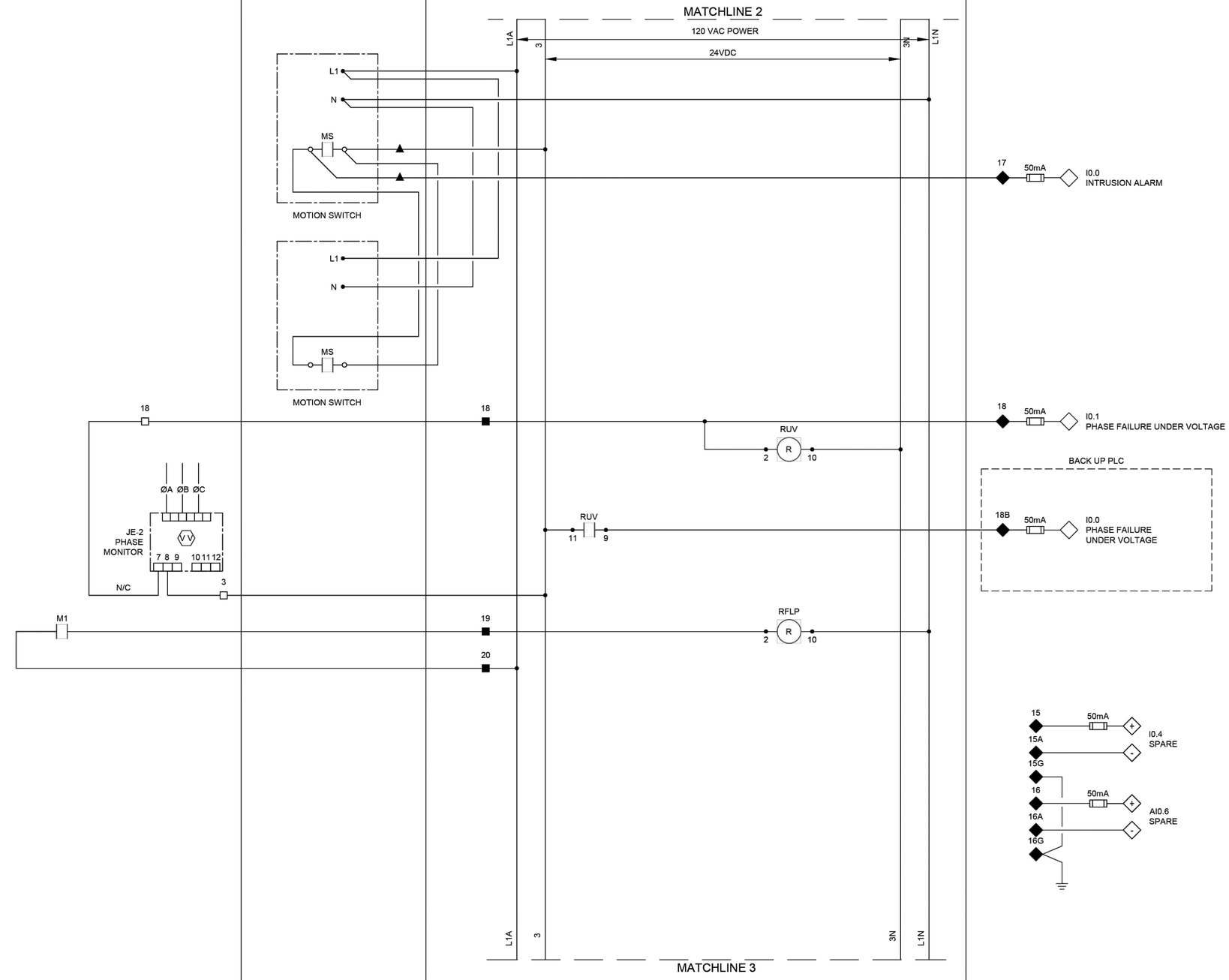
CONTROL PANEL CONTROL WIRING DIA.–II

(SHEET 2 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 120 OF 298	I–209

PLOTTED: 2/23/2026 8:12:22 AM
PLOT STYLE: Grayscale.ctb
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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

NO.	DATE	REVISION	APP.

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DATE: 2/25/2026

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

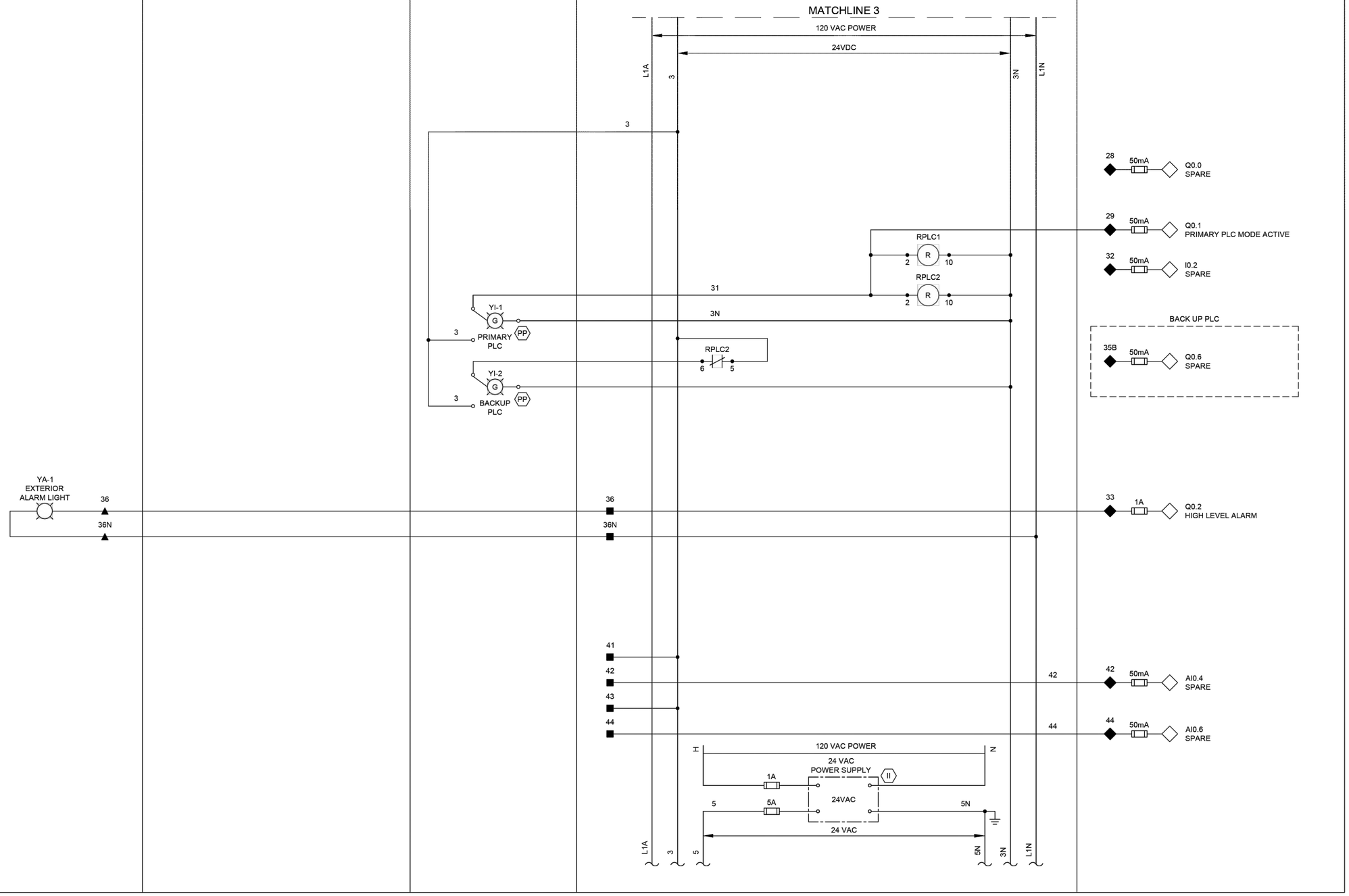
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION
INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA.–II
(SHEET 3 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 121 OF 298	I–210

PLOTTED: 2/23/2026 8:12:22 AM
PLOT STYLE: Gai-ctb
FILE PATH: Q:\[illegible]

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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DATE: 2/25/2026

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINSG LIFT STATION
INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA.–IV
(SHEET 4 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 122 OF 298	I–211

PLOTTED: 2/23/2026 8:12:22 AM
PLOT STYLE: G4.ctb
FILE PATH: C:\Users\...\Deer Springs\...\DS-LG-21 (DEER SPRINGS).dwg

FIELD | POWER PANEL | CONTROL PANEL — DOOR | INTERIOR PANEL | PLC

120 VAC POWER
24 VDC
24 VAC
JE-2
TBP1 SEE NOTE 2
L1A
L1N
3N
5N
15
15N
3P1

TSH-1 MOTOR TEMP SWITCH
LSH-1 SEAL LEAK DETECTOR
HS-1A RESET
TO SHEET I-213
HS-1 H-O-A
M1
MOR1
PUMP NO.1
TERMINAL JUNCTION BOX
REFER TO SHEET E-205
CT
4-20mA CURRENT TRANSDUCER
IE-1 MOTOR OVERLOAD RELAY (MOR) (SEE NOTE 1)
ZS-1
YI-1
RUN

PUMP NO. 1 PROTECTION MODULE
LAH-1 SL1
TAH-1 MTH1
RRST1
RMSL1
RMTH1
TDFRM1
RFS1
RMOR1
RPLC1
RBRM1
RPLM1

103	1A	Q0.4 ALARM RESET
104	50mA	I0.6 ALARM RESET
109	50mA	I1.1 PUMP NO.1 HIGH TEMP ALARM
122	50mA	AI0.8 PUMP NO.1 MOTOR CURRENT
123	50mA	I3.3 PUMP NO.1 MOTOR OVERLOAD
115	50mA	I3.0 PUMP NO.1 IN HAND
121	50mA	I3.1 PUMP NO.1 IN AUTO
118	1A	Q0.7 PUMP NO.1 PLC START/STOP
120	50mA	I1.0 PUMP NO.1 RUN
110	50mA	I3.2 PUMP NO.1 SEAL FAILURE ALARM

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-203.
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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SURVEYED BY: LANDTECH, INC.
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TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRINGS LIFT STATION INSTRUMENTATION
PUMP NO.1 CONTROL WIRING DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 123 OF 298	I-212

PLOTTED: 2/23/2026 8:12:22 AM
PLOT STYLE: G4.ctb
FILE PATH: C:\Users\...\Deer Springs\...\I-213 (DEER SPRINGS).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
200

FROM SHEET I-212
HS-1A RESET (I)
201
202
RRST2
RRST2

M2
203
204
205
206
207
208

TSH-2 MOTOR TEMP SWITCH △
20
21
22
23
LSH-2 SEAL△ LEAK DETECTOR

PUMP NO. 2 PROTECTION MODULE
LAH-2 SL2
TAH-2 MTH2
5
XX
5N

PUMP NO.2
M
T1 T2 T3 G
CT
M1
REFER TO SHEET E-205
TERMINAL JUNCTION BOX

3P2
RMSL2
RMTH2
221
RMTH2
RFS2
TDFRM2
TD

209 50mA I1.3 PUMP NO.2 HIGH TEMP ALARM
222 50mA AI.0 PUMP NO.2 MOTOR CURRENT

U
MOR2
215
216
210

4-20mA CURRENT TRANSDUCER
15
IE-2
MOTOR OVERLOAD RELAY (MOR) (SEE NOTE 1)
RMOR2
RMOR2
223 50mA I3.7 PUMP NO.2 MOTOR OVERLOAD ALARM

212
HS-2 H-O-A (F)
H O A
213
214
220
RMTH2
211
RMSL2
RPLC1
215
RBRM2
RPLC1
216
RPLM2
TDFRM2
RFLP

210 50mA I3.5 PUMP NO.2 IN HAND
211 50mA I3.4 PUMP NO.2 IN AUTO

B
M2
MOR2
ZS-2
213
218
RPLM2
218 1A Q1.0 PUMP NO.2 PLC START/STOP

15
M2
ZS-2
219

220 50mA I1.2 PUMP NO.2 RUN

YI-2 (R) G
RUN
3N
3P2
RMSL2
210 50mA I3.6 PUMP NO.2 SEAL FAILURE ALARM

L1A 15 15N L1N L1A 3 3N L1N

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-203.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

NO.	DATE	REVISION	APP.

DCCM

GAI
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FB NO. 6399

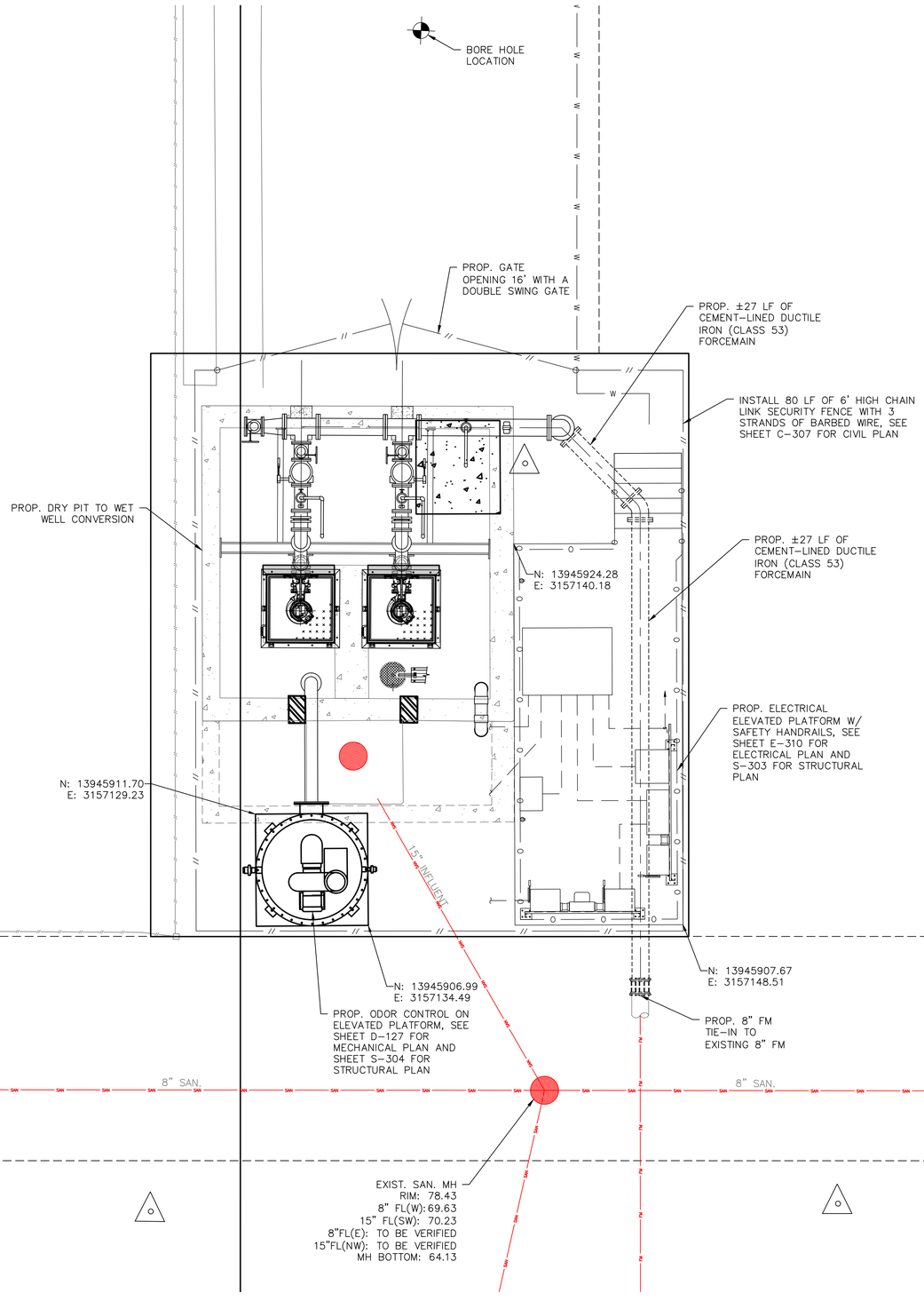
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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

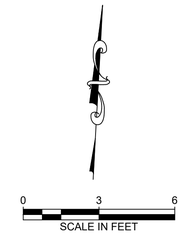
DEER SPRINGS LIFT STATION INSTRUMENTATION
PUMP NO.1 CONTROL WIRING DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 124 OF 298	I-213



OVERALL SITE PLAN

SCALE: 1" = 3'-0"



NO.	DATE	REVISION	APP.

DCCM

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Houston, TX 77008
713.869.3433
DCCM.com

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

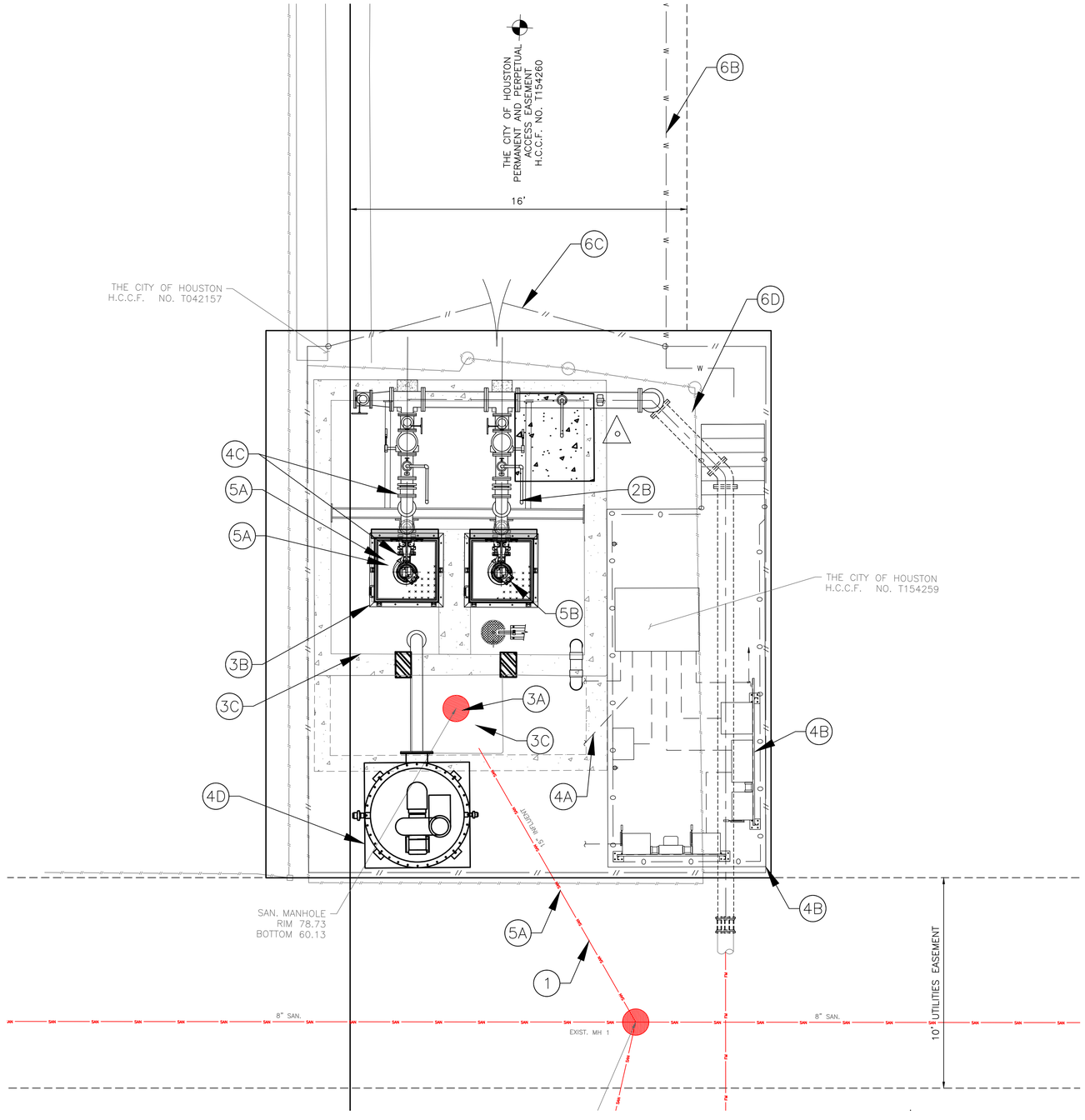
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION

PROPOSED OVERALL SITE LAYOUT

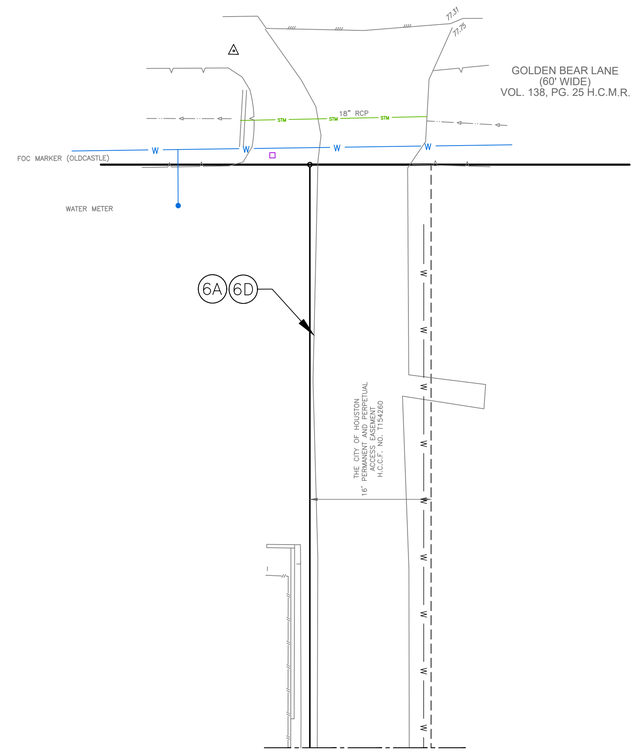
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: 1"=3' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 125 OF 298	M–301

PLOTTED: 2/25/2026 3:28 PM
PLOT STYLE: COH.ctb
FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.03_Drawings\24-1930-PD-OVERALL-SITE-PLAN.dwg



OVERALL SITE PLAN

SCALE: 1" = 3'-0"



OVERALL SITE PLAN

SCALE: 1" = 10'-0"

RECOMMENDED CONSTRUCTION SEQUENCE	
NO.	DESCRIPTION
1	ISOLATE EXIST. 15" GRAVITY LINE INLET TO WEL WELL. PROVIDE BYPASS PUMPING SERVICES FROM EXISTING MANHOLE TO EXISTING FORCEMAIN WITHIN LIMITS OF LIFT STATION PROPERTY OR 10-FOOT UTILITY EASEMENT.
2A	DEMOLITION AND REMOVAL OF EXISTING ELECTRICAL ITEMS: MCC, PANELS FROM DRY PIT, ETC.
2B	DEMOLISH AND REMOVE MECHANICAL EQUIPMENT INCLUDING PUMPS, PIPING, AND VALVES FROM THE DRY PIT.
3A	CLEAN EXISTING WET WELL VIA REMOVAL AND DISPOSAL OF SLUDGE AND SOLIDS.
3B	STRUCTURAL MODIFICATION OF WET WELL AND DRY PIT TOP SLAB TO INSTALL PROP. FLOOD-PROOF HATCHES.
3C	COAT EXISTING WET WELL.
4A	SET UP NEW ELECTRICAL SERVICES.
4B	INSTALL PROP. ELECTRICAL PLATFORM, CONTROL PANELS, AND CONDUIT CONNECTIONS TO NEW SUBMERSIBLE PUMPS.
4C	INSTALL PROP. MECHANICAL EQUIPMENT INCLUDING PUMPS, PIPING, VALVES, HEADER PIPING SUPPORTS, ETC.
4D	INSTALL PROP. ODOR CONTROL SYSTEM AND PIPING CONNECTION.
5A	INTRODUCE WASTEWATER INTO COMPLETED PROP. WET WELL.
5B	PERFORM PUMP TESTING AND STARTUP OF NEW LIFT STATION OPERATION.
6A	DEMOLISH AND REMOVE EXISTING PAVING.
6B	INSTALL PROP. WATER SERVICE, METER, BACK FLOW PREVENTER, AND HOSE BIBB.
6C	INSTALL PROP. FENCES AND GATES
6D	INSTALL PROP. CONCRETE PAVEMENT AND REPLACE ACCESS ROAD PAVING.

NO.	DATE	REVISION	APP.

DCCM

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Houston, TX 77008
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RESPONSIBLE ENGINEER:
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TEXAS REGISTRATION No. 98576

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GOLDEN BEAR LIFT STATION
PROPOSED CONSTRUCTION SEQUENCE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: AS NOTED VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 126 OF 298	CS-301

PLOTTED: 2/25/2026 12:46 PM
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PLOT STYLE: COH_ctb_230809.ctb PLOTTED: 2/26/2026 3:07 PM

GOLDEN BEAR LANE
(60' WIDE)
VOL. 138, PG. 25 H.C.M.R.

ASPHALT

HIGH BANK

HEADWALL

STM

18" RCP

6" WATERLINE (PER GIMS)

PROPERTY LINE

FOREST COVE
COUNTY CLUB ESTATES
SECTION NO. 4
VOL. 138, PG. 25 H.C.M.R.
BLOCK 44

LOT 19

LOT 18

THE CITY OF HOUSTON
16' PERMANENT AND PERPETUAL
ACCESS EASEMENT
H.C.C.F. NO. T154260

6" CONC

8" CONC

WOOD FENCE

CONCRETE WALK

CONCRETE DRIVE

MATCH LINE THIS SHEET

MATCH LINE THIS SHEET

CONCRETE DRIVE

FOREST COVE
COUNTY CLUB ESTATES
SECTION NO. 4
VOL. 138, PG. 25 H.C.M.R.
BLOCK 44

WOOD FENCE

CONCRETE WALK

LOT 19

LOT 18

THE CITY OF HOUSTON
16' PERMANENT AND PERPETUAL
ACCESS EASEMENT
H.C.C.F. NO. T154260

GOLDEN BEAR
F/N #488

GATE

THE CITY OF HOUSTON
H.C.C.F. NO. T042157

ELEC. BOXES

ELEC. BOX W/ METER POLE

VENT PIPE

CONCRETE PUMP VAULT

SAN. MANHOLE
RIM 78.73
BOTTOM 60.13

VAULT

CONC.

LID

CABLE ON GROUND

CHAIN LINK FENCE

WOOD FENCE

LIGHT POLE

VENT PIPE

THE CITY OF HOUSTON
H.C.C.F. NO. T154259

VENT PIPE

MANHOLE

LIGHT POLE

15" SAN INFLUENT

8" SAN.

15" SAN.

SAN. MANHOLE
RIM 78.43
8" FL(W) 69.63
15" FL(SW) 70.23
BOTTOM 64.13

15" SAN.

8" FORCE MAIN
(APPROX. LOCATION)

10' UTILITIES EASEMENT

50' DRAINAGE EASEMENT

SCALE (1"=5')
0 2.5 5 10

NO.	DATE	REVISION	APP.

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070265, A FOUND ALUMINUM DISC STAMPED "G 103-38 BM 01" IN THE SOUTH SIDEWALK OF A BRIDGE ALONG KINGWOOD DRIVE, APPROXIMATELY 850 FEET WEST OF ITS INTERSECTION WITH WOODLAND GROVE DRIVE. ELEVATION = 74.46' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER
02/20/2026

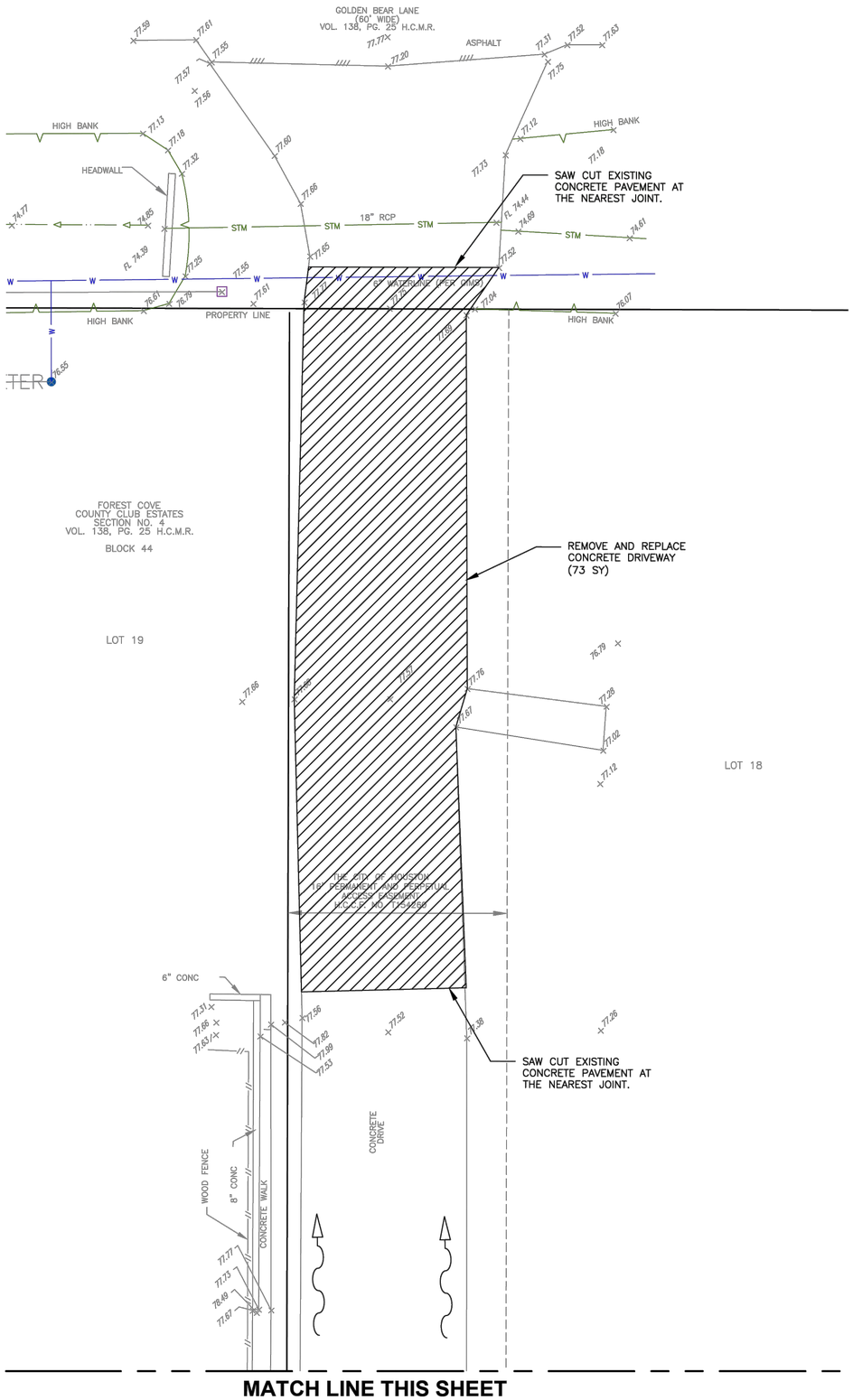
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
EXISTING CONDITIONS

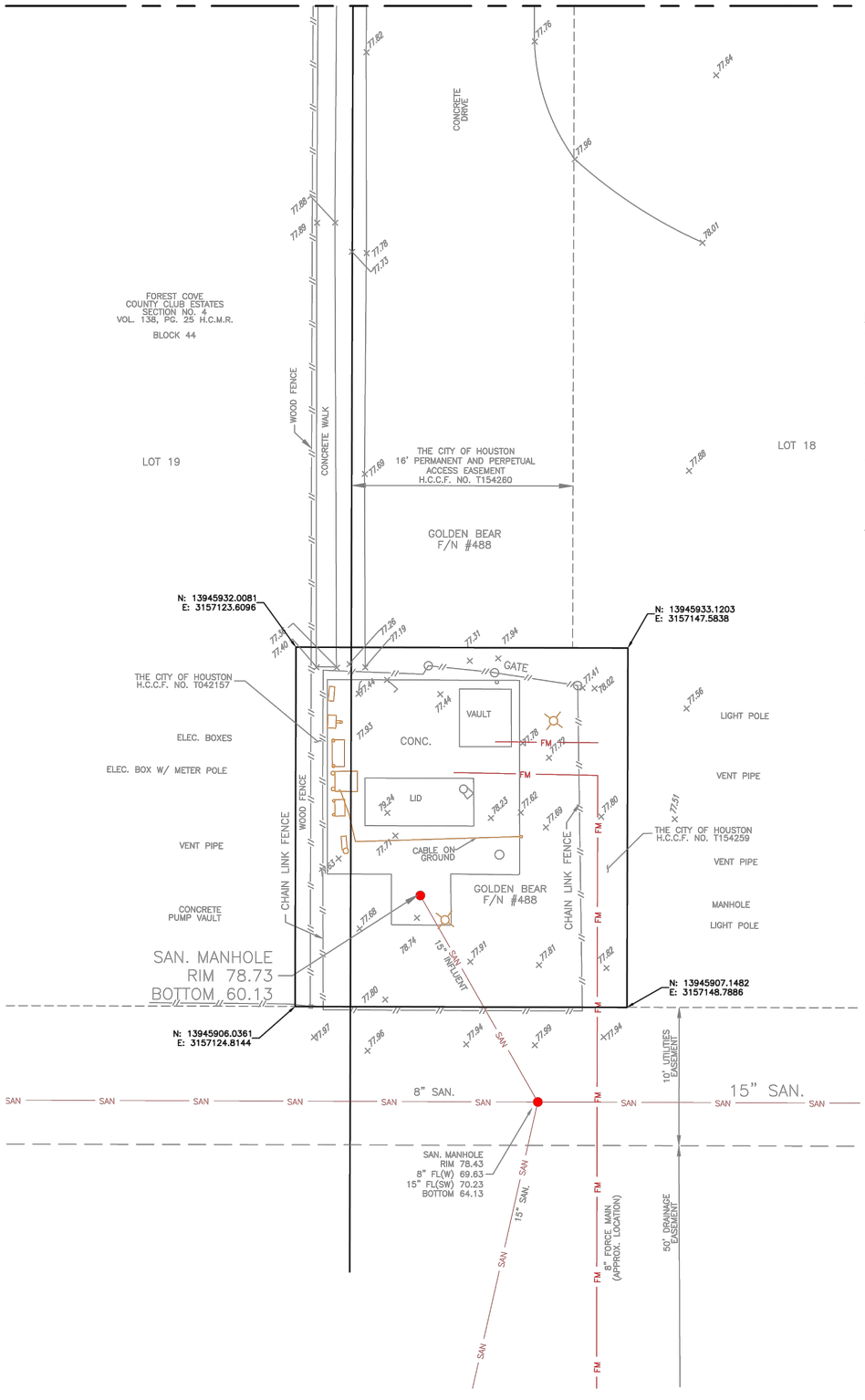
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DRAWING SCALE	
HORIZ: 1"=5' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 127 OF 298	C-301

FILE PATH: W:\Acquisitions\ROW\Projects\CDBG-DR\2023\18003923-4\Civil\Plan Sheets\Golden Bear\Golden Bear Lift Station Demolition Plan (GOLDEN BEAR).dwg
PLOT STYLE: COH_ctb_230809.ctb PLOTTED: 2/26/2026 8:07 AM



MATCH LINE THIS SHEET

MATCH LINE THIS SHEET



NO.	DATE	REVISION	APP.

SCALE (1"=5')
0 2.5 5 10

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
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3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

LEGEND

EXISTING CONCRETE TO BE REMOVED

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER
02/20/2026

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
DEMOLITION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=5' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 128 OF 298	C-302

PLOT STYLE: COH_ctb_230809.ctb PLOTTED: 2/26/2026 3:02 PM
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GOLDEN BEAR LANE
(60' WIDE)
VOL. 138, PG. 25 H.C.M.R.

ASPHALT

77.31

77.76

HIGH BANK

HEADWALL

MATCH EXISTING
PAVEMENT AT JOINT

STM — STM — 18" RCP — STM — STM

W — W — W — W — W — 6" WATERLINE (PER GIMS) — W — W

HIGH BANK

PROPERTY LINE

HIGH BANK

FOREST COVE
COUNTY CLUB ESTATES
SECTION NO. 4
VOL. 138, PG. 25 H.C.M.R.

BLOCK 44

LOT 19

106'

WTR

PROP CONCRETE
DRIVEWAY (73 SY)

LOT 18

THE CITY OF HOUSTON
16' PERMANENT AND PERPETUAL
ACCESS EASEMENT
H.C.C.F. NO. T154260

6" CONC

12'

MATCH PROP PAVEMENT
TO EXISTING PAVEMENT

PROP WATER LINE
(SEE SHEET C-305)

WOOD FENCE

8" CONC

CONCRETE WALK

CONCRETE
DRIVE

MATCH LINE THIS SHEET

MATCH LINE THIS SHEET

FOREST COVE
COUNTY CLUB ESTATES
SECTION NO. 4
VOL. 138, PG. 25 H.C.M.R.

BLOCK 44

LOT 19

WOOD FENCE

CONCRETE WALK

THE CITY OF HOUSTON
16' PERMANENT AND PERPETUAL
ACCESS EASEMENT
H.C.C.F. NO. T154260

LOT 18

GOLDEN BEAR
F/N #488

PROP GATE

1.0' — 16.0' — 4.8'

THE CITY OF HOUSTON
H.C.C.F. NO. T042157

ELEC. BOXES

ELEC. BOX W/ METER POLE

VENT PIPE

CONCRETE
PUMP VAULT

SAN. MANHOLE
RIM 78.73
BOTTOM 60.13

25.0'

WOOD FENCE

PROP 6" REINFORCED
CONCRETE PAVEMENT ON 6"
CEMENT STABILIZED CRUSHED
CONCRETE (48 SY)

VENT PIPE

25.0'

THE CITY OF HOUSTON
H.C.C.F. NO. T154259

VENT PIPE

CABLE ON
GROUND

GOLDEN BEAR
F/N #488

MANHOLE

LIGHT POLE

15" SAN. EFFLUENT

PROP CHAIN
LINK FENCE

21.7'

10' UTILITIES
EASEMENT

SAN — SAN — SAN — SAN — SAN — 8" SAN. — SAN — FM — SAN — SAN — 15" SAN. — SAN

SAN. MANHOLE
RIM 78.43
8" FL(W) 69.63
15" FL(SW) 70.23
BOTTOM 64.13

15" SAN.

8" FORCE MAIN
(APPROX. LOCATION)

50' DRAINAGE
EASEMENT

SCALE (1"=5')
0 2.5 5 10

NO.	DATE	REVISION	APP.

NOTES

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3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

LEGEND

CONCRETE PAVEMENT

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED
PROFESSIONAL ENGINEER

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

02/20/2026

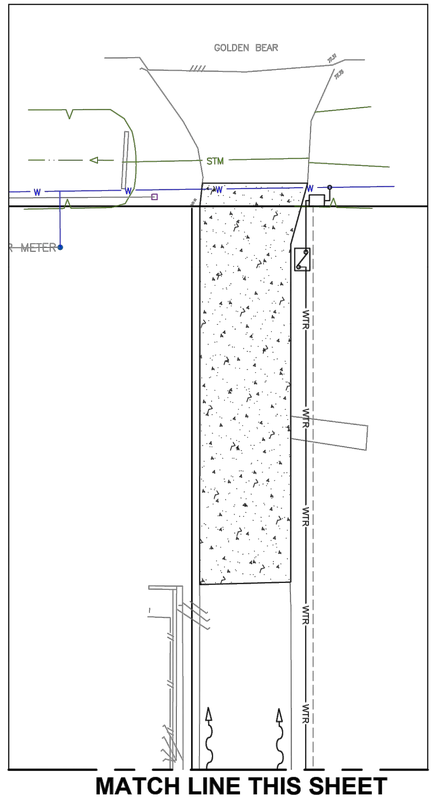
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

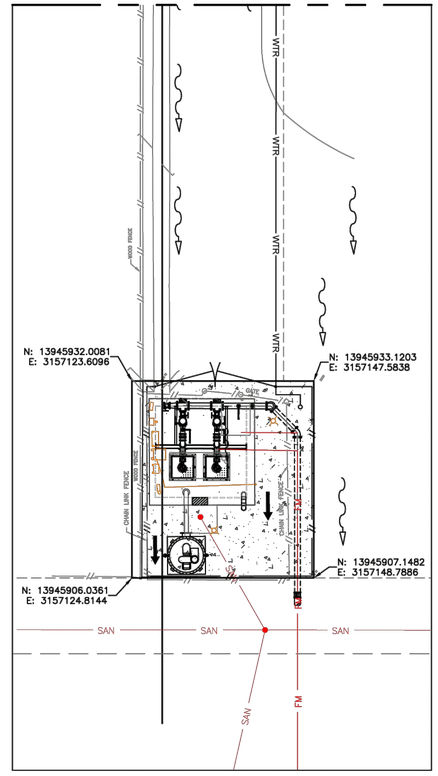
GOLDEN BEAR LIFT STATION
PROPOSED CIVIL SITE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=5' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 127 OF 298	C-301

PLOT STYLE: COH_ctb_230809.ctb PLOTTED: 2/26/2026 3:02 PM
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MATCH LINE THIS SHEET



Notes:

Storage rate 0.4 Ac-ft/Ac for new impervious cover at locations where existing impervious cover is removed.
Storage rate 0.80 Ac-ft/Ac for new impervious cover.

Lift Station Pad Site Detention		
Pavement to be removed		sf
Proposed concrete paving	413	sf
Proposed Lift Station Top	211	
Storage Required	**330**	**cf**
**not subject to detention		
Cut and Fill Data		
Total Cut	-200	cf
Total Fill	200	cf
Net Cut	0	cf
Lift Station Drainage Calculations		
Total Area	624.00	sf
	0.01	Ac
Total Impervious Cover		
Proposed Paving	624.00	sf
	624.00	
Runoff Coefficient	**1.00**	

2-YEAR EVENT - CoH IDF CURVE b=48.35, D=9.07, E=0.7244 (Existing)

FROM NODE	TO NODE	AREA (SF)	AREA (AC)	AREA (AC)	AREA (AC)	C	Tc (MIN)	2-YR (IN/HR)	TOTAL (CFS)
A	B	624	0.0143		0.0143	0.34	19.73	4.24	0.02

100 -YEAR EVENT - CoH IDF CURVE b=60.66, D=4.44, E=0.5797 (Existing)

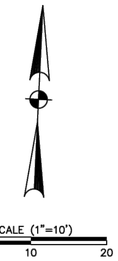
FROM NODE	TO NODE	AREA (SF)	AREA (AC)	AREA (AC)	AREA (AC)	C	Tc (MIN)	2-YR (IN/HR)	TOTAL (CFS)
A	B	624	0.0143		0.0143	0.34	19.73	9.57	0.05

2-YEAR EVENT - CoH IDF CURVE b=48.35, D=9.07, E=0.7244

FROM NODE	TO NODE	AREA (SF)	AREA (AC)	AREA (AC)	AREA (AC)	C	Tc (MIN)	2-YR (IN/HR)	TOTAL (CFS)	SIZE (IN)	MANNING NUMBER	SLOPE (%)	CAPACITY (CFS)	Velocity (FPS)	Pipe Run (FT)	Fall (FT)	DROP (FT)	STREAM (FT)	STREAM (FT)	Actual Velocity ft/sec)	Hydraulic Grade (%)	Change in Head (%)	Elevation HGL (upstream) (ft)	Elevation HGL (downstream) (ft)	Existing Surface Elevation (ft)
A	B	624	0.0143		0.0143	1.00	19.73	4.24	0.06																

100 -YEAR EVENT - CoH IDF CURVE b=60.66, D=4.44, E=0.5797

FROM NODE	TO NODE	AREA (SF)	AREA (AC)	AREA (AC)	AREA (AC)	C	Tc (MIN)	2-YR (IN/HR)	TOTAL (CFS)	SIZE (IN)	MANNING NUMBER	SLOPE (%)	CAPACITY (CFS)	Velocity (FPS)	Pipe Run (FT)	Fall (FT)	DROP (FT)	STREAM (FT)	STREAM (FT)	Actual Velocity ft/sec)	Hydraulic Grade (%)	Change in Head (%)	Elevation HGL (upstream) (ft)	Elevation HGL (downstream) (ft)	Existing Surface Elevation (ft)
A	B	624	0.0143		0.0143	1.00	19.73	9.57	0.14	6															



NO.	DATE	REVISION	APP.

NOTES

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3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

LEGEND

EXISTING DRAINAGE DIRECTION
PROPOSED DRAINAGE DIRECTION
CONCRETE PAVEMENT

FLOOD DATA

FIRM Map No.: 48339C0750H
Effective Date: 8/17/2014
Flood Zone: X

REQUIRED VARIANCES

1. Omit connection to drainage system.
2. Omit internal site drainage.
3. Omit detention.

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED
PROFESSIONAL ENGINEER

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

02/20/2026

CITY OF HOUSTON

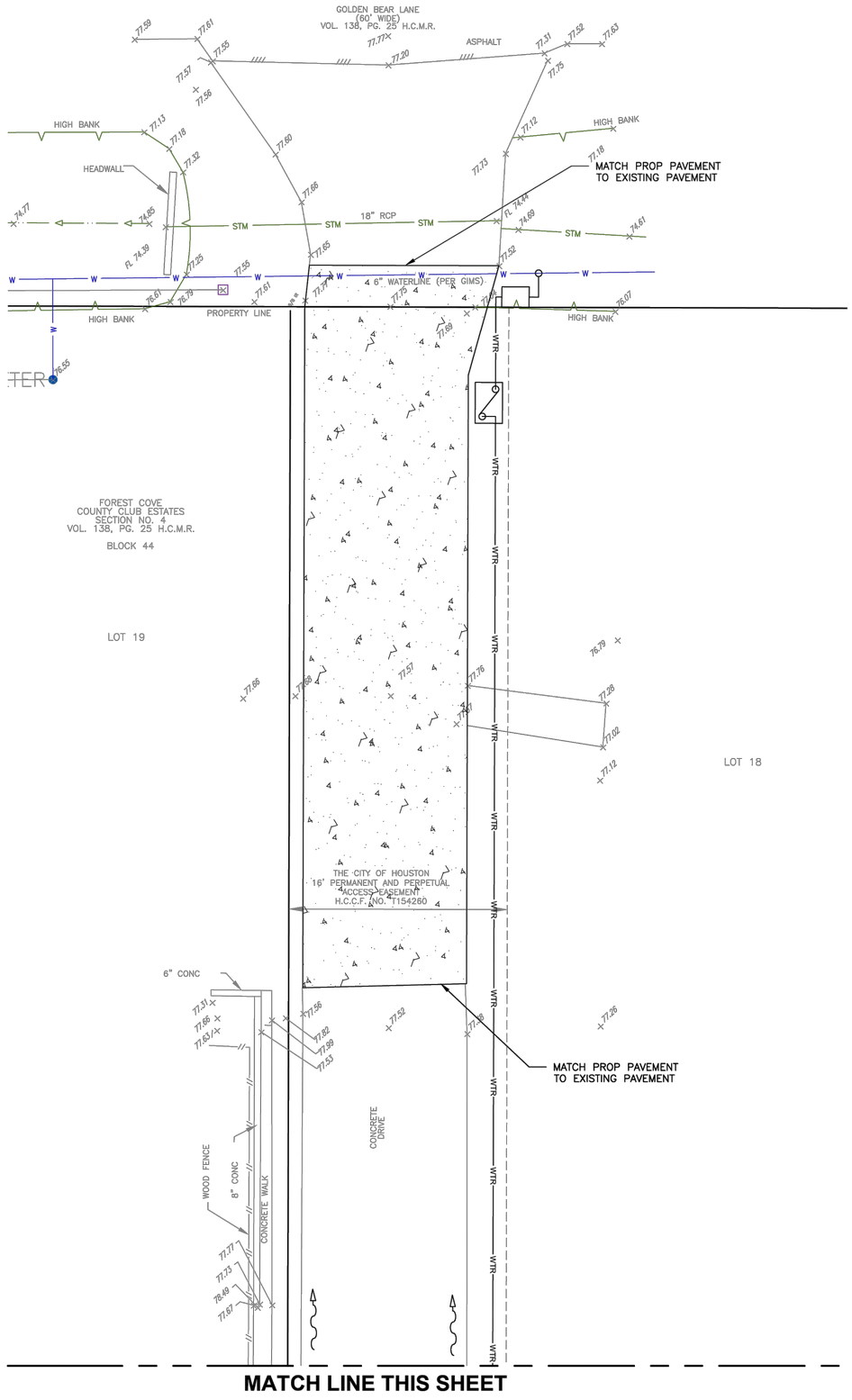
HOUSTON PUBLIC WORKS

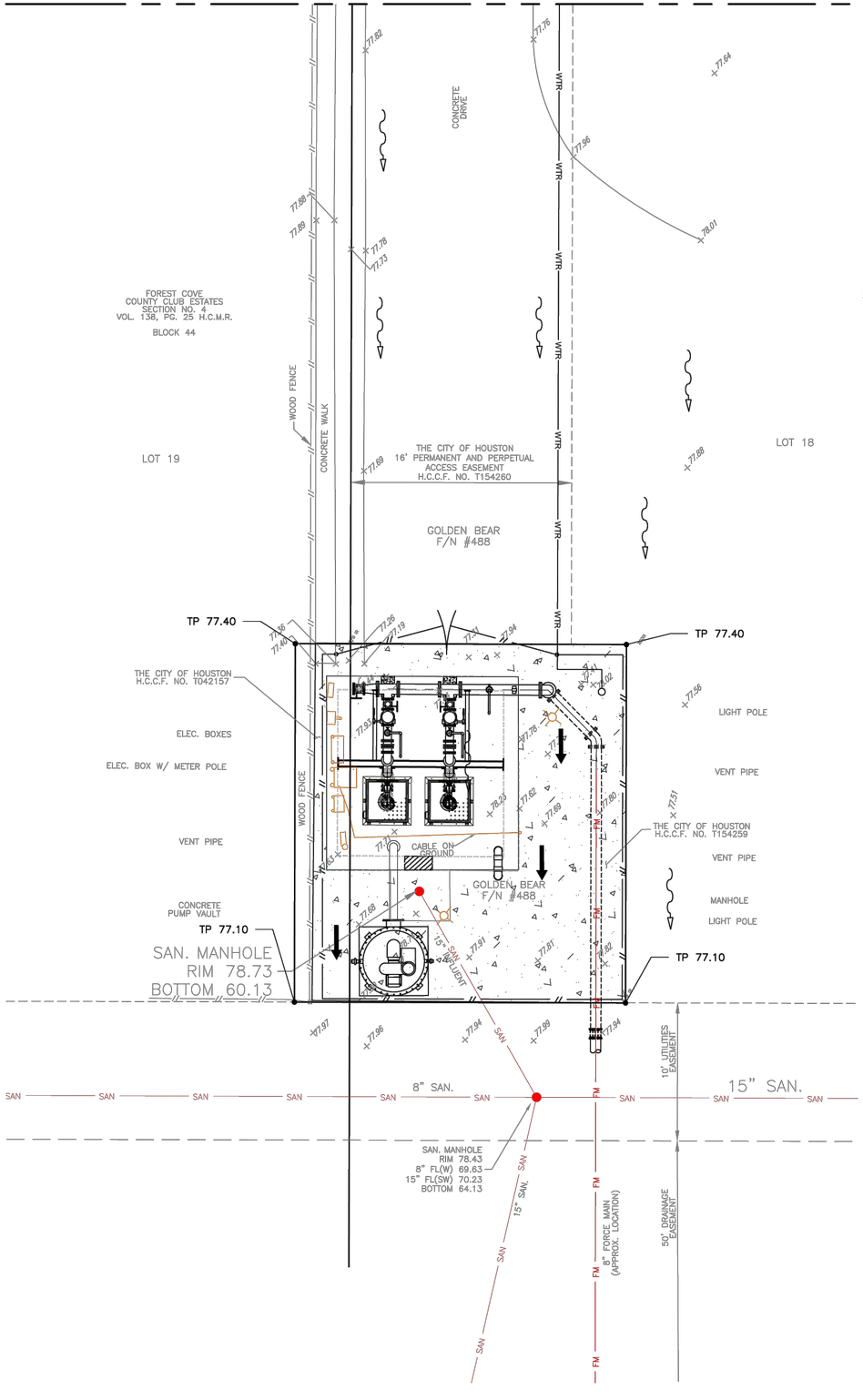
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(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

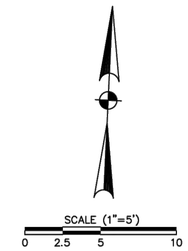
GOLDEN BEAR LIFT STATION
PROPOSED CIVIL DRAINAGE PLAN

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R–000267–0177–3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 130 OF 298	C–304

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NO.	DATE	REVISION	APP.

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LEGEND

EXISTING DRAINAGE DIRECTION

PROPOSED DRAINAGE DIRECTION

CONCRETE PAVEMENT

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED
PROFESSIONAL ENGINEER

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

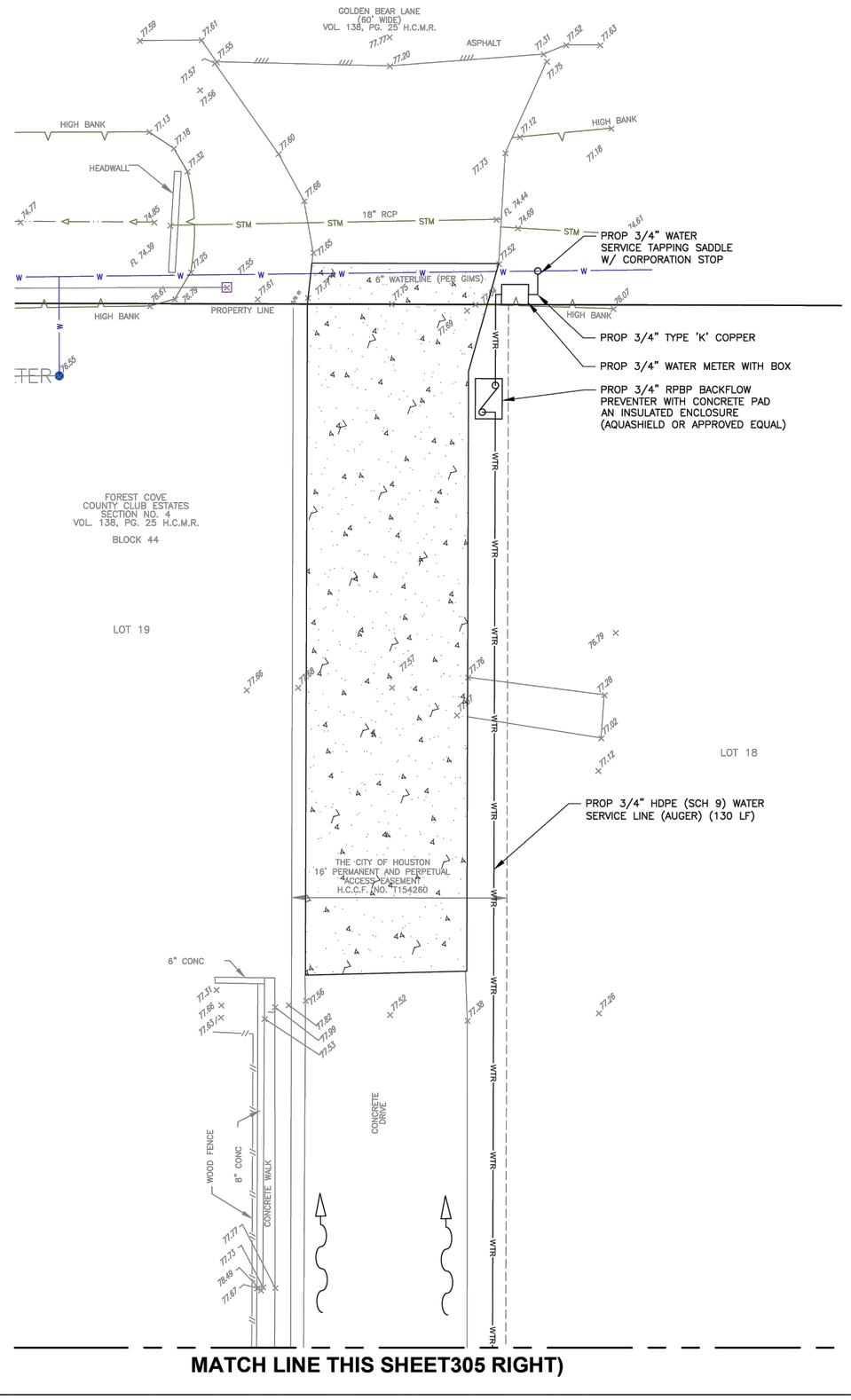
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
PROPOSED CIVIL GRADING PLAN

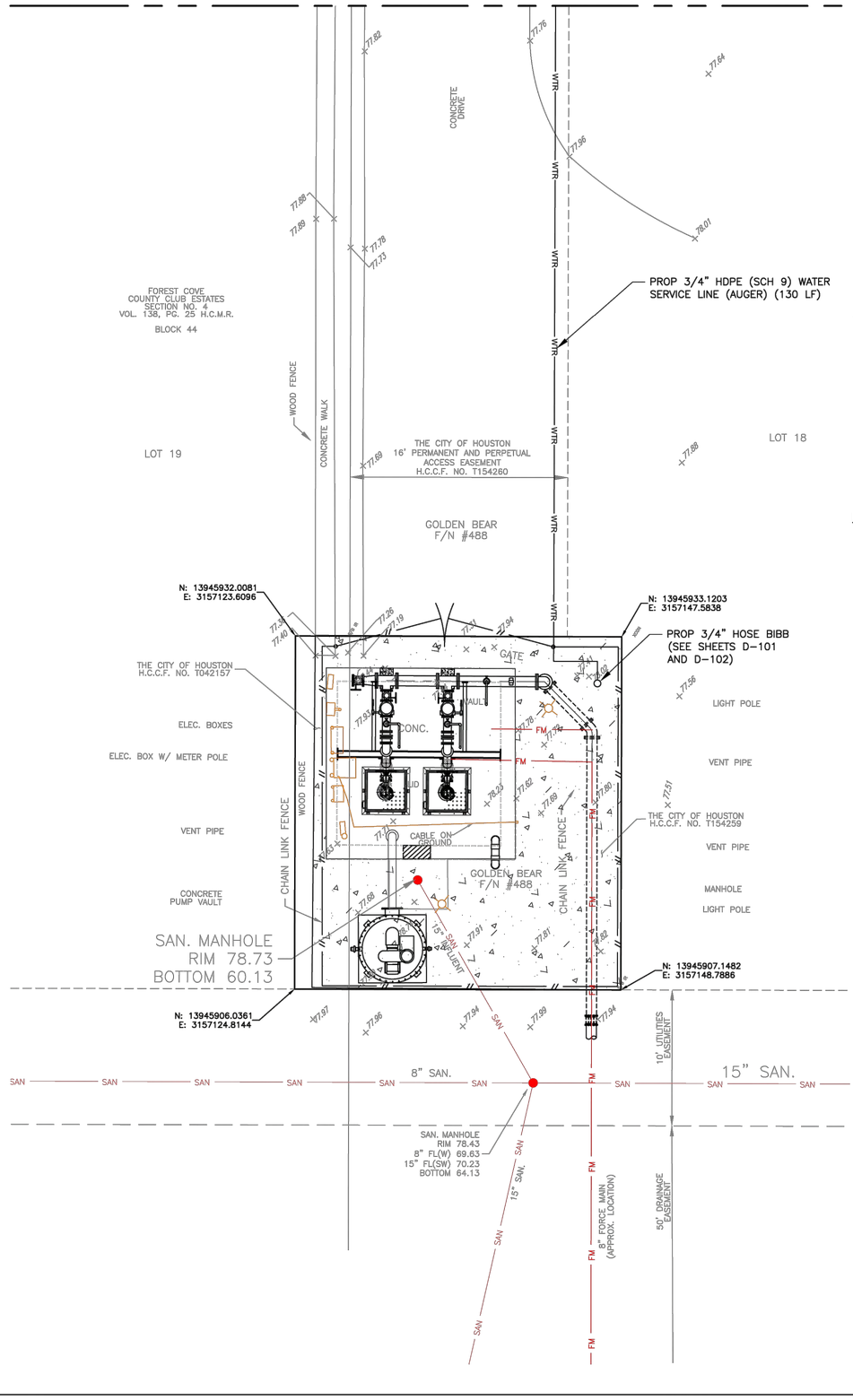
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=5' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 129 OF 298	C-303

PLOT STYLE: COH_ctb_230809.ctb PLOTTED: 2/26/2026 3:02 PM
FILE PATH: W:\2026\projects\Q0810\plt\dgn\C0223_1800923-Q-GOLDEN BEAR).dwg



MATCH LINE THIS SHEET305 RIGHT)

MATCH LINE THIS SHEET305 LEFT)



SCALE (1"=5')
0 2.5 5 10

NO.	DATE	REVISION	APP.

NOTES

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3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

LEGEND

CONCRETE PAVEMENT

DCCM

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ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS
NATHAN A. WILSON
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PROFESSIONAL ENGINEER

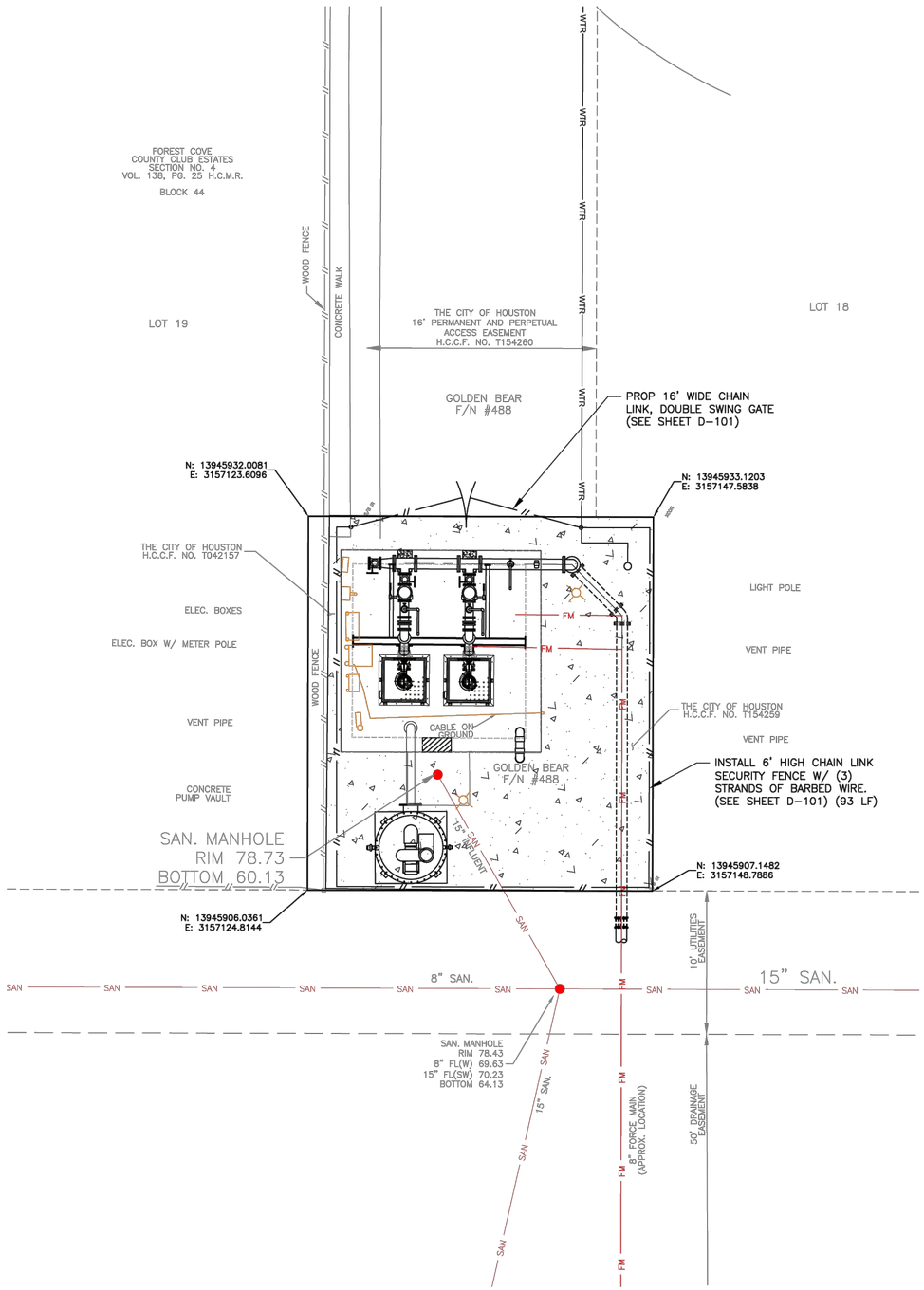
02/20/2026

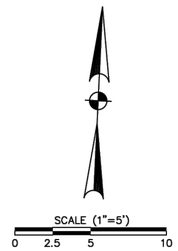
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
PROPOSED CIVIL WATER PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=5' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 132 OF 298	C-306





NO.	DATE	REVISION	APP.

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070265, A FOUND ALUMINUM DISC STAMPED "G 103-38 BM 01" IN THE SOUTH SIDEWALK OF A BRIDGE ALONG KINGWOOD DRIVE, APPROXIMATELY 850 FEET WEST OF ITS INTERSECTION WITH WOODLAND GROVE DRIVE. ELEVATION = 74.46' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

LEGEND

CONCRETE PAVEMENT

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED
PROFESSIONAL ENGINEER

02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

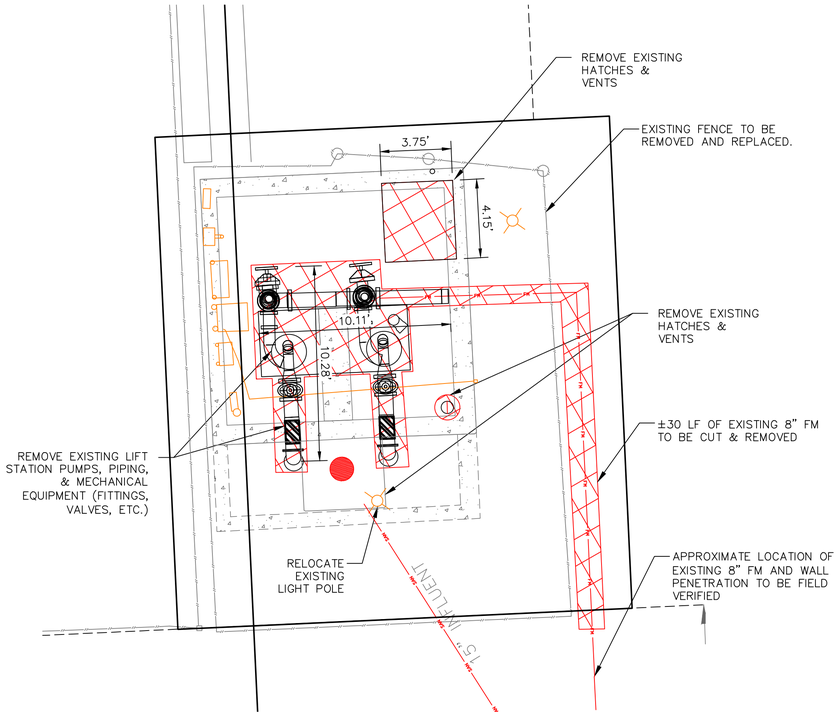
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
PROPOSED CIVIL FENCE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=5' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 133 OF 298	C-307

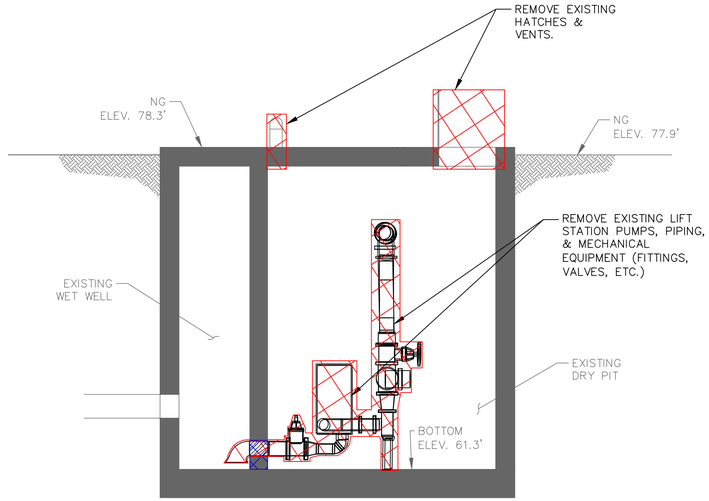
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EXISTING GOLDEN BEAR LIFT STATION

SCALE: 1" = 4'-0"



SECTION

SCALE: 1" = 4'-0"

NOTES:

1. PROVIDE SAFE WORKING CONDITIONS FOR EMPLOYEES THROUGHOUT DEMOLITION AND REMOVAL OPERATIONS. OBSERVE SAFETY REQUIREMENTS FOR WORK BELOW GRADE.
2. MAINTAIN SAFE ACCESS TO ADJACENT PROPERTY AND BUILDINGS. DO NOT OBSTRUCT ROADWAYS, SIDEWALKS OR PASSAGEWAYS ADJACENT TO THE WORK.
3. PERFORM DEMOLITION IN A MANNER TO PREVENT DAMAGE TO ADJACENT PROPERTY. REPAIR DAMAGE TO CITY PROPERTY OR ADJACENT PROPERTY AN FACILITIES.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFETY AND INTEGRITY OF ADJACENT STRUCTURES AND SHALL BE LIABLE FOR ANY DAMAGE DUE TO MOVEMENT OR SETTLEMENT. PROVIDE PROPER FRAMING AND SHORING NECESSARY FOR SUPPORT. CEASE OPERATIONS IF AN ADJACENT STRUCTURE APPEARS TO BE ENDANGERED. RESUME DEMOLITION ONLY AFTER PROPER PROTECTIVE MEASURES HAVE BEEN TAKEN.
5. NOTIFY AND COORDINATE WITH UTILITY COMPANY AND ADJACENT BUILDING OCCUPANTS WHEN TEMPORARY INTERRUPTION OF UTILITY SERVICE IS NECESSARY.
6. DO NOT BACKFILL WITH MATERIAL FROM DEMOLITION UNLESS APPROVED BY PROJECT MANAGER.
7. ALL OPENINGS BELOW THE REMOVED WALLS SHALL BE SEALED WITH NON-SHRINK GROUT.
8. CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS (INCLUDING DEMOLISH PERMITS, COH FORM NO. CE-0175 & TEXAS DSHS FORM APB#5) REQUIRED. CONTRACTOR SHALL COORDINATE DISCONNECT WITH CENTERPOINT ENERGY TO ELECTRICAL POWER.
9. THE CITY OF HOUSTON HAS THE FIRST RIGHT OF REFUSAL OF ANY EQUIPMENT OR MATERIAL REMOVED. CONTACT CITY PROJECT MANAGER AT LEAST 72 HOURS PRIOR TO DEMOLITION IN ORDER TO COORDINATE REMOVAL OF ANY ITEMS THE CITY WISHES TO CLAIM AS SALVAGE. THE CONTRACTOR SHALL DELIVER ALL SALVAGED ITEMS TO A LOCATION, WITHIN THE CITY, DETERMINED BY THE CITY, THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL OTHER EQUIPMENT AND MATERIAL NOT IDENTIFIED FOR SALVAGE.
10. THE EXISTING WET WELL SHALL BE CLEANED OF ALL DEBRIS, WASTEWATER, AND OTHER RESIDUES.
11. THE CONTRACTOR SHALL DISPOSE OF ANY LIQUID OR SOLID WASTE FOUND IN THE WET WELL AT A DISPOSAL FACILITY LICENSED & APPROVED BY THE STATE OF TEXAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF TRANSPORTATION, DISPOSAL & TESTING REQUIRED BY STATE & FEDERAL REGULATORY AGENCIES, & BY THE DISPOSAL FACILITY
12. CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS (INCLUDING DEMOLISH PERMITS, ENCROACHMENT PERMITS, ETC.)

NOTES CONT'D:

13. DO NOT PROCEED WITH DEMOLITION OR REMOVAL OPERATIONS UNTIL AUTHORIZED BY PROJECT MANAGER. NO DEMOLITION SHALL BE PERFORMED UNTIL BYPASS PUMPING IS OPERATIONAL.
14. PLUG, GROUT FILL & ABANDON 8-INCH INFLUENT LINE (TO WET WEATHER LIFT STATION).



PHOTO 1



PHOTO 2



PHOTO 3

NO.	DATE	REVISION	APP.

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

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FB NO. 6399

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

CITY OF HOUSTON

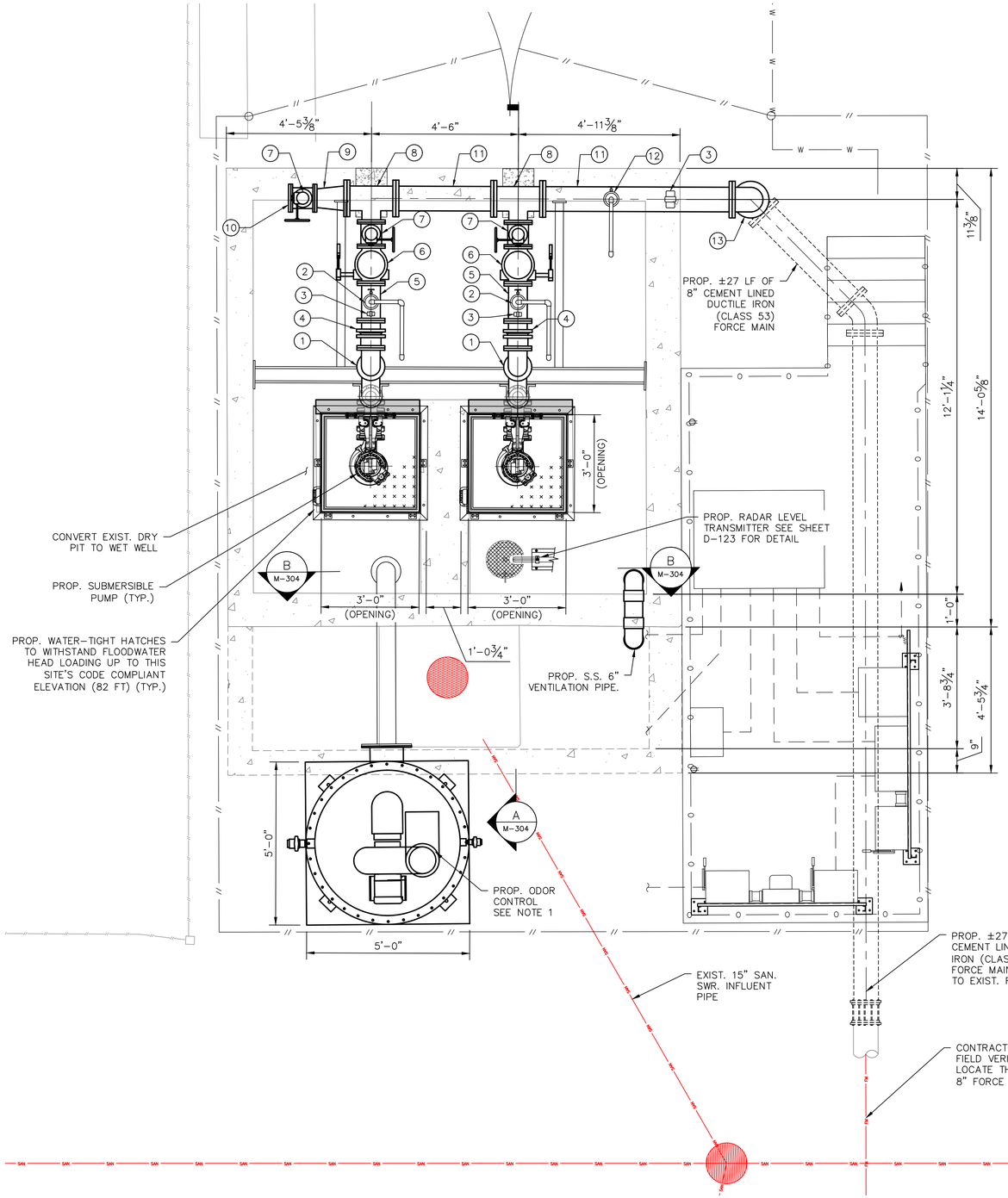
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

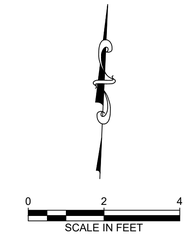
GOLDEN BEAR LIFT STATION
MECHANICAL
DEMOLITION PLAN AND SECTION

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
H: 1"=4' V: 1"=4'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 134 OF 298	M-302

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FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.03_Drawings\24-1930-PD-PLAN-PROP.dwg



PLAN @ GRADE
SCALE: 1" = 2'-0"



NO.	DATE	REVISION	APP.

NOTES:

1. ODOR CONTROL MECHANICAL EQUIPMENT IS NOT RECOMMENDED TO BE INSTALLED ABOVE THE 500-YR FLOODPLAIN, AS IT IS NOT CONSIDERED A CRITICAL COMPONENT OF THE LIFT STATION AND WOULD CAUSE DIFFICULTY FOR ACCESS AND ON-GOING MAINTENANCE.

PIPE FITTING TABLE

ITEM NO.	QUANTITY	ITEM
1	2	6" D.I. 90° BEND, FLG X FLG
2	2	1" S.S. COMBINATION ARV
3	3	4" PRESSURE GAUGE
4	2	6" RESTRAINED FLANGED COUPLING ADAPTER
5	2	6" D.I. PIPE, FLG X FLG
6	2	6" SWING CHECK VALVE, FLG X FLG
7	3	6" PLUG VALVE, FLG X FLG
8	2	8" X 6" D.I. TEE, FLG
9	1	8" X 6" D.I. REDUCER, FLG
10	1	6" BLIND FLANGE
11	2	8" D.I. PIPE, FLG X FLG
12	1	2" S.S. ARV
13	1	8" D.I. 90° BEND, FLG X FLG

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1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

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LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
MECHANICAL
LIFT STATION PLAN

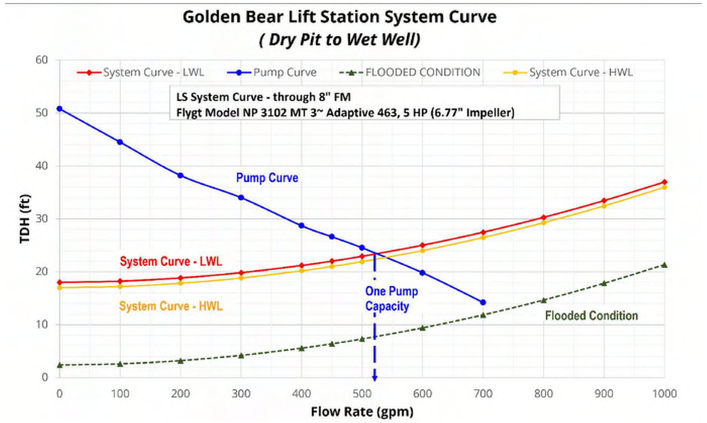
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R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=2' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 135 OF 298	M-303

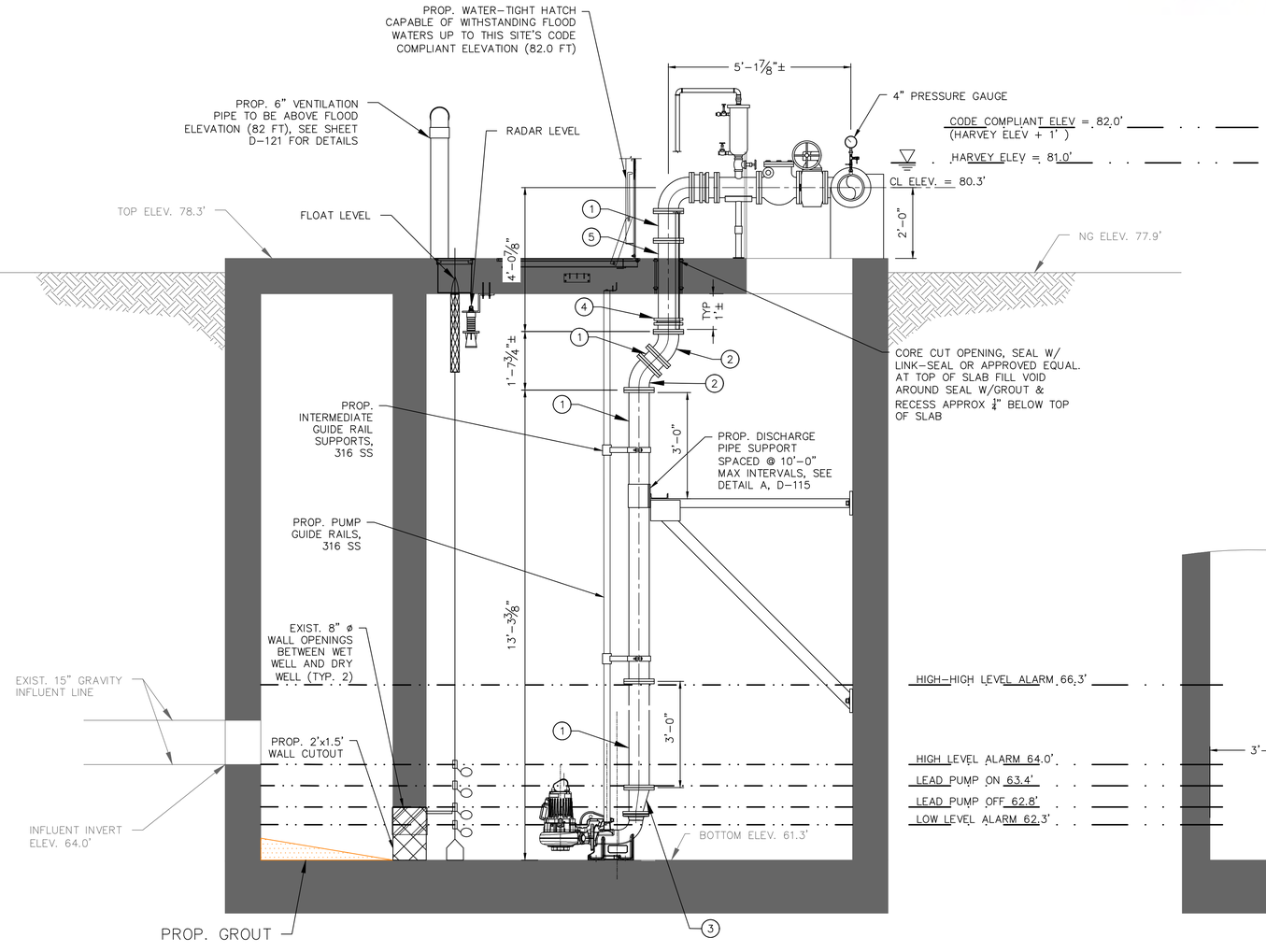
STATION OPERATION TABLES

RISING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
62.8	PUMPS OFF LEVEL – NO ACTION	ALL PUMPS ARE OFF
63.4	LEAD PUMP TURNS ON	LEAD PUMP ON
64.0	HIGH WATER ALARM ON	HIGH WATER ALARM SOUND
66.3	HIGH HIGH WATER ALARM ON (FLOAT ON LEVEL)	FIRM PUMPS ON (FLOATS)
FALLING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
63.4	FLOAT OFF LEVEL	FIRM PUMPS OFF (FLOATS)
63.4	HIGH WATER LEVEL ALARM OFF	LEAD & SECOND PUMPS ON
62.8	LEAD PUMP TURNS OFF	ALL PUMPS STOPPED – STANDBY PUMP SWITCHES TO LEAD PUMP
62.3	LOW LEVEL ALARM	–

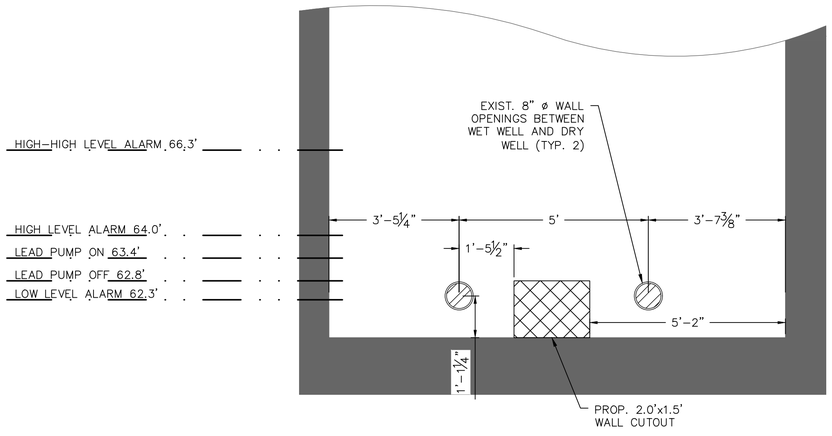
PUMP DATA TABLE

PUMP CHARACTERISTICS	PUMP NO. 1	PUMP NO. 2
MOTOR DATA NOMINAL SIZE (HP) MAX SPEED (RPM)	5.0 1,175	5.0 1,175
SOLIDS PASSAGE MIN SPHERE (IN)	3.0	3.0
CAPACITY (GPM) DESIGN RUNOUT	4,200.0	4,200.0
DISCHARGE HEAD (FT) DESIGN RUNOUT SHUT OFF	34.0	34.0
EFFICIENCY (%) DESIGN	69.9	69.9
NPSHR (FT) DESIGN RUNOUT	15.0	15.0





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



B LIFT STATION WET WELL PROFILE
SCALE: 1" = 2'-0"

PIPE FITTING TABLE

ITEM NO.	QUANTITY	ITEM
1	8	6" D.I. PIPE, FLG X FLG
2	4	6" D.I. 45° BEND, FLG X FLG
3	2	6" X 4" D.I. PIPE REDUCER, FLG X FLG
4	2	6" RESTRAINED FLANGED COUPLING ADAPTER
5	2	6" D.I. PIPE, PE X FLG

NO.	DATE	REVISION	APP.

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DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

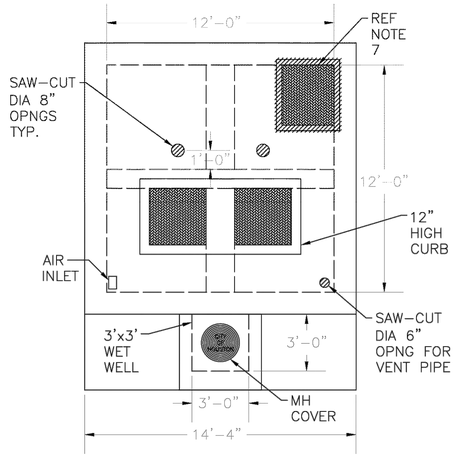
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
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GOLDEN BEAR LIFT STATION
MECHANICAL
LIFT STATION SECTION

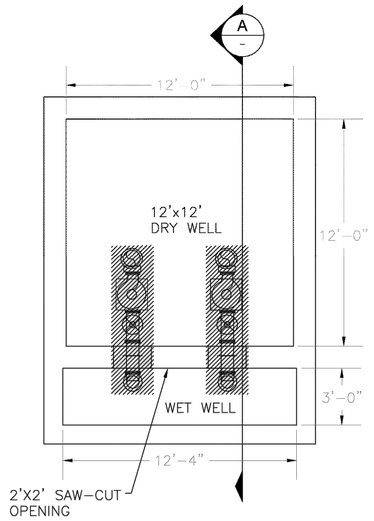
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R–000267–0177–3	
DRAWING SCALE	
HORIZ: 1"=20' VERT: 1"=2'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 136 OF 298 | M–304	

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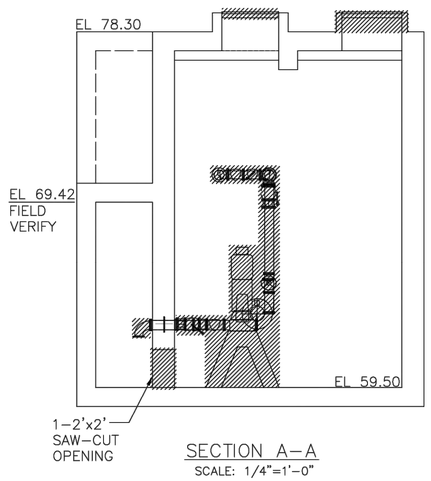
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PLAN AT 59.50
SCALE: 1/4"=1'-0"



PLAN AT 78.30
SCALE: 1/4"=1'-0"



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

0' 5' 10'
SCALE IN FEET
1" = 1'

DEMOLITION NOTES

1. ALL EXISTING EMBEDDED PIPE FLANGES SHALL BE SEALED WITH MATCHING BLIND FLANGES.
2. PARTIAL DEMOLITION OF EXISTING EQUIPMENT, CONCRETE, AND STRUCTURAL STEEL MUST BE MONITORED CAREFULLY FOR THE STABILITY, CONTROL, VIBRATIONS, CRACKS, LEAKS, AND OTHER PROGRESSIVE OR SUDDEN DAMAGE TO THE PORTIONS OF STRUCTURE TO BE RETAINED.
3. REFER TO MECHANICAL/PIPING DRAWINGS FOR PIPE SUPPORTS, PENETRATIONS, AND OPENINGS FOR FLOATS AND LEVEL SENSING EQUIPMENT.
4. HEAVY DEMOLITION EQUIPMENT CAUSING EXCESSIVE VIBRATIONS SHALL NOT BE USED.
5. DEMOLITION OF WALL OPENINGS MUST BE DONE WITH SAW-CUTTING ONLY. CURBS AND EDGES OF SAW CUT CONCRETE SHALL BE DEMOLISHED MANUALLY TO EXPOSE THE EXISTING REBAR FOR LAPPING/EMBEDDING WITH NEW CONCRETE.
6. NEW CONCRETE WORK SHALL NOT START UNTIL ALL DEMOLITION IS COMPLETE.
7. INSTALL #5 ANCHORS @8"C/C PER FACE ON WALL SURFACES WHERE EXISTING REBARS ARE NOT AVAILABLE. CHIP EXISTING CONCRETE SURFACE TO BOND WITH NEW CONCRETE.

NO.	DATE	REVISION	APP.

DCCM

neera
880 Tully Road
Ste 087
Houston, TX 77079
832.641.5413
TBPE Reg. No. F-14240

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FB NO. 6399

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PARDHA NAMUDURI, P.E.
#82977
FEBRUARY 2026

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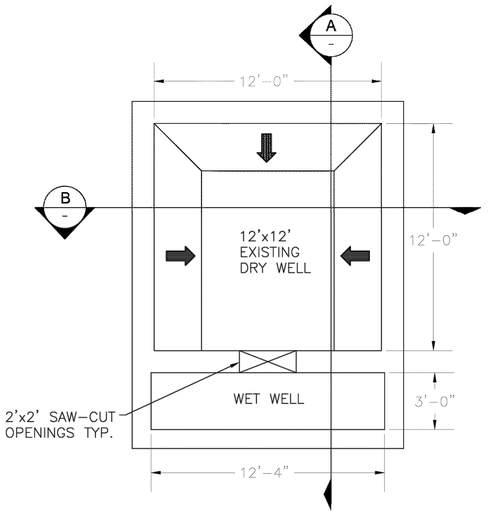
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

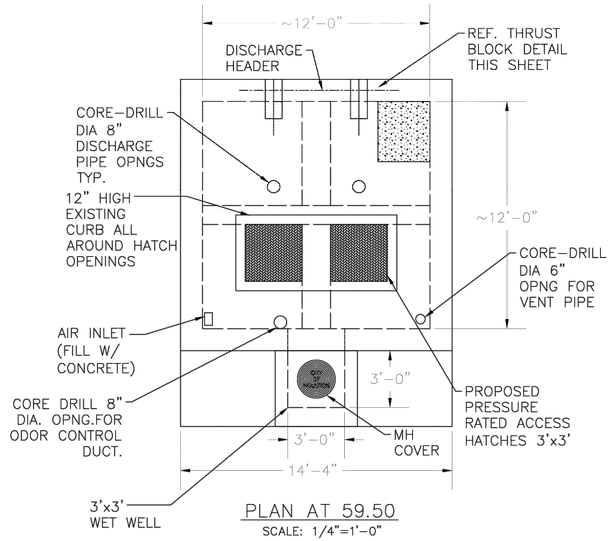
GOLDEN BEAR LIFT STATION
STRUCTURAL DEMOLITION
PLANS AND SECTION

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 137 OF 298	S-301

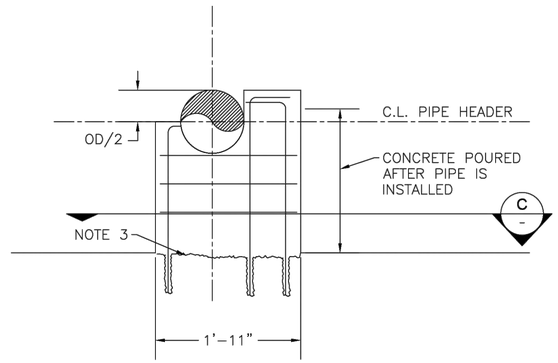
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PLAN AT 78.30
SCALE: 1/4"=1'-0"

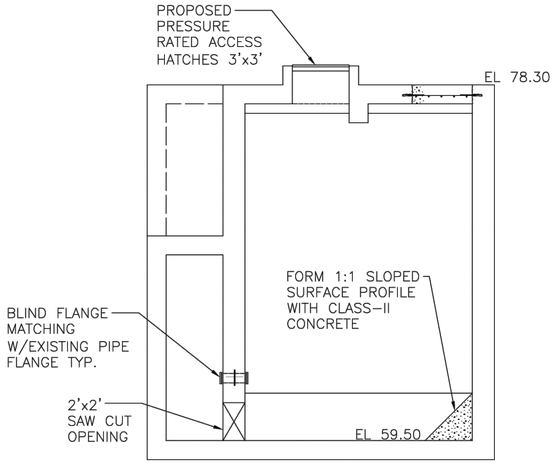


PLAN AT 59.50
SCALE: 1/4"=1'-0"

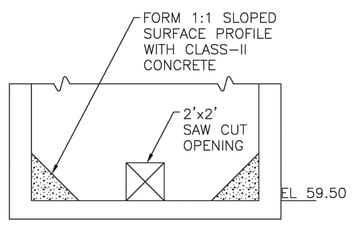


THRUST BLOCK DETAIL
SCALE: 1"=1'-0"

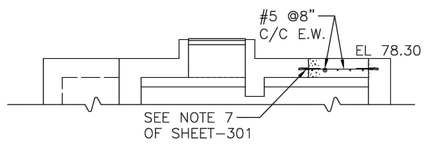
NOTES:
1. ALL DIMENSIONS ARE FROM FIELD MEASUREMENTS.
2. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO STAKING/FABRICATION OF SUPER-STRUCTURE.
3. CHIP THE EXISTING CONCRETE SURFACE TO BOND WITH NEW CONCRETE.



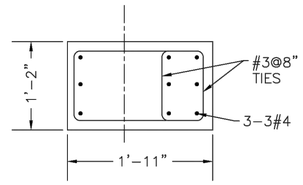
SECTION A-A
SCALE: 1/4"=1'-0"



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



PROPOSED SLAB REINFORCEMENT DETAILS
SCALE: 1/4"=1'-0"



SECTION C-C
SCALE: 1"=1'-0"

NO.	DATE	REVISION	APP.

DCCM

neera
880 Tully Road
Ste 087
Houston, TX 77079
832.641.5413
TBPE Reg. No. F-14240

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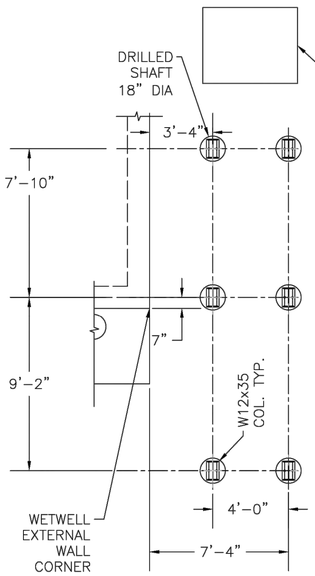
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

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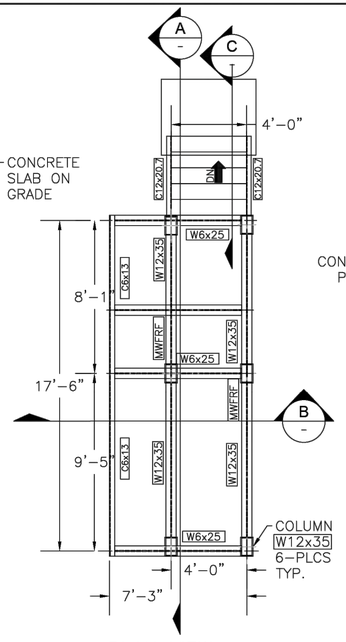
GOLDEN BEAR LIFT STATION
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DRAWING SCALE	
HORIZ: AS NOTEDVERT: N/A	
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SHEET NO. 138 OF 298	S-302

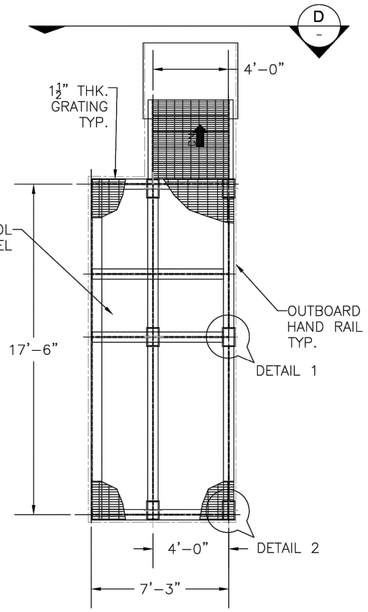
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PLAN VIEW
DRILLED SHAFTS
SCALE: 1/4"=1'-0"



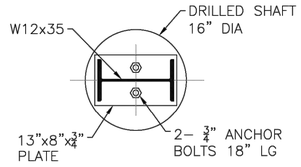
PLAN VIEW
ELECTRICAL PLATFORM
FRAMING LAYOUT
SCALE: 1/4"=1'-0"



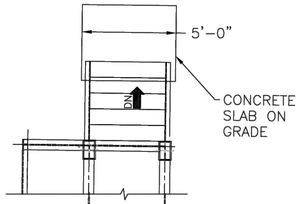
PLAN VIEW
ELECTRICAL PLATFORM
HANDRAIL & GRATING PLAN
SCALE: 1/4"=1'-0"

NOTES:
1. MAIN FRAMING BEAMS ARE SHOWN ABOVE. SEE DETAIL 1 AND DETAIL 2 OF S-304 FOR ADDITIONAL BEAMS TO ANCHOR EQUIPMENT SKIDS.
2. FOR EQUIPMENT LOCATIONS SEE ELECTRICAL AND MECHANICAL DRAWINGS.

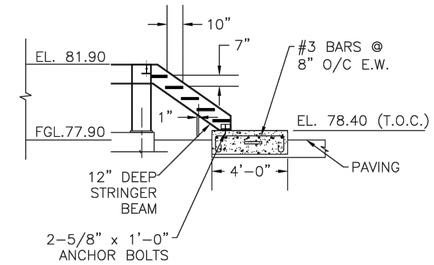
NOTES:
1. HANDRAILS ARE NOT SHOWN FOR CLARITY. REFER TO S-303 FOR HANDRAIL AND GRATINGS.
2. PROVIDE ADEQUATE GUSSETS AND STIFFENER PLATES FOR CONTINUITY OF FORCES AND MOMENTS.
3. CLEAT ANGLES AND TEMPORARY BOLTS MAY BE USED FOR ERECTION. ALL CONNECTIONS MUST BE FIELD WELDED ALL AROUND TO ENSURE COMPLETE FORCE (AND MOMENT) TRANSFER.
4. CONNECTIONS WITH FLUSH FLANGE ELEVATIONS MUST BE SET WITH RECESS (CUT OFF) ON FLANGE OF SMALLER MEMBER WHILE THE WEB IS EXTENDED.
5. COORDINATE BEARING BEAMS AND SECONDARY CHANNELS WITH EQUIPMENT SKID LOCATIONS FOR TIE DOWN BOLTS WITH ELECT. DRWGS.
6. PROVIDE ½" THICK GUSSET/STIFFENER PLATES AS SHOWN FOR FLANGE TO FLANGE AND WEB TO WEB CONTINUITY.
7. TRIM AND FIT FLANGES OF SECONDARY BEAMS FOR WEB TO WEB CONTINUITY AND ELEVATION TOLERANCE OF ± ¼".
8. FILLET WELD ALL EDGES OF SECONDARY BEAM (WITH MAIN BEAM) ALL ROUND, TYP.
9. ALL GUSSET/FLANGE PLATES ARE ½" THK UNLESS NOTED OTHERWISE.
10. ERECTION BOLTS WITH SLOTTED HOLES SHALL BE USED FOR FINER ADJUSTMENT AND LEVELING FOR ELEVATION TOLERANCE.
11. MANUFACTURED STAIR PANELS OF STANDARD WIDTH MAY BE USED IN PLACE OF CUSTOM PANELS.
12. ALL BEAMS & COLUMNS IN MWFRF ARE W12x35 UNLESS NOTED OTHERWISE. ALL SECONDARY BEAMS SUPPORTING OTHER SECONDARY BEAMS AND EQUIPMENT SKID ARE W6x25 OR C12x20.7 OR C10x20 AS NECESSARY.
13. PIER CENTERLINE AND EMBEDDED ANCHOR BOLTS SHALL BE INSTALLED TO THE HIGHEST DEGREE OF ACCURACY. THE VERTICAL AND HORIZONTAL TOLERANCES OF FINISHED SURFACE AND AXIS OF PIERS SHALL BE ±0.5".
14. ANCHOR BOLTS ON PIER TOP SHALL BE INSTALLED TO THE TOLERANCE OF ±0.125". THE PURPOSE OF MAINTAINING TOLERANCES IS FOR SHOP DRILLED COLUMN BASE PLATES ARE INSTALLED EASILY NOT REQUIRING EXTENSIVE FIELD MENDS.



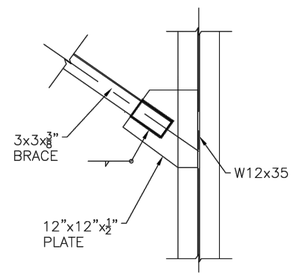
COLUMN BASEPLATE DETAIL
SCALE: 1"=1'-0"



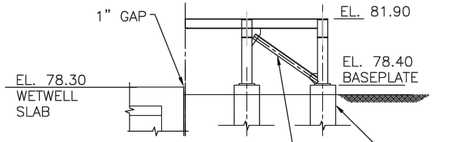
PLAN VIEW
PLATFORM ACCESS STAIRS
SCALE: 1/4"=1'-0"



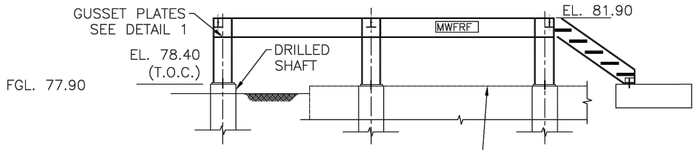
SECTION C-C
PLATFORM ACCESS STAIRS
SCALE: 1/4"=1'-0"



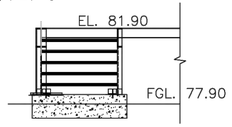
DETAIL A
BRACE CONNECTION DETAIL
SCALE: 1"=1'-0"



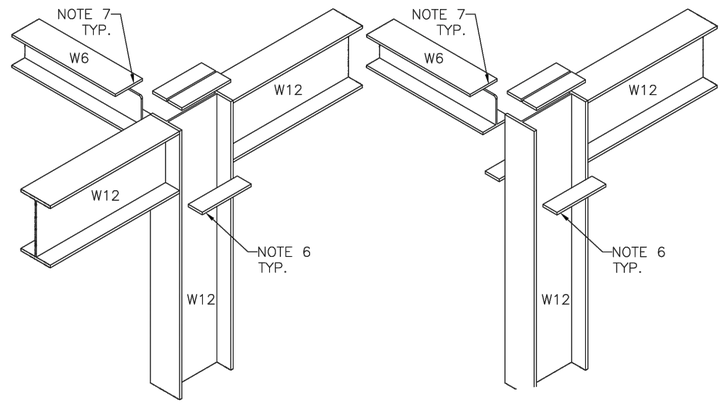
SECTION B-B
SCALE: 1/4"=1'-0"



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



SECTION D-D
PLATFORM ACCESS STAIRS
SCALE: 1/4"=1'-0"



SUMMARY OF DRILLED PIERS

Lift Station Site	Shaft Depth, feet	Diameter of Pier	Number of piers
AG Farm Lift Station Generator /Electrical Platform Odor Control Platform	10'	18" Dia.	10
Deer Springs Lift Station Generator/ Electrical Platform Odor Control Platform	25'	18" Dia.	8
Golden Bear Lift Station Electrical Platform Odor Control Platform	10'	18" Dia.	6
Golf Course Lift Station Generator /Electrical Platform Odor Control Platform	10'	18" Dia.	10
Kingwood Place South Lift Station Generator /Electrical Platform Odor Control Platform	10'	18" Dia.	8

NO.	DATE	REVISION	APP.

DCCM

neera
880 Tully Road
Ste 087
Houston, TX 77079
832.641.5413
TBPE Reg. No. F-14240

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PARDHA NAMUDURI, P.E.
#82977
FEBRUARY 2026
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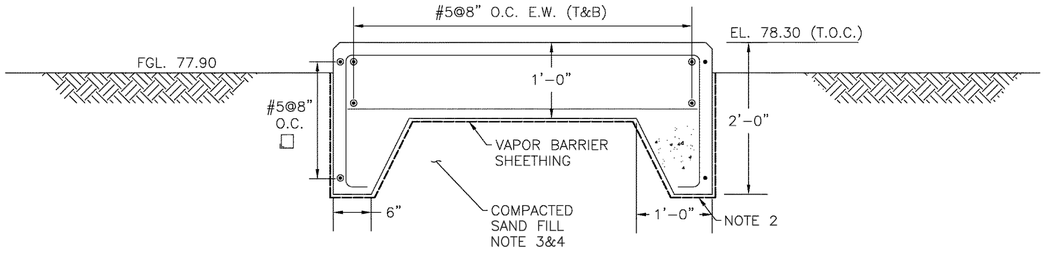
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

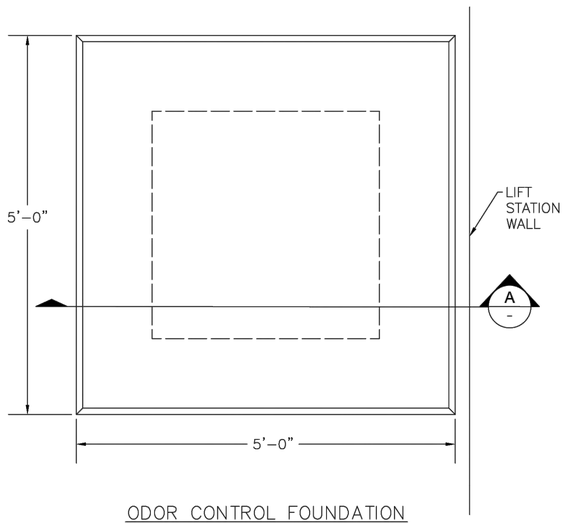
GOLDEN BEAR LIFT STATION
ELEVATED PLATFORM DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1/4"=1' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 139 OF 298 | S-303	



SECTION A-A

SCALE: 1"=1'-0"



ODOR CONTROL FOUNDATION PLAN VIEW

SCALE: 1"=1'-0"

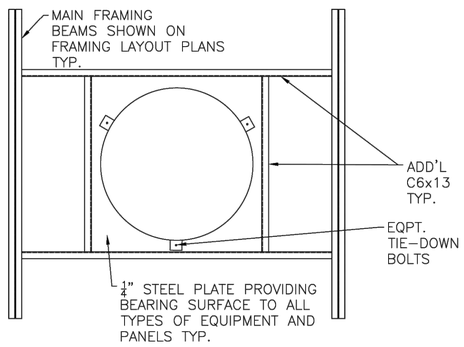
FOUNDATION NOTES:

1. EXCAVATE AND REMOVE EXISTING BACKFILL TO TOP OF WET WELL BASE SLAB.
2. COMPACT & LEVEL THE SUBGRADE TO 95% MODIFIED PROCTOR DENSITY.
3. FILL WITH CEMENT STABILIZED SAND (CSS) TO BOTTOM OF PAD FOUNDATION.
4. CSS MAY BE REPLACED WITH COMPACTED SAND FILL IF EXISTING STRUCTURE IS ADEQUATELY PROTECTED.

SECTION MEASUREMENTS				
	OVERALL DEPTH (IN)	FLANGE WIDTH (IN)	WEB THICKNESS (IN)	FLANGE THICKNESS (IN)
W12X35	12.5	6.56	0.3	0.52
W6X25	6.38	6.08	0.32	0.455
C12X20.7	12.0	2.96	0.282	0.501
C10X20	10.0	2.74	0.379	0.436

STRUCTURAL FRAMING NOTES:

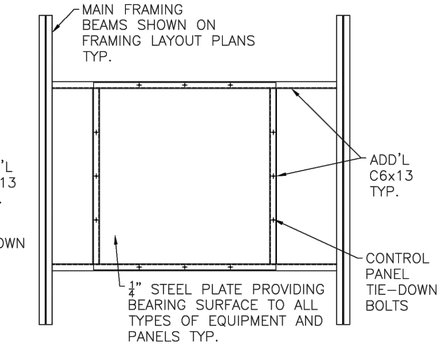
1. ATTACH STAIR STRINGERS TO MWFRF (MAIN WIND FORCE RESISTING FRAME) MEMBERS OF THE SUPPORTING FRAME. SUCH FRAMES ARE DESIGNATED AS MWFRF.
2. HOT DIP GALVANIZE ALL STRUCTURAL STEEL MEMBERS AFTER FABRICATION.
3. ALL HANDRAILS AND GRATING SHALL BE ALUMINUM.
4. HANDRAIL SHALL BE 42-INCH HIGH TWO-RAIL HANDRAIL WITH MIN 4" HIGH TOE PLATE. CONNECT POSTS TO SUPPORTING MEMBER; NOT GRATING.
5. PROVIDE $\frac{1}{2}$" GUSSET PLATES AS NECESSARY TO CONNECT ANGLE BRACES IN CENTER PLANE OF CONNECTED MEMBERS UNLESS NOTED OTHERWISE (U.N.O.).
6. MINIMUM 1" GRATING SPANNING IN SHORT DIRECTION SHALL BE TIED TO THE SUPPORTING MEMBERS WITH CLIPS.
7. PROVIDE 2-$\frac{3}{4}$"X8"LG ANCHOR BOLT AT COLUMN BASE PLATE AS SHOWN IN S-303.
8. ALL EQUIPMENTS/CABINETS SHALL BE SUPPORTED BY A CUSTOM FLOOR FRAME SHOWN IN DETAIL-1 OR 2 (S-304).
9. PROVIDE ADDITIONAL SUPPORT BEAMS AS BEARING /BOLTING SURFACE FOR ALL EQUIPMENT SKIDS. SUPPORT BEAMS SHALL SPAN BETWEEN NEAREST STRUCTURE BEAMS.



DETAIL-1 /S-303

CUSTOM FLOOR FRAME SUPPORTING ODOR CONTROL EQPT. SKID

SCALE: NTS



DETAIL-2/S-303

CUSTOM FLOOR FRAME SUPPORTING CONTROL PANEL

SCALE: NTS

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880 Tully Road
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Houston, TX 77079
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FEBRUARY 2026

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CITY OF HOUSTON

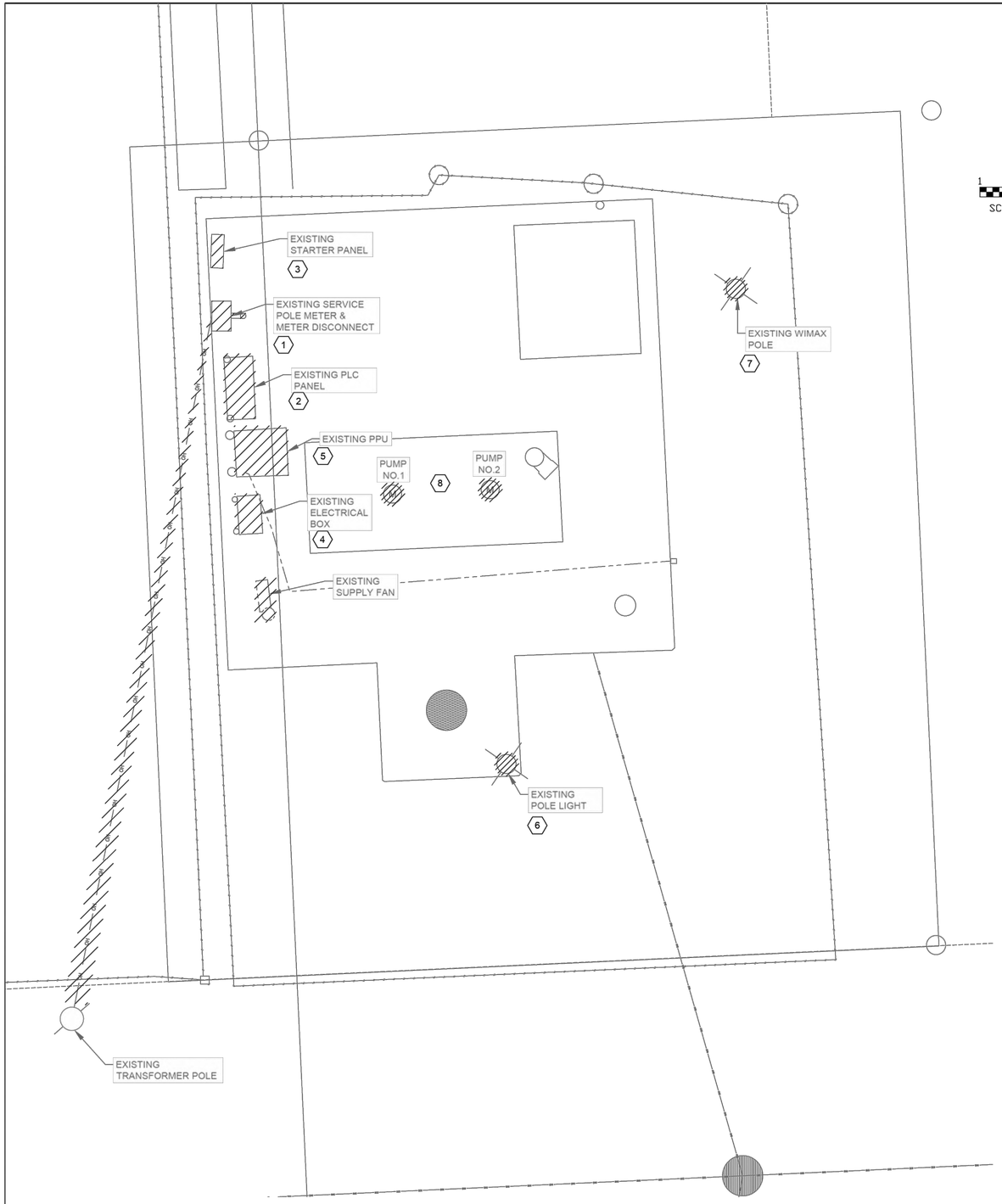
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
ODOR CONTORL SLAB ON GRADE
GA AND REINFORCING DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=1' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 140 OF 298	S-304

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GOLDEN BEAR LIFT STATION
ELECTRICAL DEMOLITION SITE

PLAN

1" = 2'-0"

1 0 1 2

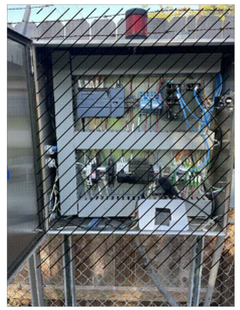
SCALE: 1" = 2'

GENERAL NOTES:

1. THE OWNER HAS THE RIGHT OF FIRST REFUSAL TO THE EQUIPMENT BEING REMOVED. CONTRACTOR SHALL DELIVER THE EQUIPMENT WHICH OWNER WISHES TO KEEP AT LOCATION DESIGNATED BY THE OWNER. SEE SPECIFICATIONS SECTION 16060 FRO ELECTRICAL DEMOLITION.

NOTES BY SYMBOL "#":

1. EXISTING SERVICE POLE, METER, METER DISCONNECT AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
2. EXISTING CONTROL PANEL AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
3. EXISTING STARTER PANEL AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
4. EXISTING ELECTRICAL BOX AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
5. EXISTING PPU AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED AND RETURNED TO THE WASTEWATER FACILITY MAINTENANCE DEPARTMENT OF THE CITY.
6. EXISTING LIGHT POLE AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
7. EXISTING WIMAX POLE AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
8. EXISTING LIGHT FIXTURES, LIGHT SWITCHES, RECEPTACLES, PANELS IN DRY PIT AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.



EXISTING CONTROL PANEL

PHOTOGRAPH A - 2 NTS



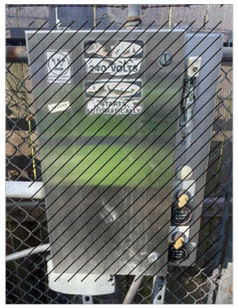
EXISTING SERIVE RACK

PHOTOGRAPH B - 1 NTS



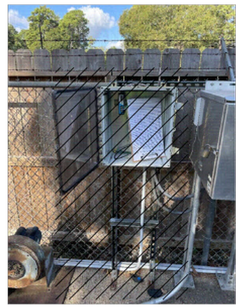
EXISTING SERIVE POLE

PHOTOGRAPH C - 1 NTS



EXISTING STARTER PANEL

PHOTOGRAPH D - 3 NTS



EXISTING ELECTRICAL BOX

PHOTOGRAPH E - 4 NTS



EXISTING PPU

PHOTOGRAPH F - 5 NTS



EXISTING PANEL IN DRY PIT

PHOTOGRAPH G - 8 NTS



EXISTING WIMAX POLE

PHOTOGRAPH H - 7 NTS



EXISTING POLE LIGHT

PHOTOGRAPH I - 6 NTS

NO.	DATE	REVISION	APP.

LEGEND:

ITEMS TO BE DEMOLISHED.

DCCM

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

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TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

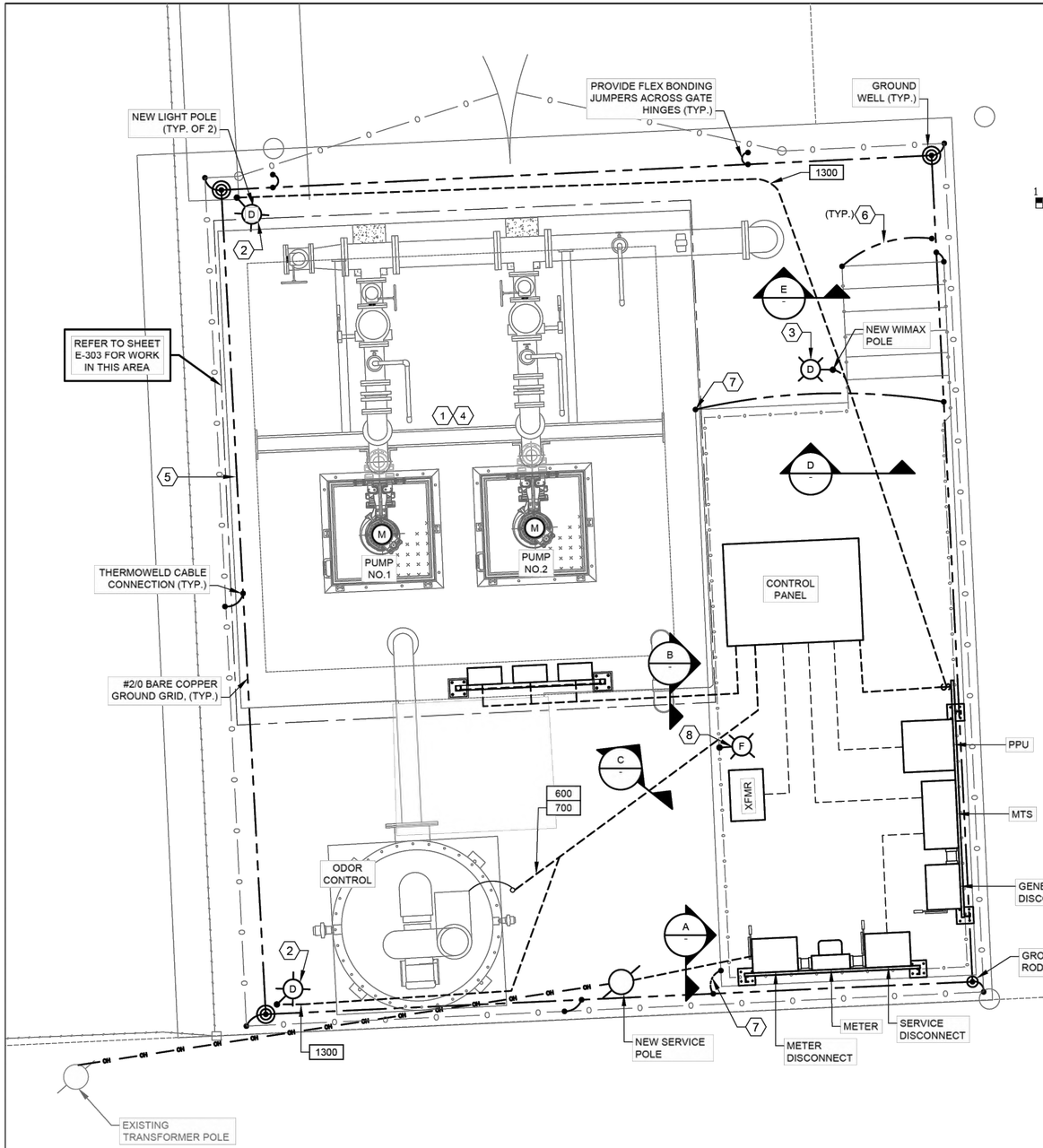
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
ELECTRICAL
DEMOLITION OVERALL SITE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=2' VERT: 1"=2'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 141 OF 298	E-301

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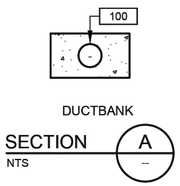
GOLDEN BEAR LIFT STATION
ELECTRICAL PROPOSED SITE

PLAN

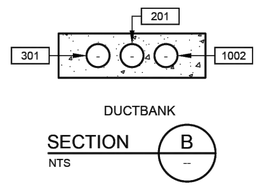
1" = 2'-0"

NOTES BY SYMBOL "#":

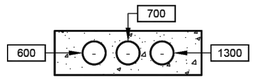
1. THE ELECTRICAL INSTALLATION IN THE WET WELL SHALL BE EXPLOSION PROOF, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE FOR CLASS I, DIVISION 1 LOCATIONS.
2. YARD LIGHT CONTROLLED BY LIGHTING SWITCH.
3. TYPE "B" FIXTURE TO BE INSTALLED ON THE POLE PROVIDING WIRES FOR THE "B" LIGHT.
4. INSIDE WETWELL 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 HANDRAIL.
7. #4/0 BARE COPPER GROUND TO BE BONDED TO PLATFORM STRUCTURAL STEEL.
8. LIGHTING FIXTURE TO BE AMOUNTED ON THE PLATFORM HANDRAIL.



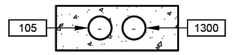
DUCTBANK
SECTION A
NTS



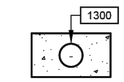
DUCTBANK
SECTION B
NTS



DUCTBANK
SECTION C
NTS



DUCTBANK
SECTION D
NTS



DUCTBANK
SECTION E
NTS

DCCM

GAI
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Fax: 713-636-2987
email: hforouzan@gaiconsulting.com

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(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
ELECTRICAL
PROPOSED OVERALL SITE PLAN

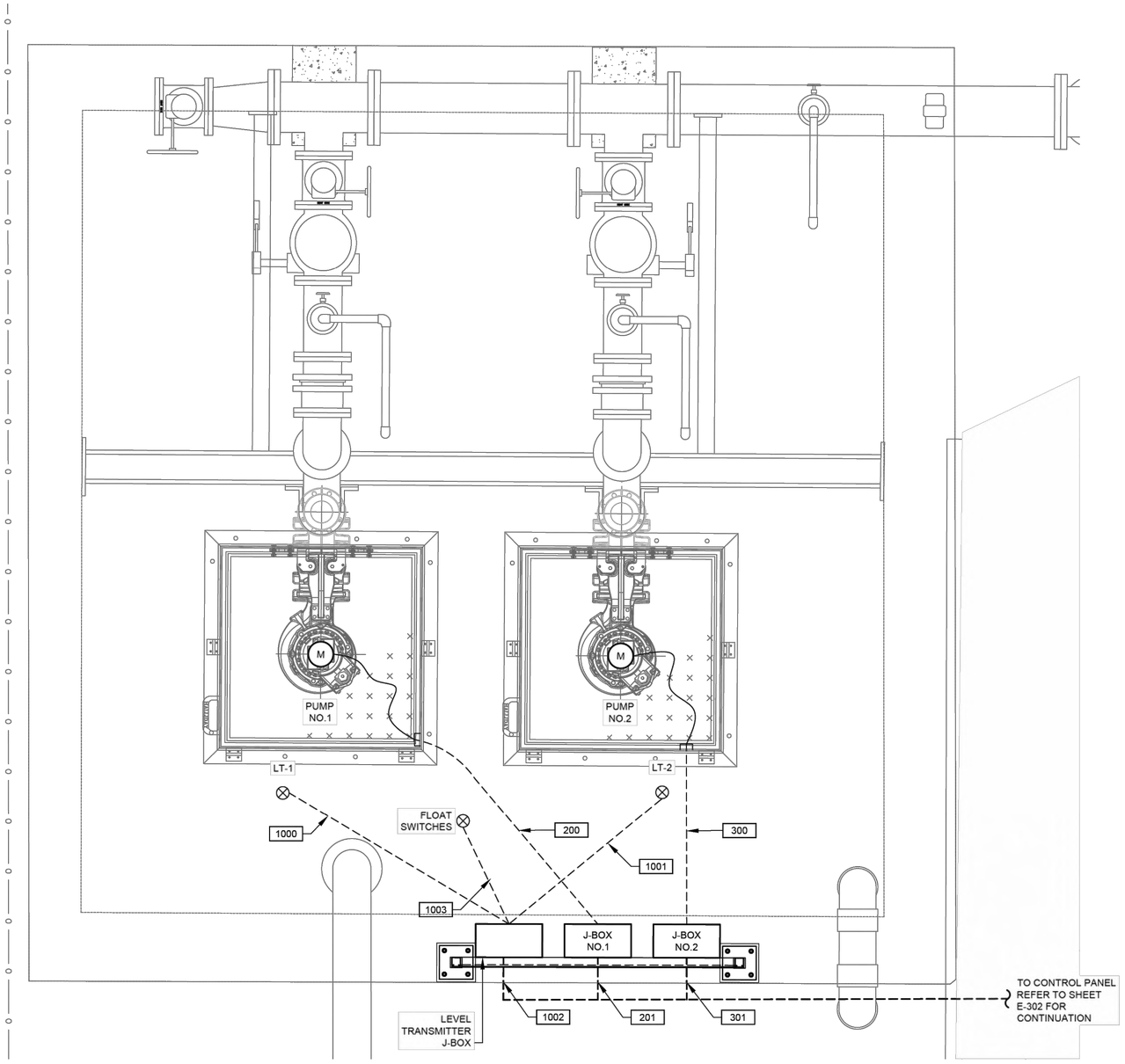
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 142 OF 298	E-302

NO.	DATE	REVISION	APP.

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PLOT STYLE: G[illegible].ctb
PLOTTED: 2/23/2026 8:11:35 AM

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.



.5 0 1
SCALE: 1" = 1'-0"

GOLDEN BEAR LIFT STATION
ELECTRICAL PROPOSED ENLARGED SITE
PLAN
1" = 1'-0" (1) (2)

NO.	DATE	REVISION	APP.

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GAI
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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

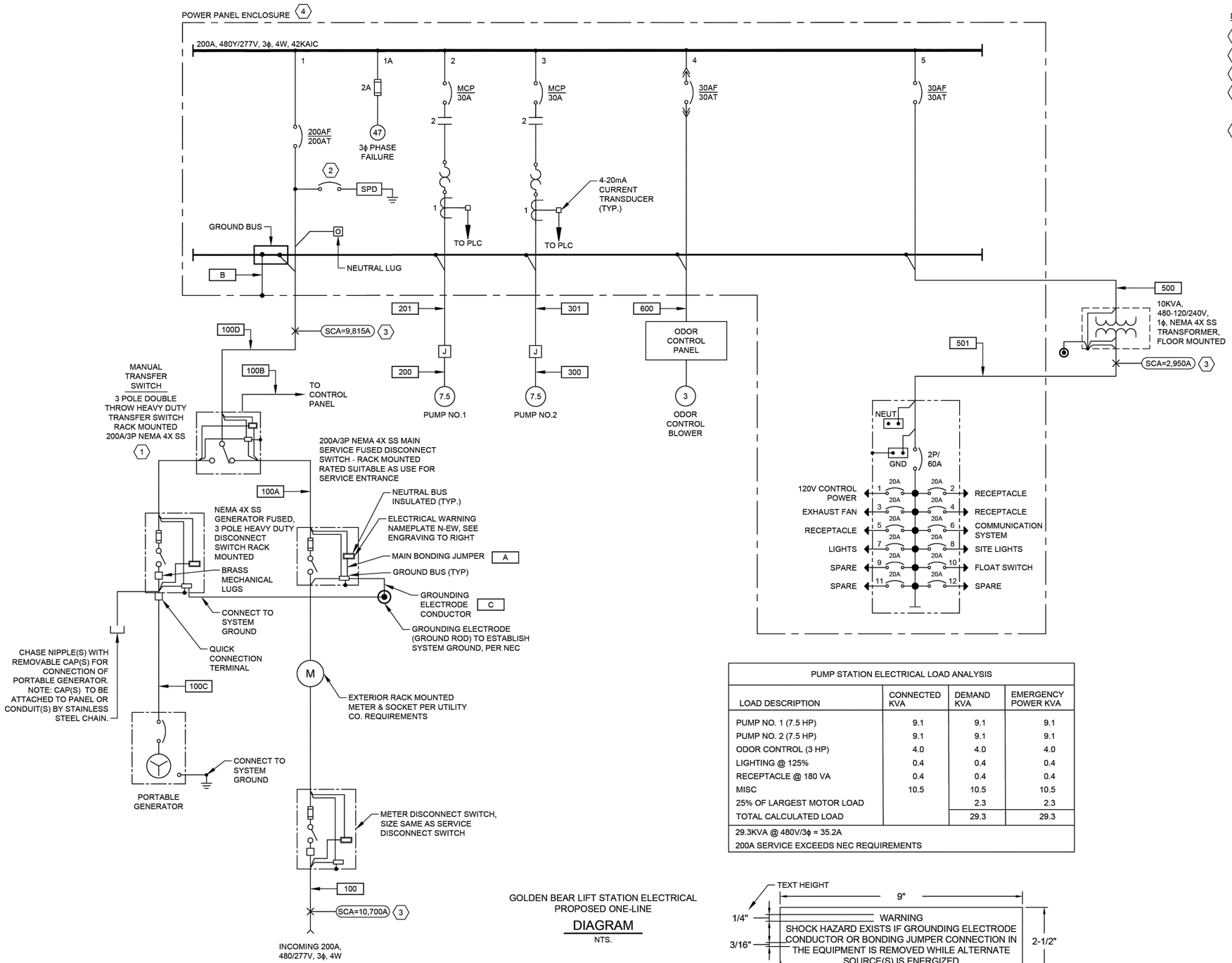
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
ELECTRICAL
PROP. ENLARGED LIFT STATION SITE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=1' VERT: 1"=1'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 143 OF 298	E-303

PLOTTED: 2/23/2026 8:11:35 AM
PLOT STYLE: Grayscale
FILE PATH: C:\Projects\...\Drawings\...\E-304 GOLDEN BEAR LIFT STATION ELECTRICAL (GOLDEN BEAR).dwg



GOLDEN BEAR LIFT STATION ELECTRICAL
PROPOSED ONE-LINE
DIAGRAM
NTS.

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.

PUMP STATION ELECTRICAL LOAD ANALYSIS			
LOAD DESCRIPTION	CONNECTED KVA	DEMAND KVA	EMERGENCY POWER KVA
PUMP NO. 1 (7.5 HP)	9.1	9.1	9.1
PUMP NO. 2 (7.5 HP)	9.1	9.1	9.1
ODOR CONTROL (3 HP)	4.0	4.0	4.0
LIGHTING @ 125%	0.4	0.4	0.4
RECEPTACLE @ 180 VA	0.4	0.4	0.4
MISC	10.5	10.5	10.5
25% OF LARGEST MOTOR LOAD		2.3	2.3
TOTAL CALCULATED LOAD		29.3	29.3
29.3KVA @ 480V/3ϕ = 35.2A 200A SERVICE EXCEEDS NEC REQUIREMENTS			

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

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
ELECTRICAL
PROPOSED ONE–LINE DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 144 OF 298	E–304

PLOTTED: 2/23/2026 8:11:35 AM
PLOT STYLE: Gdi.ctb
FILE PATH: G:\Projects\305\Lift Stations\Golden Bear\Design\Electrical\Drawings\E-305 GOLDEN BEAR).dwg

FROM UTILITY METER
REFER TO SHEET E-304
480/277V, 3Ø, 4W

GROUNDED SERVICE CONDUCTOR
NEUTRAL BUS (INSULATED) (TYPE)
MAIN BONDING JUMPER A
GROUNDING ELECTRODE CONDUCTOR C
GROUND ROD (TYPICAL)
200A/3P NEMA 4X SS MAIN SERVICE FUSED DISCONNECT SWITCH POLE OR RACK MOUNTED RATED SUITABLE AS USE FOR SERVICE ENTRANCE
GROUND BUS (TYPE)

3 POLE DOUBLE THROW HEAVY DUTY TRANSFER SWITCH
GND BUS
NEUT
C
B
A
A B C

NEMA 4X SS GENERATOR FUSED, 3 POLE HEAVY DUTY DISCONNECT SWITCH RACK MOUNTED
GND
NEUT
CHASE NIPPLE'S WITH REMOVABLE CAP(S) FOR CONNECTION OF PORTABLE GENERATOR. NOTE: CAP(S) TO BE ATTACHED TO PANEL OR CONDUIT(S) BY STAINLESS STEEL CHAIN.
BRASS MECHANICAL LUGS (TYPICAL)
QUICK CONNECTION TERMINAL
POWER PANEL | FIELD
NEUT
GND
GEN
PORTABLE GENERATOR

SURGE PROTECTOR
JE-1
(SEE NOTE 2)
SPD
M
MAIN BREAKER
X
PHASE MONITOR
JE-2
VV
PLC
(SEE NOTE 5)

4-20mA CURRENT TRANSDUCER
4-20mA TO PLC
+
-
MOR
(SEE NOTE 6)
MCP
M1
T1
T2
T3
PUMP NO. 1
M
105
106
107
108
GND
20
21
22
23
TSH-1
LSH-1

4-20mA CURRENT TRANSDUCER
4-20mA TO PLC
MOR
(SEE NOTE 6)
MCP
M2
PUMP NO. 2
205
206
207
208
TSH-2
LSH-2

MATCHLINE `A'

MATCHLINE `A'
POWER PANEL | FIELD
CB
T1
T2
T3
GND
ODOR CONTROL PANEL

10KVA, 480-120/240V
1 PHASE TRANSFORMER
SEE NOTE 3
EE
CB

240V, 100A, 12 CKT
LIGHTING PANEL
60A
NEUT
GND
20A
1 2 RECEPTACLE
3 4 RECEPTACLE
5 6 COMMUNICATION SYSTEM
7 8 SITE LIGHTS
9 10 FLOAT SWITCH
11 12 SPARE
120V CONTROL POWER
EXHAUST FAN
RECEPTACLE
LIGHTS
SPARE
SPARE

NOTES:

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

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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HOSS FOROUZAN
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SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
ELECTRICAL
INCOMING POWER THREE LINE DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 145 OF 298	E-305

	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	200A	UTILITY POWER SERVICE	METER DISCONNECT		3#3/0 AWG, #2 NEUT. #2 GND. 2-1/2"C.
100A	SERVICE POWER	480V	200A	SERVICE DISCONNECT	MTS	--	3#3/0 AWG, #2 NEUT. #2 GND. 2-1/2"C.
100B	NORMAL/EMERGENCY POWER	24VDC	--	MTS	CONTROL PANEL	--	4#14 AWG, 1"C.
100C	EMERGENCY POWER	480V	200A	GENERATOR DISCONNECT	PORTABLE GENERATOR	CAPPED CONDUIT	--
100D	MCC POWER	480V	--	MTS	CONTROL PANEL	--	3#3/0 AWG, #2 NEUT. #2 GND. 2-1/2"C.
101	GROUND ELECTRODE CONDUCTOR	--	--	POWER PANEL	GROUND FIELD	--	#2 CU GND.
104	GROUND ELECTRODE CONDUCTOR	--	--	CONTROL PANEL	GROUND FIELD	--	#2 CU GND.
105	COMMUNICATION	--	--	COMMUNICATION POLE	PPU-AC	--	POE CABLE IN 1" CONDUIT
200	PUMP NO. 1 POWER	480V	7.5 HP	PUMP NO. 1	PUMP NO. 1 JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT.
201	PUMP NO. 1 POWER AND CONTROLS	480V	7.5 HP	PUMP NO. 1 JUNCTION BOX	CONTROL PANEL	--	3#10 AWG, 4#14, #10 GND. 1-1/2"C.
300	PUMP NO. 2 POWER	480V	7.5 HP	PUMP NO. 2	PUMP NO. 2 JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT.
301	PUMP NO. 2 POWER AND CONTROLS	480V	7.5 HP	PUMP NO. 2 JUNCTION BOX	CONTROL PANEL	--	3#10 AWG, 4#14, #10 GND. 1-1/2"C.
500	LIGHTING TRANSFORMER PRIMARY FEEDER	480V	30A	CONTROL PANEL	LIGHTING TRANSFORMER PRIMARY	--	2#8 AWG, #10 GND. 3/4"C.
501	LIGHTING TRANSFORMER SECONDARY FEEDER	240/120V	--	LIGHTING TRANSFORMER SECONDARY	LIGHTING PANEL	--	3#4 AWG, #6 GND. 1"C.
600	ODOR CONTROL UNIT	480V	--	CONTROL PANEL	ODOR CONTROL UNIT	--	3#10 AWG, #10 GND. 1"C.
700	ODOR CONTROL	120V	--	CONTROL PANEL	ODOR CONTROL UNIT	--	8#14 AWG, #14 GND. 1"C.
1000	LEVEL TRANSMITTER	24VDC	--	LEVEL TRANSMITTER LT-1	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2" CONDUIT
1001	LEVEL TRANSMITTER	24VDC	--	LEVEL TRANSMITTER LT-2	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2" CONDUIT
1002	COMBINED LEVEL TRANSMITTERS & FLOAT SWITCH	24VDC	--	CONTROL PANEL	TRANSMITTER JUNCTION BOX	--	2 TRIAD #16, 4#14 AWG, 1"C.
1003	WELL FLOAT SWITCHES	120V	--	TRANSMITTER JUNCTION BOX	FLOAT SWITCH NO.1 THROUGH NO.7	--	MANUFACTURER'S CABLE IN 2-1/2"C
1100	120VAC FOR RECEPTACLE	120V	--	LIGHTING PANEL	RECEPTACLE ON PLATFORM	--	2#12 AWG, #12 GND, 3/4"C.
1200	120VAC FOR RECEPTACLE	120V	--	LIGHTING PANEL	RECEPTACLE ON PLATFORM	--	2#12 AWG, #12 GND, 3/4"C.
1300	SITE LIGHTING	120V	--	SITE LIGHTING SWITCH	SITE LIGHTING	--	2#12 AWG, #12 GND, 1"C.
1400	PPU BOX POWER	120V/24VDC	--	CONTROL PANEL	PPU BOX	--	4#12 AWG, #12 GND, 3/4"C.
1401	PPU BOX COMMUNICATION	24VDC	--	PPU BOX	CONTROL PANEL	--	CAT. 5E IN 3/4"C.
1300A	SITE LIGHTING	120V	--	LIGHTING PANEL	SITE LIGHTING SWITCH	--	2#12 AWG, #12 GND, 1"C.

NOTES BY SYMBOL "⟨#⟩":

⟨1⟩ REFER TO SPEC SECTION 16120 FOR CONDUCTOR COLOR CODE.

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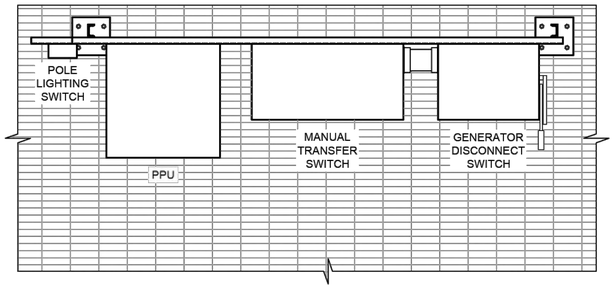
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND Ggolf COURSE LS)

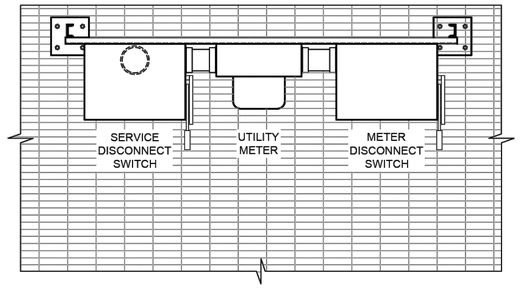
GOLDEN BEAR LIFT STATION
ELECTRICAL
CONDUIT SCHEDULE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 146 OF 298	E-306

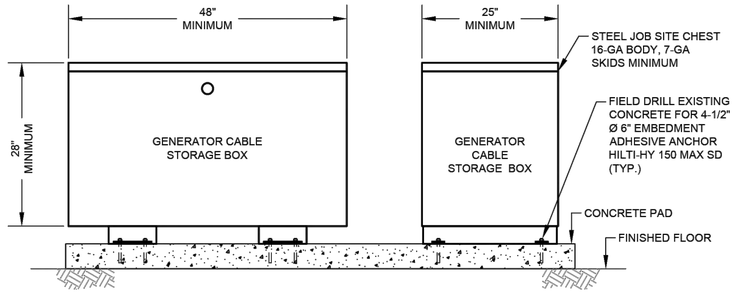
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PLAN VIEW

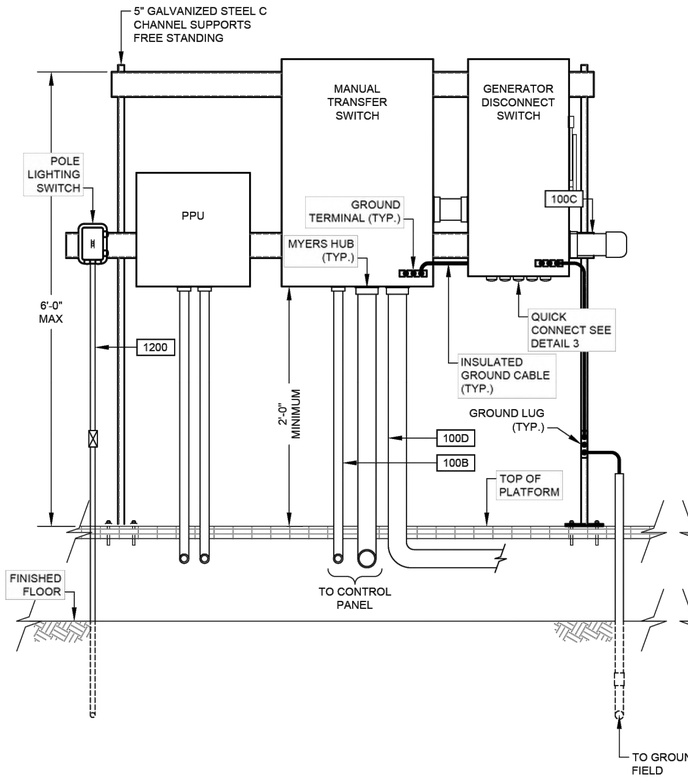


PLAN VIEW



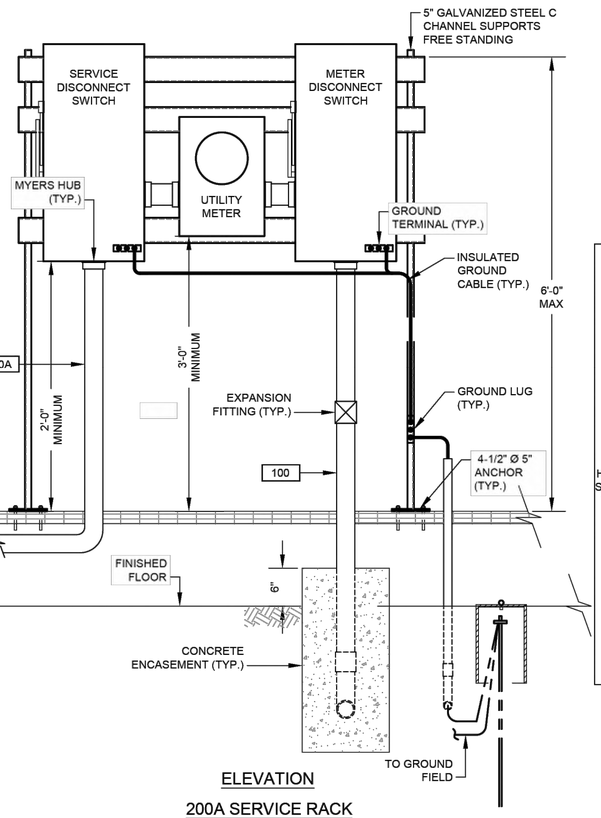
GENERATOR CABLE STORAGE BOX SIDE VIEW

DETAIL 5
NTS.



ELEVATION
200A SERVICE RACK

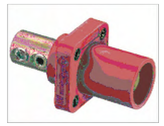
DETAIL 1
NTS.



ELEVATION
200A SERVICE RACK

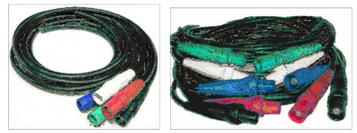
DETAIL 2
NTS.

ALLOWABLE DEVICE AMPACITY CHART DLO RHW-2 CAM-LOK CONNECTOR CABLE		
CABLE SIZE AWG	AMPS	CABLE LENGTH
#1	220	65 FEET
4/0	400	65 FEET



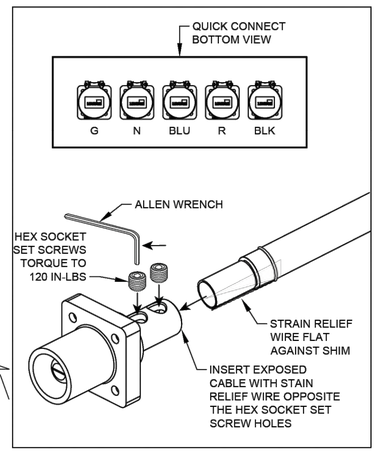
QUICK CONNECT FOR GENRATOR

PHOTOGRAPH 1
NTS.



QUICK CONNECT FOR GENRATOR

PHOTOGRAPH 2
NTS.



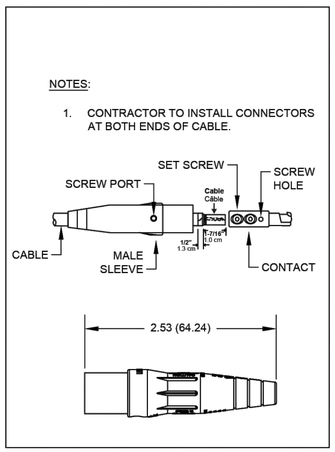
400A AND LESS FEMALE PLUG CABLE TERMINATION

DETAIL 3
NTS.

REFER TO PHOTO NO.1

NOTES:

1. CONTRACTOR TO INSTALL CONNECTORS AT BOTH ENDS OF CABLE.



400A AND LESS MALE PLUG CABLE TERMINATION

DETAIL 4
NTS.

REFER TO PHOTO NO.2

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LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

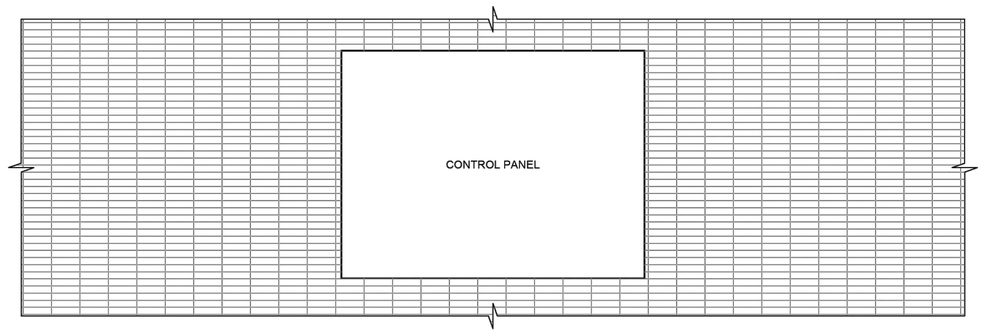
GOLDEN BEAR LIFT STATION
ELECTRICAL
SERVICE RACK DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 147 OF 298	E-307

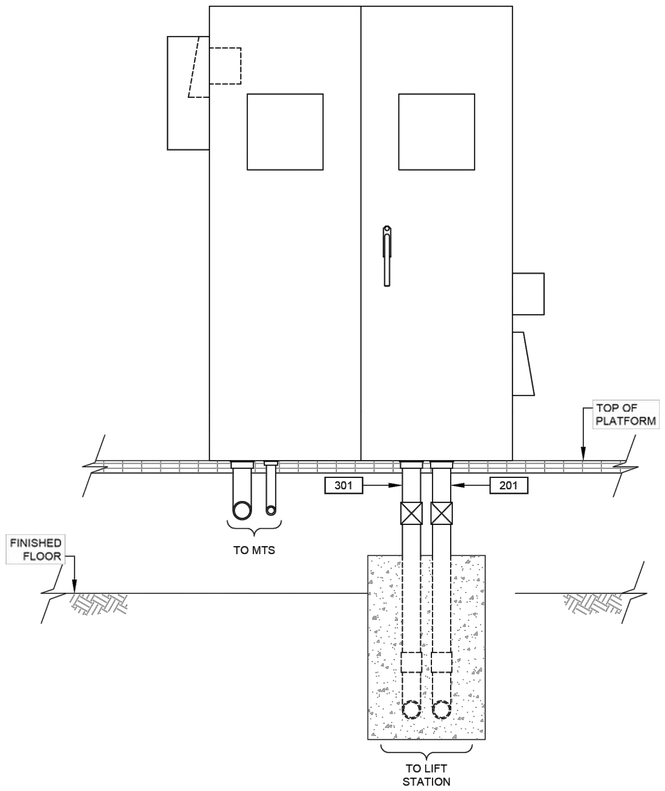
NO.	DATE	REVISION	APP.

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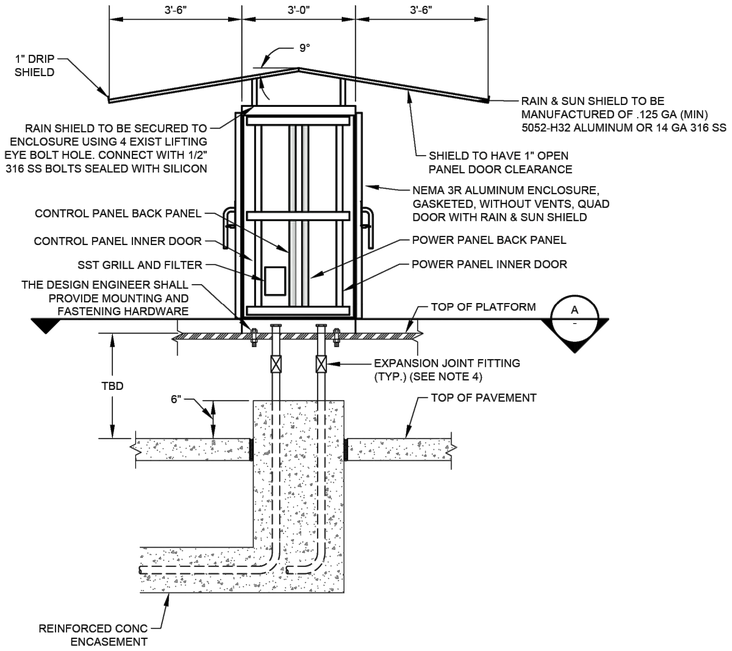


PLAN VIEW



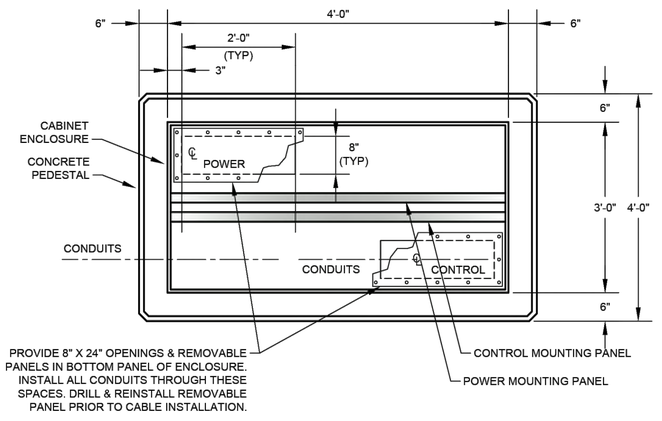
CONTROL PANEL ELEVATION

DETAIL 1 / NTS



CONTROL CABINET ENCLOSURE WITH PLATFORM
(SEE NOTE 6)

DETAIL 2 / NTS



SECTION A / NTS

GENERAL NOTES:

1. REFER TO SPECIFICATION SECTION 13325 PROCESS CONTROL SYSTEMS CONTROL PANELS FOR PANEL DIMENSIONS.
2. COMMUNICATION PANEL TO BE INSTALLED ABOVE SERVICE RACK ELEVATION.
3. EXPANSION JOINT FITTINGS AS REQUIRED.
4. REFER TO SERVICE RACK FOR DETAIL.
5. POWER FACTOR CAPACITOR TO BE MOUNTED OUTSIDE SIDE WALL OF THE CONTROL CABINET.
6. REFER TO STRUCTURAL DRAWINGS FOR PLATFORM DETAIL.

NO.	DATE	REVISION	APP.

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FB NO. 6399

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DATE: 2/25/2026

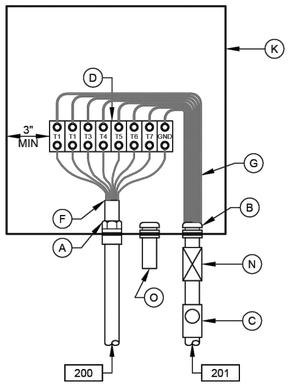
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
ELECTRICAL
CONTROL CABINET ENCLOSURE DETAIL

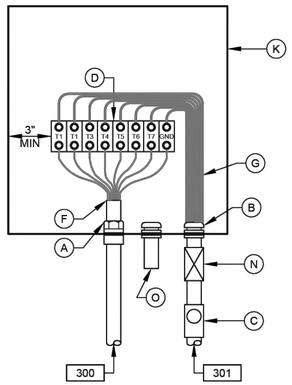
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DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 148 OF 298	E-308

PLOTTED: 2/23/2026 8:11:15 AM
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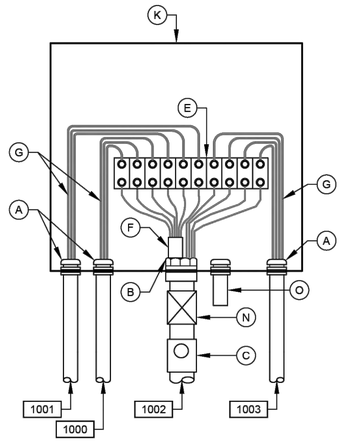
JUNCTION BOX NO.1

DETAIL 2
NTS
(SEE NOTE 7)



JUNCTION BOX NO.2

DETAIL 3
NTS
(SEE NOTE 7)



LEVEL TRANSMITTER JUNCTION BOX

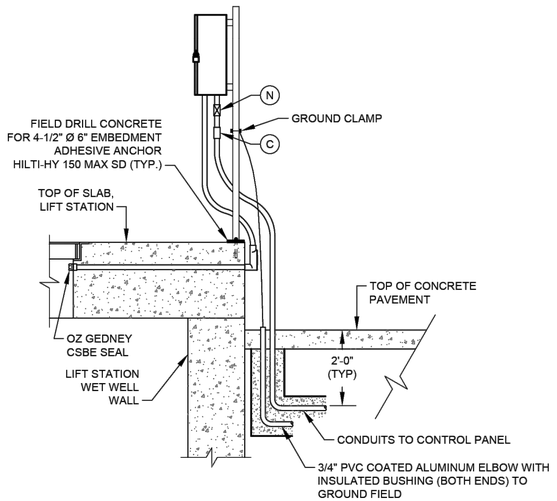
DETAIL 4
NTS
(SEE NOTE 7)

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.

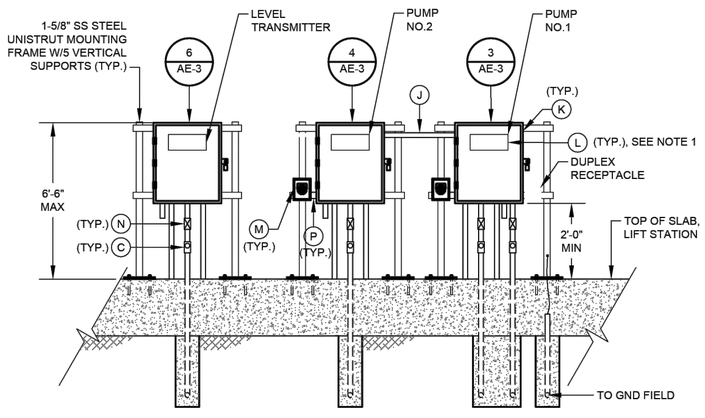
JUNCTION BOX EQUIPMENT SCHEDULE

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 6P 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



TYP SIDE VIEW FOR DETAIL 1

(SEE NOTE 10)



DETAIL 1
NTS
(SEE NOTE 9 & 12)

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TEXAS P.E. NO. 77748
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
ELECTRICAL
JUNCTION BOX DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 149 OF 298	E-309

NO.	DATE	REVISION	APP.

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GENERAL NOTES:

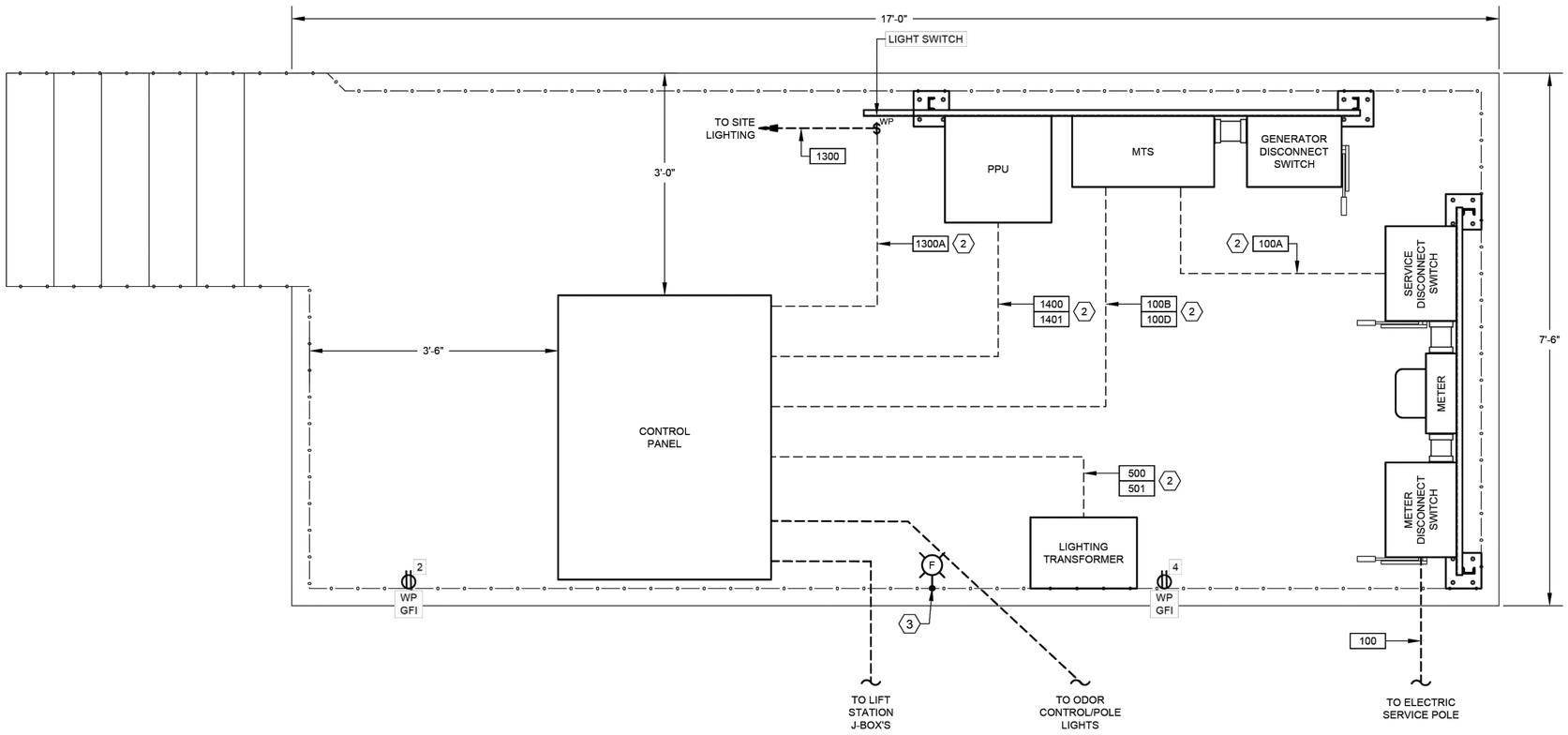
1. ALL NATURAL GAS PIPING FROM CNP GAS TO NATURAL GAS GENERATOR IS TO BE INSTALLED BY A PROFESSIONAL PLUMBER LICENSED IN THE STATE OF TEXAS.

NOTES BY SYMBOL "⟨#⟩":

⟨1⟩ REFER TO STRUCTURAL DRAWINGS FOR PLATFORM DETAILS.

⟨2⟩ CONDUIT TO BE INSTALLED BELOW PLATFORM.

⟨2⟩ LIGHTING FIXTURE TO BE AMOUNTED ON THE PLATFORM HANDRAIL.



PROPOSED ELECTRICAL PLATFORM LAYOUT

DETAIL 1 (1) — 1" = 1'-0"

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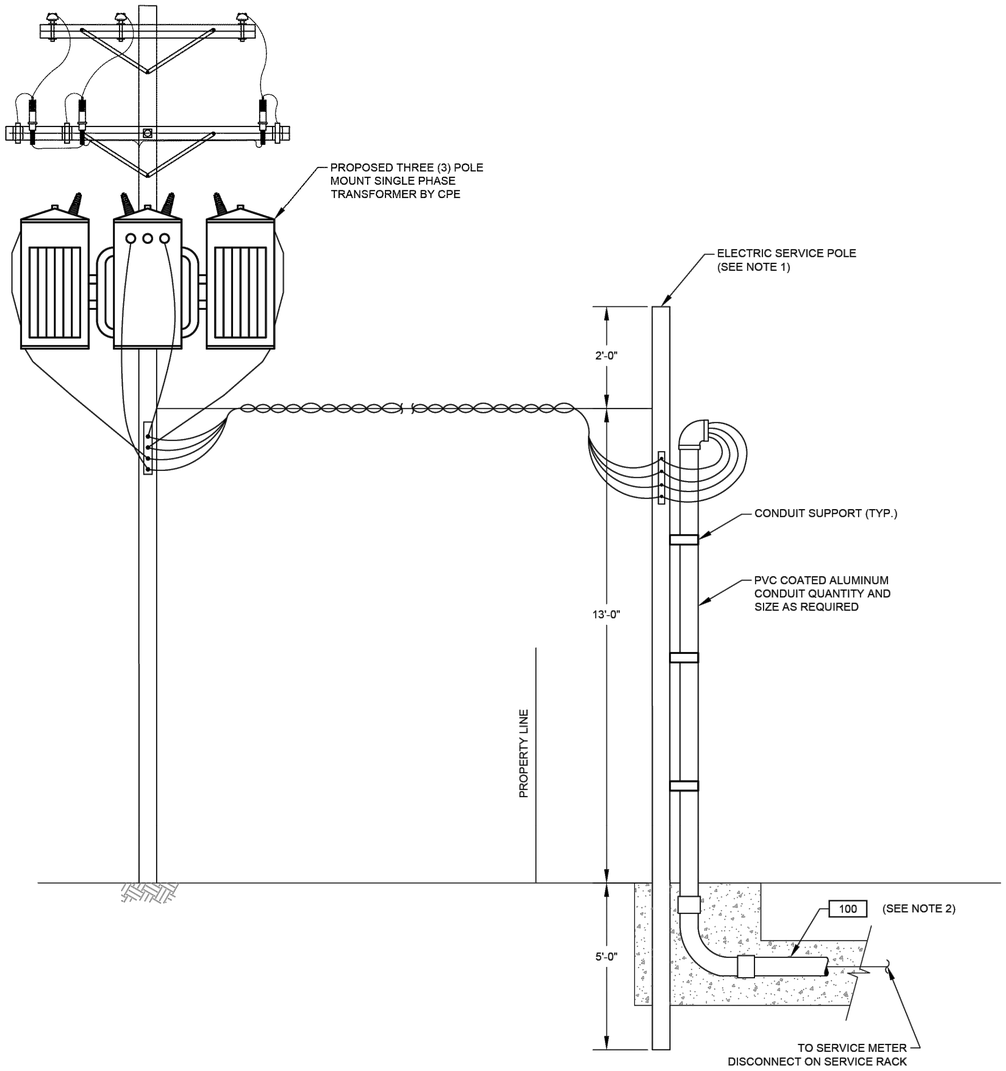
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
ELECTRICAL
PROPOSED ELECTRICAL PLATFORM LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 150 OF 298	E-310



TYPICAL ELECTRICAL SERVICE ENTRANCE

FOR POWER SUPPLY BELOW 500KVA

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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CITY OF HOUSTON

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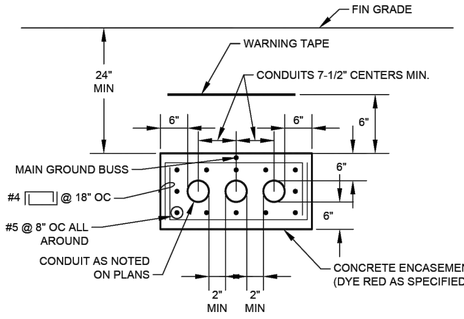
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
ELECTRICAL
ELECTRICAL SERVICE POLE DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 151 OF 298	E-311

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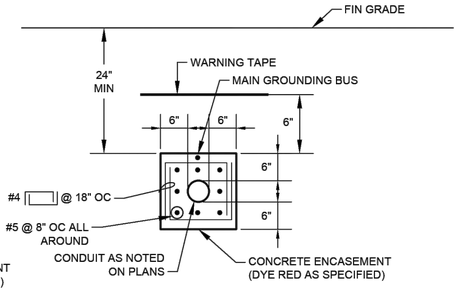
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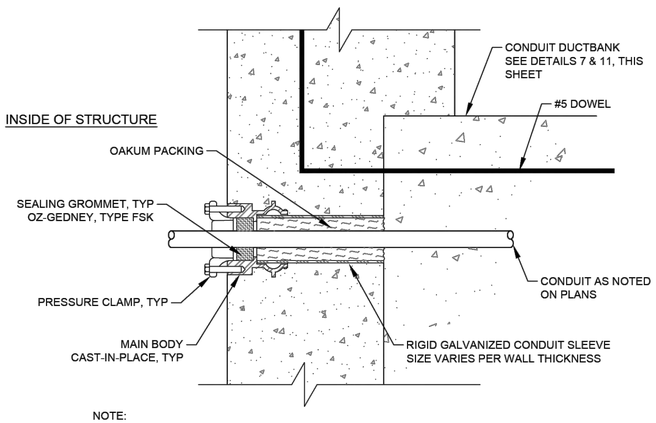
TYP MULTI-CONDUIT DUCTBANK SECTION

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

DETAIL 1 / NTS



TYP SINGLE-CONDUIT DUCTBANK SECTION

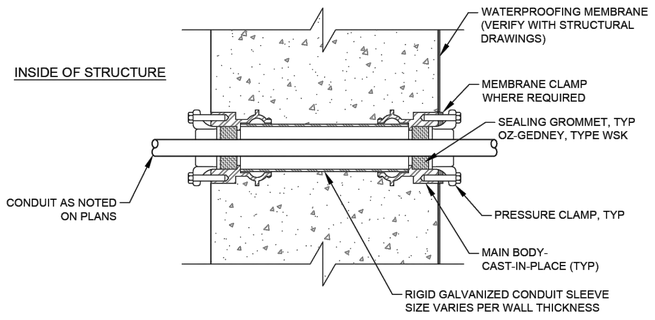


NOTE:

WALL SEAL SHOWN IS TYPICAL FOR EACH CONDUIT IN DUCTBANK.

SINGLE ENDED TYPE

FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS ENCASED IN CONCRETE

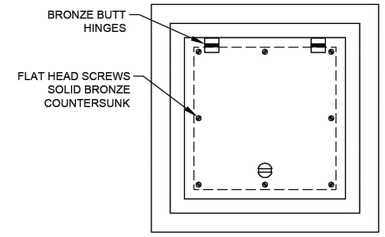


DOUBLE ENDED TYPE WITH MEMBRANE

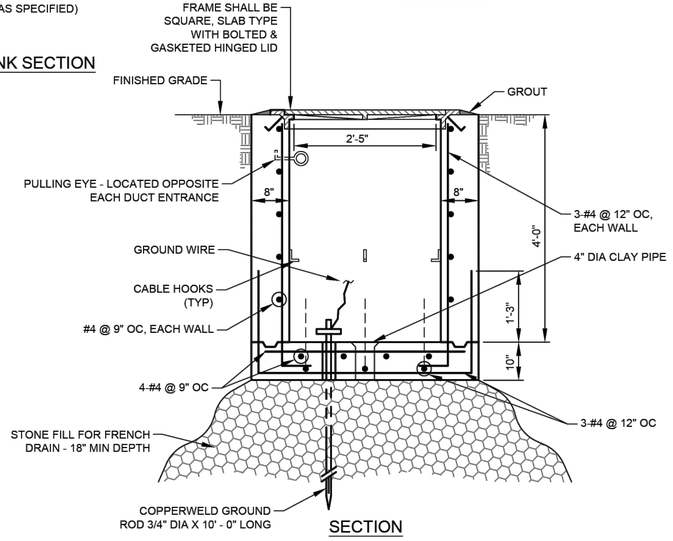
FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS ENCASED IN CONCRETE

TYPICAL CONDUIT SEALS

DETAIL 4 / NTS



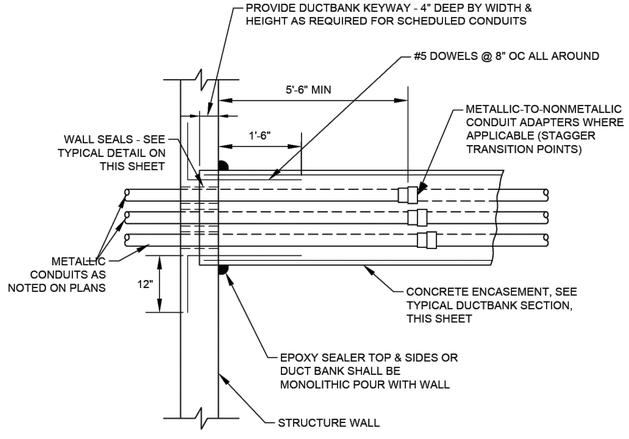
TOP PLAN



SECTION

TYPICAL ELECTRICAL HANDHOLE CONSTRUCTION

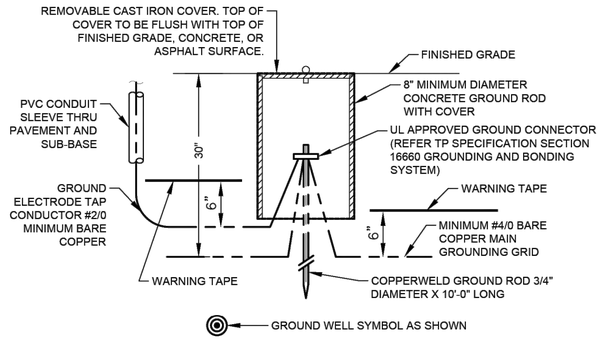
DETAIL 2 / NTS



PLAN

TYPICAL DUCTBANK ENTRANCE AT STRUCTURE WALL

DETAIL 5 / 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

NO.	DATE	REVISION	APP.

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TEXAS P.E. NO. 77748
DATE: 2/25/2026

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FB NO. 6399

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
ELECTRICAL
ELECTRICAL TYPICAL DETAILS

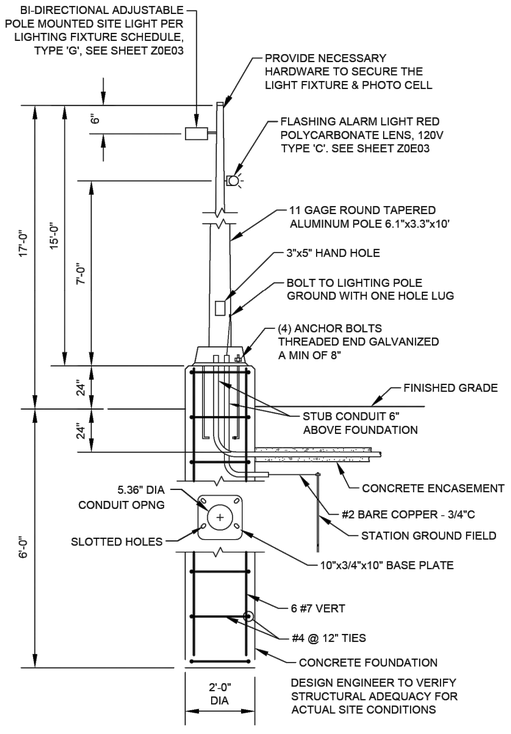
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DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 152 OF 298	E-312

PLOTTED: 2/23/2026 8:11:15 AM
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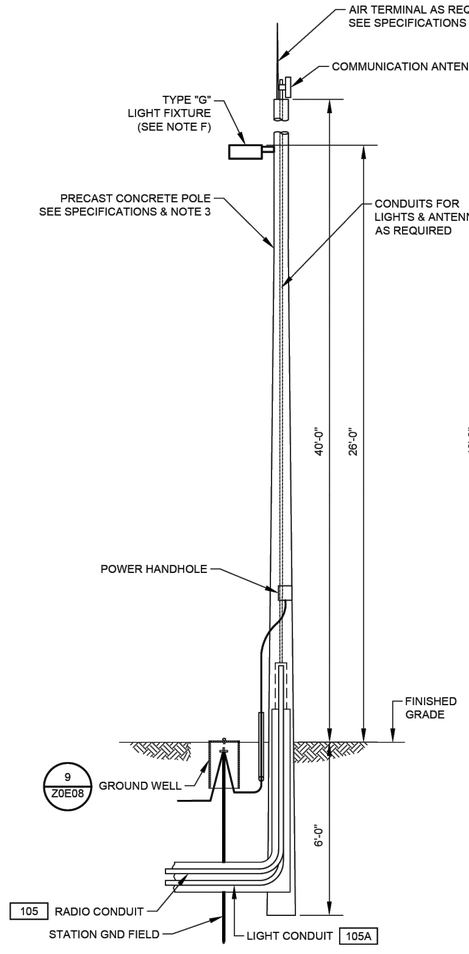
1. ON GROUND WIRE TERMINATION'S, ALL PAINTED OR COATED METAL SURFACES SHALL BE REMOVED AND CLEANED TO BARE METAL. TO OBTAIN A SOUND GROUND CONNECTION. ONCE INSTALLED APPLY PROTECTIVE COATING ON BARE METAL AREAS PER MANUFACTURER REQUIREMENTS.
2. PRECAST CONCRETE POLE TO MOUNT THE RADIO RECEIVER.
3. 1" CONDUIT TO EXTEND TO THE TOP OF POLE FOR ETHERNET CABLE FOR RADIO.

NO.	DATE	REVISION	APP.



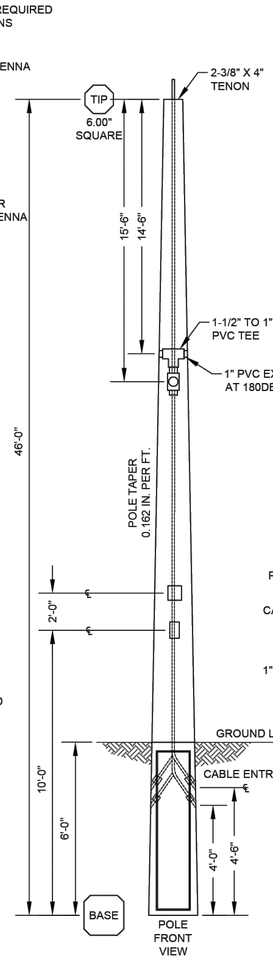
TYPICAL YARD LIGHT

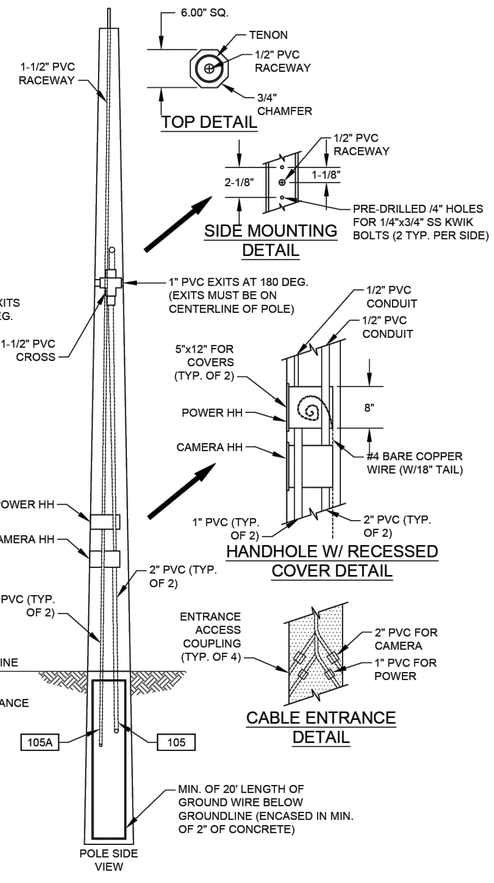
DETAIL 1
NTS -



COMMUNICATION POLE MOUNTING DETAIL

DETAIL 2
NTS -





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CITY OF HOUSTON

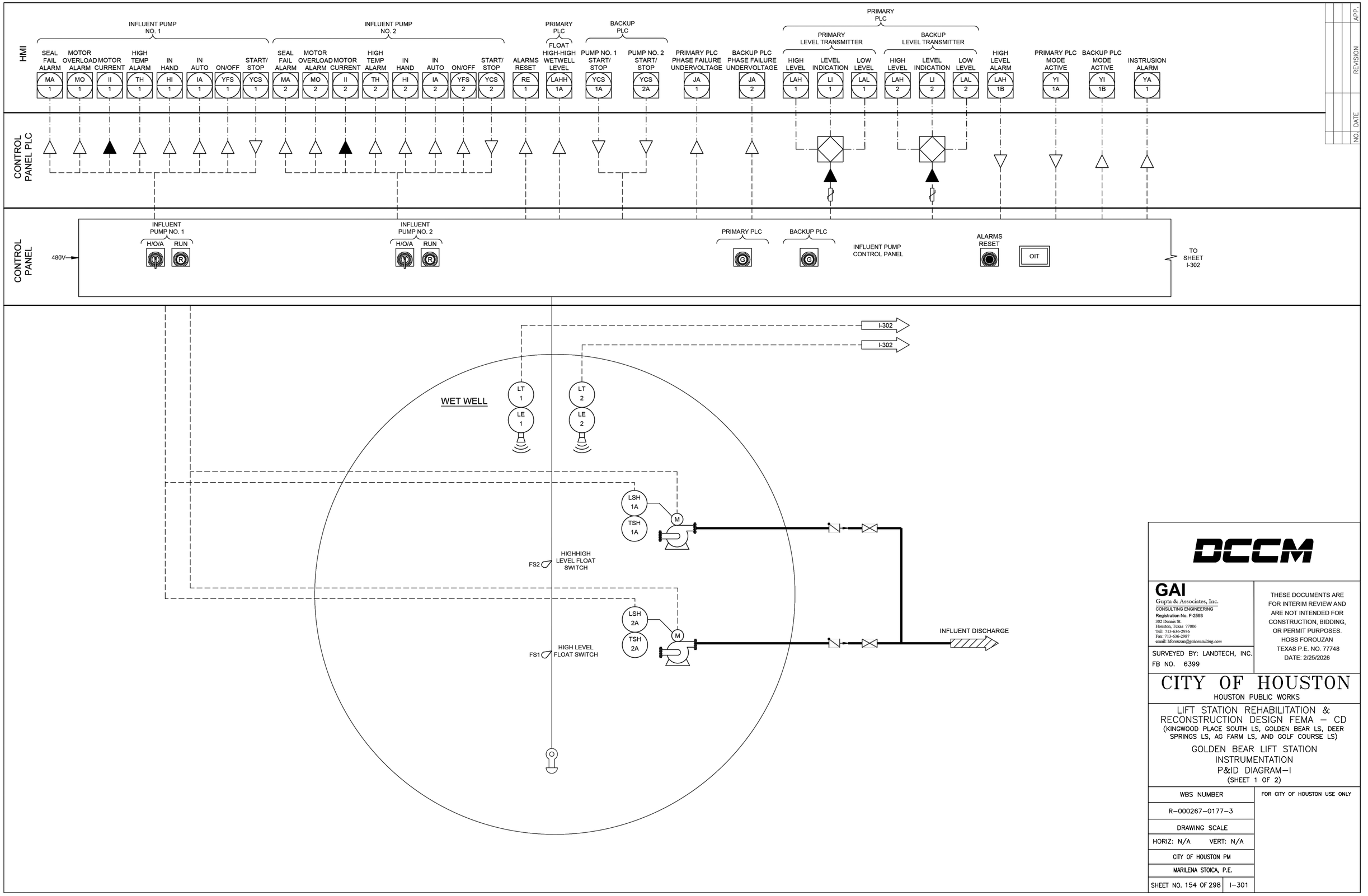
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
ELECTRICAL
YARD LIGHT/COMMUNICATION POLE DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 153 OF 298	E-313

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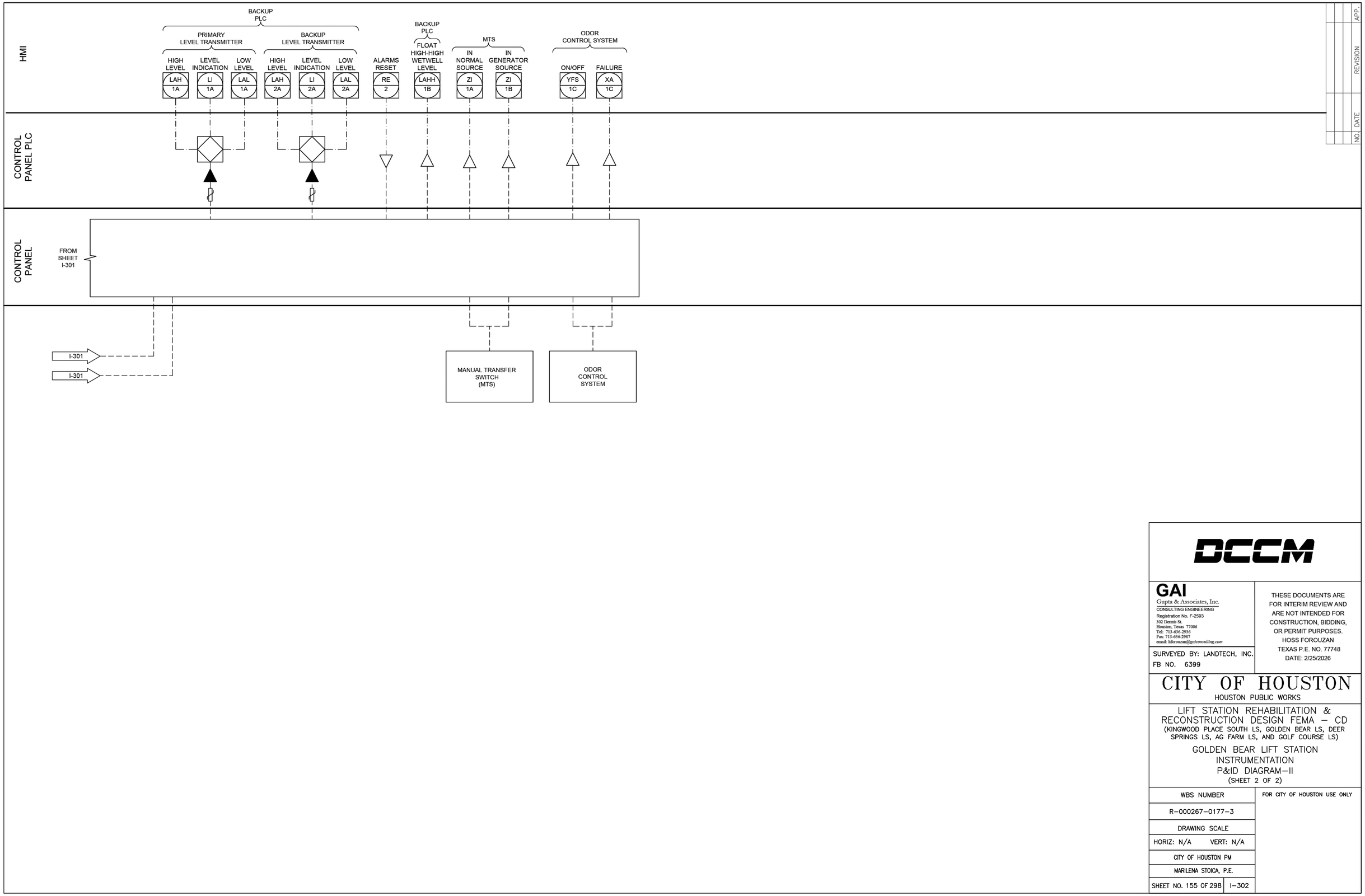
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GOLDEN BEAR LIFT STATION
INSTRUMENTATION
P&ID DIAGRAM–I
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 154 OF 298	I–301



NO.	DATE	REVISION	APP.

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GOLDEN BEAR LIFT STATION
INSTRUMENTATION
P&ID DIAGRAM–II
(SHEET 2 OF 2)

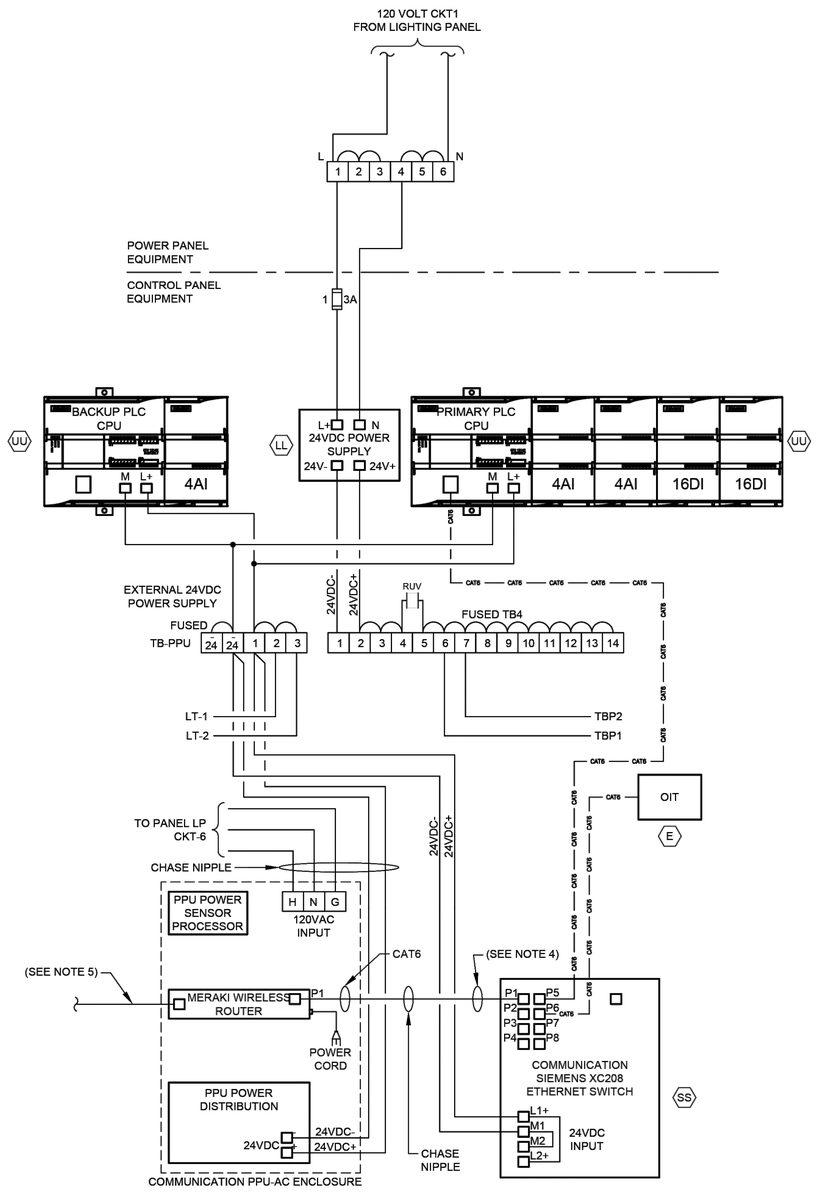
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R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 155 OF 298	I–302

PLOTTED: 2/23/2026 8:11:16 AM
PLOT STYLE: Color.ctb
FILE PATH: C:\Users\...\Golden Bear (BEAR).dwg

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. CAT6 ETHERNET CABLE FOR MERAKI CELLULAR ROUTER (P1).
5. CAT6 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.

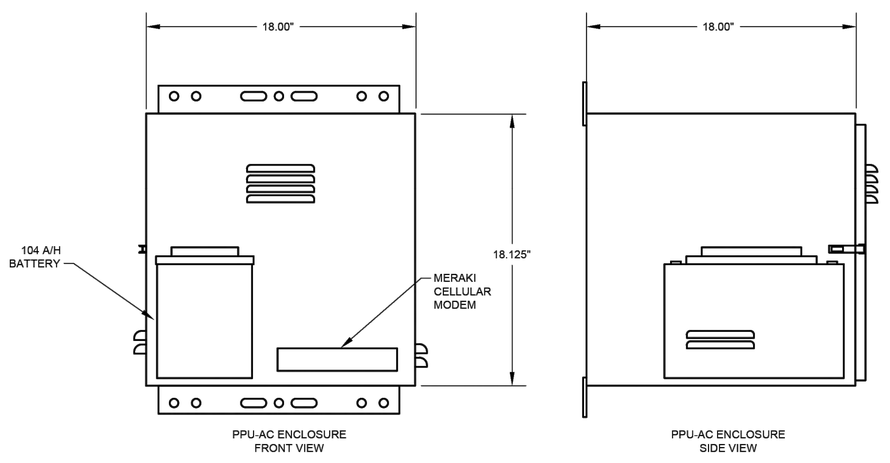


CONTROL POWER & COMMUNICATIONS WIRING

DIAGRAM

NTS

(SEE NOTE 2 & 6)



PPU-AC CONTROL ENCLOSURE

ELEVATION

NTS

(SEE NOTE 7)

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FB NO. 6399

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TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
INSTRUMENTATION
COMMUNICATION DIAGRAM

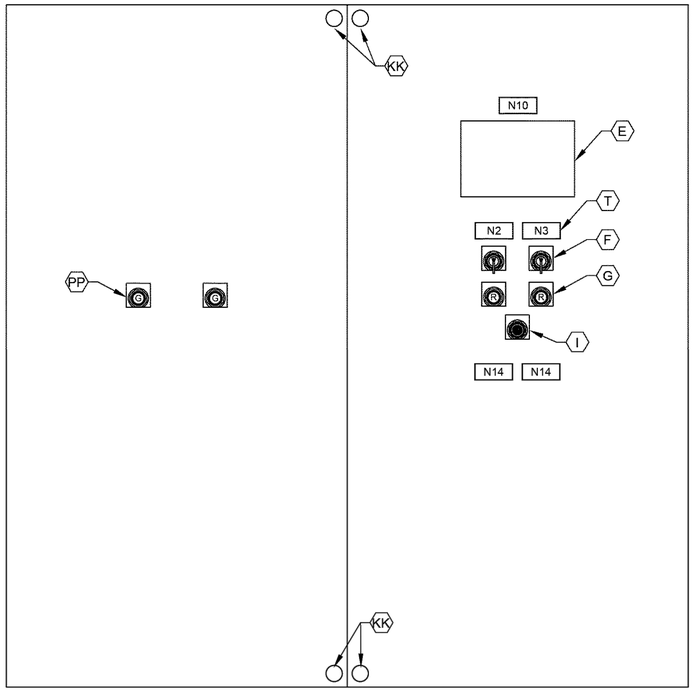
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 156 OF 298	I-303

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PLOTTED: 2/23/2026 8:11:16 AM

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	3	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	15 KVA, 480 - 240/120V,1ϕ, 3W DRY TYPE NEMA 3R ENCLOSURE TRANSFORMER
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

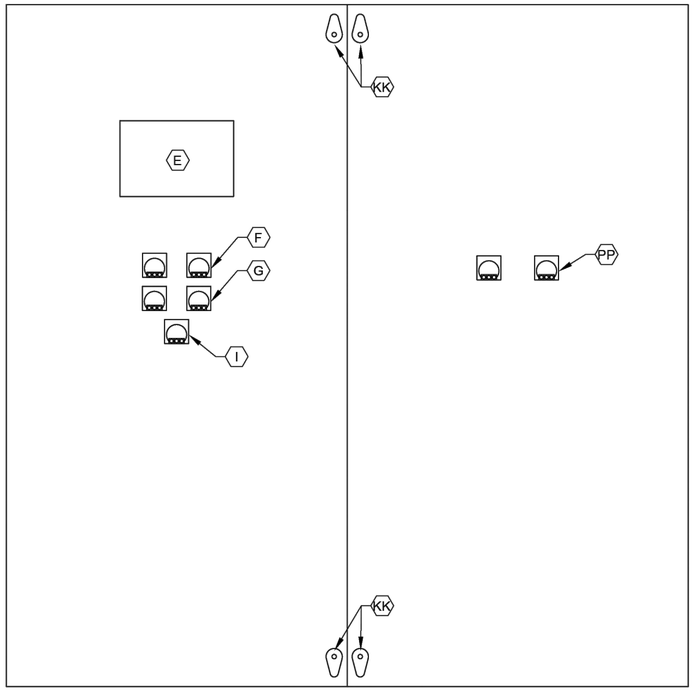
* - AS SCHEDULED



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.

NO.	DATE	REVISION	APP.

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DATE: 2/25/2026

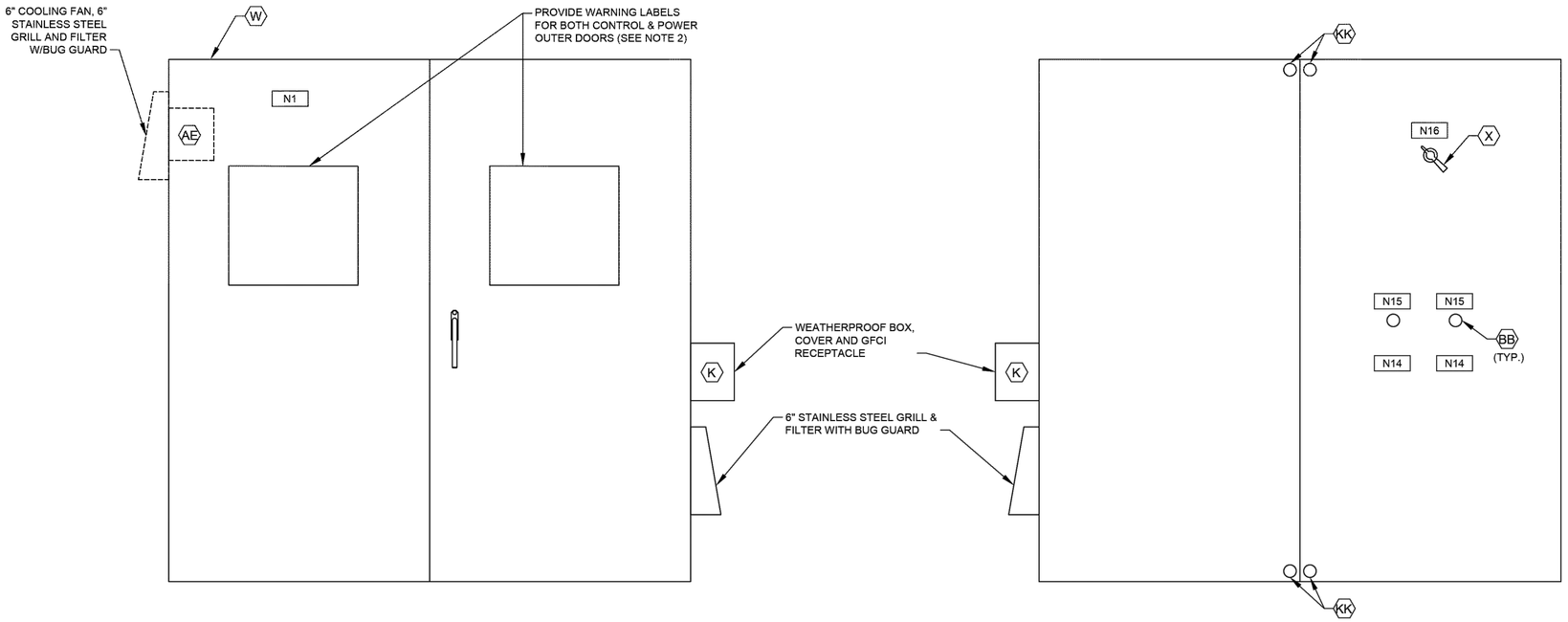
CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
INSTRUMENTATION
CONTROL CAB. EQUIP. LAYOUT & SCHD.

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 157 OF 298	I-304



CONTROL CABINET (CONTROL SIDE)
OUTER DOOR

ELEVATION

NTS

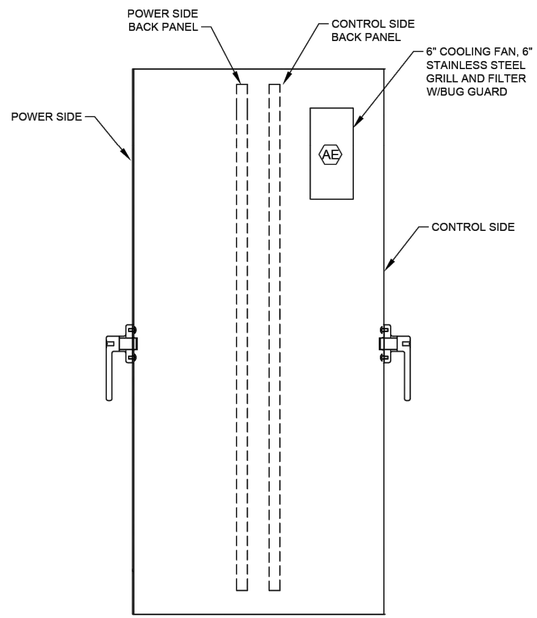
CONTROL CABINET (POWER SIDE)
INNER DOOR

ELEVATION

NTS
(SEE NOTE 1)

NAMEPLATE SCHEDULE

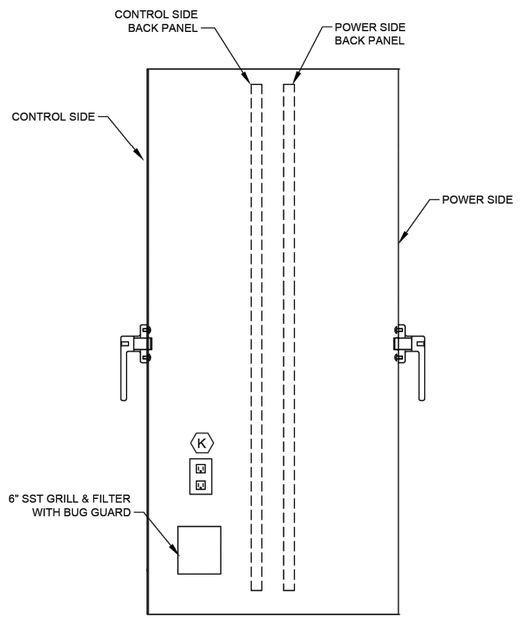
DESIGNATION	ENGRAVED	DESIGNATION	ENGRAVED
N1	PUMP STATION DESIGNATION	N8	NOT USED.
N2	PUMP NO. 1	N9	NOT USED.
N3	PUMP NO. 2	N10	PROGRAMMING SCREEN
N4	NOT USED.	N11	NOT USED.
N5	NOT USED.	N12	PRIMARY PLC
N6	NOT USED.	N13	BACKUP PLC
N7	NOT USED.	N14	MOTOR DATA
			HORSEPOWER (OUTPUT) ----------
			RPM AT 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

NOTES:

1. SEE SHEET I-304 FOR EQUIPMENT SCHEDULE.
2. REFER TO NEC SECTIONS 110.16 & 110.21

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

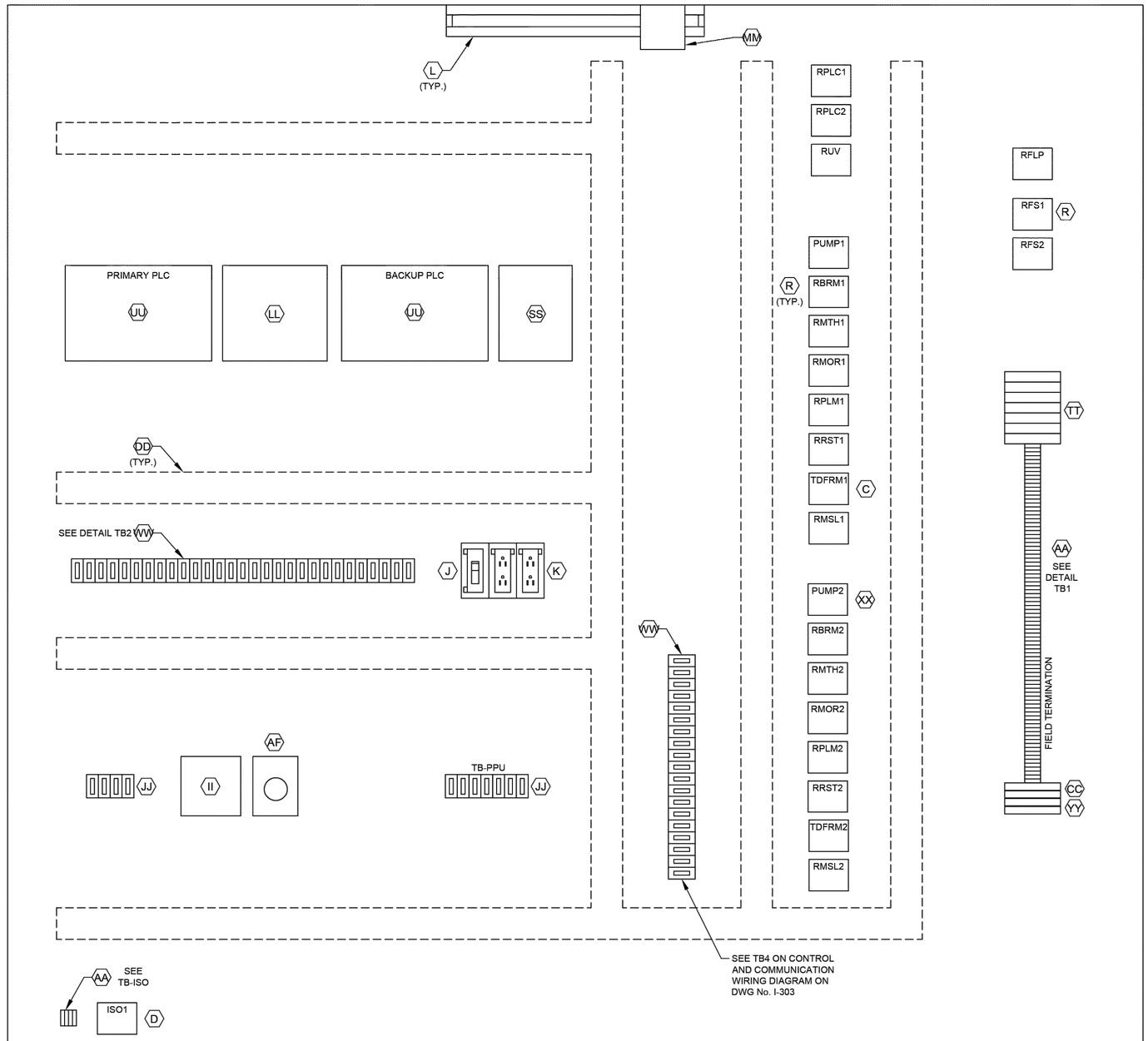
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
INSTRUMENTATION
CONTROL CABINET EQUIPMENT LAYOUT–I
(SHEET 1 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 158 OF 298	I-305

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PLOT STYLE: Gai-ctb
FILE PATH: G:\2018\...\BEAR).dwg



CONTROL PANEL
ELEVATION

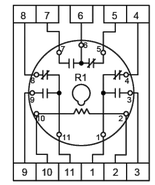
DETAIL TB1
L1A
L1N
SPARE
3
3N
49
50
51
52
53
54
1004
1
24V-
24V-
1002
2
11
1001
1001A
12
1003
1003A
1002
1004
18
3N
19
20
36
36N
41
42
43
44
SPARE
L1A
L1N
103
104
105
106
107
108
110
113
115
116
119
SPARE
203
204
205
206
207
208
210
213
215
216
219

ALL L AND N FOR
EACH PUMP
CONTROL TO BE
FUSED

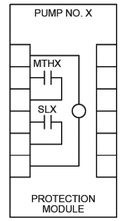
DETAIL TB2
36A
37A
50
52
54
52A
54A
L+
M
35B
38B
41B
47B
13B
13AB
13GB
L+
M
14B
14AB
14GB
L+
M
13
13A
13G
14
14A
14G
SPARE
18
SPARE
28
29
32
35B
33
42
44
SPARE
103
104
115
109
110
118
120
121
122
123
SPARE
209
210
211
218
220
222
223

DETAIL TB-ISO
1500
1501
1503
1504

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-304 FOR EQUIPMENT SCHEDULE.

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON

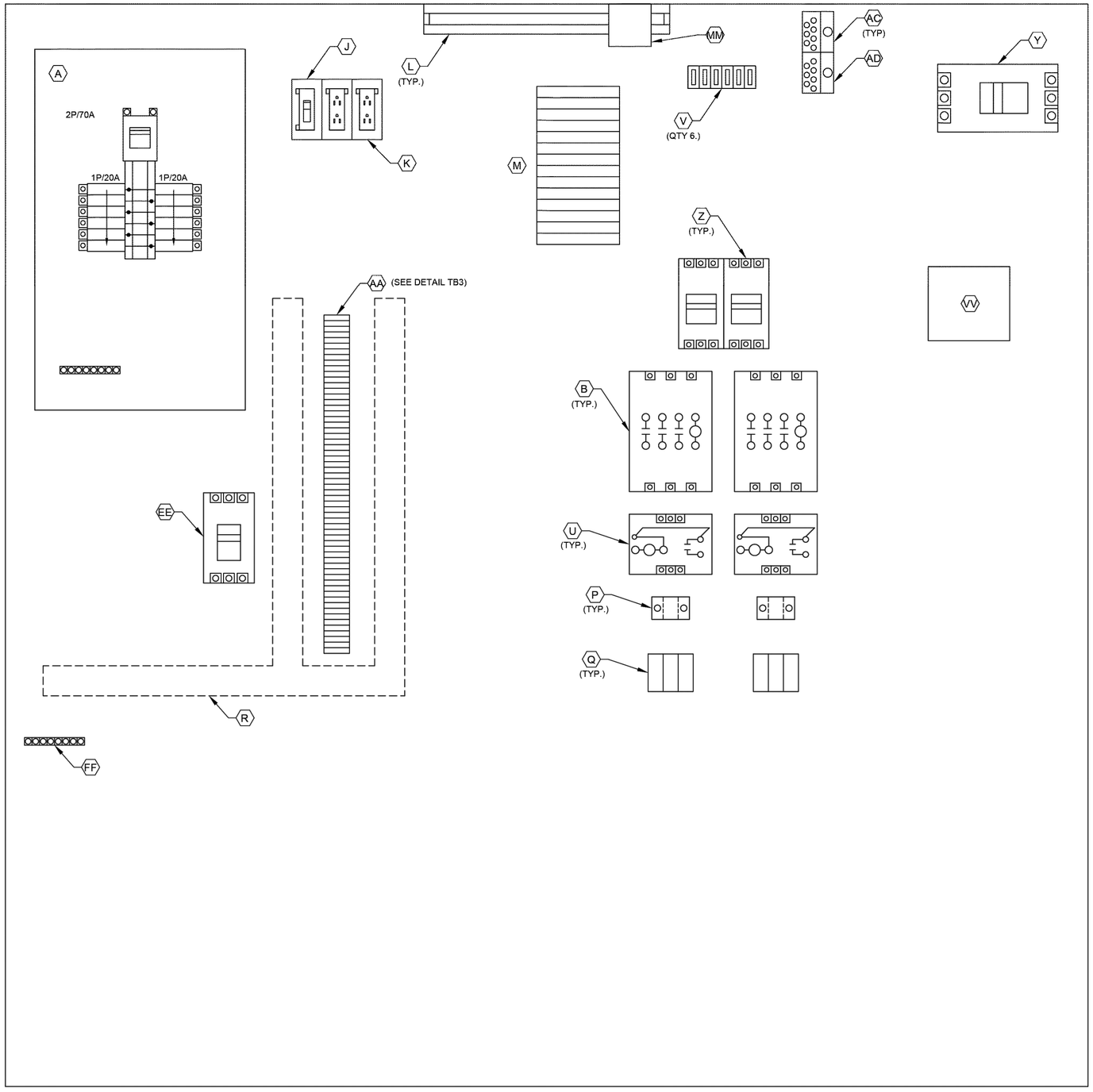
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
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GOLDEN BEAR LIFT STATION
INSTRUMENTATION
CONTROL CABINET EQUIPMENT LAYOUT–II
(SHEET 2 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 159 OF 298	I–306

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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-304 FOR EQUIPMENT SCHEDULE.

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HOUSTON PUBLIC WORKS

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(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

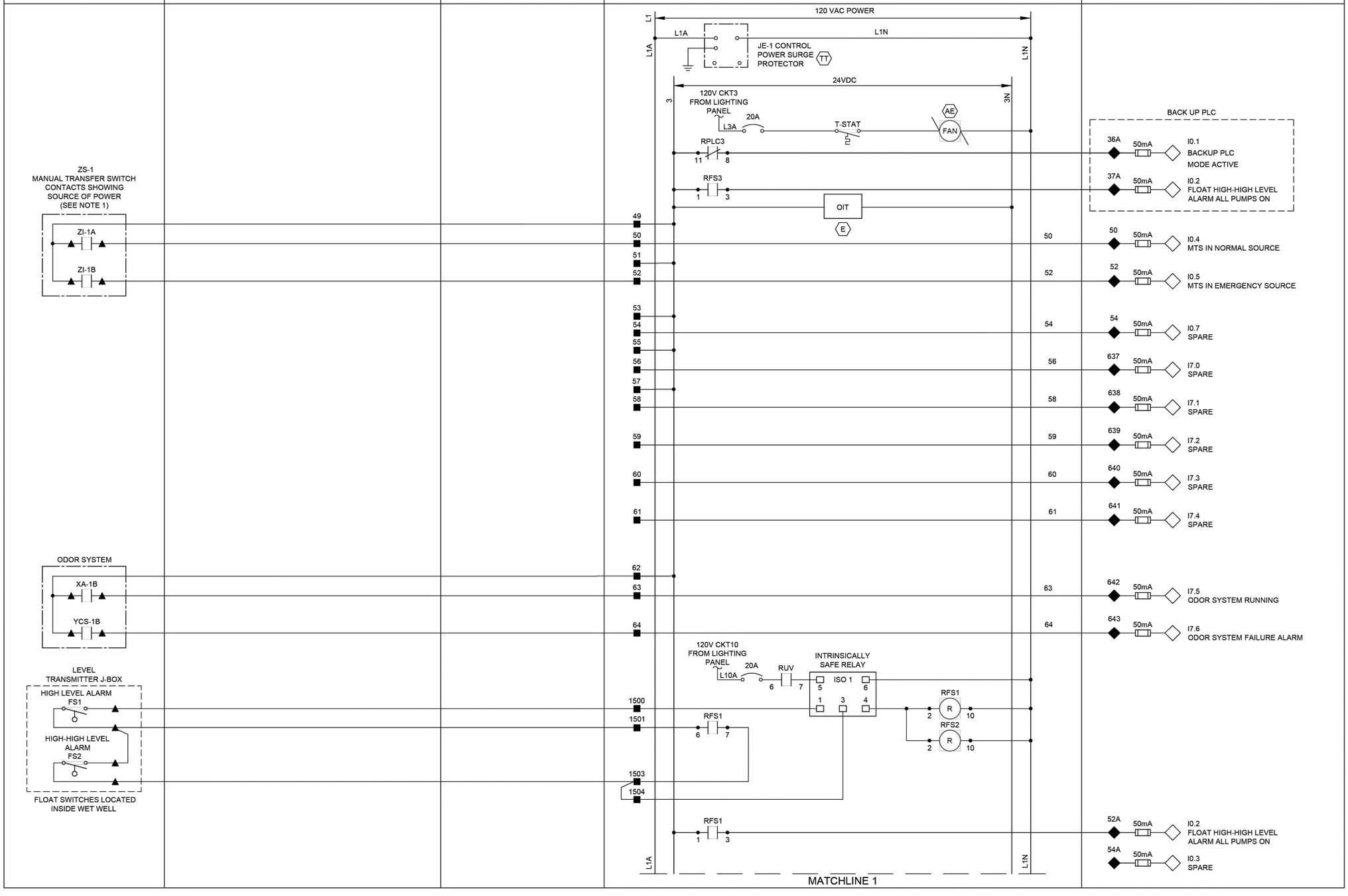
GOLDEN BEAR LIFT STATION
INSTRUMENTATION
CONTROL CABINET EQUIPMENT LAYOUT–III
(SHEET 3 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 160 OF 298	I-307

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FILE PATH: C:\Users\...\Golden Bear).dwg

NO.	DATE	REVISION	APP.

FIELD | CONTROL PANEL: DOOR | INTERIOR PANEL | PLC



NOTES:

1. PROVIDE AUTO TRANSFER SWITCH DRY CONTACT.
2. 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 STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA.–I
(SHEET 1 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 161 OF 298	I–308

PLOTTED: 2/23/2026 8:16:36 AM
PLOT STYLE: Gaitctb
FILE PATH: C:\Users\...\Golden Bear\...\Golden Bear Control Panel Wiring Dia-II (SHEET 2 OF 4) (GOLDEN BEAR).dwg

NO.	DATE	REVISION	APP.

FIELD

CONTROL PANEL

DOOR

INTERIOR PANEL

PLC

MATCHLINE 1

120 VAC POWER

24VDC

L1A 3

3N L1N

BACK UP PLC

L+ CPU POWER

M CPU COMMON

35B 1A QO.0 PUMP NO.1 CALL TO RUN

38B 1A QO.1 PUMP NO.2 CALL TO RUN

41B 1A QO.2 SPARE

44B 1A QO.3 SPARE

47B 1A QO.4 SPARE

RBRM1 5 2 R 10

RBRM2 6 2 R 10

1004

ANALOG ISOLATOR (YY)

13B 50mA AIO.0 PRIMARY WET WELL LEVEL TRANSMITTER

13AB

13GB

L+ CPU POWER

M CPU COMMON

1

24-

1002

ANALOG ISOLATOR (YY)

14B 50mA AIO.2 BACKUP WET WELL LEVEL TRANSMITTER

14AB

14GB

L+ CPU POWER

M CPU COMMON

24V-

2

ANALOG I/O SURGE SUPPRESSOR (CC)

13 50mA AIO.0 PRIMARY WET WELL LEVEL TRANSMITTER

13A

13G

14 50mA AIO.2 BACKUP WET WELL LEVEL TRANSMITTER

14A

14G

11 — 11 — 24V+

1001 — 1001 — 1001B

1001A — 1001A

12 — 12 — 24V+

1003 — 1003 — 1003B

1003A — 1003A

RADAR LEVEL TRANSMITTER JUNCTION BOX

MFG. CABLE

PRIMARY RADAR LEVEL TRANSMITTER

LT-1

MFG. CABLE

BACK UP RADAR LEVEL TRANSMITTER

LT-2

L1A 3 3N L1N

MATCHLINE 2

LEGEND

△ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR

✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE

□ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL

■ FIELD TERMINAL LOCATED AT CONTROL PANEL

▲ REMOTE TERMINAL

● DEVICE TERMINAL NO.

◆ PLC INTERFACE TERMINAL

DCCM

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

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA.–II
(SHEET 2 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 162 OF 298	I–309

PLOTTED: 2/23/2026 8:16:36 AM
PLOT STYLE: Gaitctb
FILE PATH: O:\PROJECTS\...\Golden Bear\...\Golden Bear Control Panel Wiring Diagram (GOLDEN BEAR).dwg

NO.	DATE	REVISION	APP.

FIELD | CONTROL PANEL: DOOR | INTERIOR PANEL | PLC

MATCHLINE 1

120 VAC POWER

24VDC

L1A 3 — 3N L1N

RADAR LEVEL TRANSMITTER JUNCTION BOX

MFG. CABLE

PRIMARY RADAR LEVEL TRANSMITTER LT-1

MFG. CABLE

BACK UP RADAR LEVEL TRANSMITTER LT-2

RBRM1: 5 — R — 2, 10

RBRM2: 6 — R — 2, 10

1004 — ANALOG ISOLATOR (YY): 1, 2, +, -, 3, 4, 5, 6

1002 — ANALOG ISOLATOR (YY): 1, 2, +, -, 3, 4, 5, 6

24V-

2

ANALOG I/O SURGE SUPPRESSOR (CC): 1, 2, 3, 4

11	11	1	24V+
1001	1001	2	1001B
1001A	1001A		
12	12	3	24V+
1003	1003	4	1003B
1003A	1003A		

BACK UP PLC

L+		CPU POWER
M		CPU COMMON
35B	1A	QO.0 PUMP NO.1 CALL TO RUN
38B	1A	QO.1 PUMP NO.2 CALL TO RUN
41B	1A	QO.2 SPARE
44B	1A	QO.3 SPARE
47B	1A	QO.4 SPARE
13B	50mA	AIO.0 PRIMARY WET WELL LEVEL TRANSMITTER (+)
13AB		(-)
13GB		
L+		CPU POWER
M		CPU COMMON
14B	50mA	AIO.2 BACKUP WET WELL LEVEL TRANSMITTER (+)
14AB		(-)
14GB		
L+		CPU POWER
M		CPU COMMON
13	50mA	AIO.0 PRIMARY WET WELL LEVEL TRANSMITTER (+)
13A		(-)
13G		
14	50mA	AIO.2 BACKUP WET WELL LEVEL TRANSMITTER (+)
14A		(-)
14G		

MATCHLINE 2

LEGEND

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

DCCM

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA.–III
(SHEET 3 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 163 OF 298	I–310

PLOTTED: 2/23/2026 8:16:36 AM
PLOT STYLE: Color.ctb
FILE PATH: Q:\[illegible]

FIELD	POWER PANEL	CONTROL PANEL		
		DOOR	INTERIOR PANEL	PLC

MATCHLINE 2

120 VAC POWER

24VDC

L1A 3 3N L1N

L1
N
MS
MOTION SWITCH

L1
N
MS
MOTION SWITCH

17 50mA I0.0 INTRUSION ALARM

18 18 18 50mA I0.1 PHASE FAILURE UNDER VOLTAGE

RUV 2 R 10

BACK UP PLC

18B 50mA I0.0 PHASE FAILURE UNDER VOLTAGE

RUV 11 9

ØA ØB ØC

JE-2 PHASE MONITOR

7 8 9 10 11 12

N/C 3

M1

19

20

RFLP 2 R 10

15 50mA I0.4 SPARE
15A
15G

16 50mA AI0.6 SPARE
16A
16G

L1A 3 3N L1N

MATCHLINE 3

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

NO.	DATE	REVISION	APP.

DCCM

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA.–IV
(SHEET 4 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 164 OF 298	I-311

PLOTTED: 2/23/2026 8:16:36 AM
PLOT STYLE: Color.ctb
FILE PATH: C:\Users\hforouzan\Gupta & Associates, Inc\Projects - Documents\CITY OF HOUSTON\Active Projects\Golden Bear\Drawings\Instrumentation\Golden Bear Lift Station Instrumentation (GOLDEN BEAR).dwg

FIELD | POWER PANEL | CONTROL PANEL: DOOR | CONTROL PANEL: INTERIOR PANEL | PLC

120 VAC POWER
24 VDC
24 VAC
JE-2
TBP1 SEE NOTE 2
L1A
L1N
3N
5N
15
15N
3P1

TSH-1 MOTOR TEMP SWITCH
LSH-1 SEAL LEAK DETECTOR
TERMINAL JUNCTION BOX
PUMP NO.1
REFER TO SHEET E-305
4-20mA CURRENT TRANSDUCER
IE-1 MOTOR OVERLOAD RELAY (MOR) (SEE NOTE 1)
HS-1A RESET
TO SHEET I-313
HS-1 H-O-A
ZS-1
YI-1 RUN
PUMP NO. 1 PROTECTION MODULE
LAH-1 SL1
TAH-1 MTH1
RRST1
RMSL1
RMTH1
TDFRM1
RFS1
RMOR1
RPLC1
RBRM1
RPLM1

103	1A	Q0.4 ALARM RESET
104	50mA	I0.6 ALARM RESET
109	50mA	I1.1 PUMP NO.1 HIGH TEMP ALARM
122	50mA	AI0.8 PUMP NO.1 MOTOR CURRENT
123	50mA	I3.3 PUMP NO.1 MOTOR OVERLOAD
115	50mA	I3.0 PUMP NO.1 IN HAND
121	50mA	I3.1 PUMP NO.1 IN AUTO
118	1A	Q0.7 PUMP NO.1 PLC START/STOP
120	50mA	I1.0 PUMP NO.1 RUN
110	50mA	I3.2 PUMP NO.1 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-303.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

NO.	DATE	REVISION	APP.

DCCM

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
INSTRUMENTATION
PUMP NO.1 CONTROL WIRING DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 165 OF 298	I-312

PLOTTED: 2/23/2026 8:16:36 AM
PLOT STYLE: Gaitctb
FILE PATH: C:\Users\hforouzan\Gupta & Associates, Inc\GAI - Documents\Projects\2025\25-0000 CITY OF HOUSTON\25-0000 CITY OF HOUSTON (GOLDEN BEAR).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-312
HS-1A RESET
RRST2
M2
TSH-2 MOTOR TEMP SWITCH
LSH-2 SEAL LEAK DETECTOR
20
21
22
23
PUMP NO.2
T1
T2
T3
G
M1
CT
REFER TO SHEET E-305
TERMINAL JUNCTION BOX
4-20mA CURRENT TRANSDUCER
IE-2 MOTOR OVERLOAD RELAY (MOR) (SEE NOTE 1)
MOR2
PUMP NO. 2 PROTECTION MODULE
LAH-2 SL2
TAH-2 MTH2
RMSL2
RMTH2
RFS2
TDFRM2
RMOR2
RPLM2
RPLC1
RBRM2
RFLP
HS-2 H-O-A
YI-2
RUN
ZS-2
3P2
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
218
219
220
221
222
223
50mA
1A
I1.3 PUMP NO.2 HIGH TEMP ALARM
AI.0 PUMP NO.2 MOTOR CURRENT
I3.7 PUMP NO.2 MOTOR OVERLOAD ALARM
I3.5 PUMP NO.2 IN HAND
I3.4 PUMP NO.2 IN AUTO
Q1.0 PUMP NO.2 PLC START/STOP
I1.2 PUMP NO.2 RUN
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-303.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

NO.	DATE	REVISION	APP.

DCCM

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

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

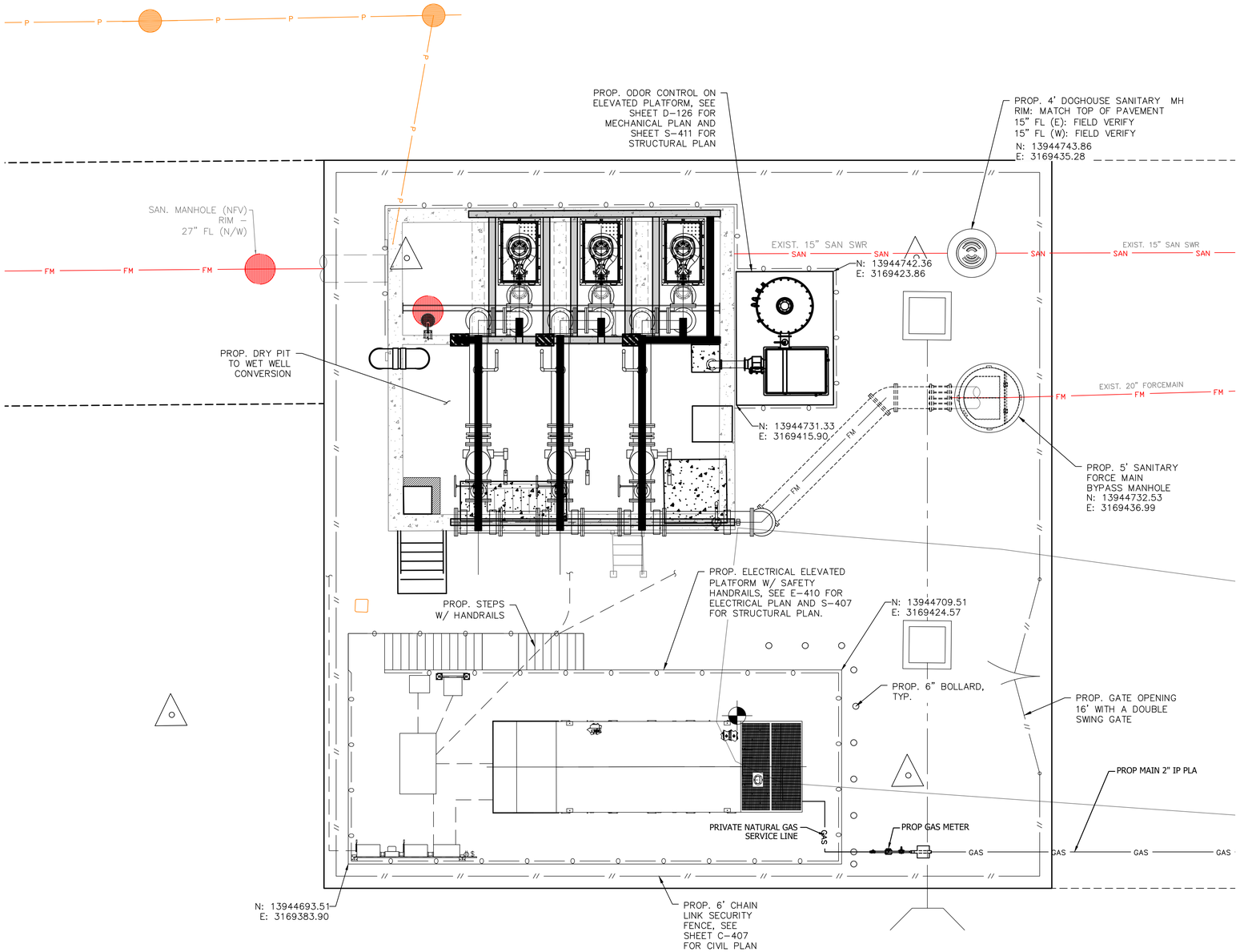
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION INSTRUMENTATION
PUMP NO.2 CONTROL WIRING DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 166 OF 298	I-313

PLOTTED: 2/25/2026 3:21 PM
PLOT STYLE: COH.ctb
FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.03_Drawings\24-1930-PD-OVERALL-SITE-PLAN.dwg



OVERALL SITE PLAN
SCALE: 1" = 5'-0"

0 5 10
SCALE IN FEET

NO.	DATE	REVISION	APP.

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

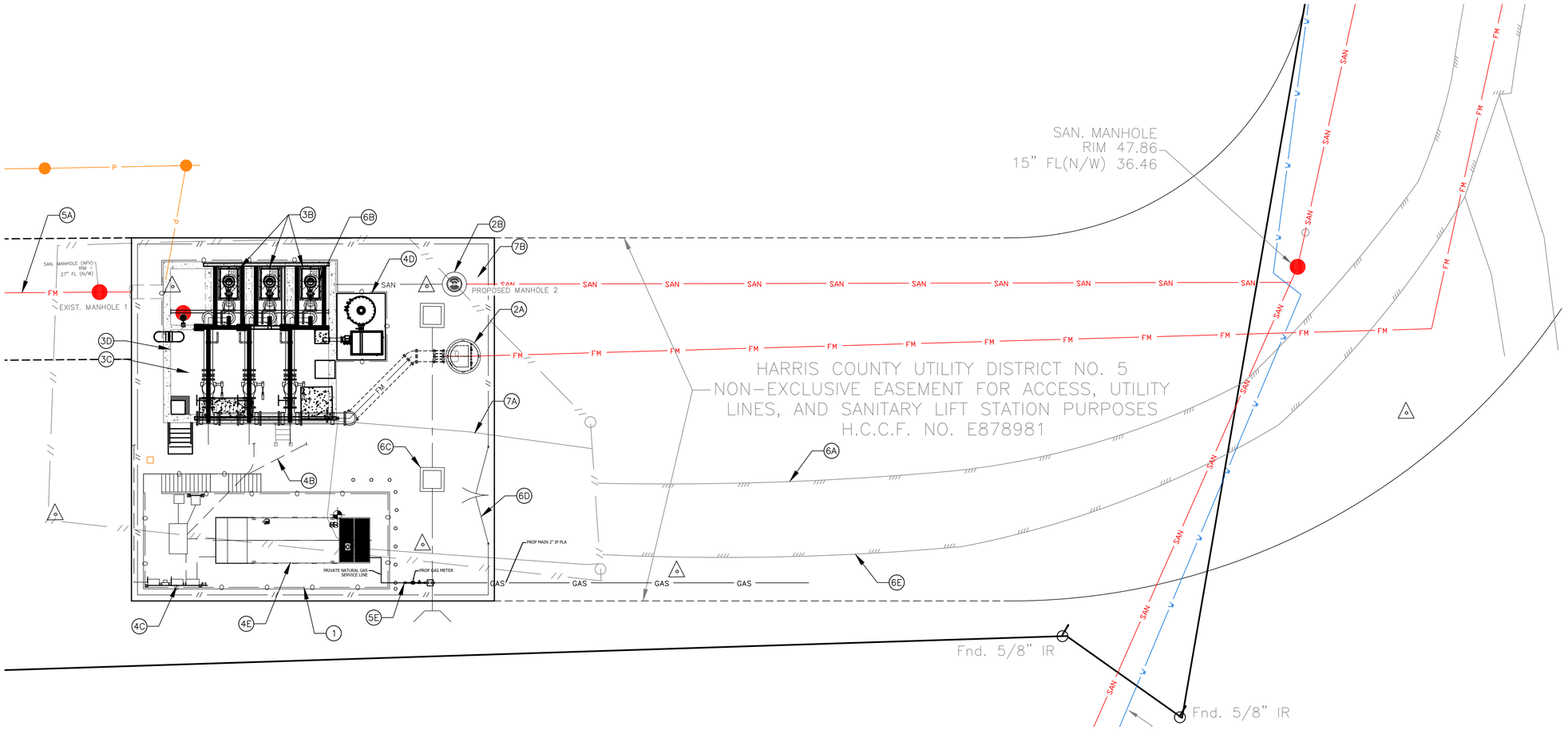
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION

PROPOSED OVERALL SITE LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=5' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 167 OF 298	M-401



OVERALL SITE PLAN

SCALE: 1" = 5'-0"

RECOMMENDED CONSTRUCTION SEQUENCE	
NO.	DESCRIPTION
1	CONSTRUCT PROP. ELECTRICAL PLATFORM.
2A	INSTALL PROP. BYPASS MANHOLE.
2B	INSTALL PROP. MANHOLE 2 (DOGHOUSE STYLE) AND ISOLATE FLOW TO EXISTING WET WELL. PROVIDE BYPASS PUMPING SERVICES FROM EXISTING MANHOLE 1 AND PROP. MANHOLE 2 TO THE BYPASS MANHOLE.
2C	MAINTAIN EXISTING LS OPERATION UNTIL COMPLETION OF PROP. SUBMERSIBLE LS
3A	DEMOLISH AND REMOVE MECHANICAL EQUIPMENT INCLUDING PUMPS, PIPING, AND VALVES FROM THE DRY PIT.
3B	STRUCTURAL MODIFICATION OF WET WELL AND DRY PIT TOP SLAB TO INSTALL PROP. FLOOD-PROOF HATCHES.
3C	CLEAN EXISTING WET WELL VIA REMOVAL AND DISPOSAL OF SLUDGE AND SOLIDS.
3D	COAT EXISTING WET WELL.
4A	DEMOLITION AND REMOVAL OF EXISTING ELECTRICAL ITEMS: MCC, PANELS FROM DRY PIT, ETC.
4B	SET UP NEW ELECTRICAL SERVICES.
4C	INSTALL CONTROL PANELS, AND CONDUIT CONNECTIONS TO NEW SUBMERSIBLE PUMPS.
4D	INSTALL PROP. ODOR CONTROL SYSTEM AND PIPING CONNECTION.
4E	INSTALL PROP. GAS GENERATOR AND NATURAL GAS PIPING CONNECTION.
5A	INTRODUCE WASTEWATER INTO COMPLETED PROP. WET WELL.
5B	PERFORM PUMP TESTING AND STARTUP OF NEW LIFT STATION OPERATION.
6A	DEMOLISH AND REMOVE EXISTING PAVING.
6B	REPLACE EXISTING WATER SERVICE, BACK FLOW PREVENTER, AND HOSE BIBB.
6C	INSTALL PROP. STORM DRAIN.
6D	INSTALL PROP. FENCES AND GATES.
63	INSTALL PROP. CONCRETE PAVEMENT AND REPLACE ACCESS ROAD PAVING.

NO.	DATE	REVISION	APP.

DCCM

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1710 Seamist Dr
Houston, TX 77008
713.869.3433
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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

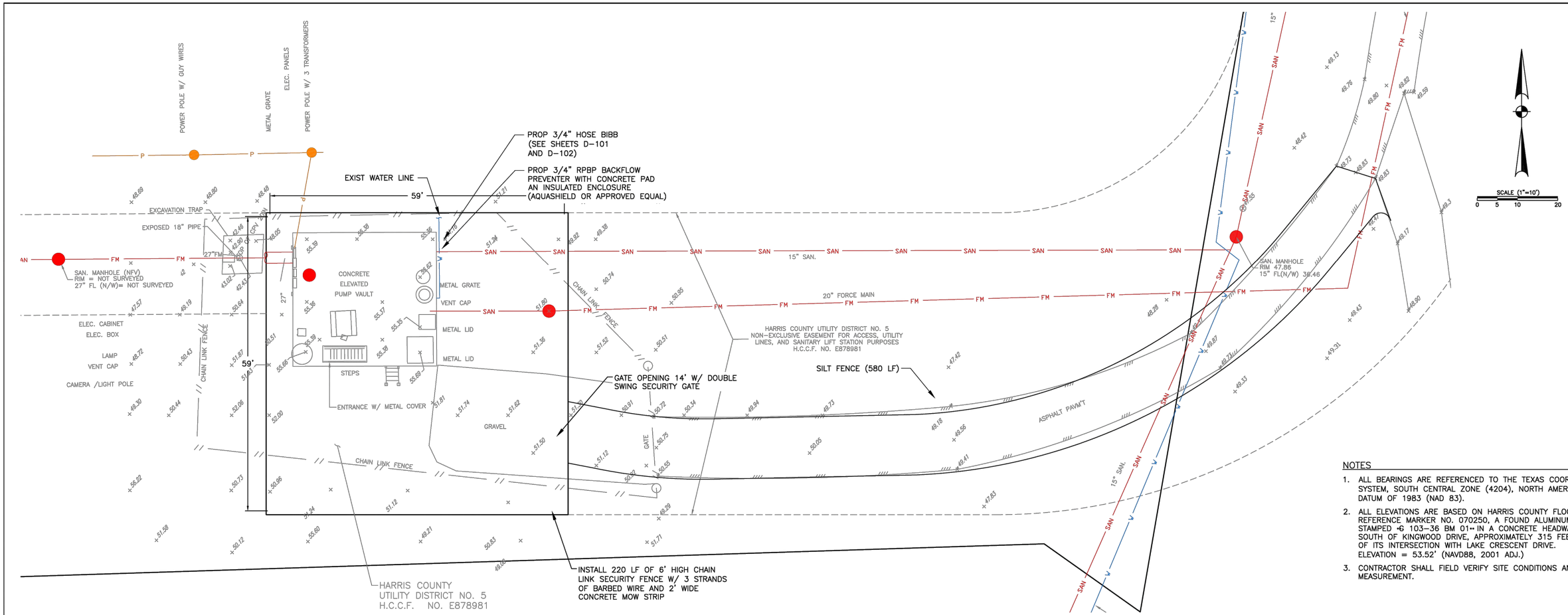
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
PROPOSED CONSTRUCTION SEQUENCE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=5' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 168 OF 298	CS-401

PLOTTED: 2/25/2026 12:47 PM
PLOT STYLE: COH.ctb
FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.03_Drawings\24-1930-PD-CONST SEQ.dwg

PLOT STYLE: COH_ctb_230809.ctb PLOTTED: 2/26/2026 3:27 PM
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NO.	DATE	REVISION	APP.

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070250, A FOUND ALUMINUM DISC STAMPED "G 103-36 BM 01" IN A CONCRETE HEADWALL SOUTH OF KINGWOOD DRIVE, APPROXIMATELY 315 FEET EAST OF ITS INTERSECTION WITH LAKE CRESCENT DRIVE. ELEVATION = 53.52' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENT.

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS · NATHAN A. WILSON · 136610 · LICENSED PROFESSIONAL ENGINEER

02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
EXISTING CONDITIONS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 169 OF 298	C-401

PLOT STYLE: COH_ctb_230809.ctb PLOTTED: 2/26/2026 8:27 PM
FILE PATH: W:\Projects\NOB\0193234-01\COH\Lift Stations\GOLF COURSE\CIVIL\DEMOLITION\GOLF COURSE DEMO.dwg

POWER POLE W/ GUY WIRES
METAL GRATE
ELEC. PANELS
POWER POLE W/ 3 TRANSFOR

EXCAVATION TRAP
EXPOSED 18" PIPE
SAN. MANHOLE (NFV)
RIM = NOT SURVEYED
27" FL (N/W)= NOT SURVEYED
ELEC. CABINET
ELEC. BOX
LAMP
VENT CAP
CAMERA /LIGHT POLE
CONCRETE ELEVATED PUMP VAULT
METAL GRATE
VENT CAP
METAL LID
METAL LID
STEPS
ENTRANCE W/ METAL COVER
CHAIN LINK FENCE
58'
59'
45'
59'
92'
27"
27" FM
15" SAN.
20" FORCE MAIN

REMOVE EXISTING FENCE (265 LF)
43' CHAIN LINK FENCE
REMOVE EXISTING STEPS
GATE OPENING 14' W/ DOUBLE SWING SECURITY GATE
REMOVE ASPHALT SURFACE (192 SY)
REMOVE ASPHALT SURFACE (89 SY)
SAWCUT ASPHALT CART PATH (9 LF)
SAN. MANHOLE
RIM 47.96
15" FL(N,W) 38.46
INSTALL 220 LF OF 6' HIGH CHAIN LINK SECURITY FENCE W/ 3 STRANDS OF BARBED WIRE AND 2' WIDE CONCRETE MOW STRIP

HARRIS COUNTY
UTILITY DISTRICT NO. 5
H.C.C.F. NO. E878981

SCALE (1"=10')
0 5 10 20

NO.	DATE	REVISION	APP.

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070250, A FOUND ALUMINUM DISC STAMPED "G 103-36 BM 01" IN A CONCRETE HEADWALL SOUTH OF KINGWOOD DRIVE, APPROXIMATELY 315 FEET EAST OF ITS INTERSECTION WITH LAKE CRESCENT DRIVE. ELEVATION = 53.52' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENT.

LEGEND

REMOVE EXISTING CONCRETE

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

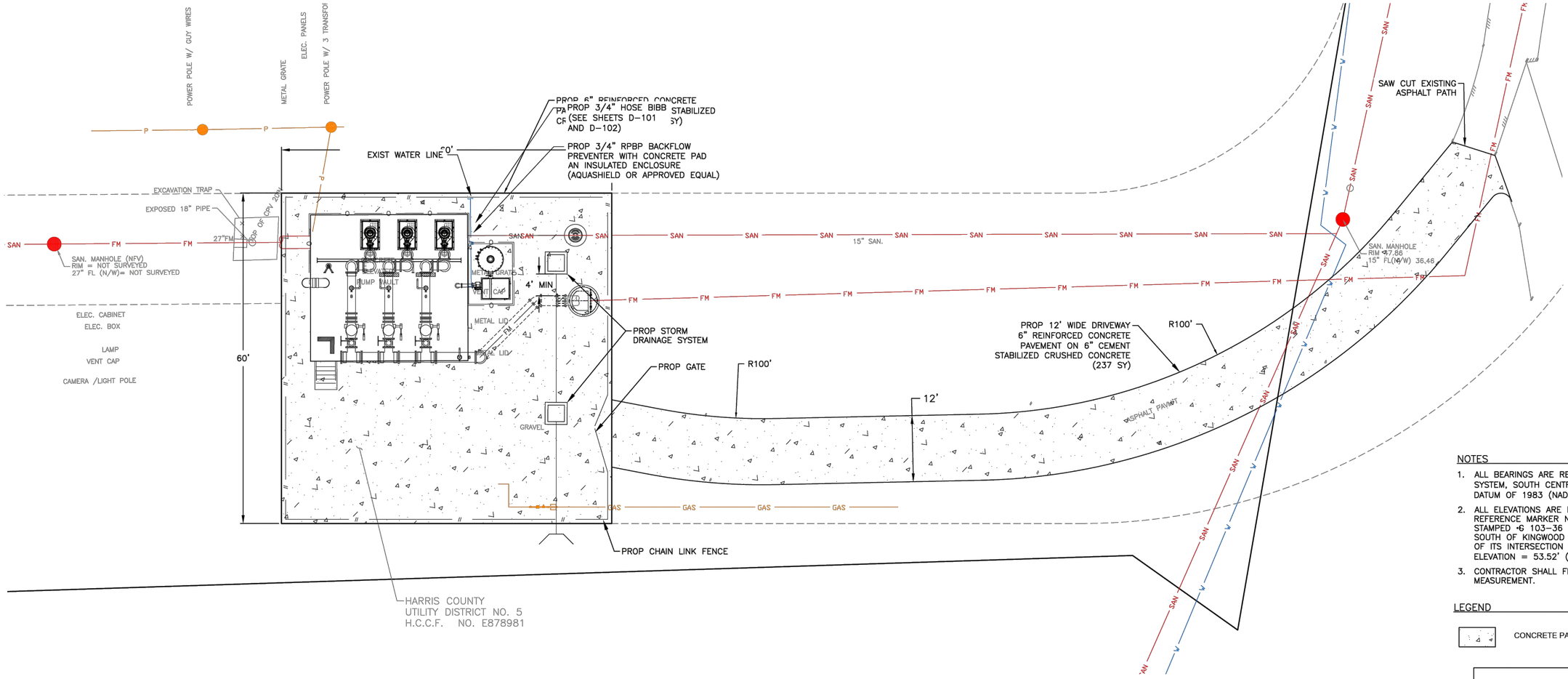
STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER
02/20/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
DEMOLITION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 170 OF 298	C-402



NO.	DATE	REVISION	APP.

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
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3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENT.

LEGEND

CONCRETE PAVEMENT

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
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SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS · NATHAN A. WILSON · 136610 · LICENSED PROFESSIONAL ENGINEER

02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
PROPOSED CIVIL SITE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 171 OF 298	C-403

PLOTTED: 2/26/2026 8:28 AM
PLOT STYLE: C3H_ctb_230809.ctb
FILE PATH: W:\2021projects\021023-06\CIVIL\Drawings\Sheets\C-403 PROPOSED CIVIL (GOLF COURSE).dwg

PLOT STYLE: COH_ctb_230809.ctb PLOTTED: 2/26/2026 3:25 PM
FILE PATH: W:\Projects\NOEN\Projects\CIVIL (GOLF COURSE).dwg

ROMERICA LANDCO, LP
H.C.C.F. NO. RP-2018-162614

PROP 3/4" HOSE BIBB (SEE SHEETS D-101 AND D-102)
PROP 3/4" RPBP BACKFLOW PREVENTER WITH CONCRETE PAD AN INSULATED ENCLOSURE (AQUASHIELD OR APPROVED EQUAL)
EXIST WATER LINE
EXCAVATION TRAP
EXPOSED 18" PIPE
PROP INLET TG=51.50
PROP INLET TG=51.10
15" SAN.
20" FORCE MAIN
SAN. MANHOLE RIM 47.68 15" FL(N/W) 36.46
GRAVEL
ASPHALT PAVMENT
12" WATERLINE (APPROX. PER GIMS)
HARRIS COUNTY UTILITY DISTRICT NO. 5
H.C.C.F. NO. E878981

TP=52.
TP=51.90
TP=51.80
TP=51.70
TP=51.80
TP=51.80
TP=51.50
TP=51.50
TP=51.30
TP=51.30
TP=51.40
TP=51.40
TP=49.90
TP=49.60
TP=49.20
TP=48.90
TP=49.60
TP=49.40
TP=49.73
TP=49.30
TP=49.30
TP=48.10

SCALE (1"=10')
0 5 10 20

NOTES

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3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENT.

LEGEND

EXISTING DRAINAGE DIRECTION
PROPOSED DRAINAGE DIRECTION
CONCRETE PAVEMENT

NO.	DATE	REVISION	APP.

DCCM

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ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
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FB NO. 6399

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER

02/20/2026

CITY OF HOUSTON

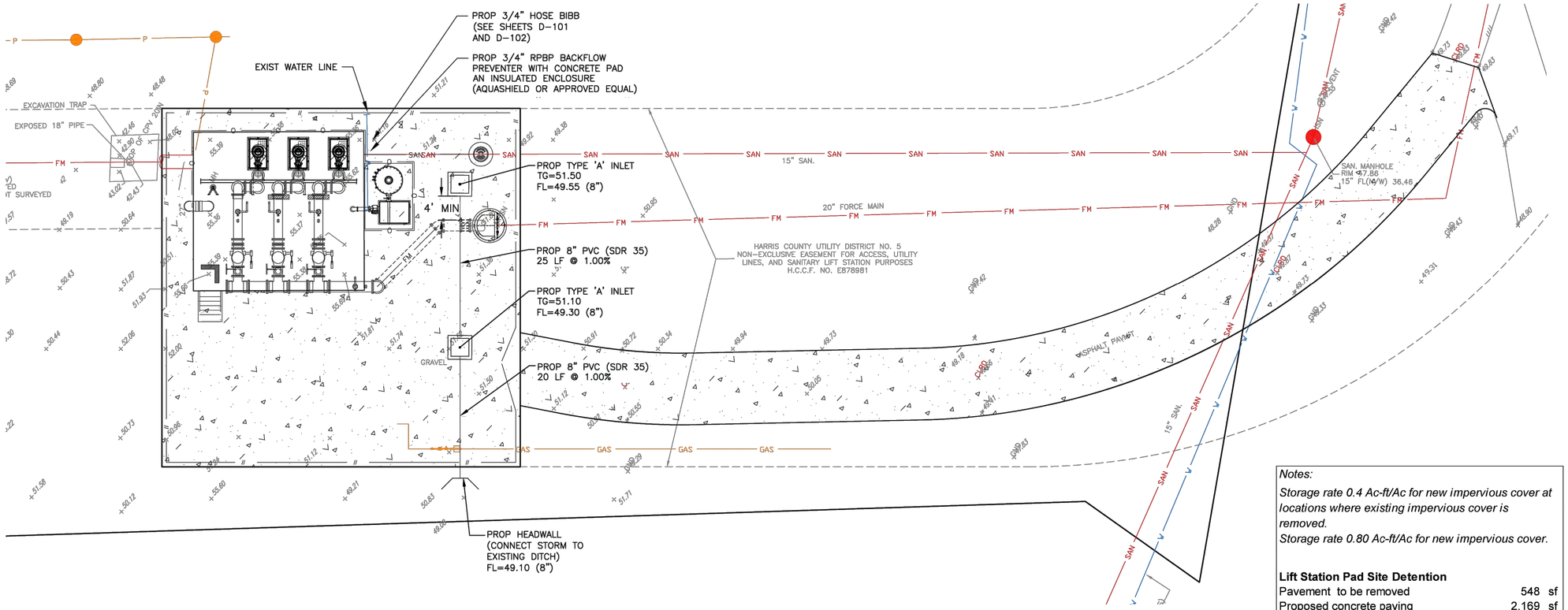
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
PROPOSED CIVIL GRADING PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 171 OF 298	C-403



NOTES

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3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENT.

LEGEND

CONCRETE PAVEMENT

FLOOD DATA

FIRM MAP NO.: 48201C0315L
EFFECTIVE DATE: 6/18/2007
FLOOD ZONE: AE
BFE = 55.90
500-YR WSEL = 61.02

REQUIRED VARIANCES

1. OMIT DETENTION.
2. CONNECTION TO PUBLIC DRAIANGE SYSTEM.

Notes:
Storage rate 0.4 Ac-ft/Ac for new impervious cover at locations where existing impervious cover is removed.
Storage rate 0.80 Ac-ft/Ac for new impervious cover.

Lift Station Pad Site Detention	
Pavement to be removed	548 sf
Proposed concrete paving	2,169 sf
Lift Station Top	760
Proposed Gravel (river rock for vegetation control) (Permeable)	550 sf
Storage Required	**1,956 cf**

Cut and Fill Data	
Total Cut	215 cf
Total Fill	-215 cf
Net (Cut) / Fill	0 cf

Lift Station Drainage Calculations	
Total Area	3,600.00 sf
	0.08 Ac
Total Impervious Cover	
Paving	2,929.00 sf
	2,929.00
Runoff Coefficient	**0.81**

2-YEAR EVENT - CoH IDF CURVE b=48.35, D=9.07, E=0.7244 (Existing)

FROM NODE	TO NODE	AREA (SF)	AREA (AC)	AREA (AC)	AREA (AC)	C	Tc (MIN)	2-YR (IN/HR)	TOTAL (CFS)
A	B	1,800	0.0413		0.0413	0.36	20.71	4.14	0.06
B	C	1,800	0.0413		0.0826	0.36	21.45	4.06	0.12

100 -YEAR EVENT - CoH IDF CURVE b=60.66, D=4.44, E=0.5797 (Existing)

FROM NODE	TO NODE	AREA (SF)	AREA (AC)	AREA (AC)	AREA (AC)	C	Tc (MIN)	2-YR (IN/HR)	TOTAL (CFS)
A	B	1,800	0.0413		0.0413	0.36	20.71	9.36	0.14
B	C	1,800	0.0413		0.0826	0.36	21.45	9.20	0.27

2-YEAR EVENT - CoH IDF CURVE b=48.35, D=9.07, E=0.7244

FROM NODE	TO NODE	AREA (SF)	AREA (AC)	AREA (AC)	AREA (AC)	C	Tc (MIN)	2-YR (IN/HR)	TOTAL (CFS)	SIZE (IN)	MANNING NUMBER	SLOPE (%)	CAPACITY (CFS)	Velocity (FPS)	Pipe Run (FT)	Fall (FT)	DROP (FT)	STREAM (FT)	STREAM (FT)	Actual Velocity ft/sec)	Hydraulic Grade (%)	Change in Head (%)	Elevation HGL (upstream) (ft)	Elevation HGL (downstream) (ft)	Existing Surface Elevation (ft)
A	B	1,800	0.0413		0.0413	0.81	20.71	4.14	0.14	8	0.12	1.00	1.58	2.83	20	0.2									
B	C	1,800	0.0413		0.0826	0.81	21.45	4.06	0.27	8	0.12	1.00	1.58	3.38	20	0.2									

100 -YEAR EVENT - CoH IDF CURVE b=60.66, D=4.44, E=0.5797

FROM NODE	TO NODE	AREA (SF)	AREA (AC)	AREA (AC)	AREA (AC)	C	Tc (MIN)	2-YR (IN/HR)	TOTAL (CFS)	SIZE (IN)	MANNING NUMBER	SLOPE (%)	CAPACITY (CFS)	Velocity (FPS)	Pipe Run (FT)	Fall (FT)	DROP (FT)	STREAM (FT)	STREAM (FT)	Actual Velocity ft/sec)	Hydraulic Grade (%)	Change in Head (%)	Elevation HGL (upstream) (ft)	Elevation HGL (downstream) (ft)	Existing Surface Elevation (ft)
A	B	1,800	0.0413		0.0413	0.81	20.71	9.36	0.31	8	0.12	1.00	1.58	3.51	20	0.2									
B	C	1,800	0.0413		0.0826	0.81	21.45	9.20	0.62	8	0.12	1.00	1.58	4.25	20	0.2									

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED
PROFESSIONAL ENGINEER

02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
PROPOSED CIVIL DRAINGE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 170 OF 298	C-402

NO.	DATE	REVISION	APP.

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POWER POLE W/ GUY WIRES
METAL GRATE
ELEC. PANELS
POWER POLE W/ 3 TRANSFOR
PROP 3/4" HOSE BIBB (SEE SHEETS D-101 AND D-102)
PROP 3/4" RPBP BACKFLOW PREVENTER WITH CONCRETE PAD AN INSULATED ENCLOSURE (AQUASHIELD OR APPROVED EQUAL)
EXIST WATER LINE
EXCAVATION TRAP
EXPOSED 18" PIPE
TOP OF CPV ZONE
27"FM
SAN. MANHOLE (NFV)
RIM = NOT SURVEYED
27" FL (N/W)= NOT SURVEYED
ELEC. CABINET
ELEC. BOX
LAMP
VENT CAP
CAMERA /LIGHT POLE
ELEVATOR
PUMP VAULT
METAL GRATE
VENT CAP
METAL LID
METAL LID
GRAVEL
15" SAN.
SAN. MANHOLE
RIM = 47.66
15" FL(N/W) 36.46
ASPHALT PAVMT
HARRIS COUNTY
UTILITY DISTRICT NO. 5
H.C.C.F. NO. E878981

SCALE (1"=10')
0 5 10 20

NO.	DATE	REVISION	APP.

NOTES

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LEGEND

CONCRETE PAVEMENT

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER
02/20/2026

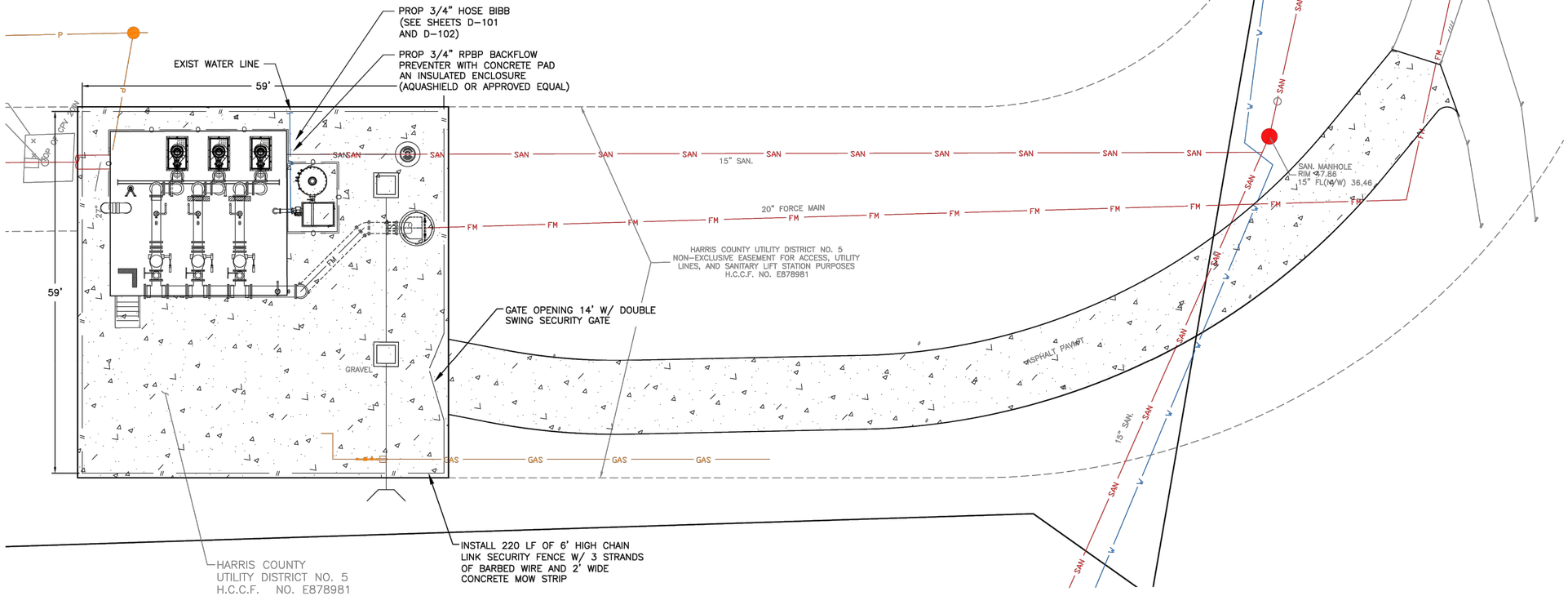
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

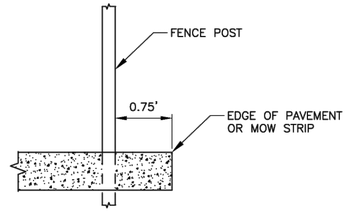
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
PROPOSED CIVIL WATER PLAN

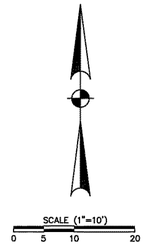
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R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 174 OF 298	C-406

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FENCE SECTION VIEW
SCALE: 1" = 1'-0"



NO.	DATE	REVISION	APP.

NOTES

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LEGEND

CONCRETE PAVEMENT

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED
PROFESSIONAL ENGINEER

02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

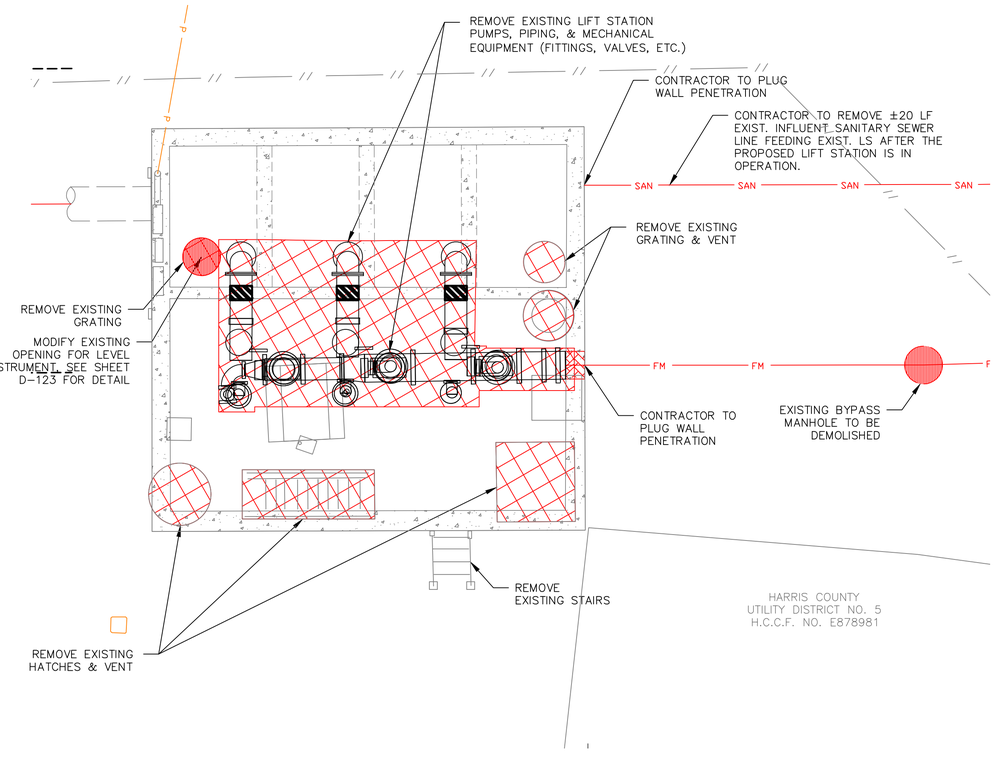
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
PROPOSED CIVIL FENCE PLAN

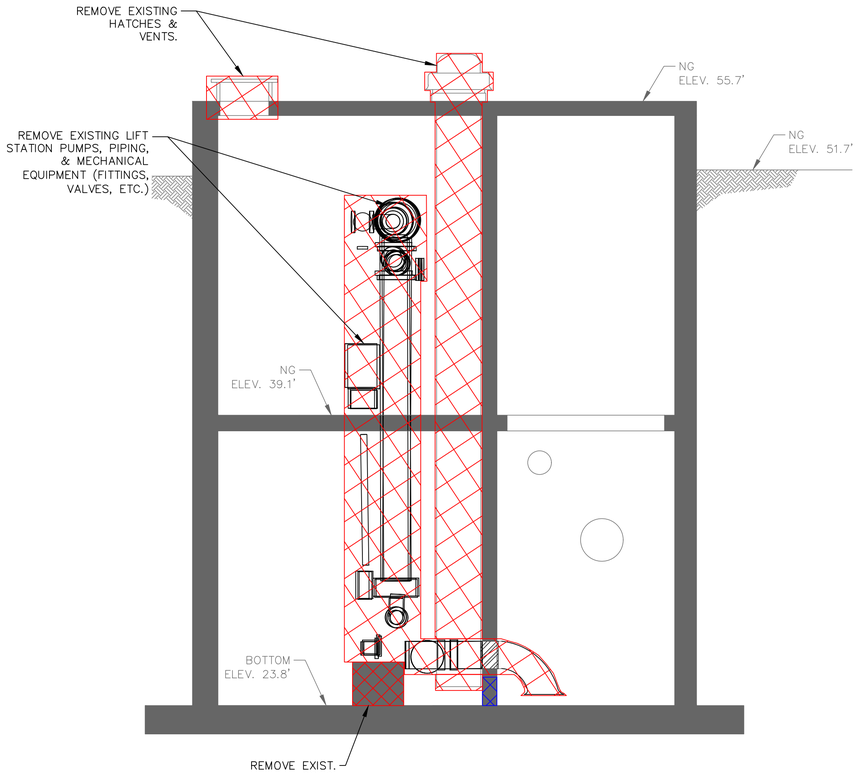
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 175 OF 298	C-407

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EXISTING GOLF COURSE LIFT STATION

SCALE: 1" = 5'-0"



SECTION

SCALE: 1" = 4'-0"

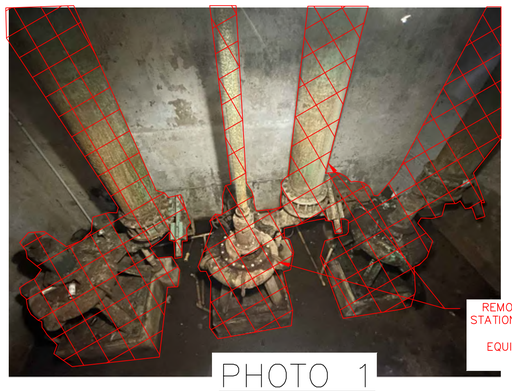


PHOTO 1

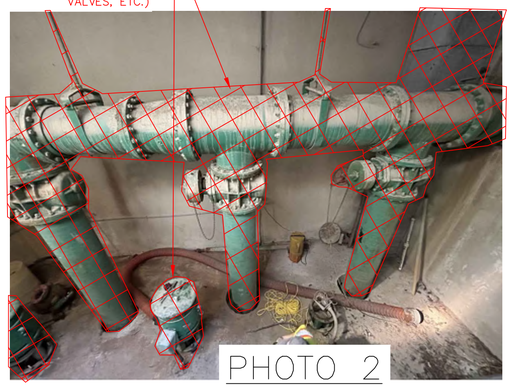


PHOTO 2

NOTES:

1. PROVIDE SAFE WORKING CONDITIONS FOR EMPLOYEES THROUGHOUT DEMOLITION AND REMOVAL OPERATIONS. OBSERVE SAFETY REQUIREMENTS FOR WORK BELOW GRADE.
2. MAINTAIN SAFE ACCESS TO ADJACENT PROPERTY AND BUILDINGS. DO NOT OBSTRUCT ROADWAYS, SIDEWALKS OR PASSAGEWAYS ADJACENT TO THE WORK.
3. PERFORM DEMOLITION IN A MANNER TO PREVENT DAMAGE TO ADJACENT PROPERTY. REPAIR DAMAGE TO CITY PROPERTY OR ADJACENT PROPERTY AN FACILITIES.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFETY AND INTEGRITY OF ADJACENT STRUCTURES AND SHALL BE LIABLE FOR ANY DAMAGE DUE TO MOVEMENT OR SETTLEMENT. PROVIDE PROPER FRAMING AND SHORING NECESSARY FOR SUPPORT. CEASE OPERATIONS IF AN ADJACENT STRUCTURE APPEARS TO BE ENDANGERED. RESUME DEMOLITION ONLY AFTER PROPER PROTECTIVE MEASURES HAVE BEEN TAKEN.
5. NOTIFY AND COORDINATE WITH UTILITY COMPANY AND ADJACENT BUILDING OCCUPANTS WHEN TEMPORARY INTERRUPTION OF UTILITY SERVICE IS NECESSARY.
6. DO NOT BACKFILL WITH MATERIAL FROM DEMOLITION UNLESS APPROVED BY PROJECT MANAGER.
7. ALL OPENINGS BELOW THE REMOVED WALLS SHALL BE SEALED WITH NON-SHRINK GROUT.
8. CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS (INCLUDING DEMOLISH PERMITS, COH FORM NO. CE-0175 & TEXAS DSHS FORM APB#5) REQUIRED. CONTRACTOR SHALL COORDINATE DISCONNECT WITH CENTERPOINT ENERGY TO ELECTRICAL POWER.
9. THE CITY OF HOUSTON HAS THE FIRST RIGHT OF REFUSAL OF ANY EQUIPMENT OR MATERIAL REMOVED. CONTACT CITY PROJECT MANAGER AT LEAST 72 HOURS PRIOR TO DEMOLITION IN ORDER TO COORDINATE REMOVAL OF ANY ITEMS THE CITY WISHES TO CLAIM AS SALVAGE. THE CONTRACTOR SHALL DELIVER ALL SALVAGED ITEMS TO A LOCATION, WITHIN THE CITY, DETERMINED BY THE CITY, THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL OTHER EQUIPMENT AND MATERIAL NOT IDENTIFIED FOR SALVAGE.
10. THE EXISTING WET WELL SHALL BE CLEANED OF ALL DEBRIS, WASTEWATER, AND OTHER RESIDUES.
11. THE CONTRACTOR SHALL DISPOSE OF ANY LIQUID OR SOLID WASTE FOUND IN THE WET WELL AT A DISPOSAL FACILITY LICENSED & APPROVED BY THE STATE OF TEXAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF TRANSPORTATION, DISPOSAL & TESTING REQUIRED BY STATE & FEDERAL REGULATORY AGENCIES, & BY THE DISPOSAL FACILITY
12. CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS (INCLUDING DEMOLISH PERMITS, ENCROACHMENT PERMITS, ETC.)

NOTES CONT'D:

13. DO NOT PROCEED WITH DEMOLITION OR REMOVAL OPERATIONS UNTIL AUTHORIZED BY PROJECT MANAGER. NO DEMOLITION SHALL BE PERFORMED UNTIL BYPASS PUMPING IS OPERATIONAL.
14. PLUG, GROUT FILL & ABANDON 8-INCH INFLUENT LINE (TO WET WEATHER LIFT STATION).

NO.	DATE	REVISION	APP.

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND NOT FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
MECHANICAL
DEMOLITION PLAN AND SECTION
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
H: 1"=4' V: 1"=4'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 176 OF 298	M-402

PLOTTED: 2/25/2026 11:37 AM
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FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.03_Drawings\24-1930-PD-DEMO.dwg



PHOTO 3



PHOTO 4



PHOTO 5



PHOTO 6

NOTES:

1. PROVIDE SAFE WORKING CONDITIONS FOR EMPLOYEES THROUGHOUT DEMOLITION AND REMOVAL OPERATIONS. OBSERVE SAFETY REQUIREMENTS FOR WORK BELOW GRADE.
2. MAINTAIN SAFE ACCESS TO ADJACENT PROPERTY AND BUILDINGS. DO NOT OBSTRUCT ROADWAYS, SIDEWALKS OR PASSAGEWAYS ADJACENT TO THE WORK.
3. PERFORM DEMOLITION IN A MANNER TO PREVENT DAMAGE TO ADJACENT PROPERTY. REPAIR DAMAGE TO CITY PROPERTY OR ADJACENT PROPERTY AN FACILITIES.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFETY AND INTEGRITY OF ADJACENT STRUCTURES AND SHALL BE LIABLE FOR ANY DAMAGE DUE TO MOVEMENT OR SETTLEMENT. PROVIDE PROPER FRAMING AND SHORING NECESSARY FOR SUPPORT. CEASE OPERATIONS IF AN ADJACENT STRUCTURE APPEARS TO BE ENDANGERED. RESUME DEMOLITION ONLY AFTER PROPER PROTECTIVE MEASURES HAVE BEEN TAKEN.
5. NOTIFY AND COORDINATE WITH UTILITY COMPANY AND ADJACENT BUILDING OCCUPANTS WHEN TEMPORARY INTERRUPTION OF UTILITY SERVICE IS NECESSARY.
6. DO NOT BACKFILL WITH MATERIAL FROM DEMOLITION UNLESS APPROVED BY PROJECT MANAGER.
7. ALL OPENINGS BELOW THE REMOVED WALLS SHALL BE SEALED WITH NON-SHRINK GROUT.
8. CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS (INCLUDING DEMOLISH PERMITS, COH FORM NO. CE-0175 & TEXAS DSHS FORM APB#5) REQUIRED. CONTRACTOR SHALL COORDINATE DISCONNECT WITH CENTERPOINT ENERGY TO ELECTRICAL POWER.
9. THE CITY OF HOUSTON HAS THE FIRST RIGHT OF REFUSAL OF ANY EQUIPMENT OR MATERIAL REMOVED. CONTACT CITY PROJECT MANAGER AT LEAST 72 HOURS PRIOR TO DEMOLITION IN ORDER TO COORDINATE REMOVAL OF ANY ITEMS THE CITY WISHES TO CLAIM AS SALVAGE. THE CONTRACTOR SHALL DELIVER ALL SALVAGED ITEMS TO A LOCATION, WITHIN THE CITY, DETERMINED BY THE CITY, THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL OTHER EQUIPMENT AND MATERIAL NOT IDENTIFIED FOR SALVAGE.
10. THE EXISTING WET WELL SHALL BE CLEANED OF ALL DEBRIS, WASTEWATER, AND OTHER RESIDUES.
11. THE CONTRACTOR SHALL DISPOSE OF ANY LIQUID OR SOLID WASTE FOUND IN THE WET WELL AT A DISPOSAL FACILITY LICENSED & APPROVED BY THE STATE OF TEXAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF TRANSPORTATION, DISPOSAL & TESTING REQUIRED BY STATE & FEDERAL REGULATORY AGENCIES, & BY THE DISPOSAL FACILITY
12. CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS (INCLUDING DEMOLISH PERMITS, ENCROACHMENT PERMITS, ETC.)

NOTES CONT'D:

13. DO NOT PROCEED WITH DEMOLITION OR REMOVAL OPERATIONS UNTIL AUTHORIZED BY PROJECT MANAGER. NO DEMOLITION SHALL BE PERFORMED UNTIL BYPASS PUMPING IS OPERATIONAL.
14. PLUG, GROUT FILL & ABANDON 8-INCH INFLUENT LINE (TO WET WEATHER LIFT STATION).

NO.	DATE	REVISION	APP.

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

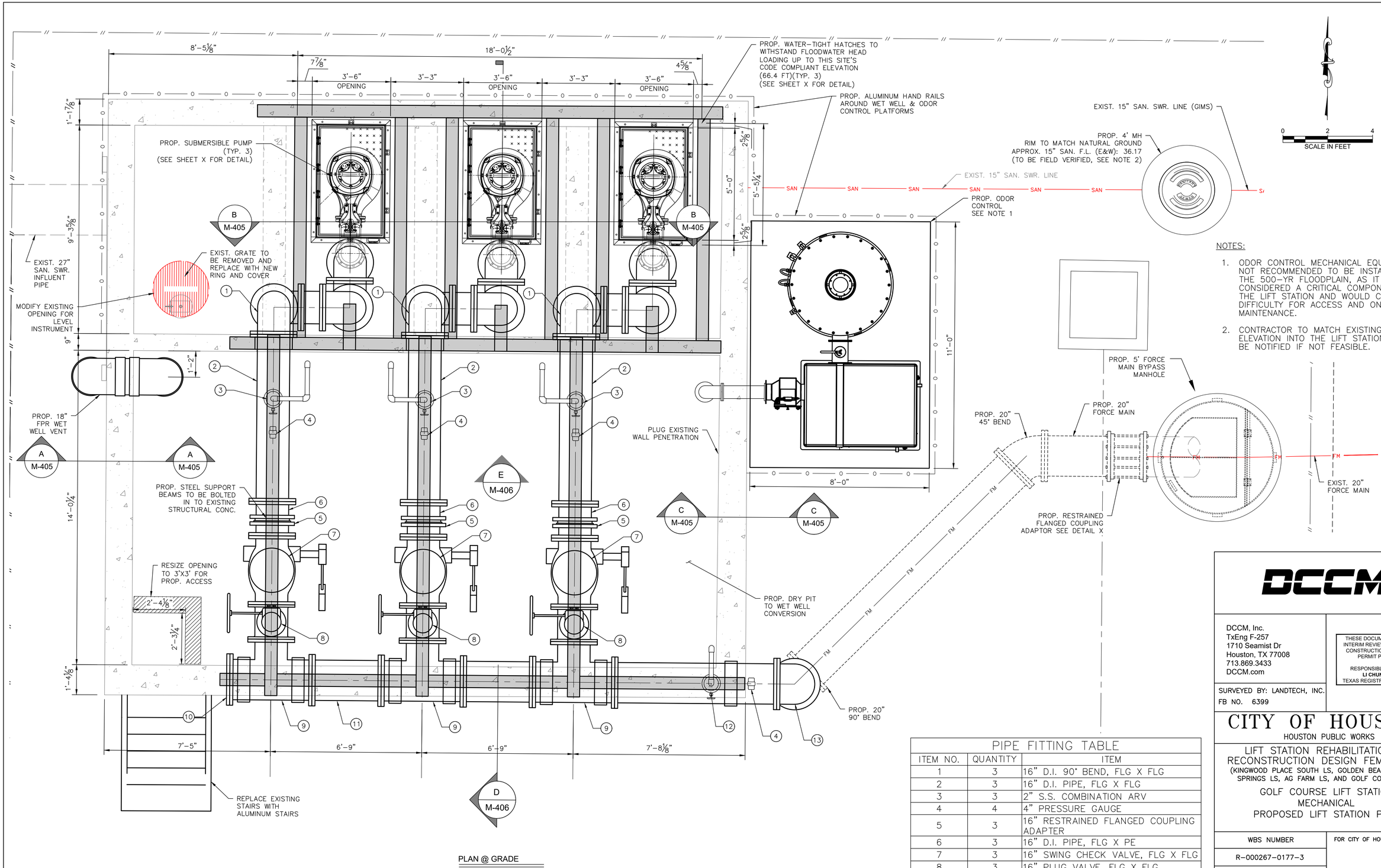
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
MECHANICAL
DEMOLITION PLAN AND SECTION
(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
H: 1"=4' V: 1"=4'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 177 OF 298	M-403

PLOTTED: 2/25/2026 3:10 PM
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FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.03_Drawings\24-1930-PD-PLAN-PROP.dwg



PLAN @ GRADE
SCALE: 1" = 2'-0"

NOTES:

1. ODOR CONTROL MECHANICAL EQUIPMENT IS NOT RECOMMENDED TO BE INSTALLED ABOVE THE 500-YR FLOODPLAIN, AS IT IS NOT CONSIDERED A CRITICAL COMPONENT OF THE LIFT STATION AND WOULD CAUSE DIFFICULTY FOR ACCESS AND ON-GOING MAINTENANCE.
2. CONTRACTOR TO MATCH EXISTING INVERT ELEVATION INTO THE LIFT STATION. EOR TO BE NOTIFIED IF NOT FEASIBLE.

PIPE FITTING TABLE

ITEM NO.	QUANTITY	ITEM
1	3	16" D.I. 90° BEND, FLG X FLG
2	3	16" D.I. PIPE, FLG X FLG
3	3	2" S.S. COMBINATION ARV
4	4	4" PRESSURE GAUGE
5	3	16" RESTRAINED FLANGED COUPLING ADAPTER
6	3	16" D.I. PIPE, FLG X PE
7	3	16" SWING CHECK VALVE, FLG X FLG
8	3	16" PLUG VALVE, FLG X FLG
9	3	20" X 16" D.I. REDUCING TEE, FLG
10	1	20" BLIND FLANGE
11	3	20" D.I. PIPE, FLG X FLG
12	1	2" S.S. ARV
13	1	20" D.I. 90° BEND, FLG X FLG

NO.	DATE	REVISION	APP.

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DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
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LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

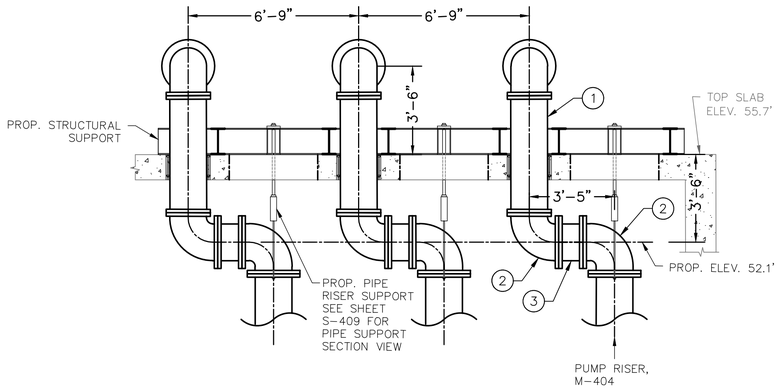
GOLF COURSE LIFT STATION
MECHANICAL
PROPOSED LIFT STATION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=2' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 178 OF 298	M-404

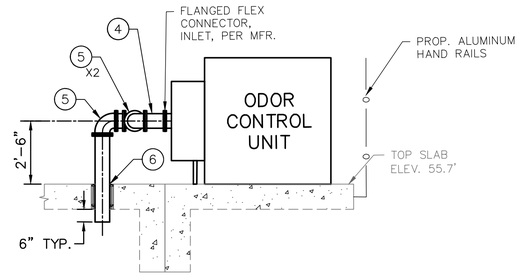
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NO.	DATE	REVISION	APP.

0 3 6
SCALE IN FEET



SECTION A-A
SCALE: 1" = 3'-0"



SECTION B-B
SCALE: 1" = 3'-0"

PIPE FITTING TABLE		
ITEM NO.	QUANTITY	ITEM
1	3	16" DI WALL PIPE, FLG X FLG
2	6	16" DI 90° BEND, FLG X FLG
3	3	16" DI PIPE, FLG X FLG
4	1	8" FRP, FLG X FLG
5	3	8" FRP 90° BEND, FLG X FLG
6	1	8" FRP WALL PIPE, PE WITH LINK SEAL

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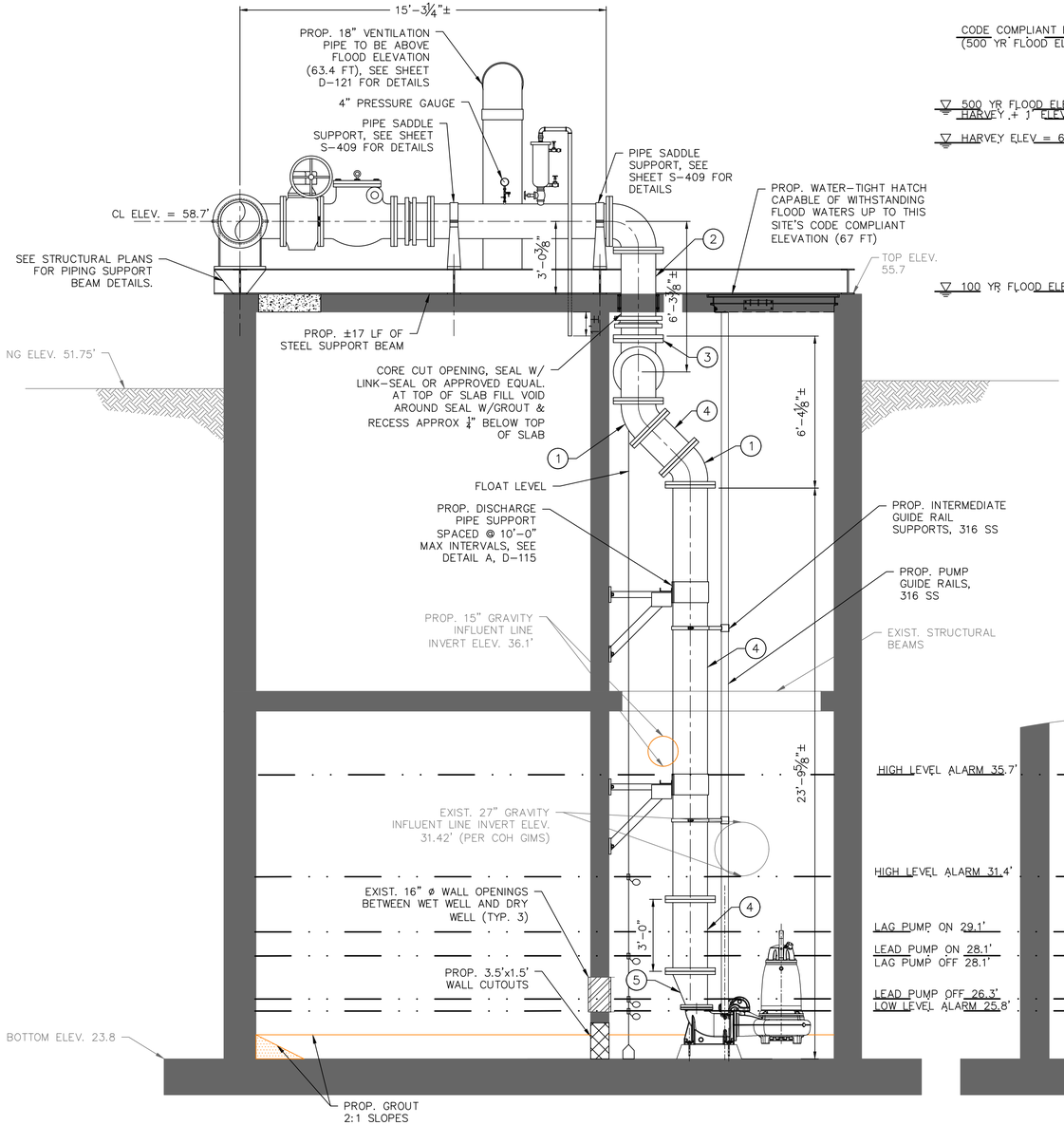
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HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

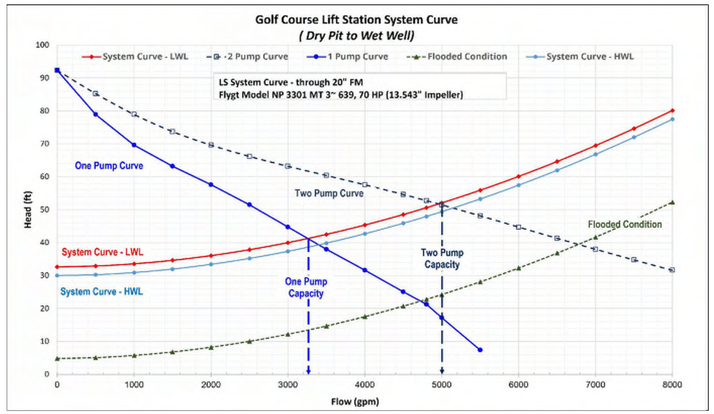
GOLF COURSE
LIFT STATION PLAN
SECTION VIEWS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
H: 1"=3' V: 1"=3'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 179 OF 298	M-405



D SECTION VIEW
SCALE: 1" = 3'-0"

E LIFT STATION WET WELL PROFILE
SCALE: 1" = 3'-0"



PUMP DATA TABLE

PUMP CHARACTERISTICS	PUMP NO. 1	PUMP NO. 2	PUMP NO. 3
MOTOR DATA NOMINAL SIZE (HP) MAX SPEED (RPM)	70 1,190	70 1,190	70 1,190
SOLIDS PASSAGE MIN SPHERE (IN)	3.0	3.0	3.0
CAPACITY (GPM) DESIGN RUNOUT	2,400	2,400	2,400
DISCHARGE HEAD (FT) DESIGN RUNOUT SHUT OFF	51.25	51.25	51.25
EFFICIENCY (%) DESIGN	74.04	74.04	74.04
NPSHR (FT) DESIGN RUNOUT	17.94	17.94	17.94

STATION OPERATION TABLES

RISING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
26.3	PUMPS OFF LEVEL – NO ACTION	ALL PUMPS ARE OFF
28.1	LEAD PUMP TURNS ON	LEAD PUMP ON
29.1	SECOND PUMP TURNS ON	LEAD & SECOND PUMPS ON
31.4	HIGH WATER ALARM ON	HIGH WATER ALARM SOUND
35.7	HIGH HIGH WATER ALARM ON (FLOAT ON LEVEL)	FIRM PUMPS ON (FLOATS)

FALLING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
29.1	FLOAT OFF LEVEL	FIRM PUMPS OFF (FLOATS)
29.1	HIGH WATER LEVEL ALARM OFF	LEAD & SECOND PUMPS ON
26.3	LEAD PUMP TURNS OFF	SECOND PUMP ON
28.1	SECOND PUMP TURNS OFF	ALL PUMPS STOPPED – STANDBY PUMP SWITCHES TO LEAD PUMP
25.8	LOW LEVEL ALARM	–

PIPE FITTING TABLE

ITEM NO.	QUANTITY	ITEM
1	6	16" D.I. 45° BEND, FLG X FLG
2	3	16" D.I. PIPE, FLG X PE
3	3	16" RESTRAINED FLANGED COUPLING ADAPTER
4	9	16" D.I. PIPE, FLG X FLG
5	3	16" X 10" D.I. PIPE REDUCER, FLG X FLG

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713.869.3433
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CITY OF HOUSTON
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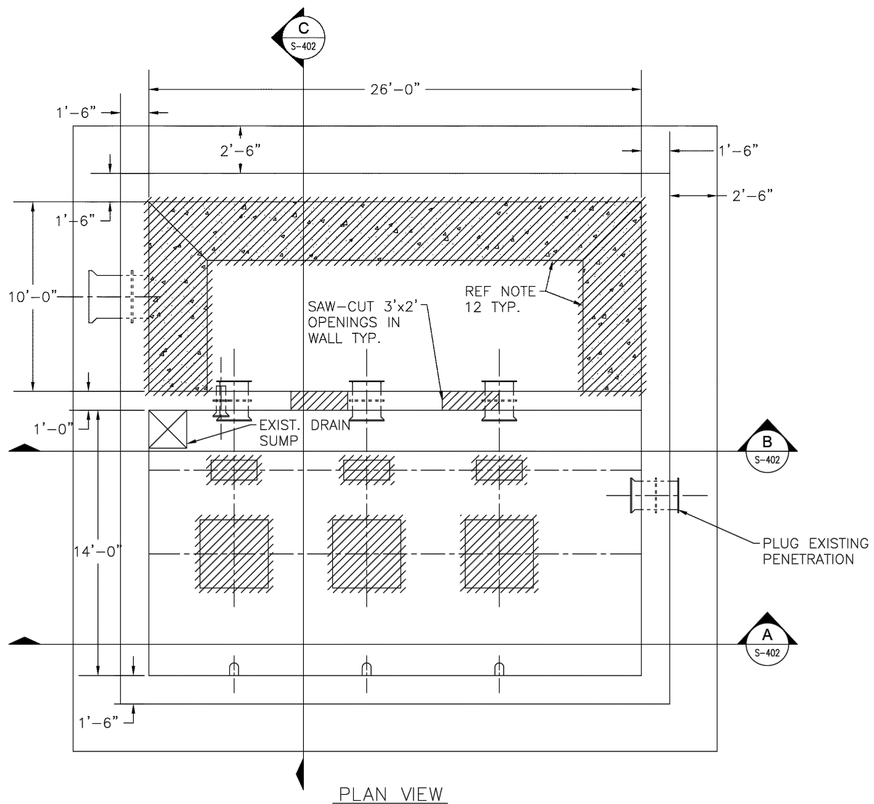
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
MECHANICAL
LIFT STATION SECTION

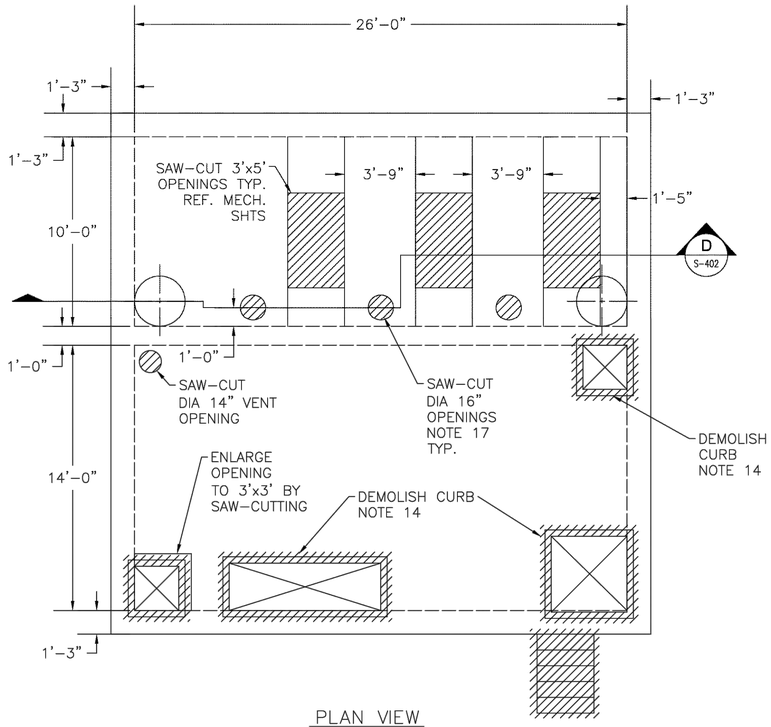
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DRAWING SCALE	
HORIZ: 1"=20' VERT: 1"=2'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 180 OF 298	M-406

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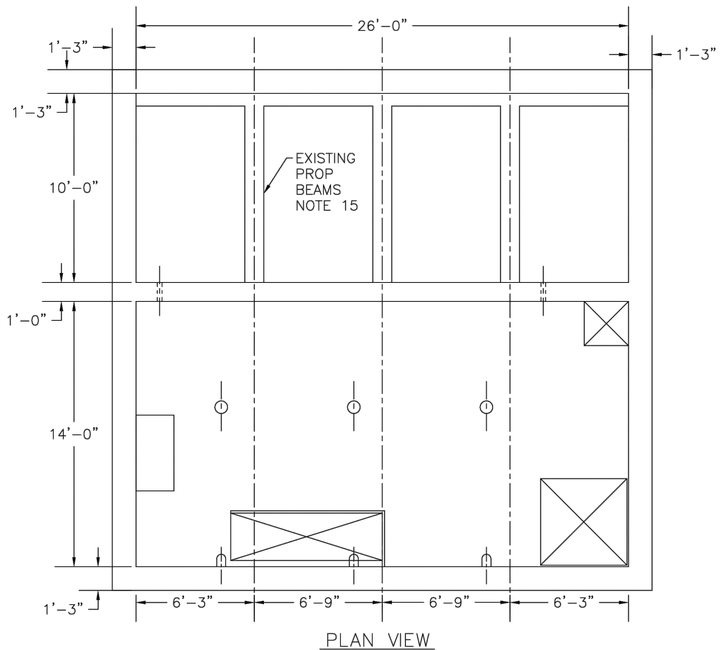
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PLAN VIEW
PLAN AT EL. 25.67
SCALE: 1/4"=1'-0"



PLAN VIEW
PLAN AT EL. 57.00
SCALE: 1/4"=1'-0"



PLAN VIEW
PLAN AT EL. 41.00
(NO DEMOLITION ON THIS FLOOR)
SCALE: 1/4"=1'-0"

0' 5' 10'
SCALE IN FEET
1/4" = 1'

NOTES

1. ALL EXISTING EMBEDDED WALL PIPES SHALL BE GROUTED AND SEALED WITH MATCHING BLIND FLANGES.
2. PARTIAL DEMOLITION OF EXISTING EQUIPMENT, CONCRETE, AND STRUCTURAL STEEL MUST BE MONITORED CAREFULLY FOR THE STABILITY , CONTROL, VIBRATIONS, CRACKS, LEAKS, AND OTHER PROGRESSIVE OR SUDDEN DAMAGE TO THE PORTIONS OF STRUCTURE TO BE RETAINED.
3. NO DEMOLITION SHOULD START UNLESS THE INTERMEDIATE SLAB AND ROOF SLAB ARE FULLY SUPPORTED WITH SHORING SYSTEM.
4. THE LOCATIONS OF PROPS ON BOTH FLOORS SHALL MATCH CLOSELY SO THE VERTICAL LOADS ARE DIRECTLY TRANSFERRED TO THE BOTTOM FLOOR WITHOUT CAUSING OVERSTRESSING.
5. HEAVY DEMOLITION EQUIPMENT CAUSING EXCESSIVE VIBRATIONS MAY NOT BE USED.
6. LARGE CHUNKS OF CONCRETE MUST BE ADEQUATELY SECURED AND REMOVED WITH CRANE AND NOT ALLOWED TO FREE FALL TO LOWER ELEVATIONS.
7. DEBRIS REMOVAL AND DEMOLITION ACTIVITY MUST NOT BE DONE AT THE SAME TIME.
8. DEMOLITION OF LARGE SLAB OPENINGS MUST BE DONE WITH SAW-CUTTING ONLY. CURBS AND EDGES OF SAW CUT CONCRETE SHALL BE DEMOLISHED MANUALLY TO EXPOSE THE EXISTING REBAR.
9. NEW CONCRETE WORK SHALL NOT START UNTIL ALL DEMOLITION IS COMPLETE.
10. DEMOLITION IN THESE AREAS IS MEANT TO EXPOSE EXISTING SLAB REBAR FOR LAPPING WITH PROPOSED PROP BEAMS.
11. HYDRAULIC DEMOLITION USING HIGH-PRESSURE WATER JETS MAY BE CONSIDERED FOR AREAS REFERENCED IN NOTE 10.
12. DEMOLISH EXISTING CLASS 2 CONCRETE PROFILE TO MAKE ROOM FOR NEW SUBMERSIBLE PUMPS, BENDS, GUIDE RAILS, ETC.
13. THE LOCATIONS OF SCAFFOLD PROPS ON MULTIPLE FLOORS SHALL MATCH CLOSELY SO THE VERTICAL LOADS ARE DIRECTLY TRANSFERRED TO THE BOTTOM FLOOR WITHOUT CAUSING OVERSTRESSING.
14. INSTALL NO 5 ANCHORS @8"C/C PER FACE ON WALL SURFACES WHERE EXISTING REBARS ARE NOT AVAILABLE. CHIP EXISTING CONCRETE SURFACE TO BOND WITH NEW CONCRETE.
15. EXISTING PROP BEAMS ARE ESSENTIAL FOR THE STABILITY OF STRUCTURE. ALL CARE MUST BE APPLIED FOR THE PROTECTION OF THESE BEAMS. DEMOLITION DEBRIS SHALL NOT BE ALLOWED TO FREE FALL OR DAMAGE THE BEAMS. SCAFFOLDS OR FORM WORK SHALL NOT BE SUPPORTED ON THESE BEAMS.
16. SAW-BINDING MAY OCCUR WHILE SAW-CUTTING OPENINGS FOR THE ACCESS HATCHES. CONTINUED SAW-BINDING IS A WARNING THAT THE STEEL FRAMING BEAMS ARE NOT INSTALLED/PROPERLY INSTALLED TO MOBILIZE REQUIRED IN-PLANE STIFFNESS.
17. VERIFY FINAL OD OF DISCHARGE RISER WITH PIPING DRAWINGS.

NO.	DATE	REVISION	APP.

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neera
880 Tully Road
Ste 087
Houston, TX 77079
832.641.5413
TBPE Reg. No. F-14240

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PARDHA NAMUDURI, P.E.
#82977
FEBRUARY 2026

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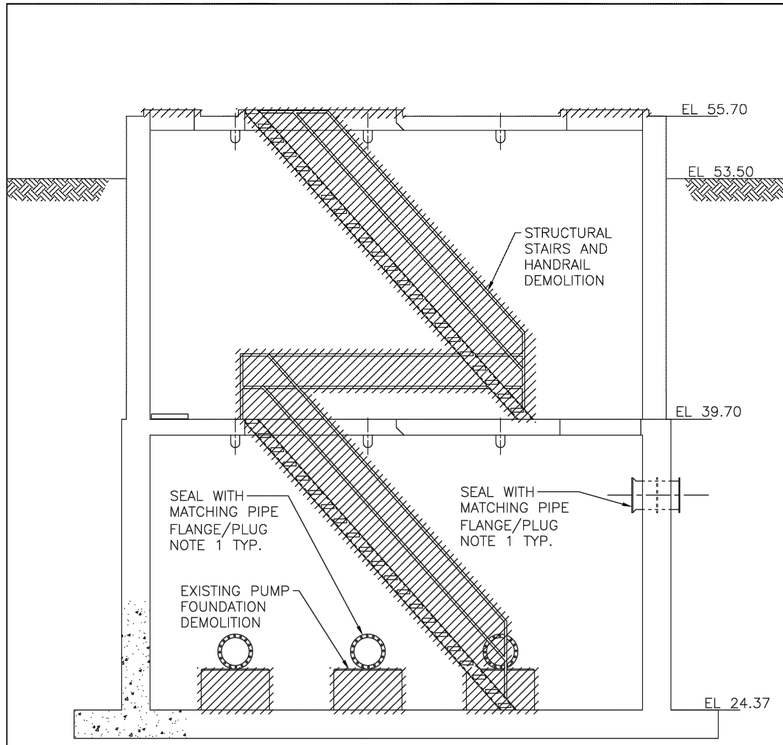
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
STRUCTURAL DEMOLITION PLAN

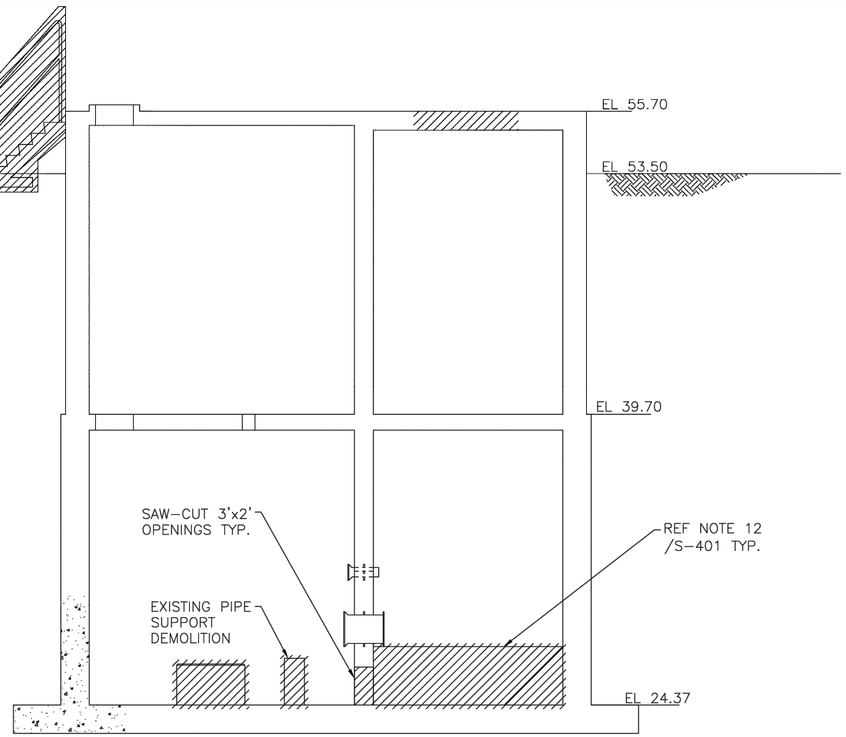
(SHEET 1 OF 2)

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DRAWING SCALE	
HORIZ: 1/4"=1' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 181 OF 298	S-401

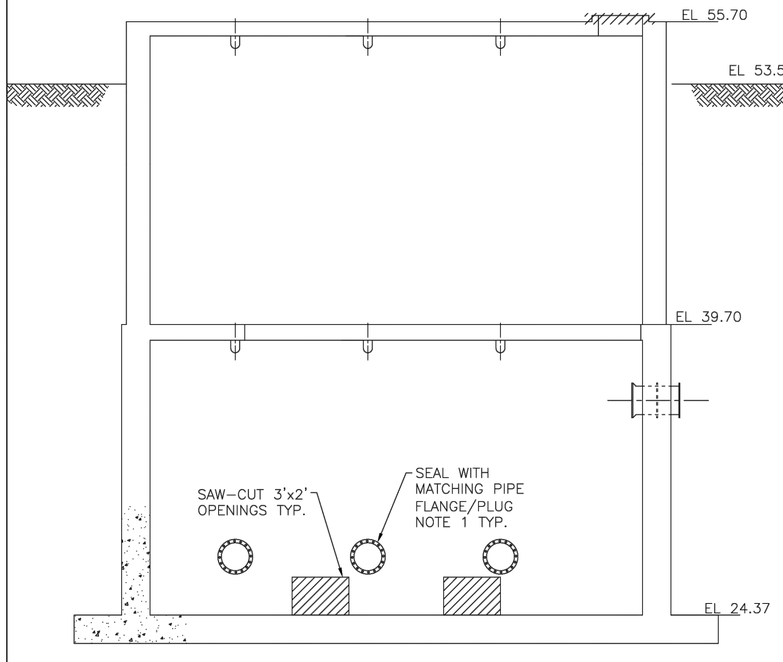
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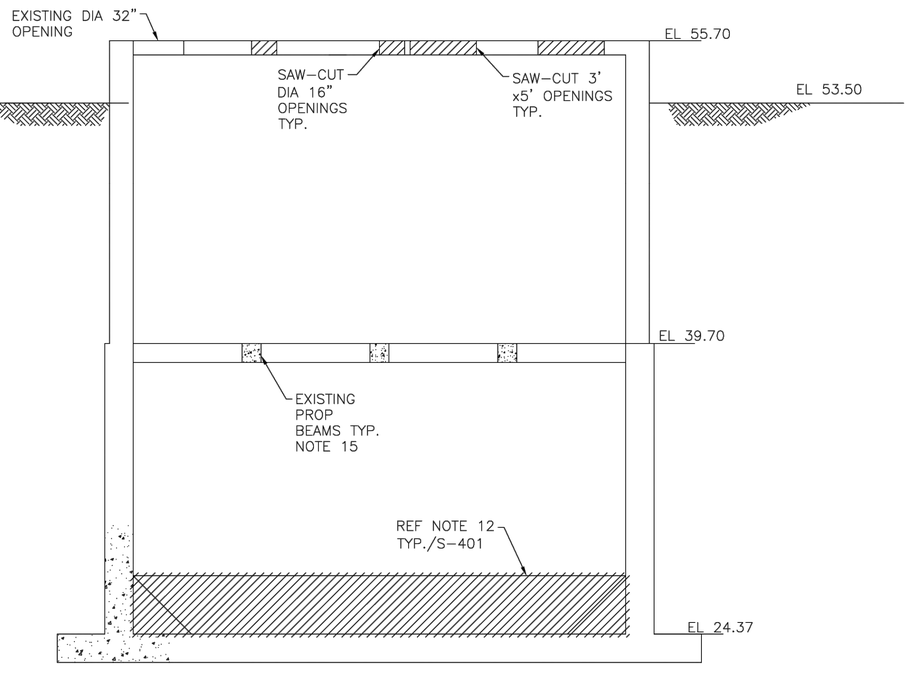
SECTION VIEW
SECTION A–A
SCALE: 1/4"=1'–0"



SECTION VIEW
SECTION C–C
SCALE: 1/4"=1'–0"



SECTION VIEW
SECTION B–B
SCALE: 1/4"=1'–0"



SECTION VIEW
SECTION D–D
SCALE: 1/4"=1'–0"

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Ste 087
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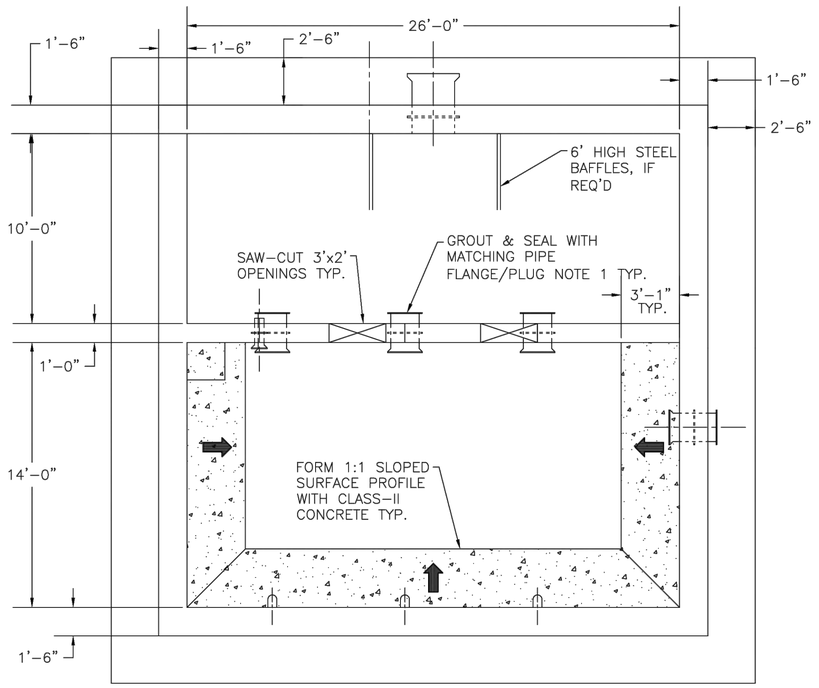
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LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

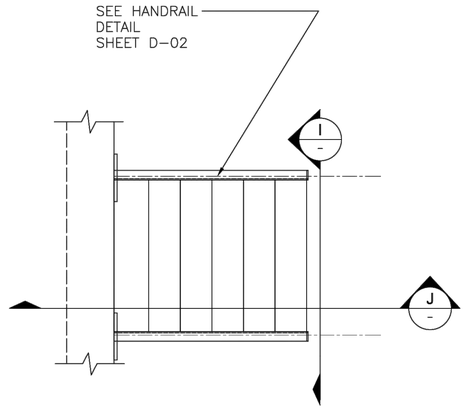
GOLF COURSE LIFT STATION
STRUCTURAL DEMOLITION

(SHEET 2 OF 2)

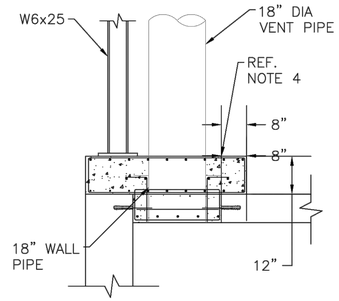
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MARILENA STOICA, P.E.	
SHEET NO. 182 OF 298	S–402



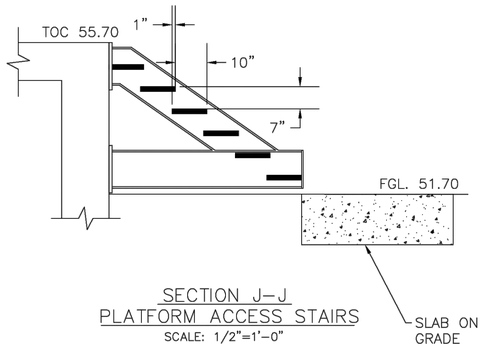
PROPOSED FLOOR PROFILE WITH LEAN CONCRETE
PLAN AT EL. 25.67
SCALE: 1/4"=1'-0"



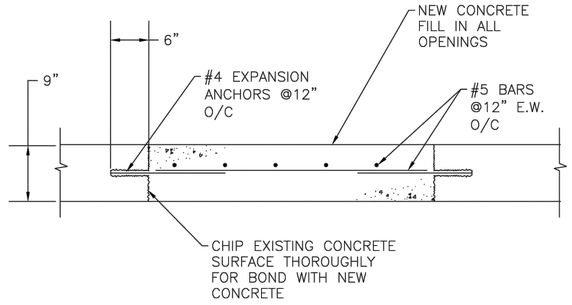
PLAN VIEW
PLATFORM ACCESS STAIRS
SCALE: 1/2"=1'-0"



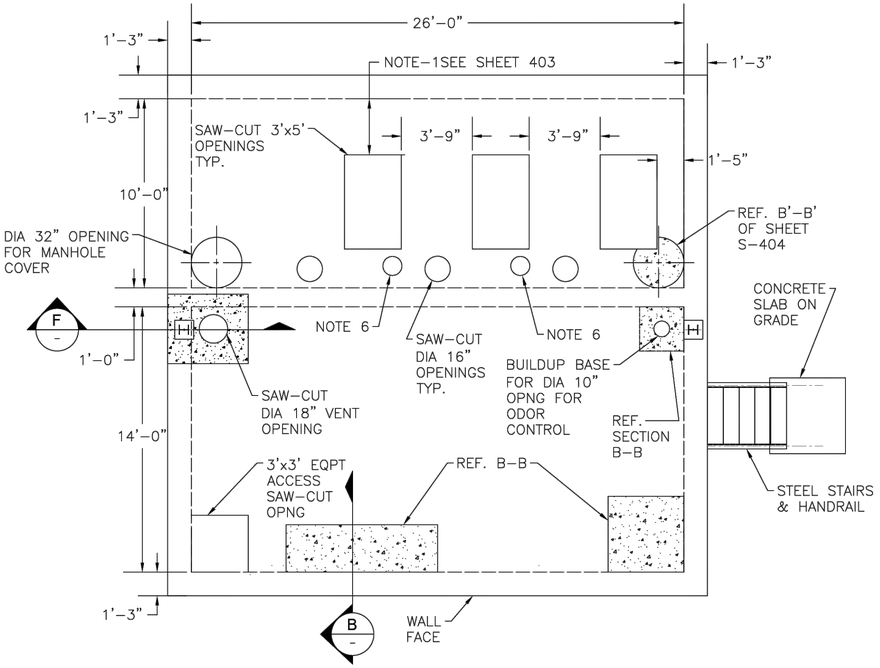
SECTION F-F
SCALE: 1/2"=1'-0"



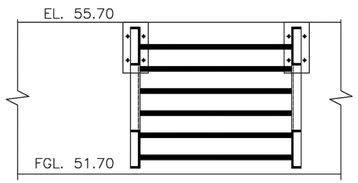
SECTION J-J
PLATFORM ACCESS STAIRS
SCALE: 1/2"=1'-0"



SECTION B-B
SCALE: 1"=1'-0"



PROPOSED OPENING LAYOUT
PLAN AT EL. 57.00
SCALE: 1/4"=1'-0"



SECTION I-I
PLATFORM ACCESS STAIRS
SCALE: 1/2"=1'-0"

NOTES:

1. REFER TO MECH/PIPE DRAWINGS FOR LOCATIONS AND SIZE OF OPNGS AND SUPPORTS.
2. ALL HATCH, MANHOLE COVERS, EQPT HATCHES, VENTS & PIPE PENETRATIONS SHALL BE PRESSURE RATED.
3. MIN. 1" GAP SHALL BE MAINTAINED BETWEEN EXISTING TOP OF SLAB AND STEEL BEAMS. THE GAP IS INTENDED TO: (A) ISOLATE PIPE LOADS FROM IMPOSING ON TO ROOF SLAB (B) ALLOW FREE DRAINAGE.
4. CONCRETE FILLED OPENING WITH REINFORCEMENT. LAP REBAR WITH ANCHORS DRILLED INTO EXISTING EDGE CONCRETE.
5. PROVIDE PIPE SUPPORTS AT LOCATIONS AS SHOWN IN PIPING DRAWINGS.
6. OPENINGS FOR RADAR LEVEL TRANSMITTER AND BACKUP FLOAT LEVEL SENSORS SHALL BE LOCATED PER ELECTRICAL DRAWINGS.

NO.	DATE	REVISION	APP.

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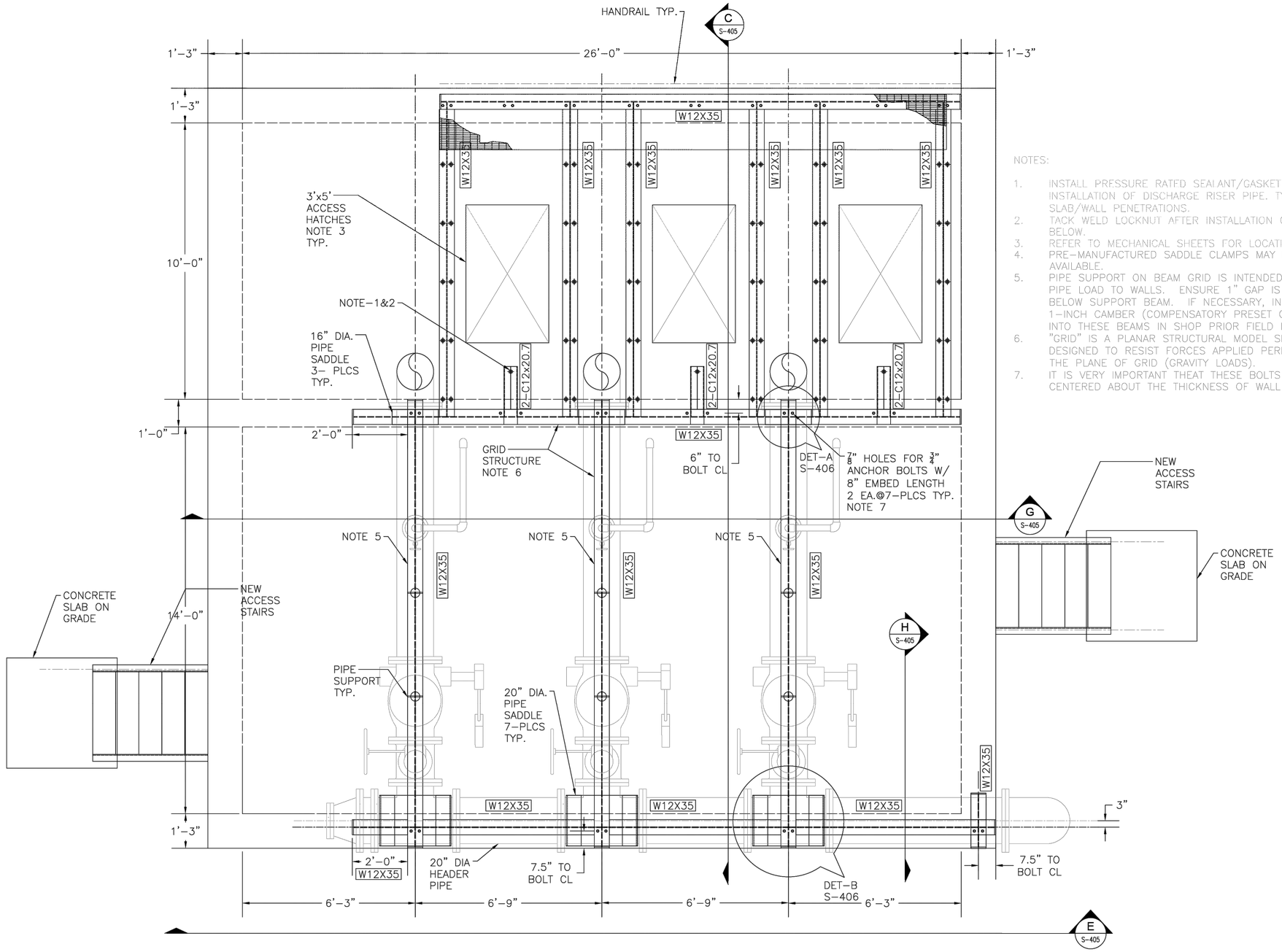
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
PROPOSED PIPE SADDLE AND OPENING FILL & STAIR DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: AS NOTEDVERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 183 OF 298	S-403

PLOTTED: 2/26/2026 8:05 PM
PLOT STYLE: 60Hatch
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PROPOSED STEEL BEAM SUPPORT
PLAN AT EL. 57.00
SCALE: 1/2"=1'-0"

0' 2.5' 5'
SCALE IN FEET
1/2" = 1'

NOTES:

1. INSTALL PRESSURE RATED SEALANT/GASKET AFTER INSTALLATION OF DISCHARGE RISER PIPE. TYPICAL FOR ALL SLAB/WALL PENETRATIONS.
2. TACK WELD LOCKNUT AFTER INSTALLATION OF RISER BELOW.
3. REFER TO MECHANICAL SHEETS FOR LOCATION AND SIZE.
4. PRE-MANUFACTURED SADDLE CLAMPS MAY BE ADAPTED, IF AVAILABLE.
5. PIPE SUPPORT ON BEAM GRID IS INTENDED TO TRANSFER PIPE LOAD TO WALLS. ENSURE 1" GAP IS MAINTAINED BELOW SUPPORT BEAM. IF NECESSARY, INCORPORATE 1-INCH CAMBER (COMPENSATORY PRESET CURVATURE) INTO THESE BEAMS IN SHOP PRIOR FIELD INSTALLATION.
6. "GRID" IS A PLANAR STRUCTURAL MODEL SPECIALLY DESIGNED TO RESIST FORCES APPLIED PERPENDICULAR TO THE PLANE OF GRID (GRAVITY LOADS).
7. IT IS VERY IMPORTANT THEAT THESE BOLTS MUST BE CENTERED ABOUT THE THICKNESS OF WALL BELOW.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
DISCHARGE PIPE SUPPORT FRAME
ENLARGED VIEW

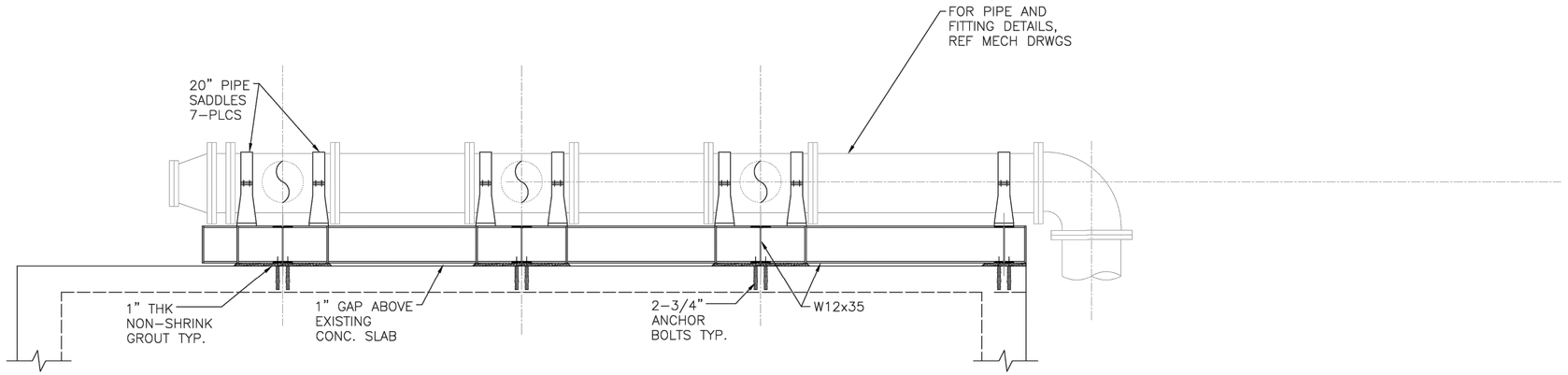
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R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1/2"=1' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 184 OF 298	S-404

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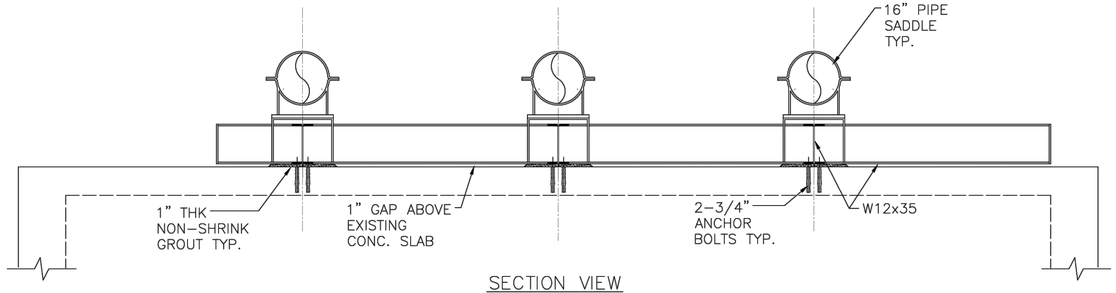
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0' 2.5' 5'
SCALE IN FEET
1/2" = 1'

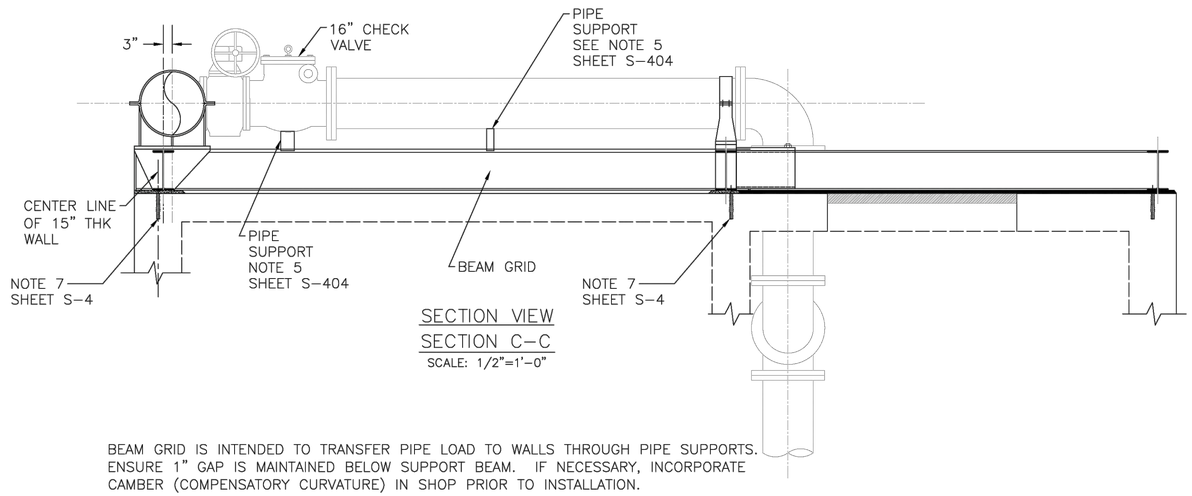
NO.	DATE	REVISION	APP.



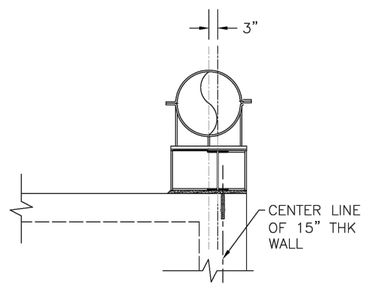
SECTION VIEW
SECTION E-E
SCALE: 1/2"=1'-0"



SECTION VIEW
SECTION G-G
SCALE: 1/2"=1'-0"



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



SECTION VIEW
SECTION H-H
SCALE: 1/2"=1'-0"

BEAM GRID IS INTENDED TO TRANSFER PIPE LOAD TO WALLS THROUGH PIPE SUPPORTS. ENSURE 1" GAP IS MAINTAINED BELOW SUPPORT BEAM. IF NECESSARY, INCORPORATE CAMBER (COMPENSATORY CURVATURE) IN SHOP PRIOR TO INSTALLATION.

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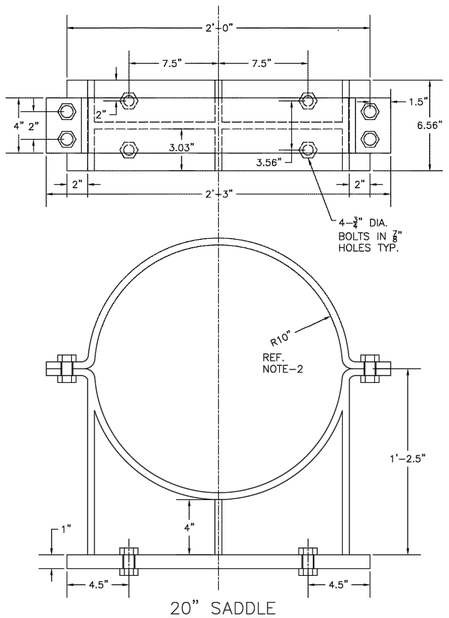
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HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

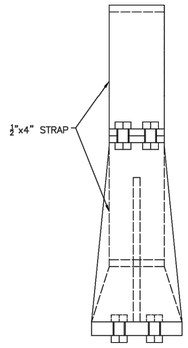
GOLF COURSE LIFT STATION
PIPE SUPPORT BEAMS
ENLARGED SECTIONS

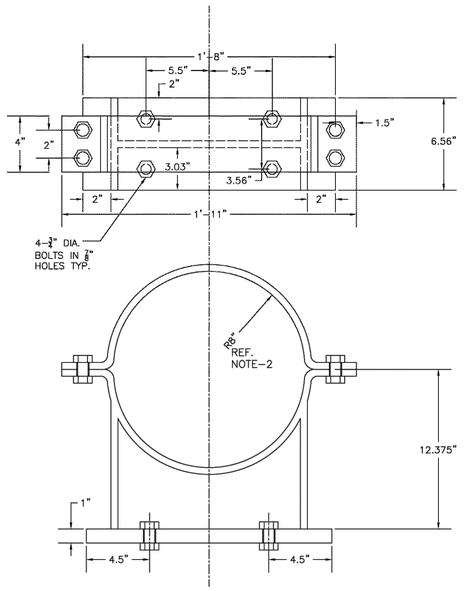
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1/2"=1' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 185 OF 298	S-405



20" SADDLE
PLAN & ELEVATION VIEWS

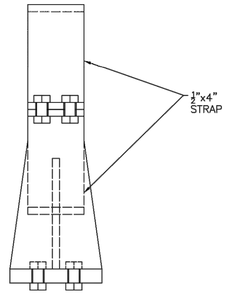
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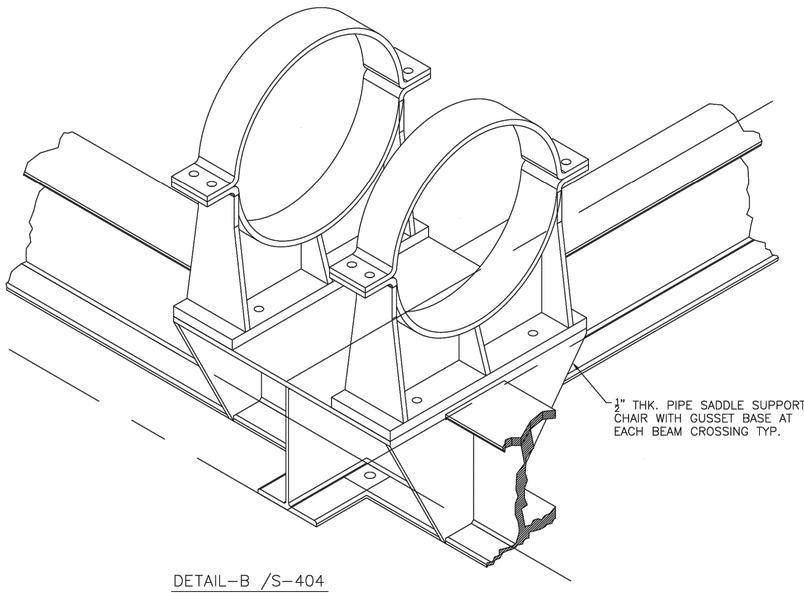
16" SADDLE
PLAN & ELEVATION VIEWS

SCALE: NTS



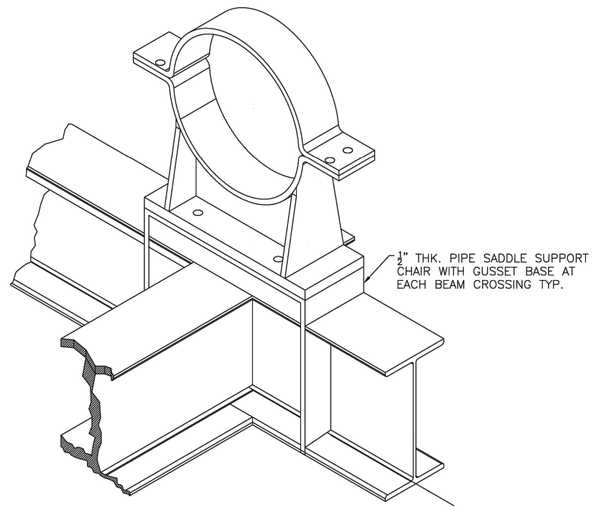
NOTES:

1. ALL PLATES ARE ½" THK. EXCEPT BASE PLATE WHICH IS 1" THK.
2. MATCH THE CURVATURE OF STRAPS WITH FINAL PIPE O.D.



DETAIL–B /S–404
20" SADDLE SUPPORT CHAIR

SCALE: NTS



DETAIL–A /S–404
16" SADDLE SUPPORT CHAIR

SCALE: NTS

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LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

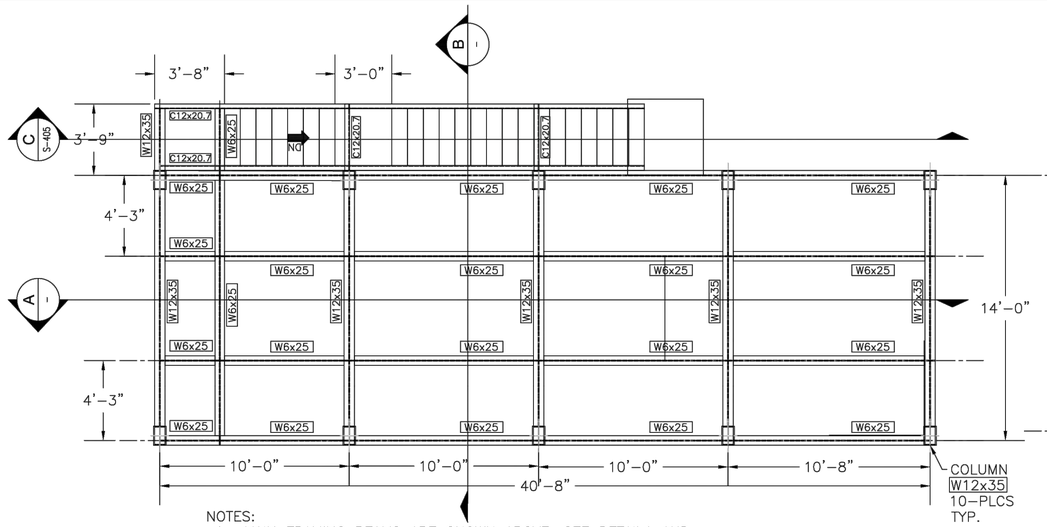
GOLF COURSE LIFT STATION

PIPE SADDLE DETAIL (16" & 20")

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R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 186 OF 298 S-406	

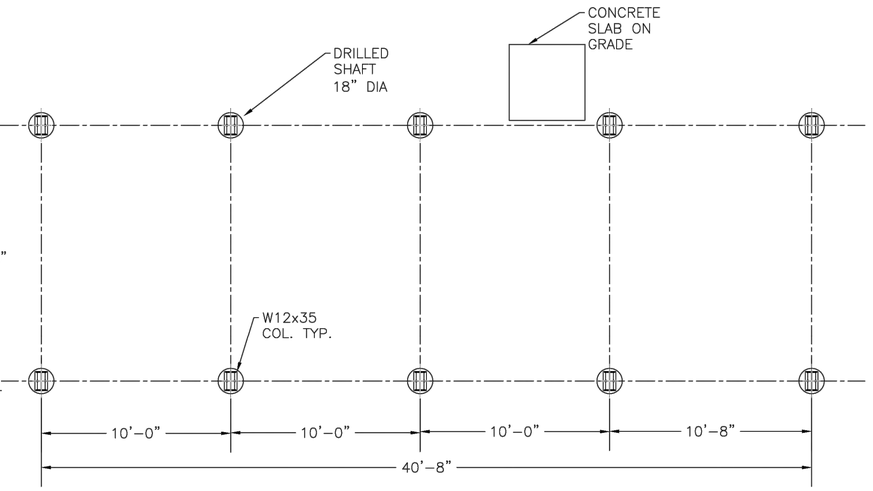
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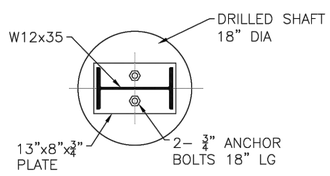


NOTES:
1. MAIN FRAMING BEAMS ARE SHOWN ABOVE. SEE DETAIL1 AND DETAIL 2 OF S-411 FOR ADDITIONAL BEAMS TO ANCHOR EQUIPMENT SKIDS.
2. FOR EQUIPMENT LOCATIONS SEE ELECTRICAL AND MECHANICAL DRAWINGS.

PLAN VIEW
ELECTRICAL PLATFORM
FRAMING LAYOUT
SCALE: 1/4"=1'-0"

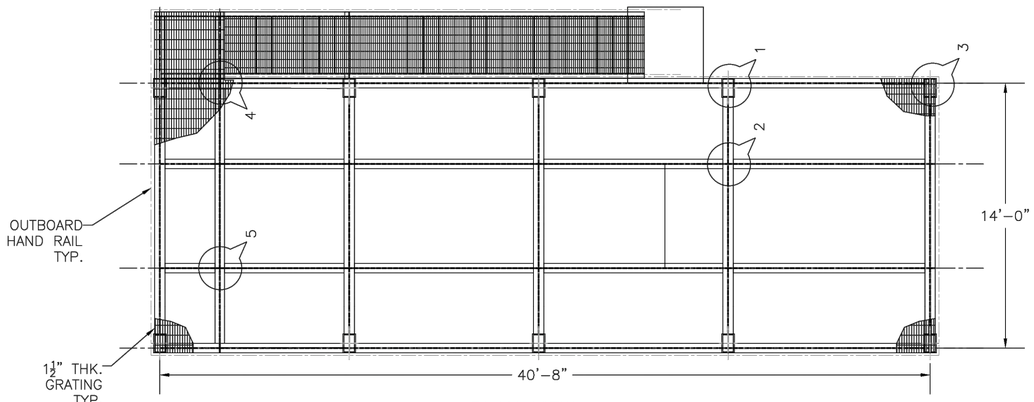


PLAN VIEW
DRILLED SHAFTS
SCALE: 1/4"=1'-0"

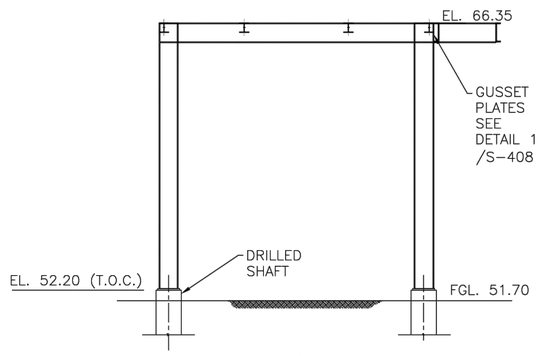


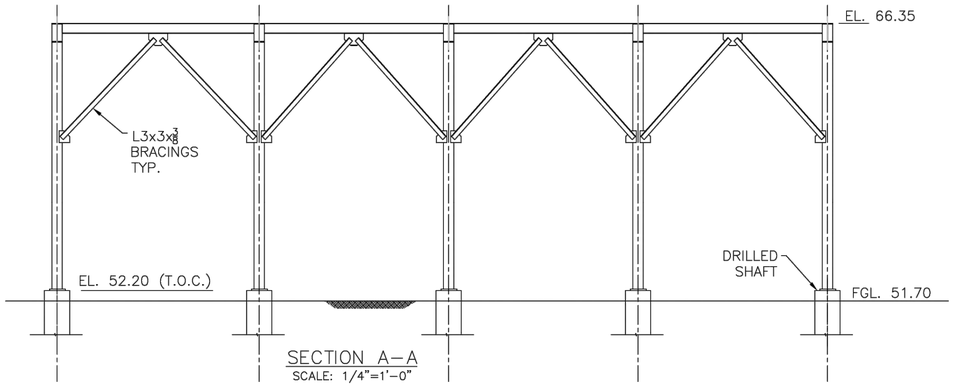
COLUMN BASEPLATE DETAIL
SCALE: 1"=1'-0"

NOTES:
1. PIER CENTERLINE AND EMBEDDED ANCHOR BOLTS SHALL BE INSTALLED TO THE HIGHEST DEGREE OF ACCURACY. THE VERTICAL AND HORIZONTAL TOLERANCES OF FINISHED SURFACE AND AXIS OF PIERS SHALL BE ±0.5".
2. ANCHOR BOLTS ON PIER TOP SHALL BE INSTALLED TO THE TOLERANCE OF ±0.125". THE PURPOSE OF MAINTAINING TOLERANCES IS FOR SHOP DRILLED COLUMN BASE PLATES ARE INSTALLED EASILY NOT REQUIRING EXTENSIVE FIELD MENDS.

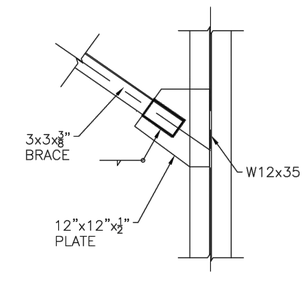


PLAN VIEW
ELECTRICAL PLATFORM GRATING & HANDRAIL
SCALE: 1/4"=1'-0"



SECTION


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



DETAIL A /S-408
BRACE CONNECTION DETAIL
SCALE: 1"=1'-0"

SUMMARY OF DRILLED PIERS

Lift Station Site	Shaft Depth, feet	Diameter of Pier	Number of piers
AG Farm Lift Station Generator /Electrical Platform Odor Control Platform	10'	18" Dia.	10
Deer Springs Lift Station Generator/ Electrical Platform Odor Control Platform	25'	18" Dia.	8
Golden Bear Lift Station Electrical Platform Odor Control Platform	10'	18" Dia.	6
Golf Course Lift Station Generator /Electrical Platform Odor Control Platform	10'		

NO.	DATE	REVISION	APP.

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Houston, TX 77079
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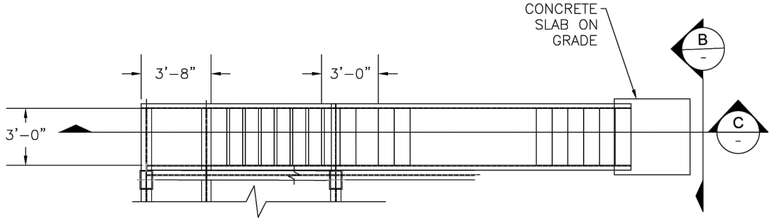
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

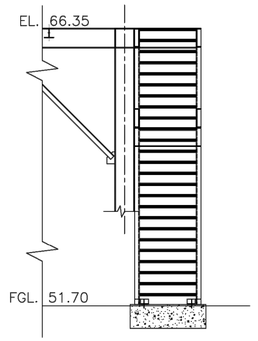
GOLF COURSE LIFT STATION
ELEV. PLATFORMS
GENERAL ARRANGMENT & FRAMING DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1/4"=1' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 187 OF 298	S-407

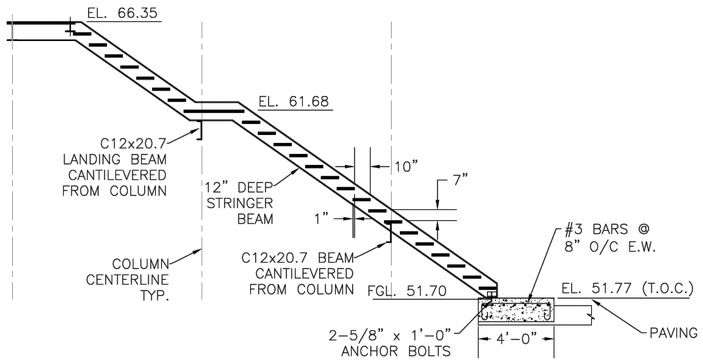
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PLAN VIEW
PLATFORM ACCESS STAIRS
SCALE: 1/4"=1'-0"

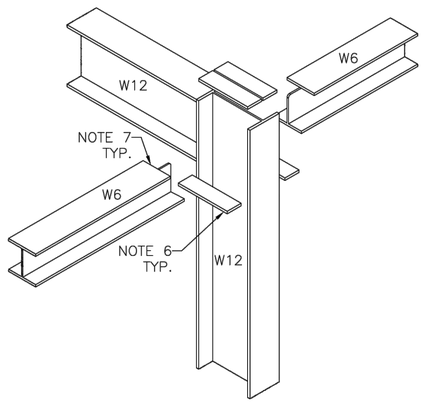


SECTION B-B
PLATFORM ACCESS STAIRS
SCALE: 1/4"=1'-0"

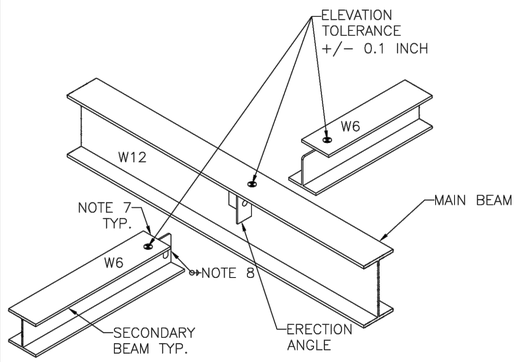


SECTION C-C
PLATFORM ACCESS STAIRS
SCALE: 1/4"=1'-0"

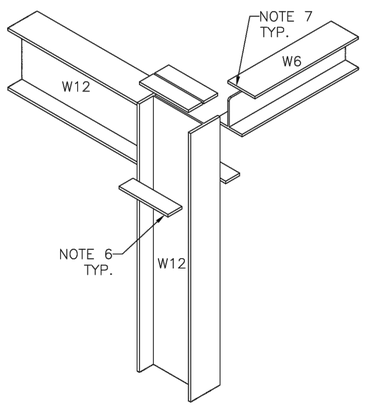
NOTES:
1. HANDRAILS ARE NOT SHOWN FOR CLARITY. REFER TO S-402 FOR HANDRAIL AND GRATINGS.
2. PROVIDE ADEQUATE GUSSETS AND STIFFENER PLATES FOR CONTINUITY OF FORCES AND MOMENTS.
3. CLEAT ANGLES AND TEMPORARY BOLTS MAY BE USED FOR ERECTION. ALL CONNECTIONS MUST BE FIELD WELDED ALL AROUND TO ENSURE COMPLETE FORCE (AND MOMENT) TRANSFER.
4. CONNECTIONS WITH FLUSH FLANGE ELEVATIONS MUST BE SET WITH RECESS (CUT OFF) ON FLANGE OF SMALLER MEMBER WHILE THE WEB IS EXTENDED.
5. COORDINATE BEARING BEAMS AND SECONDARY CHANNELS WITH EQUIPMENT SKID LOCATIONS FOR TIE DOWN BOLTS WITH ELECT. DRWGS.
6. PROVIDE $\frac{1}{2}$" THK GUSSET/STIFFENER PLATES AS SHOWN FOR FLANGE TO FLANGE AND WEB TO WEB CONTINUITY.
7. TRIM AND FIT FLANGES OF SECONDARY BEAMS FOR WEB TO WEB CONTINUITY AND ELEVATION TOLERANCE OF $\pm \frac{1}{4}$".
8. FILLET WELD ALL EDGES OF SECONDARY BEAM (WITH MAIN BEAM) ALL ROUND, TYP.
9. ALL GUSSET/FLANGE PLATES ARE $\frac{1}{2}$" THK UNLESS NOTED OTHERWISE.
10. ERECTION BOLTS WITH SLOTTED HOLES SHALL BE USED FOR FINER ADJUSTMENT AND LEVELING FOR ELEVATION TOLERANCE.
11. MANUFACTURED STAIR PANELS OF STANDARD WIDTH MAY BE USED IN PLACE OF CUSTOM PANELS.
12. ALL BEAMS & COLUMNS IN MWFRF ARE W12x35 UNLESS NOTED OTHERWISE. ALL SECONDARY BEAMS SUPPORTING OTHER SECONDARY BEAMS AND EQUIPMENT SKID ARE W6x25 OR C12x20.7 OR C10x20 AS NECESSARY.



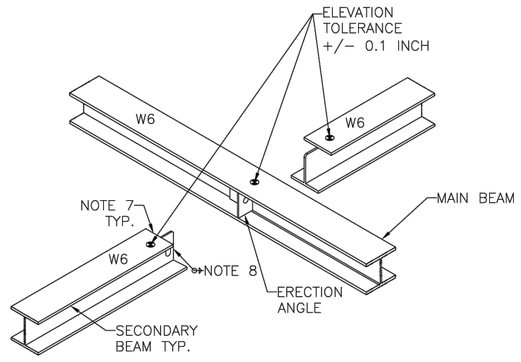
DETAIL 1
SCALE: NTS



DETAIL 2
SCALE: NTS



DETAIL 3
SCALE: NTS



DETAIL 4&5
SCALE: NTS

SCALE IN FEET
1" = 1'

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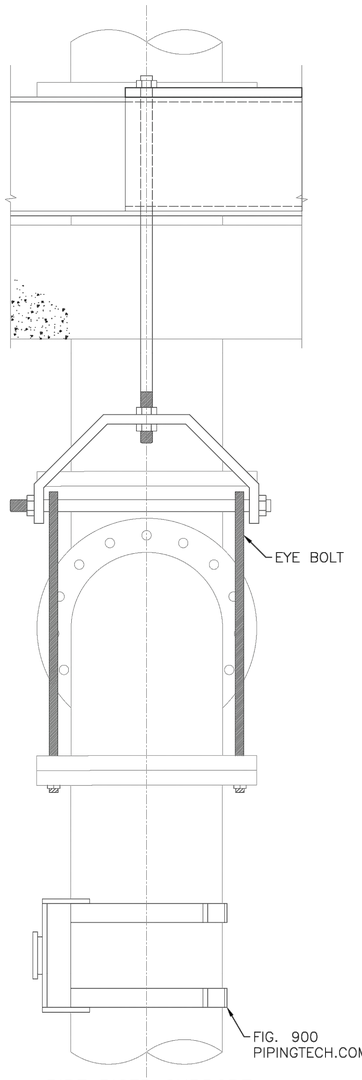
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

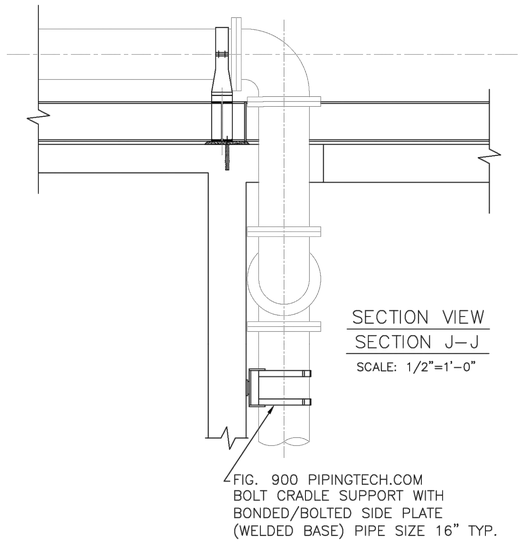
GOLF COURSE LIFT STATION
ELEVATED PLATFORMS
STAIRS, HANDRAIL, & CONNECTION DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1/4"=1' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 188 OF 298	S-408

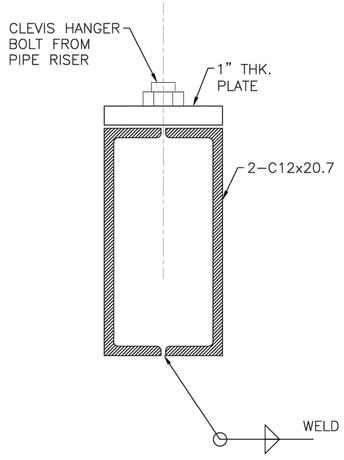
PLOTTED: 2/26/2026 8:05 PM
PLOT STYLE: 60Hetb
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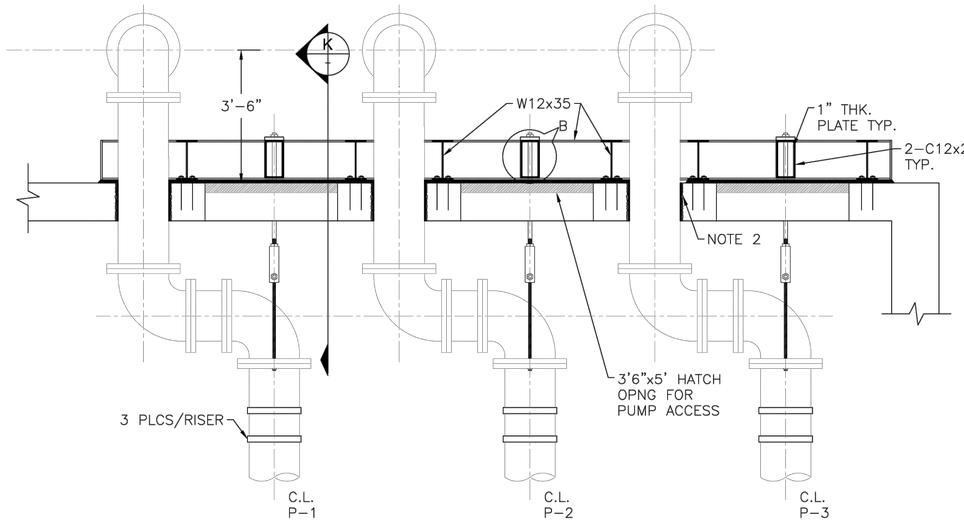
PIPE RISER SUPPORT
SECTION K–K
SCALE : 1–1/2"=1'–0"



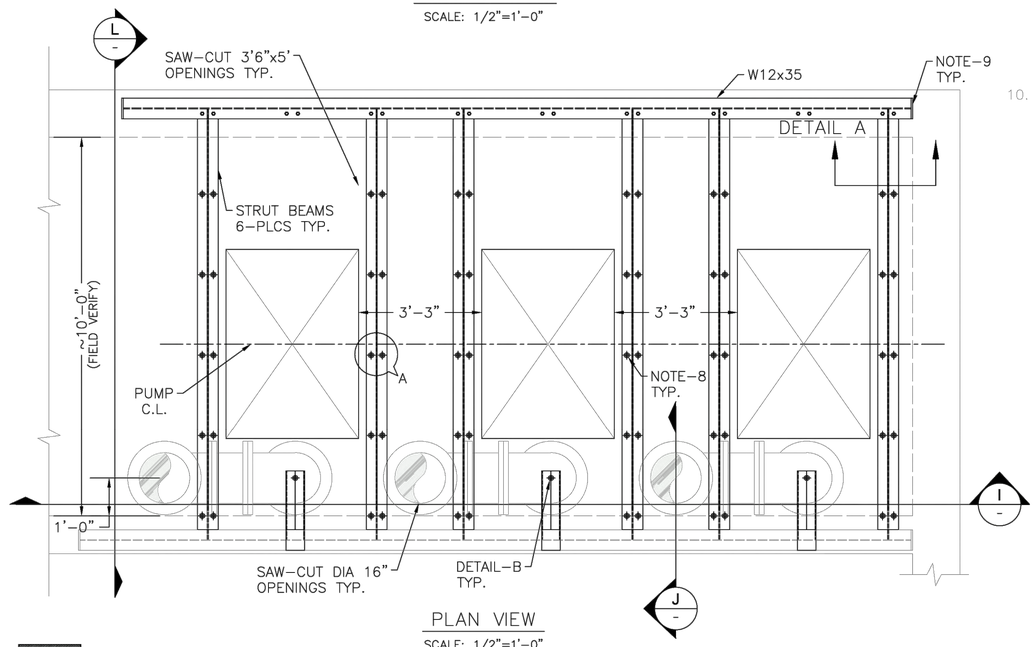
SECTION VIEW
SECTION J–J
SCALE: 1/2"=1'–0"



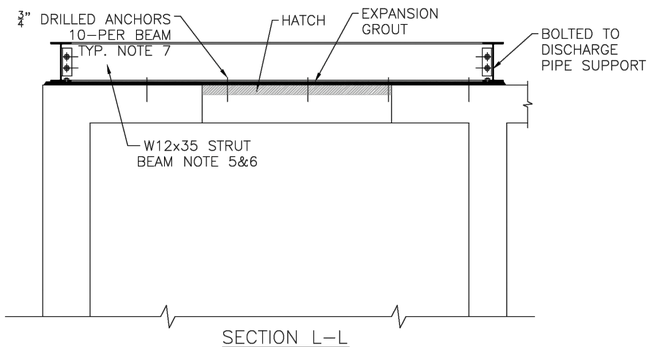
DETAIL B
SCALE: 3"=1'–0"



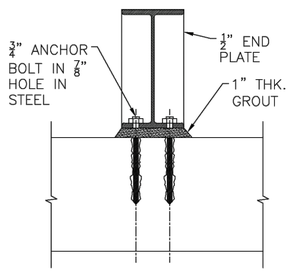
SECTION VIEW
SECTION I–I
SCALE: 1/2"=1'–0"



PLAN VIEW
SCALE: 1/2"=1'–0"



SECTION L–L
SCALE : 1/2" = 1'–0"



DETAIL–A
SCALE: 1–1/2"=1'–0"

NOTES:

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2. INSTALL PRESSURE RATED SEALANT/GASKET DURING INSTALLATION OF PIPE.
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4. ALL CARBON STEEL COMPONENTS INCLUDING BOLTS/ANCHOR BOLTS, BEAMS, CLAMPS, HANGERS, NUTS, AND FRAMES SHALL BE HIGH STRENGTH HOT–DIP GALVANIZED. ITEMS INSIDE THE WET WELL SHALL BE COATED WITH COAL TAR EPOXY.
5. STEEL STRUT BEAMS ARE PROVIDED TO COMPENSATE FOR IN–PLANE STIFFNESS LOST DUE TO LARGE ACCESS OPENINGS IN THE EXISTING SLAB. THEREFORE, THEY SHOULD BE INSTALLED AND SNUG–FIT PRIOR TO ANY DEMOLITION FOR COMPOSITE BEHAVIOR.
6. NO DEMOLITION/SAW–CUTTING SHALL START UNTIL INSTALLATION/ANCHORING/GROUTING OF STRUT BEAMS TO EXISTING SLAB.
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8. ALL BEAM OPEN ENDS SHALL BE PROVIDED WITH END PLATES.
9. WIDTH OF WET WELL IS NOT UNIFORM, CONTRACTOR SHALL MAKE FIELD MEASUREMENTS AT EACH STRUT BEAM LOCATION (REFERENCED IN NOTE 5 ABOVE), AND CUSTOM–FABRICATE SO EACH BEAM SNUGLY FITS (TOLERANCE +/–0.5") WITHOUT EXCESSIVE END GAPS.
10. DRILLED ANCHORS AS CALLED OUT ON THESE SHEETS ARE HILTI HIT–RE 500V3 WITH HILTI QUICK BOLT. DO NOT USE EXPANSION ANCHORS THAT MAY CAUSE CONCRETE TO SPLIT.

NO.	DATE	REVISION	APP.

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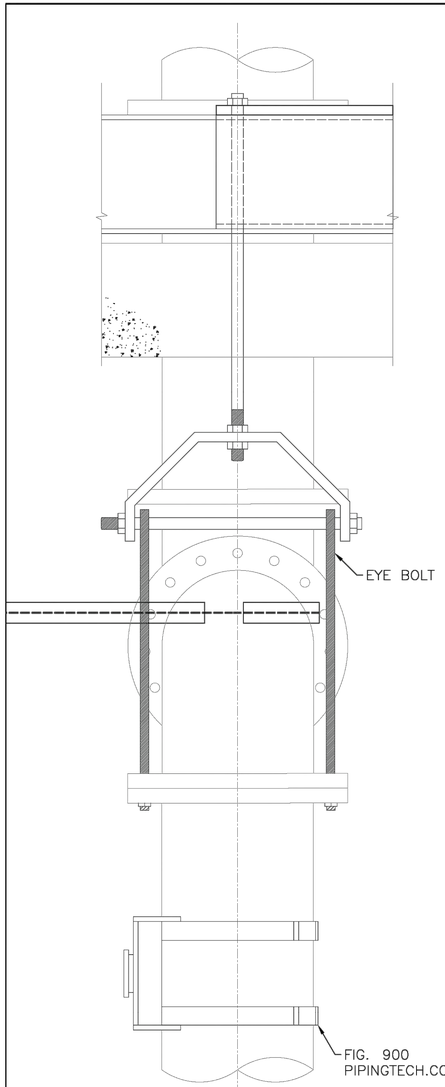
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)
GOLF COURSE LIFT STATION

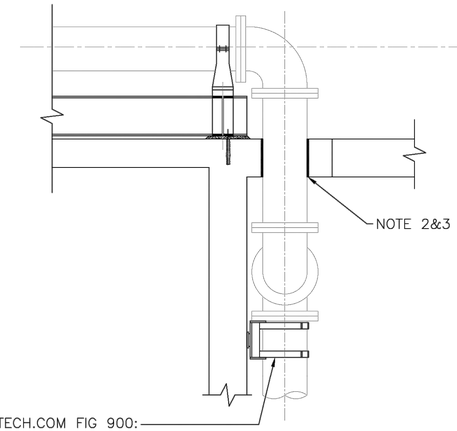
RISER PIPE SUPPORT DETAILS
(OPTION 1)

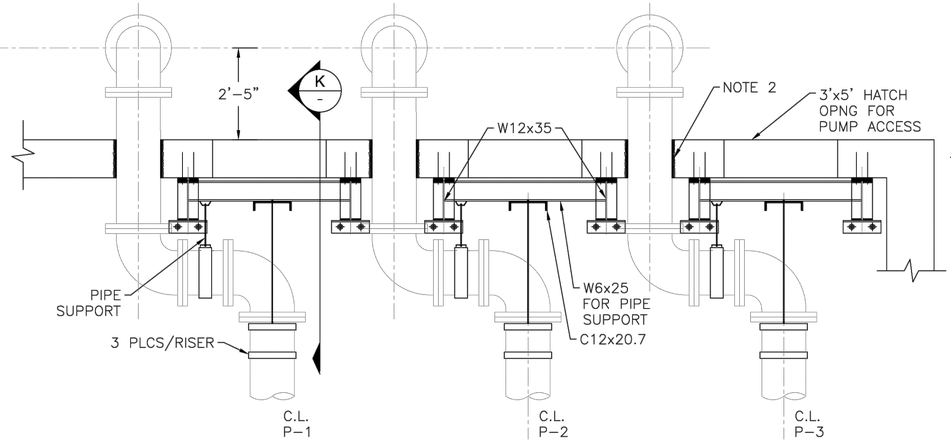
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DRAWING SCALE	
HORIZ: AS NOTEDVERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 189 OF 298	S–409

PLOTTED: 2/26/2026 8:05 PM
PLOT STYLE: 60Hetb
FILE PATH: ...\GOLF COURSE).dwg

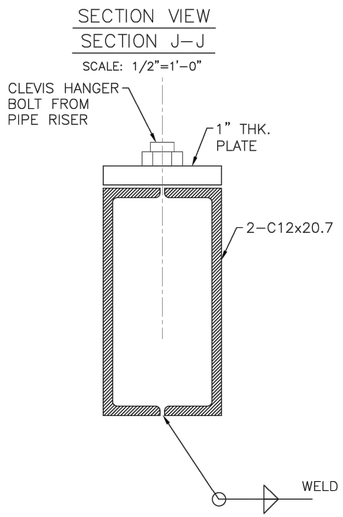


PIPE RISER SUPPORT
SECTION K–K
SCALE : 1–1/2"=1'–0"



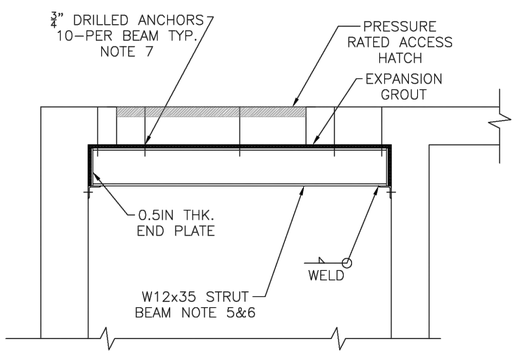


SECTION VIEW
SECTION I–I
SCALE: 1/2"=1'–0"

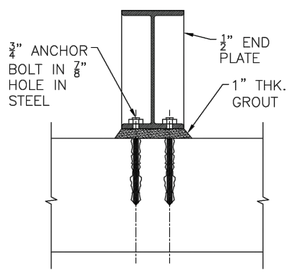


SECTION VIEW
SECTION J–J
SCALE: 1/2"=1'–0"

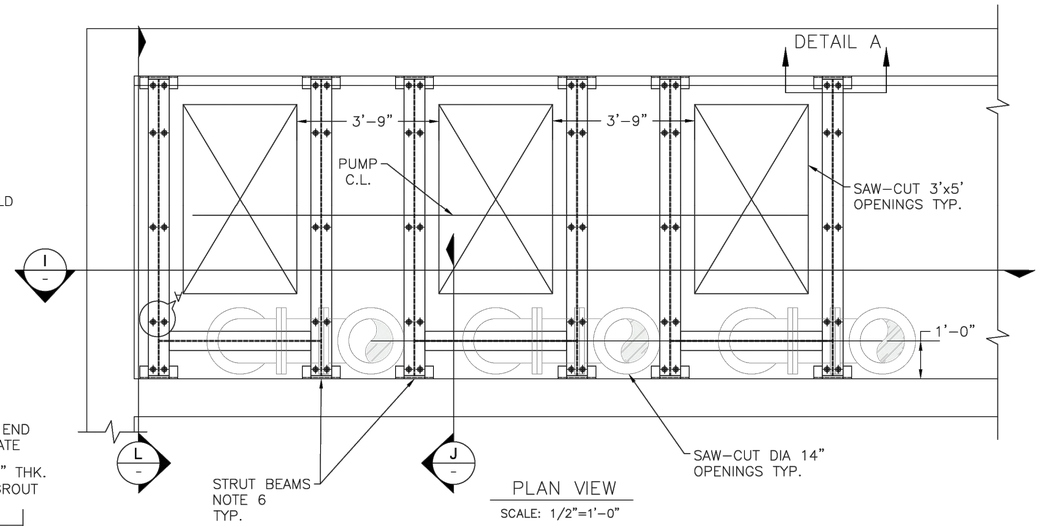
DETAIL B
SCALE: 3"=1'–0"



SECTION L–L
SCALE : 1/2" = 1'–0"



DETAIL–A
SCALE: 1–1/2"=1'–0"



PLAN VIEW
SCALE: 1/2"=1'–0"

NOTES:

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10. DRILLED ANCHORS AS CALLED OUT ON THESE SHEETS ARE HILTI HIT–RE 500V3 WITH HILTI QUICK BOLT. DO NOT USE EXPANSION ANCHORS THAT MAY CAUSE CONCRETE TO SPLIT.

NO.	DATE	REVISION	APP.

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FEBRUARY 2026

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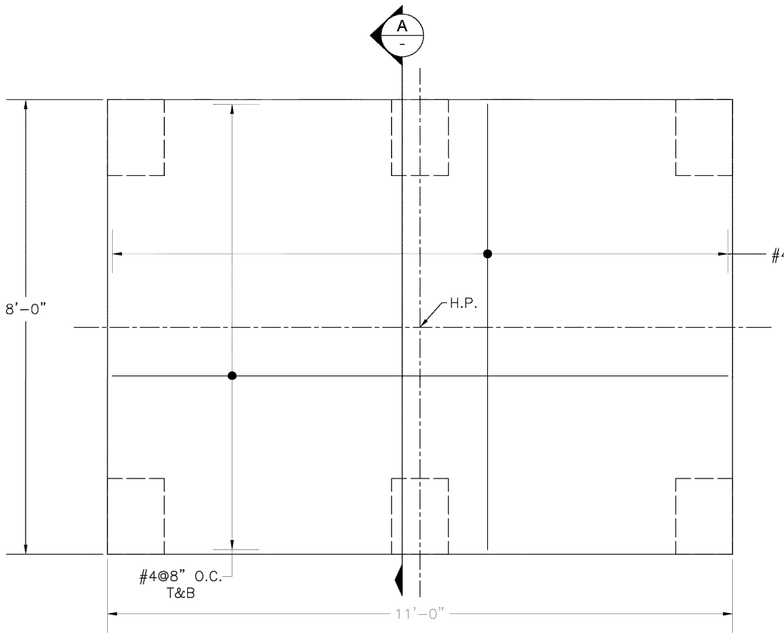
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

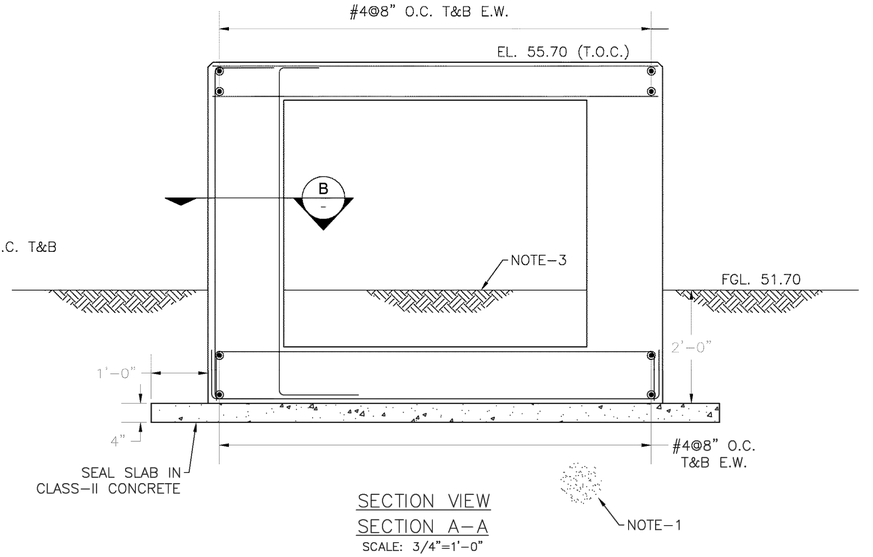
GOLF COURSE LIFT STATION

RISER PIPE SUPPORT DETAILS
(OPTION 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: AS NOTED VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 190 OF 298	S–410

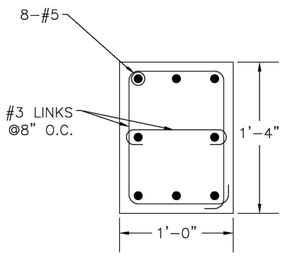


PLAN VIEW
TOP SLAB REINFORCEMENT
SCALE: 3/4"=1'-0"

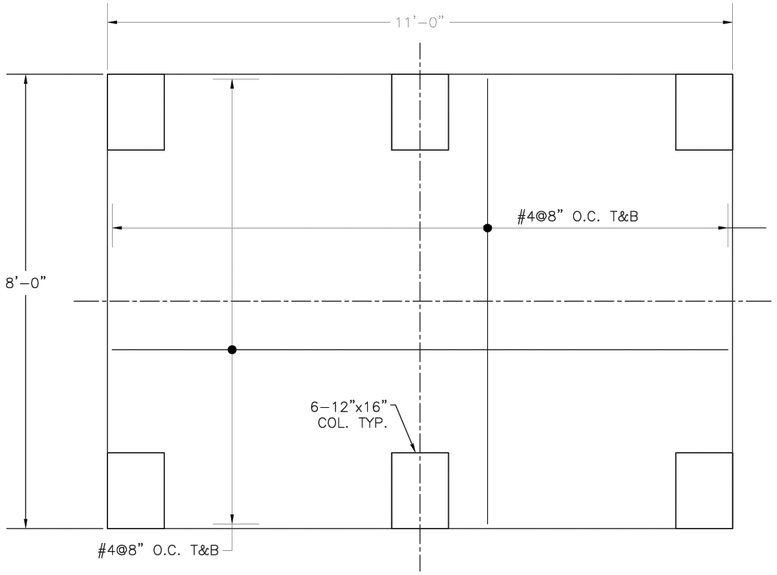


SECTION VIEW
SECTION A-A
SCALE: 3/4"=1'-0"

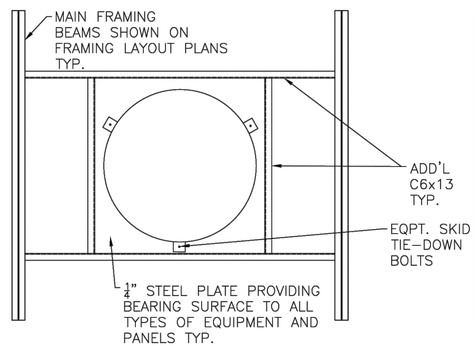
NOTES:
1. REMOVE ANY LOOSE MATERIAL VOIDS, POCKETS, ORGANIC MATERIAL, ETC. HAND COMPACT SUBGRADE TO 95% STANDARD PROCTOR DRY DENSITY. BACKFILL WITH CLASS-II CONCRETE PRIOR TO INSTALLING SEAL SLAB. DUE TO PROXIMITY TO LIFT STATION EXTERIOR WALL, HIGH ENERGY COMPACTORS MAY NOT BE USED.
2. FOR CONCRETE AND REINFORCEMENT SPECIFICATIONS, REFER TO G-01 STRUCTURAL GENERAL NOTES.
3. FINISHED GROUND PROFILE SHALL BE SLOPING AWAY FROM THE EXISTING LIFT STATION.



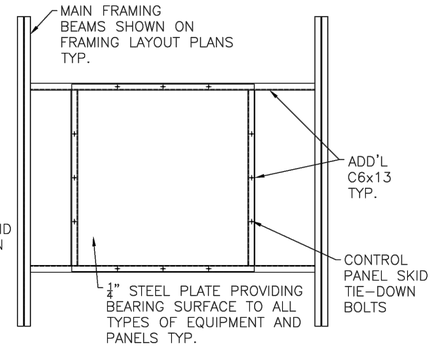
COLUMN REINFORCEMENT
SECTION B-B
SCALE: 1-1/2"=1'-0"



PLAN VIEW
BASE SLAB REINFORCEMENT
SCALE: 3/4"=1'-0"



DETAIL 1/ S-407
CUSTOM FLOOR FRAME SUPPORTING
ODOR CONTROL EQPT. SKID
SCALE: NTS



DETAIL 2 /S-407
CUSTOM FLOOR FRAME SUPPORTING
CONTROL PANEL
SCALE: NTS

SEE THE NOTE ON SHEET 407 FOR ADDITIONAL SUPPORT BEAMS AND STEEL PLATE REQUIRED FOR EQUIPMENT AND CONTROL PANEL SKID SUPPORTS.

NO.	DATE	REVISION	APP.

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HOUSTON PUBLIC WORKS

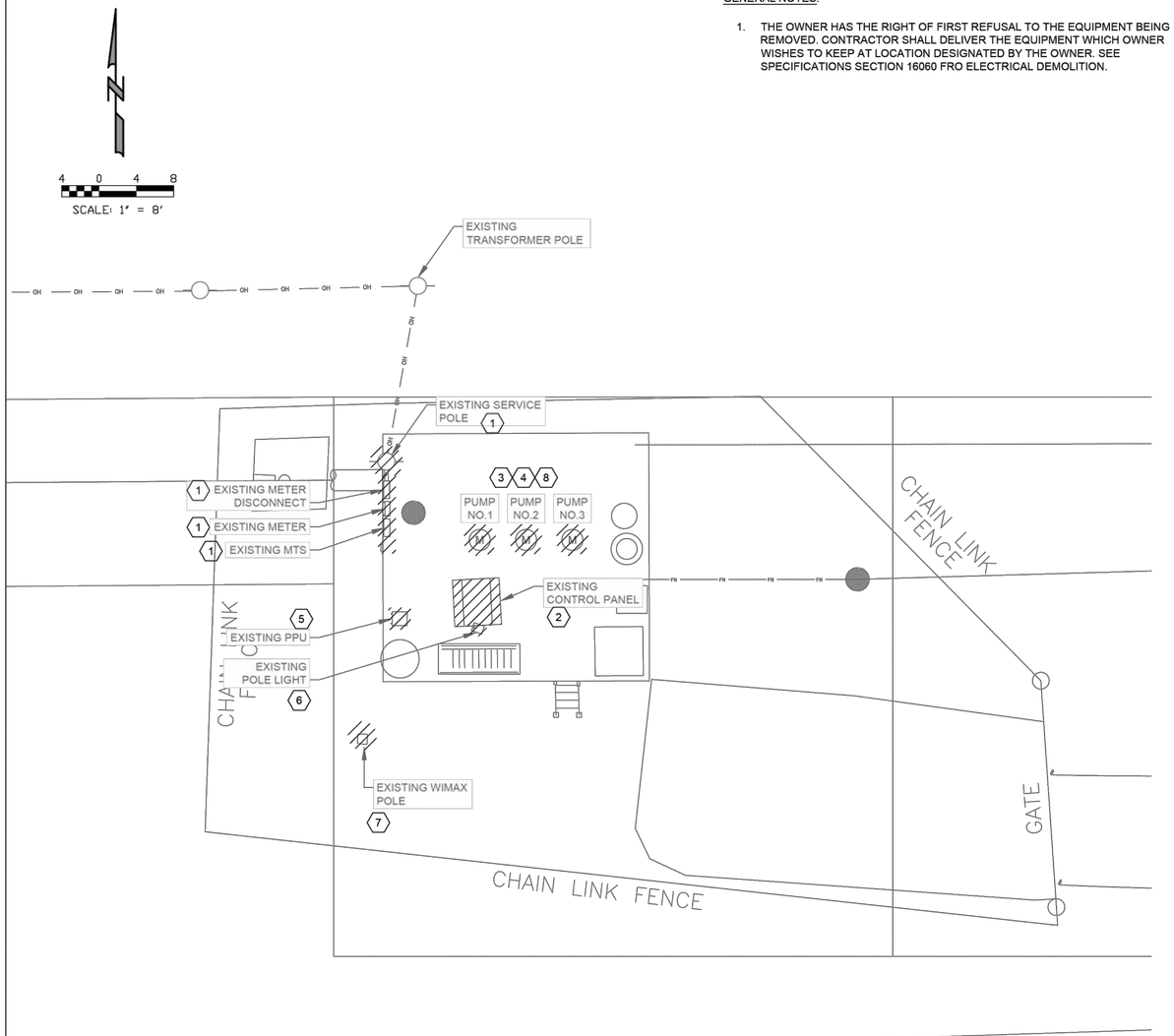
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
ODOR CONTROL PLATFORM
REINFORCEMENT DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 3/4"=1' VERT: 3/4"=1'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 191 OF 298	S-411

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PLOT STYLE: 60Hetb
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GOLF COURSE LIFT STATION
ELECTRICAL DEMOLITION SITE

PLAN

1" = 8'-0"

GENERAL NOTES:

1. THE OWNER HAS THE RIGHT OF FIRST REFUSAL TO THE EQUIPMENT BEING REMOVED. CONTRACTOR SHALL DELIVER THE EQUIPMENT WHICH OWNER WISHES TO KEEP AT LOCATION DESIGNATED BY THE OWNER. SEE SPECIFICATIONS SECTION 16060 FRO ELECTRICAL DEMOLITION.

NOTES BY SYMBOL "#":

1. EXISTING SERVICE POLE, METER, METER DISCONNECT SWITCH, MTS AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
2. EXISTING CONTROL PANEL AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
3. EXISTING STARTER PANEL, HIGH LEVEL PANEL, TRANSFORMER, LIGHTING PANEL AND ASSOCIATED CONDUITS AND WIRES IN DRY POT TO BE DEMOLISHED AND REMOVED.
4. EXISTING ELECTRICAL BOXES AND ASSOCIATED CONDUITS AND WIRES IN DRY PIT TO BE DEMOLISHED AND REMOVED.
5. EXISTING PPU AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED AND RETURNED TO THE WASTEWATER FACILITY MAINTENANCE DEPARTMENT OF THE CITY.
6. EXISTING POLE LIGHT AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
7. EXISTING WIMAX POLE AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
8. EXISTING LIGHT FIXTURES, LIGHT SWITCHES, RECEPTACLES, PANELS AND ASSOCIATED CONDUITS AND WIRES IN DRY PIT TO BE DEMOLISHED AND REMOVED.



EXISTING SERIVE RACK

PHOTOGRAPH A - 1
NTS



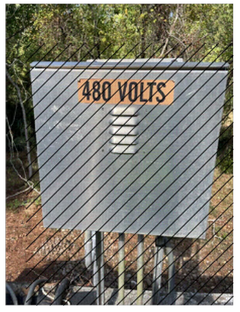
EXISTING METER, METER DISCONNECT SWITCH AND MTS

PHOTOGRAPH B - 1
NTS



EXISTING CONTROL PANEL

PHOTOGRAPH C - 2
NTS



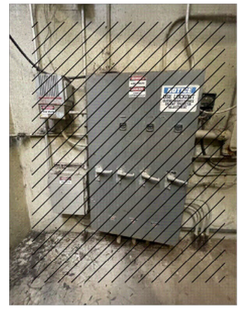
EXISTING PPU

PHOTOGRAPH F - 5
NTS



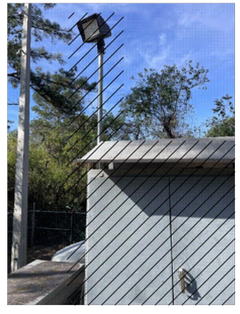
EXISTING ELECTRICAL EQUIPMENT IN DRY PIT

PHOTOGRAPH E - 4 3
NTS



EXISTING STARTER PANEL IN DRY PIT

PHOTOGRAPH D - 3
NTS



EXISTING POLE LIGHT

PHOTOGRAPH J - 6
NTS



EXISTING WIMAX POLE

PHOTOGRAPH I - 7
NTS



EXISTING LIGHTS, LIGHTS SWITCHES AND RECEPTACLES IN DRY PIT

PHOTOGRAPH H - 8
NTS



EXISTING HIGH LEVELPANEL IN DRY PIT

PHOTOGRAPH G - 3
NTS

LEGEND:

ITEMS TO BE DEMOLISHED.

NO.	DATE	REVISION	APP.

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Gupta & Associates, Inc.
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Registration No. F-2593
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SURVEYED BY: LANDTECH, INC.
FB NO. 6399

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON

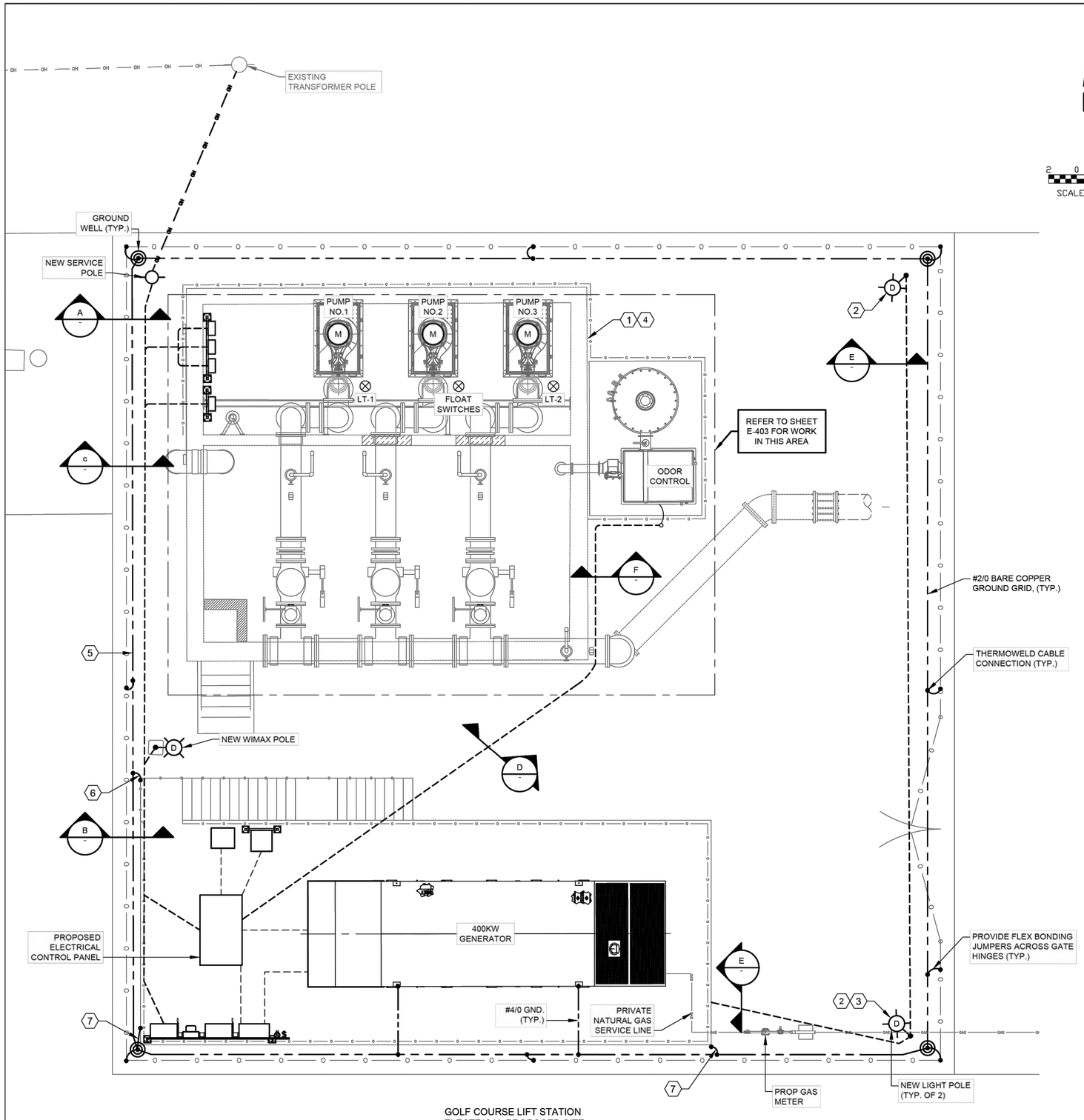
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
ELECTRICAL
DEMOLITION OVERALL SITE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=8' VERT: 1"=8'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 192 OF 298	E-401

PLOTTED: 2/23/2026 8:11:39 AM
PLOT STYLE: Grayscale.ctb
FILE PATH: C:\Users\hforouzan\Gupta & Associates, Inc\GAI - Documents\Projects\City of Houston\Golf Course\WIP\E-402 GOLF COURSE - ELECTRICAL (GOLF COURSE).dwg



GOLF COURSE LIFT STATION
ELECTRICAL PROPOSED SITE

PLAN

1" = 4'-0"

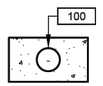
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SCALE: 1" = 4'

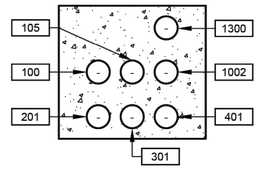
NOTES BY SYMBOL "#":

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. 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 HANDRAIL.
7. #4/0 BARE COPPER GROUND TO BE BONDED TO PLATFORM STRUCTURAL STEEL.

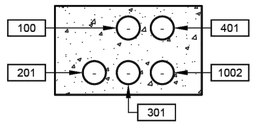
NO.	DATE	REVISION	APP.



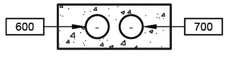
DUCTBANK
SECTION A
NTS



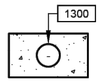
DUCTBANK
SECTION B
NTS



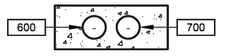
DUCTBANK
SECTION C
NTS



DUCTBANK
SECTION D
NTS



DUCTBANK
SECTION E
NTS



DUCTBANK
SECTION F
NTS

DCCM

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

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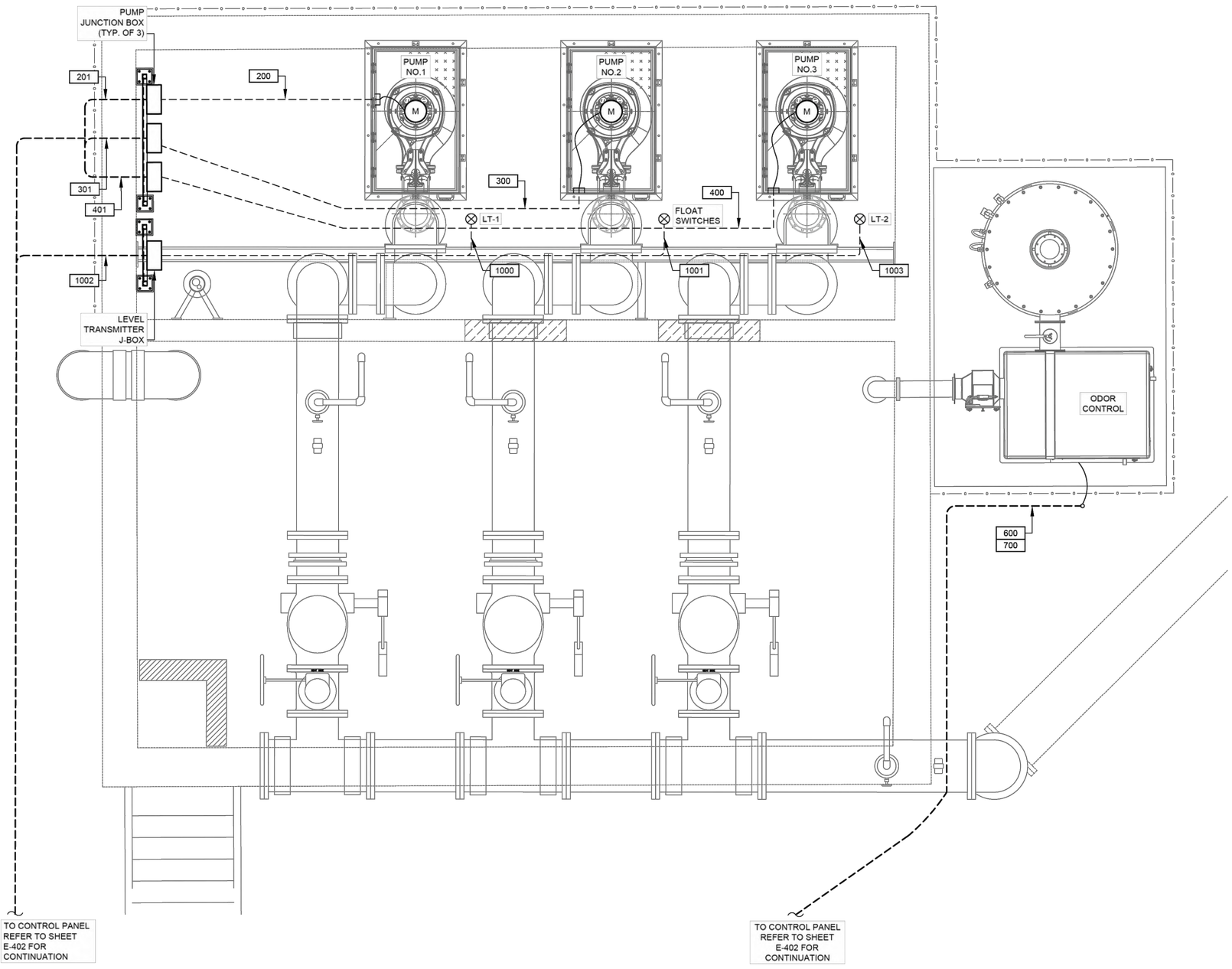
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
ELECTRICAL
PROPOSED OVERALL SITE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 193 OF 298	E-402

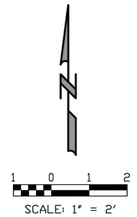
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GOLF COURSE LIFT STATION
ELECTRICAL PROPOSED ENLARGED SITE

PLAN (1)(2)

1" = 2'-0"



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.

NO.	DATE	REVISION	APP.

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DATE: 2/25/2026

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FB NO. 6399

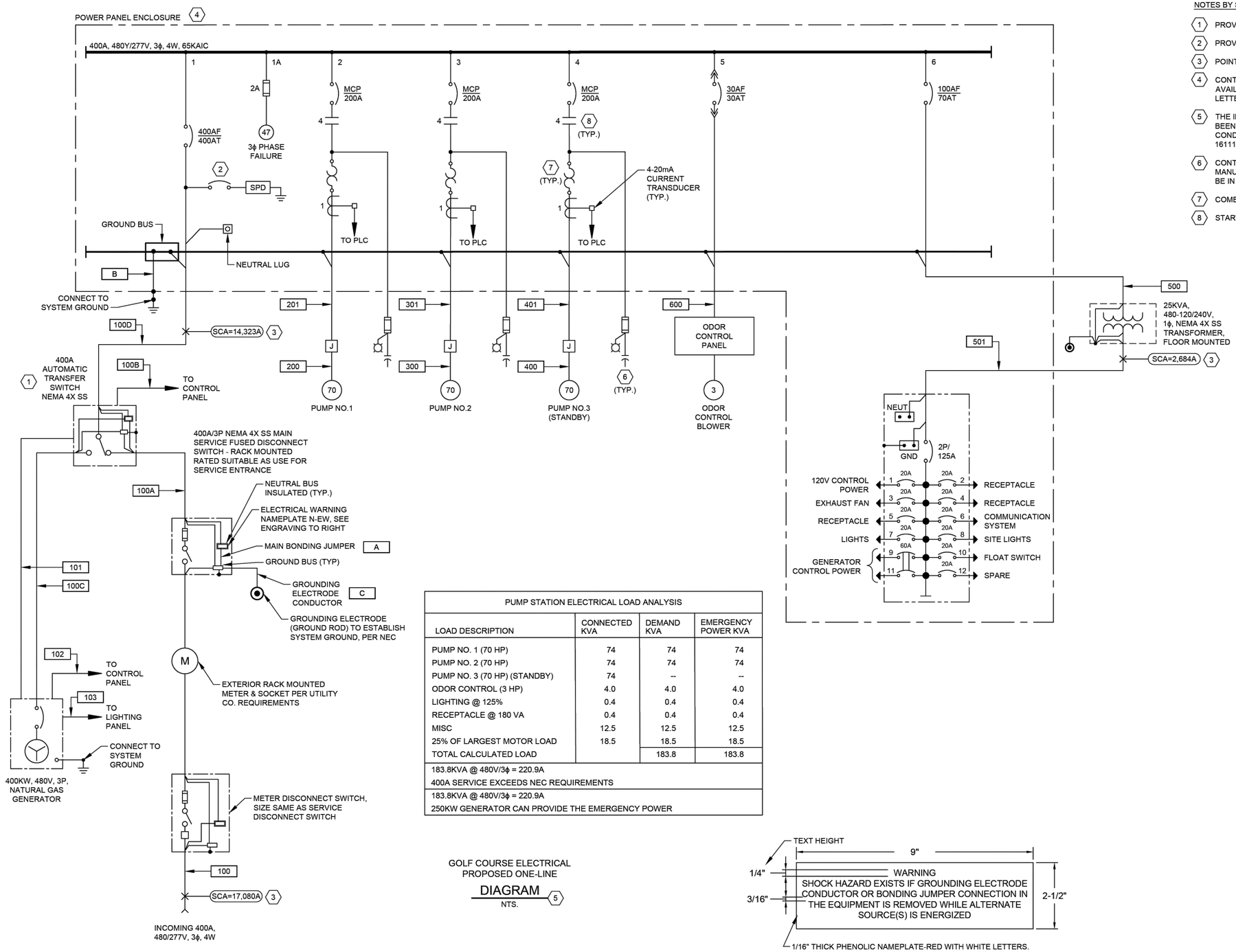
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
ELECTRICAL
PROP. ENLARGED LIFT STATION SITE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=2' VERT: 1"=2'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 194 OF 298	E-403

PLOTTED: 2/23/2026 8:19 AM
PLOT STYLE: Grayscale
FILE PATH: C:\Projects\...\GOLF COURSE)_E-404.dwg



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.
6. CONTRACTOR TO COORDINATE POWER FACTOR CORRECTION CAPACITOR SIZE WITH PUMP MANUFACTURER. MINIMUM 95% POWER FACTOR CORRECTION AT FULL LOAD. THEY SHALL BE IN A NEMA 3R ENCLOSURE AND MOUNTED OUTSIDE OF CONTROL CABINET.
7. COMBINATION OF CT AND OVERLOAD RELAY AS REQUIRED.
8. STARTER NEMA SIZE 3 OF GREATER SHALL BE VACUUM TYPE.

NO.	DATE	REVISION	APP.

PUMP STATION ELECTRICAL LOAD ANALYSIS

LOAD DESCRIPTION	CONNECTED KVA	DEMAND KVA	EMERGENCY POWER KVA
PUMP NO. 1 (70 HP)	74	74	74
PUMP NO. 2 (70 HP)	74	74	74
PUMP NO. 3 (70 HP) (STANDBY)	74	--	--
ODOR CONTROL (3 HP)	4.0	4.0	4.0
LIGHTING @ 125%	0.4	0.4	0.4
RECEPTACLE @ 180 VA	0.4	0.4	0.4
MISC	12.5	12.5	12.5
25% OF LARGEST MOTOR LOAD	18.5	18.5	18.5
TOTAL CALCULATED LOAD		183.8	183.8
183.8KVA @ 480V/3ϕ = 220.9A 400A SERVICE EXCEEDS NEC REQUIREMENTS			
183.8KVA @ 480V/3ϕ = 220.9A 250KW GENERATOR CAN PROVIDE THE EMERGENCY POWER			

GOLF COURSE ELECTRICAL PROPOSED ONE-LINE DIAGRAM 5
NTS.

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

DCCM

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
ELECTRICAL
PROPOSED ONE–LINE DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 195 OF 298	E–404

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PLOT STYLE: Grayscale
FILE PATH: C:\Users\...\Golf Course\...\E-405 (GOLF COURSE).dwg

FROM UTILITY METER
REFER TO SHEET E-404
480/277V, 3Ø, 4W

GROUNDED SERVICE CONDUCTOR
NEUTRAL BUS (INSULATED) (TYPE)
MAIN BONDING JUMPER A
GROUNDING ELECTRODE CONDUCTOR C
GROUND ROD (TYPICAL)
400A/3P NEMA 4X SS MAIN SERVICE FUSED DISCONNECT SWITCH RACK MOUNTED RATED SUITABLE AS USE FOR SERVICE ENTRANCE
GROUND BUS (TYPE)

3 POLE AUTOMATIC TRANSFER SWITCH (ATS)
GND BUS
NEUT
EC
EB
EA
NC
NB
NA
LA LB LC

SURGE PROTECTOR (SEE NOTE 5)
JE-1
SPD
M
MAIN BREAKER
X
PHASE MONITOR
JE-2
VV
PLC

NEUT
GND BUS
POWER PANEL | FIELD

NEUT
GND
GEN
STANDBY GENERATOR

POWER FACTOR CAPACITOR (SEE NOTE 2)
4-20mA CURRENT TRANSDUCER
4-20mA TO PLC
+
-
MOR (SEE NOTE 6)
MCP
M1
T1
T2
T3
PUMP NO. 1
M
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
MOR (SEE NOTE 6)
MCP
M2
PUMP NO. 2
205 206 207 208 GND
TSH-2
LSH-2

MATCHLINE `A'

MATCHLINE `A'

POWER PANEL | FIELD
POWER FACTOR CAPACITOR (SEE NOTE 2)
4-20mA CURRENT TRANSDUCER
4-20mA TO PLC
MOR (SEE NOTE 6)
MCP
M3
PUMP NO. 3
305 306 307 308 GND
20 21 22 23 GND
TSH-3
LSH-3

T1 T2 T3 GND
ODOR CONTROL PANEL

25KVA, 480-120/240V
1 PHASE TRANSFORMER
FLOOR MOUNTED
(SEE NOTE 3)
EE
CB

240V, 125A, 12 CKT
LIGHTING PANEL
125A
NEUT
GND

120V CONTROL POWER	20A	1	RECEPTACLE
EXHAUST FAN	20A	3	RECEPTACLE
RECEPTACLE	20A	5	COMMUNICATION SYSTEM
LIGHTS	60A	7	SITE LIGHTS
GENERATOR CONTROL POWER	20A	9	FLOAT SWITCH
		11	SPARE

		2	20A
		4	20A
		6	20A
		8	20A
		10	20A
		12	

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 INDICATED, 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 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.
6. THE COMBINATION OF CT AND MOTOR OVERLOAD RELAY IF REQUIRED.

NO.	DATE	REVISION	APP.

DCCM

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
ELECTRICAL
INCOMING POWER THREE LINE DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 196 OF 298	E-405

	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	--	#1/0 CU GND.
B	EQUIPMENT BONDING JUMPER	--	--	MCC/POWER PANEL ENCLOSURE	POWER/CONTROL PANEL & EQUIPMENT	--	#1/0 CU GND.
C	GROUNDED ELECTRODE CONDUCTOR	--	--	GROUNDING ELECTRODE	MAIN SERVICE FUSED DISCONNECT GROUNDING	--	#1/0 CU GND.
100	SERVICE ENTRANCE	480V	400A	UTILITY POWER SERVICE	METER DISCONNECT		3#500 MCM, #1/0 NEUT. #1/0 CU GND. 3-1/2"C.
100A	SERVICE POWER	480V	400A	SERVICE DISCONNECT	ATS	--	3#500 MCM, #1/0 NEUT. #1/0 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, #1/0 NEUT. #1/0 CU GND. 3-1/2"C.
100D	ELECTRIC POWER	480V	400A	ATS	CONTROL PANEL	--	3#500 MCM, #1/0 NEUT. #1/0 CU GND. 3-1/2"C.
101	GENERATOR CONTROL	120V	--	ATS	GENERATOR	--	6#14, #12 GND. 1"C.
102	ANNUNCIATION	--	--	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	PPU-AC	--	POE CABLE IN 1"C.
200	PUMP NO. 1 POWER	480V	70 HP	PUMP NO. 1	PUMP NO. 1 JUNCTION BOX	--	MANUFACTURER'S CABLE IN 3" CONDUIT
201	PUMP NO. 1 POWER AND CONTROLS	480V	70 HP	PUMP NO. 1 JUNCTION BOX	CONTROL PANEL	--	3#2 AWG, 4#14, #8 GND. 2"C.
300	PUMP NO. 2 POWER	480V	70 HP	PUMP NO. 2	PUMP NO. 2 JUNCTION BOX	--	MANUFACTURER'S CABLE IN 3" CONDUIT
301	PUMP NO. 2 POWER AND CONTROLS	480V	70 HP	PUMP NO. 2 JUNCTION BOX	CONTROL PANEL	--	3#2 AWG, 4#14, #8 GND. 2"C.
400	PUMP NO. 3 POWER	480V	70 HP	PUMP NO. 3	PUMP NO. 3 JUNCTION BOX	--	MANUFACTURER'S CABLE IN 3" CONDUIT
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	LIGHTING TRANSFORMER PRIMARY FEEDER	480V	70A	CONTROL PANEL	LIGHTING TRANSFORMER PRIMARY	--	2#4 AWG, #8 GND. 1"C.
501	LIGHTING TRANSFORMER SECONDARY FEEDER	208/120V	--	LIGHTING TRANSFORMER SECONDARY	LIGHTING PANEL	--	3#1 AWG, #6 GND. 1-1/2"C.
600	ODOR CONTROL UNIT	480V	--	CONTROL PANEL	ODOR CONTROL UNIT	--	3#8 AWG, #10 GND. 1"C.
700	ODOR CONTROL	120V	--	CONTROL PANEL	ODOR CONTROL UNIT	--	8#14 AWG, #14 GND. 1"C.
1000	LEVEL TRANSMITTER	24VDC	--	LEVEL TRANSMITTER LT-1	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT
1001	LEVEL TRANSMITTER	24VDC	--	LEVEL TRANSMITTER LT-2	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT
1002	COMBINED LEVEL TRANSMITTERS & FLOAT SWITCH	24VDC	--	CONTROL PANEL	TRANSMITTER JUNCTION BOX	--	2 TRIAD #16, 4#14 AWG, 1"C.
1003	WELL FLOAT SWITCHES	120V	--	TRANSMITTER JUNCTION BOX	FLOAT SWITCH NO.1 THROUGH NO.7	--	MANUFACTURER'S CABLE IN 2-1/2"C
1100	120VAC FOR RECEPTACLE	--	--	LIGHTING PANEL	RECEPTACLE ON PLATFORM	--	2#12 AWG, #12 GND, 3/4"C.
1200	120VAC FOR RECEPTACLE	120V	--	LIGHTING PANEL	RECEPTACLE ON PLATFORM	--	2#12 AWG, #12 GND. 1"C.
1300	SITE LIGHTING	120V	--	SITE LIGHTING SWITCH	SITE LIGHTING	--	2#12 AWG, #12 GND. 1"C.
1300A	SITE LIGHTING	120V	--	LIGHTING PANEL	SITE LIGHTING SWITCH	--	2#12 AWG, #12 GND. 1"C.
1400	PPU BOX POWER	120V/24VDC	--	CONTROL PANEL	PPU BOX	--	4#12 AWG, #12 GND. 3/4"C.
1401	PPU BOX COMMUNICATION	24VDC	--	PPU BOX	CONTROL PANEL	--	CAT.5E IN 3/4"C.

NOTES BY SYMBOL "⟨#⟩":

⟨1⟩ REFER TO SPEC SECTION 16120 FOR CONDUCTOR COLOR CODE.

NO.	DATE	REVISION	APP.

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GAI
Gupta & Associates, Inc.
CONSULTING ENGINEERING
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SURVEYED BY: LANDTECH, INC.
FB NO. 6399

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TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

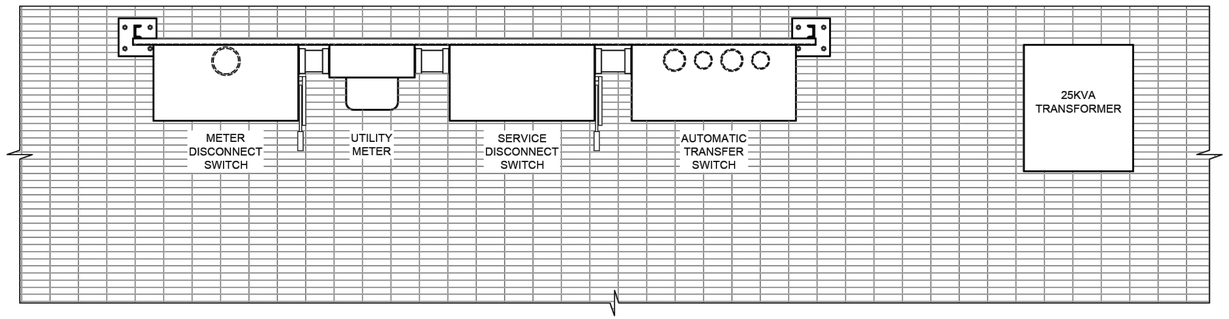
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
ELECTRICAL
CONDUIT SCHEDULE

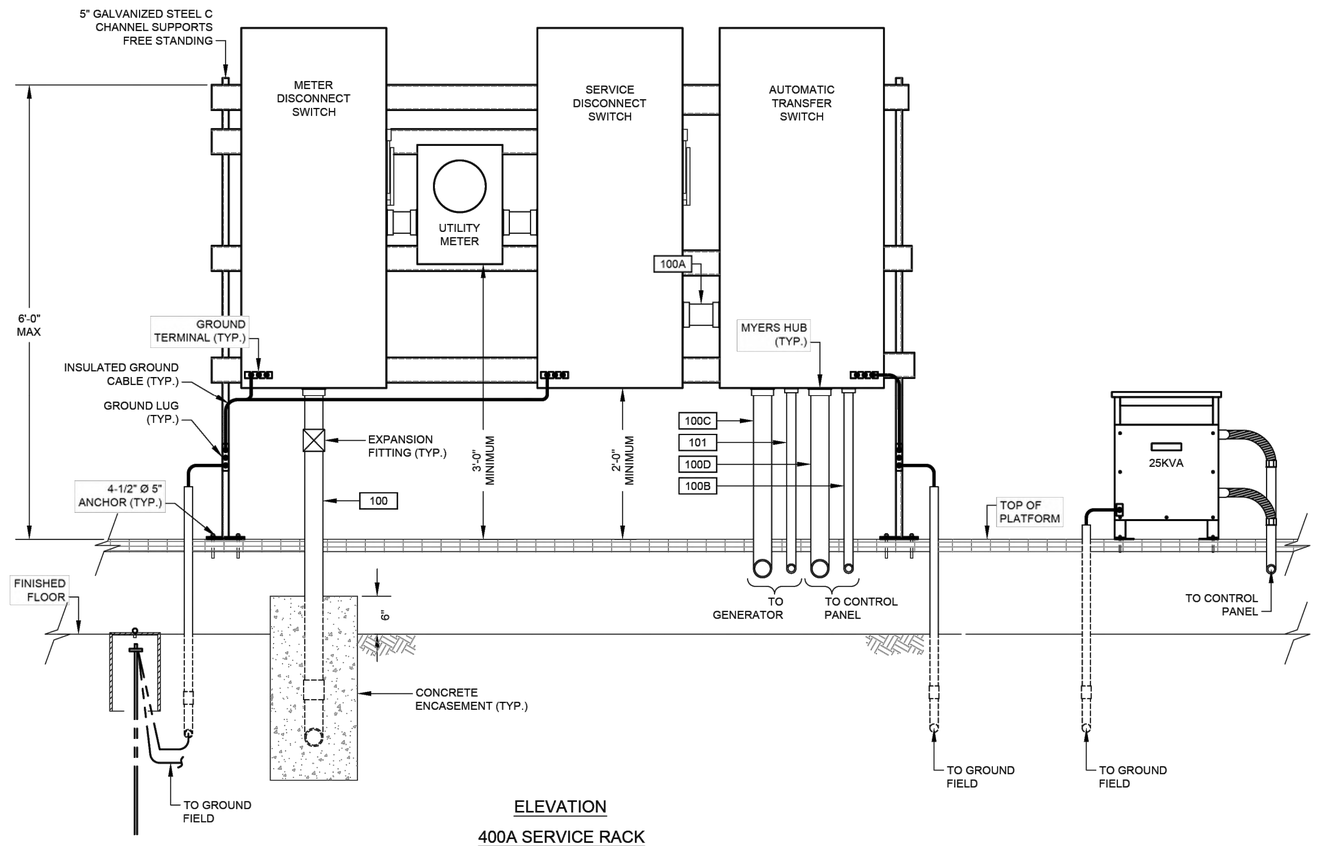
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HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 197 OF 298	E-406

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PLAN VIEW



ELEVATION

400A SERVICE RACK

DETAIL 1

NTS.

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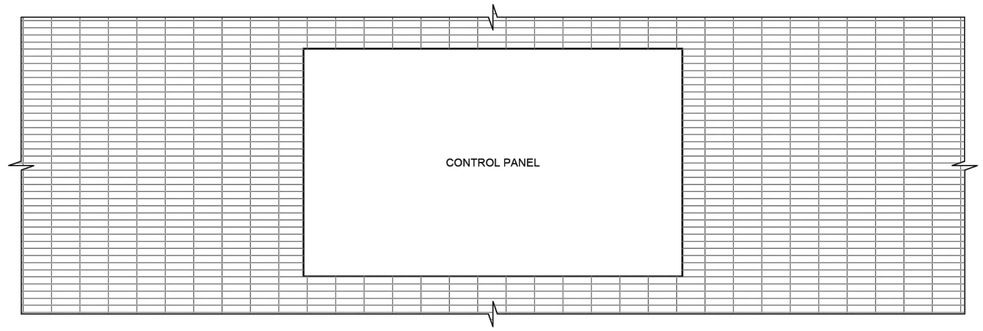
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

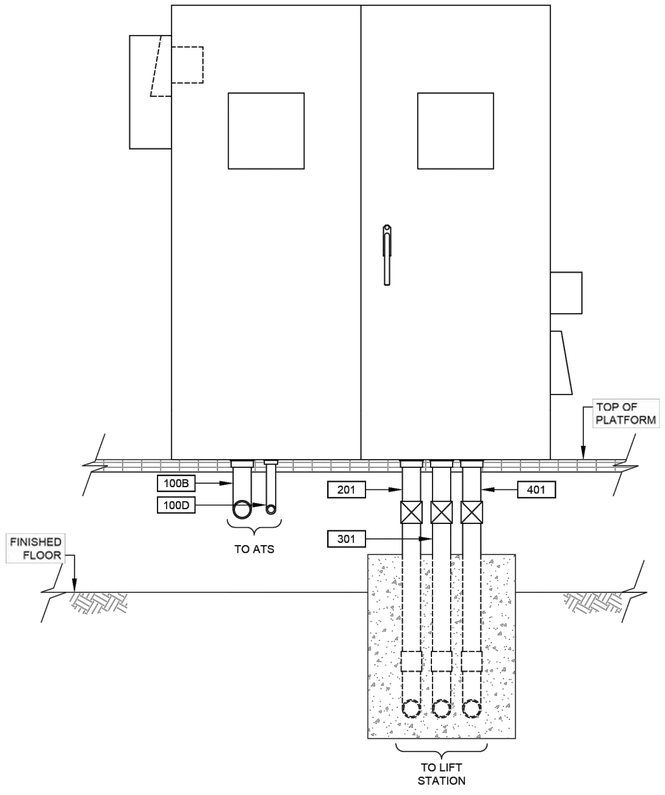
GOLF COURSE LIFT STATION
ELECTRICAL
SERVICE RACK DETAIL

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DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 198 OF 298	E-407

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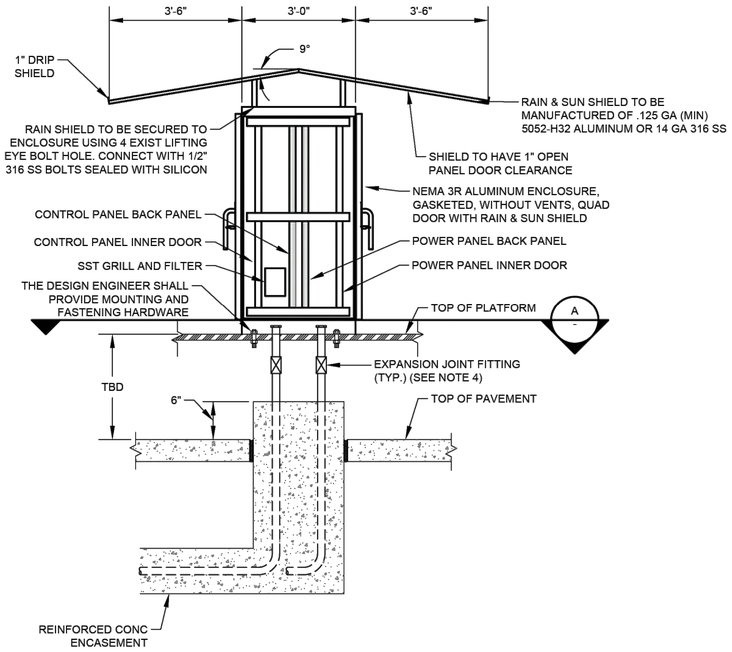


PLAN VIEW



CONTROL PANEL ELEVATION

DETAIL 1 (-)
NTS

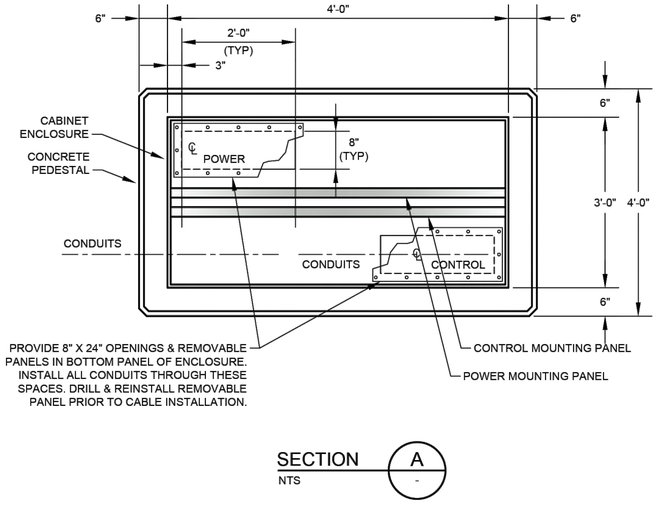


CONTROL CABINET ENCLOSURE WITH PLATFORM
(SEE NOTE 6)

DETAIL 2 (-)
NTS

GENERAL NOTES:

1. REFER TO SPECIFICATION SECTION 13325 PROCESS CONTROL SYSTEMS CONTROL PANELS FOR PANEL DIMENSIONS.
2. COMMUNICATION PANEL TO BE INSTALLED ABOVE SERVICE RACK ELEVATION.
3. EXPANSION JOINT FITTINGS AS REQUIRED.
4. REFER TO SERVICE RACK FOR DETAIL.
5. POWER FACTOR CAPACITOR TO BE MOUNTED OUTSIDE SIDE WALL OF THE CONTROL CABINET.
6. REFER TO STRUCTURAL DRAWINGS FOR PLATFORM DETAIL.



SECTION A (-)
NTS

NO.	DATE	REVISION	APP.

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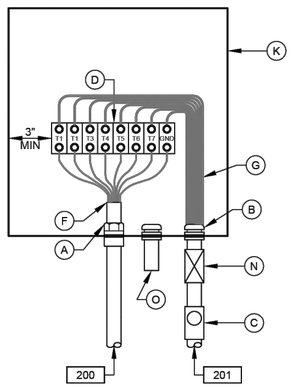
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
ELECTRICAL
CONTROL CABINET ENCLOSURE DETAIL

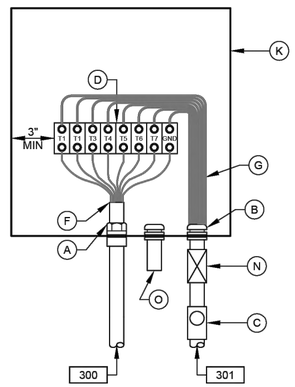
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 199 OF 298	E-408

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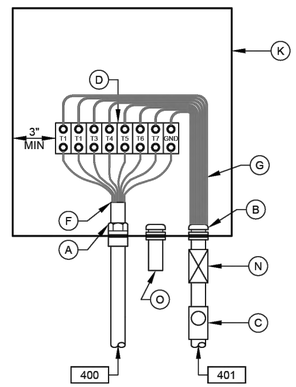
JUNCTION BOX NO.1

DETAIL 2 / NTS / - / (SEE NOTE 7)



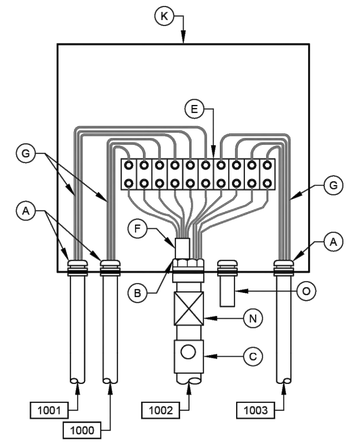
JUNCTION BOX NO.2

DETAIL 3 / NTS / - / (SEE NOTE 7)



JUNCTION BOX NO.3

DETAIL 5 / NTS / - / (SEE NOTE 7)



LEVEL TRANSMITTER JUNCTION BOX

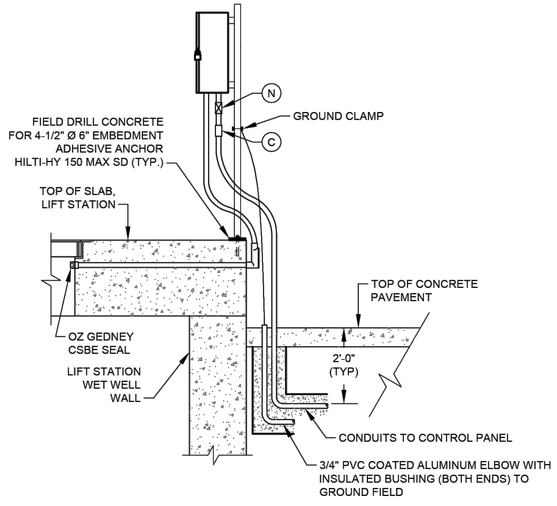
DETAIL 4 / NTS / - / (SEE NOTE 7)

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.

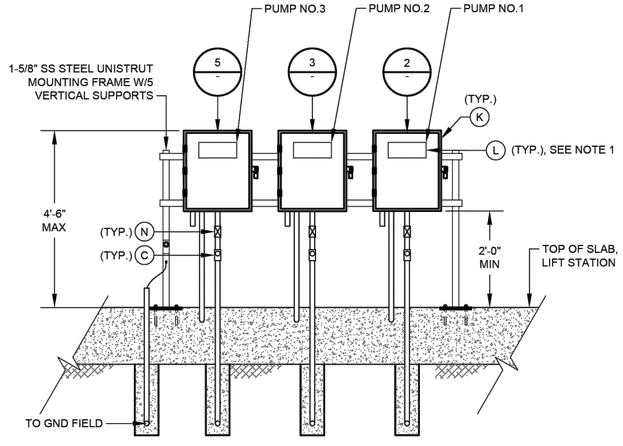
JUNCTION BOX EQUIPMENT SCHEDULE

- 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 6P 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

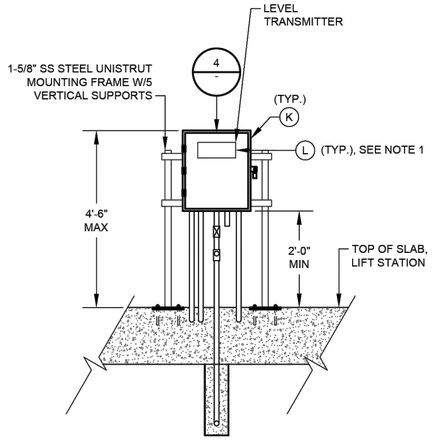


TYP SIDE VIEW FOR DETAIL 1 & 3

(SEE NOTE 10)



DETAIL 1 / NTS / - / (SEE NOTE 9)



DETAIL 3 / NTS / - / (SEE NOTE 9)

NO.	DATE	REVISION	APP.

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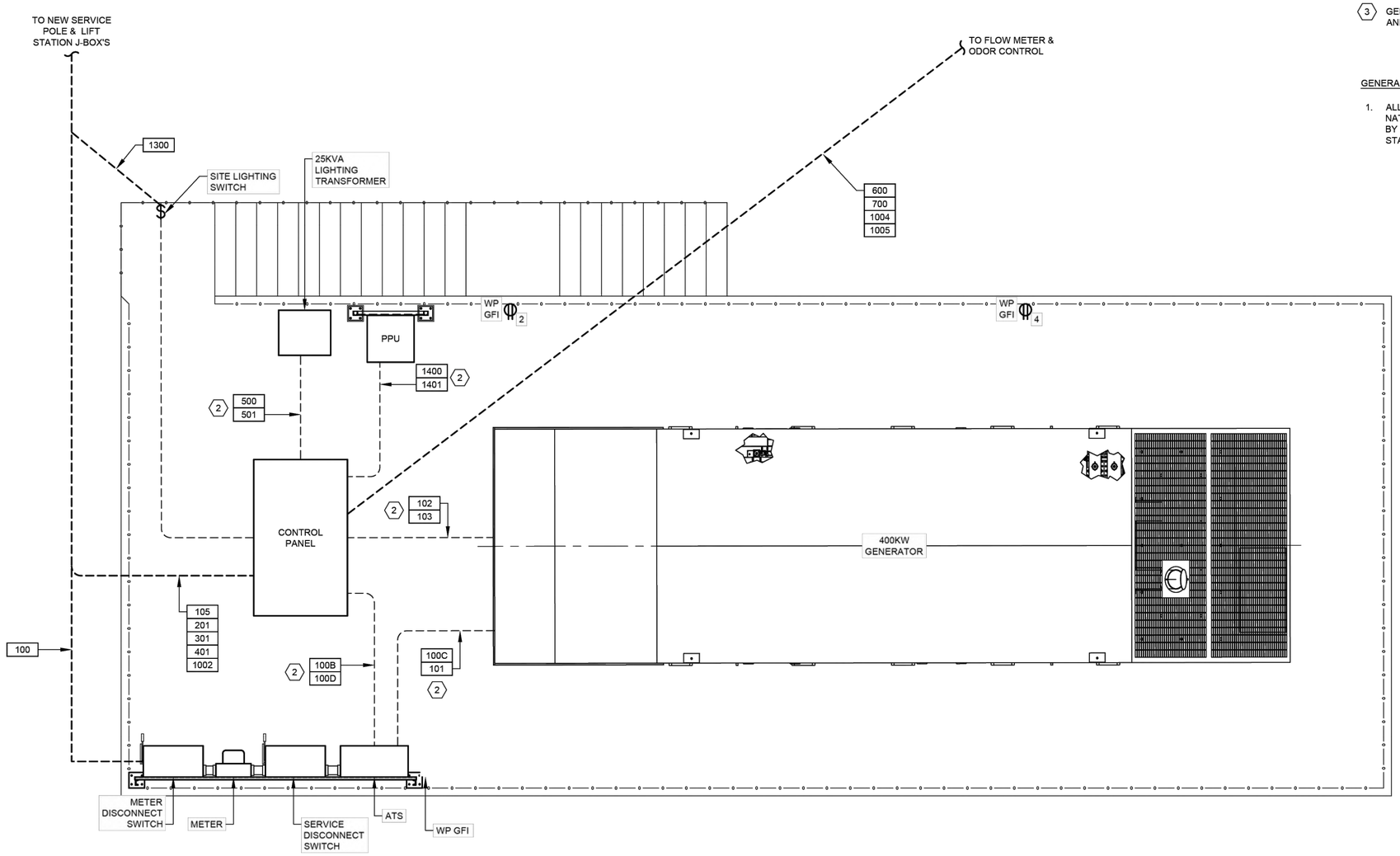
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
ELECTRICAL
JUNCTION BOX DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 200 OF 298	E-409

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PROPOSED ELECTRICAL PLATFORM LAYOUT

DETAIL 1 (1) (3)
1" = 2'-0"

NOTES BY SYMBOL "⟨#⟩":

(1) REFER TO STRUCTURAL DRAWINGS FOR PLATFORM DETAILS.

(2) CONDUIT TO BE INSTALLED BELOW PLATFORM.

(3) GENERATOR NOISE LEVEL SHALL MEET LOCAL NOISE REQUIREMENTS AT 65dBA DAYTIME AND 58 dBA NIGHTTIME.

GENERAL NOTES:

1. ALL NATURAL GAS PIPING FROM CNP GAS TO NATURAL GAS GENERATOR IS TO BE INSTALLED BY A PROFESSIONAL PLUMBER LICENSED IN THE STATE OF TEXAS.

NO.	DATE	REVISION	APP.

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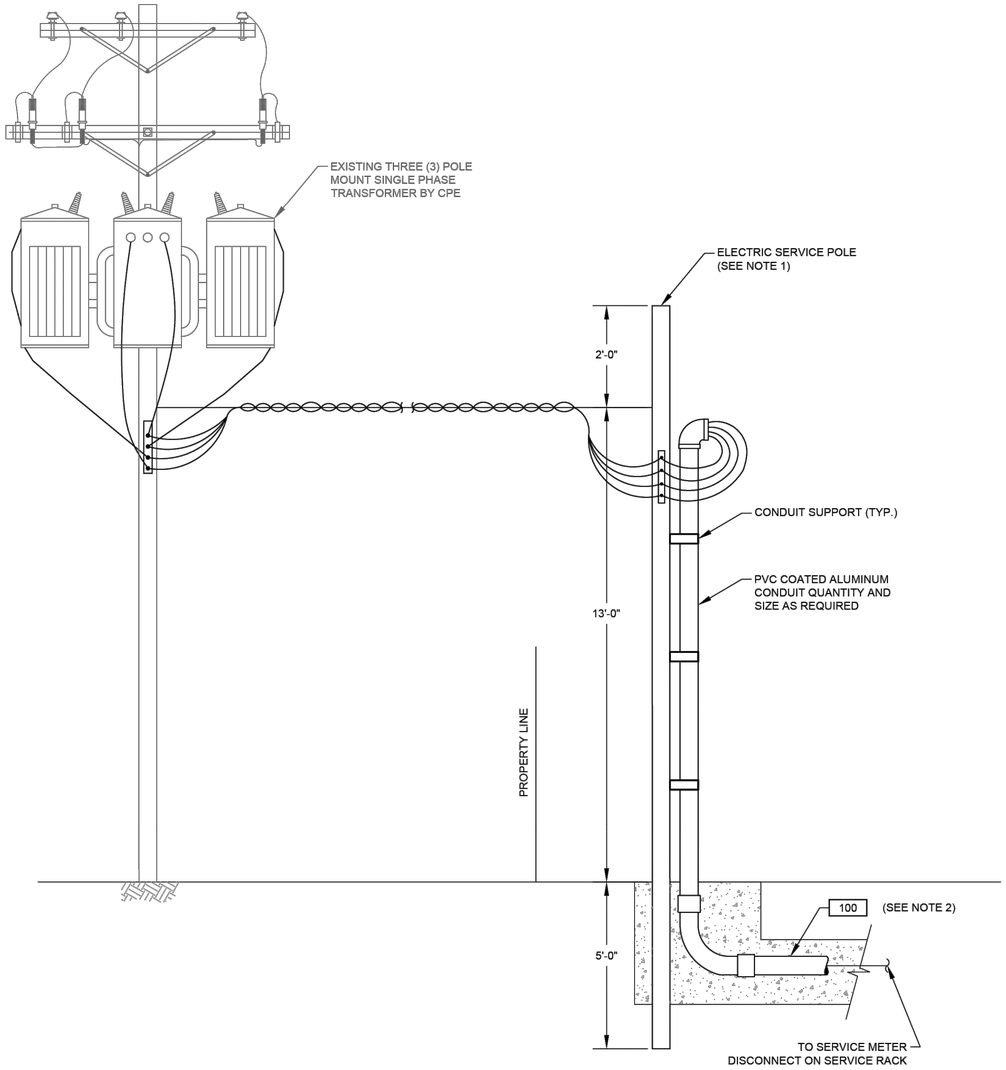
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GOLF COURSE LIFT STATION
ELECTRICAL
PROPOSED ELECTRICAL PLATFORM LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
HORIZ: N/A VERT: N/A	
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TYPICAL ELECTRICAL SERVICE ENTRANCE
FOR POWER SUPPLY BELOW 500KVA

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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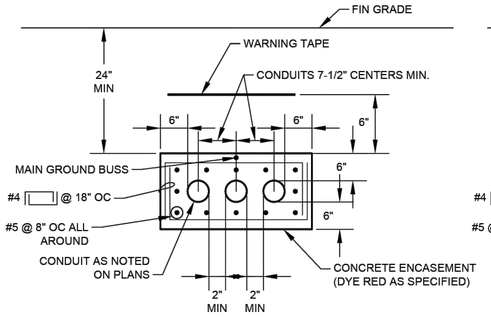
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(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
ELECTRICAL
ELECTRICAL SERVICE POLE DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 202 OF 298	E-411

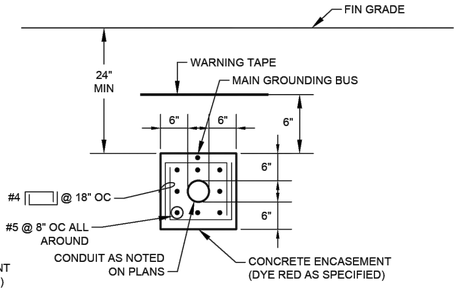
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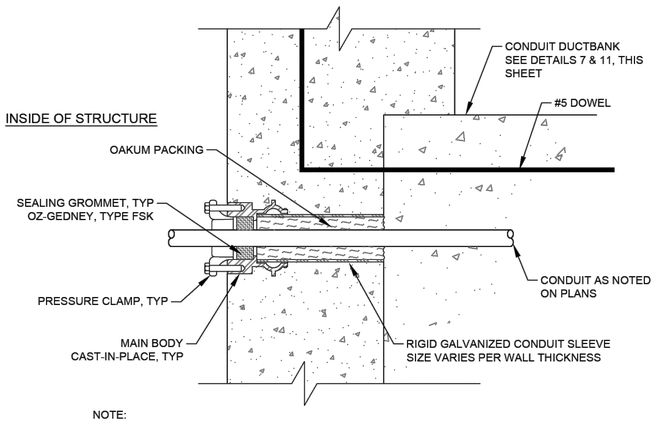
TYP MULTI-CONDUIT DUCTBANK SECTION

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

DETAIL 1 / NTS



TYP SINGLE-CONDUIT DUCTBANK SECTION

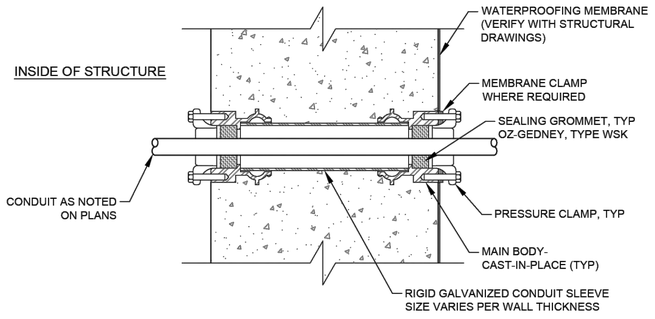


NOTE:

WALL SEAL SHOWN IS TYPICAL FOR EACH CONDUIT IN DUCTBANK.

SINGLE ENDED TYPE

FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS ENCASED IN CONCRETE

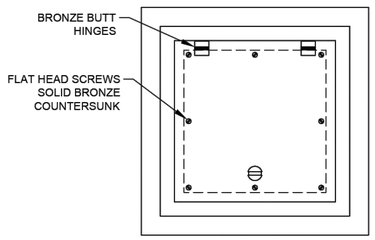


DOUBLE ENDED TYPE WITH MEMBRANE

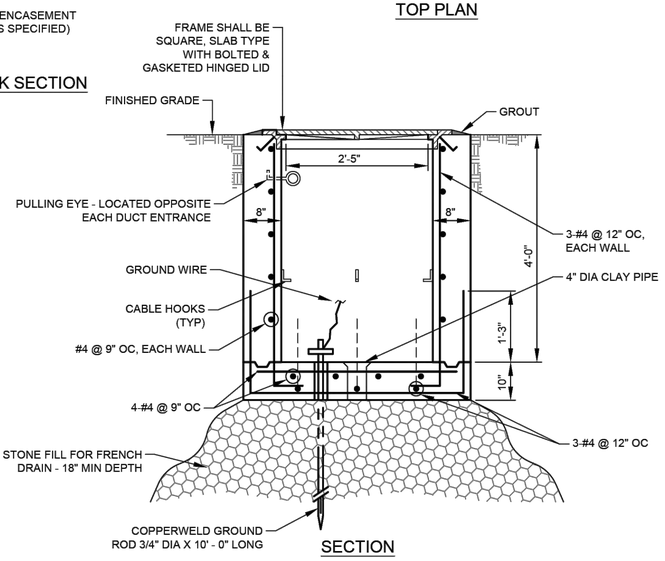
FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS ENCASED IN CONCRETE

TYPICAL CONDUIT SEALS

DETAIL 4 / NTS



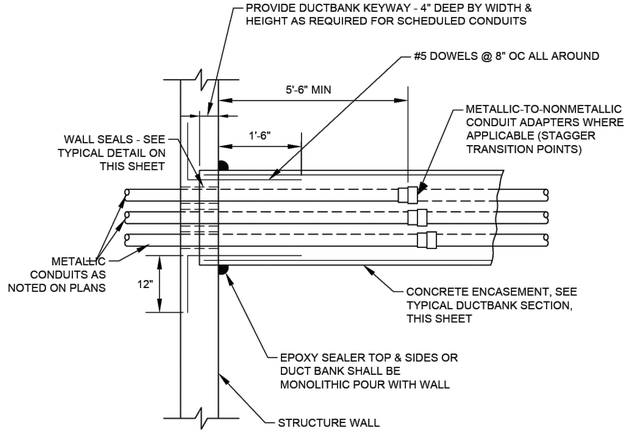
TOP PLAN



SECTION

TYPICAL ELECTRICAL HANDHOLE CONSTRUCTION

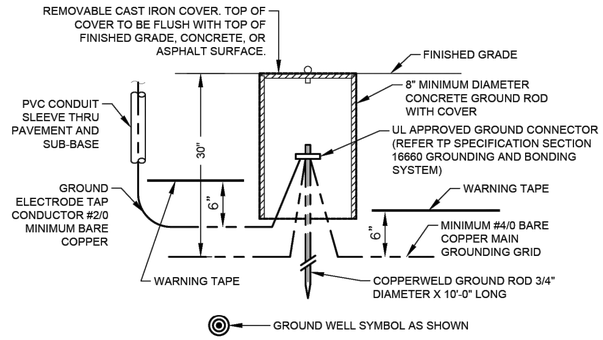
DETAIL 2 / NTS



PLAN

TYPICAL DUCTBANK ENTRANCE AT STRUCTURE WALL

DETAIL 5 / 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

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
ELECTRICAL
ELECTRICALT TYPICAL DETAILS

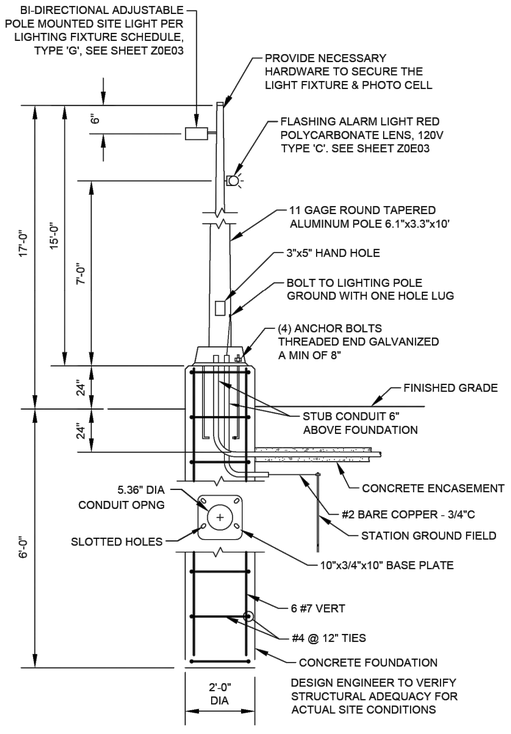
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DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 203 OF 298	E-412

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NOTES:

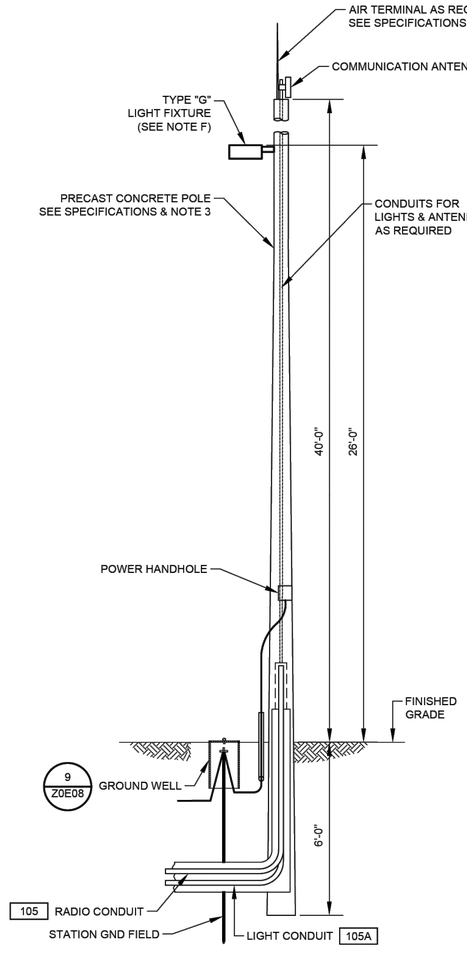
1. ON GROUND WIRE TERMINATION'S, ALL PAINTED OR COATED METAL SURFACES SHALL BE REMOVED AND CLEANED TO BARE METAL. TO OBTAIN A SOUND GROUND CONNECTION. ONCE INSTALLED APPLY PROTECTIVE COATING ON BARE METAL AREAS PER MANUFACTURER REQUIREMENTS.
2. PRECAST CONCRETE POLE TO MOUNT THE RADIO RECEIVER.
3. 1"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

NO.	DATE	REVISION	APP.



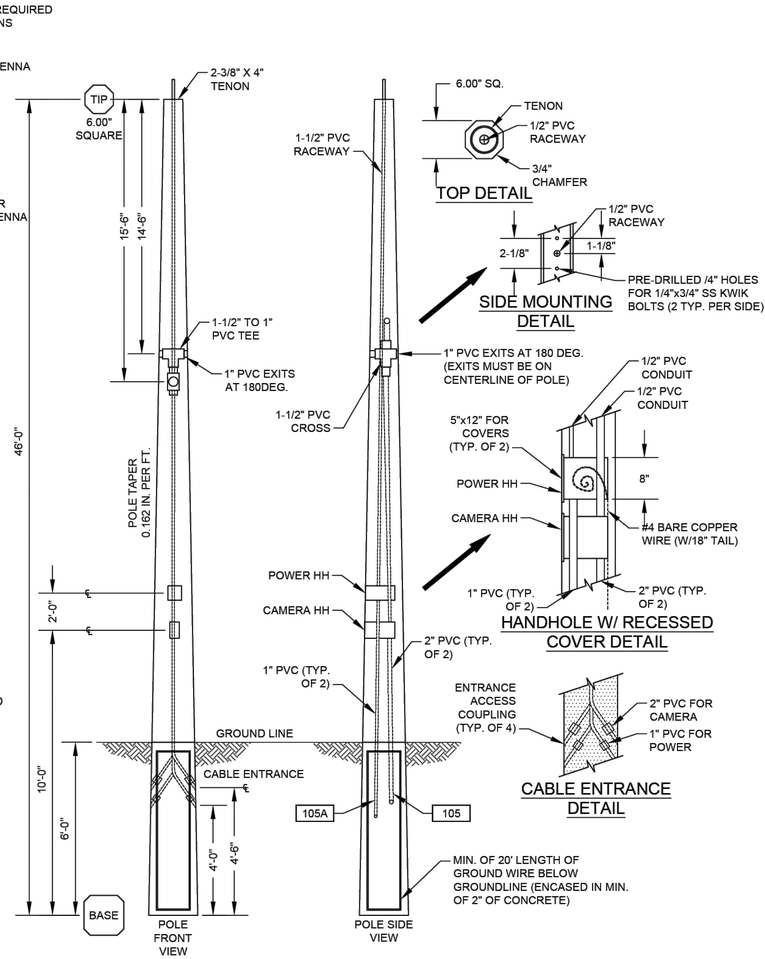
TYPICAL YARD LIGHT

DETAIL 1
NTS



COMMUNICATION POLE MOUNTING DETAIL

DETAIL 2
NTS



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HOSS FOROUZAN
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DATE: 2/25/2026

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
ELECTRICAL
YARD LIGHT/COMMUNICATION POLE DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
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HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 204 OF 298	E-413

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FILE PATH: C:\Projects\HBJ\Drawings\Instrumentation\Golf Course\HBJ_I-401 (GOLF COURSE).dwg

HMI

CONTROL PANEL PLC

CONTROL PANEL

480V

INFLUENT PUMP NO. 1 — SEAL FAIL ALARM (MA 1) | MOTOR OVERLOAD ALARM (MO 1) | MOTOR CURRENT (II 1) | HIGH TEMP ALARM (TH 1) | IN HAND (HI 1) | IN AUTO (IA 1) | ON/OFF (YFS 1) | START/STOP (YCS 1)

INFLUENT PUMP NO. 2 — SEAL FAIL ALARM (MA 2) | MOTOR OVERLOAD ALARM (MO 2) | MOTOR CURRENT (II 2) | HIGH TEMP ALARM (TH 2) | IN HAND (HI 2) | IN AUTO (IA 2) | ON/OFF (YFS 2) | START/STOP (YCS 2)

INFLUENT PUMP NO. 3 — SEAL FAIL ALARM (MA 3) | MOTOR OVERLOAD ALARM (MO 3) | MOTOR CURRENT (II 3) | HIGH TEMP ALARM (TH 3) | IN HAND (HI 3) | IN AUTO (IA 3) | ON/OFF (YFS 3) | START/STOP (YCS 3)

ALARMS RESET (RE 1)

PRIMARY PLC — FLOAT HIGH-HIGH WETWELL LEVEL (LAHH 1A)

BACKUP PLC — PUMP NO. 1 START/STOP (YCS 1A) | PUMP NO. 2 START/STOP (YCS 2A) | PUMP NO. 3 START/STOP (YCS 2A)

PRIMARY PLC PHASE FAILURE UNDERVOLTAGE (JA 1)

BACKUP PLC PHASE FAILURE UNDERVOLTAGE (JA 2)

PRIMARY PLC — PRIMARY LEVEL TRANSMITTER — HIGH LEVEL (LAH 1) | LEVEL INDICATION (LI 1) | LOW LEVEL (LAL 1)

PRIMARY PLC — BACKUP LEVEL TRANSMITTER — HIGH LEVEL (LAH 2) | LEVEL INDICATION (LI 2) | LOW LEVEL (LAL 2)

INFLUENT PUMP NO. 1 — H/O/A | RUN

INFLUENT PUMP NO. 2 — H/O/A | RUN

INFLUENT PUMP NO. 3 — H/O/A | RUN

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

FS2 HIGHHIGH LEVEL FLOAT SWITCH

LSH 2A / TSH 2A — M

FS1 HIGH LEVEL FLOAT SWITCH

LSH 3A / TSH 3A — M

INFLUENT DISCHARGE

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LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION INSTRUMENTATION
P&ID DIAGRAM–I
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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SHEET NO. 205 OF 298	I–401

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HMI

BACKUP PLC
PRIMARY LEVEL TRANSMITTER
BACKUP LEVEL TRANSMITTER
BACKUP PLC
ATS
GENERATOR
ALARM
SHUTDOWN
ODOR CONTROL SYSTEM

HIGH LEVEL ALARM	PRIMARY PLC MODE ACTIVE	BACKUP PLC MODE ACTIVE	INSTRUSION ALARM	HIGH LEVEL	LEVEL INDICATION	LOW LEVEL	HIGH LEVEL	LEVEL INDICATION	LOW LEVEL	ALARMS RESET	FLOAT HIGH-HIGH WETWELL LEVEL	IN NORMAL SOURCE	IN GENERATOR SOURCE	GENERATOR RUNNING	NOT IN AUTO	LOW FUEL/ PRESSURE ALARM	LOW DC VOLTAGE ALARM	FAULT ALARM	ON/OFF	FAILURE
LAH 1B	YI 1A	YI 1B	YA 1	LAH 1A	LI 1A	LAL 1A	LAH 2A	LI 2A	LAL 2A	RE 2	LAHH 1B	ZI 1A	ZI 1B	YIG 1	IAG 1	LSLG 1	LEG 1	YAG 1	YFS 1C	XA 1C

CONTROL PANEL PLC

CONTROL PANEL

FROM SHEET I-401

I-401

I-401

AUTOMATIC TRANSFER SWITCH (ATS)

GENERATOR

ODOR CONTROL SYSTEM

NO.	DATE	REVISION	APP.

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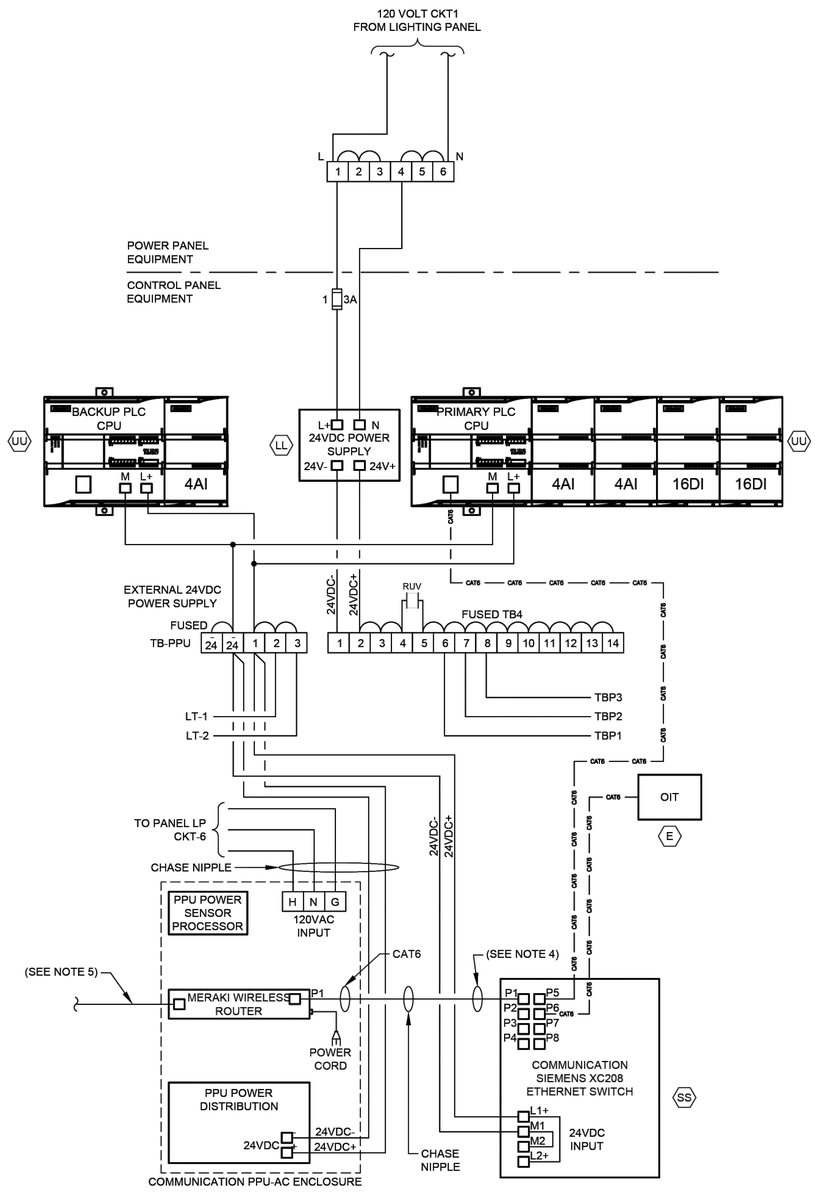
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HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
INSTRUMENTATION
P&ID DIAGRAM–II
(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 206 OF 298	I–402

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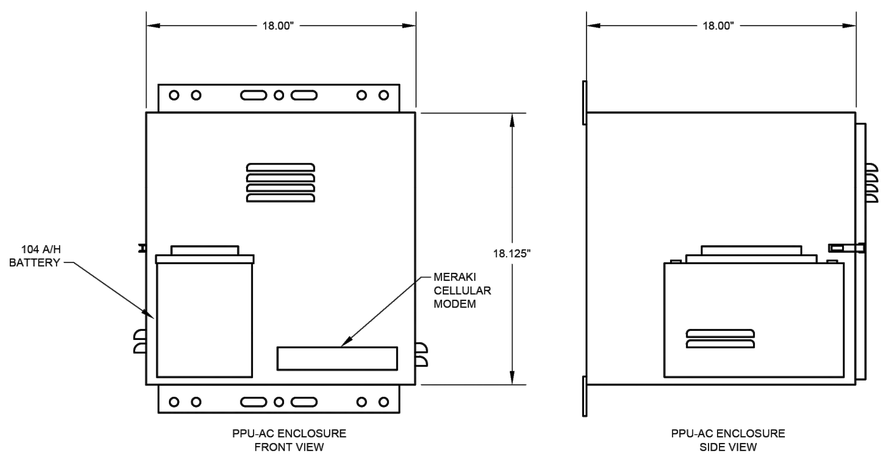


CONTROL POWER & COMMUNICATIONS WIRING

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. CAT6 ETHERNET CABLE FOR MERAKI CELLULAR ROUTER (P1).
5. CAT6 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.

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LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION INSTRUMENTATION COMMUNICATIONS DIAGRAM

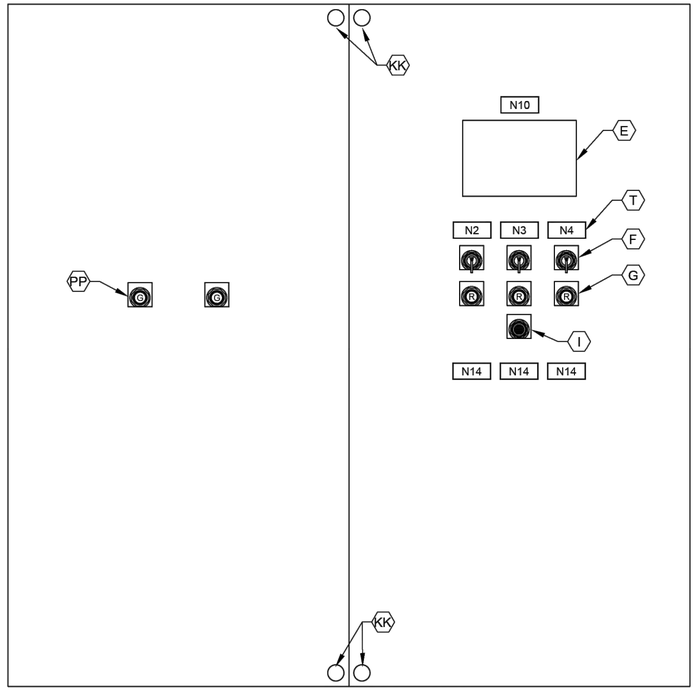
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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 207 OF 298	I-403

PLOTTED: 2/23/2026 8:12:20 AM
PLOT STYLE: Grayscale.ctb
FILE PATH: C:\Users\HBI357\Desktop\Recent Projects\Golf Course\Golf Course Lift Station Reconstruction (FEMA)\Drawings\Instrumentation\04 (Golf COURSE).dwg

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	3	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

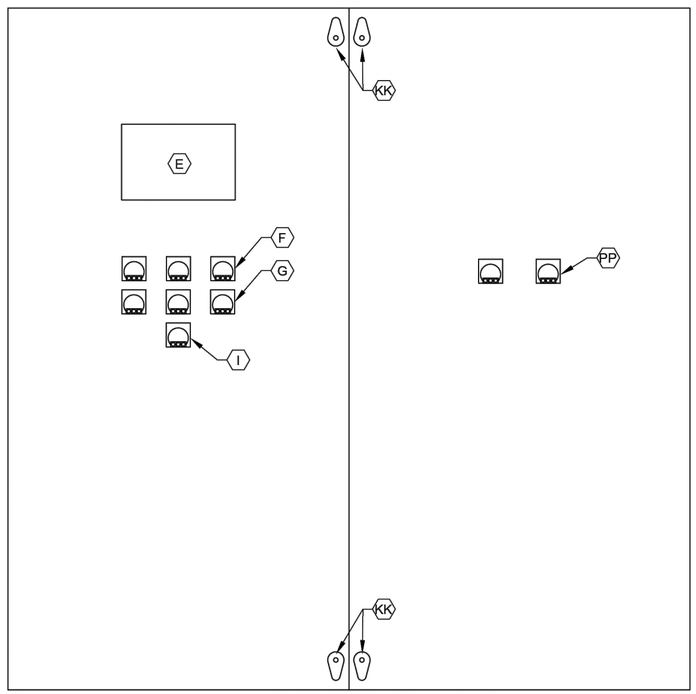
* - AS SCHEDULED



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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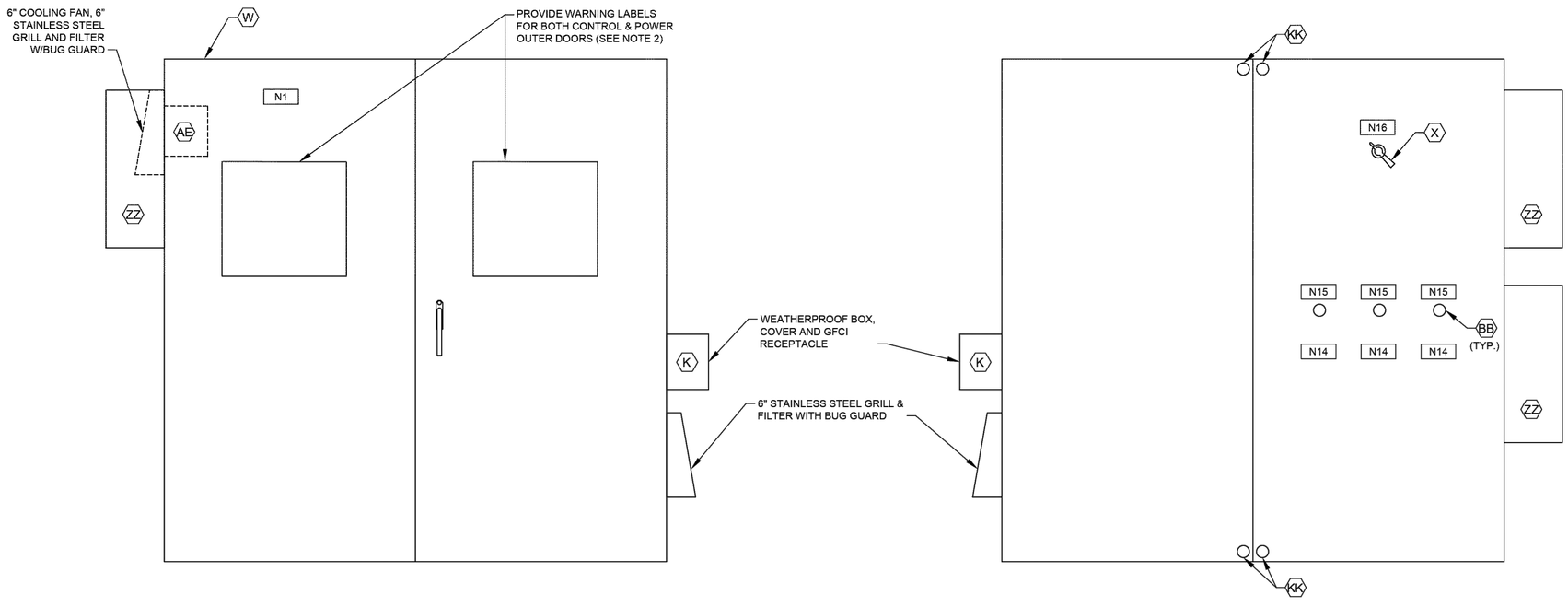
CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
INSTRUMENTATION
CONTROL CAB. EQUIP. LAYOUT & SCHEDULE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 208 OF 298	I-404



CONTROL CABINET (CONTROL SIDE)
OUTER DOOR

ELEVATION

NTS

CONTROL CABINET (POWER SIDE)
INNER DOOR

ELEVATION

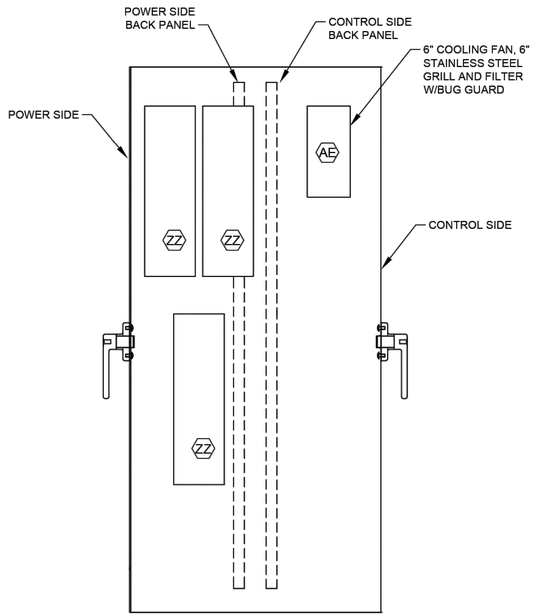
NTS
(SEE NOTE 1)

NOTES:

1. SEE SHEET I-404 FOR EQUIPMENT SCHEDULE.
2. REFER TO NEC SECTIONS 110.16 & 110.21

NAMEPLATE SCHEDULE

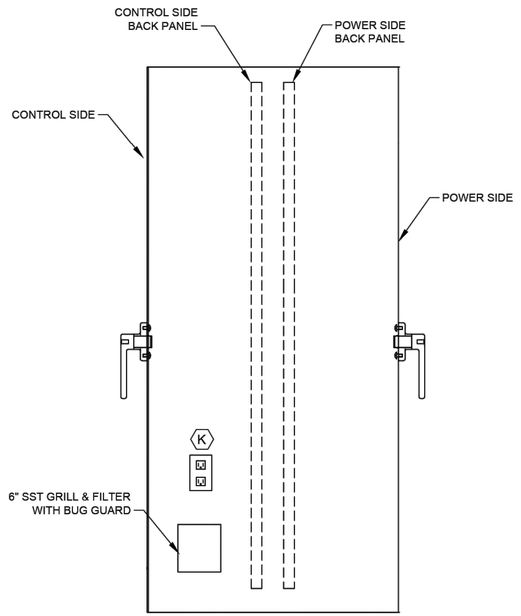
DESIGNATION	ENGRAVED	DESIGNATION	ENGRAVED
N1	PUMP STATION DESIGNATION	N8	NOT USED.
N2	PUMP NO. 1	N9	NOT USED.
N3	PUMP NO. 2	N10	PROGRAMMING SCREEN
N4	PUMP NO. 3	N11	NOT USED.
N5	NOT USED.	N12	PRIMARY PLC
N6	NOT USED.	N13	BACKUP PLC
N7	NOT USED.	N14	MOTOR DATA
			HORSEPOWER (OUTPUT) ----------
			RPM 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

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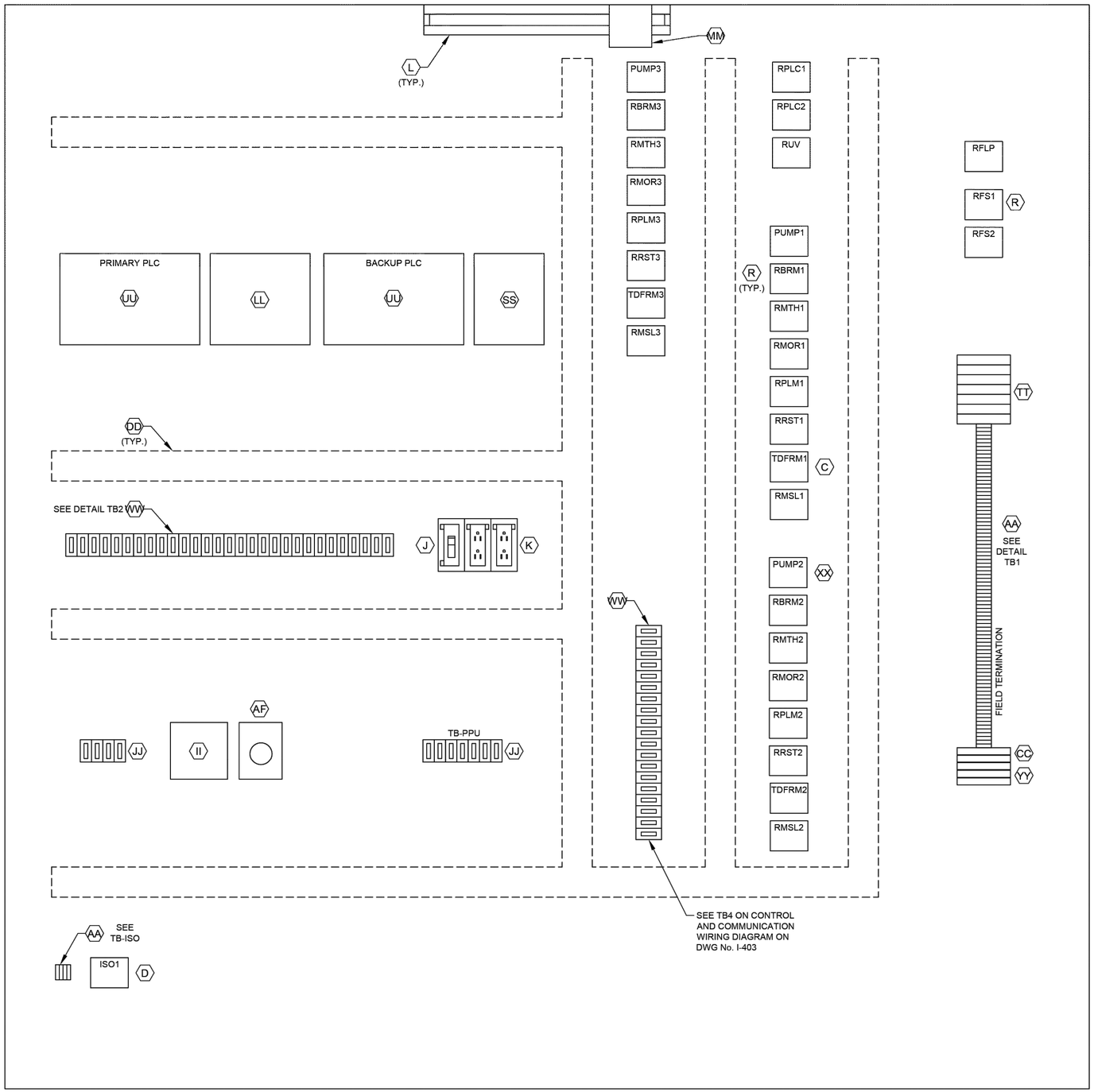
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HOUSTON PUBLIC WORKS

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GOLF COURSE LIFT STATION
INSTRUMENTATION
CONTROL CABINET EQUIPMENT LAYOUT–I
(SHEET 1 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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MARILENA STOICA, P.E.	
SHEET NO. 209 OF 298	I-405

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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
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219

DETAIL TB1

ALL L AND N FOR EACH PUMP CONTROL TO BE FUSED

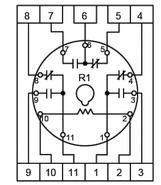
303
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307
308
310
313
315
316
319
36A
37A
50
52
54
52A
54A
L+
M
35B
38B
41B
47B
13B
13AB
13GB
L+
M
14B
14AB
14GB
L+
M
13
13A
13G
14
14A
14G
SPARE
18
SPARE
28
29
32
35B
33
42
44
SPARE
103
104
115
109
110
118
120
121
122
123
SPARE
209
210
211
218
220
222
223

DETAIL TB2

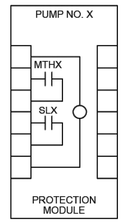
1500
1501
1503
1504

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-404 FOR EQUIPMENT SCHEDULE.

NO.	DATE	REVISION	APP.

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HOUSTON PUBLIC WORKS

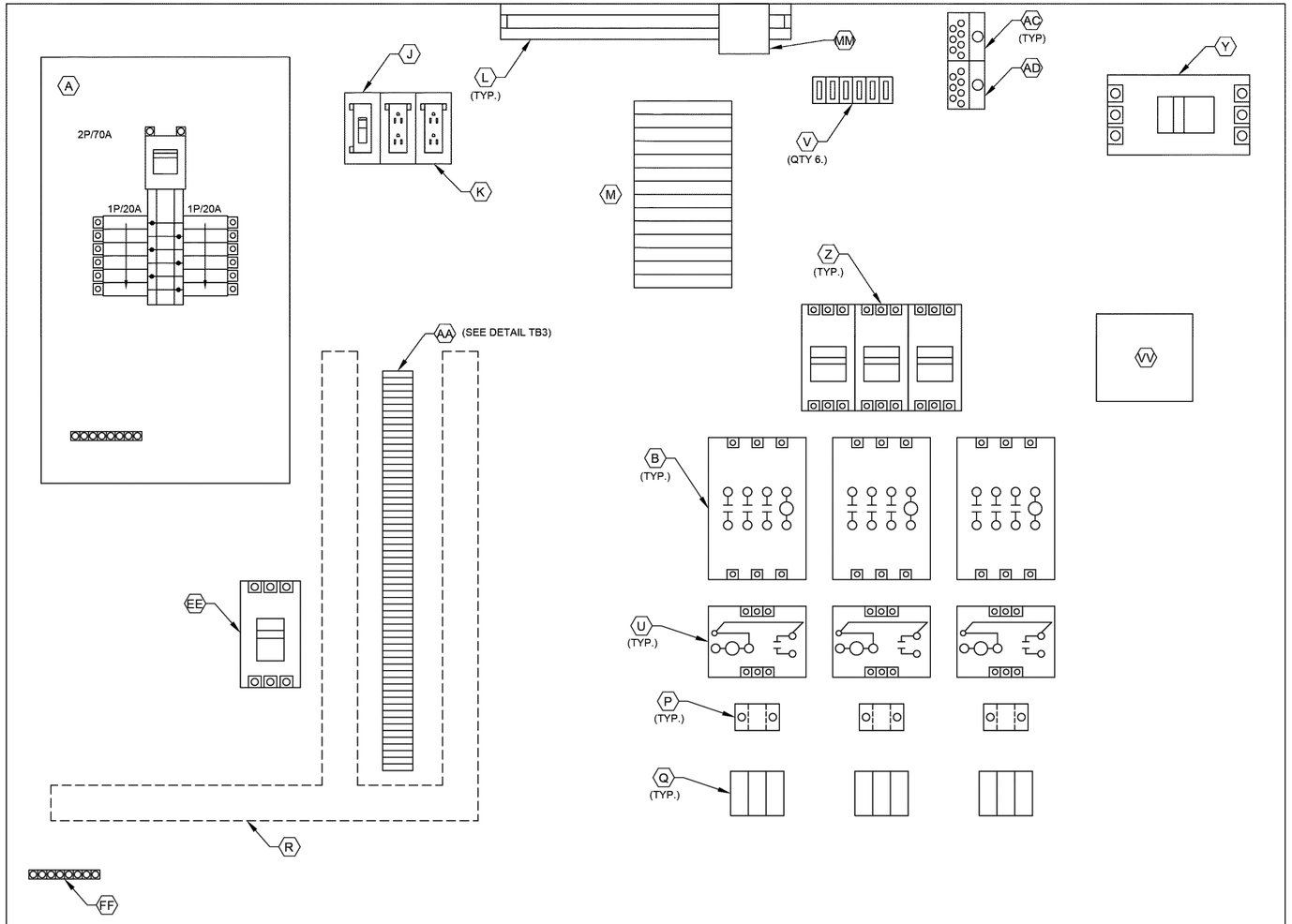
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
INSTRUMENTATION
CONTROL CABINET EQUIPMENT LAYOUT–II
(SHEET 2 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 210 OF 298	I–406

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FILE PATH: Q:\[illegible]\I-407(GOLF COURSE).dwg
PLOT STYLE: G4bit.ctb
PLOTTED: 2/23/2026 8:12:20 AM



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
SPARE

DETAIL TB3

NOTES:

1. SEE SHEET I-404 FOR EQUIPMENT SCHEDULE.

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON

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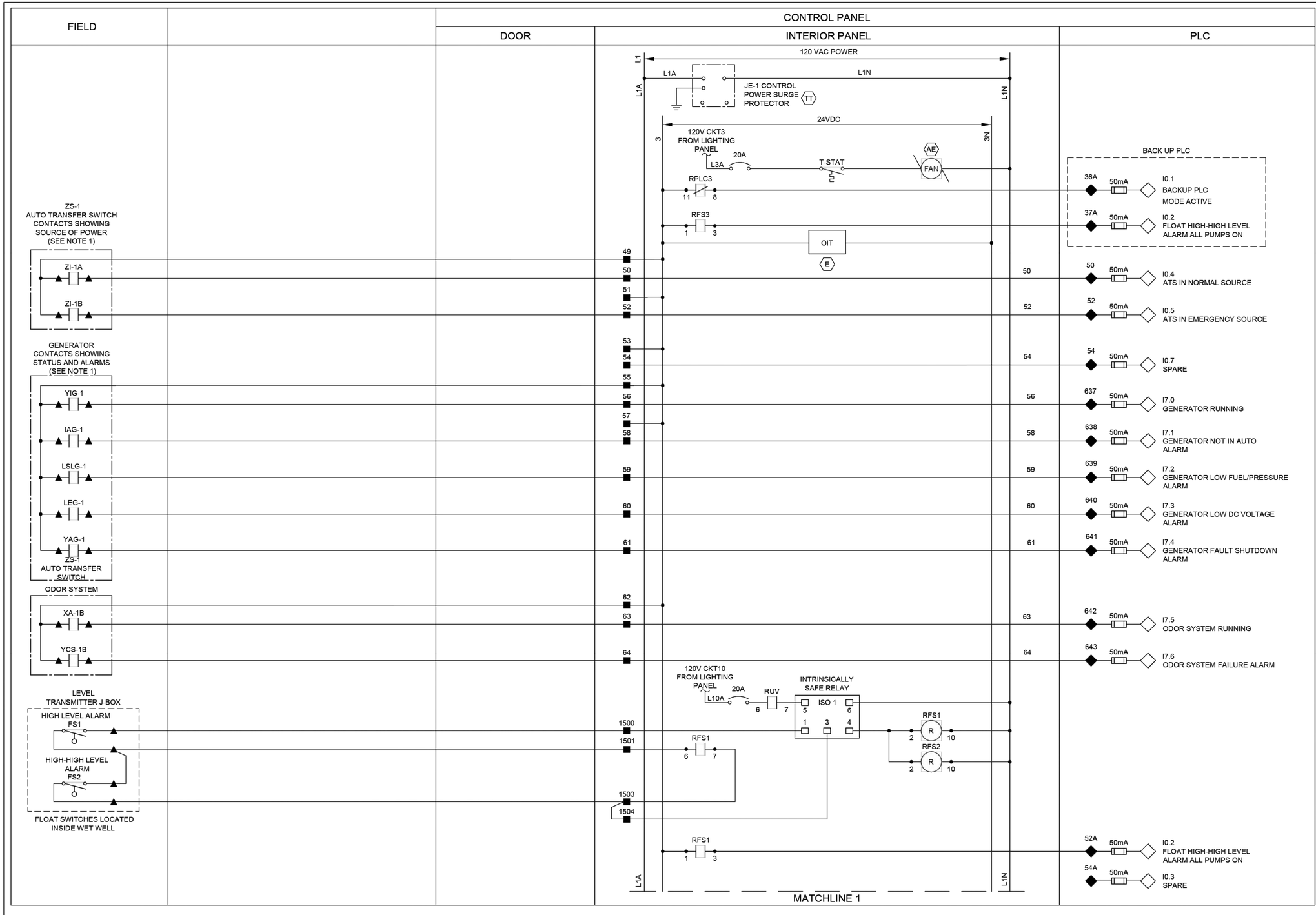
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
INSTRUMENTATION
CONTROL CABINET EQUIPMENT LAYOUT–III
(SHEET 3 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 211 OF 298	I-407

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FILE PATH: C:\Users\HBirouzan\Desktop\Projects\Houston\Lift Stations\Golf Course\Drawings\Golf Course Lift Station (GOLF COURSE).dwg

NO.	DATE	REVISION	APP.



NOTES:

1. PROVIDE AUTO TRANSFER SWITCH DRY CONTACT.
2. 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 STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA.–I
(SHEET 1 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 212 OF 298	I–408

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NO.	DATE	REVISION	APP.

FIELD | CONTROL PANEL: DOOR | CONTROL PANEL: INTERIOR PANEL | CONTROL PANEL: PLC

MATCHLINE 1

120 VAC POWER

24VDC

L1A 3

3N L1N

RBRM1 — 5 — R — 2 — 10

RBRM2 — 6 — R — 2 — 10

RBRM3 — 6 — R — 2 — 10

1004

ANALOG ISOLATOR (YY) — 1 2 + - 3 4 5 6

1

24-

1002

ANALOG ISOLATOR (YY) — 1 2 + - 3 4 5 6

24V-

2

11 — 1001 — 1001A — 12 — 1003 — 1003A

ANALOG I/O SURGE SUPPRESSOR (CC) — 1 2 3 4 — 24V+ — 1001B — 24V+ — 1003B

L1A 3 3N L1N

MATCHLINE 2

RADAR LEVEL TRANSMITTER JUNCTION BOX

MFG. CABLE

PRIMARY RADAR LEVEL TRANSMITTER

LT-1

MFG. CABLE

BACK UP RADAR LEVEL TRANSMITTER

LT-2

BACK UP PLC

L+			CPU POWER
M			CPU COMMON
35B	1A		QO.0 PUMP NO.1 CALL TO RUN
38B	1A		QO.1 PUMP NO.2 CALL TO RUN
41B	1A		QO.2 PUMP NO.3 CALL TO RUN
44B	1A		QO.3 SPARE
47B	1A		QO.4 SPARE
13B	50mA	+	AIO.0 PRIMARY WET WELL LEVEL TRANSMITTER
13AB		-	
13GB			
L+			CPU POWER
M			CPU COMMON
14B	50mA	+	AIO.2 BACKUP WET WELL LEVEL TRANSMITTER
14AB		-	
14GB			
L+			CPU POWER
M			CPU COMMON
13	50mA	+	AI0.0 PRIMARY WET WELL LEVEL TRANSMITTER
13A		-	
13G			
14	50mA	+	AI0.2 BACKUP WET WELL LEVEL TRANSMITTER
14A		-	
14G			

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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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA.–II
(SHEET 2 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 213 OF 298	I–409

PLOTTED: 2/23/2026 8:12:20 AM
PLOT STYLE: Grayscale.ctb
FILE PATH: C:\Projects\HPW\Design\Drawings\Instrumentation\Golf Course\Control Wiring Dia (GOLF COURSE).dwg

NO.	DATE	REVISION	APP.

FIELD | POWER PANEL | CONTROL PANEL: DOOR | INTERIOR PANEL | PLC

MATCHLINE 2

120 VAC POWER

24VDC

L1A 3 3N L1N

L1
N
MS
MOTION SWITCH

L1
N
MS
MOTION SWITCH

17 50mA I0.0 INTRUSION ALARM

BACK UP PLC

RUV 11 9

18B 50mA I0.0 PHASE FAILURE UNDER VOLTAGE

18 18 50mA I0.1 PHASE FAILURE UNDER VOLTAGE

RUV 2 R 10

ØA ØB ØC

JE-2 PHASE MONITOR 7 8 9 10 11 12

N/C 3

M1 M2

19

20

RFLP 2 R 10

15 50mA I0.4 SPARE
15A
15G

16 50mA AI0.6 SPARE
16A
16G

L1A 3 3N L1N

MATCHLINE 3

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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CITY OF HOUSTON
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LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

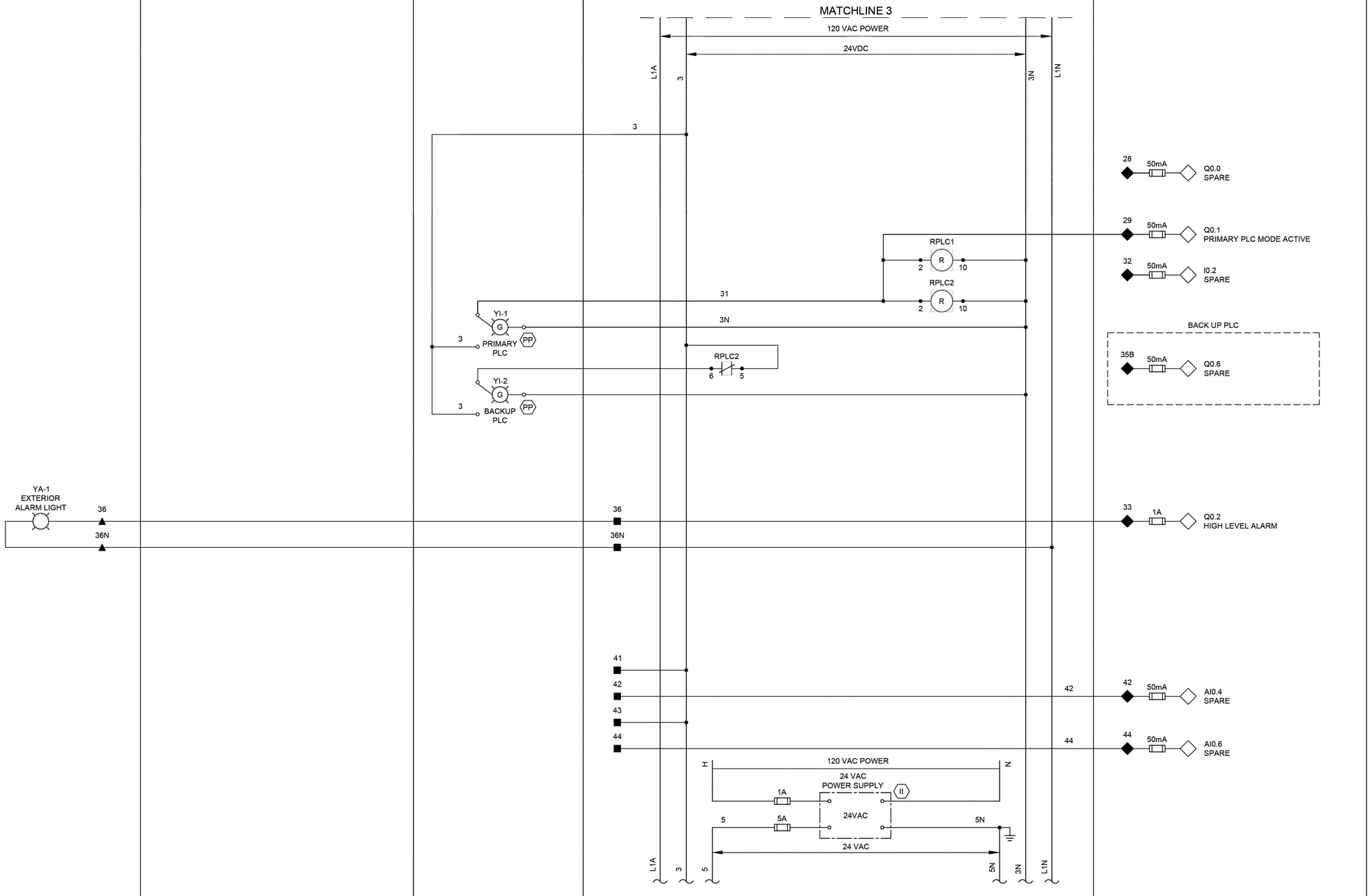
GOLF COURSE LIFT STATION INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA.–III
(SHEET 3 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 214 OF 298	I–410

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FILE PATH: G:\Projects\HB1135\Lift Stations\Golf Course\Electrical\Drawings\Instrumentation\GOLF COURSE).dwg

NO.	DATE	REVISION	APP.

FIELD	POWER PANEL	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

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA.–IV
(SHEET 4 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 215 OF 298	I–411

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FIELD | POWER PANEL | CONTROL PANEL: DOOR | CONTROL PANEL: INTERIOR PANEL | PLC

120 VAC POWER
24 VDC
24 VAC
L1A
L1N
JE-2
TBP1 SEE NOTE 2
HS-1A RESET
TO SHEET I-413
RRST1
TO SHEET I-413
TSH-1 MOTOR TEMP SWITCH
LSH-1 SEAL LEAK DETECTOR
PUMP NO.1
TERMINAL JUNCTION BOX
REFER TO SHEET E-405
4-20mA CURRENT TRANSDUCER
IE-1 MOTOR OVERLOAD RELAY (MOR) (SEE NOTE 1)
HS-1 H-O-A
YI-1 RUN
PUMP NO. 1 PROTECTION MODULE
LAH-1 SL1
TAH-1 MTH1
RMSL1
RMTH1
TDFRM1
RFS1
RMOR1
RPLC1
RBRM1
RPLM1

103	1A	Q0.4 ALARM RESET
104	50mA	I0.6 ALARM RESET
109	50mA	I1.1 PUMP NO.1 HIGH TEMP ALARM
122	50mA	AI0.8 PUMP NO.1 MOTOR CURRENT
123	50mA	I3.3 PUMP NO.1 MOTOR OVERLOAD
115	50mA	I3.0 PUMP NO.1 IN HAND
121	50mA	I3.1 PUMP NO.1 IN AUTO
118	1A	Q0.7 PUMP NO.1 PLC START/STOP
120	50mA	I1.0 PUMP NO.1 RUN
110	50mA	I3.2 PUMP NO.1 SEAL FAILURE ALARM

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.

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 STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
INSTRUMENTATION
PUMP NO.1 CONTROL WIRING DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 216 OF 298	I-412

PLOTTED: 2/23/2026 8:12:20 AM
PLOT STYLE: Color.ctb
FILE PATH: C:\Users\hforouzan\Desktop\Working\Control Wiring\Instruction (R&B)\Pump Control Wiring Diagram (GOLF COURSE).dwg

NO.	DATE	REVISION	APP.

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
200

FROM SHEET I-412
HS-1A RESET
TO SHEET I-414
RRST2
FROM SHEET I-412
TO SHEET I-414
RRST2

M2
TSH-2 MOTOR TEMP SWITCH
LSH-2 SEAL LEAK DETECTOR
20
21
22
23
201
202
203
204
205
206
207
208

PUMP NO. 2 PROTECTION MODULE
LAH-2 SL2
TAH-2 MTH2
5
XX
5N

PUMP NO.2
M
T1
T2
T3
G
M1
CT
REFER TO SHEET E-405
TERMINAL JUNCTION BOX

3P2
RMSL2
RMTH2
RFS2
TDFRM2
221
209
50mA
I1.3 PUMP NO.2 HIGH TEMP ALARM
222
AI.0 PUMP NO.2 MOTOR CURRENT

U
MOR2
4-20mA CURRENT TRANSDUCER
IE-2 MOTOR OVERLOAD RELAY (MOR) (SEE NOTE 1)
215
216
210
RMOR2
223
I3.7 PUMP NO.2 MOTOR OVERLOAD ALARM

212
211
RMTH2
RMSL2
HS-2 H-O-A
H
O
A
F
213
214
220
RPLC1
RBRM2
RPLM2
TDFRM2
210
I3.5 PUMP NO.2 IN HAND
211
I3.4 PUMP NO.2 IN AUTO

B
M2
MOR2
ZS-2
218
1A
Q1.0 PUMP NO.2 PLC START/STOP
RPLM2

219
YI-2
G
RUN
3N
220
I1.2 PUMP NO.2 RUN
RMSL2
I3.6 PUMP NO.2 SEAL FAILURE ALARM

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.

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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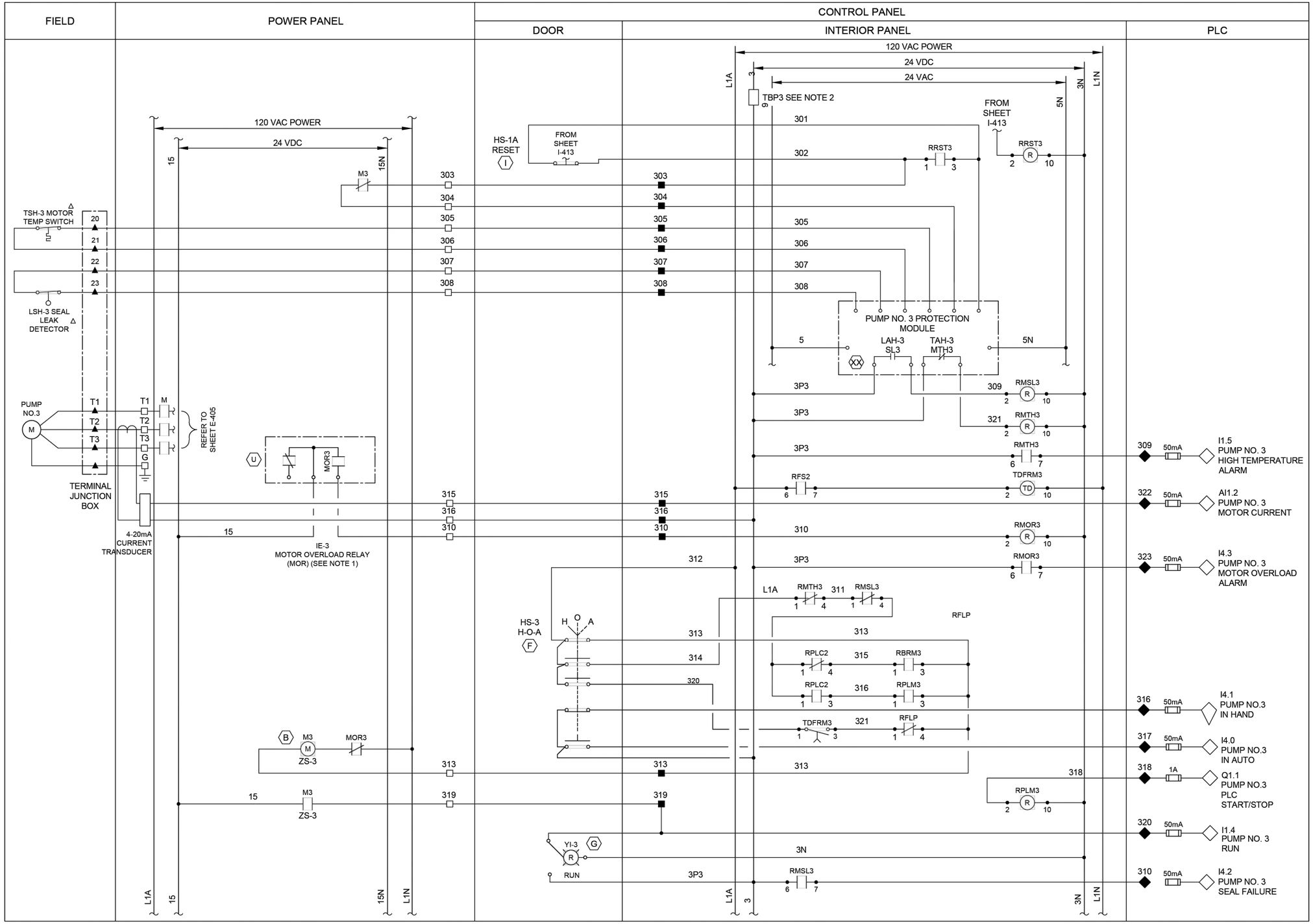
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
INSTRUMENTATION
PUMP NO.2 CONTROL WIRING DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 217 OF 298	I-413

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PLOT STYLE: Golf Course.ctb
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NO.	DATE	REVISION	APP.



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-403.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

DCCM

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

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

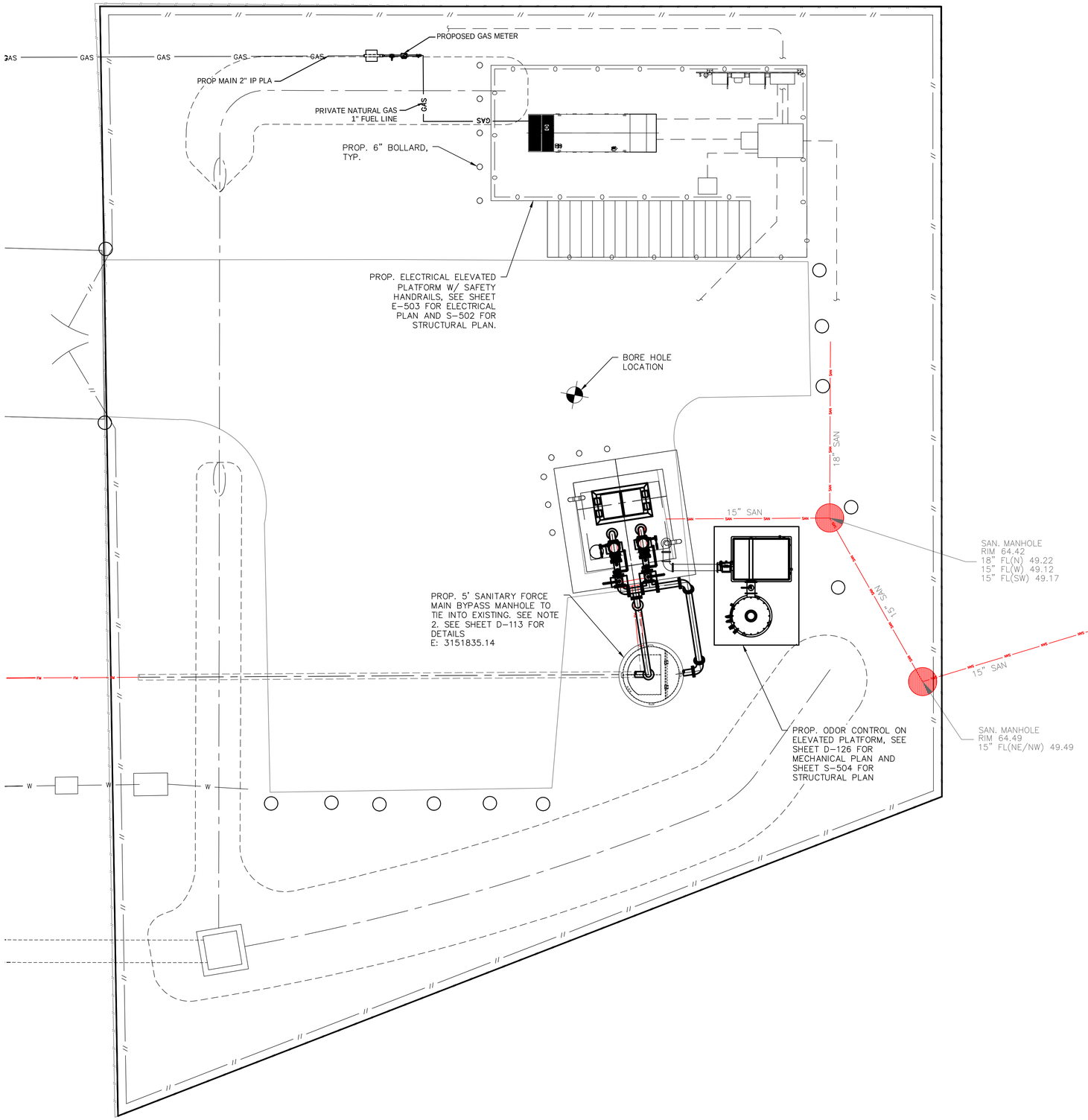
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION INSTRUMENTATION
PUMP NO.3 CONTROL WIRING DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 218 OF 298	I-414

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OVERALL SITE PLAN
SCALE: 1" = 5'-0"

0 5 10
SCALE IN FEET

NO.	DATE	REVISION	APP.

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DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

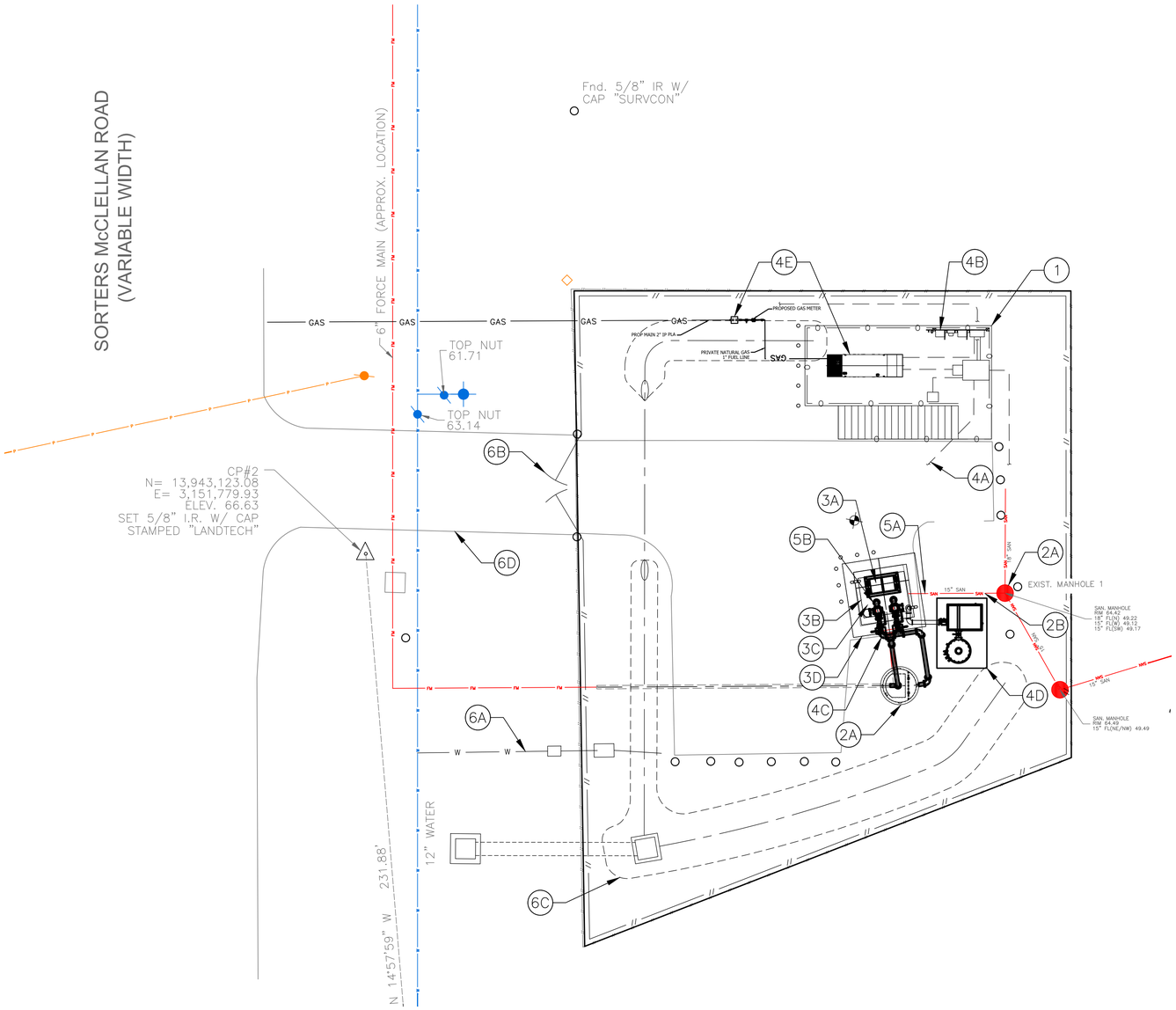
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION

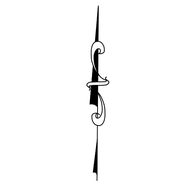
PROPOSED OVERALL SITE LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ:1"=5' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 219 OF 298	M-501

PLOTTED: 2/25/2026 12:47 PM
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OVERALL SITE PLAN
SCALE: 1" = 5'-0"



NO.	DESCRIPTION
	RECOMMENDED CONSTRUCTION SEQUENCE
1	CONSTRUCT PROP. ELECTRICAL PLATFORM.
2A	INSTALL PROP. BYPASS MANHOLE.
2B	PLUG EXISTING GRAVITY INFLUENT TO WET WELL AND PROVIDE BYPASS PUMPING SERVICES FROM EXISTING MANHOLE 1 TO THE BYPASS MANHOLE.
3A	DEMOLITION AND REMOVAL OF EXISTING ELECTRICAL ITEMS: MCC, PANELS FROM DRY PIT, ETC.
3B	DEMOLISH AND REMOVE MECHANICAL EQUIPMENT INCLUDING PUMPS, PIPING, AND VALVES FROM WET WELL.
3C	CLEAN EXISTING WET WELL VIA REMOVAL AND DISPOSAL OF SLUDGE AND SOLIDS.
3D	COAT EXISTING WET WELL.
4A	SET UP NEW ELECTRICAL SERVICES.
4B	INSTALL PROP. CONTROL PANELS, AND CONDUIT CONNECTIONS TO NEW SUBMERSIBLE PUMPS.
4C	INSTALL PROP. MECHANICAL EQUIPMENT INCLUDING PUMPS, PIPING, VALVES, HEADER PIPING SUPPORTS, ETC.
4D	INSTALL PROP. ODOR CONTROL SYSTEM AND PIPING CONNECTION.
4E	INSTALL PROP. GAS GENERATOR AND NATURAL GAS PIPING CONNECTION.
5A	INTRODUCE WASTEWATER INTO COMPLETED PROP. WET WELL.
5B	PERFORM PUMP TESTING AND STARTUP OF NEW LIFT STATION OPERATION.
6A	INSTALL PROP. WATER SERVICE, METER, BACK FLOW PREVENTER, AND HOSE BIBB.
6B	INSTALL PROP. FENCES AND GATES.
6C	INSTALL DRAINAGE SWALE AND STORM DISCHARGE CONNECTION TO EXISTING DRAIN PIPE.
6D	DEMOLISH AND REPLACE EXISTING ACCESS ROAD PAVING.

NO.	DATE	REVISION	APP.

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TxEng F-257
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Houston, TX 77008
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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

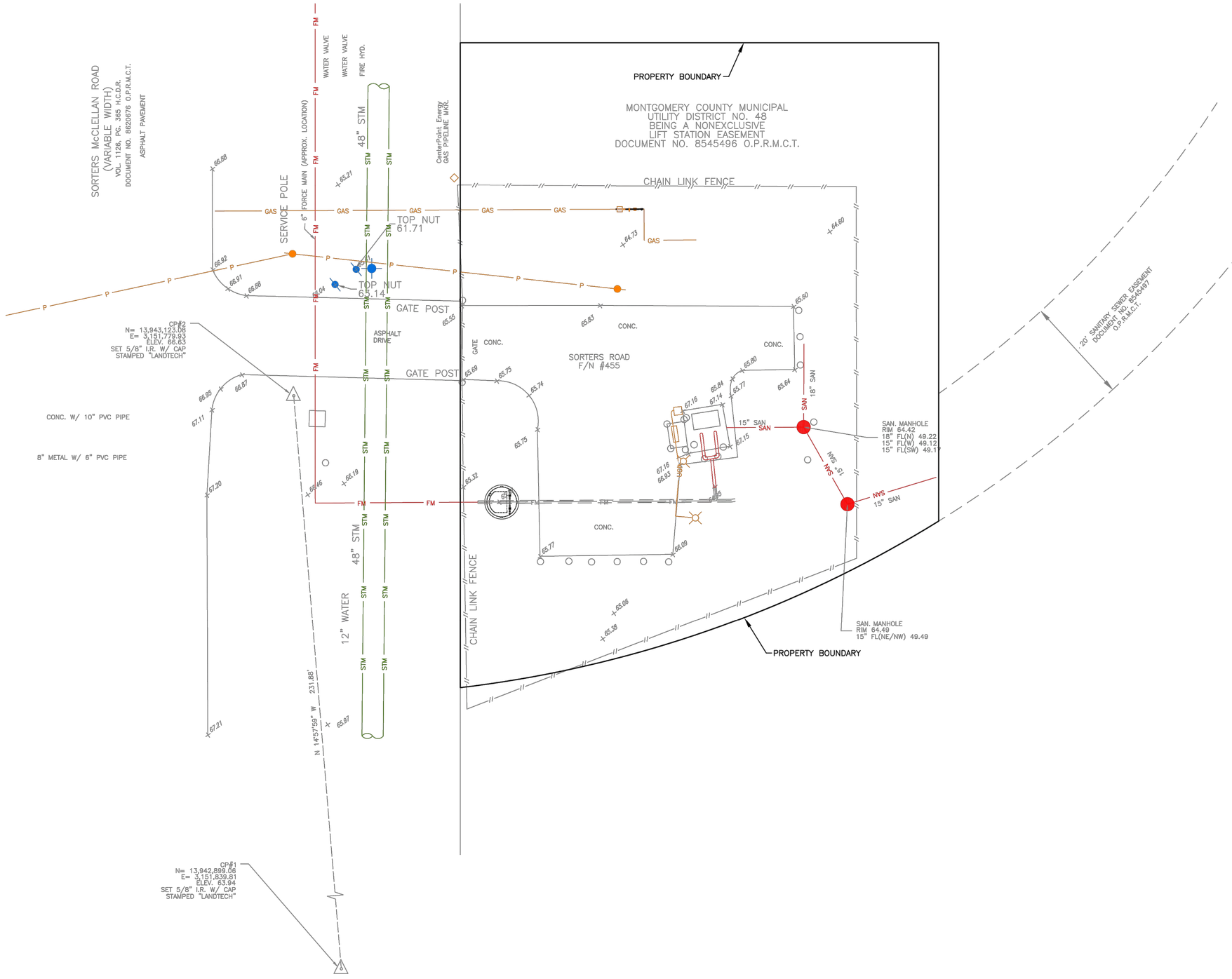
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
PROPOSED CONSTRUCTION SEQUENCE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=5' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 220 OF 298	CS-501

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SCALE (1"=10')
0 5 10 20

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 100005, A FOUND BRASS DISC ON A CURB INLET STAMPED 100005 ALONG THE NORTH SIDE OF SORTERS/MCCLELLAN ROAD, APPROXIMATELY 300 FEET WEST OF ITS INTERSECTION WITH US 59 FEEDER ROAD. ELEVATION = 78.70' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

NO.	DATE	REVISION	APP.

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WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED
PROFESSIONAL ENGINEER

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

02/20/2026

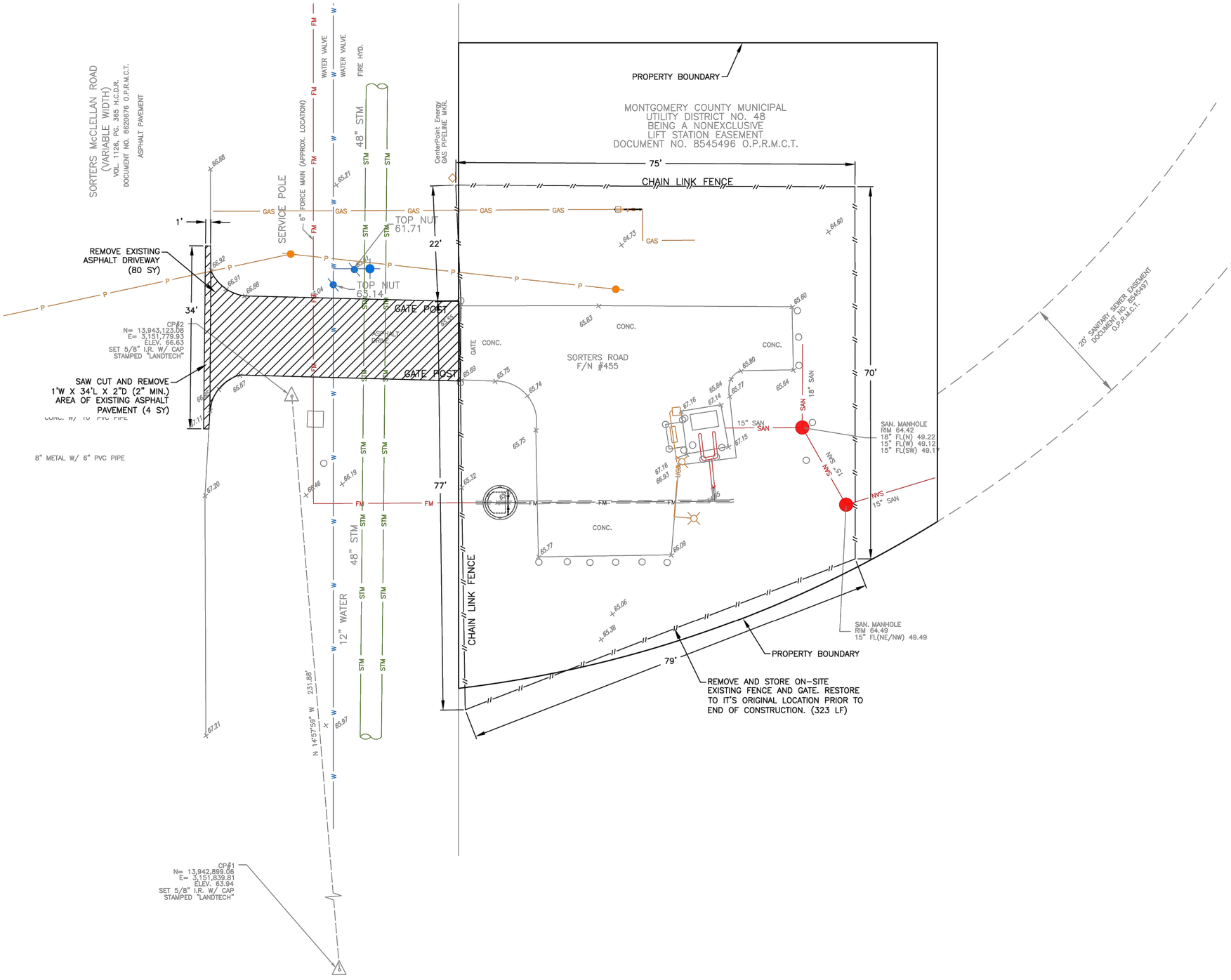
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
EXISTING CONDITIONS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 221 OF 298	C-501

FILE PATH: W:\Projects\Houston\Kingwood Place South LS (GATE)\Kingwood Place South LS (GATE).dwg
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SCALE (1"=10')
0 5 10 20

NO.	DATE	REVISION	APP.

NOTES

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3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

LEGEND

EXISTING CONCRETE TO BE REMOVED

DCCM

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ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS · NATHAN A. WILSON · 136610 · LICENSED PROFESSIONAL ENGINEER

02/20/2026

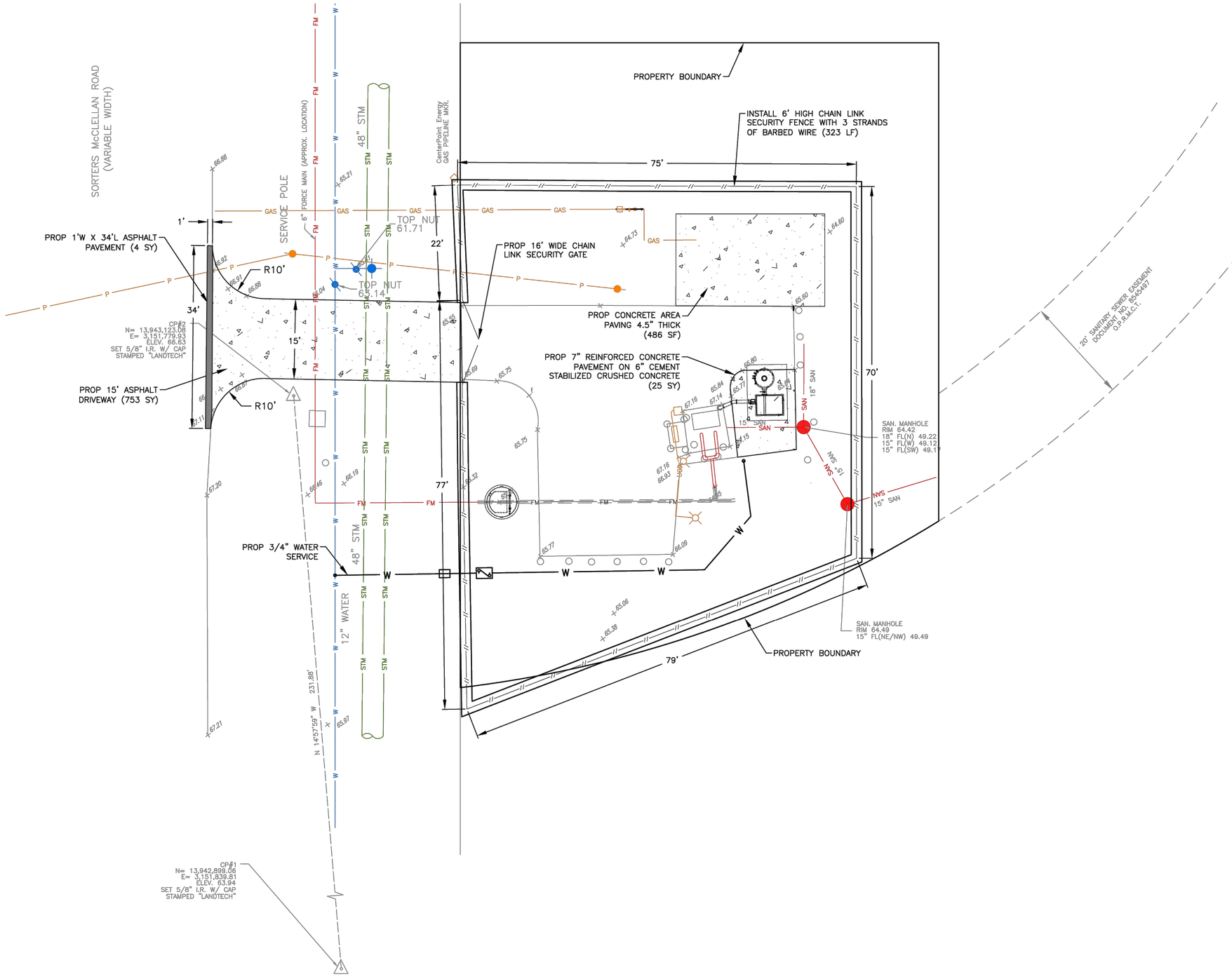
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
DEMOLITION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 222 OF 298	C-502

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SCALE (1"=10')
0 5 10 20

NO.	DATE	REVISION	APP.

NOTES

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3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

LEGEND

CONCRETE PAVEMENT

ASPHALT PAVEMENT

DCCM

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STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED
PROFESSIONAL ENGINEER

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

02/20/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
PROPOSED CIVIL SITE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 223 OF 298	C-503

Notes:
Storage rate 0.4 Ac-ft/Ac for new impervious cover at locations where existing impervious cover is removed.
Storage rate 0.80 Ac-ft/Ac for new impervious cover.

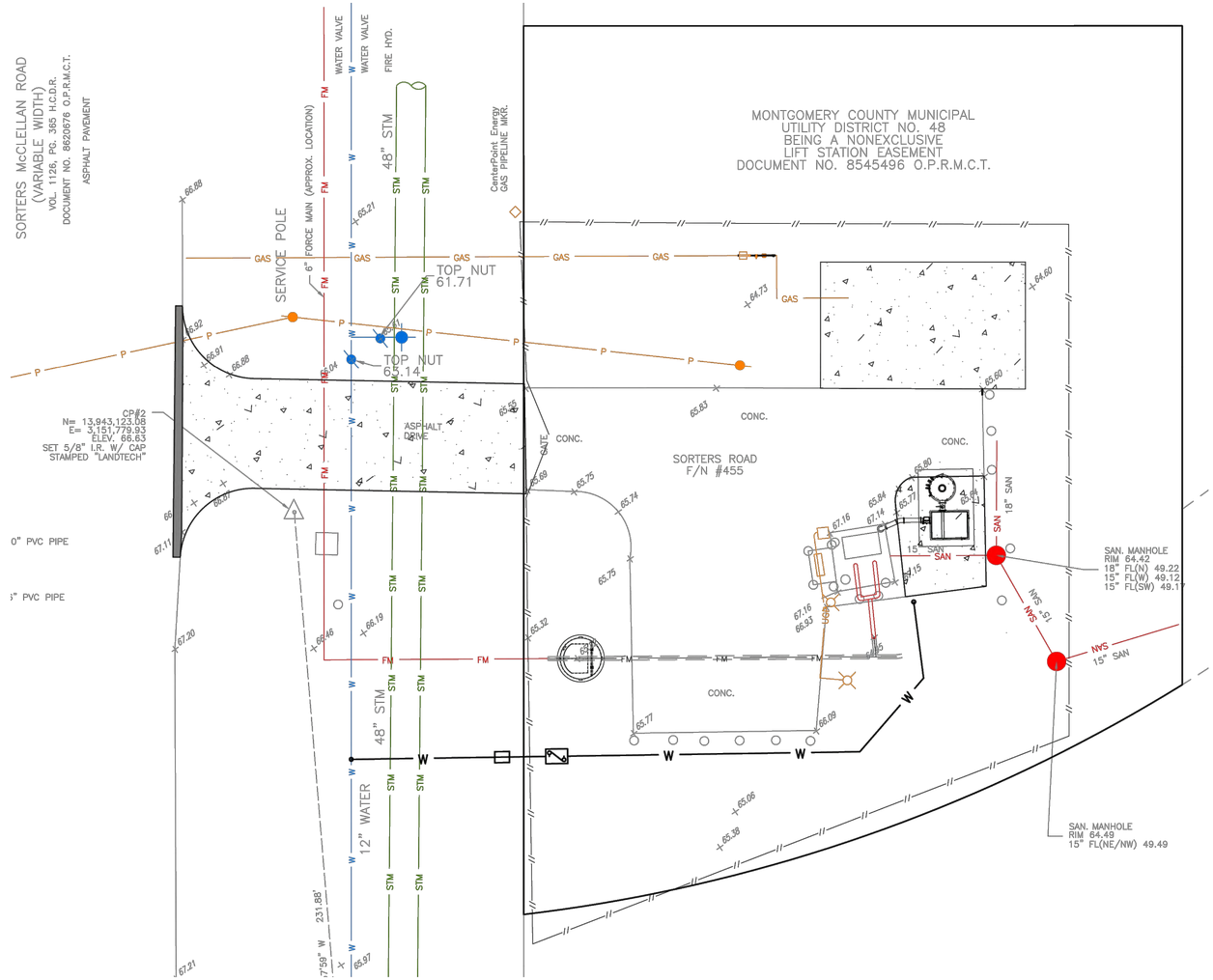
Lift Station Pad Site Detention		
Existing concrete pavement	1,878	sf
Proposed concrete paving	208	sf
Proposed Gravel (river rock for vegetation control)	460	sf
Storage Required	**534**	**cf**
Cut and Fill Data		
Total Cut	-777	cf
Total Fill	684	cf
Net Cut	-93	cf
Lift Station Drainage Calculations		
Total Area	9,845.00	sf
	0.23	Ac
Total Impervious Cover		
Existing Paving and Lift Station Top	2,042.00	sf
Proposed Paving	668.00	sf
	2,710.00	
Runoff Coefficient	**0.28**	

2-YEAR EVENT - CoH IDF CURVE b=48.35, D=9.07, E=0.7244 (Existing)

FROM NODE	TO NODE	AREA (SF)	AREA (AC)	AREA (AC)	AREA (AC)	C	Tc (MIN)	2-YR (IN/HR)	TOTAL (CFS)
A	B	9,845	0.2260		0.2260	0.21	22.70	3.95	0.19

100 - YEAR EVENT - CoH IDF CURVE b=60.66, D=4.44, E=0.5797 (Existing)

FROM NODE	TO NODE	AREA (SF)	AREA (AC)	AREA (AC)	AREA (AC)	C	Tc (MIN)	2-YR (IN/HR)	TOTAL (CFS)
A	B	9,845	0.2260		0.2260	0.21	22.70	8.95	0.42



SCALE (1"=10')
0 5 10 20

NOTES

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3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

LEGEND

- EXISTING DRAINAGE DIRECTION
- PROPOSED DRAINAGE DIRECTION
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT

FLOOD DATA

FIRM Map No.: 483390C0725G
Effective Date: 8/18/2014
Flood Zone: AE
BFE = 66.00
500-YR WSEL = 72.03

REQUIRED VARIANCES

1. Omit detention.

2-YEAR EVENT - CoH IDF CURVE b=48.35, D=9.07, E=0.7244

FROM NODE	TO NODE	AREA (SF)	AREA (AC)	AREA (AC)	AREA (AC)	C	Tc (MIN)	2-YR (IN/HR)	TOTAL (CFS)	SIZE (IN)	MANNING NUMBER	SLOPE (%)	CAPACITY (CFS)	Velocity (FPS)	Pipe Run (FT)	Fall (FT)	DROP (FT)	STREAM (FT)	STREAM (FT)	Actual Velocity ft/sec)	Hydraulic Grade (%)	Change in Head (%)	Elevation HGL (upstream) (ft)	Elevation HGL (downstream) (ft)	Existing Surface Elevation (ft)
A	B	9,845	0.2260		0.2260	0.28	22.70	3.95	0.25	6	0.12	2.00	0.73												

100 - YEAR EVENT - CoH IDF CURVE b=60.66, D=4.44, E=0.5797

FROM NODE	TO NODE	AREA (SF)	AREA (AC)	AREA (AC)	AREA (AC)	C	Tc (MIN)	2-YR (IN/HR)	TOTAL (CFS)	SIZE (IN)	MANNING NUMBER	SLOPE (%)	CAPACITY (CFS)	Velocity (FPS)	Pipe Run (FT)	Fall (FT)	DROP (FT)	STREAM (FT)	STREAM (FT)	Actual Velocity ft/sec)	Hydraulic Grade (%)	Change in Head (%)	Elevation HGL (upstream) (ft)	Elevation HGL (downstream) (ft)	Existing Surface Elevation (ft)
A	B	9,845	0.2260		0.2260	0.28	22.70	8.95	0.56	6	0.12	2.00	0.73												

NO.	DATE	REVISION	APP.

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11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS · NATHAN A. WILSON · 136610 · LICENSED PROFESSIONAL ENGINEER

02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

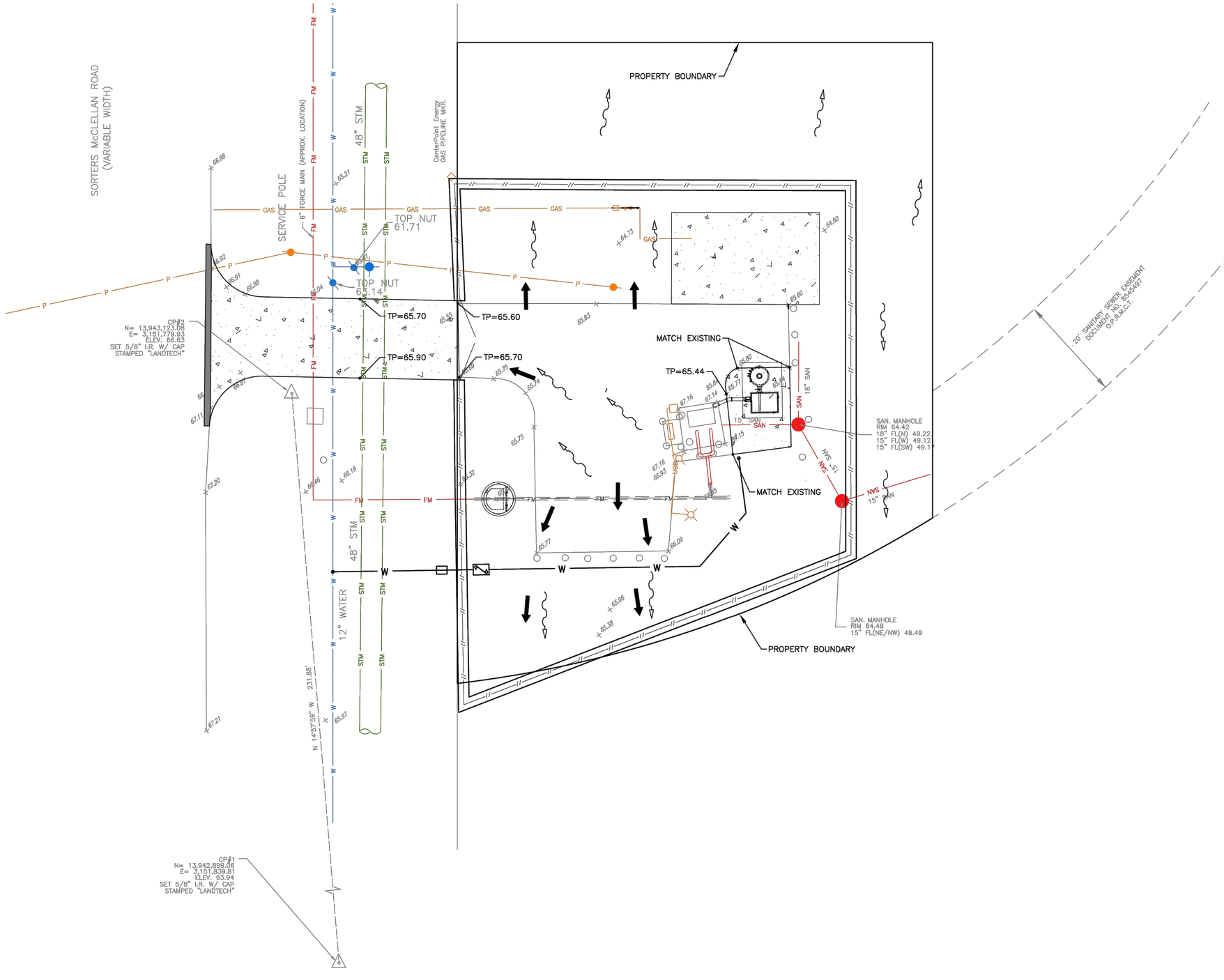
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
PROPOSED CIVIL DRAINAGE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 224 OF 298	C-504

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PLOT STYLE: COH_ctb 230809.ctb PLOTTED: 2/26/2026 3:29 PM



NO.	DATE	REVISION	APP.

SCALE (1"=10')
0 5 10 20

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 100005, A FOUND BRASS DISC ON A CURB INLET STAMPED 100005 ALONG THE NORTH SIDE OF SORTERS/MCCLELLAN ROAD, APPROXIMATELY 300 FEET WEST OF ITS INTERSECTION WITH US 59 FEEDER ROAD. ELEVATION = 78.70' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

LEGEND

- EXISTING DRAINAGE DIRECTION
- PROPOSED DRAINAGE DIRECTION
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED
PROFESSIONAL ENGINEER

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

02/20/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

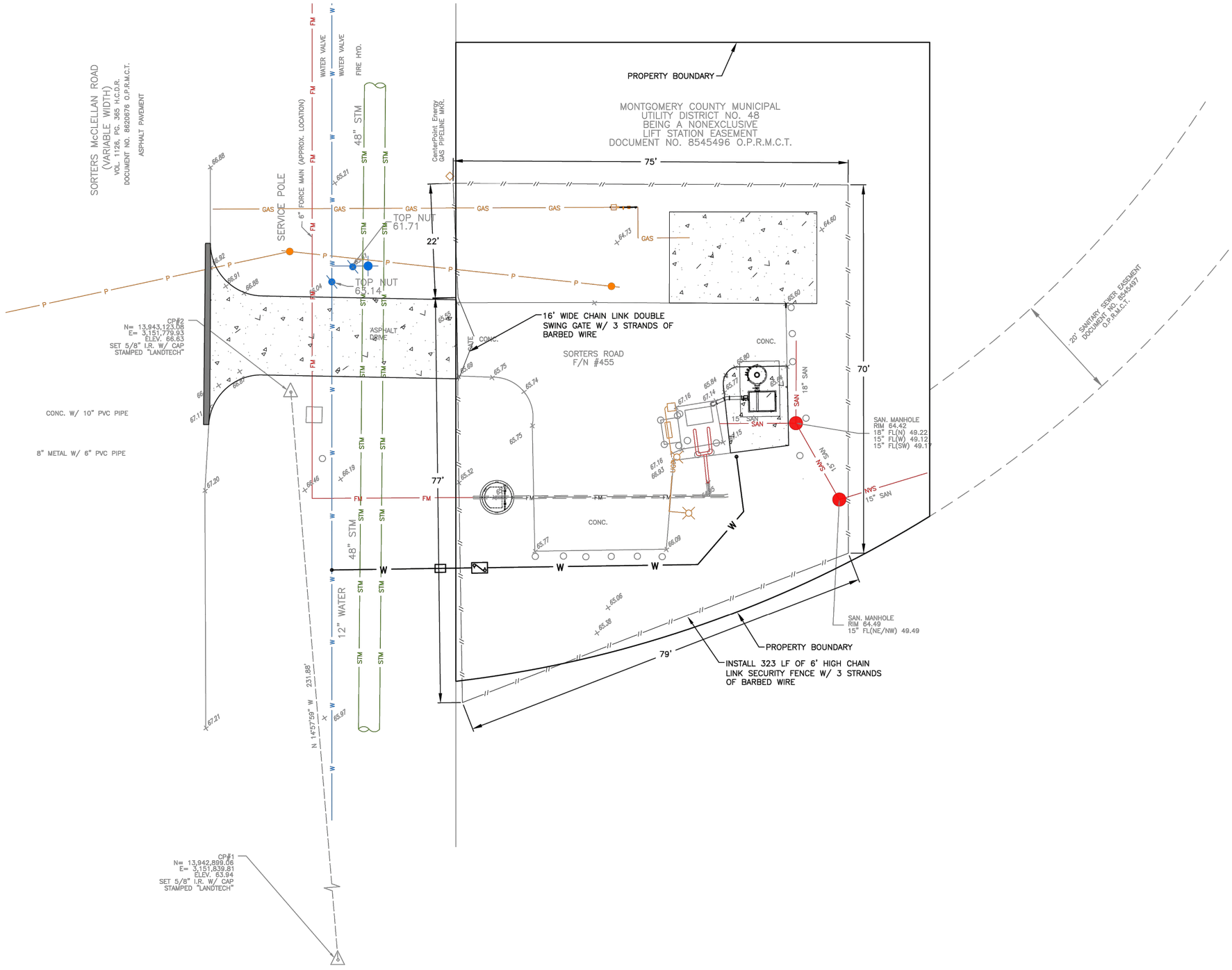
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
PROPOSED CIVIL GRADING PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 225 OF 298	C-505

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SCALE (1"=10')
0 5 10 20

NOTES

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LEGEND

CONCRETE PAVEMENT

ASPHALT PAVEMENT

NO.	DATE	REVISION	APP.

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ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED
PROFESSIONAL ENGINEER

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

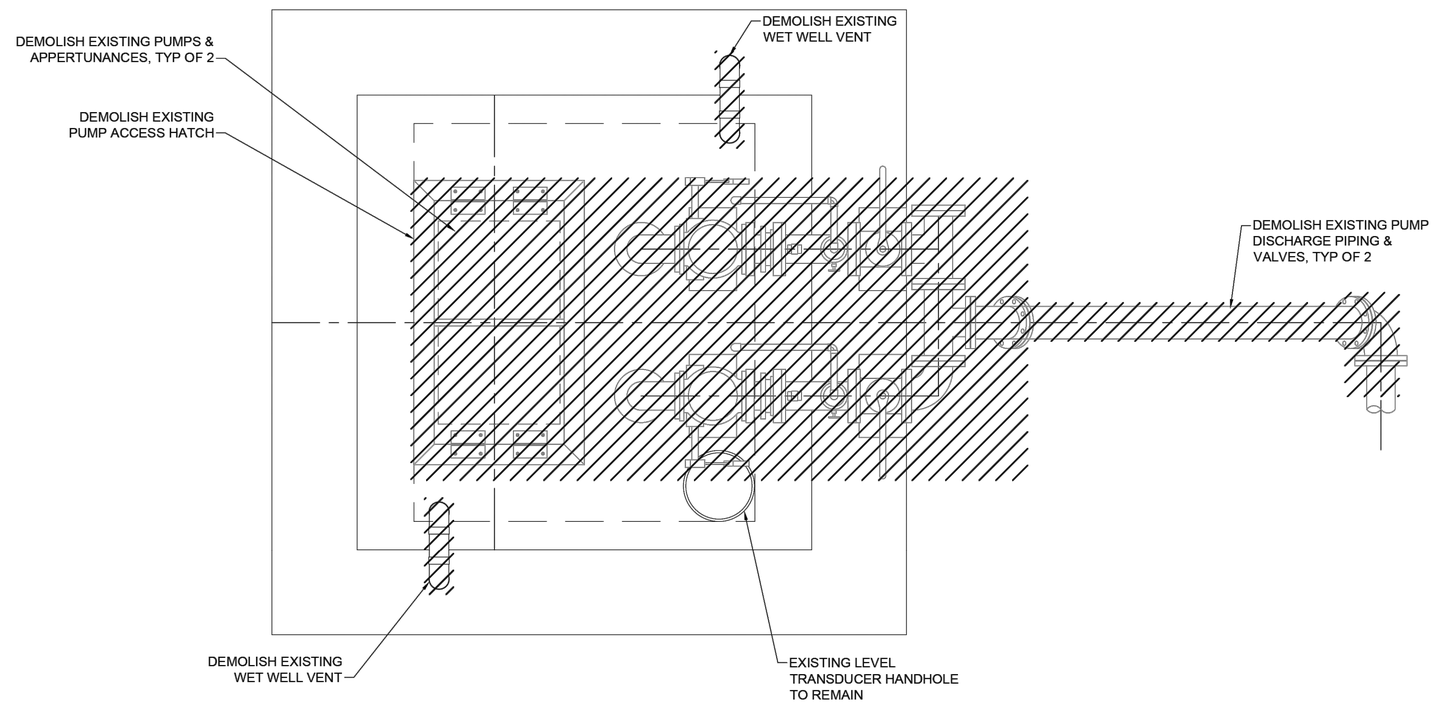
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
PROPOSED CIVIL FENCE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 227 OF 298	C-507

FILE PATH: P:\0098\103\00\0109823\8\Design\Cad\01S\00\Cad\01S\0035HEC73\Sheet\D-FEMA\01\D-2D-LIFT STATION Reference_Files\24-1930-SUB-PLANREL-Kingwood Place South LS_ctb_230809.ctb PLOTTED: 2/25/2026 8:24 AM
PLOTTED: 2/25/2026 8:24 AM



1 - PLAN VIEW @ GRADE
3/4"=1'-0"

LEGEND:

TO BE DEMOLISHED

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

NOTES:

1. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE WET WELL HATCHES PER SELECTED PUMP MANUFACTURER'S REQUIREMENTS.
3. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL VERIFY.
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. THE CITY OF HOUSTON HAS THE FIRST RIGHT OF REFUSAL OF ANY EQUIPMENT OR MATERIAL REMOVED. CONTACT CITY PROJECT MANAGER AT LEAST 72 HOURS PRIOR TO DEMOLITION IN ORDER TO COORDINATE REMOVAL OF ANY ITEMS THE CITY WISHES TO CLAIM AS SALVAGE. THE CONTRACTOR SHALL DELIVER ALL SALVAGED ITEMS TO A LOCATION, WITHIN THE CITY, DETERMINED BY THE CITY, THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL OTHER EQUIPMENT AND MATERIAL NOT IDENTIFIED FOR SALVAGE.

DCCM

5engineering
11200 WESTHEIMER ROAD, SUITE 353
HOUSTON, TEXAS 77042
(832) 800-1463 | www.5engineering.com
TBPE FIRM NO. F-13748

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PIERO BATTISTINI, P.E.
TEXAS P.E. NO 104895
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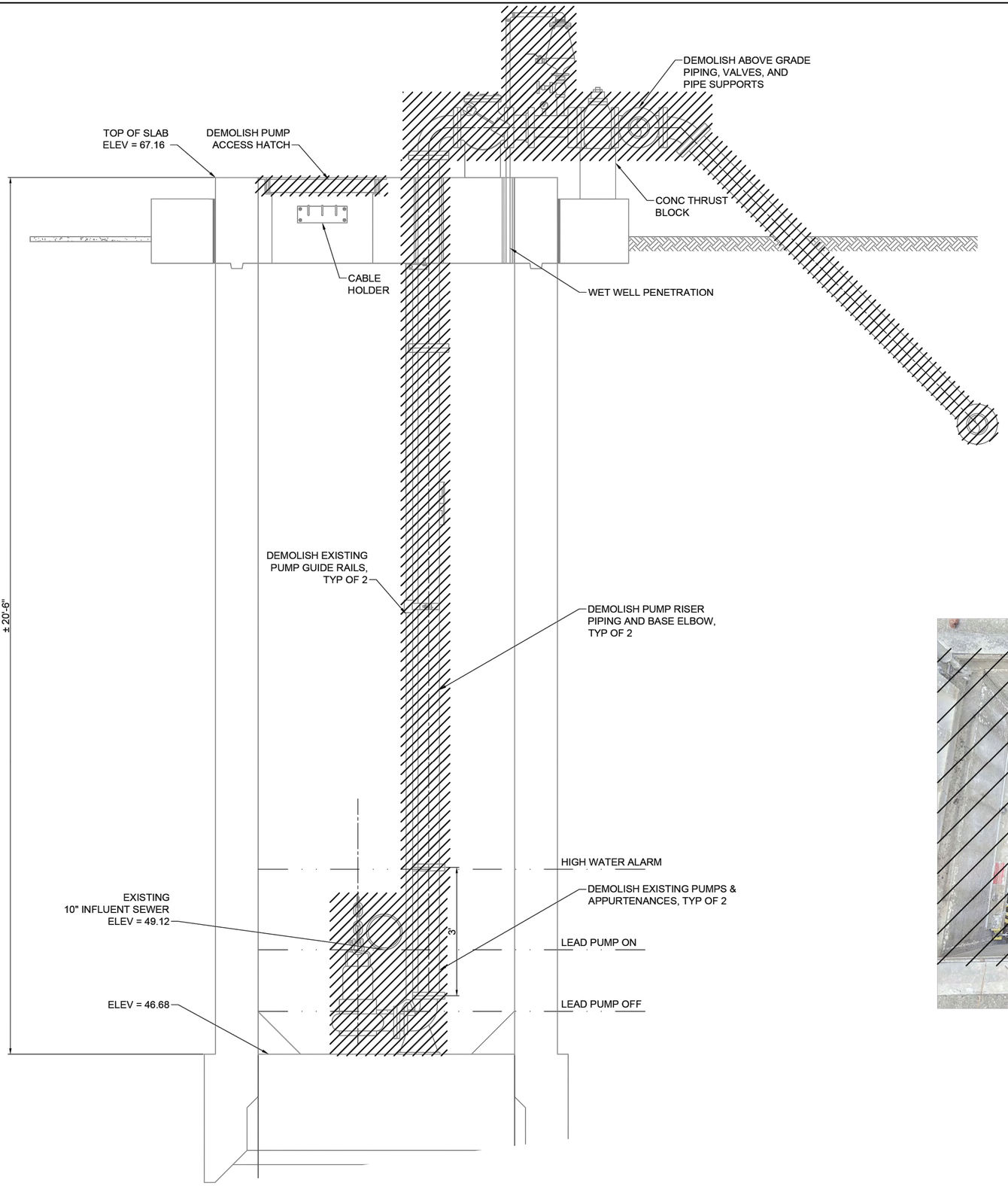
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION DEMOLITION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 3/4"=1' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 228 OF 298	M-502





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



LEGEND:

NOTES:

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3. 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.
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.

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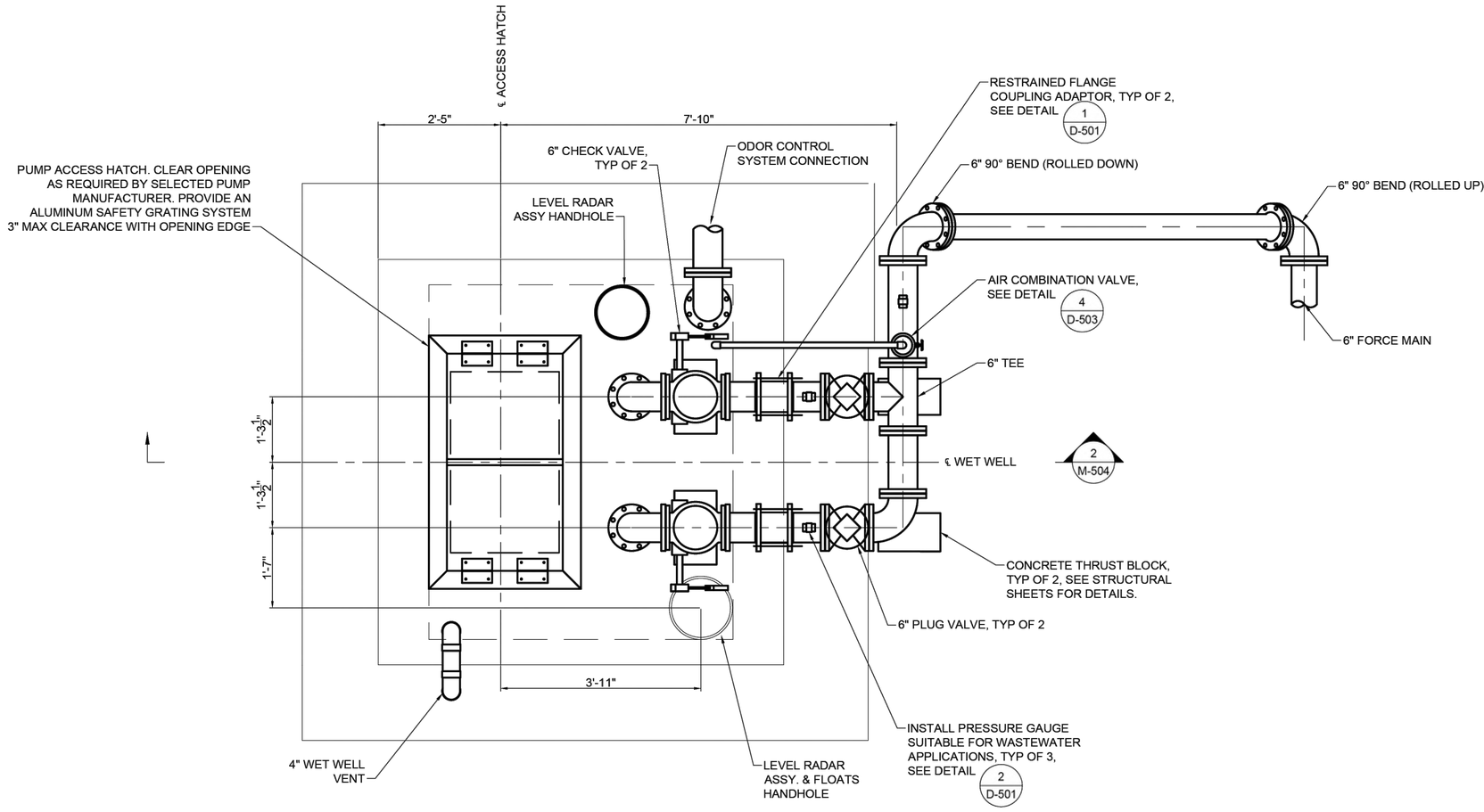
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION DEMOLITION SECTION

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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 229 OF 298 M-503	

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PLOTTED: 2/25/2026 8:24 AM
24-1930-SUB-PLAN-SHEET SETS\Kingwood Coh_ctb_230809.ctb
P:\00180\003\00180923818\06\Cad\Sht\PRO Cad\Sht\SHEET SETS\00180923818_06-2024-1930\Cad\Reference_Files\24-1930-SUB-



1 - PLAN VIEW @ GRADE

3/4"=1'-0"

0 6" 1' 2'

3/4"=1'-0

NOTES:

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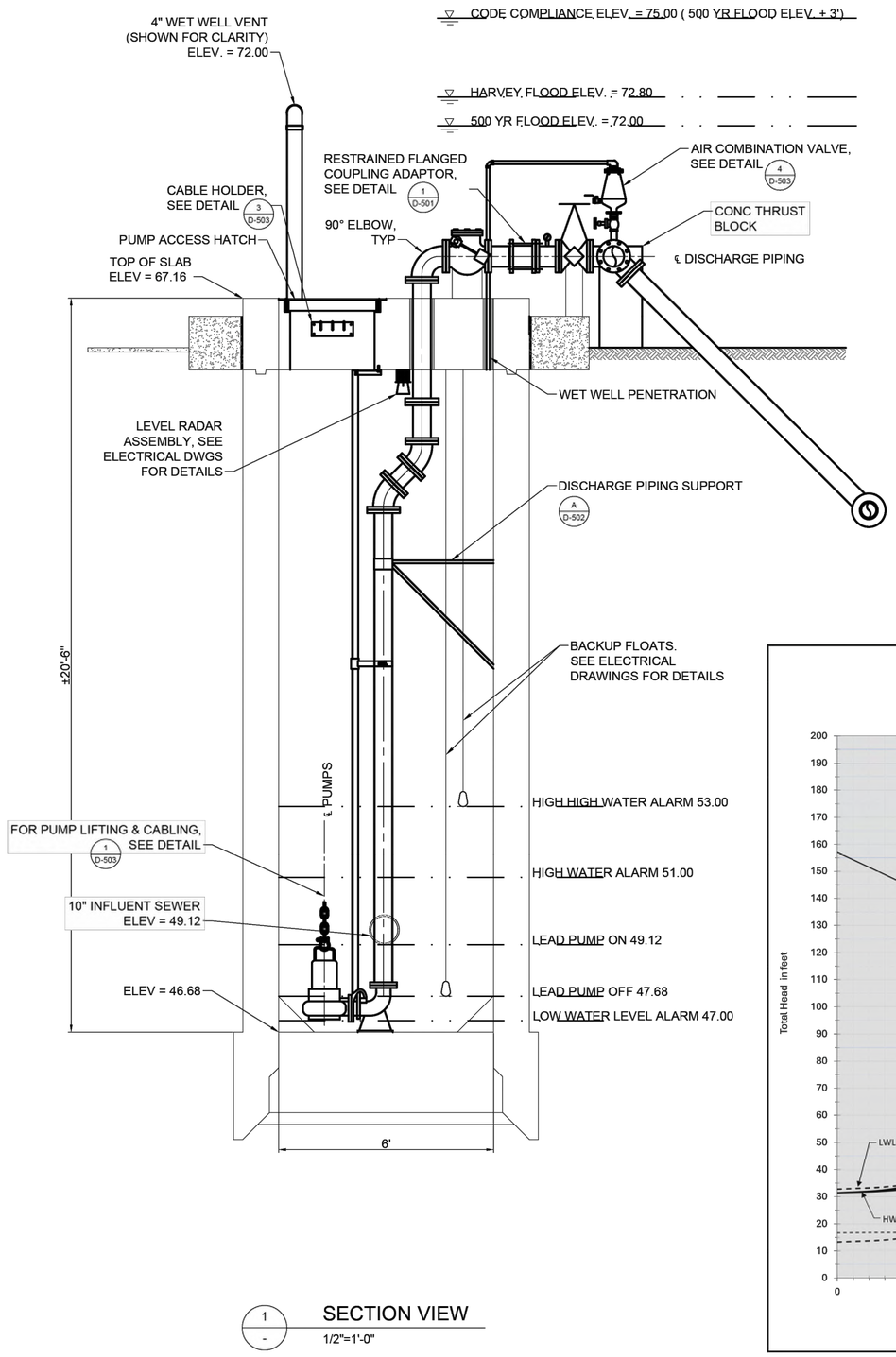
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KINGWOOD PLACE SOUTH LIFT STATION
LIFT STATION PLAN

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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 230 OF 298 | M-504	

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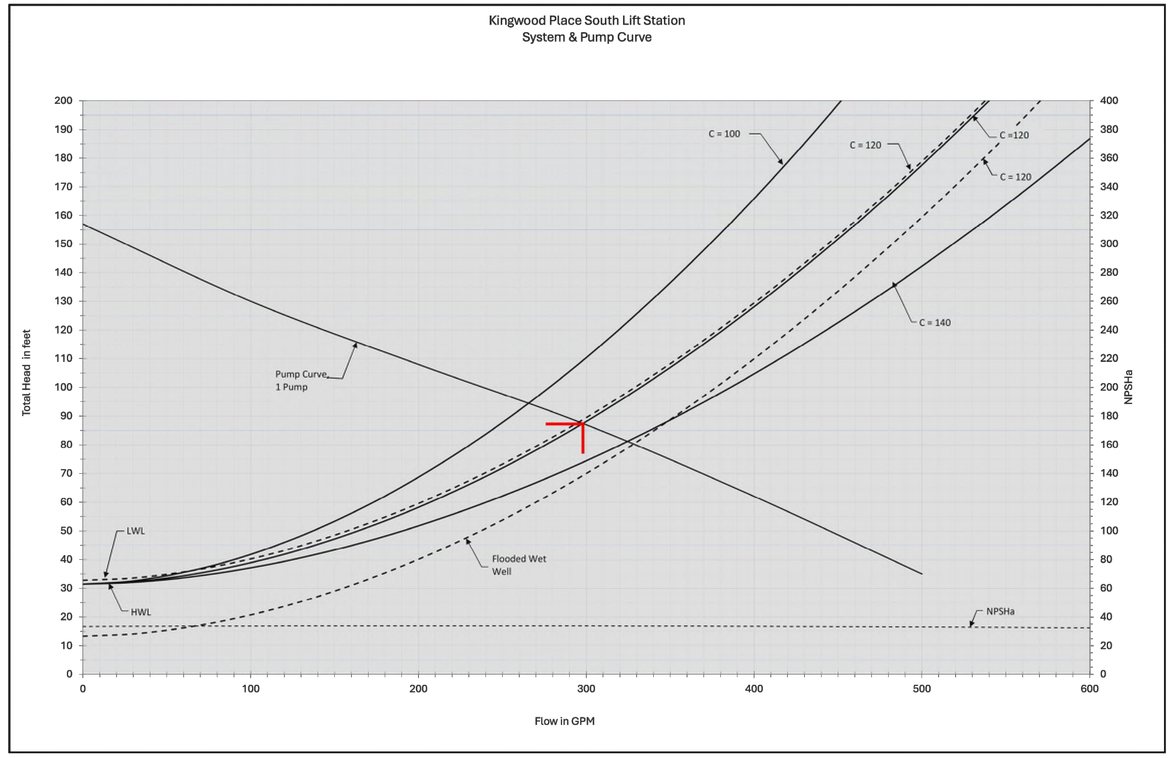
1 - SECTION VIEW
1/2"=1'-0"

PUMP DATA TABLE

PUMP CHARACTERISTICS	PUMP NO. 1	PUMP NO. 2
MOTOR DATA NOMINAL SIZE (HP) MAX SPEED (RPM)	 15 3600	 15 3600
SOLIDS PASSAGE MIN SPHERE (IN)	 3	 3
CAPACITY (GPM) DESIGN RUNOUT	 300 500	 300 500
DISCHARGE HEAD (FT) DESIGN RUNOUT SHUT OFF	 88 35 158	 88 35 158
EFFICIENCY (%) DESIGN	 61	 61
NPSHR (FT) DESIGN RUNOUT	 33.8 33.0	 33.8 33.0
PUMP CYCLE TIME	6	6

STATION OPERATION TABLES

RISING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
47.68	PUMPS OFF LEVEL - NO ACTION	ALL PUMPS ARE OFF
49.12	LEAD PUMP TURNS ON	LEAD PUMP ON
51.00	HIGH WATER ALARM ON	HIGH WATER ALARM SOUND
53.00	HIGH HIGH LEVEL ALARM (FLOAT ON LEVEL)	FIRM PUMPS ON (FLOATS)
FALLING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
51.00	FLOAT OFF LEVEL	FIRM PUMPS OFF (FLOATS)
49.12	HIGH WATER LEVEL ALARM OFF	LEAD PUMP ON
47.68	LEAD PUMP TURNS OFF	ALL PUMPS STOPPED - STANDBY PUMP SWITCHES TO LEAD PUMP
47.00	LOW WATER LEVEL ALARM	-



0 1' 2' 4'
1/2"=1'-0"

NOTES:

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5engineering
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HOUSTON, TEXAS 77042
(832) 800-3483 | www.5engineering.com
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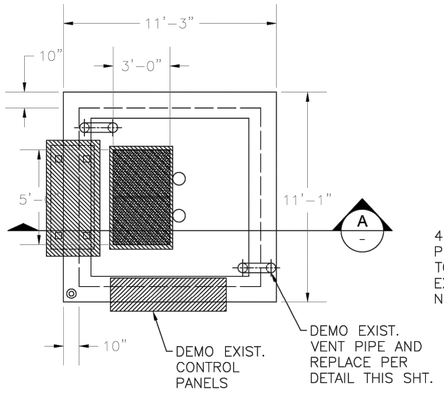
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

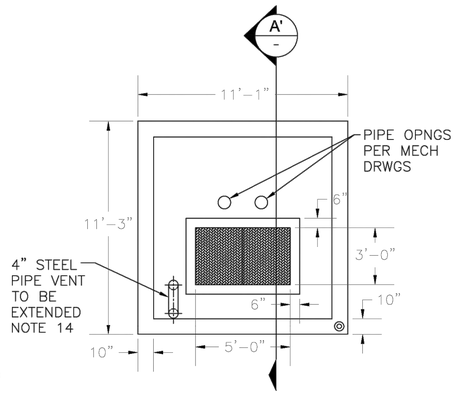
KINGWOOD PLACE SOUTH LIFT STATION
LIFT STATION SECTION

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1/2"=1' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 231 OF 298	M-505

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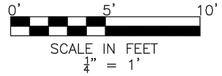
DEMO PLAN
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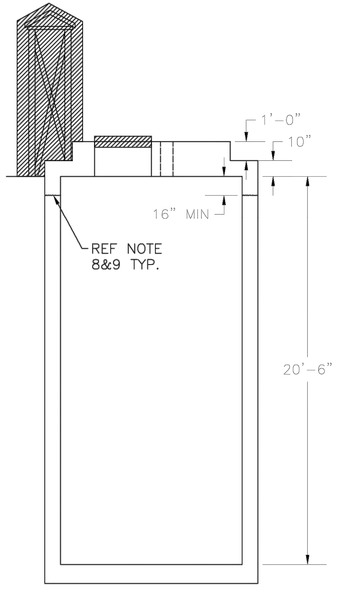
PROPOSED PLAN
SCALE: 1/4"=1'-0"

NOTES

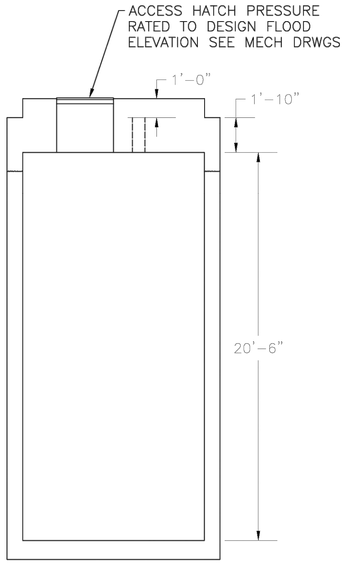
1. PARTIAL DEMOLITION OF EXISTING EQUIPMENT, CONCRETE, AND STRUCTURAL STEEL MUST BE MONITORED CAREFULLY FOR THE STABILITY , CONTROL, VIBRATIONS, CRACKS, LEAKS, AND OTHER PROGRESSIVE OR SUDDEN DAMAGE TO THE PORTIONS OF STRUCTURE TO BE RETAINED.
2. NO ROOF SLAB DEMOLITION SHOULD START UNLESS THE FEATURES TO REMAIN AT LOWER LEVEL ARE FULLY PROTECTED WITH SHORING SYSTEM.
3. HEAVY DEMOLITION EQUIPMENT CAUSING EXCESSIVE VIBRATIONS SHALL NOT BE USED.
4. LARGE CHUNKS OF CONCRETE MUST BE ADEQUATELY SECURED AND REMOVED WITH CRANE AND NOT ALLOWED TO FREE FALL TO LOWER ELEVATIONS.
5. DEBRIS REMOVAL AND DEMOLITION ACTIVITY MUST NOT BE DONE AT THE SAME TIME.
6. DEMOLITION OF WALL OPENINGS MUST BE DONE WITH SAW-CUTTING ONLY. CURBS AND EDGES OF SAW CUT CONCRETE SHALL BE DEMOLISHED MANUALLY TO EXPOSE THE EXISTING REBAR.
7. NEW CONCRETE WORK SHALL NOT START UNTIL ALL DEMOLITION IS COMPLETE.
8. DEMOLITION IN THESE AREAS IS MEANT TO EXPOSE EXISTING REBAR FOR LAPPING WITH PROPOSED REBARS.
9. CLEAN AND LAP EXISTING REBARS WITH NEW REBARS IN THE PROPOSED SLAB.
10. ALL EXISTING EMBEDDED PIPE FLANGES SHALL BE SEALED WITH MATCHING BLIND FLANGES.
11. THE LOCATIONS OF PROPS ON MULTIPLE FLOORS SHALL MATCH CLOSELY SO THE VERTICAL LOADS ARE DIRECTLY TRANSFERRED TO THE BOTTOM FLOOR WITHOUT CAUSING OVERSTRESSING.
12. HYDRAULIC DEMOLITION USING HIGH-PRESSURE WATER JETS MAY BE CONSIDERED IN PLACE OF SAW-CUTTING IN HIGH-STRESSED AREAS, SUCH AS OPENINGS IN COMMON WALL.
13. INSTALL #5 ANCHORS @8"C/C PER FACE ON WALL SURFACES WHERE EXISTING REBARS ARE NOT AVAILABLE. CHIP EXISTING CONCRETE SURFACE TO BOND WITH NEW CONCRETE.
14. EXTEND VENT PIPE AND SUPPORT TO ABOVE THE HIGH FLOOD ELEVATION.



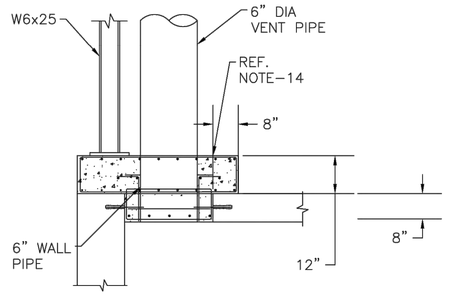
NO.	DATE	REVISION	APP.



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



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



VENT DETAIL (2PLCS)
SCALE: 1/2"=1'-0"

DCCM

neera
880 Tully Road
Ste 087
Houston, TX 77079
832.641.5413
TBPE Reg. No. F-14240

90% DESIGN

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PARDHA NAMUDURI, P.E.
#82977
FEBRUARY 2026
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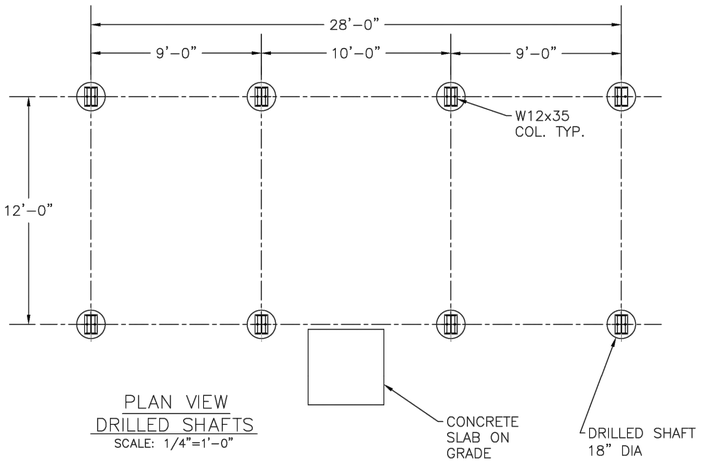
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

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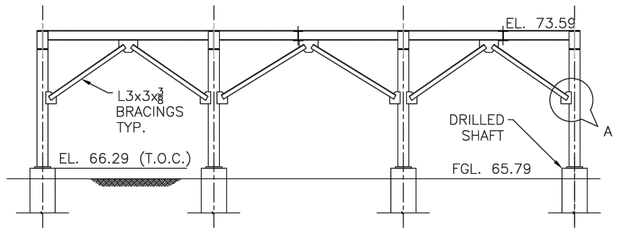
KINGWOOD PLACE SOUTH LIFT STATION
STRUCTURAL DEMOLITION AND
PROP. PLAN AND SECTION

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: AS NOTEDVERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 232 OF 298 S-501	

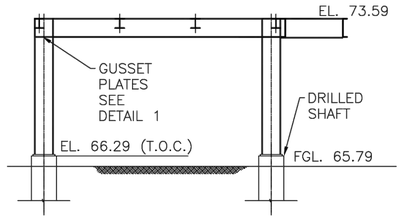
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PLAN VIEW
DRILLED SHAFTS
SCALE: 1/4"=1'-0"



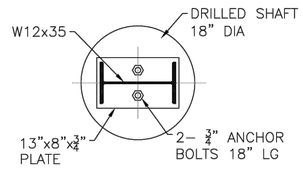
SECTION A-A
SCALE: 1/4"=1'-0"



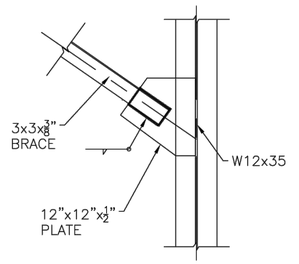
SECTION B-B
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STRUCTURAL FRAMING NOTES:

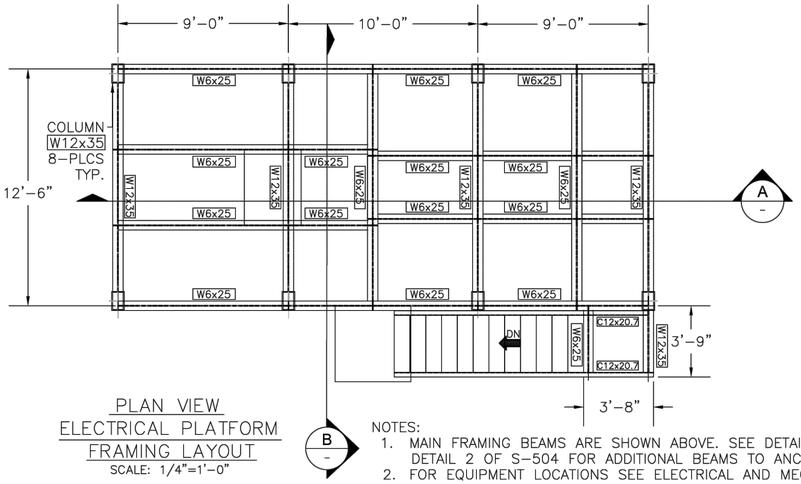
1. PIER CENTERLINE AND EMBEDDED ANCHOR BOLTS SHALL BE INSTALLED TO THE HIGHEST DEGREE OF ACCURACY. THE VERTICAL AND HORIZONTAL TOLERANCES OF FINISHED SURFACE AND AXIS OF PIERS SHALL BE ±0.5".
2. ANCHOR BOLTS ON PIER TOP SHALL BE INSTALLED TO A TOLERANCE OF ±0.125". THE PURPOSE OF MAINTAINING TOLERANCES IS EASY INSTALLATION OF SHOP DRILLED COLUMN BASES NOT REQUIRING EXTENSIVE FIELD MENDS.
3. FOR ALUMINUM HANDRAILS SEE SHEET D-02.
4. ALL GRATING AND HANDRAILS SHALL BE ALUMINUM.
5. ALL DIMENSIONS ARE FROM FIELD MEASUREMENTS.
6. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO STAKING/FABRICATION OF SUPER- STRUCTURE.
7. CHIP THE EXISTING CONCRETE SURFACE TO BOND WITH NEW CONCRETE, IF APPLICABLE.



COLUMN BASEPLATE DETAIL
SCALE: 1"=1'-0"



DETAIL A
BRACE CONNECTION DETAIL
SCALE: 1"=1'-0"



PLAN VIEW
ELECTRICAL PLATFORM
FRAMING LAYOUT
SCALE: 1/4"=1'-0"

B

NOTES:
1. MAIN FRAMING BEAMS ARE SHOWN ABOVE. SEE DETAIL1 AND DETAIL 2 OF S-504 FOR ADDITIONAL BEAMS TO ANCHOR EQUIPMENT SKIDS.
2. FOR EQUIPMENT LOCATIONS SEE ELECTRICAL AND MECHANICAL DRAWINGS.

SUMMARY OF DRILLED PIERS

Lift Station Site	Shaft Depth, feet	Diameter of Pier	Number of piers
AG Farm Lift Station Generator /Electrical Platform Odor Control Platform	10'	18" Dia.	10
Deer Springs Lift Station Generator/ Electrical Platform Odor Control Platform	25'	18" Dia.	8
Golden Bear Lift Station Electrical Platform Odor Control Platform	10'	18" Dia.	6
Golf Course Lift Station Generator /Electrical Platform Odor Control Platform	10'	18" Dia.	10
Kingwood Place South Lift Station Generator /Electrical Platform Odor Control Platform	10'	18" Dia.	8

NO.	DATE	REVISION	APP.

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neera
880 Tully Road
Ste 087
Houston, TX 77079
832.641.5413
TBPE Reg. No. F-14240

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#82977
FEBRUARY 2026
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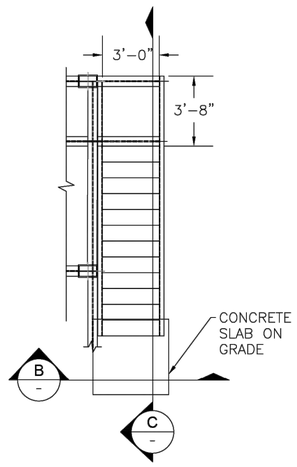
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

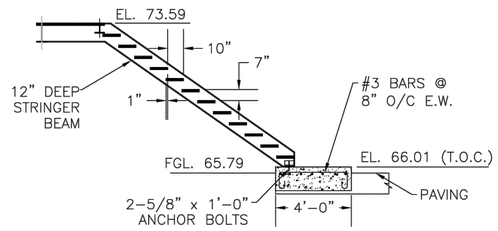
KIKNGWOOD PLACE SOUTH LIFT STATION
ELEVATED PLATFORMS
GENERAL ARRANGEMNT & FRAMING LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: AS NOTEDVERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 233 OF 298 | S-502	

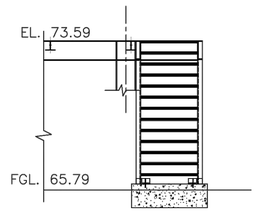
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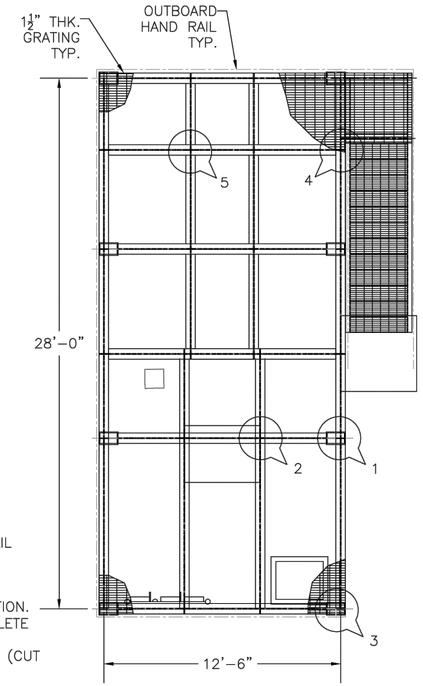
PLAN VIEW
PLATFORM ACCESS STAIRS
SCALE: 1/4"=1'-0"



SECTION C-C
PLATFORM ACCESS STAIRS
SCALE: 1/4"=1'-0"



SECTION B-B
PLATFORM ACCESS STAIRS
SCALE: 1/4"=1'-0"



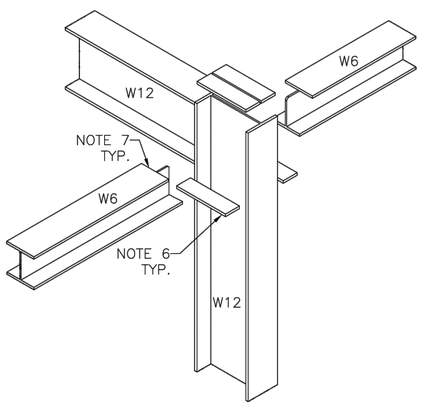
PLAN VIEW
ELECTRICAL PLATFORM
GRATING AND HANDRAIL
SCALE: 1/4"=1'-0"

0' 5' 10'
SCALE IN FEET
¼" = 1'

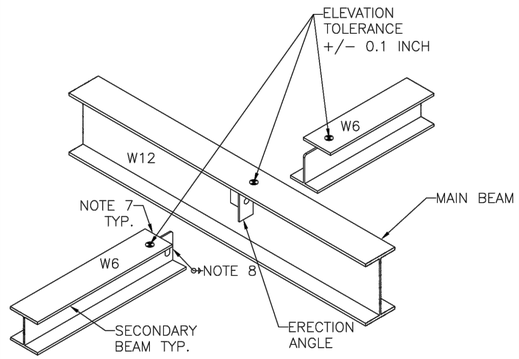
NOTES:
1. HANDRAILS ARE NOT SHOWN FOR CLARITY. REFER TO S-502 FOR HANDRAIL AND GRATINGS.
2. PROVIDE ADEQUATE GUSSETS AND STIFFENER PLATES FOR CONTINUITY OF FORCES AND MOMENTS.
3. CLEAT/ERECTION ANGLES AND TEMPORARY BOLTS MAY BE USED FOR ERECTION. ALL CONNECTIONS MUST BE FIELD WELDED ALL AROUND TO ENSURE COMPLETE FORCE AND MOMENT TRANSFER.
4. CONNECTIONS WITH FLUSH FLANGE ELEVATIONS MUST BE SET WITH RECESS (CUT OFF) ON FLANGE OF SMALLER MEMBER WHILE THE WEB IS EXTENDED.
5. COORDINATE LOCATIONS BEARING BEAMS AND SECONDARY CHANNELS WITH EQUIPMENT SKID LOCATIONS FOR TIE DOWN BOLTS WITH ELECT. DRWGS.
6. PROVIDE ½" THK GUSSET/STIFFENER PLATES AS SHOWN FOR FLANGE-TO-FLANGE AND WEB-TO-WEB CONTINUITY.
7. TRIM AND FIT FLANGES OF SECONDARY BEAMS FOR WEB-TO-WEB CONTINUITY AND ELEVATION TOLERANCE OF ± ½".
8. FILLET WELD ALL EDGES OF SECONDARY BEAM WITH MAIN BEAM ALL ROUND, TYP.
9. ALL GUSSET/FLANGE PLATES ARE ½" THK UNLESS NOTED OTHERWISE.
10. ERECTION BOLTS WITH SLOTTED HOLES SHALL BE USED FOR FINER ADJUSTMENT AND LEVELING FOR ELEVATION TOLERANCE.
11. MANUFACTURED STAIR PANELS OF STANDARD WIDTH MAY BE USED IN PLACE OF CUSTOM PANELS.
12. ALL BEAMS & COLUMNS IN MWFRF ARE W12x35 UNLESS NOTED OTHERWISE. ALL SECONDARY BEAMS SUPPORTING OTHER SECONDARY BEAMS AND EQUIPMENT SKID ARE W6x25 OR C12x20.7 OR C10x20 AS NECESSARY.

SECTION MEASUREMENTS

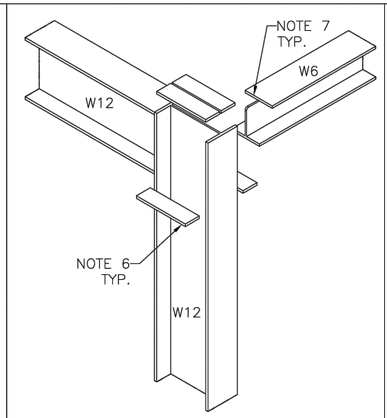
	OVERALL DEPTH (IN)	FLANGE WIDTH (IN)	WEB THICKNESS (IN)	FLANGE THICKNESS (IN)
W12X35	12.5	6.56	0.3	0.52
W6X25	6.38	6.08	0.32	0.455
C12X20.7	12.0	2.96	0.282	0.501
C10X20	10.0	2.74	0.379	0.436



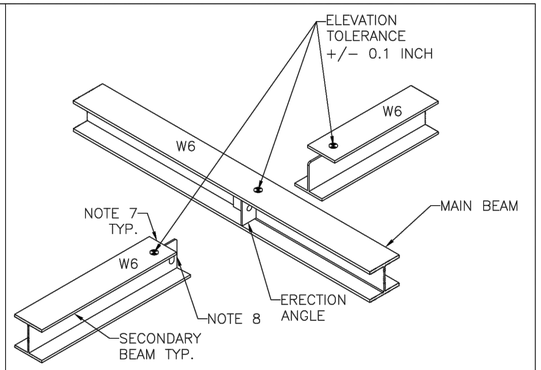
DETAIL 1
SCALE: NTS



DETAIL 2
SCALE: NTS



DETAIL 3
SCALE: NTS



DETAIL 4&5
SCALE: NTS

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FEBRUARY 2026
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

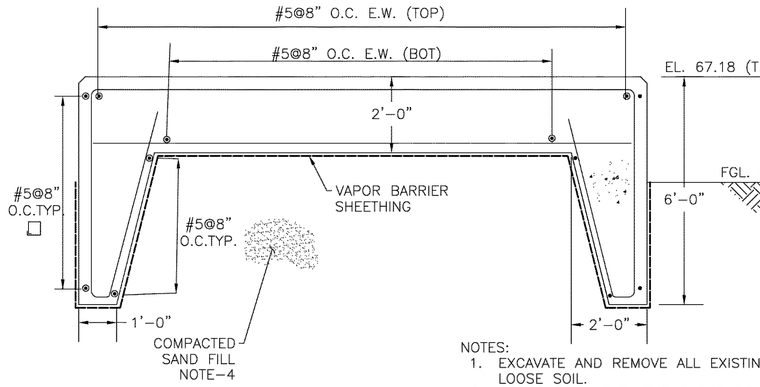
KINGWOOD PLACE SOUTH LIFT STATION
ELEVATED PLATFORMS
STAIRS, HANDRAIL, AND CONNECTION DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1/4"=1' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 234 OF 298	S-503

NO.	DATE	REVISION	APP.

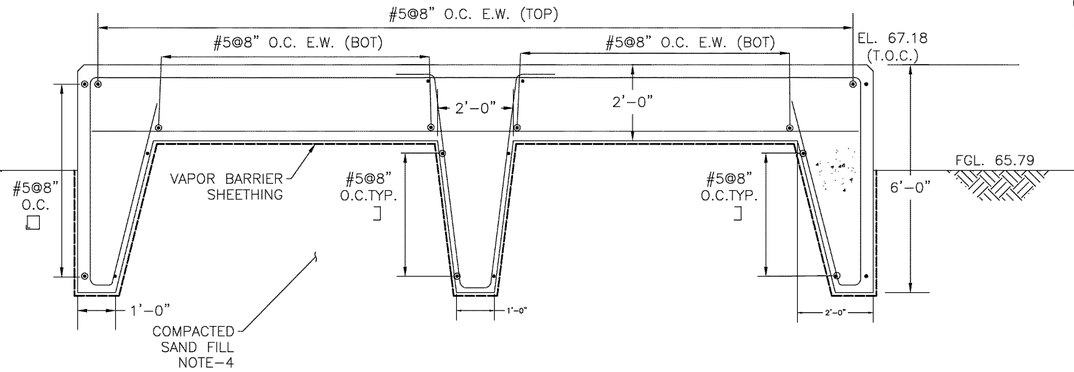
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PLOTTED: 2/26/2026 8:33 PM
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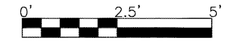


SECTION A-A
SCALE: 1/2"=1'-0"

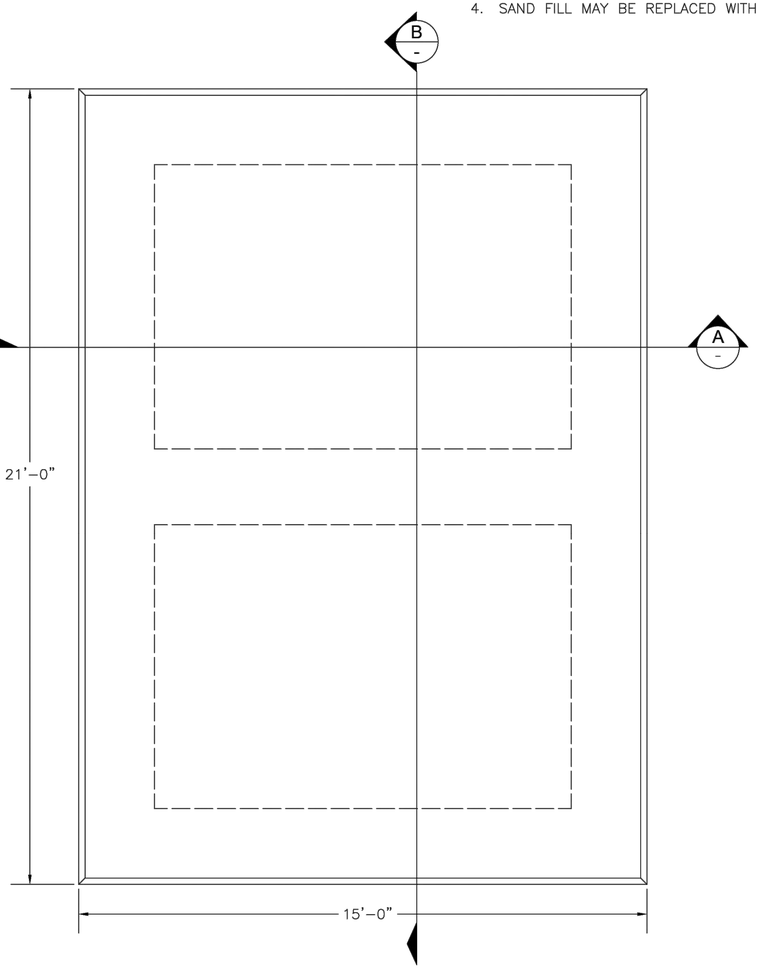
NOTES:
1. EXCAVATE AND REMOVE ALL EXISTING BACKFILL AND LOOSE SOIL.
2. COMPACT & LEVEL THE SUBGRADE TO 95% MODIFIED PROCTOR DENSITY.
3. FILL WITH CEMENT STABILIZED SAND (CSS) TO BOTTOM OF PAD FOUNDATION.
4. SAND FILL MAY BE REPLACED WITH CSS.



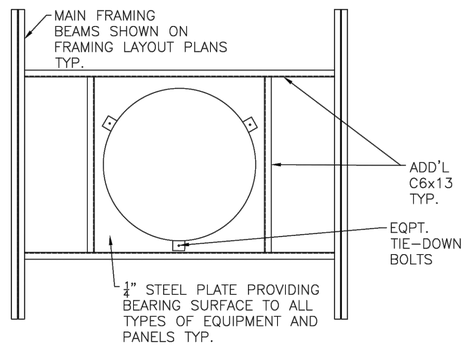
SECTION B-B
SCALE: 1/2"=1'-0"



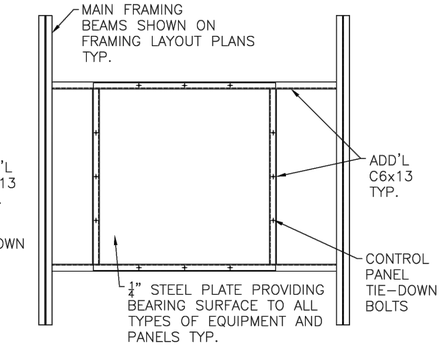
NOTES:
1. ATTACH STAIR STRINGERS TO MWFRF (MAIN WIND FORCE RESISTING FRAME) MEMBERS OF THE SUPPORTING FRAME.
2. HOT DIP GALVANIZE ALL STRUCTURAL MEMBERS AFTER FABRICATION.
3. HANDRAIL SHALL BE 42-INCH HIGH TWO-RAIL HANDRAIL WITH MIN 4" HIGH TOE PLATE. CONNECT POSTS TO SUPPORTING MEMBER; NOT GRATING.
4. PROVIDE $\frac{1}{2}$" GUSSET PLATES AS NECESSARY TO CONNECT ANGLE BRACES IN CENTER PLANE OF CONNECTED MEMBERS.
5. MINIMUM 1" GRATING SPANNING IN SHORT DIRECTION SHALL BE TIED TO THE CONNECTING MEMBERS WITH CLIPS.
6. PROVIDE 2-$\frac{5}{8}$"X8"LG ANCHOR BOLT AT COLUMN BASE PLATE AS SHOWN IN S-504.
7. ALL EQUIPMENTS/CABINETS SHALL BE SUPPORTED BY A CUSTOM FLOOR FRAME SHOWN IN DETAIL-1 (S-506).
8. PROVIDE ADDITIONAL SUPPORT BEAMS AS BEARING/BOLTING SURFACE FOR ALL EQUIPMENT SKIDS. SUPPORT BEAMS SHALL SPAN BETWEEN NEAREST STRUCTURE BEAMS.



ODOR CONTROL FOUNDATION
PLAN VIEW
SCALE: 1/2"=1'-0"



DETAIL-1/502
CUSTOM FLOOR FRAME SUPPORTING ODOR CONTROL EQPT. SKID
SCALE: NTS



DETAIL-2/502
CUSTOM FLOOR FRAME SUPPORTING CONTROL PANEL
SCALE: NTS

NO.	DATE	REVISION	APP.

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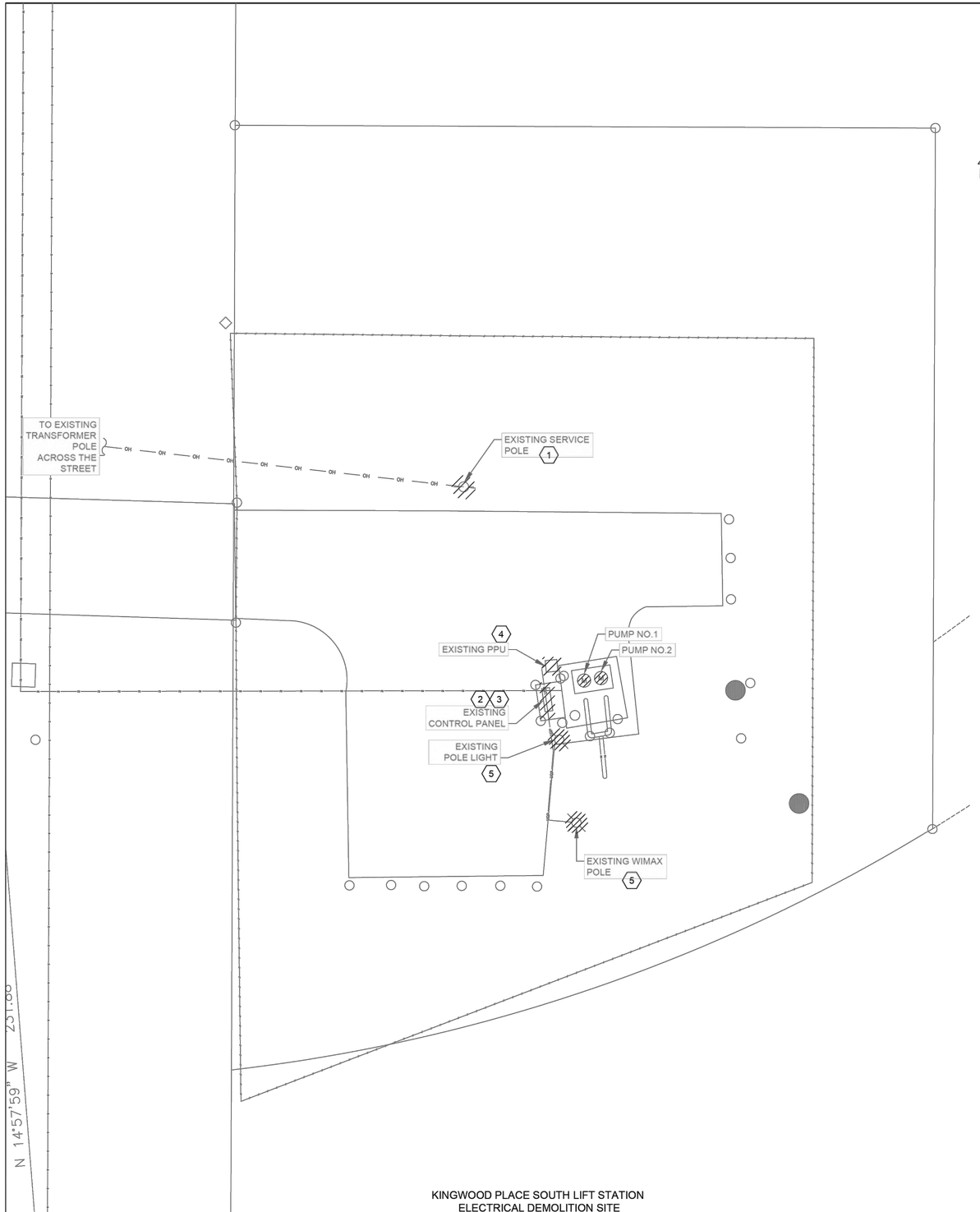
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
ODOR CONTROL SLAB ON GRADE
REINFORCEMENT DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1/2"=1' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 235 OF 298	S-504

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KINGWOOD PLACE SOUTH LIFT STATION
ELECTRICAL DEMOLITION SITE

PLAN

1" = 8'-0"



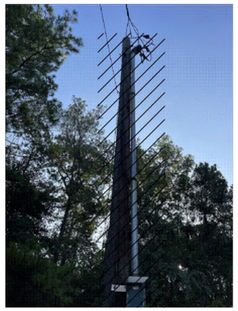
SCALE: 1" = 8'

NOTES BY SYMBOL "⟨#⟩":

1. EXISTING SERVICE POLE, METER, METER DISCONNECT SWITCH, AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
2. EXISTING CONTROL PANEL/POWER PANEL AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.
3. EXISTING ELECTRICAL BOX BEHIND CONTROL PANEL AND ASSOCIATED CONDUITS AND WIRES DEMOLISHED AND REMOVED.
4. EXISTING PPU AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED AND RETURNED TO THE WASTEWATER FACILITY MAINTENANCE DEPARTMENT OF THE CITY.
5. EXISTING WIMAX POLE, POLE LIGHT AND ASSOCIATED CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.

GENERAL NOTES:

1. THE OWNER HAS THE RIGHT OF FIRST REFUSAL TO THE EQUIPMENT BEING REMOVED. CONTRACTOR SHALL DELIVER THE EQUIPMENT WHICH OWNER WISHES TO KEEP AT LOCATION DESIGNATED BY THE OWNER. SEE SPECIFICATIONS SECTION 16060 FRO ELECTRICAL DEMOLITION.



EXISTING SERIVE POLE

PHOTOGRAPH A - 1

NTS



EXISTING METER AND METER DISCONNECT

PHOTOGRAPH B - 1

NTS



EXISTING CONTROL PANEL

PHOTOGRAPH C - 2

NTS



EXISTING ELECTRICAL BOX

PHOTOGRAPH F - 3

NTS



EXISTING PPU

PHOTOGRAPH E - 4

NTS



EXISTING POLE LIGHT

PHOTOGRAPH D - 5

NTS

LEGEND:

ITEMS TO BE DEMOLISHED.

DCCM

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Gupta & Associates, Inc.
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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

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CITY OF HOUSTON

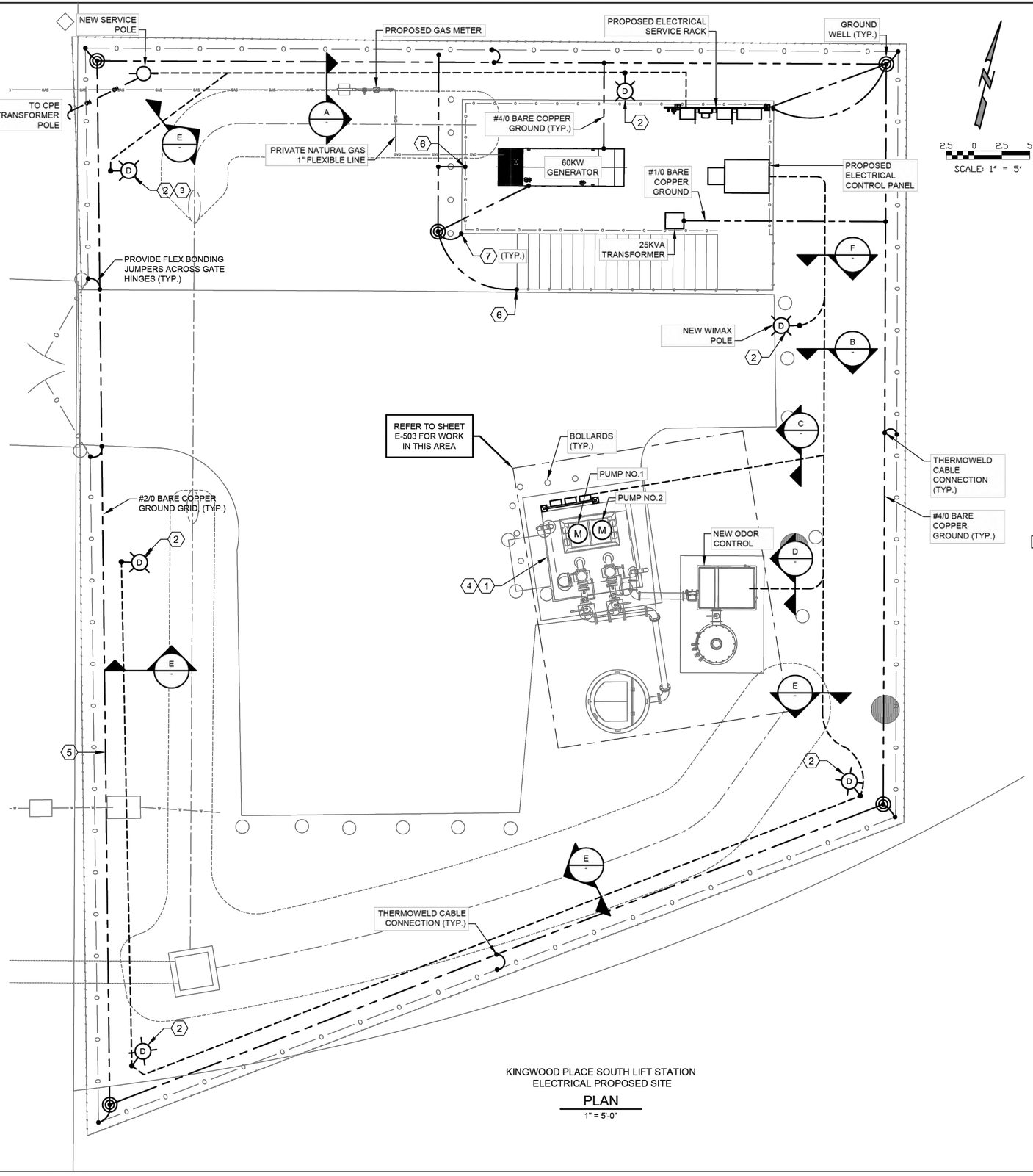
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
ELECTRICAL
DEMOLITION OVERALL SITE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=8' VERT: 1"=8'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 236 OF 298	E-501

NO.	DATE	REVISION	APP.



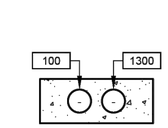
KINGWOOD PLACE SOUTH LIFT STATION
ELECTRICAL PROPOSED SITE

PLAN

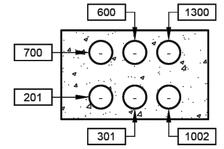
1" = 5'-0"

NOTES BY SYMBOL "⬡#":

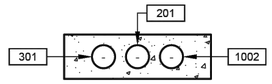
1. THE ELECTRICAL INSTALLATION IN THE WET WELL SHALL BE EXPLOSION PROOF, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE FOR CLASS I, DIVISION 1 LOCATIONS.
2. YARD LIGHT CONTROLLED BY LIGHTING SWITCH.
3. TYPE "B" FIXTURE TO BE INSTALLED ON THE POLE PROVIDING WIRES FOR THE "B" LIGHT.
4. INSIDE WETWELL 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 HANDRAIL.
7. #4/0 BARE COPPER GROUND TO BE BONDED TO PLATFORM STRUCTURAL STEEL.



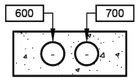
DUCTBANK SECTION A NTS



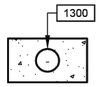
DUCTBANK SECTION B NTS



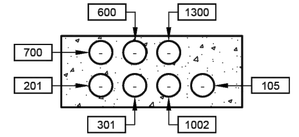
DUCTBANK SECTION C NTS



DUCTBANK SECTION D NTS



DUCTBANK SECTION E NTS



DUCTBANK SECTION F NTS

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Gupta & Associates, Inc.
CONSULTING ENGINEERING
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Fax: 713-636-2987
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LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
ELECTRICAL
PROPOSED OVERALL SITE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 237 OF 298	E-502

NO.	DATE	REVISION	APP.

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PLOT STYLE: COH.ctb
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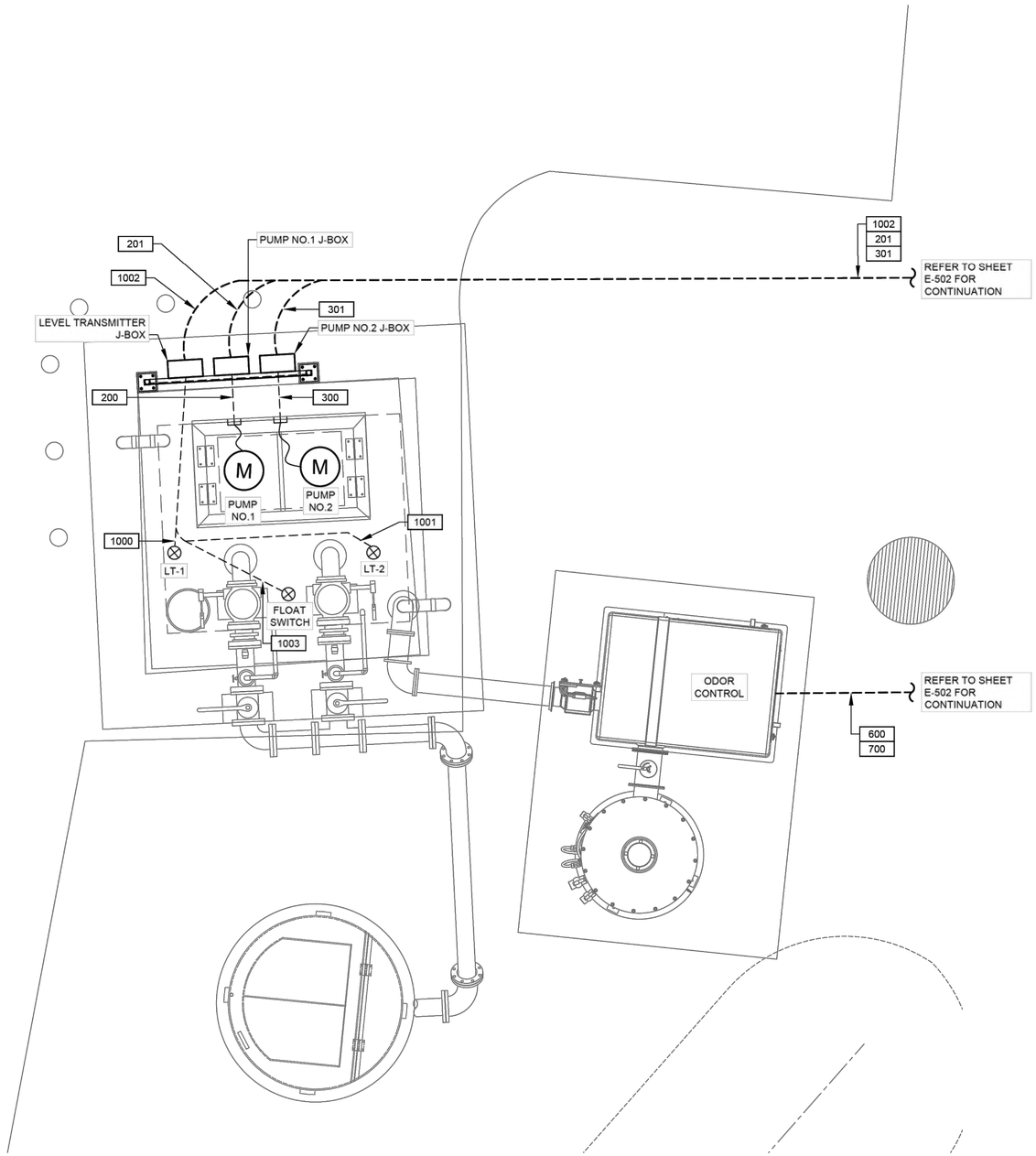
SCALE: 1" = 2'

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.

NO.	DATE	REVISION	APP.



KINGWOOD PLACE SOUTH LIFT STATION
ELECTRICAL PROPOSED ENLARGED SITE

PLAN ⟨1⟩⟨2⟩

1" = 2'-0"

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

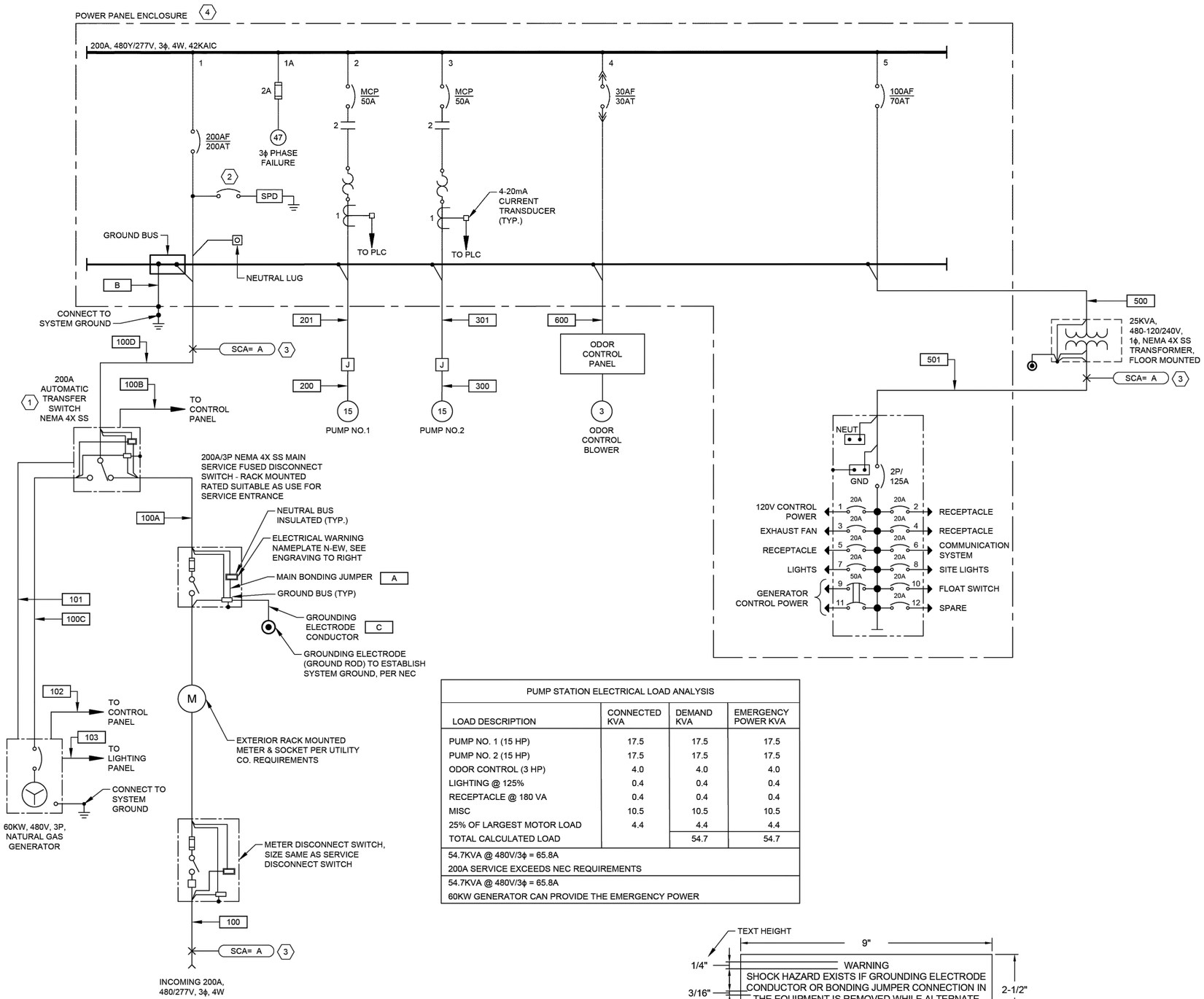
CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
ELECTRICAL
PROP. ENLARGED LIFT STATION SITE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=2' VERT: 1"=2'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 238 OF 298	E-503



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.

PUMP STATION ELECTRICAL LOAD ANALYSIS

LOAD DESCRIPTION	CONNECTED KVA	DEMAND KVA	EMERGENCY POWER KVA
PUMP NO. 1 (15 HP)	17.5	17.5	17.5
PUMP NO. 2 (15 HP)	17.5	17.5	17.5
ODOR CONTROL (3 HP)	4.0	4.0	4.0
LIGHTING @ 125%	0.4	0.4	0.4
RECEPTACLE @ 180 VA	0.4	0.4	0.4
MISC	10.5	10.5	10.5
25% OF LARGEST MOTOR LOAD	4.4	4.4	4.4
TOTAL CALCULATED LOAD		54.7	54.7
54.7KVA @ 480V/3ϕ = 65.8A 200A SERVICE EXCEEDS NEC REQUIREMENTS			
54.7KVA @ 480V/3ϕ = 65.8A 60KW 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

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
ELECTRICAL
PROPOSED ONE–LINE DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 239 OF 298	E–504

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PLOTTED: 2/23/2026 8:12:23 AM
PLOT STYLE: Grayscale.ctb
FILE PATH: G:\...\E-505 (KINGWOOD PLACE SOUTH).dwg

FROM UTILITY METER
REFER TO SHEET E-504
480/277V, 3Ø, 4W

GROUNDED SERVICE CONDUCTOR
NEUTRAL BUS (INSULATED) (TYPE)
MAIN BONDING JUMPER [A]
GROUNDING ELECTRODE CONDUCTOR [C]
GROUND ROD (TYPICAL)
400A/3P NEMA 4X SS MAIN SERVICE FUSED DISCONNECT SWITCH RACK MOUNTED RATED SUITABLE AS USE FOR SERVICE ENTRANCE
GROUND BUS (TYPE)

3 POLE AUTOMATIC TRANSFER SWITCH (ATS)
GND BUS
NEUT
NC
NB
NA
EC
EB
EA
LA LB LC

SURGE PROTECTOR
JE-1
(SEE NOTE 5)
SPD
M
MAIN BREAKER
X
PHASE MONITOR
JE-2
VV
PLC
(SEE NOTE 5)

NEUT
GND BUS
POWER PANEL | FIELD

NEUT
GND
GEN
STANDBY GENERATOR

4-20mA CURRENT TRANSDUCER
4-20mA TO PLC
+
-
MOR
(SEE NOTE 6)

MCP
M1
T1
T2
T3
PUMP NO. 1
M
105
106
107
108
GND
20
21
22
23
TSH-1
LSH-1

4-20mA CURRENT TRANSDUCER
4-20mA TO PLC
MOR
(SEE NOTE 6)
MCP
M2
PUMP NO. 2
205
206
207
208
TSH-2
LSH-2

MATCHLINE `A'

MATCHLINE `A'
POWER PANEL | FIELD
CB
T1
T2
T3
GND
ODOR CONTROL PANEL

25KVA, 480-120/240V
1 PHASE TRANSFORMER
FLOOR MOUNTED
(SEE NOTE 3)
EE
CB

240V, 125A, 12 CKT
LIGHTING PANEL
125A
NEUT
GND

120V CONTROL POWER	1	2	RECEPTACLE
EXHAUST FAN	3	4	RECEPTACLE
RECEPTACLE	5	6	COMMUNICATION SYSTEM
LIGHTS	7	8	SITE LIGHTS
GENERATOR CONTROL POWER	9	10	FLOAT SWITCH
	11	12	SPARE

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 INDICATED, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE CONTROL PANEL.
2. NOT USED.
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.
6. THE COMBINATION OF CT AND MOTOR OVERLOAD RELAY IF REQUIRED.

NO.	DATE	REVISION	APP.

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FB NO. 6399

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION ELECTRICAL
INCOMING POWER THREE LINE DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 240 OF 298	E-505

	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	200A	UTILITY POWER SERVICE	METER DISCONNECT		3#3/0 AWG, #2 NEUT. #2 GND. 2-1/2"C.
100A	SERVICE POWER	480V	200A	SERVICE DISCONNECT	ATS	--	3#3/0 AWG, #2 NEUT. #2 GND. 2-1/2"C.
100B	NORMAL/EMERGENCY POWER	24VDC	--	ATS	CONTROL PANEL	--	4#14 AWG, 1"C.
100C	EMERGENCY POWER	480V	200A	ATS	GENERATOR	--	3#3/0 AWG, #2 NEUT. #2 GND. 2-1/2"C.
100D	ELECTRIC POWER	480V	200A	ATS	CONTROL PANEL	--	3#3/0 AWG, #2 NEUT. #2 GND. 2-1/2"C.
101	GENERATOR CONTROL	120V	--	ATS	GENERATOR	--	6#14, #12 GND. 1"C.
102	ANNUNCIATION	--	--	GENERATOR	CONTROL PANEL	--	MANUFACTURER'S CABLE IN 2"C
103	GENERATOR AUX. POWER	208/120V	--	GENERATOR	LIGHTING PANEL	--	3#4 AWG, #6 GND. 1-1/2"C.
105	COMMUNICATION	--	--	COMMUNICATION POLE	PPU-AC	--	POE CABLE IN 1"C.
200	PUMP NO. 1 POWER	480V	15 HP	PUMP NO. 1	PUMP NO. 1 JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT
201	PUMP NO. 1 POWER AND CONTROLS	480V	15 HP	PUMP NO. 1 JUNCTION BOX	CONTROL PANEL	--	3#8 AWG, 4#14, #10 GND. 1-1/2"C.
300	PUMP NO. 2 POWER	480V	15 HP	PUMP NO. 2	PUMP NO. 2 JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT
301	PUMP NO. 2 POWER AND CONTROLS	480V	15 HP	PUMP NO. 2 JUNCTION BOX	CONTROL PANEL	--	3#8 AWG, 4#14, #10 GND. 1-1/2"C.
500	LIGHTING TRANSFORMER PRIMARY FEEDER	480V	70A	CONTROL PANEL	LIGHTING TRANSFORMER PRIMARY	--	2#4 AWG, #8 GND. 1"C.
501	LIGHTING TRANSFORMER SECONDARY FEEDER	208/120V	125A	LIGHTING TRANSFORMER SECONDARY	LIGHTING PANEL	--	3#1 AWG, #6 GND. 1-1/2"C.
600	ODOR CONTROL UNIT	480V	--	CONTROL PANEL	ODOR CONTROL UNIT	--	3#8 AWG, #10 GND. 1"C.
700	ODOR CONTROL	120V	--	CONTROL PANEL	ODOR CONTROL UNIT	--	8#14 AWG, #14 GND. 1"C.
1000	LEVEL TRANSMITTER	24VDC	--	LEVEL TRANSMITTER LT-1	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT
1001	LEVEL TRANSMITTER	24VDC	--	LEVEL TRANSMITTER LT-2	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2" CONDUIT
1002	COMBINED LEVEL TRANSMITTERS & FLOAT SWITCH	24VDC	--	CONTROL PANEL	TRANSMITTER JUNCTION BOX	--	2 TRIAD #16, 4#14 AWG, 1"C.
1003	WELL FLOAT SWITCHES	120V	--	TRANSMITTER JUNCTION BOX	FLOAT SWITCH NO.1 THROUGH NO.7	--	MANUFACTURER'S CABLE IN 2-1/2"C
1100	120VAC FOR RECEPTACLE	--	--	LIGHTING PANEL	RECEPTACLE ON PLATFORM	--	2#12 AWG, #12 GND, 3/4"C.
1200	120VAC FOR RECEPTACLE	120V	--	LIGHTING PANEL	RECEPTACLE ON PLATFORM	--	2#12 AWG, #12 GND. 1"C.
1300	SITE LIGHTING	120V	--	SITE LIGHTING SWITCH	SITE LIGHTING	--	2#12 AWG, #12 GND. 1"C.
1300A	SITE LIGHTING	120V	--	LIGHTING PANEL	SITE LIGHTING SWITCH	--	2#12 AWG, #12 GND. 1"C.

NOTES BY SYMBOL "⟨#⟩":

⟨1⟩ REFER TO SPEC SECTION 16120 FOR CONDUCTOR COLOR CODE.

NO.	DATE	REVISION	APP.

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FB NO. 6399

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

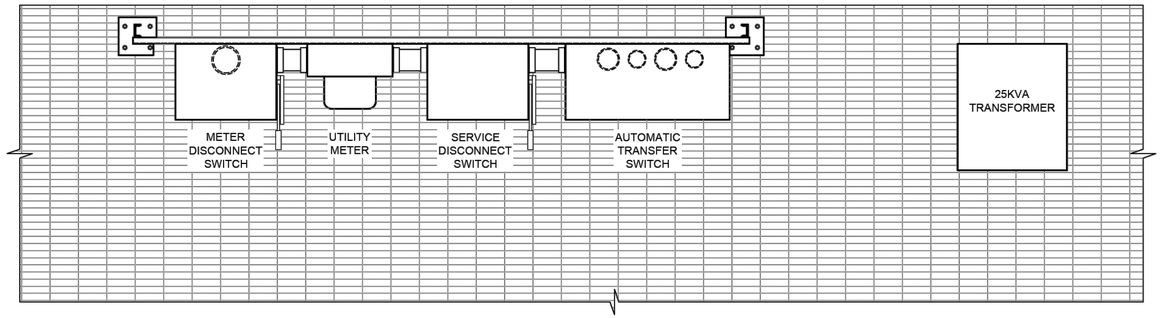
KINGWOOD PLACE SOUTH LIFT STATION
ELECTRICAL
CONDUIT SCHEDULE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 241 OF 298 E-506	

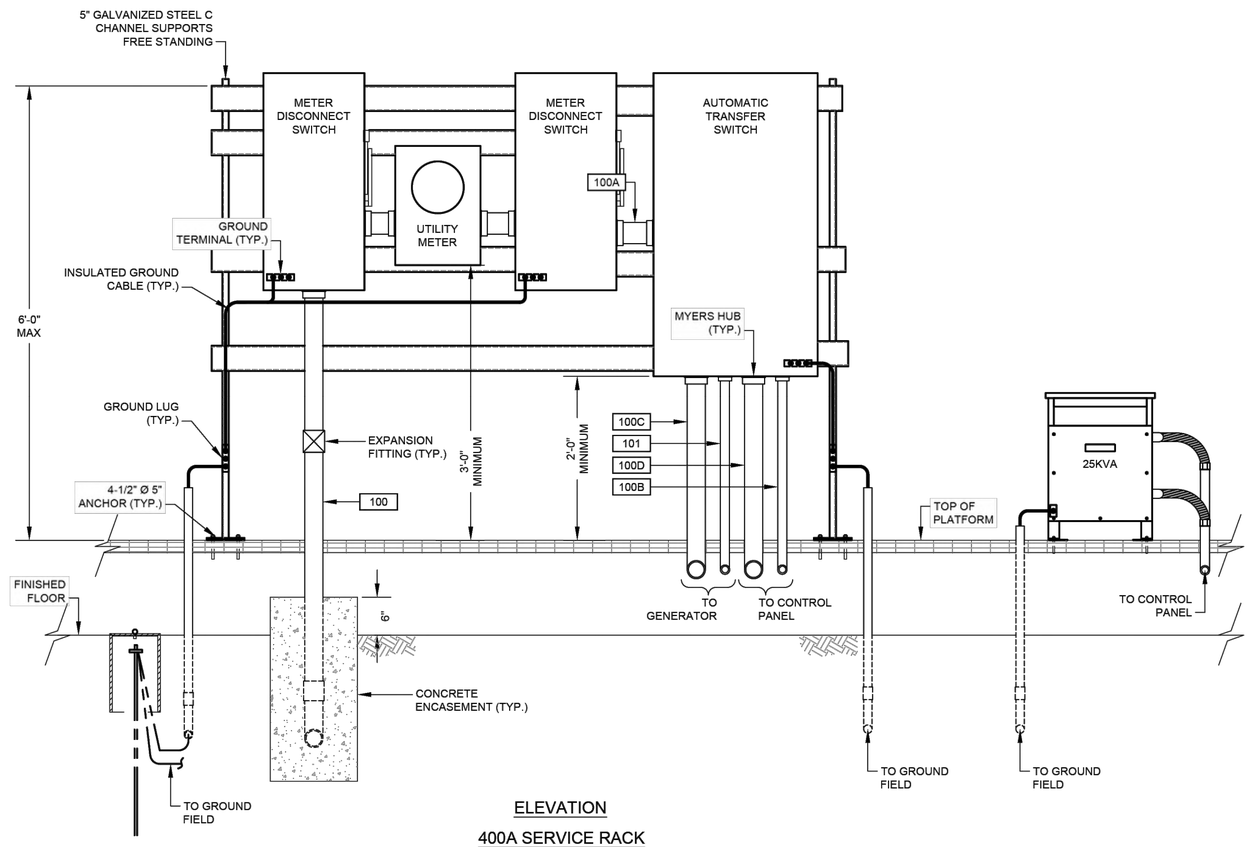
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PLAN VIEW



ELEVATION

400A SERVICE RACK

DETAIL 1

NTS -

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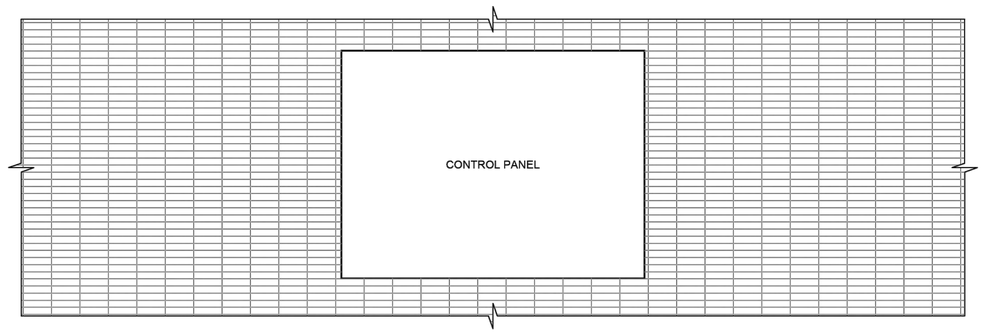
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

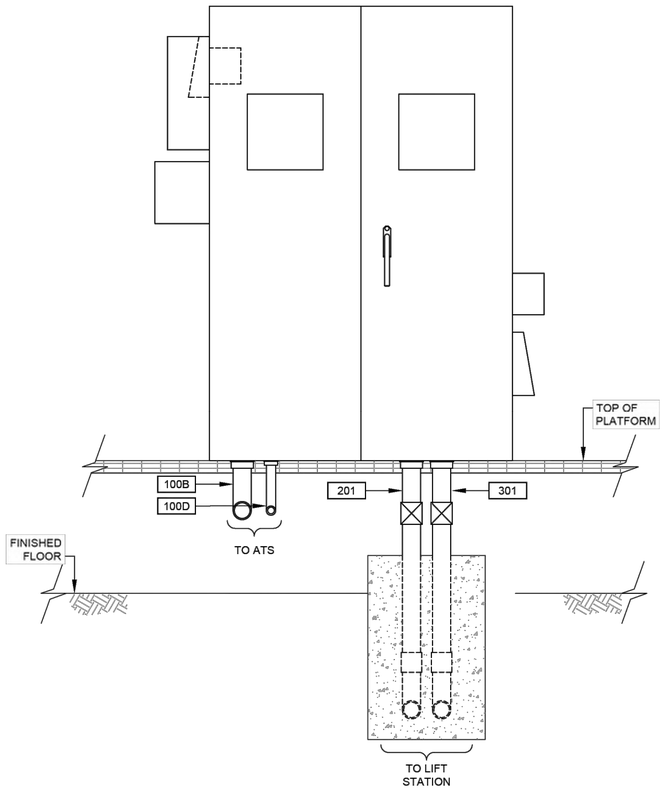
KINGWOOD PLACE SOUTH LIFT STATION
ELECTRICAL
SERVICE RACK DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 242 OF 298	E-507

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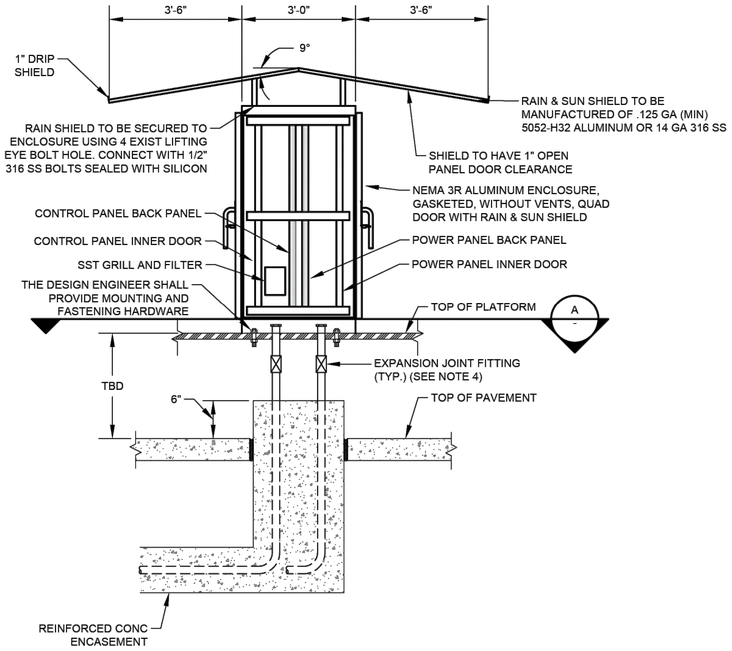


PLAN VIEW



CONTROL PANEL ELEVATION

DETAIL 1 / NTS

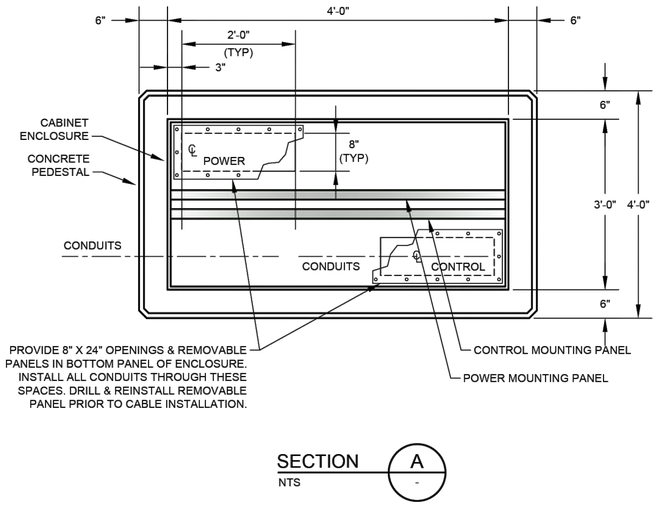


CONTROL CABINET ENCLOSURE WITH PLATFORM
(SEE NOTE 6)

DETAIL 2 / NTS

GENERAL NOTES:

1. REFER TO SPECIFICATION SECTION 13325 PROCESS CONTROL SYSTEMS CONTROL PANELS FOR PANEL DIMENSIONS.
2. COMMUNICATION PANEL TO BE INSTALLED ABOVE SERVICE RACK ELEVATION.
3. EXPANSION JOINT FITTINGS AS REQUIRED.
4. REFER TO SERVICE RACK FOR DETAIL.
5. POWER FACTOR CAPACITOR TO BE MOUNTED OUTSIDE SIDE WALL OF THE CONTROL CABINET.
6. REFER TO STRUCTURAL DRAWINGS FOR PLATFORM DETAIL.



SECTION A / NTS

NO.	DATE	REVISION	APP.

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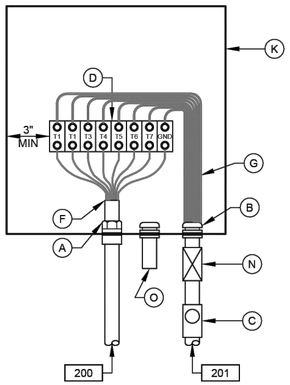
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
ELECTRICAL
CONTROL CABINET ENCLOSURE DETAIL

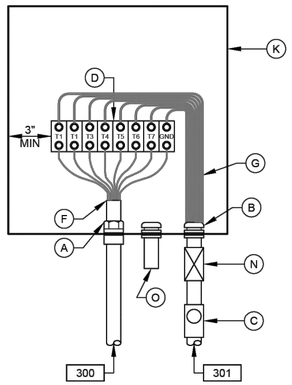
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 243 OF 298	E-508

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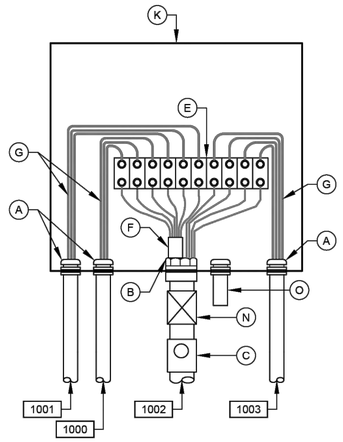
JUNCTION BOX NO.1

DETAIL 2
NTS -
(SEE NOTE 7)



JUNCTION BOX NO.2

DETAIL 3
NTS -
(SEE NOTE 7)



LEVEL TRANSMITTER JUNCTION BOX

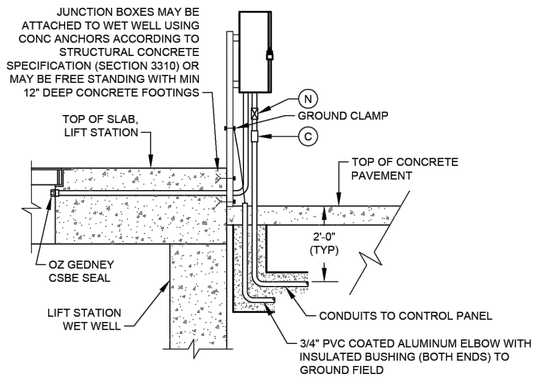
DETAIL 4
NTS -
(SEE NOTE 7)

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.

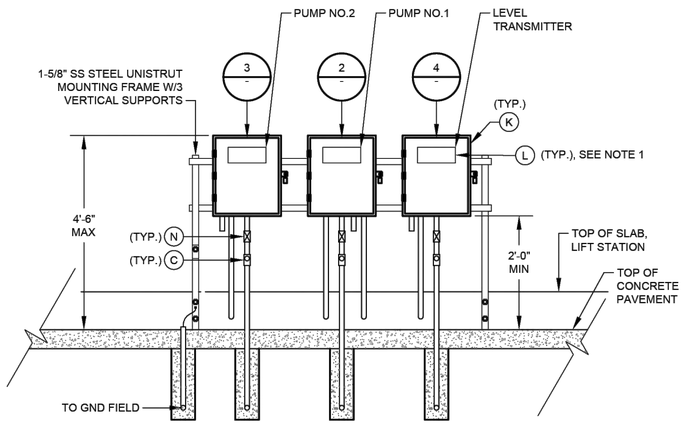
JUNCTION BOX EQUIPMENT SCHEDULE

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 6P 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



TYP SIDE VIEW FOR DETAIL 1

(SEE NOTE 10)



DETAIL 1
NTS -
(SEE NOTE 9 & 12)

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

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FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
ELECTRICAL
JUNCTION BOX DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 244 OF 298	E-509

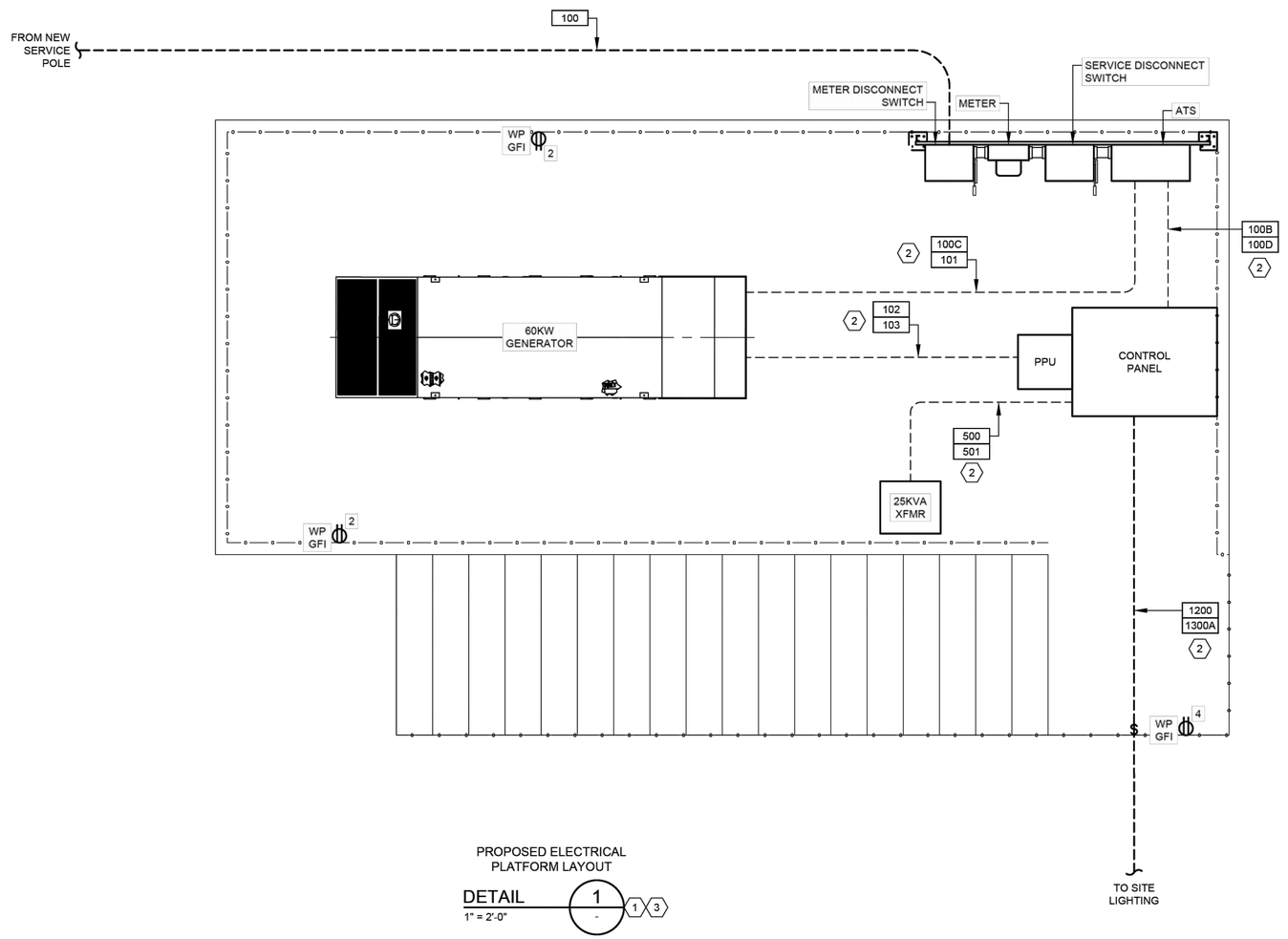
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GENERAL NOTES:

1. ALL NATURAL GAS PIPING FROM CNP GAS TO NATURAL GAS GENERATOR IS TO BE INSTALLED BY A PROFESSIONAL PLUMBER LICENSED IN THE STATE OF TEXAS.

NOTES BY SYMBOL "#":

1. REFER TO STRUCTURAL DRAWINGS FOR PLATFORM DETAILS.
2. CONDUIT TO BE INSTALLED BELOW PLATFORM.
3. GENERATOR NOISE LEVEL SHALL MEET LOCAL NOISE REQUIREMENTS AT 65dBA DAYTIME AND 58 dBA NIGHTTIME.



PROPOSED ELECTRICAL PLATFORM LAYOUT

DETAIL 1 (1) (3)
1" = 2'-0"

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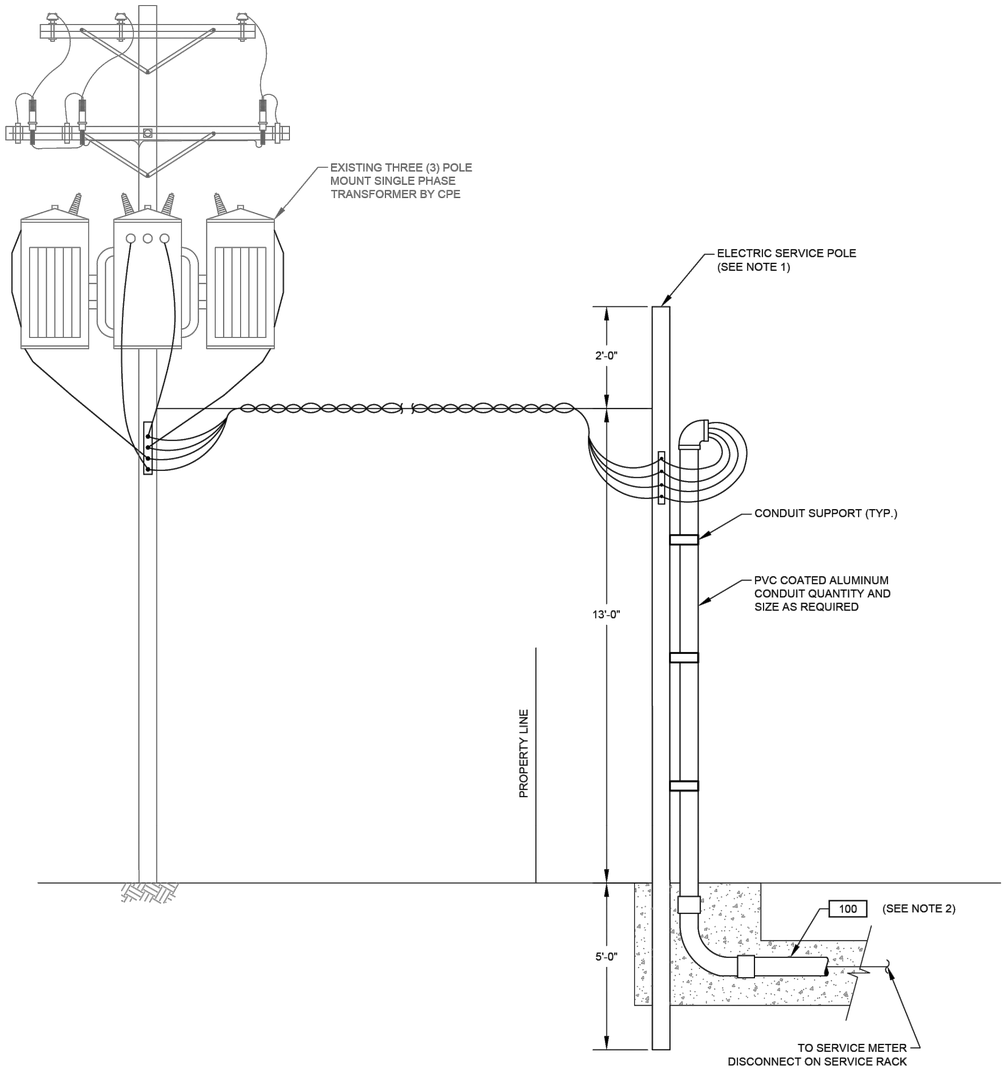
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CITY OF HOUSTON
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LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
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KINGWOOD PLACE SOUTH LIFT STATION
ELECTRICAL
PROPOSED ELECTRICAL PLATFORM LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 245 OF 298	E-510



TYPICAL ELECTRICAL SERVICE ENTRANCE

FOR POWER SUPPLY BELOW 500KVA

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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CITY OF HOUSTON

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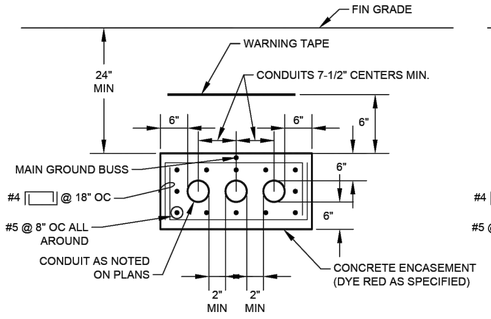
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND Ggolf COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
ELECTRICAL
SERVICE POLE DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 246 OF 298	E-511

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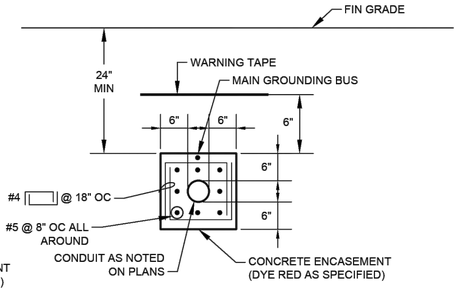
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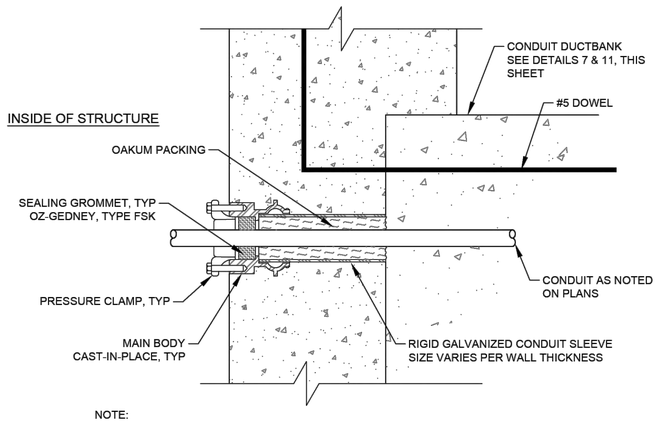
TYP MULTI-CONDUIT DUCTBANK SECTION

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

DETAIL 1 / NTS



TYP SINGLE-CONDUIT DUCTBANK SECTION

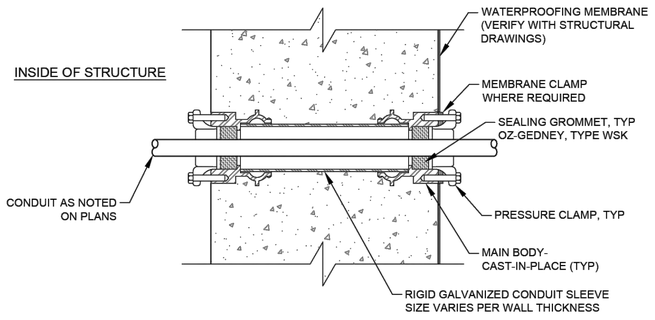


NOTE:

WALL SEAL SHOWN IS TYPICAL FOR EACH CONDUIT IN DUCTBANK.

SINGLE ENDED TYPE

FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS ENCASED IN CONCRETE

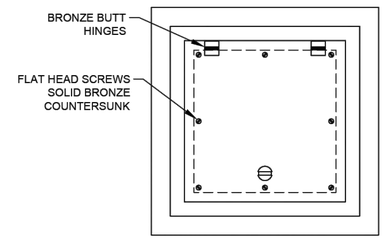


DOUBLE ENDED TYPE WITH MEMBRANE

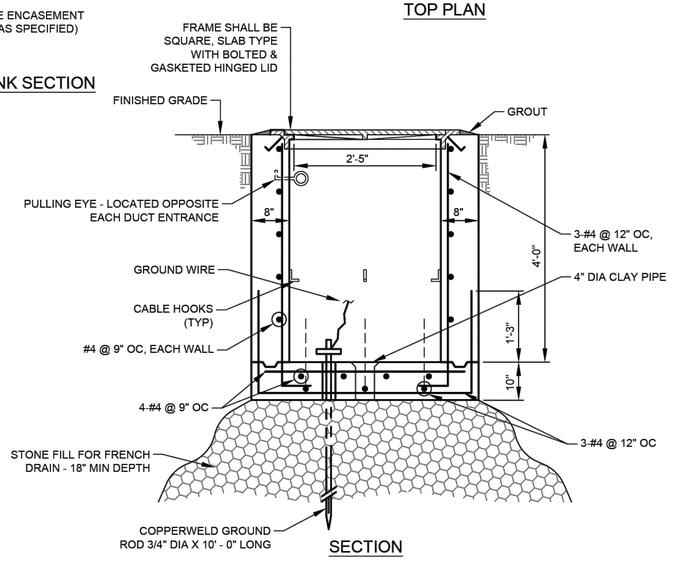
FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS ENCASED IN CONCRETE

TYPICAL CONDUIT SEALS

DETAIL 4 / NTS



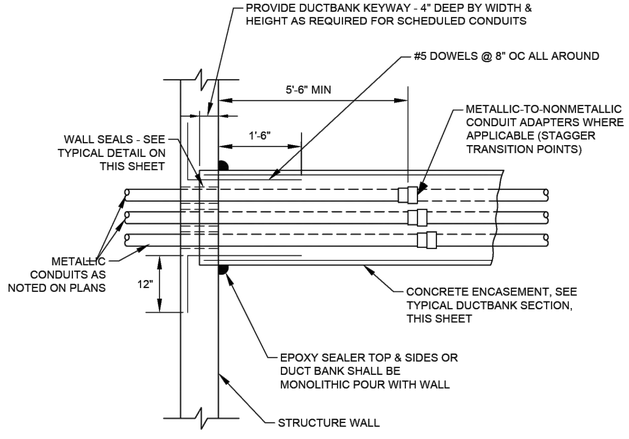
TOP PLAN



SECTION

TYPICAL ELECTRICAL HANDHOLE CONSTRUCTION

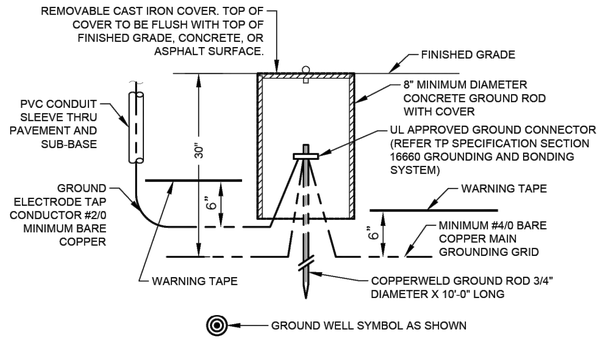
DETAIL 2 / NTS



PLAN

TYPICAL DUCTBANK ENTRANCE AT STRUCTURE WALL

DETAIL 5 / 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

NO.	DATE	REVISION	APP.

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

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FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
ELECTRICAL
ELECTRICAL TYPICAL DETAILS
(SHEET 1 OF 2)

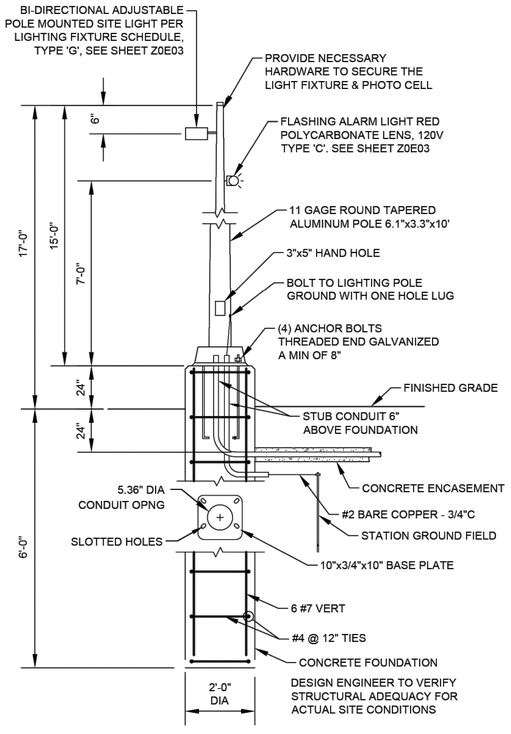
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DRAWING SCALE	
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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 247 OF 298	E-513

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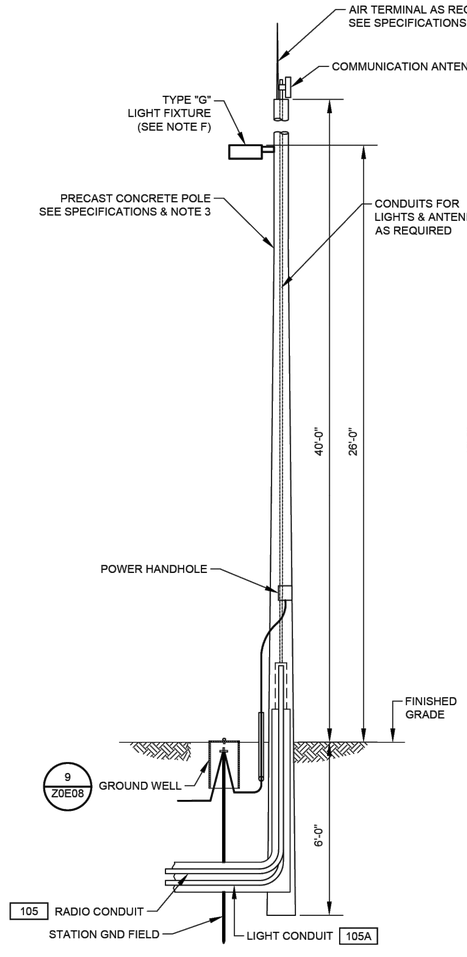
1. ON GROUND WIRE TERMINATION'S, ALL PAINTED OR COATED METAL SURFACES SHALL BE REMOVED AND CLEANED TO BARE METAL. TO OBTAIN A SOUND GROUND CONNECTION. ONCE INSTALLED APPLY PROTECTIVE COATING ON BARE METAL AREAS PER MANUFACTURER REQUIREMENTS.
2. PRECAST CONCRETE POLE TO MOUNT THE RADIO RECEIVER.
3. 1"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

NO.	DATE	REVISION	APP.



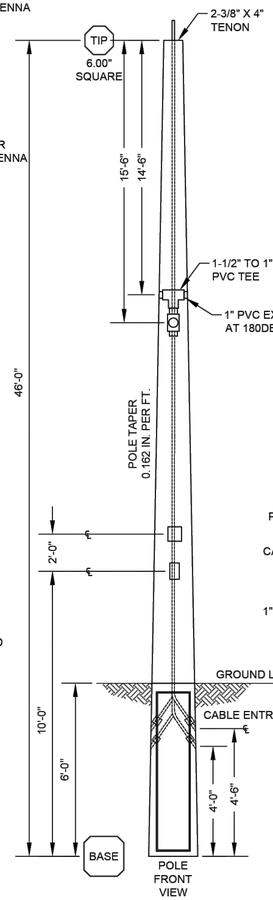
TYPICAL YARD LIGHT

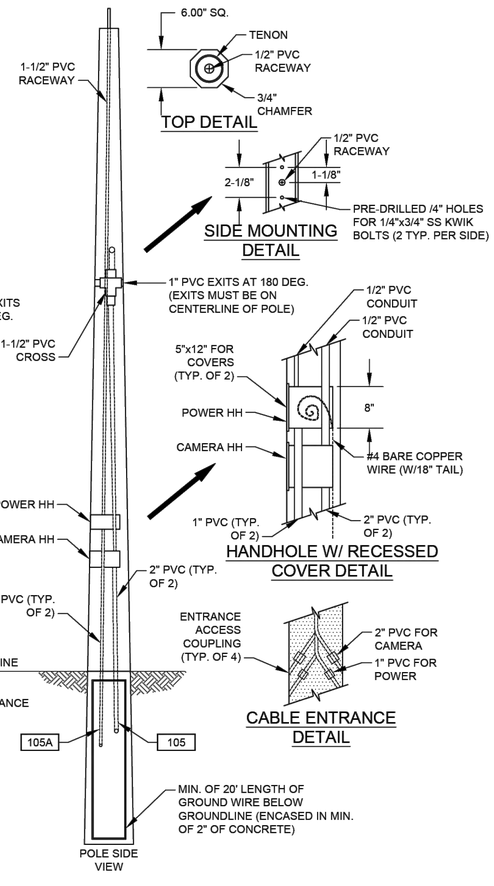
DETAIL 1
NTS



COMMUNICATION POLE MOUNTING DETAIL

DETAIL 2
NTS





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DATE: 2/25/2026

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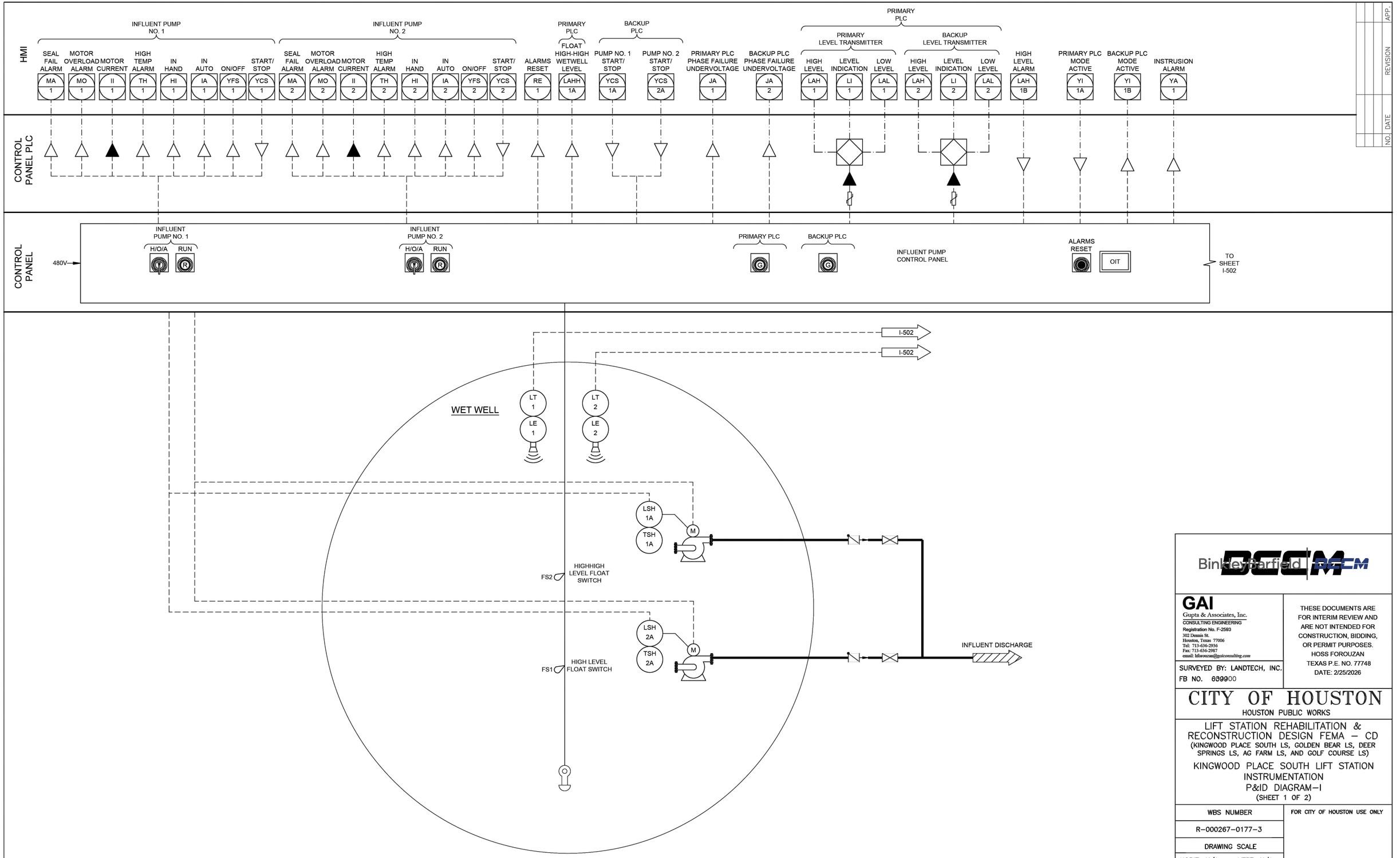
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
ELECTRICAL
ELECTRICAL TYPICAL DETAILS
(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 248 OF 298	E-514

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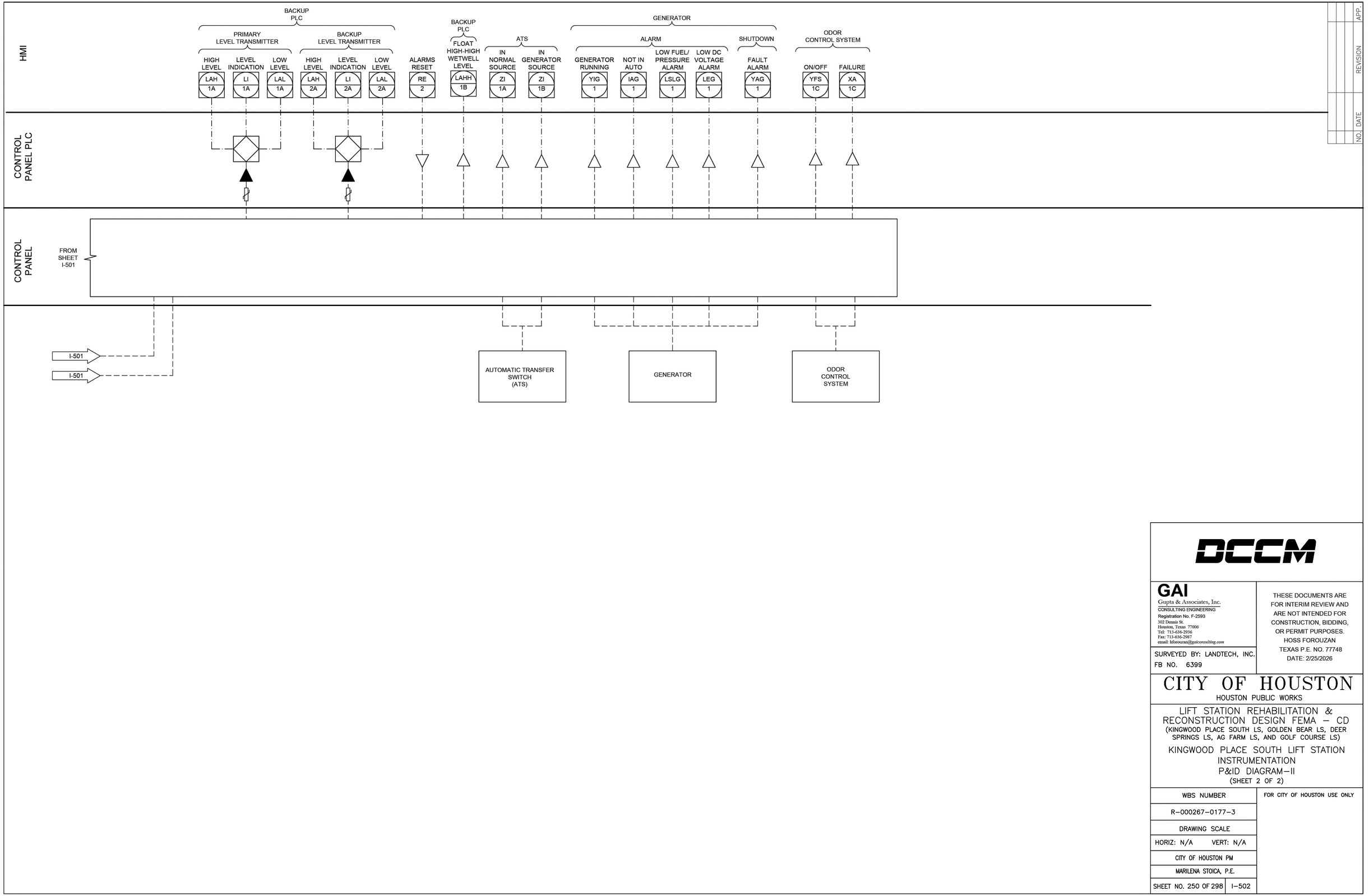
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KINGWOOD PLACE SOUTH LIFT STATION
INSTRUMENTATION
P&ID DIAGRAM–I
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
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HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 249 OF 298	I–501

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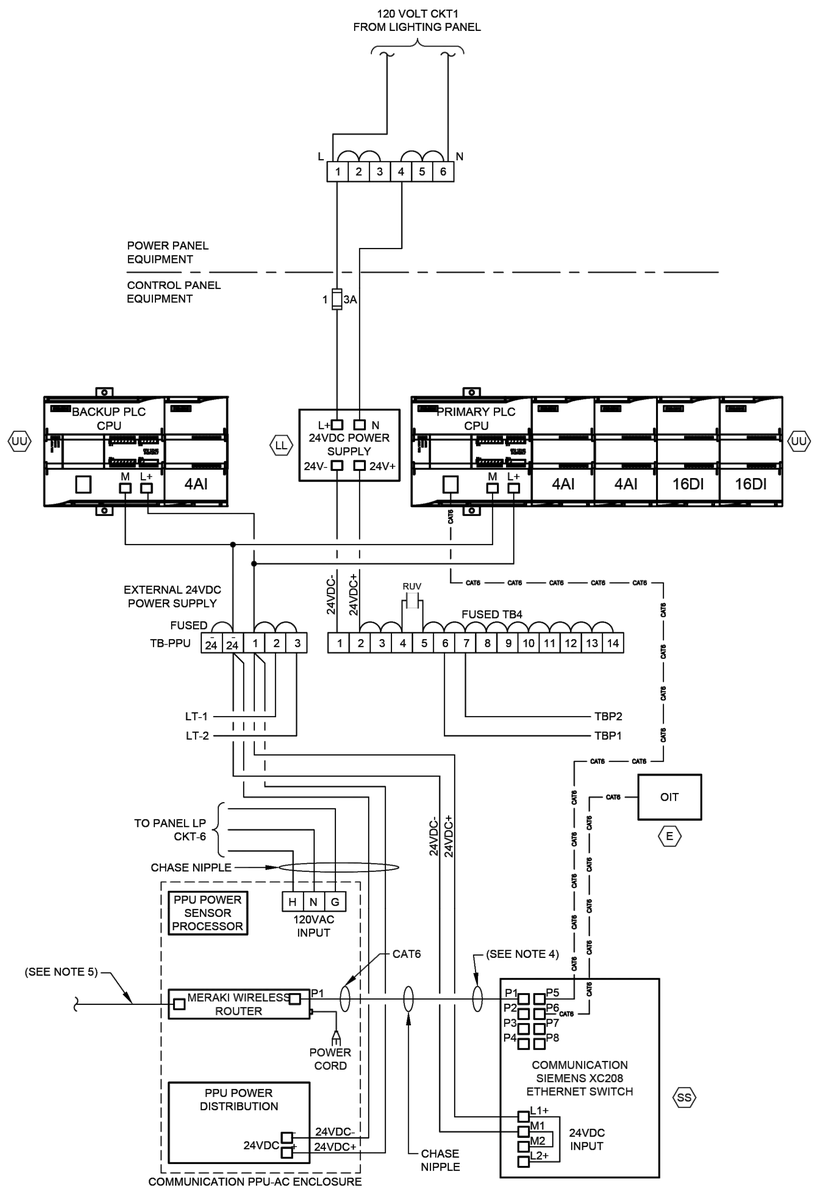
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KINGWOOD PLACE SOUTH LIFT STATION
INSTRUMENTATION
P&ID DIAGRAM–II
(SHEET 2 OF 2)

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MARILENA STOICA, P.E.	
SHEET NO. 250 OF 298 I–502	

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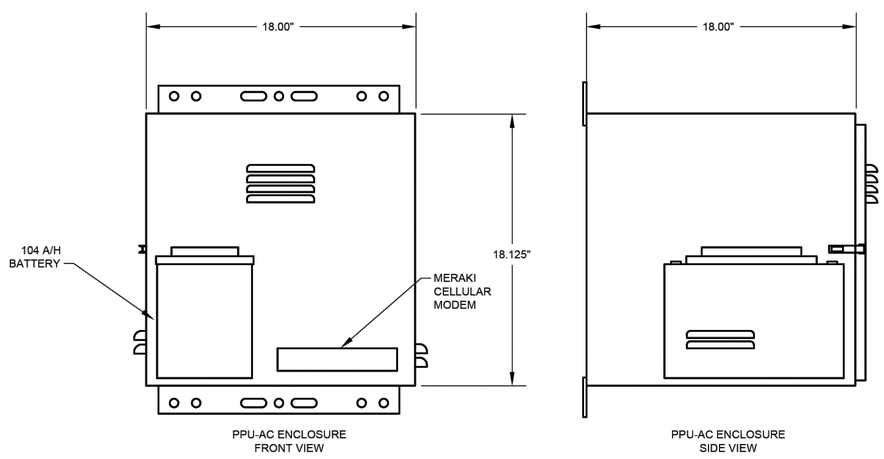


CONTROL POWER &
COMMUNICATIONS WIRING

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. CAT6 ETHERNET CABLE FOR MERAKI CELLULAR ROUTER (P1).
5. CAT6 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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KINGWOOD PLACE SOUTH LIFT STATION
INSTRUMENTATION
COMMUNICATION DIAGRAM

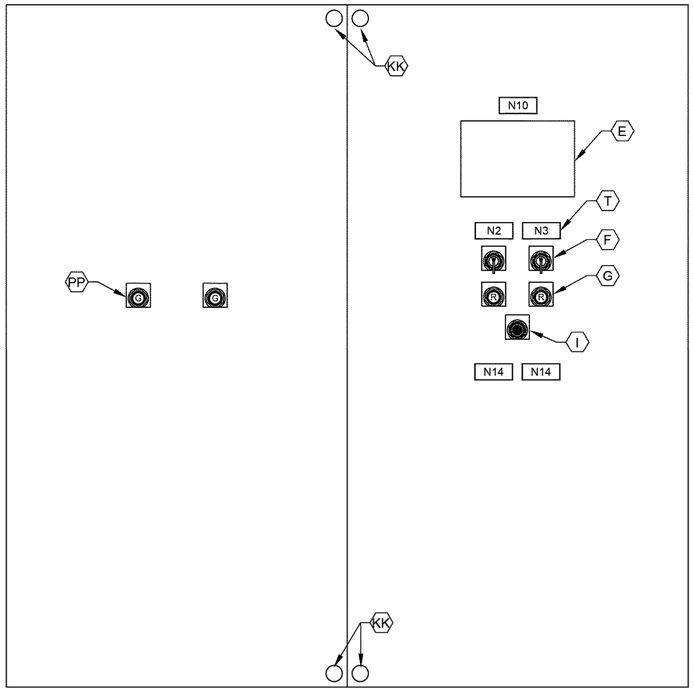
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MARILENA STOICA, P.E.	
SHEET NO. 251 OF 298	I-503

FILE PATH: Q:\...\I-504 (KINGWOOD PLACE SOUTH).dwg PLOT STYLE: G4ltctb PLOTTED: 2/23/2026 8:12:24 AM

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	3	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

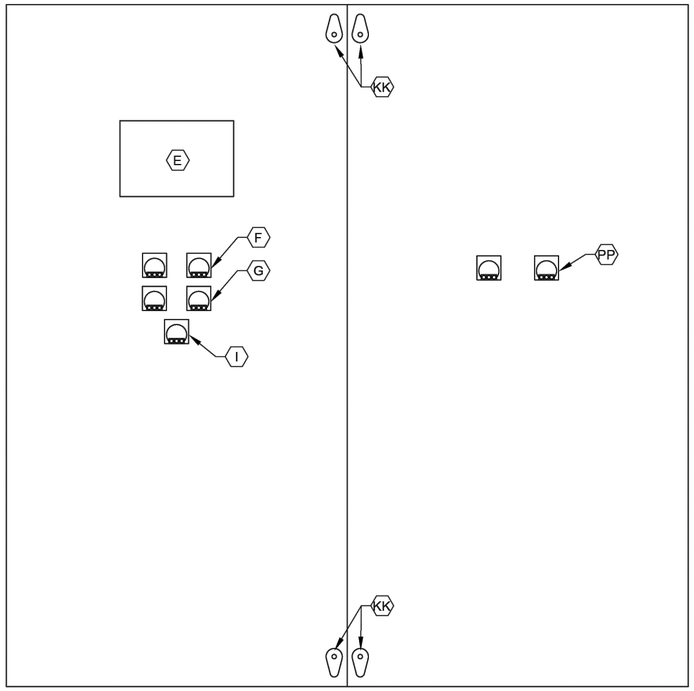
* - AS SCHEDULED



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.

NO.	DATE	REVISION	APP.

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TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON

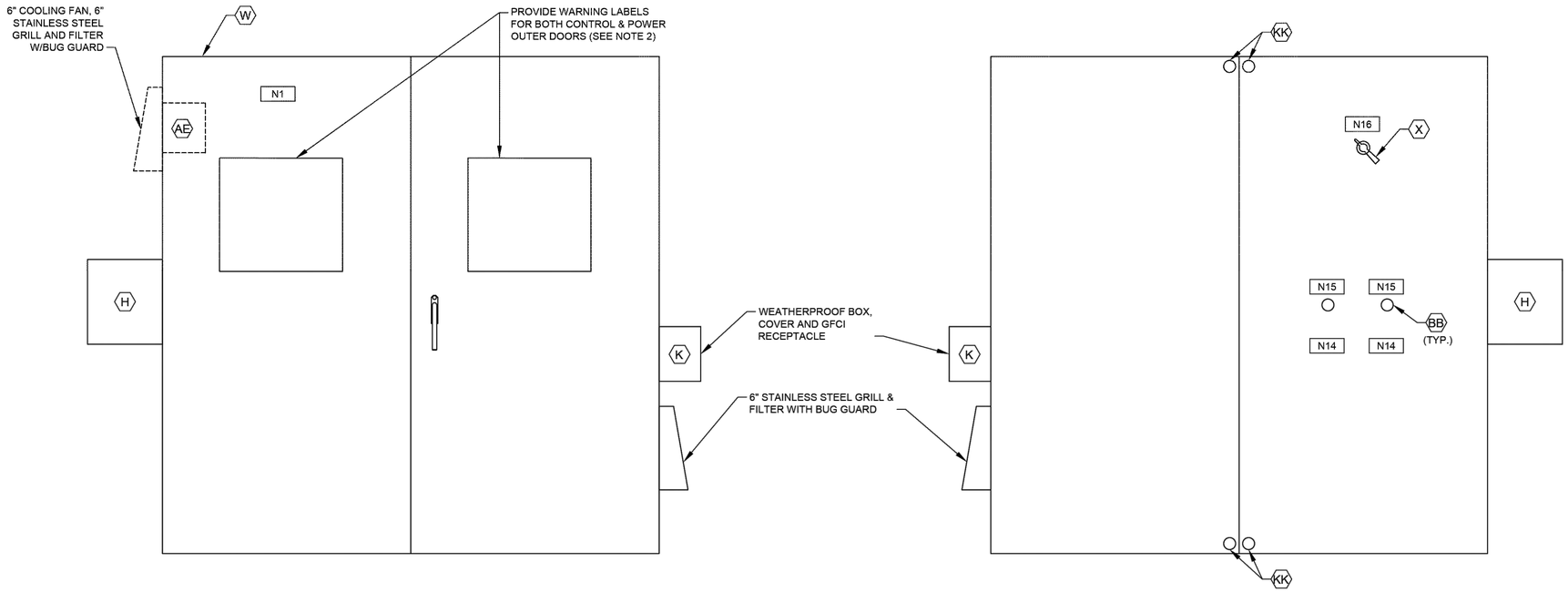
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION INSTRUMENTATION
CONTROL CAB. EQUIP. LAYOUT & SCHD.
XXX (SHEET ## OF ##)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 252 OF 298	I-504

FILE PATH: G:\Projects\2015\2015-0177-3 Kingwood Place South LS (15)\CAD\Sheets\I-505.dwg PLOT STYLE: Gaitctb PLOTTED: 2/23/2026 8:12:24 AM



CONTROL CABINET (CONTROL SIDE)
OUTER DOOR

ELEVATION

NTS

CONTROL CABINET (POWER SIDE)
INNER DOOR

ELEVATION

NTS

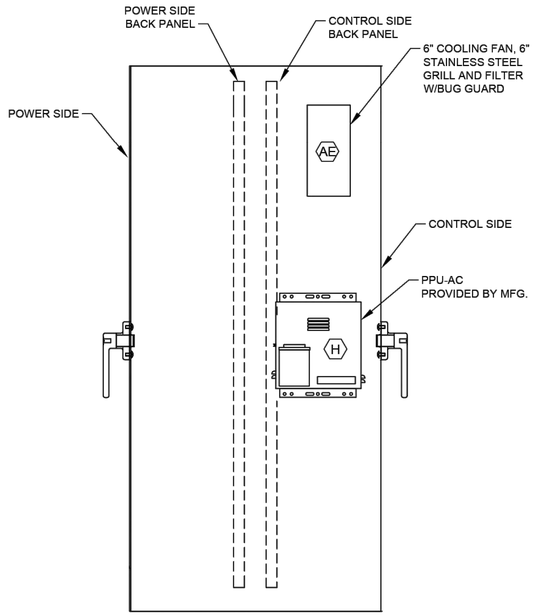
(SEE NOTE 1)

NOTES:

1. SEE SHEET I-503 FOR EQUIPMENT SCHEDULE.
2. REFER TO NEC SECTIONS 110.16 & 110.21

NAMEPLATE SCHEDULE

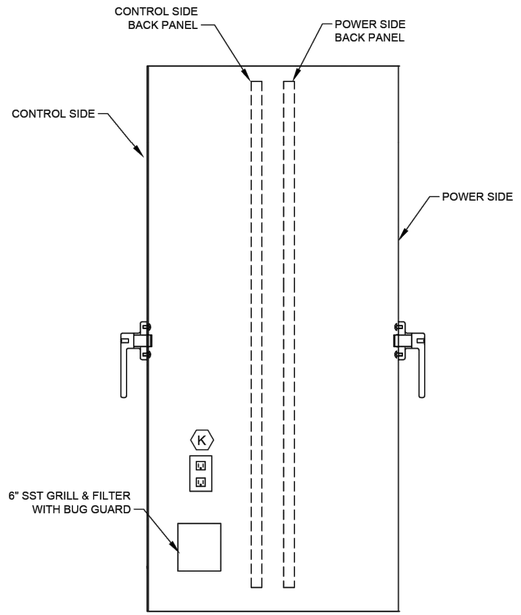
DESIGNATION	ENGRAVED	DESIGNATION	ENGRAVED
N1	PUMP STATION DESIGNATION	N8	NOT USED.
N2	PUMP NO. 1	N9	NOT USED.
N3	PUMP NO. 2	N10	PROGRAMMING SCREEN
N4	NOT USED.	N11	NOT USED.
N5	NOT USED.	N12	PRIMARY PLC
N6	NOT USED.	N13	BACKUP PLC
N7	NOT USED.	N14	MOTOR DATA
			HORSEPOWER (OUTPUT) ----------
			RPM AT 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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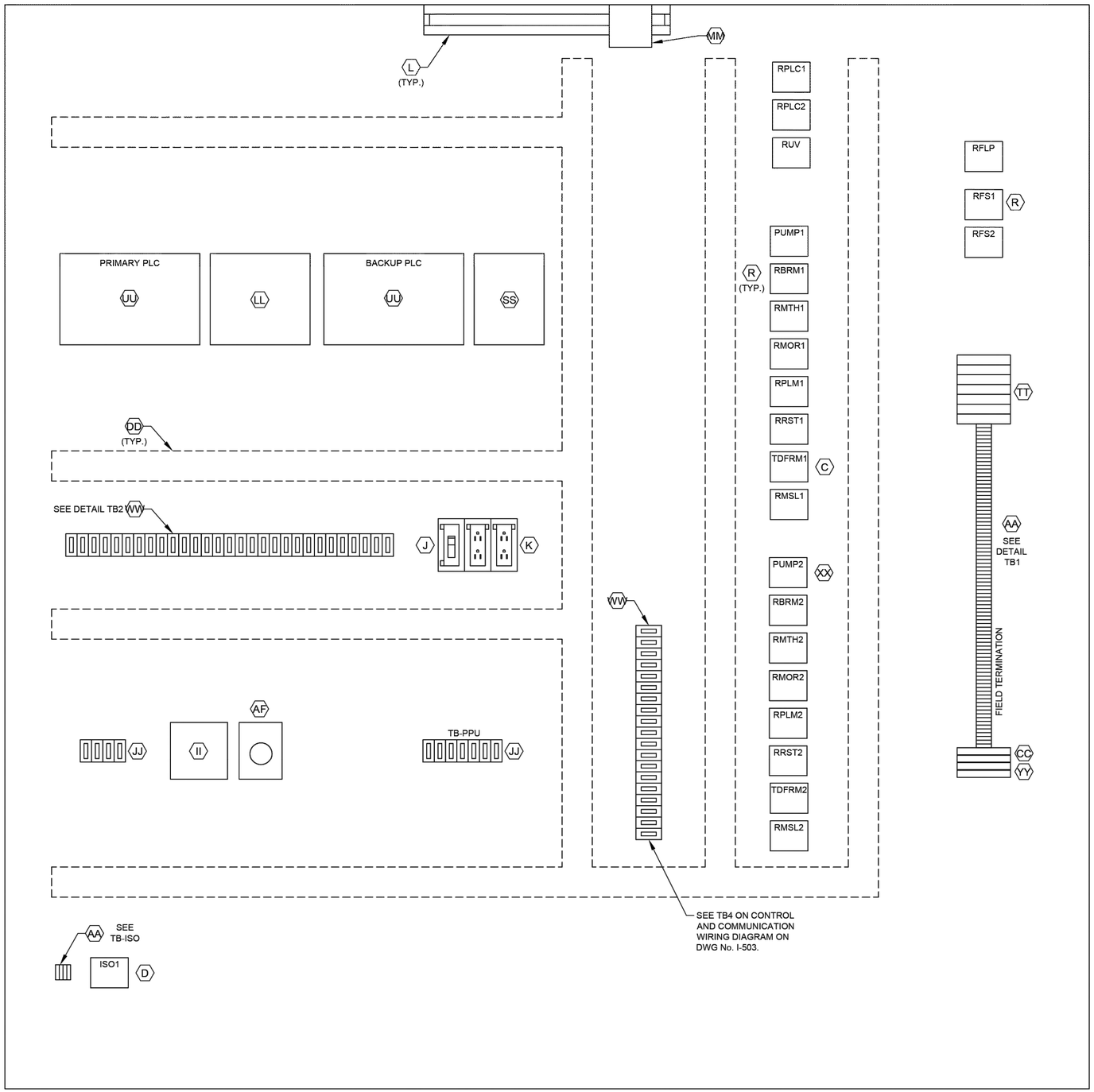
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION INSTRUMENTATION
CONTROL CABINET EQUIPMENT LAYOUT–I
(SHEET 1 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 253 OF 298	I–505

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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

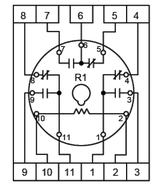
36A
37A
50
52
54
52A
54A
L+
M
35B
38B
41B
47B
13B
13AB
13GB
L+
M
14B
14AB
14GB
L+
M
13
13A
13G
14
14A
14G
SPARE
18
SPARE
28
29
32
35B
33
42
44
SPARE
103
104
115
109
110
118
120
121
122
123
SPARE
209
210
211
218
220
222
223

DETAIL TB2

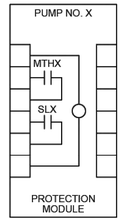
1500
1501
1503
1504

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.

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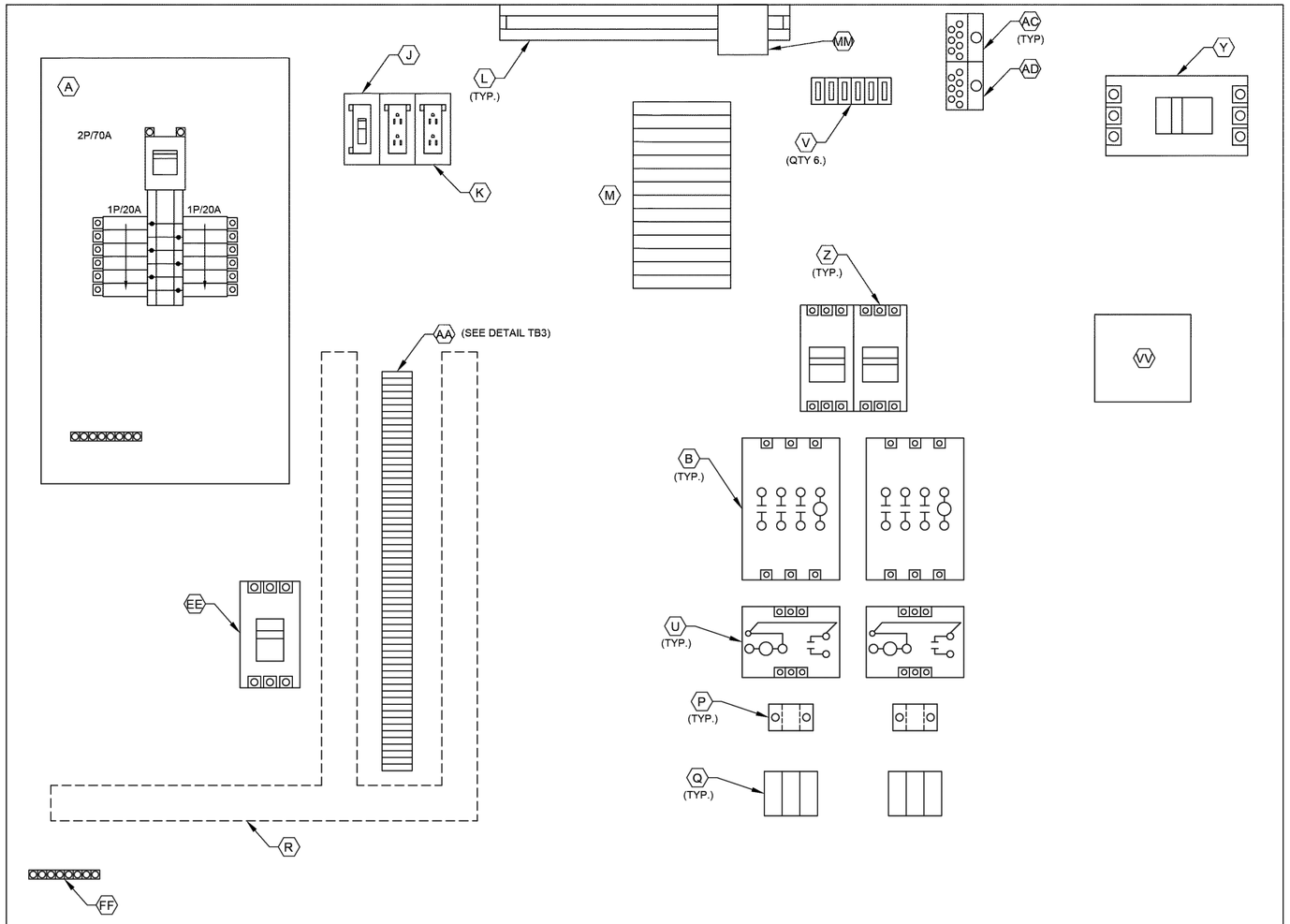
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION INSTRUMENTATION
CONTROL CABINET EQUIPMENT LAYOUT–II
(SHEET 2 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 254 OF 298	I–506

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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

DETAIL TB3

NOTES:

1. SEE SHEET I-504 FOR EQUIPMENT SCHEDULE.

NO.	DATE	REVISION	APP.

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HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION INSTRUMENTATION
CONTROL CABINET EQUIPMENT LAYOUT–III
(SHEET 3 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 255 OF 298	I-507

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PLOT STYLE: G4bctb
FILE PATH: C:\Users\...\(KINGWOOD PLACE SOUTH).dwg

NO.	DATE	REVISION	APP.

FIELD

CONTROL PANEL

DOOR

INTERIOR PANEL

PLC

120 VAC POWER

L1 — L1A — L1N

JE-1 CONTROL POWER SURGE PROTECTOR (TT)

24VDC

3 — 3N

120V CKT3 FROM LIGHTING PANEL — L3A — 20A — T-STAT (TT) — AE — FAN

RPLC3 (11, 8)

RFS3 (1, 3)

OIT (E)

ZS-1
AUTO TRANSFER SWITCH CONTACTS SHOWING SOURCE OF POWER (SEE NOTE 1)

ZI-1A — 49 / 50

ZI-1B — 51 / 52

GENERATOR CONTACTS SHOWING STATUS AND ALARMS (SEE NOTE 1)

YIG-1 — 53 / 54

IAG-1 — 55 / 56

LSLG-1 — 57 / 58

LEG-1 — 59 / 60

YAG-1 — 61

ODOR SYSTEM

XA-1B — 62 / 63

YCS-1B — 64

LEVEL TRANSMITTER J-BOX

HIGH LEVEL ALARM FS1 — 1500 / 1501

HIGH-HIGH LEVEL ALARM FS2 — 1503 / 1504

FLOAT SWITCHES LOCATED INSIDE WET WELL

120V CKT10 FROM LIGHTING PANEL — L10A — 20A — RUV (6, 7)

INTRINSICALLY SAFE RELAY — ISO 1 (5, 1, 3, 6, 4)

RFS1 (R) (2, 10)

RFS2 (R) (2, 10)

RFS1 (6, 7)

RFS1 (1, 3)

MATCHLINE 1

BACK UP PLC

36A	50mA	I0.1	BACKUP PLC MODE ACTIVE
37A	50mA	I0.2	FLOAT HIGH-HIGH LEVEL ALARM ALL PUMPS ON
50	50mA	I0.4	ATS IN NORMAL SOURCE
52	50mA	I0.5	ATS IN EMERGENCY SOURCE
54	50mA	I0.7	SPARE
637	50mA	I7.0	GENERATOR RUNNING
638	50mA	I7.1	GENERATOR NOT IN AUTO ALARM
639	50mA	I7.2	GENERATOR LOW FUEL/PRESSURE ALARM
640	50mA	I7.3	GENERATOR LOW DC VOLTAGE ALARM
641	50mA	I7.4	GENERATOR FAULT SHUTDOWN ALARM
642	50mA	I7.5	ODOR SYSTEM RUNNING
643	50mA	I7.6	ODOR SYSTEM FAILURE ALARM
52A	50mA	I0.2	FLOAT HIGH-HIGH LEVEL ALARM ALL PUMPS ON
54A	50mA	I0.3	SPARE

NOTES:

1. PROVIDE AUTO TRANSFER SWITCH DRY CONTACT.
2. 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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TEXAS P.E. NO. 77748
DATE: 2/25/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA.–I
(SHEET 1 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 256 OF 298	I–508

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PLOT STYLE: Grayscale.ctb
FILE PATH: C:\Users\...\Control Panel Wiring Diagram (Grayscale SOUTH).dwg

NO.	DATE	REVISION	APP.

FIELD | CONTROL PANEL: DOOR | INTERIOR PANEL | PLC

MATCHLINE 1

120 VAC POWER

24VDC

L1A 3 — 3N L1N

RADAR LEVEL TRANSMITTER JUNCTION BOX

MFG. CABLE

PRIMARY RADAR LEVEL TRANSMITTER LT-1

MFG. CABLE

BACK UP RADAR LEVEL TRANSMITTER LT-2

RBRM1: 5 — R — 2, 10

RBRM2: 6 — R — 2, 10

ANALOG ISOLATOR (YY)

ANALOG ISOLATOR (YY)

ANALOG I/O SURGE SUPPRESSOR (CC)

1004 — 1 — 3 — 2 — 4 — + — 5 — - — 6

1 — 24- — 1002 — 24V-

2 — 11 — 1001 — 1001A — 12 — 1003 — 1003A

1 — 24V+ — 2 — 1001B

3 — 24V+ — 4 — 1003B

BACK UP PLC

L+			CPU POWER
M			CPU COMMON
35B	1A		QO.0 PUMP NO.1 CALL TO RUN
38B	1A		QO.1 PUMP NO.2 CALL TO RUN
41B	1A		QO.2 SPARE
44B	1A		QO.3 SPARE
47B	1A		QO.4 SPARE
13B		50mA	AIO.0 PRIMARY WET WELL LEVEL TRANSMITTER
13AB			
13GB			
L+			CPU POWER
M			CPU COMMON
14B		50mA	AIO.2 BACKUP WET WELL LEVEL TRANSMITTER
14AB			
14GB			
L+			CPU POWER
M			CPU COMMON
13		50mA	AIO.0 PRIMARY WET WELL LEVEL TRANSMITTER
13A			
13G			
14		50mA	AIO.2 BACKUP WET WELL LEVEL TRANSMITTER
14A			
14G			

L1A 3 — 3N L1N

MATCHLINE 2

LEGEND

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

DCCM

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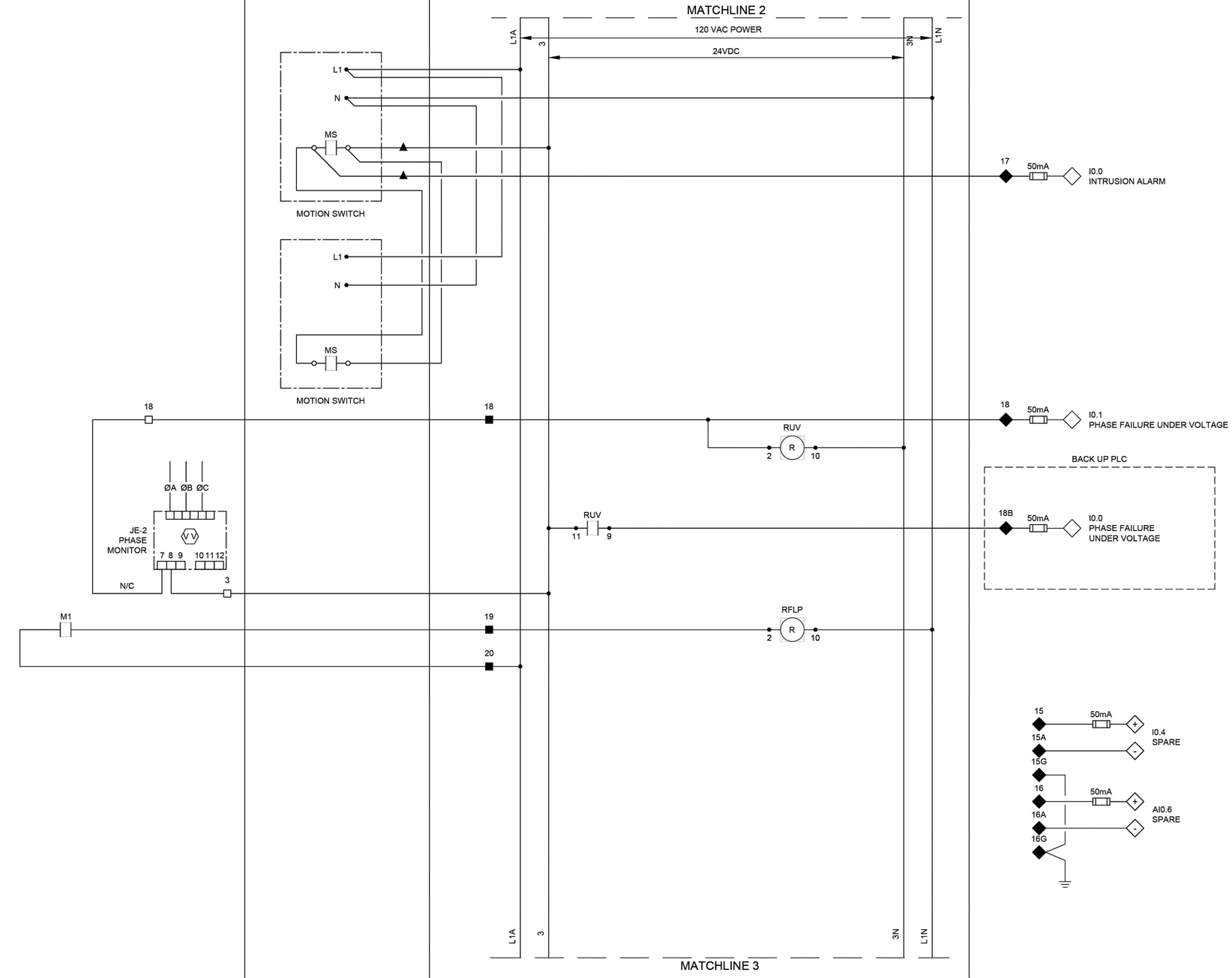
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA.–II
(SHEET 2 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 257 OF 298	I–509

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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

NOTES:

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

NO.	DATE	REVISION	APP.

DCCM

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

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND ARE NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.
HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

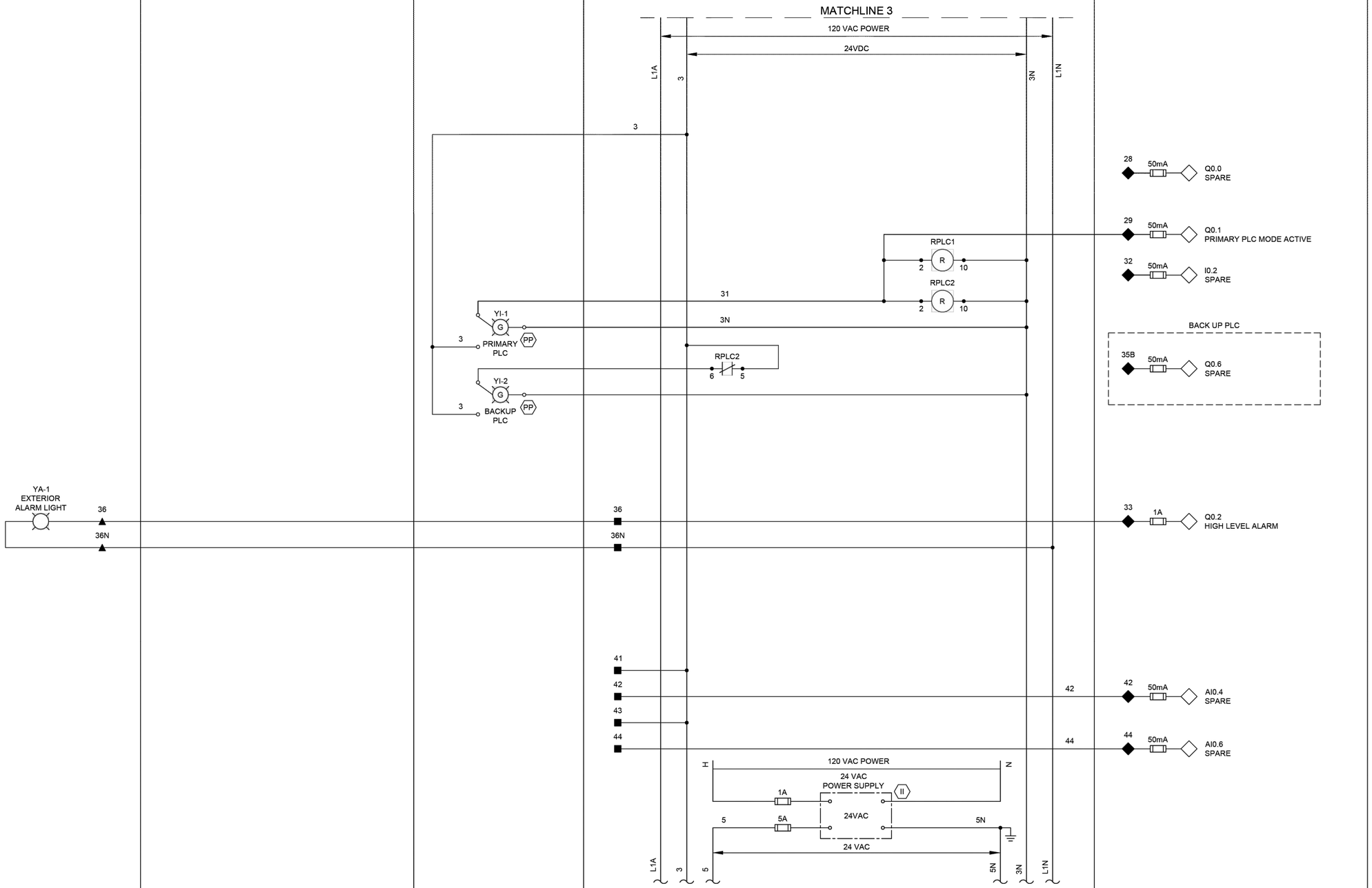
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA.–III
(SHEET 3 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 258 OF 298	I–510

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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CONSULTING ENGINEERING
Registration No. F-2593
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Tel: 713-636-2936
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email: hfprouzan@gaiconsulting.com

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TEXAS P.E. NO. 77748
DATE: 2/25/2026

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION INSTRUMENTATION
CONTROL PANEL CONTROL WIRING DIA.–IV
(SHEET 4 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 259 OF 298	I-511

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FILE PATH: C:\Users\hforouzan\Gupta & Associates, Inc\GAI - Documents\Projects\City of Houston\Kingwood Place South LS\Drawings\Kingwood Place South LS (CE SOUTH).dwg

FIELD | POWER PANEL | CONTROL PANEL: DOOR | CONTROL PANEL: INTERIOR PANEL | PLC

120 VAC POWER
24 VDC
24 VAC
JE-2
TBP1 SEE NOTE 2
L1A
L1N
3N
5N
15
15N
3P1

TSH-1 MOTOR TEMP SWITCH
LSH-1 SEAL LEAK DETECTOR
HS-1A RESET
TO SHEET KP-I-13
M1
PUMP NO.1
TERMINAL JUNCTION BOX
REFER TO SHEET E-505
MOR1
4-20mA CURRENT TRANSDUCER
IE-1 MOTOR OVERLOAD RELAY (MOR) (SEE NOTE 1)
HS-1 H-O-A
YI-1 RUN
ZS-1

PUMP NO. 1 PROTECTION MODULE
LAH-1 SL1
TAH-1 MTH1
RRST1
TO SHEET KP-I-13
RMSL1
RMTH1
TDFRM1
RFS1
RMOR1
RPLC1
RBRM1
RPLM1

103	1A	Q0.4 ALARM RESET
104	50mA	I0.6 ALARM RESET
109	50mA	I1.1 PUMP NO.1 HIGH TEMP ALARM
122	50mA	AI0.8 PUMP NO.1 MOTOR CURRENT
123	50mA	I3.3 PUMP NO.1 MOTOR OVERLOAD
115	50mA	I3.0 PUMP NO.1 IN HAND
121	50mA	I3.1 PUMP NO.1 IN AUTO
118	1A	Q0.7 PUMP NO.1 PLC START/STOP
120	50mA	I1.0 PUMP NO.1 RUN
110	50mA	I3.2 PUMP NO.1 SEAL FAILURE ALARM

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-504.
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.

DCCM

GAI
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Houston, Texas 77006
Tel: 713-636-2936
Fax: 713-636-2987
email: hforouzan@gaiconsulting.com

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION INSTRUMENTATION
PUMP NO.1 CONTROL WIRING DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 260 OF 298	I-512

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NO.	DATE	REVISION	APP.

FIELD | POWER PANEL | CONTROL PANEL — DOOR | 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
M2
TSH-2 MOTOR TEMP SWITCH
LSH-2 SEAL LEAK DETECTOR
PUMP NO.2
T1 T2 T3 G
M1
CT
REFER TO SHEET E-505
TERMINAL JUNCTION BOX
4-20mA CURRENT TRANSDUCER
IE-2 MOTOR OVERLOAD RELAY (MOR) (SEE NOTE 1)
MOR2
RRST2
PUMP NO. 2 PROTECTION MODULE
LAH-2 SL2
TAH-2 MTH2
RMSL2
RMTH2
RFS2
TDFRM2
RMOR2
RPLM2
RPLC1
RBRM2
RPLM2
RFLP
HS-2 H-O-A
ZS-2
YI-2
RUN
3P2
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
218
219
220
221
222
223

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.

DCCM

GAI
Gupta & Associates, Inc.
CONSULTING ENGINEERING
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Houston, Texas 77006
Tel: 713-636-2916
Fax: 713-636-2987
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SURVEYED BY: LANDTECH, INC.
FB NO. 6399

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

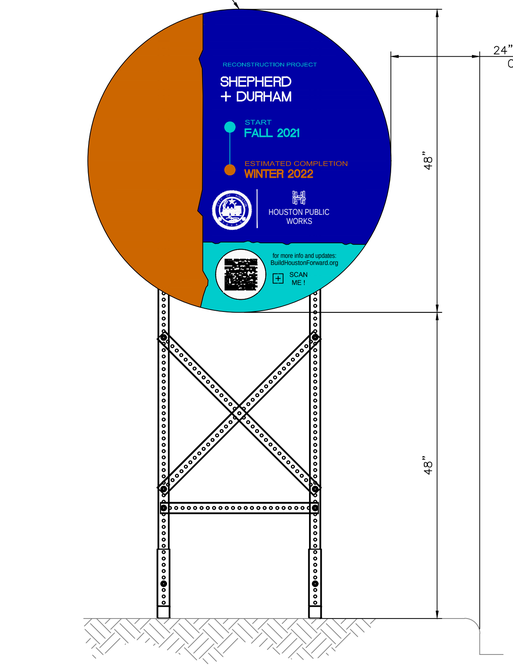
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION INSTRUMENTATION
PUMP NO.2 CONTROL WIRING DIAGRAM

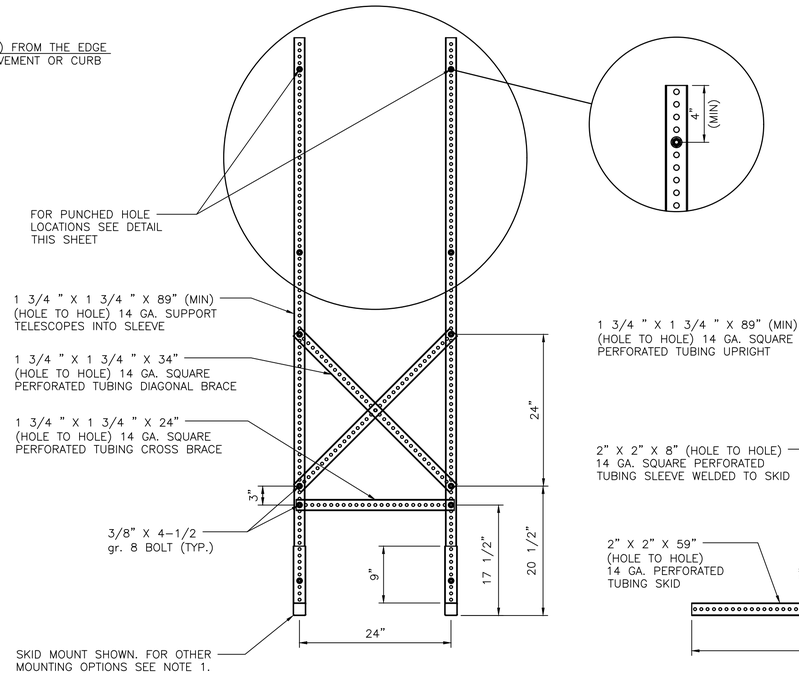
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DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 261 OF 298	I-513

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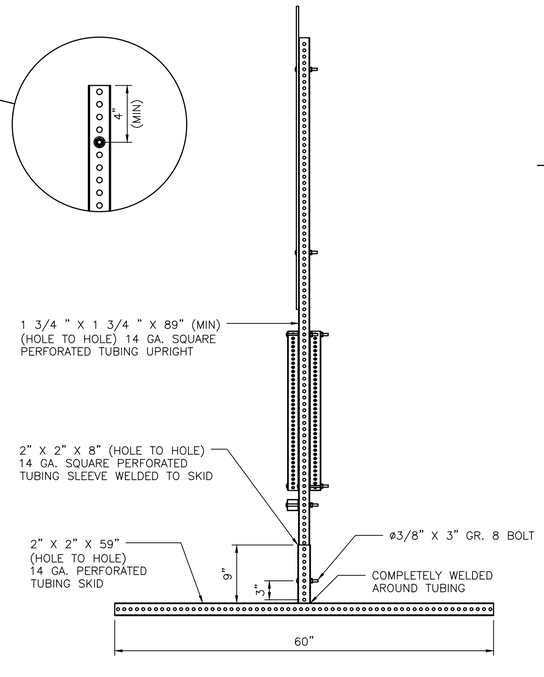


FRONT VIEW

PROJECT SIGN – 48"

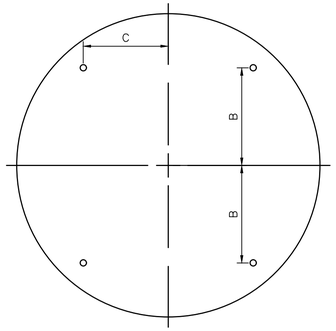


FRONT VIEW



SIDE VIEW

SKID MOUNTED SUPPORTS FOR 48" PROJECT SIGN

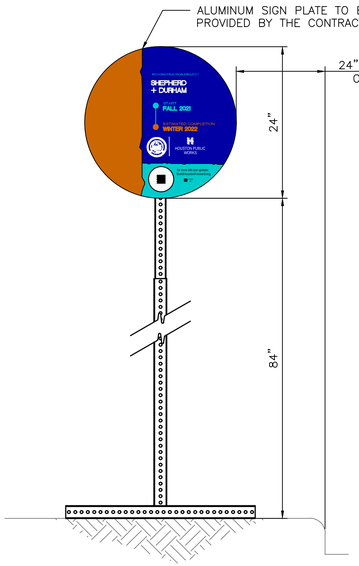


A	B	C	T
24"	15"	12"	0.080"

48" SIGN PLATE HOLE DETAIL

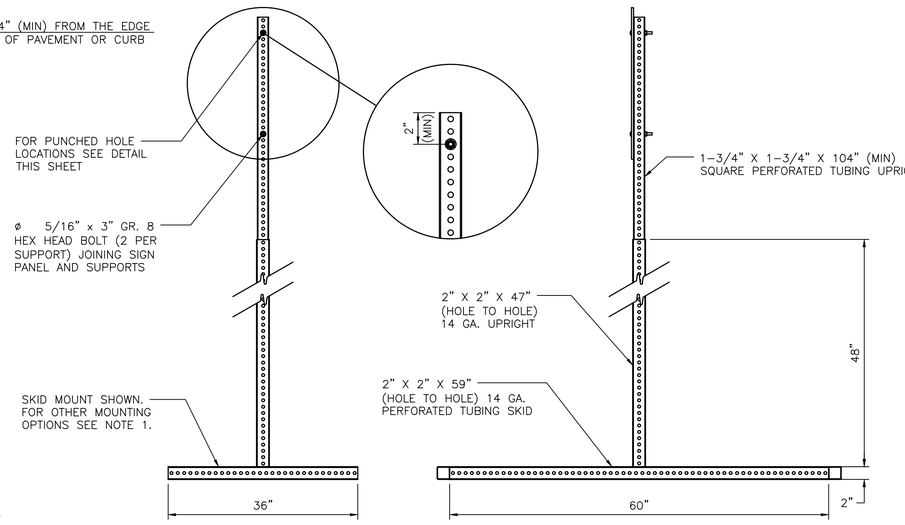
NOTES:

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

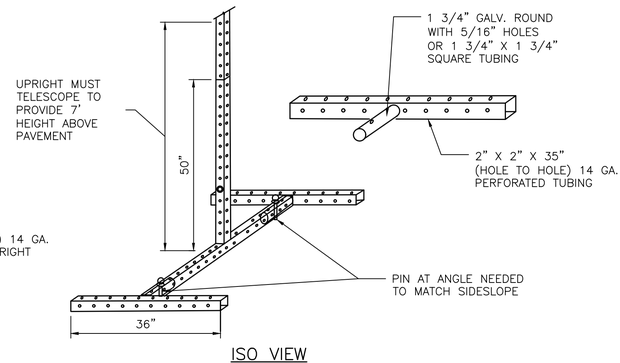
PROJECT SIGN – 24"



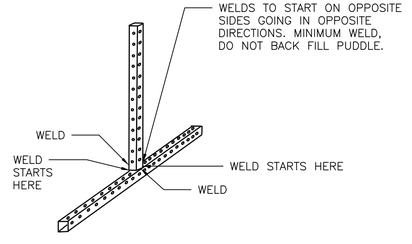
FRONT VIEW

SIDE VIEW

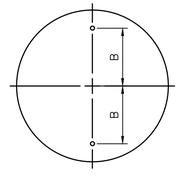
SKID MOUNTED SUPPORTS FOR 24" PROJECT SIGN



ISO VIEW



ISO VIEW



A	B	C
12"	8"	0.080"

24" SIGN PLATE HOLE DETAIL

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

CITY OF HOUSTON

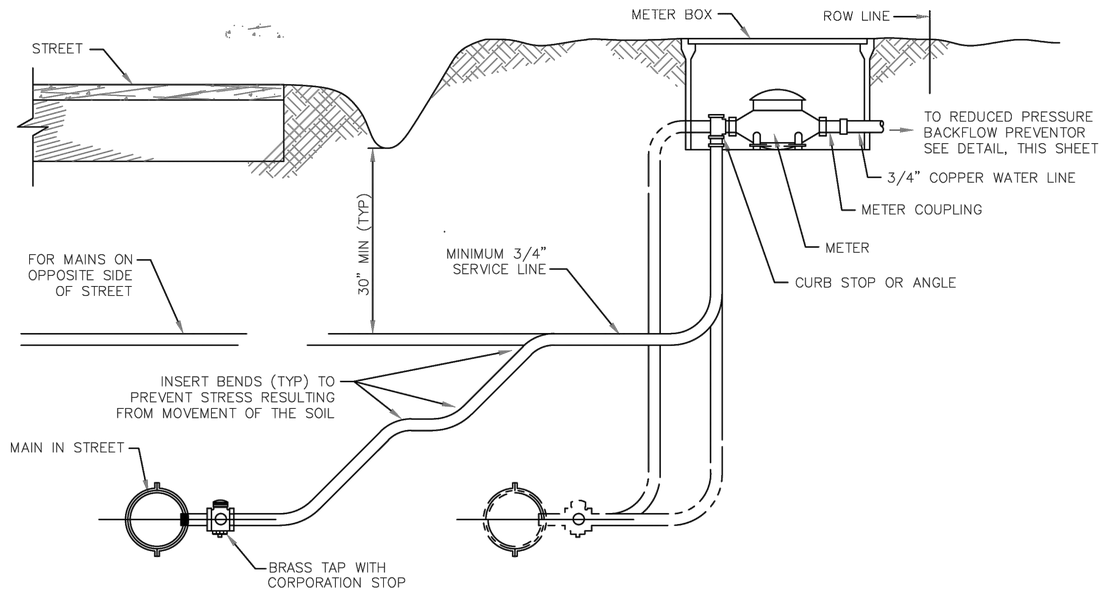
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

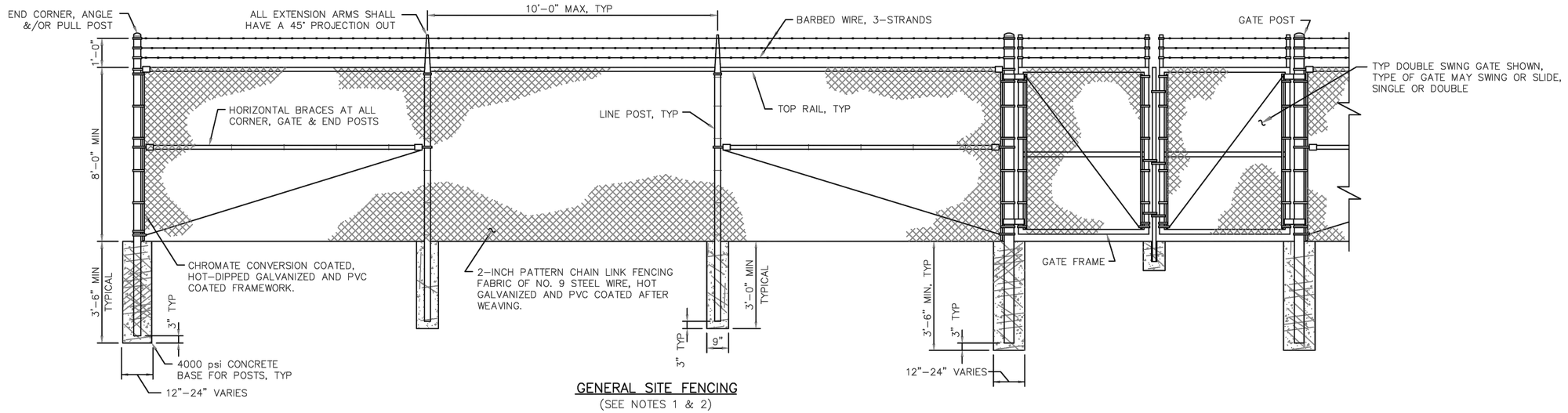
STANDARD DETAIL
CONSTRUCTION SIGN

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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 262 OF 298	D-101

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FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.02_Reference_Files\24-1930-SUB-CIVIL (GENERAL & DETAILS).dwg



TYP WATER SERVICE LINE SECTION & METER SET DETAIL



GENERAL SITE FENCING
(SEE NOTES 1 & 2)

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER
02/20/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

CIVIL DETAILS
WATER

(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=20' VERT: 1"=2'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 263 OF 298	D-102

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AquaSHIELD®
PROTECTIVE ENCLOSURES

Outdoor Enclosure Specifications
Model BFP1-S

1 GENERAL

1.1 WORK INCLUDED

A. Provide manufactured outdoor enclosure for backflow prevention assembly.

1.2 QUALITY ASSURANCE

A. Qualifications: The manufacturer of the outdoor enclosure shall be a company specializing in the field of manufacturing of such enclosures with at least ten (10) years of successful field installations and be ASSE 1060 Seal certified.

1.3 REFERENCES

A. ASSE 1060-Performance Requirements for Outdoor Enclosures for Backflow Prevention Assemblies.
B. ASTM B209

1.4 ACCEPTABLE MANUFACTURERS

A. **AquaSHIELD** or Engineer approved equivalent.

2 PRODUCTS

2.1 MODEL NO. & SIZE

A. Model No. shall be BFP1-S
B. Inside dimensions shall be 30"L x 10"W x 22"H (+ or – 1/2")

2.2 MATERIALS OF FABRICATION

A. Materials for exterior walls shall be 5052-H32 aluminum (.050/18 gauge) and shall comply with ASTM B209. The aluminum shall have a factory mill finish.
B. Insulation shall be a closed cell polyisocyanurate foam core laminated to heavy black glass fiber reinforced facers on each side. The insulation shall have the following properties:
- R-Value – 9.0
- Dimensional Stability - 2% Linear Change
- Compressive Strength - 20 psi and 25 psi
- Product Density - Nominal 2.0 pcf
- Water Absorption - <1% By Volume
- Service Temperature - (-100°F to +250°F)
- Moisture Vapor Transmission - < One (1) Perm
- Flame Spread - 25
- Insulation shall be 1.5" thick

C. Adhesive shall be Hilti brand Product No. CA-3200 and shall have the following features:
- Bonds foam products
- Water resistant bond
- Stays resilient
- Will not freeze
- Freeze/thaw stable

2.3 COMPONENTS

A. The enclosure shall be constructed of 5052-H32 (.050/18 gauge) mill finish marine grade aluminum ASTMB B209 outside with insulation 1.5" thick (9.0 "R" value) on the inside.
B. The above components shall be securely bonded to form a composite panel.
C. The exterior of the panels shall have a protective PVC masking to protect the finish. The protective masking shall be removed by the customer immediately after installation of the enclosure.
D. The enclosure shall be fully assembled by the manufacturer.
E. The top shall be removable to provide access to the BFP and shall be attached to the enclosure with aluminum clasps.
F. The access panel shall be removable to provide access to the BFP and shall slide over the side walls from the top of the enclosure and held in place by the top.
G. The enclosure shall be lockable with pad locks provided by the manufacturer.
H. Drain relief panel for the enclosure shall be constructed of same said materials as wall panels and be located in the access panel.
I. Drain relief panel shall have a stainless steel hinge and stainless steel spring as a positive means of closure after water discharge to prevent the intrusion of outside air, debris, and small animals.

2.4 HEATING EQUIPMENT

A. Enclosure with heating equipment provided by manufacturer shall maintain freeze protection with an external temperature of -30°F.
B. Enclosure without heating equipment are designated for climates where the ambient temperature does not go below 33°F for long periods of time.
C. Heating equipment shall be ETL, UL, or CSA certified.
D. Heating equipment shall be installed above the level of RPZ discharge.
E. Electrical power source for heater shall be a designated circuit with G.F.I. protection and a minimum of 8" clearance from receptacle base to top of slab.

2.5 INSTALLATION HARDWARE

A. Concrete anchors shall be metal hit type and provided by the manufacturer. Optional anchors with Florida Building Code High-Velocity Hurricane Zone approval available.
B. Masonry drill bit and screw chuck shall be provided by the manufacturer

2.6 INSTALLATION

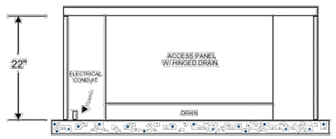
A. Recommended pad size shall be 45"L x 25"W x 6"T.
B. Enclosure shall be assembled per manufacturer's instructions provided with enclosure.
C. Enclosure shall be mounted to concrete pad per manufacturer's instructions.

AquaSHIELD PROTECTIVE ENCLOSURES
1805 WEST 37TH PLACE
NO. LITTLE ROCK, AR 72118
501-791-1800 501-791-1801 FAX
www.aquashieldenclosures.com

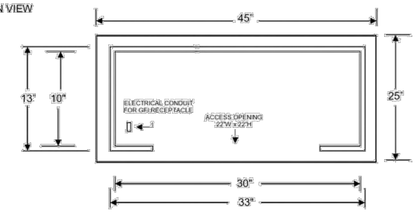
Enclosure Model #	BFP1-S
Inside Dimensions:	30"L x 10"W x 22"H
Outside Dimensions:	33"L x 13"W x 24"H
Recommended Pad Size:	45"L x 25"W x 6"H
Wall Thickness:	1.5"
Roof Thickness:	1.5"
Heat if Required:	30W/120V/1PH Heat Cable

AquaSHIELD suggests power source for heat be a designated circuit with GFI Receptacle

ELEVATION VIEW



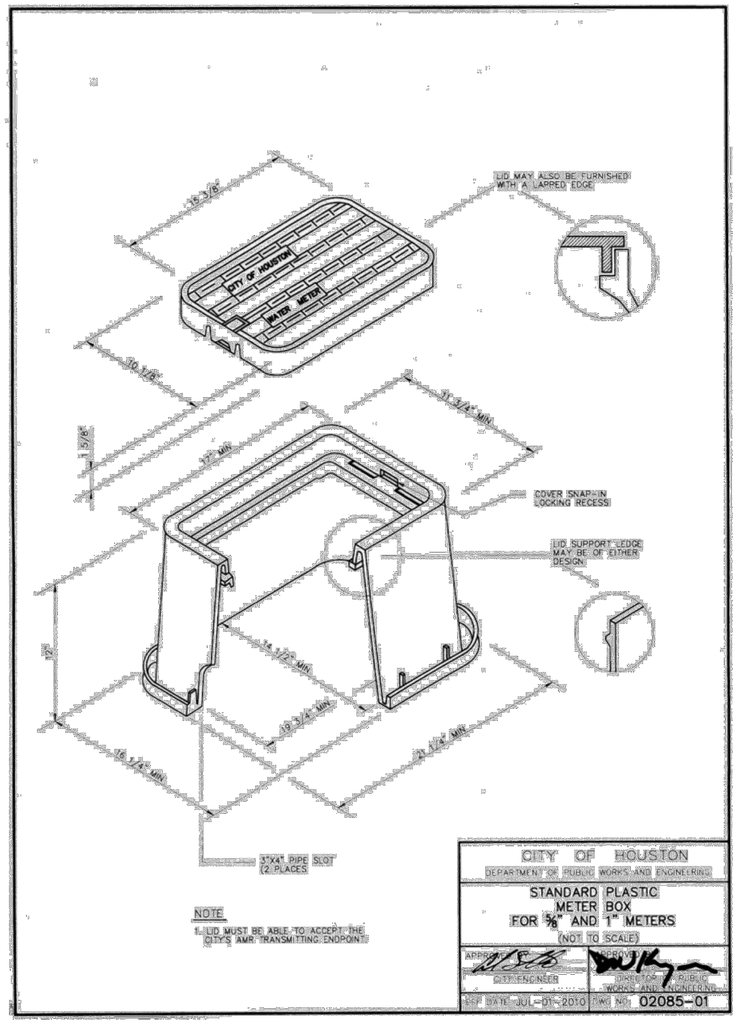
PLAN VIEW



JOB:

DRAWN BY: WH
SCALE: NONE
DATE: 12/10/2018

Drawing: NOT TO SCALE
CONFIDENTIAL: This drawing is intended for use only by those authorized to receive it. Dissemination distribution or copy of the information is strictly prohibited.

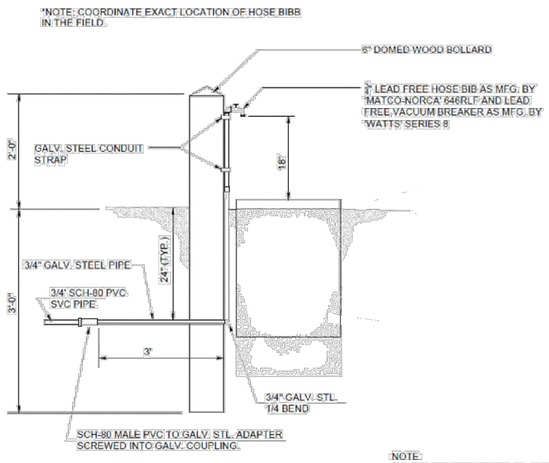


NOTE
1. LID MUST BE ABLE TO ACCEPT THE CITY'S AMR TRANSMITTING ENDPOINT

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STANDARD PLASTIC METER BOX FOR ⅝" AND 1" METERS
(NOT TO SCALE)

APPROVED — CITY ENGINEER
APPROVED — DIRECTOR, PUBLIC WORKS AND ENGINEERING
ISSUE DATE: JUL-01-2010 DWG NO. 02085-01



DETAIL - HOSE BIBB INSTALLATION
N.T.S.

NOTE:
ALL BELOW GROUND STEEL AND IRON PIPING SHALL BE WRAPPED WITH 'TAPECOAT H35 GRAY' (CORROSION PROTECTION TAPE) OR EQUAL TO 6" ABOVE FINISHED GRADE

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS — NATHAN A. WILSON — 136610 — LICENSED PROFESSIONAL ENGINEER
02/20/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

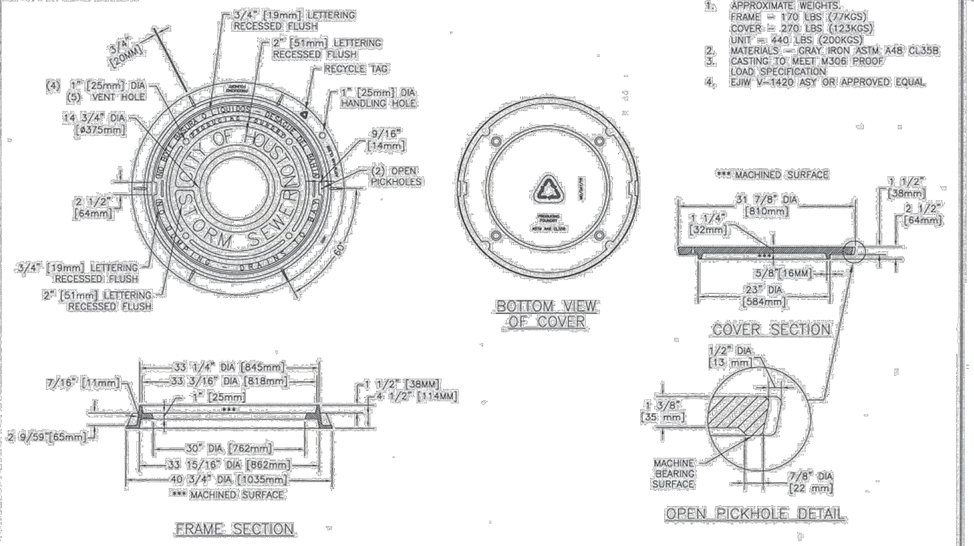
CIVIL DETAILS
WATER

(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
HORIZ: 1"=20' VERT: 1"=2'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 264 OF 298	D-103

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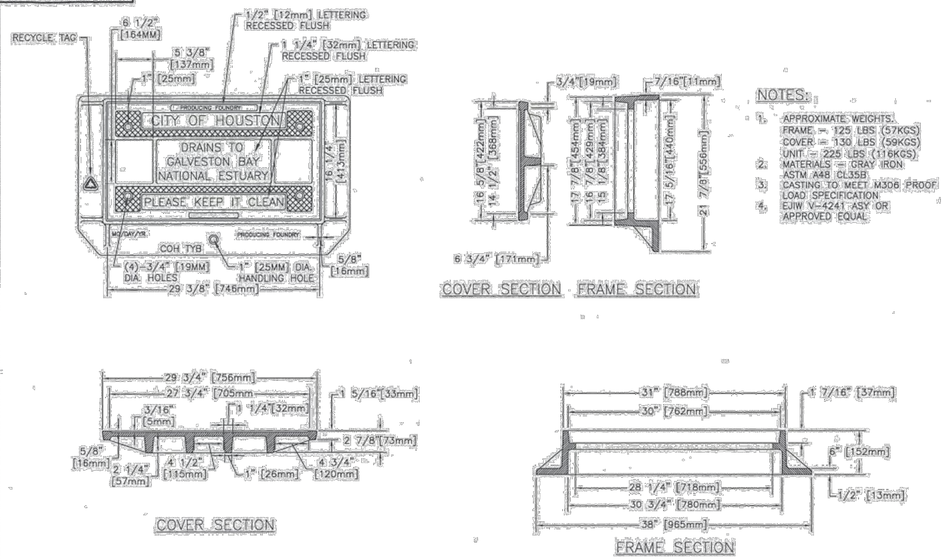
02084-02



NOTES:
1. APPROXIMATE WEIGHTS:
   FRAME = 170 LBS (77KGS)
   COVER = 270 LBS (123KGS)
   UNIT = 440 LBS (200KGS)
2. MATERIALS – GRAY IRON ASTM A48 CL35B
3. CASTING TO MEET M306 PROOF LOAD SPECIFICATION
4. EJIW V-1420 ASY OR APPROVED EQUAL

STORM SEWER MANHOLE FRAME AND COVER
NTS

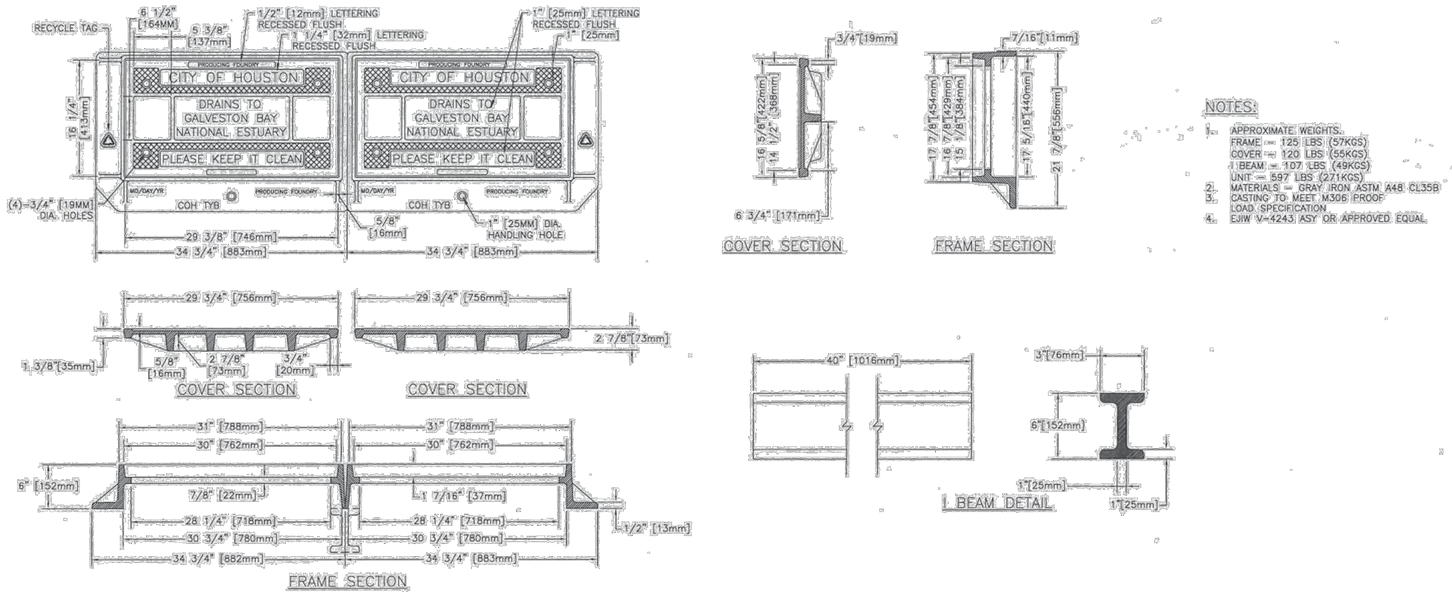
02084-03



NOTES:
1. APPROXIMATE WEIGHTS:
   FRAME = 125 LBS (57KGS)
   COVER = 130 LBS (59KGS)
   UNIT = 225 LBS (116KGS)
2. MATERIALS – GRAY IRON ASTM A48 CL35B
3. CASTING TO MEET M306 PROOF LOAD SPECIFICATION
4. EJIW V-4241 ASY OR APPROVED EQUAL

STORM SEWER TYPE "B" INLET ASSEMBLY
NTS

02084-04



NOTES:
1. APPROXIMATE WEIGHTS:
   FRAME = 125 LBS (57KGS)
   COVER = 120 LBS (55KGS)
   I BEAM = 107 LBS (49KGS)
   UNIT = 597 LBS (271KGS)
2. MATERIALS – GRAY IRON ASTM A48 CL35B
3. CASTING TO MEET M306 PROOF LOAD SPECIFICATION
4. EJIW V-4243 ASY OR APPROVED EQUAL

STORM SEWER TYPE "BB" 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: _____ DEPUTY DIRECTOR
APPROVED BY: _____ DIRECTOR
EFFECTIVE DATE: JUL-01-2019
FOR CITY OF HOUSTON USE ONLY

SHEET NO.

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS · NATHAN A. WILSON · 136610 · LICENSED PROFESSIONAL ENGINEER
02/20/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

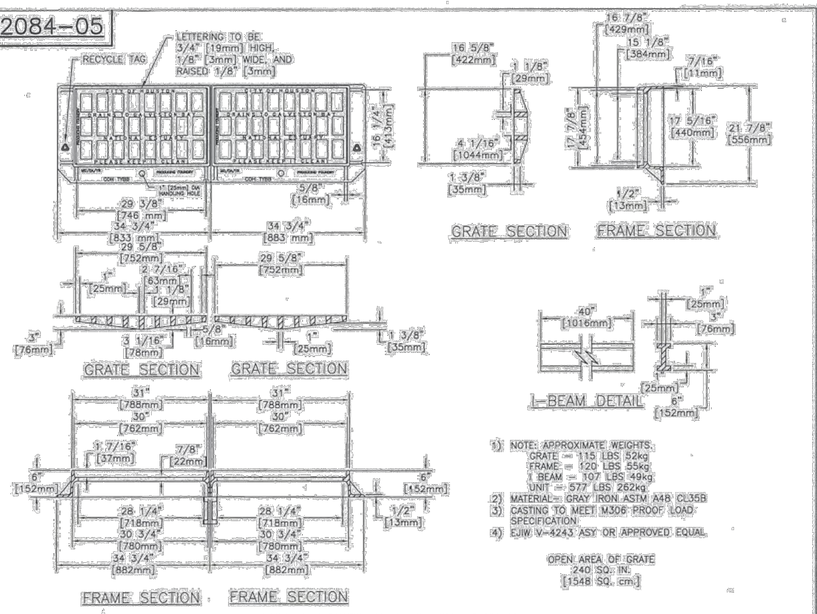
CIVIL DETAILS
STORM

(SHEET 1 OF 5)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 265 OF 298	D-104

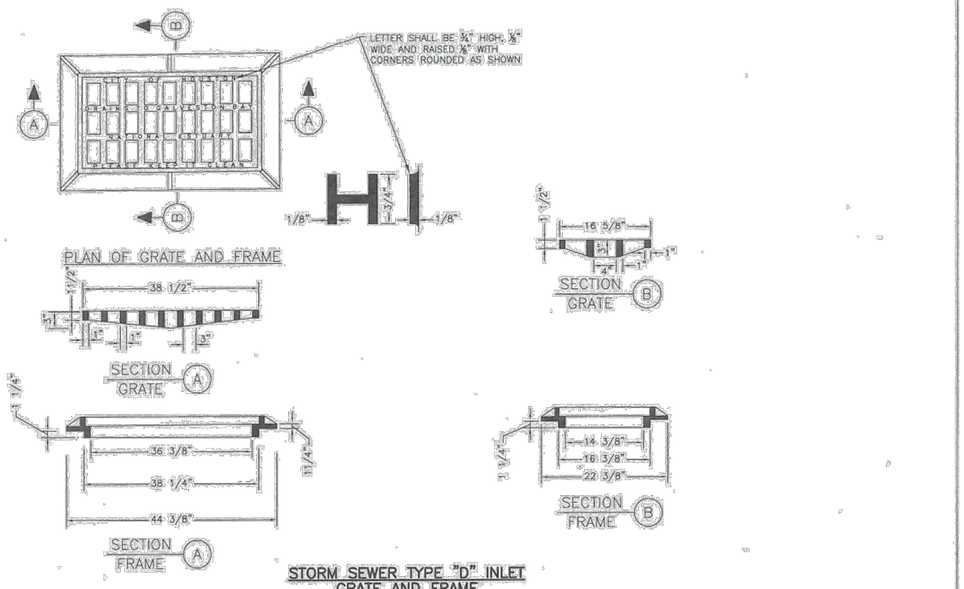
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02084-05



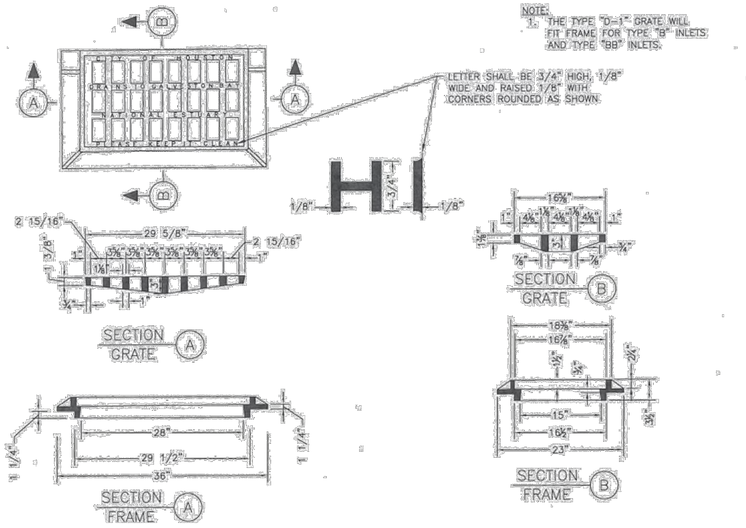
STORM SEWER FRAME AND GRATE
FOR TYPE B-B INLET DOUBLE ASSEMBLY
NTS

02084-06



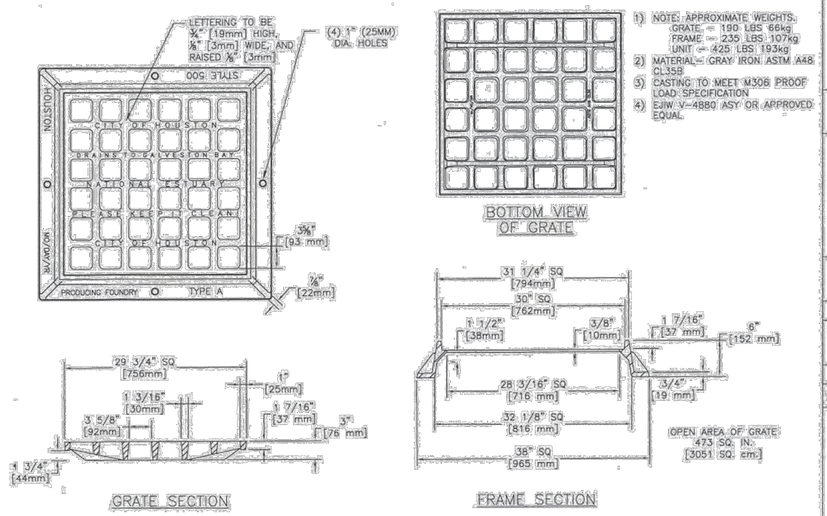
STORM SEWER TYPE "D" INLET
GRATE AND FRAME
NTS

02084-07



STORM SEWER TYPE "D-1" 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: DEPUTY DIRECTOR
APPROVED BY: DIRECTOR
EFFECTIVE DATE: JUL-01-2019
FOR CITY OF HOUSTON USE ONLY
SHEET NO.:

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11750 Katy Freeway, Suite 1260
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SURVEYED BY: LANDTECH, INC.
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STATE OF TEXAS — NATHAN A. WILSON — 136610 — LICENSED PROFESSIONAL ENGINEER
02/20/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

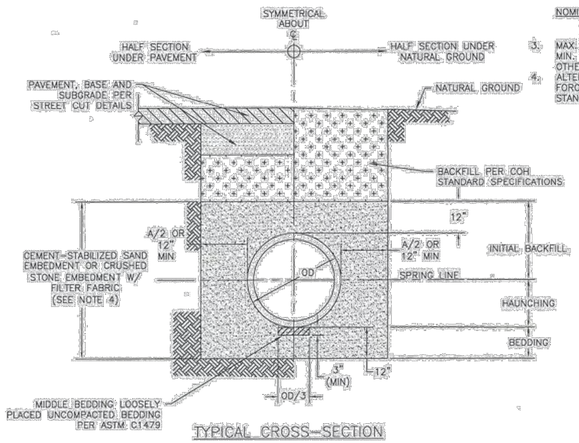
CIVIL DETAILS
STORM

(SHEET 2 OF 5)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
HORIZ: 1"=20' VERT: 1"=2'	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 266 OF 298	D-105

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02317-03



TYPICAL CROSS-SECTION

NOTES:

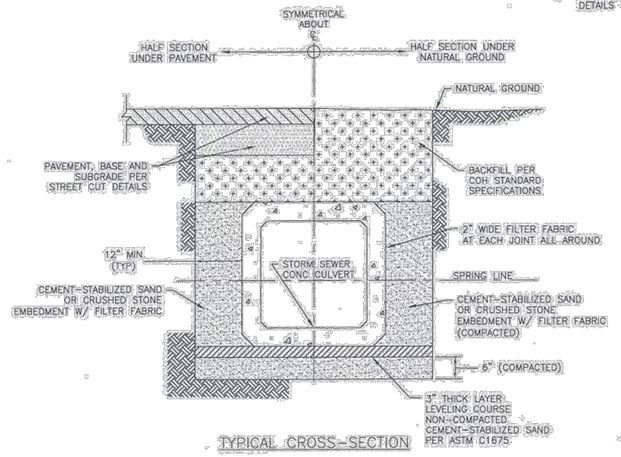
1. THIS DETAIL MAY BE USED ONLY FOR DRY STABLE TRENCH CONDITIONS PER COH STANDARD. SEE COH STANDARD SPECIFICATION FOR REQUIREMENTS IN OTHER CONDITIONS.
2. MIN. TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE:

NOMINAL PIPE SIZE	"A"
18" TO 30"	24"
OVER 30"	36"

3. MAX. TRENCH WIDTH SHALL BE NOT GREATER THAN MIN. TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
4. ALTERNATIVE EMBEDMENT BACKFILL MATERIALS FOR FORCE MAINS MAY BE ALLOWED. SEE COH STANDARD SPECIFICATIONS.

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

02317-05



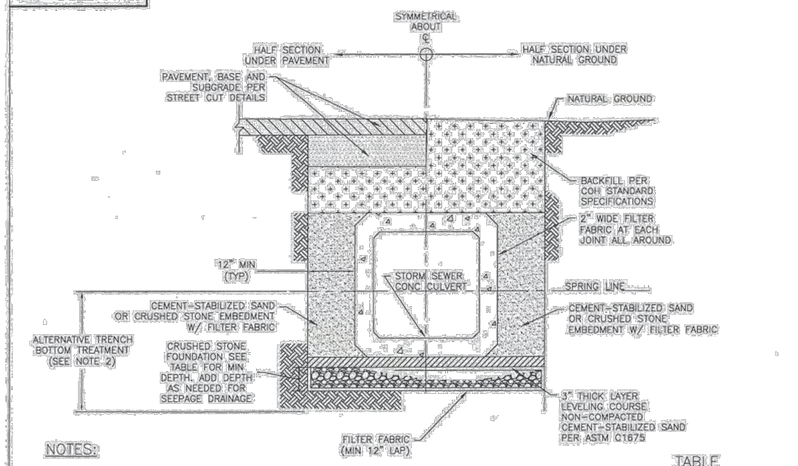
TYPICAL CROSS-SECTION

NOTES:

1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
2. SUBGRADE AND PAVEMENT FOR STREET CUT DETAILS — 02951.

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

02317-06



NOTES:

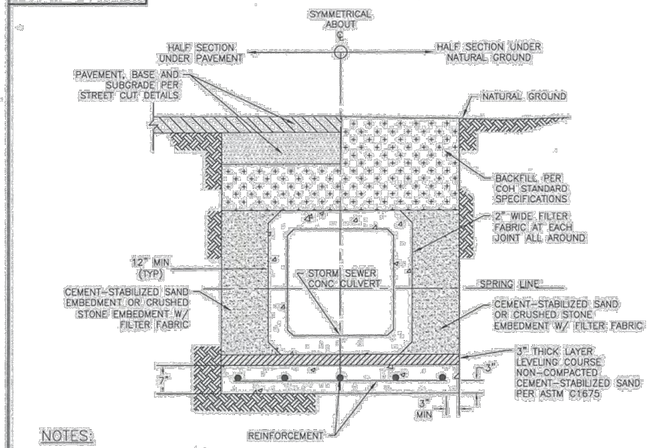
1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
2. ALTERNATIVE TRENCH BOTTOM TREATMENT MAY BE USED AS APPROVED BY THE CITY OF ENGINEERS AND AS PAID FOR IN THE PROPOSAL.

TABLE

CULVERT SIZE (FT)	FOUNDATION DEPTH(INCHES)
3' X 2' TO 6' X 6'	12
6' X 6' AND LARGER	18

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

02317-07



NOTES:

1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
2. REINFORCED CONCRETE SLAB PIPE BEDDING TO BE PLACED IN DRY TRENCH ONLY.
3. CONCRETE IN SLAB TO REACH MIN. COMPRESSIVE STRENGTH OF 1000 PSI BASED ON MAX DESIGN BEFORE PIPE IS LAID.
4. PRECAST SEAL SLAB MAYBE USED AS APPROVED BY CITY ENGINEER.

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

FIRM INFORMATION | ENGINEER'S SEAL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02317-03 THROUGH 07

APPROVED BY: CITY ENGINEER | APPROVED BY: DEPUTY DIRECTOR

APPROVED BY: DIRECTOR

EFFECTIVE DATE: JUL-01-2019

FOR CITY OF HOUSTON USE ONLY

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11750 Katy Freeway, Suite 1260
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STATE OF TEXAS — NATHAN A. WILSON — 136610 — LICENSED PROFESSIONAL ENGINEER

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

02/20/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

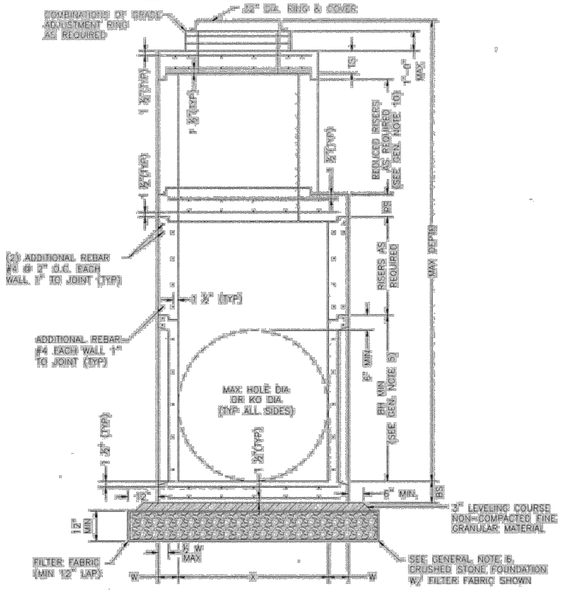
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

CIVIL DETAILS
STORM

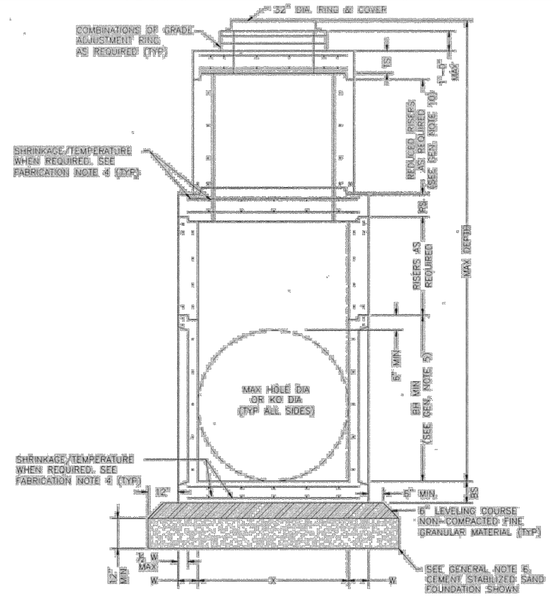
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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 267 OF 298	D-106

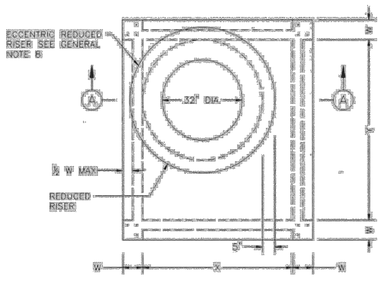
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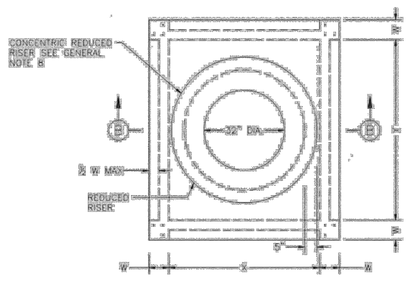
ELEVATION A–A
FLAT SLAB TOP WITH SHIP LOOSE RING & COVER OPTION



ELEVATION B–B
FLAT SLAB TOP WITH SHIP LOOSE RING & COVER OPTION



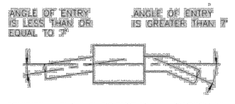
PLAN VIEW A
COVER NOT SHOWN



PLAN VIEW B
COVER NOT SHOWN

ECCENTRIC MANHOLE
(PREFERRED CONFIGURATION)

CONCENTRIC MANHOLE
(ALTERNATE CONFIGURATION)



PIPE CONNECTION DETAIL
CONNECT PIPES WITHIN 7° OF NORMAL TO PRECAST BASE WALL. IF NECESSARY, USE PIPE ELBOW OR CURVED APPROACH ALIGNMENT TO STAY WITHIN THIS LIMIT.

TABLE 1
PRECAST BOX MANHOLE (PBM) MINIMUM REQUIREMENTS FOR 24 IN. TO 78 IN. INTERNAL DIA STORM SEWER PIPES

	SIZE	BASE SLAB THICKNESS	BASE UNIT OR RISER THICKNESS	REDUCED RISER DIA	REDUCING SLAB THICKNESS	TOP SLAB THICKNESS	MAX DEPTH TO TOP OF BASE SLAB	MIN HEIGHT (SEE GEN. NOTE 5)	MAX HOLE DIA (SEE FAB. NOTE 11)	MAX KO DIA (SEE FAB. NOTE 11)
	X & Y	BS	W	ID	RS	TS	MAX DEPTH	BH MIN	MAX HOLE DIA	KO DIA
	FT.	IN.	IN.	FT.•	IN.	IN.	FT.	FT.	IN.	IN.
PBM	3X3	6	6	N/A	N/A	9	25	3.50	36	36
	4X4	6	6	N/A	N/A	9	25	4.50	48	48
	3X5	6	6	N/A	N/A	9	25	3.50	36/60	36/60
	4X5	6	6	48 IN.	9	9	25	4.50	48/60	48/60
	5X5	6	6	48 IN.	9	9	25	5.50	60	60
	5X6	9	8	48 IN.	9	9	25	5.50	60/72	60/72
	6X6	9	8	48 IN.	9	8	25	5.50	72	72
	6X8	9	10	48 IN.	12	9	25	8.50	96	96

TABLE 1 NOTES:
1. (•) ROUND MANHOLES ARE PREFERRED FOR THESE SIZES.
2. (•) UNLESS OTHERWISE INDICATED.
3. TABLE IS VALID FOR UP TO 25 FT OF INSTALLATION DEPTH.

FABRICATION NOTES:
1. PROVIDE CLASS "H" CONCRETE IN ACCORDANCE WITH TEXAS DEPARTMENT OF TRANSPORTATION ITEM 421 AND HAVING A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI.
2. PROVIDE GRADE 60 REINFORCING STEEL OR EQUIVALENT AREA OF WWR. PROVIDE CIRCUMFERENTIAL REINFORCING STEEL IN VERTICAL WALLS OF RISER AND CONE IN ACCORDANCE WITH ASTM C478.
3. PROVIDE TYPICAL MINIMUM CONCRETE CLEAR COVER OF 1" TO REINFORCING STEEL AT INTERIOR OR EXTERIOR WALLS.
4. SLABS WITH A THICKNESS OF 8" OR GREATER REQUIRE SHRINKAGE AND TEMPERATURE REINFORCING STEEL. PROVIDE STEEL AREA EQ. 0.11 SF/FT EACH WAY.
5. MANUFACTURE BASE AND RISERS TO NEAREST 3" INCREMENT.
6. DESIGN TONGUE AND GROOVE JOINTS FOR FULL CLOSURE ON BOTH SHOULDERS. MINIMUM SPIGOT DEPTH IS 2".
7. PROVIDE LIFTING DEVICES IN CONFORMANCE WITH MANUFACTURER'S RECOMMENDATIONS.
8. PROVIDE CAST IRON SOLID COVER, UNLESS NOTED OTHERWISE ELSEWHERE IN THE PLANS.
9. MINIMUM SPACING OF REINFORCEMENT IS 6".
10. AT MANUFACTURER'S OPTION, PROVIDE CAST OR CORED HOLES OR THIN WALL PANELS (KO) TO THE MAXIMUM DIA SHOWN FOR EACH. WHEN NO PENETRATION IS REQUIRED, IT IS ACCEPTABLE TO PROVIDE A WALL WITH NO SECTIONAL REDUCTION.
11. THREE DIFFERENT OPTIONS FOR CAPPING THE MANHOLE RISER NEAR THE FINISHED GRADE ARE ALLOWED. CONES CAN BE USED WHEN COVER IS SUFFICIENT TO ALLOW FOR PROPER PLACEMENT. FLAT LIDS ARE TO BE USED WHERE COVER IS LIMITED. REFER TO 02082-12 FOR OPTIONS.
12. BASES AND RISERS MAY HAVE CAST, KOT OR THIN WALL PANEL (KO) THAT ARE ROUND AND DO NOT EXTEND INTO THE FLOOR, INTO WALLS, OR WITHIN 8" OF THE JOINT ABOVE OR BELOW.

INSTALLATION NOTES:
1. IF REQUIRED ELSEWHERE, INVERTS (BENCHING) TO BE PROVIDED BY CONTRACTOR. CONCRETE OR MORTAR USED FOR INVERT IS SUBSIDIARY TO MANHOLE. REFER TO CITY OF HOUSTON SPECIFICATION SECTION 02082 FOR INVERT (BENCHING) REQUIREMENTS.
2. SEAL TONGUE AND GROOVE JOINTS WITH PREFORMED OR BULK MASTIC IN CONFORMANCE WITH MANUFACTURER'S RECOMMENDATIONS. TONGUE AND GROOVE JOINTS MAY BE GROUTED NO MORE THAN ½" BETWEEN EACH SECTION, OR ½ THE JOINT DEPTH, WHICHEVER IS GREATER.
3. DO NOT GROUT RUBBER GASKET JOINTS WITHOUT MANUFACTURER'S RECOMMENDATION.
4. FOR RIGID PIPE, CUT HOLE IN THIN WALL PANEL (KO) 2" MAX, 2" MIN LARGER THAN PIPE OD.
5. FOR FLEXIBLE PIPE, CONSULT BOOT/SEAL MANUFACTURER'S SPECIFICATION FOR PLACEMENT TOLERANCE AND HOLE SIZE. CENTER PIPE IN HOLE AND INSTALL BOOT/SEAL PER MANUFACTURER'S SPECIFICATIONS.
6. INITIAL INSTALLATION OF GRADE ADJUSTMENT RINGS IS LIMITED TO 1'-0" MAX AS SHOWN.
7. GRADE ADJUSTMENT RINGS MAY BE INCREASED TO 1'-6" MAX WHEN FUTURE CONSTRUCTION AFFECTS FINAL GRADE OF STRUCTURE. MAKE ADJUSTMENTS GREATER THAN 1'-0" WITH ADDITIONAL RISERS. ADJUSTMENTS MAY BE MADE UP TO THE MAX DEPTH OF 25'-0". STRUCTURE MUST BE EVALUATED IF MAX DEPTH WILL BE EXCEEDED.

GENERAL NOTES:
1. SEE TABLE 1 FOR MINIMUM DESIGN REQUIREMENTS. CONCENTRIC RISER WITH RESPECT TO BASE (ALTERNATIVE CONFIGURATION) FALLS OUTSIDE THE SCOPE OF REQUIREMENTS PROVIDED. ENGINEER OF RECORD ACCEPTS RESPONSIBILITY FOR SAFETY AND ADEQUACY OF MANHOLE IF THE ALTERNATIVE CONFIGURATION IS USED.
2. DESIGNED ACCORDING TO ASTM C478 AND/OR ASTM C913.
3. PAYMENT FOR PRECAST MANHOLE PER SECTION 02082 "PRECAST CONCRETE MANHOLES."
4. PRECAST BASE CONSISTS OF BASE SLAB, BASE UNIT, RISERS (AS REQUIRED), REDUCING SLAB (AS REQUIRED), AND REDUCED RISERS (AS REQUIRED).
5. MIN HEIGHT SHOWN FOR STOCK BASE UNITS. USE STOCK BASE UNITS WHENEVER PRACTICAL. SMALLER HEIGHT BASE UNITS CAN BE USED IN SPECIAL INSTALLATION CIRCUMSTANCES, WHEN NOTED ELSEWHERE IN THE PLANS. ABSOLUTE MINIMUM HEIGHT OF BASE UNITS IS 2'-6".
6. FOUNDATION/CRADLE TO BE DESIGNED BY ENGINEER AND MEET MINIMUM REQUIREMENTS ACCORDING TO SECTION 02082.
7. ALL STORM WATER MANHOLES ARE TO BE PRECAST CONCRETE, UNLESS OTHERWISE NOTED ELSEWHERE IN THE PLANS.
8. ECCENTRIC REDUCED RISER WITH RESPECT TO BASE IS THE PREFERRED MANHOLE CONFIGURATION. CONCENTRIC REDUCED RISER WITH RESPECT TO BASE MANHOLE CONFIGURATION IS AN ALTERNATIVE DESIGN THAT WILL BE ACCEPTED BASED ON THE NEEDS OF THE CITY OF HOUSTON.
9. MANHOLE SIZE SHALL CONSIDER ENGINEERING ECONOMY. THIS DETAIL IS NOT APPLICABLE TO BOX MANHOLES LARGER THAN 8'-FOOT BY 8'-FOOT.
10. REFER TO STORM SEWER TYPE "C" PRECAST ROUND MANHOLE DETAIL (02082-12) FOR REDUCED RISER DESIGN REQUIREMENTS.

DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR USE, ACCEPTS RESPONSIBILITY FOR THEIR APPLICABILITY, ADEQUACY AND SAFETY. NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON, WHATSOEVER, THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE FOR ANY PURPOSES WHATSOEVER.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
PRECAST BOX MANHOLE

(NOT TO SCALE)

APPROVED BY: Sethail Kamum
CITY ENGINEER

APPROVED BY:
DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: JUL-01-2021

DWG NO: 02082-13

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER
02/20/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

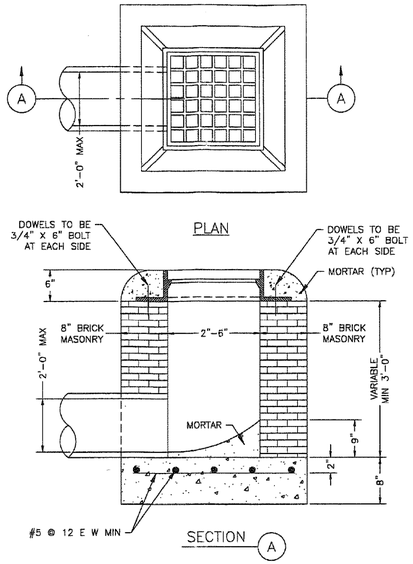
CIVIL DETAIL
STORM

(SHEET 4 OF 5)

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DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 268 OF 298	D-107

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02632-01

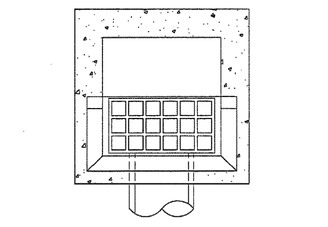


STORM SEWER TYPE "A" GRATE INLET
NTS

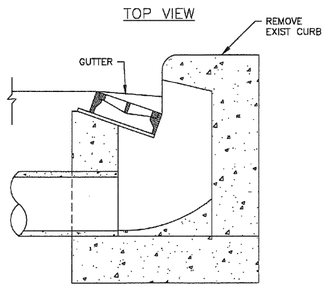
COH IS PHASING OUT BRICK. NEW DETAILS TO BE POSTED END OF 2019

02632-03

STEP 1: EXIST TYPE "B" INLET

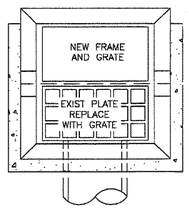


TOP VIEW



SIDE VIEW

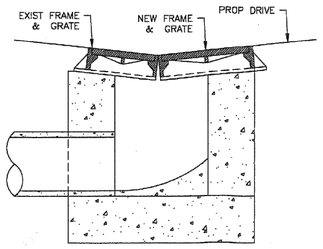
STEP 2:



TOP VIEW

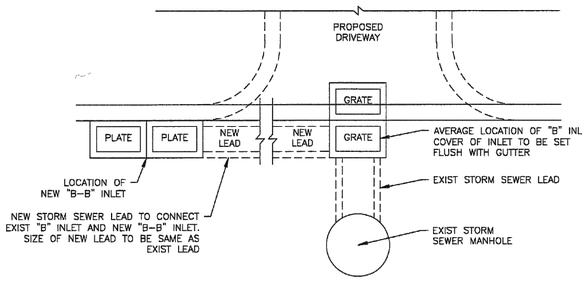
NOTES:

1. AFTER REMOVING EXIST CURB, RAISE EXIST FRAME TO GUTTER GRADE.
2. REPLACE EXIST PLATE WITH A GRATE.
3. ADD NEW FRAME AND GRATE NEXT TO EXIST FRAME.
4. BACKFILL INLET TO A POINT ONE FOOT BEHIND THE CURB WITH 1 SACK/TON CEMENT STABILIZED SAND.



SIDE VIEW

STEP 3: CONSTRUCT NEW TYPE "B-B" INLET ON CURB RETURN OF PROPOSED DRIVEWAY



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: _____ DEPUTY DIRECTOR
APPROVED BY: _____ DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFFECTIVE DATE: JUL-01-2019
FOR CITY OF HOUSTON USE ONLY

SHEET NO. XX OF XX

DCCM

WOOLPERT
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STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER
02/20/2026

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

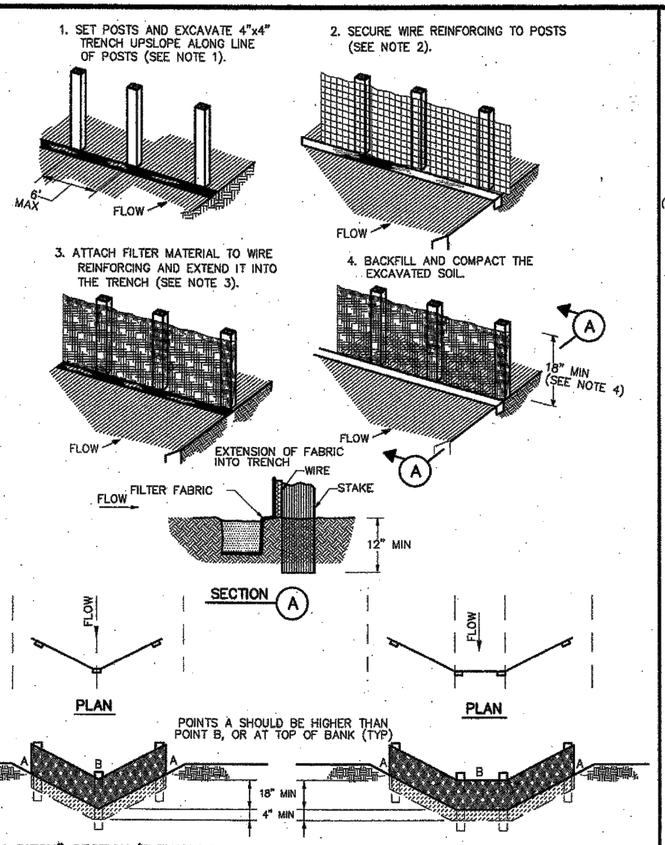
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

CIVIL DETAILS
STORM

(SHEET 5 OF 5)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 269 OF 298 D-108	

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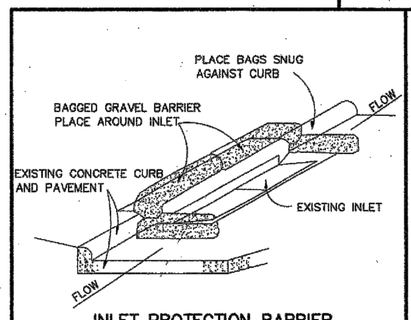


CONSTRUCTION NOTES:

1. SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
2. WOVEN WIRE REINFORCING TO BE FASTENED SECURELY TO BARRIER POSTS WITH STAPLES.
3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE REINFORCING, WITH TIES SPACED EVERY 24 INCHES AT TOP AND MIDSECTION.
4. MINIMUM HEIGHT OF FILTER SHOULD BE 18 INCHES AND A MAXIMUM OF 36 INCHES ABOVE NATURAL GROUND.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
6. SEE COH STANDARD SPECIFICATION FOR FILTER FABRIC BARRIER.

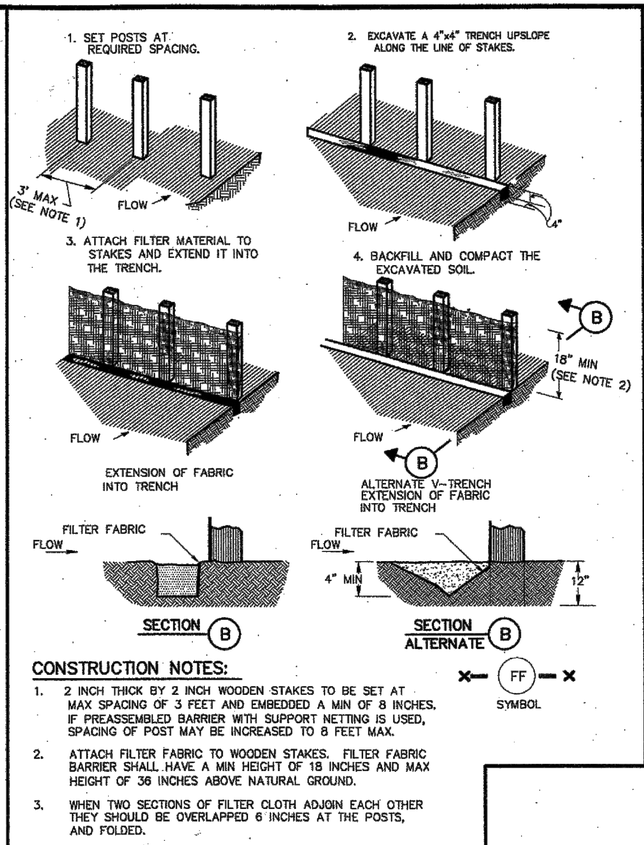
SYMBOL

REINFORCED FILTER FABRIC BARRIER



INLET PROTECTION BARRIER

(FOR STAGE II INLETS)
BAGGED GRAVEL BARRIER

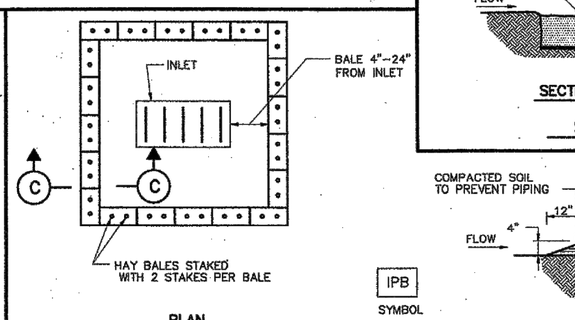


CONSTRUCTION NOTES:

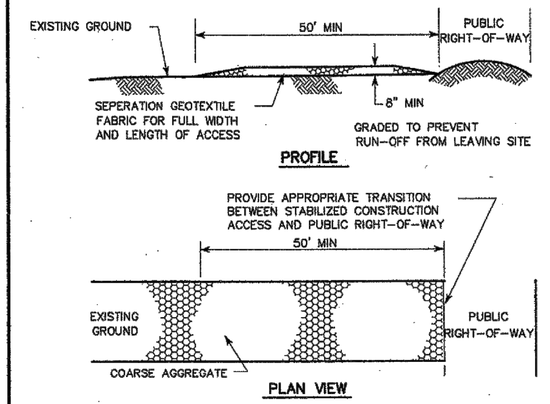
1. 2 INCH THICK BY 2 INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN OF 8 INCHES. IF PREASSEMBLED BARRIER WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC BARRIER SHALL HAVE A MIN HEIGHT OF 18 INCHES AND MAX HEIGHT OF 36 INCHES ABOVE NATURAL GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
4. SEE COH STANDARD SPECIFICATION FOR FILTER FABRIC BARRIER.

SYMBOL

FILTER FABRIC BARRIER



HAY BALE INLET PROTECTION BARRIER

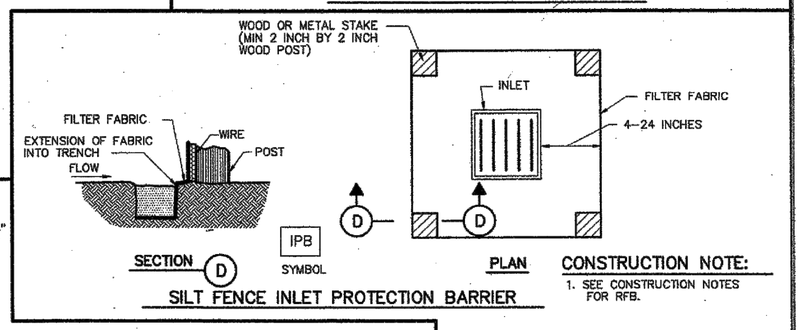


CONSTRUCTION NOTES:

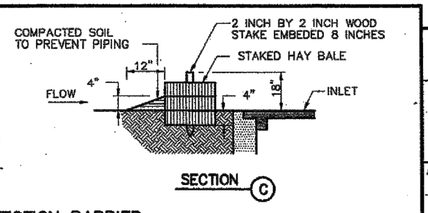
1. LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS, BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZATION FOR OTHER AREAS SHALL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION ACCESS, UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION DRAWINGS.
5. STABILIZED AREA MAY BE WIDENED OR LENGTHENED TO ACCOMODATE A WASHING AREA. AN OUTLET SEDIMENT TRAP MUST BE PROVIDED FOR THE WASHING AREA.
6. COH STANDARD SPECIFICATION FOR STABILIZED CONSTRUCTION ACCESS.
7. STABILIZED CONSTRUCTION ACCESS SHALL BE MAINTAINED FREE OF SEDIMENT FOR THE DURATION OF THE PROJECT.

SC
SYMBOL

STABILIZED CONSTRUCTION ACCESS



SILT FENCE INLET PROTECTION BARRIER



DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
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800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

NATHAN A. WILSON 136610 LICENSED PROFESSIONAL ENGINEER
02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

CIVIL DETAILS
SWPPP DETAIL

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STORM WATER POLLUTION PREVENTION PLAN DETAILS
(NOT TO SCALE)

APPROVED — CITY ENGINEER
APPROVED — DIRECTOR OF PUBLIC WORKS AND ENGINEERING

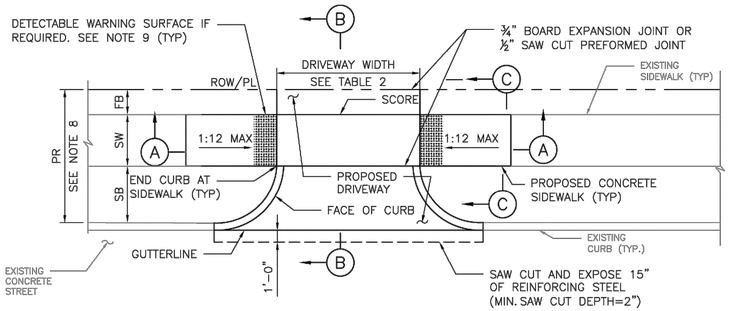
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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 270 OF 298	D-109

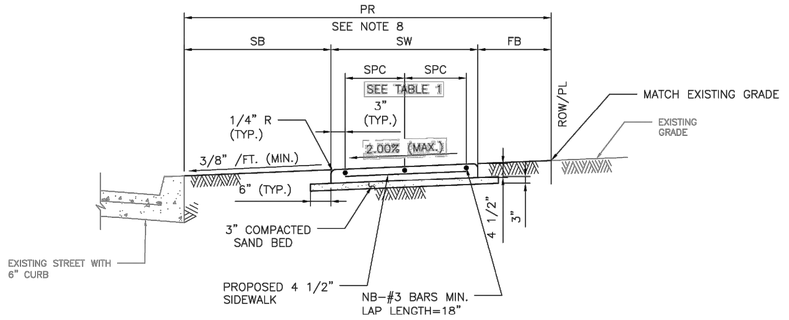
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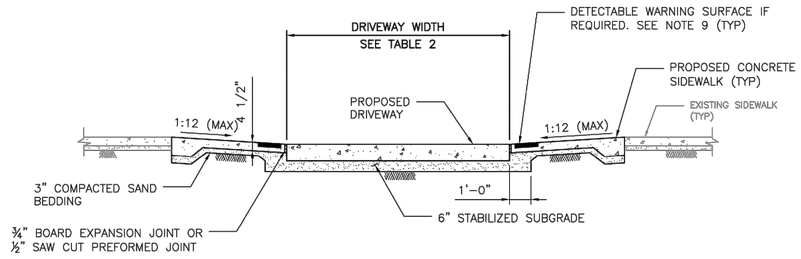
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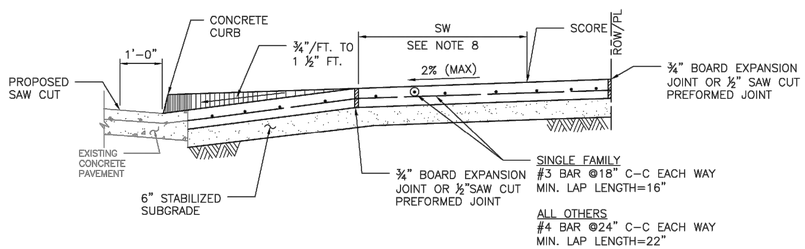
PLAN VIEW
DRIVEWAY



SECTION C–C
TYPICAL SIDEWALK SECTION



SECTION A–A
PROPOSED SIDEWALK THROUGH DRIVEWAY
WITH EXCESSIVE ELEVATION DIFFERENCE
WITH EXISTING SIDEWALK



SECTION B–B
TYPICAL DRIVEWAY SECTION

NOTES:

1. REPAIR, RECONSTRUCTION OR REPLACEMENT OF SIDEWALKS SHALL MEET PERMITTING REQUIREMENTS OF CODE OF ORDINANCES SECTION 40–552.
2. FOR REPAIR, RECONSTRUCTION, OR REPLACEMENT OF EXISTING SIDEWALKS:
   - 2.1. EXISTING SIDEWALKS LESS THAN OR EQUAL TO 20 FEET IN TOTAL LENGTH:
     - 2.1.1. THE PROPOSED SIDEWALK WIDTH WILL BE ALLOWED TO MATCH THE EXISTING SIDEWALK.
   - 2.2. EXISTING SIDEWALKS GREATER THAN 20 FEET IN TOTAL LENGTH:
     - 2.2.1. THE SIDEWALK WIDTH FOR THE ENTIRE PROPERTY WIDTH SHALL BE IMPROVED TO MEET WIDTH REQUIREMENTS ACCORDING TO THE LATEST INFRASTRUCTURE DESIGN MANUAL.
   - 2.3. 20 FOOT TOTAL LENGTH IS DEFINED AS:
     - 2.3.1. UP TO 10 FEET ON BOTH SIDES OF THE DRIVEWAY; OR
     - 2.3.2. UP TO 20 FEET WHEN SIDEWALK AFFECTED IS LOCATED ONLY ON ONE SIDE OF THE DRIVEWAY.
3. ALL JOINTS ALONG THE SIDEWALK SHALL BE CONSTRUCTED ACCORDING TO DRAWING 02752–02 AND SPECIFICATION 02752.
4. DRIVEWAYS SHALL BE MINIMUM 6" THICK FOR SINGLE FAMILY AND DUPLEXES. DRIVEWAYS SHALL BE MINIMUM 7" THICK FOR ALL OTHERS (I.E. COMMERCIAL, INDUSTRIAL, ETC.)
5. DRIVEWAYS AND SIDEWALKS SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE AND INCLUDE 5 1/2 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE.
6. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
7. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.
8. REFER TO CONTRACT DRAWINGS FOR PEDESTRIAN REALM (PR), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.
9. DETECTABLE WARNING SURFACES:
   - 9.1. SIDEWALK SHALL HAVE A DETECTABLE WARNING SURFACE WHERE:
     - 9.1.1. SIDEWALK INTERSECTS TYPE C DRIVEWAYS (COMMERCIAL DRIVEWAYS) THAT ARE STOP, YIELD, OR TRAFFIC SIGNAL CONTROLLED; OR
     - 9.1.2. SIDEWALK SLOPE IS GREATER THAN 1:20 AND INTERSECTS A TYPE C DRIVEWAY (COMMERCIAL DRIVEWAY)
   - 9.2. DETECTABLE WARNING SURFACES ARE OPTIONAL WHERE SIDEWALKS INTERSECT TYPE A DRIVEWAYS (SINGLE FAMILY RESIDENTIAL HOUSES OR DUPLEXES) OR TYPE B DRIVEWAYS (SHARED ACCESS/SHARED DRIVEWAYS).
   - 9.3. REFER TO STANDARD DETAILS 02775–06 TO 02775–07 FOR DETECTABLE WARNING SURFACE STANDARDS.

TABLE 1

REINFORCING STEEL INFORMATION
FOR 4 ½ " THICK SIDEWALKS
EXPANSION JOINT SPACING = 40 FT
fc' = 3,500 PSI AND fy = 60,000 PSI
REFER TO CONTRACT DRAWINGS FOR SIDEWALKS WIDER THAN 6 FEET.

SIDEWALK THICKNESS (IN)	SIDEWALK WIDTH (FT)	LONGITUDINAL STEEL #3 BARS			TRANSVERSE STEEL #3 BARS SPACING (IN)
		NO. OF BARS "NB"	SPACING "SPC" (IN)	END BAR SPACING (IN)	
4.5	5	3	27	3	48
4.5	6	4	22	3	48

TABLE 2

DRIVEWAY DESIGN CRITERIA (1)(2)

TRAFFIC TYPE	TYPE A DRIVEWAY (FOR SINGLE FAMILY RESIDENTIAL HOUSES OR DUPLEXES)				TYPE B DRIVEWAY (SHARED ACCESS/SHARED DRIVEWAY)				TYPE C DRIVEWAY (COMMERCIAL DRIVEWAY)			
	WIDTH (FT)		RADIUS (FT)		WIDTH (FT)		RADIUS (FT)		WIDTH (FT)		RADIUS (FT)	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
ONE–WAY	10	12	4	10	12(5)	16(5)	4(5)	10(5)	15	20	10	20
TWO–WAY	10(3)	24(4)	4	10	16(6)	24	4	10	24	35	10	20

(1) REFER TO INFRASTRUCTURE DESIGN MANUAL ARTICLE 15.2.07.C.1.F FOR DRIVEWAYS THAT REQUIRE A VEHICLE SWEPT PATH ANALYSIS.
(2) REFER TO INFRASTRUCTURE DESIGN MANUAL ARTCILES 15.2.07.C.1.G.(1) AND 15.2.07.C.1.G.(2) FOR TYPE 1 PAE AND TYPE 2 PAE REQUIREMENTS.
(3) THE MINIMUM WIDTH FOR JOINT ACCESS DRIVEWAY IS 12 FT.
(4) REFER TO CHAPTER 42 OF THE CODE OF ORDINANCES FOR DRIVEWAY WIDTHS FOR NARROW LOTS.
(5) ONLY MURS AND COURTYARD STYLE DEVELOPMENTS ON CORNER LOTS CAN HAVE ONE–WAY DRIVEWAYS.
(6) REFER TO CHAPTER 42, SECTION 42–146 OF THE CODE OF ORDINANCES FOR EXCEPTIONS TO THE MINIMUM DRIVEWAY WIDTH FOR SHARED DRIVEWAYS.

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STATE OF TEXAS
NATHAN A. WILSON
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SURVEYED BY: LANDTECH, INC.
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02/20/2026

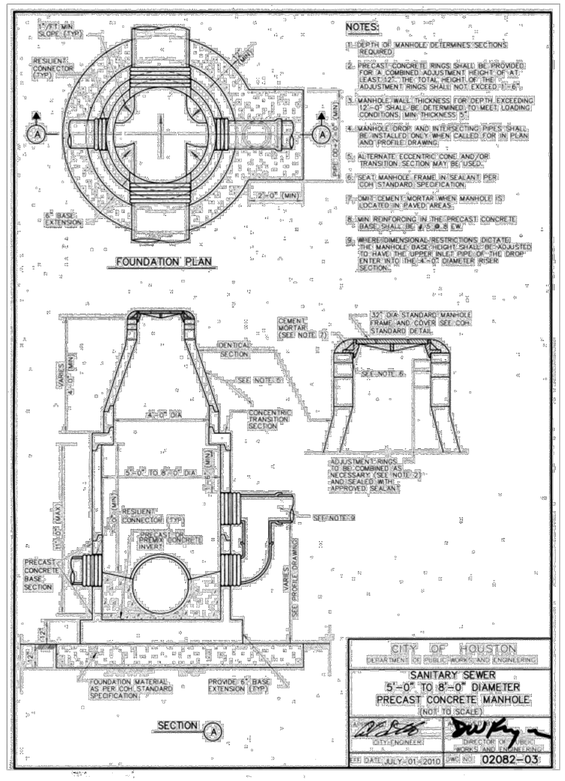
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

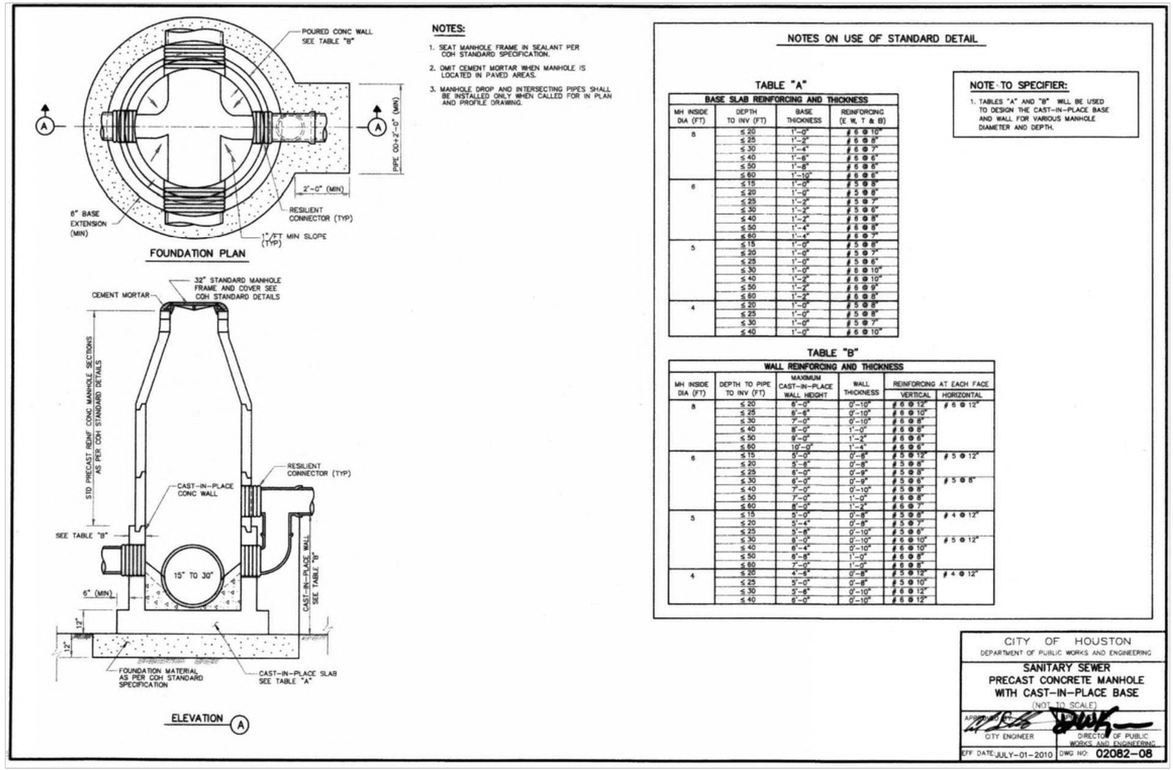
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

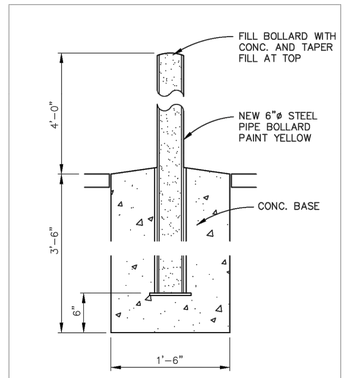
CIVIL DETAIL
DRIVEWAY

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DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 271 OF 298 D–110	

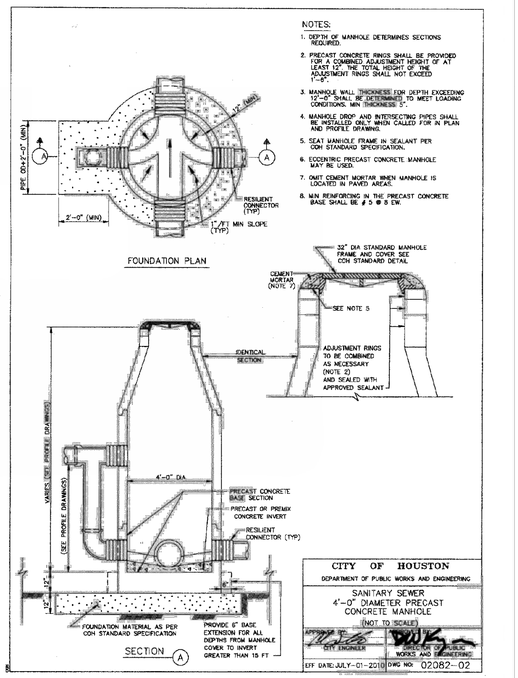
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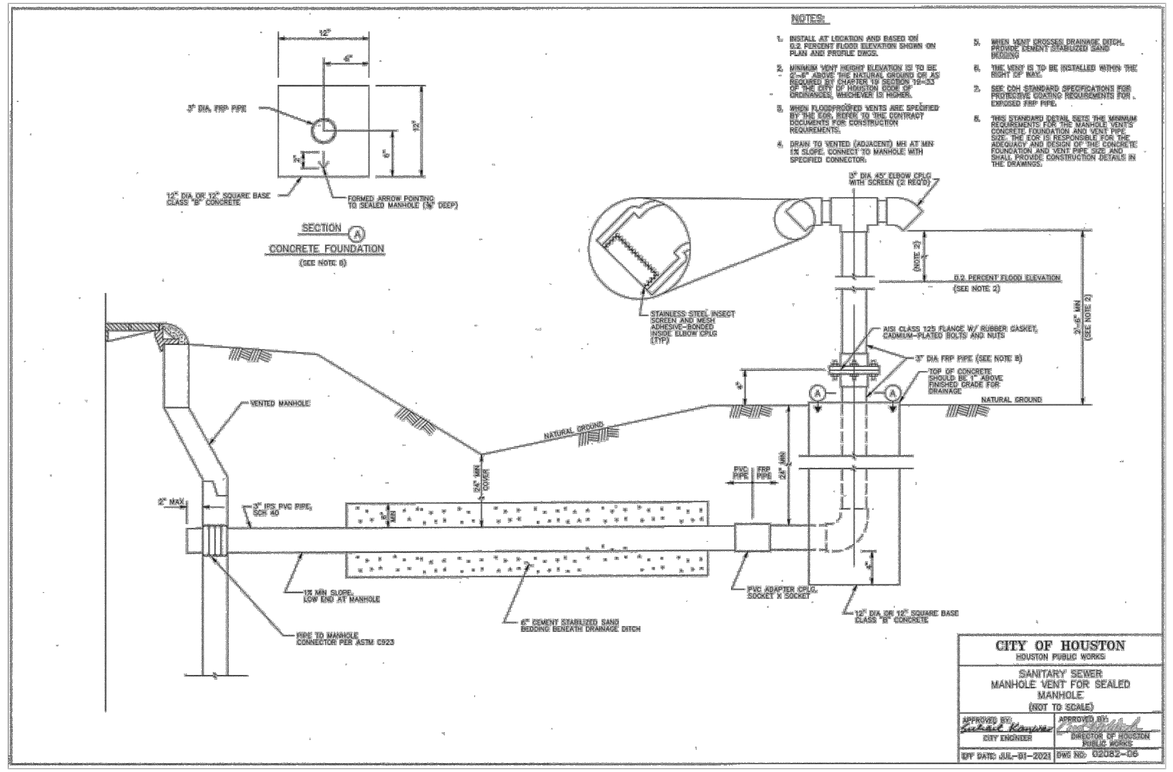






PIPE BOLLARD DETAIL
N.T.S.





DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

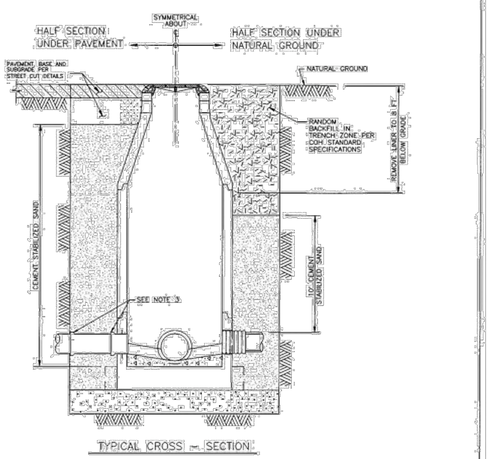
MECHANICAL DETAILS
SANITARY SEWER

(SHEET 1 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
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SHEET NO. 272 OF 298	D-111

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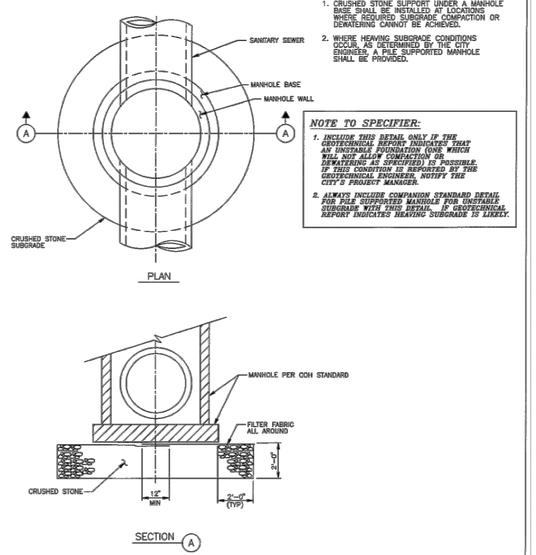
NOTES:
1. GROUTING OF MANHOLE STRUCTURE ANNULAR SPACE WILL BE PERMITTED IN CASES WHERE INSUFFICIENT WORK SPACE EXISTS FOR PLACEMENT AND COMPACTION OF CEMENT STABILIZED SAND, PER COH STANDARD SPECIFICATION FOR TUNNEL GROUT.
2. THIS DETAIL ALSO APPLIES TO BACKFILL OF SHAFTS WITHOUT STRUCTURES.
3. ARRANGE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



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: 02347-08

NOTES:
1. CRUSHED STONE SUPPORT UNDER A MANHOLE BASE SHALL BE INSTALLED AT LOCATIONS WHERE REQUIRED SUBGRADE COMPACTION OR DEWATERING CANNOT BE ACHIEVED.
2. WHERE HEAVING SUBGRADE CONDITIONS OCCUR AS DETERMINED BY THE CITY ENGINEER, A PILE SUPPORTED MANHOLE SHALL BE PROVIDED.

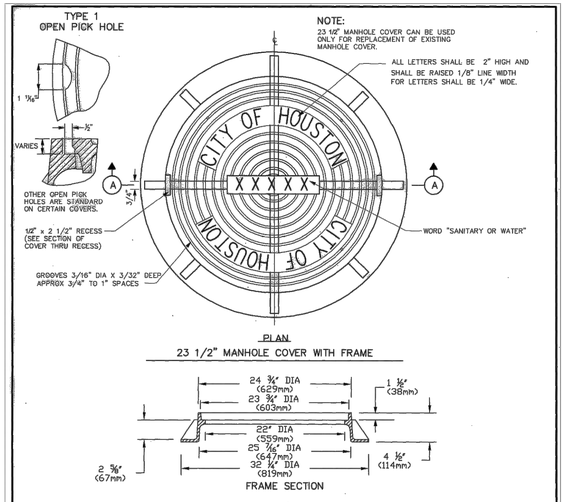
NOTE TO SPECIFIER:
1. INCLUDE THIS DETAIL ONLY IF THE GEOTECHNICAL REPORT INDICATES THAT UNSTABLE FOUNDATION CONDITIONS WHICH WILL NOT ALLOW COMPACTION OR DEWATERING AS SPECIFIED) IS POSSIBLE. IF THIS CONDITION IS REPORTED BY THE GEOTECHNICAL ENGINEER, NOTIFY THE CITY'S PROJECT MANAGER.
2. ALWAYS INCLUDE COMPANION STANDARD DETAIL FOR PILE SUPPORTED MANHOLE FOR UNSTABLE SUBGRADE WITH THIS DETAIL. IF GEOTECHNICAL REPORT INDICATES HEAVING SUBGRADE IS LIKELY.



CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
SANITARY SEWER CRUSHED STONE SUPPORTED MANHOLE FOR WET STABLE TRENCH (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 02082-05

TYPE 1
OPEN PICK HOLE

NOTE:
23 1/2" MANHOLE COVER CAN BE USED ONLY FOR REPLACEMENT OF EXISTING MANHOLE COVER.



23 1/2" MANHOLE COVER WITH FRAME

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-1424B ASY 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

DCCM

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DCCM.com

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FB NO. 6399

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

CITY OF HOUSTON
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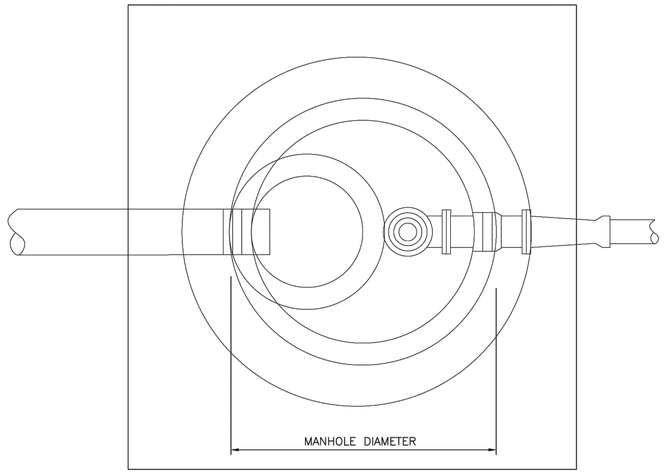
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
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MECHANICAL DETAILS
SANITARY SEWER

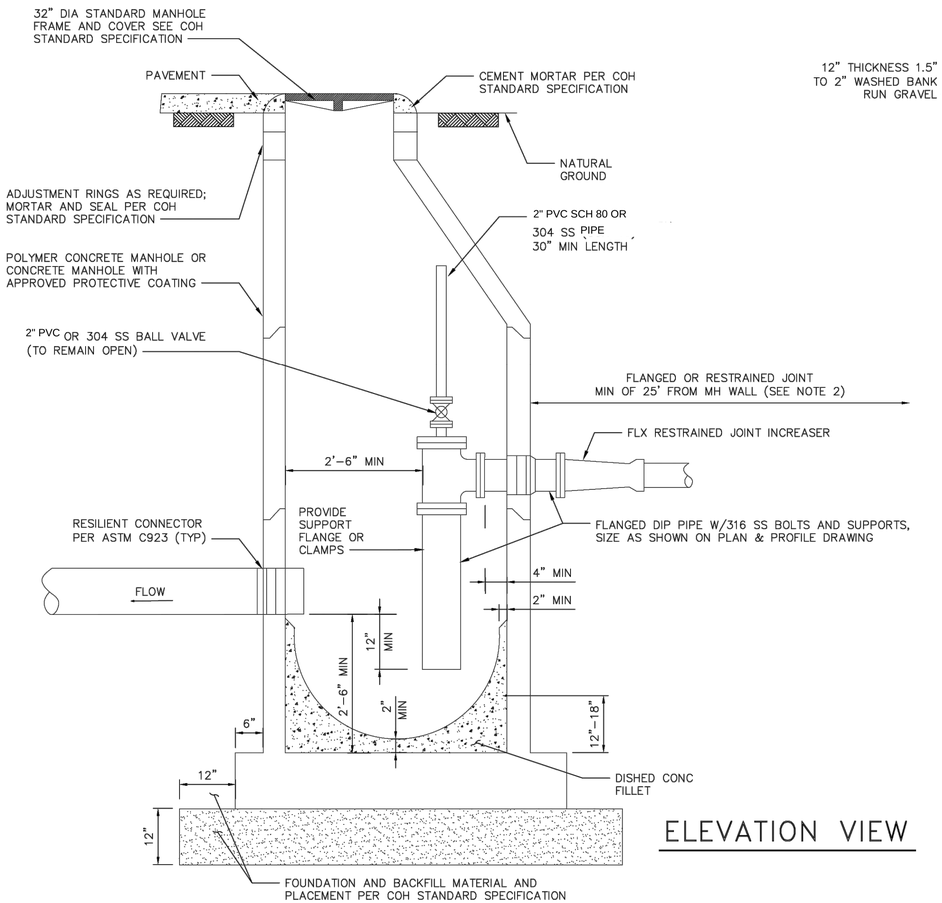
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MARILENA STOICA, P.E.	
SHEET NO. 273 OF 298	D-112

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PLAN VIEW

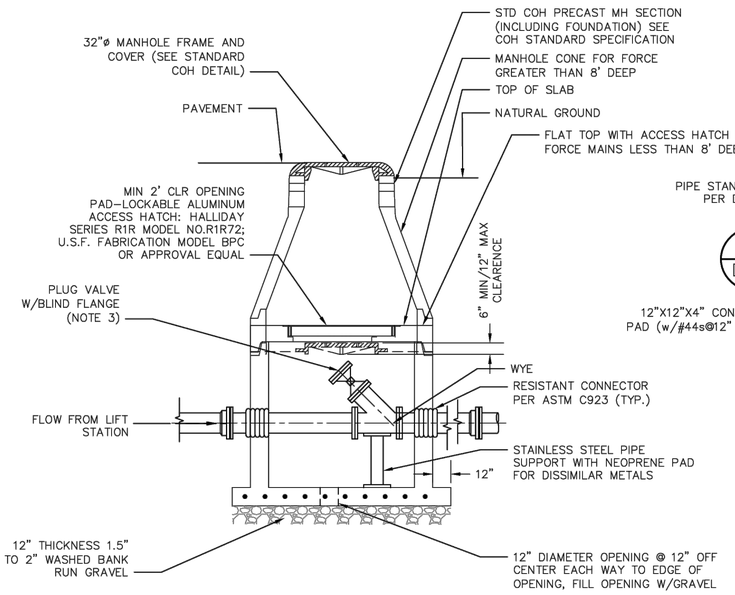


ELEVATION VIEW

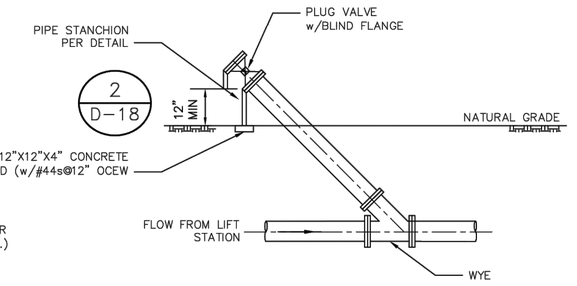
FOR SANITARY SEWER MANHOLE
FOR FORCE MAIN DISCHARGE
2
–

NOTES:

1. SEAT MANHOLE FRAME IN SEALANT PER COH STANDARD SPECIFICATION.
2. IF FORCE MAIN HAS BENDS WITHIN 25FT OF MANHOLE, EXTEND RESTRAINED JOINTS TO 25FT MINIMUM UPSTREAM OF BEND.
3. OMIT CEMENT MORTAR WHEN MANHOLE IS LOCATED IN PAVED AREA.
4. MINIMUM REINFORCING IN BASE SHALL BE 5 @ 8 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".



BELOW GROUND BYPASS DETAIL



ABOVE GROUND BYPASS DETAIL
USE OF THIS DETAIL MUST BE APPROVED BY WASTEWATER OPERATIONS.

MANHOLE SIZE (NOTE B)	
FORCEMAIN DIAMETER	MANHOLE DIAMETER
8"	4'-0"
18"	5'-0"
30"	8'-0"

NOTES:

1. PROVIDE LINED DUCTILE IRON PIPE, THICK, CLASS 53, FOR FORCE MAIN WITHIN 12" OF OUTSIDE FACE OF MANHOLE. JOINTS WITHIN MANHOLE MAY BE FLANGED (AS SHOWN OR GROOVED PER ASTM 606) WITHIN MANHOLE, WITH 316 STAINLESS STEEL BOLTS.
2. MANHOLE TOP MAY BE CONCENTRIC CONE, OR FLAT TOP WITH ECCENTRIC OPENING. PROVIDE 32" FRAME AND COVER.
3. ENSURE MIN CLEARANCE OF 18" ON ALL SIDES. OFFSET VALVE ON HATCH/MH OPENING AS NEEDED TO OBTAIN CLEARANCE.

BYPASS MANHOLE DETAIL
1
–
SCALE: NTS

TABLE 02082-07

MANHOLE DIAMETER	4'-0"	5'-0"	6'-0"
MAX DISCHARGE SIZE	6"	14"	24"

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1710 Seamist Dr
Houston, TX 77008
713.869.3433
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FB NO. 6399

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

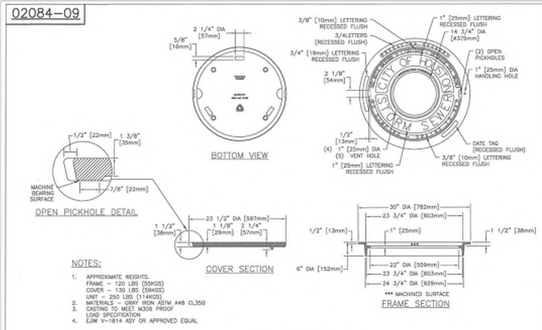
MECHANICAL DETAILS
SANITARY SEWER

(SHEET 3 OF 4)

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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 274 OF 298	D-113

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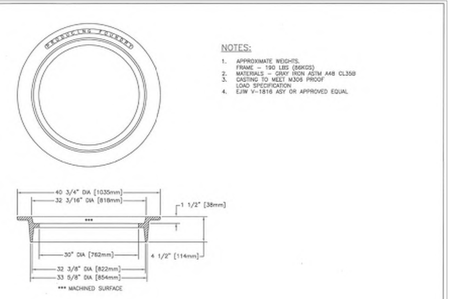
02084-09



NOTES:
1. APPROXIMATE WEIGHTS:
   FRAME - 120 LBS (55KGS)
   COVER - 130 LBS (59KGS)
   UNIT - 250 LBS (114KGS)
2. MATERIALS - GRAY IRON ASTM A48 CL35B
3. CASTING TO MEET M306 PROOF LOAD SPECIFICATION
4. EJIW V-1814 ASY OR APPROVED EQUAL

STORM SEWER TYPE "C-1, C-2, C-2A" AND "H-2" INLET FRAME AND COVER
NTS

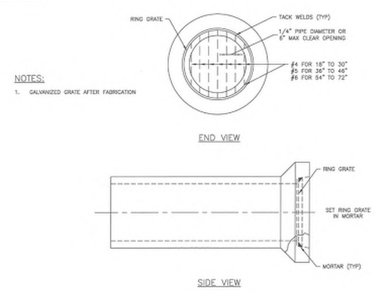
02084-10



NOTES:
1. APPROXIMATE WEIGHTS:
   FRAME - 190 LBS (86KGS)
2. MATERIALS - GRAY IRON ASTM A48 CL35B
3. CASTING TO MEET M306 PROOF LOAD SPECIFICATION
4. EJIW V-1816 ASY OR APPROVED EQUAL

32" INVERTED MANHOLE FRAME
NTS

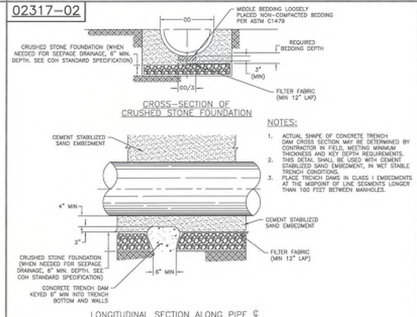
02084-11



NOTES:
1. GALVANIZED GRATE AFTER FABRICATION

STORM SEWER RING GRATE FOR OPEN END OF 18" TO 72" RCP STUBS TO DITCH
NTS

02317-02



NOTES:
1. ACTUAL SHAPE OF CONCRETE TRENCH AND CROSS SECTION MAY BE DETERMINED BY CONTRACTOR IN FIELD, MEETING MINIMUM THICKNESS AND KEY DEPTH REQUIREMENTS.
2. THIS DETAIL SHALL BE USED WITH CEMENT STABILIZED SAND EMBEDMENT, IN WET STABLE TRENCH CONDITIONS.
3. PLACE TRENCH DAMS IN CLASS I EMBEDMENTS AT THE MIDPOINT OF LINE SEGMENTS LONGER THAN 100 FEET BETWEEN MANHOLES.

SANITARY OR STORM SEWER CRUSHED STONE FOUNDATION FOR WET STABLE TRENCH
NTS

FIRM INFORMATION | ENGINEER'S SEAL

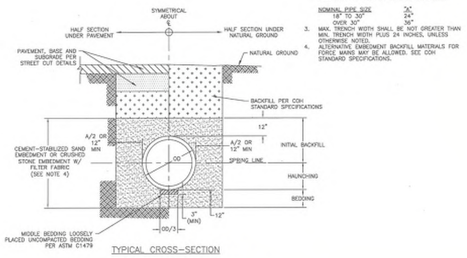
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02084-09 THROUGH 11
AND 02317-02

APPROVED BY: CITY ENGINEER | APPROVED BY: DEPUTY DIRECTOR
APPROVED BY: DIRECTOR
EFFECTIVE DATE: JUL-01-2019
FOR CITY OF HOUSTON USE ONLY

SHEET NO.

02317-03



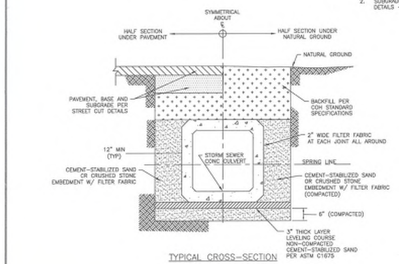
NOTES:
1. THIS DETAIL MAY BE USED ONLY FOR DRY STABLE TRENCH CONDITIONS PER COH STANDARD. SEE COH STANDARD SPECIFICATION FOR REQUIREMENTS IN OTHER CONDITIONS.
2. MIN. TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE.

NOMINAL PIPE SIZE	"A"
18" TO 30"	24"
OVER 30"	36"

3. MAX. TRENCH WIDTH SHALL BE NOT GREATER THAN MIN. TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
4. ALTERNATIVE EMBEDMENT BACKFILL MATERIALS FOR FORCE MAINS MAY BE ALLOWED. SEE COH STANDARD SPECIFICATIONS.

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

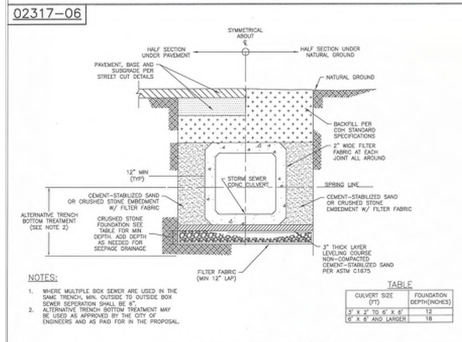
02317-05



NOTES:
1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
2. SUBGRADE AND PAVEMENT FOR STREET CUT DETAILS - 02951.

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

02317-06



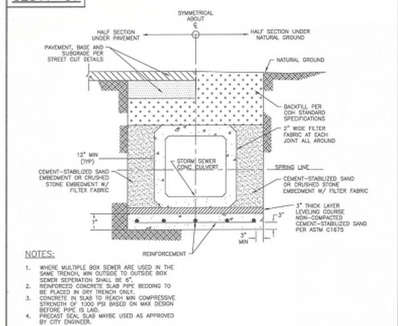
NOTES:
1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
2. ALTERNATIVE TRENCH BOTTOM TREATMENT MAY BE USED AS APPROVED BY THE CITY OF ENGINEERS AND AS PAID FOR IN THE PROPOSAL.

TABLE

CULVERT SIZE (I.T.)	FOUNDATION DEPTH(INCHES)
3' x 2' TO 6' x 6'	12
6' x 6' AND LARGER	18

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

02317-07



NOTES:
1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
2. REINFORCED CONCRETE SLAB PIPE BEDDING TO BE PLACED IN DRY TRENCH ONLY.
3. CONCRETE SLAB TO HAVE A MIN. COMPRESSIVE STRENGTH OF 1,000 PSI BASED ON MAX DESIGN BEFORE PIPE IS LAID.
4. PRECAST SEAL SLAB MAYBE USED AS APPROVED BY CITY ENGINEER.

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

FIRM INFORMATION | ENGINEER'S SEAL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02317-03 THROUGH 07

APPROVED BY: CITY ENGINEER | APPROVED BY: DEPUTY DIRECTOR
APPROVED BY: DIRECTOR
EFFECTIVE DATE: JUL-01-2019
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DCCM.com

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TEXAS REGISTRATION No. 98576

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FB NO. 6399

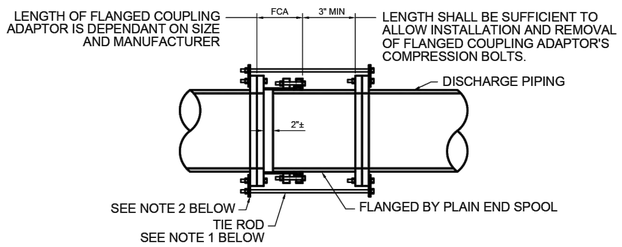
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MECHANICAL DETAILS
SANITARY SEWER

(SHEET 4 OF 4)

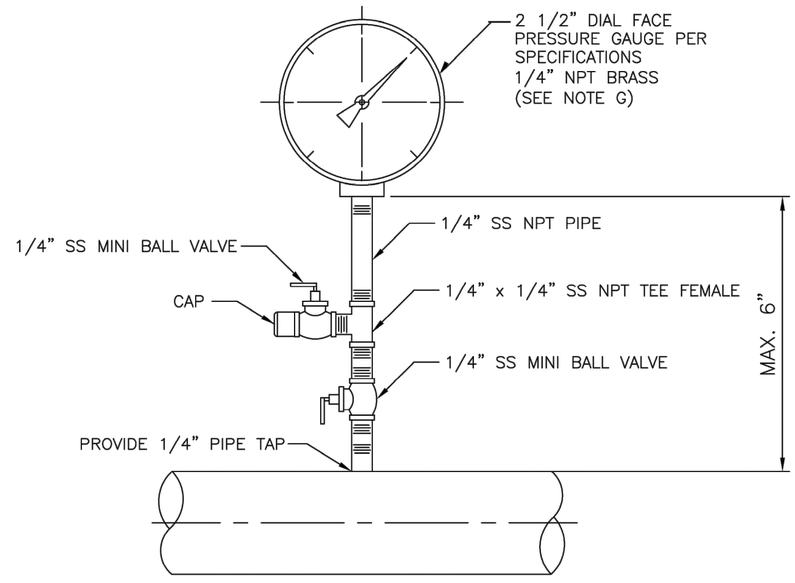
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CITY OF HOUSTON PM	
MARLENA STOICA, P.E.	
SHEET NO. 275 OF 298	D-114



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.

1 / D-501 TYP FLANGED COUPLING ADAPTER RESTRAINT DETAIL
N.T.S.



1. ALL FITTINGS SHALL BE STAINLESS STEEL (316).

2 / D-501 PRESSURE GAUGE DETAIL
N.T.S.

DCCM

5engineering
11200 WESTHEIMER ROAD, SUITE 353
HOUSTON, TEXAS 77042
(832) 800-3483 | www.5engineering.com
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DATE: February 23, 2026
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FB NO. 6399

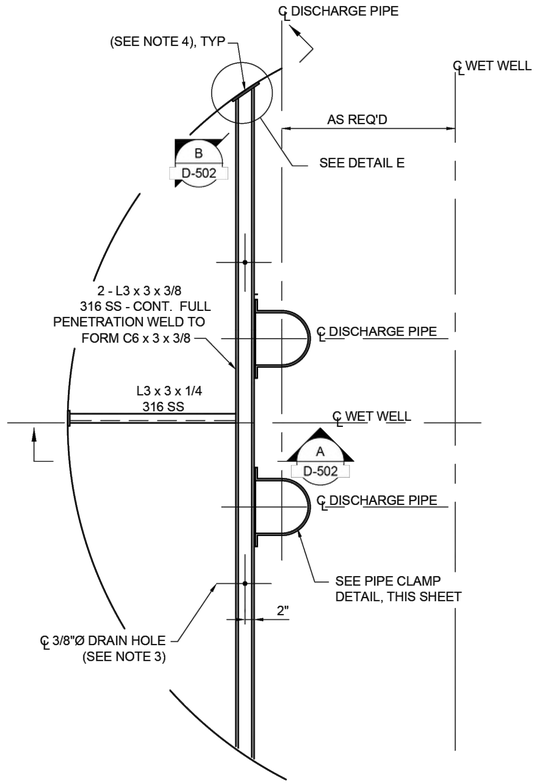
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

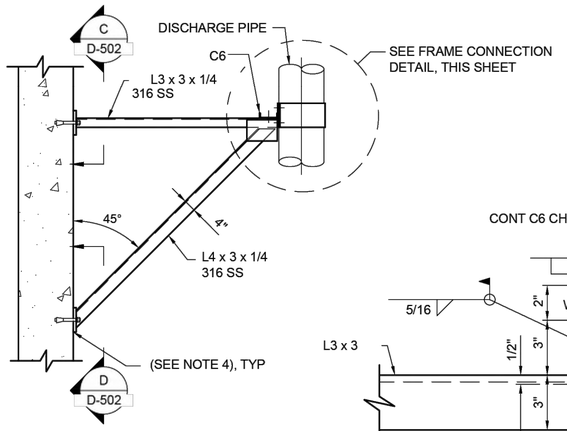
MECHANICAL DETAILS
STANDARD DETAILS
PRESSURE GUAGE
(SHEET 1 OF 7)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 276 OF 298	D-115

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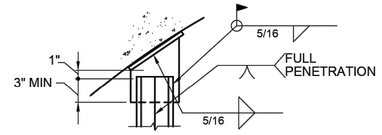


TYP DISCHARGE PIPING SUPPORT PLAN FOR 2 PUMPS

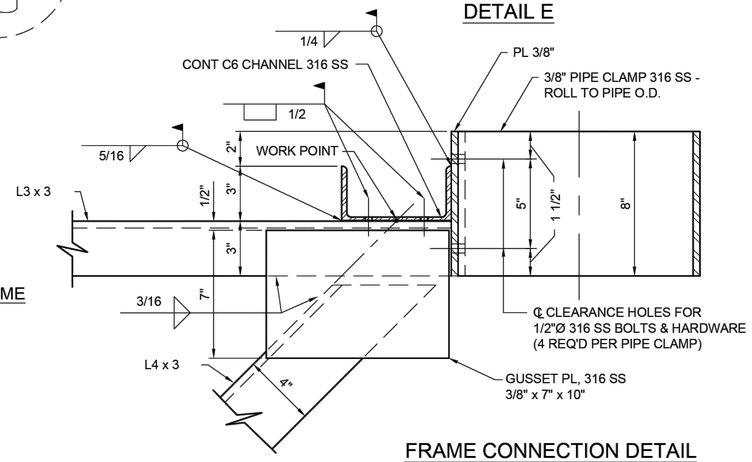


TYP LATERAL PIPE SUPPORT FRAME

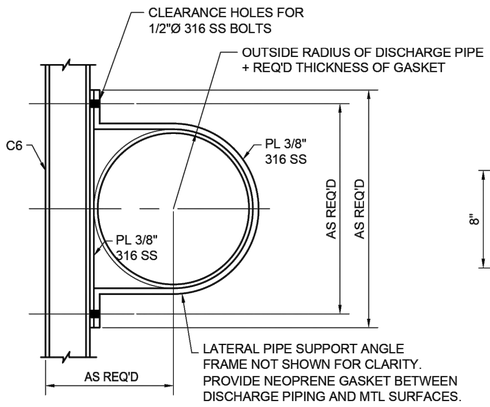
A D-502 **SECTION** N.T.S.



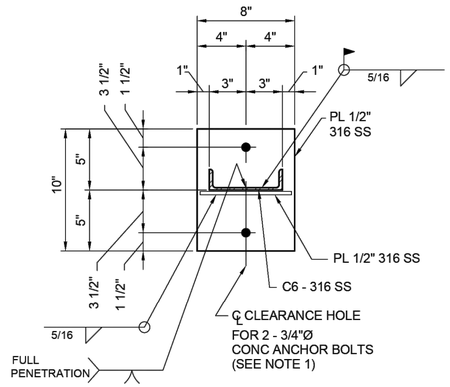
DETAIL E



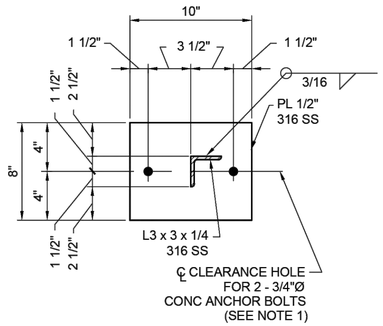
FRAME CONNECTION DETAIL



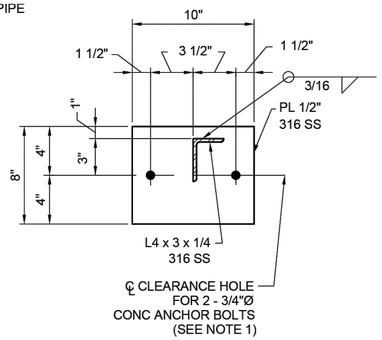
PIPE CLAMP DETAIL



B D-502 **SECTION** N.T.S.



C D-502 **SECTION** N.T.S.



D D-502 **SECTION** N.T.S.

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 ⅜" Ø HOLES 1" OFF C 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 ¼" NEOPRENE GASKET ON WALL SURFACE IN SIKA 1A (OR EQUAL) SEALANT.

DCCM

5engineering
11200 WESTHEIMER ROAD, SUITE 353
HOUSTON, TEXAS 77042
(832) 800-3483 | www.5engineering.com
TBPE FIRM NO. F-13748

FOR INTERIM REVIEW ONLY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF
PIERO BATTISTINI, P.E.
TEXAS P.E. NO 104895
DATE: February 23, 2026
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SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

MECHANICAL DETAILS
STANDARD DETAILS

(SHEET 2 OF 7)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 277 OF 298	D-116

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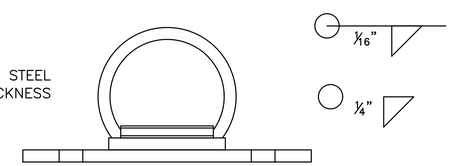
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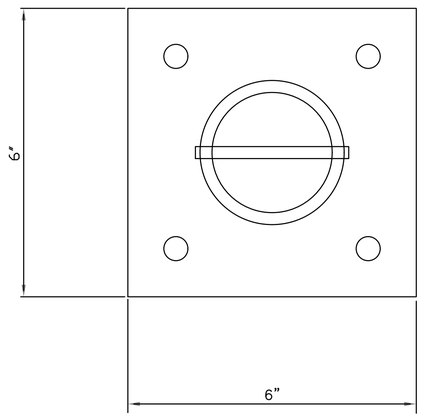
3" DROP FORGED "D" RING

2" DIAMETER STEEL
PLATE 1/8" THICKNESS

2 1/2" DIAMETER STEEL
PLATE 3/16" THICKNESS



SIDE VIEW



PLAN VIEW

CB SERIES FALL PROTECTION CB-1B BOLT ANCHORED

DETAIL 1 / Z0C10
NTS

NOTES:

STEEL BASE PLATE SHALL BE ¼" HOT ROLLED STEEL PLATE THAT MEETS ASTM A-570 SPECIFICATIONS.

2 ½" DIAMETER STEEL PLATE, 3/16" THICK ATTACHED TO BASE PLATE USING ¼" FILLET WELD.

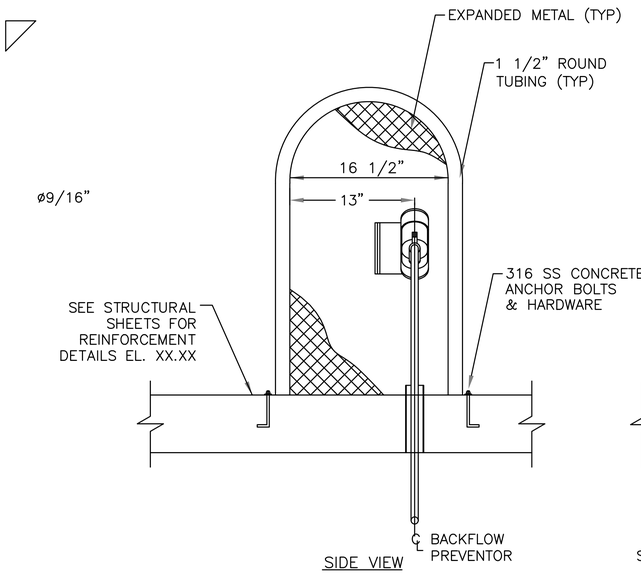
2" DIAMETER FORMED STEEL PLATE, ⅛" THICK USED TO ATTACHED "D" RING TO THE 2 ½" DIAMETER STEEL PLATE USING A 1/16" FILLET WELD.

BASE PLATE CAN BE BOLTED TO CONCRETE, STEEL, OR WOOD AS NEEDED PER APPLICATION.

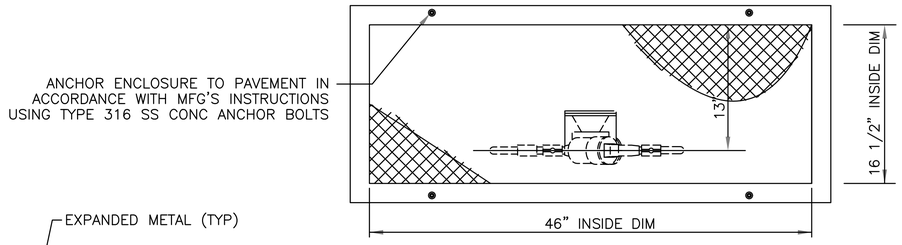
ANCHOR BOLTS SHALL BE ½" DIAMETER ANCHOR BOLTS.

ANCHOR BOLTS SHALL SUSTAIN A MINIMUM ULTIMATE PULL-OUT LOAD OF AT LEAST 6,000 POUNDS.

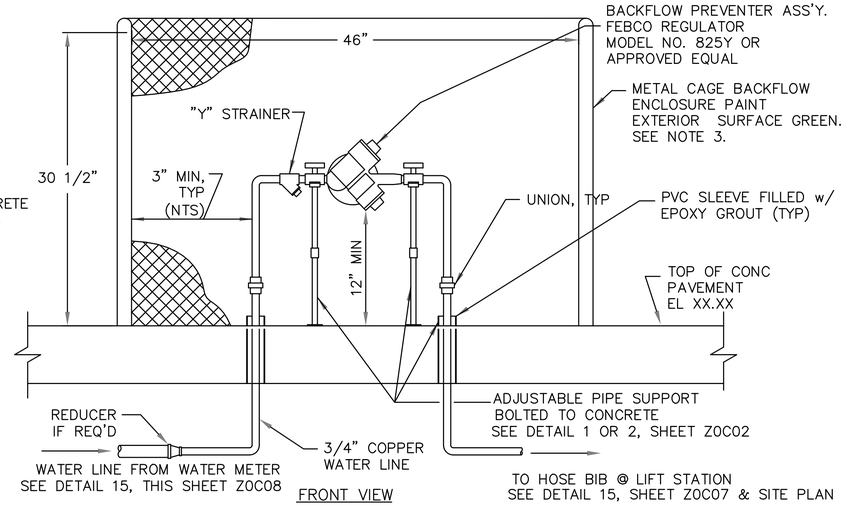
WELDING SHALL BE PERFORMED BY A CERIFIFIED WELDER USING E-70XX ROD OR WIRE FEED.



SIDE VIEW



PLAN VIEW



FRONT VIEW

NOTE:

1. VERIFY BYPASS MANHOLE DIAMETER WITH COH PM. MINIMUM DIAMETER SIZE EQUAL TO 6 FEET.

REDUCED PRESSURE BACKFLOW PREVENTOR INSTALLATION

DETAIL 2 / Z0C10

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

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FB NO. 6399

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

MECHANICAL DETAILS
STANDARD DETAILS
BYPASS MANHOLE DETAIL
(SHEET 4 OF 7)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 279 OF 298	D-118

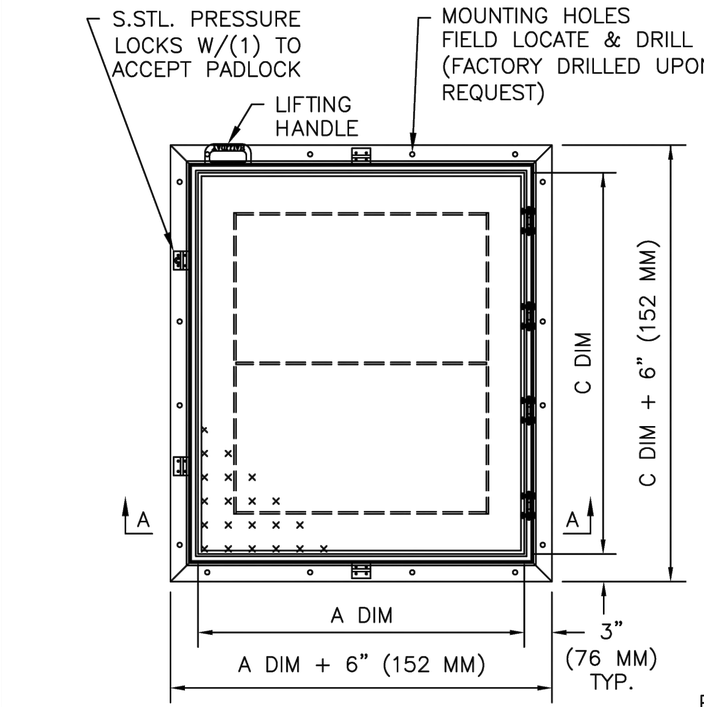
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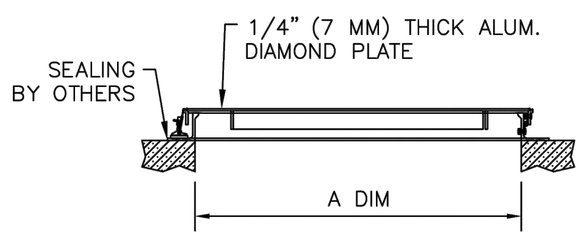
SERIES F1R ACCESS DOOR

HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone: (800) 298-1027
Local: (407) 298-4470
Sales@HallidayProducts.com

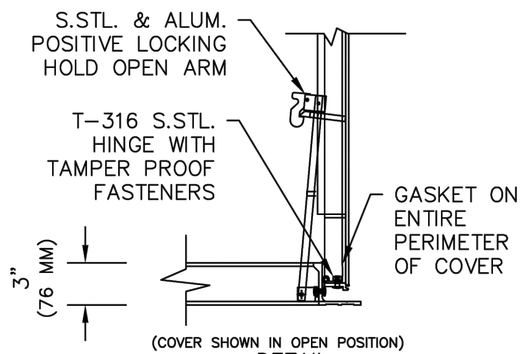
STANDARD FEATURES:

- 625 LBS. PER SQ. FT. LOAD RATING (3051 KB PER SQ. METER LOAD RATING)
- FLOODTIGHT UP TO 10FT COLUMN OF WATER
- EXTRUDED ALUMINUM ANGLE FRAME
- AUTO-LOCK T-316 STAINLESS STEEL HOLD OPEN ARM WITH RELEASE HANDLE
- TYPE-316 STAINLESS STEEL HINGES AND ATTACHING HARDWARE
- STAINLESS STEEL PRESSURE LOCKS (1 TO ACCEPT PADLOCK)
- 1/4" (7 MM) X 1 1/2" (38 MM) EPDM/NEOPRENE GASKET
- SINGLE LEAF CONSTRUCTION
- LIFETIME GUARANTEE





SECTION A-A



(COVER SHOWN IN OPEN POSITION)
DETAIL

STANDARD SIZES				
QTY.	MODEL NO.	A DIM. INCHES (MM)	C DIM. INCHES (MM)	UNIT WT. LBS. (KG)
	F1R2424	24 (610)	24 (610)	46 (21)
	F1R2430	24 (610)	30 (762)	51 (23)
	F1R2436	24 (610)	36 (914)	61 (28)
	F1R2442	24 (610)	42 (1067)	77 (35)
	F1R2448	24 (610)	48 (1219)	85 (39)
	F1R3030	30 (762)	30 (762)	54 (24)
	F1R3036	30 (762)	36 (914)	69 (31)
	F1R3042	30 (762)	42 (1067)	77 (35)
	F1R3048	30 (762)	48 (1219)	85 (39)
	F1R3054	30 (762)	54 (1372)	99 (45)
	F1R3060	30 (762)	60 (1524)	106 (48)
	F1R3636	36 (914)	36 (914)	70 (32)
	F1R3642	36 (914)	42 (1067)	89 (40)
	F1R3648	36 (914)	48 (1219)	97 (44)
	F1R3654	36 (914)	54 (1372)	107 (49)
	F1R3660	36 (914)	60 (1524)	104 (47)
	F1R3666	36 (914)	66 (1676)	126 (57)
	F1R3672	36 (914)	72 (1829)	135 (61)

F1R SERIES R0

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

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FB NO. 6399

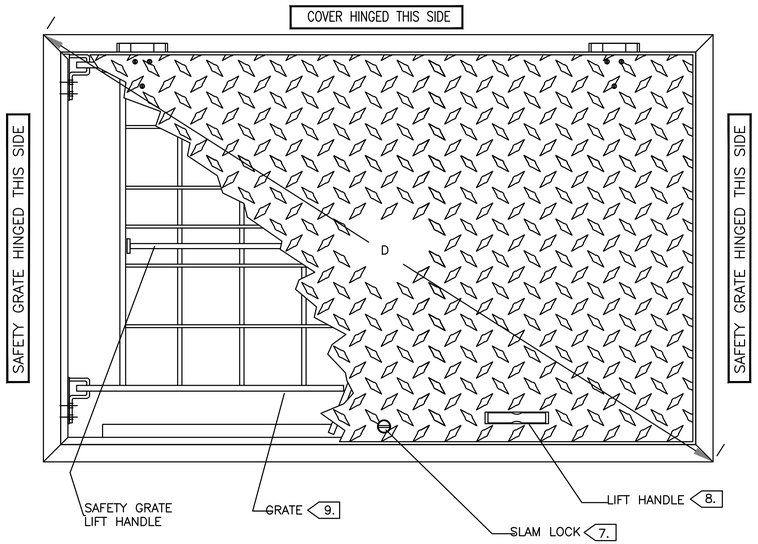
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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

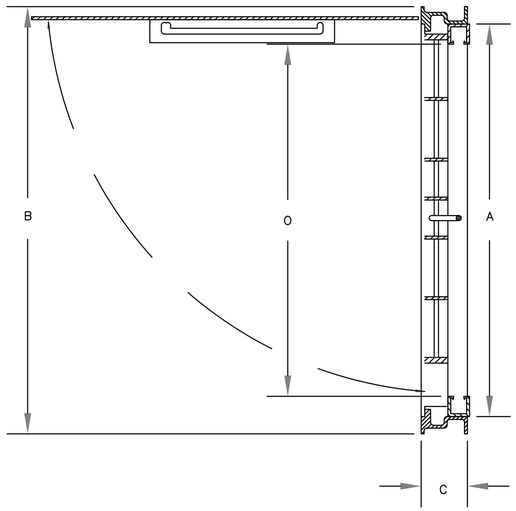
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
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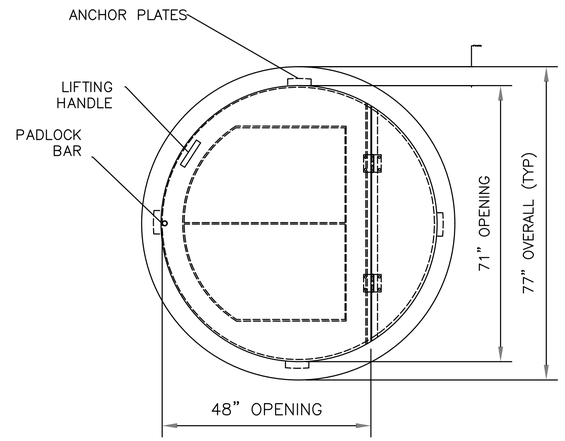
MECHANICAL DETAIL
STANDARD DETAIL
SERIES F1R ACCESS DOOR
(SHEET 5 OF 7)

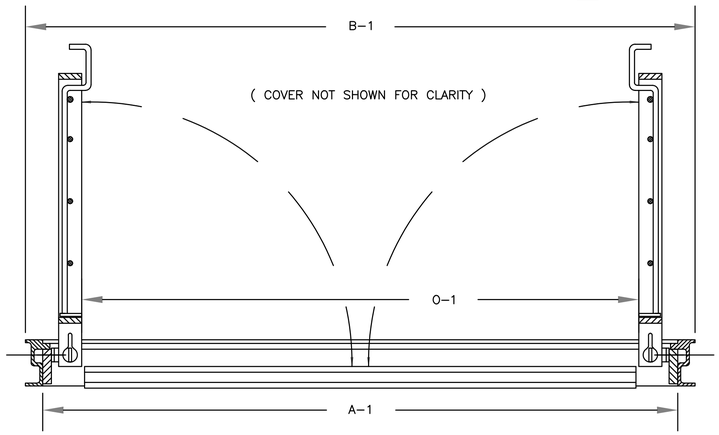
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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 280 OF 298	D-119

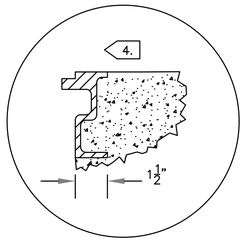




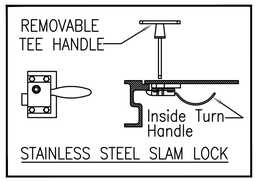
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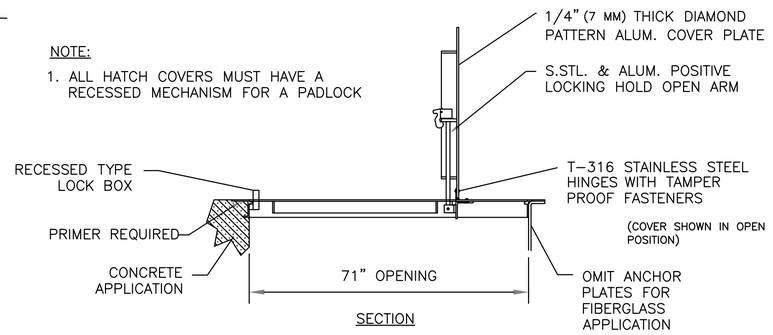


DETAIL B



DETAIL A

NOTE:
1. ALL HATCH COVERS MUST HAVE A RECESSED MECHANISM FOR A PADLOCK



SECTION

PATTERN NO.	DIMENSIONS IN INCHES		UNOBSTRUCTED CLEAR OPENING	HEIGHT	DIAGONAL
ALUMINUM	A x A1	B x B1	O x O1	C	D
FLED-AOSH	PER MANUFACTURER	PER MANUFACTURER	MATCH EXISTING	PER MANUFACTURER	PER MANUFACTURER

1.) MATERIAL SHALL BE 6061-T6 ALUMINUM FOR BARS, ANGLES, AND EXTRUSIONS. 1/4" DIAMOND PLATE SHALL BE 5086 ALUMINUM. EXTERIOR OF FRAME WHICH COMES IN CONTACT WITH CONCRETE SHALL HAVE ONE COAT FOREST GREEN PAINT.

2.) UNIT DESIGNED PEDESTRIAN RATED FOR A MINIMUM LIVE LOAD OF 300 LBS./SQ.FT.

3.) DOOR SHALL BE EQUIPPED WITH A HOLD OPEN ARM. DOOR SHALL LOCK OPEN IN THE 90 DEGREE POSITION. HOLD OPEN ARM SHALL BE FASTENED TO THE FRAME WITH A 1/2" GRADE 316 STAINLESS STEEL BOLT.

4. ANGLE FRAME SHALL BE OF EXTRUDED ALUMINUM, WITH A CONTINUOUS 1-1/2" ANCHOR FLANGE.

5.) COVER HINGES SHALL BE OF HEAVY DUTY DESIGN. MATERIAL SHALL BE GRADE 316 STAINLESS STEEL. EACH HINGE SHALL HAVE A GRADE 316 STAINLESS STEEL, 3/8" DIAMETER HINGE PIN. HINGE SHALL BE FASTENED TO ANGLE AND DIAMOND PLATE WITH GRADE 316 STAINLESS STEEL BOLTS AND NY-LOCK NUTS.

6.) ALL HARDWARE SHALL BE STAINLESS STEEL.

7. EACH HATCH SHALL BE SUPPLIED WITH A GRADE 316 STAINLESS STEEL SLAM LOCK, WITH KEY WAY PROTECTED BY A THREADED PLUG. PLUG SHALL BE FLUSH WITH THE TOP OF THE 1/4" DIAMOND PLATE. SLAM LOCK SHALL BE FASTENED WITH FOUR GRADE 316 STAINLESS STEEL BOLTS AND WASHERS.

8. EACH HATCH SHALL BE EQUIPPED WITH AN ALUMINUM LIFT HANDLE. THE LIFT HANDLE SHALL BE FLUSH WITH THE TOP OF THE 1/4" DIAMOND PLATE.

9. UNITS SHALL BE SUPPLIED WITH A HINGED SAFETY GRATES (SAFETY YELLOW) TO PROVIDE PROTECTION AGAINST FALL THROUGH AND TO CONTROL ACCESS TO THE CONFINED SPACE. (SEE SAFETY GRATE SPECIFICATIONS ON SEPARATE PAGE.)

10.) HATCH COVERS SHALL BE PAINTED FOREST GREEN TO DEMARCATE AND PREVENT VANDALISM.

LIFT STATION WET WELL AND SPLITTER BOX HATCHES

SOURCE: ITT/FLYGT

STANDARD FEATURES:

- AUTO-LOCK T-316 STAINLESS STEEL HOLD OPEN ARM WITH RELEASE HANDLE
- T-316 STAINLESS STEEL HINGES AND ATTACHING HARDWARE
- NON-CORROSIVE LOCKING BAR
- SINGLE LEAF CONSTRUCTION FOR MAXIMUM ACCESS
- 300 LBS. PER SQ. FT. LOAD RATING (1464 KG. PER SQ. METER LOAD RATING)
- EXTRUDED ALUMINUM FRAME
- RECESSED LIFTING HANDLE
- ANCHOR PLATES (ORDER WITHOUT FOR FIBERGLASS OR DROP-IN INSTALLATIONS)
- LIFETIME GUARANTEE
- COVERED FRAME PAINTED FOREST GREEN
- PROVIDE ACCESS HATCH DOOR WITH RECESSED (PATERNAL) TYPE PADLOCK CLIPS. EXPOSED PADLOCK CLIP NOT ALLOWED.

STANDARD SIZES					
QTY.	MODEL NO.	A DIM. INCHES (MM)	B DIM. INCHES (MM)	C DIM. INCHES (MM)	UNIT WT. LBS. (KG.)
1	R1R72	48 (1219)	71 (1803)	77 (1956)	175 (79)

FORCE MAIN BYPASS MANHOLE HATCH

SOURCE: HALLIDAY PRODUCTS
PHONE: 1 (800) 298-1027

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON
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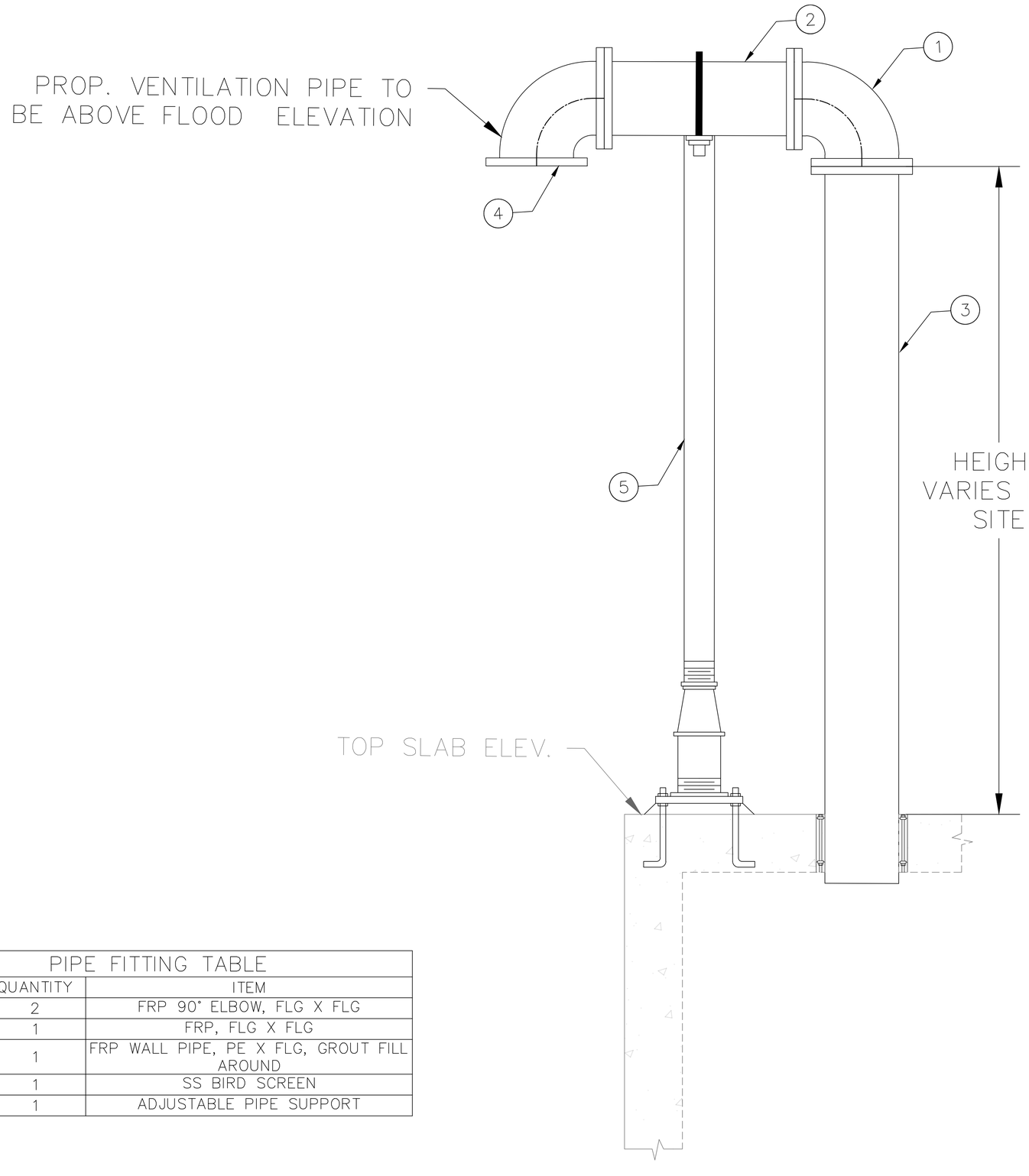
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

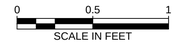
MECHANICAL DETAILS
STANDARD DETAIL

(SHEET 6 OF 7)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N/A VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 281 OF 298	D-120

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PIPE FITTING TABLE		
ITEM NO.	QUANTITY	ITEM
1	2	FRP 90° ELBOW, FLG X FLG
2	1	FRP, FLG X FLG
3	1	FRP WALL PIPE, PE X FLG, GROUT FILL AROUND
4	1	SS BIRD SCREEN
5	1	ADJUSTABLE PIPE SUPPORT

DCCM

DCCM, Inc.
TxEng F-257
1710 Seamist Dr
Houston, TX 77008
713.869.3433
DCCM.com

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RESPONSIBLE ENGINEER:
LI CHUNG CHEN
TEXAS REGISTRATION No. 98576

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

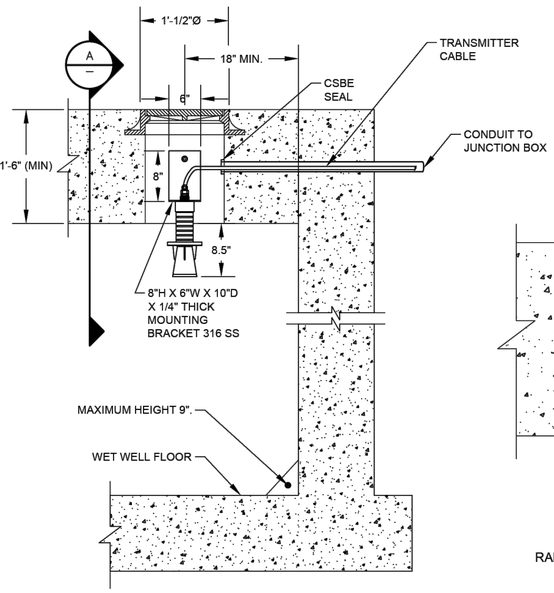
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

MECHANICAL DETAILS
STANDARD DETAIL
VENTILATION PIPE
(SHEET 7 OF 7)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 282 OF 298	D-121

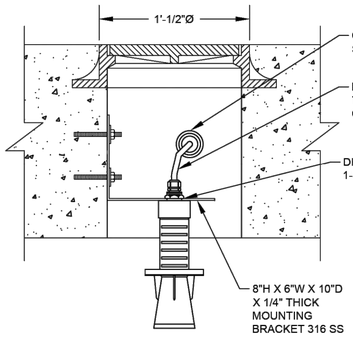
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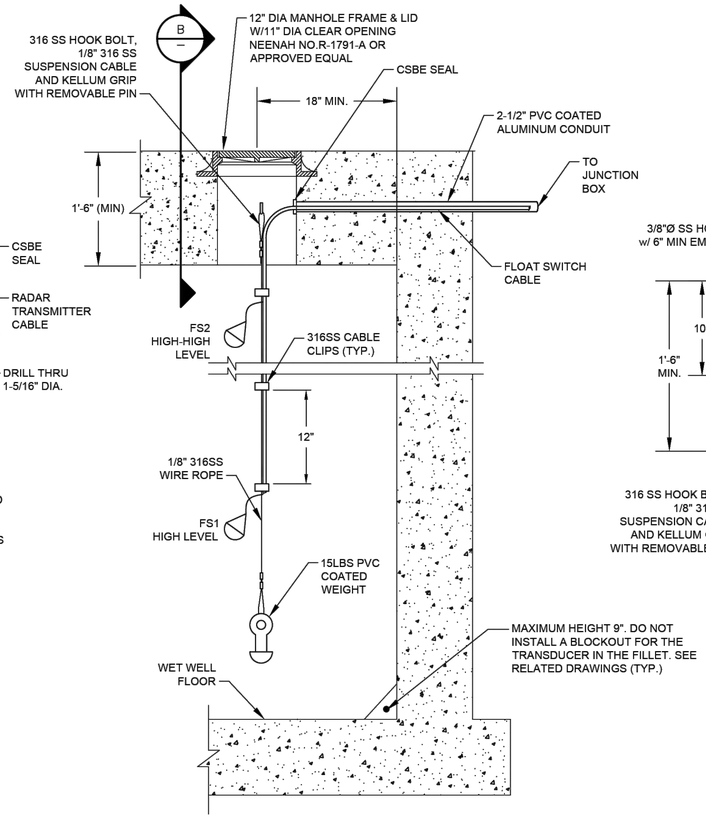
RADAR LEVEL TRANSMITTER MOUNTING
(TYP. LT-1, LT-2)

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



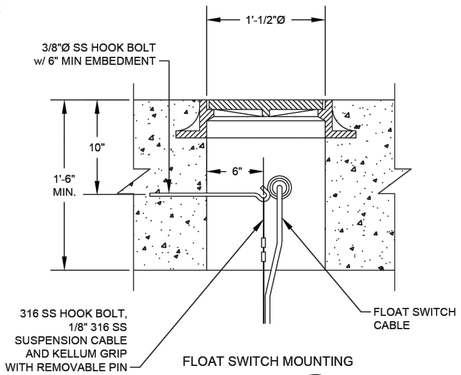
RADAR LEVEL TRANSMITTER MOUNTING
TYP. LT-1 & LT-2

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



FLOAT SWITCH MOUNTING

DETAIL 2
NTS
(SEE NOTES 3, 4 & 5)

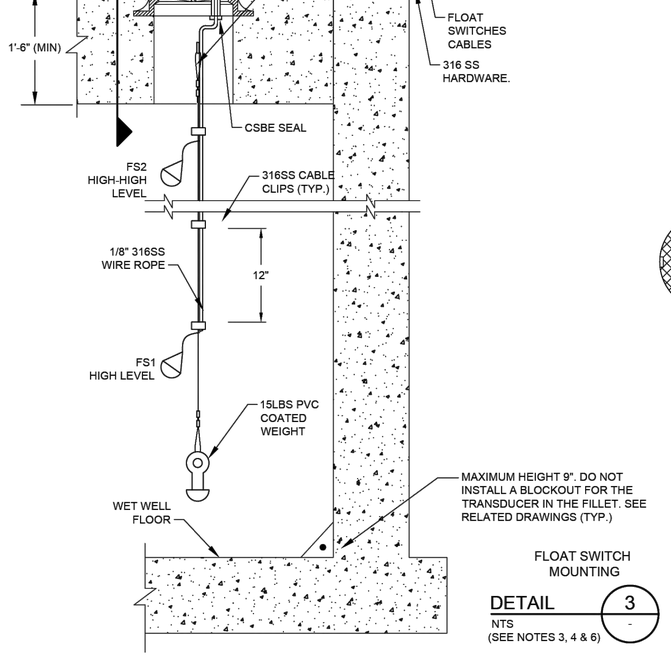


FLOAT SWITCH MOUNTING

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

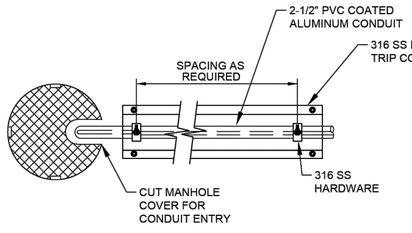
NOTES:

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. 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.



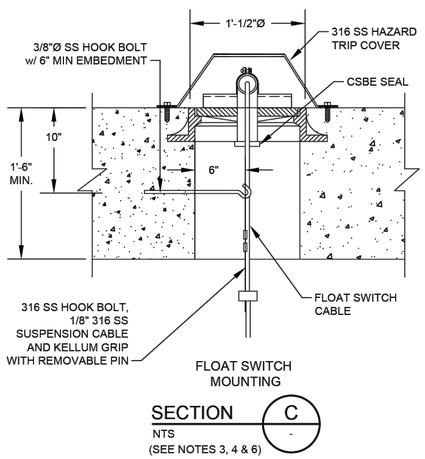
FLOAT SWITCH MOUNTING

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



FLOAT SWITCH MOUNTING
TOP VIEW

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



FLOAT SWITCH
MOUNTING

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

		APP.
		REVISION
		DATE
		NO.

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

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HOSS FOROUZAN
TEXAS P.E. NO. 77748
DATE: 2/25/2026

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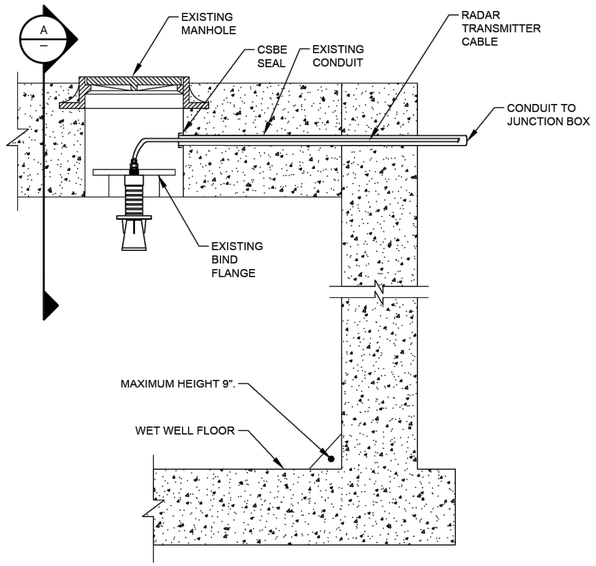
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GENERAL
RADAR LEVEL TRANSMITTER GAUGING SYSTEM INSTALLATION & DETAIL – I
(SHEET 1 OF 2)

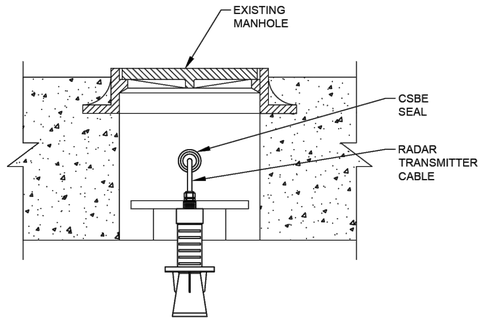
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 283 OF 298	D-122

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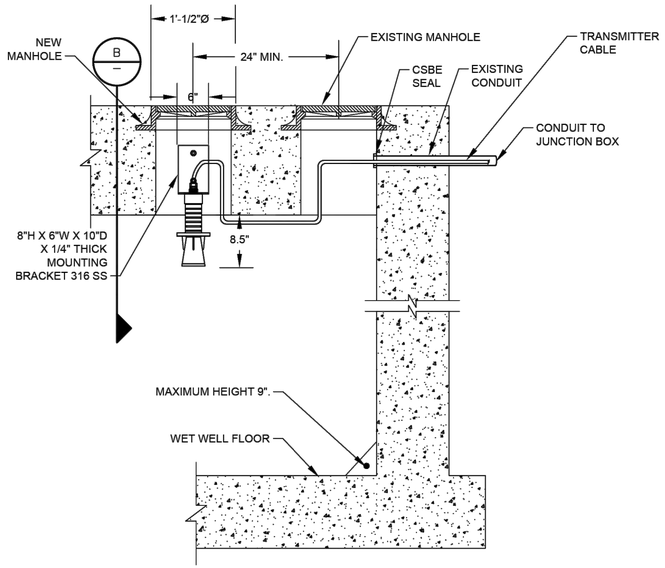
RADAR LEVEL TRANSMITTER MOUNTING
(TYP. LT-1, LT-2)

DETAIL 1
NTS
(SEE NOTES 1, 2, 4,)



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

SECTION A
NTS
(SEE NOTES 1, 2, 4,)

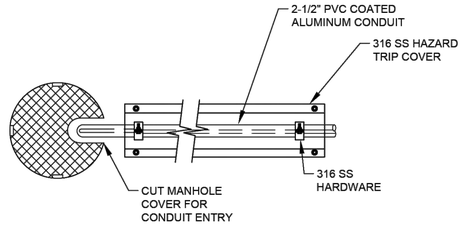


RADAR LEVEL TRANSMITTER MOUNTING
(TYP. LT-1, LT-2)

DETAIL 2
NTS
(SEE NOTES 1, 3, 4, 5,)

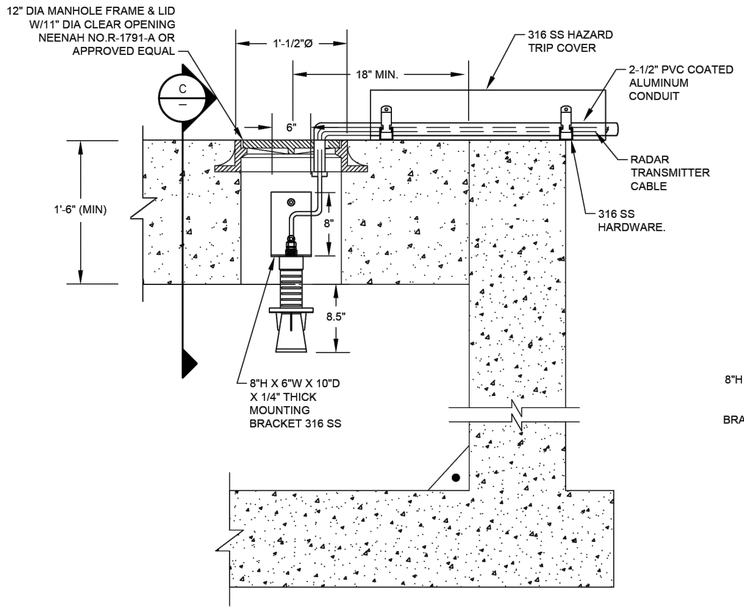
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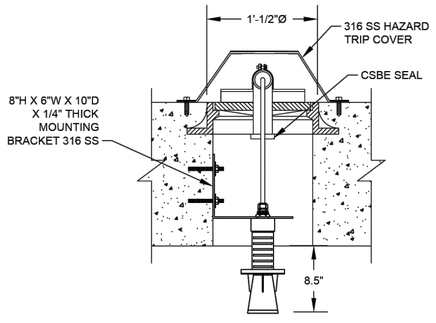
FLOAT SWITCH MOUNTING
TOP VIEW

DETAIL 4
NTS
(SEE NOTES 1, 4, 5 & 6)



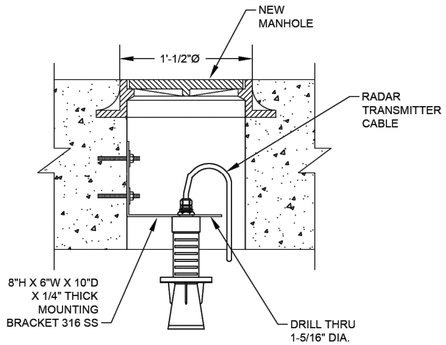
RADAR LEVEL TRANSMITTER MOUNTING
(TYP. LT-1, LT-2)

DETAIL 3
NTS
(SEE NOTES 1, 4, 5 & 6)



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

SECTION C
NTS
(SEE NOTES 1, 4, 5 & 6)



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

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

NO.	DATE	REVISION	APP.

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GAI
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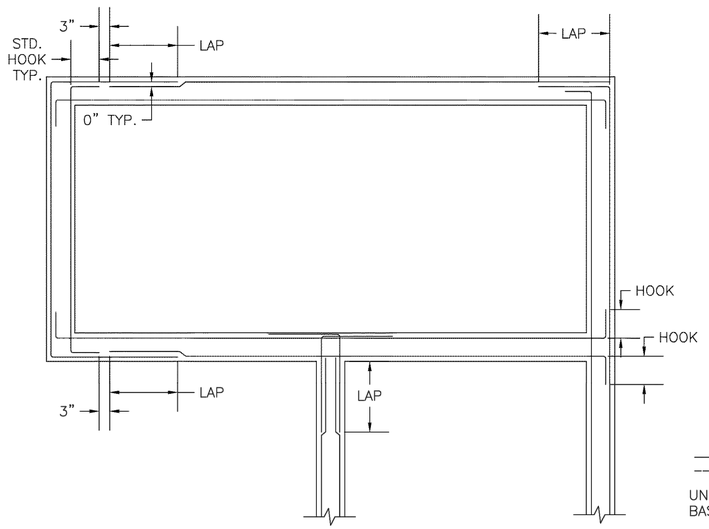
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

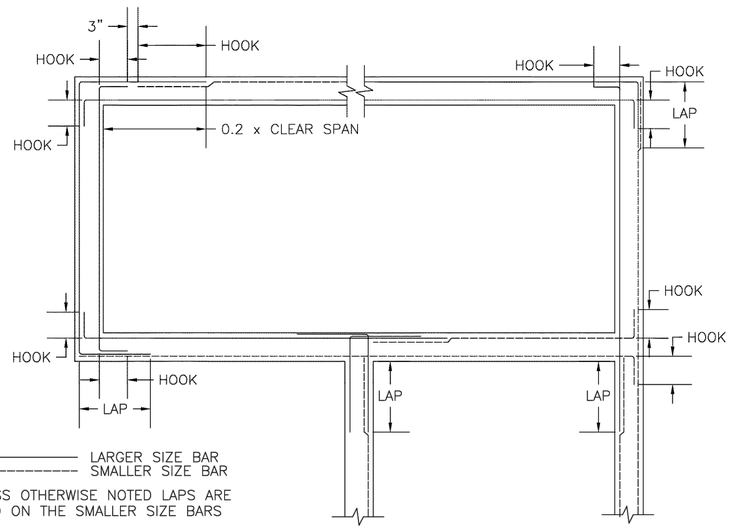
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GENERAL
RADAR LEVEL TRANSMITTER GAUGING SYSTEM INSTALLATION & DETAILS – II
(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 284 OF 298	D-123

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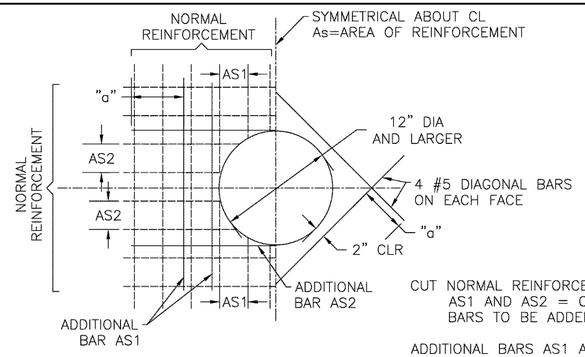


LARGER SIZE BAR
SMALLER SIZE BAR

UNLESS OTHERWISE NOTED LAPS ARE BASED ON THE SMALLER SIZE BARS

TYPICAL HORIZONTAL REINFORCEMENT AT WALL INTERSECTIONS

SCALE: NTS

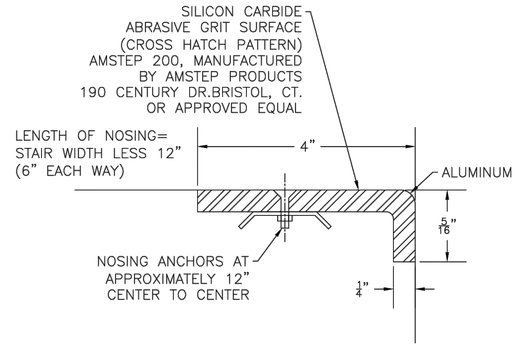


BAR SIZE	"a" GRADE 60
#4	15"
#5	21"
#6	24"
#7	27"
#8	36"
#9	42"
#10	48"

CUT NORMAL REINFORCEMENT AT OPENINGS:
AS1 AND AS2 = ONE HALF OF AREA OF CUT BARS TO BE ADDED ON EACH SIDE OF OPENING.

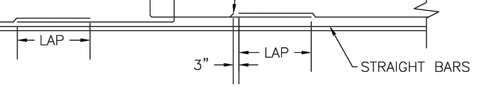
ADDITIONAL BARS AS1 AND AS2 TO BE PLACED
a) AT CL OF WALLS OR SLABS WHERE ONE LAYER OF REINFORCEMENT IS PROVIDED.
b) AT EACH FACE PF WALLS OR SLABS WHERE TWO LAYERS OF REINFORCEMENT ARE PROVIDED.

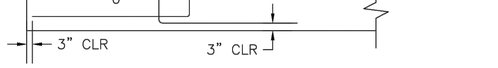
ADDITIONAL REINFORCEMENT AT CIRCULAR OPENINGS

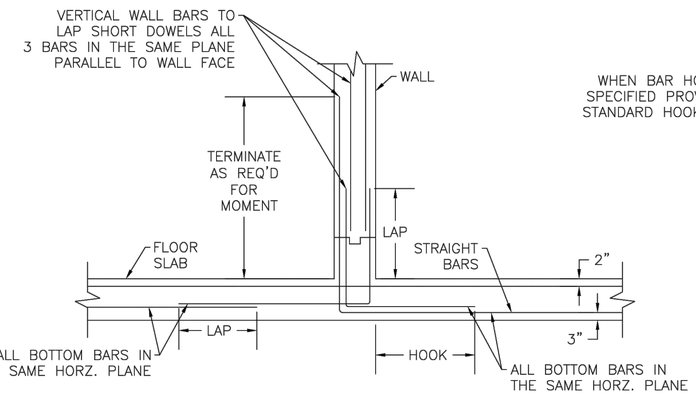


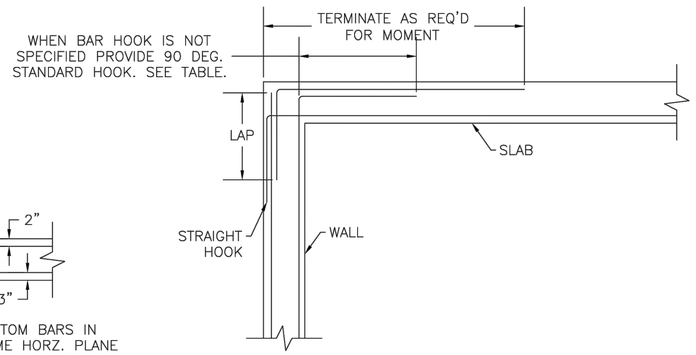
CONCRETE STAIR NOSING

SCALE: NTS









TYPICAL REINFORCING BAR DETAILING

SCALE: NTS

STANDARD HOOK LENGTHS

BAR SIZE	90 DEG. HOOK LENGTH
#3	6"
#4	6"
#5	8"
#6	9"
#7	11"
#8	12"
#9	14"
#10	15"
#11	17"

DEVELOPMENT LENGTHS Ld1 INCHES
(f'c=4000 PSI, fy=6000 PSI)

BAR SIZE	SLAB REINF (THICKNESS <12")	WALLS	BEAMS (D<12")	BEAMS (D>12") TOP BARS	BEAMS (D>12") BOT BARS
#3	14"	19"	14"	19"	14"
#4	19"	25"	19"	25"	19"
#5	24"	31"	24"	31"	24"
#6	28"	37"	28"	37"	28"
#7	42"	54"	42"	54"	42"
#8	47"	62"	47"	62"	47"
#9	54"	70"	54"	70"	54"
#10	60"	78"	60"	78"	60"
#11	67"	87"	67"	87"	67"

NOTE 1:
UNLESS OTHERWISE NOTED ON DRAWINGS, FOR TOP BARS IN BEAMS DEVELOPMENT LENGTH SHALL BE 1.3 TIMES LISTED DEVELOPMENT LENGTH FOR BOTTOM BARS.
HORZ. BARS IN WALLS ARE CONSIDERED AS TOP BARS AND VERTICAL BARS ARE BOTTOM BARS FOR DEVELOPMENT LENGTH PURPOSES.
LAP (SPLICE) LENGTH SHALL BE 1.3 TIMES DEVELOPMENT LENGTHS LISTED ABOVE FOR RESPECTIVE LOCATIONS.

NO.	DATE	REVISION	APP.

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neera
880 Tully Road
Ste 087
Houston, TX 77079
832.641.5413
TBPE Reg. No. F-14240

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

90% DESIGN

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PARDHA NAMUDURI, P.E.
#82977
FEBRUARY 2026

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CITY OF HOUSTON

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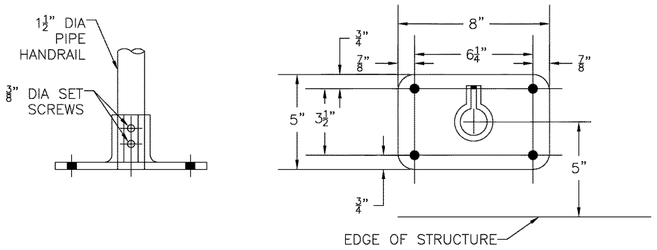
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STRUCTURAL DETAILS
STANDARD REINFORCEMENT DETAILS

(SHEET 1 OF 2)

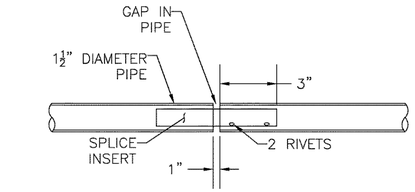
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CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 285 OF 298	D-124

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PLOT STYLE: 60Hetb
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FLOOR MOUNTING HANDRAIL DETAIL

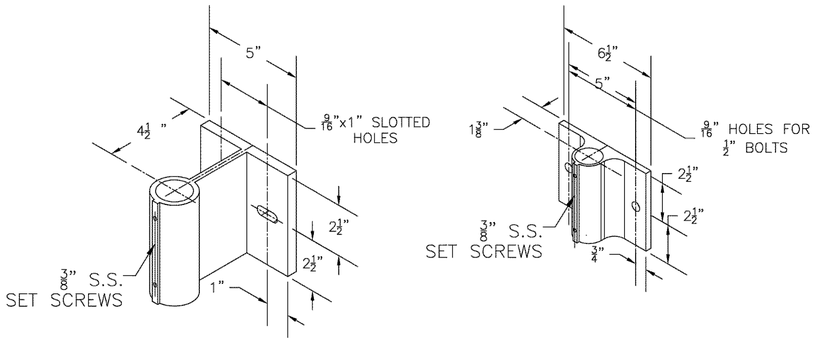
SCALE: NTS



TYPICAL AT ALL EXPANSION JOINTS IN STRUCTURES WHERE HANDRAIL IS CONTINUOUS ACROSS JOINT. EXPANSION JOINT IN HANDRAIL REQUIRED AT MAXIMUM SPACING OF 50 FEET.

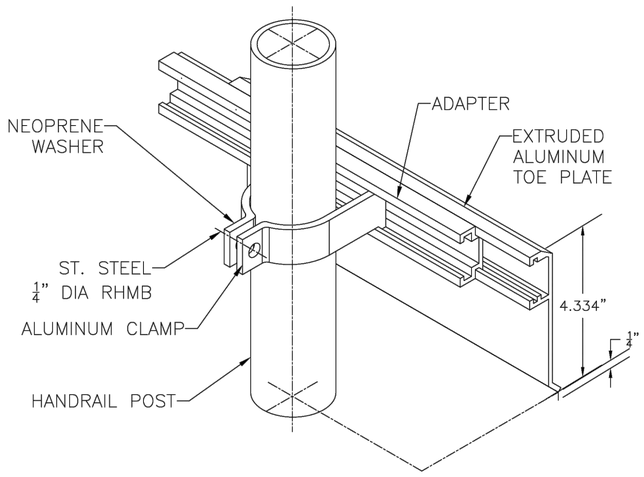
HANDRAIL EXPANSION JOINT

SCALE: NTS



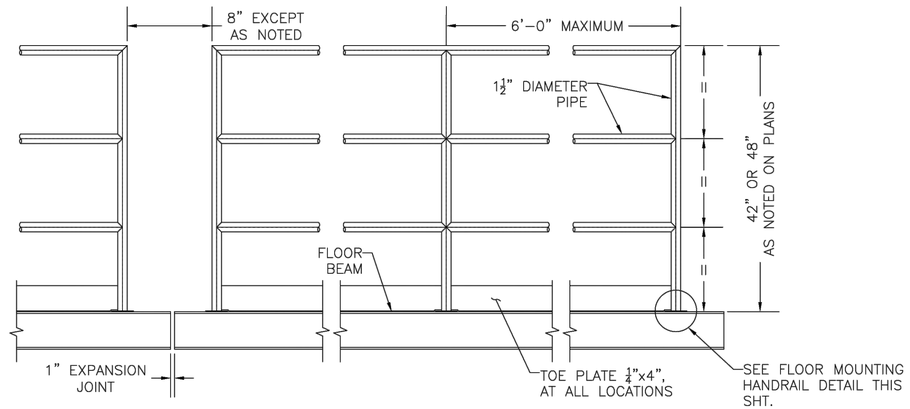
OUTBOARD HANDRAIL INSTALLATION

SCALE: NTS



TOE PLATE DETAILS

SCALE: NTS

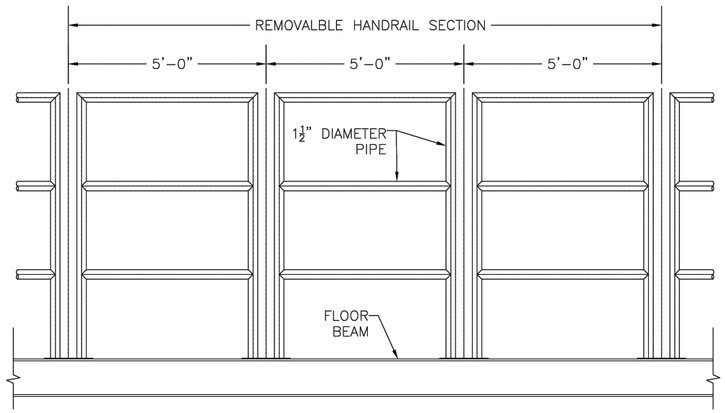


TYPICAL FLOOR MOUNTED HANDRAIL INSTALLATION

SCALE: NTS

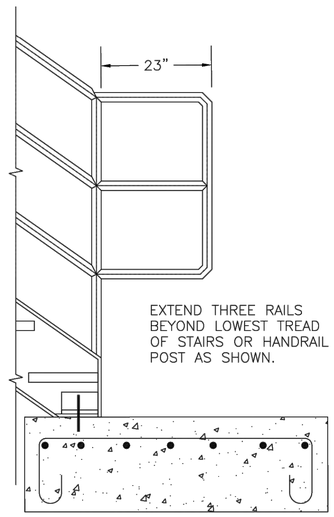
NOTES:

1. ALL HANDRAILS SHALL BE OF ALUMINUM CONSTRUCTION.
2. HANDRAIL & TOE PLATE TO BE TUFRAIL OR APPROVED EQUAL.
3. HANDRAIL DESIGN TO CONFORM TO UNIFORM BUILDING CODE UBC-2020.
4. LOCATE CENTER OF FLOOR MOUNTING ANCHOR FOR HANDRAIL 5" FROM EDGE OF STRUCTURE.



REMOVABLE HANDRAIL INSTALLATION

SCALE: NTS



HANDRAIL EXTENSION AT THE BOTTOM OF STAIRS

SCALE: NTS

NO.	DATE	REVISION	APP.

DCCM

neera
880 Tully Road
Ste 087
Houston, TX 77079
832.641.5413
TBPE Reg. No. F-14240

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

90% DESIGN

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF

PARDHA NAMUDURI, P.E.
#82977
FEBRUARY 2026

THIS DOCUMENT IS NOT INTENDED FOR BIDDING, PERMITTING AND/OR CONSTRUCTION PURPOSES

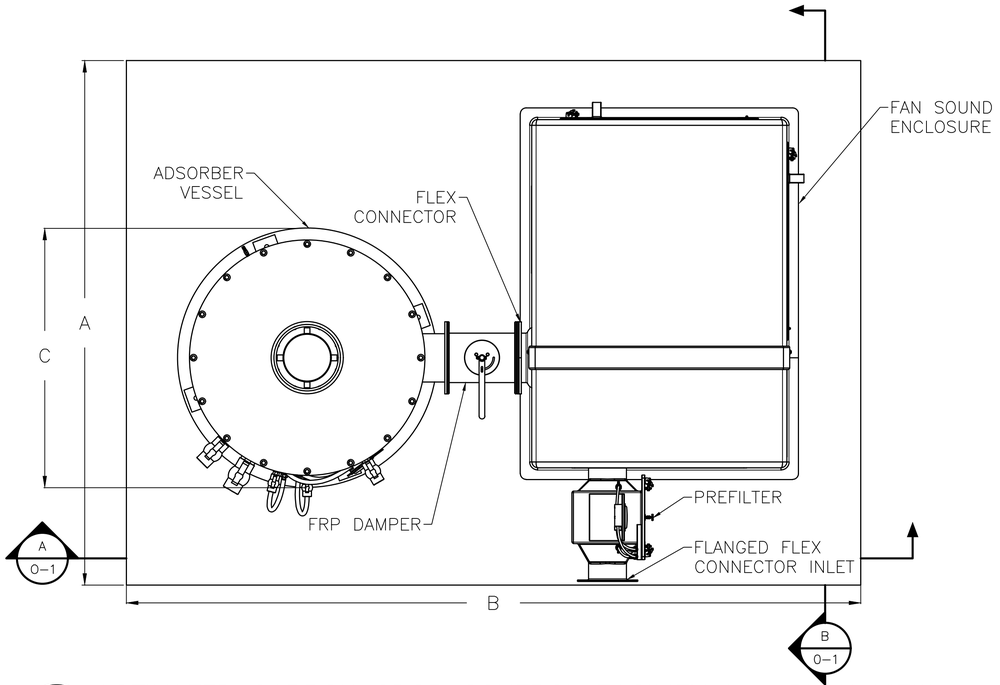
CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

STRUCTURAL DETAIL
HANDRAIL

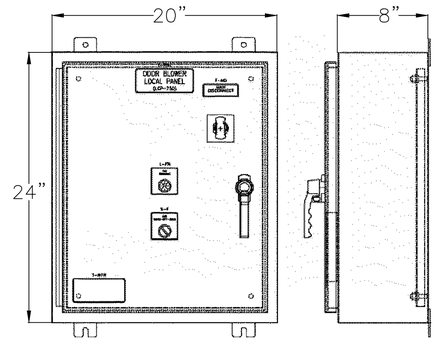
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 286 OF 298	D-125



1 / O-1 ACTIVATED CARBON ODOR CONTROL FACILITY 1 – PLAN VIEW

NTS

LIFT STATION NAME	AIR FLOW RATE (CFM)	SKID DIMENSIONS (IN.) (A x B)	CARBON ADSORBER DIMENSIONS (IN.) (C x D)	NO-LOSS DISCHARGE STACK (IN.) (E)	PRE-FILTER ELEVATION (IN.) (F)	INLET DUCT SIZE (IN.) (G)	SYSTEM OPERATING WEIGHT (LB.)
KINGWOOD PLACE SOUTH	200	90.0 x 126.0	38.5 x 68.6	32.9	19.7	4.0	809
DEER SPRINGS	200	90.0 x 126.0	38.5 x 68.6	32.9	19.7	4.0	809
AG FARM	600	96.0 x 132.0	56.5 x 68.6	32.9	19.7	8.0	1,839
GOLF COURSE	1,200	96.0 x 156.0	74.5 x 77.4	36.9	25.4	10.0	3,357



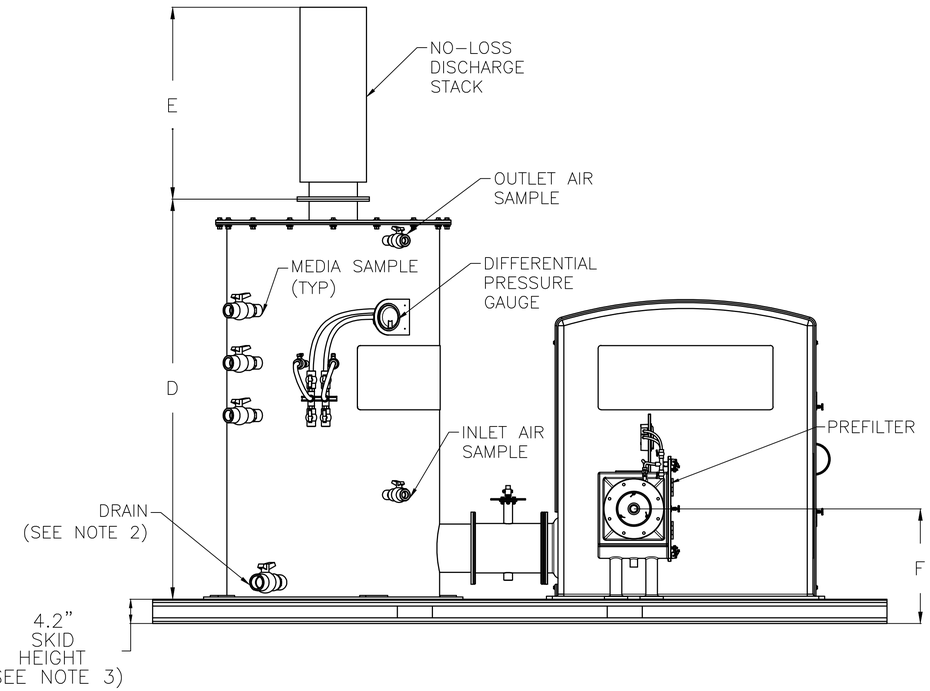
NOTE: PANEL SHALL BE SUPPLIED, LOCATED, AND INSTALLED MINIMUM THREE FEET AWAY FROM BLOWER, OR ODOR CONTROL VESSEL.

2 / O-1 ACTIVATED CARBON CONTROL PANEL

NTS

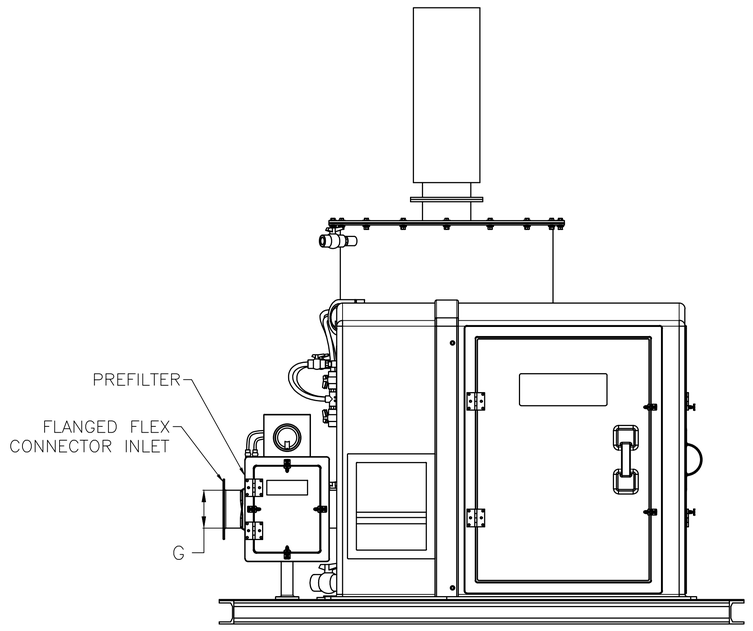
NOTES:

1. THE SKID AREA CONTAINS THE ACTIVATED CARBON ODOR CONTROL FACILITY.
2. DRAIN PORT MAY HAVE A CONSTANT DRIP AND SHALL BE PLUMBED A WITH 6" WATER TRAP.
3. THE ODOR CONTROL SYSTEM EQUIPMENT FOR EACH LIFT STATION IS PRE-MOUNTED ON A METALLIC SKID BY THE MANUFACTURER. THE METALLIC SKID SHALL BE INSTALLED ON A CONCRETE PAD AS SHOWN ON THE STRUCTURAL SHEETS. CONTRACTOR SHALL FIELD VERIFY THE HEIGHT OF THE CONCRETE SLAB TO CONFIRM ALL MECHANICAL CONNECTIONS.
4. ALL CARBON SHALL BE CONSIDERED NON-HAZARDOUS AND SHALL BE CAPABLE OF BEING DISPOSED OF AT A LANDFILL WITHOUT ADDITIONAL TESTING AND/OR CERTIFICATIONS.



A / O-1 ACTIVATED CARBON ODOR CONTROL FACILITY 1 – SECTION VIEW

NTS



B / O-1 ACTIVATED CARBON ODOR CONTROL FACILITY 1 – SECTION VIEW

NTS

DCCM

V&A Consulting Engineers, Inc.
15720 Park Row, Suite 500
Houston, TX 77084 Tel. (713) 568-9067
F-9154
V&A Project No.: 25-0263

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

INTERIM REVIEW ONLY
Document incomplete; not intended for regulatory approval, permit, or construction.
JAMES VAUGHAN HARSHMAN
Engineer
153247
Registered Number
01/19/2026
Date

V&A CONSULTING ENGINEERS, INC.
Texas Registered Engineering Firm
F-9154

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

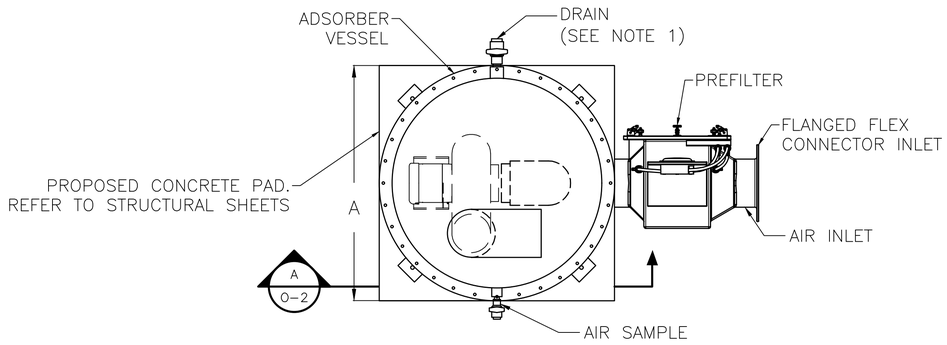
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

ODOR CONTROL SYSTEM DETAILS
CARBON ABSORBER
PLAN AND SECTION VIEW
(SHEET 1 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 287 OF 298	D-126

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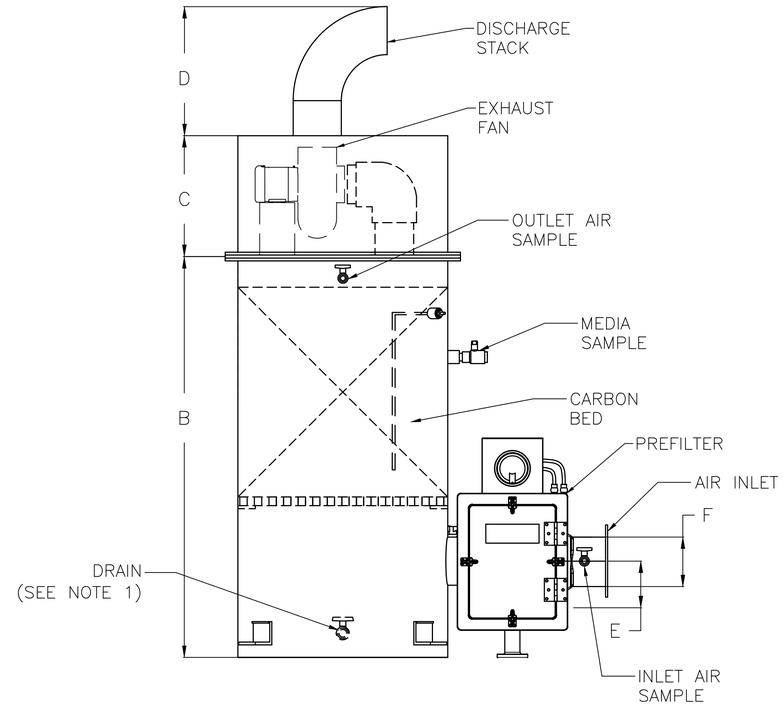


1 / O-2 ACTIVATED CARBON ODOR CONTROL FACILITY 2 – PLAN VIEW
NTS

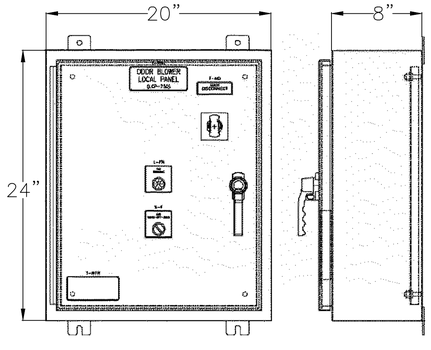
LIFT STATION NAME	AIR FLOW RATE (CFM)	CARBON ADSORBER DIMENSIONS (IN.) (A x B)	EXHAUST FAN (IN.) (C)	DISCHARGE STACK (IN.) (D)	AIR INLET HEIGHT (IN.) (E)	INLET DUCT SIZE (IN.) (F)	SYSTEM OPERATING WEIGHT (LB.)
GOLDEN BEAR LANE	450	41.0 x 60.0	20.0	22.0	8.0	9.0	1,150

NOTES:

1. DRAIN PORT MAY HAVE A CONSTANT DRIP AND SHALL BE PLUMBED A WITH 6" WATER TRAP.
2. THIS ODOR CONTROL SYSTEM EQUIPMENT WILL BE INSTALLED ON THE CONCRETE PAD. CONTRACTOR SHALL VERIFY THE HEIGHT OF THE CONCRETE SLAB TO CONFIRM ALL MECHANICAL CONNECTIONS.
3. ALL CARBON SHALL BE CONSIDERED NON-HAZARDOUS AND SHALL BE CAPABLE OF BEING DISPOSED OF AT A LANDFILL WITHOUT ADDITIONAL TESTING AND/OR CERTIFICATIONS.



A / O-2 ACTIVATED CARBON ODOR CONTROL FACILITY 2 – SECTION VIEW
NTS



NOTE: PANEL SHALL BE SUPPLIED, LOCATED, AND INSTALLED MINIMUM THREE FEET AWAY FROM BLOWER, OR ODOR CONTROL VESSEL.

2 / O-2 ACTIVATED CARBON CONTROL PANEL
NTS

DCCM

V&A
V&A Consulting Engineers, Inc.
15720 Park Row, Suite 500
Houston, TX 77084 Tel. (713) 568-9067
F-9154
V&A Project No.: 25-0263

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

INTERIM REVIEW ONLY
Document incomplete; not intended for regulatory approval, permit, or construction.
JAMES VAUGHAN HARSHMAN
Engineer
153247
Registered Number
01/19/2026
Date

V&A CONSULTING ENGINEERS, INC.
Texas Registered Engineering Firm
F-9154

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

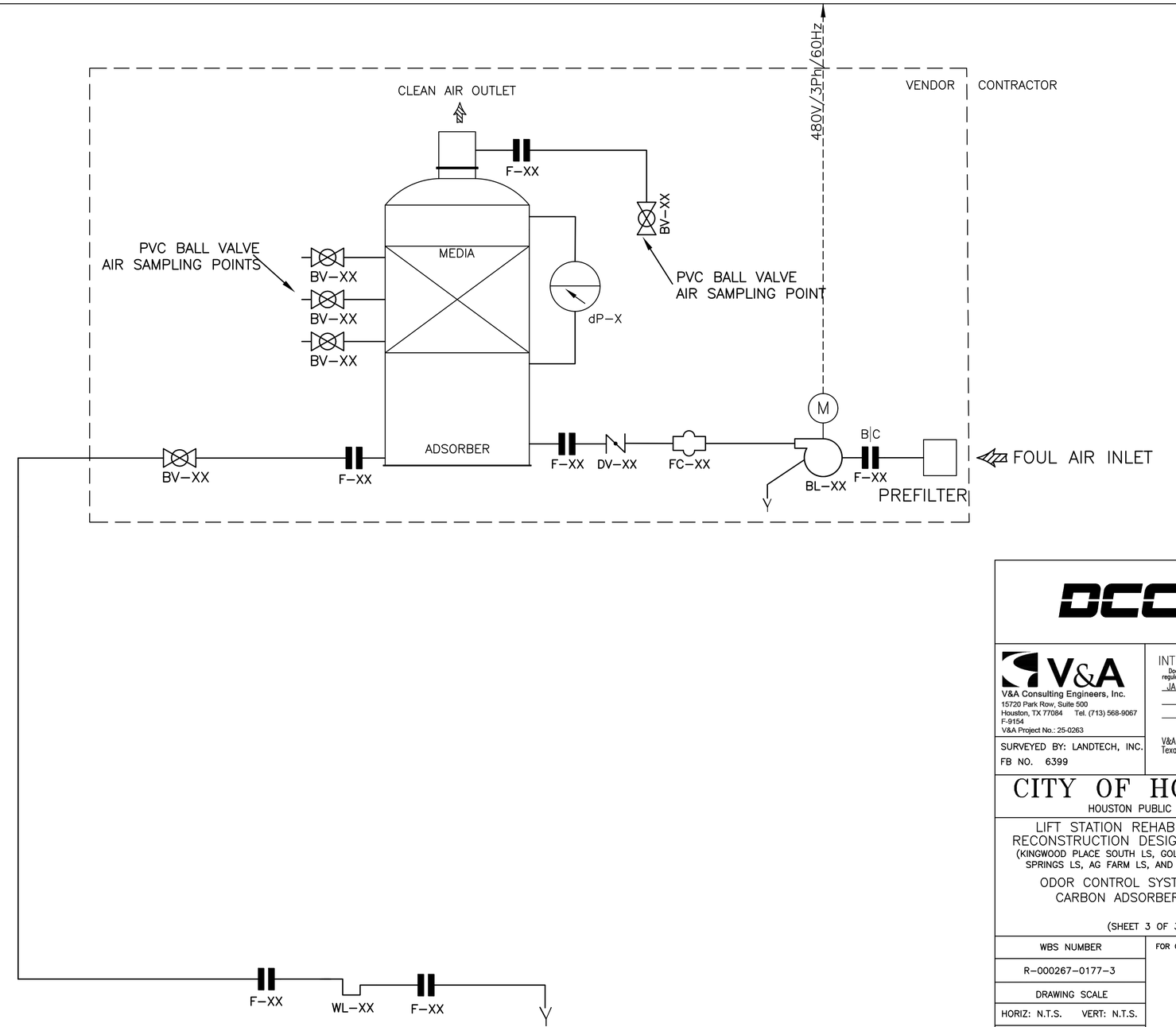
ODOR CONTROL SYSTEM DETAILS
CARBON ADSORBER
PLAN AND SECTION VIEW
(SHEET 2 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 288 OF 298	D-127

ODOR CONTROL SYSTEM ELECTRICAL CONTROL PANEL

LEGEND

- dP–X — Differential Pressure Gauge
- DV–XX — Manual Damper Butterfly Valve
- FC–XX — Flexible Duct Connection
- BV–XX — 2 Way Manual Ball Valve
- F–XX — Flange Connection
- WL–XX — Water Trap
- Drain
- BL–XX — Blower



DCCM

V&A Consulting Engineers, Inc.
15720 Park Row, Suite 500
Houston, TX 77084 Tel. (713) 568-9067
F-9154
V&A Project No.: 25-0263

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JAMES VAUGHAN HARSHMAN
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Date

V&A CONSULTING ENGINEERS, INC.
Texas Registered Engineering Firm
F-9154

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

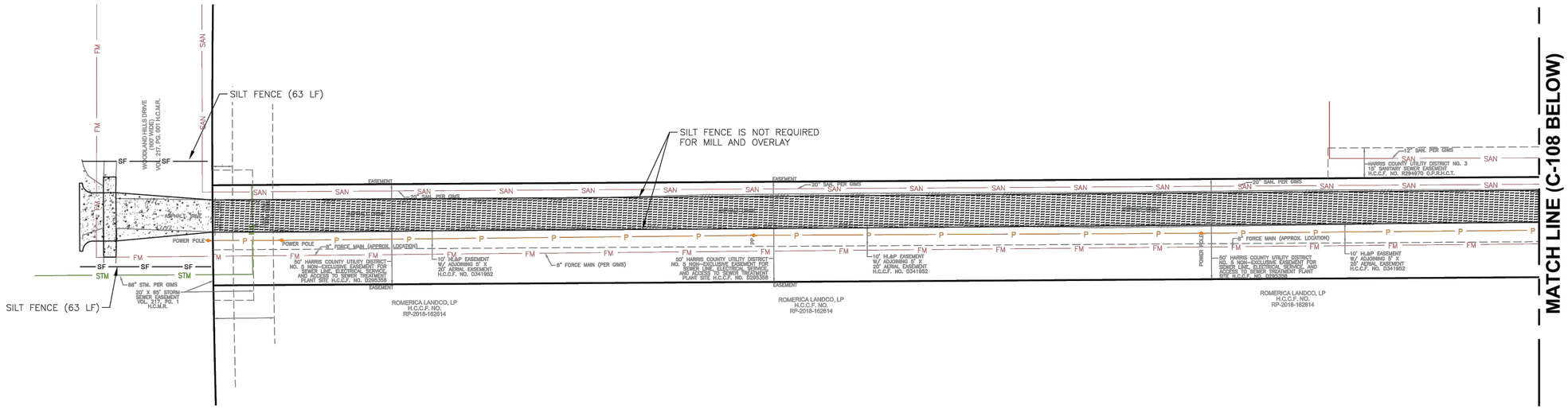
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

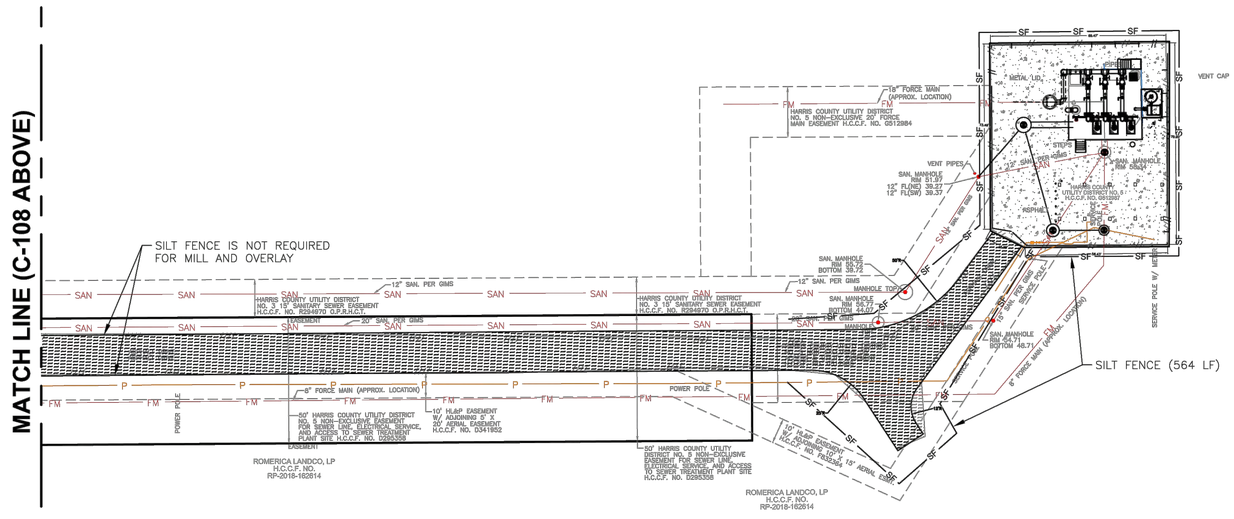
ODOR CONTROL SYSTEM DETAILS
CARBON ADSORBER P & ID

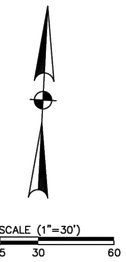
(SHEET 3 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 289 OF 298	D–128

PLOTTED: 2/25/2026 8:38 AM
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FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.02_Reference_Files\24-1930-SUB-ODOR CONTROL.dwg







NO.	DATE	REVISION	APP.

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070250, A FOUND ALUMINUM DISC STAMPED "6 103-36 BM 01" IN A CONCRETE HEADWALL SOUTH OF KINGWOOD DRIVE, APPROXIMATELY 315 FEET EAST OF ITS INTERSECTION WITH LAKE CRESCENT DRIVE. ELEVATION = 53.52' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

LEGEND

- ASPHALT MILL AND OVERLAY
- CONCRETE PAVEMENT
- SF — REINFORCED FILTER FABRIC FENCE

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS — NATHAN A. WILSON — 136610 — LICENSED PROFESSIONAL ENGINEER
02/20/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

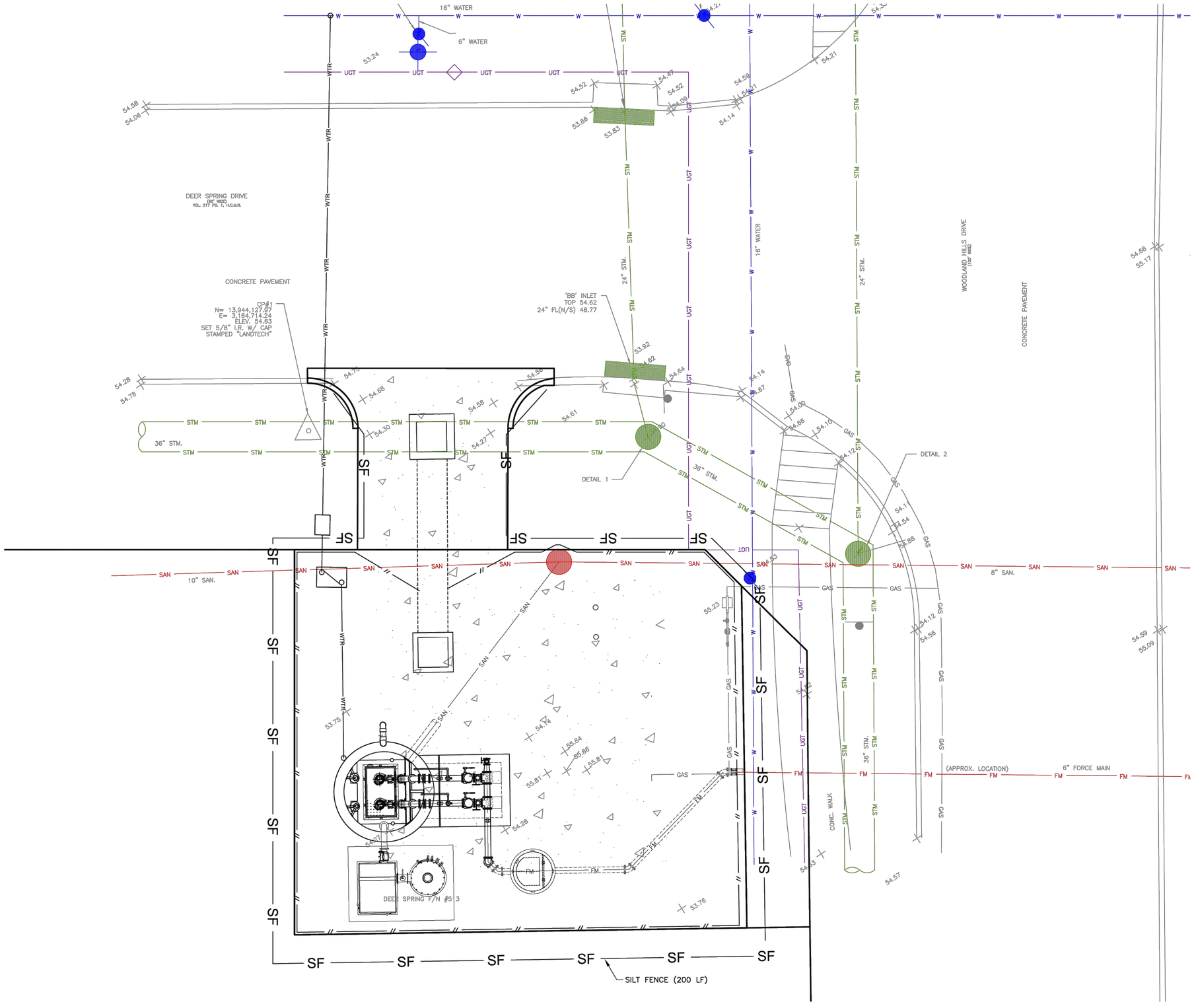
AG FARM LIFT STATION
PROPOSED CIVIL SWPPP

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=30' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 290 OF 298	P-101

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FILE PATH: P:\Houston\2024\240930\24-1930-SUB-CIVIL (DEER SPRING).dwg

NO.	DATE	REVISION	APP.



SCALE (1"=5')
0 2.5 5 10

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070255, A FOUND ALUMINUM DISC STAMPED "G 103-36-02.1 BM 01" IN A CULVERT HEADWALL SOUTH OF KINGWOOD DRIVE, APPROXIMATELY 165 FEET WEST OF ITS INTERSECTION WITH SHADY RUN DRIVE. ELEVATION = 54.15' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENT.

LEGEND

CONCRETE PAVEMENT

SF REINFORCED SILT FENCE (SF)

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

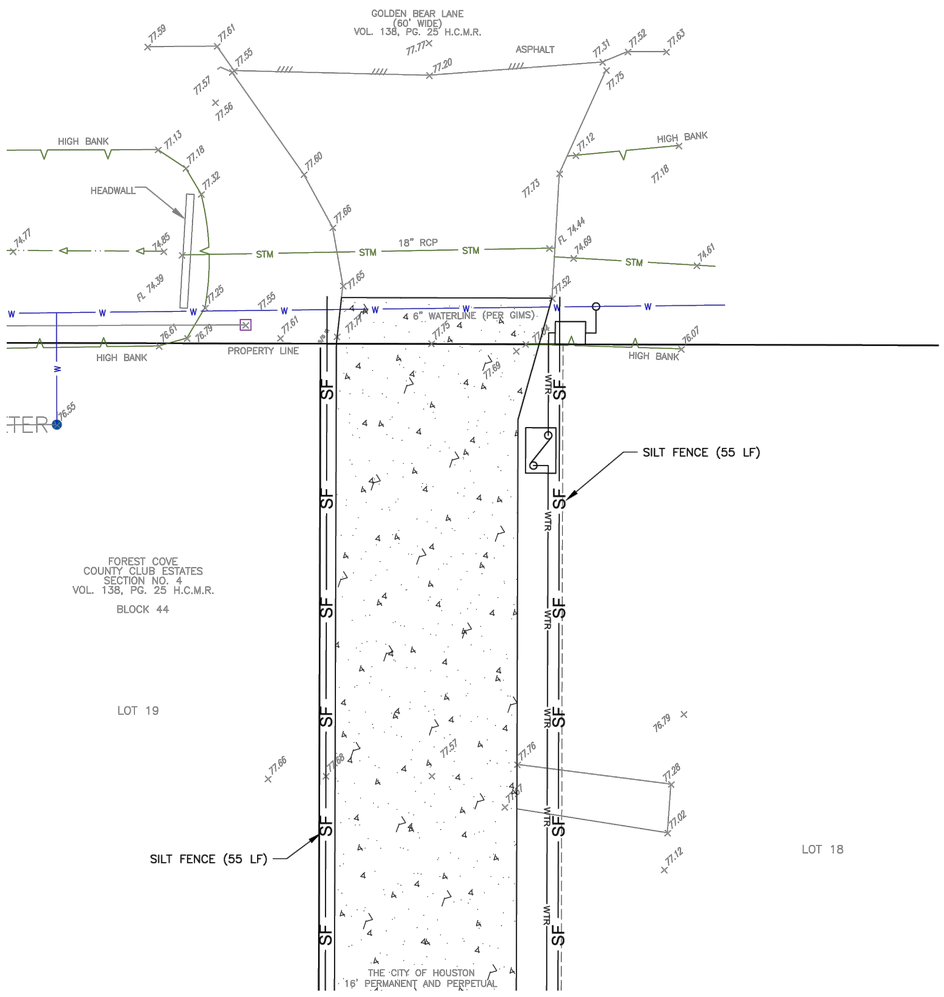
LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

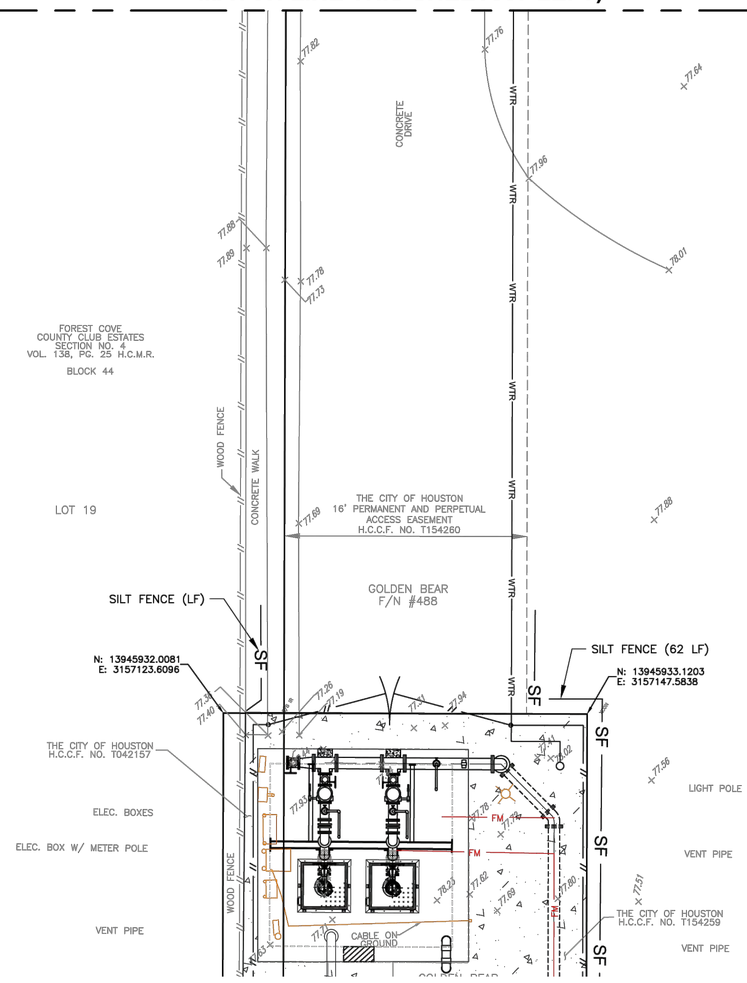
DEER SPRINGS LIFT STATION
PROPOSED CIVIL SWPPP

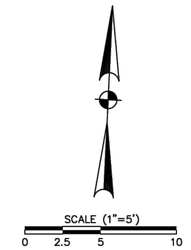
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=5' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 291 OF 298 P-102	

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MATCH LINE THIS SHEET307 LEFT)





NO.	DATE	REVISION	APP.

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070265, A FOUND ALUMINUM DISC STAMPED "6 103-38 BM 01" IN THE SOUTH SIDEWALK OF A BRIDGE ALONG KINGWOOD DRIVE, APPROXIMATELY 850 FEET WEST OF ITS INTERSECTION WITH WOODLAND GROVE DRIVE. ELEVATION = 74.46' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

LEGEND

CONCRETE PAVEMENT

SF — REINFORCED FILTER FABRIC FENCE

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED
PROFESSIONAL ENGINEER

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

02/20/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
PROPOSED CIVIL SWPPP

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=5' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 292 OF 298	P-103

PLOT STYLE: COH_ctb_230809.ctb PLOTTED: 2/26/2026 8:38 AM
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PROP 3/4" HOSE BIBB (SEE SHEETS D-101 AND D-102)

PROP 3/4" RPBP BACKFLOW PREVENTER WITH CONCRETE PAD AN INSULATED ENCLOSURE (AQUASHIELD OR APPROVED EQUAL)

EXIST WATER LINE

15" SAN.

20" FORCE MAIN

HARRIS COUNTY UTILITY DISTRICT NO. 5
NON-EXCLUSIVE EASEMENT FOR ACCESS, UTILITY LINES, AND SANITARY LIFT STATION PURPOSES
H.C.C.F. NO. E878981

SILT FENCE (580 LF)

SAN. MANHOLE
RIM 47.88
15" FL(N/W) 36.46

GRAVEL

ASPHALT PAVMT

SCALE (1"=10')
0 5 10 20

NO.	DATE	REVISION	APP.

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070250, A FOUND ALUMINUM DISC STAMPED "G 103-36 BM 01" IN A CONCRETE HEADWALL SOUTH OF KINGWOOD DRIVE, APPROXIMATELY 315 FEET EAST OF ITS INTERSECTION WITH LAKE CRESCENT DRIVE. ELEVATION = 53.52' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENT.

LEGEND

CONCRETE PAVEMENT

SF REINFORCED SILT FENCE (SF)

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS
NATHAN A. WILSON
136610
LICENSED PROFESSIONAL ENGINEER

02/20/2026

CITY OF HOUSTON

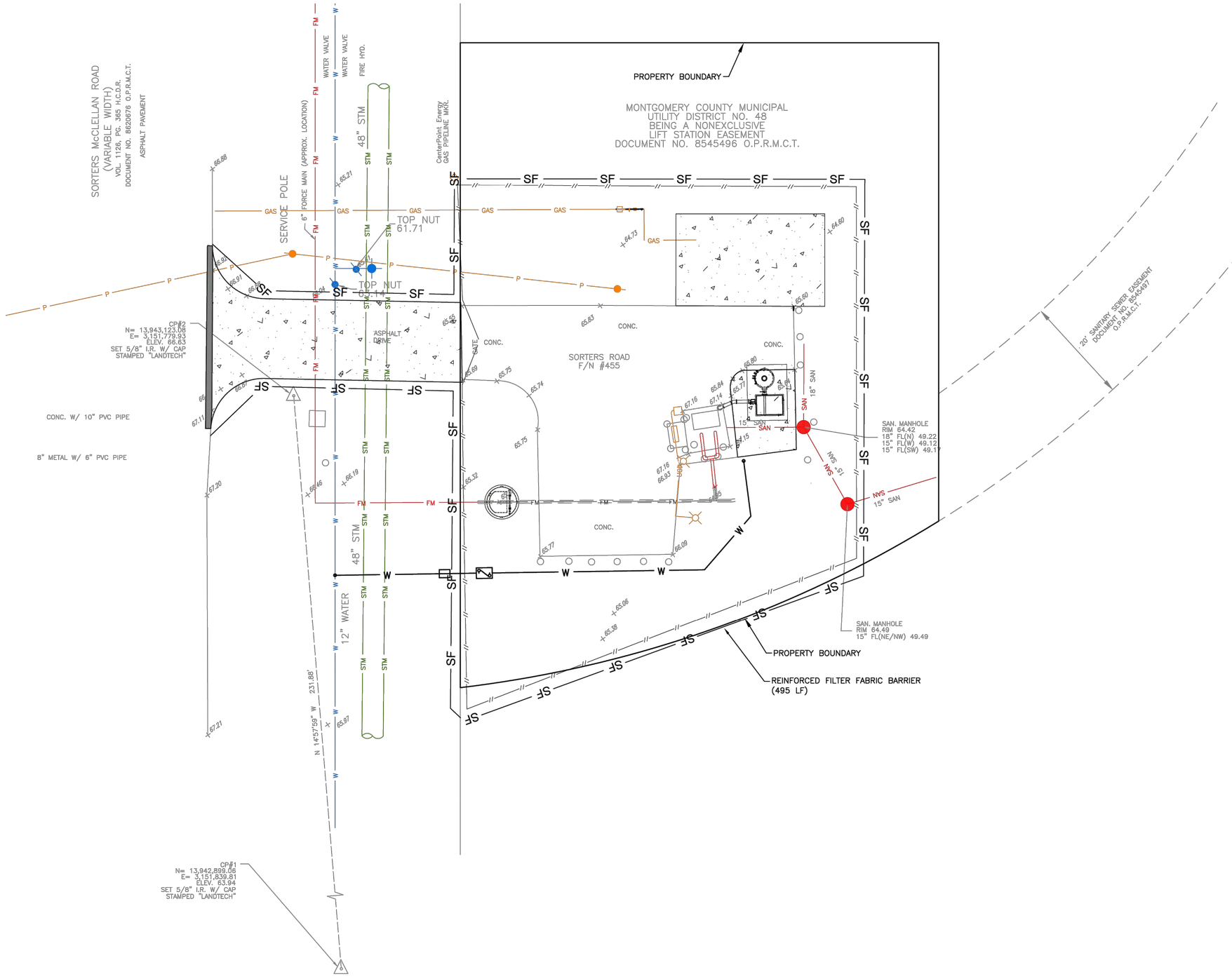
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLF COURSE LIFT STATION
PROPOSED CIVIL SWPPP

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 293 OF 298	P-104



SCALE (1"=10')
0 5 10 20

NO.	DATE	REVISION	APP.

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 100005, A FOUND BRASS DISC ON A CURB INLET STAMPED 100005 ALONG THE NORTH SIDE OF SORTERS/MCCLELLAN ROAD, APPROXIMATELY 300 FEET WEST OF ITS INTERSECTION WITH US 59 FEEDER ROAD. ELEVATION = 78.70' (NAVD88, 2001 ADJ.)
3. CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS AND MEASUREMENTS.

LEGEND

- CONCRETE PAVEMENT
- ASPHALT PAVEMENT
- SF — REINFORCED SILT FENCE (SF)

DCCM

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD

(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

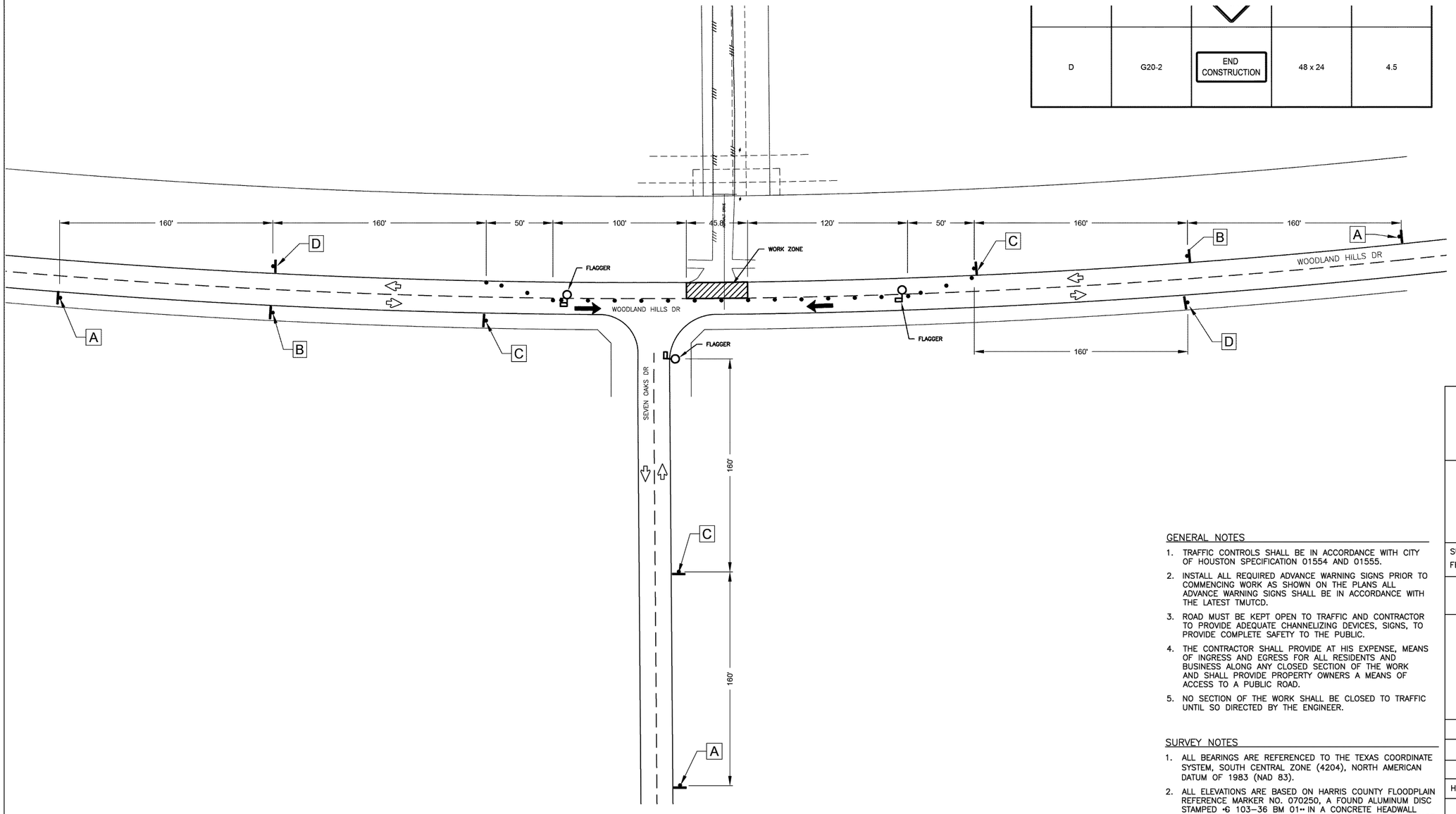
KINGWOOD PLACE SOUTH LIFT STATION
PROPOSED CIVIL SWPPP

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: 1"=10' VERT: N/A	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 294 OF 298	P-105

FILE PATH: W:\Active Projects\KINGWOOD PLACE SOUTH\Civil\Sheets\KINGWOOD PLACE SOUTH).dwg PLOT STYLE: C3M_ctb_230809.ctb PLOTTED: 2/26/2026 8:39 PM

PLOTTED: 2/25/2026 8:40 AM
PLOT STYLE: COH.ctb
FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.02_Reference_Files\24-1930-SUB-CIVIL (TCP).dwg

D	G20-2	END CONSTRUCTION	48 x 24	4.5



VEHICLE DIRECTION

CHANNELIZING DEVICES (TO BE INSTALLED AT 20' OC

FLAGGER

GENERAL NOTES

1. TRAFFIC CONTROLS SHALL BE IN ACCORDANCE WITH CITY OF HOUSTON SPECIFICATION 01554 AND 01555.
2. INSTALL ALL REQUIRED ADVANCE WARNING SIGNS PRIOR TO COMMENCING WORK AS SHOWN ON THE PLANS ALL ADVANCE WARNING SIGNS SHALL BE IN ACCORDANCE WITH THE LATEST TMUTCD.
3. ROAD MUST BE KEPT OPEN TO TRAFFIC AND CONTRACTOR TO PROVIDE ADEQUATE CHANNELIZING DEVICES, SIGNS, TO PROVIDE COMPLETE SAFETY TO THE PUBLIC.
4. THE CONTRACTOR SHALL PROVIDE AT HIS EXPENSE, MEANS OF INGRESS AND EGRESS FOR ALL RESIDENTS AND BUSINESS ALONG ANY CLOSED SECTION OF THE WORK AND SHALL PROVIDE PROPERTY OWNERS A MEANS OF ACCESS TO A PUBLIC ROAD.
5. NO SECTION OF THE WORK SHALL BE CLOSED TO TRAFFIC UNTIL SO DIRECTED BY THE ENGINEER.

SURVEY NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070250, A FOUND ALUMINUM DISC STAMPED "G 103–36 BM 01" IN A CONCRETE HEADWALL SOUTH OF KINGWOOD DRIVE, APPROXIMATELY 315 FEET EAST OF ITS INTERSECTION WITH LAKE CRESCENT DRIVE. ELEVATION = 53.52' (NAVD88, 2001 ADJ.)

DCCM

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

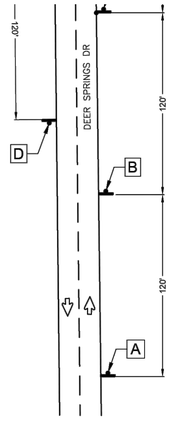
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

AG FARM LIFT STATION
PROPOSED CIVIL TRAFFIC CONTROL PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 295 OF 298	TCP–101

FILE PATH: J:\COHouston\0000001930.0000_COH RFQ 23-04 Lift Station Rehab (FEMA)\6.00_CADD\6.02_Reference_Files\24-1930-SUB-CIVIL (TCP).dwg
PLOT STYLE: COH.ctb
PLOTTED: 2/25/2026 8:40 AM



GENERAL NOTES

1. TRAFFIC CONTROLS SHALL BE IN ACCORDANCE WITH CITY OF HOUSTON SPECIFICATION 01554 AND 01555.
2. INSTALL ALL REQUIRED ADVANCE WARNING SIGNS PRIOR TO COMMENCING WORK AS SHOWN ON THE PLANS ALL ADVANCE WARNING SIGNS SHALL BE IN ACCORDANCE WITH THE LATEST TMUTCD.
3. ROAD MUST BE KEPT OPEN TO TRAFFIC AND CONTRACTOR TO PROVIDE ADEQUATE CHANNELIZING DEVICES, SIGNS, TO PROVIDE COMPLETE SAFETY TO THE PUBLIC.
4. THE CONTRACTOR SHALL PROVIDE AT HIS EXPENSE, MEANS OF INGRESS AND EGRESS FOR ALL RESIDENTS AND BUSINESS ALONG ANY CLOSED SECTION OF THE WORK AND SHALL PROVIDE PROPERTY OWNERS A MEANS OF ACCESS TO A PUBLIC ROAD.
5. NO SECTION OF THE WORK SHALL BE CLOSED TO TRAFFIC UNTIL SO DIRECTED BY THE ENGINEER.

SURVEY NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070255, A FOUND ALUMINUM DISC STAMPED "G 103-36-02.1 BM 01" IN A CULVERT HEADWALL SOUTH OF KINGWOOD DRIVE, APPROXIMATELY 165 FEET WEST OF ITS INTERSECTION WITH SHADY RUN DRIVE. ELEVATION = 54.15' (NAVD88, 2001 ADJ.)

DCCM

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

DEER SPRING LIFT STATION
PROPOSED CIVIL TRAFFIC CONTROL PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 296 OF 298	TCP-201

PLOTTED: 2/25/2026 8:40 AM
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NO.	DATE	REVISION	APP.

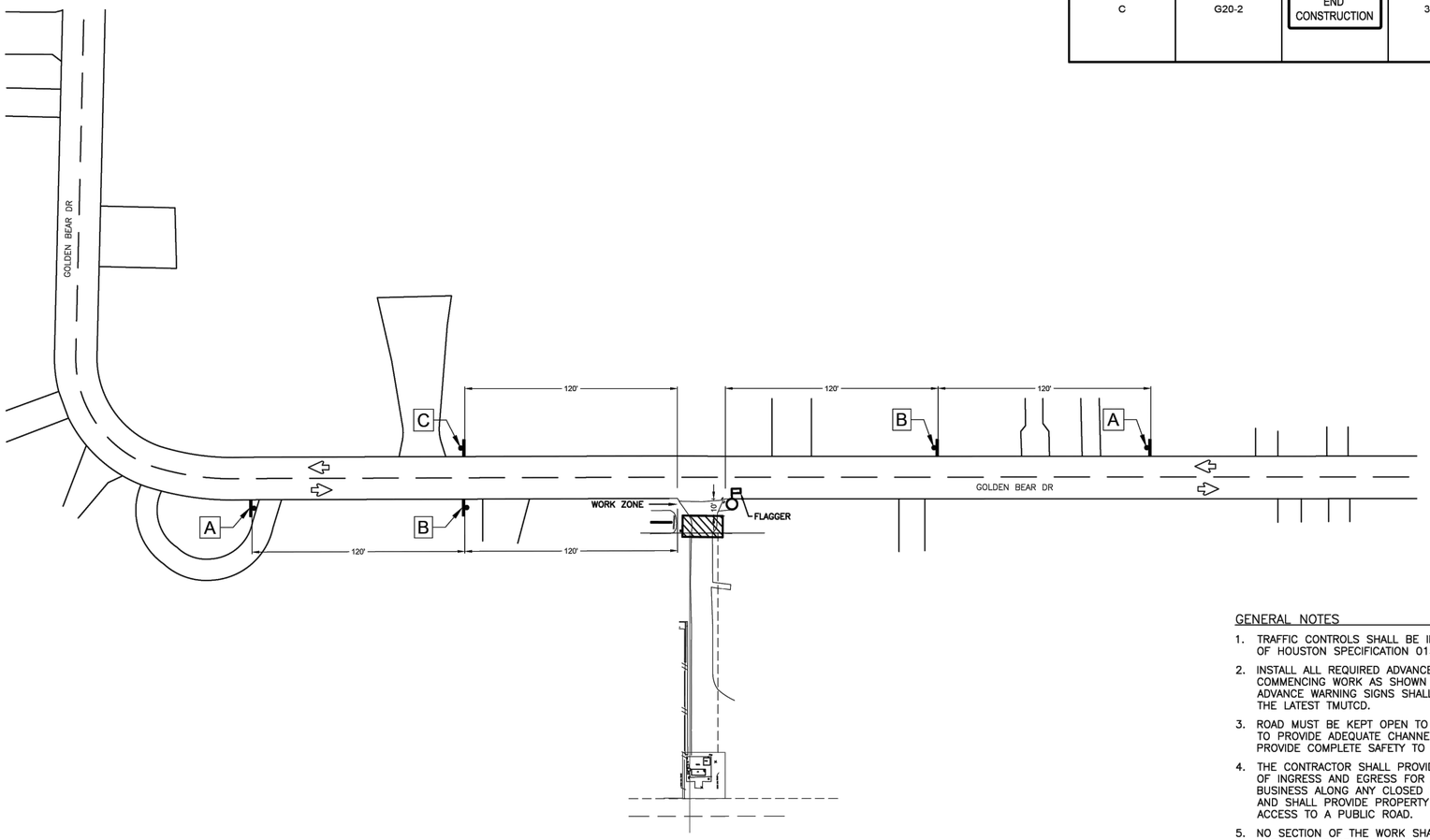
SIGN SUMMARY

SIGN	TYPE	LEGEND	SIZE (IN x IN)	AREA
A	W8-H6A	TRUCKS ENTERING AND EXITING AHEAD	36 x 36	9.0
B	CW20-7		36 x 36	9.0
C	G20-2	END CONSTRUCTION	36 x 18	4.5

SCALE (1"=40')
0 20 40 80

LEGEND

- SIGN
- TRAFFIC DIRECTION
- WORK ZONE
- VEHICLE DIRECTION
- CHANNELIZING DEVICES (TO BE INSTALLED AT 20' OC
- FLAGGER



GENERAL NOTES

1. TRAFFIC CONTROLS SHALL BE IN ACCORDANCE WITH CITY OF HOUSTON SPECIFICATION 01554 AND 01555.
2. INSTALL ALL REQUIRED ADVANCE WARNING SIGNS PRIOR TO COMMENCING WORK AS SHOWN ON THE PLANS ALL ADVANCE WARNING SIGNS SHALL BE IN ACCORDANCE WITH THE LATEST TMUTCD.
3. ROAD MUST BE KEPT OPEN TO TRAFFIC AND CONTRACTOR TO PROVIDE ADEQUATE CHANNELIZING DEVICES, SIGNS, TO PROVIDE COMPLETE SAFETY TO THE PUBLIC.
4. THE CONTRACTOR SHALL PROVIDE AT HIS EXPENSE, MEANS OF INGRESS AND EGRESS FOR ALL RESIDENTS AND BUSINESS ALONG ANY CLOSED SECTION OF THE WORK AND SHALL PROVIDE PROPERTY OWNERS A MEANS OF ACCESS TO A PUBLIC ROAD.
5. NO SECTION OF THE WORK SHALL BE CLOSED TO TRAFFIC UNTIL SO DIRECTED BY THE ENGINEER.
6. 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 DRIVEWAY, UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM THE CITY OF HOUSTON.

NOTES

1. ALL BEARINGS ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARKER NO. 070265, A FOUND ALUMINUM DISC STAMPED "G 103–38 BM 01" IN THE SOUTH SIDEWALK OF A BRIDGE ALONG KINGWOOD DRIVE, APPROXIMATELY 850 FEET WEST OF ITS INTERSECTION WITH WOODLAND GROVE DRIVE. ELEVATION = 74.46' (NAVD88, 2001 ADJ.)

DCCM

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045
F1001

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

STATE OF TEXAS · NATHAN A. WILSON · 136810 · LICENSED PROFESSIONAL ENGINEER
02/20/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

GOLDEN BEAR LIFT STATION
PROPOSED CIVIL TRAFFIC CONTROL PLAN

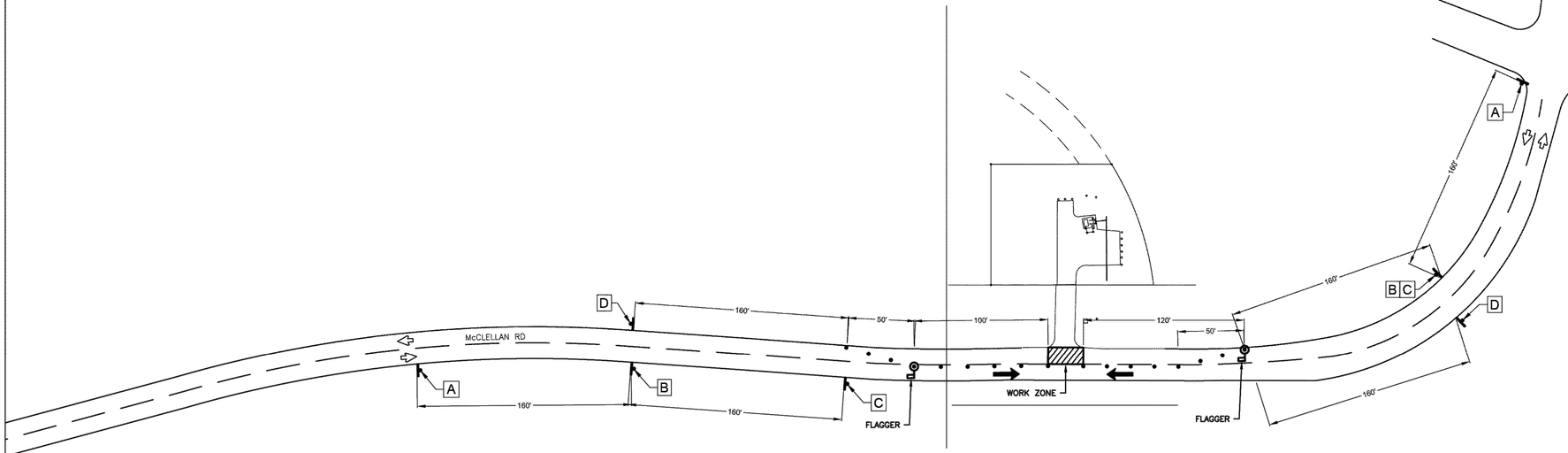
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000267–0177–3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 297 OF 298	TCP–301

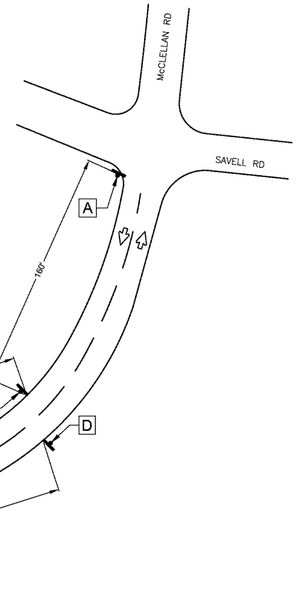
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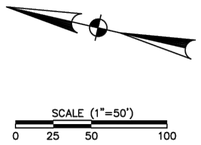
NO.	DATE	REVISION	APP.

SIGN SUMMARY

SIGN	TYPE	LEGEND	SIZE (IN x IN)	AREA ▪▪ ▪ ▪▪▪▪▪▪▪
A	CW20-1D	ROAD WORK AHEAD	48 x 48	9.0
B	CW20-4D	ONE LANE ROAD AHEAD	48 x 48	9.0
C	CW20-7		48 x 48	9.0
D	G20-2	END CONSTRUCTION	48 x 24	4.5







LEGEND

- SIGN
- TRAFFIC DIRECTION
- WORK ZONE
- VEHICLE DIRECTION
- CHANNELIZING DEVICES (TO BE INSTALLED AT 20' OC
- FLAGGER

GENERAL NOTES

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DCCM

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STATE OF TEXAS · NATHAN A. WILSON · 136810 · LICENSED PROFESSIONAL ENGINEER

SURVEYED BY: LANDTECH, INC.
FB NO. 6399

02/20/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LIFT STATION REHABILITATION & RECONSTRUCTION DESIGN FEMA – CD
(KINGWOOD PLACE SOUTH LS, GOLDEN BEAR LS, DEER SPRINGS LS, AG FARM LS, AND GOLF COURSE LS)

KINGWOOD PLACE SOUTH LIFT STATION
PROPOSED CIVIL TRAFFIC CONTROL PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000267-0177-3	
DRAWING SCALE	
HORIZ: N.T.S. VERT: N.T.S.	
CITY OF HOUSTON PM	
MARILENA STOICA, P.E.	
SHEET NO. 298 OF 298	TCP-501